

December ,

Dear Planning Commissioners

I am writing to request that you deny the special use permit application for the proposed slaughterhouse. My research shows that locating such a facility near where people live, work, and recreate will cause irreparable harm to my family, local neighborhoods, nearby businesses, the environment, and our City overall.

I am writing to you today because three things have changed since my first email letters to you prior to the Planning Commission meeting I have spent nearly two dozen hours researching the market, operations, and impacts of slaughterhouses, both in general and locally,

I learned that our city government's 'standard operating procedures' are not always followed or effective, and we, our ragtag group, the Coalition of Citizens for Peaceful Enjoyment (CCPE) have gathered nearly signatures on our petition to oppose the location of this facility. In a few hours at the Downtown Wine Walk on we collected more signatures since my emailing of , and signatures on our "Visitors" petition. These are attached.

These changes provide a rationale for making a different decision at the meeting than you did at the meeting. That decision is to deny the requested SUP because the evidence shows that this facility will more likely than not cause harm. The evidence demonstrates that the proposed project fails to meet Findings , , , , , and .

Further, verbal assurances solicited from the representatives of a wealthy out of state corporation, Carson Valley Meats (the applicant by the Commission at the meeting (documented as additional Conditions are woefully inadequate they will not promote the health, safety, and general welfare of Carson City's citizens.

Evidence matters because the decision making standard you are tasked with applying is not mere opinion, but rather a preponderance of evidence (CCMC This burden rests with CVM. To put that simply, if you were to put the evidence favorable to the applicant, Carson Valley Meats, and the evidence favorable to the opposition, the Coalition of Citizens for Peaceful Enjoyment, on opposite sides of the scales, CVM would have to make the scales tip somewhat on their side. If CVM fails to meet this burden, then the SUP permit must be denied.

- a) The applicant has provided NO evidence to support assertions made in the application that the proposed facility will cause no harm.
- b) With this letter are two links containing documents that provide data – EVIDENCE – that these harms are known to exist, and these harms are more likely to occur than not. (These links are good for days .
 - Documents submitted prior to meeting (documents https://we.tl/t_bbrwtgWq
 - New Documents (documents https://we.tl/t_tg
- c) The evidence supports Reasons why a slaughterhouse in the proposed location is a bad idea. These Reasons are attached. This document has been revised since providing it to Ms. Ferris on .

- d) These documents also describe and or illustrate best Practices followed by caring communities when determining whether to build a slaughterhouse. Doing a feasibility study to collect data and explore the market, operational, and location needs of the facility and including the public in the decision making process (studies from Montana, Vermont, and Washington are included in the source documents). Neither of these best Practices have been followed to date.

In conversation with Ms. Sullivan on [redacted], she commented, "I don't know you" in reference to my skills, abilities, and accomplishments. Certainly, I'm willing to share my CV on request, and at the bottom of my emails there is a link to my LinkedIn page. However, considering Ms. Sullivan's comment, here is a summary of my research expertise

- I am an award winning, peer review published, research scientist in the field of Industrial Organizational Psychology (i.e., business or workplace psych). People study my research when they are earning their doctorate. I have taught undergraduate and graduate level courses at colleges and universities across the country for [redacted] years. I have served as adjunct Faculty at Western Nevada College for over [redacted] years. I have spent dozens of hours researching slaughterhouses and their effects on the communities in which they are located. My research indicates that slaughterhouses of all sizes produce well documented irreparable harm to people (acute and chronic illnesses, property values (no one wants to buy a home or property near a slaughterhouse), the environment (the industry regularly violates environmental protections, several supersites exist), and animals (even Wolf Pack meats was shut down in [redacted] for inhumane treatment of animals, Gentry [redacted]).
- **Select Sources (see links to full list of sources)** Environmental Integrity Project, Kirkpatrick, [redacted] Indiana Business Research Center, [redacted] Easton Courier, Center for Biological Diversity, [redacted] White, [redacted] Killough, [redacted] Murray, Fitzgerald et al., [redacted] Toronto news report, [redacted] Carapetian, [redacted] Ghandi, [redacted] Harris, [redacted] Sinclair Farms Newsletter, [redacted] Northern Nevada Development Authority website Cities Inside Nevada's Plan for Recovery & Resilience from the Governor's website Penrose, [redacted] KTVN, [redacted] Franke Whittle & Insam, [redacted] Pestman website Walker & Stachecki Guide to Designing a Small Red Meat Plant Standard Plans for a Small Slaughterhouse and Meat Market Slade & Illeyne, [redacted] Food Northwest Standard Plans Fuller [redacted] USGS crimegrade.org DT Security reavibes.com Willow Home Values database Jones, [redacted] Ruggers, [redacted] Gadiak, [redacted] Shah et al., Grandin, [redacted] The Counter.org, [redacted].

When people disagree, the tie breaker is evidence. The SUP application provides little to no evidence that the well known harms associated with slaughterhouses will be prevented. Whereas I have provided over [redacted] pages documenting the irreparable harm that slaughterhouses can cause to communities. The preponderance of evidence clearly supports a decision to deny the requested SUP.

Given that the preponderance of evidence makes it clear that the proposed location is completely unsuitable for a slaughterhouse, how is it that staff recommended the SUP in the Staff Report? How is it that some of our City Supervisors and Mayor have said they are

“in support” of the project? This appears to have happened because of a flaw in our Planning process – the Major Project Review.

Major Project Review is a useful tool only when it is well informed by the applicant. That did not happen with this project.

- a The Business Case provided to Planning Staff by CVM was literally a list of bullet points. It did not provide full sentences, much less a comprehensive discussion of the operations of the facility and its impacts on neighbors and the community.
 - a. There is NO description of an air filtration system, noise abatement measures, pest management systems, procedures for ethically treating animals, procedures for cleaning the facilities and the drains that collect “blood, hair, and fat” (Fuller, , nor robust discussion of the prevention of leakage when located in a high Risk flood plain.
- b CVM was not forthcoming in discussing, or intentionally ignored discussing, known and foreseeable harms associated with running a slaughterhouse, and specifically addressing how they would prevent such harms.
- c CVM provided false assurances to Staff when suggesting that the USD can offer protections to prevent or mitigate harms. The USD can provide certification but not enforcement of many of the adverse effects. Indeed, the USD’s effectiveness has been shown to be woefully inadequate for decades (Abbott, Ruggers, Achman et al.).
- d CVM appears to be significantly underestimating the proposed facility’s projected water usage. They say gallons per cow, while standard industry ratios are to gallons per cow (Food Northwest, Standard Plans, Fuller , USGS . There are no projections for the significant increase in water usage for an indoor corral where manure and urine must be washed away. (In fact, there is no design at all offered for the review of decision makers or the public. The evidence shows that it’s more likely that the proposed facility will meet or exceed , gallons of water per harvest day.

Due to inadequate information, the Major Project Review was flawed. It was this flawed review that apparently set the expectation by both the applicant and staff that CVM’s SUP request would be approved. It is this flawed review that has given the public the impression that this request was a “done deal” – an impression that has been costly in terms of optics and votes to the City, you, and the Supervisors.

What is clear now – several months after first becoming aware of the proposed project – is that the applicant has failed to provide actual evidence to support their assertions that the facility will do no harm. Compromising the public health and welfare, our peaceful enjoyment, our water usage, and our tourism and hospitality industries is untenable and unnecessary. There are no data that support a market need for this facility in Carson City. And there are no data that support the need for a second such facility given the facility being built in Douglas County, the initial county of choice for the applicant.

It is unfortunate that the applicant was not more thorough in the information they provided to Staff. Additionally, it is unfortunate that, after the well publicized 'fiasco' that happened in Douglas County, that City staff did not include a public comment component in the Major Project Review. It is time for these unfortunate wrongs to be righted.

I urge you to deny this application given the lack of evidence that the proposed facility will do no harm. Such a decision prevents the City from being put in the position of having to monitor and enforce the numerous additional Conditions attached to the project – a duty of care that the CCPE will actively work to ensure is properly exercised. Further, a denial decision is aligned with the Master Plan and the mission of this Commission.

Finally, common sense indicates that, if there is interest in having a slaughterhouse in the region, then the next course of action is to conduct a feasibility study to gather local data on the market, operational, and location needs of such a facility. A committee made up of the applicant, City staff, and the public could then be convened to evaluate the data and make a decision that results in a win for all stakeholders.

Sincerely,

A handwritten signature in black ink, appearing to read "Jn Verive", written in a cursive style.

Jennifer Verive, Ph.D.
Carson City Resident

NO ON [proposed] SLAUGHTERHOUSE50!

I OPPOSE the special use permit requested by Carson Valley Meats because it will be a detriment to the use, peaceful enjoyment, economic value of surrounding properties or the general neighborhood; and it will cause OBJECTIONABLE noise, odor, dust, and physical activity.

	NAME	EMAIL	ZIP CODE
1.	Craig Sharp	CSharp27C@gmail.com	89403
2.	Linda Sharp		89403
3.	Isabel Zantilla	39IZZY@gmail.com	89706
4.	DIRK ZANTILLA	IDEAZ@ATT.NET	89706
5.	Suzanne Keefe	oldWaters	89701
6.	Kendal Joyner	kendal.g.joyner@gmail.com	89701
7.	Susan Edgar	~~EDGAR~~	89703
8.	Barbara Wilhelm	barbagain13@gmail.com	89706
9.	Mercedes Madrano		89701
10.	Patricia Fulton		89703
11.	Elisa Ayala	msencameyna@gmail.com	
12.	Karen Lunnin		89403
13.	Jana Buda		89403
14.	Suzanne Mohr	SuzanneMohr@yahoo.com	89403
15.	Lisa Fredley	dolphinlvr4@gmail.com	89403
16.	Aileen Webster		89701
17.	Lisa Webster		89701
18.	Joyce Tebbitt	tebbittj@me.com	89403
19.	CLIFF TEBBITT	CLIFFORD.TEBBITT@GMAIL.COM	89403
20.	La Donna Rathel		89703

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	NAME	EMAIL	ZIP CODE
1.	LYNÉE McVICAR	LYNÉE.McVICAR@gmail.com	89706
2.	Patricia McClure	—	89403
3.	M. H. —		89703
4.	Shirley Carter		89701
5.	Deborah Wells	deborah.wells@ymail.com	89703
6.	Frank Anderson		89703
7.	Kelly McHane		89701
8.	B. A. —	jessica2446@gmail.com	89741
9.	BrSO		89703
10.	Tyra Garcia		89703
11.	Kelsu —	—————	89403
12.	Marsha Owsen		89701
13.	Kris Bachofner	Krisbachofner@hotmail.com	89706
14.	RACHEL SUTHER		89423
15.	AUBIE ESPARZA		89706
16.	Angela Sanchez		89706
17.	Nadia Lopez		89706
18.	Carm Fox Hennessey		89703
19.	Nicole Anne Tye		89410
20.	Jennifer Harris		89403

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	NAME	EMAIL	ZIP CODE
1.	Renee Sorich	rsorich@gmail.com	89704
2.	Stephanie Slitz	sslitz13@gmail.com	89706
3.	Lisa J. Tolda	Lisa.j.photos@gmail.com	89703
4.			
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Visitors Say NO On [proposed] SLAUGHTERHOUSE50!

I enjoy visiting Carson City, I oppose the proposed facility because it will cause
OBJECTIONABLE noise, odor, dust, and physical activity; and negative environmental
 impacts that will make my visit to Carson City less enjoyable.

	NAME	EMAIL	ZIP CODE
1.	Linda Hiller	greenacres 23@charter.net	89705
2.	MICHAEL EVANS	evansm9999@sbcglobal.net	95819
3.	LISA SILVA	truckerjo@gmail.com	96116
4.	Nicole Kennedy	nicmill507@yahoo.com	89403
5.	Laura Waggoner	waggon2tails@yahoo	89403
6.	Lura Raifaisen	lraifaisen@hotmail.com	89521
7.	SSE		
8.	Elaine Garcia	leftlaine7@yahoo.com	89403
9.	GARY ESPENSHIP	golf1gem2@yahoo.com	89403
10.			
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Here are **Reasons why building a slaughterhouse in Carson City is bad for Neighbors, businesses, the Carson River, Tourists, and Our Community Overall**

The support “for” the proposed SH is support for a “meat processing” plant in general. HOWEVER, the proposal is a request for a Special Use Permit (SUP) to operate such a business on a particular lot in our city. Whether a slaughterhouse is “good” is not relevant. The question at hand is whether a SUP should be granted to put such a business in a particular LOCATION. We assert that there are reasons why a SUP for this particular location should be denied.

- . **There is NO NEE for this facility.** There is no market data to support the need for meat processing in Carson City. Especially with a facility being built on Buckeye Road in Gardnerville.
- . **The Carson City community does NOT support this facility.** We have over 100 signatures from Carson City residents on our petition to oppose the location of the proposed SH.
- . **Carson City is an R N County.** Carson is a designated US Metropolitan Statistical Area and is described by the NNDA as “the regional retail and commercial center for Northwestern Nevada”.
- 4. **It’s TOO CLOSE to residences and businesses.** It’s ONLY 400 feet from the property line of the proposed facility to the property line of the nearest residential neighborhood.
- 5. **CVM does NOT have “the right” to build a SH in a GI zone.** This PARTICULAR GI zone is unsuitable for a slaughterhouse because it is located near places people live, work, and recreate. Those uses were there first.
- . **It Violates Master Plan Principal Stable, Cohesive Neighborhoods Offering a Mix of Housing Types.** The city has set the goal to work to maintain the quality and character of established neighborhoods and ensure that infill and redevelopment is designed in a manner that minimizes impacts on existing neighborhoods
- . **It Violates Master Plan Goal . b Maintain the quality and character of established neighborhoods.** Any way you measure it...the proposed facility violates the city goal to maintain the quality and character of established neighborhoods. The facility will negatively affect the neighborhoods of Empire Ranch, August Dr. Sunrise Dr., and Villa Sierra Mobile Home Park, as well as major golf courses, several ball fields and tennis courts, and recreating on the Carson River.
- . **It Violates Master Plan Goal . 1d Land Use Friction Zones discourage rezoning of properties that create “friction zones” between land uses.** The GI zone was designated AFTER neighborhoods were well established. This GI zone is not suitable for a slaughterhouse.
- . **It Violates Master Plan Goal . 5. f Property Value Retention Enhancement.** Home and property values in the area will be significantly adversely affected. (Greenfield, Toronto, Willow Home Database)

0. **It will decrease Tourism as the Slaughterhouse Stigma permeates the Eastern Gateway to our City.** There will be a negative impact on tourists visiting Virginia City, and on people commuting to Dayton, Fallon, and the Tahoe Regional Industrial Center.
- . **It will adversely affect the use and peacefulness of historic sites.** Peaceful enjoyment of Empire Ranch Cemetery and historical markers will be impeded.
- . **It is detrimental to Peaceful Enjoyment Noxious Odors from living animals. 0 to 1 0 animals produce, literally, tons of manure.** There is no mitigation of this in an outdoor corral, and no evidence that an indoor corral will prevent or mitigate it. (Minnesota Pollution Control Agency, MIU E tension, RGJ 0)
- . **It is detrimental to Peaceful Enjoyment Noxious Odors from animal waste carcasses.** 0 to 0 animals will produce, literally, tons of blood and disemboweled animal parts. There is no mitigation of this in an outdoor corral, and no evidence that an indoor corral will prevent or mitigate it. (Minnesota Pollution Control Agency, MIU E tension, RGJ 0)
4. **It is detrimental to Peaceful Enjoyment ir Pollution.** The application describes NO air filtration system for living animals nor for harvesting activities. There is no mitigation of this in an outdoor corral, and no evidence that an indoor corral will prevent or mitigate it.
5. **It is detrimental to Peaceful Enjoyment Objectionable Noise from living animals.** Hungry, stressed animals vocali ing loudly – bellowing, bleating, and squealing. There is no mitigation of this in an outdoor corral, and no evidence that an indoor corral will prevent odors, noise, flies, or air pollution
- . **It is detrimental to Peaceful Enjoyment Objectionable Noise from animals being slaughtered.** Animals “scream” from stress during the harvesting process. The application describes no noise abatement methods.
- . **It is detrimental to Peaceful Enjoyment Physical ctivity.** No ious odors, noise, and air pollution, and swarms of flies will prohibit or severely curtail river related recreation
- . **It will create traffic, increase vehicular accidents.** The applicant says that this is a regional issue – thus traffic on Hwy 50 (“Death Hwy”) will significantly increase from all directions.
- . **It will harm the health and general welfare of neighbors and people throughout the County.** *“Meat processing facilities face an enormous risk when it comes to bacterial growth and contamination, as well as pests such as flies and other insects.”* (foodsafedrains.com)
0. **There will be swarms of flies, mice, and coyotes. There is no vermin pest management control described in the application other than use of denature after harvest .** *“With all the safety issues and concerns that come with operating a successful meat processing plant, the last thing a processor wants to worry about is an infestation of the four or more legged variety. Mice, flies, roaches or any other kind of pest can lower the sanitary conditions of a facility, pose a risk to employee and food safety and generally make for an unpleasant working environment.”* (from The National Provisioner website)

- . **The application is woefully inadequate incomplete, vague, and missing key components that address the Findings.** Passing the buck to other City departments is untenable given the well documented harms attributed to slaughterhouses, even “boutique” ones.
- . **It will likely use over 15,000 gallons of water every “special event” day, and possibly on a regular harvest day as well.** The application appears to use a substandard ratio of gallons of water pound of animal thereby significantly underestimating its water usage. *“Consider you will be using a lot, and I mean A LOT, of water per carcass.”* (Fuller, 0 , p.)
- . **It will put a burden on our City sewer system.** There is NO description of wastewater treatment in the application (only casual mention of “detention ponds”). *“Also, make sure that your filters traps will be able to catch **most** of the blood, hair and fat heading down the drain.”* (Fuller, 0 , p. 0) *“Untreated slaughterhouses waste entering into a municipal sewage purification system may create severe problems, due to the very high biological oxygen demand (BOD) and chemical oxygen demand (COD).”* (Barafshan et al. 0)
- 4. **It will not bring “economic vitality” or jobs to our area. The application mentions a max of 5 employees.** SH employees have a “tendency towards violence” and self report a myriad of mental health issues. Arrest rates for sexual assault and family violence are statistically higher in communities with SHs. (Slade Alleyne, 0 Fitzgerald et al., 00)
- 5. **Wolf Pack Meats East Reno is a terrible comparison – we do not want to be like the area around WPM** There are no residential neighborhoods near WPM. East Reno crime rates are higher than the Reno average and higher than national average. East Reno has nearly twice the number of rapes than the national average. (crimegrade.org ADT Security AreaVibes.com)
- . **Having S certification does NOT mitigate harms.** The USDA is overworked and unable to adequately provide proper oversight. There is legislation to exempt boutique SHs from USDA oversight. (Bruggers, 04 Linnekin, 0).
- . **The proposed site is adjacent to an Earthquake Fault** There is no description of what, if any, design moderations have been made to accommodate earthquake impact on the building and especially on the drainage structures.
- . **The proposed site is currently classified as a SPECIAL FLOOD HAZARD AREA – HIGH RISK.** The application does not provide detail on how wastewater will be treated nor provide data to support the adequacy of the proposed design given the site being located in a HIGH RISK FLOOD PLAIN.
- . **Unprotected Wetlands will be altered or destroyed.** The proposed plans will change the natural drainage patterns of the land, eliminating or severely altering an unprotected Wetland.
- 0. **There is inadequate information on Water Pollution Control, and the need for a 0 permit.** A 404 permit requires the FILLING of the wetlands to have a level surface on which to build.

- . **Meats from boutique slaughterhouses costs more it will not lower meat prices.** In some cities, meat from boutique SHs is twice the cost per pound then meat from the grocery store. (Seegerstrom, 0 0)
- . **There are no indications that animals will be treated humanely.** Although animal welfare is not specifically addressed in the application, the applicant has stated that they will use “Temple Grandin” methods. However, there is no evidence of such methodology described in the application. The use of an indoor corral is inconsistent with the Grandin methodology. (Grandin, 005)
- . **REGION L approach to the proposed project may locate a more suitable site.** Best practices include doing a feasibility study to collect data on market, location, and operational needs. A UNR Feasibility study concluded that the best site to build a new slaughterhouse in Northern Nevada would be Silver Springs. Land is available in Silver Springs.

“America’s Slaughterhouse Mess”

by [Baylen J. Linnekin](#)
05.02.2017, 12:08pm

Opinion

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When Americans grumble about how our food system is broken, the slaughter and processing of farm animals are often at the heart of their critiques. One hundred years ago, Upton Sinclair’s damning novel, *The Jungle*, exposed many gruesome and unsanitary practices in the food system of his day. A host of important federal food-safety regulations, including mandatory inspections, soon followed.

This is an excerpt from [Biting the Hands That Feed Us: How Fewer, Smarter Laws Would Make Our Food System More Sustainable](#) (September, 2016) by Baylen J. Linnekin.

But that was hardly the end of the story. Instead, attention to livestock slaughter has only grown in recent years. In 2014, for example, I moderated a panel at Harvard Law School on sustainable meat production as part of a conference called “The Meat

the first of many similar student groups that have popped up at law schools around the country in recent years, and the Student Animal Legal Defense Fund. The title of my panel—“Reducing Legal Barriers, Empowering Consumers, and Creating Pathways for Sustainably and Humanely Raised Meat”—nicely encapsulates the obstacles that many farmers, consumers, and others face in their efforts to sell, buy, and eat the type of meat they want. Many of these obstacles are the result of a mandatory food-safety inspection system, administered by the USDA, that is deeply flawed.



Island Press

Today's USDA food-safety rules require that agency inspectors be present at a facility every day that meat is processed. In 2007, though, stunning reports emerged that USDA inspectors had failed to inspect hundreds of plants regularly, as required, for [thirty years](#). Although the agency's failure to inspect hundreds of facilities regularly for three decades is outrageous, even that fact doesn't illustrate the broken state of the agency's food-safety rules quite as well as does the closure of a Petaluma, California

only USDA-approved slaughterhouse in Northern California—to close. An agency investigation indicated the facility had illegally processed cattle that were [suffering from cancer](#).

The presence of cancerous meat led the USDA to order the recall of 8.7 million pounds of beef processed by Rancho. The agency was clearly justified in taking any cancerous meat—which was disgusting at best and which could pose food-safety problems at worst—out of the food supply. By also ordering the recall of millions of pounds of beef that was entirely wholesome, though, the agency was throwing out the baby with the bathwater. Worse still, as I'll explain, the USDA's own food-safety rules were largely to blame for the agency's decision to order the destruction of perfectly good meat.

USDA rules often force small, sustainable farmers to ship animals hundreds of miles away—even out of state—to be slaughtered.

One morning in 2009, when I was living in Fayetteville, Arkansas, where I was studying agricultural and food law, I jogged by a pair of cattle dining on grass in a fenced pasture a couple blocks from my apartment. As I slowed down to take a look at them, I noticed some flyers attached to the fencing along the roadside. I stopped running and grabbed a flyer. Sure enough, these cattle or parts of them, at least— would soon be for sale in fifty-pound boxes. After I finished my jog, I called the phone number on the flyers. Another phone call, a few emails, and a week or two later, I was the proud owner of a box of steaks and other cuts raised by Tommy Daniel, a recently retired professor of crop, soil, and environmental sciences at the University of Arkansas.

You'd think that these cattle, raised lovingly and openly in a pasture a block from the main intersection in a college town, might be spared the indignity of enduring a road trip to meet their end at a far-off processing plant. They'd be killed locally and sold to people like me. You'd be wrong. Though Prof. Daniel's cows lived out their days in a pasture only two blocks from my home, that fact hides the journey

send his cows *only* sixty miles to be slaughtered. Other farmers—and their livestock—aren’t so lucky. USDA rules often force small, sustainable farmers to ship animals hundreds of miles away—even out of state—to be slaughtered and processed alongside animals that were raised without the same care. That’s because USDA rules unnaturally amalgamate animals from farmers and ranchers of all types and sizes—from cattle raised on the smallest grass-fed beef farm to those raised on the nation’s largest confined animal feeding operations (CAFOs)—into many of the same USDA-approved slaughterhouses. This is largely true because rules are uncaring, and because there simply aren’t enough slaughterhouses to meet demand.

“When I take my animals to be processed, I drive past a custom facility three miles from my house and travel three hours to a USDA facility.”

There are more than 800 federally inspected slaughterhouses in the United States, according to recent USDA data. Another 1,800 are operated by states or are “custom” slaughterhouses—where sales are severely restricted to prohibit, for example, sales to grocers. But figures showing a proliferation of custom slaughterhouses are misleading. The thirteen largest U.S. cattle slaughterhouses account for 56 percent of all cattle killed in this country. The figures are similar for hogs (twelve plants account for 57 percent of all slaughters) and other livestock. Commercial plants processed [47.3 billion pounds](#) of red meat (including cattle, pork, sheep, and other hooved animals) in 2014.

USDA requirements for slaughterhouses the agency inspects are part of the problem. They’re so complex that the agency itself funded a [report](#) in 2012 for the purpose of establishing “a streamlined regulatory proposal that could be carried forward in future years to make the USDA inspection system less onerous to smaller facilities that could perceivably be built or utilized in more small local communities.” That sounds great. But the report writers concluded that their mission was damn near futile. “After the numerous conversations and meetings, it became apparent that no one with the USDA or . . . working as

occur.”

On-farm slaughter accounted for just 93.4 million pounds of red meat—or a paltry 0.2 percent of meat slaughtered commercially.

Despite this dire conclusion, small farmers do have some choices for operating outside of the USDA system. But these choices come with serious drawbacks. A 2013 [report](#) by the Spokane, Washington, *Spokesman-Review* detailed the problem. Farmers and ranchers are free to use slaughterhouses that are not inspected by the USDA. But meat from animals slaughtered there “must be sold to the consumer before it is butchered.” That means consumers must buy cow, not beef. And they often have to buy hundreds of pounds at a time. “Since a steer yields about 400 pounds of meat, that’s often too much for a single family,” reported the *Spokesman-Review*. “Several families can go together to purchase an animal, but that’s more hassle for the rancher. And it doesn’t address the needs of individuals who just want to purchase a few steaks or some ground chuck.”

This helps explain why on-farm slaughter accounted for just 93.4 million pounds of red meat—or a paltry 0.2 percent of meat slaughtered commercially. This figure includes mobile slaughterhouses, vehicles that travel to farms to slaughter livestock without forcing them to undergo the discomfort and stress required by lengthy travel. All of this helps explain why Rancho was the only independent USDA-inspected slaughterhouse in all of Northern California in 2014. It also explains why most small cattle farmers are forced to use USDA facilities and pass up the local slaughterhouse. Some even literally drive by the latter on their way to the former. “I’m a beef farmer myself,” Rep. Thomas Massie (R-KY) told me in 2015, “and when I take my animals to be processed, I drive past a custom facility three miles from my house and travel three hours to a USDA facility.”

He’s out almost \$400,000 even though the hundreds of his cattle that Rancho slaughtered were cancer-free.

distribution networks that once made small farming viable . . . disintegrated in the last 30 years as U.S. agriculture went through a dramatic consolidation.” This dramatic decline has occurred even as “demand for pasture-raised niche meats is soaring,” [reported USA Today](#) that same year. In other words, the demand for niche meats is rising fast, but supply is being suppressed artificially by the lack of slaughterhouses.

These problems aren’t just evident with cattle and pig slaughter. Consider poultry. Small farmers can slaughter up to 20,000 of their own chickens in a year. And if you’re raising and slaughtering that many birds, chances are you can justify the cost of investing in your own processing facility. But very small operations can’t afford to do so. And that hurts the smallest poultry farmers, because slaughterhouses are often difficult to find. For example, [Massachusetts](#) lacks a USDA-approved poultry slaughter facility.

That program is a bad one for small, sustainable farmers and consumers.

The impact of limiting where animals can be slaughtered has real world consequences beyond mere inconvenience, including the Rancho recall. The USDA’s mandatory recall ensnared not only cancerous cattle processed from (and by) a few bad actors but also that of every other producer who’d had an animal slaughtered in the Rancho plant in the past year—out of what the *San Francisco Chronicle* [termed](#) “an abundance of caution . . . to make sure none of the cancerous meat commingled with healthful beef.” That includes cattle sent to Rancho by celebrated grass-fed farmer Bill Niman, who told the *Chronicle* that he’s out almost \$400,000 even though the hundreds of his cattle that Rancho slaughtered were cancer-free and he could prove to the USDA that those cattle were not commingled with the diseased meat. Niman’s wife, Nicolette, an environmental law attorney and author of the book *Righteous Porkchop*, penned an excellent [New York Times](#) op-ed lamenting the recall as an overbroad reaction akin to chopping down hundreds of different orchards thanks to one bad apple. “The Agriculture

when dealing with independent farmers,” she wrote. These USDA policies aren’t just stupid—they’re also reckless. And the alleged “abundance of caution” the department claims to be exercising now—after the fact—is entirely the result of its own recklessness.

The Rancho recall is part of a much larger problem that’s existed for decades in the USDA inspection process. That program is a bad one for small, sustainable farmers and consumers. As you’ll learn in chapter 5, the USDA inspection program is now under fire from a bipartisan group of lawmakers in Congress who support small farmers, including some, such as Rep. Massie, who are themselves small farmers. As you’ll learn, Rep. Massie, a Republican, and Democratic colleagues such as Rep. Chellie Pingree (D-ME) and Jared Polis (D-CO), have cosponsored a bill that would permit farmers to expand options for selling meat locally that’s been processed by local slaughterhouses.

Although USDA food-safety rules make selling sustainably raised meat a tough slog, you’re about to learn that state and local food-safety rules are often no less complicated. Food-safety rules that govern the sale of fruits and vegetables, meats and cheeses, and other foods you buy at farmers markets and other local outlets can make doing business difficult— or impossible—for local farmers.

Also tagged [meat](#), [slaughterhouse](#), [usda](#)



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9 CFR § 325.13 - Denaturing procedures.

CFR State Regulations

§ 325.13 Denaturing procedures.

(a) Carcasses, parts thereof, [meat](#) and [meat food products](#) (other than rendered animal fats) that have been treated in accordance with the provisions of this paragraph shall be considered denatured for the purposes of the regulations in this part, except as otherwise provided in [part 314](#) of this subchapter for articles condemned at official establishments.

(1) The following agents are prescribed for denaturing carcasses, parts thereof, [meat](#) or [meat food products](#) which are affected with any condition that would result in their condemnation and disposal under [part 314](#) of this subchapter if they were at an official establishment: Crude carbolic acid; cresylic disinfectant; a formula consisting of 1 part FD&C green No. 3 coloring, 40 parts water, 40 parts liquid detergent, and 40 parts oil of citronella, or other proprietary substance approved by the [Administrator](#) in specific cases. ³

³ Information as to approval of any proprietary denaturing substance may be obtained from the Technical Services, [Meat](#) and Poultry Inspection, Food Safety and Inspection Service, U.S. Department of Agriculture, Washington, DC 20250.

(2) Except as provided in paragraphs (a)(3), (4), and (5) of this section, the following agents are prescribed for denaturing other carcasses, parts thereof, [meat](#) and [meat](#) food products, for which denaturing is required by this part: FD&C green No. 3 coloring; FD&C blue No. 1 coloring; FD&C blue No. 2 coloring; finely powdered charcoal; or other proprietary substance approved by the [Administrator](#) in specific cases. ³

(3) Tripe may be denatured by dipping it in a 6 percent solution of tannic acid for 1 minute followed by immersion in a water bath, then immersing it for 1 minute in a solution of 0.022 percent FD&C yellow No. 5 coloring;

(4) [Meat](#) may be denatured by dipping it in a solution of 0.0625 percent tannic acid, followed by immersion in a water bath, then dipping it in a solution of 0.0625 percent ferric acid; and

(5) When [meat](#), [meat](#) byproducts, or [meat food products](#) are in ground form, 4 percent by weight of coarsely ground hard bone, which shall be in pieces no smaller than the opening size specified for No. 5 mesh in the [standards](#) issued by the U.S. Bureau of [Standards](#) or 6 percent by weight of coarsely ground hard bone, which shall be in pieces no smaller than the opening size specified for No. 8 mesh in said [Standards](#), uniformly incorporated with the [product](#) may be used in lieu of the agents prescribed in [paragraph \(a\)\(2\)](#) of this section.

(6) Before the denaturing agents are applied to articles in pieces more than 4 inches in diameter, the pieces shall be freely slashed or sectioned. (If the articles are in pieces not more than 4 inches in diameter, slashing or sectioning will not be necessary.) The application of any of the denaturing agents listed in paragraph (a)(1) or (2) of this section to the outer surface of molds or blocks of boneless [meat](#), [meat](#) byproducts, or [meat food products](#) shall not be adequate. The denaturing agent must be mixed intimately with all of the material to be denatured, and must be applied in such quantity and manner that it cannot easily and readily be removed by washing or soaking. A sufficient amount of the appropriate agent shall be used to give the material a distinctive color, odor, or taste so that such material cannot be confused with an article of human food.

(7) [Carcasses](#) (other than viscera), parts thereof, cuts of [meat](#), and unground pieces of [meat](#) darkened by charcoal or other black dyes shall be deemed to be denatured pursuant to this section only if they contain at least that degree of darkness depicted by diagram 1 of the [Meat](#) Denaturing Guide (MP Form 91). ¹

¹ Copies of MP Form 91 may be obtained, without charge, by writing to the Administrative Operations Branch, Food Safety and Inspection Service, U.S. Department of Agriculture, 123 East Grant Street, Minneapolis, Minnesota 55403. Diagrams 2 and 3 of the [Meat](#) Denaturing Guide are for comparison purposes only. The [Meat](#) Denaturing Guide has been approved for incorporation by reference by the Director, Office of the Federal Register, and is on file at the Federal Register library.

(b) [Inedible](#) rendered animal fats shall be denatured by thoroughly mixing therein denaturing oil, No. 2 fuel oil, brucine dissolved in a mixture of alcohol and pine oil or oil of rosemary, finely powdered charcoal, or any proprietary denaturing agent approved for the purpose by the [Administrator](#) in specific cases. The charcoal shall be used in no less quantity than 100 parts per million and shall be of such character that it will remain suspended indefinitely in the liquid fat. Sufficient of the chosen identifying agents shall be used to give the rendered fat so distinctive a color, odor, or taste that it cannot be confused with an article of human food.

[[35 FR 15605](#), Oct. 3, 1970, as amended at [41 FR 22930](#), June 8, 1976; [44 FR 67626](#), Nov. 27, 1979]

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Simple Thoughts



Greetings!

This is a very busy month for us at our ranch with the lambs and the calves and the irrigation preparation. Our irrigation water gets turned on mid April and our son Matt and our helper Taylor spent quite some time welding up the holes in the irrigation lines before putting them out in the pasture in preparation for the water. Matt was also trying to get a lot of this done before heading to back surgery. Hoping this will get him back on track and back outside. He is already getting stir crazy and wanting to get back outside.

Trying to get our animals processed has become a pretty hard task, as the local producers all claim that there isn't enough processing plants and the processing plants claim that there isn't steady supply. I have attended a few events where this has been a topic of discussion and trying to find a solution is not as easy as one would think. Money is of course at the top of the list, as is trying to find a location that is close enough to make it work for the producers and yet far enough away from homes and cities.

We are getting ready for a day on the farm. May 18 we will open up our ranch in Newcastle along with the [Gold Country Sheep Producers Association](#). We will show off some of the products that we are growing, as well as demonstrations on wool handling, sheep shearing and showing a few varieties of sheep breeds. I hope to do a sheep dog demonstration, hopefully on schedule this time. We will also have our cows and calves to watch, and hoping for some feeder pigs on site. BBQ samples of our meats will be available, and if you are interested in attending and would like lunch, please give us a head count so we can have plenty of food for the grill. Our producers that are involved in the Meat Buyers will be available to talk with as well as purchase some of their items if you choose

[Meat Orders](#)

A couple weeks ago, [Pat Stoddard-Aragon](#) (my Mom) hosted a day for her Pastel Society group to come and enjoy our ranch with the animals and scenery. A lot of wonderful people that enjoyed a beautiful day of sunshine and warm weather. Helped of course having some new calves and lambs to enjoy!

I hope this finds you all well!

Sincerely,
Karin Sinclair
Sinclair Family Farm

Assessing Needs and Opportunities:

A Feasibility Study for USDA-inspected Livestock Slaughter in Okanogan County, Washington



October, 2018
Prepared by the Methow Conservancy
Alyssa Jumars, Agricultural Coordinator

On behalf of the TwispWorks Foundation, the Okanogan Conservation District, and the USDA Rural Business Development Program



This document was prepared by the Methow Conservancy. The statements, findings, conclusions, and recommendations are those of the authors and do not necessarily reflect the views of the USDA.

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10.0 Sources

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1.0 INTRODUCTION

This study assesses the need for USDA-inspected slaughter in Okanogan County, a rural county of North-Central Washington. The study also identifies a feasible opportunity to serve the identified demand for USDA-inspected livestock processing.

This study was supported by a grant from the United States Department of Agriculture's (USDA) Rural Business Development Grant Program. The grant was implemented by three partners: the **TwispWorks Foundation**, the **Okanogan Conservation District**, and the **Methow Conservancy**. The TwispWorks Foundation is a non-profit in the Methow Valley that works to create economic development opportunities, with a particular focus on the arts and education, but also on technology and agriculture, as well. The Okanogan Conservation District is a governmental, non-regulatory agency that offers support to landowners and land managers wishing to conserve natural resources in the county. They frequently work with local farmers and ranchers, offering stewardship planning services, conservation incentives and workshops and educational opportunities. The Methow Conservancy is a conservation land trust, established in 1996 and based in the Methow Valley, that works to protect wildlife habitat and agricultural lands from development. The Methow Conservancy has also recently been developing a more active program to offer diverse support to small farms and ranches in the Methow Valley, to support a vibrant future for working farms, regardless of whether they are under conservation.

Project work was conducted primarily by project manager, Alyssa Jumars, a member of the Methow Conservancy staff. Further assistance was provided by Kayla McIntyre, an independent agricultural consultant; by Kathryn Quanbeck, niche meats consultant and project advisor; and by diverse staff from each of the partner organizations. Other supporting partners in this study were an indispensable Producer Advisory Committee of nearly a dozen producers raising diverse livestock and representing the geographic diversity of Okanogan County¹; affiliates of Washington State University²; as well as three additional consultants from the niche meat industry.³

This study was motivated by anecdotal accounts from livestock producers who raise meat for local and expanding niche markets. Across the county, producers feel that the success and sustainability of their operations are severely challenged by limited access to USDA-inspected livestock processing services. There are currently no USDA-inspected slaughterhouses in Okanogan County, and most producers are traveling 250 to 500 miles, round trip, to access USDA-inspected processing. Additionally, producers from the Okanogan have increasingly struggled with limited availability of appointments at the handful of small USDA plants in eastern Washington that continue to serve small farms. In the last 2-3 years, both the travel distance and the difficulty of securing slaughter appointments have begun to wear particularly hard on producers. Given the deep and personal impact to family farms and ranches, most producers have a sense that the need

¹ Betsy Devin-Smith; Jennifer Hover; Deb Jones-Schuler; Rachel McClure; Rod Haeberle; Bill Kresge; Mark Timmerman; Carey Hunter; Albert Roberts; Casey Smith; Howard Asmussen

² Dr. Paul Kuber, WSU livestock extension agent and PhD of meat science, and WSU masters-candidate in Animal Science, Natasha Moffit-Hemmer.

³ Shane Nelson, S&K Meats; Bruce Dunlop, Island Grown Farmers' Cooperative; Greg Sherman, GCS Northwest HACCP Consultants.

for improved access to livestock processing services in Okanogan County is urgent and assume that it must also be large, when aggregated county-wide.

However, there was a clear need for data to better understand the scope of the problem, and the range of possible solutions. Most feasibility models for new, small meat plants estimate a required minimum flow of 1,200 beef (or beef equivalents)⁴ per year for profitability.^{5, 6} Over the course of this feasibility study, it became clear that the identified demand among producers in Okanogan

County would fall far short of 1,200 beef equivalents, and that other options for serving the demand would need to be explored in greater detail.

WSDA-inspected "custom-exempt" processing vs. USDA-inspected processing

Custom-exempt processing can take place at meat plants that are certified by the Washington State Department of Agriculture. Custom-exempt facilities are subject to semi-annual oversight and inspection from the state, whereas facilities certified by the Food Safety Inspection Service (FSIS), a branch of the United States Department of Agriculture (USDA), are inspected daily by a federal inspector. All animals slaughtered under USDA-inspection must be inspected live by a FSIS agent, prior to slaughter.

Most farms that process meat under the custom-exemption choose to slaughter on-farm, for the sake of convenience and to avoid additional stress to the animal. Typically, farms will hire a WSDA-certified kill service, to slaughter and break the carcass, and ultimately deliver the carcass to a custom-exempt, cut-and-wrap shop.

Farms may sell custom-exempt meat *only* by the quarter, half or whole animal and *only* to individuals who purchased the animal while it was still alive, "on the hoof." USDA-inspected product can be sold freely **by the cut** to individuals, stores, or restaurants, whereas custom-exempt meat *cannot*.

The study ultimately worked closely with two existing, custom-exempt, cut-and-wrap plants in the county: one in Twisp, and one in Tonasket. The study assessed whether either of them would be suitable to expand and upgrade to a USDA-inspected slaughter plant. After an initial assessment, the plant in Twisp presented several barriers to successes, but the plant in Tonasket proved to be an extremely promising option. The Tonasket plant, Double S Meats, is of new and modern construction that already meets USDA specifications for cut-and-wrap. Double S Meats already operates under USDA inspection for a wholesale cutting and distribution arm of their business. They are also located in closest proximity to the majority of livestock raised in the county, and the town of Tonasket proved extremely receptive to a slaughterhouse. Most importantly, the survey process revealed that Double S Meats appears to be well-trusted by producers.

⁴ While there is some variation within the industry and among feasibility studies, for the purposes of this study, we consider 1 beef to be equivalent 2.5 hogs, 6 lamb, or 6 goats.

⁵ Community Involved in Sustaining Agriculture (CISA). Demand and Options for Local Meat Processing: Finding the way from pasture to market in the CT River Valley. USDA Rural Development, 2008.

⁶ Niche Meats Processor Assistance Network. Options for Increased Processing Capacity in California's Central Coast Region. USDA Agricultural Marketing Service, 2015.

1.1 EXECUTIVE SUMMARY

In the following feasibility report, we describe the regional context for livestock production in Okanogan County and the approach taken by the study team to conduct both a ***Needs Assessment*** and an ***Opportunity Assessment*** for improving access to livestock slaughter and processing in the region. Our work revealed a significant demand for USDA-inspected slaughter in Okanogan County and a promising opportunity to meet that demand by expanding the capacity of Double S Meats, in Tonasket.

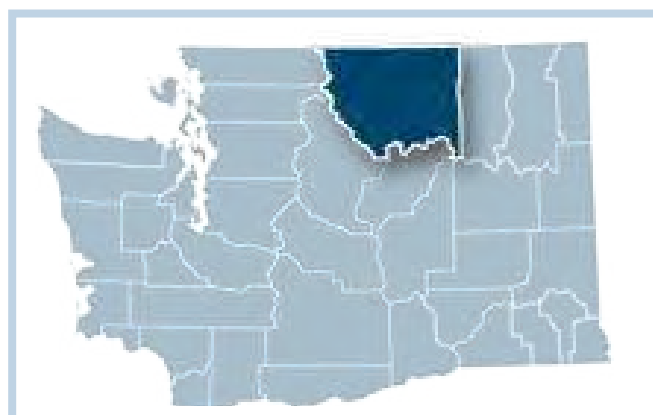
Our study of feasibility of USDA-inspected slaughter at Double S Meats is divided into three sections: an ***assessment of the market*** for slaughter services; a discussion of the ***technical feasibility*** of developing slaughter capacity at the existing facility; and an evaluation of ***financial feasibility*** in light of market potential, infrastructure costs, and operating costs. While there remain some further areas of research, our study concludes that ***an incremental, collaborative approach to developing USDA-slaughter services at Double S Meats is feasible.***

The incremental approach proposed in this feasibility study is to develop a permanent docking station for a USDA-certified, Mobile Slaughter Unit (MSU). The Methow Conservancy is willing to purchase a MSU and lease it to Double S Meats for a period of 5 years. The proposed, 5-year pilot project would allow Double S Meats to test assumptions about demand for USDA-slaughter and to navigate the learning curve of this new venture. At the end of this period, Double S Meats could decide to purchase the MSU from the Methow Conservancy or to build a more efficient, permanent kill floor. If demand for services were to fall drastically short of predictions, this incremental approach would prevent undue risk to Double S Meats -- a small, family-run business.

The final sections of this report describe the process by which the Methow Conservancy determined how a non-profit organization could support a for-profit entity, in order to serve livestock producers and address a long-standing community need. The report also describes possible ***barriers to success***, as well as some of the ***unique opportunities*** that could result from a ***concerted effort to develop a spirit of collaboration*** among livestock producers, the Methow Conservancy, and staff of Double S Meats.

1.2 BACKGROUND AND REGIONAL CONTEXT

Okanogan is Washington State's largest, and one of its least-populated counties, located in the north-central portion of the state -- just east of the Cascade Mountain Range and just south of the Canadian border. Population density is 7.8 people per square mile, as compared to the state's average of 101.2 per square mile.⁷ Okanogan County enjoys a



⁷ 2016 United States Census Bureau: American Community Survey.

particularly wild and rugged landscape, much of which is public land. Roughly 78% of Okanogan County lands are owned by Federal, State, or Tribal entities.⁸

Okanogan ranks 9th of Washington's counties, in estimated value of agricultural goods produced; and 10th in the number of acres dedicated to cropland.⁹ The bulk of irrigated agricultural lands are dedicated to commercial tree-fruit, hay and pasture, and grain crops.¹⁰ However, much of the county's livestock production involves large areas of both private and public native rangeland. Historically, the upland shrub steppes and higher elevation forests have been an integral component of spring, summer, and fall grazing rotations.

Ranching in Okanogan County has weathered its fair share of challenges over the decades. The volatility of the commodity cattle market has always threatened small and medium ranches operating in a high-risk, low-margin business. Pressures from development and increasing land values have also steadily whittled away the large, historical ranches. And the potential for drought conditions and low forage yields, in addition to the increasing threat of catastrophic wildfires, are risks that continue to grow in a changing climate.

In 2002, the last remaining livestock sale yard in the county closed its doors, forcing ranchers to haul their livestock to the Toppenish and Davenport sale yards, a 200-mile round trip, or to explore new alternatives, like online auction houses. The sale yard closure occurred during a time of historically-low prices for cattle on the commodity market, causing significant strain on the viability of long-time family ranches in Okanogan County.

2012 Census of Agriculture, Okanogan County:

Number of farms: **1,449 farms**
Acres in farm ownership: **1,205,265**
Acres of harvested crops: **129,232**
Average farm size: **832 acres**
Median farm size: **42 acres**
Farms grossing less than \$2,500: **542**
Farms grossing over \$50,000: **160**

The value of livestock products produced in Okanogan County was estimated to be \$37.3 million in 2012, making Okanogan the 9th highest-grossing producer of livestock among Washington's counties.

QuickFacts from U.S. Census Bureau (2017 PEP): Okanogan County

Population: **41,742**
Population employed by farming/fishing: **7.8%**
Median household income: **\$41,158**
(State-wide median household income: **\$62,848**)

2016: Top Five Economic Sectors Okanogan County

Agriculture, forestry, fishing	32.1%
Local government	22.4%
Retail Trade	9.9%
Health Services	8.3%
Hospitality	6.5%
All other industries	20.7%

Source: Washington State Employment Security Department: Quarterly Census of Employment and Wages (QCEW)

⁸ 2014 Okanogan County Comprehensive Plan (page 4): www.okanogancounty.org/planning

⁹ & ¹⁰ 2012 United State Department of Agriculture, National Agricultural Statistics Service: State and County Profiles: www.agcensus.usda.gov

Over the last decade, Okanogan County has also begun to witness the entry of corporate cattle ranches quietly purchasing ownership in family-run ranches. As in every other sector of agriculture, increases in the costs of doing business have outpaced the returns, and small-to-medium size ranches have found it increasingly hard to compete with well-financed, vertically-integrated operations that enjoy economies of scale.

Estimates from the USDA's Agriculture Census for Okanogan County reveal a dramatic decline in recent years of the numbers of cattle, sheep, and pigs raised on the land, as well as a decline in the numbers of total farms in operation.

	2007 Ag Census	2012 Ag Census	% change 2007-2012
<i>Inventory: Cattle/Calves</i>	44,551	35,471	20%
Farms: Cattle/Calves	518	466	10%
<i>Inventory: Sheep/Lambs</i>	1,725	1,527	11%
Farms: Sheep/Lambs	92	75	18%
<i>Inventory: Pigs</i>	256	248	3%
Farms: Pigs	42	33	20%

And yet, despite the challenges, many family ranches continue to adapt and employ characteristic creativity. Ranching also remains core to the heritage and ethos of Okanogan County, and a large part of what distinguishes the county's cherished rural character.

An Important Distinction

Ranches in Okanogan County have traditionally been multi-generation, family-run operations raising 100 to 1,000 cow-calf pairs on large acreages of dryland range, including both public and private lands. Long, cold winters and hot, dry summers limit the growing season for native forages and for hay production, making the region challenging for finishing cattle. Most ranches produce calves and sell them to operations in other parts of the state where it is easier and cheaper to produce feed. The calves are then raised by "feeder operations" on hay, pasture, silage, and/or grain for an additional 6-12 months, to finished, butcher weight. For the purposes of this feasibility study, the distinction that ***ranches in Okanogan County generally do not produce beef, but rather calves*** is critical.

Typically, calves are born in the spring and sold in the fall—either through the Davenport Livestock Sale Yard, or through online livestock auctions. For a cow-calf operation to keep steer calves through the winter and raise them for an additional season to finished weight means incurring additional feed and labor costs, as well as opportunity costs and significant risks. Additionally, finishing steers creates additional tasks, complexities, and inefficiencies within an operation that is structured around raising calves. Despite these drawbacks, an increasing number of family ranches in Okanogan County are exploring the growing niche opportunities for farm-to-table meats. Particularly as ranches change hands from one generation to the next, the new generation seems particularly motivated to explore value-added ventures, partially as a way to diversify ranch

revenue streams. However, it's important to note that very few of the cow-calf ranches that participated in the survey indicated that they have any intention to consider a large-scale shift in the structure of their operation, from producing calves to producing beef. So while there are large numbers of cattle raised on the land in Okanogan County, those numbers do not translate into high demand for slaughter and meat-processing services.

However, the traditional cow-calf ranches that are cautiously exploring farm-to-table opportunities as a minor component of their operations were not the sole focus of this study.

There are a large number of small farms across the county, with well-established brands that are raising diverse livestock solely for meat production. The focus of these small operations is invariably humanely and wholesomely-raised meats, including beef, pork, lamb, goat, bison, and poultry although poultry producers are not included in this study. These small farms have growing opportunities in niche markets for farm-raised meats. However, these producers overwhelmingly indicate that long-term growth and success is unattainable without improved access to USDA-processing.

Old News

The perception of an urgent need for USDA-processing among producers of farm-raised meat products is not new. This study is not even the first feasibility study that has been conducted in Okanogan County for USDA-inspected slaughter and processing. In 2003, a non-profit called the Project for a Sustainable Methow was awarded a grant by the Washington State Department of Agriculture's (WSDA) Small Farms and Direct Marketing Program, to explore the feasibility of a USDA-certified, mobile livestock processing unit in Okanogan County.

The 2003 study explored producer interest in using a mobile, on-farm, USDA-inspected slaughter unit and interest among local restaurants and stores in sourcing locally-raised meats. A preliminary assessment of the technical and financial feasibility of operating a mobile slaughter unit was also conducted. While the study concluded there was moderated interest among producers, a cautious willingness among local buyers, and some promise of overall feasibility based on a successful mobile slaughter unit in western Washington State, the study never resulted in project implementation.

A small history lesson on federal meat legislation and state inspection programs:

Congress passed the Federal Meat Inspection Act, in 1906, to protect consumers and ensure a wholesome and safe meat supply. The legislation made it a crime to adulterate or misbrand meat, and required that meat be processed under sanitary conditions. The Department of Agriculture was authorized to conduct ongoing monitoring and inspection of slaughtering and meat packing plants, and given the authority to inspect and condemn meat products determined to be unfit for human consumption; to require inspection of livestock before slaughter; and conduct a postmortem inspection of every carcass.

Under the Federal Meat Inspection Act of 1906, inspection was the responsibility of each state's Department of Agriculture. However, because state funds for inspection were typically limited, abuses were not infrequent. By the mid 1960s, consumer group began to lobby for an overhaul of the 1906 act, with the hopes of better protecting consumers and ensuring more humane handling of livestock.

It is important to note that the 2003 study indicated livestock producers who were selling meat products were primarily processing under the WSDA's custom-exemption and selling direct-to-consumer. According to the study, producers worried about the additional cost of processing under USDA-inspection, and wondered if their existing customers would see the value in USDA-labeling.¹¹ Producers indicated an interest in selling meat by the cut to individuals, stores, and restaurants -- but at the time in 2003, few producers were actively engaged in those market opportunities or had an understanding of the complexities of selling by the cut, as compared to selling quarter, half or whole shares of an animal under the custom-exemption. However, despite having no established markets for USDA cuts of meat, the study indicated that several producers were willing to commit to processing 160 head of cattle, 360 hogs, 100 sheep, 10 goats, and 100 buffalo if a mobile slaughter unit became operational.¹² A concern with these estimates from the 2003 feasibility study is that producers may have believed that USDA-processing would somehow be coupled with future marketing and sales, or some kind of collaborative brand effort. It is unclear whether these responding producers had established market opportunities for the animals they were promising to commit to processing under USDA inspection.

Fast-forward 15 years. Farms in the Okanogan are actively developing niche market opportunities for their unique farm brands. They are taking animals to USDA facilities in other parts of the state, and slowly building a diverse customer base. They have websites, active social media sites, and online shopping platforms. They are selling locally, as well as to the urban markets in western Washington. They are working with Seattle-based restaurants, regional food hubs, large multi-farm CSA programs, or farm-direct platforms like Barn-2-Door or Crowd Cow.

Our feasibility study was particularly cautious to clarify that a USDA-processing facility would not offer marketing or sales services of any kind. In the survey process, respondents were asked about their established markets, and whether they had additional market opportunities they were unable to serve because access to USDA-processing was a primary barrier. They were asked how many animals they are currently processing under USDA-inspection, and how many additional animals

History lesson, cont'd...

The Wholesome Meat Act of 1967 required state inspection programs to be at least equal to that of the federal Food Safety and Inspection Services (FSIS) of the United States Department of Agriculture (USDA). States that were unable to upgrade their inspection program and maintain the standards established by the FSIS, were allowed to relinquish their inspection programs to the FSIS. Washington State was among the states that ultimately relinquished their own inspection program and allowed the FSIS to administer meat inspection in the state.

In 1967, there were nearly 10,000 slaughterhouses across the country. Fifty years later, there are currently less than 3,000. Only four companies control over 80% of the beef processing in the United States, and four companies control over 60% of the pork processing. Many attribute the demise of small, regional meat packers and the consolidation of slaughterhouses to the passage of the Wholesome Meat Act.

¹¹ Dune Ives. Okanogan County USDA Certified Mobile Livestock Processing Unit Feasibility Study. Partnership for a Sustainable Methow, and WSDA Small Farm & Direct Marketing Program, 2003. Page 12.

¹² Dune, page 14.

they would raise for opportunities they already have, but cannot meet because of limited access to processing.

While the perception of the urgent need for improved access to USDA-inspected processing is not new -- a lot of things have changed over the last 15 years that make the scope and context of the need different than in 2003. Many more farms in Okanogan County do have established markets for USDA-processed meats, and many more do understand the complexities and the effort involved in marketing to stores, restaurants, CSA's, etc. The emergence of platforms and food hubs connecting online consumers directly to farms has greatly changed the landscape for high-value niche markets for farm-raised meats. While the market for local, sustainable, farm-raised meats may be beginning to experience some saturation, and also some competition from larger brands, there continues to be room for strategic growth (APPENDIX: Kayla).

Unfortunately, what may also be changing is access to the limited number of small USDA-inspected plants in eastern Washington that are willing to serve small farms. Currently, there are five small plants used by producers in Okanogan County, that are within a 200 mile radius of points in the county. Of those five, each have navigated their own unique struggles -- from startup struggles, to ownership changes, to aging facilities -- and have at times been unable to reliably offer appointments to producers in the Okanogan region. Uncertainty of this nature makes the growth and success of small-farm brands extremely challenging.

The challenge of limited access to USDA-inspected processing is not unique to Okanogan County. Producers in rural communities across the West and across the entire United States have been grappling with this problem for decades.¹³ What continues to be at stake are the livelihoods of small farms, the viability of small-scale agricultural economies, and the vibrancy of working agricultural landscapes.

1.3 METHODOLOGY

The study was conceptualized as two components: as a Needs Assessment and as an Opportunity Assessment. The first component was intended to better understand the needs of diverse livestock producers, and to determine the potential demand for USDA-inspected slaughter and processing services. An intensive, county-wide producer survey process was launched in February, and reached nearly 100 producers over the course of four months. The second major component of the study was a simultaneous exploration of the range of feasible opportunities to better serve the anticipated need. Alternatives initially considered included a brand new plant; expansion of an existing (custom-exempt) plant within the county; and a collaborative trucking program to increase the sustainability for producers of using existing USDA plants outside the county. It quickly became clear that a new plant might not be realistic, and that collaborative trucking would not adequately serve the needs of producers. As a result, the study focused on exploring opportunities to work with existing, WSDA-certified, custom-exempt, cut-and-wrap plants that might be suitable for expansion to include USDA-inspected slaughter and processing.

¹³ Laruen Gwin, Daniel Marti, Rachel Johnson. Slaughter and Processing Options and Issues for Locally Sourced Meat. Economic Research Service, United States Department of Agriculture. June 2012.

1.3.1 NEEDS ASSESSMENT

The Needs Assessment began with the careful formation of a Producer Advisory Committee. Nearly a dozen producers were invited to advise the study process and lend their insight. The producers represented diverse operations raising calves, beef, pork, lamb, and goats; and they were also representative of the geographic diversity of Okanogan County. They provided invaluable suggestions and context that shaped the survey questions and outreach strategy. They met a total of four times; however, most producers also offered the project manager advice and suggestions outside of the group meetings.

PRODUCER ADVISORY COMMITTEE

Betsy Devin-Smith & Casey Smith	BCS Livestock	Lamb	Winthrop
Rachel McClure	McClure Ranch	Cow-calf	Nespelem
Bill Kresge	Island Mountain Farm	Lamb & pork	Tonasket
Deb Jones-Schuler	Wild Plum Farm	Pork	Winthrop
Mark Timmerman	Oberge Brothers Beef	Beef	Havillah
Kayla McIntyre	Double J Ranch	Cow-calf	Okanogan
Carey Hunter & Albert Roberts	Pine Stump Farms	Goats	Omak
Rod Haeberle	Haeberle Ranch	Cow-calf	Omak
Jennifer Hover	Hover Highland Cattle Co.	Beef	Winthrop
Howard Asmussen	Double R Ranch	Cow-calf	Pateros
Natasha Moffit Hemmer	WSU, Master s Candidate		Okanogan

Survey Design

With guidance from the Producer Advisory Committee, we developed a survey questionnaire to gather information about the scope of the need for improved access to livestock-processing services. The Producer Advisory Committee was instrumental in influencing the design of a survey that asked for as much detail as possible, without asking socially-unacceptable questions that would allow one to infer herd sizes or the aggregate value of a ranch operation. Questions were framed only as they were relevant to this study: for example, how many animals did a rancher process and sell each year, for meat alone? A cow-calf operator might process only 5 beef for meat, but sell 100-200 calves per year. We deliberately chose not to ask how many animals a producer had in his or her herd, as this line of questioning is likened to asking a rancher how much money s/he has in the bank.

Upon the advice of the Producer Advisory Committee, the survey was designed so that respondents could choose to complete the survey anonymously. Given fairly widespread sensitivity among the ranching community to privacy concerns, this approach was important. About half of respondents chose to respond anonymously.

Two distinct surveys were actually designed: one for small farms raising diverse livestock, specifically for meat (including lamb, pork, goat, and beef); and the other for cow-calf operations

whose primary product is calves and not finished beef. Because the two types of operations have some significant structural differences, some of the questions were approached differently.

Producers were asked:

- How many and what species of animals do you process for meat each year? How many are processed under USDA-inspection, and how many under the custom-exemption?
- Which types of markets are most important for your farm-raised meat products (individuals, restaurants, groceries, farmers markets, institutions)?
- What percentage of your market is outside of Okanogan County?
- Which urban markets do you serve? (Wenatchee, Seattle, Spokane, Portland, Other)
- Where is your farm located in the county?
- Are your current options for meat processing meeting your needs?
- How far are you traveling to access a processing facility?
- What do you consider a maximum sustainable distance to travel to access processing services?
- Would you be interested in cooperative freight services, to access regional, USDA-inspected facilities more efficiently?
- If you had access to a plant that could process both USDA-inspected and custom-exempt products, which type of processing would you prefer? (Or would you prefer both, depending on the end customer?)
- Do you have existing market opportunities for USDA or custom-exempt product that you are not fully able to serve? Is access to slaughter and processing a limiting barrier to growth?

Producers were also asked to rate their customer experiences using regional USDA slaughter plants in eastern Washington¹⁴ as well as custom-exempt plants in Okanogan County.¹⁵ Producers were asked to score each plant, on a scale of 1-5 (1 being unsatisfactory, 5 being excellent) in each of the following categories: cutting quality, affordability, customer service, plant sanitation, and capacity for multi-species.

Additional information was gathered about:

- Factors influencing producers' preferences for USDA-inspected or custom-exempt processing;
- Preferred times of year for slaughter, and willingness to slaughter at other times of the year;
- Additional value-added services that would be desired from a processing facility (dry-aging, cured meats, smoked meats, access to long-term freezer storage, vacuum packing, flash freezing, scald-and-scrape, etc.)

Cow-calf producers were also asked about potential interest finishing beef for a regional brand, and about considerations and criteria that would influence their desire to participate. However,

¹⁴ Livestock Processor's Cooperative Association (LPCA), Odessa; Pure Country Harvest, Moses Lake; Smokey Ridge, Chewelah; McCary's, Basin City; Cascade Food Corp, Lynden.

¹⁵ Thomson's Custom Meats, Twisp; Okanogan Custom Meats, Okanogan; Black Dog Meats, Brewster; Superior Meats, Ellisford; Double S Meats, Tonasket

the survey question was careful to clarify that any future sales and marketing efforts were well beyond the scope of this study.

Outreach Strategy

With the help of the Producer Advisory Committee, the project team was able to develop an extensive list of over 120 farms and ranches to reach in the survey process. Between the project manager, Alyssa Jumars, and the outreach coordinator, Kayla McIntyre, an outreach plan was developed, and roughly 100 producers were reached by phone and invited to participate in the study process. This approach was time consuming, but highly effective. It provided the opportunity for farmers and ranchers to ask questions about the study, and to take a more vested interest in the project. It also allowed the opportunity for the outreach team to capture insight and information outside of the survey form. The outreach team made over 100 phone calls, in many cases, leaving voice mails and trying back a week or two later. Ultimately, the outreach team was able to successfully connect with about 60% of these producers over the phone.

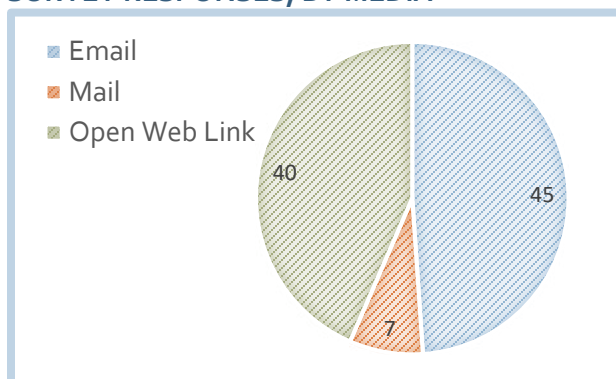
Rather than administer the survey over the phone, Kayla or Alyssa asked if producers would agree to receive a copy of the survey via email, to complete at their convenience. About a dozen producers requested that a hard-copy survey be mailed to them instead. However, most producers agreed to receive an email invite via SurveyMonkey, which allowed the project team to track whether a producer had responded or not but also still allowed for producer responses to be anonymous on the SurveyMonkey platform. This allowed for reminders to be sent through SurveyMonkey, while still preserving the anonymity of respondents. Ninety percent of the survey invitations sent via SurveyMonkey were completed, and 45 responses were ultimately gathered via email.

In addition to personalized invitations to take the survey, a webpage and an open survey link were also developed so that producers who learned about the study and wanted to participate could navigate to the survey on their own, without an invitation. Information about the study and a link to the webpage and open survey were shared through a variety of producer networks, non-profits, and agencies: including the Farm Service Agency, the Okanogan Conservation District, Okanogan County 4H, the Okanogan Natural Resources Conservation Service (NRCS), Washington State University Extension, the Economic Alliance of Okanogan County, Tilth Producers of Washington, and the Initiative for Rural Innovation and Stewardship. A Facebook page was also developed for the study, which allowed the survey link to be shared widely across Facebook. In addition, with the help of the Producer Advisory Committee, approximately 30 fliers were posted at feed stores and other locations across the county where producers might see them. Small business cards with the website address and survey link were placed near the posters. Forty-three web responses were gathered from distinct IP addresses through the open survey link, although two were not sufficiently completed, and were discarded. One producer raising a small number of sheep responded to the open survey for cattle producers; and unfortunately, this survey had to be discarded.

Lastly, both outreach coordinator Kayla McIntyre and project manager Alyssa Jumars attended several events over the course of the spring. These events included a Cattleman's Appreciation Dinner; several Cattleman Association meetings; and the annual Verjaska Bull Sale. Attending these events provided an opportunity to share information about the study process, as well as to

distribute hard-copy surveys. Of the nearly two dozen hard-copy surveys distributed by mail and at events, seven surveys were returned.

SURVEY RESPONSES, BY MEDIA



*n = 92

Overall, this multi-pronged, multi-media approach proved highly effective. In all, 95 surveys were received, and 92 surveys were counted in the analysis (3 responses were insufficiently completed and were discarded). By comparison, the 2003 feasibility study administered 105 hard-copy surveys by mail, and received 23 responses. Our survey process was greatly aided by an organized outreach strategy, advances in social media, the general public's growing level of comfort with the internet, and the relative painlessness of completing online surveys.

1.3.2 OPPORTUNITY ASSESSMENT

The second component of the study focused on exploring the range of feasible opportunities to better serve the anticipated need. Alternatives initially considered included a small, brand-new plant; collaborative trucking to increase the efficiency and sustainability of using existing USDA plants outside the county; and the possible upgrade and expansion of an existing (custom-exempt) plant within the county.

A Brand New Plant for Okanogan County?

Some members of the Producer Advisory Committee were initially hopeful that the study process would determine that a small, modern, new, centrally-located plant was feasible. However, most models indicate that a minimum flow of 1,200 beef (or beef equivalents¹⁶) per year is necessary to sustain a small plant.

In most of the existing studies that explore the feasibility of constructing new, *small-scale USDA plants in rural communities similar to Okanogan County, the costs for development range from*

¹⁶ While there is some variation within the industry and among feasibility studies, for the purposes of this study, we consider 1 beef to be equivalent 2.5 hogs, 6 lamb, or 6 goats.

\$1 to \$1.5 million, or more.^{17, 18, 19, 20, 21} These costs include the purchase of real estate; developing power, water, and sewer; excavation and site preparation; permitting; plant construction; and equipment.

Over the course of the study, an **annual demand of approximately 685 beef equivalents was identified in the region.** Without the development of a larger brand, reaching the 1,200-mark seemed implausible. During the survey process, producer interest in a cooperative brand was measured. While the project team was extremely careful to design a survey about demand for slaughter among producers *with established markets* for farm-raised meat products, and to avoid any implication that future project implementation might include sales or marketing, we did include a question in the cow-calf producer survey regarding producer interest in a cooperative brand of Okanogan-raised beef products. Sixteen producers responded to the question, indicating they were potentially interested in a cooperative brand and would be willing to commit, on average, between 25 and 15 beef per year to the brand, at a price near \$2/lbs live weight.²² In light of these survey results, **it would take 25 to 40 ranches committing to a cooperative brand, in order to provide a minimum flow of 600 beef per year, to make up the difference between current, identified demand and the necessary minimum demand to support a new processing facility.**

A more likely scenario would be for a handful of the largest ranches to work cooperatively to develop a consistent brand, with uniform genetics and production criteria. However, under this scenario, it would be more likely for these ranches to use one of the very large and efficient meat packing plants in the southeast corner of the state -- such as Agri Beef Co's plant in Toppenish, or Tyson Food's plant in Wallula, near Tri-Cities. These facilities are accessible only to ranches able to process beef at a certain scale, generally by the tractor-trailer load.

Moreover, a new plant posed a series of difficult questions that were beyond the capacity of this study's team to answer: **Who would run a new plant? Who would own it? How would they pay for it?** Producers were generally drawn to the idea of a new plant run by a cooperative of some kind. Project Advisor, Kathryn Quanbeck provided an overview of possible business models, including cooperative structures (see Appendix E). However, the recent lessons learned by the Livestock Processors Cooperative Association (LPCA) in Odessa, Washington were particularly impactful in guiding the team towards other alternatives.

¹⁷ Wendy Lockwood Banka. Architectural and Business Plans for a Multi-species Meat processing, Aggregation, Storage, and Distribution Facility in an Urban Area. Might Fine Poultry Processing, LLC and ONESource Facility Solutions, 2018: articles.extension.org/sites/default/files/Final%20MFPP%20Report.pdf

¹⁸ Food & Livestock Planning, Inc. Business Plan for a New Small USDA Inspected Meat Processing Plant to Serve Local Livestock Producers. USDA Rural Development, 2011.

¹⁹ Niche Meats Processor Assistance Network. Options for Increased Processing Capacity in California's Central Coast Region. USDA Agricultural Marketing Service, 2015. (pg. 19)

²⁰ Arion Thiboumery. Guide to Designing a Small Red Meat Plant. Iowa State University Extension, 2009.

²¹ Lauren Gwin; Arion Thiboumery; Debra Garrison; Nick McCann. Business Planning Guidebook. Niche Meats Processors Assistance Network, 2011.

²² The *average* and *median* number of animals that producers would want to sell through a brand was 24 and 20, respectively. The minimum number of animals producers were willing to commit to a brand, regardless of possible high prices for calves, was 15 beef (this was both the *average* and *median*).

The LPCA is a multi-species, producer cooperative that opened a small, state-of-the art, USDA slaughter facility in Odessa, in 2013. Several producers in Okanogan County are members of the cooperative, and many Okanogan producers have used the facility during the last five years. Most producers report satisfaction with their experience at LPCA, but have often struggled to get an appointment, due to a series of plant closures. The LPCA launched on an accelerated timeline, and unfortunately made several miscalculations in their business plan as well as in the plant design. Some of LPCA's challenges have been the result of management decisions made cooperatively by livestock producers, with limited experience in the meat industry. While the LPCA is perhaps cresting that learning curve, their experience offers valuable lessons about producer-run cooperatives. According to a case study by the Washington State University (WSU) Extension, the LPCA has

"not found the cooperative model to be entirely functional. They don't have great buy-in from the majority of members, just a select few. There has not been a strong understanding of cooperative principles by the members, many of which are used to operating as independent ranchers ... To build trust, good communication, and create a strong cooperative structure usually takes a great deal of time."²³

While a cooperatively-run plant in Okanogan might not represent a viable opportunity to serve small and medium producers in the immediate future, the study outreach revealed an eagerness among livestock producers to develop stronger connections with fellow farmers and ranchers, and to share knowledge and ideas about both production and marketing strategies. Future efforts could include the development of opportunities to develop stronger producer networks in Okanogan County, perhaps laying the foundation of what could someday evolve into a cooperative processing or marketing venture.

Improving Access with Collaborative Trucking

At the recommendation of the Producer Advisory Committee, the survey process also explored producer interest in some form of collaborative trucking. Encouraging producers to look into collaborative trucking has been a key suggestion made by the Niche Meats Processing Assistance Network (NMPAN) recently.²⁴ In the face of a plethora of studies that have concluded that most of the studied communities don't have adequate demand to support a new processing plant, NMPAN has suggested that producers explore the opportunity to alleviate the individual burden of transportation to existing USDA facilities by working cooperatively.²⁵

In our survey, producers were asked if they would be willing to pay someone to haul their animals. The results were inconclusive. Only 16 producers indicated they would be willing to pay someone to haul their animals; 11 producers indicated they would really prefer to haul their own animals; and 10 producers said they would be willing to haul animals for others. While 75% of respondents to

²³ Livestock Cooperative Producer's Association, Odessa, Washington. Cooperative Extension, June 22, 2017: articles.extension.org/pages/74355/lpca-plant:-odessa-wa

²⁴ Laruen Gwin, Daniel Marti, Rachel Johnson. Slaughter and Processing Options and Issues for Locally Sourced Meat. Economic Research Service, United States Department of Agriculture, June 2012.

²⁵ Lauren Gwin and Kathryn Quanbeck. The Economics of Local Meat Processing. The Ag Mag, Fall 2014: create.extension.org/sites/default/files/AgMag%202014%20Gwin%20%26%20Quanbeck.pdf

this question indicated a willingness towards collaborative trucking of some kind, only 38% of surveyed producers responded to this question. Given the inconclusive survey results, organizing transportation and coordinating slaughter schedules across Washington's geographically-largest county seemed unlikely to be a reasonable or profitable task.

However, the survey also asked if producers would be willing to pay someone to back-haul their meat, or if they would be willing to back-haul product for someone else. Fourteen producers indicated they would pay someone to back-haul product for them; and 12 producers indicated they would be willing to back-haul product for someone else. Producers were also asked if they would like access to long-term freezer storage; 32 producers responded positively.

Collaborative back-hauling does pose some concerns about product chain-of-custody that could be problematic for food safety concerns or for individual farms' product liability. Also of concern are possible head-aches for producers and processors alike, in the event of any miscommunication about the items being picked up for another producer. If these concerns could be addressed, and freezer storage/drop sites could be developed across the county -- there is real potential that a back-hauling and frozen storage service could greatly benefit producers.

While collaborative trucking or simply back-hauling of product could alleviate some of the burden to producers of having farm-raised meat products processed at USDA plants far from home, the problem of uncertainty remains. The closest and ideal plant under a collaborative trucking scenario would be the LPCA, in Odessa. However, recent producer experience has been that appointments can be extremely difficult to get for smaller member and non-member farms; that month-long or longer shutdowns have occurred without any warning to producers with scheduled appointments; and that the plant has often and inconsistently decided not to accept species other than beef, particularly during the busy harvest season. If the uncertainties of slaughtering at Odessa were reduced, collaborative trucking might be a more viable opportunity to solve the problem of limited access to USDA services.

Existing, Custom-Exempt Facilities in Okanogan County

The study focus quickly began to narrow to exploring opportunities to work with existing, WSDA-certified, custom-exempt, cut-and-wrap plants that might prove suitable for expansion to include USDA-inspected slaughter and processing.

In early March, project manager Alyssa Jumars reached out to all four of the existing, WSDA-certified, custom-exempt meat processors in Okanogan, as well as one former custom processor who was building a new facility²⁶. All were invited to participate in the feasibility study, and to explore whether an expansion to include USDA-inspected slaughter might work for their business. One processor indicated he was content with the scope and size of his current operations; another considered the possibility in-depth, but ultimately decided his operation was more efficient without the addition of USDA paperwork and oversight; and one processor declined to return

²⁶ At the time he was contacted, Larry Brownlee was building a new facility for Okanogan Custom Meats. He had been forced to close, during the 2016-2018 seasons, after a prior facility lease was not renewed.

phone calls.²⁷ Two additional individuals who were each considering opening custom-exempt meat shops, one in the Methow Valley, and one in Omak, approached the study team, hoping to learn more about the study process and any opportunities to participate.²⁸ Ultimately, *two existing processors agreed to participate in the study process: Thomson's Custom Meats, in Twisp, and Double S Meats, in Tonasket.*

In early April, a Washington State University (WSU) extension agent and PhD of meat science, Dr. Paul Kuber, agreed to accompany the project manager and several members of the Producer Advisory Committee on preliminary site visits to both Double S Meats and Thomson's Custom Meats. Assessments from these site visits were then brought to the Producer Advisory Committee. Based on the information and assessments provided by Dr. Paul Kuber, the Producer Advisory Committee quickly determined that the most feasible opportunity to serve the needs of producers was to work with Double S Meats, in Tonasket.²⁹ The Double S Meats facility is of new construction that already meets USDA specifications. Double S Meats operates under USDA-inspection for a wholesale cutting and distribution arm of their business that serves regional stores, restaurants, and catering companies. Tonasket is also in closest proximity to the majority of livestock raised in the county. Thomson's Custom Meats, in Twisp, presented several significant challenges to success: including an aging building, a long list of upgrades that would be required by the USDA within the facility, and a relatively far distance from the bulk of livestock producers in Okanogan County.

In late April, the project team hosted two additional consultants and conducted a second site visit and preliminary feasibility assessment of Double S Meats. Bruce Dunlop, of Island Grown Farmers Cooperative, and Greg Sherman, a retired USDA inspector, visited the site with the project manager, outreach coordinator, and a member of the advisory committee. Bruce and Greg each brought different sets of experiences and perspectives, but they each determined Double S Meats to have a high potential for a successful upgrade and expansion to USDA-inspected slaughter and processing.³⁰

Summary

It quickly became clear that the best, and possibly only viable opportunity to improve access to USDA-inspected livestock slaughter and processing for small and medium farms and ranches in Okanogan County was a facility expansion of Double S Meats, in Tonasket. Following the initial feasibility assessments, the study began to explore the technical and financial feasibility of adding USDA-inspected slaughter at Double S Meats. The project team also conducted a market analysis, drawing on findings about producer demand for USDA-slaughter services, as well as contextual market research on the opportunities for farm-raised, niche meats. Simultaneously, the project team worked to identify any potential barriers to the success of USDA-slaughter at Double S Meats.

²⁷ Thomson's Custom Meats, Twisp; Double S Meats, Tonasket; Superior Meats, Ellisforde; Okanogan Custom Meats, Okanogan; and Black Dog Meats, Brewster were all invited to participate in the study process.

²⁸ At the time, both Dusty Ravenstein and Lonnie Dixon were considering opening custom-exempt meat shops, and were interested in learning about the opportunity for USDA-processing.

²⁹ See Appendix A: Dr. Paul Kuber, Preliminary Feasibility Assessment, Summary Report

³⁰ See Appendix B and C: Bruce Dunlop and Greg Sherman: Preliminary Feasibility Assessment, Summary Reports

The rest of this report describes how feasibility was assessed within the context of a **market analysis, technical analysis, and financial analysis**.

2.0 MARKET ANALYSIS

The following market analysis evaluates the market opportunity, as defined by the *demand among livestock producers for USDA-inspected slaughter services*. The producer survey, which reached 92 producers in Okanogan County is the source of data for this market assessment.

The survey process was careful to distinguish between 1) responding producers who already process farm-raised meats under USDA inspection, have established markets, and perceive opportunities for growth with increased access to USDA-slaughter services and 2) farms who express interest in USDA-inspected processing, but are currently processing only under the custom-exemption. ***The project team was especially careful to clarify, in the survey and in all outreach, that any future project implementation would likely only include slaughtering services, and would not include any sales, marketing, or brand development.***

Although fully assessing opportunities for coordinated marketing and sales was beyond the scope of this feasibility study, we did conduct a thorough evaluation of the ***regional context of consumer demand, trending product attributes, and evolving market opportunities*** for regional, farm-raised meat products. Through extensive outreach to farms, restaurants, stores, CSA's, food hubs, food distributors, farmer cooperatives, farmers' market associations, and research institutions, we found that consumer demand in the region for high-quality, niche meat products is growing, but that accessing the growing consumer base requires a strategic approach. (See Appendix D for Kayla McIntyre's complete report.)

2.1 SURVEY FINDINGS

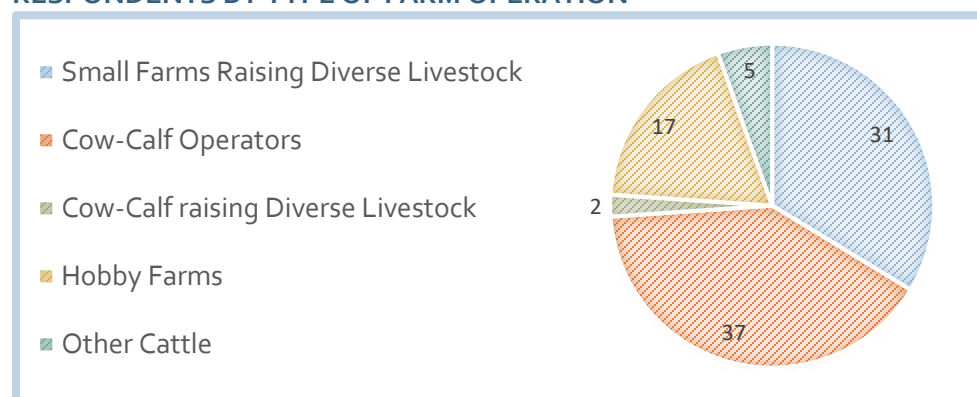
The survey received 95 responses, 92 of which were sufficiently completed to be utilized in the analysis. Of the ***92 responses***, 45 were received via email, seven by mail, and 40 through an open survey link that was shared via Facebook, through agency email listserves, on printed feed-store fliers, and on a temporary webpage.

There were actually ***two distinct surveys***, one for small farms raising diverse livestock (beef, pork, lamb, and goat), and another for cow-calf producers. The Producer Advisory Committee suggested that the distinct nature of these different types of operations necessarily required distinct survey questions.

Fifty responses were generated by small farms raising diverse livestock, including sheep, goats, pigs, and cattle. However, of those 50 responses, 17 came from extremely small farms raising a half-dozen animals for meat production, or less. For the purposes of this feasibility study, these very small operations were considered hobby farms that likely do not generate a significant source of household income from the production of livestock. While we evaluated the responses of these

hobby farms, there were a few questions for which the analysis removed their responses. Forty-two responses to the survey for cow-calf producers were collected, although five respondents indicated that they do not consider themselves calf producers. These five respondents do raise cattle and were able to respond meaningfully to the survey. Conversely, there were two respondents to the survey for diverse livestock operations who indicated they also raise between 60-100 calves, in addition to diverse livestock.

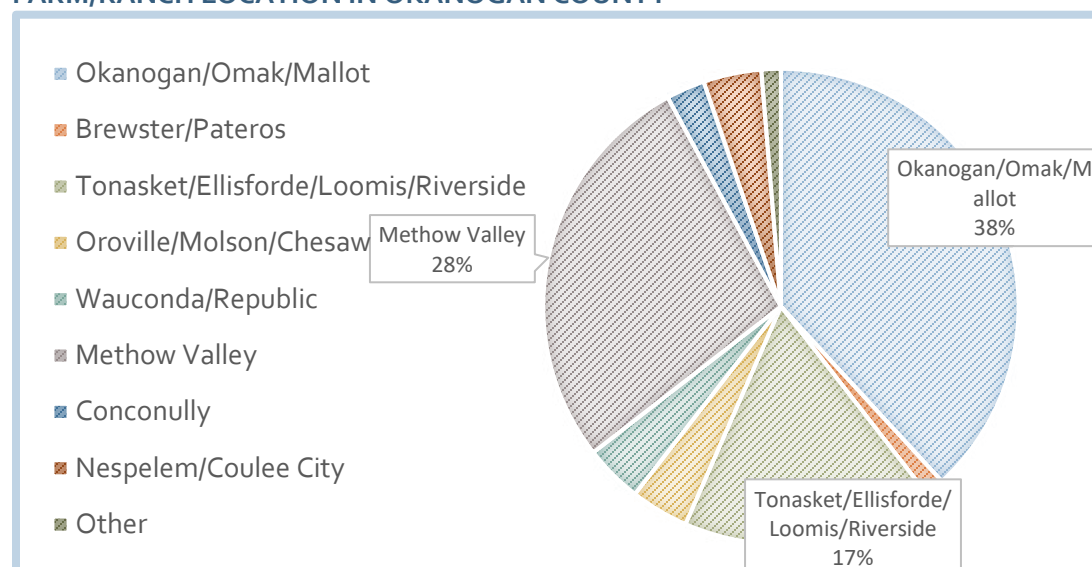
RESPONDENTS BY TYPE OF FARM OPERATION



*n = 92

Forty-one percent of respondents were small farms raising diverse livestock (including the five respondents to the cow-calf survey who produce cattle, but not calves, and the two respondents raising diverse livestock in addition to calves). Forty percent of respondents were cow-calf operators, and 19% of respondents had very small farm operations, or hobby farms.

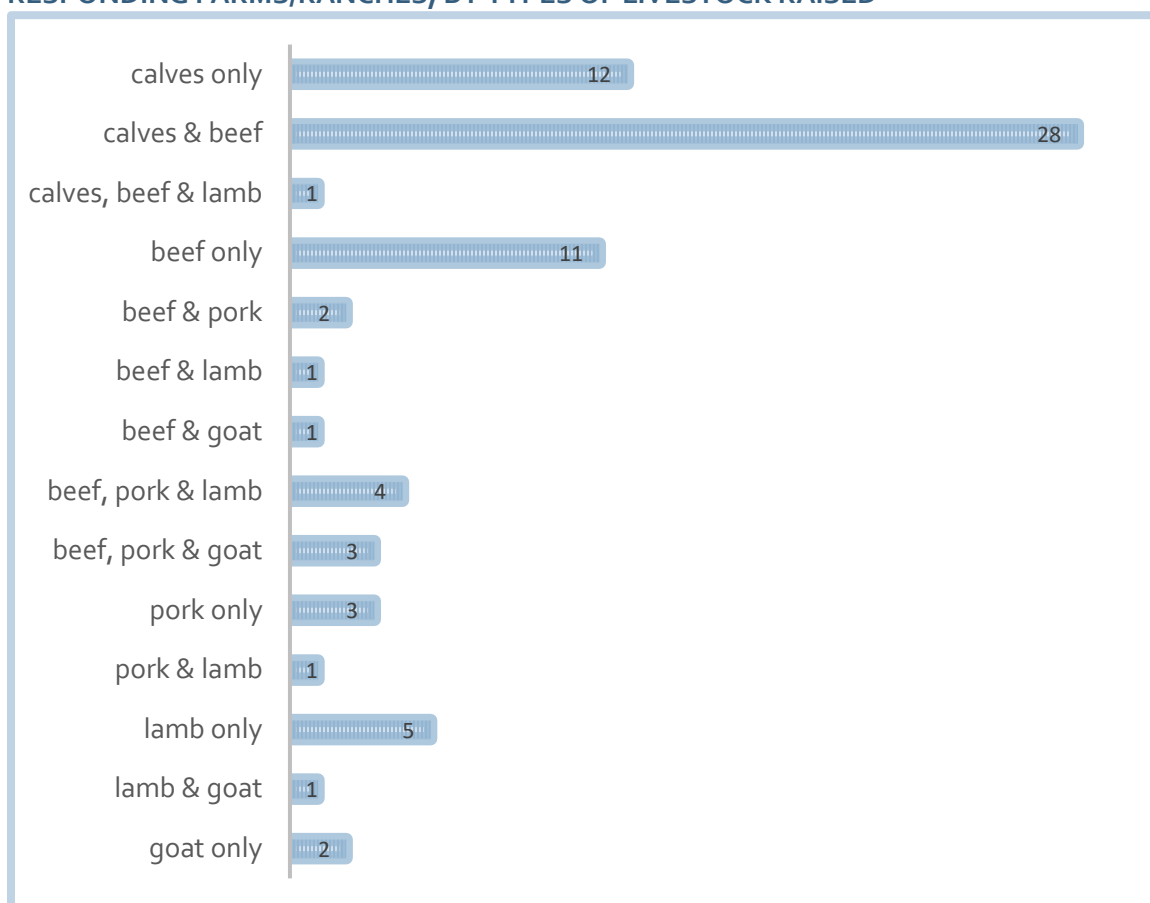
FARM/RANCH LOCATION IN OKANOGAN COUNTY



*n = 92

Survey respondents represented not only the diversity of types of operations, but also the geographic diversity of Okanogan County. Twenty-eight percent of responses came from the Methow Valley; 38% from the Okanogan, Omak, and Malot Areas; 17% from the Tonasket, Ellsford, Loomis, and Riverside Areas. Responses also came from the Brewster-Pateros area (1%); the Oroville-Molson-Chesaw area (4%); the Wauconda-Republic area (4%); Condonally (3%); and the Nespelem-Coulee City area (4%). It should be noted that the two members of the outreach team were located in the Methow Valley and just outside Okanogan, and drew on their personal relationships and local knowledge of farming networks to facilitate a high response rate in those areas. It should also be noted that while response rates from areas in the northern and eastern corners of the county were significantly lower, perhaps the greatest numbers of livestock are raised in these areas, especially relative to the Methow Valley.

RESPONDING FARMS/RANCHES, BY TYPES OF LIVESTOCK RAISED



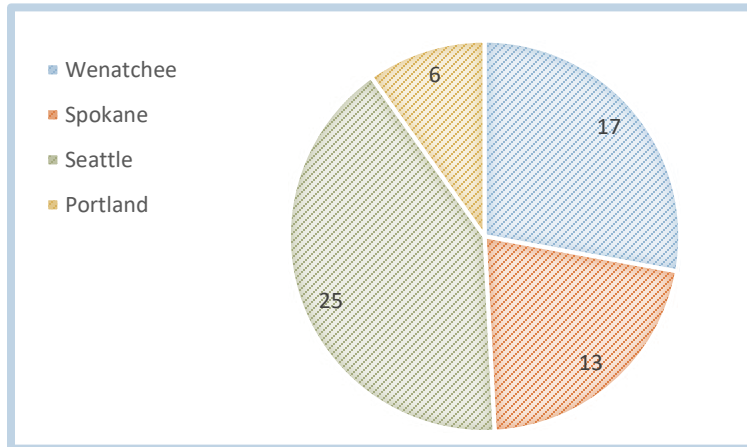
*n = 75

**Does not include hobby farms

Of the 92 respondents, 12 raise only calves, 28 raise calves and produce some finished beef, and 11 produce only beef. In other words, 55% of respondents are raising only calves and/or cattle, and no other species. Just over one-third of respondents are raising more than one species, and only 11% of respondents are raising only one species that is not cattle.

To look at the data a bit differently, the numbers of responding farms (not including hobby farms) engaged in raising pigs was 13 -- or 17% of responding small farms. The numbers of responding farms engaged in raising sheep was 12 -- or 16% of responding small farms. The numbers of responding farms engaged in raising goats was seven -- or 9% of responding small farms.

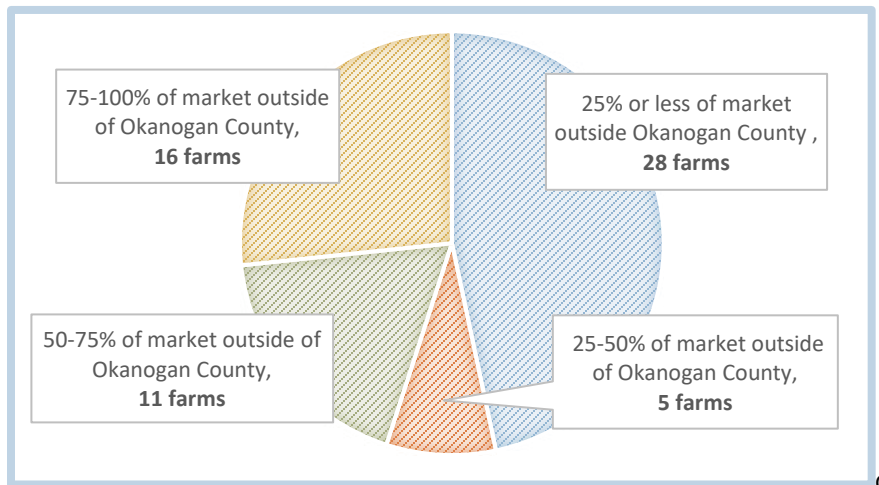
PRODUCERS SELLING TO REGIONAL URBAN MARKETS



*n = 61

Many producers are selling farm-raised meat products (both USDA-inspected and custom-exempt) in the Seattle urban markets, as well as the Wenatchee, Spokane, and Portland markets.

PRODUCERS WITH MARKETS OUTSIDE OF OKANOGAN COUNTY

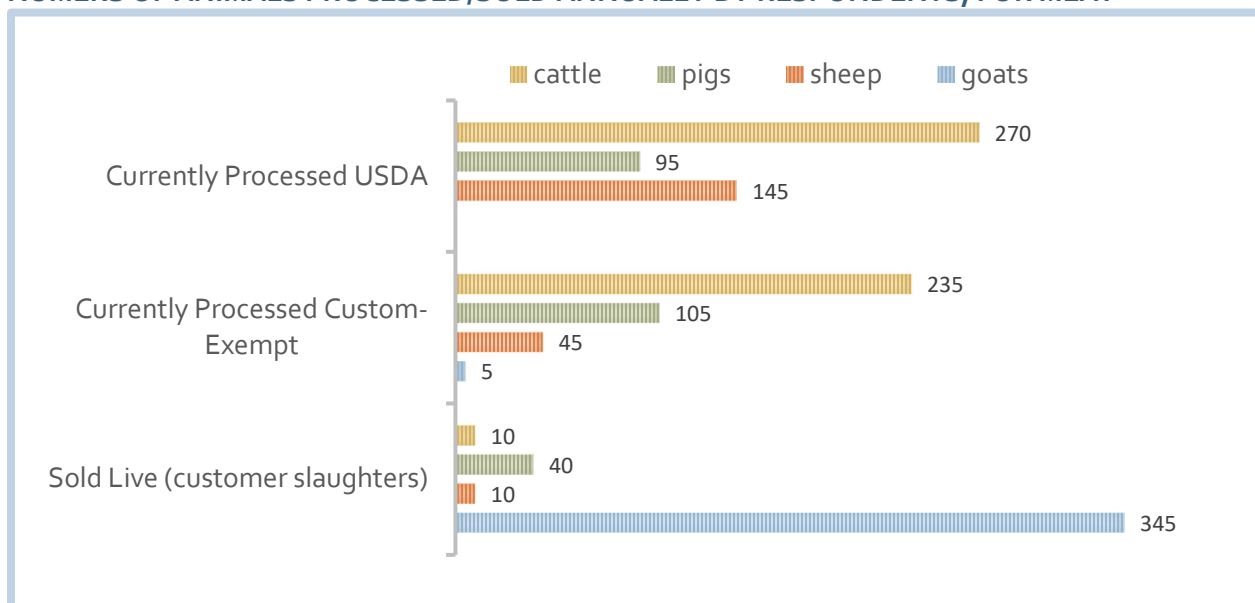


*n = 60

Forty-seven percent of respondents indicated they sell farm-raised meats predominantly within Okanogan County. Eight percent of respondents indicate that 25-50% of their market for farm-raised meats is outside of Okanogan County. Eighteen percent indicated that 50-75% of their market is outside of the county; and 25% indicated that over 75% of their market is outside of Okanogan County. The survey attempted to gather information about the importance of different

market avenues for each farm: individuals and families; restaurants; grocery stores; farmers markets; and institutions. However, the data proved difficult to interpret.

NUMERS OF ANIMALS PROCESSED/SOLD ANNUALLY BY RESPONDENTS, FOR MEAT



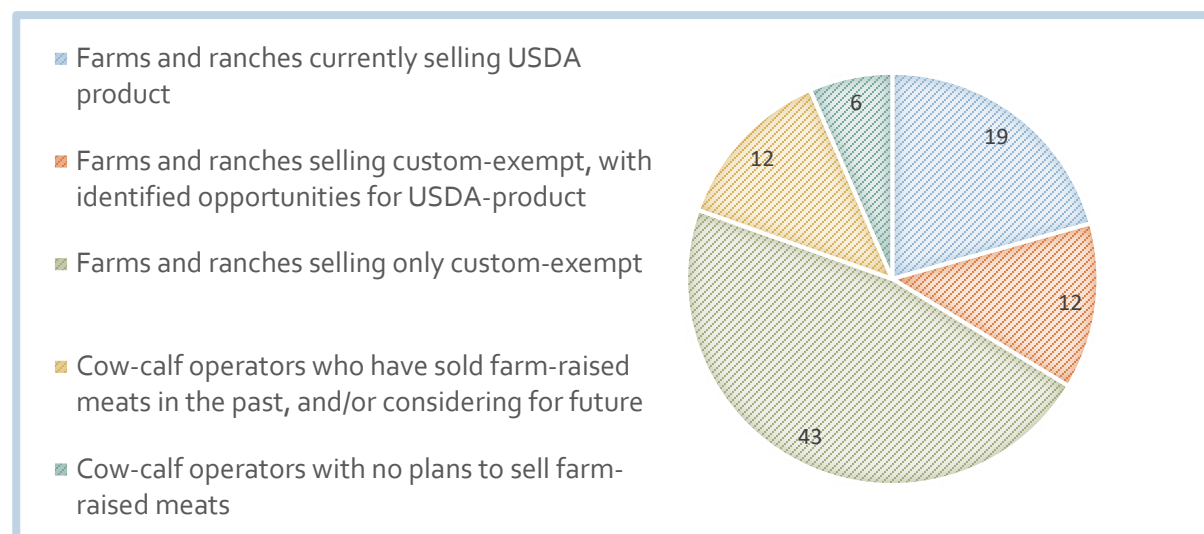
*n = 92

The numbers of cattle, pigs, sheep, and goats being processed and sold for meat each year under USDA-inspection by responding producers is approximately 270, 95, 145, and zero, respectively. The numbers of cattle, pigs, sheep, and goats being processed and sold for meat under the custom-exemption each year by responding producers is approximately 235, 105, 45, and 5, respectively. The numbers of cattle, pigs, sheep, and goats sold live by producers to customers who conduct their own slaughter and butchering each year is 10, 40, 10, and 345, respectively. Of particular note are the producers raising and selling 345 live goats each year, who indicate they have extremely limited access to both USDA-inspected and custom-exempt slaughter, because most processors won't process goats on account of limited carcass size and therefore limited potential cut-and-wrap revenue. Producers indicate that they have identified strong market opportunities for USDA-inspected product, and would greatly prefer to sell processed meat, rather than live animals -- so that they can oversee the final step of the each animal's life and ensure a humane end.³¹ Two producers indicated that access to USDA-inspected halal-slaughter would vastly expand their market opportunities.

³¹ Interviews: Gary Walker, Darin McLaughlin, Carey Hunter.

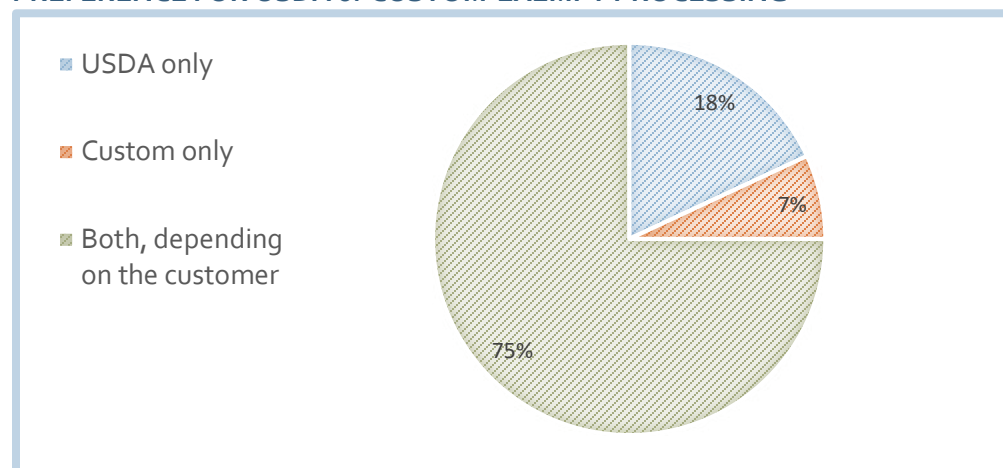
FARMS CURRENTLY PROCESSING USDA-INSPECTED OR CUSTOM-EXEMPT

* n = 92



Twenty-one percent of farms surveyed are currently selling farm-raised meats under USDA inspection, and an additional 13% of farms currently selling product only under custom-exemption indicated they have ready market opportunities for USDA-inspected product. Forty-seven percent of surveyed farms are currently selling only custom-exempt product. Thirteen percent of surveyed farms indicated they have either produced farm-raised meats in the past, or are considering it for the future. Six percent of surveyed farms, all of whom were calf producers, indicated they have never sold farm-raised meats and have no plans to do so.

PREFERENCE FOR USDA or CUSTOM-EXEMPT PROCESSING

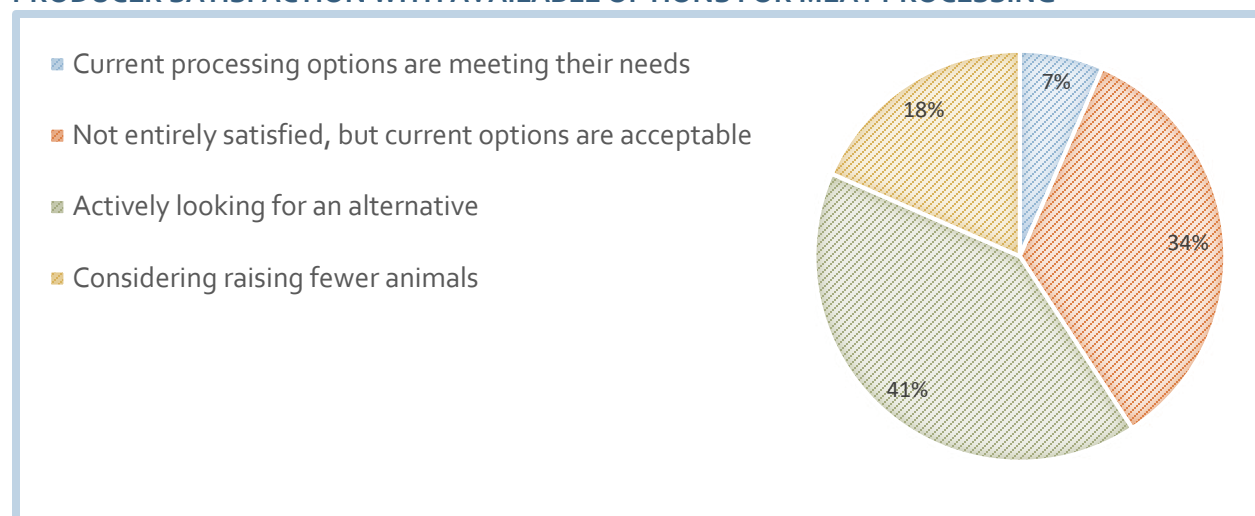


*n = 72

Ninety-three percent of all respondents indicated that they would like access to USDA processing. When asked if their preference was for USDA or custom-exempt processing, 75% of producers responded that they would like access to a facility that could do both, depending on the

end-customer of the product. Only 7% of respondents indicated that they wanted access to custom-exempt processing only, and 18% of respondents indicated they wanted access to USDA-inspected services only.

PRODUCER SATISFACTION WITH AVAILABLE OPTIONS FOR MEAT PROCESSING



*n = 76

We had expected to find a relatively low level of satisfaction among producers, given the anecdotal accounts that motivated this study. Of the responding producers, only seven percent indicated they are content with their current options for processing, and one-third indicated they are not completely content, but are making-do, for now. Forty-one percent of respondents indicated they are actively looking for a better alternative, and nearly 20% indicated they are considering raising fewer animals because they cannot find an alternative that meets their needs.

The responses to this question cannot necessarily be interpreted directly as indication that a USDA-inspected slaughter facility located within Okanogan County would alleviate the currently unmet needs of producers. The surveys were gathered from a mix of farms that currently process under USDA inspection, farms that process under the custom exemption but would like to process under USDA inspection, farms that would like to do both, and farms that wish to process only under the custom exemption. While we know that distance to existing USDA facilities is a big factor in satisfaction among producers with established markets and opportunities for USDA-inspected product, our survey was not designed to capture statistical information about the factors influencing satisfaction among producers whose preference is to process partially, primarily or solely under the custom exemption.

What we do know, from anecdotal accounts, is that producers processing under the custom exemption have struggled especially in the last 2-3 years to get appointments with WSDA-certified,³² on-farm kill services. Generally, farms that process meat under the custom exemption

³² On-farm kill services are required to inspected and certified by the Washington State Department of Agriculture (WSDA).

have their livestock slaughtered on-farm by a certified kill truck, and then delivered to the custom-exempt, cut-and-wrap shop as an eviscerated, headless, skinned, clean carcass. (Offal, heads, and hides typically remain on the farm.) Many producers prefer on-farm slaughter because the animal is never subject to the stress of being transported off-farm. Many producers and consumers alike consider that on-farm slaughter produces the best-quality meat, because the animal never produces adrenaline in response to stress, which can affect the flavor and quality of the end product.

*In the last few years, there has been as few as one kill truck serving the entire Okanogan County, but rarely more than 2-3 conducting on-farm slaughter of the 800 or so beef that are raised for custom-exempt processing in Okanogan County each year.*³³ We heard numerous accounts from producers that they either couldn't get a scheduled appointment with the kill truck, or they had an appointment scheduled, but the kill service simply didn't show up, or wasn't able to visit their farm until months later. For farmers and ranchers raising livestock, this kind of uncertainty can have a huge negative impact, including unanticipated feed costs or spoiled customer relationships with the end consumer.

However, we also know that limited kill-truck services are not the only limiting factor for custom-exempt processing. There has been a significant amount of turnover among the custom-exempt meat shops in the county. Currently, there are five WSDA-certified processors in Okanogan County: Double S Meats, in Tonasket; Superior Meats, in Ellisforde; Black Dog Meats, in Brewster; Thomson's Custom Meats, in Twisp; and Okanogan Custom Meats, in Okanogan. However, Superior Meats and Black Dog Meats are both fairly new and fairly small operations, processing only 100 or so beef and 100 or so hogs, each per year. Thomson's Custom Meats began scaling back their custom-exempt processing of farm animals significantly in the fall of 2016, and by 2017 was no longer accepting any farm animals. Okanogan Custom Meats temporarily shut their plant doors in 2016, due to a soured relationship between the plant operator and landowner. However, they are expected to re-open at new location in 2019.

While the focus of this study has been the need for improved access to USDA-inspected processing, we also clearly found that *producers feel the need for improved, reliable access to on-farm kill and custom-exempt cutting services is also unmet.*

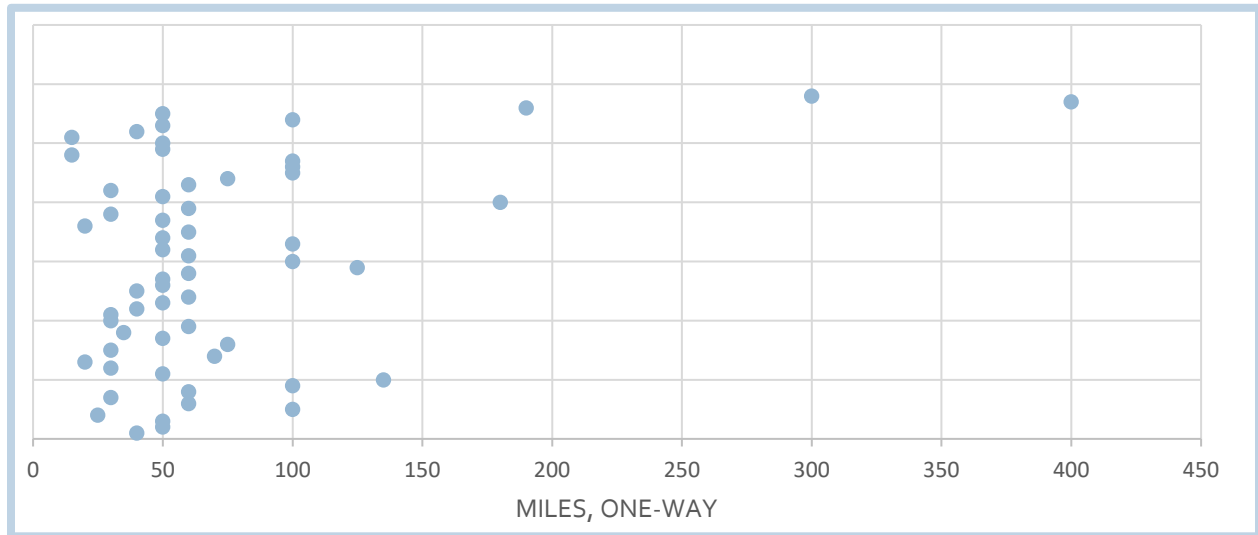
It is important to note, however, that *producers' perception of limited availability of slaughter and processing appointments is not always shared by meat processors.* While producers express frustration with the seeming unavailability of appointments, small meat processors express frustration that most producers want to slaughter and process animals during the same fall harvest window. While many meat processors are "slammed" from September through December, they find that business can be quite slow during the shoulder seasons.

While it is difficult to fully dissect the factors influencing each respondent's satisfaction with current processing options, we concluded that much of producers' frustration stems from

³³ We estimate that among Okanogan County's custom-exempt processors, an average of 800 head of beef are processed under custom-exemption each year. This estimate was derived through conversations with the various meat processors over the course of this study.

problematic *scheduling* and/or *distance*. Quality of cutting services, affordability of services, customer service, and plant sanitation at the available plants are also important factors affecting producer satisfaction.

MAXIMUM, ONE-WAY DISTANCE PRODUCERS CONSIDER SUSTAINABLE TO ACCESS SLAUGHTER AND PROCESSING SERVICES

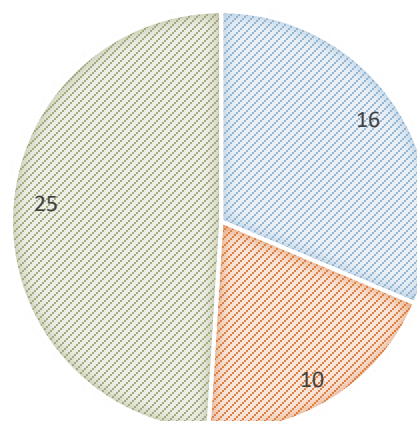


*n = 58

We asked producers what they felt was a maximum sustainable distance to travel for processing services. Responses from 58 producers (processing both USDA and custom-exempt), indicate that the average distance that producers feel is a maximum, sustainable distance to travel to access slaughter and processing is 71 miles, one-way (142, round-trip). When two outlier responses were removed (values = 400, 300), the average was 61 miles. ***Given that approximately 60 miles is considered by producers to be a maximum reasonable, one-way distance to travel for slaughter services, it is worth noting that, on average, producers who sell USDA-inspected product are traveling on average 135 miles, one-way (270, round-trip).*** In summary, we have concluded that many responding producers feel that their opportunities for growth are impeded by excessive travel distances and lack of schedule availability.

PRODUCERS WITH ADDITIONAL, UNMET MARKET OPPORTUNITIES FOR USDA PRODUCT

- Respondents with UNMET market opportunities:
Access to USDA-inspected processing is PRIMARY barrier to expansion
- Respondents with UNMET market opportunities:
Facing MULTIPLE barriers to expansion
- Respondents with NO additional, unmet market opportunities



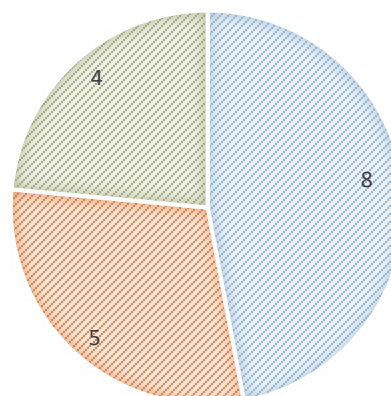
*n = 51

One of our survey questions asked: do you have established market opportunities for USDA-inspected product that you are not fully able to serve? Responses to the survey question included: no, I have no additional market opportunities at this time; yes, but there are multiple barriers to expanding into those opportunities; or yes, and the primary barrier to growth into those opportunities is access to USDA-inspected processing. ***Thirty-one percent of respondents indicated that access to USDA-inspected processing is a primary barrier to growth.***

Interestingly, while we carefully framed the question to understand perceived opportunities within *established markets for USDA product*, 51 producers responded to this question, even though only 19 of the survey's 92 respondents indicated they are currently selling USDA-inspected product. When only the responses for producers currently selling USDA-inspected were analyzed, the distribution of producers' responses to the same question were as follows:

PRODUCERS WITH ADDITIONAL, UNMET MARKET OPPORTUNITIES FOR USDA PRODUCT (ONLY THOSE CURRENTLY PROCESSING USDA PRODUCT)

- Respondents with UNMET market opportunities: access to USDA-inspected processing is PRIMARY barrier to expansion
- Respondents with UNMET market opportunities: Facing MULTIPLE barriers to expansion
- Respondents with NO additional, unmet market opportunities

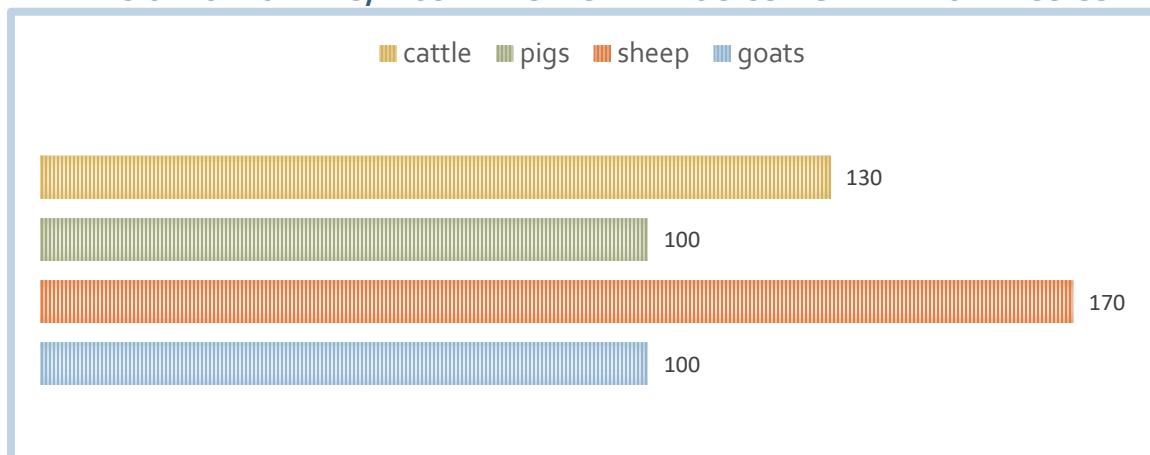


Four respondents currently selling USDA-inspected product do not have additional market opportunities beyond what they can serve; five respondents perceive additional market opportunities for USDA-inspected product but face multiple barriers to growth; and eight producers feel that the limiting barrier to expansion into existing market opportunities for USDA-inspected product is access to processing.

By comparing the two charts, we could conclude that there are an additional eight producers who do not sell USDA-inspected product at this time, but have cultivated potential market opportunities for USDA-inspected product. After taking a closer look at each of these eight survey responses, we found that with the exception of one farm, all of these producers are already selling significant amounts of farm-raised meat under the custom-exemption. We might conclude that ***these producers are ready to make the transition from custom-exempt markets to market opportunities where USDA-inspection is required, but are constrained by limited access to USDA processing.*** This finding supports the premise that a USDA-inspected facility in the region would benefit small farms and ranches wishing to grow and expand their markets.

The following chart illustrates how many additional animals responding producers might raise to serve existing or identified market opportunities for USDA-inspected product, if the access to processing were improved.

ADDITIONAL ANIMALS PRODUCERS WOULD ANTICIPATE RAISING FOR ESTABLISHED MARKETS OPPORTUNITIES, IF USDA-INSPECTED PROCESSING WERE MORE ACCESSIBLE



* n = 51

Through the survey process, we have established that a very diverse and large pool of producers in Okanogan County perceives the need for improved access to slaughter and processing -- urgently. Eighteen percent of respondent are considering down-scaling their operations because of inadequate access to processing services, and 41% are actively looking for better, more sustainable options. Limited or uncertain access to slaughter and processing has a big economic impact at the farm level, and it should be no surprise that producers perceive this need as extremely urgent.

2.2 ESTIMATED DEMAND

An important part of the analysis has been to answer the question: *just how large is the aggregated demand for USDA-inspected slaughter services in Okanogan County?*

As previously described, the survey process was able to determine the numbers of animals that responding producers are currently taking to USDA facilities in other parts of the state. We were also able to determine how many *additional* animals producers with established market opportunities would anticipate raising if access to USDA-inspected processing were improved:

	beef	pork	lamb	goat
Animals currently being processed under USDA inspection	270	95	145	--
Additional animals to be raised, for USDA market opportunities	130	100	170	100

A further consideration, given the limited availability of WSDA-inspected, on-farm, slaughter-truck services and the potential continued variability of existing custom-exempt plants, is the potential conversion of producers currently processing under the custom exemption. A conservative estimate is that 20% of the animals processed custom-exempt by *responding* producers might be processed under USDA-inspection if it were geographically convenient -- especially if scheduling were more reliable or transparent than currently-available, custom-exempt options. Given that 93% of responding producers indicated wanting access to USDA-inspected slaughter, a 20% conversion rate seemed realistic:

	beef	pork	lamb	goat
Animals processed custom-exempt by survey respondents	235	105	45	5
Approximate potential conversion from custom-exempt to USDA	50	20	10	n/a

Animals currently sold live is another potential source of demand for USDA-inspected slaughter. In particular, goat producers were extremely eager to have access to a slaughter facility that would accept goats. Many goat producers find themselves unable to access even locally-available custom-exempt processing, and resort to selling animal live to customers who are willing to do their own slaughter. Producers indicate that they would much rather sell processed meat and oversee the final step of each animal's life to ensure a humane end.³⁴ Several of these producers indicated that access to USDA-inspected processing would allow them to expand into market opportunities they have already identified -- especially into diverse ethnic markets in Seattle.

	beef	pork	lamb	goat
Animals sold live, with likely producer preference for USDA slaughter	10	40	10	345

Lastly, there were a half-dozen cow-calf operators that indicated they don't currently sell finished beef products, but are seriously considering exploring farm-to-table opportunities. While there is admittedly a long road and a steep learning curve to develop a market for each ranch's niche

³⁴ Interviews: Gary Walker, Darin McLaughlin, Carey Hunter.

product, these six producers indicated they would like to finish approximately 80 beef per year, in total.

Cow-calf producers anticipating producing farm-raised meats in future	80 beef

Determining to what extent to use this number in estimating potential demand for USDA inspected slaughter is somewhat of a challenge. In outreach to small meat plants in our region, we have been advised to apply some skepticism to estimates from producers who are not currently and actively engaged in marketing farm-raised meats.

At the end of the day, it s also extremely difficult to know how many responding producers who indicated they are unsatisfied with their current options would ultimately utilize a new facility located in Tonasket. While scheduling and distances have proven to be the biggest hurdles for producers, we also know that there are many other relevant details driving producer preference. *The influence of good communication and customer service, skill of cutting, labeling, and availability of value-added options should not be under estimated.*

What also is extremely difficult to determine is *how much to extrapolate the survey s identified demand for USDA-inspected slaughter*. If we were to utilize the most recent statistics from the USDA s Agricultural Census, we might conclude that we reached 92 of the 574 farms raising beef, pigs, or sheep in Okanogan County -- in other words, only 16% of the farms potentially producing farm-raised meats in Okanogan County.

2012 AGRICULTURAL CENSUS

Inventory: Cattle/Calves	35,471
Farms: Cattle/Calves	466
Inventory: Sheep/Lambs	1,527
Farms: Sheep/Lambs	75
Inventory: Pigs	248
Farms: Pigs	33

However, we have assumed that the farms with the highest dissatisfaction with current available options and the greatest interest in using a local, USDA-inspected facility would have been motivated to respond to the survey. Based on further insights provided by the Producer Advisory Committee, we question whether the estimates provided in the 2012 Ag Census about the number of working farms in Okanogan County might be a little optimistic. Ultimately, we decided not to use a multiplier to estimate county-wide demand. Instead we evaluated the direct survey results, and also considered potential factors affecting the identified demand. Based on the survey results, based on outreach to small meat plants in our state, and based on discussions among the Producer Advisory Committee and ground-truthing, our estimated potential demand for USDA-inspected process in Okanogan County and neighboring areas is approximately 500 beef, 300 pork, and 400 lamb or goat -- or 685 beef equivalents:

	beef	pork	lamb & goat
Estimated Potential Demand for USDA-inspected processing	500	300	400

Additional Factors Affecting Identified Demand

We acknowledge that the potential demand estimates could be affected by a variety of factors. We clearly did not reach all producers in Okanogan County, although we believe that respondents may have been self-selecting and that those motivated to respond to the survey are those most interested in accessing USDA-inspected processing.

Factor	Affect on demand
Okanogan County producers <i>not</i> reached in the survey wanting USDA processing	↑
Producers in neighboring counties wanting to use a USDA plant in Tonasket	↑
Double S Meats' ability to offer desired value-added processing	↑
Future technical assistance provided to producers to help develop new market opportunities	↑
Future development of a private or cooperative brand for small-and-medium Okanogan ranches	↑
Producers reached in the survey, who may choose to continue using other processing options	↓
Future fluctuations in the calf market (higher prices for calves result in fewer finished beef)	↓

It is difficult to know how much of the demand we identified for USDA-inspected processing would ultimately be served by Double S Meats. Some number of the producers reached in the survey will undoubtedly elect to continue using their currently-available options, and won't shift their business to a facility at Double S Meats. ***At the end of the day, distance and scheduling are only two of multiple factors affecting how producers decide where to process their meat. Double S Meats will need distinguish itself from other small plants in eastern Washington with excellent communication and customer service; with strategic value-added processing; and by accepting species that other plants do not prioritize.***

A next step beyond the feasibility study that was extensively discussed by the project team and Producer Advisory Committee was the potential to develop workshops for livestock producers, to help them identify and target niche markets for farm-raised meat products. In particular, the research conducted by Kayla McIntyre about the regional, consumer market context illuminated some of the evolving opportunities for small farms, as well as the need for strategic efforts in a market place that is experiencing a significant amount of competition and some saturation. (See Appendix D.) The Producer Advisory Committee suggested that providing resources and workshops to build producers' knowledge of the market opportunities and challenges could ultimately result in expanding production and increased demand for USDA services at Double S Meats.

While the development of an Okanogan-raised brand was beyond the scope of the study, we did determine that there is some interest among producers to explore the opportunities in a cooperative brand or to explore potential collaborative efforts to target institutional markets. While these opportunities would take years and dedicated effort to develop, they do represent a potential for increased demand for USDA-inspected processing.

Based on accounts from USDA plants in other parts of the state, small plants typically draw from 4-5 counties. However, Okanogan County is bordered to the north by Canada, and bordered to the west by the Cascade Mountains, over which the primary pass is closed between the months of November and May.³⁵ That said, a USDA plant in Tonasket could reasonably expect to draw producers from Ferry, Douglas, and Chelan Counties. Based on some limited outreach to Ferry County, we believe that livestock producers from the Republic area would be extremely likely to use a facility located in Tonasket.³⁶ How far producers are willing to travel from other counties will be determined by Double S Meats' ability to offer good customer service, certain value-added processing, and processing for diverse species. Producers in neighboring counties are in closer proximity to the established USDA plants in Moses Lake, Odessa, and Chewelah so offering an excellent customer experience, as well as strategic value-added processing would be necessary to access the potential demand from neighboring counties.

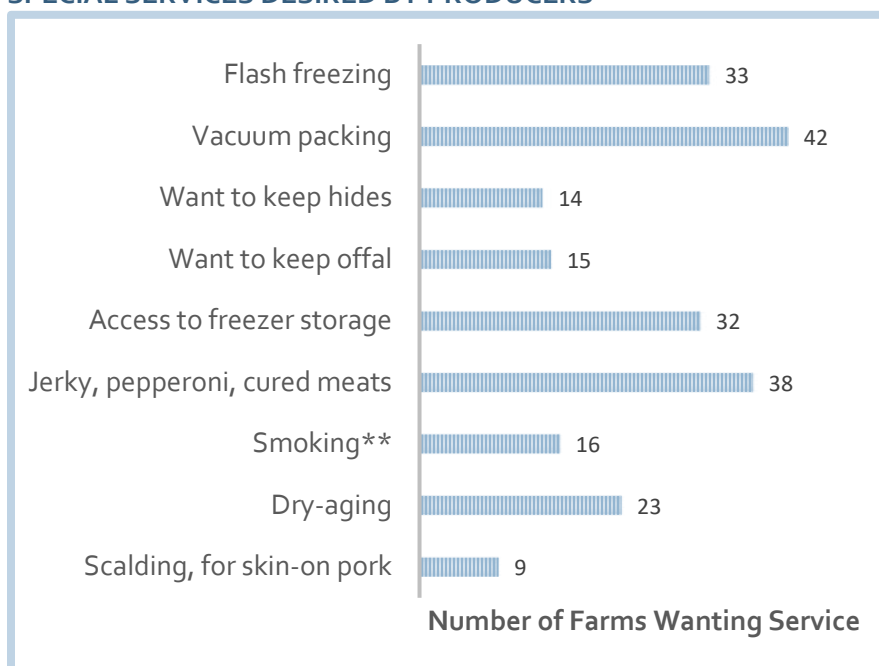
Desired Value Added Services

In the survey, we asked producers a number of questions about the types of services they would want in a USDA facility. This included flash freezing, vacuum packing, cured meats, and dry-aging. We also asked producers whether they would want access to long-term freezer storage for their products, and if they would want hides or offal returned to them. Of particular note are the number of producers who indicated they wanted access to *smoking* and *scalding* for skin-on processing for pork. (We should clarify that we did not ask respondents to the cow-calf producer survey if they wanted access to scalding or smoking.) Seventy-five percent of the 13 producers raising pigs indicated they wanted access to scalding, and all of them indicated they wanted access to smoking services. ***For Double S Meats to increase production in the shoulder seasons, outside of the traditional months for beef harvest (September thru December), it would be important to consider opportunities to increase services that would entice producers of pork and lamb, who generally have more flexibility in slaughter seasons.***

³⁵ Washington Pass, which is located on Highway 20 and separates a major corridor between Okanogan County and the western part of the state, is closed during the winter months, due to avalanches. During the winter, producers must travel an extra 1-2 hours, over Stevens Pass or Snoqualmie Pass, to reach markets on the western side of the Cascade Range.

³⁶ Conversations with Trevor Lane, WSU extension agent for Ferry County, and Mary Ciais, Forsee Ranch, Republic.

SPECIAL SERVICES DESIRED BY PRODUCERS



* n = 67

** Smoking and Scalding were not responses offered in the cow-calf producer survey

Notes About the Data

There are, of course, always concerns with anonymous responses. Just under half of the surveys were completed anonymously. Each survey was reviewed for consistency and plausibility. In some cases, respondents had indicated they were willing to take follow-up questions about the survey, which allowed the survey team to resolve questionable responses. However, there were some responses to individual questions from anonymous respondents that seemed inconsistent and these were not included. Of the surveys collected by the open survey link, three were discarded for incompleteness. Because SurveyMonkey allowed for tracking IP addresses, we are confident that none of the surveys were duplicates.

At the time the survey was launched, Double S Meats had not been identified as the best opportunity to serve the needs of producers. If the survey had been launched after the possibility of working with Double S Meats had become clear, it would have been possible to ask the direct question: if Double S Meats offered USDA-inspected slaughter and processing -- would you be likely to use them? This would have allowed the survey to be more concise, and it would have allowed producers to feel they were responding to more concrete, tangible questions. The timeline was admittedly unfortunate. As a result, the survey was only able to gather information about producers' general level of satisfaction with existing processing opportunities and information about their experiences with existing plants. While we can generally surmise from these responses that many producers would be eager to use Double S if they offered USDA-slaughter, we unfortunately lost an opportunity for a more accurate and precise analysis.

3.0 TECHNICAL FEASIBILITY

As described previously, the project team's exploration of feasible opportunities to meet the need for improved access to USDA-inspected livestock processing ultimately narrowed to assessing the suitability of existing, custom-exempt meat plants in Okanogan County. All five custom-exempt meat processors in the county were invited to participate in the study process, and two accepted the offer: Thomson's Custom Meats, in Twisp, and Double S Meats, in Tonasket.

A series of initial site and facility assessments were conducted in April, to determine overall feasibility of each custom-exempt processor. WSU Extension agent and PhD of Meat Science, Dr. Paul Kuber, conducted site visits to both Double S Meats and Thomson's Custom Meats, and provided an initial assessment.³⁷ Dr. Kuber's assessment concluded that bringing the Thomson's Custom Meats facility up to USDA standards would be prohibitively expensive due to the age, construction, and disrepair of the facility. He concluded that Double S Meats presented a significantly more viable opportunity, given that the facility was recently constructed (2013) to USDA specifications, and given that Double S Meats was already conducting wholesale cut-and-wrap under USDA-inspection.*

*Many custom-exempt butcher shops have a **USDA retail-exemption**, which allows them to purchase USDA-inspected meat (in primals or quarters), and sell specialty cuts direct-to-consumer at their on-site retail counter. The USDA retail-exemption does **not** allow custom-exempt butcher shops to sell wholesale cuts or cured meats to restaurants, catering companies, or other retail outlets. Double S Meats, on the other hand, is inspected by the USDA for wholesale cut-and-wrap. This means that their cut-and-wrap facility is inspected to USDA standards, that they have a Food Safety Inspection Service (FSIS) inspector *on-site* while they are processing wholesale cuts, and that they can sell wholesale products to stores, restaurants, and other outlets.

After a decision by the Producer Advisory Committee to focus the study's efforts on Double S Meats alone, the project team conducted a second preliminary site assessment. Two industry consultants, Bruce Dunlop, of

Contributing Expertise:

Dr. Paul Kuber is livestock extension agent for Washington State University (WSU) and a PhD of meat science. Dr. Kuber conducted an initial site and feasibility assessment for both Thomson's Custom Meats and Double S Meats. *(See Appendix A for summary report.)*

Bruce Dunlop is a livestock producer and member of Island Grown Farmer's Cooperative. He helped to develop and build one of the first USDA-inspected mobile slaughter units for red meat species and has since consulted on various MSU projects and small plant feasibility studies. Previously, he was a chemical engineer in the bio-ag and food industries. Dunlop conducted a second site visit and initial feasibility assessment of Double S Meats. *(See Appendix B for summary report.)*

Greg Sherman is a retired FSIS inspector of 30 years experience in public health and food safety, with a focus on humane handling and slaughter of livestock, as well as HACCP protocols. He currently consults for small meat plants across the country, through GSC Northwest HACCP Consultants. Dunlop conducted a second site visit and initial feasibility assessment of Double S Meats. *(See Appendix C for summary report)*

³⁷ See Appendix A.

Island Grown Farmers' Cooperative, and Greg Sherman, a retired FSIS inspector for the USDA, provided their expertise. In each of their summary reports, Dunlop and Sherman indicated Double S Meats to have a high potential for success in an expansion to USDA-inspected slaughter and processing.³⁸ Following this second optimistic assessment, the study began to focus on evaluating in greater detail: the *market feasibility*, *technical feasibility*, and *financial feasibility* for an expansion at Double S Meats.

One particularly interesting opportunity that developed over the course of the feasibility work was the *chance to acquire a used, discounted Mobile Slaughter Unit (MSU)* from a non-profit in Stevens County, a northeast county of Washington. The Community Agriculture Development Center (CADC) of Colville is a non-profit that purchased a MSU with the help of WSU Extension and a grant from the USDA's Rural Business Development Grant program. The CADC leased their MSU to a private operator, S&K Meats, for a period of over 10 years. Shane Nelson, of S&K Meats, operated the unit in conjunction with Smokey Ridge Meats, a small meat shop in Chewelah, Washington that was able to do both custom-exempt and USDA-inspected cut-and-wrap. Due to changing circumstances and ownership, Smokey Ridge Meats purchased their own MSU in 2017 and Shane Nelson relocated his business to another part of the state. As a result, the CADC found themselves with a MSU that was going unused, and they decided to develop a Request for Proposal process to see the unit put into service in another rural community in North-Central Washington.

At the suggestion of Dunlop, Sherman, and Quanbeck, the project team began to explore the feasibility of Double S Meats, or of a collaborating non-profit such as TwispWorks or the Methow Conservancy, acquiring the CADC's MSU as *an intermediary step to test assumptions about the demand for USDA-inspected processing* in the region and to inform future efforts to build a more permanent kill floor at Double S Meats. Given Double S Meats' concern about over-extending

Contributing Expertise, cont d:

Natasha Moffit-Hemmer is a masters candidate at the Washington State University's Animal Science program, and was recently hired as an agent for Okanogan County's WSU extension office. Her research has included pre- and post-harvest livestock management, food safety, and meat quality and yield; safety and development of processed meat products; improving efficiency and sustainability in livestock production; humane and low stress livestock handling and production. Moffit-Hemmer offered her insight throughout the course of the study process.

Kathryn Quanbeck worked for the USDA as a livestock economist, and later for the Niche Meats Processor Assistance Network. She has consulted on over three dozen feasibility studies for small to medium scale meat processors in communities across the West. Quanbeck served as a project advisor through the study's entirety.

Shane Nelson successfully operated a USDA-inspected MSU for 12 years in Chewelah as S&K Meats. He has consulted regionally for livestock producers and small niche meat processors. Nelson contributed to the project's assessment of financial feasibility, as well as potential site design.

³⁸ See Appendix B and C.

their small, family-run business on well-informed, but un-tested assumptions, exploring a relatively low-cost, low-risk, intermediary option seemed truly ideal.

The study progressed, focusing on the feasibility of offering USDA-inspected slaughter at Double S Meats, using a USDA-certified, permanently-docked MSU. In June, the feasibility project contracted with Shane Nelson, consultant and former operator of the CADC's MSU. Nelson offered cost estimates for site development to create a docking station for the MSU. Nelson also developed a series of profit-and-loss scenarios for slaughter, based on his extensive, hands-on experience operating a MSU, and based on the estimated potential demand for USDA services in Okanogan County.

The following assessment of technical feasibility explores the *infrastructure components* necessary for the addition of a USDA kill floor at Double S Meats: in particular, the site needs to become a permanent docking station for a Mobile Slaughter Unit (MSU). Also addressed are potential *regulatory and permitting requirements*.

3.1 INFRASTRUCTURE NEEDS

In general, primary components necessary for the expansion of any meat facility are access to sufficient *electrical utilities for refrigeration; access to potable water; and adequate wastewater handling capacity*. To become a docking station for an MSU, the Double S Meats site would also need a concrete kill pad, animal holding pens, and additional refrigerated capacity. Special consideration would need to be given to flow and design for humane handling, as well as operation during winter conditions.

Double S Meats has 3-phase power on-site and an electrical panel that can accommodate expanded refrigeration needs. Double S Meats' current refrigeration capacity would not be adequate to handle increased production, although they might be able to accommodate increased production in the first year or two by adding a drip cooler for cooling hot carcasses. This would allow the existing hanging cooler to be packed more tightly. At optimum production, Double S Meats estimates they will need an additional 400 square feet of hanging cooler space. They also anticipate needing more freezer space, and may like to offer long-term freezer storage to customers. Lastly, they will need expanded capacity for holding offal and rendering.

ADDITIONAL REFRIGERATION NEEDS

Drip Cooler	300 sq ft
Additional Hanging Cooler	400 sq ft
Additional Freezer Storage	350 sq ft
Offal Cooler	150 sq ft

Double S Meats is already connected to Tonasket city water. *Wastewater handling, however, is a component that will need additional research*. Double S Meats' current septic system can accommodate 360 gallons per day. Based on past efforts to meter water use on the cutting floor, Double S Meats estimates that water usage at the facility is approximately 120 gallons per day,

which includes a daily wash-down of the cutting room and equipment. Based on estimates provided by both Bruce Dunlop³⁹ and Shane Nelson,⁴⁰ we anticipate that Double S Meats would use approximately 400 gallons of water for each day of slaughter. This would exceed the septic system's daily capacity. However, it is most likely that slaughter will be conducted 3 days per week, at most, and that wastewater could be captured in a temporary holding tank. This temporary, 1500-gallon holding tank would also allow for pre-filtering of hair, large particles and grease, enabling Double S Meats to reduce the Total Suspended Solids (TSS) and Biological Oxygen Demand (BOD) load to the septic system. The holding tank would also allow wastewater to be pumped slowly into the existing septic system.

	Daily (gallons)	Weekly (gallons)
Water used in cutting room	120	600
Water used on kill floor (MSU)	400	1,200
Septic capacity	350	2,450

Wastewater from slaughtering and facility cleanup is characterized by high levels of fats, proteins, manure, and other solids in both particulate and dissolved form. Levels of BOD and TSS, nitrogen, phosphorous, coliforms, and other pathogens can vary, depending on process and mechanisms for capturing waste. NMPAN has reported values of 150 ppm BOD and 58 ppm TSS for a similar, small plant in Washington State.⁴¹ Further research is needed to determine an appropriate filtration and possible chemical treatment process, and to determine acceptable levels of BOD and TSS for both inflow and outflow of the current septic system. Plant owner, Gavin Pratt, made initial outreach to the Okanogan County Department of Public Health, but at the time of writing of the final report, had not been able to discuss possible septic upgrades in detail with the department.

In the event that an upgraded septic were to prove prohibitively expensive, a holding tank could be used and pumped weekly by a pumping service. Double S Meats could even consider purchasing an inexpensive flatbed truck and tank, to deliver transport wastewater to the Tonasket sewer treatment plant. This intermediary alternative would allow Double S Meats to await the arrival of expanded town sewer services, which are expected to reach their site in 2-3 years.

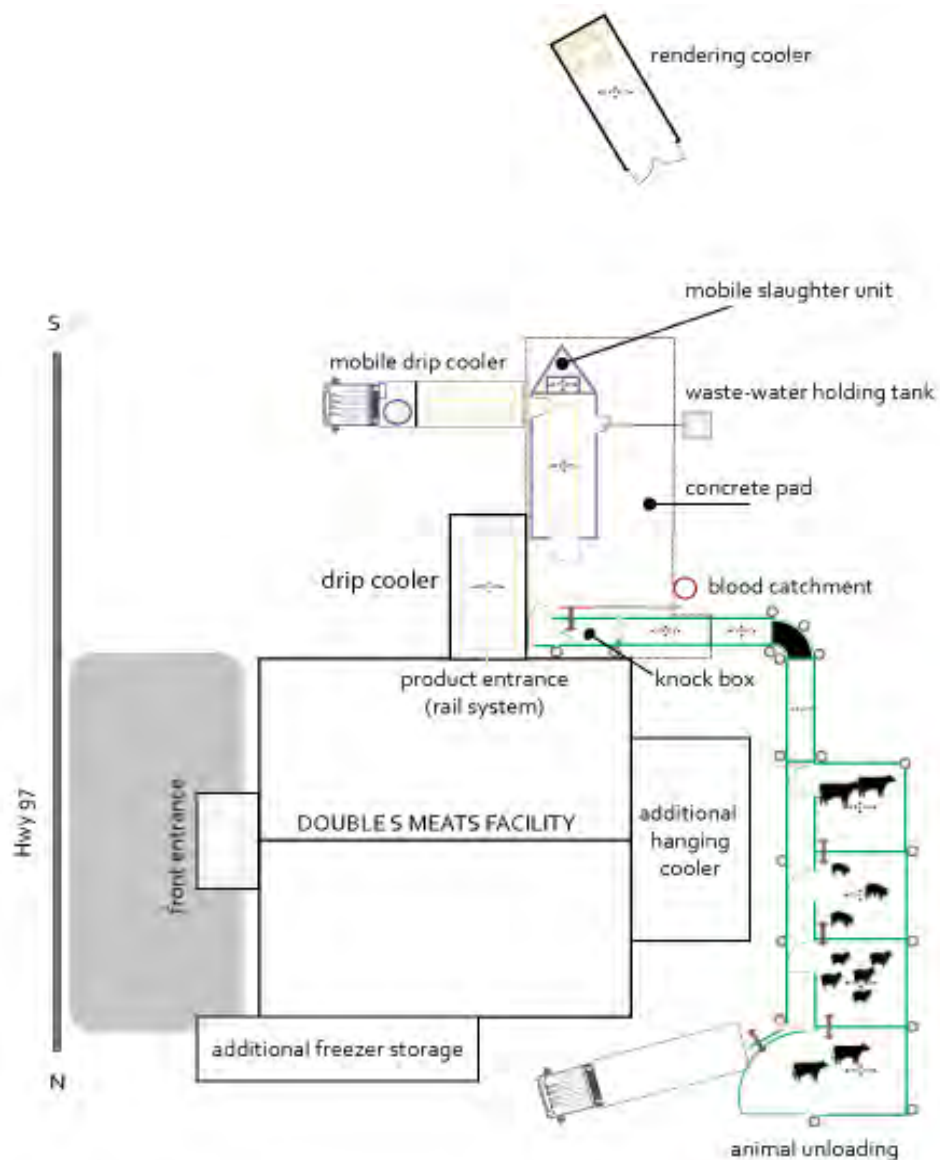
Docking Station

The biggest challenge with accommodating slaughter at Double S Meats is the limited, buildable area. The available footprint for a docking station is highly constrained by property boundaries and by topography. The following design developed by Shane Nelson provides the necessary components of a docking station, despite these constraints.

³⁹ The Island Grown Farmers Cooperative MSU has a 400-gallon on-board water tank that is used for washing carcasses and for equipment cleanup at the end of the day. The MSU typically processes 8-10 beef per day.

⁴⁰ While he operated a MSU at Smokey Ridge Meats, in Colville, Shane Nelson estimated using approximately 400 gallons per day, or less.

⁴¹ Shermain Hardesty; John Harper. Mendocino County Meat Plant (MCMP) Study. University of California Agriculture and Natural Resources, Cooperative Extension, 2013: <http://edfc.org/wp-content/uploads/2014/02/Meat-Study-Final-Report-2013.pdf> (page 26)



Animal Holding Pens

Animal holding pens would need to allow for separation of each species, and ideally separation by ownership when possible. One pen would need to be able to serve as a clearly-marked suspect pen in the event that an animal exhibits signs of illness. The animal holding pens would ideally be covered, as would the walkways and outdoor kill pad for the comfort of livestock, as well as for the efficient and safe operation of slaughter during the winter months. Pens and walkways would not necessarily need to be concrete, but would need to provide adequate footing for the animals and would need to be easily and routinely cleaned to reduce odors, runoff, and flies. Shane Nelson indicated he cleaned animal holding pens on a weekly schedule, with a tractor bucket.

Both Double S Meats and the Town of Tonasket are in agreement that animal holding pens should also be screened from view of Highway 97. Their suggested placement is on the west side of the building, opposite the highway. One of the conditions established by the Town of Tonasket for a

Conditional Use Permit for slaughter includes adequate setback from neighboring residences. Animal holding pens must be at least 100 feet from a neighboring residence. The town would allow animal holding pens to be as close as 50 feet to the nearest residence, provided that a privacy fence were erected along the property boundary. The slaughter pad would need to be located 100 feet or more from the nearest residence.

Kill Pad

The suggested concrete pad would be approximately 20 by 20 feet. The MSU would be parked with the trailer door opening toward the knock box. Once loaded into the knock box, the animal would be killed with a captive bolt gun. The animal would then be tipped out of the knock box and bled on the concrete. Blood would be captured by a special drain in the concrete pad and diverted into a catchment drum. Once bled out, the animal would be drug inside the MSU with the on-board wench. Once inside the unit, the hide, head, and entrails would be removed; and finally the carcass would be broken into halves or quarters.

Highway 97 runs parallel to the east side of the building, so shielding the slaughter pad from public view would be essential. In the site plan developed by Shane Nelson, the kill pad would be screened by the addition of a strategically-placed drip cooler. Any additional needs for a visual barrier could be achieved with concrete ecology blocks.

Drainage on the concrete pad would need to be carefully designed and managed, to prevent nutrient-rich runoff or erosion to the hillside abutting the west side of the proposed slaughter area. Further research with the Okanogan Department of Health will be needed to determine how wastewater from the cleanup of the outdoor kill pad might be captured and handled differently than storm water.

Water used inside the MSU, for carcass processing as well as end-of-day cleanup, would be captured and diverted to a 1,500 gallon holding tank on the west side of the kill pad. Wastewater would then be pumped, at a determined daily rate, into the facility's septic system with a sump pump. The holding tank would allow for some filtration and possible chemical treatment, thus reducing the Total Soluble Solids (TSS) and Biological Oxygen Demand (BOD) load to the septic system. Further research and communication with the Okanogan County Department of Health will be needed to better understand a suitable pre-treatment protocol.

Humane Handling

The precise techniques for humane handling and slaughter were beyond the expertise of the study team and beyond scope of this study. However, through the study process, it became abundantly clear that humane handling of animals in the final stage of their life is of critical importance to producers and that *the success of Double S Meats will depend heavily on producers' perception of humane animal handling and well-designed holding pens, walkways, knock box, and kill pad*. Double S Meats would need to consider how the alleys, sight lines, footing, and protection from the elements affect each species' safety and comfort while awaiting slaughter. The study team recommends that Double S Meats refer to methods recommended by *Temple Grandin*⁴², and take

⁴² Comprehensive guidelines for humane slaughter can be found on Temple Grandin's website: www.grandin.com

advantage of the expertise and resources available through Washington State University's Animal Science and Extension programs when considering facility design, as well as slaughter protocol.

Mobile Drip Cooler & Additional Drip Cooler

The slaughter unit belonging to the Community Agriculture Development Center (CADC) has an associated mobile drip cooler, on a tractor-trailer. The unit has built-in rails and can hold carcasses from one full day of slaughter.⁴³ At the end of the work day, the mobile drip cooler can be moved and backed up to a stationary drip cooler, and unloaded. Ultimately, the docking station could be designed so that carcasses went directly from the MSU into an attached, stationary drip cooler -- avoiding this extra step at the end of the day. However, this design would have to accommodate access to the drip cooler by Double S Meats' WSDA-certified, custom-exempt, on-farm kill truck to unload custom-exempt carcasses into the drip cooler. While somewhat inefficient, the mobile drip cooler actually allows for some initial flexibility among Double S Meats' existing operations.

The stationary drip cooler would be roughly 300 square feet and with sufficient refrigeration capacity to bring the temperature of hot carcasses down to 40 degrees within a period of 24 hours. The stationary and mobile drip cooler refrigeration would also need to be able to reduce humidity generated by the wet carcasses. From the stationary drip cooler, carcasses would be moved into the facility's existing hanging cooler. Currently, Double S Meats' hanging cooler serves as a drip cooler for custom-exempt animals slaughtered on-farm. Unlike many custom-exempt facilities, Double S Meats does not process wild game -- which avoids any concerns about storing wild game with USDA-inspected carcasses. Custom-slaughtered carcasses are permitted to be stored in the same cooler as USDA-inspected carcasses, however they require separate rails. While the addition of a drip cooler would allow for fully-cooled carcasses to be packed more closely in the hanging cooler, Double S Meats would ultimately need to expand their existing hanging cooler capacity as well as their freezer capacity.

Rendering Cooler

The rendering cooler could be located in proximity to a power source at the base of a telephone pole, at the southernmost end of the parking lot. Locating the rendering cooler away from the facility and kill pad would help to reduce concerns about flies and other pests. Offal, hides, and rendering could be stored inside a 8-foot by 20-foot, insulated shipping container, and refrigerated using a low-tech Coolbot⁴⁴ refrigeration system. Generally, the offal, paunch, and other rendering generated by 1 beef fills approximately one, 50-gallon barrel. The waste from four or five pigs typically occupies one barrel. Three to four cow hides will typically fit in a barrel, and can be worth a small amount to the rendering company, reducing the cost of rendering fees slightly. It is important to note that rendering companies won't take offal or hides from lambs or goats, so that waste will have to be hauled separately to the dump, or perhaps to a farm willing to make compost. Under a USDA Grant of Inspection (GOI), waste must be managed in a fashion that does not encourage pests (rodents, flies, etc) and does not create odors. Rendering would likely need to be collected every week.

⁴³ Typically, 15 sqft of refrigeration floor space is needed per beef carcass.

⁴⁴ Commonly used by small farms, the Coolbot is sensor that allows household air conditioners to be run at 40 degrees and utilized for refrigeration purposes: www.storeitcold.com.

Winter Operation

Operation of an MSU in the harsh winter climates of North Central Washington will be a challenge. From Shane Nelson's accounts, water and drainage systems will require constant attention to keep from freezing. Animal walkways and the kill pad would need to be maintained for proper animal footing and human safety. This would mean shoveling and/or the use of sand or salt. Water lines to the MSU would need to be heated to prevent freezing, and all drain lines would need to be adequately sloped to prevent clogging and freezing. The wastewater holding tank could be heated with the use of a stock-tank heater. Water for livestock would also need to be heated.

3.2 REGULATORY AND PERMITTING CONSIDERATIONS

Before Double S Meats can become an operational, USDA-inspected facility, the processor would need to navigate a variety of local and federal regulatory processes.

Double S Meats would need to apply for a *Grant of Inspection (GOI) from the USDA's Food Safety Inspection Service (FSIS)*. What makes Double S Meats a particularly promising candidate for expansion to USDA-inspected slaughter is that, unlike most custom-exempt meat plants, they already operate under USDA inspection for their wholesale, cut-and-wrap and distribution activities. In order to conduct wholesale production, Double S Meats is inspected regularly by an FSIS inspector. As a result, Double S Meats is familiar with the oversight, procedures, and documentation required by USDA inspection. Double S Meats' relative comfort with the protocols and paperwork associated with USDA-inspection is a critical indicator of their high likelihood for success.

To apply for a Grant of Inspection, Double S Meats would have to provide documentation of an *approved potable water source* and an *approved wastewater handling system*. Double S Meats would also need approval from the Town of Tonasket for a *Conditional Use Permit (CUP)* to conduct slaughter at their plant location within town boundaries.

Double S Meats is already connected to town water, which is considered an approved water source. The Town of Tonasket's municipal water system would simply need to provide a letter for Double S Meats' GOI application.⁴⁵ Unfortunately, although Double S Meats is located within the town limits and is connected to town water, they are not connected to town sewer at this time. The public sewer system is expected to arrive in the next few years. Double S Meats currently utilizes an on-site septic system that is inspected by the Okanogan County Department of Public Health. The Okanogan County Department of Public Health regulates septic systems processing up to 3,500 gallons per day.⁴⁶ While the Department of Public Health has the authority to work with Double S Meats to determine whether the existing treatment system is adequate, the department could also elect to involve the Washington State Department of Ecology if further evaluation were deemed necessary. Initial contact was made with Dave Hilton, agent for the

⁴⁵ Example template letters are available letter on the FSIS website: www.fsis.usda.gov/shared/PDF/Grant_of_Inspection_Attachment3.pdf

⁴⁶ Okanogan County Public Health, webpage: www.okanogancounty.org/ochd/Septic.html

Okanogan County Department of Public Health; however a determination of adequacy of the existing septic was not made by the time of writing.

Aside from access to an approved potable water source and proof of an adequate waste treatment system, other relevant local and state permitting requirement are the responsibility of the applicant, and do not necessarily affect the GOI process. What makes up the rest of the GOI application process is demonstration of the plant's compliance with *Sanitation Performance Standards of Title 9, Code of Federal Regulations, Sections 416.2 and 416.3 (9 CFR 416)*.⁴⁷ These performance standards do not dictate precise metrics or specific guidelines for plant construction, design, or materials. The FSIS generally cannot offer specific guidance about construction or design, but can suggest whether or not a material or design-outcome would be acceptable. The requirements focus on performance outcomes that achieve:

- Pest and odor control
- Adequate drainage that prevents backflow of waste water
- Adequate lighting and ventilation
- Sufficient rest rooms, hand-washing stations, and garbage cans
- Materials for walls, floors and ceilings that are easily cleaned, and are impervious to moisture
- Prevention of conditions resulting in product alteration or unsanitary conditions⁴⁸

While there may be a few minor changes that Double S Meats will be required to make within their existing cut-and-wrap facility, changes will likely be minimal and at the discretion of the individual FSIS inspector. Double S Meats already operates under USDA inspection for their wholesale cut-and-wrap and distribution activities. They are inspected regularly by a FSIS inspector, who conducts routine facility inspections and microbial testing, and ensures that the Sanitary Standard Operating Procedures (SSOP) and Hazard Analysis and Critical Control Point (HACCP) plan are followed.⁴⁹

Double S Meats would need to develop new HACCP and SSOP plans for slaughter using the MSU.

While Double S Meats already operates in accordance with HACCP and SSOP plans for their current USDA-inspected cut-and-wrap activities, they would need new plans for slaughter. Luckily, the Niche Meats Processors Assistance Network has already developed HACCP and SSOP templates designed specifically for MSUs that are freely available online.⁵⁰ While these templates

⁴⁷ Subchapter E (Regulatory Requirements Under the Federal Meat Inspection Act and the Poultry Products Inspection Act) of the Code of Federal regulations is available online: www.gpo.gov/fdsys/pkg/CFR-2011-title9-vol2/pdf/CFR-2011-title9-vol2-part416.pdf

⁴⁸ NMPAN provides a summary of facility requirements and performance standards:

articles.extension.org/pages/17979/step-3:-facilities-must-meet-regulatory-performance-standards

⁴⁹ HACCP, or Hazard Analysis and Critical Control Point, is a methodology for determining food safety hazards reasonably likely to occur in the production process. HACCP also identifies preventative measures, or "critical control points." Hazards are generally grouped into three categories: physical, chemical, or biological. Standard Operating Procedures (SSOP) plans provide the documentation and protocol for ensuring critical control points are reached, and identified potential hazards are avoided.

⁵⁰ NMPAN's templates for HACCP and SSOP's are available, online:

<https://articles.extension.org/pages/27297/msu-model-haccp-plan-ssops-and-sops>

will certainly need some tailoring to Double S Meats operation and site, they will save Double S Meats time, effort, and expense in getting started.

Double S Meats may also need to update their existing HACCP and SSOPs within the cut-and-wrap facility, in any circumstances where this new venture would impact process or product. Before submitting an application for a Grant of Inspection, Double S Meats would likely reach out to their regional FSIS office and discuss their detailed plans for plant expansion. The USDA's FSIS also has a Small Plant Help Desk that provides a variety of online resources and information relevant to small plants trying to navigate GOIs and FSIS compliance.⁵¹

In addition to applying for a Grant of Inspection from the FSIS, Double S Meats will also have to obtain ***approval from the town of Tonasket to conduct slaughtering activities within the town boundaries***, where the facility is located. Double S Meats is zoned in the C-2 commercial district of Tonasket, in which slaughterhouses have ***historically been a prohibited use***. The following is an account of how Double S Meats and the project team worked to navigate this major potential barrier and identify whether it was even possible for this prohibition to be removed so that Double S Meats might be permitted to conduct slaughter at their site.

On June 12th, project manager, Alyssa Jumars, and owner of Double S Meats, Gavin Pratt, made a presentation to the Town Council of Tonasket. Jumars shared the study's preliminary findings about the need for improved access to USDA-slaughter services among livestock producers in Okanogan County. Jumars also described how Double S Meats was the only facility identified in the county as a viable possibility for improving access to USDA slaughter services. Pratt explained to the Town Council that in order for the project to move forward, the town would need to approve a change to the zoning use code, making slaughterhouses an allowable use. The Town Council demonstrated a palpable interest in future USDA capacities at Double S Meats, and motioned the Planning Commission to draft an amendment to the zoning use code.⁵²

On July 31st, Jumars met with the Tonasket Planning Commission to answer questions about a potential future slaughter facility at Double S Meats, and other relevant considerations regarding USDA-inspected slaughter plants. The Planning Commission asked for input on what types of conditions would help to ensure public safety, humane animal handling, mitigation of odors or other nuisances, environmental impacts, aesthetic impacts, and impacts to neighboring residents. The Planning Commission approved a draft amendment prepared by Town Planner, Kurt Danison, and scheduled a public hearing.

On August 21st, the Planning Commission conducted a public hearing. Ten residents of the town attended and were primarily concerned that the proposed amendment included two zoning use codes: C-2 and Mixed-Use. Following a public discussion and a concerted request by residents, the Planning Commission staff agreed to remove the Mixed-Use zoning code from the proposed amendment. Double S Meats is located in the C-2 district,

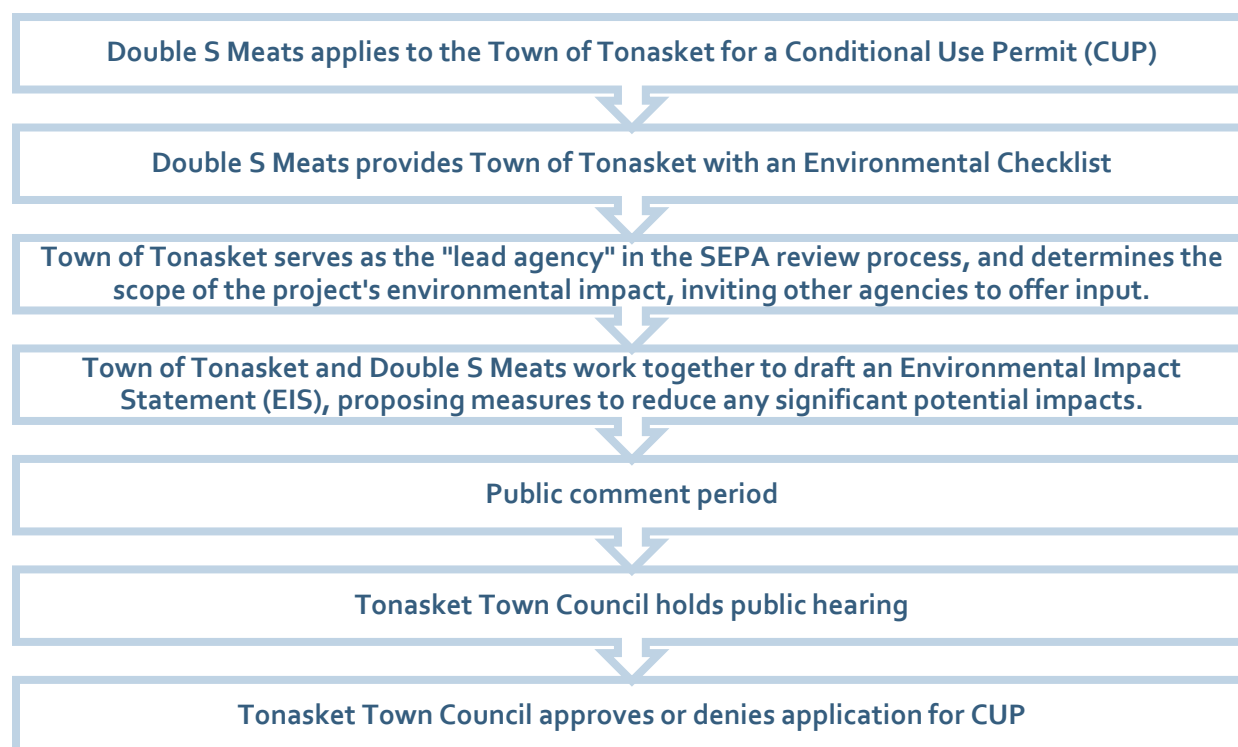
⁵¹ www.fsis.usda.gov/wps/portal/fsis/topics/regulatory-compliance/haccp/small-and-very-small-plant-outreach

⁵² USDA-certified slaughter proposed Omak Chronicle, June 19, 2018: www.omakchronicle.com/news/2018/jun/19/usda-certified-mobile-slaughter-unit-proposed/

and adjoins only one residential property. The adjoining residential landowner was in attendance and stated that he had no issue with the proposed zoning use change and would support a future application from Double S Meats for a Conditional Use Permit. At the close of the public hearing, the Planning Commission made a formal recommendation to the Town Council to approve the zoning use code amendment.

On September 25th, the Tonasket Town Council conducted a public hearing for the proposed amendment to the zoning use code. About a dozen residents attended the hearing, and several voiced concerns about offering a foothold to future, large-scale slaughterhouses inside the Town. An engaged discussion ensued regarding the likelihood of this possibility; and while several citizens of the town were not ultimately placated, all attending members of the Town Council articulated their reasoning for supporting the amendment and their confidence that the conditions established in the amendment would prevent abuses or the establishment of any large-scale slaughter facility in Tonasket. The Town Council voted unanimously to approve the zoning use code, to allow slaughter in the C-2 district, with a Conditional Use Permit (CUP).⁵³

The question of whether Double S Meats could even conceivably be permitted by the Town to conduct slaughter in Tonasket was answered with a resolute yes. However, Double S Meats would still be required to apply for a **Conditional Use Permit (CUP)**. This process would involve conducting a **SEPA environmental review**, and would also require another public hearing before the Town Council could approve a CUP.



⁵³ See Appendix H, Tonasket Town Ordinance 793

Once the Conditional Use Permit (CUP) were approved by the Tonasket Town Council, Double S Meats could confidently move forward applying for a Grant of Inspection (GOI). However, it can take many months before a GOI is awarded, so Double S Meats may want to consider beginning the application process as early as possible – potentially even before a CUP were awarded.

Summary

The study's work leads us to conclude that the potential feasibility of developing USDA-slaughter at Double S Meats is quite high. While there is a need for additional research, particularly regarding any required improvements to the existing septic system, the construction of a permanent docking station at Double S Meats is achievable and the permitting process is navigable. Had the Town of Tonasket not demonstrated such a willingness to adapt the zoning code, any further discussion of feasibility of USDA-inspected slaughter at Double S Meats would have been entirely mute. While Double S Meats must still apply to the Town for a Conditional Use Permit and successfully complete an Environmental Checklist and SEPA review, the study team is confident that there are no foreseeable roadblocks at this time. Because Double S Meats is already familiar with USDA oversight and process, the study team is also confident that Double S Meats will be able to successfully achieve a Grant of Inspection from the USDA.

4.0 FINANCIAL FEASIBILITY

In the previous discussion of technical feasibility, we explored the roadmap to a USDA-certified kill floor at Double S Meats: the site development needs, the Grant of Inspection process, and the process for getting approval from the Town of Tonasket. We also identified additional potential barriers and speedbumps, as well as some potential ways around them. The outstanding question remained: *could Double S Meats generate profit from conducting USDA-inspected slaughter at their facility?* And would the potential profit margin be large enough to encourage Double S Meats to incorporate USDA slaughter as a sustainable, long-term component of their business model?

The answer to this question, we discovered, was a **conditional yes**. When presented with the estimated potential demand for USDA slaughter services in Okanogan County, and the estimated marginal profit of conducting slaughter, the owner of Double S Meats was willing to consider the undertaking. While the potential marginal profit of adding USDA slaughter was sufficiently appealing, the risks were still too high for a small, family-run business. Double S Meats had already been considering the addition of USDA-inspected slaughter at their facility, but had concluded there was too much uncertainty with regard to the demand for USDA services. While the feasibility study and outreach process helped to illuminate potential demand for services, the demand estimates developed in the study process were well-informed assumptions. Cautionary lessons learned from the examples of other small, collaborative projects to bring USDA-inspected slaughter to rural communities suggest that predicted demand often takes many years and ongoing outreach effort in order to achieve.⁵⁴

In the end, Double S Meats determined that the undertaking was financially feasible, but *only if some of the uncertainties and financial risks could be mitigated*. In Section 5 of this report, we will describe the process of working with the Methow Conservancy Board of Directors to develop a plan for collaboration between Double S Meats and the non-profit land trust. The plan proposed ways to reduce some of the risk to the small business, in order to help them serve what has long been considered a "community need" for improved access to USDA-inspected services in Okanogan County.

4.1 METHODOLOGY

In the following section, we will describe the study's efforts to identify: *the costs of site and facility development; the fixed and variable marginal costs of conducting USDA-inspected slaughter; and the potential marginal profit to Double S Meats*. We reviewed diverse feasibility studies and existing templates for estimating profitability. While we found the available templates to be excellent references, we questioned their applicability to our region and our unique context. We ultimately contracted Shane Nelson, a regional consultant with 12 years of experience conducting

⁵⁴ Interviews: Tracy Smaczarz, Heritage Meats, regarding Puget Sound Processors, LLC and Nils Johnson, WSU Extension Agent and Board member of the CADC.

USDA-inspected slaughter using a MSU, to help us develop a more precise profit-and-loss scenario for USDA slaughter at Double S Meats.⁵⁵

4.2 COSTS OF SITE AND FACILITY DEVELOPMENT

Double S Meats already has many of the components required for a USDA-inspected slaughter plant. They have a USDA-inspected cut-and-wrap room, inspected refrigeration, and an office for the USDA inspector. They have sufficient potable water and power for existing and future operations. While refrigeration capacity would need to be expanded and wastewater handling may need to be increased, Double S Meats essentially has all of the components of a USDA slaughter plant, except the kill floor. This makes the cost of development uniquely low when compared to potential new plants explored in most other feasibility studies.

In most of the existing studies that explore the feasibility of constructing new, small-scale USDA plants in rural communities similar to Okanogan County, the costs for development range from \$1 to \$1.5 million, or more.^{56 57} These costs include the purchase of real estate; developing power, water, and sewer; excavation and site preparation; permitting; and plant construction. It's important to note that the operating budgets for these models also include significant debt burdens as a result of these large startup costs.

What is needed at Double S Meats is essentially just the kill floor. A small, but efficient kill floor capable of accommodating the estimated demand could be accomplished with approximately 1,000 square feet. Construction costs for USDA plants are generally \$300/square foot, including equipment.⁵⁸ The costs of a new kill floor at Double S Meats could be approximately \$300,000. The question posed as part of the study was: ***could Double S Meats support a construction loan for a kill floor, based on the anticipated demand for USDA-inspected slaughter?***

The projected marginal profit of slaughtering activities under the predicted, optimal annual production capacity of 500 beef, 300 pigs, and 400 lamb and goats could support a 30-year loan. On a 30-year schedule for a loan of \$270,000, with a fixed rate of 5%, annual payments would total \$17,388. Once the estimated labor costs, supplies, rendering fees, refrigeration costs, insurance, maintenance and repairs, surprises, and loan repayments are accounted for, Double S Meats could potentially generate approximately \$36,000 in profits from slaughter services alone. Additional income would be generated in the cut-and-wrap shop.

⁵⁵ Shane Nelson leased the MSU belonging to the Community Agriculture Development Center (CADC) of Colville, and operated the unit as S&K Meats until 2017. Shane Nelson has also consulted for regional plants, such as the LPCA in Odessa. His experience in our region proved indispensable.

⁵⁶ Food & Livestock Planning, Inc. Business Plan for a New Small USDA Inspected Meat Processing Plant to Serve Local Livestock Producers. USDA Rural Development, 2011.

⁵⁷ Niche Meats Processor Assistance Network. Options for Increased Processing Capacity in California's Central Coast Region. USDA Agricultural Marketing Service, 2015. (pg. 19)

⁵⁸ NMPAN resources: <https://articles.extension.org/pages/20445/plant-design-and-construction>

PROFIT & LOSS AT PREDICTED OPTIMAL DEMAND

Potential Revenue	Potential Profit	Labor	Supplies	Rendering	Refrigeration	Insurance	Maintenance	Surprises	Loan payments
\$107,500	\$36,392	\$40,320	\$2,625	\$2,250	\$2,000	\$2,400	\$2,625	\$1,500	\$17,388

**See Section 4.2 for a detailed discussion of these operating costs and projected marginal profits.*

While these estimates present a scenario where it should be possible for Double S Meats to construct a new, 1,000 square-foot kill floor it is important to recognize ***that the estimates of demand for USDA slaughter services are well-informed, but untested assumptions, and that this estimated peak demand would take several years to reach.*** The project team and advisory producers are optimistic that production could reach 500 beef, 300 pigs, and 400 lamb and goats by year eight, and possibly as early as year five.

However, if similar projects in other regions are any indicator, the first five years are often rough: operators experience a steep learning curve and expensive surprises; efficiency is low and labor costs are high; livestock producers don't raise as many animals for USDA slaughter as promised, and demand ramps up slowly. Overall, profit margins are slim in the beginning years. While projections for peak demand would indicate that supporting a loan on \$300,000 investment is feasible, supporting this debt burden in the first 5 years would be quite unrealistic. ***What was clearly identified was the need for an intermediary step, to test assumptions about demand and provide a "proof of concept."***

The intermediary step identified by the feasibility study process was the acquisition of a Mobile Slaughter Unit (MSU), by a non-profit entity. The non-profit entity would then to lease the MSU to Double S Meats, and Double S Meats would construct a docking site for the unit at their facility.

Exploring the potential for an MSU was not part of the original study objectives. Historically, many MSU projects have not been entirely successful: the inefficiencies inherent in moving the units farm-to-farm have rendered them unprofitable, and many of the MSU's that remain in use are permanently parked.⁵⁹ While some MSUs allow for the operator to conduct limited, on-board cut-and-wrap, most operators find that the space does not allow for efficient or profitable cutting. Successful MSU's are operated in conjunction with USDA-inspected, cut-and-wrap shops.

Currently, MSU's are available from two companies in our region: Trivan and Featherlite. Brand-new, these units cost between \$200,000 and \$250,000, depending on the on-board cut-and-wrap capabilities and refrigeration capacity. Trivan has begun manufacturing some units that are not designed to be mobile, and are available at a slightly reduced cost.

⁵⁹ For example, the CADC's unit in Colville, or the Pierce County Conservation Districts' unit that is leased to Puget Sound Processors, LLC.

Given that the cost of a new MSU is fairly close to the estimated cost of a more efficient, brick-and-mortar kill floor at Double S, a MSU did not initially seem like a good option.⁶⁰ However, it came to the attention of a member of the Producer Advisory Group in early May that a non-profit in Colville, Washington, had a used, USDA-inspected MSU that they were going to be putting up for sale. The non-profit, called the Community Agriculture Development Center (CADC), had purchased the unit 10 years ago from Trivan, with the help of funding from the USDA's Rural Business Development Grant program.

The CADC had leased the unit to a private operator, Shane Nelson, of S&K Meats. Nelson operated the MSU as a stationary unit, in conjunction with a small cut-and-wrap plant that was able to offer USDA-inspected cutting. The cut-and-wrap shop, Smokey Ridge Meats, ultimately changed ownership, and the new owners decided to fabricate their own MSU. Shane Nelson relinquished his lease with the CADC, and as a result, the CADC decided to put their MSU up for sale.

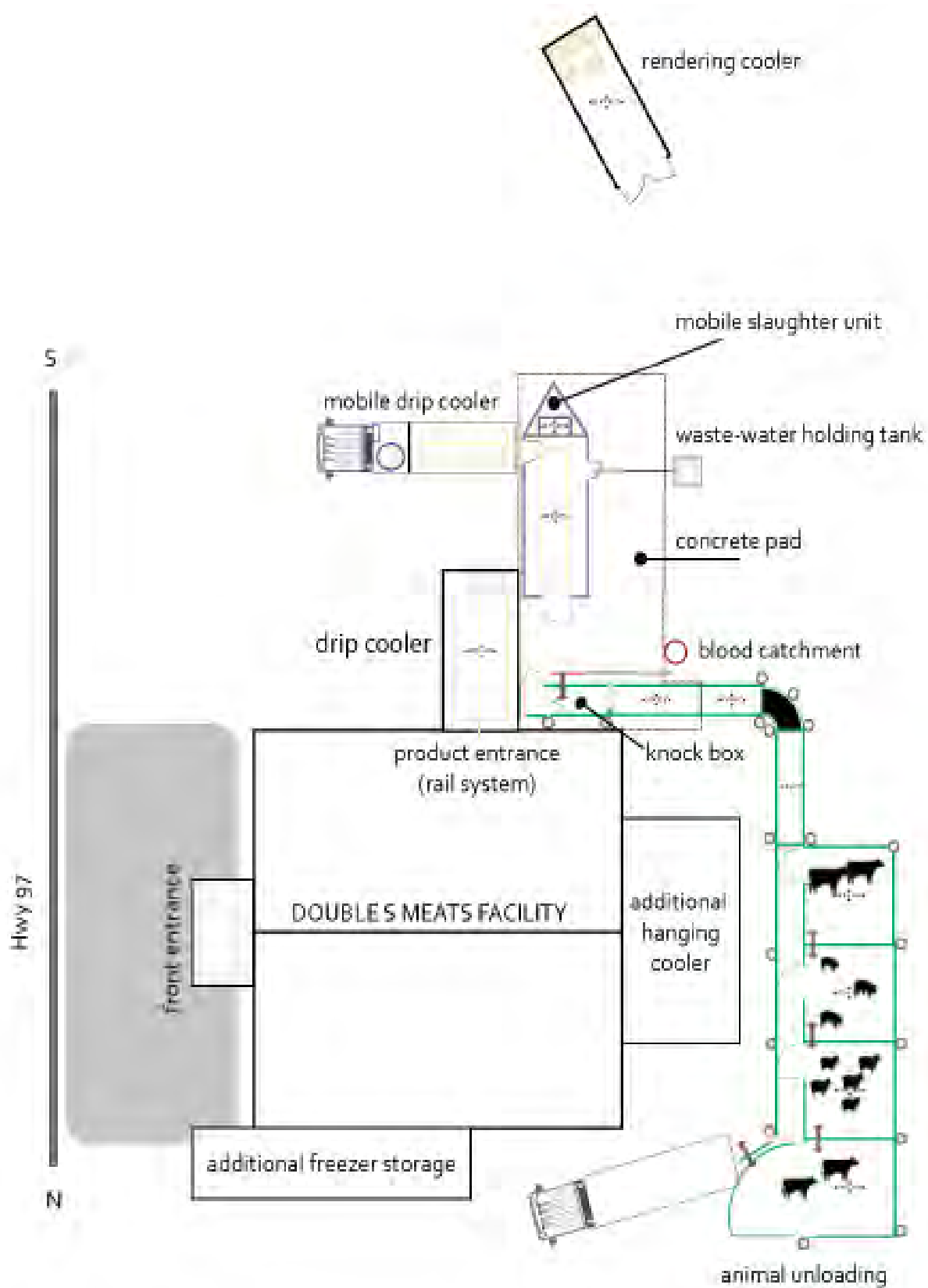
Between May and September, the CADC worked to develop an appraisal for the unit and a "Request for Proposal" process that would allow the MSU to be sold to another non-profit or private business with high potential for success in serving the needs of small-to-medium livestock producers. The feasibility study team worked to keep the CADC informed of the study progress, and to stay in touch with the CADC as their criteria for relocating the unit developed. In the meantime, the study team evaluated and explored a range of opportunities for collaboration between Double S Meats and several non-profit entities. In particular, a collaboration between Double S Meats and the Methow Conservancy began to emerge as a promising opportunity.

By June, the study work began to narrow, and focus on the feasibility of developing a permanent docking site for a MSU at Double S Meats. This seemed like both a promising opportunity and the only realistic scenario under which Double S Meats would be willing to undertake USDA-inspected slaughter, until assumptions about demand could be fully tested.

Site Cost Estimates

To establish site development costs for creating a permanent docking station for a MSU and to estimate slaughter costs, capacity, and profitability using a MSU, the study team hired Shane Nelson, the former operator of the CADC's unit. Nelson developed a site design to include animal holding pens, walkways, a squeeze chute and knock-box, an outdoor concrete kill-pad, wastewater holding, and blood catchment. Nelson was able to develop a site plan that maintained good work flow and kept animal holding pens and slaughtering activities screened from public view. Particularly challenging was accomplishing a design to meet these needs on the limited available footprint at Double S Meats. A more detailed discussion of each element is offered in the previous section, 3.1: *Infrastructure Needs*.

⁶⁰ A similar conclusion was made in another feasibility study by the Niche Meats Processor Assistance Network: Options for Increased Processing Capacity in California's Central Coast Region. USDA Agricultural Marketing Service, 2015.



The following are estimated costs of each component of the docking-station site development. These estimates would likely vary, depending on the extent to which used or discounted materials could be sourced.

SITE DEVELOPMENT COSTS

Animal holding pens (not covered*) and walkways	\$5,000 - \$7,000
Chutes and knock box	\$5,000
150 sqft rendering cooler	\$4,500
300 sqft drip cooler (located on existing concrete pad)	\$7,500
400 sqft, additional hanging cooler (used), rail system, concrete pad	\$10,000
1,500 gallon waste-water holding tank and sump pump	\$1,500
Excavation work and concrete for kill pad, including drainage	\$7,500 - \$10,000
Additional freezer capacity (used, tractor-trailer unit)	\$7,000
Total docking station development costs	\$42,000 - \$46,500

*While Shane Nelson suggested that animal holding pens need not be covered until the plant could afford the construction of covered shelters, the Producer Advisory Committee felt quite strongly that animal holding pens should be covered to improve animal comfort.

Anticipated MSU Costs

The typical cost of a new MSU is \$200,000 - \$250,000.⁶¹ However, the feasibility study proceeded in exploring the opportunity that developed to acquire a *used MSU* from the Community Agriculture Development Center (CADC), a non-profit in a neighboring county. Bruce Dunlop, who consults with TriVan and supplied the unit belonging to the CADC, estimated that the unit and associated mobile drip cooler might currently have a value of about \$50,000. The project team had hoped to be provided with the CADC's appraisal of the unit by late summer, however, by the time of writing, the CADC had not yet released their appraisal or formally announced their "Request for Proposal" process."

We also discovered through the course of the study, that a manufacturer in Colville was able to create a similar MSU for approximately \$100,000, though without any associated on-board or mobile refrigeration.

4.3 MARGINAL OPERATING COSTS AND MARGINAL PROFITS

Because this feasibility study assessed the opportunity to expand an existing facility, the operating costs evaluated were *marginal operating costs*, or operating costs in addition to Double S Meats' current operating costs. Most feasibility studies exploring small, brand-new plants must address operating costs in their entirety. In the case of this particular study, it would have been both irrelevant and inappropriate and to ask Double S Meats to share an overview of their complete business operating costs and profit margins, for the purposes of a publicly-available study.

⁶¹ More information about TriVan's custom fabrication of MSU is available, online: <https://trivan.com/mobile-processing-unit/>

Furthermore, most feasibility studies explore the profitability of USDA-inspected processing as a bundle of services that include both slaughter and cut-and-wrap. Because this study worked with an established cut-and-wrap plant, our assessment of feasibility focused primarily on the *marginal costs and benefits of slaughter activities only*.

However, the study team was able to estimate the potential marginal gross income to Double S Meats from the predicted increase in production in their cut-and-wrap shop, using available templates.⁶² It was estimated that Double S Meats could generate 10-12% profit on gross sales of cut-and-wrap. Additional profit to Double S Meats resulting from the additional demand for cut-and-wrap services as a result of USDA-inspected slaughter could approximate \$35-\$50,000, once optimum production capacity were reached (projected for year 8).

ESTIMATED CUT-AND-WRAP REVENUES

Livestock	Estimated demand	Cut & wrap fees (per lb)	Average hanging weight	Estimated cut-and-wrap fees (per animal)	Estimate revenue
Beef	500	\$0.85	700	\$595	\$297,500
Pork	300	\$0.75	180	\$135	\$40,500
Lamb	250	flat fee		\$60	\$15,000
Goat	150			\$60	\$9,000
Total Estimated Potential Cut-and-Wrap Revenue					\$362,000

Again, these are extremely rough estimates, and the precise marginal profit of increased cut-and-wrap production at Double S Meats is private information. The study focused on evaluating the marginal operating costs and potential profit of slaughter activities, and assumed that increasing cut-and-wrap production would necessarily increase profits to Double S Meats. A deeper exploration of profit margins for the plant as a whole would have been relevant only if slaughter proved to be a break-even activity. The question would then have been whether slaughter could increase cut-and-wrap profits sufficiently and justify the costs of conducting slaughter.

There was initially some concern that slaughter would prove to be a break-even activity. The Island Grown Farmers' Cooperative operates their MSU as a break-even business, in order to keep fees low for members of the cooperative. However, it should be noted that Island Grown Farmers Cooperative is one of the few MSU operators that continues to transport their unit farm-to-farm, and the costs associated with moving the unit (on the ferry system, to serve farms on multiple islands in Puget Sound) is quite large.

Puget Sound Processors (PSP), is another operator of a MSU in Washington State. Tracy Smaciarz, who is head butcher of Heritage Meats, a USDA cut-and-wrap facility that processes many of the carcasses slaughtered by PSP, indicated that slaughter with a MSU was a break-even activity.

⁶² Rodney Holcomb; Kyle Flynn; Phil Kenkel. Feasibility Template for a Small Multi-Species Meat Processing Plant. Oklahoma State University, 2011.

According to Tracy, who has helped PSP manage their MSU, the MSU's primary obstacles have been efficiency of production in the small operating space, and the slow buildup of demand for services, despite high initial interest among livestock producers.

However, Shane Nelson's experience leasing the CADC's MSU offered a more hopeful, contrasting example. Nelson attributes his success in operating a MSU profitably to making the unit stationary from day one, prioritizing efficiency of work flow, and using ingenuity to find lower-cost solutions to production needs. Interestingly, the majority of Nelson's clients were not cattle producers. Annually, he processed 400 beef and 1,000 head of pigs and sheep. While most cattle producers prefer to process beef during a small window in the fall (Sep-Dec) when their animals are "on the gain," lamb and pork producers are more willing to process during the shoulder seasons. ***Having producers willing to process during the shoulder season allows the operator to stay more consistently busy and more profitable over the course of a year.***

Based on the information provided by Nelson, we developed the following estimates for fixed operating expenses. While some of the expenses may certainly increase as production expands, it would be difficult to estimate these additional costs with much accuracy until the endeavor were underway. The following are reasonable estimates, based on the experiences of Shane Nelson.

ANNUAL FIXED COSTS

Rendering (\$150 per regularly scheduled pick-up)	\$2,250
Refrigeration (power consumption for drip cooler and expanded hanging cooler)	\$2,000
Insurance	\$2,400
Loan payments*	\$11,520

*Annual loan payments for an 8-year, \$76,000 loan with 5% interest would be approximately \$11,520. The loan would cover 80% of the cost of the MSU (at a discounted price of \$50,000) and site-development costs (\$45,000).

We also estimated variable expenses, which would depend on the number of days the MSU were in operation:

VARIABLE COSTS

Labor *	\$384/day
Supplies	\$25/day
Maintenance & Repairs	\$25/day

*Labor would include eight hours per day for a lead staff (\$22/hr) and a supporting staff member (\$18/hr), and including employer taxes.

To estimate days of operation, we used two different efficiency metrics. In Y1-Y3, we anticipated that production efficiency would be low, as staff at Double S Meats navigate the learning curve of USDA-inspected slaughter. In Y1-Y3, we anticipated that a team of two staff could slaughter and break 5 beef carcasses, or 12 pigs, or 15 sheep, or 12 goats in an 8-hour work day that would include cleanup. By Y4, we anticipated that staff should be able to process 8 beef, 15 pigs, 20 sheep, or 15 goats in one work day.

PRODUCTION EFFICIENCY: SLAUGHTER AND BREAKING

	Beef	Pork	Lamb	Goat
Y1-Y3	5/day	12/day	15/day	12/day
Y4+	8/day	15/day	20/day	15/day

Potential demand for USDA slaughter is estimated at 500 beef, 300 pigs, 250 lambs, and 150 goats. Reaching this demand and this level of production capacity would likely not be achieved until sometime between Y5 and Y8. Demand would likely be affected by the ability of Double S Meats to offer quality cutting and labeling, excellent customer service, and humane animal handling. Double S Meat's ability to offer value-added processing, especially to pork producers, may also be a factor in the demand for slaughter services.

The following is a projected timeline showing predicted days of operations, reflecting production efficiency and based on target levels of production for Y1-Y10. Days of operation reflect the number of days the MSU would be used, in order to process the estimated demand for each species of livestock. The schedule for estimated yearly demand is based on the anticipated demand of 500 beef, 300 pigs, 250 lambs, and 150 goats. Based on the accounts of Tracy Smaciarz and on information provided by Shane Nelson, we anticipate that production levels would reach the projected demand sometime between Y5-Y8. We would expect demand to increase by about 10% per year. This rate of growth is what Shane Nelson experienced during his 12 years of offering USDA slaughter through S&K Meats in the Colville area.

PROJECTED DEMAND SCHEDULE

	Beef	Pork	Lamb	Goat	Days of Operation
Y1	200	137	102	68	64
Y2	301	150	113	75	86
Y3	331	165	124	83	95
Y4	364	182	136	91	70
Y5	400	200	150	100	78
Y6	440	220	165	110	85
Y7	484	242	182	121	94
Y8	500	300	250	150	105
Y9	500	300	250	150	105
Y10	500	300	250	150	105

Based on the projected timeline of production growth, and on the variable and fixed costs for slaughtering, the following is a predicted profit-and-loss schedule for Y1-Y10. The following scenario is based on the assumption that a MSU could be acquired at a discounted rate of \$50,000, and that Double S Meats could acquire a favorable loan for both the unit and site development costs totaling \$95,000. Assuming that a bank would require the borrower to put forward 20%, or

\$19,000, and would be able to offer a rate of 5% interest over 8 years, annual loan payments on the \$76,000 of borrowed capital would be approximately \$11,520, for an 8-year period.

PREDICTED PROFIT AND LOSS SCENARIO: YEARS 1-10, DISCOUNTED MSU

	Potential Revenue**	Potential Profit	----- Estimated Expenses -----	Labor	Supplies	Rendering	Refrigeration	Insurance	Maintenance & Repair	Surprises	Loan Repayment
Y1	\$45,025	(\$2,370)		\$24,531	\$1,597	\$2,250	\$2,000	\$2,400	\$1,597	\$1,500	\$11,520
Y2	\$58,414	\$1,246		\$33,178	\$2,160	\$2,250	\$2,000	\$2,400	\$2,160	\$1,500	\$11,520
Y3	\$64,256	\$3,338		\$36,495	\$2,376	\$2,250	\$2,000	\$2,400	\$2,376	\$1,500	\$11,520
Y4*	\$70,681	\$20,435		\$27,054	\$1,761	\$2,250	\$2,000	\$2,400	\$1,761	\$1,500	\$11,520
Y5	\$77,750	\$24,445		\$29,760	\$1,937	\$2,250	\$2,000	\$2,400	\$1,937	\$1,500	\$11,520
Y6	\$85,525	\$28,856		\$32,736	\$2,131	\$2,250	\$2,000	\$2,400	\$2,131	\$1,500	\$11,520
Y7	\$94,077	\$33,709		\$36,009	\$2,344	\$2,250	\$2,000	\$2,400	\$2,344	\$1,500	\$11,520
Y8	\$107,500	\$42,260		\$40,320	\$2,626	\$2,250	\$2,000	\$2,400	\$2,625	\$1,500	\$11,520
Y9	\$107,500	\$53,780		\$40,320	\$2,625	\$2,250	\$2,000	\$2,400	\$2,625	\$1,500	--
Y10	\$107,500	\$53,780		\$40,320	\$2,625	\$2,250	\$2,000	\$2,400	\$2,625	\$1,500	--

*In Y4, production efficiency is expected to increase (resulting in lower labor costs and fewer days of operation).

** Estimated revenues are based on slaughter fees of **\$110 per beef** and **\$75 per small animal** (sheep, pig, or goat).

These projections would suggest that it should be financially feasible for Double S Meats to utilize a bank loan to purchase a heavily-discounted MSU. However, in the event that the used unit belonging to the CADC could not be acquired for use at Double S Meats, the following is a scenario in which Double S Meats might utilize a bank loan to purchase a new, custom-fabricated unit for \$100,000. Double S Meats would still need the loan to cover the \$45,000 in site development costs, as well. Assuming a loan amount of \$120,000 (20% of \$150,000, or \$30,000, would likely be required by the lender to be put forward by the borrower), and a favorable rate of 5% over an 8-year period, the annual loan payments would be \$18,240.

PREDICTED PROFIT AND LOSS SCENARIO: YEARS 1-10, New MSU

	Potential Revenue**	Potential Profit	----- Estimated Expenses -----	Labor	Supplies	Rendering	Refrigeration	Insurance	Maintenance & Repair	Surprises	Loan Repayment
Y1	\$45,025	(\$9,090)		\$24,531	\$1,597	\$2,250	\$2,000	\$2,400	\$1,597	\$1,500	\$18,240
Y2	\$58,414	(\$5,473)		\$33,178	\$2,160	\$2,250	\$2,000	\$2,400	\$2,160	\$1,500	\$18,240
Y3	\$64,256	(\$3,382)		\$36,495	\$2,376	\$2,250	\$2,000	\$2,400	\$2,376	\$1,500	\$18,240
Y4*	\$70,681	\$13,715		\$27,054	\$1,761	\$2,250	\$2,000	\$2,400	\$1,761	\$1,500	\$18,240
Y5	\$77,750	\$17,725		\$29,760	\$1,937	\$2,250	\$2,000	\$2,400	\$1,937	\$1,500	\$18,240
Y6	\$85,525	\$22,136		\$32,736	\$2,131	\$2,250	\$2,000	\$2,400	\$2,131	\$1,500	\$18,240
Y7	\$94,077	\$26,989		\$36,009	\$2,344	\$2,250	\$2,000	\$2,400	\$2,344	\$1,500	\$18,240
Y8	\$107,500	\$35,540		\$40,320	\$2,626	\$2,250	\$2,000	\$2,400	\$2,625	\$1,500	\$18,240
Y9	\$107,500	\$53,780		\$40,320	\$2,625	\$2,250	\$2,000	\$2,400	\$2,625	\$1,500	--
Y10	\$107,500	\$53,780		\$40,320	\$2,625	\$2,250	\$2,000	\$2,400	\$2,625	\$1,500	--

What is important to note about this scenario is that, while feasible, it would require Double S Meats to have \$30,000 in available cash at project inception. Moreover, cash-flow would not be positive until Y5 (see chart below), and Double S Meats would need to have an additional estimated \$17,945 in liquid capital to get through Y1-Y4.

PREDICTED CASH FLOW

	Potential Revenue	Potential Profit	Cash Flow
Y1	\$45,025	(\$9,090)	(\$9,090)
Y2	\$58,414	(\$5,473)	(\$14,564)
Y3	\$64,256	(\$3,382)	(\$17,945)
Y4	\$70,681	\$13,715	(\$4,231)
Y5	\$77,750	\$17,725	\$13,494
Y6	\$85,525	\$22,136	\$35,630
Y7	\$94,077	\$26,989	\$62,620
Y8	\$107,500	\$35,540	\$98,160
Y9	\$107,500	\$53,780	\$151,940
Y10	\$107,500	\$53,780	\$205,720

While these projections would suggest that it could be financially feasible for Double S Meats to utilize a bank loan to purchase a MSU and conduct necessary site development, it was already established early in the study process that the uncertainties regarding demand are too high for this small, family-run business to be willing to on take this kind of risk. From the beginning, the feasibility process has ***considered access to USDA inspected livestock processing services as a community need, rather than simply as a service provided by a private business.*** That is why exploration of possible opportunities to meet the identified demand for USDA processing have included research into the feasibility of cross-sector collaboration with non-profit entities. Much of the feasibility study efforts focused on devising strategies that would reduce the burden of risk on Double S Meats, while serving the charitable mission of a participating non-profit entity.

5.0 OPPORTUNITIES FOR CROSS-SECTOR COLLABORATION

Because the need for improved access to USDA-inspected livestock processing was considered a community need by the project team, much of the effort in the study involved developing a strategy to include support from the non-profit sector in any potential future implementation.

We were fortunate to be able to look to several successful examples in Washington State, of non-profit, community organizations that played a pivotal role to improve access to USDA-inspected livestock processing for small farms their region:

- The **Island Grown Farmers' Cooperative** is a nationally-recognized example of an extremely successful, community-driven effort to improve access to USDA-inspected processing for small farms. The IGFC operates a MSU that offers on-farm, USDA-inspected slaughter on multiple islands in the Puget Sound. The MSU is transported, by ferry, to each member farm. Originally, the MSU belonged to the **Lopez Community Land Trust**, which leased the unit to the farmer cooperative for approximately 10 years.⁶³ After 10 years, the cooperative purchased the unit from the community land trust, at fair-market value.
- The non-profit **Community Agriculture Development Center (CADC)** was another successful example in nearby Stevens County. The CADC and the Stevens County WSU Extension collaborated to purchase an MSU, with the help of a USDA Rural Business Development Grant. The MSU was then leased for nearly 12 years to a private operator: Shane Nelson, of S&K Meats. Nelson, however, opted not to operate the MSU as a mobile unit, for the sake of efficiency. Instead, Nelson parked the unit and conducted slaughter in partnership with a cut-and-wrap shop that could offer USDA-inspected cutting. Nelson leased the unit on a per-animal basis from the CADC, rather than paying a fixed lease rate.
- The **Pierce County Conservation District (PCCD)** currently owns a MSU and leases it to a private operator, Puget Sound Processors (PSP), on a 5-year lease agreement. Initially, farms in Pierce County had hoped to develop a cooperative, similar to the Island Grown Farmers' Cooperative, to conduct USDA-inspected, on-farm slaughter in the region. However, cooperative management proved extremely challenging, and the expense and inefficiency of moving the MSU farm-to-farm proved prohibitive. Currently, the unit is operated by a private operator, PSP, and is parked at a permanent docking station. PSP works in collaboration with a USDA-inspected cut-and-wrap shop: Heritage Meats, in Rochester.

**For additional details about IGFC and PCCD, please see Appendix F, for Kathryn Quanbeck's summary report.*

Initially, all three feasibility study partners -- the Okanogan Conservation District, the TwispWorks Foundation, and the Methow Conservancy -- indicated a willingness to play a role in future project implementation. When the opportunity to bid for the CADC's MSU developed, and the idea that a local non-profit could own the unit and lease it to Double S Meats began to get some traction, both the TwispWorks and Methow Conservancy Boards of Directors were very eager to explore this opportunity in further detail.

⁶³ Interview: Liz Scranton, former Board President, Lopez Community Land Trust.

Presentations were made in June to the Boards of Directors of TwispWorks and the Methow Conservancy. Project manager Alyssa Jumars gave a summary of the outreach and survey process that had been conducted in the spring; provided an initial summary of survey results; described the work to identify feasible opportunities to meet the identified demand; and explained the initial work to assess the market, technical, and financial feasibility of an expansion of Double S Meats.

At their July meetings, both the TwispWorks and Methow Conservancy Boards of Directors discussed potential involvement in the opportunity to acquire the CADC's MSU, and lease it to Double S Meats. Both Boards began to develop an extensive list of questions. Primarily, the Boards wanted to better understand the project impact; how much programmatic and organizational support would be required; how much it would cost to acquire the MSU and offer organizational support during the pilot project; what the risks would be; and how a collaboration between TwispWorks, the Methow Conservancy, and Double S Meats might be structured. During July and August, the feasibility study team worked to provide answers to these questions. Ultimately, the TwispWorks Board determined the organizational, programmatic, and financial support they could offer towards project implementation was limited -- not for lack of interest, but because of multiple existing commitments and programs that would not allow for the organization to take on additional projects at the time. As a result, the feasibility study team began to develop a detailed proposal, focused for the Methow Conservancy Board of Directors.

Project manager Alyssa Jumars formed a Methow Conservancy Task Force, consisting of two board members of the Methow Conservancy and three additional Methow Conservancy staff⁶⁴ to help develop a formal proposal to the Board of Directors. The proposal suggested that the Methow Conservancy bid to purchase the CADC's MSU, then lease the MSU to Double S Meats. The Task Force would ultimately propose that the Methow Conservancy initiate a 5-year project and play a supporting role to ensure that livestock producers were well-served. The Task Force recommended that Double S Meats be offered the opportunity to purchase the MSU from the Methow Conservancy, at fair-market value, at the end of the 5-year project.

The proposal clarified that Double S Meats would be the sole operator of the MSU, and that the Methow Conservancy would not be involved in or responsible for the day-to-day operation of the unit. The Methow Conservancy's role would be holding the lease and offering programmatic support that might include:

- gathering feedback from livestock producers and ensuring their needs were heard and addressed;
- offering workshops to farmers and ranchers to help expand their niche market opportunities for USDA-inspected product;
- organizing producer meetings to help with long-term planning and scheduling; and
- helping Double S Meats build a user-friendly online calendar to further tackle seasonality issues.

In addition to the day-to-day operation of the MSU, Double S would also be responsible for applying to the USDA for a Grant of Inspection; securing any additional local permits; conducting

⁶⁴ Mary Johnston, Methow Conservancy Board President; David Schooler, Board Secretary; Jason Paulsen, Executive Director; Jeanne White, Land Program Manager; Sarah Brooks, Associate Director.

site development to create a permanent docking station for the MSU; and conducting any repairs or maintenance on the MSU.

The proposal suggested that Double S Meats pay a variable lease rate to the Methow Conservancy, based on the number of animals processed in the MSU. Rather than pay a fixed annual lease, Double S would essentially pay a use fee, for example, \$12/beef, \$4/pig, and \$2/sheep or goat. This pay-by-use model was used by the CADC of Colville, and was preferred by Double S Meats. A variable lease rate would help the operator weather the leaner shoulder seasons, and would not require payment when the unit was not generating much revenue. The Task Force further recommended that Double S Meats be offered a 5-year, \$30,000, low-interest AFR loan for some of the costs associated with site development.⁶⁵

Ultimately, the Methow Conservancy Board would approve a resolution at the September Board Meeting, committing resources and staff time to the project. To convince the Board, the Task Force needed to carefully address potential concerns for the organization. The Task Force met frequently between the July and September Board meetings, and worked to evaluate a number of potential concerns for the non-profit organization, including liabilities associated with owning piece of equipment such as a MSU; the costs of acquiring the unit and implementing a 5-year project; the alignment of the potential project's impact with the organization's charitable purpose; and the risk of impermissible private benefit incurred by a collaboration with a private business that might threaten the Methow Conservancy's tax-exempt status.

5.1 COSTS AND ORGANIZATIONAL COMMITMENT

The Task Force evaluated the project costs; organizational commitment; and opportunity costs to the organization of using funds and staff resources that would not be available for other projects.

Based on information provided by Bruce Dunlop, the Task Force estimated that the cost of acquiring the unit would be approximately \$50,000, and that an additional \$30,000 should be offered as a loan to Double S Meats for site-development work. The Task Force further recommended that \$6,000 be budgeted for legal counsel and programming expenses. Including staff time, the estimated project cost would be \$108,000 to the organization.

The expected project revenues from lease payments over the course of five years were approximately \$24,000, based on a per-animal use fee of \$12/beef, \$4/pig, and \$2/sheep or goat. Additionally, the Methow Conservancy would expect to recuperate approximately \$32,000 in loan principal and interest payments. At the end of the project, the Methow Conservancy would also expect to recuperate approximately \$30,000 in the sale of the MSU. The primary, unrecoverable cost to the organization would be staff time, totaling approximately \$22,000. Initially, staff time would be expected to be high, and would decrease in subsequent years: 200 hours in Y1; 150 hours in Y2; 125 hours in Y3; 100 hours each in Y4 and Y5.

⁶⁵ The Applicable Federal Rate (AFR) is set by the IRS every month, and mandates a minimum interest rate to be collected for short, mid, and long-term loans. A five-year loan would be considered a mid-term loan, and at the time of writing was 2.82 to 2.86%, depending on the compounding schedule. <https://www.irs.gov/pub/irs-drop/rr-18-23.pdf>

5.2 IMPACT AND ALIGNMENT WITH CHARITABLE PURPOSES

In addition to evaluating the costs of the potential project, the Task Force also evaluated the benefits, and worked to clarify how the project outcomes aligned with the Methow Conservancy's charitable purpose.

Because the Methow Conservancy's charitable mission is defined by protecting conservation values within the geographic area of the Methow Valley watershed, it was important to evaluate how the potential project would impact farmers and ranchers in the Methow Valley, specifically. While the feasibility study had focused on the impact of improved access to USDA-inspected processing to producers, county-wide, the Task Force wanted to know more about the impact to Methow Valley farms.

ANNUAL IMPACT TO METHOW VALLEY FARMS	beef	pigs	sheep	goats
Numbers of surveyed farms raising primarily:	15	2	2	2
Animals currently being processed USDA	60	25	100	--
Additional animals to be raised, for established USDA markets	10	50	100	--
Animals processed custom, likely conversion to USDA	30	--	30	--
Animals sold live, likely preference for USDA slaughter	--	--	--	215
Estimated Methow Valley demand for USDA processing	100	75	230	100
Estimated value of USDA-inspected meat, to producers	\$250,000	\$45,000	\$40,250	\$32,250
				\$367,500

The Task Force then worked to articulate *how this positive economic impact to Methow Valley farmers and ranchers would further the charitable purposes of the Methow Conservancy*. As a conservation land trust, the Methow Conservancy's charitable purpose is to acquire, hold, preserve and dispose of land, easements, leases, or other improvements to land, with an emphasis on the lands in the Methow Valley, for the purposes of: protecting wetlands, riparian areas, forests, streams, lakes, ponds, scenic areas, and ecological, historical, or other natural features; **preserving agricultural areas**; providing community trail systems, future park lands and recreational facilities; providing areas for the education of the public in the principles of conservation of historic and natural areas, and for the preservation of interest therein.⁶⁶

The Task Force determined that helping farms and ranches be economically successful was an important tool for *keeping land in working agriculture, and thereby protected from development*. The Task Force also noted that of the 8,700 protected acres under conservation easement with the Methow Conservancy, 1,700 acres were working, dryland range and another 1,300 acres were irrigated pasture or hay fields. That meant that 3,000 of the Methow Conservancy's conserved acres, or 34% of easements, supported livestock production in some way. It was also noted by the Task Force that a 2006 Community Needs Assessment⁶⁷ concluded that preserving a *working*

⁶⁶ Nonprofit Articles of Incorporation of the Methow Valley Land Trust. Department of the Secretary of Washington State, September 1997.

⁶⁷ Methow Conservancy, Community Needs Assessment 2.0. 2014.

agricultural landscape was perceived by the community as a critical part of the Methow Conservancy's work. In the Methow Conservancy's ongoing effort to better understand the needs of valley farmers and ranchers and to offer meaningful support, it had become clear that the farming community's needs were very diverse. The Task Force concluded that offering assistance to livestock producers through improved access to USDA processing might be one of the singularly most impactful ways to support the economic success of the greatest number of agriculturalists.

5.3 RISKS TO THE ORGANIZATION

The Task Force spent the bulk of efforts evaluating the diverse risks of the proposed project. As a conservation land trust, the Methow Conservancy's primary activities are the protection of land from development, through the acquisition of permanent "conservation easements" on private properties. Conserved lands remains under private ownership, but the Methow Conservancy essentially purchases the development rights from the landowner: ensuring that prime agricultural lands or prime habitat areas remain intact, in perpetuity. The bulk of the Methow Conservancy's work has involved acquiring conservation easements, and monitoring them in perpetuity. In recent years, the organization has increasingly played a role as a community facilitator in diverse scenarios that foster a community ethic of conservation and appreciation for the natural and agricultural environments.

Undertaking to own and lease a slaughter unit, however, was undeniably outside of the organization's "comfort zone." While the Board of Directors was extremely receptive to the idea and quickly understood the potential impact to farms and ranches in the Methow Valley, they naturally had a variety of concerns, and wanted to fully evaluate the risks. The two primary areas of concern were the *liability* of owning slaughter equipment and any *impermissible private benefit* that might arise through a collaboration with a for-profit business.

Liability

The Task Force was concerned with public and worker safety, food-safety liabilities, and additional liabilities and potential expenses associated with ownership of an asset like a MSU. In addressing these concerns, the project manager was able to draw on case studies from existing MSU or small-scale USDA slaughter plant projects. In particular, the Pierce County Conservation District (PCCD), which owns and leases a MSU to Puget Sound Processors, LLC, was able to provide a copy of their lease template. The template proved indispensable for the Task Force's work, and helped to address many of these concerns.

The PCCD's lease document offered a template for clearly establishing that the Leasee would be the sole responsible party for the operation of the MSU. The Leasee, or Double S Meats, would hold harmless the Lessor. The Lessor, or the Methow Conservancy, would not be involved in or liable for the day-to-day operation of the unit. The collaboration between Double S Meats and the Methow Conservancy would not be a formal partnership, but simply a lease arrangement. The Methow Conservancy would not share any of the profits, losses, or liabilities of operating the MSU with Double S Meats.

With regard to public safety, it was determined that Double S Meats should carry their own liability insurance, and that the Methow Conservancy would require proof of the insurance as part of the lease agreement. In accordance with Washington State Law, Double S Meats would carry L&I insurance for their employees, to cover injury in the case of a workplace accident. With regard to food safety, Double S Meats would similarly provide proof of product liability insurance and assume sole responsibility for food safety measures and product liability. Furthermore, it was noted that the USDA's Grant of Inspection (GOI) would be held by the operator of the MSU, Double S Meats. Under a GOI, the USDA requires and actively oversees the implementation of a Hazard Analysis Critical Control Point (HACCP) plan, as well as Sanitation Standard Operating Procedures, (SSOP) which would help to mitigate food safety risks.

Lastly, with respect to potential expenses and liabilities of owning and maintaining a MSU, the Task Force recommended that Double S Meats be responsible for all maintenance and repair, and that Double S Meats be required to list the Methow Conservancy as an additional insured for the MSU under Double S Meat's private property insurance policy. Methow Conservancy staff would conduct a quarterly inspection, to ensure that the MSU was well maintained, and the lease agreement would articulate a process for enforcing repairs and maintenance.

Impermissible Private Benefit

Another primary concern of the Task Force was the potential risk of creating impermissible private benefit for a private business, thereby jeopardizing the Methow Conservancy's tax-exempt, charitable status. Collaborations and partnerships between non-profit and for-profit entities are common, however, this was uncharted territory for the Methow Conservancy. The Methow Conservancy Board wanted to know: ***under what conditions was it permissible for a non-profit, charitable organization to assist a for-profit business in a venture that would allow the business to generate additional profit?***

After researching and consulting with legal counsel, the Task Force determined that private benefit is permissible in circumstances where the charitable purpose of a non-profit entity cannot otherwise be accomplished. In these circumstances, the private benefit is considered ***incidental*** and ***necessary*** as a means to furthering the charitable mission of the organization. In this case, the activity or project must also be ***substantially related*** to the charitable purpose of that organization. The Task Force determined that a strong case could be made to show the charitable activity of increasing access to USDA-inspected slaughter and supporting the viability of small farms could not be accomplished without some amount of necessary and incidental benefit to Double S Meats.

Of critical importance in collaborations with for-profit entities is careful ***documentation***. The non-profit must document the project's justification and alignment with the charitable purposes of the organization. Documentation would include Board resolutions, any supporting materials, lease agreements, memorandums of understanding, etc. The Task Force further determined that documentation should include a narrative describing the context of limited opportunities for economic development in Okanogan County; that Double S Meats had proven the only likely candidate for USDA-inspected slaughter; and why it was unlikely that Double S Meats would undertake an endeavor to offer USDA slaughter without some assistance. This documentation

would help clarify the incidental and necessary nature of the potential private benefit to Double S Meats.

In these materials, the Methow Conservancy would also want to demonstrate that all arrangements made with the for-profit entity were *arm's length* and represent *fair-market value*. Fortunately, the Methow Conservancy could refer to the examples of the Lopez Community Land Trust, the Pierce County Conservation District, and the Community Agriculture Development Center of Colville to demonstrate that the lease rate offered to Double S Meats for the MSU would be within an established, fair-market value. By articulating in a lease agreement that Double S Meats would be solely responsible and liable for the day-to-day operation of the MSU, the Methow Conservancy could demonstrate an arms-length relationship.

The Task Force further clarified that in the case of the Methow Conservancy, a potential future project conducted with Double S Meats should be referred to as a *collaboration* -- not a formal partnership. A partnership might imply that the Methow Conservancy shared in profits, losses, or liabilities with Double S Meats. Formal partnerships with for-profit entities require significant additional documentation and legal counsel to demonstrate that the charitable purposes of the non-profit organization cannot be subordinated by private interests or liabilities.

There was also some concern from the Methow Conservancy Board about the potential need to report "Unrelated Business Income Tax" (UBIT) to the IRS, for income generated by the MSU lease fees. Generally, non-profits are exempt from paying taxes on loan interests or income from the lease of real property -- but not exempt from taxes on income from the lease of private property, such as equipment. In this scenario, income generated from the lease of a MSU would not automatically be tax-exempt. However, if the activity were *substantially related* to the charitable purposes of the organization, income generated from the lease would be tax exempt. After conferring with legal counsel, the Task Force determined that a strong argument could be made and documented that the activity of leasing a MSU was substantially related to the charitable mission of the Methow Conservancy, and that UBIT would not apply.

Lastly, the Task Force wanted to understand any additional considerations for a non-profit wishing to offer a loan to a for-profit business. Under what conditions would it be permissible to offer a low-interest loan to Double S Meats for site development? Legal counsel suggested that offering a loan to Double S Meats was permissible, so long as the loan rate was not below the IRS minimum mandated Applicable Federal Rate (AFR). Considering how the loan would be secured was also important. The Task Force suggested that, as much as possible, the loan be made for items, such as refrigeration units, corral panels, the knock box, or holding tank, that could be sold in the worst case scenario, to recuperate the loan. It was also suggested that a filing be made under the state's Uniform Commercial Code, to record the loan.

The Methow Conservancy Board had a few additional questions: *Had other land trusts or organizations in the region undertaken similar projects? What would the optics of this kind of project be?*

The Board was heartened to know that there were several other, successful regional efforts to increase producer access to USDA-inspected livestock processing, and that other land trusts in the

West had already explored diverse ways to support farmers and ranchers producing farm-raised meats. In addition to the projects lead by the Lopez Community Land Trust (LCLT), the Community Agriculture (CADC), and the Pierce County Conservation District (PCCD), a few land trusts and conservation groups in the West had also been involved in brand development, proving that this was not entirely new territory for conservation land trusts. The *American Prairie Reserve* had developed a brand for conservation-minded ranchers in Montana, called Wild Sky Beef. The *Sierra Foothills Conservancy* in California had developed a marketing and sales program for their conservators called Sierra Lands Beef.

The Board was concerned with how the public might perceive the Methow Conservancy's involvement in a slaughterhouse project. However, the Board was confident that with some careful story telling, the community and membership could be led to understand that the slaughterhouse project would:

- Allow small, family farms and ranches to expand and grow into new market opportunities;
- Support the economic success of small farms, thereby keeping more land in working agriculture and protecting it from development;
- Support small farms that typically produce farm-raised meats with the highest standards of sustainability, compassion, and humane handling;
- Ensure humane slaughter, under strict USDA oversight;
- Offer local consumers increased opportunities to support small farms.

Summary

The Methow Conservancy, while extremely eager to see small farms benefit from improved access to USDA-inspected livestock slaughter, had to carefully consider the extent to which a non-profit organization could offer support to a private, for-profit business. After considerable research and due diligence, the organization determined the conditions under which the Methow Conservancy could collaborate with Double S Meats. The organization further evaluated other risks, including liability issues, financial risk, mission creep, and public perception. The examples of organizations like the LCLT, the CADC, and PCCD were particularly helpful in shedding light on many of these considerations. Ultimately, the Methow Conservancy Board of Directors could agree that this project represented a rare and exciting opportunity to address a long-standing community need, and to support the economic vibrancy of small farms and working agricultural landscapes in the region.

6.6 POTENTIAL BARRIERS TO SUCCESS

The study's review of technical, market, and financial feasibility indicates that an appropriately-sized, strategically-implemented endeavor to serve livestock producers of Okanogan County and neighboring regions could be successful. It should be noted that there are many potential barriers to success, the full impacts of which are difficult to predict in the planning stage. We have carefully considered the uncertainty of demand estimates and have developed an incremental strategy for testing demand that would allow Double S Meats to determine whether future investment in a permanent kill floor is feasible. However, several potential barriers and uncertainties merit further consideration, as any potential project moves forward. In particular, *access to skilled labor, seasonality of demand, variability and specificity of producer needs, the challenges of maintaining producer trust, future competition, lack of opportunities to add value to byproducts, and proximity to end consumers* may limit the opportunities for future success.

Access to Skilled Labor

From conversations with small meat plants across our region, we know that finding labor with the willingness to do the strenuous and demanding work of butchering or slaughtering may be one of the biggest challenges to future success.⁶⁸ Double S Meats may need to consider looking beyond the local workforce, and actively recruit skilled labor to meet their increased labor needs. Suggestions made to the study team include recruiting butchers through the Northwest Meat Processors Network; from the Tri Cities area in southeast Washington, where the state's industrial meat packing plants are located; from Greeley, Colorado, which has an exceptionally high concentration of skilled butchers; or from the nearby Brewster area, which has a large Hispanic population that is mostly engaged in orcharding, but that might be present promising opportunities for recruitment. Future efforts could also include collaboration with a Veterans' training program or Okanogan County's WorkSource program, to develop an apprenticeship or training program for butchers.

Seasonality

The seasonality of harvest is the number-one challenge for small meat plants. Especially in a region with harsh winters and significant beef production, this challenge is even greater. Most producers want to harvest in the fall and avoid the great expense of feeding animals through the winter. For beef producers, it is also important to harvest cattle while they are "on the gain." Cattle struggle to gain weight during the hot summer months, and it's both challenging and expensive to keep cattle gaining weight during the winter and early spring, when pasture is not available. As a result, meat processors in the region are extremely busy between September and December. But by mid-winter, demand for services tapers off, and work can actually be quite slow.

While producers express frustration with the unavailability of appointments, small meat plants often express frustration that producers all want to schedule at the same time. For small meat plants, maintaining profitability during the shoulder season is a struggle. Double S Meats, for example, continues to pay employees for a full eight-hour day, even though there are often not eight hours of work. However, they recognize that if they offered employees fewer hours, or laid them off temporarily -- they might lose that skilled labor permanently.

⁶⁸ Interviews: Shane Nelson, Tracy Smaczarz, Dr. Paul Kuber.

Offering USDA-inspected services should help to alleviate seasonality, to a degree. Producers with established markets for USDA product are more likely to need their farm-raised meat products to be available all year long, whereas producers with custom-exempt markets have typically trained customers to expect product in the fall.

To address seasonality and extend production into the shoulder season, Double S Meats will want to consider how to best serve producers of pork, lamb, and goats. Pork producers typically have the greatest flexibility to harvest at all times of the year. However, pork producers generally desire smoking and curing services. Double S Meats has expressed hesitation to process value-added products that require additional HACCP plans, such as smoked or cured, ready-to-eat meats. However, Shane Nelson has suggested that hams and bacons could be partially-smoked and clearly labeled as **not** fully-cooked, thus avoiding some of the requirements associated with cured meats. That said, our survey indicated that many producers would like to process their farm-raised meats as jerky, pepperoni, and other ready-to-eat cured meats – so not capturing this demand represents a significant, lost opportunity. Our outreach further indicates that the majority of pork producers (75% of respondents) have niche markets and heritage breeds that require scald-and-scrape services, which allow for pork to be de-haired and processed with the skin on. The closest facility that offers USDA-inspected scalding services is McCary's Meats, in Mesa, Washington – nearly 200 miles, one-way from most points in Okanogan County. Thinking strategically about how to offer services that are desired by pork producers could offer a competitive advantage and opportunities to acquire steady business during the shoulder season. Our outreach leads us to believe that there is a strong network of *small-scale, pasture-raised, heritage pork producers* in the state that actively share information, resources, and ideas – and that *a facility that could actively work to meet their needs would pull producers from across the entire state.*⁶⁹

Lamb and goat producers generally like to avoid winter feeding costs, when possible; however, our outreach indicates that these producers *are willing to be flexible, so long as they can plan ahead with certainty and be assured of getting slaughter dates.*

An idea that has developed over the course of the study process is that Double S Meats could create an online calendar, to allow producers to see availability of future slaughter dates. Scheduling could conceivably be done online – or at the least, producers could look at the live calendar, and then call the facility to schedule an appointment. Double S Meats could also offer discounts for producers willing to process during the shoulder season. Producers willing to wait until after the fall harvest would expend more on feed costs, but would also spend less on processing. By developing an online calendar that displayed available slaughter dates and variable pricing, producers could make informed decisions about the costs and benefits of processing during the shoulder season. An online calendar would also be a powerful visual tool to educate producers about the need to schedule well in advance.

⁶⁹ Interviews: Deb Jones-Schuler, Bill Kresge.

Diverse Producer Needs

Navigating the diversity of producer needs and desires is another perennial challenge for small meat plants. Small farms serving niche markets can have very specific requests, some of which can be extremely time-consuming for the meat processor to fulfill. It will be important for Double S Meats to find a balance between offering specialized cut sheets, and ensuring efficient and profitable production. WSU Livestock Extension agent Dr. Paul Kuber suggested that producers could be invited to participate in a process to develop two standard cut sheets for each species, that would serve the greatest number of producers' needs. Double S Meats could still offer special cut selections -- at an upcharge. Finding standard cut sheets that satisfy the majority of producers needs could increase efficiency on the cut floor, and also improve consistency of cuts for each species. Producers have expressed frustration with experiences at meat plants where the consistency of the cutting varied by staff member. For producers, the uncertainty of how a cut sheet will be interpreted can be extremely stressful, and can have a devastating impact on the end value of their niche product.

Maintaining Producer Trust

What has become clear through outreach with producers is that *first impressions matter*. We've heard numerous accounts of producers taking their animals to small plants for the first time, having a bad experience of some kind, and swearing to never return. These experiences have included gruff customer service; poor communication; rough handling of animals or inadequate holding pens; meat that was hung for too long; products that didn't reflect cut selections; unsatisfactory labeling; or uncertainty about whether they received all of their product.

It is important for any successful small meat plant to take into consideration the effort, expense, and emotion that have gone into raising each farm animal. Producers often feel that they are placing years of work, care, and investment into the hands of a butcher, who can change the value of their end product in the course of several hours. It is not surprising that producers can be quick to react when their experience or end product doesn't meet their high expectations.

One of the greatest risks for Double S Meats will be losing customers in the beginning. As the staff at Double S Meats climbs the learning curve, they will naturally and inevitably make mistakes. How they address these mistakes will be of critical importance to producers. *Double S Meats must find ways to maintain producer trust and loyalty through the learning curve, and address mistakes promptly.* Even though Double S Meats may not be able to correct a mistake once it is made, acknowledging the mistake and communicating to producers about how it will be avoided in the future will go a long way to building trust and encouraging patience on the part of producers. For a more detailed discussion of opportunities and strategies for encouraging producer trust and loyalty, see Section 7.

Future Competition

Throughout the course of this feasibility study, there have been suggestions that one of the biggest cattle operations in the region has been considering building a new, USDA-inspected meat plant in Mallot, capable of slaughtering as many as 100 head of beef per day. While the likelihood of this possible new plant is unknown, the potential impact to a very small plant in Tonasket may not be very significant. A future plant processing 100 head per day would likely serve only cattle producers, and would most likely purchase live, finished beef or even calves from larger ranches

that are able to offer both scale and consistency of supply. It is likely that a feedlot and finishing program would be a component of this scale of facility.

The feasibility study identified a very different type of demand, existing among the small and very diverse farms and ranches across the county that have already developed niche markets for their farm-raised meat products. Given the potential scale and target market of the rumored operation, it seems fairly unlikely that such a facility would find it convenient or economical to serve the diverse needs of very small producers.

Lost Revenue Streams for Small Plants

As a component of this feasibility study, we evaluated the potential for developing "ancillary" businesses to capture value from by-products such as blood, bones, hides, glands, organs, offal, and tallow. Our initial hope had been that developing value-added opportunities, such as compost, bone meal, bone broth, blood meal, etc., could help a small plant generate more profit. However, our research concluded exactly the opposite: that it is rarely cost-effective for small plants to develop the needed infrastructure to turn by-products into sellable products. Because waste streams for small plants that process diverse species are not consistent; because waste streams are fairly small compared to large plants; and because of the extremely low-margins for these products, developing ancillary businesses began to seem costly and unrealistic. Furthermore, case studies show that small plants are usually best served by focusing on the primary business activities of slaughter, cutting, and value-added processing (such as smoking, curing, sausage, etc.). (See *Appendix G, for Kathryn Quanbeck's summary report on ancillary business opportunities.*)

Distance to Markets for Farm-Raised Meats

Unfortunately, Tonasket is far removed from any of Washington State's urban centers. Spokane is a three-hour drive; Seattle is a four or five-hour drive; and Bellingham is a four-hour drive in the summer, but nearly six hours in the winter. Tonasket is not located within proximity to the I-90 corridor, which makes any hopes of dramatically expanding market access somewhat unrealistic for producers in the future. If the predicted demand for USDA services had come from larger ranches with an eye on regional or even national brand development, this barrier could present significant limitations to growth and success. At larger scales, economical access to transportation arteries are a critical factor in maintaining competitive pricing and ensuring the success and profitability of a larger brand. However, the demand identified by the survey process comes from small farms in Okanogan County that have niche market opportunities and are able to charge a premium that helps to compensate for the travel distances.

7.6 UNIQUE OPPORTUNITIES

While there are admittedly many potential barriers to success, there are also some unique opportunities that could result from a potential collaboration between the Methow Conservancy and Double S Meats. By serving as a facilitator, the Methow Conservancy could help to promote better understanding among livestock producers about the needs of a small meat processor, and simultaneously ensure that producers' needs are heard and addressed by Double S Meats. Over the course of the potential 5-year project, the Methow Conservancy could work to ensure that producers have a vested interest in the success of Double S Meats: by cultivating transparency and a sense of collaboration among producers and staff of Double S Meats. In a supporting role, the Methow Conservancy could also offer educational workshops to producers, expanding their knowledge of niche market opportunities and increasing demand for services in the long-run.

When asked to help envision other ways that the Methow Conservancy could play a supporting role to ensure a successful project outcome, the Producer Advisory Committee offered numerous ideas and details about *how to ensure producer buy-in and customer loyalty*. In particular, they described the elements of a "customer experience" that are the most important to livestock producers. The Producer Advisory Committee also articulated a desire that Double S Meats and any future producer advisory group work *as a team, to build producer trust, encourage a spirit of transparency and collaboration, and build a greater sense of community that would include producers as well as the staff team of Double S Meats*.

Building a Team

The premise of a future collaboration between the Methow Conservancy and Double S Meats has been that improved access to USDA-inspected slaughter is a **community need** among small farms and ranches in Okanogan County. Serving that community need would require a strong spirit of collaboration among Double S Meats staff, livestock producers, and the Methow Conservancy. An important component of success would be fostering open communication and dialogue between Double S Meats and livestock producers that allows producers to feel their needs are heard, but that also allows Double S Meats staff to feel appreciated for the skilled and critically-important role they play ensuring the high value of producers' meat products.

In future project implementation, maintaining an advisory producer group would provide a nexus between Double S Meats staff and livestock producers in the region. Producer advisors could be initial points of contact for other livestock producers who have questions, concerns, or complaints. These producer advisors could serve as a buffer for Double S Meats staff, taking feedback from other producers and acknowledging their complaints, while finding ways to constructively convey feedback to Double S Meats. These advisory producers could also look for opportunities to help educate livestock producers about the needs of Double S Meats and help keep producers' expectations reasonable. At the end of the day, the advisory producers could play an instrumental role in *building producer trust, encouraging patience during the learning curve, developing a sense of community around local processing, and fostering long-term producer buy-in to the success of Double S Meats*.

It was suggested that seeking advisory producers from each geographic area (ie: Methow Valley, Okanogan/Omak, Tonasket, Oroville, Republic/Wauconda, Nespelem, Brewster/Pateros) could be a good approach for ensuring that producers across the county felt included in the project. It was

further suggested that quarterly meetings among advisory producers, Double S Meats staff, and the Methow Conservancy could be an ideal format for facilitating open dialogue, and addressing concerns or opportunities to build producer trust and loyalty.

Finding ways to show producer appreciation for the skilled and challenging work of Double S Meats staff will be another important component of building an effective team to serve this community need. Producers can be extremely quick to offer criticism. However, it is critically important that butcher staff receive positive feedback and appreciation for the crucial role they play in the quality end product and success of each farm. The feasibility study's Producer Advisory Committee suggested that future project implementation include an effort to give staff at Double S Meat regular farm tours and opportunities to appreciate how their work supports farm livelihoods. Further suggestions were made that perhaps the project could work with the Washington State University (WSU) Extension, and bring faculty or staff to conduct workshops and trainings so that producers and Double S Meat staff could learn about specialty cuts and niche markets, together.

Transparency

As part of the feasibility study process, we determined that Double S Meats already has a strong positive reputation among livestock producers. Our outreach indicated that producers have at times questioned whether they ultimately got all of their meat back from certain processor facilities in the region – however, that is not a narrative we heard, even once, about Double S Meats. It should be mentioned that the Double S Meats' cutting room can be viewed by the general public, through a giant window in the front entry -- a facility design choice that clearly encourages transparency.

Although our outreach indicates that Double S Meats enjoys a relatively high level of trust from producers, we believe that pro-active efforts to promote transparency and producer education will be important components of a successful project. Creating a transparent structure for collecting and addressing complaints will be critical. Particularly in a context where Double S Meats will be serving many beginning, small-scale farmers and ranchers that are still learning what yields to expect, it will be important for Double S Meats and the project team to develop outreach and educational materials. Quite often, producers can be unpleasantly surprised by the final yield of cut-and-wrapped product.

For example, a 1200-pound beef will typically result in an average 750 pounds of hanging-weight, once the head, hide, feet, fat layer, and offal have been removed. After de-boning, the final weight of cut-and-wrap product is typically 400 +/- pounds. An excessively fat, or poorly-muscled animal might only yield 650 pounds of meat at hanging-weight, and 350 pounds of cut-and-wrapped product. Depending on the condition score of the animal, the final yield of cut-and-wrapped product can be quite different among animals of the exact same live weight.⁷⁰

Providing producers with information, ahead of processing, about reasonable yields based on the condition score of the animal and the live weight, will help inform producer expectations and

⁷⁰ Understanding Beef Carcass Yields and Losses During Processing. PennState Extension, August 2016: <https://extension.psu.edu/understanding-beef-carcass-yields-and-losses-during-processing>

prevent potential misunderstandings. This standard information could be offered on Double S Meats website, on a Frequently-Asked Questions (FAQ) page, or incorporated as a pre-amble to the cut-and-wrap sheet. Offering producers feedback about the condition score of their animal would also help inform future management decisions that could improve the end the quality of their product. The Producer Advisory Committee suggested that the following data be gathered and provided to producers: live animal weight, hot and wet hanging weight, hanging weight just prior to cut-and-wrap, weights for each finished cut. The Advisory Committee further suggested that perhaps a photograph of each animal in the chute could be taken (from behind), to document the condition score. All of this information for each producer could be kept on-file, or perhaps online, which would allow producers easy access to their historical data about each animal s yield.

Online Scheduling and Cut Sheets

Conversations with Double S Meats and the Producer Advisory Committee also indicate potential for the development of online tools that could serve to alleviate some burden on Double S Meats staff, while also serving as educational opportunities for producers. In particular, suggestions were made that Double S Meats offer an online calendar of slaughter dates, an online cut sheet form, and possibly even some kind of future online account for each producer, where they could access historical yield data from each carcass.

An online calendar, showing availability of slaughter dates would allow producers to see how far in advance they should schedule slaughter dates. A live, visual calendar would also help producers understand what their options are, even if appointments during the height of the harvest season are not available. Allowing producers to sign up for dates online would also greatly reduce the burden to staff members, who currently spend significant time on the phone taking appointments and walking through cut sheets with producers. Some discussion of variable pricing suggests that Double S Meats could use an online calendar to encourage producers to process outside of the shoulder season, by offering discounts during the slower production months. There was even a suggestion that perhaps the online platform could serve to connect producers from certain areas of the county, who might be looking to process at a similar time, and could work cooperatively to haul animals to Double S Meats, or to backhaul product.

Online cut sheets are another opportunity to reduce the burden on staff, while also offering an educational opportunity for producers. Typically, Double S Meats staff spend a lot of time on the phone with producers, especially new and beginning producers, educating them about the appropriate cut selections. Much of this information could be shared online, reducing the need for staff to walk through each choice with producers. It was further suggested, by Dr. Paul Kuber, that Double S Meats consider choosing just two universal cut sheets for each species. Producers could always make special cut requests, for an additional fee. Limiting the cut selections to a few universal cut sheets would increase the efficiency for Double S Meats staff, and also likely increase the consistency of cuts for each species. Producers could be engaged in the process of determining which universal cut sheets were most representative of the needs of the most farms and ranches.

Ongoing Education for Producers

The Producer Advisory Committee was particularly excited by the prospect that a future collaborative project could bring additional educational opportunities to livestock producers. In particular, Producer Advisory Committee expressed interest in working with WSU Extension, to

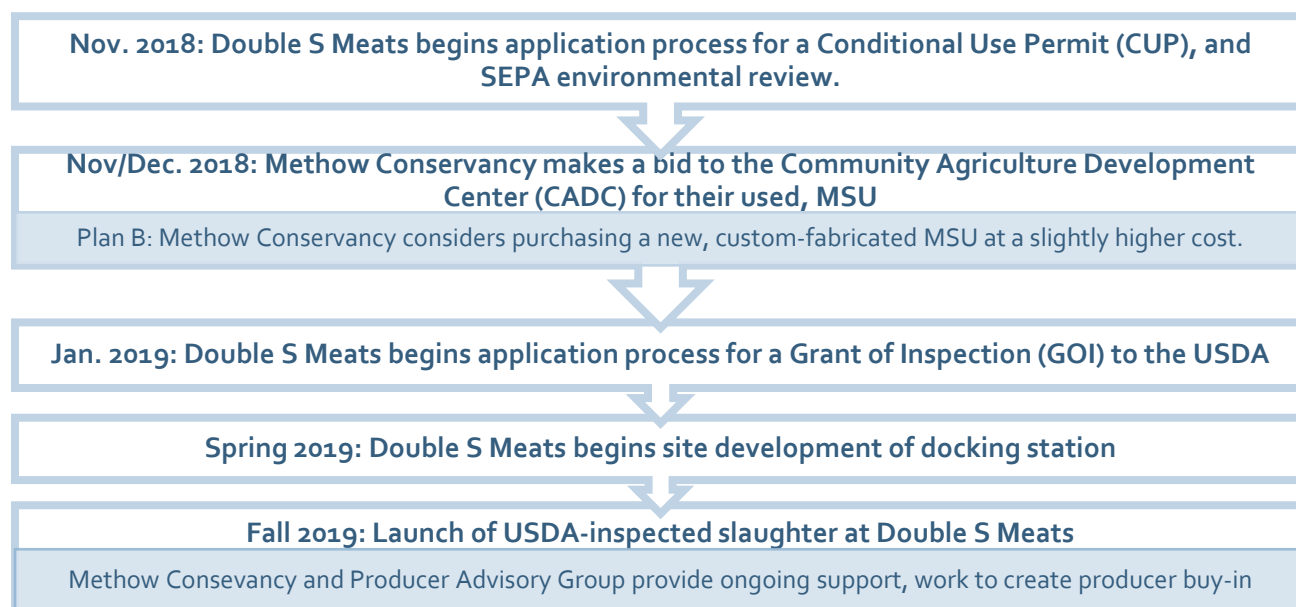
possibly host the popular Beef 300 workshop series in Okanogan County, and to host similar workshop series for lamb or pork. The suggestion was made that perhaps Double S Meat staff could be encouraged to attend these workshops -- or even that WSU Meat Science and Extension staff might be willing to offer some special technical trainings, on-site for Double S Meat staff and interested producers. What appealed to the Producer Advisory Committee about future workshop offerings was the ***opportunity for both producers and butcher staff to learn together; for butcher staff to network with producers; and for producers to network with each other*** -- thereby strengthening the spirit of collaboration and encouraging the mutual success of producer and processor.

8.6 SUMMARY AND NEXT STEPS

Our feasibility work revealed an estimated potential demand for USDA-inspected slaughter among diverse small farms in Okanogan County of 685 beef equivalents, annually. Research indicated that serving this need at Double S Meats, in Tonasket, was technically and financially feasible. Double S Meats demonstrated a willingness to undertake this new venture with an incremental approach and with ongoing support from livestock producers and the Methow Conservancy. While there are a number of risks and uncertainties for future implementation, collaboration among these diverse sectors would help to dilute and mitigate the risk, and would also offer some unique opportunities for success. What is particularly exciting about the proposed collaborative endeavor is the possibility of developing a spirit of cooperation and mutual appreciation among livestock producers and the staff Double S Meats.

At the time of writing of this final report, several next steps for project implementation were already in motion. The Methow Conservancy Board of Directors had passed a resolution to make a bid for the CADC's MSU. The Town of Tonasket had passed an amendment to the zoning code to allow Double S Meats to apply for a Conditional Use Permit (CUP), and planning staff had begun drafting a template CUP application and Environmental Checklist for Double S Meats. Gavin Pratt, owner of Double S Meats, had begun reviewing HACCP and SSOP templates available through the Niche Meats Processors Assistance Network (NMPAN), and had begun conversations with the Okanogan County Department of Public Health about possible upgrades to the existing septic.

Still uncertain at the time of writing was the CADC's evolving timeline to release a "Request for Proposals" and to begin accepting bids for their used MSU. Also unclear to the project team were reasonable expectations for a timeline of achieving a GOI inspection from the USDA, once an application had been submitted. However, despite some uncertainties about timelines, the project team was hopeful that Double S Meats might be operating under a USDA GOI as early as fall harvest of 2019.



9.0 APPENDIX

A: Dr. Paul Kuber, Preliminary Feasibility Assessment, Summary Report

B: Bruce Dunlop, Preliminary Feasibility Assessment, Summary Report

C: Greg Sherman, Preliminary Feasibility Assessment, Summary Report

D: Kayla McIntyre, Regional Market Context, Summary Report

E: Kathryn Quanbeck, Processing Plant Business Structures, Summary Report

F: Kathryn Quanbeck, Non-profit Ownership of MSU s in Washington State, Summary Report

G: Kathryn Quanbeck, Ancillary Business Opportunities, Summary Report

H: Town of Tonasket, Ordinance 793: Slaughterhouse Amendment to C-2 Zoning Code

APPENDIX A: Dr. Paul Kuber, Preliminary Feasibility Assessment, Summary Report

Report drafted for:

The Methow Conservancy
315 Riverside Avenue
Winthrop, WA 98862

Subject:

Justification and location for a meat harvest, processor and storage facility under USDA-FSIS Inspection

Contact:

Alyssa Jumars
509-996-2870

Report compiled by:

Paul S. Kuber, Ph.D.
NE Regional Livestock Extension Specialist
Washington State University Extension

The purpose of this report is to assess the viability of two meat packing facilities in existence and one potential facility that would need to be constructed from an existing structure and their ability to shift or become a USDA harvest and processing facility. The push is to open doors for livestock producers in the Methow Valley casting a wider net for market options from product raised in the area.

The day started with a tour at Thomson's Custom Meats LLC in Twisp, WA. This facility was constructed in 1906 with a remodel in the 70s. The current state of the plant would require numerous resources and time to meet USDA inspection requirements. Throughout the plant there were exposed wood beams, chipping paint, cracks in floors and walls, particularly when we were transitioning from one room to another. Rails throughout were painted metal and chipping. Historically this was done to cover areas that were prone to rust. Modern or newly built facilities are using various materials that inhibit rust accumulation which is much easier for USDA to accept and approve. The flow of the facility and limited functional cooler space resulted in cooked and raw product being housed in the same cooler, unsealed. Further, the same processing room that housed the fabrication tables also housed the smokehouse in the center of that room. Again adding to the potential for raw and cooked product to come in contact with one another. The kill floor was not currently functioning. Numerous changes would have to take place in order for this to be brought into compliance for USDA. An appropriate animal handling and chute set-up in order to receive and move livestock to the harvest floor would have to be set in place with a complete redo of the existing facility. There seemed to be plenty of cooler and floor space to handle

the volume that was being discussed between all those that were in attendance. The challenge is that many of the mechanics and space is dated and 2/3 of the property were not in use which means that restoring coolers, walls, rails, etc. would be a cost limiting factor which is usually the case with outdated facilities. Further, in corners, wall transitions, and pass troughs or doorways there were areas that resembled mold in combination with some flaking paint. This would have to be addressed with a permanent solution to inhibit any further issues. The foot-print of the lot did not seem large enough if this was a full on USDA facility to handle waste management. That would have to be determined assuring that waste-water and other items do not contaminate the local municipal system.

We then toured another facility in the same region, which was a vacated structure that had an open floor plan to construct exactly what you d want. The benefits of this type of structure would be a state of the art facility fitting the needs based on market assessment in the area. The challenge is that it is an undertaking for the gentleman that we were discussing with. This unit is essentially a shell with concrete floors. The existing concrete would have to be trenched in order to facilitate a drain system. The lot size seemed large enough for waste management to occur on site. Granted this is the closest to an open slate, yet it is still an existing structure, which could pose logistical challenges. Plenty of space to expand if need be.

Lastly, Double S Meats in Tonasket was a nice clean environment. The plant seemed small at first but the footprint was nice with easy access for expansion in all directions. The facility is already a USDA facility for fabrication and with a USDA inspector in house that makes an easier transition to adding a harvest floor and expansion. The harvest floor would be a new built which means that there should be no issues starting it from the ground up, correctly. The long-term storage was limited. With the addition of the kill floor could come additional cooler space. Further trailers with cooling units could be added out side, once product is packed, sealed and in boxes. Long-term storage could be accomplished through the containers used for overflow product. The key concern would be the amount of product you could push through this facility without some expansion. Again any added space would be new built and the result would be state of the art.

Summary:

In all facilities that we toured the biggest issue that I was trying to wrap my head around was the workforce. Using unemployment figures alone is not the best way to assess who you will capture in the work force. The food packing and more specifically the meat packing industry is a unique beast. Not everyone is willing to work in the environment that is offered in the meat processing industry. Meat processors and packers along with other food companies thrive as a result of the immigrant Hispanic populations in the US. Many facilities struggle in areas where these populations are limited or non-existent. My first thought was that Winthrop and Twisp would be better locations than Tonasket however the location and

distance to Brewster (a main thoroughfare for distribution) seemed similar. Seeing that is the case choosing an area that you will have a better chance to establish a dedicated and consistent workforce will aid in the success of the facility.

Aside from building from the ground up the facility that I would estimate to be the easiest transition to USDA will be that of the one in Tonasket. Having said that there are a lot of things that come to play and proper business planning and execution will yield results.

Please don't hesitate to run more ideas by me. I hope that this report helps in this Methow Conservancy endeavor for livestock producers.

APPENDIX B: Bruce Dunlop, Preliminary Feasibility Assessment, Summary Report

Facility Description:

The Double S facility is in a recently constructed building, purpose built for meat processing under federal inspection. The facility is currently operating under a federal grant of inspection for meat cutting activities and appears to be well maintained and operated. The carcass breaking and cutting activities done in the facility are done under a state custom exempt license and separated from the USDA Inspected activities by space and/or time.

USDA Inspected Slaughter and Carcass Processing:

The facility could easily add the processing of inspected carcasses using the existing space and equipment. There would need to be additions to the HACCP Plan and operating procedures to cover this added activity and some process procedures developed to maintain separation of inspected and non-inspected carcasses and final product.

Addition of animal slaughter alongside the existing building appears to be feasible. There will be some issues regarding live animal holding pens, water treatment and site grading to accommodate a kill facility but all of these should be possible to address. Water treatment is an unknown issue, as it appears the existing septic system may not be adequate for the water volume needed for the kill activities. The septic system designer who specified the existing system may be able to provide further detail regarding its capacity for the anticipated additional load.

I see three possible options for Inspected slaughter: 1) slaughter is done off site at another Inspected facility or mobile unit operating on local farms and/or docking stations where producers transport animals for processing, 2) a modular facility built off site and set in place at Double S Meats and 3) Addition of a kill floor as an extension to the building. Options 2 and 3 as well as docking stations entail the construction of live animal handling facilities and knocking chute and slaughter pad. Slaughter done offsite with an MSU could be considered as a backup option if on-site slaughter is not permitted for some reason.

There is a possibility of leasing or purchasing a used processing trailer formerly used in Ferry County for the Inspected slaughter of cattle and smaller species. Obtaining this trailer would be a lower cost way to test the market for these services and potentially could be in service by the fall of 2018. This unit has sufficient capacity to process the numbers of animals projected initially. At some point in the future a larger unit or fixed building could be added if needed. A certain investment into facilities at the facility would be required but most of that infrastructure would also be needed for a fixed building option.

Additional hanging cooler capacity will be desirable to allow more processing capacity. If a new modular facility is considered it would make sense to include carcass chilling as an integral part of that unit or as a fixed building component installed between the unit and the existing plant loading entrance.

Specific Questions:

Cooler Capacity and Expansion

There are two additional coolers to keep in mind for expansion of the existing plant. The first would be a chilling cooler capable of holding one day of production and bringing the hot carcasses down to temperature overnight. The chilling load is significant and by not burdening the existing aging cooler with this function will allow it to hold more carcasses for aging and limit the risk of over temperature events. A second aging cooler will be needed if the total plant capacity is increased. While not needed at this time, provision should be made for where it could be located in the future.

Docking Site for MSU or Modular Unit

The unit itself needs a level surface to be stationed on where the carcasses can be unloaded by rail directly into the plant rail system. Ideally this would include a carcass chilling cooler between the unit and the main hanging cooler in the plant. Electrical, water and drain hookups would be run from the building to support the utility needs of the unit. The water effluent from the unit is grey water (ie no sewage) and might be sent to the existing plant septic system if capacity allows. Alternate disposal might be some type of irrigation use on the existing property or collection and hauling to a waste treatment plant. Ideally the city sewer system will be extended to allow connection for the entire plant.

Stunning and bleeding of the animals is done outside the unit on a concrete pad. The pad would be approximately 15 ft square and sloped to a drain for collection of blood and wash water. Animals are brought to the location in a chute and are restrained in a headgate (for cattle) where they can be safely stunned. For sheep, goats and hogs a smaller closed chute that can hold one animal at a time would be more suitable.

The collected blood and pad wash water might not be allowed to go directly into a sewer system due to the high BOD due to the blood component. It is however an excellent fertilizer and options to use or sell it as a soil amendment product could be explored. The alternative would be some sort of pretreatment on site or collection and hauling to a disposal location.

USDA regulatory documents including a HACCP plan for slaughter will need to be prepared for any of the options. These will be in addition to those the facility already has for their current Inspected activities. This should be pretty straightforward and Dr. Sherman can provide more detail on what this will entail.

Other Design Considerations:

An important consideration is the flow of material through the facility. Ideally you want live animals to come in at one point and for product to always go forward through the various stages of the facility without back tracking. Raw and any cooked products as well as inspected and custom exempt product require separation in time or space to meet the USDA regulations. Thinking about these product flows before building is essential to having an efficient facility. Included with this report is a booklet published by Iowa State University regarding the design and building of small meat plants. This may be helpful as you evaluate the options for your situation.

Live animal handling facility design is important to allow animals to be unloaded and move into position calmly with minimal stress. Temple Grandin has done extraordinary work developing animal handling systems that work well. Her web site and publications are a great resource.

APPENDIX C: Greg Sherman, Preliminary Feasibility Assessment, Summary Report

Background; Purpose of Visit

GSC Northwest was contacted by the Methow Conservancy to assist in evaluating selected abattoirs in eastern Washington that are currently operating under custom exemption or retail exemption. The study is to determine feasibility for one or more of the plants to operate under USDA, FSIS inspection, in order to provide that option to farmers in this part of the state. Prior to the visit, the list of potential sites was reduced to one facility, Double S Meats in Tonasket, WA.

Existing Facility

Description of Existing Facility

At the time of the visit on April 19, 2018, operations had finished for the day. Double S Meats currently operates under USDA, FSIS inspection for processing operations, so they are accustomed to both the challenges and benefits that FSIS inspection brings. The processing room, cooler and storage areas meet FSIS requirements for sanitation and room finishes. There were some housekeeping issues in cold storage and some rust in the processing room, but neither is significant in the big picture.

Livestock carcasses are currently provided by one or more custom exempt operators, and FSIS-inspected boneless beef is used for the processing that is currently done under FSIS inspection.

Potential Challenges in Adding Slaughter Process

While challenges exist, the fundamental point of concern is potential for return on the investment in adding a slaughter floor to the existing facility. Other items for consideration include:

Cost of a brick and mortar addition to the plant for slaughter.

There are several options to consider for the slaughter floor. Brick and mortar construction is always the preferred option because the slaughter floor can be built to precisely meet the needs of the plant. However, there are modular units and mobile slaughter trailers that can also provide the same slaughter capability at lower cost and without much of the permitting process involved in permanent construction. There is currently an inactive modular unit in eastern Washington that might be available for lease. The primary advantage of a modular unit is that width is not limited to 12 feet as is the case for mobile units. The extra space that added width provides, and in particular for beef harvest, is immeasurable.

Addition on a drip cooler for cooling of warm carcasses.

A drip cooler is essential for cooling warm carcasses before they enter the aging cooler. Warm air and humidity can complicate aging of beef carcasses, and a drip cooler reduces both by bringing the carcasses down to 40° or less. After 24 hours in the drip cooler, carcasses entering the aging cooler are chilled and dry.

Availability of inspectors for slaughter activities.

FSIS is facing challenges of their own in terms of staffing new positions in the wake of a hiring freeze. However, we have found that FSIS is typically able to work with industry optimally through coordination, good communication and planning. FSIS cannot refuse a Grant of Inspection because of staffing concerns, and Double S is already operating under FSIS inspection, and with scheduling flexibility, cooperation and communication, staffing of slaughter should not pose an unsolvable problem.

Suitability for Addition of Slaughter Process

Ultimately, this is the question that Double S must answer. The addition of the slaughter process would result in a consistent supply of livestock carcasses for further processing. Return on the investment of a slaughter floor is the determining factor. It seems logical that the most cost-effective option would be to lease the inactive modular unit for 1-2 years. During that period, Double S can evaluate the benefit of slaughter operations on site prior to a commitment to brick and mortar, and ultimately build a kill floor to the optimal size.

There is a concrete pad on the south side of the existing plant that could be expanded to support a modular slaughter floor and drip cooler, and by location seamlessly mesh with the existing structure.

Additional Items for Discussion

Holding Pens

Are there any particular suggestions you would make about multi-species pen layout/placement/construction for the site?

If it is practical, the area at the bottom of the hill has ample space for livestock holding pens. Pen and alley construction on the official inspection premise (by the plant itself) should be constructed to meet the parameters of FSIS humane handling guidelines. Pens in the lower part of the property could easily not be included in the official premises for FSIS oversight.

Drip cooler/chiller + rails, to accommodate 10 beef/beef equivalents per 24hr period

What details should we keep in mind about the construction of a drip cooler, from a food-safety perspective?

The purpose of a drip cooler is to provide the initial chilling of fresh carcasses to 40° or less within 24 hours of slaughter. Additional benefits of a drip cooler are to prevent the high humidity from the freshly harvested livestock from complicating the aging process in the aging or sales cooler. The third benefit is that sanitation in the aging cooler is not compromised by purge from the fresh carcasses. The drip cooler can then be cleaned daily after carcasses are moved to the aging cooler, and the latter remains clean.

Expanded capacity for hanging cooler

What food-safety details should we keep in mind as we think about expanding the footprint and cooling capacity of the current hanging cooler -- to accommodate 40+ beef?

The primary consideration for any cooler, regardless of capacity, is air flow, which is based on volume of air moved by the cooling fans and space for air movement between carcasses. Inadequate air flow results in a slower rate of cooling, which could allow for pathogen growth on the surface of the carcass, and loss of quality of the internal muscle tissue. Basically, rapid carcass cooling results in a greater margin of safety and higher quality end products.

Expanded hot water supply for post-slaughter sanitation

Do you have a sense of how much hot water a typical small-plant slaughter floor, harvesting 20 beef/week would need?

It depends on what all hot water is used for. If hot water is used just for sanitation at the end of the day, the usage could be relatively low. If we use hot water as an antimicrobial application for each carcass, then the volume would be significantly higher. Most slaughter plants have in-line water heaters, which are much more efficient and cost effective. Bruce Dunlop is much more versed in water usage than I am, so he could probably provide a more accurate estimate. Mine would be little more than guess work.

Rendering

Are there any rules about how rendering is stored? Must it be stored under refrigeration, or removed at a certain frequency?

All offal and inedible should be held under refrigeration unless it is picked up daily. The odor of decomposing meat and by products attracts pests, vermin, and stinks. If a refrigerated area is not available, then it needs to be in a separate area from any processing and kept covered. With the summer heat in Tonasket, the odor would become unbearable very quickly, and FSIS could determine that an insanitary condition exists.

Docking site for Mobile Unit

- What are the requirements for an outdoor concrete pad for slaughter?

There are no specific requirements, but FSIS will react unfavorably to what they define as an 'insanitary condition'; that would include pooling of water, blood and other waste. For infrequent slaughter operations, a simple gravel bed that is large and deep enough to allow water and other liquids to percolate through is adequate. For consistent slaughter in one location, a concrete pad sloping to a 4" drain has proven to be the best solution. The drain can connect to a drain field for dispersal of the water and other liquids.

- How is animal restraint accomplished for a "stationary" MPU situation?

A head catch and squeeze chute is optimal. Most mobile units have started with less, but after one or more mis-stuns they incorporate proper restraint. For a modular application, a squeeze chute is always the best if a true restrainer is not an option. They are typically cost-prohibitive. The problem with a manual squeeze chute is the difficulty of opening the side with the weight of a stunned beef on it. Hydraulic chutes work much better.

- Can you provide any additional insight about challenges, considerations that you have observed of mobile/stationary MPUs?

The greatest challenges that mobile units face is two-fold – a butcher that can consistently remove the hide and eviscerate a beef carcass in a sanitary manner in restricted space, and a cut and wrap where carcasses can be aged and processed. Double S will provide the latter.

Considerations for a Brick & Mortar kill floor?

Could you recommend any small plants that have a particularly well-designed kill floor -- that might be willing to share their layout? Are there any small plant designs that you have seen that handle multi-species particularly well? What are the features that make a small plant particularly efficient and food-safe? What are the common mistakes that you have seen in kill-floor designs?

Actually, my expertise is in HACCP design and implementation as well as regulatory issues, but not in slaughter floor layout. I have seen many variations in the flow from stunning to entry into the cooler, and all work. Most are set up the way the butcher prefers. I believe you have spoken with Tracy Smaczarz from Heritage Meats. He is much more knowledgeable than I am in that area.

Effluent

What, if any, are the alternatives to waste-water disposal, while Double S waits for the town sewer to arrive? Could effluent (if treated) be applied to the lower pasture?

Double S may need a variance to do that with the volume of effluent that could be involved. Most of the operators on the west side of the mountains that have frequent slaughter days at their location have a concrete pad and drain field, but the microenvironment in western Washington is vastly different from the east side of the state. I think a contact with the Department of Ecology may provide the best direction there.

HACCP

- You mentioned that there are some basic template HACCP plans available for kill floors. Would you be able to pass one along?

I don't really have templates; every food safety system I write is unique, although most mobile slaughter units have a pretty typical process.

- Would you be willing, if/when we get to that point -- to consult with us again to develop Double S's HACCP for slaughter?

I would be thrilled to be a part of bringing Double S under inspection in any phase of the process that I can. That would certainly include drafting a slaughter food safety system for them with all prerequisite programs, forms, supporting documentation, validation plans, etc. The plan would be unique to them in that we would work together to develop the optimal antimicrobial for the slaughter that would also seamlessly integrate with the existing processing plan that they are working with.

- If the stationary MPU from Colville were re-located and operated under a different entity, would its certificate of inspection still be valid? Would a change in ownership induce any review of the inspection status? (I understand that a new/updated HACCP plan would be required for the new site.)

That would depend; if the Grant of Inspection is under a voluntary withdrawal, it could be re-activated and passed on to Double S, possibly just through a change in ownership through a revised application for a Grant. If the GOI lapsed, then Double S would have to start over. That's not a deal breaker, just takes a little more time.

APPENDIX C: Kayla McIntyre, Regional Market Context, Summary Report

The following assessment of regional market opportunities for USDA-inspected, locally produced meat provides important context for this study. This study's survey indicates that many producers have an established market for USDA-certified products, and that better access to USDA-certified processing would allow them to more fully take advantage of this market. In addition, many small producers indicate an eagerness to identify new market opportunities that would allow them to expand farm production. Because they would benefit most from a small, USDA-certified processing facility in Okanogan County, this section of the study focuses on small- and mid-scale independent livestock producers selling value-added meat products in the Pacific Northwest.

This section evaluates the **regional market context** for local, farm-raised meats, especially beef¹. First, we assess the regional market context for local, independently produced meats by evaluating the current **customer base, market trends and desired product attributes**. We derived an evaluation of this context through a review of existing research and primary data that we collected from relevant businesses, agencies, and organizations. Second, we evaluate opportunities and constraints within the existing regional outlets to underscore **market opportunities for future sales** development. Our evaluation of institutional market opportunities was derived from extensive primary research on direct-to-consumer platforms, farmer's markets, food hubs, and meat co-operatives. This includes pertinent analysis of the strengths and weaknesses of **businesses already selling niche meat** products within these outlets. We move on to evaluate **institutional markets** such as schools, hospitals and universities as potential promising outlets for farms seeking to significantly expand production or create a co-operative arrangement with other farms in the area. Finally, to address the interest producers expressed in creating a co-operative in the survey and in advisory meetings, we explain opportunities and barriers to **multi-farm collaboration**.

The customer base ranges widely for independently produced, farm-raised meats. It includes individuals buying directly from a farm to grocery chains buying either from larger independent farms, conglomerate farms or producer co-operatives. The geographic area for this study includes all of Washington State as well as some market analysis in Oregon, with a focus on the metropolitan areas because that is where the greatest number of local food oriented customers reside.

On a societal level, many Americans' values are shifting about our food system as a whole, including meat. It is becoming more common for people to want to know the origin of their food, and about the producer who raised it -- often referred to as "food with a face."² This customer demographic tends to align with values-based behavior.³ Customers who buy local, independently produced, humanely raised meat products place a high value on the quality of meat, as well as on respect for the producer and the animal's welfare.⁴

¹ As beef is the dominant meat industry in our county (US Ag Census 2012), it would generate the highest revenue of all farm animals through these markets. Because of this, and because almost all in-depth academic and non-profit research on this topic in our region is focused on beef production, this analysis focuses on beef, primarily grass-fed beef.

² Stevenson, Steve and Rich Pirog. "Values-Based Food Supply Chains - Agriculture of the Middle." 2014, Microsoft PowerPoint file.

³ Stevenson, Steve and Rich Pirog. "Values-Based Food Supply Chains - Agriculture of the Middle." 2014, Microsoft PowerPoint file.

⁴ Stevenson, Steve and Rich Pirog. "Values-Based Food Supply Chains - Agriculture of the Middle." 2014, Microsoft PowerPoint file.

The University of Wisconsin's Ag of the Middle project research, which included a nation-wide survey, states that "product attributes such as food quality, safety, and/or functionality along with environmental and social attributes such as sustainable or organic production and treatment of farm workers or animals" are the most important attributes to consumers.⁵ Similarly, the University of Illinois conducted a survey for a beef consumer preference study and ranked the top seven specific on-farm practices in consumers' purchasing decisions, which includes:

1. Animals were not administered growth hormones.
2. Genetically modified organisms were not used in the production of this product (non-GMO).
3. Animals were humanely raised.
4. Animals were not administered antibiotics.
5. Animals were raised in a free-range (or cage-free) environment.
6. Animals were grass-fed (or raised on a vegetarian diet).
7. The product is certified organic.⁶

Our research indicates that desirable meat products include premium cuts, ground meat that is reasonably priced⁷, and value-added products such as sausage and jerky.⁸ Stone Barn Center's comprehensive report, "Back to Grass: The Market Potential for US Grassfed Beef", states that consumers most often

"go for the expensive 'middle meats', which consist of the loin and rib or for cheaper ground beef... Together [chuck and round] with most of the cuts from the bottom half of the animal, these less popular cuts are often turned into trim and sold as ground beef. Some of the trim is also processed to make grass-fed beef sausages, which is a small but fast-growing category."⁹

As the population and median income rise in Washington State, the demand for high-quality products with these attributes is increasing. Trends in grocery stores illustrate that more customers are choosing to purchase smaller quantities of niche meat products that are typically more expensive than industrially produced meat.¹⁰ Even smaller and more rural communities such as the Methow Valley, Walla Walla, the Skagit Valley, Pullman, Bellingham, Olympia and the Tri-cities, host a strong base of consumers who prioritize purchasing niche meats products.¹¹ However, the growth in this market is unclear as it is difficult to have a clear understanding of market saturation and producers should do market research to clarify opportunities within specific physical demographics.

⁵ Stevenson, Steve and Rich Pirog. "Values-Based Food Supply Chains - Agriculture of the Middle." 2014, Microsoft PowerPoint file.

⁶ Which production attributes are most important to consumers when buying beef, chicken? Science Daily via University of Illinois, 2017.

⁷ Voltz, Jeff. Personal Interview. 16 August 2018.

⁸ Stone Barn Center. Back to Grass: The Market Potential for US Grassfed Beef. 2017.

⁹ Stone Barn Center. Back to Grass: The Market Potential for US Grassfed Beef. 2017.

¹⁰ Cascadia Foodshed Financing Project. The economics of Pacific Northwest Grass-Finished Beef: Investor Summary. 2016.

¹¹ Ecotrust. Differentiated Cost of Production in the Northwest: An Analysis of Six Food Categories, Beef. Portland: Ecotrust, 2016.

To access consumers who are willing to pay a premium for a high-quality product, producers often sell through intermediary businesses such as grocery stores, restaurants and other farms that value supporting local farms. While a growing number of consumers are willing and able to pay a premium for locally raised meats, there are signs that some market saturation already exists.¹² Many of the markets that are easiest for farmers to access have already been captured, such as specialized grocery stores and restaurants that have long-standing relationships with other local farms. Although there is room for growth, it is important for small-scale producers to look beyond these venues.¹³ They may need to scale up or work collaboratively to access bigger stores and restaurants that are effectively tapping into the demand for grass-fed, organic, GMO and hormone-free, sustainable, and humanely raised products.

In addition, online sales platforms are a promising and relatively new market channel to connect producers and buyers. These platforms provide relatively cheap marketing, as well as organizational and bookkeeping support for farmers, and the number of producers using these sites is growing quickly.¹⁴ E-commerce could benefit many small, independent farmers and could change the face of direct sales in the coming decade by providing direct access to an interested customer base and closing some of the rural-urban divide.¹⁵

A source of concern is the introduction of larger, national or international brands that have begun to use marketing tools that previously served as markers of product distinction for independent, sustainable meat producers. These brands are beginning to encroach on the market once held by smaller producers.¹⁶ In the context of this emerging and well-financed competition, labelling is an important tool to meaningfully distinguish products from small-scale farmers based on attributes such as: grass-fed, grain-finished, farm-raised, humanely raised, organic, non-GMO, all-natural, no antibiotics, hormone-free, free-range or pastured.¹⁷

Existing Market Outlet Opportunities

Direct Sales. This is a marketing outlet where the farmer sells directly to the consumer. The connection is made through phone calls, emails, website, or social media. The type of products offered through this outlet includes selling an animal in bulk as quarters or halves when processed as custom-exempt meat or selling individual cuts when processed as USDA-certified meat. Customers who buy a quarter or half of an animal enjoy participating in the process and often are able to decide how the animal is butchered. This method of sales succeeds when there is a high level of trust in the producer and clear communication exists between producer and customer.

Direct sales can provide greater flexibility for the producer; they do not have to provide an exact and consistent quantity of meat every year, as they would with an intermediary customer. For example, a medium sized cattle ranch in the Okanogan region primarily raises calves to sell at market as all-natural (no growth hormones, no antibiotics), non-GMO animals that are sold to a

¹² Crosby, Tim. Personal Interview. 20 August 2018.

¹³ Saul, Darin, Soren Newman, Tracie Lee, Steven Peterson, Stephen Devadoss, Dev Shrestha, Nick Sanyal. "Increasing prosperity for small farms through sustainable livestock production." University of Idaho. 2014.

¹⁴ Maiocco, Janelle. Personal Interview. 11 September 2018.

¹⁵ Maiocco, Janelle. Personal Interview. 11 September 2018.

¹⁶ Maiocco, Janelle. Personal Interview. 11 September 2018.

¹⁷ Saul, Darin. Personal Interview. 29 August 2018.

buyer who finishes them for slaughter.¹⁸ In addition, the ranch finishes a number of its own steers to sell directly to customers across the state. The ranch can vary the number of steers it finishes in accordance with calf commodity market prices and other factors. This ranch has a stable and dedicated customer base that, through clear communication, understands that availability may differ each year. The majority of the customers in this arrangement are people who have direct relationships with the farm owners and are committed to supporting local agriculture.

An example of more complex direct sales is Crown S Ranch in the Methow Valley. As direct sales are the farm's main source of income, they have invested in creating a recognizable brand label, along with a website where customers can directly purchase the farm's products.¹⁹ Through the website, they offer individual cuts of different types of meat as well as the opportunity to be a part of their 'Meat CSA'. CSA stands for Community Supported Agriculture program, a marketing outlet in which members pay up front for a share of the season's harvest and, in return, receive a regular supply of products throughout the season. These funds from the CSA program support the agricultural operation for the year. Several other farms that offer successful Meat CSA programs in the state, including Jubilee Farm in Carnation; Skagit River Ranch in Sedro-Wooley, which refers to their CSA program as a "buying club" but operates under the same premise; Rocky Ridge Ranch in Reardon has a "buying club" as well. Due to the direct sale relationship, the product does not necessarily require a label or brand. However, once a producer begins to sell through other marketing channels, a brand is important for signaling professionalism to purchasing partners and recognizability to customers.²⁰

Farmer's Markets. Farmer's Markets "offer a regular and flexible outlet for vendors to sell . . . products in a short period of time. Farmers markets also offer an important opportunity for product testing, farm visibility, and overall business incubation and development".²¹ Research by Washington State University shows that farmers markets have clearly become a major sales outlet for small- scale producers in Washington State.²²

There is limited but lucrative opportunity to sell at farmer's markets. As stated in Colleen Donovan's 'Shopper Demand for Meat at King County Farmer's Markets' report in 2017:

"The vast majority of farmers markets (91%) have at least one meat vendor. A third of markets (33%) would like to add at least one more meat vendor to their farmers market. Highest demand is for chicken and other poultry meat, followed by pork and beef. Lowest demand is for goat. Over three-quarters of markets (77%) thought that shoppers were "probably willing to pay" more than grocery store and other usual retail prices. There are 14 markets in King County still looking for meat vendors this year."²³

Based on a survey of King County market managers' observations, the following table outlines "shoppers' interest or demand for meat and meat products at market":²⁴

¹⁸ Goldmark, Chuck. Personal Interview. 21 August 2018.

¹⁹ About us. Crown S Ranch. <http://www.crown-s-ranch.com/>.

²⁰ Voltz, Jeff. Personal Interview. 16 August 2018.

²¹ Ostrom, Marcia and Zachary Lyons. Washington State Farmers Market Manual. WSDA, 2012.

²² Ostrom, Marcia and Zachary Lyons. Washington State Farmers Market Manual. WSDA, 2012.

²³ Donovan, Colleen. Shopper Demand for Meat at King County Farmers Markets: An informal survey of King County Farmers Market Managers. 2017

²⁴ Donovan, Colleen. Shopper Demand for Meat at King County Farmers Markets: An informal survey of King County Farmers Market Managers. 2017

N = 22	No demand	Low demand	Good Demand	High Demand	Don't Know or N/A
Chicken and other poultry meat	0%	5%	32%	59%	5%
Beef	0%	5%	64%	27%	5%
Pork	0%	5%	68%	23%	5%
Lamb	0%	14%	55%	27%	5%
Goat	0%	23%	59%	5%	14%
Value-Added Products	23%	18%	36%	0%	23%
Non-edible products (e.g., fleece)	0%	68%	9%	0%	23%

This table represents King County's Farmer's Market demand for meat producers. A producer wanting to sell at farmer's markets would need to assess the individual market's demand. As well, it is critical to weight the multiple variables involved in selling at farmer's markets to see if it can be a net gain for one's business – travel, weekly commitments, variability in sales, and consistent availability of product.

Online Markets. There are now online platforms where producers can sell their meat directly to customers if they pay a small fee to the platform. The farmers list what they have to sell on the website, customers buy products at their convenience and then the farmer delivers the good to the customer²⁵ or a drop site for multiple customers to pick-up products.²⁶ The two notable current local businesses providing this service are Crowd Cow and Barn 2 Door. Crowd Cow has not responded to multiple attempts of communication. On their website they claim to work with “sustainable independent cattle ranches, to help them reach more consumers and sell more beef”.²⁷

Barn 2 Door works with all types and sizes of meat producers. This is a potentially effective option for small-scale rural producers who are not near their customer base and do not have enough product to sell in large quantities.²⁸ In an interview with the CEO of Barn 2 Door, Janelle Maiocco, she states that the customer base continues to expand each year. As this base continues to grow, so will sales opportunities.²⁹ The biggest drawback is the monthly cost but options like Barn 2 Door provide comprehensive marketing: fresh sheets, segment and target different audiences, order reminders, email alerts, online payments, sales tracking and more.³⁰ Maiocco states that Barn 2 Door is regularly working with farmers to improve what services the company offers.

²⁵ About us . Barn 2 Door. <https://www.barn2door.com/>.

²⁶ Donovan, Colleen. Personal Interview. 7 September 2018.

²⁷ About Crowd Cow . Crowd Cow. <https://www.crowdcow.com/about>

²⁸ Maiocco, Janelle. Personal Interview. 11 September 2018.

²⁹ Maiocco, Janelle. Personal Interview. 11 September 2018.

³⁰ Maiocco, Janelle. Personal Interview. 11 September 2018.

CSA Partnerships. In Washington State, there is a robust Community Supported Agriculture (CSA) market that is almost entirely utilized by vegetable and fruit farmers. Opportunities for meat producers include exclusively meat CSA programs as well as collaborating with established produce-based CSA programs and offering meat additions. Growing Washington and Full Circle Farm are both CSA models that buy produce from external farms to be able to offer more variety in their boxes. Both of these farms offer meat from local producers in their region.³¹ If meat producers plan to sell through another business, they will need to maintain clear and reliable communication, consistent labeling of product, and a willingness to align product availability with the CSA program's schedule.

The customers that are participating in produce CSA programs have already illustrated their desire to support independent farmers.³² An option would be to reach out to current large produce CSAs in the state to see if they would be willing to either (a) work with a livestock producer to create a meat add-on to their CSA or (b) allow said producer to send out a survey or email announcement to their customer base. For the larger CSA programs, it may take a bit of legwork to get in the door and discuss opportunities with the right coordinator. Full Circle Farm, one of the largest CSA programs in the region, works with Skagit River Ranch and other farms.³³ We were unable to reach a procurement coordinator; interested farms are encouraged to apply through their website and Full Circle then responds to applications in quarterly assessments.³⁴ Growing Washington is working with one external farm at the moment but it could be a potential in the future.³⁵ LINC's CSA and other similar programs offer specific meat add-ons to their customers and, based on LINC's CSA program growth, they believe there may be room for more meat sales through their CSA program in the near future.³⁶

Food Hubs. A food hub is a business that exists "to market, aggregate and distribute locally produced food from farms to restaurants, hospitals, preschools, grocery stores, universities and more".³⁷ These businesses, typically co-operatives, offer small farms the ability to access larger markets through an intermediary that supports a values-based supply chain.³⁸ The farms keep their independent identity as their product moves through the supply chain. There are two robust food hubs in Washington State: the Puget Sound Food Hub (PSFH) and the Local Inland Northwest Co-operative (LINC). The PSFH currently sells Skagit River Ranch beef, Skiyou Ranch beef, and North Cascades Meat Co-op beef, and five other beef, pork and chicken producers.³⁹ PSFH has an abundance of local beef and chicken producers in their area and most likely will not be looking for out of region producers any time soon.⁴⁰

LINC is a Spokane-based for-profit co-op food hub that has seen much growth over the past four years of operation. Like PSFH, their main products are vegetables and fruits. This was LINC's

³¹ Sancerre, Gaby. Personal Interview. 25 August 2018.

³² Boyle, Carolyn. Personal Interview. 20 August 2018.

³³ Webb, Phoebe. Personal Interview. 10 September 2018.

³⁴ Full Circle Farm interview

³⁵ Sancerre, Gaby. Personal Interview. 25 August 2018.

³⁶ Robinette, Beth. Personal Interview. 20 August 2018.

³⁷ About us. Puget Sound Food Hub. <http://pugetsoundfoodhub.com/>

³⁸ About us. Puget Sound Food Hub. <http://pugetsoundfoodhub.com/>

³⁹ Interview, Amy Frye

⁴⁰ Interview, Amy Frye

first year of meat sales; the co-op is working with one farm in their area, Lazy R Ranch, to supply a small amount of beef to one customer.⁴¹ At this time, they would like to see meat sales grow but their customers have expressed cost as a barrier to purchasing local meat.⁴² They sell food mostly to schools and hospitals, both of which have tight budgets.⁴³

Meat Co-operatives. There are two different meat co-operative models that exist here in our region. One model exists where the co-op, made up of meat producers, provides slaughter, cut and wrap, storage and some marketing assistance. This is the case with Island Grown Farmers Co-op that runs a very small processing facility and sells some of the products at their farm stand in the Skagit Valley. While this specific co-op is considered very successful by an assortment of case studies across the nation, it is important to note the unique community that supports this co-op. The San Juan island region is a hyper-niche scenario where the producers do not have any other processing option and therefore are a captured market that must keep the co-op afloat.⁴⁴ In addition, the local community members prioritize supporting local producers and are willing to pay higher than standard costs for meat the co-op needs to charge to operate.⁴⁵ Therefore, Island Grown is a model that thrives due to very specific positive circumstances; it is a good example that every location and business opportunity has its own external conditions that need to be assessed to understand the probability of success.

Live Animals to Niche Brands. An alternative market option for value-added, local meat is to sell value-added animals (grass-fed/all-natural/organic) to a larger company, such as Painted Hills, Carman Ranch or Country Natural Beef.⁴⁶ It is an appealing outlet option that could be used in conjunction with increasing animal production for sales through other outlets.

Painted Hills Natural Beef in Oregon is an example of a successful conglomerate co-op where producers sell their animals to a co-op which then finishes, slaughters, butchers and sells the meat under the co-op's own label. They sell both grass-fed and grain-finished meat, with the latter being their much bigger market.⁴⁷ They have strong relationships with many grocery stores in the Pacific Northwest. Beef producers are able to sell finished steers or calves to the company, receiving up to a \$200/animal premium above market value. They are quite possibly the largest natural beef operation in the western United States, slaughtering 600 head of cattle each week.⁴⁸

Carman Ranch, located in northeastern Oregon's Wallowa Valley, is one example of informal aggregation. The company is a large, well-known brand (Carman Ranch) that supports smaller producers by selling their meat through Carman's established markets.⁴⁹ Carman Ranch has diversified markets, selling to grocery stores, restaurants and direct to consumers through a buying club.⁵⁰ We were unable to reach anyone to interview at the Carman Ranch business. They

⁴¹ Robinette, Beth. Personal Interview. 20 August 2018.

⁴² Robinette, Beth. Personal Interview. 20 August 2018.

⁴³ Robinette, Beth. Personal Interview. 20 August 2018.

⁴⁴ Island Grown Farmers Cooperative. Case Study, Extension Cooperative.

⁴⁵ Island Grown Farmers Cooperative. Case Study, Extension Cooperative.

⁴⁶ Ecotrust. Differentiated Cost of Production in the Northwest: An Analysis of Six Food Categories, Beef. Portland: Ecotrust, 2016.

⁴⁷ Homer, Mehrten. Personal Interview. 17 August 2018.

⁴⁸ Homer, Mehrten. Personal Interview. 17 August 2018.

⁴⁹ Ecotrust. Differentiated Cost of Production in the Northwest: An Analysis of Six Food Categories, Beef. Portland: Ecotrust, 2016.

⁵⁰ Shop. Carman Ranch. <https://carmanranch.com/>.

would be a good source of information if producers wanted to pursue some sort of co-operative in Okanogan County.

An even larger conglomerate than Carman Ranch, Country Natural Beef is a successful “Family Ranch Owned Beef Co-op” in Oregon that consists of over 80 ranches.⁵¹ The company sells grass-fed and all-natural (grain-fed and/or -finished) product lines to grocery stores across the Western US.⁵² CNB would also be a good source of information if producers wanted to pursue some sort of co-operative in Okanogan County.

Grocery Stores. Local-product focused grocery stores are a consistent, valuable market outlet for locally raised meats. These stores are actively seeking to partner with local farmers to increase the local food options they are able to provide to their customers. Through our research we found that the smaller the store, the smaller the farm they are willing to work with.⁵³ Small, individual co-ops make excellent partners. For example, Central Co-op in Seattle has a freezer devoted to frozen Skagit River Ranch beef as well as fresh beef available from North Cascades Meat Producers Co-operative (NCMPC).⁵⁴ They were working with Montana Meat Company, but they recently switched to NCMPC as Montana Meat Co. was having some logistical issues that made them unreliable.⁵⁵ This anecdote acts as a good reminder that when a meat producer is selling to a distributor, it is critical to have proper logistics worked out; local meat suppliers are now easily replaceable and no longer have the leverage from lack of supply to shirk professionalism or reliability.

Larger grocery stores or chains that want more quantity of product or want to work with only one supplier often turn to collective arrangements, such as Painted Hills, Carman Ranch or Country Natural Beef.

Strategic Growth: Institutional Market Opportunities

As explained in the previous section, many of the small, niche outlets in our region are saturated with local food options and it would require significant legwork on behalf of the producer to find specific markets. We wanted to explore other markets with room for growth. Studies show that institutional markets are “becoming more interested in buying local food”⁵⁶ and interviews with multiple institutional suppliers in our region supported this claim. For the purpose of this report, an institutional market is defined as “larger buyers who purchase goods and services for use in the production of their own goods or services.”⁵⁷ This includes sales outlets such as business cafeterias, schools, hospitals, day-care centers, senior centers, community colleges, universities and prisons. As these markets tend to want large and consistent quantities of product, small farms may need to consider collaboration in order to access these market opportunities.

⁵¹ About us. Natural Country Beef. <https://www.countrynaturalbeef.com/>.

⁵² About us. Natural Country Beef. <https://www.countrynaturalbeef.com/>.

⁵³ Gilliam, Beth. Personal Interview. 23 August 2018.

⁵⁴ Gilliam, Beth. Personal Interview. 23 August 2018.

⁵⁵ Gilliam, Beth. Personal Interview. 23 August 2018.

⁵⁶ Tips for selling to institutional markets. ATTRA. 2012.

⁵⁷ Business Dictionary. <http://www.businessdictionary.com/definition/institutional-market.html>.

Food Service Companies

Companies with strategic plans to support small farms can be a compelling market for small farms. Bon Appetit is a subsidiary of Compass, the global leader in foodservice and serves the higher end clientele of the larger company.⁵⁸ The company has a “groundbreaking, companywide initiative requiring chefs to buy at least 20% of their ingredients from small farmers, ranchers, fishermen, and food producers within 150 miles of their kitchens”.⁵⁹ Once a producer is registered in the company’s ‘Farm to Fork’ system, they can sell to individual chefs and create unique relationships depending on the chefs’ needs and what the producer is able to supply.⁶⁰

Local Distribution Companies. Local distribution companies are starting to participate in the values-based food chain and are finding ways to work with independent farmers. Similar to grocery stores that sell higher priced, local goods, smaller, higher-end institutions are an accessible market option as they are often willing to work with local producers to be able to source local food.^{61 62}

Charlie’s Produce, out of Seattle, is a prominent distributor of local food. They purchase most of their meat from MacDonald Meats in Seattle for the Westside of Washington State and from Food Services of America in Spokane for the Eastside of Washington State and Idaho.⁶³ Charlie’s, like many distribution companies, has smaller subsidiary companies. An interesting market outlet exists with one of Charlie’s subsidiaries, Rogge, that supplies Alaskan fishing companies and vessels with provisions.⁶⁴ Since Rogge makes large, bulk deliveries, they do not need a constant, reliable timeline, they just need a reliable product.⁶⁵ Seasonally bound producers could look for similar outlets that want bulk purchases of frozen meat.

Another regional food distributor, Quality Food Distributors in Montana is focused on providing local products. They work with local Montana meat producers and they are over-supplied with meat products.⁶⁶ Organically Grown Company, based out of Oregon, is a produce-focused food distributor that focuses on selling local products. They work with many small, independent farmers and currently do not sell meat but are considering adding meat to their sales.⁶⁷

National Distribution Companies. National food service operations are beginning to adjust their parameters so they are able to buy from small farms. To sell to a national distribution company, such as Sodexo or Sysco, small producers must connect with a chef to access these markets.⁶⁸ A producer must apply to become a “compliant vendor” with a company like Sodexo.⁶⁹ This involves comprehensive legwork before a producer can start selling: paperwork and communication to fulfill seller requirements of the corporation; communication with multiple potential individual sales outlets; product test periods; potential slow sales at first; and

⁵⁸ Supply Chain. Compass USA. <https://www.compass-usa.com/supply-chain/>.

⁵⁹ Farm to Fork. Bon Appetit of BAMCO.

⁶⁰ Clark, Anthony. Personal Interview. 20 August 2018.

⁶¹ Hofford, Buzz. Personal Interview. 7 September 2018

⁶² Iso, Brent. Personal Interview. 22 August 2018.

⁶³ Iso, Brent. Personal Interview. 22 August 2018.

⁶⁴ Iso, Brent. Personal Interview. 22 August 2018.

⁶⁵ Iso, Brent. Personal Interview. 22 August 2018.

⁶⁶ Lindberg, Randy. Personal Interview. 9 September 2018.

⁶⁷ Sharp, Melissa. Personal Interview. 25 August 2018.

⁶⁸ Grayson, Timothy. Personal Interview. 22 August 2018.

⁶⁹ Grayson, Timothy. Personal Interview. 22 August 2018.

willingness to adjust prices to compete with industrial meat prices.⁷⁰ This application process takes about a year but once a producer is accepted as a supplier, it opens doors to all of the distributor's outlets, including university campuses and other major food service cafeterias. Regardless, a producer needs to work directly with a chef within the company to actually have their product purchased.

Aramark, another large food service distributor, requires their partners to have an insurance policy with \$5 million liability and third party inspector involvement, which are difficult barriers for small, independent producers. Although we did not learn the exact insurance demands of other large food service operations, similar barriers would exist unless the company has a strategic plan to support small farms, such as Sodexo's 'Supplier Diversity' program or Bon Appetit's 'Farm to Fork' program.

Public Institutions: Schools. At public schools, current markets exist on a very local basis where there are direct relationships between the individual school's procurement office and local producers. School nutrition directors, who are usually in charge of food allocation budgets, are strapped for funding resources. Schools can buy meat at such low prices from large suppliers such as Chartwell's (the supplier for Okanogan County schools), and the price discrepancy between value-added meat and industrial meat is so great, it is not an easy give in the budget.⁷¹

Our research has shown that many opportunities exist within institutional markets in Washington State. Yet, in order to access many of these markets, producers may need to create a collaborative business. Our research indicates that many barriers exist in meat producing farm collaborative businesses.

Potential barriers for meat producing farm collaborations

1. Commitment to the collaboration. Whether run as a co-op or a corporation, a multi-farm collaboration would need significant involvement from the individual producers at the onset of establishing the business and throughout periods of growth. Producers need an incentive to be committed to a new project that has yet to prove itself as a reliable component of the individual producer's income.

The lack of incentive has been noted as one of the major reasons that Cattle Producers of Washington (CPOW) has struggled to find success since it opened a processing facility, Livestock Cooperative Association in 2013 (CPOW Case Study). CPOW, a non-profit organization of cattle producers, worked together to build a processing plant in Odessa, WA. As explained by the Cooperative Extension System in a case study of LPCA, the lack of financial and mental incentives for producers to be involved in the creation or maintenance of a business can dramatically impact the success of that collaboration.

2. Reliability of product availability: quantity and time frame. Other than specific market outlets that run seasonal businesses such as farms or seasonal food providers, to access year-round market outlets, in particular institutions, producers or collaborations must have regular and reliable availability of product. Institutional food providers are very structured and do not have room for constantly updating their product availability. The meat producers in Okanogan County

⁷⁰ Meyering, Micheal. Personal Interview. 10 October 2014.

⁷¹ Raymond, Laura. Personal Interview. 14 August 2018.

that would be accessing the new USDA-certified processing plant are not large enough operations to individually provide meat in regular intervals to customers.

Working together would allow individual producers to have the quantity of meat they would need to access institutional markets but it would not ensure product availability on a reliable time frame. Therefore, some producers would need to process their meat at different times of the year for meat to be available to a market outlet. A seasonal change in slaughter time is a difficult transition or concession for many producers to make as all cattle raised in our region are in their peak condition in late summer to early fall. It is a big request to ask a producer to change when they breed and calve in order to have yearlings available for slaughter year-round. As well, most calves in our region are sold in the fall; to request a producer to over-winter his or her animals so they can be slaughtered in early spring requires the producer to incur the cost of feeding and caring for the animals for an extra six months (the economically efficient method of feed is natural grass; feed hay in the winter is much more expensive) (Increasing Prosperity, Pg. 9). This need for year-round consistent supply poses an unequal cost scenario between producers and was discussed with dis-ease at the steering committee meetings. Perhaps some producers can be paid an incentive to breed, calve and slaughter at inconvenient times?

3. Consistency of product. All small scale, independent animal producers have different methods for raising their animals, which creates different products at each farm. This is the beauty of independent producers but it is also a hurdle when working with other producers to provide a consistent product to large market outlets. During an interview, a butcher in our area who has been cutting meat for thirty years stated that each producer's herd is unique and producers take pride in their uniqueness. In our region, it can be hard to pinpoint what creates the "uniqueness" -- whether it comes from the elevation of the pastureland, the quality and type of pasture, the type of winter feed, or the method of livestock handling. With this variability, not just in one factor but also in many factors, it is difficult to produce a consistent product. Just as with reliability of quantity and timing of product availability, institutional buyers require a consistent product, especially if they are paying a premium for grass-fed or all-natural or organic attributes.

4. Agreement on business operations. This barrier acknowledges that independent producers would have difficulty participating in a collaborative business due to the nature of their personalities and their personal tenets on how they raise their animals. Cattle producers tend to work independently and have chosen a rancher's life style for that reason; they tend to not have much experience working collaboratively. A collaborative outfit would need to jointly decide on many things, not limited to the financial and time requirements of each member/participant, the requirements regarding the product they are selling, the pricing of their product, what will be the regulating body, etc.

5. Market Saturation. The most accessible market outlets for niche meats -- high-end grocery stores and restaurants -- are already selling local meats. The lowest, and most lucrative, hanging fruit has already been picked; producers will need to adjust expectations around ease of accessing new markets and high returns. Collective pricing may be a difficult exercise, especially if producers need to sell at a lower price point than their independent sales.

In summary, there are multiple market opportunities for USDA-certified meat products from farms in Okanogan County. Each market has different room for growth and therefore the success in any new market or with new customer requires a careful assessment of the market's need and if the producer is able to meet that need; an understanding on the producer's end of what they can provide in terms of product, communication, logistics, reliability, consistency; and picking specific product attribute(s) to highlight through clear labeling. This study is timely as many

institutions across the nation are pursuing answers to help support rural agriculture. Universities and non-profits are researching ways to help small to medium sized farms stay viable. It is often referred to as “Agriculture in the Middle”. Producers are encouraged to utilize existing resources such as North Carolina’s Cooperative Extension handbook, “Farm to Fork: A Direct-to-the-Consumer Beef Marketing Handbook,” to understand the market context specific to their product. Please see the attached outreach table for a comprehensive list of all organizations and businesses contacted for this study.

Comprehensive Outreach List for Market Context Study

Type of Organization	Business/Agency/Org
NPO	King County Ag Policy Program Manager
NPO	Northwest Ag Business Center
NPO	Northwest Ag Business Center
NPO	WA State Beef Commission
GOV	WSDA Small Farms Team
GOV	FSA office re: meat event
NPO	WSFMA
University	WSU Dept. of Agriculture
University	OSU Small Farms
University	OSU Small Farms
University	University of Idaho
University	University of Idaho
Investor	Agricultural Capital
Investor	Cascadia Foodshed Financing Project
Institution	Bon Appetit
Institution	Bon Appetit
Institution	Bon Appetit
Institution	Bon Appetit
Institution	Bon Appetit
Institution	Microsoft (Daj)
Food Hub	LINC
Food Hub	LINC
Food Hub	Puget Sound Food Hub
Food Hub	Ecotrust Food Hub (??)
Food Hub/Meat Co-op	North Cascade Meats
Retail	Rain Shadow Meats
Retail	Heritage Meats
Retail	New Seasons
Retail	New Seasons
Retail	New Seasons
Retail	Central Co-op

Retail	PCC
Retail	Market of Choice
Producer + co-op	Carman Ranch, Wallowa, Oregon
Producer	Crown S Ranch
Meat Co-op	Our Table co-op
Meat Co-op	Painted Hills Natural Beef
Meat Co-op	Painted Hills Natural Beef
Meat Co-op	Grass Roots Co-op
Meat Co-op	CPoW
Meat Co-op	Montana Meat Co.
USDA Meat Processor	Revel Meats (USDA Meat Processor in OR)
USDA Meat Processor	Heritage Meats
Distributor	OGC
Distributor	Charlie's Produce
Distributor	Charlie's Produce
Distributor	UNFI
Distributor	KEHE
Distributor	QFD
Distributor	QFD
Online Retail	Crowd Cow
Online Retail	Barn2Door
Online Retail	Amazon Fresh
CSA	Oxbow
CSA	Seattle Tilth
CSA	Helsing Junction
CSA	New Roots
CSA	Full Circle Farm
CSA	Full Circle Farm
CSA	Growing Washington
CSA	Growing Washington

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Beef.” June 2013. [http://agofthemiddle.org/wp-
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APPENDIX E: Kathryn Quanbeck, Processing Plant Business Structures, Summary Report

There are various business structures that could work for a new meat processing facility in Okanogan County. Selecting the right structure will depend on the individuals involved, the needs of the business, the business goals and the potential tax and legal liabilities. Below are excerpts from two other feasibility studies that outline the business structure options.

This first section is an excerpt from *The Mendocino County Meat Plant Study*¹, completed in 2013 by Shermain Hardesty and John Harper. This study looked at the feasibility of building a new, small-scale USDA inspected processing plant to serve producers in Mendocino and Lake counties in Northern California. As a part of the study, the researchers investigated different business structures for the proposed facility. A summary of those business structures is included here:

a. Partnerships

Partnerships are one of the oldest legal forms of closely-held joint ventures. They involve two or more owners. Since at least one of the owners is fully liable for the debts of the venture, its liability is not limited; at least one owner's assets are subject to liquidation if the partnership suffers an adverse ruling. Thus, the partnership structure is very problematic in a litigious environment. The owners, called partners, may pull out at any time, usually without generating any taxable capital gains. A partnership's income is taxed at the partner level only.

b. Limited Liability Companies

Limited liability companies (LLCs) are a much newer structure. The owners are called "members", and all members enjoy limited liability. These members may also pull out at any time without triggering capital gains tax penalties. Income is distributed to members in proportion to their ownership; income is taxed only at the member level. LLCs resemble partnerships, but, most importantly, they share the corporate characteristic of limited liability. They can have an unlimited number of partners. Members have one vote per share owned.

c. S-corporations

¹ Hardesty, S. and J. Harper. 2013. Mendocino County Meat Plant Study – Staying Local. University of California Cooperative Extension Mendocino County, University of California Davis Department of Agricultural and Resource Economics, Mendocino Economic Development and Financing Corporation, Award No. 07 79 06702, U. S. Department of Commerce Economic Development Administration. 92 pages. Can be found online at <http://edfc.org/wp-content/uploads/2014/02/Meat-Study-Final-Report-2013.pdf>

S-corporations originated sometime before the LLCs, but they also offer a blend of partnership and corporate characteristics. Like a partnership, income may only be taxed at the owner (shareholder) level--as long as certain ownership criteria are met. However, if it distributes profits to outside investors, it may have to pay capital gains taxes. The shareholders have limited liability. An S-corporation can have up to 100 members. However, individuals who are not U.S. citizens cannot be members of an S-corporation. Like LLCs, members in an S-corporation can have varying investment levels.

d. B-corporations

The new benefit corporation became a recognized business structure in Washington in 2012. It is usually referred to as a B-corp. To qualify as a B-corp, a firm must have an explicit social or environmental mission, and a legally binding fiduciary responsibility to take into account the interests of workers, the community and the environment as well as its shareholders. It must also publish independently verified reports on its social and environmental impact alongside its financial results. Food-related B-corps include Cabot Cooperative Creamery (Vermont), New Seasons Markets (Oregon grocer) and Swanton Berry Farms (California, 100%- unionized organic farm). Some B-corps have explained the motivation for creating B-corporations is that for-profit firms often face pressure to abandon their social and/or environmental goals in favor of increasing their profits. By explicitly labeling themselves as B-corps, they believe that they will be able to attract like-minded investors to raise capital when they need to grow (The Economist, 2012).

e. Cooperatives

A cooperative is a jointly-owned business that: (a) distributes control equally (either as one member, one vote or proportionate to use); (b) provides equitably distributed benefits on the basis of use (rather than on the basis of investment); and (c) has equitably distributed capitalization responsibilities, also on the basis of use. Cooperatives usually have employees who operate the cooperative on a daily basis. In the long-term, cooperatives strive to have each member's capital investment in the cooperative to be proportionate to his/her utilization of the cooperative. Cooperatives resemble partnerships and LLCs in that their income may be taxed only at the individual (or member) level-- if profits are distributed properly as "patronage refunds". Also, cooperatives share the corporate characteristic of limited liability and involve similar capital gains tax disadvantages.

Traditionally, farmers formed cooperatives to pool their resources to build processing facilities in rural communities. Cooperatives often provide economies of scale, enabling farmers to compete against larger operations. Cooperatives can also serve to provide missing markets or services, such as

when a corporate customer decides to close its processing facility, leaving the local farmers with nowhere to market their production. Additionally, cooperatives can reduce their members' coordination costs (which economists refer to as transaction costs). For example, MCMP could potentially provide both slaughter and processing services at one location; therefore, its members would no longer have to schedule appointments to have their livestock slaughtered and/or processed, and then make arrangements to have the carcasses shipped to be processed (or pick up the carcasses and deliver them to the processor).

Another feasibility study from rural Northern California, in Del Norte County (near the Oregon border) looked at New Generation Cooperatives (NGC) as a potential business structure for a new meat processing facility. The section below is an excerpt from the *Del Norte Meat Processing and Retail Facility Feasibility Study*² prepared by John Irwin in 2011:

New Generation Cooperatives

The New Generation Cooperative (NGC) is similar in structure to traditional cooperatives, but the NGC focuses on marketing niche strategies rather than the traditional cooperative roles, such as production and storage. One of the main focuses of the NGC is delivery rights, which are tied directly to the initial investment required from each member. The NGC establishes a production volume, and then sells shares based on a delivery commitment from farmers, which stipulates that enough of the NGC's product is produced to fulfill the NGC's capacity requirement. One disadvantage of this system is the inability of the cooperative to encompass new producers, as the production capacity is already maximized at inception. However, delivery rights may be sold or traded to other members of the cooperative and future expansion can allow for the sale of additional delivery rights. NGCs normally maintain a marketing agreement with the member producers, whereas traditional cooperatives do not. Because NGCs are limited to purchasing products from their members only, they require a much narrower level of quality standards than traditional cooperatives. The process of identity preserved is used to ensure that an acceptable quality product is grown by members, or it can trade lower quality member grain for the higher quality grain needed for processing. The key advantage to NGCs is the fact that the organization can supply a large amount of its own start-up capital. NGCs can typically generate 30%-50% of their start-up capital, lowering long term private debt commitments and freeing up future profits for larger dividend payments to farmers. Additionally, delivery rights ensure a reliable volume of product for the cooperative, while guaranteeing a home for the producer's

² Can be found online at

<http://www.jirwinconsulting.com/Del%20Norte%20Meat%20Processing%20and%20Retail%20Facility%20Feasibility%20Assessment-%20report.pdf>

product. It also allows the cooperative to better react to market conditions. New generation cooperatives may choose a combination of options, but usually organizations stay within a stock or non-stock form of capital acquisition. Potential members may feel more comfortable with stock options, as it is a more commonly understood system of capitalization.

Capitalizing refers to the amount of money needed to begin operations and the mechanism for acquiring the cash. Important decisions include whether the cooperative will issue stock or non-stock options (i.e. membership dues), borrow from traditional financial institutions, and determine minimal rates of return for its members. The goal is to provide enough working capital to begin and maintain operations while sustaining manageable debt levels for the organization and making the investment affordable to prospective members. Ownership certificates come in a variety of forms, including common stock, preferred stock, membership certificates, and capital certificates. In terms of cooperatives, common stocks are shares of the cooperative representing membership/ownership in the cooperative and are accompanied by voting rights. Common stock can be divided into classes, each carrying different voting privileges and assessed different values. Those with more privileges are more expensive to purchase. Cooperatives usually do not pay interest on common stock issued. Preferred stock is nonvoting stock that can be issued to both members and nonmembers of the cooperative. The proceeds from the purchase of preferred stocks are usually used for capital investment and. As with common stock, preferred stock can be divided into classes, each with a different value receiving different scales of interest payments. Preferred stock owners receive interest for their investment, and are usually given their interest dividends before the distribution of profits to common stock holders. If the organization ceased to exist, preferred stock holders are compensated first. If the members of a cooperative decide that they do not want to offer stock, membership is derived through membership certificates. Voting rights accompany membership certificates, which are issued once membership dues are paid. Usually memberships and capital certificates are insured, but are non-interest bearing. Capital certificates are similar to preferred stock, but are not issued as stock. They are sold in a variety of denominations and do not have accompanying voting rights. Interest may or may not be paid to capital certificate holders, but nonmembers may purchase the certificates. NGCs require a marketing contract, making all members producers. In an NGC, preferred stock and/or capital certificates are generally not offered. After the cooperative has begun operation, members continue their investment by providing additional risk capital. This can be accomplished in a variety of ways. The cooperative may retain a portion of earnings as an additional investment into the organization. This can be done in two ways: through the payment or retention of a per-unit fee for each member, or through the retention on the overall cooperatives net earnings. Either way, the equity

investment is credited to the members' equity accounts and held as a liability on the cooperatives balance sheet.

Cooperative Legal Considerations

The legal considerations cooperatives must consider include the drafting of articles of incorporation, creating bylaws, membership applications, creating and maintaining marketing and purchase agreements, and revolving fund certificates. While the Capper-Volstead Act of 1922 and the Farm Credit Act of 1971 have aided cooperatives in their ability to work together in the handling, processing and marketing of their goods, and allows them to borrow jointly, cooperatives are still subject to numerous antitrust laws and are responsible for all tax codes relating to their enterprise. Articles of incorporation give the cooperative a distinct legal standing. It limits personal liability for debt incurred by the cooperative, excluding the amount of their initial investment. The articles of incorporation also describe the nature of the business entity, its location, the proposed duration of the association, and the names of the principle parties involved. Once drafted, the articles are filed with the Secretary of State, activating the cooperative. Bylaws define how the cooperative will conduct business. The bylaws describe membership requirements and list the rights and responsibilities of the cooperative's members. They also discuss voting procedures and the board structure that will govern the cooperative. Membership applications are composed of five main parts: the applicant's statement addressing membership; the signature of the applicant; a statement of cooperative acceptance; signatures of the board president and secretary; and a statement of the duties and intent of the prospective member. A membership certificate may be issued to each member as evidence of entitlements to the organization.

Marketing and purchasing agreements set the standard of quality acceptable to the cooperative. They also state how the proceeds of the cooperative will be distributed, once deductions for operating and capital expenditures have been taken. Often marketing and purchasing agreements are required when seeking outside financial backing. The revolving funds certificate is a written receipt for capital investments and retained earnings that will eventually be revolved or redeemed. These investments may be deductions based on a per-unit of production, reinvested earnings, or original capital subscription, if not issued in stock form. All legal documents should be written with the help of a lawyer to ensure state provisions are addressed. Investing risk capital is the responsibility of all members. The amount of risk capital invested is an important decision for the cooperative's members to consider. It must cover a large portion of the start-up and operational costs, so that outside investors feel comfortable that the membership will work to make the operation successful. Members must also invest enough capital to give them a financial stake in the success of the enterprise. Most private loan institutions will require the cooperative members to assume at least 50% of the capital risk,

but it may take many years for the members to acquire this percentage. Long-term credit is available through federal and state sponsored credit programs. Sources of facility loans include: USDA Rural Development; Cobank; St. Paul Bank for Cooperatives; and National Cooperative Bank. Many commercial banks and credit unions have local programs for small business start-up. Cooperatives can apply for short-term loans to cover operating costs during the first year of operation. These are acquired through the Farm Credit System and the National Cooperative Bank (Rapp and Ely, 1996).

Owner Investment

Ownership options that can be exchanged between members within the cooperative are referred to as exchangeability. Redemption refers to the expectation that member ownership will be redeemed under specific conditions, such as retirement or death. Investment amounts should be determined by comparative usage requirements. Producers interested in owning more than their usage percentage can purchase additional preferred stock or capital certificates. Cooperatives must maintain financial reserves to tie them over during periods of reduced production or environmental recession. These reserves can be earmarked for specific spending, such as debt reduction, facility improvements, or operational growth. Reserves also provide peace of mind for members, allowing the cooperative to weather hard times without the need for additional investment by members. After reserves have been established, the cooperative needs to develop a system to repay investors their initial cash outlays. Usually a percentage of operating revenues are dedicated for the repayment of owner equity and the purchase of stock or certificates of outgoing members. This can be done in two ways: either a payment amount is determined based on the input of each member; or the resources are pooled and distributed based on the percentage share owned in the cooperative. Both systems require a delayed payment for initial livestock inputs, so that the cooperative pays for the initial livestock and repays profits after the meat has been successfully sold.

With traditional cooperatives, the initial investments are very low, often less than \$100. Ownership is offered through the issuance of capital certificates and not stock options. Traditional cooperatives are generally more restrictive than other ownership types in allowing exchanges. This is usually done through the sale of certificates between members at the board of director's discretion. Traditional cooperatives usually have an established par value for certificates that is determined at the time of buy-in. Traditional cooperatives allow new members to join at any time, so a par value must be established. Traditional cooperatives use a set price system for profit distribution. Based on the number of certificates owned or the amount of meat produced, the cooperative will disperse profits as flat fees at the close of the business cycle. Members in new generation cooperatives typically

invest \$10,000 - \$12,000 to purchase marketing rights (Coltrain, Barton, and Boland, 2001). NGCs do not normally establish a par value, so ownership stocks are valued at market price. It is highly correlated to the expected profitability of the organization; so certificate sales are usually done through a flat fee. Since NGCs are exchangeable, redemption obligations are not required. NGCs commonly use the pooling system. In the pooling system, a pool is opened at the start of the production period, with payments made as meat is sold. An initial payment can be arranged at delivery time, with additional progress payments made until the pool is closed and the final margins are determined. The amount of profit distribution is directly tied to the amount of meat generated by each member and is tied to the producer's contract. For investor-owned firms, stock certificates are purchased, with the stock value based directly on the profitability of the organization, and profits are distributed through dividends. The value of a stock certificate is based on the future anticipated profitability of the enterprise. Stock sales and exchanges can occur through an open market, and non-producers can buy-in to the cooperative.

How can non-profits assist in developing meat processing capacity?

In Okanogan County there is a unique opportunity to partner with local non-profits like The Methow Conservancy and others to support the development of additional meat processing capacity in the region. Looking nationwide for examples, we don't see many non-profits operating meat processing facilities. A non-profit owned and operated the [Foothills Pilot Plant](#) in Marion, SC for a number of years but recently closed in 2017 as they could never achieve profitability. A better strategy is for a non-profit to *support* a for-profit meat processing business rather than the non-profit trying to own and operate the plant. Right here in Washington State we have a good example as to how non-profit and a meat processing facility might work together with the partnership between the Puget Sound Meat Producers Cooperative and Heritage Meats.

APPENDIX F: Kathryn Quanbeck, Non-profit Ownership of MSU s in Washington State, Summary Report

In the last 15+ years, there have been several instances of non-profits owning and leasing mobile slaughter units (MSU) to increase access to USDA-inspected meat processing in their communities. Examples include the relationship between the Lopez Community Land Trust and Island Grown Cooperative, the Pierce Conservation District and the Puget Sound Meat Producers Cooperative (now, Puget Sound Processing, LLC), the Community Agricultural Development Center and S&K Processing and others. Here, we ll focus on two MSUs that are still running and serving their communities. Much more information on MSUs (in Washington, and beyond) can be found on the Niche Meat Processor Assistance Network s website at <http://www.nichemeatprocessing.org/mobile-unit-overview>.

Pierce Conservation District

The Pierce Conservation District¹ (PCD) purchased a mobile slaughter unit (MSU) in 2009 to serve producers in the Southern Puget Sound area who had limited access to USDA-inspected slaughter services for cattle, hogs, sheep and goats. Following a feasibility study² in 2008 in their region, the PCD approved funding for the purchase of an MSU that would be owned by the PCD but leased to a newly formed cooperative, the Puget Sound Meat Producers Cooperative (PSMPC) to manage and operate the unit.



Puget Sound Processing Mobile Slaughter Unit

¹ <https://www.piercecountycd.org/169/Mobile-Meat-Processing-Unit>

² <http://articles.extension.org/pages/74378/southern-puget-sound-2008>

The PSMPC ran the unit from 2009 until 2016. At this time, the lease and management was turned over to a newly formed private business, Puget Sound Processing, LLC³ (PSP). PSP currently operates the unit. PSP operates the MSU and hauls carcasses to multiple USDA-inspected and custom-exempt processing facilities for cutting, packaging and value-added processing. PSP maintains a site lease with a local farm where the animal handling facilities are located and slaughter services are performed. Local producers haul to the farm each week for processing. PSP is currently in the process of looking for a secondary site to expand their service range. The site lease outlines maintenance responsibilities, access to fresh water, responsibilities for wastewater and more. The site requirements can be quite expensive, ranging up to \$30,000 to establish a new slaughter site with all the correct equipment and animal handling facilities.

Regarding the MSU itself, PSP carries the grant of inspection with the USDA and all required insurance. Any upgrades and all maintenance are the responsibility of the operator. PSP has three consecutive 5 year leases with PCD. The lease is offered at a discounted rate as slaughtering animals in a MSU is generally an unprofitable business. The daily operating cost of the MSU can range as high as \$2,000/day with all labor, supplies, wear and tear, insurance and overhead accounted for.

PSP remarked that they have a very good working relationship with PCD. In general, PCD is fairly hands off in the operation of the unit: it is PSP's responsibility to maintain, operate and oversee the unit. PSP provides PCD with quarterly reports detailing the number of animals processed, number of producers served, dollar value of meat processed, a brief narrative on any improvements or repairs made and more. This information helps PCD ensure that the unit is being used for its intended purpose, to serve the producers and consumers of Pierce County.

Lopez Community Land Trust

Much of the information here is adapted from the Niche Meat Processor Assistance Network's Island Grown Farmer's Cooperative: A Case Study. ⁴

Starting in 1996, livestock producers in San Juan County, WA became interested in marketing their meat locally but were having trouble accessing slaughter and processing services. At first, they wanted to build a small slaughter facility on one of the islands, but quickly ran into neighborhood opposition at each site they considered. So, they connected with the Lopez Community Land Trust (LCLT) to explore the possibility of a MSU. In 2002, the LCLT bought an MSU and leased it to the newly formed Island Grown Farmer's Cooperative (IGFC) for operation and management. The IGFC also leased a USDA-inspected cut and wrap on the mainland for processing, packaging and distribution. The relationship with LCLT was crucial

³ <http://www.pugetsoundprocessing.com/>

⁴ <http://articles.extension.org/sites/default/files/IGFC%20Case%20Study.pdf>

to getting started, LCLT committed significant time and human capital to the project by raising \$90,000 of the \$150,000 in start-up costs (trailer, truck, equipment, design/testing, outreach). Each member of the IGFC also made an initial equity investment of \$600 each. From then on, the only source of funding was processing revenue - basically, the unit had to be self-sustaining from the beginning.



Island Grown Farmer s Cooperative Mobile Slaughter Unit

The LCLT originally leased the MSU to IGFC for \$1/yr. for 10 years. In 2012, the co-op purchased the unit at fair market value. From the beginning, the lease stipulated that IGFC take care of everything: maintenance, grant of inspection, insurance, operations, etc. The LCLT had no day-to-day responsibilities for the MSU. This relationship worked well for both parties: the LCLT wasn't interested in operating an MSU and it gave IGFC the flexibility to make business decisions that could ensure operated at break-even, or even a small profit.

Overall, both the IGFC and PSP describe their relationships with the non-profit owners of the MSUs they operate as hands-off, in a good way. This is important for both parties: it allows the operators to focus on running the MSU in a manner that sustains the business and limits the responsibilities and liability of the non-profit. Both operators remarked that the lease arrangement is likely to be the least of your worries: making a MSU operate as a profitable business is a far bigger challenge!

Byproducts for hogs and cattle represent a significant portion of the carcass, by weight. A USDA report in 2011, *Where's the (Not) Meat? Byproducts from Beef and Pork Production* estimated Byproducts (edible offal (including variety meats), inedible offal, hides and skins, blood, fats, and tallow) include all parts of a live animal that are not part of the dressed carcass and constitute about 30 percent of the liveweight of hogs and about 44 percent of the liveweight of cattle.¹ These byproducts are an important revenue stream for large-scale meat processing facilities that have the infrastructure, expertise and relationships to make sellable products out of offal, hides and more. Some of the byproducts processed and sold by large-scale meat processing facilities in the U.S. include:

- **blood/blood meal:** blood byproducts have many uses including pharmaceutical products, animal feed, fertilizer and manufacturing industry uses.
- **Bones/bone meal:** bones can be use for many purposes from buttons to glue and bone meal can be used as an animal feed or in fertilizer.
- **hides:** hides can tanned and turned into leather products.
- **glands and organs:** many uses in the pharmaceutical industries.
- **tallow:** rendered into edible fat, and for soap or candle making.

While estimates of total U.S. byproduct production by species are not publicly available, USDA estimated that the annual proportion of packer revenue earned per animal from byproducts was 7.0 percent meaning that byproducts are a definite contribution to a meat processor's bottom line.

For small-scale processing facilities, however, it is usually very difficult to capture much value from byproducts. It is frequently not cost effective to build the processing capacity needed to turn byproducts into sellable products, given the high cost of processing and the low dollar value paid for the finished product. The byproducts market is, by and large, high volume, low margin and export focused. A feasibility study in Montana for a processing plant that would process approximately 250 head of beef per day found that the rendering equipment alone needed to process just bone meal and fat, for example, would cost \$6 million, plus an additional \$2 million for installation and building.²

In general, when it comes to byproducts small-scale plants are best served focusing on generating revenue from the edible offal. Edible offal includes products such as hearts, livers, tripe and more. These products can be sold for human consumption or for pet treats. It should be noted that the regulations surrounding pet food and pet

¹ 2011. USDA-ERS. *Where's the (Not) Meat? Byproducts from Beef and Pork Production*. Available at https://www.ers.usda.gov/webdocs/publications/37427/8801_ldpm20901.pdf?v=0

² <http://onemontana.org/what-we-do/meat-processing-facility-feasibility-study>

treats have changed in recent years. Processing plants interested in producing pet treats and/or pet food should carefully review the FDA guidance on *Human Food By-Products For Use As Animal Food* at <https://www.fda.gov/downloads/AnimalVeterinary/GuidanceComplianceEnforcement/GuidanceforIndustry/UCM499201.pdf>. This distinction is very important: the regulations for pet treats and pet food are different and those for pet food are quite strict. Those wishing to produce pet food must show that their pet food is a complete and nutritious diet for a dog or cat, meeting all the macro- and micro-nutrient needs of the animal. Suffice to say, many small plants choose to go the pet treats route as opposed to developing pet food recipes.

Two relatively easy entry points into the pet treats market are smoked beef bones and dried beef liver treats. First, if possible, try to sell fresh beef bones for soup or stock and fresh beef liver for human consumption as that will garner the highest price. But, if you have a hard time moving these products, it is worth considering selling smoked beef bones and dried beef livers as pet treats at a lower price point. Regarding smoked beef bones, a processor in the Midwest noted on the NMPAN listserv we smoke the knuckles and femurs at 180° with full smoke for 6 hrs. We do not use any preservative[s] on them and handle them as [we would] edible [products]. We sell them for \$2 each and sell all we can make. They are a big hit at farmers markets and sport shows and I would think would be easy to wholesale in urban areas. And they bring new and diverse folks to our store on a regular basis.

Dried liver treats can also be made using existing equipment. Livers can be cut and sliced and then dried in food dehydrator or in the smoker.

We do see some examples of small-scale processing plants across the country controlling costs or generating revenue with byproducts. For example, a small-scale custom-exempt plant in Lakeview, OR, Lakeview Lockers, uses a composting system to reduce the cost of handling their meat processing waste. They use a windrow system to compost meat processing waste into fertilizer. You can learn more about their process on an NMPAN webinar found here:

<https://articles.extension.org/pages/24718/alternatives-to-rendering:-butcher-waste-composting>. Cornell University in New York also has lots of resources on composting meat processing waste at their Cornell Waste Management Institute website, here: <http://cwmi.css.cornell.edu/>.

White Oak Pastures (WOP) in Bluffton, GA is also well known for their innovative approach to meat processing and marketing. They have two on-site, USDA-inspected meat processing facilities at WOP: one for poultry and one for red meat. They have developed a full-circle solution for their meat processing waste in which they feed the intestines from meat processing to black soldier flies and then collect the black soldier fly larvae to feed to their chickens. WOP describes the process on their blog: We take the intestines from our abattoir and feed them to the black soldier fly larvae. They eat and grow, and when they're ready to pupate, they self-harvest by crawling up the ramps on the sides of the tub and dropping into a

bucket The larvae serve two really important purposes: eating up that organic material from our red meat abattoir, and producing a protein- and fat-rich feed source that we use to supplement the diets of our pastured poultry.³

For most small-scale meat processing facilities, it is best to focus on the primary business activities of slaughter, cutting, and value-added processing first and foremost. Add in byproduct processing activities where and when they are beneficial to the core business activities. Seek out byproduct revenue streams that further utilize existing equipment or labor, rather than those that require more (equipment or people). Additionally, it is strongly recommended to partner with other processing facilities that may specialize in further processed or value-added products to generate revenue from byproducts you might not have the equipment to process. For example, very few small-scale meat processing facilities make bone broth. Typically, bone broth is made at facilities that specialize in just making bone broth. Rather than invest in the infrastructure to process bone broth in your own plant, partner with a bone broth maker to sell them bones, or ask them to co-pack a bone broth just for you.

³ <http://blog.whiteoakpastures.com/blog/weve-got-guts.-lots-and-lots-of-guts>

ORDINANCE No. 793

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF TONASKET, WASHINGTON, AMENDING TITLE 17 OF THE TONASKET MUNICIPAL CODE BY ADDING NEW DEFINITIONS, REVISING TEXT TO ALLOW “SLAUGHTERHOUSES” IN THE C-2 WITH A CUP AND ESTABLISHING MINIMUM STANDARDS TO BE APPLIED.

WHEREAS, Chapter 35A.63 of the Revised Code of Washington establishes the City of Tonasket as the authority with jurisdiction on local land use decisions; and

WHEREAS, on July 31, 2018 the Planning Commission initiated text amendments to considering limited slaughterhouses uses in the service commercial and mixed use districts for the City of Tonasket; and

WHEREAS, all notice regarding said text amendment proceedings as required under TMC Title 19 have satisfactorily been performed; and

WHEREAS, a program for implementing the Comprehensive Plan is to review and revise the zoning ordinance to encourage development of industrial and commercial uses while providing for appropriate buffers between potentially conflicting uses; and

WHEREAS, the Planning Commission conducted a duly publicized public hearing on the proposed text amendment on August 21, 2018, and after said hearing the Commission recommended to the City Council to approve the text amendment for the Commercial Two (C-2) District only and pass an ordinance enacting the same; and

WHEREAS, the City Council conducted a duly publicized public hearing on the Planning Commission’s recommendation on the proposed text amendments on September 25, 2018; and

WHEREAS, the City Council does find that allowing limited slaughterhouses uses in the service commercial districts of the City of Tonasket is supported by the Comprehensive Plan; and

WHEREAS, the City Council did adopt by reference the Planning Commission’s Finding of Facts and Conclusions as their own and accepted the Planning Commission’s recommendation.

**NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF
TONASKET, WASHINGTON, DO ORDAIN as follows:**

Section 1. Amendment by Addition.

Add an entirely new Section 17.70.200 to the Tonasket Municipal Code entitled Slaughterhouses to read as follows:

"17.70.200 Slaughterhouses.

A. The intent of this section is to provide for and establish standards for permitting of uses requiring the slaughter of animals. The intent of the following conditions is to ensure that animals are kept in a manner which will not endanger the health, peace and safety of the citizens of the city and which will assure that the animals are kept in a clean and sanitary condition and not subjected to suffering, cruelty or abuse.

B. The slaughter of animals is permitted to be operated and maintained only as a use accessory to a permitted meat processing and packing facility subject to the following requirements:

1. The meat processing and packing facility is certified by the USDA;
2. The slaughter methodology and process is certified by the USDA;
3. The number of animals held on-site shall be limited to no more than 16 beef equivalents a period not to exceed 48 hours;
4. Animals shall be kept in a well-maintained enclosure and all waste managed in conformance with best management practices and USDA requirements. All waste must be cleaned on a regular basis so as to prevent offensive odors and prevent contamination of groundwater;
5. Offal and other by products of the slaughter process shall comply with USDA requirements and be kept in closed containers which are emptied and the contents removed from the site on at least a weekly basis;
6. A minimum buffer of 100' shall be required between slaughter and animal enclosure and existing residential uses. The buffer may be reduced to 50' with the addition of an 8' tall sight obscuring fence on the property line with the adjoining residential uses;
4. Slaughtering of animals shall not be conducted within view of the public;
6. At no time shall the animals be allowed to run at large."

Section 2. Amendment by Revision.

A. TMC 17.10.011 "B" which reads:

"17.10.011 "B"

"Basement" means that portion of a building, between a floor and a ceiling, which is partly below the finished grade. A basement shall be considered a story

unless it is used exclusively for parking, storage and/or the housing of heating equipment.

"Bed and breakfast" means an owner-occupied single-family dwelling in which not more than two bedrooms are rented to the traveling public (tourists). For the purposes of this title, this use is not considered a commercial use. This use shall have the outward appearance of a single-family residence and food service in accordance with WAC 246-215-180.

"Best management practices (BMPs)" means conservation practices or systems of practices and management measures that:

Control soil loss and reduce water quality degradation caused by nutrients, animal waste, toxins, and sediment.

Minimize adverse impacts to surface water and ground water flow, circulation pattern, and to the chemical, physical, and biological characteristics of waters, wetlands, and other fish and wildlife habitats.

Control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw material.

"Binding site plan development" means a planned development that does not establish lot boundaries for the purpose of subdividing for sale individual lots or parcels within the development. A binding site plan development must meet exemption criteria from subdivision regulations as defined in RCW 58.17 and the city's subdivision regulations.

"Boardinghouse," "lodginghouse," or "roominghouse" means a building where lodging with or without meals is provided for not more than 10 persons in addition to members of the family occupying such building.

"Broadcast facility, radio and television" means an establishment engaged in transmitting oral and/or visual programs, and which consists of a studio, transmitter, and antennas.

"Buffer" means a strip of land established to protect one type of land use from another with which it is incompatible.

"Buildable area" means the space remaining on a lot after the minimum open space requirements (coverage, yards, setbacks) have been met.

"Building" means a structure built for the support, shelter, or enclosure of persons, animals, chattels, or property of any kind.

"Building code" means the State Building Code and related construction codes and standards as amended and adopted by the city of Tonasket per Title 15 TMC.

"Building coverage" means the amount of land covered or permitted to be covered by a building or buildings, usually measured in terms of percentage of a lot.

"Building height" means the vertical distance measured from the average elevation of the native grade adjacent to the building foundation, to the highest point of the coping of a flat roof, or to the highest gable of a pitched or hipped roof, excluding chimneys, antennas and other secondary roof structures.

"Building line" means a line, fixed parallel to the lot line, beyond which a building cannot extend.

"Bulk storage" means nonportable storage of bulk products in fixed tanks.

"Business or professional office" means the office of a recognized profession including doctors, dentists, accountants, attorneys, optometrists, architects, professional engineers and surveyors and persons engaged in other similar occupations or nonretail business maintained for the conduct of that profession or business."

Is hereby amended to read as follows:

"17.10.011 "B"

"Basement" means that portion of a building, between a floor and a ceiling, which is partly below the finished grade. A basement shall be considered a story unless it is used exclusively for parking, storage and/or the housing of heating equipment.

"Beef equivalents" means, for the purposes of calculating the number of animals allowed at a permitted slaughterhouse, 1 beef = 2.5 hogs = 6 sheep/goats = 0.75 bison.

"Bed and breakfast" means an owner-occupied single-family dwelling in which not more than two bedrooms are rented to the traveling public (tourists). For the purposes of this title, this use is not considered a commercial use. This use shall have the outward appearance of a single-family residence and food service in accordance with WAC 246-215-180.

"Best management practices (BMPs)" means conservation practices or systems of practices and management measures that:

Control soil loss and reduce water quality degradation caused by nutrients, animal waste, toxins, and sediment.

Minimize adverse impacts to surface water and ground water flow, circulation pattern, and to the chemical, physical, and biological characteristics of waters, wetlands, and other fish and wildlife habitats.

Control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw material.

"Binding site plan development" means a planned development that does not establish lot boundaries for the purpose of subdividing for sale individual lots or parcels within the development. A binding site plan development must meet exemption criteria from subdivision regulations as defined in RCW 58.17 and the city's subdivision regulations.

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"Building line" means a line, fixed parallel to the lot line, beyond which a building cannot extend.

"Bulk storage" means nonportable storage of bulk products in fixed tanks.

"Business or professional office" means the office of a recognized profession including doctors, dentists, accountants, attorneys, optometrists,

Ordinance No. (insert)

Zoning Code Slaughterhouses Amendment

Page 5 of 7

architects, professional engineers and surveyors and persons engaged in other similar occupations or nonretail business maintained for the conduct of that profession or business."

B. That portion of Table 1 of Section 17.70.020 of the Tonasket Municipal Code entitled District Use Chart which reads:

As shown on Part 1 of Exhibit "A" attached hereto.

Is hereby amended to read as follows:

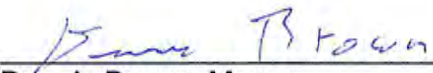
As shown on Part 2 of Exhibit "A" attached hereto.

Section 3. Severability. If any section, subsection, paragraph, sentence, clause, or phrase of this ordinance is declared unconstitutional or invalid for any reason, such decision shall not affect the validity of the remaining parts of this ordinance.

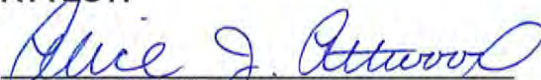
Section 4. Effective Date. This ordinance shall become effective from and after its passage by a majority vote of the City Council, approval by the Mayor, and five days after publication of this ordinance, or a summary of this ordinance, as required by law.

APPROVED AND ADOPTED by the City Council of the City of Tonasket, this 25 day of Sept, 2018.

APPROVED:


Dennis Brown, Mayor

ATTEST:


Alice J. Attwood, City Clerk

APPROVED AS TO FORM:

Michael D. Howe, City Attorney

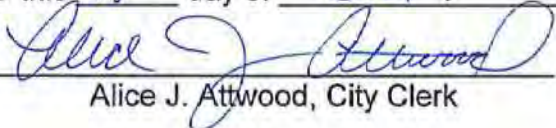
Filed with City Clerk: 9-21-18

Passed by City Council: 9-25-18

Date Published: 10-11-18

Date Effective: 10-16-18

On the 25 day of Sept, 2018, the City Council of the City of Tonasket passed Ordinance No.

DATED this 18 day of Oct., 2018.


Alice J. Attwood, City Clerk

EXHIBIT A

Part 1

17.70.020 Table 1

USE CHART

CITY OF TONASKET ZONING USE CHART	Zoning Districts								
	R-1	R-2	R-R	C-1	C-2	MU	M-1	AI ¹	PU
Land Uses									
Slaughterhouses, stockyards and feedlots	X	X	X	X	X	X	X	X	X

Part 2:

17.70.020 Table 1

USE CHART

CITY OF TONASKET ZONING USE CHART	Zoning Districts								
	R-1	R-2	R-R	C-1	C-2	MU	M-1	AI ¹	PU
Land Uses									
Slaughterhouses	X	X	X	X	CUP ¹⁴	X	X	X	X
Stockyards and feedlots	X	X	X	X	X	X	X	X	X

¹⁴ - Slaughterhouses subject to the requirements of 17.70.200 TMC.

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APPROVED AUGUST 10, 2021

The Regular Meeting of the Planning Commission was held on July 13, 2021 in the meeting room of the Historic Courthouse, 1616 8th Street, Minden, NV, beginning at 1:00 PM and via Zoom participation as well as was streamed via Live Stream – Video Link, Douglas County YouTube Channel. **When applicable, the minutes below have been transcribed.**

CALL TO ORDER AND DETERMINATION OF QUORUM

The meeting was called to order at 1:00 PM.

PLANNING COMMISSIONERS PRESENT:

Kirk Walder, Chairman
Maureen Casey, Vice Chairwoman
Bryan Oland, Member
Mark Neddenriep, Member
Kristi Kandel, Member
Bryce Clutts, Member
Nicholas Maier, Member

STAFF PRESENT:

Sam Taylor, Deputy District Attorney
Sam Booth, Deputy Director
Michelle Pablo, Deputy Clerk
Melissa Allmett, Deputy Clerk

PLEDGE OF ALLEGIANCE

Member Clutts led the Pledge of Allegiance.

PUBLIC COMMENT

Chairman Walder speaks:

At this time, we'll begin with Public Comment. Public Comment will be taken on those items that are within the jurisdiction and control of the Planning Commission. Additional Public Comment periods may be allowed on individual agenda items at the discretion of the Chairperson. It is requested that members of the public comment on those agenda items when they are considered. In addition to Opening Public Comment, Public Comment will also be taken on each item listed on the agenda when they are discussed by the Planning Commission. We will also take Closing Public Comment. Public Comment is limited to three minutes per speaker on matters over which the Planning Commission has jurisdiction, supervision or control. The Planning Commission wants to encourage the respectful consideration of all views by members of the public. If the content is willfully disruptive of the meeting by being irrelevant, repetitious, slanderous, offensive, inflammatory, irrational, or amounts to a personal attack or interfering with the rights of others the comment will be terminated. The microphone for

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Public Comment is at the podium, you can press the face button or the staff can turn that on when you have Public Comment. If, when you begin your Public Comment, you would print your name on the pad and state your name for the record, and then we'll begin the three minute timer. When the timer gets down to 30 seconds it will turn yellow, and then when the three minutes has expired it will turn red and you should conclude your statement. So, at this time, Public Comment is open on any matter within the jurisdiction of the Planning Commission. Again, if you have comments on Agenda Item Number One or Agenda Item Number Two, we would ask you to hold those comments until we consider those agenda items. So, if there are any opening Public Comments, please go ahead.

Jim Slade speaks:

Maps are important to nearly every issue that comes before the Planning Commission. Of course, those maps need to be accurate and readable to fulfill their purpose of informing both the Planning Commission and the public as to what they're portraying. I pointed that out a few months ago, that the new maps that the Community Development was using failed in both goals, being neither accurate nor readable, and were far worse than the previous maps that staff presented. There was some agreement that this was the case, some mention of a new program being used by GIS and a promise to make them better. Sadly, that has not happened, which is a disservice to you and the public. Regardless of who creates the map it is up to Community Development to make certain that they serve their intended purpose. While the comments I make here are general and don't address the substance and factors of any agenda item today, it will be helpful if you look at a recent map, so I would recommend that you look at the map on page 136 of today's packet, the zoning map of the area around Buckeye and Muller. On that map the subject parcel alone shows four different shades of green. The key shows three green colors, each a tiny two millimeters by four millimeters, one being A 19, one RA 5, and one RA 10. It is difficult to tell which of those zoning districts apply to the four different greens on the parcel map. Making matters worse, there are four or five other shades of green nearby. The purpose of this map is supposedly to inform us as to the zoning of the subject parcel and the other nearby parcels, but it is impossible to do so from that map. The adjacent parcels to the east and north, on the other side of Muller, and three shades of gray, are marked Light Industrial. The Rural Industrial appears in part of the gray area to the east. SFR 8,000 appears in five places on the west side of the map, but on top of four different color parcels, only one of which is SFR 8,000 in the key. The purple parcel is not identified at all, though the key indicates that it is a public facility. Would it have been too difficult to identify it as a public facility? The Minden Elementary School, which might be relevant? Maps are supposed to make the Planning Commissioners and the public better informed about the nature of the subject parcel and other nearby parcels. This map does just the opposite, making us all more confused. Community Development needs to

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do a better job with all their maps, and don't blame it on GIS, this is your work product and you need to make sure that it serves its intended purpose.

Chairman Walder speaks:

Thank you very much. Is there additional Opening Public Comment? Seeing no additional Opening Public Comment, we'll close Opening Public Comment.

APPROVAL OF AGENDA

Chairman Walder speaks:

We'll move to the approval of the agenda. This is for possible action, approval of the proposed agenda. The Planning Commission reserves the right to take items in a different order to combine two or more agenda items for consideration, and to remove items from the agenda or delay discussion relating to an item on the agenda at any time. We do have two items on our agenda today and I would also allow Public Comment on the approval of the agenda, if there is anyone from the public who would like to comment on the approval of the agenda today.

PUBLIC COMMENT none

Chairman Walder speaks:

If there's no Public Comment on approval of the agenda, then I would bring it back to the Planning Commission for approval of the agenda and a motion.

Vice Chairwoman Casey speaks:

So moved.

Chairman Walder speaks:

Maureen moves approval of the agenda; is there a second?

Member Neddenriep speaks:

Second.

Chairman Walder speaks:

Mark seconds approval of the agenda. Is there any discussion on approval of the agenda? Seeing no discussion, I'll call for the vote. All those in favor of approving the agenda vote aye. Any opposed to approval of the agenda? Hearing no opposition, then the agenda is approved 7 0.

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MOTION to approve the agenda; carried.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Maureen Casey, Member
SECONDER:	Mark Neddenriep, Member
AYES:	Oland, Walder, Casey, Neddenriep, Maier, Clutts, Kandel

APPROVAL OF MINUTES

Planning Commission - Regular Meeting - April 13, 2021 1:00 PM
Planning Commission - Regular Meeting - May 11, 2021 1:00 PM

Chairman Walder speaks:

I will move on to approval of the minutes. This is for possible action. Approval of the draft minutes of the Planning Commission April 13th, 2021, and approval of the draft minutes of the May 11th, 2021 meeting. We did postpone the April 13th minutes, as they were a little bit jumbled at times. We have corrected those. In the interim, we did not have a June meeting, so we would be approving the two minutes from the April 13th and the May 11th meeting. I'll, again, call for any Public Comment on approval of the minutes of those two meetings. As I've said in the past, I do this because, in some cases, members of the public may have been misquoted in the minutes, and I do want to offer that opportunity for any member of the public who made a statement at either of those meetings and it was not properly recorded. So, if there's Public Comment on the approval of the minutes, please come forward.

PUBLIC COMMENT none

Chairman Walder speaks:

Seeing no Public Comment on approval of the minutes, I would bring it back to the Planning Commission for a motion to approve the minutes of those two meetings.

Vice Chairwoman Casey speaks:

So moved.

Chairman Walder speaks:

Maureen moves approval of the two minutes in April and May meetings; is there a second?

Member Neddenriep speaks:

I'll second it.

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Chairman Walder speaks:

Mark seconds the motion. Is there any discussion on approval of the minutes? Seeing no discussion, I'll call for the vote. All those in favor of approving the minutes vote aye. Any opposed to approval of the minutes would vote nay. In this vote, the votes are seven in favor and none against, so both of those minutes are approved.

MOTION to approve the draft minutes of the April 13, 2021 and May 11, 2021 Planning Commission meetings; carried.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Maureen Casey, Member
SECONDER:	Mark Neddenriep, Member
AYES:	Oland, Walder, Casey, Neddenriep, Maier, Clutts, Kandel

PUBLIC HEARINGS

1. For possible action. Discussion on a request for a Major Variance to reduce the required 30 foot side yard setback to a 10 foot setback for a proposed carport and deck located at 1248 Tamarack Drive in the R-064 zoning district in the Tahoe Region. The applicant is Alan Mansfield, Masterfield Construction, LLC representing the owners Jason and Yelena Rose. (APN: 1418-34-210-002). Development Application DP 21-0146. Lucille Rao

Chairman Walder read the agenda item into the record

Chairman Walder speaks:

Lucille, you will be doing the staff presentation and I'll remind everyone that the procedure we usually follow is that the staff will make a presentation, we will then have the applicant make any comments they wish to make, we'll then move to questions from the Planning Commission for the staff or the applicant, then we'll follow up with Public Comment on the agenda item, and then the Planning Commission will take action on a motion. Lucille, go ahead and start your presentation, and then we'll move to the applicant.

Lucille Rao, Assistant Planner, speaks:

Thank you, Chairman Walder. I'll start with the background. There are two types of variances, Major and Minor Variances, for setbacks. A Minor Variance is 20 percent or less. A Major Variance is greater than 20 percent. Minor Variances can be approved administratively by the Director and Major Variances must go before

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the Planning Commission. Planning Commission must approve, must meet the findings. Title 20, Section 20.606.050.B contains the findings required by the Planning Commission to approve a Major Variance. The subject parcel is within the Lakeridge Estates Subdivision Map Number 1. It was recorded in 1957. On the map there are specific setbacks that were determined for each parcel. The house was built in 1980, per the Assessor's database. So, it can be concluded that the intention for the setbacks was a way to determine the location of the homes on each parcel. It would be reasonable to say that the setbacks may have afforded owners with potential views of perhaps, distances between structures to create a more spacious and private environment. For the subject parcel, the setbacks shown in the final subdivision map are set at 30 feet on the west of the property line. The request is for a ten foot setback, resulting in approximately a 33 percent reduction in the set back. Mr. and Mrs. Rose reached out to their neighbors and the HOA. The Staff Report contains 11 letters in support of the variance, including the HOA, which is also the architectural review committee. Those approvals can be found as attachment six, on packet page 122. It's important to note that Douglas County Code Section 20.702.070.3 states, "the side yard setback is a minimum of seven feet from the property line to the foundation wall." That's what code requires, it's not what's on the map, so we're talking about what's on the map today. This applies in areas of Tahoe that do not have setbacks included on the final subdivision map.

Here is a vicinity map of the parcel. The parcel is located west of Highway 50 along Tamarack Drive. It's the highlighted blue parcel that you see on that slide. The zoning is R O64 and, as I stated earlier, in the R O64 zoning district, if they were not in a subdivision that had setbacks already set on them, they would be allowed to have a seven foot setback in the Tahoe area in this zoning district. This slide is a picture of the Lakeridge Subdivision Map. The star is the parcel. The yellow circle represents the 30 foot setback, so we have the parcel here. Here's the site plan of the request. The one on the left is the entire parcel, the one on the right is the request zoomed in. As you can see, we highlighted the set back at ten foot for the proposed deck and carport. Staff went out to the site, we took photos. This is the entrance to the driveway; it kind of loops around to the right. The photo to the right is the area where the request is for the deck and carport. They do have two existing garages and there is a current deck now. The photo on the left is a fence that illustrates, basically, where the deck and carport would go to. Their property line does extend beyond the fence. As you can see, there is a neighbor that is to the west of the property and is sort of slightly sloping, so it's a little bit down from an elevation from the proposed deck and carport. Findings have to be met in the affirmative, pursuant to Douglas County Code Section 20.606.050.B. Planning Commission may not approve a variance unless all of the following findings are made in the affirmative. Those findings can be found on packet pages 105 to 106, and staff does not believe the findings can be made in the affirmative to approve the Major Variance. Staff is recommending denial of application DP 21 0146, a variance to the west side yard, setback from 30 feet to ten feet for a proposed

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carport and deck for Alan Mansfield, representing Jason and Yelena Rose, located at 1248 Tamarack Lane based on the inability to make the required findings. If the Planning Commission votes to approve the variance request, staff recommends all conditions applicable to the project are included in the approval. Any questions?

To review Ms Rao's full presentation please see the Supplemental Meeting Materials

Chairman Walder speaks:

Thank you very much Lucille. I think we'll hold the questions until we've heard as well from the applicant. If we can get the sound turned up maybe just a little bit, that might help everybody here. I'm not sure if the mics, that might help. I think we're getting there. Are the applicants, Jason and Yelena Rose, or the applicant's representatives here and would like to make a presentation? Okay, you can handle it however you'd like. You can have your representative make the presentation or each of you can speak. The microphone is over there. You just press the button that has a little face on it and that should turn on. Please take as much time as you need to discuss your application.

Jason Rose, applicant, speaks:

Thank you very much. I'm the owner at 1248 Tamarack Drive, along with my wife, Yelena, making the application today. As the pictures that Lucille demonstrated, we are kind of set pretty far back away from the road. We're also offset to our neighbor's house that is subject to that 30 foot setback, currently. There is also a set of trees that have grown out between us and the house that are, as you can see that picture, probably, I don't know, 20, 30 feet tall that we plan on maintaining and keeping as a measure of privacy between us and the neighbor's home. The deck actually extends out over an existing driveway, so we've already been through all the work with TRPA, which you know can be a little bit challenging, especially when it comes to things like coverage on the property. Since we have existing driveway there they didn't feel like there was any issue, so TRPA has actually already approved the project overall. As the Commissioner mentioned, it does leave a fairly substantial amount of space between us and our neighbor in that, as you can see, the fence is about where the footings and the termination of the new deck would take place, which is inside the trees, and remains on the level and flat portion of our property overall. We are also fairly far back from the road. So, from a neighborhood view and kind of perspective there will be no impact on any of the neighbors. Actually, my wife and I, since the submission, have actually received 14 additional letters of support from neighbors in the vicinity as well. So, we do feel like the 30 foot setback was absolutely appropriate in the building of the house, so our house is within the 30 feet. The existing deck is within that, and did provide a real or does provide a really nice spacing between us and the neighbor, which you can see pictured in the image there. The new deck, it does not impact that neighbor in any way. We actually have support from them in terms of building the carport space and deck. A part of

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our challenge as well is that while we have the two garages, being a house built in the 1980s, you can see in the image, my wife and I do drive two SUVs to accommodate the snow and weather that we get up in Tahoe, which actually don't fit in the current garage. So, the deck addition would actually provide us with a covered space for those vehicles for the heavy snowfall that hopefully we will receive again in the Tahoe area in the coming seasons. So, that's a portion of the hardship. Oftentimes, my wife is home on her own to take care of the shoveling. So, when you're trying to take three feet of snow off the top of your cars because you can't fit in the garage, obviously, that's a challenge and causes us some hardship. And then, the other element is due to the shape of the lot and the property, there's really nowhere else for us to put a covering to support those vehicles. There's just no other space available, so this is really our only option to accommodate something that would provide us some cover for those cars in the winter months when we get a tremendous amount of snow. So, as I mentioned, we do have all of the letters. I know it doesn't necessarily meet all of the three requirements in the Major Variance. However, in kind of looking at the timing going back to 1957, when those trees probably didn't exist between the two properties, you know, all of the, I'll call it foundations and structures of the homes are in place. We're not looking to alter that in any way, shape or form. All we're simply looking to do is just extend that deck back out over our current driveway to provide a little bit of additional outdoor space for our family, as well as the coverage for the vehicles to prevent the, you know, kind of snow from accumulating on the top of those during the winter months.

Chairman Walder speaks:

Thank you very much, Mr. Rose. Does your wife or Mr. Mansfield want to speak, or have any additional comments?

Alan Masterfield of Masterfield Construction, representing the applicant, speaks:
Hi, I'm the owner of Masterfield Construction.

Chairman Walder speaks:

I apologize for the typo there, thank you.

Mr. Masterfield speaks:

I was hired as a builder for Mr. and Mrs. Rose, and when we came aboard the first thing we do, we hit the engineer up, we get all those setback requirements, and we look, and we go around, we look at the neighborhood and see what's been done. When we looked at this project we kind of informed them that we see that we'd have to get some kind of variance, but we'd hoped it would get through simply because we're covering the existing asphalt. We're not going into any natural vegetation. We're staying just on what the roadway provides and the parkway provides. We tried to build it in such a way, you can see it's at an angle, so we can keep it at the minimal distance out that we possibly could, and still they had that one corner at the very bottom when it comes into the driveway that it basically

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barrels down to about ten to 12 feet with that last pier of that deck to get that around that corner to make it as easy accessible and safe as possible. That's why we had to push it out just a little bit into that variance to get it down to that same maximum minimum ten foot and we didn't want to go below that. We don't want to extend it out any further and we feel that at that point we can get it with inside that variance, if we could get that passed. Everything else is going to be built, it's gonna look just like the home. It will match existing. So basically, anybody driving by it will look like it's always been part of the home. You'll never notice there's any difference. It is very well hidden from the street and other views. We did take a walk around to try to see from other neighbors' point of view. Where this deck is, and like Mr. Rose had stated, the other house is actually down the hill from them. It's down the hill and it's also offset. So, when they are looking outside the front door it is not a part of their, say scenery, it is more in their driveway part of the scenery of them. We have talked with neighbors and they all confirmed that it would be okay, they didn't mind to have that.

Chairman Walder speaks:

Thank you very much, Mr. Masterfield. We'll come back to the Planning Commission then for questions. I would remind the Members of the Planning Commission that we are the sole authority on this; this would not go to the Board of County Commissioners unless there was an appeal of the action we took, so we would be voting to approve or deny the application. Kristi, I can't necessarily see when you want to speak, so if you'd like to ask questions at this point we can go to you or we'll take questions from Members of the Planning Commission first.

Member Kandel speaks:

No questions yet.

Chairman Walder speaks:

Okay, whenever you feel like you've got a question just jump in. I'll turn it over to the Members of the Planning Commission for questions of either staff or the applicant. Mr. Masterfield or Mr. Rose, if you'd like to stand at the mic, when you stand at the mic and speak try and get a little closer to the microphone. The sound doesn't carry too well when you're standing a little further away. Members of Planning Commission, questions for the staff or the applicant? Bryan.

Member Oland speaks:

For the construction, you said you walked the neighborhood, did you notice any other similar variances within the Lakeridge Estates that you can speak to?

Mr. Masterfield speaks:

We did. We actually, I had my office staff do the same type of overlay you did and we did it with theirs. We've seen, in one of the cul de sacs that, if you look at the association, there was a cul de sac down there. They had a, the actual garage was no more than two feet off the road. There was absolutely zero driveway. So, they

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had gotten, and under my impression, because I don't know exactly what their zoning was there, but my impression was you gotta have at least a ten foot driveway to park the car. Their garage was literally right on the street, and so, in my impression, they had to have a variance. And then, some of the other ones we walked around, and without crossing property, we tried to get our lasers as close as possible to see some of the other variances or other setbacks that were off. We actually found 17, from what we could see on our overlay, and what we went out there and tried to measure without crossing property lines or getting on other people's property we found 17 different items that we thought were inside the setback.

Member Oland speaks:

And then my follow up question would be for Lucille; when we say that circumstances do not apply generally to other properties in the same land use district, how many homes are in that land use district? How many of them have the 30 foot setback, and how many of them conform to County code at the seven or ten?

Ms. Rao speaks:

I'm not aware of any variances, since I've been with the County for 16 years, in Lakeridge. I did do a search and I didn't find any variances, variance requests, so I can't speak to what they're saying. I would think that you'd have to do a survey to know if the house was or was not extending into the setback.

Member Oland speaks:

Would that not be something we have recorded in the County as to anybody that would be?

Ms. Rao speaks:

Yup, sure.

Member Oland speaks:

When I say in the land use districts, so Lakeridge Estates, that's the entire land use district, that doesn't apply to the people across the road or people down the road in Douglas County, there is no other people included in that land use district?

Ms. Rao speaks:

So, you're talking about the R O64 zoning district?

Member Oland speaks:

Correct.

Ms. Rao speaks:

There could be other variances in that land use district.

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Member Oland speaks:

So, back to the original question, do we have an idea of how many homes are in there and how many are required to meet the 30 feet versus the regular County code? Because I feel like we have an HOA here that is like many of the HOAs I see around here, where they correct stricter rules than what the County enforces, not necessarily considering anything other than themselves. They don't consider any future owners, or any visitors, or anything and these HOAs create problems more often than they solve them. So, when I'm looking at this, we have a 30 foot setback, whereas, the rest of everybody else, from right now, I can't tell if anybody else has a 30 foot setback, if Lakeridge is the only one from this conversation.

Ms. Rao speaks:

So in the Lakeridge subdivision, on that map, correct, there are setbacks just for that subdivision itself. You can say, in favor of them, that the HOA was in favor of approving or agreed with the variance. So, they're ok with the variance and so is the architectural review committee, so are a number of neighbors, but if...

Member Oland speaks:

I wanted to use numbers to actually figure out how many people are like Lakeridge, but when we don't have anything comparable, say that this doesn't apply to other general properties in the land use district, I don't see any evidence other than Lakeridge itself. And so, when I'm saying that we don't apply to the same land use, let's expand the land use to everyone included in the land use, and let's put some statistics on it. I mean, 30 foot setbacks, we should know the number of homes, the number of homes in the land use districts. It's probably recorded in the County and an easy number to get. How many are a ten? I mean, these are things that I think we should know and I think a disservice is provided to these people when we don't actually use comparable information and we're sticking to just what's in front of us.

Ms. Rao speaks:

Right, we were looking at the subdivision map, right.

Chairman Walder speaks:

Bryan, you're making some very good points. I think Sam Booth might have something to add on this and I can possibly interject as well, but go ahead, Sam Booth.

Sam Booth, Community Development Deputy Director, speaks:

Thank you, Mr. Chair. I would agree with what Lucille said. Bryan, to your point, the land use or the zoning applies to many properties in Tahoe, many other subdivisions. But as Lucille pointed out, the specific standards that we're talking about on this application only apply to the Lakeridge subdivision. So, to the discussion or point that, what are the setbacks in some other areas? What we're strictly looking at here, the 30 foot setback that's required per this subdivision

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map, of course, there is some age to it. As we've discussed, this map was approved in 1957. My guess is, as far as the nature of construction since 1957 to today, there could be some changes to construction practices over time, but Lucille said she's reviewed there aren't any variances that were approved in there. But, just as far as what other areas, I think you were quoting the finding, what other circumstances or conditions would generally apply? Those circumstances in other subdivisions would be different, because they would have a different set of setbacks within there, so we're strictly looking at Lakeridge subdivision. Again, Lucille touched on this in her presentation, by the nature of Title 20, the County's development code, the side yard setback is just seven feet, and so their request does meet our County code; what it doesn't meet is the established setback for their subdivision and that's the need for the variance.

Member Oland speaks:

So, it goes back to what I say is HOAs create rules stricter than the County and isn't it the County's job to maybe say, HOA, you're being a little bit too strict. I would think, as our job as Planning Commissioners, is to review those of the lower decisions and make an overriding decision in the instance that they're being too strict. When I read number two, it does not say other properties within Lakeridge subdivision, it says land use district, and that is bigger than Lakeridge. So I think, even though we are restricting this we're limiting our scope on this view as to whether or not it applies to everyone. I would think if we could pull up the total number of homes and we look at it, I'd say that there's a larger number of homes within the ten than there are in the 30. I think we're creating an extra barrier for anybody that decides to live there. And yes, you live there and you should know it, but at the same time was the HOA right in making the decision in the first place? I think it's something that no one will ever review and who is? I think it's the overarching people's decision to at least take a review of those types of conditions that these HOAs place. I audit more HOAs than probably anybody in this room and deal with them on a daily, weekly, monthly basis. So, I can see the things that these people do, and the meetings and such that happen within them, and I have to say that they create more problems than they ever solve. In this instance, I'm looking at somebody that's an HOA and they are within the HOA, but did the HOA do everything right in the first place? I have no numbers to back up whether or not they did. So, my research did not prove as well, because I'm not as good as the maps and have the information you guys have at your hands, but maybe I should've asked you guys a little sooner. I apologize for not bringing to your attention and putting you on the spot, but I think its information that if we can include it, we can talk about it.

Chairman Walder speaks:

Thank you, Bryan. Other Members of the Planning Commission with questions for the staff or the applicant? Bryce.

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Member Clutts speaks:

Thank you, Mr. Chairman. Lucille, was there an opportunity for the applicant to meet with y'all and talk about this prior to the decision being rendered today, had a chance to kind of express what they've expressed to us today or did they submit, and then a decision was rendered?

Ms. Rao speaks:

Thank you, Member Clutts. From the research I did, an application was brought in for a building in January and it was caught at the counter that it wasn't going to meet setbacks for the subdivision map. I believe, Lorenzo Mastino had met with or spoke with Mr. or Mrs. Rose on the phone, correct me if I'm wrong, and explained the process that they were going to need a Major Variance. Other than that, you mean, did I call them up and explain that I was going to be denying? No, I did not. We sent them the Staff Report.

Chairman Walder speaks:

Thank you, Bryce. Other Members of the Planning Commission? Nick, go ahead.

Member Maier speaks:

A couple questions. What jurisdiction does the HOA have over setbacks? I mean, at this point, any or are we still dealing with a subdivision map that was done in 1957?

Mr. Booth speaks:

Member Maier, I was just discussing with Sam Taylor, but our determination early on in this, as Lorenzo reached out to the property owner and as Lucille had been doing a review, is that the County Commissioners approved the subdivision map back in 1957. When the County approved that subdivision map, essentially, the County endorsed those setbacks. The developer, of course, as Bryan did mention, had proposed those setbacks originally, but once the County voted and approved that subdivision map and it was recorded, now those are the setbacks that we have to adhere to.

Member Maier speaks:

Okay. And what then would be the process for the HOA to bring forth the subdivision map and change the setback requirements for the entire subdivision?

Mr. Booth speaks:

That's a good question and a good point, Member Maier. I believe we have discussed with the property owners, but another option to a variance could be submitting an amended subdivision map and recording an amended subdivision map with revised setbacks, potentially for each parcel or maybe just this parcel in particular. The tricky point for the property owner in doing that is that on the owner's certificate, on that map that gets recorded, every owner within the subdivision would have to sign that certificate and approve of that.

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Member Maier speaks:

Okay, so that's a possibility where the entire subdivision could address this particular issue?

Mr. Booth speaks:

That's true, yes.

Member Maier speaks:

Another question is, how much are they over from a Minor Variance to a Major Variance? How far out of bounds are they? What kicked them to a Major Variance versus a Minor Variance? Could they just cut back the deck a little bit and get to a Minor Variance?

Ms. Rao speaks:

Member Maier, yes, they can reduce it. 20 percent or less is a Minor Variance. I believe that was discussed with them. The problem is that the posts for the deck would be in the way of the car getting into the driveway or swinging around towards the garage. I think it's a matter of logistics for now.

Member Maier speaks:

You mean it wouldn't go out far enough?

Ms. Rao speaks:

Correct.

Member Maier speaks:

The post would inhibit them from actually getting into the garage.

Ms. Rao speaks:

Correct. When staff, we discuss every application that comes in and we try to think of ways to make this work. There's other ways of doing it. Can they cantilever a deck? Yes. What's the engineering involved in that? I have no idea, it's probably more involved than just putting the posts there. So, yes. Is there an option for that? I would imagine, yes.

Member Maier speaks:

Okay. Thank you. To the owner, do you have the support from your neighbors on both sides of you and in back of you?

Mr. Rose speaks:

We do. So, we have support from the immediate neighbor just down the hill that was in the photographs Lucille presented. We have approval from the neighbor directly across Tamarack Drive from us that would be most proximate, and then behind us is actually a forest land lot, so there's no house directly behind us. That then goes up onto 50, so the neighbors on the other side, which by the way, that

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deck is fully facing the other direction, so they wouldn't see it anyways, but we also went up and we got signatures from a number of people that are right on 50, directly across the highway from us as well.

Member Maier speaks:

Okay. My only concern with approving this is just the precedent that it will set. I don't know if this is going to open up a flood of people coming into Planning now wanting Major Variances because they're dealing with something that is a subdivision map from 1957. So, I don't think our Planning Department wants to go through individual applications like that, so I'm trying to figure out some way to get this particular subdivision to update its setback requirements for everyone in that division to streamline the process for Planning and the Planning Commission.

Mr. Rose speaks:

Right, and maybe to address that, I think Mr. Oland was making some great points around, interestingly, our neighbor that is pictured in that image is seven to eight feet from the property line. They actually don't have a 30 foot side setback. So, the 30 foot side setback isn't a universal element of the Lakeridge subdivision, it actually only applies to the lot that we're on. There may be others in the subdivision that potentially have a 30 foot setback, but like literally, if you, I don't have the aerial view of the subdivision of where the houses are, but if you go down by the lake you can reach out your hand between the houses on the lake and touch the two of them right along the lakefront, which is also part of the same subdivision. And then, our neighbor's house is literally five foot from the property, five to six foot, I mean, we haven't done a survey, but they are like literally almost right on the property line with their house, like I'm not even talking about a deck, I'm talking about the corner of their foundation. So again, it feels like a very unusual thing that, I think, again, when the original folks back in 1957 laid out the subdivision, I can't speak to what their thought process was, but it wasn't uniform. It wasn't like we're gonna put 30 foot setbacks throughout this community and everybody's gonna have all this space, you know. I'm pretty sure you could pull the map and look at the setbacks of all the neighbors, this one's actually pretty unusual. So, while I respect the thought about precedent and everybody wanting to come in to do something, this is, I feel like, kind of an unusual case where it's not universally applied, it's like just this one property that has it. If you look at the property our stairs that come down from the existing deck probably go into that setback already, so I'm not sure how that factors into this. And then, certainly, our driveway is well into that setback, because again, all we're trying to do is go over top of an existing driveway, we're not looking to add any additional coverage beyond where we're already parking vehicles, and we're already living and using the space.

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Member Maier speaks:

Well then, this brings up another question of enforcement of the existing code. It sounds like everybody did their own thing regardless of what the code was up there. Is this a responsibility of the HOA or was this a responsibility of the County? It sounds like a lot of building going on up there that was not code and doesn't even meet County code. I mean, I don't know, does Community Development have any answer on that?

Chairman Walder speaks:

Thank you, Nick. You made a lot of good points. I think the question is, and I can amplify this a little bit, Lake Tahoe and the areas that are built there, in each individual community, the rules and regulations vary tremendously; some have HOAs, some do not have HOAs, some have architectural standards, some do not have architectural standards. In many, many cases, the lots were not surveyed, people just built wherever they felt like building. I don't know that Community Development was even existing when some of these things were done. And going back to Bryan's point, variances, I think, again, people put fences where they wanted to put fences, people put their driveways where they wanted to put their driveways back in the '50s, and the '60s and even in the '70s. So, I don't know how much retroactive action that Community Development could take or would want to take. I think the attitude in Tahoe, in many cases, is, well, it's okay, nobody's getting hurt by this or by that. But, I do agree with the points that other people have made, we should have good standards, we should have good regulations, we should have appropriate setbacks. There's a reason for rules and regulations. I don't know if, Sam Booth, you wanted to add anything else to the role of Community Development in policing the standards that are currently being set and what has previously been done or whether we want to just leave that as an unanswerable question, but you raise a very good point Nick.

Mr. Booth speaks:

I appreciate that, Mr. Chair. To the point that over time, as we've said, since 1957, there could be some nonconforming structures that don't conform with our existing code that the development code was approved. We've had several iterations of the development code since 1957, so the standards by the County may have changed over time, that could contribute to the issue. But, what I can say for today, and to your point about current construction, any building permit that's submitted we would review against the code standards, and as Lucille and Lorenzo pointed out, that's why we're here today. The applicant submitted a building permit, and proposed this, and it was staff that caught the issue, and pulled the subdivision map and saw the setbacks there.

Chairman Walder speaks:

Very good points, Nick. Anything else that you want to ask for questions? Mark, would you like to go ahead and ask questions next?

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Member Neddenriep speaks:

Yes, sure. This is for Lucille. Lucille, do we know how many total lots are in this subdivision? I mean, we have letters from 14 that say it's okay, but how many total lots are there?

Ms. Rao speaks:

It looks to be about 25 or 26.

Member Neddenriep speaks:

Okay.

Ms. Rao speaks:

I'm counting on the map here.

Member Neddenriep speaks:

I know that Tahoe Douglas Fire District has to approve this; do they have the authority to actually say, you know what, this might cause a fire hazard and we're not going to allow you to pull a building permit? How does that work administratively?

Ms. Rao speaks:

When they apply for a building permit they have to also submit to the Fire Department. So, they would have to get approval from the Fire Department before the building permit could be issued.

Member Neddenriep speaks:

Okay.

Chairman Walder speaks:

Mr. Masterfield, did you?

Mr. Masterfield speaks:

We filed with the Fire Department and have gotten their approval. So, we have approval from the TRPA, Fire, and then we're here in front of Douglas County.

Mr. Rose speaks:

And from the GID Architectural Committee, as well. So, the actual HOA approved this as well.

Chairman Walder speaks:

Thank you. Other questions, Mark?

Member Neddenriep speaks:

Did we receive any reports from the subdivision owner that was against this?

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Ms. Rao speaks:

We only received letters in support. I did receive a visit from the next door neighbor early on, she was concerned. She said I signed the letter saying I was okay with it. She goes, then I thought about it, so I really want to come in and see what they're doing. I showed them the file and what they were doing, and I said if she had anything else to say she could email me, call me, come to the meeting. I have not heard from her and her husband since they visited me.

Member Neddenriep speaks:

Thank you.

Chairman Walder speaks:

Thank you, Mark. Bryan, did you have other questions, or Maureen, or Kristi? If you're willing to, Bryan is going to go, and then Maureen, and then Kristi, you would be after that if you have questions.

Member Oland speaks:

Again, for staff or maybe Lorenzo is not a good person to answer this, but in my past, when I'd get up here for these variances and I see by reason of exceptional narrowness, shallowness or shape of the property, I think I remember in the past the staff response was it's in Tahoe. I mean, not that short, but pretty much most lots in Tahoe have these weird angles and things like that and yet, we're saying that there's no peculiar exception or practical difficulties and our men up here described that there's differences in all the different parcels within even just this single HOA, let alone the rest of the area. So, I'm having trouble with us pulling a full 180 here. And the other thing is, I've rarely seen a TRPA approval come in front of us to which we were arguing against. Not to say that they have anything to do with the boundaries of the zoning and things like that, they're more concerned with lake clarity, and construction, and green or whatever you want to call it, but I think they put it through a pretty rigorous process and to take their yes lightly, I think even they probably are looking at this with a similar light and how come this property is so different than the one that's right on the line right next to it, I mean, three houses down, that house is, like you said, on the line. Even one other area, I see a structure or something that seems to even split the line, but maybe that's two people that have things back to back. When I'm looking at this, on our number one, we're saying that there's no exceptional differences and I have trouble with agreeing with that one. It's almost a full 180 of anything I've ever seen under that single exception on any of the other Tahoe homes, so I'm wondering what's the thought process as to why we don't apply what we apply to all the other properties in this instance and I feel like we were really shortsighted. In looking at this number one, please describe how, you know, the fact that we have all these different things going on within even just this HOA, they don't meet number one.

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Chairman Walder speaks:

Sam Booth. Excuse me, Lucille. Sam Booth, did you have something that you need to jump in on?

Mr. Booth speaks:

Thank you, Mr. Chair. Bryan, to your points, I think Lucille could speak for herself, but staff did struggle with making a recommendation on this. The Planning Commission doesn't hear easy cases, we handle those in the office if we can or at the front counter when a building permit is submitted. So, this is a very tough call. In that finding that you're referencing there, I think it could be the case that there is an exceptional shallowness, narrowness, conditions to this potential property. The rest of that finding goes on to read that there is and that there's also an undue hardship. And so, as staff was reviewing the application we were trying to find what the undue hardship was there and it was, I think, just breaking it down to its simplest form, was that the homeowner has a two car garage today, he has covered parking, and of course, we heard their comments in their submittal that they were requesting additional area of coverage for snow. Is there a hardship that they don't have covered parking and they needed a place to park a car? There are many homes at Tahoe that don't have parking. I think we might've looked at it a little bit differently if there wasn't a garage and they were trying to add that, but this is an additional space out beyond the garage and that there is an existing deck today that's in that area. However, again, this isn't an easy issue. The contractor and the applicant have described there's a very tight turn into the property with their driveway. I think you're kind of coming down the hill off of 50, they have to make a tight swing in there. We leave these things up to the Planning Commission. As I said, some of these tough issues come to you guys, because we have a hard time making a call on it as well. I think when staff was looking at it we said, what's the hardship here, that there is already additional covered parking on the property.

Chairman Walder speaks:

Thank you, Sam. Anything else you wanted to follow with Bryan or should we move to Maureen? Go ahead.

Member Oland speaks:

To follow that up, I think again, we're ignoring the hardship that's at place is the fact that he's got different setbacks than everybody else around him and for him to have to be 30 feet from the property line when the 48,000 residents here are ten feet. I'd say COVID caused one percent and is one percent enough? What we put a number on, where the hardship exists, where you're different than everybody else? And so, I just have trouble with saying that there isn't a hardship because he's different than everybody else and where he wants to put it would normally meet the rules in this instance because normal doesn't work. I think that's where a hardship exists. I think, again, when we look at the slides we say that it's a 33 percent reduction in the setback when it's 67 percent and we're taking off 20 feet

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of 30 feet, that's 67 percent gone, not 33 percent gone. Why do we have to take such a big chunk to get to normal? To me, that's what's wrong in this instance.

Chairman Walder speaks:

Thank you, Bryan. Maureen, go ahead with questions that you want to make at this point.

Vice Chairwoman Casey speaks:

We were told by the applicant and their representative that they have approval from TRPA and the Fire District. Yet, it says after the variance is granted, if the variance is granted, they have to submit a written approval. So, there is a chance, if we grant the variance, that it could come back that TRPA and fire people may not approve these plans; is that correct?

Ms. Rao speaks:

They do have approved plans from TRPA, that is in our system, that was what was submitted with the building permit in January. I cannot speak to fire, I don't know. They said they brought it to fire, but I haven't seen anything in regards to the Fire Department approval.

Vice Chairwoman Casey speaks:

Okay, because I don't see that in the packet, the approvals, so that's a concern to me. Also, in the letters from the neighbors saying we support this, I think I would feel better about the HOA approval letter if it was not on a form letter that was sent by all the other neighbors; if it was a letter that was written and sent by the Lakeridge Architectural Review Committee on their own letterhead and not just stamped at the bottom of this form letter. HOAs, as I recall, all they do is enforce the HOA rules, they have no jurisdiction, if I'm correct, Sam Taylor, over anything other than HOA rules. They have no jurisdiction over County rules or any other things dealing with code, correct?

Sam Taylor, Deputy District Attorney, speaks:

Yes, HOA rules do not trump County code when it comes to setbacks and what have you. Also, something else I think is important to note for the record, and it's something that I think is a little bit misleading, if you look at the map there are setbacks within that subdivision, up to 60 that I've seen. There are 40 foot setbacks and it appears to me that the way that the developer did this they were trying to basically align where the building envelopes would occur on each individual lot. I'm not sure what the underlying purpose is, of course, because the map is so old, but probably to maximize views, to maximize spacing between the houses, so their sightlines are not impeded, which is often the case when you do these types of setbacks and have this type of map. Again, I can't speak to why they were doing it, but those setbacks do exist. Again, there's 50 foot setbacks, 30 foot setbacks. There's a 30 foot setback, I think to the east, on their own property as well. I just wanted to note that for the record. Okay.

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Vice Chairwoman Casey speaks:

Are we going to have Public Comment on this? I'll reserve my other comments until after that.

Chairman Walder speaks:

Thank you, Maureen. Kristi, did you have questions you wanted to ask now? I have just a couple of short ones, but I'll defer to you if you want to jump in.

Member Kandel speaks:

Yeah, I had a couple comments or questions.

Chairman Walder speaks:

Go ahead.

Member Kandel speaks:

I think, in listening to what Sam just said, while the different properties have different setback requirements and some could exceed the 30 feet, I think that if we were to approve this that just granting this major setback variance doesn't necessarily set a complete precedent for the other parcels because the findings that we would have on this would be specifically related to a driveway and parking. So, we could separate it out to where someone couldn't just build another addition to their house for no reason by, I guess, setting this precedence. So for finding one, I am in agreement with Bryan that yeah, Tahoe really does mean there's exceptional challenges and I would argue that in 1957 when this was recorded the size of the vehicles that people drove are completely different than they are today. So, having vehicles that you have in Tahoe and I believe our code requires garages for any new building, but yet if we have vehicles in today's world, 60 years later, that can't fit into these garages that would seem that yes, we've, common sense would say there's been a change, that is an undue hardship that the applicant can't change. They can't fit their vehicle in the garage and when we get four feet of snow and you've got to undig your car that's a pretty miserable time at Tahoe when we have good snow years. So, I would argue that on finding one that times have changed from 1957 and that garages built back in the day don't fit the cars of today. As far as finding number two, with circumstances or conditions that don't generally comply, there's properties with less setbacks that have greater encroachments with other conditions, circumstances and conditions related to each parcel. So, there's other existing examples that you could make that finding. And then, in the third saying that we can't meet the finding that it won't result in material damage to other properties, they received letters from their adjacent neighbors who are claimed in the finding that says they could be negatively affected, but yet we have letters from the neighbors saying, I'm okay with this, I'm not negatively impacted. So, I think we actually can make all three findings. And I think it was important, what another Commissioner brought up earlier that, and Lucille, the Minor Variance was explored to try to figure out can we and the reason that they can't do a Minor Variance is the exact finding of

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finding one, Tahoe, the exact layout and the exact circumstances of the property are why they couldn't just fit into a Minor Variance, hence, creating a hardship for this. I think it was very important that TRPA, the Fire Department, and the GID are in agreeance with this project. A lot of times in government common sense isn't used. I think this is a good time for us to make the findings and use common sense.

Chairman Walder speaks:

Thank you very much, Kristi. I have just a couple of brief questions that I could ask of the applicant. Mr. Rose, you're probably the best person, can you tell me when you purchased your home?

Mr. Rose speaks:

We purchased it in December 2019.

Chairman Walder speaks:

December of 2019, okay. Where did you live previously?

Mr. Rose speaks:

The Santa Cruz Mountains.

Chairman Walder speaks:

Okay. Much snow in the Santa Cruz Mountains?

Mr. Rose speaks:

No snow in the Santa Cruz Mountains, yeah.

Chairman Walder speaks:

Okay. When you bought the house did your realtor or anybody else that you consulted with tell you there was a lot of snow in Tahoe?

Mr. Rose speaks:

It never came up, no.

Chairman Walder speaks:

It never came up? Well, anecdotal evidence, I bought a house in Tahoe about five years ago. When we looked at the house the snow was probably five or six feet up to the back door. I think when you buy property in Tahoe you gotta realize there's a lot of snow. The question of the vehicles, we have small garages. If your house was built in the last ten years you may have a larger garage, but you have small garages. You have big vehicles, I respect the fact that you can't get them in the garages, probably. The whole question of the variance is one, as Kristi explained and I think Nick hit on very well too, we have to look at the findings, we have to judge the property by the findings and make our decision accordingly. I think this is a difficult one. You've got many pros on your side. There are a number of cons

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on the other side. I think I'll reserve going through all those until after we've heard Public Comment. I do think it's important that we make a sound decision based on the facts, the circumstances, and the findings, and that's what I hope Members of the Planning Commission will do individually. So, if there're no other questions at this point I will open it up to Public Comment, and then we'll bring it back to Members of the Planning Commission for further deliberations, a motion and a vote.

Mr. Rose speaks:

Mr. Walder, to that point.

Chairman Walder speaks:

Yes, please.

Mr. Rose speaks:

We actually, when we purchased the house one of the selling points was the two car garage. However, when we tried to pull the vehicles in we realized there was just no way to make it happen, and that's when my wife and I started exploring other options just because we've got three boys; 14, 12 and nine. So, downsizing cars into something smaller really is challenging and also potentially dangerous with the, hopefully, the large snowfalls we'll get in the Tahoe area. So, we do look at it as a pretty big hardship for us, and then, as mentioned, the shape and the size of the setbacks is pretty unusual even vis à vis the rest of the neighborhood. Our contractor, Mr. Masterfield, and I don't know if this was submitted as part of the application because it wasn't a requirement, actually did do an overlay where he kind of put some of the measurements. It was based on a satellite photo and kind of pictures, so it's not like a true survey, but it was very apparent that many of our neighbors obviously didn't go through the Commission. If they did get approval, nobody came out and checked the setbacks. So, I do feel like we are trying to abide by the letter of the law. We are following step by step the rules put out in front of us. I can see that our neighbors probably went ahead and did it, and will ask forgiveness if anybody ever came back out to check. But, I just want to say that we have been working on this for over a year and have really been collaborative with all of the different jurisdictions we've worked with to do this right. I mean, we absolutely want to make sure that what we do is quality, it's improving the neighborhood, and has the full support of our neighbors, the GID, the TRPA and everybody in between. So, just wanted to make that statement as well. Thank you for considering our case.

Chairman Walder speaks:

Thank you very much. I do agree with all your points.

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PUBLIC COMMENT

Chairman Walder speaks:

If there are no other questions at this point, we'll open it for a Public Comment. Each person will have three minutes for Public Comment if they choose to make it. So please, again, come forward to the microphone, sign in and state your name, make your Public Comment, and then we'll bring it back to the Planning Commission. Are there Public Comments that would be made on this agenda item?

Jim Slade speaks:

As staff mentioned, a Minor Variance is a 20 percent or less change. This Major Variance would be 67 percent decrease in the setbacks and more than three times the level of a Minor Variance. This variance must meet all three required findings, and according to staff, this request meets none of those findings. When I look at the map of the property it's kind of rectangular, it's not exceptionally narrow or shallow, and there's no real evidence of undue hardship. When the owners bought this home they should've known what the setbacks were and accepted that. There is undoubtedly a reason why the setbacks are set where they are on each of the properties, as Mr. Taylor mentioned. It's a little hard for me to believe that their two SUVs don't fit in the garage without any evidence, except their word. Cars weren't really all that much smaller 60 years ago. When I think of an old Oldsmobile 88, or a Cadillac or the one car my family had, a Buick Station Wagon, I don't think it was really all that much smaller. I would be curious how many vehicles they do normally have at the house and how many trailers of any sort, since one was pictured in one of their photographs. Guessing what other properties might have variances is irrelevant, as are the setbacks in other areas also, likewise, irrelevant. The rules are the rules. Change in the code has to go to the Board of County Commissioners. Regardless, since there is no disagreement that the request does not meet the required findings it must be denied. To approve it would be a bad precedent and clearly you need more information to proceed any further at all on the other properties, and the other possible variances, and etcetera, etcetera, etcetera, than just the information that you have today, which is very limited. But, there may be other ways, as mentioned, that the owners can proceed and get their approval, but it should not be here and not today. Thank you.

Chairman Walder speaks:

Thank you. Other additional Public Comment? Yes, go ahead.

Yelena Rose, Applicant, speaks:

I'm the one who, I'm the wife of Jason Rose. In pursuing this approval, we, I came in person to get the application and figure out the process. And personally, I spoke extensively with Lucille and I spoke extensively with Lorenzo, and I was explained that we need to get the approval from the neighbors, which we got 25 neighbors

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approving our case and supporting us and there are lots of personal letters. Unfortunately, a lot of people do not want to get the government response sometimes, but they do respond to personal approach and we're in great relationship with people. And unforeseen consequences, as a gentleman brought up, that we have a trailer. We lost our house in the Santa Cruz Mountains in a wildfire last year, and unfortunately, we have, I had to evacuate my personal business. And yes, we do have a trailer, but it's a temporary thing for us. With the vehicles, vehicles are much bigger than the entrance, if you know the SUVs there's basically less than an inch from each side of the car when you try to park it in, and you almost hitting the roof, and another car I can't even get in there, that's just impossible. And the property does have unique shape, and maybe on the picture on the map it does look rectangular, but the steepness we have, we are downslope from the road, downslope from the driveway that has the entrance into the Lakeridge, and we have to make, it's a diagonal driveway that you have to get the car into the garage at a pretty big angle. I personally cannot park it because I am afraid of damaging the vehicle. In the summertime we have all the pine trees that we would like to keep because Tahoe area is beautiful as it is because of the vegetation. But, the sap of the trees, I, when I drive out I'm basically blind out of my windshield because of the sap. I just, you know, and we have to drive the kids to school, so it's almost impossible anytime, any day of the year. It's either snow, or the sap of the trees, or it will be, you know, it just, it's so sticky I can't remove it from any, with anything. I have to go through the car wash almost every day. And the stairs were brought up before, right? We do have the staircase extending all the way to the width of the driveway, which is covered with asphalt. If we do the Minor Variance we would have to drill the hole in the middle of our driveway and split the driveway in two. So, that would be, with the size of the beam that would have to go as a support we would not be able to go on either side with the car, so it would destroy the property altogether by doing that. If we do the Major Variance, we already discussed the plans with our neighbors and were very open with them about the designing, and making it appealing, and making more privacy there because neither one of us want to impose on each other and we already discussed how we going to keep it as a carport, right? And then, setback the railing so we can have space for them, so they will be comfortable. And it's, you know, you can see, even in the picture, that the car that is on the right is higher, higher than the garage opening. I mean, I would have to rebuild the whole house if I have to open up more space in the, and put the car in the garage and that's, I don't think I can approach that. I mean, I've lost one house last year. We still working with a lot of issues with that and we were planning on having this as a vacation house, but now it's a permanent residence. And, you know, we have no other way of dealing with it except I can put tarps there. I mean, I can do that if that would be appealing for the neighborhood. I don't think any neighbor would approve for that. But, making something structurally sound, and something that is attractive and improves the local Lakeridge, everybody went on that and everybody, so, everybody knows how much we struggle. And another point is, for the Major Variances, our friends have a circular driveway, they did apply for the

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Major Variance while building their house because of the setbacks, as well. I know that for a fact because we discussed it with them and during the building of their house they had to go through the same process. So, that's all I have to say. And we have the 25 neighbors signed up, all around, lower Lakeridge, upper Lakeridge. We have some people type their own letters because they felt us to go, and extend their support for our case and this is not unusual when you just have to cover the vehicles. Thank you very much.

Chairman Walder speaks:

Thank you. You're welcome to leave those letters with the staff and we can add those to the Supplemental Materials that will be included after the meeting. Are there other individuals who would like to make Public Comment on this agenda item?

Mr. Slade speaks:

That was Public Comment, that ten minute diatribe was Public Comment?

Chairman Walder speaks:

I allowed her a little extra time since she is the applicant. I thought that was appropriate. I was trying to be generous and make sure that everyone has a fair hearing, so we didn't go too much over time. Are there other members of the public that would care to make Public Comment? Seeing no other Public Comment, we'll close Public Comment on this agenda item and I'll bring it back to the Planning Commission. At this time, if you do have additional questions that were raised during Public Comment that you'd like to ask the staff or the applicant we could do that. If not, we can have a motion and discuss the issue before we proceed to a vote. I'll open it to Members of the Planning Commission for comments, questions or a motion.

Member Maier speaks:

I'll make a motion to approve the Major Variance.

Chairman Walder speaks:

Nick would make a motion to approve the Major Variance. Would you like to go off of the recommended motion that's either in your packet or on the screen, Nick? It's in the supplemental packet or on the screen.

Member Maier speaks:

Yes, I'll make a recommended motion to approve the Major Variance, the west side yard setback from 30 feet to ten feet for a proposed carport and deck for Alan Mansfield, representing Jason and Yelena Rose, located at 12487 Tamarack Lane.

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Chairman Walder speaks:

Thank you, Nick. I'd just make a minor typo, it's 1248, so you read it right on the screen, we just had a little addition there on the typo, so it's 1248. Is there a second to Nick's motion to approve the Major Variance?

Member Oland speaks:

I'll second that motion.

Member Kandel speaks:

I'll second.

Chairman Walder speaks:

Bryan seconds the motion. Kristi, we have you a little delayed, so Bryan was able to second that. It's appropriate now for the maker of the motion to speak on behalf of their motion, or for other individuals to speak for or against the motion. Nick, did you want to make any comments in favor of the motion?

Member Maier speaks:

I am voting to approve the Major Variance for two reasons; one, it seems like the applicant has gone the extra mile to get the support of the community and the people that live in the subdivision. And two, given the history of that particular subdivision, and the number of buildings and projects that are within that subdivision that are not abiding by the setbacks I feel it's an undue burden on this particular applicant not to approve it.

Chairman Walder speaks:

Thank you very much, Nick. Other Members wish to speak for or against the motion? Bryan, go ahead.

Member Oland speaks:

So, I speak for this because when I do look at it, Sam Taylor said it perfectly, County code trumps HOA, and so when County code trumps HOA, we are sitting here as Planning Commissioners of the County not board members of the HOA. When we looked at County code this wasn't even a Major Variance and we shouldn't even be talking about this. Therefore, on finding one, I believe this is a hardship upon them. As I mentioned on number two, we didn't provide overwhelming evidence to show that this isn't something that applies everywhere. From my understanding, there are a lot of properties just from the view here that are not the same, so when we say that they don't generally apply to other properties, I'd say, yeah. I mean, the conditions are generally different from each property within even the subdivision. And yes, they are recorded, they are the HOAs rules, but the County is what we're deciding on, not the HOA. If the board members want to make a different decision good for them, but we are the County, we are not the HOA. The granting of the variance representing in material damage, so to say that if somebody within ten feet of somebody else's property is material

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damage everybody in this room is damaging your neighbor. So, to say that we're going to damage somebody because we're within ten feet, I don't think that's a good enough argument to say that the neighbors are essentially damaged. I believe it passes all three of the findings and I believe that we should approve this.

Chairman Walder speaks:
Thank you, Bryan. Bryce.

Member Clutts speaks:
Thank you, Mr. Chairman. I respect the difficulty of the staff in rendering their decision. Often times, they're criticized on the other end. I believe as a Planning Commissioner it's my job to review the merits and conditions of each situation. This subdivision map was developed in 1957. Douglas County Code is seven feet, and therefore, I'm going to support this based on that and the reasons that my fellow Members have stated.

Chairman Walder speaks:
Thank you, Bryce. Other comments from the Planning Commission? Maureen.

Vice Chairwoman Casey speaks:
On the other half, on the other side, ding dong, I will support staff's findings. I believe we have code for a reason. Even though the subdivision map was developed 50 60 years ago, it is what is in existence, it is what we are working with and I feel for the applicant, but it is the applicant's responsibility to do due diligence, and this is what happens when you buy something off the internet and don't go up and actually inspect the property. It's not our responsibility to make sure it works for them, it's their responsibility. I wish I could feel it differently. I appreciate their honesty in their letter that they wrote to us, but he gave the ages of his children and it says, the letter says, his wife is left with our three small children and teenage boys are not three small children. And his honesty in saying extending the deck will improve the architectural presence of our home and I believe that. And keeping the sap off our cars, to me, is not a good enough reason to extend the deck threefold. So, I will support staff's findings and vote no on the motion.

Chairman Walder speaks:
Thank you, Maureen. Mark, go ahead.

Member Neddenriep speaks:
While I can feel for the applicant, I realize that this is a very difficult situation, but unfortunately, the code is the code and I believe that staff did make the right call.

Chairman Walder speaks:
Thank you, Mark. Kristi, did you want to have any comments to make before we conclude the debate on the motion?

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Member Kandel speaks:

No, I don't have any new comments other than what I said earlier where I do believe we can make all three findings.

Chairman Walder speaks:

Thank you very much, Kristi. I did go out and look at the property in question. I think I'm very familiar with a lot of the properties in Tahoe. All of you have made excellent points, this is a very difficult decision. When I looked at the facts and the circumstances I came down with several reasons to vote in favor of the variance. You did get a broad support of your proposal from members of the community, I think that's always very important. If there were individuals from the surrounding area who oppose this it would be a pretty easy decision, in my view, but you did get the approval of everyone that's important. I do agree with you; the lots are very unusual. The slope and the setbacks are very different all around in Tahoe, that creates hardships on the individuals, so that's another point in favor. You do have a very difficult driveway; the pictures don't do it justice. You come down a steep hill, you make almost a 180 degree turn into their driveway, then you have to jog a little bit to the right, and then to the left to even go into the garage. The garages are small. Those are all favoring the Major Variance. Then, when I look at the other side of the equation, I do think the staff has great expertise, I think they consider these things very carefully. Lucille, you've worked long and hard on this, you have great experience in dealing with all sorts of issues and I do think it's always wise to trust the judgment of the staff. Nick, you made some very good points. We may be on opposite sides of this issue Nick, but you raised the point of what precedent will this set if we allow a Major Variance of this nature. Will there be ten other properties that come forward and ask for a similar variance? Then, when I come to the final analysis, I do have to look at the findings and that's what we're supposed to do. I think there's probably not much question that you do meet finding number two and number three, but the key one, in my view, is finding number one and in particular the clause where it says, a peculiar and exceptional practical difficulties to or exceptional and undue hardships upon the applicant. So, I guess I come down on Maureen's side that I don't see this as an exceptional or undue hardship given that the property does have garages. You should've understood what you were dealing with as far as the nature of your parking area. So, based on that, I don't think finding number one can be made in the affirmative, so I would be voting against Nick's motion to approve the variance. I will turn it back to anybody else who wants to add further comments. If there are no further comments then we can call for a vote on Nick's motion to approve. Bryan, would you like to go ahead for additional comments?

Member Oland speaks:

I just want to make a point on historical context, we're talking about a guy that wrote this development that didn't have a cell phone, didn't have a computer, didn't even have power windows. So, to say that he, 70 years into the future, is gonna make a good decision, I hardly think so.

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Chairman Walder speaks:

Thank you, Bryan. Any closing comments by Members of the Planning Commission? Seeing none, then I'll call for the vote. Again, this is Nick's motion to approve the development application, which would be the Major Variance in the side yard setback. Bryan, I believe you seconded this motion. So, if you're in favor of Nick's motion for approval you'd vote aye. If you're opposed to the motion you'd vote nay. And we'll call the role, Kristi.

Member Kandel speaks:

Aye.

Chairman Walder speaks:

Nick.

Member Maier speaks:

Aye.

Chairman Walder speaks:

Bryce.

Member Clutts speaks:

Aye.

Chairman Walder speaks:

Mark.

Member Neddenriep speaks:

Nay.

Chairman Walder speaks:

Bryan.

Member Oland speaks:

Aye.

Chairman Walder speaks:

Maureen.

Vice Chairwoman Casey speaks:

Nay.

Chairman Walder speaks:

And the Chair votes nay. So, on this there's four votes aye and three votes nay. The motion is agreed to.

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Chairman Walder speaks:

Unless Members of the Planning Commission feel they need to break, at this point, we'll move on to Item Number 2 and we'll see how far we get on Item Number 2. Alright, I think some people would like to take about a five minute break, so we'll take a five minute break and we'll come back at 2:30 PM. We'll recess until 2:30 PM.

A break was held

Chairman Walder speaks:

If we can go ahead and get started. Excuse me, we left off with Agenda Item 2, so if we could get started with Agenda Item 2.

MOTION to approve a Major Variance to reduce the required 30 foot side yard setback to a ten foot setback for a proposed carport and deck located at 1248 Tamarack Drive in the R 064 zoning district in the Tahoe Region; carried.

RESULT:	APPROVED [4 TO 3]
MOVER:	Nick Maier, Member
SECONDER:	Bryan Oland, Member
AYES:	Oland, Maier, Clutts, Kandel
NAYS:	Walder, Casey, Neddenriep

2. For possible action. Discussion on a request for Development Application DP 21-0078, a Special Use Permit to allow a 9,320 square-foot commercial meat and poultry processing facility within an existing 40,391 square-foot building. The subject parcel is located at 1300 Buckeye Road in Minden, within the A-19 (Agriculture, 19 acre minimum parcel size) zoning district and the Minden Community Plan area. The applicant is Park Ranch Holdings, LLC (APN 1320-28-000-041). (Lorenzo Mastino)

Chairman Walder read the agenda item into the record

Chairman Walder speaks:

Lorenzo, you can make the staff presentation, then, as we've done in the past, we'll have the applicant, we'll have questions, Public Comment, and then we'll move to the final proceedings in a vote. Go ahead, Lorenzo. There is a supplemental packet, I think all Members of the Planning Commission got this and it is on the table outside the room, that includes Supplemental Materials that's available for everyone. Go ahead, Lorenzo.

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Lorenzo Mastino, Senior Planner, speaks:

Thank you, Mr. Chair, Members of the Commission. Yes, the packet is available outside and is going to be available online after the presentation with all the other material that was received before and after publication of the agenda.

Mr Mastino began the presentation and covered the following topics:

- Development Application DP 21 0078
 - o For possible action. Discussion on a request for a Special Use Permit to allow a 9,320 square foot commercial meat and poultry processing facility within an existing 40,391 square foot building. The subject parcel is located at 1300 Buckeye Road in Minden, within the A 19 Agriculture, 19 acre minimum parcel size zoning district and the Minden Community Plan area. The applicant is Park Ranch Holdings, LLC APN 1320 28 000 041 .
- Background
 - o The applicant is requesting a Special Use Permit to improve an existing facility dedicated to agricultural an agricultural business, and commence operating part of the structure as a meat processing facility. The improvements to the facility will include: 1 the complete interior remodel of approximately 25 percent of the square footage, to make it suitable to meat processing; and 2 remodel of the parking and loading areas to improve ADA access, landscaping, and designation of stalls. The meat processing operations are to be carried out in the completely enclosed structure, which shall meet federal, state and local regulations.
- DP 21 0078 oning Map – Douglas County, NV

Mr. Mastino speaks:

This is a map of the zoning of the property. As you stated in the opening, it's a large agricultural property located northwest of the Muller Parkway alignment and the Buckeye Road intersection. Forgive me, going back to this, the legend, as pointed in the zoning at the bottom of the map, says that it's A 19. That is one of the three green colors, in this case it's A 19, so Agricultural, 19 acre minimum, as described in the Staff Report. This is an aerial of the property and as you can see, the access happens to be Buckeye Road, which is a major collector road, and then northwards there is a tree lined street that then leads to the facilities.

Mr Mastino continued the presentation and covered the following topic:

- Buckeye Farm Parcel Layout Concept

Mr. Mastino speaks:

This is a map of the Buckeye Farm Specific Plan. This property is within the boundary of the plan that was adopted in 2020. The star and that red boundary is approximately the shape and size of the actual property. Unfortunately, the parcel layout concept does not follow strictly the parcel lines that exist today because it's

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supposed to be conceptual in nature and proposes an alternative layout for roads, parcels and other elements, but that is so you have an idea of where that would be located within the conceptual land use plan. I know that later we will have the applicant present to give a presentation, and in their presentation they will show how the distance to existing and future residential properties is related to the facility that we're gonna be discussing today. But, you can see that it is located on, and to give you some coordinates help here, at the bottom right corner there is a north arrow, it's a little hard to read, this was taken directly from the plan, but north is to the left of this image. So, you can see that Buckeye Road is actually running from the top to bottom on this image and the parcel in question will be surrounded by what is labeled as a teaching farm, future public facility, village center farm, and then some agri and ecotourism centers with neighborhood commercial incorporated, and a Buckeye Creek preserve open space as identified in various paragraphs of the plan, which is a several page document and it's not really entirely related to this application for the operation of this business, but just to get some concept for possible future development of the area within the mid to long term. This is a zoomed in map of the area. Again, this is still from the approved special plan for Buckeye Farm and you can see at the bottom there is actually a label with the existing building that we are discussing, and its relationship to Buckeye Road and that layout, and what it is, is really the northeastern portion of the Buckeye Farm plan.

Mr Mastino continued to presentation and covered the following topic:

- Site Plan

Mr. Mastino speaks:

You can see, as depicted, the site plan for this specific proposal. Because I understand that it might be hard to read for everyone in the room, I do want to point out that packet page 152 and 154 are the actual plans that were provided by the applicant and they're listed as attachments in the application. Once again, north is to our left side of the screen in this case, so it is shifted, but the northern area of the existing structure is where the proposed facility would be located if approved. You can see, beside the existing metal building, which is separated for this operation as opposed to the other area, it would still be dedicated to what it's dedicated to today, which is supporting agricultural use. You can see some depicted loading zones on both the long sides of the metal building, and also you can see the landscape improvements that the applicant is proposing, and depiction of other engineering and improvements to the site that are necessary for a facility of this kind to operate.

Mr Mastino continued the presentation and covered the following topic:

- Photos

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Mr. Mastino speaks:

Here you can see the two sides of the building. On the left side is actually the southern portion of the structure and that is what you approach after you drive the tree line and street. Staff did a site visit on site, and that is an office that is related to the operations and that parking lot would be improved as part of this application. On the right side, instead, is the northern end of the building, which you can see there is some elevation there because the property is actually elevated due to flood zone requirements, because on the surrounding area the flood zones are different than the one that does not require elevation, and that's why back when this development came in it was elevated. So, today it is not, just to be clear, in the flood zone.

Mr Mastino continued the presentation and covered the following topics:

- Findings for Special Use Permit
- o Pursuant to Douglas County Code Section 20.660.010.F, the use requested is allowed in the A 19 zoning district with the approval of a Special Use Permit if the facility:
 - has five or fewer employees on site at one time;
 - processes no more than 200 poultry or rabbits per day, or 60 larger animals per week; and
 - does not include retail sales.
- o Per DCC 20.604 the Special Use Permit is to be reviewed for possible action by the Planning Commission upon the basis of 8 findings.
- o Findings A H are listed in packet pages 140 to 143:
 - Consistency with Master Plan.
 - Compatibility with neighborhood.
 - Adequate infrastructure I facilities roads, water, sewerage.
 - Minimal impact on adjacent properties.
 - Not located in a special archeological or cultural area.
 - Not detrimental to public health, safety, convenience and welfare.
 - Water and Sewer
- o Since the publication of the agenda staff has received questions regarding water and sewer provisions for the facility. The applicant is proposing the following:
 - A commercial septic system per NDEP requirements.
 - Usage of the existing agricultural well.
- o The site is currently not within the water and sewer district boundary; however, public water and sewer lines are present within or directly adjacent to the property.
- o If the PC believes that connection to the public systems should be required, staff drafted conditions to address both facility improvement types.

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Mr. Mastino speaks:

They would have to review the engineering of the actual system itself, and then approve it for the use, the specific use. Additionally, they're proposing the usage of the existing agricultural well, which is on the site. A couple of things that are worth mentioning now is that the site is particularly unique in which it's not currently within the water and sewer district boundary because it lies somewhat outside of it. However, there are public water and sewer lines that are on the parcel or directly along Buckeye Road, and that is in the case of the sewage line. It is not entirely clear whether the proposal, as presented by the applicant, would have to necessarily connect today because, although in the future, with the expansion of the sewer and water district boundary, eventually, it might be ten, or 15 or 20 years from now, it would need to be annexed to the water and sewer district, and then provide those facilities. However, at the day, it is not within that boundary. However, the County and this Commission has the ability to recommend that the facility actually connects to the public sewage and water system, but it is not required at this time, necessarily. Staff discussed, the Planning Division, the Engineering Division, we discussed the matter today and what could be the impact on the water resources, on the quality of water resources, also on what effect would the commercial septic system have on the land. Unfortunately, I do have to admit that I and the Planning Division is not necessarily qualified to review the engineering of a septic system, usually that is left for, again, the Nevada Division of Environmental Protection, which it is literally their mandate to review certain requirements. I'll be happy to answer any questions you may have on this to the best of my ability. I believe County Engineer, Jeremy Hutchings, is present today for some more technical questions or I would defer to Deputy Director Booth on additional questions on water and sewer. However, once again, the current proposal in front of you has a commercial septic system and uses existing agricultural well and the water that is present on site. Staff, however, has conditions that would be readily available in the case that this Commission would like to ask to connect on water and sewer.

Mr Mastino continued the presentation and covered the following topic:

- Recommended Motion: DP 21 0078

o To approve Development Application DP 21 0078, a Special Use Permit to allow a 9,320 square foot commercial meat and poultry processing facility, based on the ability to make the required findings, presentation, the applicant's variance justification and public comment, subject to conditions.

Mr. Mastino speaks:

If the Commission finds that the use should be allowed to operate then the applicant would come in for permits of various nature for the actual improvement inside of the existing structure. There is a lot that would go on getting a business of this type started in that facility, a lot of improvements, again, a lot of reviews from different divisions, and fire, and again, the State itself. At this point,

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however, unless the Commission has additional questions, I know that the applicant is present and would like to have their own presentation shown.

To review Mr Mastino's full presentation please see the Supplemental Meeting Materials

Chairman Walder speaks:

Thank you very much, Lorenzo. We'll turn to the applicant. If the applicant or the applicant's representative would like to make a presentation at this point, please go ahead, go to the podium and state your name, and you may proceed.

Dave Lundergreen, representing the applicant, speaks:

I'm here on behalf of Park Cattle Company. I'm part of the team that has been working on this project for the last few months. I just wanted to introduce our team today. We have four of us here; myself, Gary Thurm is the engineer who helped with the design of the project, and also the engineering for the septic, he's going to do a presentation for you. I think, one thing I'd just like to say up front and I know there will be more debate, but I think there's been a lot of discussion over the last year about Douglas County needs a meat processing facility. I think we have the place for it. I think this is the ideal situation, the ideal place, for a meat processing facility and I just hope that we can work it out today. Thank you.

Chairman Walder speaks:

Thank you, Dave. Mr. Thurm, would you like to go next?

Gary Thurm of Three Castles Engineering, representing the applicant, speaks:

Inaudible comment to our presentation today for a Special Use Permit for Dave Park and Park Ranch Holdings.

Chairman Walder speaks:

If you can go ahead and speak right into the microphone, they are very sensitive. Thank you.

Mr. Thurm speaks:

Okay. For a meat processing facility located here in Minden, Nevada. I would like to thank Sam Booth and Lorenzo for their work on this, it seems like you can try to interpret County code and you want to. Dave has a vision of how this is supposed to be, but we also need to stick within the law and County code. We're here to do that. Anyway, this is the Park Ranch Harvest Facility, Park Ranch Holdings, LLC, located at 1300 Buckeye Road, Minden, Nevada. I am the owner of Three Castles Engineering here in the Valley. Dave Park hired me to put together design documents and help with the process of obtaining a Special Use Permit to help them harvest, and process animals and meat for sale here in the Valley, not for private sale, but for more commercial operations. Nobody's going to be coming

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to this facility other than trucks to pick up the meat and owners to pick up the meat.

Mr Thurm began his presentation and covered the following topics:

- Park Ranch Harvest Facility
- What is a harvest facility?
 - o A harvest facility is known as a meat processing facility, within Douglas County Code, Title 20, 20.60.010 to be specific.
 - o Located at the Park Ranch headquarters at Buckeye Road in Minden, NV. Owner David Park is proposing a 9,320 square foot meat harvesting facility.
 - o Inspected by the United States Department of Agriculture USDA , live animals enter the facility. They are dispatched, dressed out and cleaned off, then inspected by USDA meat inspection personnel, cured for ten to 14 days, then processed and packaged for delivery or pick up to or by owners, grocery stores and restaurants.
 - o Fact: In 2019, 34.3M head of cattle were harvested in the U.S. Ref 1 USDA
- Where is the Park Ranch?
 - o In the previous slide, we mentioned that the harvest facility will be located off Buckeye Road in Minden.
 - o Formerly known as Park Land and Cattle, the Park family has been ranching in this valley as well as Antelope Valley since 1861.
 - o The Park family and the Dangberg family, both pioneers in the Carson Valley since the late 1800's, have been grazing cattle on this prime agricultural land, producing beef for consumption by locals and visitors ever since.
 - o Fact: The average person consumes four ounces of meat daily in the U.S. Ref 2 USDA
- What types of animals will be harvested?
 - o Cattle
 - o Hogs
 - o Lamb
 - o Big Game

Mr. Thurm speaks:

In the announcement in the paper, it said meat and poultry, we are not considering poultry at all.

Mr Thurm continued the presentation and covered the following topics:

- How many animals will be harvested here?
 - o On average, 30 head of cattle could be processed per week. 60 head is allowed by Douglas County. The limiting factor is the curing time and that will be dependent on the owner of the animal. The curing cooler proposed has a capacity of 60 1,000 lb. hanging both sides of beef.
- How many people can that feed?

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- o A 30 month old cattle or a full grown steer might weight 1,200 lbs. and processed to 500 lbs. At 30 head per week, that can feed 7,500 people per day.
- Park Ranch Harvest Facility

Mr. Thurm speaks:

This is a map. You can see Heybourne Road there. There are two green arrows, and then a little note there that says proposed facility. That is about 1,300 feet north of Buckeye to the north end of the facility.

Mr Thurm continued the presentation and covered the following topics:

- o Currently, the nearest home outside the noticing radius is over 3,700 feet from the facility.
- o In the future, residential homes proposed will be as close as 3,000 feet east of the facility.
- o For local farmers and ranchers in the Carson Valley, Antelope Valley and Smith Valley, as well as Eastern California, if they are bringing animals through this valley to take them to Wolfpack Meats in Reno or Lahontan Valley Meats in Fallon, they will reduce their travel distance by 60 miles and 80 miles respectively, if they have the option to bring them to Park Ranch Meats

Mr. Thurm speaks:

I know 60 to 80 miles doesn't seem like a lot to you or me, an hours' drive, but when you're hauling cattle it puts a lot of stress on the animal. Hopefully, we can get this facility here and have that option.

Mr Thurm continued the presentation and covered the following topics:

- Food and Fiber Security in the U.S.
- o On May 30th of this year, the largest meat processor and supplier in the world and 2nd largest in the U.S., JBS Foods was shut down for five days due to a cyber attack on their computer systems. They ultimately had to pay a ransom of 11M USD to get their production back on track to get meat to its destination around the world. JBS Foods controls 20 percent of the slaughtering capacity for U.S. cattle and hogs.
- o Park Ranch Meats does not want the residents of Douglas County, Nevada to be in that situation and believes that one way ranchers and farmer in the Northern Nevada and the Western Region can maintain a local source of fresh meat is to have a harvest and processing facility here in the Carson Valley. As such, the risk of not having available meat in the grocery stores when we need it is not an option.
- o Fact: According to the USDA, as of 2017 there were an estimated 11,232 head of cattle in Douglas County, 5,441 of which are cows. Ref 4 USDA

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Mr. Thurm speaks:

This is the facility. As you're looking at this facility, up on the page is north. This building is about 375 feet long, I believe. So, from the north tip all the way to the south tip it is 375 feet. This is 75 feet in depth, 120 feet wide. This shell that you see here is existing. In years past and even this year, they're processing onions or harvesting onions. On the right hand side, the animals enter, they're held. So, there's two entrances, one is at ground level for trailers that may need to stay there overnight. That pen holds about 30 or so head. On the very north end there is a loading dock and that loading dock has a ramp down to the holding pen area. There's a little alley there with pens on each side for holding cattle, hogs and sheep. The floor does need to be retrofitted to create a nonslip floor. Again, you don't want to stress the animals out, you want to make it as easy as possible. There would be water available in all the pens, food in the pen on the south end, the larger, what would be used as an overnight pen. And then, at the top of the page, you can see a little shaded area where the cattle are coming around in an s shape and that's for the handlers to be able to guide the cattle in. Again, all of this is, we're trying to keep the animals calm and safe until they enter the slaughter floor. The slaughter floor, I won't go into it in great detail, but the animal is stunned and they go through a process where they are cut in half. As soon as they are cleaned they get inspected before they go into the *inaudible comment* and they get inspected again before they go into the hot box, which is a cooler that there's a lot of heat and you gotta get rid of that warm air in a relatively short amount of time, and then they go into a curing cooler for several days. That depends on the owner and whoever our client is. After the curing time they go to the processing floor where they are packaged. On the left hand side of the page there is an area where trucks come and pick up the product. Something interesting here, you'll notice, if you're on the slaughter floor where the animal is being harvested there is a USDA employee office and you can't go from that side to the processing floor. At no time can an employee go from there to the processing side, they have to physically leave the building. If for some reason they are going to the processing floor they have to go to the other side and you'll also see that there's a USDA office on the other side. During the harvesting and the processing a USDA inspection service employee has to be there on site.

Mr Thurm continued the presentation and covered the following topics:

- Handling of livestock
 - o At Park Ranch Meats, the Owner Operator, David Park is committed to having a safe and clean facility, while treating the animals humanely.
 - o Dr. Temple Grandin's extensive work and recommendations for handling of livestock will be incorporated into the operation from the time the animal is received to the time when the animal is brought from the holding pens to the harvest floor.
 - o For more information Dr. Temple Grandin's work go to:
<https://www.grandin.com>.

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Mr. Thurm speaks:

She is an amazing lady who really knows how to handle livestock, and care for them and make this whole process a little easier.

Mr Thurm continued the presentation and covered the following topics:

- o Recommendations by Park Ranch Meats to the livestock producers that bring the animals to the facility will be made during the contract process.
- o Those may include:
 - o Transport and handling instructions to limit the stress on the animals.
 - o Required cleaning of the animals prior to arriving at the facility.
 - o Proof of age older than 30 months or less than 30 months.
- The Harvest Process
 - o Animals arrive and are put into a temporary holding area inside the facility.
 - o Two days a week, animals will be taken to the slaughter floor. 15 large animals a day can be dressed out, cleaned, and inspected ready to go into the cooler.
 - o The dressed out halves are placed in a cooler to bring down the temperature of the meat carcass for 24 hours. During that time, evaporation occurs and condensate is evacuated, prior to entering the aging cooler.
 - o After 24 hours, the meat carcass goes into the aging cooler.
 - o Once the meat is cured, the various parts of the beef sides are cut up into various choice cuts or ground up, then packaged up, weighed and labeled, placed in the freezer or cooler, ready for pick up.
 - o The USDA Inspector also certifies grades the meat during this process.
 - o The packaged meat is picked up by owner or purchaser of the meat.
- Water Usage During the Harvesting Process

Mr. Thurm speaks:

This table that you see is from a study that was done, Rami iara, University of Nebraska, Lincoln, 06 2015. This is a breakdown of what water is used for the process. They're at about 355 pounds per 1,000 pounds of body weight, and that could equate to about 425. Wolfpack Meats, if you ever get a chance to tour the facility, I encourage it, they are estimating 150 200. We went on the high end as far as estimating our water use at 30 head.

Mr Thurm continued the presentation and covered the following topics:

- o The above study is mid range of figures we have seen. Wolfpack Meats is on the low end in their estimation as are other sources researched that track that data and depending on conditions, water usage per 1,200 lb. live weight, could be as low as 150 gal and as high as 425 gal.
- o At 425 gal per head and 30 head processed per week, annual water usage could be as much as two acre feet or 637,500 gal. At 60 head per week, annual usage would be closer to four acre feet.

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- o A typical household on a 1 acre parcel under current Nevada water laws is allowed to use two acre feet of water from their well per year.
- o Estimate: It takes 441 gallons of water to produce a pound of beef, this is slightly more than what it takes to produce a pound of rice and has a much higher nutritive quality. Ref 3 University of California at Davis.
- Reno Rendering
- o Reno Rendering was selected to remove the fat, bone, hide and other animal waste on a periodic basis from the processing floor, and from the sand and grease interceptor located on the north end of the building.
- Solids, Fat and Grease Interceptor

Mr. Thurm speaks:

If Dave decides to keep the hides or other parts, you know, I mean, makes sure that it goes to a licensed tanning operation, whatnot.

Mr Thurm continued the presentation and covered the following topics:

- o A 10,000 gallon solids, fat and grease interceptor is proposed to separate our solids and fats from the water that is used to clean the animal on the slaughter floor. Reno Rendering removes all of this on a regular basis as the tank fills up. The remaining liquids are disposed of into a standard leach field. A standard leach field can be used as the water table is at 24 feet below the ground surface.
- Treating the Effluent
- o A 10,000 gallon tank with sand and grease interceptor and a de nitrification system will be used to treat the effluent by adding oxygen to and removing as much as 90 percent of the nitrogen prior to entering the infiltration trenches.
- o The Biomicrobics Fast System 9.0 can treat up to 9,000 gallons per day GPD .

Mr. Thurm speaks:

If you look through their literature it is equivalent to being able to treat 26 136 homes per day. It obviously varies on water usage. This is for 9,000 gallons.

Mr Thurm continued the presentation and covered the following topics:

- o At 425 gallons of water per large animal used during the cleaning and disinfection process and 15 head per day, 6,375 GPD of water would be required to clean the animals.
- o Again, estimated water use for the facility is two acre feet per year assuming 50wks yr and will come from the existing well on the east side of the building.
- Environmental Concerns Mitigation

Vice Chairwoman Casey speaks:

Mr. Thurm?

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Mr. Thurm speaks:
Yes.

Vice Chairwoman Casey speaks:
While you're on that page, I'm looking at one, two, three, four, can you kind of say how one gets to two, please?

Mr. Thurm speaks:
Oh, yeah. Sorry. This is actually a two compartment system. We are actually proposing a battery system where there's actually three compartments. So, effluent, and solids and fat enter the first compartment, the solids fall to the bottom of the tank, the fats stay suspended, and then they move with the water into the second compartment, and then in the third compartment the inlet that goes into the third compartment is lower than where the fats would be suspended. So, that effluent, we've got rid of the solids, the fats and that's where the biomicrobic system is located, oxygen is constantly introduced into that third compartment, and then that effluent is recirculated through, it's like a charcoal carbon filter. It is supposed to remove 90 percent of the nitrates.

Vice Chairwoman Casey speaks:
So, it would be much like a traditional sewage plant, that they have, when the water comes and you have the sludge tank where they have the microbes working on the top?

Mr. Thurm speaks:
Yes, for...

Vice Chairwoman Casey speaks:
To some extent.

Mr. Thurm speaks:
For primary, yes. It's definitely not like MGSD's or anything like that. This is...

Vice Chairwoman Casey speaks:
Different scale, but you know what I'm talking about.

Mr. Thurm speaks:
This is very similar to a residential. We have a different mammal producing waste. There will be a screen that will try to pick up as much of the hair and things that you don't really want to get in there, both the solids and the fat area where hair may even stay suspended, both of those are going to have an area where Rendering can come. They can remove that stuff on a daily or weekly, as needed basis.

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Vice Chairman Casey speaks:

Okay. I think I got it. I'll ask more questions later.

Mr. Thurm speaks:

Sure, that's fine. In the middle of this slide you can see the actual harvest facility.

Mr Thurm continued the presentation and covered the following topics:

- o The harvest facility building was built up three feet and is shown here as up and out of the flood plan, surrounded by x shaped AO 1, A0 2, and AE at Buckeye Creek.
- o Buckeye Creek is the flooding source from the Pinenut Mountain Range and currently runs along the east property line north then west until it encounters Highway 395.

Mr. Thurm speaks:

Dave and Park Ranch, they do utilize that water and in the Master Plan Agreement you can see where the future Muller Parkway is coming through. The outline is in yellow. It's 105 feet dedication by Dave Park. One thing to consider here is while the County is going to allow him to be able to still utilize those same waters that he had access to building that road up is, I mean, I'm pretty sure this thing is going to be out of the flood plain entirely to the north and to the south.

Mr Thurm continued the presentation and covered the following topics:

- Animals harvested at the Park Ranch facility.
- o Beef cattle raised in Northern Nevada and the rest of the Western Region, to be processed for sale, require a brand inspection when entering the holding area for slaughter and processing. Many of the cattle that will be processed are owned and harvested from Park Ranch, LLC.

Mr. Thurm speaks:

These are two current brands that Park Ranch holds.

Mr Thurm continued the presentation and covered the following topics:

- o Beef cattle:
 - Average arrival weight: 1,200 lbs.
 - Dressed out weight: 500 lbs.
- Hogs
- o Just like beef comes from cattle, pork comes from hogs.
- o Pork:
 - Average arrival weight: 250 lbs.
 - Dressed out weight: 140 lbs.
- Lamb

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- o Lamb meat comes from lambs that are less than 12 months old. The lambs are considered sheep after a year old and mutton is the meat if the sheep is processed for packing and sale.
- o Lamb:
 - Average arrival weight: 90 lbs.
 - Dressed out weight: 50 lbs.
 - Big Game
- o Big game animals can be processed in this facility. This processing is more seasonal than other animals processed here.
- o The packaged meat is not to be sold, rather to be consumed by the owner that brought the animal to be processed.
- o The big game tag will need to stay with the largest part of the animal throughout the duration of slaughter and processing as required by the Nevada Department of Wildlife.
- o Types of game harvested: Deer, pronghorn antelope, elk, bighorn sheep, mountain goats.
- o Note: Check with the Nevada Department of Wildlife to verify which animals a tag is required for hunting.

Mr. Thurm speaks:

That's my presentation and if you have any questions I'd be happy to ask or Dave Park.

To review Mr Thurm's full presentation please see the Supplemental Meeting Materials

Chairman Walder speaks:

Thank you very much, Mr. Thurm. Mr. Park, did you want to make any comments, or should we move right to questions? Please, go ahead.

David Park, applicant, speaks:

I really don't have any comments, but I'm available to answer questions with Mr. Thurm and Mr. Lundergreen.

Chairman Walder speaks:

Thank you very much for being here. We'll bring it back to the Planning Commission now, then and you can ask questions of the staff or the applicants. Mark, you've got your microphone on, I'll recognize you first.

Member Neddenriep speaks:

Nevada Revised Statutes require that I disclose that I've known David for several decades and he's a client of mine. A reasonable person would conclude, in my situation, that this will not affect my decision making and I will be voting on this matter.

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Chairman Walder speaks:

Thank you very much, Mark. Any other disclosures? If there are none, I would like to remind Members of the Planning Commission that we are the final authority on this. This is a Special Use Permit. This would not go to the Board of County Commissioners. Also, I want to remind everyone that the findings are what we should make our decision on. The findings are on packet page 140. There are eight findings, A through H, and they are listed there in detail. So that, when we come to a final conclusion, would be something that if you cannot support a favorable recommendation you would cite whichever findings you believe cannot be met. So with that, then we'll start with questions from Members of the Planning Commission. Again, Kristi, if you want to jump in at any point, please just raise your voice and we'll get to you with questions for the applicant or for the staff. Raise your hand if you have questions at this point. Oh yes, Maureen reminded me, in the Supplemental Materials that were handed out to Members of the Planning Commission and will be included in the packet is a letter in support, email in support, by Mary Booher of Montevideo Circle in Minden for this project. So, that is in the packet and I believe the Members of the Planning Commission all have that. So, questions from Members of the Planning Commission at this point for the applicant or the staff? Nick, go ahead.

Member Maier speaks:

Thanks for the presentation guys. It looks like a really nice facility. I do think that Douglas County needs a meat processing plant in the Valley here. This one looks good, it's not around any houses, near Light Industrial, so all good. I have a couple questions. This is right next to a Light Industrial zoned area, but it's inside the Buckeye agrihood project; is the entire Buckeye agrihood project zoned A 19 or are there different zonings within the Buckeye project?

Mr. Park speaks:

My understanding is that the majority of it is A 19 right now; however, there is portions that are Light Industrial that are within the agrihood, but they're small in comparison to what Bently owns.

Member Maier speaks:

This one is on A 19?

Mr. Park speaks:

Correct.

Member Maier speaks:

Okay. Now is there a development plan in place with the Planning Commission for Buckeye agrihood as an entire project?

Mr. Park speaks:

There's a specific plan at this point.

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Member Maier speaks:

Okay, and those areas are designated Light Industrial or A 19?

Mr. Park speaks:

They are. However, in the specific plan, as Lorenzo had up a slide earlier on, it identified what we proposed as where the residential development will occur.

Member Maier speaks:

Right.

Mr. Park speaks:

And other portions of the agrihood.

Member Maier speaks:

Okay.

Mr. Park speaks:

But for the most part, not most part, almost all of it is the A 19 right now.

Member Maier speaks:

Okay. How close is the sewer currently to the facility?

Mr. Lundergreen speaks:

The sewer is in Buckeye, right in Buckeye Road, and it's approximately 1,200 feet from the structure and probably more like 1,500 feet to the proposed area that we are...

Member Maier speaks:

Okay, have you done any engineering analysis or environmental analysis as to the pros and cons versus a septic system versus hooking up to the sewer?

Mr. Lundergreen speaks:

Yeah, I can let Gary speak to that a little bit more. We have spoke with NDEP in detail about a proposed septic system and we've received a lot of input from them on this design and stuff, so we're very confident that it is, we feel it's the best design more so than even discharging into a public sewer, because we're managing it better with our system. But, I'll let Gary explain how it works, because it is a very detailed system.

Member Maier speaks:

Okay.

Mr. Lundergreen speaks:

As far as County code...

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Member Maier speaks:

Is there any negative to your facility hooking up to the Minden Gardnerville Sewer System that you know of?

Mr. Lundergreen speaks:

We haven't proposed, we have not approached MGSD because we were under the impression that we have the right to, we're far enough away, we're not within the zoning district or we're not annexed to the sewer. We have not reached out to MGSD, so we don't really know what their requirements would be.

Member Maier speaks:

Okay. I'm just trying to figure out what is the best way to manage the effluent, okay? I mean, from a cost standpoint, from an environmental standpoint. For all I know, it might be an advantage to go into the sewer system, right? It might be much more appropriately handled that way. So, that's one area that I'm interested in. Now, you've done financial analysis on this and profitability analysis on this, do you expect this to be a profitable venture?

Mr. Lundergreen speaks:

Yes. We've received, we haven't done a true financial impact study on it, but we've received a lot of input from people that are interested in doing business with us already from some sheep companies and other ranchers, etcetera, locally.

Member Maier speaks:

What proportion of the animals that you process will actually come from the Valley here?

Mr. Lundergreen speaks:

I would say...

Mr. Park speaks:

50 percent.

Member Maier speaks:

50 percent?

Mr. Park speaks:

From the Valley?

Member Maier speaks:

Yeah.

Mr. Park speaks:

Well, let me clarify that.

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Member Maier speaks:
Okay.

Mr. Park speaks:
So, I would suspect that nearly 100 percent will be coming from Western Nevada, including Smith Valley, even as far as California and such.

Member Maier speaks:
Okay.

Mr. Park speaks:
Furthermore, I think about, it's hard to say right now, but 25 to 50 percent of the operation will be custom work for other farmers that have animals besides ourselves.

Member Maier speaks:
Okay, so a large proportion is actually going to serve Douglas County?

Mr. Park speaks:
Absolutely. We've been approached by farmers, ranchers, you know, mostly they're local too that have meat retail businesses that need this service and...

Member Maier speaks:
Right.

Mr. Lundergreen speaks:
So, yes.

Member Maier speaks:
Okay, good. And where do you anticipate the hogs are going to come from?

Mr. Park speaks:
We've been approached by others as well, and we've even contemplated ourselves of raising some hogs ourselves.

Member Maier speaks:
Okay. On your property here in the Valley?

Mr. Park speaks:
Yeah, it would be somewhere in the Valley.

Member Maier speaks:
Okay. Okay. Those are all the questions I have.

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Chairman Walder speaks:

Thank you, Nick, very good questions. Other questions from Members of the Planning Commission? Bryan.

Member Oland speaks:

So, I'd say the only question I had and kind of leads to the discussion of how close this is to the residences. Can you guys bring up the slide that they had with the 3,000 versus the 3,700? Not to make Lorenzo switch back and forth, but when we look at this it kind of looks like we got two ag parcels of about equal size. Would you say so, David?

Mr. Park speaks:

Correct.

Member Oland speaks:

So, when we're looking at the Buckeye Specific Plan that Lorenzo provided, it looked like the houses went out to that middle line, yet this says 3,000, so explain the difference.

Mr. Park speaks:

Yeah. So, you're correct, that's not accurate. The 3,700 is, so the Buckeye Farms residential actually goes out further to, as you just noticed, and it's probably more like half that, of the 3,700.

Member Oland speaks:

That was kind of my estimation, if we go by the lines its right around that line, so...

Mr. Park speaks:

Exactly.

Member Oland speaks:

In the end when the thing does get built out...

Mr. Park speaks:

1,800 2,000 feet.

Member Oland speaks:

That could be about, yes, 2,000 feet, possibly within the noticing radius was what I was trying to get at. But also, like you guys said, this is a plan and if you moved it yourself, you obviously have the ability to do so, because it's only a conceptual plan, correct? You could actually change the allocation of where the houses actually are?

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Mr. Thurm speaks:

That was actually my fault. It should've been, it was closer to 2,000 feet and I apologize.

Member Oland speaks:

I'm not saying anything bad about it. When I'm doing math, I'm doing 700 minus and I wasn't quite seeing it, but what I'm pointing out is the fact that we do have a specific plan that may reach as far as that line. However, it is a plan, and it is conceptual in nature and we did see a casino behind my office turn into houses. So, when we look at these plans they are down on paper, but however, when you bring the ultimate approval you can change the configuration within that area; is that correct?

Mr. Park speaks:

I suspect we could, yes.

Member Oland speaks:

Thank you.

Chairman Walder speaks:

Thank you, Bryan. Other questions from Members of the Planning Commission? Mark.

Member Neddenriep speaks:

This is for Gary. Gary, you said that if this thing is operating at full capacity it's going to use approximately four acre feet or two one acre house sites full of water; is that correct?

Mr. Thurm speaks:

Correct.

Member Neddenriep speaks:

Okay. And then, I'm assuming that Mr. Park would have to convert his agricultural or part of the agricultural well to a domestic use or something; is that possible?

Mr. Thurm speaks:

Well actually, I'm pretty sure that is considered domestic well.

Member Neddenriep speaks:

Okay.

Mr. Thurm speaks:

So, if we need to divert or if Dave needs to divert any water rights to that we will do that through the State Engineer.

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Member Neddenriep speaks:
Okay. Thank you, Gary.

Chairman Walder speaks:
Thank you very much, Mark. Other questions from Members of the Planning Commission? Kristi, any questions on your end? I just have a couple of small ones that I can go ahead with, unless you had anything at this point?

Member Kandel speaks:
No, I don't have any questions at this point.

Chairman Walder speaks:
Okay, thank you. David or Gary, the existing building we note in the packet is about 40,000 square feet, but that says that the meat processing will be about 9,320 square feet. What's the rest of the square footage? Is that the offices, the USDA office, your office, the holding pen, the coolers, things like that?

Mr. Park speaks:
No, that's included in the 9,300.

Chairman Walder speaks:
Okay.

Mr. Park speaks:
Okay, yeah. The balance is equipment storage, our shop.

Chairman Walder speaks:
Okay. So, that won't have anything to do with the meat processing at all?

Mr. Park speaks:
It will not.

Chairman Walder speaks:
Okay. So that, the large portion of the building is going to be non meat processing?

Mr. Park speaks:
Correct.

Chairman Walder speaks:
Okay. The office, that's a general Park Ranch office, that'll remain a general Park Ranch office where you do your operations? How many people work in that office?

Mr. Park speaks:
Actually, one and a half.

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Laughter was heard

Chairman Walder speaks:
Okay. Alright.

Mr. Park speaks:
One full time employee and I'm there part time.

Chairman Walder speaks:
I'm sure you got a lot of people in the field rather than the office doing the real work, right?

Mr. Park speaks:
Right.

Chairman Walder speaks:
But those people are not going to be affected by the meat processing at all, so you've got a pretty clean facility and the separations are going to be pretty distinct, as Gary explained, I think; right?

Mr. Park speaks:
Correct.

Chairman Walder speaks:
And then, speaking also to the point, I voted against the meat processing facility that we previously considered that Sinclair Farm had. I had concerns with the neighboring properties, the smell of the manure, the other hazardous, or negative affects I should say, to the surrounding areas, but everything that you're gonna be doing is enclosed inside the one building, you're gonna actually load the animals from the truck to the building and have a holding pen inside the building; is that correct?

Mr. Park speaks:
That's correct. So, what's important to understand, the comment you just made is true and this is not a confined feeding operation. We do that operation 30 miles south of here. So, what will happen is the animals will be transported from either our operation or others to the facility, and within hours the harvest will occur.

Chairman Walder speaks:
Okay, thank you. And then, kind of going back and amplifying on Bryan's point, we've got the Buckeye Farm Specific Plan that we've kind of overlaid and Lorenzo's laid that out, I think, very well. We can see how it fits in with the other agriculture areas that are immediately surrounding the building that we are concerned with. My concern would always be with the neighboring residential properties, and as Bryan pointed out, we're a long ways from those now. What you have explained is

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that neighboring residential properties in neighborhood one, I think would probably be the closest, and they're over 1,500 feet. I think I calculated that out to city blocks, so about five or six city blocks, so it's gonna be a fair distance away. I also compared this, I think, with Wolfpack, and I think Wolfpack is in an area where there's some apartment buildings that might be even a block or two away. So, you do have what you would consider an adequate separation with the proposed homes that would be in Buckeye Farm?

Mr. Park speaks:

Yeah, absolutely. If you look on Lorenzo's map of the Buckeye Farms, it's actually centrally located within the surrounding agriculture uses, so it couldn't be any further away from residential than possibly, as part of the project.

Chairman Walder speaks:

Okay. Those are your homes, you're gonna have to sell them, so if they would be severely impacted that certainly wouldn't be a good selling point.

Mr. Park speaks:

Right.

Chairman Walder speaks:

Okay. I don't think I have any other questions at this point. If there's no other questions from Members of the Planning Commission, then we can open it to Public Comment.

PUBLIC COMMENT

Chairman Walder speaks:

We'll open this for Public Comment. Again, if you come to the microphone, please sign in on the sign in sheet, and then state your name and make your Public Comment. They'll be limited at three minutes per person. If we have other individuals, if they want to stand up and line up by a wall, and we'll proceed with each individual as they come up. Please, go ahead, sir.

Tim Milliron speaks:

Some of you may know that I'm heavily involved with the Sinclair litigation and it was our group that brought the concerns to the Commission that they had the big meeting at. I've learned more about slaughterhouses than I ever wanted to know. I am a, I have a degree in civil engineering. I retired from the Department of Water Resources. I just wanted to point out that there are significant differences between the system that they're proposing and what Sinclair did. Sinclair was proposing what was essentially an experimental waste treatment plant and it was going to be right on top of the, not necessarily aquifer, but on top of the water table. The water table at the Sinclair Ranch is one foot underground, right, compared to what Mr. Park is proposing. He's got at least 24 feet. I have checked the records of

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all the wells in the area and he does seem to have plenty of room to leach down before we have any problems with the aquifer. One thing that Sinclair didn't have was the denitrification and on any slaughterhouse that is really the key component. Cattle, when they're slaughtered, do produce a lot more nitrates than any, like a household system is. I do have confidence in NDEP to check their system and make sure it works. I think that this is an excellent opportunity. I was never really against the slaughterhouse at Sinclair, I was just more worried about the water quality of their system and it appears that the system that they're proposing is very common in the United States; it's not experimental and I really wouldn't anticipate any problems there. They do have the sewer nearby. I haven't done a cost estimate, but I'm sure they have. And so, I think either system that they use will work real well and I would recommend you guys approve the project. Thank you.

Chairman Walder speaks:

Thank you very much. Other Public Comment?

Sue Sullivan speaks:

Hi, I live in Monterra. I just have a couple questions. You cleared up the Sinclair issue with me, as far as the differences. I do have a question, I'm concerned about the smell. Is that an issue that they are going to address or is that something that we won't have to worry about being residents of Monterra? I also wanted to address the traffic issue with large trucks, is that gonna be a problem, because we're with all the new homes, the townhomes, the homes across the street by *inaudible comment*) causing a lot more traffic than we're used to. Is that going to be an issue? So that's, those are my concerns.

Chairman Walder speaks:

Thank you very much. If people do have questions that come up in Public Comment, then Members of the Planning Commission can raise those with staff or the applicant after we finish all Public Comment. So, other Public Comment?

Jim Slade speaks:

I believe that this type of facility would be an asset to the Carson Valley, but a Special Use Permit is deservedly required, because there are a great many locations where it would be completely inappropriate. As to required Finding A, consistency with the policies of the Master Plan, staff starts by referring to the Carson Valley Region without mentioning that refers to the entire Valley from Indian Hills to Genoa, Minden, Gardnerville and the Ranchos, which makes it so vague as to be irrelevant. Staff then attempts to explain its consistency with the ag element without mentioning that the subject parcel is not in any of the three identified agricultural communities in the county. It is in the Minden Community Plan, which states that it is, "suitable for future urban development or otherwise preserved for open space." That community boundary was expanded there to accommodate the dense urban style development of Park's Buckeye Farm. Staff

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briefly mentions that and that the future land use is Receiving Area, meaning that it is “identified for future urban development.” The applicant totally ignored the Buckeye Farm plan and the fact that it is Receiving Area. Required Finding B, the proposed use is compatible with and preserves the character and integrity of adjacent development of neighborhoods, which should include the already planned and approved development, Buckeye Farm, yet the applicant fails to acknowledge that the Buckeye Farm plan shows that this exact area is, as indicated, as a neighborhood commercial center, which could be inconsistent with a slaughterhouse. Adjacent to this parcel to the west is slated to be a “teaching farm and future public facilities.” What type of public facilities? Would they be consistent with a slaughterhouse? We have no idea, because they didn't address it. Staff also quotes that the proposed project is also surrounded by A 19 parcels in all directions. The required finding only refers to adjacent property, which to the east and north is zoned Light Industrial. Park falsely states that “all the adjacent properties are zoned A 19;” that is not true. They also failed to inform us that just over a quarter mile from the slaughterhouse will be a dense urban style residential development and that within a mile of the proposed slaughterhouse will be more than 2,000 homes, far more than within a mile of the proposed facility at Centerville and 88. It is incredibly disappointing that the applicant has not been more accurate and forthcoming in their portrayal of the area by completely ignoring the future land use of Receiving Area in the Buckeye Farm Specific Plan, including the planned use of the subject and adjacent parcels. It seems that Park Ranch is trying to pull a fast one on the County. I believe that this type of facility would be an asset, but only in the right location. With neighborhood commercial planned on the same parcel, an elementary school just over half a mile away and more than 2,000 homes scheduled to be built within one mile, I don't believe that this is an appropriate location. You should deny this application, there are far better places for such a facility.

Chairman Walder speaks:

Thank you. Other members of the public for Public Comment?

Susan Wanless speaks:

I, too, feel that this is an inappropriate place to have a slaughterhouse. I am concerned about the extra traffic on Buckeye Road as a result of this. I'm concerned that they're gonna hook up to possibly to the sewer and to the city water, as was commented early on. The water usage scares me. Nevada has a real problem with water right now. I've heard that they're thinking about sending water down to Las Vegas. So if, we're already at a water shortage, there's a definite problem there. The smell is something that I would find hard to deal with. I also am concerned about my land value being decreased as a result of living close to a slaughterhouse and I do feel that another location would be better. I also can't understand why we don't have more people that are concerned about this.

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Chairman Walder speaks:

Thank you very much. Other Public Comment?

Curly Hoagland speaks:

Hello. The housing development that's to the west is upwind. I'm just worrying about the smell, the odors that go to the east, because the wind comes out of the west 90 percent of the time. We already live with Bently Farms effluent fertilizing and it smells like a sewer opening on a hot summer day. Excuse me, so, just wondering what the odor, whether anybody's thought about that, the people that live to the east.

Chairman Walder speaks:

Thank you very much. Other Public Comment?

Courtney Kemp speaks:

I was born and raised in this Valley and I see the need for this for the future generations. We have 4 H people, we have FFA kids, they can't take their animals anywhere. Now, we have kids that don't have anything to do, because that's what our Valley has to offer for them. As for smell, the animals will not be there very long, in my understanding. Unless you have animals that are really housed there for more than 48 hours it takes a long time for smell to develop. As for the road, it's a state route, in my opinion. I believe that it is zoned Light Industrial, so we will have big rigs going up and down the road at all times. I'm completely for this.

Chairman Walder speaks:

Thank you very much. Other Public Comment?

Christy Lyons speaks:

I am 100 percent for this. I kind of chuckle a little bit about the "not in my backyard." I went through the whole Sinclair thing and everybody said, why not do it off Buckeye? The same people came and said, don't do it there because it's their backyard. I think we're gonna get that no matter where we go. I agree, we need this more than anything. I just had two of my cows have to go all the way up to Reno to get processed, and in fact, they come here to mobile game butcher. That comes to your land, dispatches them on your land, and then takes them off and that is what our community is going to. The smell, like they said, the smell is not gonna come. We do have cows here, that's what you moved to. That's what everybody wants, they want to see open land and cattle, and now they say, we don't want it. It's just a lot of contradiction in this community. It makes me kind of sad to live in it at times, because we want to support our local rancher, and then they have to go up to this brutal like, no, no, no, no type of a thing. So, with that, I 100 percent support this location, a slaughterhouse or harvesting facility and especially the way they proposed it, it looks great. Thank you.

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Chairman Walder speaks:

Thank you very much. Additional Public Comment?

Kristin Miller speaks:

I was, for the record, opposed to the Karen Sinclair slaughterhouse on Centerville, but for many, many reasons, basically, on location alone and for the environment. My husband is fourth generation. His father owned and operated Miller's Market, and he was a butcher. I live across the street from lovely people, Cordis family, and Julian, several, several neighbors that are third, fourth and fifth generation. We collaborated together with the surrounding area to oppose it, again, for location alone, never against the slaughterhouse. To keep my word, I have then since looked for locations. I went to the Bently family and Park family. I went to Silver State Industries and they were also interested, COVID kind of shut that down. I looked at former dairies. I'm just here to say that it's not as easy, as like, to find a place for a great location. In looking at this project, I was thoroughly impressed with, first of all, I thought it would be a great area. I was concerned coming here not knowing about where the effluent would go. Again, I just wanna say I'm impressed with the time and effort that they've taken. I wanna thank the Park family for bringing this to the committee. I believe that's gonna benefit the rancher, and as the gal said, 4 H, FFA, the local hunter. It's more humane for the animal to be this close. And also, hats off to the Temple Grandin's, not required, but it just goes to show that I think he's went above and beyond to make this good for the animal and good for the rancher. Let's see what else, and as for the area, again, not on a floodplain. You got 24 feet for this thing to percolate versus 24 inches. I think it's a win win whether it's the system or if it were to be hooked in, but again, you need to treat it before it's even hooked in as well. The denitrification system, again, I don't even believe that's required, but hats off to go above and beyond. It actually treats it before you even send it to be treated, so it's a, it was a definite need for the Centerville, it wasn't even enough to, again, fix that process. But again, I just wanna thank him for, and like I said, it's not an easy way to look in this Valley if it's gonna be anywhere. I don't know of another area and I just really encourage you to support this. Thank you.

Chairman Walder speaks:

Thank you very much. Other Public Comments?

Carol Bennis speaks:

I'd like to joke and say I've been a newcomer, because I've only lived here 49 years, but I do realize the value of this Valley, and I know the Parks family, and I know their values and what they have done. They haven't taken the easy road many times and they could've made more profits, but instead, they chose the ethical way to go. And I did oppose the Sinclair project, because that, I felt, was, it was on a, the watershed for the Carson River, and it, the Carson River is the only river that flows east, west of the continental divide. All the other rivers flow into the ocean. That is a prized, prized river, and we really, anyway, why do people move here?

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They moved here because of the agricultural environment. They wanted to get away from the heavy city life. They wanted to raise their children in an agricultural environment and in order to sustain this agricultural environment we need the facility of a slaughterhouse. And the Park option, I think, is an excellent one, because we've got 4 H, we've got FFA, we want to continue to make this an agricultural and residential area. The people before us have always kept that in mind when they have voted for any type of property like this. Anyway, I'm not used to public speaking, I'm sure you can tell, but I just wanted to say please, please consider this option, because it's very, very much needed. Thank you.

Chairman Walder speaks:
Thank you. Other Public Comment?

Dave Benjamin speaks:

I'd like to say it's great that we don't have a four hour meeting getting ready to go here. It's pretty clear that the Valley needs additional meat processing capabilities and I think this is a pretty good site. If there are economic impacts, the Parks are gonna experience them. It's not gonna go out to a big part of the community. Unlike Sinclair, there's not a house across the road, there's not water wells nearby that are potentially gonna be impacted, so this is a much better location than Sinclair ever was. There is one remaining issue though, I still think, and I think it should be discussed. We're still in a floodplain at this location because of Buckeye Creek and they're still disposing of the waste into the ground. If the sewers close, I think that this becomes a slam dunk if they attached to the sewer, but I think that's one of the considerations that really needs to be explored, is connecting to the sewer. Otherwise, I think this is as good a location as you're probably gonna find. Thank you.

Chairman Walder speaks:
Thank you. Any additional Public Comment? Seeing no additional Public Comment, we'll come back to the Planning Commission, and if the staff or the applicant would want to address any of the questions that were raised in Public Comment, we'll start with that, and then either move it back to the Planning Commission or go in another direction. Dave, if you'd like to start, state your name, and then make responses as needed.

Mr. Lundergreen speaks:

So, the first one I took down the note, was the smell. Part of the whole reason that we contemplated the indoor, fully indoor, processing facility was that reason alone. The whole process is completely inside. We believe the smell is mitigated already by that, and I just, we just feel like it's a nonfactor. I understand concerns about it, but I really believe that it's just not gonna happen. That's already a cattle operation, there could be 500 cattle standing out in the field around those properties at any time, so we just don't feel that it's a concern. As far as the traffic, Buckeye is a collector already, and so we're kind of thinking about that, talking

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about that and Dave has cattle trucks that go out of there now, he has to haul his cattle out of there to truck them somewhere else and his hay trucks, farm equipment. The impact of the traffic is basically a push in our opinion, because of what won't have to happen there, so we kind of feel that way. As far as the floodplain, just want to make clear, we're not doing any work in the floodplain. There's floodplain around it, but there's none where our proposed work is there's no floodplain.

Mr. Thurm speaks:

In regards to the floodplain, so all over the Valley we have standard septic systems, some with denitrification systems, some without, some in floodplains, some without. This is not a mounded system, so it's not, the water's gonna flow over the system just like in a standard septic system, and then for almost 2,000 feet to the west is the Park Ranch fields. With proper monitoring and documentation through inspections, which NDEP is going to require of us, whether it's quarterly, or annually or whatever. Dave doesn't want toxic waters going into his fields, and so as far as floodplain affecting that in this location, I don't believe that that's gonna be a problem. Smell, if you're worried about the smell, I would encourage you to go up to Wolfpack Meats, tour the facility. I thought for sure that there would be an odor, but if you keep a clean facility, those animals are there for relatively short amount of time, and again, with a clean facility you're not gonna, odor is not gonna accumulate. We're removing the waste on a periodic basis. Often times with waste, that's even an underground tank, if left there long enough it can emit smell, but if we remove it often enough, I just don't think we're gonna have any problems with the smell. Again, I mean, 1,300 feet to the road, a couple thousand feet to the west, nobody, and winds are primarily west to east, and southwest to northeast. If there's not a lot of smell right at the location, I can't see that there's going to be anything that far away.

Mr. Park speaks:

One last comment, I understand people's concerns about the effluent on site and I really don't have a concern about that. We believe we've addressed it. We also use the majority of MGSDs effluent for irrigation on our ranch, over near Muller Lane. So, we're familiar of what it can do to our property and how to handle it. We monitor it with wells, so we're familiar with it, and I really don't have a concern about what we're proposing over on Buckeye Road.

Chairman Walder speaks:

Thank you very much. Did the staff have any additional points that they wanted to make in response to Public Comment or on other issues? Please go ahead.

Jeremy Hutchings, County Engineer, speaks:

Yep. Thanks, Chairman. Just to point out, I think Mr. Maier had the question about the sewer, the code under development standards for 20.100.050 actually requires connection for new development to sewer and water when you're within

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2,000 feet, so the code actually requires it. Lorenzo has some language here that we would like to add to the condition. This is a little bit of an interesting project, because the sewer facility is not within the service area, so they'd have to request annexation or an out of service area contract with MGSD. I think they are in the Town of Minden's service area. The way the condition could be is to add it to connect to public sewer, then the backup would be if an annexation was refused by MGSD, then they could approach the State for a commercial system, as what they're proposing. But, our recommendation from engineering is based on this code section, the exemption is if you're over 2,000 feet away from a public sewer, and the gray area is that the project, currently, that property is not annexed MGSD, so they'd have to file for annexation within MGSD. Staff has contacted Pete at MGSD, there is a commercial application he could fill out, but he seemed willing to accept it. It would likely require the same pretreatment that Gary's actually already designed, as far as settling out the fats before entering the system, but it wouldn't be something they would, he said it'd be something they'd certainly consider. I'm happy to answer any further clarification. It may seem like a hardship, more for, just because of the distance to, the Park's office is about 1,500 feet, but again, if you just look at the straight up code, the code cut off is within 2,000 feet and the project and the property both fall within that. Historically, I think the property boundary is considered the distance that you measure the 2,000 feet from, but in either case here, it does not seem to fall within that exception. I'm happy to answer any further questions, and again, Lorenzo has a couple of traffic conditions that engineering would like to add.

Chairman Walder speaks:

Thank you very much, Jeremy. If I can just do a brief summarization, and then Dave, if you have comments that you want to make. So, basically, what you're saying is the presentation that Lorenzo made when he talked about water and sewer is what you were just summarizing, the requirement and code that if they're less than the 2,000 feet to, excuse me, greater than 2,000 feet to connect.

Mr. Hutchings speaks:

I'm sorry, if they're greater than 2,000 feet they meet the exception to not connect and they can do the septic.

Chairman Walder speaks:

Okay. Right. Yes, and they're at 1,500, and you have conditions that you have brought forward that we can examine. Have you discussed these with the applicant previously or is this something we need to kind of work on the fly on?

Mr. Hutchings speaks:

Very briefly, I don't know if I actually got the conditions in front of the applicant. I did talk to Mr. Lundergreen briefly about the cut off on the code last night, and I apologize, that's something I should've done previously, it's just something frankly that I missed and wish I'd gotten to sooner.

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Chairman Walder speaks:

Thank you. We appreciate your bringing it to our attention now. Dave, do you want to make a short response now, and then do you need a short recess to review this further?

Mr. Lundergreen speaks:

Yes, both of those, Mr. Chairman. Thank you.

Chairman Walder speaks:

Okay. Please go ahead and provide your comments, and then...

Mr. Lundergreen speaks:

We read the same section. We did check originally and we believe that we were outside of the service area, because there also is an exception that says, "this may include but not limit to a requirement for installation of sewer laterals dry within the project or requirement of a connection when located within 330 feet of an existing sewer line." The property does abut Buckeye Road, but the structure is 1,500 feet away, so we understand, with all due respect, Jeremy's thoughts on this, but we might be, well, I guess we'd better have a recess first so we can talk about it.

Chairman Walder speaks:

Fine, let's take a 15 minute recess. Does that provide adequate time to at least explore the idea? We'll come back at 25 after four, resume consideration of this matter. Thank you. We'll be in recess until 4:25 PM.

Mr. Lundergreen speaks:

Thank you.

A break was held

Chairman Walder speaks:

If we could have everybody take your seats and we'll resume the meeting. I'll call the meeting back to order. It's about 4:26 PM. We were discussing Item Number 2 and the staff has some additional comments that they'd like to make relating to water and sewer. Kristi, can I confirm that you're still with us, so we have all seven members?

Member Kandel speaks:

Yes, confirming I'm still on.

Chairman Walder speaks:

Thank you very much for your patience on this. What we'll do now is we'll talk to staff about the recommended conditions that they would like to suggest, and then we'll hear from the applicant, and then we can discuss where we need to go after

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that. Lorenzo or Jeremy, if you'd like to proceed with the comments, and then we'll move it to the applicant.

Mr. Hutchings speaks:

Yeah, thanks. I think, just to clarify a couple things after talking with the applicant, who obviously has some concern with the condition, they point out hey, we think it's 330 feet away from the sewer line, but actually, the way I read the code, is if you're within 2,000 feet you connect, and if you're greater than that you can get a provision there and that's where that applies to put in dry sewer lines and such. The conditions that we would suggest are simply, my engineer did write up a standard condition, but it could be as simple as connect to sewer, and the same applies for water and connect to water. That is just simply what's in the development code. If we're gonna vary for that, they could apply for that variance for a hardship waiver, because the proximity of the actual project being quite a ways away from the sewer main, but again, the project itself is still within that 2,000 feet. I think what our legal counsel would say is, typically that 2,000 feet is measured to the property line and sewer is in front of the property line, so is the water. I believe they do have an on site system for fire suppression anyway, which the additional, I think the building is sprinklered today, and I think that would just have to get extended anyway, so the water is technically on site. So, the conditions we could add would just be simply to connect to public sewer and water. And again, if the annexation with the sewer district didn't proceed the fall back could be that they could get the system approved through the State, which would be a commercial system. Hopefully that answers the question. I know the applicant is gonna want to respond. Obviously, they're not gonna want to agree to that off hand.

Chairman Walder speaks:

Thank you, Jeremy. Dave, go ahead with comments that you might have.

Mr. Lundergreen speaks:

Okay, yeah. Well, I guess maybe we would like the District Attorney to maybe weigh in on that section 20.100.050, exemption B. We did do some due diligence and we made a few phone calls, of course, we don't have any documentation of that and we were definitely working under the impression of 330 feet to the project. So, you have a property line and obviously the acreage abuts Buckeye Road, nobody's gonna argue that, but the project itself is around 1,500 feet. The sewer lateral might even be longer than, it might even be over 2,000 feet. So, I guess the question might be, once we go out the back of that building, what's going to be the total developed length of that sewer line? It might be over 2,000 feet. We don't actually have that number. So, those are a couple of arguments that we want talk about. And then, the other one that just kinda just got slipped in is connect to water. Well, it sounds all great, but that's a pretty, connection fees are very extensive and we're talking about a couple hundred thousand dollars here probably for connection permits for water and sewer. So, if we feel we have the

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right to be exempt from that we certainly want to pursue that, so I think we might want to ask Sam for his interpretation. Sam T, sorry Sam.

Chairman Walder speaks:

Thank you, Dave. Sam Taylor, can you weigh in? I think we might have a request for reviewing the exact language in code. I'm not sure if that can be displayed to us or read to us, so the Planning Commission can hear that as well. Sam Taylor, the floor is yours.

Sam Taylor, Deputy District Attorney, speaks:

Thank you, Mr. Chair. I will take the liberty of reading the code provision into the record. 20.100.050B states in relevant part, "in areas where a public wastewater system is anticipated," just want to note here it's not only anticipated, but the wastewater system's right in front of the property, "but not located within 2,000 feet. Development may utilize ISDS," that's individual sewage disposal system, "on an interim basis upon approval by the department." So, essentially what that means is if your project is not within 2,000 feet you can otherwise be exempt, but if you are within 2,000 feet then your project unfortunately is not exempt. The question then becomes, and I spoke to Jeremy about this and asked him, and he was quite adamant that he said the project was within, definitively, the 2,000 feet. In fact, I think earlier the applicant themselves said it was within 1,500 feet, so obviously, it falls within the boundary that the individual sewer disposal system is not authorizing, whereas mandatory connection to the sewer system is required. I would also note that I tend to agree with Jeremy's interpretation of the code relative to the dry sewer lines. What you're required to do is, and I think the whole purpose of this section is, that if you're outside the 2,000 feet you're required to put in, and it says right here, "as a condition the development must make provisions for the ultimate connection of the project to a public wastewater system." Okay, "this may include, but not be limited to the requirement for installation sewer laterals, dry sewer lines within the project or requirement of connection when located within 330 feet of an existing sewer line." In both cases, both the 2,000 feet, and also, I would say 330 foot designation, that would go to the property line because what you don't want to do is get in an argument with the developer where the project begins and ends in terms of whether developing on the individual property or lot. So, whenever you have these code provisions, mandatory connection is usually within X amount of feet to the property line and it isn't just here, it's other jurisdictions that I've looked at as well, and been involved in. It would be my opinion that they would be required to connect to the wastewater's system unless they obtain a formal sort of variance and you can get a variance to development standards. They could ask the Commission for a variance, but they would have to file a separate application for that. This application, I'm not sure it can be postponed. Yeah, we can do it to a date certain, but I think you got a certain number of days that you can postpone. The applicant would have to hustle, in essence, is what I'm trying to get at to get their variance

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request in so it could be done in time and that this, the postponement, would be heard within that period. Anything else?

Chairman Walder speaks:

I think that's helpful right now. I think perhaps, Dave or Dave Park, if you can react to Sam's interpretation of code? He's also raised the question of going the variance route. If we could get your observations on that, and then maybe at that point, after you've had one more chance to respond, we can come back to the Planning Commission Members and see what the preference of the Planning Commission Members. Obviously, we'd like to have a general agreement so that all parties are satisfied, but if not, then I think the Planning Commission can weigh in as to which direction we believe is the most favorable for all parties. So, Dave and Dave Park, the floor is yours for comments that you wanted to make.

Mr. Lundergreen speaks:

I think the only point I was, we were kind of outside talking about it on the front porch and it's kind of interesting because we still have to pretreat it. So, we're still gonna have to put this elaborate pretreatment system in, and then we're gonna discharge the water, which is basically domestic waste at that point, into the sewer. We're probably gonna have to do a lift station. It's gonna be a pretty significant expense, of course, that's not always factored into anything. We're gonna send it to MGSD, they process it, then they send it over to their ponds on Muller Lane, which then Dave Park irrigates his property with that same water.

Laughter was heard

Mr. Lundergreen speaks:

And he has to buy it back and he has to pay for. So, it's really, it's super hard for us to stomach, I guess is what I would say, so we would like to explore our avenues, but we certainly want to move forward with this facility.

Mr. Taylor speaks:

Mr. Chair, if I may? Mr. Chair?

Mr. Thurm speaks:

He pays MGSD for that water.

Mr. Lundergreen speaks:

So then yeah, that water, the pretreatment, I mean, so we can't argue that all here right now, obviously. I don't know if you guys want to say anything else or maybe we might need just a quick recess again for like five minutes if we want to, whether we want to agree to those conditions or not if that's where we're headed.

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Chairman Walder speaks:

Let's let Sam Taylor make a quick response, and then if a Member of the Planning Commission or two wanted to interject some thoughts that might help you folks to get your ducks in a row. Sam Taylor, and then I'll bring it back to comments from the Planning Commission.

Mr. Taylor speaks:

Sorry, just, I wanted to point out that there may be another avenue or two that could maybe accommodate Mr. Park. One avenue is, that potentially the Board could approve this with the condition of connect to sewer and water, and then subsequent to that, Mr. Park could then come back and ask for variance from that condition. So, in other words, you could get the approval today and can kinda keep sort of moving forward, but knowing he would be subject to coming back for that condition. Also, just one thing to point out, the developer can waive the time frames within the code, so he has the ability to put this on hold for as long as he needs to in order to obtain this variance. So, I thought I'd point that out as well.

Chairman Walder speaks:

Thank you very much, Sam Taylor. Members of the Planning Commission that have comments, or want to suggest directions or ideas? Nick, please go ahead, and then Bryan, you're after that.

Member Maier speaks:

This is directed at Sam Taylor. Is there requirement that they hook up to water as well as sewer or is it just sewer?

Mr. Taylor speaks:

Yes, 20.100.040 requires connection to the water as well. It's pretty much the same language.

Member Maier speaks:

Thank you.

Mr. Taylor speaks:

But the thing about it is, and this is something else that I want to point out to Mr. Park, I worked for a water utility previously, if somebody was already connected, in other words they already had a connection for whatever purpose, we wouldn't require them to pay an impact fee because you already are connected to the system and you're already, basically, the impact for your connection has already been taken into account. Now, I'm not sure what Minden does, but I'm just saying that that might be something they can explore.

Chairman Walder speaks:

Thank you, Sam. Bryan.

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Member Oland speaks:

My question relates, again, back to this code that we're interpreting at 2,000. Sam's over here. I seem to remember a property over on East Valley, when we're looking at the wording of the sentence we keep saying project development. The building is there, we're not developing anything. I feel like when I'm reading a development I'm thinking the 160 houses in the Ranchos and there's a shared cost amongst all the people. We're looking at, as a County, requiring a single individual to spend an exorbitant amount of money for them to give the County the water to take it back. I mean, I'm looking at a grim view of the County, because that's typically how I take it as an accountant who doesn't like taxes, but when I'm looking at it as we're gonna require somebody to give us something to take it back and in the middle, there is a payment that is made to one of those County agencies, so I have a direct problem if we're considering that a project in a development, as a single property owner, and if we put this line through and there was somebody else that already existed on the line are they also required to connect, no matter what, just because we put a line there, and their house already existed, and they weren't previously connected, and do we cause that person to pay all the money to make the connection? I just want to kinda clarify where did the 330 go when we were talking about those East Valley homes? We had a connection that was right around, I think it was close to 500 feet or 330 feet, something like that, that was very close and we had required them, had they been within a 330, to connect. So, I'm wondering why a single individual could be forced to go through this type of expense when they're not even changing the building or anything existing on the property other than the use? We're considering a Special Use Permit, not a development application.

Mr. Taylor speaks:

Mr. Chair, I believe I can answer that.

Chairman Walder speaks:

Sam Taylor or Jeremy, go ahead.

Mr. Taylor speaks:

I actually considered that as well, Bryan, whenever I started looking at this issue and became aware of it earlier today in this meeting. I did not know there was a sewer line in front of the property, so I looked at it and I also looked at the definition of development, which includes basically, any construction, reconstruction, demolition or alteration of the size of any building, any facility, including a private or municipal facility, so that's where this comes from. It's required, and if you look at 20.100.050, it says new development. So, this is development, this is new development under our code. In other words, if you're doing something other than just repairing your existing building you are in the new development territory.

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Chairman Walder speaks:

Thank you very much. Bryce, go ahead.

Member Clutts speaks:

Thank you, Mr. Chair. Did I understand correctly that the variance is something that, as a body, we can debate today or are we going to have to re notice that for a future date?

Mr. Taylor speaks:

They have to file an application with the Community Development Department for a variance and that would be processed the same as any other. In fact, it would be processed the same as the variance you heard earlier today. Like I said, you could approve their development application subject to connection to water and sewer, and then they could later come back and ask for the variance at a later date, but they would have to process that separately, pay the fee, and all that what have you.

Member Clutts speaks:

Okay. Thank you. I just think it's unfortunate for the applicant that this issue was raised long into the debate today and I'm hopeful that there's some way that we can address this. It doesn't sound like we have a whole lot of options this afternoon, but it's just unfortunate.

Chairman Walder speaks:

Thank you, Bryce. Bryan, oh Mark, do you want to go ahead first, and then we'll come back to Bryan?

Member Neddenriep speaks:

My question is for Sam Taylor, as well. If they're not annexed into the service area then they don't get service, so what would stop them from saying I never want to be annexed in? Isn't it their choice?

Mr. Taylor speaks:

Are you talking about annexation in general? Service area, okay. Annexation of the service area is up to Minden Gardnerville, so that's what Jeremy was referring to earlier. In other words, if Minden Gardnerville decided that they would not provide service to that location then the only alternative that Mr. Park would have would be the system that he proposed, which is the ISDS with the denite, the commercial facility.

Member Neddenriep speaks:

Sam, is that a decision that Minden Gardnerville gets to make or is that a decision that the applicant can decide whether or not he wants to annex in?

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Mr. Taylor speaks:

Well, because they're required to connect to the public system, I think at a minimum they should at least provide proof that they've attempted to obtain service from Minden Gardnerville and been denied that service formally, and if they were denied that service then we can consider the ISDS.

Member Neddenriep speaks:

Thank you.

Chairman Walder speaks:

Bryan, did you have another quick question?

Mr. Oland speaks:

Back to the point of the water and all those things, David Park himself, I believe, has enough water for the property and like I'm saying, when we send something to somebody and there's a payment in between, me as an individual have a real trouble with somebody paying to get something back from themselves, and sitting on a board and requiring something that does require that, now we're talking about a sewer line that is already in existence close to the property, but where is it going? Why do we have a sewer line that goes where the sewer district doesn't go? Somebody here please explain that one, because had we not put a line where it shouldn't be it doesn't seem like this would ever be annexed in. So, somebody please provide why we have a line going there.

Chairman Walder speaks:

Jeremy, go ahead.

Mr. Hutchings speaks:

Mr. Oland, the sewer runs out to the Science Park for Bently and the development around Orbit, and then it runs back to the plant.

Member Oland speaks:

That's annexed in?

Mr. Hutchings speaks:

Right. So, if you look at an annexation sometimes you get little, either little islands that aren't or just little pockets that aren't, it's not all, just like you might think, it's nice rectangles or something. So, there's parcels here or there that are in, some are not. This one is not.

Member Oland speaks:

So, in my analysis, it's possible that the hardship was placed upon somebody by somebody else? Thank you.

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Mr. Hutchings speaks:

Yeah, potentially. This one's just unfortunate just because of the way Mr. Park has got his structure. It is a bit far away from the existing sewer, but it is right adjacent to it. And the way Sam is interpreting the code, I think he's, the engineer telling the lawyer how to interpret the code, but that is the way it reads. Mr. Neddenriep asked about, is it their choice to annex in or not? The annexation part's not really in it, it's just where the sewer's located and its public sewer. It's just a little unfortunate odd situation that we find ourselves in on this one.

Chairman Walder speaks:

Bryce, go ahead.

Member Clutts speaks:

Thank you, Mr. Chair. So, if Mr. Park would have known when he built that building, whenever that was, he's got a couple acres over there, that if he would've just built it 600 feet further to the north we wouldn't be having this conversation, correct?

Mr. Hutchings speaks:

Mr. Clutts, no. I think what Sam Taylor would say is the definition of where your proximity to the sewer is based on your parcel, not the actual development itself. So, it's 2,000 feet from your parcel to the sewer, to that utility. That might seem like a strict interpretation, but that's probably, I believe, to be a correct interpretation, so even if he'd pushed that building further to the north 400 or 500 feet, we would still be having this conversation.

Chairman Walder speaks:

Let's go to Mark, and then Lorenzo if you have another comment, then I'd like to try and bring this to a conclusion where we can either have action or move in the direction that the applicant would like to move.

Member Neddenriep speaks:

Jeremy, this is a question for you. If there was a spite strip there, the six foot spite strip that we heard at the last meeting, or if David simply did a lot line adjustment to put six feet into a different parcel, would we be having this discussion?

Mr. Hutchings speaks:

He'd have to put 2,000 feet in between the parcel, Mark. It's that parcel line to the sewer. Right now, his frontage is, the sewer's in the right of way on Buckeye, his parcel fronts Buckeye, so that spite strip would have to be 2,000 feet wide. It'd be a heck of a spite strip.

Member Neddenriep speaks:

Okay, thank you.

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Chairman Walder speaks:

Maureen, if you have a question, go ahead.

Vice Chairwoman Casey speaks:

I do. In the recommended motion, I agree we need to wrap this up and get moving, it says the applicant's variance justification, and for the life of me, I don't recall any discussion about any variance justification.

Mr. Hutchings speaks:

Yeah, we didn't, at this point we weren't asking for any variances in this project at all.

Vice Chairwoman Casey speaks:

So, when I make the motion, because that was the recommendation, go ahead and approve this, and then you could work on your variance request, correct?

Chairman Walder speaks:

If they would choose to go in that direction, but go ahead, Dave.

Vice Chairwoman Casey speaks:

And that's where you wanna go?

Mr. Lundergreen speaks:

At this point, we could stand here and argue about it all day. We definitely want you to vote on it today, and so if the only way we can get you to vote on it is to put those conditions in there, then we would appreciate you to vote on it, so we know where we stand. And then, of course, we do have the option to come back and ask for forgiveness on those, maybe we will, maybe we won't, that'll be something we have to discuss. Maybe we'll just move forward with it once we do a little bit of due diligence to see what it's gonna involve actually, because we haven't spoken to MGSD or Town of Minden, as far as. So, we would like you to vote on it for sure today and if the only way that that can happen is with those conditions by engineering then we would be okay with that.

Chairman Walder speaks:

Okay, if I can then re state where I think we're at, and if you don't need to take further recess to discuss anything, I think the staff has brought forward conditions of approval and we can have those read into the record. The motion would not, at this point, deal with the applicant's variance, but instead, the recommended motion would include the recommended conditions of approval that Lorenzo will read into the record now. My suggestion would be we go forward with hearing what the recommended conditions are. If we need to discuss those or ask questions of those then we can do that. I believe the applicant has been provided with a copy of those recommended conditions, so we're not hitting them with anything blind. They have seen it now, they haven't seen it previously, and again, I

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apologize on behalf of the Planning Commission that we're kind of doing some of this on the fly, which I do not always like to do, but I do want to take the applicant's request that we move forward on this one way or the other at this meeting today. So, let's hear the recommended conditions, then we can ask questions or discuss those. I believe we've already had Public Comments, so we don't need to go back to Public Comment on this issue, and then if we can come to a decision on a recommended motion and take action on that, that would be where we need to go for today. Lorenzo, I'll turn it over to you with reading the recommended conditions into the record, and then we'll go forward.

Mr. Mastino speaks:

Thank you, Chairman Walder. I want to mention again that this a request for a Special Use Permit that, if approved, the applicant would have to go through building permits, site improvement permits, to actually get the operation going. As posted in the agenda, currently, there's no condition about connecting to sewer and water. I'm about to read a condition that I believe this Commission may revise, to add to the Staff Report as the conditions or I believe that this body, and I'm gonna to defer to the DA's Office, may decide not to add that condition to the report as was posted in the agenda. However, staff believes that a condition to provide the applicant time to discuss, even with MGSD, and provide letters or other information, cost estimates, so in short, a condition that would satisfy everyone at this time could be to add an amended condition in section A, which are the conditions to be satisfied at the time of a site improvement permit or building permit, and that would be that the applicant shall connect to public sewer and water or obtain the approval of a variance per Douglas County Code, and that would be the condition. If the applicant, at the time of a site improvement permit or building permit, would decide not to connect to public water and sewer that decision would be made by the Planning Commission through the approval of a variance in the future, prior to the building permits being pulled for the actual development, but that would allow the Special Use Permit and the use to still be entitled on the land, and then would devolve the technical matters for the wastewater and the water to better evaluation from the applicant, the Sanitation District, Engineering and Planning Divisions.

Mr. Taylor speaks:

Mr. Chair?

Chairman Walder speaks:

Thank you, Lorenzo. Go ahead, Sam Taylor.

Mr. Taylor speaks:

I would add one more maybe sentence to that condition and I would say something to the fact that in the event the applicant approaches MGSD and MGSD provides a letter indicating that they were refused service to that area or annexation that their project would be approved as otherwise noted.

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Chairman Walder speaks:

Okay, thank you, Sam. These would be conditions of approval that, if you look at packet page 143, we already have conditions of approval, the Planning Division Conditions A and B that move over to page 144 and continue on to 145 with B7, so this would be a new one that would follow along with those. If I can get the Members of the Planning Commission to understand that is the recommendation by staff, so that would be the recommended motion, striking the language on variance and including the additional condition as outlined by Lorenzo and amended by Sam Taylor. Is that relatively clear for the Members who will need to make a decision on this and would they like to ask any questions of staff at this point or are we prepared to go to a motion? Maureen.

Vice Chairwoman Casey speaks:

I think I got it. I want to make a motion to approve Development Application DP 21 0078, a Special Use Permit to allow a 9,320 square foot commercial meat and poultry processing facility based on the ability to make the required findings, presentation and Public Comments, subject to recommended commissions of approval A and B, and recommendations as read into the record.

Chairman Walder speaks:

Thank you, Maureen. Is there a second?

Member Neddenriep speaks:

I'll second that.

Chairman Walder speaks:

Mark seconds the motion. We have a motion and a second to approve the development application, is there discussion? Bryce.

Member Clutts speaks:

Thank you, Mr. Chair. It's been a long time getting to this point, but I just want to say that I appreciate Mr. Park for taking the right steps to bring this facility to our Valley, and do it in a way that respects the environment and our community. I, too, have children that have been in 4 H and FFA, and one more that's on the way to doing it. Our family processes its own meat and big game, and it's pretty frustrating to live in probably one of the most beautiful agricultural valleys, at least in the Western United States, and have to drive to Reno or Fallon to have this done. Thank you for doing it in the right way, and for bringing this to our Valley and hopefully we can get some of this other stuff resolved.

Chairman Walder speaks:

Thank you, Bryce. Other Members of the Planning Commission for discussion or debate on the motion? Bryan. Mark.

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Member Neddenriep speaks:

I, too, would like to thank Mr. Park for bringing this forward. We need to do all we can to help the ranchers in Carson Valley stay in business. I believe that a facility like this would help slow down the conversion from ranchland into houses.

Chairman Walder speaks:
Bryan.

Member Oland speaks:

I, too, appreciate David and this team for actually sitting in on the other meeting, listening to the concerns that everybody had and addressing as many of those concerns in the proper way. I mean, going above and beyond what the project that we saw last time, and some experimental, as somebody put it, system. You guys really looked at what we said and made it better. When we look at projects and how we bring them forward, when we deny something it's not because we don't like the project, there's obviously something about the project that we liked, that's why it's here in the first place. I mean, look at the goals and things that we created in this Master Plan, agriculture, ranching, is all throughout that thing. Like Mark said, if we want to stop the conversion of land, the guys gotta be able to take the cattle to this facility and not have to drive it to Fallon, not to have to drive it to Reno. Personally, I worked on Greg in Reno, I lived on South McCarran, I drove by Wolfpack Meats five days a week and I can tell you I never smelled a thing. That place is right on a river. We're complaining about the Carson River and we made those arguments last time, it's moot now. We're not near a river. The smell is not gonna be anywhere within anybody's reason, and even if Wolfpack Meats is right next to the road and you can't smell it, I doubt that 1,800 feet away we're gonna have it smelling there. The one thing I am kind of disappointed is that on Friday at 2:00 we talked about this, 330 feet, and then today we come forward 2,000. We talked about this on Friday, yesterday was Monday, why today? County staff, this is two projects today that I'm kind of disappointed in, that I can't agree with a lot of what we've said, and the background research that we've done because it feels so thrown together. When we're sitting in a room and having to do things on the fly it is not fair to our applicants at all and to throw this condition on them the way we did today, I don't like it at all.

Chairman Walder speaks:

Thank you, Bryan. Other comments from the Planning Commission Members? Kristi, anything you wanted to add on your end?

Member Kandel speaks:

No, I'd say the rest of the Planning Commissioners addressed every detail.

Chairman Walder speaks:

Thank you very much. I want to just echo Bryan's comments in all respects, and the ones of Bryce and Mark too. I do find that it does meet all of the findings. I did

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vote against the previous project because I thought it endangered and jeopardized the health, safety, and welfare of surrounding properties, but I do not believe this project does. Therefore, I would be supporting this motion. If there's no further discussion from Members of the Planning, Maureen.

Vice Chairwoman Casey speaks:
I like the other one. I like this one. Thank you for both.

Chairman Walder speaks:
Thank you, Maureen. Thank you for your motion, and thank you for your good work. So, the question is on Maureen's motion to approve the Special Use Permit, all in favor say aye. Any opposed, say no. The aye's are seven, the nay's are zero and the motion is approved. Thank you very much. We appreciate everybody's due diligence and patience.

MOTION to approve Development Application DP 21 0078, a Special Use Permit to allow a 9,320 square foot commercial meat and poultry processing facility within an existing 40,391 square foot building, with Conditions A and B as presented by staff and the condition that the applicant shall connect to public sewer and water or obtain the approval of a variance per Douglas County Code; carried.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Maureen Casey, Member
SECONDER:	Mark Neddenriep, Member
AYES:	Oland, Walder, Casey, Neddenriep, Maier, Clutts, Kandel

CLOSING PUBLIC COMMENT

Chairman Walder speaks:
We do have Closing Public Comment. At this time, Public Comment will be taken on those items that are within the jurisdiction and control of the Planning Commission or those agenda items where Public Comment has not already been taken. I would be happy to open it up to anyone in the audience for Closing Public Comment.

Jim Slade speaks:
Before the start of Item 2, Chairman Walder reminded everyone of the process to be followed; as always, the Chairman would read the agenda item into the record, staff would make their presentation and answer questions, the applicant would make his presentation and answer questions, then there would be Public Comment, and then there would be final board discussion and a vote. On Item 1, this procedure was not followed. The applicant was allowed unlimited time to make their presentation and answer questions, but then instead of going to Public

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Comment the applicant stuck to the mic to make several more points with no time limit whatsoever, not answering any question posed by any member. In Public Comment following my three minutes, the applicant, Mrs. Rose, stepped to the mic and was allowed unlimited time to express every possible concern that she had, that was inappropriate and contrary to the direction given by the Chairman, but he said he wanted to give extra time to the applicant. During the recess, in the hallway, the Chairman told me that he didn't want to be accused of not allowing the applicant sufficient time, but by being overly generous to the applicant the Planning Commission is being inconsiderate and unfair to the public, especially those that might oppose the item. You should not be giving unlimited time whenever an applicant wants to speak. In my opinion, the applicant should be given one bite at the apple only, which is the way the Board does it, and be given a time limit in advance, as the Board and the Planning Commission have done sometimes. On Item 2, was it really necessary for Mr. Thurm to read every word of his 17 page presentation? That dragged on interminably and was unnecessary. Then, after Public Comment, inviting the applicant back up to respond to anything they would like to without limit or to add additional information that they wanted to without giving the public the opportunity to respond was also inappropriate. Again, by being overly generous to the applicant, to go as long as they want, basically whenever they want, ends up being inconsiderate and unfair to the public, especially those who might oppose any applicant. Thank you.

Chairman Walder speaks:

Thank you. Any additional Public Comment? I want to thank the staff for their very good work. Lorenzo, you did an excellent job. We appreciate Jeremy and Sam, and Sam's good work. All of the people in the Clerk's Office were extra patient in assisting us today, so thank them as well. I thank my colleagues on the Planning Commission and we will stand adjourned.

ADJOURNMENT

There being no further business to come before the Board, the meeting adjourned at 5:20 PM.

Respectfully submitted:

Kirk Walder, Chairman
Douglas County Planning Commission

ATTEST:

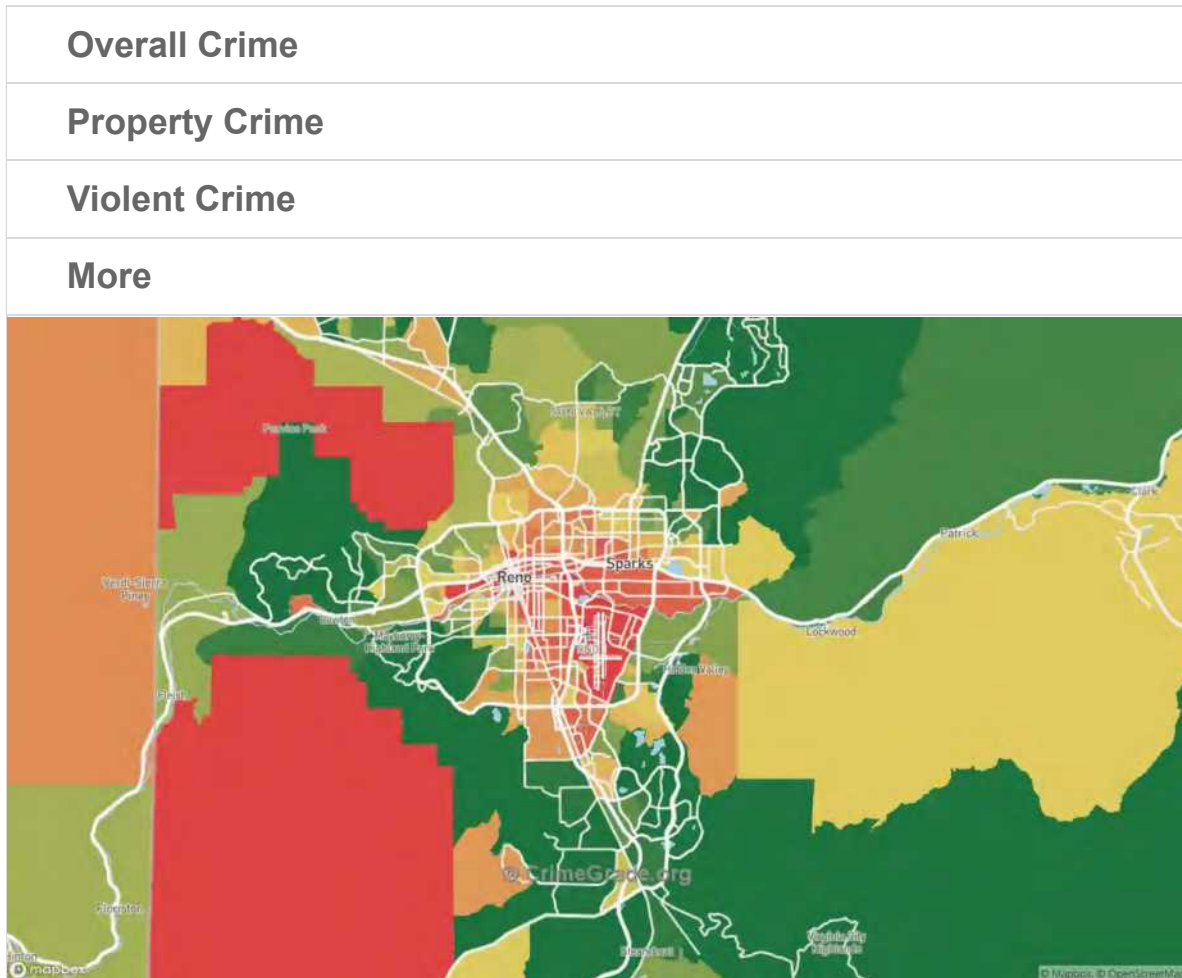
Amy Burgans, Clerk Treasurer

July 13, 2021

89502, NV Violent Crime Rates and Maps

Violent Crime per Capita in 89502

The map below shows violent crime per 1,000 89502 residents.



Crime Grades

F

C

A+

A+ (dark green) areas are safest

D-

Overall Crime Grade™

<u>Property Crime Grade</u>
D
<u>Other Crime Grade</u>
F

Which crimes are included?

Fact

A crime occurs every 2 hours 59 minutes (on average) in 89502.

300%

Your home is 300% more likely to be robbed with no home security system.

PROTECT YOUR HOME

Visit our partner Vivint to get a free quote.
Ads help us keep CrimeGrade free to use.

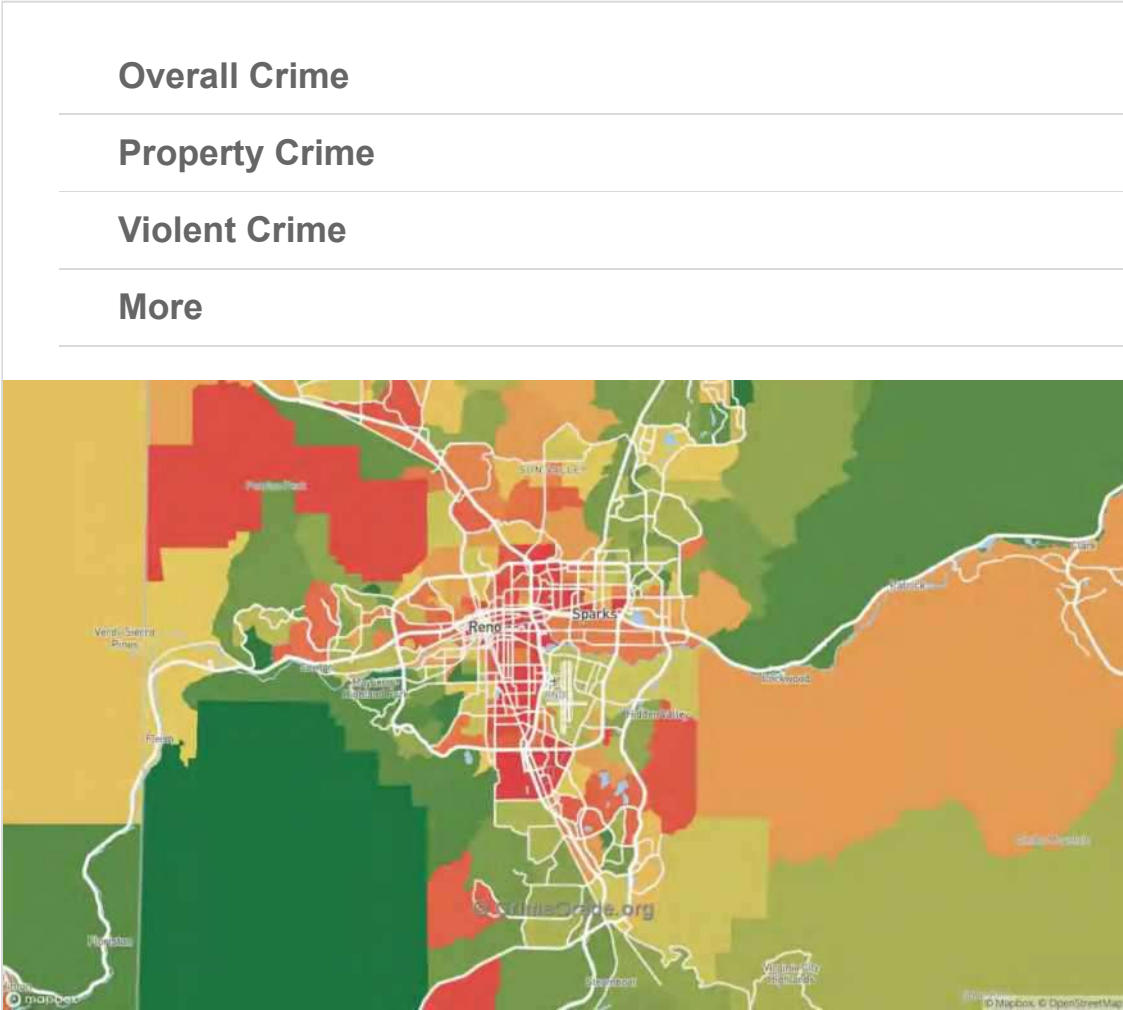
Crime Grade's violent crime map shows areas where violent crime per person is highest, weighted by the type and severity of the crime. The F grade means the rate of violent crime is much higher than the average US zip. 89502 is in the 6th percentile for safety, meaning 94% of zip codes are safer and 6% of zip codes are more dangerous.

The rate of violent crime in 89502 is 8.28 per 1,000 residents during a standard year. People who live in 89502 generally consider the east part of the zip to be the safest for this type of crime.

Your chance of being a victim of violent crime in 89502 may be as high as 1 in 28 in the northeast neighborhoods, or as low as 1 in 278 in the east part of the zip. See the section on interpreting the violent crime map, however, because comparing rates for violent crime or any other crime is not as intuitive as it may seem.

89502 Total Violent Crime Map

The map below shows a simple count for violent crime in 89502, and will closely resemble state population maps.



A+ C F

A+ (dark green) areas are safest

By a simple count ignoring population, more crimes occur in the west parts of 89502, NV: about 90 per year. The northeast part of 89502 has fewer cases of violent crime with only 1 in a typical year.

Interpreting the Violent Crime Maps

When looking at the violent crime map for 89502, remember that the rate of violent crime per resident may appear inflated when people visit the area during the day, but do not live there. For example, there are more retail establishments in the south part of the zip. Many crimes are committed in retail areas in blocks where few people live. Red areas on the violent crime rate map do not always indicate danger for 89502 residents who live there.

More issues arise with places like airports, parks, and schools. Major airports, of which 89502 has 0, always look like high-crime locations due to the large number of people and the low population nearby. Parks and designated recreational areas, of which 89502 has 11, have the same problem. Of 89502’s 45,739 residents, few live near recreational areas. Because many people visit, crime rates may appear higher even for safe parks. Ultimately crime happens where people are, whether they live there or not. Before writing off an area as unsafe, look at both the crime rate and total crime maps, then consider nearby destinations that people may be visiting.

89502 Violent Crime Breakdown

The table below shows which violent crimes are used to calculate the Violent Crime Grade above. All violent crime rates are shown as the number of crimes per 1,000 89502 residents in a standard year.

Assault
5.715
Robbery
1.633
Rape

0.8986
Murder
0.0360
Total Violent Crime
8.282 (F)



U.S. NEWS

MARCH 29, 2007 / 2:12 PM / UPDATED 15 YEARS AGO

USDA admits skipped meat plant checks for 30 years

By Charles Abbott



WASHINGTON (Reuters) - For three decades, U.S. inspectors visited 250 meat processing plants as rarely as once every two weeks despite federal law requiring daily inspection, Agriculture Department officials admitted to lawmakers on Thursday.

U.S. job growth rose solidly in July amid demand for workers in the services industry

AL

as once every two weeks despite federal law requiring daily inspection, Agriculture Department officials admitted

to lawmakers on Thursday. REUTERS/USDA/Handout

“All I can say is, it’s been going on for a long time,” said Undersecretary Richard Raymond to the House Appropriations subcommittee on agriculture. “It’s going to stop now.”

There are 6,000 federally inspected slaughterhouses and meat processing plants in the United States, USDA says.

The practice started under directives issued in the early 1970s, said Raymond. He told reporters afterward that daily inspections would commence “soon, damn soon.” He said the plants apparently were small operations located a long distance from an inspector’s base.

Also during the hearing, Raymond said USDA would delay until June or July the implementation of “risk-based inspection” of processing plants, rather than begin in April. USDA may propose at the end of 2007 to adopt the system at slaughterhouses, he said.

Subcommittee chairwoman Rosa DeLauro repeatedly challenged whether USDA has the data needed to justify the new inspection system. “If I can help it, not on my watch,” said the Connecticut Democrat in adjourning the hearing. She said Raymond would be called to another hearing in April.

DeLauro said the infrequent inspections at the 250 plants could be a violation of meat inspection laws, which require daily inspection. “I believe you’re exactly right,” replied Raymond, who is in charge of food safety at USDA.

While Raymond said he learned three weeks ago of the practice, DeLauro said “I find it very improbable” no one at the Food Safety and Inspection Service, which runs the meat inspection system, was aware of it.

FSIS acting administrator David Goldman told the subcommittee the 250 plants were not all

U.S. job growth rose solidly in July amid demand for workers in the services industry

Some plants were checked twice a week and others were visited once every two weeks, said Goldman.

Raymond said he would take steps to assure all plants received daily inspection.

“It is critical that FSIS from this point forward document that plants are visited daily, as required by law,” said Caroline Smith DeWaal of the consumer group Center for Science in the Public Interest.

Federal law requires continuous inspection of packing plants and daily inspection of processing plants.

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U.S. job growth rose solidly in July amid demand for workers in the services industry



Improving animal welfare in pig slaughterhouses

How to reduce stress, suffering and ease handling

Unloading

- Unloading pigs in small groups (5-6 pigs) is quickest . Pigs are calmer in smaller groups and thus move more easily. When pigs move easily, human handlers will also be more calm with them. It is a win-win solution.
- Ensure that the sides of the loading ramp are solid and high, this prevents pigs from falling off the ramp and blocks the view of negative distractions in the surrounding environment that could make them fearful or hesitant.



Make the sides of the loading ramp high and solid

- Place rubber or synthetic panels on the inside of the loading ramp to prevent metal to metal contact during unloading. This prevents a lot of noise and enables the pigs to walk easier off the tailgate The sound- absorbing panels can be attached with screws to make sure they stay in place. See picture below of Compaxo slaughterhouse for an example:



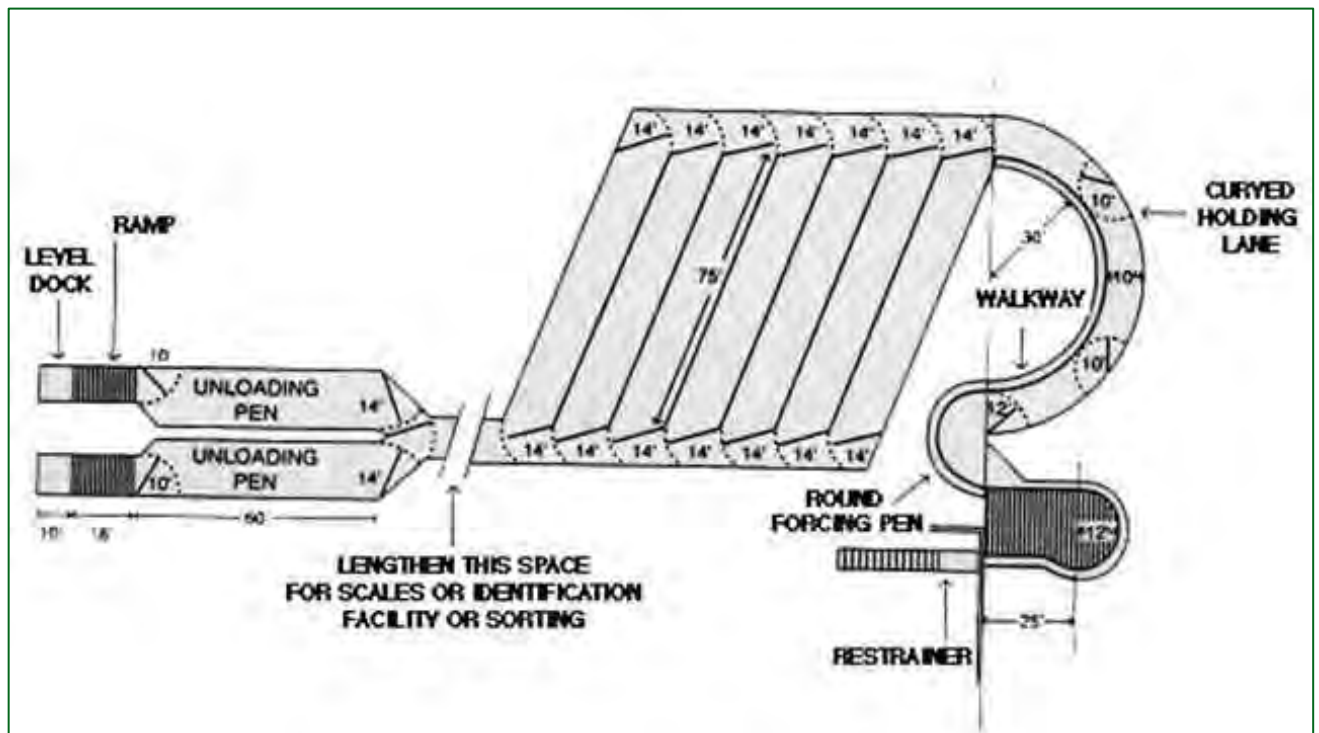
- The steeper the slope, the more fearful the pigs are. The slope of the tailgate should never exceed 15°.
- Illuminate the place where the pigs are unloaded. Pigs tend to walk more easily towards an illuminated area. Ensure that light does not shine directly into the face of the pigs because this inhibits their movement.
- The floor in the loading ramp should be non-slip to prevent pigs from slipping or injuring themselves. Use stair steps when there is a slope, even when it is a small slope.



Create non-slip flooring to prevent the pigs from slipping.

Lairages

- Allow the pigs to rest for 2-4 hours before slaughter.
- Long, narrow pens where pigs can enter on one end and can exit on the other end are ideal. Pigs like this design of pen because there are two long solid walls to lie against. Pigs prefer to lie against a solid-wall rather than in an open area.



Temple Grandin's design showing oblong pens. This design was made for a cattle slaughterhouse but the left part (unloading and lairage pens) can also be applied to pig slaughterhouses.
© T. Grandin.

- Use **partitions** to keep different social groups separate from one another in the lairage. Keeping pigs in the same established groups and not mixing them minimizes fighting. Mixing of unfamiliar pigs leads to a lot of fighting because they have to re-establish the **hierarchy order of the group**. The manager of Meijer Export Station in the Netherlands is very content with the plastic fencing they have been using for the past 20 years. These fences can be built up, arranged and taken down as desired. Tönnies slaughterhouse in Germany also uses partitions to keep social groups separated in their lairage.



Lairages at Tönnies with many partitions



Plastic fencing at Harfsen Export Station

- Make sure that the **pens are not too full**. Pigs fight considerably less in pens that are maximum 2/3 filled. Half full is best.
- When different social groups have to be mixed, make sure that the pigs can escape from each other. Including a separate narrow passageway within the lairage pen, where a pig can run into to be alone, could be used for this purpose. Creating ways for submissive pigs to escape reduces aggression and stress in the entire lairage area.
- Scatter some **corn** in the lairage pens before filling them up with pigs. The newly-arrived pigs will make a positive association with the new place and will make them calmer. The pigs will start to investigate the corn and focus their attention on the floor. This will prevent both stress in the pigs caused by the novel environment and keep them busy, with less time to fight. A rope, wood shaving or straw will have the same effect.

[Watch a video of the effect sprinkling corn on the pen floor can have on pigs](#)



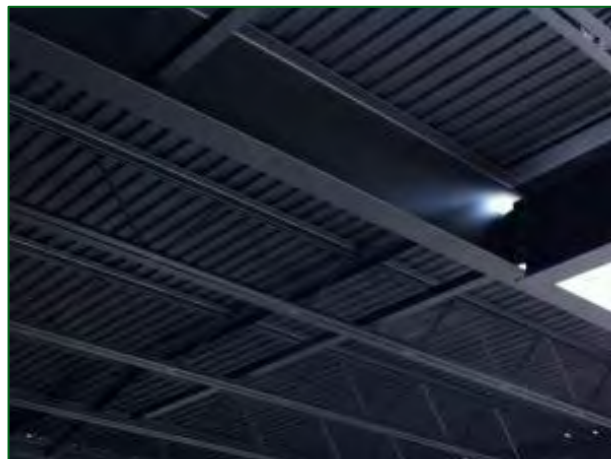
Scattering corn creates a positive distraction for the pigs and will decrease fighting behaviour.

- Fighting in pigs decreases when the pen has an odour of a boar in it or when there is a strong-smelling boar present in the lairage. Spray some boar taint in the lairages for that reason. A small slaughterhouse located in the Netherlands sprinkles the back of the necks of the pigs with vinegar to reduce aggression. The manager says this also helps reduce fighting as they all smell the same.
- Pigs are sensitive to new or sudden **noises**. Pigs cannot localize the direction of sound as well as people. Pigs are able to hear sounds that humans cannot (ultrasound). To keep the pigs calm, minimizing all types of sound is important. Using plastic instead of metal gates and fencing is a way to reduce noise because **plastic gates** hardly make any sound when opening or closing.



Export station Harfsen uses plastic fencing. Because of this, there is hardly any noise in the lairage.

- Prevent high ceilings to reduce echo and noises and search for insulating materials to install in the ceiling that are sound-absorbing. Make sure that, when using hydraulic systems, hissing sounds are transported to a different room using a pipe. Make sure that activities that create a lot of noise, such as the truck wash area, are located as far away from the animal- area as possible.

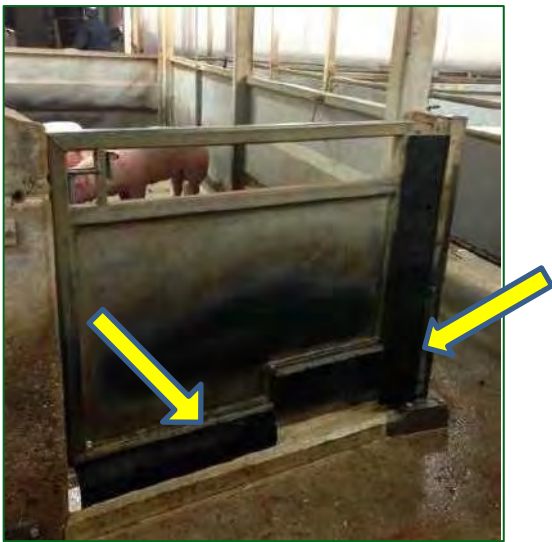


Sound absorbing design and material of ceilings

- Research shows that melodious music lowers the heart rate, which indicates a lower stress level, in animals (just like in humans). When music is played, pigs startle less easily from sudden noises. A slaughterhouse in Belgium has installed speakers in the lairage and is very pleased with the result. In a German slaughterhouse, where they also play music, they have composed a

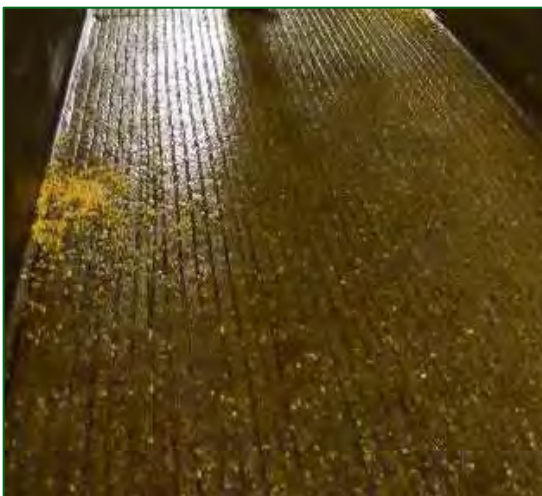
Pig Pop CD with classical music and soft rock. The pigs in the lairages are calmer and the employees enjoy the music as well. Studies have shown that a content and relaxed employee is calmer when handling animals than a frustrated or bored employee.

- Make sure that the **ventilation system** works well. Pigs cannot sweat and therefore can overheat easily. Heat stress causes a lot of suffering and is one of the most common cause of death among pigs.
- Prevent drafts in the lairage. The presence of a draft will prevent pigs from resting and increases fighting. Make fencing solid down to the floor or use anti-draft curtains.



New anti-draft curtains at Westfort pig slaughterhouse in the Netherlands.

- Make non-slip flooring.



Examples of non-slip flooring.

- Make sure that there are no sharp edges or pointy objects in the lairage or any of the areas where live animals will be passing through. These will cause injuries.



Sharp protruding will cause injuries. Photo: T. Grandin

Sick pen

- Pigs that arrive in poor condition and showing signs of discomfort and suffering should be stunned and slaughtered immediately (using emergency slaughter). Do not wait until the end of the day.
- Create a place near the unloading area where sick pigs can be stunned and killed immediately. Even mildly sick or injured animals (“suspect animals”) are immediately stunned and killed at Tönnies slaughterhouse in Germany to relieve their discomfort right away. The carcasses of these animals are then inspected by a veterinarian. After receiving approval, the carcass will proceed to the normal slaughter line. This prevents any risk of contamination of the slaughter line.
- Make sure that the environment in the sick-pen is ideal to make the pigs as comfortable as possible. Provide a soft and warm lying area for the animals. Offer the animals sawdust, straw, or rubber matting to lie on. Compaxo pig slaughterhouse has installed floor heating in the sick pen. This is also a good idea to keep the pigs warm and comfortable. Cooperl offers straw, this is the best solution.



At Tönnies the sick-pen has rubber matting and toys. At Cooperl the sick-pen has straw, which is the best option.

- Make sure that there is drinking water in the lairage pen, enough space and no draft.
- When the pigs stay in the sick pen for a longer period of time, make sure that the pigs have food and something to keep them occupied, such as some corn or some bedding material.
- Make sure that the lairage hospital pen is in a quiet area, or sealed off so noise is kept outside. Under no circumstance make the hospital pen close to where animals are passing through from one place to the next, with lots of activity.

Moving the pigs

- Pigs can be frightened of people or strange objects in their environment. This causes the pigs to pile up and become even more nervous. Place high solid panels at strategic spots to prevent their view of distractions (such as people and strange objects) so that pigs will walk calmly. The sides of the passageways should always be high and solid. Make sure that there are no strange objects lying around on the ground) of the passageways either. Even a simple water hose on the ground will cause pigs to hesitate as their curiosity kicks in and they want to explore the unfamiliar object first.



The high, solid sides prevent the pigs from seeing the people alongside the passageway.

- Make sure that the floors in the lairage and the passageways are made from the same material. Pigs are sensitive to contrasts in colours and are not very good at seeing depth and distance. Differences in flooring causes stress and pile ups. Strange objects on the floor or something as simple as a drain can cause pigs to stop. Pigs want to investigate the floor before they dare to walk further. That is why drains should always be placed at the side of the passageway. Take into consideration that pigs have a range of vision of 310° enabling them to (partly) see what is happening behind them.



The sudden change on the ground, such as a plastic strip, a drain or change in floor material, colour and texture is enough to cause pile ups. © photos: T. Grandin

- Make the flooring of the passageways non-slip.
- Prevent shadows on the floor. Pigs do not know what shadow is and want to investigate it before they dare to walk further. Shadows cause pile ups, delays,

and stress in the pigs. Installing green lighting reduces shadows.



Pigs will often balk in this passageway due to the shadows and the reflections on the wet floor. © T. Grandin



Green lighting was installed at Tönnies to reduce shadows.

- Make sure that air does not blow in the faces of the pigs. Pigs really become stressed in windy and drafty environments. . If air is blowing in the passageway, the pigs will walk in the opposite direction, away from it.
- Make sure that all the floors are as even as possible. Pigs are afraid of slopes, causing pile ups. A very small slope is not a problem.
- Use the principle that pigs like to walk towards the **light**. Lighting the end of a passageway (see pictures below) will facilitate pig movement. Prevent light shining directly into the face of the pigs because this inhibits their movement.

Fiddle with the angle of the light so that the least amount of shadows are created.



Compaxo placed extra lighting above the passageway.
The result: the pigs are less stressed and walk more easily.

- Move pigs in small groups (6-8 pigs). Driving pigs in smaller groups is easier, prevents stress. The risk of mortality during handling is lowest when pigs are kept in small groups. Research shows that moving pigs in large groups does not save time, but people often think that. It is a myth.
- It is very important that the people moving the pigs are calm. Pigs perceive fast sudden movements as a threat. Pigs will try to escape or freeze when confronted with a perceived threat. When the employee stays calm, the pigs will also stay calm, making them easier to handle. Yelling, hitting or rushing the pigs makes them more difficult to handle and makes everything take longer. Go by the principle of “When you have an hour, it will take you 20 minutes, When you have 20 minutes, it will take you an hour”.
- The use of **electric prods** is not necessary in a well-constructed passageway. Clappers cause a lot of stress because they are very noisy. Samba rattles, a plastic paddle, a plastic panel, or a flag are often enough to calmly move the pigs forward. Electric prods cause a lot of stress which will negatively impact meat quality.



A plastic panel, a samba rattle or a flag are often enough to get the pigs to move forward.

- Prevent sharp corners or dead-ends in passageways. A curved passageway is ideal because it gives pigs the impression that they are walking back to where they came from. A curve in a passageway limits the pigs' front and back view which reduces visual distractions. The exact sharpness of the passageway is very important. A pig needs to be able to view an area in front of him that has a length of at least 3-4 pigs. If not, the pig will think that there is a dead end and walk back. Read more about curved raceways in chapter [‘Electrical stunning’](#).



Corral shaped raceway for pigs at Thönes Natur. [Watch video here](#)

- Install video surveillance in the slaughterhouse. Research shows that employees handle the animals calmer when they know that there is video surveillance. Gentler handling also positively influences meat quality. Video surveillance is also useful for discovering “stress markers” in the lairage, during handling and moving, and prior to stunning that can help you re-think that area and come up with solutions. Sometimes you see new things when looking at footage that you did not notice in “real life”. Compaxo, Tönnies, Euro Meat Group and Westfort use video surveillance.

Stunning

Pig slaughterhouses in Europe use either electrical stunning and CO2 stunning. Eyes on Animals has made a film showing both stunning methods: [CO2 stunning vs. electrical stunning](#).

The advantage of stunning pigs with electricity is that they immediately lose consciousness. The disadvantage is that in larger slaughterhouses they need to be separated from the group and walk in single file through a chute that leads them to the automatic electric prongs. This causes a lot of stress. Pigs are herd animals and want to stay in the group no matter what. Natural pig flight- and herd behaviour should be taken into account when designing the passageway towards the electrical stunning system. This would prevent a lot of suffering.

During CO2 stunning, pigs are stunned in groups but the inhalation of CO2 causes approximately 20 seconds of severe fear, breathlessness and a painful burning sensation in the air passageway. Video recordings have shown that pigs panic so much that they attempt to escape before they become unconscious. For these reasons, CO2 stunning has been criticized by many large animal-welfare organizations and scientists. The European Food Safety Association and the Eurogroup for Animals welfare have both stated publically that the stunning method applied to animals at slaughter must be quick and non-aversive. This could mean that CO2 stunning will be banned in the future.

Eyes on Animals has initiated a willingness in the sector to look for a brand new alternative to stun pigs humanely before slaughter. As of the summer of 2015, Tönnies and V-Cons are investigating into an alternative system. Eyes on Animals hopes that a brand new method will be available in the near future and once it is ready, will encourage plants to make the switch immediately.

Electrical stunning

- In electrical stunning, pigs are moved into a chute of approximately 10 metres in length where the pigs move in a single file towards the electric prongs that move onto their heads automatically and stun them. Pigs are herd animals so they resist to being separated from the group. Electric prods are often used at this point to force pigs to enter the single-file chute. When a slaughterhouse chooses electrical stunning system, it is important that this “stress-point” be dealt with. Not only because of animal welfare but also because the last 5 minutes before slaughter are essential for good meat quality. If this animal welfare problem is successfully solved, then electrical stunning is more animal friendly than CO2 stunning.
- Eyes on Animals advises pig slaughterhouses using electrical stunning to use a curved raceway, like the Corral system designed by Temple Grandin. The Corral system brings the pigs in a curve towards the single-file chute. A corral system eases movement and reduces fright and stress in the pigs because the round curve gives the impression that the pigs will eventually be returning into the group. They are therefore less hesitant to enter the single file chute.



The Corral system. This design works very well according to Temple Grandin. There are however too many pigs in the Corral system on the picture. Temple Grandin recommends to only fill up half of the Corral system with pigs.



A Corral system with two narrow passageways. If the partition between the two chutes is made to be see-through than the advantage is that the pigs can see each other. © T. Grandin

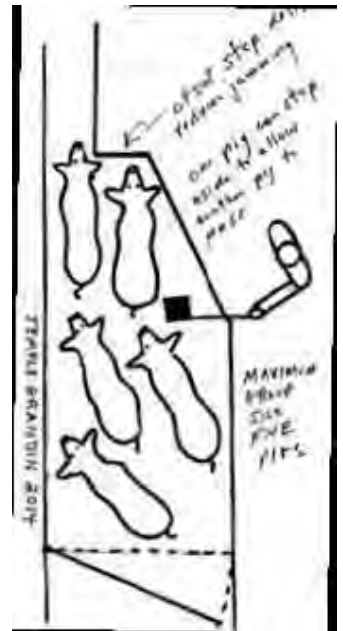
Thönes Natur, a slaughterhouse in Germany, also invented and designed a corral-shaped chute to herd pigs into the single-file raceway to be electrically stunned. It was designed as a corral to reduce stress and panic often caused when pigs are forced to move from a group pen into single-file. We visited Thönes Natur and were very impressed with this corral-shaped chute because indeed the pigs moved in a much calmer manner than seen in other slaughterhouses using straight-chutes. The raceway also has a double entrance to the stunner so pigs do not have to be forced into one direction.

[Watch a video here.](#)



Corral shaped double entrance raceway for pigs at Thönes Natur slaughterhouse

- A funnel-shape entrance into a single file chute at pig slaughterhouses using electricity will just lead to bottle-necking. Dr. Grandin recommends an offset step design so that one pig can step aside to allow another one to pass. See the illustration of the design on the right.



Offset step design. © T. Grandin

- Slaughterhouse Compaxo made an offset step to reduce pile ups and panic.



Before: funnel shape entrance



After: offset step entrance

© Compaxo

- Make sure you place your workers in the RIGHT position. It does not make sense to have a worker rushing the pigs at a point in the chute where they cannot move any faster and the worker just creates panic and stress, leading to a bottle neck effect. Place a person only at points where an animal may hesitate to move forward, to keep the flow going

CO2 stunning

- Driving pigs by calm and professional employees is better than pushing pigs forward with automatic doors. When using automatic doors, pigs that are standing in the wrong direction could fall, panic, or get injured. In case automatic doors are chosen, try to use a few doors as possible. Make sure that the doors do not slide back directly above the pigs when they are moving back to their starting position. The sound and movement of these doors directly above the heads of the pigs causes a lot of stress and fear. It's better to let the doors slide back parallel to the passageway of the pigs, out of sight to the pigs.. Another option would be to let the door slide back very high (at least 3 meters above the pigs) so that the pigs barely notice the doors.
- Setting the parameters of the CO2 system to render the pigs not only unconscious but dead by the time they exit the chamber is advantageous over just stunning them with CO2 as the risk of the pigs regaining consciousness is eliminated.

Follow-up checks

- Always make sure that the pigs are stunned properly. When the pig responds to the cornea reflex test (the pig blinks when you gently touch his eye) he may be regaining consciousness. When a pig blinks spontaneously, in a natural way, than the pig is definitely conscious. The pig is also conscious when he responds to a pain stimulus on the nose, when he tries to lift his head, or when he breathes rhythmically. At Tönnies the pigs are weighed after sticking to measure if they have lost enough blood to ensure that the pigs do not regain consciousness. There are also two employees at Tönnies that continuously check whether the pigs are unconscious: one person is checking each pig for signs of consciousness directly after being stunned and one person is positioned right before the broiler. If there is any doubt about the depth of the unconsciousness than the pig should be re-stunned immediately with manual prongs that should be placed at these two key positions..



At Tönnies there is a monitor showing the amount of blood that a pig has lost in kilograms.

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CARSON CITY – STATE CAPITAL

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ECONOMIC DEVELOPMENT FOR CARSON CITY



- ✓ Economic development for Carson City, the State Capital of Nevada, is the responsibility of NNDAA
- ✓ Centrally located in western Nevada, at the base of the Sierra Nevada Mountains, and borders Lake Tahoe's southeastern shore
- ✓ Pacific Time Zone
- ✓ Hub of the Sierra Region, the 3rd largest metropolitan area in Nevada
- ✓ Consolidated municipality of city and county governance
- ✓ A designated U.S. Metropolitan Statistical Area (MSA) which includes two U.S. Micropolitan Statistical Areas (μSAs) – Fernley (Lyon County) and Gardnerville-Ranchos (Douglas County)
- ✓ The 2018 [Milken Institute Best-Performing Cities Index](#) ranks 201 U.S. metropolitan areas according to job and economic growth. Carson City MSA ranks 63, up from a ranking of 141 in 2017.
- ✓ One of the ten largest state capitals by land area
- ✓ Pro-business tax structure and regulatory environment
- ✓ Streamlined building process

- ✓ Land mass of 157 mi² (410 km²)
- ✓ Population >55,000
- ✓ Elevation of 4,687 feet (1,429 meters)
- ✓ Easy access to elected and government officials
- ✓ Home to [Western Nevada College](#), home to the only International Mechatronics Certificate Program in the Western U.S.
- ✓ Broad array of manufacturing capabilities to produce just about anything, including medical devices
- ✓ Key Industry Sectors
 - Manufacturing
 - Construction
 - Logistics
 - Technology
 - Healthcare



Western Nevada College

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NNDAA UPCOMING EVENT

ANNUAL ECONOMIC ROUNDUP –
OCTOBER 27, 2021

October 27 @ 7:30 am - 9:00 am

[VIEW ALL EVENTS](#)



One of Carson City's 29 Public Parks

- ✓ Convenient access to Nevada's excellent air, rail and highway arterial infrastructure, with close proximity to major U.S. markets and deep-sea ports
 - 32 miles south of the Reno-Tahoe International Airport
 - One day truck transit range to nearly 60,000 customers
 - 4-hour drive to the San Francisco Bay Area
- ✓ Carson City Airport, used regularly by private and air taxi operators, is an important hub for business, pleasure, and those doing business with the state government
- ✓ 6,000 acres of open space, laced with miles of biking and hiking trails, a navigable river, and 29 public parks
- ✓ Over a dozen world-class ski resorts within a 30-60 minute drive
- ✓ Lake Tahoe access is only a 20-30 minute drive
- ✓ 9 challenging golf courses, with more courses just a short drive away

CARSON CITY RESOURCES

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[Carson City Chamber of Commerce](#)

[Carson City Visitors Bureau](#)



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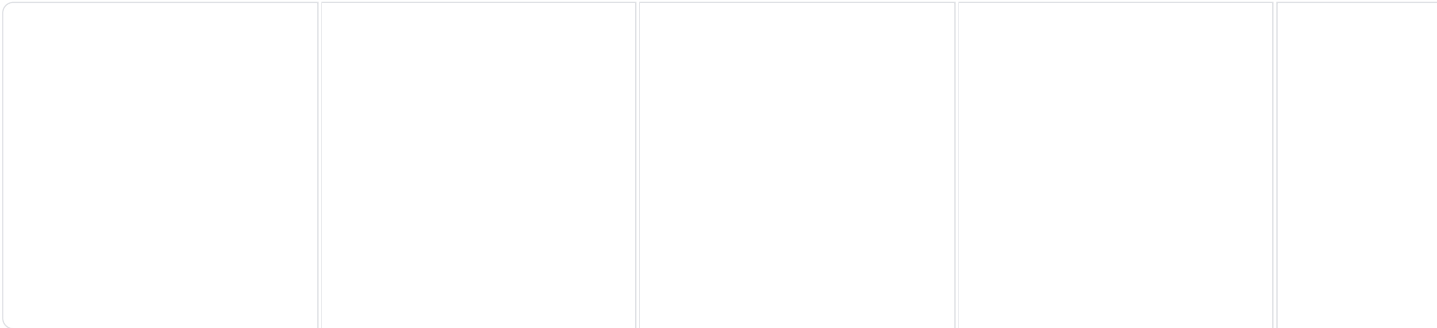


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Carson City: Economy



Free Shipping on All Orders*
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Major Industries and Commercial Activity

Carson City has a growing and diverse economy, with a population that increased by 64 percent between 1980 and 2000. It is the regional retail and commercial center for northwestern Nevada, which is devoted to irrigated farming, livestock raising, and mining of silver and other minerals. It draws from a trade area of about a quarter of a million people with 14 percent of the city's employees working in the manufacturing industry, making it the state's leading city in that category. The city's retail and commercial growth are also expected to continue at a healthy rate.

Since gambling was legalized in 1931, tourism has also been important to the Carson City economy, and the resort city is drawing increasingly more visitors. The service industry is by far the largest in the city representing 30 percent of the local workforce, which includes hotel, gaming, and tourism workers.

As the seat of state government, which meets in the city for two months every two years, and a center for federal government, the government sector employs about one out of four city residents and is the second largest industry.

Taxable sales totaled over \$860 million in 2003 with nearly half of that from car and other retail sales. The cost of doing business is about 10 percent less than in Nevada's metropolitan areas, and land and labor costs are also lower. Carson City serves as one of the health care hubs for the region, providing hospitals and multispecialty clinics.

Items and goods produced: calculators and computers, refurbished aircraft turbines, retail display furniture, plastic moldings, plumbing supplies, fiberglass light poles, aerospace components, and welding accessories

Incentive Programs—New and Existing Companies

Local programs

Carson City is able to save employers time and money through the major project review process, and a local one-stop shop that issues building permits. According to the Northern Nevada Development Authority, Nevada does not offer short-term incentives to attract business. It relies instead on having no corporate taxes and no personal income taxes or inventory taxes to make its cities very competitive. In addition, accessible government, a thriving business climate, and sensible regulations also draw business.

State programs

The State of Nevada administers Small Business Administration loans. The Nevada Development Capital Corporation (NDCC) provides more than \$3 million from Nevada banks, utilities, and mining companies and other firms to help finance growth opportunities for new and existing businesses. It provides flexible financing to small Nevada businesses that do not qualify for more conventional financing.

▼ Nevada Revolving Loan Fund (NRLF) offers loans of up to \$100,000 to for-profit businesses in need of gap financing to complete business

Why The Couch Kills Your Knees
Stop doing this immediately and watch what happens.

Western Nevada Community College works closely with area businesses in providing specialized training courses for employees. Nevada's "Train Employees Now" program has customized industrial training programs to assist new and expanding businesses in training new or potential employees. Eligible businesses contribute 25 percent of the total training costs. Working to ensure that companies have an adequate workforce is the Job Opportunities in Nevada (JOIN) that offers training and educational opportunities for job seekers; Nevadaworks assists employers in developing employees' skills.

Development Projects

In 2003 the city held a groundbreaking for the new Carson City Freeway that will provide another north-south option for local travelers. The challenging and long-discussed project is estimated to cost nearly \$70 million; the 4.8-mile northern half is scheduled to open in 2006. The Carson City Senior Center more than doubled in size to 33,000 square feet with its July 2004 expansion. In the summer of 2004 the Comstock Casino debuted its 9,500-square-foot 100-slot facility and 2002 saw the Ormsby House Hotel & Casino's revival with \$20 million in renovations. With a growing population comes an increased need for medical facilities, which will be addressed with the opening of the \$132 million Carson-Tahoe Regional Medical Center in late 2005.

Economic Development Information: Carson City Community Development Dept., 2621 Northgate Ln., Ste. 62, Carson City, NV 89706; telephone (775)887-2180; fax (775)887-2287

Commercial Shipping

With a strategic location on two major highway corridors, more than 60 local, regional, and national carriers provide trucking services in Reno. Shipments from Carson City are able to reach nine western states on a next-day basis. The Burlington Northern Santa Fe and Union Pacific Railroads provide regional freight service.

Labor Force and Employment Outlook

Nevada and Carson City's abundant availability of skilled workers and the area's moderate salaries have made the area attractive to new businesses. Training programs supported by the state and pro-business policies have helped make Nevada the fastest growing state in the nation with an anticipated 15 percent increase in the workforce by 2010. Local wages are reasonable because the cost of living remains reasonable in Carson City. Nineteen percent of the local residents hold college degrees, and 82 percent have earned high school diplomas.

The following is a summary of data regarding the Carson City area labor force, 2004 annual averages.

Size of nonagricultural labor force: 31,800

Number of workers employed in . . .

manufacturing: 3,100

trade, transportation, and utilities: 4,300

professional and business services: 2,300

leisure and hospitality: 3,900

government: 10,500

Average hourly earnings of production workers employed in manufacturing: \$14.60 (Nevada average)

Unemployment rate: 5.8% (January 2005)

<i>Largest employers</i>	<i>Number of employees</i>
State of Nevada	5,000–5,499
Carson City School District	1,000–1,499
Carson-Tahoe Hospital	800–899
City of Carson City	700–799
Nevada Department of Transportation	700–799
Western Nevada Community College	500–599
Carson City Nugget	500–599
Carson Pandego	400–499
Chromalloy Nevada	300–399
Legislative Counsel Bureau	300–399

<i>Largest employers</i>	<i>Number of employees</i>
State of Nevada	5,000–5,499
Carson City School District	1,000–1,499
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City of Carson City	700–799
Nevada Department of Transportation	700–799
Western Nevada Community College	500–599

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Cost of Living

The following is a summary of data regarding several key cost of living factors for the Carson City area.

2004 ACCRA (3rd Quarter) Average House Price: \$329,876

2004 ACCRA (3rd Quarter) Cost of Living Index: 110.2 (U.S. average = 100.0)

State income tax rate: None; no corporate income tax

State sales tax rate: 6.5% (food and prescription drugs are exempt)

Local income tax rate: None

Local sales tax rate: None

Property tax rate: \$2.63 per \$100 assessed value

Economic Information: Carson City Area Chamber of Commerce, 1900 S. Carson St., Carson City, NV 89701; telephone (775)882-1565; fax (775)882-4179; email ccchamber@carsoncitychamber.com. Nevada Department of Business & Industry, Office of the Labor Commissioner, 675 Fairview Dr., Ste. 226, Carson City, NV, 89701; telephone (775)687-4850; fax (775)687-6409

[Carson City: Economy forum \(/forum/\)](/forum/)

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OPINION

AURORA BEACON NEWS

SUBURBS

Column: A stink being raised about proposed Big Rock slaughterhouse

FEEDBACK

By DENISE CROSBY

AURORA BEACON-NEWS | APR 27, 2021



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slaughterhouse that could be built on Dauberman Road just outside this small western Kane County town.

The proposal that's got a lot of people crying foul also includes a grocery and butcher shop, as well as a truck repair facility. And the major concerns residents have raised in addition to slaughterhouse odor and noise is increased truck traffic, as well as potential air and water pollution.

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FEEDBACK



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Opponents to this proposed zoning change had planned to voice their unhappiness at the village's Planning and Zoning Commission meeting on Monday, prior to Tuesday's Village Board meeting, but officials canceled that first meeting because the park district building was not big enough to handle the expected crowd.

FEEDBACK

Plus, said Mayor Dean Hummell, some of the information from the potential buyer had not been submitted, "and we just saw this as a chance to slow things down before things get out of hand."

What the mayor can't slow down are the rumors running rampant on social media that, he insists, not only contain misinformation but have disturbing racial and religious undertones, as this zoning request is from a Muslim group planning to slaughter mostly goats and sheep.

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The property in question is the old Cottonwood Farms, once nationally known for raising racehorses that in recent years had been used for equestrian boarding and

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Yes, the nearly 20-acre property with a number of existing structures is fairly close to town, adjacent to a couple of homes and down the road from an office complex. And it can be seen from Hinkley-Big Rock Middle School, which residents say could suffer from odors and slaughtering noises carried downwind.

According to a press release from a group of opponents, in a supplemental submission to the Planning and Zoning Commission, the start-up intentions of the business is to have 125 goats and sheep and up to four cows on site awaiting slaughter, which is not specifically allowed under current zoning rules.

FEEDBACK

The press release cited several potential issues including additional large-scale truck traffic, air pollution and odor from animal parts waste in the butchering process and manure generated by the animals on site awaiting slaughter. Other issues raised were water consumption in the slaughtering process, the disposal of thousands of gallons of wastewater from the slaughtering process and the potential water pollution from the on-site septic system if it failed or if processing runoff were to get into existing drains and nearby waterways such as Welch Creek.

But Hummell says the proposal, a Type 2 facility, is much different than a Type 1 slaughterhouse such as ones for large commercial enterprises. Describing the operation as a “glorified butcher shop,” he said the facility would not own any animals but slaughter only those purchased by customers.

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The problem is, people on social media can say what they want without having facts to back them up, he said. Which, as we all know, has been a growing problem not just in our communities but across the nation.

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process,” which is what officials are going to do with the buyers who, he pointed out, have only been to one meeting.

Hummell said he was most surprised at how quickly news spread, followed by rumors and insinuations.

For one thing, he said, this is not a money grab by the village, which would only receive the benefits of a sales tax.

Besides, this is a rural community that’s proud to be “farm friendly,” Hummell said, noting that the property once had hundreds of horses on it and there are at least three major cattle producers in the area.

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FEEDBACK

While Monday night’s meeting was canceled, Hummell said about 30 people showed up anyway to protest. About two dozen people showed up Tuesday evening for the Village Board meeting, where he planned to explain the process and to allow them to voice their concerns.

“I can assure you we are proceeding correctly, and everyone will be given a fair shake,” he said, stressing again that there are plenty of questions that still need to be answered.

Before the Tuesday Village Board meeting, Big Rock resident Gary Petersen said he is not for the slaughterhouse, but “I need to learn more, like everyone else here.”

Big Rock resident Gabe Scephurek, who was raised on a farm and likes to hunt and fish, agrees there are many unanswered questions about the proposed development and even though he knows this will not happen overnight, he’s

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Hummell said that communication is key on the issue.

“My hope,” the mayor continued, “is that people listen.”

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Common Flies of Cattle

Jenny Halstead

Several fly species are considered to be significant pests of both free-ranging and confined cattle. Blood-sucking flies, such as horn flies (*Haematobia irritans*), stable flies (*Stomoxys calcitrans*), horse flies (*Tabanus* sp.) and deer flies (*Chrysops* sp.), can cause severe stress and annoyance to cattle. “Fly worry” can lead to decreased weight gain and milk production because cattle spend time trying to avoid and remove flies rather than feeding. Fly bites may also cause hide damage and spread viral, bacterial, and parasitic diseases. Face flies (*Musca autumnalis*) and houseflies (*Musca domestica*) are mainly a nuisance to cattle, but face flies can cause severe eye irritation and contribute to the spread of *Moraxella bovis*. A variety of flies may be involved in “fly-strike” or secondary myiasis, in which fly eggs are deposited in wounds and maggots develop in and feed on necrotic tissue and wound secretions. Cattle grubs, the larva of heel flies (a.k.a. gadflies) (*Hypoderma lineatum*, *Hypoderma bovis*), cause a primary cutaneous myiasis that results in hide damage and requires careful timing of insecticidal treatments to avoid anaphalactic reactions.

Horn flies (*Haematobia irritans*)

Description: Horn flies are small (3-4mm), gray-black flies that resemble stable flies, but are more slender and about half the size. When feeding, horn flies are usually in a head-downward position. Horn flies congregate along the back and sides of cattle.



[www.oznet.ksu.edu/entomology/
medical_veterinary/hornfly.htm](http://www.oznet.ksu.edu/entomology/medical_veterinary/hornfly.htm)

Life cycle: Male and female horn flies spend most of their adult life on the backs and sides of cattle, using cattle as both resting and feeding sites. Females lay eggs in fresh cow manure and the cycle of egg to adult is completed in 10 to 14 days in hot weather. Horn fly populations can reach very high numbers in a short period of time, contributing to control and insecticide resistance problems. In Kansas, there may be 7 to 10 generations of horn flies produced per year.

Pathology and economic impact: Horn flies are considered to be the most economically damaging insect pest of pastured cattle. Heavy horn fly infestations can result in reduced weight gain of up to 0.5 lbs per day and annual losses due to horn flies have been estimated to exceed \$730 million.

Control: Control of horn flies should be implemented when 100-200 horn flies per head of cattle are present. Control measures include the use of pyrethroid or organophosphate impregnated ear-tags. Due to resistance problems, a 3-year rotation schedule consisting of organophosphate tags for years 1 and 2 and a pyrethroid tag for year 3 should be used. Ear tags should not be used until horn flies are present and should be removed in the fall to help avoid resistance problems. In addition, supplemental control methods such as sprays, pour-ons, and self-treatment devices (dust bags, back rubbers) should be used in late summer to help control horn flies. Sprays and pour-on insecticides afford some control of horn flies, but require frequent application. Topical ivermectin will provide control for up to 28 days. Back rubbers and dust bags are highly effective ways to treat cattle with insecticides effective against horn flies and do not require handling of cattle. Dust bags and back rubbers should be placed near, but not over, mineral blocks or dust bags or near loafing areas. Several dust bags or back rubbers should be available for use so that less dominant cattle can have access. Oral larvicides mixed with feed or in mineral mixes or blocks kill developing larvae in manure, but do not protect cattle from adult flies. The effectiveness of oral larvicides is also limited by the immigration of horn flies from pastures with untreated cattle.

Stable flies (*Stomoxys calcitrans*)

Description: Stable flies are gray and approximately 7 to 8 mm in length. Stable flies look very similar to house flies, but have a “checkerboard” type pattern on the ventral abdomen and have distinct, biting mouthparts. Both males and females are blood feeders and tend to congregate on the lower legs of cattle. Stable flies are primarily a problem in feedlot and dairy operations, but can also be a significant pest of range cattle, especially when large round bales are placed in pastures.

Life cycle: Stable flies are often present from mid-May until September. Female stable flies deposit eggs in old manure or decaying plant material. The life span of stable flies is 2 to 3 weeks long.

Pathology and economic impact: Stable flies are aggressive feeders that inflict a painful bite. Stable flies cause significant “fly worry” in cattle, causing them to spend energy in avoidance behaviors such as foot stamping and tail switching. Range cattle may spend extended periods of time in creeks or ponds to avoid stable flies. Annual economic losses due to stable flies in Kansas feedlots are estimated to be nearly \$22 million. Blood loss and disturbance of feeding may result in a 15% loss in body weight of cattle when stable fly populations are high.

Stable flies feed only during the day, usually in a head-upward position, and are only on their host while feeding.



www.res2.agr.gc.ca/.../kd/pestfigs/stable.jpg
www.osuextra.com/pdfs/F-7000web.pdf

Control: Control of stable flies should be implemented when as few as 5 flies per head are detected. Sanitation is the most effective means of control, but the dispersal ability of stable flies may limit the success of any control measure. Stable flies are reported to be able to fly 30 km within a 24 hour period. Removing possible egg-laying sites, such as manure piles and rotting hay and grain, may help decrease stable fly populations. Ear tags, back rubbers, dusters, and pour-on insecticides are not effective in controlling stable flies. Stable flies tend to rest in shaded areas when not feeding and premise spraying may provide some benefit in dairies or feedlots. Biting fly traps that are coated with adhesive and/or insecticides may also help control stable flies. Larvicides are considered to be ineffective in controlling stable fly populations. Mixed benefits have been seen with biological control methods using parasitic wasps. *Spalangia cameroni* is a commonly found parasite of stable flies in Kansas feedlots and may prove to be an effective means of control if wasp populations are maintained in high enough numbers.

Horse flies (*Tabanus* sp.) and Deer flies (*Chrysops* sp.)

Description: Horse flies and deer flies are large bodied flies that are usually dark gray to dark brown. Horse flies are approximately 25 mm in length and have clear wings. Deer flies are 6 to 10 mm in length and have a dark stripe across the wings. Males and females both feed on nectar, but females will also bite and feed on blood. Deer flies

and horse flies are both strong fliers and tend to feed along the back, neck, and sides of cattle.



ipm.ncsu.edu/.../96PestNews/News7/deerfly.gif



Life cycle: Females deposit eggs on vegetation near water or moist areas. Eggs hatch in 5 to 12 days and larva develop in aquatic habitats. Larvae require several months to several years to complete development

Pathology and economic impact: Females have cutting and sponging mouthparts that inflict a painful bite. Females feed intermittently and frequently and studies indicate that 20 to 30 flies feeding over 6 hours can result in blood loss of 100ml. Horse flies and deer flies are considered to be a minor to moderate problem for cattle in Kansas, but heavy outbreaks can occur. Horse flies and deer flies can cause significant “fly worry”, leading to decreased weight gain. Dark colored cattle tend to be bothered more than light colored cattle. Horse flies may also be mechanical vectors of anaplasmosis.

Control: Many of the control measures enlisted for horn flies will provide some relief from horse flies and deer flies. Back rubbers and dust bags with permethrin insecticides are effective because horse flies and deer flies tend to attack the upper body and back of cattle. Permethrin sprays and pour-on formulations have some efficacy against horse flies and deer flies, but require frequent re-application. Insecticides may not kill horse flies quickly and in some cases, no control will be apparent.

Face flies (*Musca autumnalis*)

Description: Face flies are dark gray flies that are approximately 6 to 8 mm in length. Face flies resemble houseflies, but are slightly larger and darker. Face flies congregate around the eyes and nostrils of cattle. Face flies tend to be a problem of range cattle whereas houseflies are more of a problem in feedlot or dairy cattle. Male and female face flies feed on nectar, but will also feed on nasal, ocular, vaginal, and wound secretions. Face flies only

spend 5 to 10 minutes per day feeding on cattle and are found resting on shaded vegetation for most of the day.



www.uky.edu/Agriculture/kpn/kpn_04/pn040112.htm

Life cycle: Females deposit eggs in fresh, un-crusted manure. Females require a protein rich meal prior to producing eggs. The time required to develop from egg to adult takes 12 to 21 days and adults are active from April until November. Face flies overwinter as adults in barns, homes, and other protected areas.

Pathology and economic impact: Face flies are mainly a nuisance to cattle, but are vectors of *Moraxella bovis*, the agent of pink eye. Face flies have pre-stomal teeth that have a rasping action upon the conjunctiva of the eye. Damage to the conjunctiva causes tearing and provides entry for *Moraxella bovis*. The major economic impact of face flies is the cost associated with treatment of pink eye. Irritation caused by face flies may also cause cattle to seek shade or water, disrupting normal grazing activities. Face flies may also serve as vectors of other diseases, such as *Thelazia*, *Brucella abortus*, and infectious bovine rhinotracheitis (IBR).

Control: Effective control of face flies can be difficult because of the limited amount of time the flies spend on cattle. Organophosphate or pyrethroid ear tags can be effective, but two tags per animal are necessary for adequate control. Pyrethroid ear tags are more effective than organophosphate ear tags for face fly control, but the use of pyrethroid ear tags presents a resistance problem in horn fly control. Dust bags and back rubbers can be effective if placed low enough to contact the face.

House flies (*Musca domestica*)

Description: Houseflies are dull gray and approximately 6mm in length. Four dark, longitudinal stripes run along the thorax and the eyes are reddish and separated. Houseflies have sponging mouthparts and do not bite. Houseflies

are primarily a problem in feedlot and dairy cattle operations where they congregate in large numbers. Houseflies will stay near feeding and breeding sites and can be found moving back and forth from these sites to sunny

resting sites on fences, walls, and vegetation. Houseflies feed on a variety of substances, including plant material and feces. Houseflies will also feed on ocular and nasal secretions of cattle. Females require a protein rich meal prior to egg laying.



www.sciencemore.com/housefly.jpg

Life cycle: Females deposit eggs in old or fresh manure, garbage, sewage, or decaying organic matter. The time required for development from egg to adult is 10 to 14 days. Houseflies overwinter as larva or pupa under manure or decaying organic matter.

Pathology and economic importance: Houseflies are primarily a nuisance to cattle and may cause cattle to engage in avoidance behaviors that detract from time spent feeding. Movement of flies from manure to cattle and between cattle makes houseflies ideal vectors for certain diseases. Houseflies have been implicated in the transmission of enteric diseases such as salmonellosis and shigellosis. Houseflies may also transport parasitic worm eggs from manure to feed.

Control: Sanitation is the most important aspect of housefly control. Regular removal of manure, spilled feed, and uneaten hay and grain will limit breeding sites for houseflies. Residual sprays applied to walls and fences that serve as resting sites for houseflies are also effective, but must be re-applied frequently. Insecticide baits that lure houseflies with pheromones or sugars have also been useful. Biological control using parasitoid wasps has been shown to be effective in some Kansas feedlots. Attention to the use of appropriate parasitoid wasp species is necessary. *Muscidifurax zaraptor* is an effective and naturally occurring predator of houseflies in Kansas feedlots. Periodic releases of parasitoid wasps are necessary to have any impact on housefly populations.

Heel flies, cattle grubs

Description: Adult heel flies resemble honeybees, both in size and color. The two species occurring in North America include the northern cattle grub (*Hypoderma bovis*) and the common cattle grub (*Hypoderma lineatum*). The common cattle grub is found more frequently in Kansas. Adults are non-feeding and do not bite cattle, but cause agitation during egg-laying attempts. Cattle grubs are the larvae of heel flies and cause a cutaneous myiasis.



www.paleothes.com/Gallery2.htm

www.entomology.cornell.edu/Extension/Vet/Pict...

Life cycle: Adult heel flies are active on warm days, from June until September. Adults live for only one week and live only to reproduce. A female heel fly may produce up to 600 eggs. Only 3 to 5% of all eggs laid will develop into adults. Females lay eggs on the lower legs of cattle and eggs hatch in 2 to 6 days. Larvae of the common cattle grub pierce the skin and then migrate through fascial planes of muscles and connective tissue for 4 months. Common cattle grub larva then reach the submucosa of the esophagus where they overwinter. Larvae of the northern cattle grub migrate to areas near the spinal cord. Migration resumes in spring and approximately 9 months after hatching, larvae reach the back of cattle and form a characteristic swelling. Larva cut a breathing hole in the skin and remain for another 30 to 90 days while molting twice and doubling in length. Larvae then work their way out of the skin, fall to the ground, and pupate. Adults emerge in April to May. The life cycle of the northern cattle grub is approximately 2 months behind the common cattle grub. Calves and yearlings are more susceptible than older cattle. Malnourished cattle are also more susceptible to cattle grubs.

Pathology and economic impact: Cattle often become very agitated when heel flies attempt to lay eggs. Cattle will often run from female heel flies. Cattle will seek shade or water to avoid heel flies, and may run through fences in attempts to escape. Interruptions of normal grazing behavior may lead to decreases in weight gain. Cattle grubs also decrease the value of hides due to the large swellings and air holes in the skin. Larval migration can cause damage to tissues and inflammatory reactions may occur if larvae die.

Control: Treatment for cattle grubs should be applied from June until October 1, before grubs appear in the backs of cattle. If cattle are treated after October 1, reactions to dying grubs can occur. Reactions can be due to hypersensitivity from dead larva, or may be due to inflammatory responses to dead larva in tissues near the esophagus or spinal cord. Reactions to dying larvae can involve several different symptoms that may mimic organophosphate toxicity. Larvae that die near the spinal cord can cause paralysis or weakness of the hind legs. Larval death in the esophageal submucosa can cause inflammation that leads to obstruction. Bloat may occur and cattle may salivate excessively or have difficulty breathing. These reactions should be differentiated from organophosphate toxicity for proper treatment. Signs of organophosphate toxicity include staggering, hind limb weakness, excessive salivation and diarrhea.

Sprays and dips using coumaphos or phosmet are effective in controlling cattle grubs. If sprays are used, the entire body should be sprayed until the skin is wet to ensure adequate control. Pour-on formulations of famphur, fenthion, ivermectin, and phosmet are also effective. Doramectin and ivermectin injections are also highly effective in controlling cattle grubs, in addition to round worms, mites, and lice. If cattle must be treated after October 1, do not treat sick or stressed calves less than 3 months old and use the minimum dose on animals older than 3 months. Treat with only one type of medication and read the warning label carefully.



COUNTY HISTORY

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CREATION OF NEVADA'S COUNTIES

The first Nevada Territorial Legislature established nine counties on November 25, 1861, including Churchill, Douglas, Esmeralda, Humboldt, Lyon, Ormsby, Storey, Washoe and Lake. Only Humboldt County, which existed as a county within the Utah Territory, was retained and established as a county within both the Nevada Territory and, subsequently, the State of Nevada. The largest territorial county was Esmeralda which, along with Churchill and Humboldt, comprised four-fifths of the Nevada Territory. Lake County was renamed Roop County on December 5, 1862 and then consolidated with Washoe County in 1889 because of its very small population. Two more counties, Lander and Nye, were organized when Nevada was a territory, so that the total number of counties in Nevada when it became a state was 11. In the first 10 years of statehood four more counties were organized: Elko (1869), Eureka (1873), Lincoln (1866), and White Pine (1869). Over three decades passed before the organization of any additional counties.

After the turn of the century the last three counties were created, Clark (1909), Mineral (1911), and Pershing (1919). In 1969 Ormsby County and Carson City were consolidated into one municipal government known as Carson City.

In 1987, the Legislature created Bullfrog County, a 144-square mile enclave within southern Nye County. The purpose of Bullfrog County was to enhance the state's ability to receive funds from the Federal Government pursuant to the "Grants Equal To Taxes" provisions of the Nuclear Waste Policy Act. Following a challenge by Nye County in the Nevada district court, the legislation was judged to be unconstitutional and subsequently was repealed by the Legislature in 1989.

The 17 counties of the state, with years of creation and the original and present county seats, are as follows:

County	Year of creation	Original county seat	Present county seat
Carson City ¹	1969	Carson City	Carson City
Churchill ²	1861	Buckland's	Fallon (1904)
Clark	1909	Las Vegas	Las Vegas
Douglas	1861	Genoa	Minden (1916)
Elko	1869	Elko	Elko
Esmeralda ³	1861	Aurora	Goldfield (1907)
Eureka	1873	Eureka	Eureka
Humboldt	1861	Unionville	Winnemucca (1873)
Lander ³	1862	Jacob's Spring	Battle Mountain (1979)
Lincoln ³	1866	Crystal Springs	Pioche (1871)
Lyon	1861	Dayton	Yerington (1911)

Mineral	1911	Hawthorne	Hawthorne
Nye ³	1864	Ione City	Tonopah (1905)
Pershing	1919	Lovelock	Lovelock
Storey	1861	Virginia City	Virginia City
Washoe	1861	Washoe City	Reno (1871)
White Pine	1869	Hamilton	Ely (1887)

¹ Carson City became a county as the result of consolidation with Ormsby County in 1969. Ormsby County was created in 1861 and Carson City always served as its county seat.

² Churchill County was not formally organized in 1864, and its intermediate county seats were LaPlata (1864-68) and Stillwater (1868-1904).

³ Lander County also had an intermediate county seat at Austin (1863-1979); as did Lincoln County at Hiko (1867-71); Esmeralda County at Hawthorne (1883-1907); and Nye County at Belmont (1867-1905).

Nevada's Counties were named for a variety of persons or other features. The following summarizes the naming of Nevada's 17 counties, plus the former counties of Lake, Ormsby, and Roop. Other historical information also is included.

Carson City	Named by Frank M. Proctor, one of the founders of Carson City in 1858, directly or indirectly for Christopher "Kit" Carson, the famed explorer and guide who first entered western Nevada in the winter of 1843-44.
Churchill	Fort Churchill, Nevada, which had been named for General Sylvester Churchill, a Mexican War hero who as Inspector General of the U.S. Army in 1861.
Clark	William A. Clark, former United States Senator from Montana, and the builder of the railroad line through the area.
Douglas	Stephen A. Douglas, former United States Senator from Illinois. Douglas is best remembered for his debates with Abraham Lincoln. Douglas was re-elected United States Senator from Illinois over Lincoln in 1858, but was defeated by Lincoln for the Presidency in 1860.
Elko	Several explanations have been offered, including an Indian word meaning either "white woman" or "beautiful." Another explanation credits railroad owner Charles Crocker with the naming of a railroad station after elk roaming in the area and adding an "o" to form "Elko."
Esmeralda	Esmeralda is the Spanish word for emerald. An early Nevada miner, J. M. Corey, named the Esmeralda Mining District. It is believed that Corey may have named the district after the gypsy dancing girl, Esmeralda, from Victor Hugo's book, The Hunchback of Notre Dame.
Eureka	The ancient Greek term, Eureka, meaning "I have found it." This term was used earlier in California and other locations.
Humboldt	Baron Friedrich Heinrich Alexander von Humboldt, a German naturalist, traveler and statesman.
Lake	Several lakes in the area, including Honey, Pyramid, and Winnemucca.

Lander	Fredrick W. Lander, chief engineer of a federal wagon route through the area. He later served as Special Indian Agent in the area, and died in the Civil War in Virginia in 1862 at the rank of brigadier general. Created in 1862, Lander County sprang forth as the result of a mining boom on the Reese River, taking a considerable portion of Churchill and Humboldt counties with it. Eventually, Lander would be known as the “mother of counties” because so many were carved out of it.
Lincoln	Abraham Lincoln, 16th President of the United States.
Lyon	General Nathaniel Lyon, who died in the Civil War in Missouri in 1861.
Mineral	The surrounding area, which is heavily mineralized.
Nye	James W. Nye, Governor of Nevada Territory and later United States Senator from Nevada.
Ormsby	Major William M. Ormsby, one of the original settlers of Carson City, who was killed in 1860 in the Pyramid Lake Indian War.
Pershing	General John J. Pershing, commander-in-chief of the American Expeditionary Force (1917-1919) in Europe during World War 1.
Roop	Isaac N. Roop, the Governor of the provisional territory of Nevada, 1859-61.
Storey	Captain Edward F. Storey, who was killed in 1860 in the Pyramid Lake Indian War.
Washoe	A small Indian tribe that inhabited the area.
White Pine	Heavy growth of pine trees in the area, thought to be white pine.
<i>Source: Nevada State Library and Archives</i>	



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EDUCATION

Cow shot three times at UNR slaughterhouse prompts action by USDA

BY: **DANA GENTRY** - JULY 11, 2019 1:04 PM



📷 (Photo by UNR)

Killing cows is no big deal in Nevada, where beef and cattle ranching is the top agricultural industry.

But in March, when it took three shots to the forehead from a bolt gun to “stun” a cow about to be killed at the University of Nevada, Reno’s slaughterhouse, the U.S. Department of Agriculture stepped in and briefly suspended slaughtering at the facility. The USDA’s Food Safety Inspection Service (FSIS) also issued a [notice of intent](#) to take enforcement action.

The government’s inspector heard the first shot, taken at 8:33 on the morning of March 14, 2019, according to the USDA’s letter:

At approximately 0834 hours, the CSI heard the employee announce again that the stunning gun was going to be fired again. The CSI looked over at the knock box, heard the shot, taken with a hand-

held captive bolt gun, and observed the heifer initially collapse in the knock box and then stand back up. The employee reloaded the captive bolt gun, announced that the gun would be fired again, and at approximately 0835, stunned the heifer for the third attempt. The heifer collapsed in the knock box and stayed down.

“This is an egregious act of inhumane handling of animals in connection with slaughter, as this animal was not rendered insensible upon the initial knock, requiring an additional stunning blow until the animal was effectively knocked,” the USDA’s notice of intent says.

“This action was initiated due to your firm’s failure to maintain or implement required controls to prevent the inhumane handling and slaughtering of livestock at your establishment and to appropriately handle animals...” reads the letter from the USDA to [Wolf Pack Meats](#), the trade name of the UNR slaughterhouse, which has a retail operation selling the meat of state-raised animals to the public.

Human error blamed

Wolf Pack Meats blamed an employee for the incident, according to the letter.

“During the call and in your follow up clarification email sent on March 15, 2019 after the call, you stated that the employee, to be removed from stunning duties, did not wait for the heifer to properly raise its head to have a clear shot,” the USDA wrote. “You stated that the three employees who will stun cattle, were trained to only activate the stunning device after precisely locating the stunning blow or gunshot.”

Wolf Pack Meats director Amilton de Mello PhD, told the *Current* the incident is attributable to human error, not a poorly trained employee.

“This happens in very large companies frequently,” de Mello said in an interview. “Tyson Amarillo had the same problem a month before. Mississippi State had the same problem. A big company in North Carolina, too.”

De Mello said it’s never happened before during his lengthy tenure at Wolf Pack Meats.

A spokesman for the USDA’s Food Safety Inspection Service said the agency only briefly suspended slaughtering at Wolf Pack Meats because the plant has a “robust plan” in place and took corrective action following the incident.

The device used to stun cattle before slaughter is known as a captive bolt pistol, a cattle gun, stunbolt gun, or stunner. It’s designed to forcefully strike the animal in the forehead with a bolt to render it unconscious.

The USDA, in its letter to Wolf Pack Meats, suggested a revision to its process for stunning cattle but the slaughterhouse declined to make the change.

“The USDA is in our plant every day. If we do not do the right thing they are going to stop us,” de Mello told the *Current*.

Animal welfare advocates study the percentage of animals stunned on the first try in determining humane treatment, but figures vary widely by source.

“We write our own animal welfare program. Ours is based on a safety knock to make sure the animal is unconscious. You can’t butcher a dead animal. They have to be alive. They die when the blood comes out,” de Mello said.

Locally-grown, grass-fed

Wolf Pack Meats is popular among ranchers in Northern Nevada, who bring their animals to the facility for slaughter. With high demand for pricey locally-grown, grass-fed beef, business is good. In fact, Wolf Pack Meat is self-sustaining. But not to the point where it can do without its university affiliation.

Nevada System of Higher Education Chancellor Thom Reilly told the *Current* via a spokesman that he was unaware of the incident, as were members of the Board of Regents.

University slaughterhouses have drawn protests but are relatively common, especially in agricultural areas such as California.

“Other universities do have animal science programs. All these universities also have plants,” de Mello said. “It’s part of the land grant mission to teach agriculture. It goes from farm to fork.”

Wolf Pack Meats was established in 1967, originally as a meat lab. After the recession, and threatened with state budget cuts, the plant had to become self-sustaining, de Mello said.

“Everyone wants local. Everyone wants grass-fed,” he said.

Wolf Pack Meats slaughters approximately 30 to 40 animals a week, a fraction of the amount killed by large plants.

Local ranchers, who lack slaughtering capabilities of their own, bring their livestock to Wolf Pack Meats and leave with packaged, USDA-inspected meat to sell at farmers’ markets.

“We have a significant number of farmers, and consumers are willing to pay a premium. No one wants uninspected meat,” de Mello said.

“We have internships, positions for student workers,” he added. “We teach six courses with 350 students directly exposed to Wolf Pack Meats and the farm in general. Everyone who works in the plant should be trained.

“We have a significant amount of support of local farmers,” de Mello continued. “They are very humble people. They live from the land. Kids bring their animals. They are relying on us

to do the right thing.”

Wolf Pack Meats remains under the monitoring of the USDA.

Meat in the future

The sale of animals and animal products in Nevada fetched \$476 million in 2017, up 7 percent from the previous year.

As the world’s demand for protein escalates, deMello doesn’t anticipate changes to his operation.

“If you look at the forecast for the next five to 10 years, we are very sustainable for what we produce. In 20 years we need to be able to provide more food than we do now,” he said.

“Twenty years ago, we were harvesting animals 900 or 800 pounds. Now, they are 1,300 or 1,400 pounds. What I feel is there will be additional protein sources. People will be eating more soy protein. But there will still be meat in the future.”



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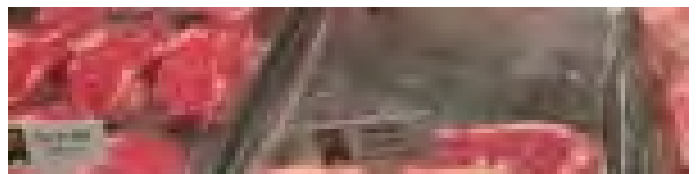
DANA GENTRY



Dana Gentry is a native Las Vegas and award-winning investigative journalist. She is a graduate of Bishop Gorman High School and holds a Bachelor’s degree in Communications from the University of Nevada, Las Vegas. Gentry began her career in broadcasting as an intern at Channel 8, KLAS-TV. She later became a reporter at Channel 8, working with Las Vegas TV news legends Bob Stoldal and the late Ned Day. Gentry left her reporting job in 1985 to focus on motherhood. She returned to TV news in 2001 to launch “Face to Face with Jon Ralston” and the weekly business programs In Business Las Vegas and Vegas Inc, which she co-anchored with Jeff Gillan. Dana has four adult children, two grandsons, three dogs, three cats and a cockatoo named Casper.

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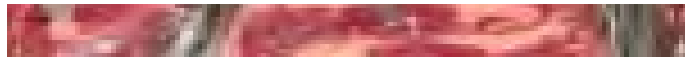




The geography of higher education reform

BY DAVID DAMORE

December 3, 2020



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BY ARIANA FIGUEROA

July 6, 2021

POLICY, POLITICS AND COMMENTARY

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CRIME RATES BY WOLFPACK MEATS

89502 is in the 6th percentile for safety, meaning 94% of zip codes are safer and 6% of zip codes are more dangerous. The rate of violent crime in 89502 is 8.28 per 1,000 residents during a standard year. (Crimegrade.org)

D- <u>Overall Crime Grade™</u>	
Violent Crime Grade	F
<u>Property Crime Grade</u>	D
Other Crime Grade	F
<u>Which crimes are included?</u>	

Fact

A crime occurs every 2 hours 59 minutes (on average) in 89502.

300%

Your home is 300% more likely to be robbed with no home security system.

NEIGHBORHOOD SCOUT

In addition, neighborhoodScout's exclusive research revealed that 100.0% of the adult residents in the Mill St / Terminal Way neighborhood do not have a 4-year college degree, which is a lower rate of college graduated adults than found in 99.5% of the neighborhoods in America.

ADT

Total Crime rate is 1.64x more than the national average

Rape	197	1.97x more than average
AREA VIBES		

- East Reno has a [Livability Score](#) of 62/100, which is considered below average
- East Reno [crime rates](#) are 19% higher than the Reno average
- [Cost of living](#) in East Reno is 10% lower than the Reno average
- East Reno [real estate](#) prices are 43% lower than the Reno average
- [Rental prices](#) in East Reno are 5% higher than the Reno average

Crime rate 27% higher than national average Violent crime is 97% higher than national average.

Crime rate for total crime and violent crime is sig. higher than other Reno neighborhoods.

The chance of being a victim of crime in East Reno is 1 in 32.

Based on a recommendation from a real estate agent, I took a look at Zillow's database. Using the Zillow Home Values database, I looked up current home average home values by zip code. The East Side of Reno, where the Reno slaughterhouse is located, has the third lowest home value (\$393,309) -- there are seven zip codes in Reno that have higher property values and just two that are lower. The East Side Reno property values are lower than Carson East Side -- my neighborhood's average value is \$398,744. That's not much higher, but \$5,400 is still significant. AreaVibes.com reports that real estate prices in East Reno are 43% lower than the Reno average. And, I found an article about a neighborhood in Toronto where the real estate agent notes that rents in the slaughterhouse neighborhood are 10 to 20% lower and that it's a "stigma" and "affects the value for sure".

I find this information worrisome. I know that there are many factors that affect property values. But some of those aren't in favor of neighborhoods with slaughterhouses either. For example, crime rates -- East Reno has twice as many rapes and 64% of the neighborhoods in Reno are safer than East Reno.

To me, it's pretty clear that the noise, odor, and the "stigma" of slaughterhouses are good for neighborhoods -- which is why they belong in locations outside of cities, farther away from where people live, work, and recreate. My home is located about the same distance away from the proposed slaughterhouse location as the Marv Teixeira Pavillion is from the Community Center. To me, that is close!

Custom-exempt slaughter should not be expanded

By Dena Jones on January 15, 2016

Custom-exempt slaughter is a little known practice that could expand in size and impact throughout the United States if pending legislation is approved by Congress — and that is almost certainly not a good thing. The “exempt” in custom-exempt means a slaughter operation is excused from continuous inspection, unlike federal- and state-inspected slaughter, where government officials must be on the premises of the establishment whenever slaughter is being conducted. With custom-exempt slaughter, inspectors need not be present, and, in fact, inspection typically occurs only once or twice per year.



Custom slaughter operations are commonly thought of as the places hunters take game animal carcasses to be processed into meat. But, these operations also slaughter cattle, pigs, sheep and goats for anyone who wants the meat for themselves, their household, or non-paying guests. Because the meat is intended for personal use only, packages of custom processed beef, pork, lamb or goat must be labeled “NOT FOR SALE,” and the meat cannot be sold, traded, or given away. The rationale behind giving minimal oversight to the custom slaughter industry is that consumers of the meat are generally aware of its origins, and the food safety risk to the general public is low. But what of the animals being slaughtered at these establishments—where is the assurance that they are being handled and killed humanely? While custom-exempt operations are expected to comply with the **federal humane slaughter law**, no inspectors are present to ensure that they do so. The public may assume that very small slaughter operations, including those conducting custom slaughter, take better care of animals than large, highly

mechanized slaughter facilities, but this is not the picture portrayed by state and federal slaughter inspection records. A case in point is Brooksville Meat Fabrication, a custom-exempt operation in Brooksville, Ken., that was formerly under federal inspection by the U.S. Department of Agriculture. During a six-month period in 2013, the USDA cited Brooksville at least 10 times for **serious violations** of humane handling and slaughter regulations. Almost all concerned the plant's failure to accurately stun animals in order to render them insensible to pain before slaughter. Aware of Brooksville's record, the **Animal Welfare Institute**, which monitors federal and state humane slaughter enforcement, **urged the USDA** to withdraw federal inspection from the plant. In November 2013, the USDA's Enforcement and Litigation Division **prepared a complaint** to indefinitely suspend and permanently withdraw the grant of federal inspection from Brooksville Meat Fabrication, finding that the establishment was "unfit to engage in a business requiring Federal inspection under the FMIA (Federal Meat Inspection Act)." In March 2014, after the owner of Brooksville failed to file an answer to the complaint, a USDA administrative law judge signed the **withdrawal order**. Withdrawal of federal inspection that is based solely on humane slaughter infractions is extremely rare; in fact, the Brooksville withdrawal order is the first time the USDA is known to have taken this step. Brooksville Meat Fabrication continues to kill animals, however, as a licensed custom-exempt slaughter house. It seems illogical that an establishment deemed incompetent to slaughter animals under direct and continuous inspection would be allowed to slaughter animals under almost no supervision at all, but that is the law at present. Instead of taking action to close this obvious loophole, members of Congress are pushing legislation to expand the exemption to all meat sold within a state.

114TH CONGRESS
1ST SESSION

H. R. 3187

To amend the Federal Meat Inspection Act to exempt from inspection the slaughter of animals and the preparation of carcasses conducted at a custom slaughter facility, and for other purposes.



Rep. Thomas Massie, R-Ken., introduced House Resolution 3187, which would expand custom-slaughter exemptions.

In July 2015, U.S. Rep. Thomas Massie, R-Ken., who is a producer of grass-fed beef himself, introduced the **Processing Revival and Intrastate Meat Exemption (PRIME) Act**, which would expand the custom slaughter exemption to cover the sale of the meat, as well. Specifically, the bill would allow meat that is prepared at a custom-exempt establishment to be sold to unsuspecting consumers at “restaurants, hotels, boarding houses, grocery stores or other establishments in the state that are involved in the preparation of meals served directly to consumers or offer meat and meat food products for sale directly to consumers in the state.” The fact that Massie represents the Kentucky congressional district that is home to Brooksville Meat Fabrication is probably no coincidence. In October 2013, after the Brooksville slaughter plant had been suspended for a fourth time for inhumane slaughter of animals, its owner complained to Massie about his treatment by the USDA. In response, Massie requested that the USDA **extend every consideration** to his constituent. Although Brooksville eventually lost its grant of federal inspection, Massie’s legislation would allow Brooksville to operate more or less as before, providing the meat produced is sold in-state. The PRIME Act was conceived as a solution to the loss of thousands of slaughter facilities throughout the United States during the past 20 years — the result of consolidation within the meat industry that has left many small farmers with few options for having their animals slaughtered locally. The lack of local slaughter capacity can create a financial hardship for small farmers and subjects the animals they raise to the stress of long-distance journeys. While there is a demonstrated need for additional slaughtering and processing alternatives for small farmers, there is also a need — aptly illustrated by the case of Brooksville Meat Fabrication — for continuous inspection of both the food safety and humane animal handling functions of meat production. About half of the states offer the option of **state-inspected slaughter**, which could provide a solution for some individual farmers or cooperatives. Another option that is receiving increased attention is **USDA-inspected mobile slaughter**, which can service dozens of small farmers in a particular geographic region. The public’s desire for alternative food choices presents the challenge of how to promote sustainable and higher-welfare farming while ensuring food safety and the humane treatment of animals at slaughter. Unfortunately the problem is unlikely to be resolved soon. In the meantime, Massie has said that if the PRIME Act does not pass during this congressional session, he plans to introduce the measure as an amendment to the next farm bill. **(To sign up for a free subscription to Food Safety News, click [here](#).)**

Food Safety News

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Dealing with pesky flies on cattle

Fly control is of major importance to cattle producers, and this article can help you make decisions about which products would fit your program. Fly control is aimed at the two most important pests: **face flies** and **horn flies**.

Effects of infestations

Heavy horn fly infestation causes decreased weight gains in cattle and decreases overall production in the herd.

Face flies carry the bacteria that causes pink eye.

Face flies are important because of the secondary damage they cause. The face fly irritates the animals' eyes by using their rasp-like mouth parts to cause tear production. The face flies then feed off the excess tear secretions. Also, face flies

carry the bacteria that causes pink eye, *Moraxella bovis*. This bacteria (*M. bovis*) causes tremendous damage to the eye and tremendous economic losses. Pink eye bacteria tend to develop resistance to antibiotics, which can further frustrate treatment. Therefore, one of the keys to pink eye prevention is fly control.

Fly control using insecticides

Alternating the class of drug increases the success of the preventive program.

Both face flies and horn flies develop resistance to insecticides over time. For best prevention results, be sure to switch the ear tag drug you use each year. It's even better to switch the class of drug you use. So, if you used an

organophosphate tag last year, this year you should use a pyrethrin tag. And if you plan to use a pyrethrin ear tag this year, then plan to use an organophosphate spray. Alternating the class of drug increases the success of the preventive program. It is also recommended to delay applying ear tags until the fly populations are relatively high, so there is less possibility for the flies to develop resistance.

Sprays, back rubbers (face rubbers) and dust bags can be helpful to reduce fly populations early in the season before applying ear tags. As the fly populations increase, apply the fresh ear tags to achieve maximum benefit. Always follow the manufacturer's label directions for applying the ear tags. If they call for two ear tags — use two ear tags! If they recommend ear tags for calves, or if ear tags are needed to prevent pink eye in the calves — use the tags in the calves.



(<https://extension.oregonstate.edu/sites/default/files/face-fly.jpg?itok=8NPd5Jg9>)

Face fly (*Musca autumnalis*)

Face flies feed on the secretions of the eyes and nose for short bouts of time; only a small percentage of the local face fly population may be found on animals at any one time. These aspects of its life history make managing face fly very difficult. This is why many of the products labeled for effective horn fly control indicate that they only aid in face fly control.

Photo: © Ken Gray Insect Image Collection



(<https://extension.oregonstate.edu/sites/default/files/face-fly2.jpg?itok=v-GbHWHN>)

Face fly grub

Photo: © Ken Gray Insect Image Collection



(<https://extension.oregonstate.edu/sites/default/files/horn-fly.jpg?itok=wC5PT9he>)

Horn fly (*Haematobia irritans*). The horn fly was introduced into the United States during the 1800s and spread rapidly across North America. Females lay eggs in fresh cattle manure, which is where immature forms complete development. During warm weather the life cycle of a horn fly is 10 to 20

Remember, in the fall, **always remove the ear tags**. If the ear tags are left in the cattle, the flies that overwinter — particularly the face flies that overwinter — will develop resistance to the drug you used and it will no longer be effective.

Face flies and horn flies lay their eggs in cow manure, and the larvae only develop in cow manure. Therefore, some of the "feed through" compounds kill the larvae in the manure pat and can be very effective. They come as feed supplements that can be mixed into grain or milk and as free choice blocks set out for the cattle.

Keep these important items in mind for fly control and pesticide use:

1. Plan ahead for insecticide and ear tag purchases. Fly season always comes, even if delayed by weather.
2. Consult with your veterinarian regarding the active ingredient(s) in these products and the history of their effectiveness in your cattle.
3. Always follow the label instructions, warnings and precautions. These products can be toxic to you, your children, pets and others working with pesticides around the chute.
4. Follow label withdrawal times and keep records of treatment dates, products and lot numbers.

Besides using insecticides for treating your livestock for flies, you can also spray or set out bait and fly traps in affected areas such as barns and porches. Biological controls such as predatory wasps and dung beetles can decrease fly populations.

Sanitation on the farm is another important factor for fly control. Clean up manure and uneaten hay from the barn area and spread it out over a field. You can drag the fields to break up the manure and dry it out in the summer heat. Composting these wastes is also an option. These processes break down and kill eggs and larvae. Also, don't forget to move feeders and hay from feeding sites and out into the pasture to clean them. These can be significant breeding ground for flies.

Two things you can count on is that the flies will decrease in number as frosty weather returns, AND the pesky flies will come back next year! You can find information on specific products for insect control in Oregon in the [PNW Insect Management Handbook](https://pnwhandbooks.org/insect/livestock/beef/) (<https://pnwhandbooks.org/insect/livestock/beef/>). There is also valuable information on pest control and management that can help you with your insect management.

This article was adapted from UCD Vet News (Hinkle and Maas, 1998) and the PNW Insect Control Handbook, Beef Cattle Pests (Ferguson 2014)

Previously titled Dealing with Pesky Flies and Grubs

Use pesticides safely!

days; there are many generations of flies each year. The first flies appear in June or earlier; flies disappear with hard frosts in fall. Both sexes suck blood from cattle and other animals. If enough flies are present, this can lead to reduced weight gains or milk production. But, cattle can tolerate a low density of horn flies without measurable losses. The generally agreed-upon economic threshold is 200 horn flies per animal.

Photo: © Ken Gray Insect Image Collection



Feedback

(<https://extension.oregonstate.edu/sites/default/n-cattle-crub-fly.jpg?itok=IU5DKtFg>).

Common cattle grub (heel fly) (*Hypoderma lineatum*) and Northern cattle grub (*Hypoderma bovis*). Typically, the life cycle of a cattle grub spans about a year, with most of that time spent as a larva migrating inside the animal's body. To avoid adverse host-parasite reactions, cattle should be treated either before or after grubs migrate through the body. The best time to treat would be as soon as the heel fly (adult stage) season is over. In practical terms, treatment for grubs may be accomplished at the same time as fall treatment for internal parasites but no later than November 30 to prevent a toxic reaction from dead/dying grubs that have migrated to vital regions such as the esophagus or spinal canal.

Photo: © Ken Gray Insect Image Collection



(https://extension.oregonstate.edu/sites/default/n-cattle-crub-prepupa.jpg?itok=gSBdp_SU).

Cattle grub prepupa

Photo: © Ken Gray Insect Image Collection

April 2020



[Shelby Filley \(/people/shelby-filley\)](/people/shelby-filley)
Regional Livestock & Forage

[Share](#)

(<https://www.addtoany.com/share#url=livestock%2Fbeef%2Fdealing-pesky->

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
- Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.



Want to learn more about this topic? Explore more resources from OSU Extension: [Beef Cattle \(/animals-livestock/beef/\)](/animals-livestock/beef/), [Dairy \(/animals-livestock/dairy/\)](/animals-livestock/dairy/).

flies-
[cattle&title=Dealing%20with%20pesky](#)
 Print
[\(/node/144196/printable/print\)](/node/144196/printable/print)

Was this page helpful?

Yes No

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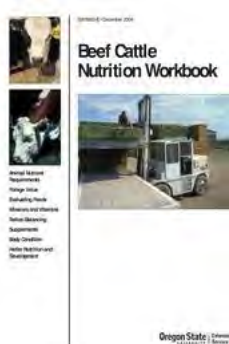
</newsletters/livestock-forages-e-news/>

Photo by Shelby Filley © Oregon State University (Cropped from original)

Livestock and Forages E-News

Announcements on educational programs and important news & notices for western Oregon producers of beef cattle, sheep and goats, plus forages to support these livestock.

NEWSLETTER



<https://catalog.extension.oregonstate.edu/em8883>

Beef Cattle Nutrition Workbook

A comprehensive workbook covering many aspects of beef cattle nutrition: animal nutrient requirements, forage value, evaluating feeds, minerals and vitamins, ration balancing, supplements, body condition, and heifer nutrition. Includes ...

David Bohnert, Shelby Filley | Mar 2020 | OSU EXTENSION CATALOG [peer-review-guidelines](/peer-review-guidelines)



Federal and state licensed slaughter facilities

This file contains spreadsheet: with contact information for a federal and state licensed slaughtering facilities in the state of Oregon. These are arranged by business name, facility type and county location. Species-specific information is also included. Some of these facilities do meat processing too. Non-slaughter, meat processing facilities will be added in the future.

• • • • •



Have a question? Ask an Expert!

Ask an Expert is a way for you to get answers from the Oregon State University Extension Service. We have experts in family and health, community development, food and agriculture, coastal issues, fores programs for young people, and gardening.



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<https://engagement.oregonstate.edu/privacy>) | [Equal opportunity/accessibility \(/equal-opportunity-accessibility\)](#)

Address, Neighborhood, City, Zip or State/Province

[Search](#) » [Nevada](#) » [Reno](#) » East Reno



89502 East Reno, Reno, NV

Population: 38,120



[Overview](#)

[Livability](#)

[Real Estate](#)

[Rentals](#)



Key Findings

East Reno has a [Livability Score](#) of 62/100, which is considered below average

East Reno [crime rates](#) are 19% higher than the Reno average

[Cost of living](#) in East Reno is 10% lower than the Reno average

East Reno [real estate](#) prices are 43% lower than the Reno average

[Rental prices](#) in East Reno are 5% higher than the Reno average

New Real Estate Listings In/Near East Reno

For Sale
▲

For Rent

\$0

▼

No Max

▼

1+ Bedrooms

▼

1+ Bathrooms

▼

SEARCH

Property photo

\$1,095,000

175-195 Hubbard

6 Bed • 6 Bath • 4119 SqFt

Property photo

\$270,000

623 Smithridge Park

3 Bed • 2 Bath • 1220 SqFt

Property photo

\$242,000

Property photo

\$1,291,995

5090 Tahiti Way 2 Bed • 1 Bath • 882 SqFt	5535 Dapplegray Way 4 Bed • 4 Bath • 2820 SqFt

-  Homebuyer Tip: Check your Credit Score Today before you get started
-  Refinance rates are near historic lows.
-  Get Pre-Approved in As Little As 3 Minutes

Best Places To Live In And Around East Reno

	Livability	Cost of Living	Employment	Schools
	Amenities	Crime	Housing	User Ratings
Cities & Neighborhoods				
East Reno Your current location Population: 38,120				62
South Reno Neighborhood: 4.6mi / 7.4km away Population: 21,203				81
Northwest Neighborhood: 8.7mi / 13.9km away Population: 26,555				78
Washoe Valley City: 14.3mi / 23.0km away Population: 2,950				77
Old Northwest-West University Neighborhood: 4.7mi / 7.6km away Population: 20,849				75
Golden Valley City: 8.8mi / 14.2km away Population: 1,805				75
Virginia City City: 14.5mi / 23.4km away				74

See all the [best places to live around East Reno](#)

Compare Reno, NV Livability



Reno, NV

VS



Enter a City

COMPARE

What Do The Locals Think About East Reno?

100%

Family friendly

100%

Public transit is accessible

100%

Walkable to grocery stores

0%

Yards are well-kept

100%

Lots of parks

100%

Walkable to restaurants

100%

Friendly neighbors

0%

Safe at night

0%

Pet friendly

100%

Streets have sidewalks

0%

A quiet area

0%

Sense of community

Based on 1 votes from AreaVibes users. See all [East Reno poll results](#).

How Do You Rate The Livability In East Reno?

1. Select a livability score between 1-100

0

0
Awful

25
Poor

50
Average

75
Good

100
Great

2. Select any tags that apply to this area

Family friendly

Public transit is accessible

Walkable to grocery stores

Yards are well-kept

Lots of parks

Walkable to restaurants

Friendly neighbors

Safe at night

Pet friendly

Streets have sidewalks

A quiet area

Sense of community

SUBMIT

[View results](#)

East Reno Real Estate & Rental Prices



See East Reno [real estate](#) or [rentals](#)

East Reno Demographics

Population	Median Age	Have Kids (under 18)
38,120	36.0	54%

See more [East Reno demographic data](#)

Top Rated Schools In East Reno

Name	Grades	Students	Proficiency

High Desert Montessori Charter School	PK - 9	382	n/a
I Can Do Anything Charter High School	9 - 12	210	n/a
Libby C Booth Elementary School	PK - 6	428	n/a
Academy Of Art Careers And Technology	9 - 12	524	n/a
Mariposa Academy Charter School	KG - 5	134	n/a
Academy Of Career Education Charter School	9 - 12	192	n/a
Rainshadow Community Charter High	9 - 12	113	n/a
Bernice Mathews Elementary School	PK - 5	609	n/a

See all [East Reno schools](#)

The Best Places In Nevada

Here are the best places to live in Nevada

10 Best cities in Nevada for employment

East Reno Reviews

WRITE A REVIEW

Source: The East Reno, Reno, NV data and statistics displayed above are derived from the 2016 United States Census Bureau American Community Survey (ACS).

General

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Address, Neighborhood, City, Zip or State/Province

Search » Nevada » Reno » East Reno » Crime



OUR CUSTOM SOLUTIONS
FROM CGI STANDARD PRODUCTS



East Reno, Reno, NV Crime



Overview

Livability

Real Estate

Rentals



Livability

Amenities

Cost of Living

Crime

62

Employment

D

A+

Housing

A-

C

Schools

F

F

User Ratings

F

RATING

F

Total crime
27%↑ NAT. AVG.

Violent crime
93%↑ NAT. AVG.

Property crime
15%↑ NAT. AVG.

Date & Last Updated

Statistic	East Reno /100k people	Reno /100k people	Nevada /100k people	National /100k people
Total crime	3,159 (estimate)	2,659	2,816	2,489
Murder	n/a	4.7	4.6	5.0
Rape	n/a	70.0	70.2	42.6
Robbery	n/a	121.1	106.7	81.6
Assault	n/a	362.1	312.3	250.2
Violent crime	731 (estimate)	558	494	379
Burglary	n/a	323.2	503.5	340.5
Theft	n/a	1,314.3	1,453.0	1,549.5

Vehicle theft	n/a	463.5	365.6	219.9
Property crime	2,428 (estimate)	2,101	2,322	2,110

Crime data for this area is not available from the FBI. Data from local enforcement agencies is analyzed and algorithms are applied to estimate the number of crimes in the area.



New Real Estate Listings In/Near East Reno

For Sale

\$0

1+ Bedrooms

For Rent

No Max

1+ Bathrooms

SEARCH

Property photo \$1,291,995 5535 Dapplegray Way 4 Bed • 4 Bath • 2820 SqFt	Property photo \$1,095,000 175-195 Hubbard 6 Bed • 6 Bath • 4119 SqFt
Property photo \$365,000	Property photo \$400,000

2175 Hellaby
2 Bed • 2 Bath • 1129 SqFt

680 Belgrave Avenue
2 Bed • 1 Bath • 1650 SqFt

 [Homebuyer Tip: Check your Credit Score Today before you get started](#)

 [Refinance rates are near historic lows.](#)

 [Get Pre-Approved in As Little As 3 Minutes](#)

Key Findings

[East Reno](#) crime rates are 27% higher than the national average

Violent crimes in East Reno are 93% higher than the national average

In East Reno you have a 1 in 32 chance of becoming a victim of crime

East Reno is safer than 40% of the [cities in Nevada](#)

Year over year crime in Reno has decreased by 13%

East Reno Crime Map



Crime map data by SpotCrime. Sign up for local [SpotCrime alerts](#).

The East Reno crime map provides a detailed overview of all crimes in East Reno as reported by the local law enforcement agency. Based on the color coded legend above, the crime map outlines the areas with lower crime compared to the areas with higher crime. The East Reno crime heat map offers insight into the total crimes on a block group level.

Safest Places To Live In And Around East Reno

Livability Amenities	Cost of Living Crime	Employment Housing	Schools User Ratings
Cities & Neighborhoods			
East Reno Your current location Population: 38,120			F
Silver City City: 17.5mi / 28.2km away Population: 211			A+
Verdi City: 14.1mi / 22.6km away Population: 167			A+
Mogul City: 8.7mi / 13.9km away Population: 1,683			A+
Verdi City: 11.9mi / 19.2km away Population: 1,399			A+
Washoe Valley City: 14.3mi / 23.0km away Population: 2,950			A+
Golden Valley			A+

See all the [best places to live around East Reno](#)



Compare Reno, NV Crime

Reno, NV

VS

Enter a City

COMPARE

TAKE THE POLL

How would you rate the amount of crime in East Reno?

Excellent. There is virtually no crime in this area.

Good. There is only a little crime in this area.

Poor. There is more crime than I'd like in this area.

Awful. Crime is rampant in this area.

[View results](#)

[Write a review](#) to give others more information about this area.

TAKE THE POLL

How safe is East Reno?

Extremely safe. Night or day, it's a very safe place.

Fairly safe. I feel safe walking in most areas.

Not very safe. I avoid walking in most areas at night.

Not safe at all. I never walk alone at night.

[View results](#)

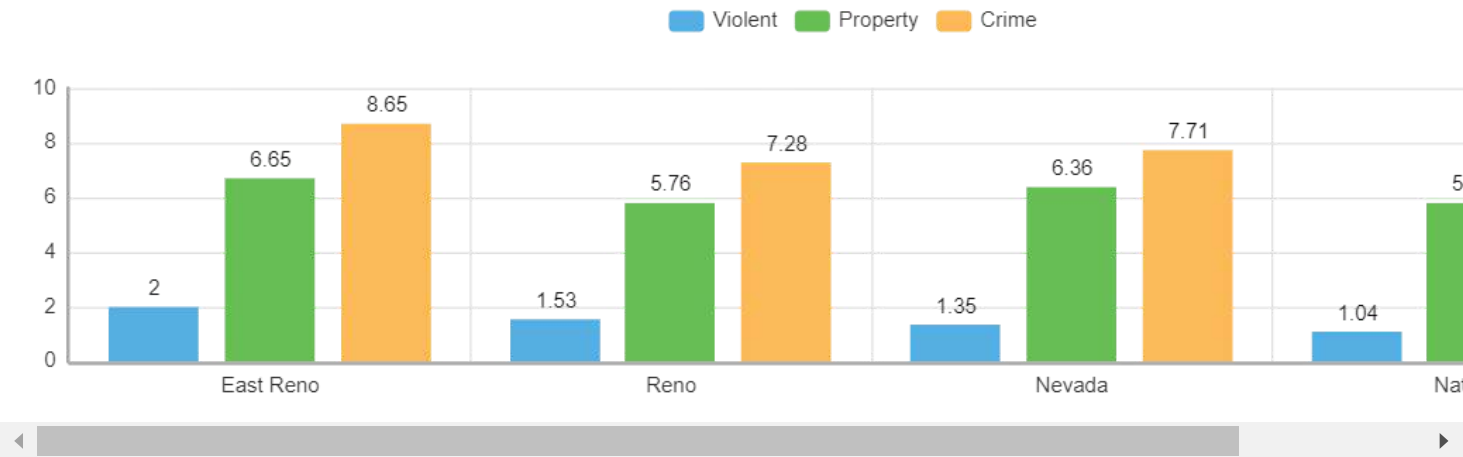
[Write a review](#) to give others more information about this area.

[See all East Reno poll results](#)

The Best Places In Nevada



Daily Crime In East Reno (Per 100,000 People)



How Safe Is East Reno (Higher Is Better)



Reno



Nevada

Chance Of Being A Victim Of Crime In East Reno

The chance of being a victim of violent crime in East Reno is

1 in 137

The chance of being a victim of property crime in East Reno is

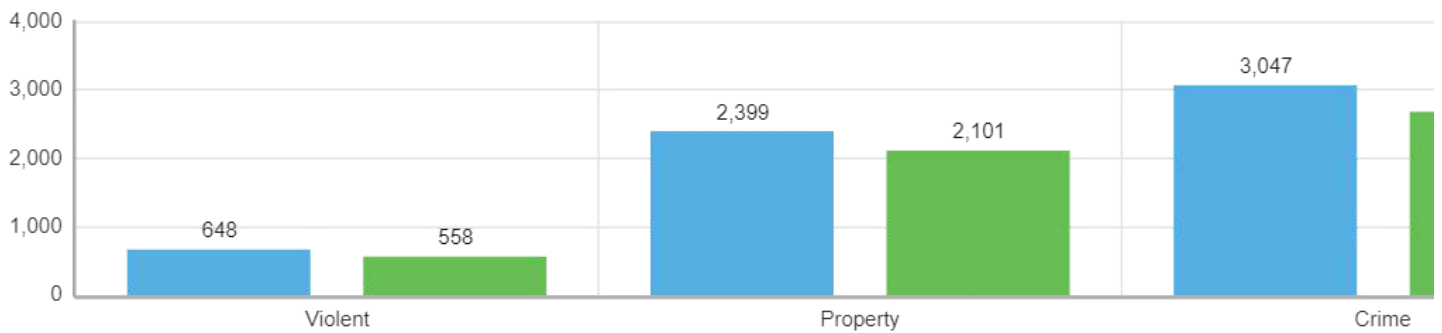
1 in 42

The chance of being a victim of crime in East Reno is

1 in 32

Year Over Year Crime In Reno (Per 100,000 People)

2018 2019



Reno Police Department

Item	East Reno	Reno	Nevada

Law enforcement employees (officers & civilians)	n/a	355	6,127
Police officers & civilians /1000 residents	n/a	1.5	2.7

Sex Offenders In Nevada

State	Total offenders	Nevada /100K	National /100K
Nevada	8,163	394	266

There are a total of 8,163 sex offenders in Nevada. This yields a total of 394 sex offenders in Nevada per 100,000 residents which is 48% greater than the national average.

Nearby Cities With Low Crime Rates

City, State	Population	Violent crime /100k people	Property crime /100k people	Total crime /100k people
Mogul, NV	1,683	69	326	395
Verdi, NV	1,399	72	338	409
Washoe Valley, NV	2,950	88	415	504
Golden Valley, NV	1,805	119	557	676
Virginia City, NV	711	312	1,469	1,781
Spanish Springs, NV	16,091	352	1,653	2,005
Lemmon Valley, NV	5,057	473	2,224	2,697
Reno, NV	237,121	558	2,101	2,659

Cities With Similar Population

City, State	Population	Violent crime /100k people	Property crime /100k people	Total crime /100k people
Winston-Salem, NC	238,474	534	3,386	3,920
Hialeah, FL	235,626	209	2,033	2,242
Garland, TX	234,810	302	2,584	2,886
Scottsdale, AZ	234,495	159	1,958	2,117
Glendale, AZ	239,943	340	3,183	3,523

Source: The East Reno, Reno, NV crime data displayed above is derived from the FBI's uniform crime reports for the year of 2019. The crime report encompasses more than 18,000 city and state law enforcement agencies reporting data on property and violent crimes. The uniform crime reports program represents approximately 309 million American residents, which results in 98% coverage of metropolitan statistical areas.

General

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**Source: UNIVERSITY OF NEVADA submitted to **
EVALUATING THE ECONOMIC IMPACT OF WOLF PACK MEATS

Sponsoring Institution	National Institute of Food and Agriculture	Project Status	TERMINATED
Reporting Frequency	Annual	Funding Source	HATCH
Grant No.	(N/A)	Accession No.	0227705
Proposal No.	(N/A)	Project No.	NEV05525
Program Code	(N/A)	Multistate No.	(N/A)
Project End Date	Jun 30, 2014	Project Start Date	Nov 9, 2011
		Grant Year	(N/A)

Project Director
[HARRIS, TH, R.](#)

Recipient Organization
[UNIVERSITY OF NEVADA](#)
(N/A)
RENO,NV 89557

Performing Department
Resource Economics

Non Technical Summary

Wolf Pack Meats (WPM), a Nevada Agriculture Experiment Station, is currently the only USDA-inspected livestock slaughter and meat processing plant in Nevada. While other regional facilities offer USDA-inspected slaughter, only WPM can provide the USDA-inspected services necessary to develop a carcass into high-value retail meat products. Recently WPM has undergone numerous changes affecting its operations and future sustainability, including the loss of UNR's Meat Science courses due to budget cuts, resulting in an absence of formal education at WPM. WPM has been subject to state-level budget cuts to operating funds, forcing the facility to shift away from processing and retailing UNR livestock to instead focus on custom slaughter and processing for regional livestock producers. WPM is located within the Truckee River flood plain. The Truckee River Flood Project has identified WPM as needing extensive flood control measures which include shoring up the area around the site, or closing the facility entirely. The loss of the region's only USDA-inspected option for meat processing would impact livestock producers in Nevada and California. Producers wishing to direct market meat products have no other local options for processing, aside from the risky custom exempt system that limits sales to large quantities and excludes the opportunity for high-value retail sales of USDA-inspected cuts. The closest USDA-inspected facility for northern Nevada producers is Orland, California, approximately 180 miles from Reno. Shipping livestock for slaughter and processing results in stressed animals and lower-quality, lower-value meats; additionally, the shortest route to Orland takes travelers over Donner Pass, frequently closed to trailer traffic due to heavy snowfall. UNR research has found that regional consumers are willing to pay impressive premiums for locally-produced meats, up to 71% for NY steak (Curtis et al., 2007). Reno's Great Basin Food Cooperative (GBFC) estimates that at present, 90% of the meat they sell comes from producers who utilize the services of Wolf Pack Meats (Powers, 2011). GBFC is currently expanding their operations with plans for 300% more space for local meats due to consumer demand. The NevadaGrown producers association has also reported a substantial increase in demand in recent years for locally grown meats, particularly beef and lamb. Therefore, local meat products could benefit both producers and consumers as this trend continues. In October 2011, a community meeting in Carson City discussed the future of WPM with University and extension personnel, livestock producers, representatives of government agencies and other stakeholder groups, chefs, retailers, restaurateurs, and consumers. Producers expressed interest in knowing the feasibility of forming a producer cooperative to run WPM and in obtaining a USDA Rural Development (USDA-RD) Value-Added Producer Grant (VAPG) to assess the feasibility and obtain working capital funds. The end result of the meeting was the generally held notion that the financial feasibility and economic impact of WPM needed to be evaluated, and the future of local meats assessed.

Animal Health Component 0%

Research Effort Categories

Basic 20%
Applied 40%
Developmental 40%

Classification

Knowledge Area (KA)	Subject of Investigation (SOI)	Field of Science (FOS)	Percent
401	5340	3010	28%
601	6210	3010	26%
601	3910	3010	10%
607	6230	3010	26%
903	6210	3010	10%

Knowledge Area

601 - Economics of Agricultural Production and Farm Management; 401 - Structures, Facilities, and General Purpose Farm Supplies; 607 - Consumer Economics; 903 - Communication, Education, and Information Delivery;

Subject Of Investigation

3910 - Cross-commodity research--multiple animal species; 6210 - Farmer cooperatives; 6230 - Marketing systems and sectors thereof; 5340 - Nonfarm structures and related facilities;

Field Of Science

3010 - Economics;

Keywords

economic impact feasibility analysis meat production meat slaughter
local food food system

Goals / Objectives

Wolf Pack Meats, a Nevada Agriculture Experiment Station, is currently the only USDA-inspected livestock slaughter and meat processing plant in the state of Nevada. Wolf Pack Meats (WPM) has recently undergone severe state-level budget cuts and faces an uncertain financial future. This eight-month project will address the financial feasibility and economic impact of WPM. The two main objectives for this project are: 1. Develop a feasibility assessment of WPM under continued University ownership, private ownership, and cooperative ownership; and 2. Assess the economic impacts of WPM. Outputs of this project will include a livestock producer survey, a regional consumer survey, an economic impact analysis, a full feasibility study, and a separate feasibility study assessing the potential for a producer cooperative to take ownership of WPM. The producer and consumer surveys will be completed by February 2012. The economic impact analysis will be complete by May 2012. The full feasibility study and producer cooperative study will be complete by June 2012. A stakeholder meeting to disseminate the results of the project will be held in June 2012.

Project Methods

Over eight months we will conduct a comprehensive feasibility study and economic impact analysis of WPM. We will develop and administer a producer survey and a consumer survey which will be used to inform our sensitivity and marketing analyses for the feasibility study and economic impact assessment. We will identify current costs and revenue based on production and pricing data, and use this information collectively to identify break-even points for production, pricing, and sales under current University ownership as well as under scenarios with private ownership and ownership by a producer cooperative. These scenarios will include sensitivity analyses to show how profit will be affected given changes in input costs and output prices. We will also examine the costs and impacts of infrastructure adjustments to WPM, including the provision of additional cooler space, currently identified as a bottleneck in WPM operations. The feasibility and economic impact report

will be published as a University Center for Economic Development (UCED) technical report in June 2012. The findings of the consumer survey will be published in academic journals relating to economics and agriculture. USDA-Rural Development's (USDA-RD) Value-Added Producer Grant (VAPG) features an option for producer cooperatives to apply for working capital to fund their operations once the cooperative has a feasibility study outlining costs and logistics of their operation. The portion of our study that addresses feasibility under producer cooperative ownership will be structured to meet USDA-RD requirements for a VAPG feasibility study so that producers may apply for a working capital grant if conditions permit. This feasibility study will be published both within the full study and as a free-standing study in June 2012 and will be available for producers to use as part of a 2012 VAPG application. The results of the WPM feasibility study will be published as two separate UCED technical reports, one with the full results of the feasibility and economic impact analysis; the other with the feasibility of ownership by a producer cooperative alone. In addition to being made available on the UCED website, these studies will be sent to the national eXtension.org website. We will work with our partner organizations and other stakeholder groups to send the report to stakeholders electronically. Abbreviated findings will be published as extension fact sheets and/or technical publications. We will conduct stakeholder meetings throughout the project to inform stakeholders of our progress and to ensure that stakeholder input is considered in the analysis. We will present the results of the WPM feasibility and economic impact study and all related findings through UNCE and WNC workshops, Cattlemen's Update, the Small Farm Conference, and other workshops and stakeholder gatherings.

Progress 11/09/11 to 06/30/14

Outputs

Target Audience: Nevada populace interested in Wolf Pack meats operating and slaughtering facility. Nevada ranchers and local economic development practitioners have been targeted for alternative economic development. Changes/Problems: Nothing Reported What opportunities for training and professional development has the project provided? Results of study have been presented at workshops. Also research associate has learned techniques of survey demand, feasibility analysis, and impact modeling. How have the results been disseminated to communities of interest? • Three presentations have been given to ranchers outlining the data collected through this project. • One technical publication has been written outlining the results. • Two extension fact sheets outlining the results are currently under review. What do you plan to do during the next reporting period to accomplish the goals? Nothing Reported

Impacts

What was accomplished under these goals? • Research into Nevada consumer preferences for local meat products and meat product attributes was used to design marketing information for Nevada livestock producers who are currently or are considering direct marketing enterprises. • Research into Nevada consumer demand for a regional meat CSA or meat buying club has led a group of Nevada livestock producers to develop interest in establishing a northern Nevada meat CSA or meat buying club. • Publication of financial statements for a slaughter facility leased by a producers' cooperative provided regional livestock producers a better understanding of the costs and technical characteristics associated with cooperative ownership of a small-scale facility; two producers have taken steps towards establishing a facility.

Publications

- Type: Other Status: Published Year Published: 2011 Citation: Cowee, Margaret and Thomas R. Harris. Regulatory and Financial Considerations for Red Meat Mobile Slaughter in Nevada, University of Nevada, Reno, University Center for Economic development, Technical Report 2010/11-04, February 2011.
- Type: Other Status: Under Review Year Published: 2014 Citation: Nevada Consumer Perceptions of Local Foods, Cooperative Extension fact Sheet. Nevada Consumer Preferences for Meat Products, Cooperative Extension Fact Sheet.

Progress 01/01/13 to 09/30/13

Outputs

Target Audience: Nevada populace interested in Wolf Pack meats operating and slaughtering facility. Nevada ranchers and local economic development practitioners have been targeted for alternative economic development. Changes/Problems: Nothing Reported What opportunities for training and professional development has the project provided? Results of study have been presented at workshops. Also research associate has learned techniques of survey demand, feasibility analysis, and impact modeling. How have the results been disseminated to communities of interest? Two presentations have been given to ranchers outlining the data collected through this project. One technical publication has been written outlining the results. Two extension fact sheets outlining the results are currently under review. What do you plan to do during the next reporting period to accomplish the goals? Nothing Reported

Impacts

What was accomplished under these goals? Research into Nevada consumer preferences for local meat products and meat product attributes is being used to design marketing information for Nevada livestock producers who are currently or are considering direct marketing enterprises. Research into Nevada consumer demand for a regional meat CSA or meat buying club has led a group of Nevada livestock producers to develop interest in establishing a northern Nevada meat CSA or meat buying club. Publication of financial statements for a slaughter facility leased by a producers' cooperative provided regional livestock producers a better understanding of the costs and technical characteristics associated with cooperative ownership of a small-scale facility; two producers have taken steps towards establishing a facility.

Publications

- Type: Other Status: Under Review Year Published: 2014 Citation: Cowee, Margaret W. and Thomas R. Harris. . Nevada Consumer Perceptions of Local Foods. University of Nevada Cooperative Extension Fact Sheet, Under Review. Cowee, Margaret W. and Thomas R. Harris. Nevada Consumer Preferences for Meat Products, 2012. University of Nevada Cooperative Extension Fact Sheet, Under Review

Progress 01/01/12 to 12/31/12

Outputs

OUTPUTS: Developed and conducted a consumer survey distributed to 1700 randomly selected households in Nevada, data from 165 completed surveys analyzed. Generated a database of consumer preferences for locally-produced meat products derived from consumer survey. Developed a database of consumer definitions of the term "local" as applied to food products derived from consumer survey. Conducted sensitivity analyses to determine the regional impacts of increasing slaughter capacity at the University of Nevada, Reno's Agricultural Experiment Station, Wolf Pack Meats. Cash flow analyses conducted to develop financial statements for a producers' cooperative as potential lessees of Wolf Pack Meats. Financial analyses based on five years of historical slaughter and pricing data as well as regional historical traditional calving/lambing/kidding dates. Economic impact analyses conducted to determine financial and employment impacts of Wolf Pack Meats to Washoe County, Nevada. PARTICIPANTS: Thomas R. Harris is the principle investigator and Margaret Cowee is the primary researcher. Dale Holcomb is co-investigator. TARGET AUDIENCES: The target audience is administration at the University of Nevada, Reno and the cattle industry in the state. PROJECT MODIFICATIONS: Not relevant to this project.

Impacts

Research into Nevada consumer preferences for local meat products and meat product attributes is being used to design marketing information for Nevada livestock producers who are currently or are considering direct marketing enterprises. Research into Nevada consumer demand for a regional meat CSA or meat buying club has led a group of Nevada livestock producers to develop interest in establishing a northern Nevada meat CSA or meat buying club. Publication of financial statements for a slaughter facility leased by a producers' cooperative provided regional livestock producers a better understanding of the costs and technical characteristics associated with cooperative ownership of a small-scale facility.

Publications

- Cowee, M.W., T.R. Harris, D. Thain, and C.M. Holcomb. 2012. Evaluating the Economic Impact and Feasibility of Wolf Pack Meats. University of Nevada, Reno Center for Economic Development Technical Report number UCED 2012/13-04. 66 pages.



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[Vet Rec.](#) 1984 Sep 22;115(12):292-5. doi: 10.1136/vr.115.12.292.

Exsanguination of animals at slaughter and the residual blood content of meat

[P D Warriss](#)

PMID: 6495586 DOI: [10.1136/vr.115.12.292](#)

Abstract

About 40 to 60 per cent of the total blood volume is lost at exsanguination. The loss can be influenced slightly by differences in traditional slaughter techniques and is considerably reduced after cardiac arrest in sheep and cattle. Blood not lost at sticking is probably largely retained in the viscera rather than the carcass. The residual blood content of lean meat is 2 to 9 ml/kg muscle. There is no evidence that this amount is affected by different slaughter methods or that large amounts of residual blood influence the microbiology of meat.

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Financial Potential for Livestock Slaughter and Processing in Nevada

Introduction

In 2006, a survey of livestock producers and meat consumers in Nevada was undertaken in an effort to assess the feasibility of building a livestock slaughter and processing facility in the state. The data collected from these surveys were analyzed in conjunction with current nationwide pricing data for buildings, equipment, livestock and meats to determine the financial costs of building and operating such a facility. This publication presents a brief overview of the financial information generated from the study. For the full study results, please see the University Center for Economic Development technical report UCED 2006/07-13, by Curtis et al., 2007.

This section of the study addresses financial analyses and recommendations for an optimal solution to slaughtering and processing animals. Based on the findings from these analyses, the optimal solution is thought to be two mobile slaughter units and a stationary processing plant. Included here are detailed start-up costs, current slaughter demand, a distributed slaughter schedule to maximize the use of two mobile units and financial forecasts for both the mobile slaughter units and the processing facility.

Mobile Slaughter Unit Background

Mobile slaughter units have been operated in Washington and New Mexico and have been considered in California and Wyoming. The many benefits of a mobile slaughter unit include the fact that United States Department of Agriculture (USDA) certified inspected meats slaughtered at the unit can be sold at local stores and restaurants; livestock is treated more humanely, as transport stresses are minimized or eliminated; and transport costs are negated (Lopez Community Land Trust, 2007).

Mobile slaughter units are currently built by TriVan Truck Body, located in Ferndale, WA. According to Marty VanDriel, the sales manager at TriVan, TriVan's mobile slaughter units come fully equipped (including all furnishings and equipment) and satisfy USDA inspection and licensing requirements (personal conversation, January 2007). The unit consists of a mechanical/storage unit, slaughter unit and refrigeration unit. Miscellaneous equipment includes knives, saws, scales and other necessary supplies. A semi-truck tractor is necessary to pull the trailer and must be purchased separately, either new or used. It takes approximately 14 to 20 weeks to receive a custom-built mobile slaughter unit from TriVan. TriVan requires 30 percent of the payment at time of order and the balance upon delivery. The approximate vehicle weight is 25,000 pounds.

Existing Slaughter Schedule

The results of the livestock producer survey indicated that the majority of livestock calving in Nevada occurs in the spring. As livestock is typically slaughtered between 18 and 22 months of age, the majority of the slaughter demand would occur in the fall. However, survey respondents expressed their willingness to adjust their calving schedule to regulate excess demand in the fall and allow for year-round operation of mobile units. To accommodate this and encourage winter and spring slaughter demand, variable livestock pricing might be used.

Existing Slaughter Demand vs. Mobile Unit Capacity

Using the survey data, it was found that a grand total of 2,614,440 pounds of meat would be sent to the slaughtering and processing facility on an annual basis (Table 1) with average monthly slaughtering demand ranging from 21,969 pounds in the winter (December through February) to 693,133 pounds in the fall (September through November).

Table 1: Total Seasonal Slaughter Demand

*table here

Cattle slaughtered for beef would provide the majority of the business for the slaughtering unit with 21,969 pounds slaughtered in the winter, 118,885 pounds in the spring, 28,398 in the summer and 479,499 pounds slaughtered in the winter (Table 2). Sheep and lamb would also play a large role in the slaughter facility with 8,275 pounds slaughtered in the summer and 205,375 pounds in the fall. Hogs would be slaughtered to a lesser but still important degree with 820 pounds slaughtered in the spring and 8,260 pounds slaughtered in the fall.

Table 2: Seasonal Slaughter Demand by Livestock Type

*table here

Distributed Slaughter Demand

A mobile unit is only capable of slaughtering 90,400 pounds monthly even if the unit is operating at full capacity and having the meat sent to a processing plant for aging. Based on this figure, even using an evenly distributed monthly slaughter demand schedule, the annual slaughter demand exceeds capacity by 241 percent for a single slaughter unit.

To compare slaughter demand to mobile unit capacity, a monthly slaughter schedule was developed, using the livestock data provided by producers interested in participating in the project. This schedule was based on the assumption that some producers would be willing to alter their slaughter schedule to accommodate the capacity constraints of the units (Table 3). Assuming an average month has 20 work days, two mobile slaughter units are capable of processing approximately 180,800 pounds of meat per month, or 2,169,600 pounds a year. This assessment assumes a total of 240 operating days for each unit per calendar year. Using these figures, slaughter demand would exceed unit capacity by 17 percent. However, as these numbers are conceptual, it is recommended that only two units are purchased at the outset, with an additional unit to be purchased in the future if necessary to meet demand.

Table 3: Monthly and Annual Slaughter Demand and Capacity

*table here

Mobile Unit Operating Costs

Labor Expenses

Two to three employees are needed for each mobile slaughter unit to operate three distinct job responsibilities. These positions include two butchers, two assistants/drivers, and two USDA Hazard Analysis and Critical Control Point (HACCP) inspectors (Table 4). The USDA Hazard Analysis and Critical Control Point (HACCP) regulation requires all slaughter and packaging facilities to develop a plan to identify critical control points for meat safety and to develop specific action plans to ensure food safety. The HACCP inspector is responsible for all meat inspection and supervisory capabilities within the plant. This position can be combined with the on-site butcher position, provided the employee has time to facilitate the necessary paperwork required by the USDA. Annual salaries are in the range of \$39,940 to \$56,849. A salary of \$46,221 was used for this study (Career Journal, 2006). The assistants/drivers would be salaried at approximately \$25,376 per year and the butchers would require an estimated annual salary of \$30,056 (Business Seminole, 2006). An additional 15 percent of total salary was added to this analysis to account for taxes and benefits.

Table 4: Mobile Slaughter Unit Salaries

*table here

Diesel Fuel Costs

The size of the service area directly affects the fuel and maintenance costs for the mobile unit. The area of interest includes the area encompassing Dayton, Carson Valley, Lahontan, Smith Valley, Mason Valley and Antelope Valley. This is an area with a driving circumference of approximately 200 miles. Washoe Valley and Bridgeport add an additional roundtrip of approximately 40 miles. It is expected that the mobile slaughter units can potentially travel up to 220 miles each day in service.

The fuel cost estimates for the study were based on the assumption that the mobile units would travel 150 miles each day with a fuel efficiency rate of 5 miles to the gallon. At the time of the study, the national average cost of diesel fuel was \$2.82 per gallon, so each unit was estimated to have a daily fuel allowance of \$100 plus \$15 each day for repairs (for a total of \$230 per day for fuel and repairs). Diesel fuel costs have increased since the time of this estimate, however, fuel cost increases are offset by "miscellaneous supplies" in the calculation of start-up costs.

Offal Disposal

The survey results showed that 93 percent of respondents have offal disposal facilities. This analysis does not take into account offal disposal costs and assumes the waste remains on the property where the slaughter occurs.

Portable Corral Facilities

Corral facilities are needed on each farm/ranch when using the mobile slaughter unit. More than two-thirds of survey respondents (68 percent) do not have corral facilities available and would need to purchase five-foot portable corral facilities, ranging in price from \$250 to \$800. Because this is a personal expense that will not apply to all producers, the expense was not included in this analysis.

Mobile Slaughter Unit Start-up Costs

Table 5 lists the start-up costs for obtaining the slaughter units and making them operationally ready. The cost for one mobile unit is \$140,000 plus an additional \$5,000 per unit for miscellaneous supplies. Each unit will also need a semi-trailer to haul it, which can cost between \$20,000 and \$90,000, but has been estimated at \$45,000 each for this study. There is an estimated \$10,325 in sales tax on each trailer using a sales tax rate of 7.375 percent (2006 average for Douglas and Lyon counties and Carson City). For validation and HACCP planning, the cost for each unit is estimated at \$4,500 with an additional \$2,000 per unit allotted for staff training. Other expenses include auto insurance, supplies and vehicle licensing and loan principal and interest. The total start-up cost estimates then comes to \$206, 825 per unit, or \$413,650 for two units.

Table 5: Mobile Slaughter Unit Start-up Costs

*table here

Mobile Slaughter Unit Loan

The loan principle amount was calculated at \$413,650 for two mobile slaughter units (Table 6). Loan interest is assumed at a fixed rate of 9 percent over a period of 10 years. Monthly loan payments would be \$5,239.94 for an annual total of \$62,879.28. The interest over the term of the loan would total \$215,142.80.

Table 6: Mobile Slaughter Unit Loan Breakdown

*table here

Stationary Processing Facility

Based on survey results, it is recommended that the stationary processing facility be located in an area of Nevada central to member ranches. Producer survey results, location of potential customers and cost of land throughout Northern Nevada indicate that such a viable central location is Silver Springs, approximately 35 miles east of Carson City and 26 miles west of Fallon. This central location accommodates the Lahontan Valley where 28 percent of respondents reside and is 32 miles from Yerington where an additional 13 percent of respondents reside. Silver Springs is also 51 miles from the Carson Valley where 16 percent of the respondents reside.

Stationary Processing Facility Construction Costs

Land

As of January 1, 2006, according to the USDA Agricultural Statistics Board, a measurement of the value of land in Nevada was \$1,000 per acre. This represents a 15 percent increase from 2005 (USDA-NASS, 2006). The processing facility will require one acre of land. Land improvements necessary for the facility include road access, water access, sewer lines, phone service, electricity and natural gas. A rough estimate of \$20,000 in land improvements is conditional on the location of the land purchased and its proximity to existing services.

Building

A prefabricated building can be purchased from \$20 to \$30 per sq. foot, excluding delivery, concrete work, site prep, wiring, plumbing and interior design (Sacco, 2007). Such a building would be of steel construction with steel beams, sheeting and fasteners delivered to the site where the building is pieced together. Any interior work would be done after construction is complete. Additionally, snow load requirements must be considered when figuring roofing requirements. This study is estimating the need for a 10,000-sq. foot building, costing between \$250,000 and \$300,000.

A general contractor would be hired to be responsible for all permitting, architectural review, concrete foundation and the construction of the building. Estimates range from \$75 to \$100 per square foot to assemble. Using a 10,000-sq. foot building, contractor fees are estimated at \$1,000,000 (NCED 2000-adjusted for inflation).

If chosen as the facility location, the Silver Springs building requirements are such that all commercial units must purchase equivalent dwelling units (EDU). All commercial operations are required to purchase 1.5 EDUs, which allow the facility to operate up to 38 sinks and toilets at an estimated cost of \$12,369.

Refrigeration units are discussed in the equipment section but must be installed during the building process. Refrigeration costs are included in the building construction analysis so that they may be included in the capital loan figures. Table 7 summarizes the building expenses.

Table 7: Stationary Processing Facility Building Costs

*table here

Furniture and Fixtures

The stationary processing facility would need office equipment, such as a communications system (i.e. telephones) and office furniture (Table 8). Additionally, a computer network, five computers and workstations, and an all-in-one printer/copier/fax/scanner would be necessary (Prices from Dell.com, 2007; OfficeDepot.com, 2007; TelephoneSystems.com, 2007; CSNOfficeFurniture.com, 2007).

Table 8: Processing Facility Furniture and Fixtures Costs

*table here

Stationary Processing Facility Equipment Costs

Refrigeration Units

The refrigerated units are prefabricated units delivered to the site directly from the manufacturer. For optimal storage, two 10 x 30-foot refrigeration (cooler) units are necessary (Table 9). Once meat has been cut, a freezer unit is needed for storage before the meat goes to the buyer. These approximate prices include delivery and installation (Bush Refrigeration, 2007).

Table 9: Processing Facility Refrigeration and Freezer Unit Costs

*table here

Other Processing Facility Equipment: Viscera and Cutting Rooms

Tables 10 and 11 detail equipment required for the processing facility (Center for Economic Initiatives, 2004). While used equipment is readily available, the prices listed below reflect new purchase costs. For the financial analysis, a percentage reduction for total capital expenses was used to provide a financial analysis reflecting actual costs for a combination of used and new equipment. A monthly expense of \$100 is used to reflect replacement and repair costs in the financial analysis.

Table 10: Processing Facility Viscera Room Equipment Costs



*table here

Table 11: Processing Facility Cutting Room Equipment Costs

*table here

Processing Facility Start-up Costs

Table 12 outlines the total start-up costs for the processing facility outlined in the previous sections. Building expenses include the cost of material, contractor labor, refrigeration/freezer units, land improvements and sewer fees.

Table 12: Stationary Processing Facility Start-up Costs

*table here

Processing Facility Loan

The processing facility loan principle amount was estimated as \$1,505,829, reflecting the total start-up costs to construct and furnish the processing facility (Table 13). This analysis assumes a loan period of 15 years at 9 percent interest. The monthly loan payment amount would be \$15,273.12 with combined annual payments of \$183,277.44. The interest paid over the term of the loan would be \$1,243,332.60.

Table 13: Stationary Processing Facility Loan Breakdown

*table here

Stationary Processing Facility Operating Costs

The financial forecast shows an estimate of annual income, cost of goods and operating costs for the processing facility. Cost of goods is calculated as the price paid to the farmer. Retail revenue is the price received by the processing facility. These include general expenses necessary to process the meat and distribute to retail locations. The financial statement also includes office expenses, such as telephones, office supplies and utilities, transportation and packaging expenses, and maintenance and tool costs. Legal and accounting fees are also included.

Labor Expenses

Salary expenses include a full-time plant manager/butcher, a brand/marketing product manager, an additional full-time butcher and a full-time office employee (Table 14). Additional butchers and seasonal help may be hired as needed based on processing demand determined by the plant manager.

Plant managers are responsible for overall operations, marketing and member services. This position requires formal training in the agribusiness field, meat production experience and a USDA slaughter certification. The plant manager will also be responsible for scheduling and managing the mobile slaughter units. A plant manager usually receives a salary and full benefit package. Plant managers earn approximately \$72,100 a year depending on size and location of the facility (Career Journal, 2006).

The job of brand/marketing product manager is to create and implement product marketing activities to develop brand awareness and maximize sales. This individual should have experience marketing a product in a niche market and would report to the plant manager. The median annual salary for brand/marketing product managers is \$83,441 (Salary.com, 2007).

For the financial calculations, it was assumed that one full-time butcher would be needed at the processing facility. Butchers earn an annual salary between \$17,000 and 42,000, depending on duration and type of experience (Career Prospects, 2007). An annual salary of \$42,000 was used for the forecast.

If additional butchers were needed to meet seasonal demand, they would be paid on an hourly basis, typically around \$15 an hour in Northern Nevada (approximately \$21,440 for 24 weeks per year) with optional benefits (College Grad, 2007). Seasonal labor requires experience, but no formal education.

Office staff would be paid \$12 per hour with or without benefits, which equates to an annual salary of \$24,788. The office employee should have secretarial and bookkeeping skills, although a certified public accountant (CPA) should be kept on retainer for profit distribution and tax filing. For all salaries, a 15 percent tax and benefits percentage was calculated.

Table 14: Processing Facility Salaries

*table here

Revenue and Cost Projections

Retail Revenue

Retail prices were calculated using a weighted method to take into account the different cuts of beef and varying prices (Cattlemen's Beef Board, 2006). At the time of the study, retail pricing of cattle was \$2.09 a pound (USDA-AMS, 2007); pork was \$1.59 a pound (USDA-ERS, 2004); and sheep/lamb was \$176.79 a head (American Sheep Industry Association, 2006). Based on results from the accompanying consumer survey, retail prices were increased by 7 percent for pork, 17 percent for lamb, 13 percent for low-value beef (ground beef, chuck, etc.) and 30 percent for high-value beef (steak, sirloin, etc). These prices reflect the higher premium that consumers stated they are willing to pay (Curtis et al., 2007). The figures used to calculate revenue for each livestock/meat type are outlined in Table 15.

Using the premium beef prices, it was estimated that cattle would earn revenue of \$1,876.64 per head. The total revenue for beef was calculated by multiplying the price per cattle by the number of animals (168) slaughtered each month for a total of \$315,781 a month. The number of cattle was calculated using the survey data of 134,616 total pounds divided by 800 pounds (800 pounds is a lower weight bound on a grass-fed animal, 1000 to 1100 pounds would increase the likelihood of receiving a Choice rating).

It was estimated that hogs would earn a per-head premium retail price of \$285.10. Revenue for hogs was calculated by multiplying the price per pork and the number of animals slaughtered each month (10) for a total of \$2,851 a month. The number of pigs (10) was calculated using the survey data of 1,884 total pounds divided by 200 pounds, which is the average weight of a pig.

Based on a premium per-pound price for sheep/lamb, revenue was calculated at \$206.84 per head. Sheep/Lamb revenue was computed at the carcass weight price multiplied by the number of animals per month (296) for total revenue of \$61,133. The number of sheep/lamb (296) was calculated using the survey data of 44,332 total pounds divided by 85 pounds (based on a set price for carcass weight at 85 pounds plus, American Sheep Industry Association, 2006).

Table 15: Meat Retail Prices and Estimated Revenue Projections

*table here

Cost of Goods/Wholesale Pricing

The cost of goods represents the wholesale meat prices paid to member ranches for their livestock (Table 16). Traditional wholesale pricing of cattle is \$89.99/ctw for an 800-pound cow, which equates to approximately \$719.92 per carcass (USDA-AMS, 2007). A study by Acevedo, Lawrence and Smith (2006) found the cost of production for grass-fed beef was higher than beef fed on a traditional diet. Therefore, a sustainable price of \$1.30/lb was used for this study. This price is paid on total carcass weight, not dressed weight. Beef was calculated at approximately \$1,040 (\$1.30/lb) for carcass weight at 168 cattle a month for a total monthly cost of goods of \$174,720 for cattle (National Cattlemen’s Beef Association, 2003). Annual cost of goods for cattle is \$2,096,640.

Traditional hog pricing is \$40.20/ctw for a 200-pound pig, which comes to approximately \$80.40 per carcass (USDA-ERS, 2004). Based on previous consumer willingness to pay studies for wholesale grass-fed pork and lamb, wholesale prices for these products were increased by 20 percent over traditional wholesale pricing, therefore hogs were calculated at approximately \$0.48 per pound. Based on given carcass weight and 10 pigs a month, total monthly cost of goods for hogs came to \$965 and an annual cost of goods of \$11,578.

Traditional pricing for sheep/lamb is \$95.50 for a carcass weight equal to and exceeding 85 pounds (American Sheep Industry Association, 2006). With the mentioned 20 percent premium, sheep/lamb was calculated at \$1.35 per pound. With an estimated 296 sheep/lamb a month, the monthly cost of goods for sheep/lamb comes to \$33,922 or \$407,059 per year.

Table 16: Meat Cost of Goods

*table here

Overview of First Year Financials

All of the costs and revenues previously mentioned are summarized in the following tables to show how the first year operating profit was calculated. Table 17 outlines the processing facility revenue of \$2,041,893.85. Subtracted from this figure are the processing facility salaries (Table 18) and mobile slaughter unit salaries (Table 19) for total salary deductions of \$510,399.20 and processing facility (Table 20) and mobile unit expenditures (Table 21) for total expenditure deductions of \$517,879.17. This leaves a first-year operating profit of \$1,013,615.48.

Table 17: Processing Facility Revenue

*table here

Table 18: Processing Facility Salaries

*table here

Table 19: Mobile Slaughter Unit Salaries

*table here

Table 20: Processing Facility Expenses

*table here

Table 21: Mobile Slaughter Unit Expenses

*table here

Table 22: First Year Operating Profit Calculation

*table here

Conclusion



The results of this study found that the optimal solution for a slaughtering and processing facility in Nevada is to have both a mobile slaughter unit and a stationary facility. In order to meet expressed slaughtering demand, two mobile units would be necessary. Based on the location of interested respondents and potential consumers, Silver Springs is considered to be the best location for the stationary processing facility. While this project would require a great deal of start-up capital, the projected expenses and revenues forecast that the entire operation could be profitable from the outset.

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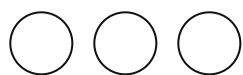
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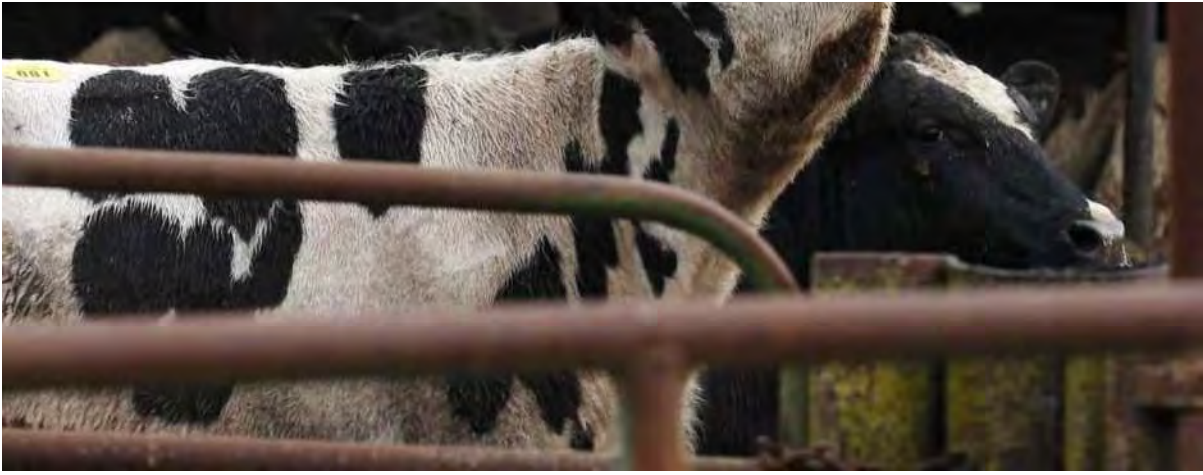
Slaughterhouse accused of selling meat from cows with cancer

Slaughterhouse accused of killing cows with cancer

Stacy Finz, Carolyn Lochhead

Updated: Feb. 26, 2014 10:45 a.m.





2 of 11

Cattle graze at Rancho Feeding Corporation in Petaluma, California February 10, 2014. The slaughterhouse is recalling 8.7 million lbs of beef parts because it used "diseased and unsound animals" and lacked proper federal inspections, the U.S. Department of Agriculture said. REUTERS/Beck Diefenbach (UNITED STATES - Tags: ANIMALS FOOD BUSINESS)

Beck Diefenbach/Reuters

(02-26) 10:44 PST SAN FRANCISCO -- Rancho Feeding Corp., the Petaluma slaughterhouse that recently recalled 8.7 million pounds of beef, is under criminal investigation by the federal government for killing and selling meat from dairy cows with cancer, according to sources who would speak only on the condition of anonymity.

Rancho was allegedly buying up cows with eye cancer, chopping off their heads so inspectors couldn't detect the disease and illegally selling the meat, the sources said. ✕

Article



Although it's against federal law, experts say eating the meat isn't likely to make people sick. So far, no one has reported becoming ill from eating the meat.

The huge recall and criminal investigation of producers, who used the facility for leaving the shelves with a dearth of

Bill Niman, arguably one of the more business and the former owner of N



slaughter 427 head of cattle and is complying with the recall. He said it's causing him to hold back about 100,000 pounds of beef from the market and that he stands to lose as much as \$400,000. He said his beef has nothing to do with the alleged tainted meat.

Voluntarily shut down

But, in an abundance of caution, the U.S. Department of Agriculture wants to make sure none of the cancerous meat commingled with healthful beef.

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Rancho officials could not be reached for comment; the plant has voluntarily shut down and is in escrow with new buyers.

Both Reps. [Jared Huffman](#), D-San Rafael, and [Mike Thompson](#), D-St. Helena, met with Agriculture Secretary [Tom Vilsack](#) this week to discuss the criminal investigation, but they weren't given details.

"I'm disappointed we did not come away with any better sense of what happened," Huffman said. "However, a couple of good things did happen."

One of them, he said, was the secretary's commitment to have his team meet with local beef producers to share whatever information they can share. The other was a promise to talk to beef producers who did segregate their beef and can demonstrate that it could not have commingled with improperly processed meat.

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That would give the producers a chance to "perhaps get some relief from the recall," Huffman said.

USDA officials said they could not discuss the case as long as Rancho is under criminal investigation. But at least one source said Rancho bought animals with a specific type of cancer found in the optical area of a cow. By eliminating the animal's head, the rest of the carcass appeared healthy.

'Carcass looked good'

"Rancho, we're told, was slaughtering them, somehow after hours or in other ways where the inspector didn't know about it," the source said. "Because the carcass looked good, (Rancho) mixed it back in with other beef that it sold under its label."

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James Cullor, professor of population health and reproduction at the School of Veterinary Medicine at UC Davis, said cows suffering from eye cancer aren't necessarily dangerous to eat, but he doesn't recommend it. It would be possible that the cancer had spread to other parts of the animal's body, Cullor said.

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"If I'm out on top of Mount Everest and have a cow (with eye cancer) and I'm hungry, I'm going to cook her well and deal with getting down the mountain," he said. "But if I'm here in this country, I will choose to not consume the animal I wouldn't feed the animal to my gran



Niman, who now owns BN Ranch, said it would have been impossible. In a letter to the Inspection Service, he has described the delivery, all under USDA inspection,

Mixing up his grass-fed beef with Rancho's milk cow meat would have been impossible to miss because the differences between the carcasses are too obvious, he said.

"It's the difference between a motorcycle and a car," he said, adding that the recall is having a profound effect on his business.

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Last year was his biggest yield since he started his grass-fed beef business. "We felt like we were just dialing in," he said. Now, because of the recall, he is experiencing a setback.



Nationwide effect

The recall started Feb. 8 and affected Nestle's Hot Pockets food line. This January, the company recalled more USDA said the plant processed with

It was at that time that investigators began getting an inkling of an alleged breach

in protocol when they found two cattle heads infected with cancer.

Stacy Finz and Carolyn Lochhead are San Francisco Chronicle staff writers. E-mail: sfinz@sfchronicle.com, clochhead@sfchronicle.com Twitter: [@sfinz](https://twitter.com/sfinz), [@carolynlochhead](https://twitter.com/carolynlochhead)

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Written By
Stacy Finz

Reach Stacy on

Stacy has worked at the San Francisco Chronicle as a reporter since 1997, when she moved to San Francisco after previously working at the Rocky Mountain News, Los Angeles Daily News, San Diego Union-Tribune and the Los Angeles Times. She started at the Chronicle as a general assignment reporter, covering breaking news, catastrophes, crime, criminal and civil trials. Later, she moved to the food and wine section, where she covered food and wine trends and news.



Her stories include full coverage of the Yosemite California olive industry and farming and ranchir food and wine industries, agriculture and tourism



Written By
Carolyn Lochhead

Reach Carolyn on

Carolyn Lochhead is the Washington correspondent for the San Francisco Chronicle, where she has covered national politics and policy for 22 years. She grew up in Paso Robles (San Luis Obispo County) and graduated from UC Berkeley cum laude in rhetoric and economics. She has a masters of journalism degree from Columbia University.

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by Lee Townsend, Extension Entomologist
University of Kentucky College of Agriculture

House flies and stable flies are common pests around horse barns, stables, and corrals. Persistent house flies are very annoying and potential carriers of human and animal pathogens. Stable flies give painful bites making activities unpleasant for humans and making horses nervous and difficult to manage.

House flies visit most any moist material from manure and decaying organic matter to garbage to blot up a liquid meal with their sponging mouthparts. They can carry a range of pathogens for such things as intestinal disorders and eye infections on their restless journeys. Females may deposit batches of eggs as they feed on a variety of moist, fermenting organic matter, manure, rotting hay, feed silage, or garbage. The cycle from egg to adult takes from 7 to 14 days, depending on environmental conditions. Mature larvae will crawl to drier sites to pupate and emerge as adults.

The stable fly resembles a house fly but has a distinct piercing mouthpart that projects from the front of its head. Males and females are blood feeders, usually attacking the flanks or below the knee causing horses to stamp or kick themselves. The fly is on the animal for only a few minutes; after feeding it moves to walls, fences, or other surfaces to digest its meal. Stable fly maggots develop in decaying organic matter. A fermenting mixture of straw, spilled feed, or hay, and urine or water is ideal. Horse manure is usually too dry but becomes suitable if moistened. Females lay several batches of 40 to 80 eggs. Development from egg to adult takes 21 to 25 days during the summer.

House flies and stable flies need breeding material, moisture, and warmth to develop. A successful fly control program must rely on timely elimination of breeding sites and moisture control. Insecticides can help to provide some temporary reduction of house fly and stable fly populations but cannot be the basis of effective fly management.

Elimination of breeding site is the key to a successful fly control program. Barns and corrals should be cleaned once a week to break fly life cycles. Removed manure and other fly breeding materials should be spread thinly over an appropriate area or composted, if practical.

Maintain good drainage to eliminate wet manure, spilled feed, and hay or straw. Check for and correct wet areas around animal waterers. Dry manure and accumulated organic matter are not good breeding sites.

Mechanical Control

- Screening is an excellent way to keep flies out of feed and tack rooms and box stalls.
- Fans that direct a downward and outward air flow will keep flies from entering barns.
- Fly traps and sticky paper will capture flies. They may be most useful as a means of documenting fly numbers over time. A significant increase in catch from one week to the

next can be a warning to check on sanitation and to increase fly control measures.

- Several commercial firms offer a fly parasite (predator) release program that can be used to supplement fly control. Aspects of using biological control are covered in Entfact 502, Biological control of flies.

Insecticides as Supplements to Fly Control

Insecticides are used to kill adult flies after a problem has developed. While they can help to reduce fly numbers, they do not address their source – moist breeding materials. There are many alternatives for fly control but they should be viewed as a temporary solution until the root cause of the problem can be corrected. Large numbers of flies mean lots of breeding sites and a situation that cannot be corrected by insecticides alone.

Residual insecticides are applied to walls, ceilings, and rafters of barns and sheds where flies rest. General observations and accumulations of fly specks (waste drops) will help to identify these spots. Be sure to protect water and feed when making applications. In order to minimize control failures due to insecticide resistance, do not apply the same insecticide or insecticide within the same chemical class repeatedly throughout an entire season.

Space sprays, fogs, and mists can provide a quick knockdown of flies, especially in enclosed areas. Systems vary from foggers to timed release aerosols. Usually, these are pyrethrins with very short residues so treatments have to be repeated.

Pyrethrins – many ready-to-use and concentrate formulations

Fly baits can be placed in bait stations. They are most effective when there are few competing food sources in an area. Baits attract and kill house flies but are not effective against blood-feeding stable flies. Animals must not have access to these materials.

Common Name	Brand Name
Imidacloprid	Quick Bayt
Methomyl	Apache, Blue Streak Fly Bait, Fatal Attraction, Golden Malrin, Tailspin
Trichlorfon	Dipterex

Larvicides are insecticides that can be applied to breeding sites where large numbers of maggots are present and the area cannot be cleaned in a timely manner.

Common Name	Brand Name
Stirofos	Rabon

Feed through insecticides are administered specific levels in animal feed and pass out in the feces making the manure toxic to developing maggots. Each animal must get the correct amount every day. While they can reduce fly production from manure, they do not address problems with wet spilled feed and straw.

Common Name	Brand Name
Cyromazine	Serene, Solitude IGR
Diflubenzuron	Equitrol II Feed-Thru Fly Control, SimpliFly with LarvaStop Feed-Thru Fly Control
Stirofos	Equitrol Feed-Thru Fly Control

The instructions for use of the recommended insecticides are not as comprehensive as the pesticide labels and are intended to be used as guidelines only. Before using any pesticide, READ THE LABEL for more specific instructions. Many insecticides are sold under brand names not listed in this publication.

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CAUTION! Pesticide recommendations in this publication are registered for use in Kentucky, USA ONLY! The use of some products may not be legal in your state or country. Please check with your local county agent or regulatory official before using any pesticide mentioned in this publication.

Of course, **ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR SAFE USE OF ANY PESTICIDE!**

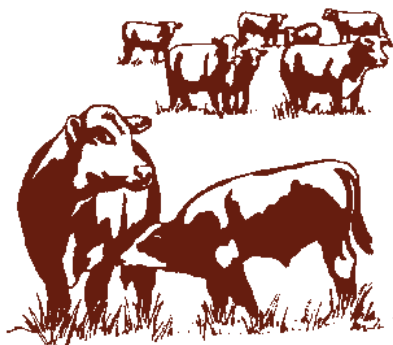
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Beef Cattle Handbook



BCH-3815

Product of Extension Beef Cattle Resource Committee

House Fly and Stable Fly Management in and Near Livestock Facilities

J. B. Campbell, University of Nebraska
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The stable fly and house fly are the major insect pests at confined livestock units. The stable fly has a piercing-type mouthpart which is used to pierce the skin to obtain a blood meal. House flies do not bite because they have a sponging-type mouthpart, with which they feed on semi-liquid material. The life cycles of the two species are similar, consisting of eggs, larvae (maggots), pupae, and adult. During summer months the stable fly completes its life cycle in about 3 weeks. The house fly requires about 2 weeks, or, in southern areas as little as 9 or 10 days. Both species deposit eggs in wet decaying organic matter. This includes spilled livestock feed and manure mixed with soil and moisture. In addition, the house fly will breed in fresh manure. The two species generally overwinter as slowly developing larvae in breeding areas below the frost line. The house fly may breed during the winter in warm buildings if breeding material is present.

Cattle under attack by stable flies will bunch together with each animal attempting to find a position within the bunch which protects their front legs—the favored feeding site of the flies. Considerable energy is expended by foot stomping, tail switching, and throwing the head toward the front legs in an effort to dislodge the flies or prevent feeding.

Stable flies reduce weight gains, milk production, and feed efficiency—both from their feeding and because of the bunching behavior of the cattle, which may induce or increase heat stress. House flies have not been shown to reduce animal weight gain and feed efficiency, but are known to transmit several animal diseases. The disease organisms recovered from house flies range from viruses to nematodes. The most common of these are the bacteria



Stable fly

associated with enteric infections. The house fly mouthparts and feeding habits (filth sources) make it efficient in transmitting bacterial and viral agents. Over one hundred different disease organisms have been recovered from house flies, and the fly has been implicated in the transmission of 65 of these. Transmission may simply involve the mechanical transfer of the disease agent, from the mouthparts or body of the fly, to the animal host. In other cases, the disease agent may multiply in the fly and be transmitted after populations of the disease agent build up to high numbers, or it changes to a different life stage.

One other important economic factor associated with stable flies and house flies is the threat of nuisance

lawsuits. Generally odor, dust, and flies are cited together as constituting a nuisance by the plaintiffs. The lawsuit may seek damages or, perhaps worse, request closing of the livestock facility.

Effective house fly and stable fly control cannot be achieved with insecticides alone. Proper animal manure management and sanitation must be the major element in a good fly control program. Confined livestock facilities should be designed or modified to facilitate ease in cleaning and to minimize accumulations of manure, spilled feed and other sources of organic debris.

Breeding Areas

In feedlots, major fly breeding areas include: 1) fence lines where manure mixed with wet soil accumulates; 2) along feeding aprons where, because of the slope of the aprons, moisture and manure accumulate; 3) at the edges of potholes, in pen corners, and around gates; 4) along pen drainage channels or edges of holding ponds at the water-soil interface, unless it is sloped enough to drain and dry quickly; 5) along the sloping edges of mounds where moisture runoff occurs; 6) around waterers if leakage or spillage occurs; 7) at the edge of and under feed bunks; 8) in and around feed handling facilities if the feed becomes wet; 9) at the edges of stored manure, if the edges are loosely packed and wet; and 10) at the edge of silage and haylage.

In addition, excessive moisture may provide fly breeding areas under round bales, in and around old hay or straw stack butts, and in sick pens and horse stables if hay or straw bedding is used.

Fly Management

Several different pest management strategies can work together to help eliminate fly problems in and around livestock facilities. Sanitation is the most important single part of a fly management program. To be effective, sanitation may need to be supplemented with insecticide sprays and baits, and/or biological control agents such as parasitoids (parasitic wasps).

Reduction of fly breeding areas in feedlots is dependent primarily on manure management and keeping the lots dry. Mounds are a key element in this process. They should be built and maintained to provide a dry area for the cattle and drainage for the excess moisture to move from the pens to the drainage system. During wet periods, the wet edges of the mounds can be scraped out into the lot in a thin layer to facilitate rapid drying.

Maximum stocking rates create tramping action that helps in drying. The lots also can be dragged periodically which helps maintain a dry surface. The area behind the feeding apron should be scraped at two week intervals and either removed or spread out in the lot for rapid drying. Drainage systems should be maintained with enough slope to move the moisture to the holding ponds rapidly which allows for rapid drying.

Haylage and silage piles may have drainage at the edges. The seepage provides an excellent fly breeding site. Covering this seepage area with black plastic should



House fly

create enough heat to kill the developing fly larvae.

If manure is used as fertilizer and spread directly on farm fields, care should be taken to spread the manure thin enough for rapid drying. If the manure is spread at depths of 3-4 inches or more and enough moisture is present, it may allow fly breeding.

Water tanks should be surrounded by a concrete apron and equipped with a drain line, to facilitate cleaning without creating a muddy area in the lot. Float valves on waterers should be protected to prevent animals from causing an overflow. Livestock pens usually have enough organic matter present to create a fly breeding area wherever water accumulates.

Feedlots designed or modified to meet the Environmental Protection Agency's pollution runoff standards can have an additional fly breeding area in the debris basin. The purpose of the debris basin is to intercept the feedlot runoff, allow the solids to settle and channel the liquids into the holding pond. The basin should be sloped enough to prevent water from standing and provide quick drying. Solids should be removed regularly to prevent fly breeding.

If spray mists are used to cool cattle or hogs or to settle dust, care should be taken to prevent puddles from forming. Dragging the surface of the lot may fill in low areas where puddles form.

Each livestock unit is different and there may be fly breeding occurring in only two or three locations. However, since even small amounts of fly breeding material can support large numbers of flies, these areas should be located and removed. Manure management and sanitation can be expensive but should be considered a required management practice in livestock production. The benefits—better animal performance, more efficient use of insecticides, better working conditions for employees, more attractive facility for commercial customers, reduced risk of nuisance lawsuits, and reduced chances of disease outbreaks—usually offset the expense.

Insecticides

Area Spray: Insecticide applications should be considered as a part of a total management strategy. The method

of application most often employed is a mist blower (area spray). Diluted insecticide is dripped into a high velocity air stream which breaks the spray into fine droplets. The insecticide droplets are dispensed by the air stream into space occupied by flies. The droplets kill the flies they contact. Insecticides approved for application by this method have little residual value because they decompose very rapidly (two hours) in the environment. The popularity of this system has more to do with the standpoint of labor and time requirements than with its effectiveness.

Factors that will improve the effectiveness of mist blower applications include: 1) Control of weeds and other vegetation around animal facilities. This practice removes a favorable habitat and forces flies to congregate in fewer areas. A useful variation on this is to control all weeds except for a few narrow strips that are left purposely as fly resting areas that can be sprayed. 2) Avoid spraying when temperatures are below 65°F or above 90°F. Insecticides are not very active at cool temperatures, and evaporation and inversion reduces the effectiveness of mist applications at high temperatures. 3) Spray what is mixed the day it is mixed. Insecticides deteriorate when mixed for more than a few hours. 4) Flies rest in trees used as a windbreak during the hot part of the day. Spraying into the trees may kill more flies than spraying the pens. 5) Rotate classes of insecticides once or twice during the season or at least from one season to the next, to reduce the buildup of resistance in the fly populations. For example, rotate from an organophosphorous product to a pyrethroid, then back to an organophosphorous insecticide.

Although mist blowers are the most popular method of applying area sprays, aircraft, hydraulic sprayers and foggers may also be used to dispense area sprays. Regardless of the equipment, it should be adjusted to deliver fine droplets of insecticide into the fly-infested area. Insecticide labels often give application rates in terms of amount of product per cubic foot of space. We suggest 1-5 gallons finished spray per acre.

Residual Spray: Residual insecticides will kill flies that contact the material for 7-14 days. Direct sunlight (ultraviolet radiation, ULV) decomposes the materials, rainfall will wash it off treated surfaces, and in dry weather dust may form a barrier between the treated surface and the flies that land on it.

Residual insecticides are most effective when applied to shaded fly resting surfaces. House flies will "roost" under eaves or inside buildings on the walls, rafters and ceilings at night. Stable flies generally do not enter buildings unless they are well-lighted. They rest on the shady sides of feed bunks, buildings and windbreaks, or on vegetation. Flies absorb enough insecticide when it is applied to the resting sites to kill them. Application of insecticides to resting areas requires more time and labor than application of area sprays.

Labels on residual insecticides usually give the amount of finished spray to apply to 1,000 sq ft of surface. In general, the insecticides can be applied to the point of run-off, and care should be taken not to conta-

minate feed and water. Some residual insecticides will require the removal of animals from buildings while the spray is being applied. Others will have restrictions on treating the inside of buildings and treating animals under a certain age.

If fly resting areas are not too extensive, residual and area sprays may be rotated. It takes both house fly and stable fly females about six days after emergence to reach the egg depositing stage. In a rotation, a good mist blower application could be followed a week later with a residual application which should be effective for another week. This rotation could be followed throughout the fly season.

Baits: Baits may be used in dry form, or the labels on some liquid insecticides allow for the preparation of wet baits or bait sprays by adding water, sugar, corn syrup or molasses. Baits should be replaced at 2-4 day intervals. Since stable flies feed only on blood, baits are not appropriate for them. Baits will not fully control a house fly population, but they can be used to supplement other control methods. They may be particularly useful around the office, feed storage areas, in the alleyways of confined units and other similar places. Baits can be mixed with water into a slurry and used as a residual treatment in swine, poultry and beef confinement units. Bait stations should be replaced with a new bait at weekly intervals.

Feed additives or boluses: Feed additives are not effective for stable fly control, but may be effective for house flies in arid regions where the only suitable breeding habitat for house flies is fresh manure. The same considerations would hold true for boluses. Under some management conditions, feed additives may be useful for house fly control in confined beef, swine or poultry units.

Animal treatments: Spraying, dusting, pour-ons, spot-ons, dips, ear tags or any other method of applying insecticides directly to animals for control of house flies or stable flies are generally ineffective. The possible exception is the application of insecticides to riding horses or show animals on a daily basis for protection from stable flies.

Larvicides: The application of insecticide to fly breeding areas is not suggested because the pH of the breeding area causes rapid decomposition of the insecticide. Routine use of insecticides on fly larvae also enhances the possibility of insecticide resistance in the fly population. However, if the fly breeding area is too wet or otherwise difficult to clean, larvicides can be used as a temporary solution.

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BCH-3815 House Fly and Stable Fly Management in and Near Livestock Facilities



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Meat and Poultry Processing

The meat and poultry processing industries in the United States together make up a \$75.6 billion per year industry. The U.S. Department of Commerce reported that the value of red meat shipments for 1988 totaled \$46.8 billion. Most red meat processing plants are located in the Midwest; most poultry processing plants are in the Southeast and the Mid-Atlantic. Processing of prepared meats, including canned cooked products, luncheon meats, hot dogs, bacons, stews, and other ready-to-eat meat products, has expanded rapidly in recent years.

Waste and By-Products

Most waste products are recovered somehow by the industry. Blood, feathers, and bone usually are processed into a meal product for animal feed. Similarly, meat scraps unsuitable for processing into food products are sold or given to rendering facilities for processing into animal and pet foods. The ultimate characteristics of solid materials and wastewaters generated by these source areas in a plant and unrecovered for another use differ greatly and are affected by:

1. animal size and type
2. processing level
3. conveyance means
4. processing water use
5. cleanup and housekeeping procedures

Water Usage

Water use for broiler processing typically ranges from 3.5 to 10.0 gal./bird; for turkeys, 11 to 23 gal./bird. Flow rates of 350 gal./animal have been reported for beef slaughtering plants. In one beef slaughtering operation, water use dropped from 458 to 187 gal/head after water conservation measures were adopted. Similar water use numbers appear in the examples in Figure 37.

Figure 37. Typical Water Consumption for Beef,

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Turkey, and Broiler Processing	
Animal type	Water (gallon/animal)
Beef	150-450
Turkey	11-23
Broiler	3.5-10

Water is used for chilling, scalding, can retorting, washing, cleaning, and waste conveying. For example, poultry processing uses approximately 3.5 to 7.0 gallons of water per bird of four-pound average weight. All broiler processing plants are required to have a scalding overflow rate of 0.25 gal./bird and a chiller overflow rate of 0.50 gal./bird. In many instances, this water is used in the plant for the transport of feathers and offal from the processing area. One researcher, studying a broiler processing plant, reported that processing accounted for 76 percent of the water use, with 13 percent used in cleanup and 12 percent used in downtime.

Beef processing water usage, primarily from carcass washing and process cleanup, has been reported in the range of 150 to 450 gallons per animal processed. As a general rule, meat processors use about one gallon of water per pound of processed hamburger meat.

Use and Minimization of Wastes

The amount of wastewater generated by the industries can be decreased largely through changes in cleanup practices. Water use can be minimized by means of commercially available high-pressure, restricted flow hoses, which can be fit with automatic shutoffs to prevent water loss during inactivity. Many materials can be handled mechanically. For example, flour and other dry material can be vacuumed from the floor and augers and conveyors can be used to transport scrap meat and viscera.

Chiller and scalding water is reused in most poultry processing plants for flushing water to remove offal and feathers. Reconditioning of chiller overflow through the use of filtration and ultraviolet irradiation has been recommended. Limits to use include the potential of bacterial contamination by coliforms or by *Escherichia coli*. Recycling is limited by the characteristics of the wastestream and by the potential for contamination of food products.

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Grain Processing for Oils

The extracting, refining, and processing of edible oils produces a variety of waste products. This chapter, which focuses on conventional caustic refinements and on related downstream processes, briefly reviews major processes and facilities, especially as they relate to waste generation and control.

Process Components and Major Wastewater Sources

Figure 38 lists primary processes and associated wastewater loadings from a well-run fat and oil processing facility. Separate totals are presented with and without salad dressing and mayonnaise because these processes often are absent in a facility. Certain oil processing and refining operations have no oil seed processing facilities, but instead bring in crude vegetable oil. To account for this practice, adjustments can be made to the figures in the table. Data presented in Figure 38 are based on these operating parameters:

1. Milling and extracting: 80,000 bushels per day.
2. Caustic refining with single-stage water wash: 60,000 lb/hr, nondegummed soybean oil.
3. Semicontinual deodorizing with scrub cooler, barometric condenser with atmospheric cooling tower.
4. Acidulating of soapstock and washwater with 90 to 95 percent recovery efficiency.
5. Bottling line and/or other extensive liquid-oil packaging.
6. Margarine, mayonnaise, and salad dressing production and packaging.
7. Washing of tank cars for finished oil only (cars carrying crude oil excluded).

Figure 38. Fats and Oils Processes and Wastewater Loads from a Well-run Facility

Process	Flow (gallons/day ^a , avg.)

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Milling and extraction	75,000
Caustic refining	11,000
Further processing	5,000
Deodorizing	5,000
Acidulating	19,000
Tank car washing	5,000
Packaging	10,000
Subtotal	130,000
Margarine	70,000
Salad dressing/mayonnaise	50,000
Total	250,000
^a gallons/day = gallons per day	

Obviously, operations of an atypical size or those omitting certain processes will have different waste loads. This applies especially to operations involved in acidulation or in mayonnaise and salad dressing processing. The effects of process control and its impacts on wastewater loading are outlined in the next section. As noted, these loadings are representative for an operation running reasonably well from a process loss control standpoint. But actual loadings depend on how well plants are run.

A final source of wastewater is contaminated runoff from truck and rail loadout areas and from tank farm drainage. During rainy periods, runoff from these sources can contribute the equivalent of five to 10 gal/min to total daily average flow and, in fact, may affect peak flows to a much greater extent.

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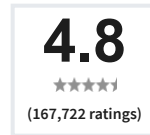
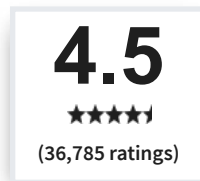
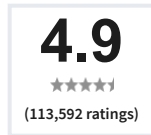
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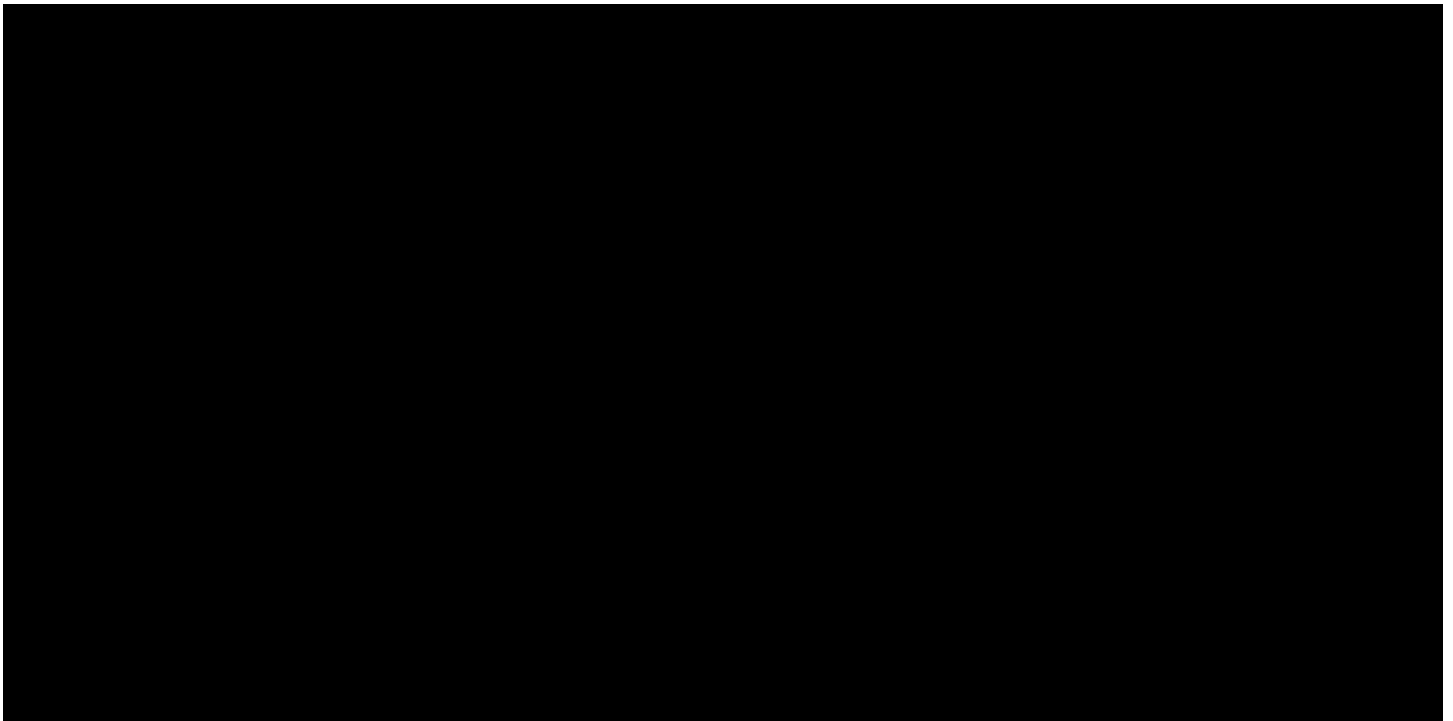
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Ford Invests \$50 Million in Carson City-Based Electric Vehicle Battery Recycling Company

Ford says locally produced materials can drive down battery costs, increase materials supply and cut reliance on imported metals.

Wednesday, September 22nd 2021, 8:12 AM PDT

Updated: Wednesday, September 22nd 2021, 1:27 PM PDT



Ford Motor Co. is investing \$50 million in an upstart electric vehicle battery recycling company as the automaker moves to bolster its U.S. battery supply chain.

The Dearborn, Michigan, automaker will invest in Redwood Materials, a Carson City-based company founded by former Tesla executive JB Straubel.

Ford says in a statement that Redwood can recover 95% of precious metals in EV batteries such as nickel, cobalt, lithium and copper.

All of those metals could be in short supply as the world shifts from to electric vehicles.

Ford says locally produced materials can drive down battery costs, increase materials supply and cut reliance on imported metals.

Ford expects 40% of its global sales to be fully electric by 2030.

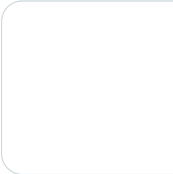
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Redwood Materials
@RedwoodMat



Excited to work with [@Ford](#) who shares our vision of making EVs sustainable & affordable, by localizing the existing complex supply chain, creating pathways for their end-of-life EVs, recycling batteries & increasing battery production, right here in the US



Redwood Materials and Ford Motor Compan...
Redwood's mission is to create a circular supply chain for batteries and help partners ...
redwoodmaterials.com

5:55 AM · Sep 22, 2021

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FORD MEDIA

Ford, Redwood Materials Team Up to Accelerate EV Recycling, U.S. Supply Chain

- Ford Motor Company and Redwood Materials are teaming up to accelerate electric vehicles more sustainable and affordable by creating recycling options for end-of-life production
- Closing the loop ensures valuable materials are recycled, which will drive down costs and reduce reliance on foreign supply
- Creating a U.S. circular supply chain is accessible and affordable for more Americans
- As part of Ford's plan to invest more than \$5 billion in joint business opportunities, Ford has invested in Redwood Materials



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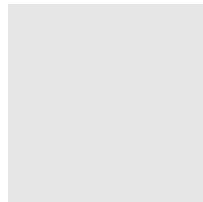
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Frequently asked questions about livestock odor

 Livestock odor facts (wq-f2-04)

What is livestock odor?

Livestock odor is caused when organic matter such as manure decomposes and releases gases containing chemicals such as ammonia and hydrogen sulfide, which smells like rotten eggs.

How overpowering is the smell of hydrogen sulfide?

Hydrogen sulfide is detectable at a very tiny amount (1 part per billion), but the nose desensitizes quickly to the odor. That's a concern, since more than 50 parts per billion of hydrogen sulfide can cause headaches, nausea, vomiting and diarrhea.

What is Minnesota's air pollution standard for hydrogen sulfide?

Minnesota's standard is a 30-minute average of 30 parts per billion twice in five days, or a 30-minute average of 50 parts per billion twice per year.

What's a part per billion?

A part per billion is the equivalent of one silver dollar in a roll of silver dollars stretching from Detroit to Salt Lake City.

Why is livestock odor an issue now?

Two changes have occurred over the past two decades that are aggravating the problem of odor:

1. Livestock operations have more animals, and
2. More people are living near livestock farms.

Why is odor worse at some feedlots?

Livestock odor can be affected by:

- how manure is stored,
- what food is fed to the animals,
- how well the farm is maintained,
- what methods farmers use to reduce odors, and
- what the weather conditions are.

What about when feedlots are close to each other?

In the spring of 1998, the MPCA conducted a study that showed when feedlots are located within a few miles of each other, hydrogen sulfide from each of them may combine and raise the air's hydrogen sulfide concentration downwind.

What is the MPCA doing about livestock odor?

In 1997, the MPCA started to monitor the amount of hydrogen sulfide emissions from feedlots. Agency staff primarily use a hand-held meter than instantly read hydrogen sulfide levels. When a monitor reading is above the state standard, MPCA staff send a letter to the feedlot owner, who can then begin to solve the problem on his or her own.

What if the hydrogen sulfide emissions continue after high readings?

The MPCA continues to monitor feedlots that initially exceed the hydrogen sulfide standard. If the feedlot owner can reduce emissions before the MPCA conducts formal monitoring, the agency won't take action. However, if the hydrogen sulfide emissions aren't reduced, the MPCA will start enforcement actions.

How much monitoring has the MPCA done this year?

As of August 1, 1998, feedlot air monitoring staff have monitored 49 feedlots with hand-held meters. Twelve have exceeded or potentially exceeded the hydrogen sulfide standard.

Who can I call for more information?

Call the MPCA at 651-296-6300 or 800-657-3864

Other resources

-  Request for ambient air quality standard applicability exemption (wq-f3-47)
-  Feedlot Air Quality Summary - Data Collection, Enforcement and Program Development
-  Guide for air quality modeling

Recommended Animal Handling Guidelines and Audit Guide for Cattle, Pigs, and Sheep (2005 Edition, with 2007 and 2010 Updates)

AMI Foundation

Published by
American Meat Institute Foundation

Written by
Temple Grandin, PhD
Associate Professor of Animal Science
Dept. of Animal Science
Colorado State University

Reviewed by
American Meat Institute Animal Welfare Committee

The major 2010 updates have been added. Refer to the [PDF Version at www.animalhandling.org](http://www.animalhandling.org) for updates on minor wording changes.

Executive Summary and Historical Perspective

The Humane Methods of Slaughter Act of 1958 was the first federal law governing the handling of livestock in meat plants. The 1958 law applied only to livestock that were slaughtered for sale to the government. In 1978, the Humane Methods of Slaughter Act was reauthorized and covered all livestock slaughtered in federally inspected meat plants. As a result of the Act, federal veterinarians are in meat packing plants continuously, monitoring compliance with humane slaughter regulations. Additional guidance is found in the Code of Federal Regulations and in specific USDA regulations and notices.

The AMI Foundation has a demonstrated commitment to voluntary animal handling programs that go above and beyond regulatory requirements.

In 1991, the American Meat Institute published Recommended Animal Handling Guidelines for Meat Packers, the first voluntary animal welfare guidelines for meat packing operations. Authored by Temple Grandin, Ph.D., of Colorado State University, the illustrated guidelines offered detailed information about optimal handling of animals, how to troubleshoot animal handling problems in packing plants, how to stun animals effectively and maintain equipment thoroughly and how to move non-ambulatory animals while minimizing stress. The guidelines were implemented widely by members of the meat packing industry.

In 1997, Dr. Grandin developed a new document called Good Management Practices (GMPs) for Animal Handling and Stunning. The new document detailed measurable, objective criteria that could be used to evaluate the well-being of livestock in meat packing plants. Self-audits using the criteria were recommended in an effort to identify and address any problems and sustain continuous improvement. When the GMPs were developed and implemented, they were envisioned as a tool for use voluntarily by meat companies. In the years that followed, major restaurant chains began developing animal welfare committees and conducting audits of their meat suppliers. They utilized the AMIF Good Management Practices as their audit tool. Beginning in 1999, compliance with AMIF's GMPs became part of many customer purchasing specifications.

In 2004, the American Meat Institute Animal Welfare Committee determined that the two animal welfare documents should be merged into a single, updated document. Also included are official AMI Foundation audits for pig, cattle and sheep slaughter. These forms can be recognized by the use of the official AMI Foundation logo.

The forms can be reformatted to suit corporate needs, but any change to the numerical criteria on the forms would make the audit inconsistent with the AMIF audit.

Relative to other areas of scholarly research, only limited basic research has been conducted in the area of animal welfare. The objective criteria in the document were developed based on survey data collected over time in plants throughout the United States. The AMI Animal Welfare Committee, together with Dr. Temple Grandin, have determined what “targets” are reasonably achievable when plants employ good animal handling and stunning practices.

AMIF’s audit guidelines recommend that companies conduct both internal (self-audits) and third party audits using the following criteria:

Effective Stunning – Cattle and sheep should be rendered insensible with one captive bolt shot at least 95 percent of the time. For pigs, electrical wands should be placed in the proper position at least 99 percent of the time. For gas stunned pigs, no more than 4 percent of gondolas may be overloaded.

Hot Wanding (Pigs only) – No more than one percent of pigs should vocalize due to hot wanding. Hot wanding is defined as the application of electrodes that are already energized.

Bleed Rail Insensibility – A sensible animal on the bleed rail is an automatic failure. However, it is possible that over longer time spans, this may occur. Plants are encouraged to aggregate audit scores to monitor system performance. While the target is clearly zero, no more than two cattle per 1,000 and no more than one pig or sheep per 1,000 should be sensible on the bleed rail. Numbers in excess of this indicate a serious system problem. Animals showing any sign of return to sensibility should be immediately re-stunned. All animals must be completely insensible before procedures such as skinning, head removal or dehorning.

Falls (2010 Update) – For all species 1% or fewer animals should fall. Score a fall if the body touches the floor. The OIE also limits falls to 1% or less of the animals. In the 2010 guide, slipping was changed to a secondary criteria due to difficulty in achieving inter-observer consistency and reliability. The goal is 3% or less of the animals slipping.

Vocalizations – Vocalization levels should be monitored in the restrainer. Three percent or fewer of cattle should vocalize and 5 percent or fewer of pigs should vocalize. For pigs, room vocalizations (vocalizations heard throughout a room and not strictly in the restrainer) should be monitored for internal audits only. For pigs, noise should be heard during fewer than 50% of stunning cycles. Due to differences in plant acoustics and the potential for auditor variability, these numbers cannot be compared from plant to plant and should not be measured on third-party audits. Do not measure vocalizations for sheep as they are not meaningful.

Electric Prod Use (2010 Update) – Prods should be used on 25% or less of cattle and pigs. Prods should never be used in CO₂ or group stunning systems. In cases where a single file chute is used for loading the gondola, prods could be used and scored at 25 percent or less mentioned above (2007 update). Since the OIE states that electric prods should not be used on sheep, the 2010 guideline has been changed. Electric prods should not be used on more than 5% of the sheep. For an excellent score, electric prod use on sheep should be 0%. The OIE states that electric prods should be battery operated.

Any willful act of abuse is grounds for failure (2010 Update) – Willful acts of abuse include, but are not limited to: (1) dragging a conscious, non-ambulatory animal, (2) intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, anus, or testicles, (3) deliberate slamming of gates on livestock, (4) malicious driving of ambulatory livestock on top of one another either manually or with direct contact with motorized equipment (This excludes loading a non-ambulatory animal for transport), (5) hitting or beating an animal, or (6) live animals frozen to the floor or sides of the trailer. In sheep operations, lifting an animal by the wool or throwing a sheep also is an act of abuse.

The Committee noted, however, that audits represent a “snapshot in time.” Many variables can impact audit outcomes, especially when live animals are involved.

These can include:

Change in plant personnel . It may take time for a new employee to become as skilled an animal handler as a more experienced employee. However, willful acts of abuse can NEVER be tolerated.

Breed, age and gender of livestock . These factors all can affect temperament.

Previous handling or lack of handling and human contact at the farm level) . Animals that are accustomed to seeing people generally are less skittish at the plant.

Weather . Livestock sometimes react to weather or seasonal changes, like a thunderstorm.

Auditor influence . This includes reaction by staff, auditor expertise and management response to auditor presence.

For these reasons, it is essential that if a plant performs poorly on an audit, those results should be viewed in the context of historical performance to determine if this is an anomaly or a pattern. A plant's proposed corrective/preventive measures also should be considered.

Just as plants strive for continuous improvement based on new practices and information, so, too, the AMI Foundation will strive for continuous improvement and refinement of this document. The general recommendations and the audit criteria are based on real data and observation. However, as additional research is completed and new information is generated, the AMI Foundation will seek to improve and update these documents based upon new information.

Chapter One: Recommended Animal Handling Guidelines

Optimal livestock handling is extremely important to meat packers for obvious ethical reasons. Once livestock — cattle, pigs and sheep — arrive at packing plants, proper handling procedures are not only important for the animal's well-being, they can also mean the difference between profit and loss. Research clearly demonstrates that many meat quality benefits can be obtained with careful, quiet animal handling. In addition, the Humane Slaughter Act of 1978, the regulations that evolved from it, as well as more than two decades of directives and notices, dictates strict animal handling and slaughtering standards for packing plants. This booklet provides practical information that can be used to develop animal handling programs and to train employees in the principles of good animal handling practices.

Management Commitment

A key factor in establishing and maintaining optimal animal handling and stunning in plants is a clearly communicated management commitment to animal handling. Top management must play an active role. This can include:

Development of an animal welfare mission statement that is widely circulated and/or posted visibly in various places in a plant.

Ongoing monitoring and measurement of animal handling and stunning practices and outcomes (See Chapter 2).

Regular internal training and providing opportunities to attend outside training programs.

Recognition and rewards for jobs well done.

This manual provides employees and managers with information that will help them improve both handling and stunning. Properly handled animals are not only an important ethical goal, they also keep the meat industry running safely, efficiently and profitably.

Section 1: Trucking Practices

For the 2010 AMI transport guide, go to www.animalhandling.org (PDF).

Managing the transportation and holding of livestock, including careful temperature management, can result in enhanced livestock welfare and improved meat quality.

The following items should be considered when transporting livestock.

Maintenance — Trailers should be kept in good repair, should be kept clean (which is especially helpful in preventing pig skin blemishes) and should have non-slip floors.

Truck Driving Practices — Careful truck driving helps prevent bruises, shrink and injuries. Sudden stops and acceleration that is too rapid increases injuries and stress. Selection of routes that are the most direct, but which minimize time on unpaved roads and avoidance of potholes will also provide benefits.

Design — It is essential that semi-trailers have sufficient height between decks to prevent back injuries. To comply with environmental regulations, truck floors should be leak proof to prevent urine and manure from dripping onto the highway.

Loading — Research shows that overloading livestock trucks can increase bruising. Overloading pig trucks can increase death losses and pale, soft exudative tissue (PSE).

Temperature Management

Temperature extremes can be harmful to livestock, but careful planning and temperature mitigation strategies can protect livestock.



Heat Stress Chart – The chart provides a guide for plant managers and truckers to help reduce heat stress on livestock. Hazard to the animal increases when both temperature and humidity increase. When conditions are in the alert zone, truckers need to be careful to keep hogs cool. When conditions get into the danger and emergency zone, try to schedule as many hog shipments as possible in the early morning or at night. (From Livestock Conservation Institute Livestock Trucking Guide – now National Institute of Animal Agriculture).

Cold Temperature Management for Pigs

Freezing temperatures and wind chills can be dangerous as well as, particularly for pigs. The combination of cold ambient temperatures and wind speed can create significant wind chill. For example, if a truck is moving at 40 miles per hour (64 km per hour) in 40°F. (3.7°C.) weather, pigs are exposed to a wind chill that makes it feel to the pigs like it is 10°F. or -12.2°C. Rain can exacerbate these extremes. Wind protection should be provided when the air temperature drops below 32°F. or zero°C.

The following chart offers guidance on Truck set-up procedures during temperature extremes.

Truck Set-Up Procedures During Temperature Extremes

Air Temp (F)	Bedding	Side Slats
Less than 10	Heavy	90% closed 10% open *
10 – 20	Medium	75% closed 25% open *
20 – 40	Medium	50% closed 50% open
40 – 50	Light	25% closed 75% open
More than 50	Light**	0% closed 100% open

*Minimum openings are needed for ventilation even in the coldest weather

**Consider using sand or wetting bedding if it is not too humid and trucks are moving

Source: National Pork Board, Trucker Quality Assurance Handbook

The chart on offers rough guidelines for the space that should be provided per running foot of truck floor for various pig weights when temperatures are below 75°F. When the Livestock Weather Safety Index is in the “Alert” condition, load 10 to 20% fewer pigs. Pigs that will travel more than 12 hours may need more space. Non-ambulatory pigs and dead pigs increase after 12 hours.

Recommended Transport Space Requirements

Average weight (lbs)	Number of Hogs Per Running Foot Of Truck Floor, Normal Weather Truck or Trailer Width (inches)		Square Feet Per Head
	96 (243.8 cm)	102 (259 cm)	
50 (22.7 kg)	5.23	5.56	1.53 (0.142 sq.m)
100 (45.4 kg)	3.44	3.66	2.32 (0.215 sq.m)
150 (68 kg)	2.71	2.88	2.95 (0.274 sq.m)
200 (90.7 kg)	2.30	2.44	3.48 (0.323 sq.m)
250 (113 kg)	1.88	1.99	4.26 (0.395 sq.m)
300 (136 kg)	1.67	1.77	4.79 (0.445 sq.m)
350 (159 kg)	1.45	1.55	5.48 (0.509 sq.m)
400 (181.4 kg)	1.25	1.33	6.39 (0.593 sq.m)

Source: National Pork Board, Trucker Quality Assurance Handbook

Cold Temperature Management for Cattle, Veal and Sheep

While cattle and sheep are less sensitive than pigs to cold weather, it is still important to manage temperatures to protect animals and ensure meat quality.

Keeping livestock dry when possible is essential to protecting them from wind chill. Veal calves also are particularly temperature sensitive and require special care during transport. Take care in cooler temperatures (below 60°F. / 16°C.) to provide straw bedding and plug some air holes so in trucks so the calves do not become too cold. Also, it is critical to keep calves dry. Wetting a calf is the equivalent of lowering the outside temperature by 40-50°F. (4.4 – 10°C.).

The charts below offers rough guidelines for the space that should be provided. These charts offer two approaches to calculating space: based upon square foot needed for various weights or per running foot of truck floor (based on 92-inch truck width) for various cattle, calf and sheep weights.

Recommended Truck Loading Densities
(Source: National Institute for Animal Agriculture)

Feedlot Fed Steers or Cows, Avg. Wt.	Horned or Tipped or more than 10% Horned and Tipped	No Horns (polled)
800 lbs. (360 kg)	10.90 sq. ft. (1.01 sq m)	10.40 sq. ft. (0.97 sq m)
1000 lbs. (454 kg)	12.80 sq. ft. (1.20 sq m)	12.00 sq. ft. (1.11 sq m)
1200 lbs. (545 kg)	15.30 sq. ft. (1.42 sq m)	14.50 sq. ft. (1.35 sq m)
1400 lbs. (635 kg)	19.00 sq. ft. (1.76 sq m)	18.00 sq. ft. (1.67 sq m)
Slaughter Weight	Shorn Lambs and Sheep	Full Fleece
60 lbs. (27 kg)	2.13 sq. ft. (0.20 sq m)	2.24 sq. ft. (0.21 sq m)
80 lbs.(36 kg)	2.50 sq. ft. (0.23 sq m)	2.60 sq. ft. (0.24 sq m)
100 lbs. (45 kg)	2.80 sq. ft. (0.26 sq m)	2.95 sq. ft. (0.27 sq m)
120 lbs. (54 kg)	3.20 sq. ft. (0.30 sq m)	3.36 sq. ft. (0.31 sq m)

Truck Space Requirements for Cattle
(Cows, range animals or feedlot animals with horns or tipped horns; for feedlot steers and heifers without horns, increase by 5 percent)

Ave. Weight	Number Cattle per running foot of truck floor (92 in. internal truck width or 233.7 cm.)*
600 lbs. / 272 kg	.9
800 lbs. / 363 kg	.7
1,000 / 453 kg	.6
1,200 / 544 kg	.5
1,400 / 635 kg	.4

Examples (1,000 lb. cattle):

44 foot single deck trailer – $44 \times 0.6 = 26$ head horned, 27 head polled.

44 ft. possum belly (four compartments, 10 ft. front compartment; two middle double decks, 25 ft. each; 9 ft. rear compartment, total of 69 ft. of lineal floor space) - $69 \times .06 = 41$ head of horned cattle and 43 head of polled cattle.

Measure the total lineal footage of floor space in YOUR truck. *In metric, this is the number of animals in each 31 cm. long segment of truck length.

Truck Space Requirements for Calves
(Applies to all animals in the 200 to 450 lb. / 90-203 kg. weight range)

Ave. Weight	Number of calves per running foot of truck floor (92 inch or 233.7 cm. internal truck width) *
200 lbs. / 90 kg.	2.0
250 lbs. / 113 kg	1.8
300 lbs. / 136 kg	1.6
350 lbs. / 159 kg	1.4
400 lbs. / 181 kg	1.2
450 lbs. / 204 kg	1.1

Examples (450 lb. calves)

44 ft. single deck trailer - $44 \times 1.1 = 48$ head 44 ft. double deck trailer - $88 \div 1.1 = 97$ head.

***In metric, this is the number of animals in each 31 cm. long segment of truck length.**

Truck Space Requirements for Sheep
(Use for slaughter sheep, load 5 percent fewer if sheep have heavy or wet fleeces.)

Ave. Weight	Number Sheep per running foot of truck floor (92-in. or 233.7 cm. internal truck width) *
60 lbs. / 27 kg	3.6
80 lbs./ 36 kg	3.0
100 lbs./ 45 kg	2.7
120 lbs. / 54 kg	2.4

Example (120 lb. sheep)

44 ft. triple deck trailer - $44 \times 3 \times 2.4 = 317$ shorn sheep, 302 wooly sheep.

***In metric, this is the number of animals in each 31 cm. long segment of truck length.**

Hot Weather Management for Pigs

According to federal regulation, all livestock must have access to clean drinking water in lairage. Water also can help prevent heat stress because it replaces fluids. Hot weather and humidity are deadly to pigs because they do not have functioning sweat glands. Therefore, special precautionary measures must be taken in hot weather conditions.

Use the following procedures to keep animals cool and eliminate unnecessary transport losses during extreme weather conditions.

1. Adjust your load conditions during temperature extremes.
2. If possible, schedule transportation early in the morning or at night when the temperature or relative humidity is cooler.
3. Never bed livestock with straw during hot weather, i.e. when the temperature is over 60°F (15°C), use wet sand or small amounts of wet shavings to keep pigs cool. Deep bedding in the summer may increase death losses.

4. If the temperature is 80°F (27°C) or higher, sprinkle pigs with water prior to loading at buying stations or on the farm (use a coarse heavy spray but not mist).
5. Remove grain slats from farm trucks.
6. Open nose vents.
7. Unplug ventilation holes and remove panels.
8. Load and unload promptly to avoid heat buildup.
9. Pigs are very sensitive to heat stress. Problems with heat stress may start to occur at 60°F. (16°C.). At 90°F. (32°C.) death losses almost double compared to 60°F. (16°C.).

Stockyards at packing plants should have sufficient capacity so that animals can be promptly unloaded from trucks. Heat builds up rapidly in a stationary vehicle. If trucks can't be unloaded, they may need to keep driving until they can.

In the stockyard pens, when the temperature is greater than 70°F (21° C.), facilities should be available and procedures for sprinkling pigs with water should be undertaken. For maximum cooling effect, the sprinklers should have a spray coarse enough to penetrate the hair and wet the skin. Sprinklers that create a fine mist can increase humidity without penetrating the hair and should not be used.

If it is not possible to follow these recommendations and protect the animals during hot conditions, make every effort to postpone the shipment until weather moderates.

When postponing is impossible, trucks should be kept moving and drivers should not be allowed to stop with a loaded trailer. When the truckers reach the plant, livestock must be unloaded promptly. Heat and humidity become extremely critical at 80°F. (27° C.) and 80% humidity.

Hot Weather Management for Cattle, Calves, Sheep and Goats

During hot weather, cattle, calves, sheep and goats should be hauled in early morning or at night whenever possible.

It is important to keep trucks moving and avoid any unnecessary stops. In addition, livestock should be unloaded promptly upon arrival at a plant and water should be provided.

Developing an Emergency Livestock Management Plan

It is essential that plants have an emergency livestock management plan in place. Each plant should assess potential vulnerabilities based on geographic location, climate and other issues that would require swift action to assure animal welfare. The plan should include:

- How food and water will be provided during an emergency like a major snowstorm.
- How electricity can be provided through backup generators should power be lost.
- What housing will be provided to livestock should housing become uninhabitable due to fire or weather conditions such as flood or snowstorm?
- How animals will be evacuated in an emergency like a fire or flood.

The plan should be kept in a visible location and should be reviewed at least annually.

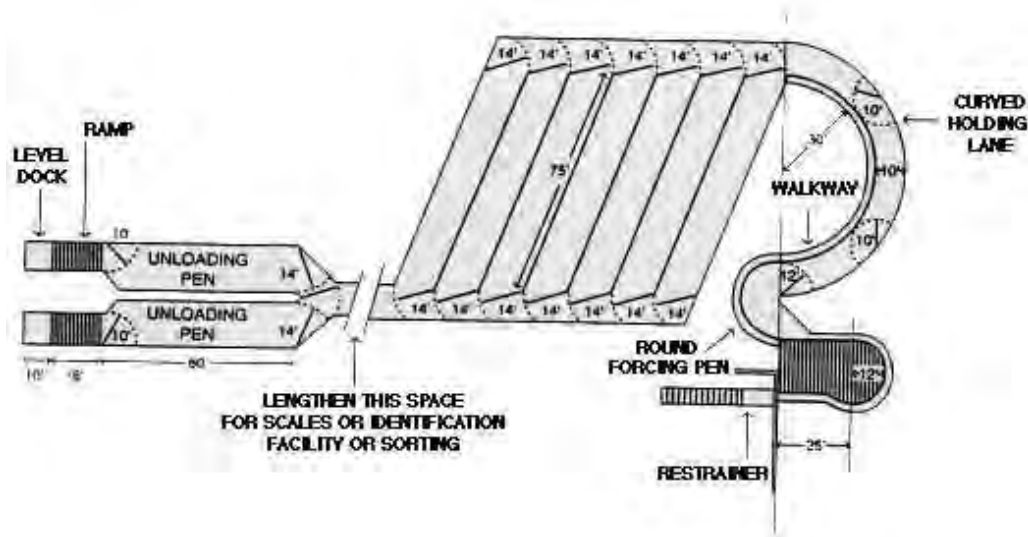
The plant also should develop a contingency plan for truckers that may, for example, state that trucks should keep driving under certain conditions until unloading can occur or, if they park at a plant, that fans or water be used to keep the internal truck temperature at an optimal level.

Section 2: Pen Space and Facility Layout

To improve meat quality, pigs should be rested two hours prior to stunning. When possible, animals should be kept in their transport groups. In large plants, pens should be designed to hold one or two truckloads. A few smaller

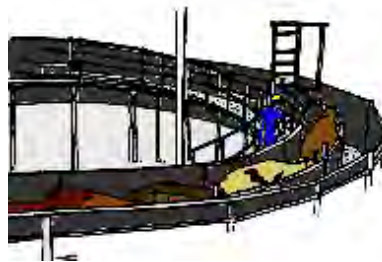
pens will also be required for small lots. Pen space allocations may vary depending upon weather conditions, animal sizes and varying holding times. As a rough guideline, 20 sq. feet (1.87 sq. m) should be allotted for each 1,200-pound (545 kg) steer or cow and six sq. feet (.55 sq. m) per pig. Sows will require 11-12 sq. feet (1.03 – 1.12 sq. m) and boars require 40 sq. feet (3.74 sq. m). (Source: Swine Care Handbook, National Pork Board, 2003). These stocking rates will provide adequate room for “working space” when animals are moved out of the pen. If the animals are stocked in the pen more tightly, it will be more difficult for the handler to empty the pen. The recommended stocking rates provide adequate space for all animals to lie down.

Recommended Handling Facility Layout – This diagram illustrates a modern cattle stockyard and chute system. Animal movement is one-way and there is no cross traffic. Each long narrow pen holds one truckload. The animals enter through one end and leave through the other. The round crowd pen and curved chute facilitate movement of cattle to the stunner.



Facility Layout – Modern cattle facility with many good features. The unloading ramps have a 10-foot (3 meter) level dock for the animals to walk on before they go down the ramps. Each unloading pen can hold a full truck load. Unloading pens are recommended for both pig and cattle facilities to facilitate prompt unloading. Long, narrow diagonal pens eliminate sharp corners and provide one-way traffic flow.

The round crowd pen and curved single file chute take advantage of the natural tendency of cattle to circle. A curved chute is more efficient for cattle because it takes advantage of their natural circling behavior. It also prevents them from seeing the other end while they are standing in the crowd pen. A curved chute should be laid out correctly. Too sharp a bend at the junction between the single file chute and the crowd pen will create the appearance of a dead end. In fact, all species of livestock will balk if a chute looks like a dead end.



A well-designed, curved chute with solid sides for cattle.

As a guideline, the recommended radii (length of crowd gate) are: Cattle, 12 feet; (3.5 m) pigs, 8 feet (2.5 m) and sheep, 8 feet (2.5 m). The basic layout principles are similar for all species, but there is one important difference. Cattle and sheep crowd pens should have a funnel entrance and pig crowd pens must have an abrupt entrance. Pigs will jam in a funnel. A crowd pen should never be installed on a ramp because animals will pile up in the crowd

pen. If ramps have to be used, the sloped portion should be in the single file chutes. In pig facilities, level stockyards and chute systems with no ramp are most effective.

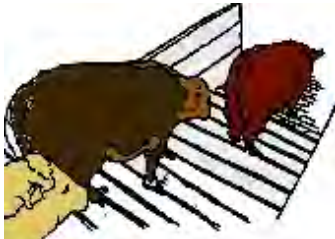
Unloading Animals Properly

For all species, a plant should have sufficient unloading ramp capacity so trucks can be unloaded promptly. Unloading ramps should have a level dock before the ramps go down so that animals have a level surface to walk on when they exit the truck. A good target for the slope of the ramp is no more than 20° (It may go up to 25° for pigs if the ramp is adjustable). With concrete ramps, stair steps are recommended because they provide better traction than cleats or grooves when ramps become dirty.



Round crowd pen with correct number of cattle

Truck drivers should seldom need to use an electric prod, also termed a hot shot, to unload a truck. Attempting to rush livestock during unloading can be a major cause of bruises, particularly loin bruises. Management should closely supervise truck unloading. For cattle, the recommended stair step dimensions are 3 ½ inch (10 cm) rise and a 12-inch (30 cm) long tread. If space permits, an 18-inch (45 cm) long tread will create a more gradual ramp. For market pigs, a 2 ½ inch (6.5 cm) rise and a 10-inch (26 cm) tread works well. On adjustable ramps, cleats with 8 inches (20 cm) of space between them are recommended. All flooring and ramp surfaces should be non-slip to avoid injury.



Well-designed unloading ramp

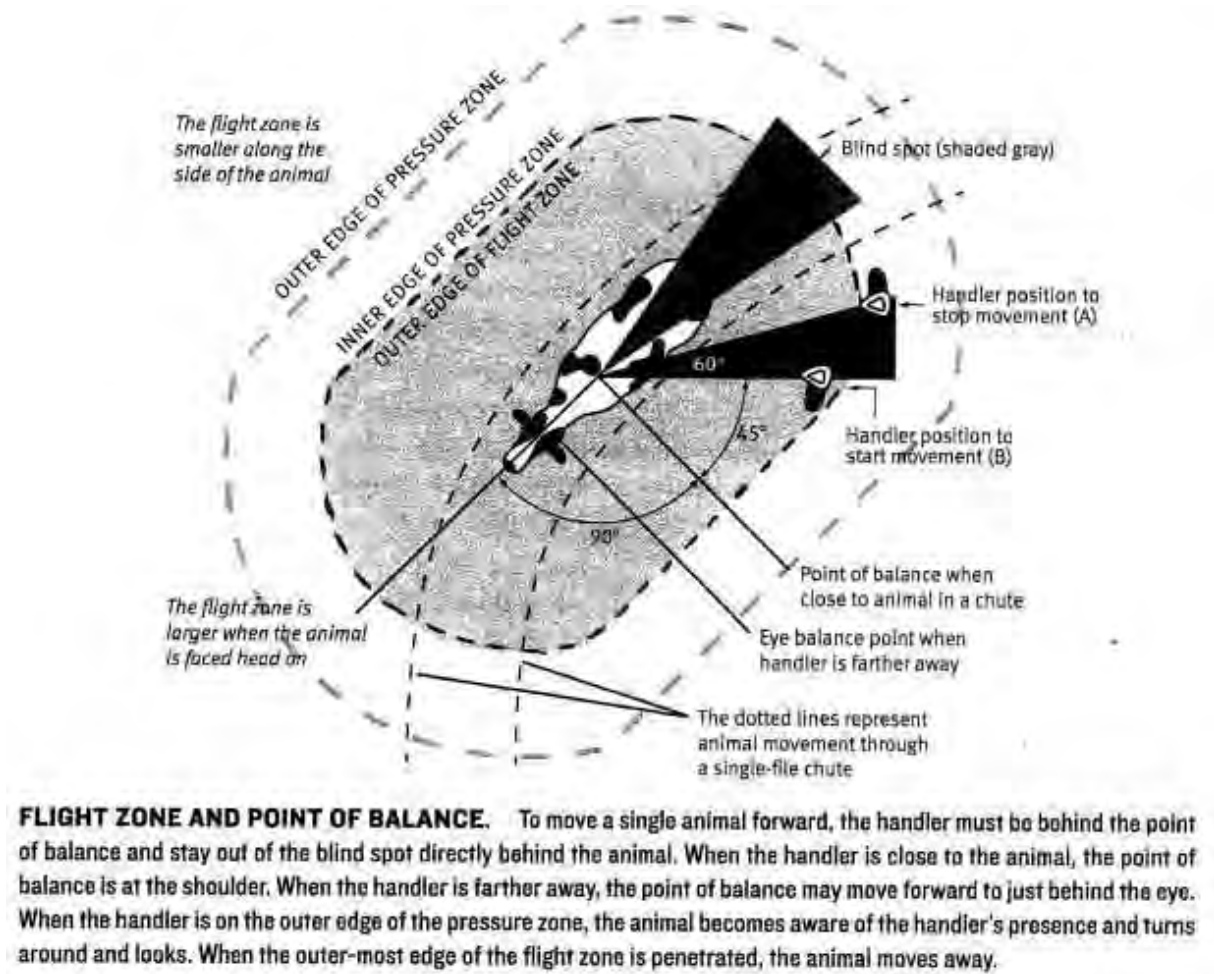
Section 3: Recommended Livestock Handling Principles

The principles of good livestock handling are similar for the different species. All livestock are herd animals and will become agitated when separated from the others. If a lone animal becomes agitated, place it with other animals where it is likely to become calmer. Never get in the crowd pen or other confined space with one or two agitated, excited livestock.

Understanding Flight Zone and Point of Balance

Handlers who understand the concepts of flight zone and point of balance will be able to move animals more easily. The flight zone is the animal's personal space and the size of the flight zone is determined by the wildness or tameness of the animal. Completely tame animals have no flight zone and people can touch them. Other animals will begin to move away when the handler penetrates the edge of the flight zone. If all the animals are facing the handler, the handler is outside the flight zone.

To keep animals calm and move them easily, the handler should work on the edge of the flight zone. The handler penetrates the flight zone to make the animals move and he backs up if he wants them to stop moving. The best positions are shown on the diagram. The handler should avoid the blind spot behind the animal's rear. Deep penetration of the flight zone should be avoided. Animals become upset when a person is inside their personal space and they are unable to move away. If cattle turn back and run past the handler while they are being driven down a drive alley in the stockyard, overly deep penetration of the flight zone is a likely cause. If animals start to turn back away from the handler, the handler should back up and increase distance between him and the animals. Backing up must be done at the first indication of a turn back.



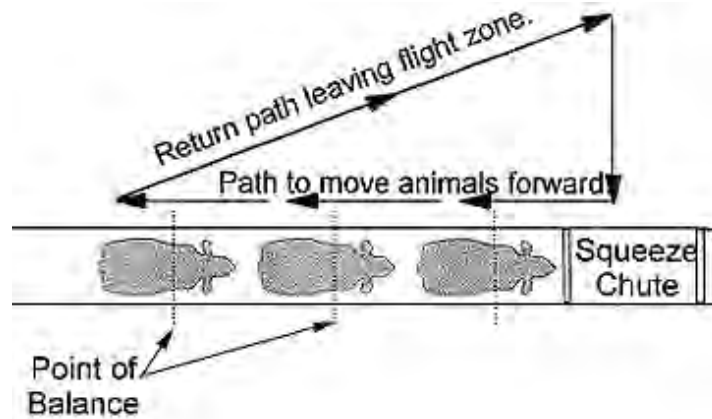
Flight Zone Diagram – This diagram shows the correct positions for the handler to move livestock. To make an animal go forward, he should work on the edge of the flight zone in positions A and B. The handler should stand behind the point of balance to make an animal go forward and in front of the point of balance at the shoulder to make an animal back up.

If a group of animals balk at a smell or a shadow up ahead, be patient and wait for the leader to cross the shadow. The rest of the animals will follow. If cattle rear up in the single file chute, back away from them. Do not touch them or hit them. They are rearing in an attempt to increase the distance between themselves and the handler. They will usually settle down if left alone.

Point of Balance

The point of balance is at the animal's shoulder. All species of livestock will move forward if the handler stands behind the point of balance. They will back up if the handler stands in front of the point of balance. Many handlers make the mistake of standing in front of the point of balance while attempting to make an animal move forward in a chute. Groups of cattle or pigs in a chute will often move forward without prodding when the handler walks past the point of balance in the opposite direction of each animal in the chute. If the animals are moving through the

chute by themselves, leave them alone. It is not necessary and not recommended to prod every animal; often they can be moved by lightly tapping.



Cattle will move forward when the handler passes the point of balance at the shoulder of each animal. The handler walks in the opposite direction along side the single file race.

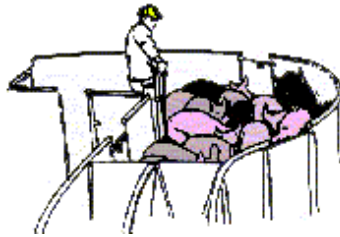
Moving Animals

Livestock will follow the leader and handlers need to take advantage of this natural behavior to move animals easily. Animals will move more easily into the single file chute if it is allowed to become partially empty (though livestock must be able to see the animal ahead) before attempting to fill it. A partially empty chute provides room to take advantage of following behavior. Handlers are often reluctant to do this because they are afraid gaps will form in the line and slow the process. But once a handler learns to use this method, he will find that keeping up with the line will be easier. As animals enter the crowd pen, they will head right up the chute. Calm animals are easier to move than excited animals. Pigs hauled for a short, 15-minute trip may be harder to unload because they have not had sufficient time to calm down after being loaded on the farm. It takes 20 to 30 minutes for excited pigs or cattle to calm down.



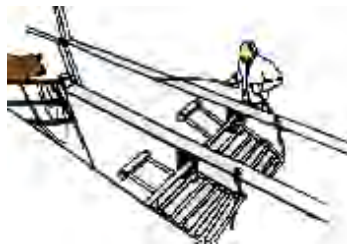
Cattle move into single file, following the leader

One of the most common mistakes is overloading the crowd pen that leads to the single file chute. The crowd pen and the staging alley between the crowd pen and the yards should be filled half full so that animals have room to turn. Handlers must also be careful not to push the crowd gate up too tightly on the animals. It often works best to leave the crowd gate on the first notch and to let the animals flow into the single file chute. This will work after all the distractions have been removed from a facility. The crowd pen should become the “passing through” pen. The crowd gate may be used to follow the animals and should never be used to forcibly push them. The handler should concentrate on moving the leaders into the chute instead of pushing animals at the rear of the group. One-way or sliding gates at the entrance to the single file chute must be open when livestock are brought into the crowd pen. Cattle will balk at a closed gate.



Pig crowd pen with an abrupt entrance to prevent jamming.

One-way flapper gates can be equipped with a rope to open them by remote control from the crowd pen. When the crowd pen is operated correctly, electric prods can usually be eliminated and non-electric driving aids such as flags, paddles and sticks with streamers can be used. Animals can easily be turned with these aids. To turn an animal, block the vision on one side of its head with the aid. If the leader balks at the chute entrance, a single touch with the prod may be all that is required. Once the leader enters, the rest of the animals will follow.



Holding a one-way gate open to facilitate cattle entry into the chute

Some highly excitable pigs are difficult to drive at the packing plant. These animals squeal, bunch and pile up and it can be difficult to make these pigs separate and walk up the chute. Highly excitable pigs can have severe pale, soft, exudative tissue or PSE due to agitation during handling, even though these pigs are negative on the genetic test for the halothane gene.

Excitability problems can be reduced and pigs will be easier to drive if people walk through the finishing pens at least once a week. The person should walk quietly in a different random direction each time to train the pigs to get up quietly and flow around them. Playing a radio in the finishing barn also gets the animals accustomed to different kinds of sounds.

Preventing Injuries and Bruises

Non-slip flooring is essential to prevent falls and crippling injuries. Humane, efficient handling is very difficult on slick floors because animals can become agitated and excited when they lose their footing. All areas where livestock walk should have a non-slip surface. Existing floors can be roughened with a concrete grooving machine. Grooves should be ¼-inch (.64 cm) deep, ¼ inch (.64 cm) wide and spaced ¼ inch (.64 cm) apart. For pigs, steel bars may be used. Concrete flooring also can be used on weight scales to prevent slipping.

For cattle, on scales, crowd pens and other high traffic areas, a grid of one-inch steel bars will provide secure footing. Construct a 12-inch (30 cm) by 12-inch (30 cm) grid and weld each intersection. Use heavy rod to prevent the grid from bending. Non-slip flooring is particularly important in stunning boxes and restrainer entrances.



A good sample of non-slip flooring

New concrete floors for cattle should have an 8-inch (20 cm) diamond or square pattern with deep 1-inch (2.5 cm) grooves. For pigs and sheep, stamp the pattern of raised expanded metal into the wet concrete. A rough broom finish will become worn smooth. It is also essential to use the right concrete mix for maximum resistance to wear.

Smooth Edges and Surfaces — Gates, fences and chutes should have smooth surfaces to prevent bruises. Sharp edges with a small diameter, such as angle irons, exposed pipe ends and channels, will cause bruises. Round pipe posts with a diameter larger than 3 inches (8 cm) are less likely to bruise. Vertical slide gates in chutes should be counter-weighted to prevent back bruises. The bottom of these gates should be padded with cut tires or conveyor belting. The gate track should be recessed into the chute wall to eliminate a sharp edge that will bruise.

In pork plants, the bottom 18 inch (46 cm) to 24 inch (61 cm) of a vertical slide gate (guillotine) can be cut off and replaced with a curtain made from conveyor belting. The pigs will not attempt to go through the curtain. This change will prevent back injuries if the gate is closed on a pig.



This bad bruise point could cause damage to both hide and meat

Pressing up against a smooth flat surface such as a concrete chute fence will not cause bruises. However, a protruding bolt or piece of metal will damage hides and bruise the meat. Bruise points can be detected by tufts of hair or a shiny surface. Contrary to popular belief, livestock can be bruised moments before slaughter until they are bled. The entrance to the restrainer should be inspected often for broken parts with sharp edges.

Surveys show that groups of horned cattle will have twice as many bruises as polled (hornless) cattle. A few horned animals can do a lot of damage. Cutting off the horn tips will not reduce bruising because the animal still has most of its horn length.

Improving Animal Movement

Calm animals are easier to handle and move than excited animals. Animals can become agitated very quickly, but it can require 20 to 30 minutes for them to become calm again. Calm animals will move naturally through well-designed systems with a minimum of driving and prodding. To keep animals calm, take the following steps:

Handlers should be quiet and calm. Yelling and arm-waving excite and agitate animals.

When handling sheep, never, ever grab or lift the animal by the wool.

Use lighting to your advantage. Animals tend to move from a darker area to a more brightly lit area and may refuse to enter a dark place. Lamps can be used to attract animals into chutes. The light should illuminate the chute up ahead. It should never glare directly into the eyes of approaching animals. Another approach is illuminating the entire chute area. This approach eliminates patches of light and dark which may confuse animals. Animals may be difficult to drive out of the crowd pen if the pen is brightly illuminated by sunlight and the chute is inside a darker building. Another common lighting problem is that a handling system may work well when lamps are new, but the animals will balk more and more as the lamps dim with age. Experiment with portable lights to find the most efficient and consistent lighting.

Eliminate visual distractions. Get down in the chutes to see them from the animal's perspective. Livestock balk at shadows, puddles of water or any object that stands in their way, from a coffee cup to a piece of paper. A drain or a metal plate running across an alley can cause animals to stop and should be located outside the areas where animals walk. Flapping objects, such as a coat hung over a fence or a hanging chain, will also make livestock balk. Install shields or strips of discarded conveyor belting to prevent animals from seeing movement up ahead as they approach the restrainer or stunning box.

Redirect air flow. Air hissing and ventilation drafts blowing in the faces of approaching animals can seriously impede movement. Ventilation systems may need to be adjusted.

Use solid sides in chutes and crowd pens leading up to chutes. Solid sides in these areas help prevent animals from becoming agitated when they see activity outside the fence – such as people. Cattle tend to be calmer in a chute with solid sides. The crowd gate on the crowd pen should also be solid to prevent animals from attempting to turn back towards the stockyard pens they just left.

Reduce noise. Animals are very sensitive to noise. Reducing high-pitched motor and hydraulic system noise along with banging or reverberation can improve animal movement. Clanging and banging metal should be reduced and hissing air should be muffled.

Move animals in small groups – When cattle and pigs are being handled, the crowd pen and the staging areas which lead up to the crowd pen should never be filled more than three-quarters full. Do not push crowd gates up tight against the animals as cattle and pigs need room to turn. For sheep, large groups may be moved and the crowd pen can be filled all the way up.

Spray water from above. When wetting pigs in the chute, be sure not to spray the animal's face with water because they will back up.

Section 4: Livestock Driving Tools

Electric prods should be used sparingly to move livestock and should not be a person's primary driving tool. In most plants, the only place an electric prod is needed is at the entrance to the stun box or restrainer. Cattle and pigs can often be moved along a chute when the handler walks by them in the opposite direction of desired movement,

taking advantage of the point of balance at the animal's shoulder. Electric prods should only be picked up and used on a stubborn animal and then put back down. Certainly, the need for electric prod use can vary depending on breeds of animals, production practices on the farm, gender, the group of animals, the day and the handling system used.

Many well-managed plants have totally eliminated electric prods in the holding pens and the crowd pen that leads to the single file chute. In beef plants with well-trained handlers, survey data showed that up to 95 percent of the animals could be moved through the entire plant without the use of an electric prod. Plants should strive to use the electric prod on 25 percent or fewer cattle, pigs and sheep. Plants that use prods on five percent or fewer cattle and pigs are achieving excellent scores. A well-designed plant that has eliminated distractions and other handling impediments detailed above can greatly reduce electric prods, though they may not be entirely eliminated.



Moving pigs with a plastic paddle and a large flag

Substitutions for electric prods are possible in many instances. They include plastic paddles, sticks with flags on the end or large flags for pigs. Plastic streamers or strips cut from garbage bags attached to a stick also can be used. Cattle can be easily turned and moved in the crowd pen by shaking the streamers near their heads. For moving pigs, a large flag on a short handle or rattle paddle work well. Rattles work well for moving sheep.



Moving cattle with a flag

Flags can be made from lightweight plasticized tarp material and can vary in size from 20 inches x 20 inches to 30 inches x 30 inches (50 cm x 50 cm to 76 cm x 76 cm). Lightweight sorting boards can be used to move livestock,

although they quickly become heavy for handlers to use. In addition, a new vibrating prod that does not use electrical stimulus is showing promise in moving animals with a minimum of stress.

Using Proper Electric Prod Voltage

USDA regulations require that electric prods have a voltage of 50 volts or less. If most livestock bellow or squeal in direct response to being touched with the electric prod, the power may need to be reduced. Prods which have sufficient power to knock an animal down or paralyze it must not be used. Electric prods must never be applied to sensitive parts of the animal such as the eyes, ears, mouth, nose or anus. In practical terms, the prod should not be used on the animal's head.

When used, electric prods must never be wired directly to house current. A transformer must be used; a doorbell transformer works well for pigs. Fifty volts is the maximum voltage for prods hooked to an overhead wire. Progressive managers have removed wired-in prods and use only battery-operated prods.

Electric prods should have the voltage low enough that it does not consistently produce a "bark" or "squeal" in pigs or a "moo" or a "bellow" in cattle, but still enough of a voltage to be a persuasion. The voltage required to move an animal will vary depending upon the wetness of the animal and the floor.

International standards from the World Organization for Animal Health (OIE) state that electric prods should be limited to battery operated prods. They should not be used on horses, on calves less than two weeks of age, or on piglets (OIE 2008).

Electric prods are ineffective on sheep, as the wool insulates the shock of a properly applied prod. This lack of response could lead handlers to prod animals in sensitive areas such as the anus or vulva, which is considered a willful act of abuse. Additionally, the application of the electric prod can cause damage to the pelt. Current international animal welfare guidelines recommend that electric prods not be used in sheep. As a result, electric prods should be a tool of last resort and used only when absolutely necessary.

The prod voltage for pigs should be lower than for cattle, which can help reduce both PSE and blood spots in the meat. The voltage required to move an animal will vary depending on the wetness of the animal and the floor. Battery-operated prods are best for livestock handling because they provide a localized directional stimulus between two prongs. Prods also should have an off switch and not be on constantly.

Section 5: Proper Design and Use of Restraints

Pigs and cattle should enter a restraint device easily with a minimum of balking. Correcting problems with animal restraint devices can also help reduce bruises and meat quality defects such as blood splash. The basic principles of low stress restraint which will minimize vocalization and agitation are:

For cattle, block the animal's vision with shields so that they do not see people or objects that move while they are entering the restrainer. Install metal shields around the animal's head on box-type restrainers to block the animal's vision.

Block the animal's vision of an escape route until it is fully held in a restraint device. This is especially important on restrainer conveyors. A flexible curtain made from discarded conveyor belts at the discharge end of the conveyor works well. Cattle often become agitated in a conveyor restrainer if they can see out from under the solid hold down cover before their back feet are off the entrance ramp. Extending the solid hold down cover on a conveyor restrainer will usually have a calming effect and most animals will ride quietly. Solid hold-downs can also be beneficial for pigs on conveyor restrainers.

Eliminate air hissing and other distractions such as clanging and banging. Refer to the section on distractions.

The restraint device must be properly lighted. Animals will not enter a dark place or a place where direct glare from a light is blinding them. To reduce balking at the entrance of a conveyor restrainer, install a light above the entrance. The light should be above the lead-up chute. It should illuminate the entrance of the restrainer, but it must not glare into the eyes of approaching animals. Light coming up from under a conveyor restrainer should be blocked with a false floor to prevent animals from balking at the “visual cliff effect.”

Provide non-slip flooring in box-type restrainers and a non-slip, cleated entrance ramp on conveyor restrainers. Animals tend to panic and become agitated when they lose their footing. Stunning boxes should have a non-slip floor.

Parts of a restrainer device operated by pneumatic or hydraulic cylinders that press against the animal’s body should move with a slow steady motion. Sudden jerky motion excites animals. On existing equipment, install flow control valves to provide smooth steady movement of moving parts that press against the animal.

Use the concept of optimum pressure. The restraint device must apply sufficient pressure to provide the feeling of being held, but excessive pressure that causes pain should be avoided. Install a pressure regulator to reduce the maximum pressure that can be applied. Very little pressure is required to hold an animal if it is fully supported by the device. If an animal bellows or squeals in direct response to the application of pressure, the pressure should be reduced.

A restraint device must either fully support an animal or have non-slip footing so the animal can stand without slipping. Animals panic if they feel like they may fall.

Restraint devices should hold fully sensible animals in a comfortable, upright position. Shackling and hoisting, shackling and dragging, trip floor boxes and leg clamping boxes are not acceptable. Restrainers that rotate animals on their backs are used rarely in glatt Kosher operations in the United States, but more commonly in glatt Kosher operation in South America and Europe. For information on using and auditing these devices, refer to: www.grandin.com (Ritual Slaughter Section).

Restraint devices must have controls that enable the operator to control the amount of pressure that is applied. Different sized animals may require differing amounts of pressure. Hydraulic or pneumatic systems should have controls that enable a cylinder on the device to be stopped in mid stroke.

Never hold an animal in a head restraint device for more than a few seconds. The animal should be stunned or ritually slaughtered immediately after the head holder is applied. Head restraint is much more aversive than body restraint. Animals can be held in a comfortable body restraint for longer periods. The animal’s reaction should be observed. If the animal struggles or vocalizes, it is an indication that the device is causing discomfort.

Restraint devices should not have sharp edges that dig into an animal. Parts that contact the animal should have smooth rounded surfaces and be designed so that uncomfortable pressure points are avoided.

On V conveyor restrainers, both sides should move at the same speed. To test this, mark each side with tape or a crayon. If after a minute of movement the marks do not appear in synch, the speed should be adjusted.

It is possible to modify existing restraint devices to lower vocalization and agitation scores. Balking at the entrance is also easy to reduce. Most of the modifications that would reduce animal agitation and vocalizations can be installed at a minimum expense. Floor grating, lighting and shields to block vision are examples of some relatively inexpensive but effective modifications.

Section 6: Recommended Stunning Practices

Good stunning practices are also required to achieve compliance with federal humane slaughter regulations. Good stunning also promotes animal welfare and meat quality. When stunning is done correctly, the animal feels no pain

and it becomes instantly unconscious. Stunning an animal correctly also results in better meat quality. When using electric stunning systems, improper stunning will cause bloodspots in the meat and bone fractures.

Reduce Noise in Stunning Area

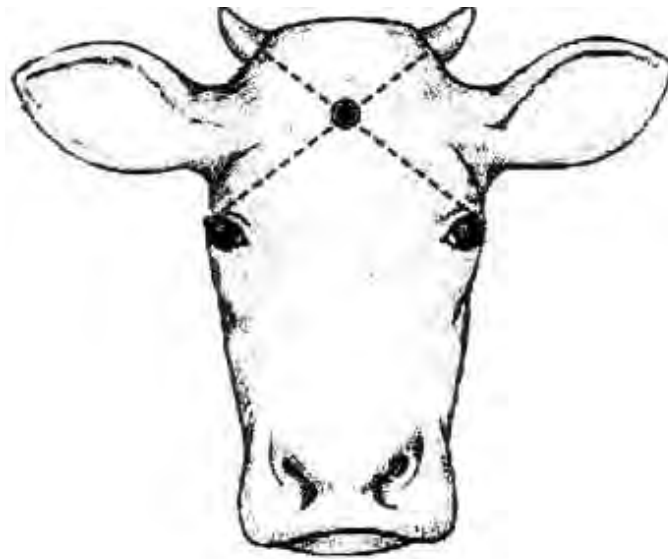
Because animals are so sensitive to noises, it is important to reduce noise in the stunning area in particular. Calm animals facilitate accurate and effective stunning. As in other areas, mufflers can be used on air valve exhausts or they can be located outside. Rubber stops on gates can be used to stop clanging and braking devices on the shackle return improve safety and reduce noise.

In addition, consider replacing small with large diameter plumbing, which makes less noise, and replace pumps with quieter ones. Rubber hose connections between the power unit and metal plumbing will help prevent power unit noise from being transmitted throughout the facility. Any new equipment that is installed in animal holding or stunning areas should be engineered for quietness.

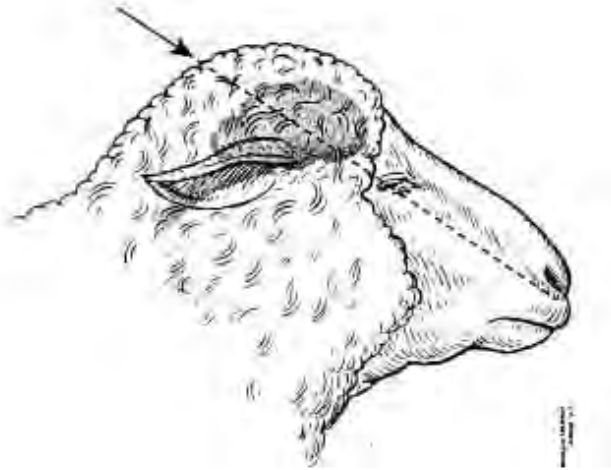
Captive Bolt Stunning

To produce instantaneous unconsciousness, the bolt must penetrate the brain with a high concussive impact. The correct positions for stunner placement are shown in the diagram. For cattle, the stunner is placed on the middle of the forehead on an “X” formed between the eyes and the base of the horns. Stunning 2 cm above the intersection of the X is also very effective. If a non-penetrating mushroom-head stunner is used, accurate aim is very critical to achieve instantaneous insensibility. A head-holding device may be needed to position the head for non-penetrating captive bolt.

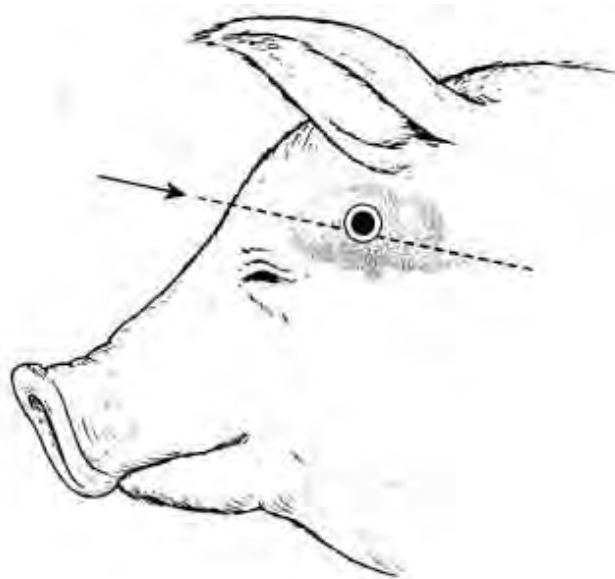
For sheep, a captive bolt is placed on the top of the head. This position is more effective for sheep because they have a very thick skull over the forehead. For pigs, the captive bolt is placed on the forehead.



Correct location for shooting cattle with a captive bolt or a firearm. A position slightly above the X is often more effective (from Shearer, 1999) (2010 Update).



Correct location for shooting a lamb or a goat. Some sheep breeds have extremely thick skulls and shooting from the rear position may be more effective. The correct angle is essential to ensure hitting the brain (diagram by J.K. Shearer) (2010 Update).



Correct position for shooting swine with a captive bolt or a firearm. Many old diagrams show a position that is too low (diagram by J.K. Shearer) (2010 Update).

A good stunner operator learns not to chase the animal's head. He takes the time to aim and get one good, effective shot. The stunner must be placed squarely on the animal's head. All equipment manufacturers' recommendations and instructions must be followed. Pneumatic stunners must have an adequate air supply. Low air pressure is one cause of poor stunning. The pressure gauge on the compressor should be checked to make sure that the stunner is receiving the air pressure recommended by the manufacturer. Heavy pneumatic stunners should be equipped with an ergonomic handle to aid positioning.

Poor maintenance of captive bolt stunners is a major cause of bad stunning. Stunners must be cleaned and maintained per the manufacturer's instructions. Good maintenance requires a person who has dedicated time each day to maintain stunners. A verified maintenance program where a mechanic signs off each day that he/she has tested the stunners is recommended. If a test stand is available for your brand of stunner, it should be used daily to test bolt velocity. It is important to keep stunner cartridges dry and the correct cartridge strength must be used. Store cartridges in a room with low humidity such as an office. Damp cartridges which have not been stored properly will cause poor stunning.



Captive bolt stunner placed on the head of a steer in the correct position

Captive Bolt Maintenance and Design

The most common cause of poor captive bolt stunning is poor maintenance of the captive bolt stunners. Stunners must be cleaned and serviced per the manufacturer's recommendations to maintain maximum hitting power and to prevent misfiring or partial firing. If a "test stand" to measure bolt velocity is available, daily use is strongly recommended. Each plant should develop a system of verified maintenance for captive bolt stunners.

Another major cause of failure to render animals insensible with one shot is a poor ergonomic design of bulky pneumatic stunners. Aversive methods of restraint, which cause three percent or more of the cattle or pigs to vocalize, must not be used as a substitute for improvements in gun ergonomics. Ergonomics for stunning in a conveyor or restrainer can be improved with a handle extension on the stunner and hanging the pneumatic stunner on an angle. Still another cause of poor stunning is damp cartridges. Cartridges must be stored in a dry place.

Another cause of missed captive bolt shots is an overworked or fatigued operator. Scoring at the end of the shift will pinpoint this problem. In some large plants two stunner operators may be required. Rotating the stunner operator to other jobs throughout the day may help prevent errors caused by fatigue.

Using electrical devices to cause immobilization prior to or during stunning is not recommended. Several scientific studies have shown that it is highly aversive. Vocalization scoring is impossible in electrically immobilized animals because paralysis prevents vocalization. Electrical immobilization must not be confused with electric stunning. Properly done, electric stunning passes high amperage current through the brain and induces instantaneous insensibility. Electrical immobilization keeps a sensible animal still by paralyzing the muscles. It does not induce epileptiform changes in an electroencephalogram (EEG).

Cattle Restraint for Stunning

If a stunning box is used, it should be narrow enough to prevent the animal from turning around. The floor should be non-slip so the animal can stand without losing its footing. It is much easier to stun an animal that is standing quietly. Only one animal should be placed in each stunning box compartment to prevent animals from trampling each other.



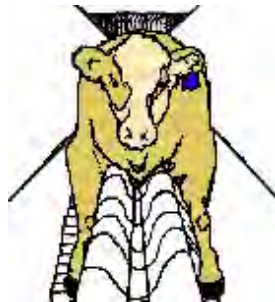
Well-designed cattle stunning box

Most large plants restrain cattle and pigs in a conveyor restrainer system. There are two types of conveyor restraints: the V restrainer and the center track system, which is used in many beef plants. In a V restrainer system, the cattle or pigs are held between two angled conveyors. In the center track system the cattle ride astride a moving conveyor. The center track system provides the advantages of easier cattle stunning and improved ergonomics because the stunner operator can stand closer to the animal. Either type of restrainer system is much safer for workers than cattle in a stunning box. Restrainer conveyors are recommended for all plants that slaughter more than 100 head per hour.



V restrainer system for cattle

Lighting over the top of the conveyor in the restrainer room will help induce cattle to raise their heads for the stunner. However, both cattle and pigs should not be able to see light coming up from under the restrainer because it may cause balking at the entrance. Restrainer systems should be equipped with a long, solid hold-down rack to prevent rearing. For cattle, the hold-down should be long enough so that the animal is fully settled down onto the conveyor before it emerges from under it. This hold-down should not press on the animal's back. It is a visual barrier.



Center track restrainer for cattle

If an animal is walking into the restrainer by itself, do not poke it with an electric prod. Center track systems require less prodding to induce cattle to enter it. Workers need to break the “automatic prod reflex” habit.

Electric Stunning of Pigs and Sheep (with 2010 updates)

To produce instantaneous, painless unconsciousness, sufficient amperage (current) must pass through the animal's brain to induce a grand mal epileptic seizure. Insufficient amperage or a current path that fails to go through the brain will be painful for the animal. It will feel a large electric shock or heart attack symptoms, even though it may be paralyzed and unable to move. When electric stunning is done correctly, the animal will feel nothing. Animals that are dehydrated also may have high electrical resistance and be difficult to stun.

There are two types of electric stunning: head only stunning, which is reversible, and head-to-back cardiac arrest stunning, which stops the heart. When head-only stunning is used, the signs of a grand mal epileptic seizure can be easily observed. The first phase is a still, rigid (tome) phase, followed by vigorous kicking (clonic) phase. If the animal is not bled, it will return to sensibility when the kicking phase stops.

When head only stunning is used with scissors type tongs, the electrodes may be either placed on the forehead or clamped around the sides of the head like ear muffs. Pigs should be wetted prior to stunning. Electrodes also may be placed in a “top to bottom” position on top of the head and below the jaw. When a wand with two stationary electrodes is used, they may be placed either on the forehead or in the hollow behind the ears. Stunning tongs and

wands must never be place on the neck. The stunning wand must be applied to the animal for at least two to three seconds to stun properly. Stunners should be equipped with a timer. Pigs and sheep that are stunned with a head only stunner for a minimum of two seconds must be bled within a maximum interval of 30 seconds to prevent them from regaining consciousness. Both practical experience and scientific research shows that a shorter interval of 15 seconds is strongly recommended.

Small plants may achieve cardiac arrest stunning by first applying the tongs to the head to induce insensibility and then immediately reapply to the chest. Most large plants use cardiac arrest head to back or head to side-of-body stunning. It produces a still carcass that is safer and easier to bleed. Cardiac arrest stunning requires the use of a restraining device to prevent the animal from falling away from the stunning wand before it receives the complete stun. Cardiac arrest stunning kills the animal by electrocution.

When cardiac arrest stunning is used, one electrode must be placed on either the forehead or in the hollow behind the ears. The other electrode is placed on either the back or the side of the body. The head electrode should not be allowed to slide back onto the neck or onto the pig's jowls. Placement is critical. If the head electrode is placed too far back, it can miss the brain. To prevent return to sensibility after head-only stunning, the stunning tong can be reapplied to the chest. This will stop the heart.

Meat packers should use amperage, voltage and frequency settings, which will reliably induce unconsciousness. Both properly and improperly stunned cardiac arrested animals can look similar. Current flow through the spine masks the epileptic seizure and a clear, rigid and kicking phase cannot be easily observed. Properly stunned cardiac arrested animals sometimes have kicking back legs.

To prevent bloodspots in the meat and pain to the animal, the wand must be pressed against the animal before the button is pushed. The operator must be careful not to break and re-make the circuit during the stun. This causes the animal's muscles to tense up more than once and bloodspots may increase. If the stunning wand is energized before it is in full contact with the pig, the pig will squeal. This is called "hot wandling." This is detrimental to pig welfare and is likely to increase blood spots in the meat. Stunning wands and wiring should be checked often for electrical continuity. A worn switch may break the circuit enough to cause bloodspots. Electrodes must be kept clean to provide a good electrical contact. Operators must never double stun animals or use the stunning wand as a prod.

Electrical Specifications for Electric Stunning of Pigs and Sheep

Electric stunning equipment must operate within the electrical parameters that have been verified by scientific research to induce instantaneous insensibility.

Modern stunning circuits use a constant amperage design. The amperage is set and the voltage varies with the pig or sheep's resistance. Older style circuits are voltage regulated. These circuits are inferior because they allow large amperage surges, which can fracture bones and cause blood splash. The distance between the head electrode and the back electrode should not exceed 14 inches. The most modern sheep stunners from New Zealand use water jets to conduct electricity down through the wool.

Amperage — Scientific research has shown that an electric stunner must have sufficient amperage to induce a grand mal seizure to insure that the animal will be made instantly insensible. Insufficient amperage can cause an animal to be paralyzed without losing sensibility. For market pigs (180 - 200 lbs. / 82-91 kg. — not mature sows or boars) a minimum of 1.25 amps is required (Stunning market pigs with less than 1.25 amps should not be permitted unless the results of lower amperages are verified by either electrical or neurotransmitter recordings taken from the brain). Large sows (more than 350 lbs. / more than 160 kg.) will require 2 or more amps. If lower amperages are used, the stunner may induce cardiac arrest but the animal will feel the shock because the seizure was not induced. For sheep a minimum of one amp is required. These amperages must be maintained for a minimum of one second to give instant insensibility.



Electric head-to-back stunner placed in the correct position on a pig in V restrainer

The Council of Europe (1991) and OIE 2008 recommends the above minimum amperages. Some plants stun animals below the Council of Europe recommended minimum amperages in an attempt to reduce blood spots in the meat. Since only a one-second application at 1.25 amps is required to induce instant insensibility in market pigs, it is the author's opinion that plants should be permitted to use circuits that lower the amperage setting after an initial, one second stun at 1.25 amps for pigs and one amp for sheep. Plants should also be encouraged to use electronic constant amperage electronic circuits that prevent amperage spiking. Both practical experience and research has shown that these types of circuits greatly reduce petechial hemorrhages (blood spots).

Voltage — There must be sufficient voltage to deliver the recommended minimum amperage; 250 volts is the recommended minimum voltage for pigs to ensure insensibility. Amperage is the most important variable to measure. The voltage that will be required will depend on the type of stunner, the wetness of the animal and whether or not it is dehydrated. For sheep, a minimum of one amp is required.

Frequency — Research has shown that too high an electrical frequency will fail to induce insensibility. Research indicates that insensibility is most effectively induced at frequencies of 50 cycles. Frequencies from 2000 to 3000 hz failed to induce instant insensibility and may cause pain. However, in pigs weighing under 200 lbs (80 kg), research has shown that a high frequency 1592 hz sine-wave or 1642 hz square wave head; only stunning at 800 ma (0.80 amp) would induce seizure activity and insensibility in small pigs. One disadvantage is that the pigs regained sensibility more quickly compared to stunning at 50 to 60 cycles. The pigs in this experiment weighed one-third less than comparable U.S. market pigs and this probably explains why the lower amperages were effective.

Equipment is commercially available for stunning pigs at 800 hz applied across the head by two electrodes and a second stun with 50 to 60 hz from head to body. Research has shown that 800 hz is effective when applied by two electrodes across the head.

Research has shown that stunning pigs with frequencies higher than 50 to 60 cycles is effective. In this experiment, the pigs were stunned with a head only applicator. High frequency stunning has never been verified to induce instant insensibility when applied as a single stun with a head to body electrode. This is the type of electrode used in many large U.S. pork slaughter plants.

Vocalization As an Indicator of Stress

Vocalizations immediately prior to stunning, such as squeals in pigs, and moos and bellows in cattle and pigs, can be signs of discomfort and stress. To prevent vocalizations the electrodes must be in firm contact with the animal prior to being energized.

Squealing of pigs during electric stunning can be more frequent in plants that have return to sensibility problems. Research conducted in commercial pork slaughter plants where squealing was measured with a sound meter indicated that the intensity of pigs squealing in the stunning chute area is correlated with physiological measures of stress and poorer meat quality determined that the intensity of pig squeals is correlated with discomfort.

Due to natural vocalization behavior, vocalization scoring is not recommended for sheep. Sheep usually will not vocalize when they are feeling pain.

Ensuring Insensibility Following Electric Stunning

Adequate electrical parameters for cardiac arrest stunning cannot be determined by clinical signs, because cardiac arrest masks the clinical signs of a seizure. Measurement of brain function is required to verify any new electrical parameters that may be used in the future. Common causes of a return to sensibility after electric stunning are:

1. Wrong position of the electrode
2. Amperage that is too low
3. Poor bleed out, or
4. Poor electrode contact with the animal

Other factors that may contribute to poor electrical stunning are: dirty electrodes, insufficient wetness, electrode contact area that is too small, animal dehydration, dirty animals and long hair or wool. Interrupted contact during the stun may also be a problem. For all species, processing plants with an excessively long stunning to bleed time are more likely to have return to sensibility problems. Electrodes must be cleaned frequently to ensure a good electrical connection. The minimum cleaning schedule should be once a day. For personal safety, the electrode wand must be disconnected from the power supply before cleaning.

Electric Cattle Stunning

Unlike pigs and sheep, electrical stunning of cattle may require a two-phase stun. Due to the large size of cattle, a current should first be applied across the head to render the animal insensible before a second current is applied from the head to the body to induce cardiac arrest. Modern systems may have a third current to reduce convulsions. A single 400 volt, 1.5 amp current passed from the neck to the brisket failed to induce epileptic form changes in the brain. Observations in plants outside the U.S. indicate that a single current passed from the middle of the forehead to the body appears to be effective. Research is needed to verify this. To insure that the electrodes remain in firm contact with the bovine's head for the duration of the stun, the animal's head must be restrained in a mechanical apparatus. Due to the high electrical resistance of cattle hair, the electrode should be equipped with a water system to provide continuous wetting during the stun.

The Council of Europe (1991) requires a minimum of 2.5 amps applied across the head to induce immediate epileptiform activity in the electro-encephalogram (EEG) of large cattle. A frequency of 60 or 50 cycles should be used unless higher frequencies are verified in cattle by either electrical or neurotransmitter measurements taken from the brain. A more recent study has shown that 1.15 amps sinusoidal AC 50 Hz applied for one second across a bovine's head is effective to induce insensibility (Wotton et al., 2000). A longer application is usually required to depolarize the spine to reduce kicking (up to 15 seconds).

CO₂ Stunning

According to CFR 9, Section 313.5, CO₂ stunning may be used in swine to induce death or to result in a state of surgical anesthesia. These states are dependent on the relationship between exposure time and CO₂ concentration, and systems will produce pigs in both states. Handlers must be careful not to overload the gondolas (elevator

boxes) that hold groups of pigs. In a properly loaded gondola, the pigs must have sufficient room to stand or lie down without being on top of each other. Handlers must never overload the gondolas by forcing pigs to jump on top of each other. **CO₂ Stunning Parameters** In the scientific literature, there are conflicting results on how pigs react to the induction of CO₂ anesthesia. One researcher found that purebred Yorkshire pigs have a calm induction and that convulsions and excitation occur after the pig becomes unconscious. Some genetic types of pigs actively attempt to escape from the container when they first sniff the gas and others respond with a calm anesthetic induction. Other research has observed that the reaction of pigs to CO₂ was highly variable. A Dutch researcher found that the excitation phase occurred prior to the onset of unconsciousness. Australian researchers found that being shocked with an electric prod was more aversive than inhaling CO₂. Research in people indicates that genetics affect the aversiveness of CO₂ inhalation.

In evaluating gas stunning, one must look at the entire system, which includes the handling system and the gas mixture. One advantage of gas stunning is that these systems can be designed to eliminate the need for pigs to line up in single file chutes, which is contrary to their natural behavior. Regardless of gas type or mixture, the pigs should have little reaction when they first contact the gas and convulsions should not begin until after the pigs collapse.

If conscious pigs squeal, struggle vigorously or attempt to escape when they first contact the gas, this is a serious problem. Genetics may be a contributing factor and may require a different gas mixture or other adjustment. Observations in several plants indicate that elimination of the stress Halothane gene may reduce problems with stressful anesthetic induction. The gas parameters for each plant should be evaluated for ease of anesthesia induction by observing the behavior of the animals. The gas mixture is not acceptable if the pigs attempt to climb out of the container. It is normal to have violent kicking and convulsions after the pig falls over.

How to Determine Insensibility

In both captive bolt and electrically stunned animals, kicking will occur. Ignore the kicking and look at the head. To put it simply, **THE HEAD MUST BE DEAD**. When cattle are shot with a captive bolt, it is normal to have a spasm for 5 to 15 seconds. After the animal is rolled out of the box or hung up, its eyes should relax and be wide open.

When pigs are stunned using CO₂ to induce surgical anesthesia, some animals may have slow limb movement or gasping. This is permissible. However, there must be no spontaneous eye blinking, righting reflex or response to a painful stimulus applied to the nose.

Below are the signs of a properly stunned animal:

- The legs may kick, but the head and neck must be loose and floppy like a rag. A normal spasm may cause some neck flexing, generally to the side, but the neck should relax and the head should flop within about 20 seconds. Check eye reflexes if flexing continues. Animals stunned with gas stunning equipment should be completely limp and floppy, though animals may exhibit slow limb movement and gasping.
- The tongue should hang out and be straight and limp. A stiff curled tongue is a sign of possible return to sensibility. If the tongue goes in and out, this may be a sign of partial insensibility.
- For all methods of stunning, when the animal is hung on the rail, its head should hang straight down and the back must be straight. It must NOT have an arched back righting reflex. When a partially sensible animal is hung on the rail it will attempt to lift up its head. Sometimes the head will flop up momentarily when a back leg kicks. This should not be confused with a righting reflex.
- When captive bolt is used, the eyes should be wide open with a blank stare. There must be no eye movements. Immediately after electrical stunning, the animal will clamp its eyes shut, but they should relax into a blank stare.

- When captive bolt is used, the animal must NEVER blink or have an eye reflex in response to touch. In electrically stunned pigs, eye movements can be misinterpreted when untrained people indiscriminately poke at the eyes. It is often best to observe without touching the eye. For all stunning methods if the animal blinks with a natural blink where the eye closes and then re-opens, it is not properly stunned. If you are not sure what a natural blink looks like, look at live animals in the yards (lairage) before assessing insensibility.
- Rhythmic breathing where the ribs move in and out must be absent. Intermittent gasping is a sign of a dying brain and is acceptable after electrical or gas stunning. A twitching nose (like a rabbit) may be a sign of partial sensibility. It is important not to confuse gasping with rhythmic breathing (2010 update).
- In captive bolt-stunned animals, insensibility may be questionable if the eyes are rolled back or they are vibrating (nystagmus). Nystagmus is permissible in electrically stunned animals, especially those stunned with frequencies higher than 50 to 60 cycles.
- Shortly after being hung on the rail, the tail should relax and hang down.
- For all methods of stunning, if the animal blinks with a natural blink, it is not properly stunned. If you are not sure what a natural blink look like, look at live animals in the yard (2010 update).
- No response to a nose pinch. When testing for response to a painful stimulus the pinch or prick must be applied to the nose to avoid confusion with spinal reflexes. Animals entering a scald tub must not make a movement that is in direct response to contact with the hot water. For all types of stunning, this is an indicator of possible return to sensibility.
- No vocalizations (moo, bellow or squeal).
- If an electrically stunned animal blinks within 5 seconds after stunning, this is a sign that the amperage is too low. In electrically stunned animals, blinking should be checked within 5 seconds and after 60 seconds. In most plants, blinking will not be found immediately after stunning because the plant is using the correct amperage. After it has been verified that the amperage is set correctly, the most important point to observe for signs of return to sensibility is 60 seconds after electrical stunning. This provides time for the eyes to relax after the epileptic seizure. Checking for signs of return to sensibility after bleeding ensures that the animal will not recover. This provides time for the eyes to relax after the rigid (tonic) and kicking (clonic) phase of the seizure. Checking for signs of return to sensibility after bleeding ensure that the animal will not recover.

Order of the events indicating Return to Sensibility in head only electrically stunned pigs (In CO₂ stunned pigs, the order of the first two events is reversed):

1. Corneal reflexes in response to touch (not recommended for electric stunning).
2. Return of rhythmic breathing.
3. Spontaneous natural blinking without touching.
4. Response to a painful stimulus such as pricking the nose with a pin.
5. Righting reflex and raising the head.
6. Fully conscious and sensible. Complete return to sensibility can occur within 15 to 20 seconds after eye reflexes appear if an electrically stunned animal is not bled.

Signs of a Properly Stunned Animal by Stunning Method

	Head	Tongue	Back	Eyes	Limbs	Vocalization	Respiration	Tail	Response to pain
Cattle - captive bolt	Must appear dead, hang straight	Straight and limp	Hanging straight, no righting reflex	No natural blinking. Wide open, blank stare, no response	Uncoordinated kicking of hind legs acceptable. No	None	Rhythmic breathing (ribs moving in and out at	Relaxes shortly after being	A pinch or pinprick may be applied to

	and floppy			to touch: nystagmus absent	righting reflex present		least twice) is absent. Agonal gasping not acceptable.	on the rail	nose only and NO response should be observed
Cattle - electric	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	Eyes may vibrate (Nystagmus), but no natural blinking	Uncoordinated kicking of hind legs acceptable. No righting reflex present	None	Agonal gasping like a fish out of water normal. Rhythmic breathing (ribs moving in and out at least twice) is absent	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to nose only and NO response should be observed
Pigs - CO ₂	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	No natural blinking	Uncoordinated kicking of hind legs acceptable. No righting reflex present	None	Agonal gasping like a fish out of water normal. Rhythmic breathing (ribs moving in and out at least twice) is absent	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to nose only and NO response should be observed
Pigs - electric	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	Eyes may vibrate (Nystagmus), but no natural blinking	Uncoordinated kicking of hind legs acceptable. No righting reflex present	None	Agonal gasping like a fish out of water normal. Rhythmic breathing (ribs moving in and out at least twice) is absent	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to nose only and NO response should be observed
Pigs - captive bolt	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	No natural blinking. Wide open, blank stare, no response to touch: nystagmus absent	Uncoordinated kicking of hind legs acceptable. No righting reflex present	None	Rhythmic breathing (ribs moving in and out at least twice) is absent. Agonal gasping not acceptable.	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to nose only and NO response should be observed
Sheep -	Must appear	Straight and	Due to anatomical	Eyes may vibrate	Uncoordinated kicking of	None	Agonal gasping like	Relaxes shortly	A pinch or

electric	dead, hang straight and floppy	limp	differences in sheep, back may not hang completely straight. No right reflex	(Nystagmus), but no natural blinking	hind legs acceptable. No righting reflex present		a fish out of water normal. Rhythmic breathing (ribs moving in and out at least twice) is absent	after being on the rail	pinprick may be applied to nose only and NO response should be observed

Stunning to Bleed Interval

Captive Bolt — Both penetrating and non-penetrating captive bolts are effective. However, non-penetrating bolts will cause less damage to the brain (Finnie et al., 2000). Practical experience has shown that for non-penetrating captive bolts to be effective the aim must be more precise. Animals stunned with a non-penetrating captive bolt should be bled within 60 seconds.

Electric Cardiac Arrest — Sixty seconds maximum. All large plants are already using less than this interval.

Head Only Reversible Electric — Fifteen seconds is strongly recommended (Blackmore and Newhook, 1981), 30 seconds maximum (Hoenderken, 1983). Scientific research clearly shows that pigs will start returning to sensibility after 30 seconds when stunned by the head only method. When frequencies of greater than 50 to 60 hz are used, these times may need to be shortened. When head only electric stunning is used for cattle or sheep the animal should be bled within 10 seconds.

Preventing Bloodsplash (Bloodspots)

Gentle handling prevents damage to small blood vessels caused by excited animals jamming against each other or equipment.

- Electric prod usage should be kept at a minimum.
- Animals should never be left in the restrainer system during breaks and lunch.
- Be sure that one side of a V restrainer does not run faster than the other. This causes stretching of the skin that damages blood vessels.
- Minimize time to bleeding after stunning to minimize meat damage.
- The slats on the V restrainer and hold-down rack and chutes should be insulated to prevent current leakage, which can cause bloodsplash.
- Rapid temperature fluctuations and periods of extremely hot weather can greatly increase the incidence of bloodsplash. In these circumstances, plants should take extra care in handling animals to minimize bloodsplash problems.

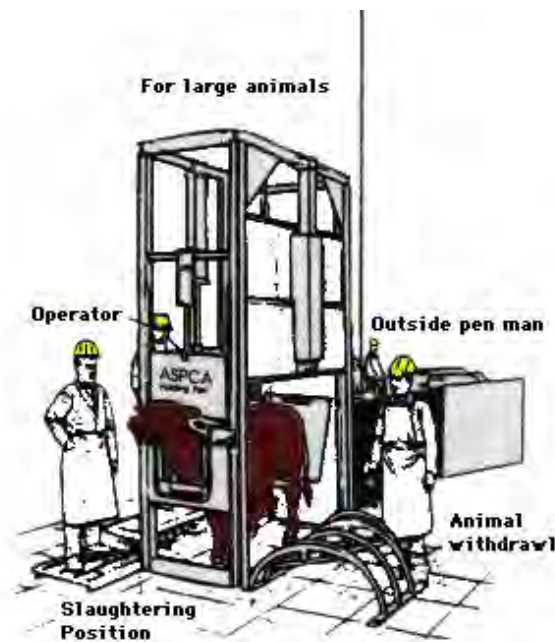
Section 7: Religious Slaughter (Kosher and Halal)

Cattle, calves, sheep or other animals that are ritually slaughtered without prior stunning should be restrained in a comfortable upright position. For both humane and safety reasons, plants should install modern upright restraining equipment whenever possible. Shackling and hoisting, shackling and dragging, trip floor boxes and leg clamping boxes should never be used. In a very limited number of glatt Kosher plants in the United States and more commonly in South America and Europe, restrainers that position animals on their backs are used. For information about these systems and evaluating animal welfare, refer to www.grandin.com (Ritual Slaughter Section).

The throat cut should be made immediately after the head is restrained (within 10 seconds). Small animals such as sheep and goats can be held manually by a person during ritual slaughter. Plants that conduct ritual slaughter should use the same scoring procedures except for stunning scoring, which should be omitted in plants that conduct ritual slaughter without stunning.

Cattle vocalization percentages should be five percent or less of the cattle in the crowd pen, lead up chute and restraint device. A slightly higher vocalization percentage is acceptable because the animal must be held longer in the restraint device compared to conventional slaughter. A five percent or less vocalization score can be reasonably achieved. Scoring criteria for electric prod use and slipping on the floor should be the same as for conventional slaughter. Animals must be completely insensible before any other slaughter procedure is performed (shackling, hoisting, cutting, etc.) If the animal does not become insensible, it should be stunned with a captive bolt gun or other apparatus and designated as non-Kosher or non-Halal).

ASPCA Pen — This device consists of a narrow stall with an opening in the front for the animal's head. After the animal enters the box, it is nudged forward with a pusher gate and a belly lift comes up under the brisket. The head is restrained by a chin lift that holds it still for the throat cut. Vertical travel of the belly lift should be restricted to 28 inches (71.1 cm) so that it does not lift the animal off the floor. The rear pusher gate should be equipped with either a separate pressure regulator or special pilot-operated check valves to allow the operator to control the amount of pressure exerted on the animal. Pilot operated check valves enable the operator to stop the air cylinders that control the apparatus at mid stroke positions. The pen should be operated from the rear toward the front.



ASPCA Pen

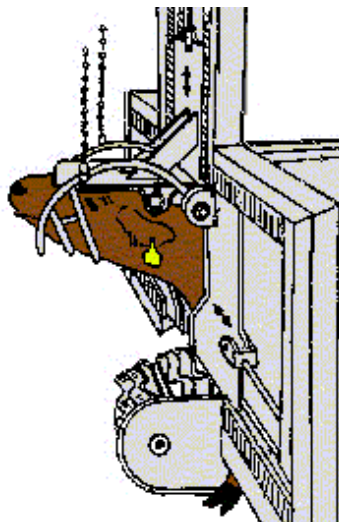
Head restraint is the last step. The operator should avoid sudden jerking of the controls. Many cattle will stand still if the box is slowly closed up around them and less pressure will be required to hold them. Ritual slaughter should be performed immediately after the head is restrained (within 10 seconds of restraint).

An ASPCA pen can be easily installed in one weekend with minimum disruption of plant operations. It has a maximum capacity of 100 cattle per hour and it works best at 75 head per hour or less. A small version of this pen could be easily built for calf plants.



Calf held in position for ritual slaughter

Conveyor Restrainer Systems — Either V restrainer or center track restrainer systems can be used for holding cattle, sheep or calves in an upright position during shehita or Halal slaughter. The restrainer is stopped for each animal and a head holder positions the head for the ritual slaughter official. For cattle, a head holder similar to the front of the ASPCA pen can be used on the center track conveyor restrainer. A bi-parting chin lift is attached to two horizontal sliding doors.



Center track restrainer being used for ritual slaughter

Small Restrainer Systems — For small locker plants that ritually slaughter a few calves or sheep per week, an inexpensive rack constructed from pipe can be used to hold the animal in a manner similar to the center track restrainer. Animals must be allowed to bleed out and become completely insensible before any other slaughter procedure is performed (shackling, hoisting, cutting, etc.).

Section 8: Recommended Handling of Disabled or Crippled Livestock

Aggressive handling can lead to injured, stressed or fatigued livestock. Although non-ambulatory animals (sometimes called “downers, slows or subjects”) represent a small fraction of all livestock arriving at packing plants, they are significant because they require special attention in the areas of handling, transporting, holding pens and inspection. Trucks carrying non-ambulatory livestock should park as close to the slaughter area as possible and disabled animals should be inspected by a USDA veterinarian, stunned and either condemned or moved to slaughter quickly. It is important that water and shelter are provided for non-ambulatory livestock. Feed must be provided for any livestock held at the plant for more than 24 hours (2010 update).

Since December 30, 2003, all non-ambulatory cattle arriving at packing plants are to be condemned and not used for human consumption. Non-ambulatory pigs may be slaughtered if inspected and passed by a USDA veterinarian.

Non-Ambulatory Cattle

Many incidents of non-ambulatory cattle can be prevented by better management at the dairy or ranch. If non-ambulatory cattle arrive on trucks, offload ambulatory cattle first, taking care not to compromise the non-ambulatory animals. Non-ambulatory cattle should be stunned with a captive bolt stunner on the truck and disposed of. If a steer or cow becomes non-ambulatory after it has passed ante mortem inspection, the USDA veterinarian will make a decision about whether the animal must be condemned, or whether it may proceed to slaughter. If a steer or cow – or any animal — becomes non-ambulatory in the single file chute that leads to the stunner, it must be stunned prior to dragging. A cartridge-fired captive bolt on a long handle is recommended. If blood gets on the chute, wash it off to prevent balking.



A well-designed cart for moving crippled livestock

Mounting activity and animal fights can cause injuries that can cause animals to become non-ambulatory. This is a problem especially with bulls and boars. Bulls that are mounting other animals should be placed in separate pens. Mounting by bulls is a common cause of bruises and crippling injuries on cows. Producers need to work to reduce the occurrence of non-ambulatory animals that are caused by either poor management or neglect.

Non-Ambulatory Pigs

There are two basic types of non-ambulatory pigs. The first type is those that are in a poor physical state before leaving the farm, often older breeding stock. Another type is a fatigued pig that becomes non-ambulatory. According to the National Pork Board, a fatigued pig is defined as having temporarily lost the ability to walk but has a reasonable expectation to recover full locomotion with rest. These animals are often called “NANIs” or “non-ambulatory, non-injured”. Many of these animals can recover and walk independently if given time to rest.

Trucks carrying disabled pigs should unload ambulatory animals first taking care not to compromise the non-ambulatory ones. Ambulatory pigs must not be driven over non-ambulatory pigs. Then, promptly unload the animals unable to walk. Delayed unloading can cause death losses and downer animals due to extreme temperatures, exposure and stress.

To offload a non-ambulatory pig from a truck, plants should use the truck exit nearest to the animal and should place as little stress as possible on the animal. Live pigs must never be dropped to the ground from a truck. In some cases, a slide board or cripple cart may be helpful. Animals may be rolled onto a wide piece of conveyor belting that has been stiffened on one end with metal bars to prevent curling when the belting with the animal on it is dragged. The board can then be dragged off the truck and the animal loaded into a suitable mechanical device for transport to an inspection area. Federal humane slaughter regulations prohibit dragging of downed or crippled livestock in the stockyards, crowd pen or stunning chute. (If the animal is stunned, it may be dragged). By using slideboards, sleds and cripple carts, animals can be transported humanely and efficiently to a pen or other area where they can be examined by an inspector, stunned and moved to slaughter. In order to prevent further injury to non-ambulatory animals by equipment or other animals, minimal movement may be required to roll the animal or slide it onto carts and other devices. The stress of this movement must be weighed against the potential harm to the animal if it is not moved promptly. In pig plants, the stunning chute should be equipped with side doors so that non-ambulatory pigs can be easily removed.

Inspection and Slaughtering Considerations

USDA rules require that any “suspect” animal – an animal with signs of abnormalities or diseases – must be held separately and examined by a USDA FSIS veterinarian. At pig plants, non-ambulatory animals must be held apart from other animals in a “suspect” pen for USDA inspection. “Suspect” pigs may be slaughtered separately so inspectors can conduct additional examinations.

Disabled or suspect animals should be segregated upon arrival for USDA inspection. Once the USDA inspector has examined the animal, plants should identify the earliest possible point in the production when that animal may be slaughtered “separately.” This separation point should be discussed with the USDA inspector. It should be noted that plants need not always wait until the end of a shift to slaughter a “suspect” animal. Waiting can prolong a disabled animal’s suffering. Plants and inspectors should cooperate to ensure non-ambulatory pigs are slaughtered as soon as possible after arrival.

At cattle plants, non-ambulatory cattle arriving on trucks should be stunned on the truck and removed from the truck for disposal. Some cattle may be deemed suspect and yet still be ambulatory. These cattle should be moved to separate pens for examination by USDA inspectors.

Chapter 2: Auditing Animal Handling and Stunning

“You manage what you measure.” That is certainly true when it comes to assuring optimal animal welfare. A number of objective criteria can be used to measure animal welfare in packing plants. By measuring welfare indicators regularly, problems can be detected and continuous improvement achieved.

This chapter details what criteria to use in evaluating livestock welfare in packing plants. The AMI Foundation recommends conducting audits at least weekly and varying those audit days and times during shifts to assess the role that employee experience, behavior and fatigue may play in animal handling and stunning.

AMIF is committed to an audit program that is simple to conduct. Audits that are easy to understand and execute are more likely to be conducted with greater frequency and fewer errors. Each of AMIF’s objective criteria is designed to measure a multitude of potential issues. For example, counting slips and falls can assess whether a ramp is too steep, whether animals are being driven too aggressively and whether a floor may be too slippery and need re-grooving. Measuring vocalization levels will indicate if prods are being overused, if restrainers are too small for livestock, and a host of other issues. Each of these individual items need not be evaluated on audits if the core criteria scores are within the target range, but notes may be taken to indicate which factors may have contributed to the score.

If a score falls below the acceptable range specified in these guidelines, plant management should take steps to correct the problem. The results of the 1996 Survey of Stunning and Handling in Federally Inspected Beef, Pork, Veal and Sheep Slaughter Plants (sponsored by USDA’s Animal and Plant Health Inspection Service) indicated that the recommended minimum acceptable levels specified in this guide are reasonably achievable. Additional data collected during audits of beef and pork plants have further verified that the minimum standards are attainable.

Objective scoring of percentages should be done in the following areas that are the core criteria for good animal welfare (Grandin, 1998).

1. Percentage of cases in which stunner was misapplied to pigs, cattle, and sheep
2. Percentage of cattle stunned more than once with the captive bolt stunner.
3. Percentage of sensible and partially sensible animals on the bleed rail.
4. Percentage of animals falling down or slipping.
5. Percentage of cattle vocalizing in the stunning chute area, which includes the stunning box, restrainer, lead-up chute, and crowd pen.
6. Percentage of pigs vocalizing in the stunning pen or restrainer conveyor.
7. Percentage of animals prodded with an electric prod.
8. Non-ambulatory animal procedures.

Poor performance on any of these core criteria could result in reduced animal welfare. These guidelines also contain criteria and recommendations for stunning equipment, which will enable a plant to maintain acceptable welfare scores. Other areas of animal welfare concern that will be covered are ritual slaughter and the handling of non-ambulatory animals.

Chapter Three includes the AMI Foundation Pig and Cattle Slaughter Audit forms that can be used as part of a corporate animal welfare program. (2007 Update): Note that shots in the air where the animal is not touched do not count as missed shots. If the stunner bolt touches the animal a missed shot is counted. Touches with the outer housing that surrounds the bolt do not count as a missed shot.

Core Criteria 1: Effective Stunning

Core Criteria 1: Effective Captive Bolt Stunning of Cattle

When evaluating the effectiveness of captive bolt stunning, the auditor monitors whether or not an animal is rendered insensible with a single shot.

Score a minimum of 100 animals in large plants and 50 in small plants. In very small plants score one hour of production. For a more accurate assessment in small plants, data collected over a period of time should be averaged.

- Excellent – 99 to 100% instantly rendered insensible with one shot
- Acceptable – 95 to 98% instantly rendered insensible with one shot
- Not Acceptable – 90 to 94% instantly rendered insensible with one shot
- Serious Problem less than – 90% instantly rendered insensible with one shot

If one-shot efficacy falls below 95%, immediate action must be taken to improve the percentage.

Core Criteria 1: Effective Electrical Stunning of Pigs and Sheep

When evaluating effective electrical stunning, the auditor monitors the correct placement of stunning wands and tongs.

If head only stunning is used, the tongs must be placed so that the current passes through the brain. Tongs may be placed on both sides of the head or one tong on the top and the other on the bottom of the head. Another scientifically verified location for head only stunning is one electrode placed under the jaw and the other placed on the side of the neck, right behind the ears. To prevent return to sensibility after head only stunning, the tongs can be reapplied to the chest after the animal is rendered insensible with a head stun. Application to the chest will induce cardiac arrest (2010 update).

For cardiac arrest stunning of pigs and sheep with a single stunning current, one electrode must be placed on the body and the other one must be placed on the forehead, side of the head, top of the head, or in the hollow behind the ear. The head electrode must never be placed on the neck because this would cause the current to bypass the brain. Electrodes must not be applied to sensitive areas such as inside the ear or in the eye or rectum. Electrodes must be placed firmly against the animal because breaking electrical contact during the stun may reduce the effectiveness of the stun. In addition, it is essential that electrodes be fully energized only after they are in full and firm contact with animals. If electrodes are energized and then applied, animals will squeal. This is called “hot wandering.” No more than one percent of animals should vocalize due to hot wandering. Hot wandering should not be measured for sheep.

Score a minimum of 100 pigs or sheep in large plants and 50 in small plants. In very small plants score 1 hour of production. Use the whole numbers for 100 and 50 animal audits. For data collection on large numbers of animals, the fractional percentages can also be used.

- Excellent – 99.5 to 100% correct placement of stunning wand or tongs and no vocalization due to energizing the electrode before it is firmly positioned.
- Acceptable – 99.4 to 99% correct placement and 1% or less of the animals vocalize in response to electrode placement.
- Not Acceptable – 98 to 96% correct placement and 2 to 3% of the animals vocalize due to energizing the electrodes before they are firmly positioned.
- Serious Problem – Less than 96% correct placement or more than 4% vocalization in response to electrode placement.

Core Criteria 1: CO₂ Stunning of Pigs

The efficacy of CO₂ and other types of gas stunning methods is determined when insensibility is scored. The core criterion is that the animal remains insensible after exiting the chamber. However, the gas system must also be evaluated for animal handling. The gondolas, elevator boxes or other apparatus used for moving the animals in and out of the gas must not be overloaded.

Score 50 gondolas in large plants to determine the percentage of gondolas (elevator boxes) that are overloaded. In small plants score 25 gondolas. A gondola or elevator is to be scored as overloaded if there is not sufficient space for the animals to stand or lie down without being on top of each other. Score on a per gondola basis:

- Excellent – No gondolas are overloaded on a 50 animal audit
- Acceptable – 4% of gondolas are overloaded
- Not Acceptable – More than 4% are overloaded
- Serious Problem – The person moving the animals forces more than one pig to jump on top of the other pigs in the gondolas with an electric prod or by hitting, shoving or kicking.

For gas systems where the animals ride head to tail on a continuous conveyor that does not have separate animal compartments, do not use this scoring system. Omit this score and score the percentage of animals prodded with an electric prod. Electric prod scoring is discussed in another section of these guidelines.

Stunning to Bleed Interval

This parameter does not have to be measured for welfare reasons unless non-penetrating captive bolt is used. To avoid return to sensibility, animals stunned with a non-penetrating captive bolt should be bled promptly, but no longer than 60 seconds after stunning.

Core Criteria 2: Bleed Rail Insensibility

Properly stunned animals should not display signs of sensibility on the bleed rail. Auditors should monitor a minimum of 100 animals in large plants and looking for signs of partial sensibility, like eye reflexes, nose twitches or the righting reflex. When a 100 animal audit is performed, 100% must be rendered insensible. There is a zero tolerance for beginning any slaughter procedure such as skinning the head, leg removal or scalding on an animal that shows any sign of return to sensibility. It must be immediately restunned.

The signs of returning to sensibility are: 1) rhythmic breathing, 2) vocalizations while hanging on the bleed rail, 3) eye reflexes in response to touch, 4) eye blinking, 5) arched back righting reflex with the head bent straight back. Any one or a combination of these signs represents a sensible animal (2007 update). Animals will sometimes have a sideways neck flexion that relaxed in a few seconds. This must not be confused with a righting reflex.

Animals should hang straight on the rail and have a floppy head. A head that flops upward for a brief moment when the legs kick should not be confused with a righting reflex. Limb movements should be ignored. If the tongue is hanging straight out and is limp and soft, the animal is definitely insensible. Gasping is a sign of a dying brain and should be ignored. However, twitching noses, or the tongue moving in and out are signs of a possible return to sensibility.

Touching the eye and observing the corneal reflex is a good method for determining insensibility in animals stunned with captive bolt. Touching an electrically stunned pig's eye may cause it to pop open suddenly which may be misinterpreted as a blink. The person scoring insensibility should look for spontaneous natural blinks. A pig that blinks spontaneously would be scored as sensible. Nystagmus, or vibrating eyelids, is a sign of a poor stun in captive bolt stunned animals. However, in electrically stunned animals, it is permissible to have some animals with vibrating lids or eyes. While no sensible animal should be observed on the bleed rail during a 100-head audit, on rare occasions, it is possible that a sensible animal will be observed. Use these figures when evaluating plant performance over time by averaging the scores of many audits.

Core Criteria 2: Cattle Insensibility

Excellent – 1 per 1,000 or less

Acceptable — 1 per 500 or less

Core Criteria 2: Pig and Sheep Insensibility

Excellent – 1 per 2,000 or less

Acceptable – 1 per 1,000 or less

Core Criteria 3: Falling (Updated 2007 and 2010)

Good animal welfare and quiet calm handling is impossible if animals slip or fall on the floor. All areas where animals walk should have non-slip footing. Animals should be observed during all phases of handling and if slipping or falling is observed, steps should be taken to correct the problem. Because survey results indicate that the greatest slipping and falling problems were in the stunning chute area, scoring should be done in this area.

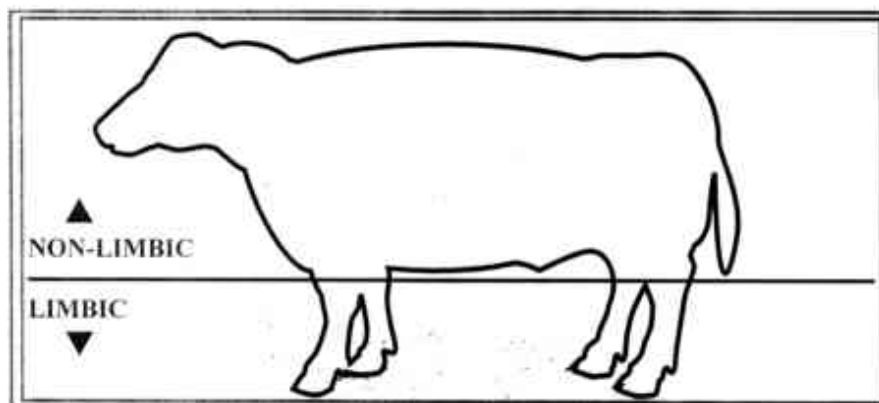
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Because of concerns about slipping at unloading, slipping and failing should also be measured here.

It is important to be clear about the definitions of slips and falls. They are as follows:

Slip: When a portion of the leg other than the foot touches the ground, or a foot loses contact with the ground in a non-walking manner.

Fall: When an animal loses an upright position suddenly in which a part of the body other than the limbs touches the ground.



Scoring of Slipping and Failing in the Unloading Area (All Species) (2010 update)

IMPORYANT: Falling is scored as a core criteria and slipping is scored as a secondary criteria. This change was made due to problems with inter-observer consistency/reliability on scoring slipping. A plant fails a welfare audit if more than 1% of the animals fall.

In large plants where multiple vehicles are continuously unloaded, 100 cattle, pigs or sheep should be scored. For cattle, unloading is continuously observed until 100 cattle from three different vehicles are scored. For pigs and sheep where a large truck holds more than 100 animals, a minimum of two vehicles should be observed. Fifty animals are scored from each truck. For all species, an equal number of animals from each deck should be scored. Vehicles should be scored in the order of arrival at the unloading ramp.

In small plants where vehicles are not continuously unloaded, a single vehicle should be scored. If no vehicle arrives, the score sheet is marked "unloading not observed."

Excellent - No slipping or falling

Acceptable - Fewer than three percent slipping; fewer than one percent falling (body touches floor)

Not Acceptable - More than three percent slipping; more than one percent falling down

Serious Problem - Five percent falling down or 15 percent or more slipping

Scoring of Slipping and Failing in the Stunning Chute Area (All Species)

Score a minimum of 50 animals in large plants. In most plants that have non-slip flooring, falling seldom occurs. In fact, problems with slipping or falling are usually either a big problem or almost no problem. Formal scoring should be done if slipping or falling is observed.

Score in the restrainer entrance, stunning box, lead up chute, crowd pen, and in the final loading pen where pigs move into a gondola or other conveyance for gas stunning. Observation without formal scoring should be made in the stockyard pens and scales.

Excellent - No slipping or falling

Acceptable - Three percent or less slipping; fewer than one or less percent falling (body touches floor)

Not Acceptable - More than three percent slipping; more than one percent failing down

Serious Problem - Five percent failing down or 15 percent or more slipping'

Core Criteria 4: Vocalization (Updated 2007)

Cattle Vocalization Scoring in the Crowd Pen, Lead-up Chute, Stunning Box or Restraint Device

Vocalization is an indicator of cattle discomfort during handling, restraint and stunning.

(Score a minimum of 100 animals in large plants and 50 in smaller plants. For data collection on large numbers of animals, the fractional percentages can be used.)

Excellent - One percent or less of the cattle vocalize

Acceptable - Three percent or less of the cattle vocalize

Not Acceptable - Between three and 10 percent vocalize

Serious Problem - More than 10 percent vocalize

Where head holders are used, five percent vocalization is acceptable.

Cattle should be stunned immediately after they enter a stun box or restrainer. Isolated animals will often vocalize. The author has observed that vocalization scoring is very efficient for identifying plants with cattle handling or equipment problems. Vocalization scoring works well in packing plants because cattle are stunned quickly after they are restrained.

When vocalization is being evaluated, cattle from more than one feedlot or ranch should be observed. There are variations in the tendency of some cattle to vocalize. To make the scoring simpler, each animal should be classified as either a vocalizer or a non-vocalizer.

Cattle vocalizations are tabulated in the crowd-pen, lead-up chute, restrainer and stun box. All vocalizing animals in the Stun box, restrainer or religious slaughter box are scored. Vocalizing animals in the crowd-pen and lead-up chute are-scored only during active handling when the handler is moving the animals. Vocalizations occurring in the yards should not be tabulated because cattle standing quietly in the yards will often vocalize to each other.

Vocalization Scoring of Pigs

Because it is impossible to count individual pig squeals when a group of pigs is being handled, vocalization scoring of individual pigs can only be conducted in the restrainer, stun box or group stunning pen. A group of pigs that excessively squeals should be assessed to identify the cause.

It is important to count squeals only and not grunts. The U.S. Department of Agriculture defines a squeal as an extended sound (0.5 - 2.0 sec.) of both high amplitude and high frequency produced with an open mouth, indicative of a high level of excitement, fear, or pain. Score only squeals that can be determined to be provoked by equipment or humans. Squealing that occurs when pigs root under each other or jump on top of each other is counted if provoked by electric prods, yelling, poking or hitting the pigs.

There are six major causes of provoked squeals/vocalizations that include, but are not limited to:

1. Electric prod use
2. Sharp edges
3. Sores or poor body condition
4. Pressure from the hold-down rack
5. Sides of a v-restrainer moving at different speeds
6. Hitting or poking livestock

If you cannot determine a cause, the squeal should be treated as unprovoked.

Score pig squeals after the most posterior part of the hind end is past the restrainer entrance. The definition of the restrainer entrance for different types of equipment is listed below.

1. V conveyor restrainer - The entrance point is located on the outer circumference of the slats where they turn around the sprocket (pivot).
2. Center track conveyor restrainer -- The entrance point is located at the point where the conveyor emerges from the housing and is exposed. In the unlikely event that a pig squeals because both legs and feet get on one side of the center track, the squeal would be counted.
3. Stun box - The entrance point is located on the inside surface of the tailgate.
4. Group floor stunning - The entrance point is the gate where the pigs enter the stunning pen. Score after the pigs enter and the gate is closed.
5. In plants that use CO₂, group stunning systems, squeals should be counted in the final loading pen where gates move pigs into a gondola or other conveyance.

Another simple method for monitoring continuous improvement within a plant is estimating the percentage of time that the entire stunning room is quiet. As each pig is stunned, the person doing the scoring checks off whether or not the room was quiet. The score is the percentage of stunning cycles where the room was quiet. When CO₂ stunning is evaluated, a stunning cycle consists of the time to fill a gondola. Because vocalization scores can vary by auditor, number of pigs and by room acoustics, vocalization scores are difficult to compare across plants and should not be measured by third party auditors. This is for internal use only.

However, one can conclude that a plant that has continuous constant squealing may have pig welfare problems. This method is excellent for internal plant monitoring over time.

Criteria for Vocalization of Pigs in Conveyor Restrainers

Do not score grunts, squeals that can be attributed to a misapplied stun wand or squeals that appear unprovoked by humans or by equipment. Score a minimum of 100 pigs in large plants and 50 pigs in smaller plants.

Excellent - Two percent or less of the pigs squeal

Acceptable - Five percent or less of the pigs squeal due to the restrainer; none due to a misapplied stunner

Not Acceptable - Six percent or more squeal in the restrainer

Serious Problem - 10 percent or more squeal in the restrainer

When 50 or less pigs are scored, a single squealing pig is acceptable. When more data is collected and averaged, use the five percent level for an acceptable rating.

Criteria for Room Vocalization

(Should be used in internal audits only and not compared across plants).

Score a minimum of 100 pigs in large plants and 50 pigs in smaller plants.

Acceptable - 50 percent or less of the pigs in the room vocalize

Vocalization Scoring of Sheep

Observations at a sheep slaughter plant indicated that vocalization during handling is not an effective measure of handling problems in sheep. Sheep walking quietly up the stunning chute often vocalized to each other. Sheep which balked and had to be pushed by a person never vocalized. This is a species difference between cattle and sheep and neither the presence nor absence of vocalization should be used as a measure.

Core Criteria 5: Electric Prod Use (2010 update)

Reducing the use of electric prods will improve animal welfare. Shocking livestock with electric prods will significantly raise heart rate, open mouthed breathing, and many other physiological measures. Revisions to the standard are based on data collected from 26 plants which were audited by McDonalds during 1999 and 2000 (www.grandin.com). In 2000, 68 percent of the plants used no electric prods in the crowd pen and 62 percent used an electric prod on fifteen percent or less of the pigs at the restrainer entrance. For purposes of auditing, touching livestock with an electric prod is counted whether the prod is energized or not.

Core Criteria 5: Electric Prod Scoring Criteria for Cattle

Percentages of Animals Prodded

Excellent - 5 percent or less

Acceptable - 25 percent or less

Not Acceptable - 26 to 49 percent

Serious Problem - 50 percent or more

Core Criteria 5: Electric Prod Scoring Criteria for Pigs Entering In Single File in Either Electric or CO2 Systems

Percentages of Animals Prodded

Excellent - 10 percent or less

Acceptable - 25 percent or less

Not Acceptable - 26 percent to 79 percent

Serious Problem - 80 percent or more

Core Criteria 5: Electric Prods Scoring for Pigs With CO₂ /Group Stunning Systems— (No Single File Chute) or Systems Where Pigs Are Stunned on the Floor in Groups

Percentages of Animals Prodded

Excellent - 0 percent

Acceptable - 5 percent or less

Not Acceptable - 6 to 10 percent

Serious Problem - 11 percent or more

Core Criteria 5: Electric Prod Scoring of Sheep

Percentages of Animals Prodded

Excellent - 0 percent

Acceptable - 5 percent or less

Not Acceptable - 6 percent to 10 percent

Serious Problem - 11 percent or more

Note: Electric prods should only rarely be used on sheep. The only place they should be used is at the restrainer entrance on large sheep that refuse to enter. The OIE (2008) international slaughter guidelines state that electric prods should not be used on sheep. There are some very large sheep that are difficult for a person to push manually into the restrainer. A single application of an electric prod may be required to move them.

Core Criteria 6: Willful Acts of Abuse (2010 update)

Any willful act of abuse is grounds for failure (2010 Update) – Willful acts of abuse include, but are not limited to: (1) dragging a conscious, non-ambulatory animal, (2) intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, anus, or testicles, (3) deliberate slamming of gates on livestock, (4) malicious driving of ambulatory livestock on top of one another either manually or with direct contact with motorized equipment (This excludes loading a non-ambulatory animal for transport), (5) hitting or beating an animal, or (6) live animals frozen to the floor or sides of the trailer. In sheep operations, lifting an animal by the wool or throwing a sheep also is an act of abuse.

Core Criteria 7: Access to Water

All livestock should have access to clean water in holding pens in plants.

Scoring of Very Small Plants

Small beef plants that process 25 or fewer beef cattle per hour may need adjustments in scoring due to small sample size and differences in cattle behavior. Ideally 50 or more cattle should be scored, but this is often not practical in a plant that processes 5 to 10 cattle per hour. For a plant's own internal audit, data should be pooled and averaged. Pooled small data sets can be scored per the American Meat Institute Foundation's guidelines. When an outside auditor audits a small plant, sometimes only 10 to 20 cattle are observed. If one stun were missed the plant would not achieve the 95% acceptable score. If passing or failing the stunning audit is based on a single small data set, one miss should be permitted. However on pooled data the 95% first shot efficacy score must be maintained. On small data sets of 10 to 20 cattle, all cattle (100%) must be rendered insensible prior to hoisting to pass the audit. In very small beef plants with line speeds of less than 25 cattle per hour, the animals may stand for long periods in the single file chute (race) and "talk" to each other. Their "talking" vocalizations are not scored. "Talking" vocalizations in the handling system occur more often at slow line speeds. An animal should be scored as a vocalizer if the vocalization is associated with:

1. Poking with an electric prod.
2. Slipping or falling.
3. Vocalizing in the stun box.
4. Poking by sharp edges on equipment.
5. Hitting with gate.
6. Excessive pressure from a restraint device.
7. Missed stuns.
8. Physical abuse by a person.
9. Signs of agitation such as rearing, jumping, repeated backing up in the single file race or frantic attempts to escape.
10. Isolation of a single animal away from other cattle.

Conclusion

An acceptable level of animal welfare can be maintained if scores for the core criteria for stunning, animal insensibility, slipping and falling, vocalization and electric prod use are in the acceptable range. Scoring performance on these variables is simple and easy to do under commercial plant conditions. In conclusion, managers must be committed to good animal welfare. Plants that have managers who insist on good handling and stunning practices tend to have better results. Positive and negative feedback also is very important. You manage the things that you measure, which is why auditing is important. To maintain good handling and stunning practices requires continuous measurement, monitoring and management.

Chapter Three: Official AMI Foundation Audit Forms

Official AMI Foundation Audit Forms are included in the following section and are indicated with the AMI Foundation logo. These forms are dated. Updates to these forms may be made based upon new information and user feedback. Any updated forms will be posted on www.animalhandling.org

Chapter Four: Troubleshooting Guides

Finding Distractions That Hinder Easy Movement

Problem: Animal refuses to move through an alley, chute or race.

Possible Causes: If animals refuse to move through an alley, chute or race, there may be a very simple solution. Once the area is clear, step into the race to see what distractions may be hindering movement. Any one of these items on the following list may cause animals to stop moving or back up and prevent a properly designed facility from working efficiently. In some facilities, two or three different distractions must be removed before animals will move easily. Often, identifying the problem requires trial and error.

Look for:

- Sparkling reflections on puddles that can be eliminated by moving a ceiling lamp
- Reflections on smooth metal that can be minimized through lighting changes.
- Chains that jiggle and can be fastened.
- Metal clanging or banging that can be secured. Rubber stops can be used on gates, for example, to prevent clanging.
- High pitched noises and other loud or reverberating noises that can be silenced
- Air hissing, which can be silenced with mufflers or piped outside
- Air drafts blowing toward approaching animals, which can be redirected away from them.
- Clothing hung on the fence that can be removed.
- Moving piece of plastic that can be secured or removed.
- Fan blade movement. Install a shield to block the animals' view.
- Seeing people moving up ahead. Install a shield so approaching animals cannot see them.

- Small object on the floor such as a coffee cup, hose or paper.
- Changes in flooring and texture, which can be made uniform.
- Drain grate on the floor, which can be moved to another location outside races.
- Sudden changes in the color of equipment or flooring. Colors with high contrast like yellow are the worst. Use of single colors on floors and walls can facilitate movement.
- Race entrance is too dark. Animals prefer to move from a darker place to a brighter place.
- Bright light such as blinding sun. Animals will move from a darker place to a brighter place, but they will not move toward blinding light. Examples of blinding light are looking into the sun or a bare light bulb.
- One-way and back-up gates. Install them two to three body lengths away from the crowd pen. Equip the one-way gate near the crowd pen with a remote controlled rope so that they can be held open when the single file race is filled. Many facilities have too many backup gates. Try tying them open.

Resolving Problems in Center Track Conveyor Restrainer Systems and V Belt Restrainer Systems for Cattle, Pigs, and Sheep

Problem: Animal stops at entrance and refuses to enter.

Possible Causes:

1. Hold-down rack is too low and the animal bumps its shoulder as it enters. Raise hold-down so that there is approximately 4 in. (10 cm) of clearance for the tallest animal. The hold down should be solid to block vision.
2. Entrance is too dark – install a light that illuminates the entrance. The light must not shine in an approaching animal's eyes.
3. Slick Floor – Animals panic when they slip. Weld rods to floor to provide a non-slip floor. The entrance ramp into the restrainer must be non-slip.
4. Entrance ramp missing – Reinstall entrance ramp. See diagrams on www.grandin.com. Forcing an animal to jump into a restrainer frightens it.
5. Leg spreader is too wide and it bumps the inside of the animals' legs. This problem only occurs in center track restrainers. See diagrams on www.grandin.com.
6. No False Floor - on all types of restrainers, animals will be afraid to enter if they see a steep drop off (visual cliff) below the restrainer. Install a solid false floor approximately six inches (15 cm) below the feet of the largest animal. See diagrams on www.grandin.com.
7. No belly rails – on center track restrainers belly rails keep the animal centered over the leg spreader bar. See diagrams on www.grandin.com.
8. Distractions in plant – install a curtain at the exit end of the restrainer. Look through the Restrainer and see if you can see distractions such as moving conveyor, a yellow apron or sparkling reflections on a moving piece of equipment.
9. Broken sharp edges in entrance – repair or replace entrance parts.

If an animal is walking into the restrainer by itself, do not poke it with an electric prod. Center track systems require less prodding to induce cattle to enter it. Workers need to break the “automatic prod reflex” habit.

Resolving Problems in Center Track Conveyor Restrainer Systems and V Belt Restrainer Systems for Cattle, Pigs and Sheep

Problem: Animals struggle in the restrainer

Causes:

1. V conveyor sides run at different speeds - Both sides must run at the same speed.
2. Hold down too short – on all types of restrainers, the animal must be completely restrained and riding on the conveyor with its feet off the entrance ramp BEFORE its head emerges from under the hold down. The principle is blocking vision until the animal is fully restrained.
3. Broken slats and other parts – sharp edges that stick into animals will cause struggling. On the center track restrainer, the metal guides along the conveyor must not be bent. Replace broken or bent slats. Slat must line up and provide a smooth continuous surface.
4. Hold-down too high – This is most likely to be a problem when small animals are handled. Install a rubber curtain made from conveyor belting on the discharge end of the hold down rack to block the vision of smaller animals.
5. Adjustable sides not centered - Struggling is more likely to occur if the adjustable sides of the center track conveyor push the animal to one side and make it feel off balance. Adjustable sides should be at the same setting on both sides.

Resolving Electrical Stunning Problems

Problem: Animal blinks within 5 seconds after stunning

Possible Causes:

1. Electrode is placed in the wrong position and the electrical current fails to go through the brain. The animal blinks because the stunner failed to induce a grand mal epileptic seizure that is required to induce instant insensibility.
2. The electrical amperage may be too low. Even though the electrode is in the correct position, there is not enough current passing through the brain to induce a grand mal epileptic seizure. The amperage and/or voltage should be checked and may need to be increased.
3. High electric resistance of the animal. This is especially a problem in old sows or dehydrated animals.
4. Electrode contact area is too small or the electrodes are dirty. Increase surface area of electrode or clean them.
5. The animal is too dry, which results in high electrical resistance. This is most likely to be a problem in cattle or sheep and continuous wetting during the stun may be required in these two species.

Problem: The initial stun appears to be done correctly but the animal blinks or shows other signs of return to sensibility 30 to 90 seconds after stunning.

Possible Causes:

1. The stunning-to-bleed interval is too long. This is especially a problem with head only reversible stunning. The solution is to shorten the interval between stunning and bleeding.
2. Poor bleeding if an animal shows a sign of return to sensibility after it has been bled. This can occur in cardiac arrested animals because there are always a few animals in which the heart is not stopped. Training of the person doing the bleeding will usually solve this problem.
3. Poor initial contact results in the animal receiving a stunning time that is too short. A common cause is a fatigued operator.

4. Interrupted contact – The stunning wand or tongs may bounce or slide during the stun and result in a stunning time that is too short. Poor design of the stunning wand is a likely cause. An other cause can be an overloaded stunner operator who is stunning more animals than he can easily handle.
5. Placement of the head electrodes in the wrong position on the head. Reposition the electrodes so that the electrical current will pass through the brain.

Resolving Captive Bolt Stunning Problems

Possible Reasons for Poor Stunning

1. Stunner has not been maintained. A dirty stunner will lose bolt velocity. High bolt velocity is required for an effective stun.
2. Damp cartridges for a cartridge fired stunner. Cartridges must be kept in a dry place. Do not store them in the slaughter room.
3. An overheated cartridge fired stunner will lose bolt velocity. Rotate cartridge fired stunners to prevent overheating.
4. Worn cylinder bore on a pneumatic stunner. Even when the stunner has been serviced correctly, the machined cylinder bore eventually wears out and the stunner will lose hitting power. At this point the stunner will have to be replaced. A clean air supply will help prevent cylinder wear.
5. Poor ergonomics of bulky pneumatic stunners. Adding additional handles will aid positioning. When a pneumatic stunner is used with a conveyor restrainer, it is often easier to position the stunner if it is hung from the balancer on a 30-degree angle.
6. Stunner operator chases the animal's head. The operator should be trained to wait for the animal to stop moving and then position the stunner. Chasing the head will result in poor stunning.
7. Excited animals. Careful quiet handling and driving of animals into the stun box or restrainer will provide calm animals that are easier to stun correctly.
8. Air pressure too low to power a pneumatic stunner. Use the air pressure setting recommended by the manufacturer. This usually requires a dedicated compressor, which powers only the stunner.
9. Slick floor in stunning box causes cattle to become agitated.
10. Poor placement. Stunner is not placing the captive bolt square against the center of the head or not placing the bolt in the "X" between the base of the horn (poll) and the eye.

Resolving CO₂ Stunning Problems

Problem: Stunning Ineffective, animals not completely insensible

Possible Causes:

1. Low CO₂ concentration. Increase the gas concentration.
2. Exposure time is too short. Slow down the number of pigs which are moved through the system.
3. The time between the exit from the CO₂ chamber and bleeding is too long. To prevent recovery from the anesthesia, bleed the animals more quickly.

4. Poor bleeding technique. If animals show signs of return to sensibility after bleeding, the person doing the bleeding may need more training.

Chapter 5: Worker Safety Tips for Animal Handlers and Stunners

Working with livestock in a plant setting can be challenging and unpredictable. It is essential that safety be a priority when handling and stunning animals. Below are a series of safety tips that can help protect employees.

Livestock Facility and Trucking

1. Battery operated prods are recommended. If prods are wired into the house current, they must always be wired through a transformer. A light bulb wired in series is dangerous to both people and livestock.
2. Man gates and other devices must be installed so people can easily escape from agitated cattle. This is especially important for areas with solid fences. In concrete fences, toeholds can be formed in the walls.
3. Be alert around the unloading dock. A truck driver backing in may not be able to see you.
4. Handle cattle quietly. Excited animals are more likely to cause accidents.

Electric Stunning of Sheep and Pigs

1. The stunner operator's station must be kept dry.
2. The operator should wear rubber boots and stand on non-conductive plastic grating. Hand stunning should be done with the operator standing on cement.
3. The restrainer frame and worker walkway structure should be grounded to a perfect ground. However, the side of the restrainer that the stunner operator can touch should be covered with heavy insulating materials such as a plastic meat cutting board.

Captive Bolt Stunning

1. Cartridge-fired stunners must ALWAYS be uncocked before they are set down.
2. NEVER, EVER throw a cartridge-fired stunner to another person.
3. Inspect latches on stunning boxes to make sure they latch securely. Before the next animal is admitted to the box, check the latch.
4. All guards must be kept in place over exposed pinch points that could be easily touched by employees during normal operation of the restrainer system equipment.
5. If a worker has to get inside a restrainer conveyor system to unjam it, lock it out first to prevent somebody else from turning it on.
6. Cartridge-fired stunners must always be kept unloaded when they are carried away from the stunning area.
7. Good maintenance is essential with pneumatic stunners to prevent excessive recoil, which can strain and injure the operator's hands, arm or back.
8. The use of a cartridge gun holder is considered a best practice. Do not lay a gun on the edge of a stun box.

Safe Livestock Handling

1. A single, lone, agitated steer is very dangerous. Many serious cattle handling injuries are caused by a single agitated steer or cow. Never leave a single animal alone during break.
2. Escaped cattle must never be chased. An animal that is loose on the plant grounds will return to the stockyard if it is left alone. If an animal gets loose inside the plant, employees should stay quiet while one designated person either stuns it or eases it out a door.
3. Stay out of the blind spot behind a steer's rear end. If he cannot see you, he is likely to kick you.
4. Install a safety fence consisting of upright posts around the cattle shackling area to prevent cattle from entering other parts of the plant.
5. Do not try to stop a pig that is running back from a group as a person may be knocked down or injure his or her knees.

Ritual Slaughter Practices

Shackling and hoisting unstunned cattle and calves can be very dangerous. It has caused many serious accidents. In one plant, replacement of the shackle hoist with a restrainer resulted in a dramatic reduction in accidents. Shackling and hoisting of live sheep is also hazardous.

Working with livestock in a plant setting can be challenging and unpredictable. It is essential that safety be a priority when handling and stunning animals. Below are a series of safety tips that can help protect employees.

Livestock Facility and Trucking Safety Tips

1. Battery operated prods are recommended. If prods are wired into the house current, they must always be wired through a transformer. A light bulb wired in series is dangerous to both people and livestock. The OIE states that only battery operated electric prods should be used.
2. Man gates and other devices must be installed so people can easily escape from agitated cattle. This is especially important for areas with solid fences. In concrete fences, toeholds can be formed in the walls.
3. Be alert around the unloading dock. A truck driver backing in may not be able to see you.
4. Handle cattle quietly. Excited animals are more likely to cause accidents.

Electric Stunning of Sheep and Pigs

1. The stunner operator's station must be kept dry.
2. Stunning wands should be designed so that they can be operated with one hand. Avoid designs where the two electrodes are held separately in each hand. These can increase the hazard of an electrocution shock across the chest.
3. The operator should wear rubber boots and stand on non-conductive plastic grating. Hand stunning should be done with the operator standing on cement.
4. The restrainer frame and worker walkway structure should be grounded to a perfect ground. However, the side of the restrainer that the stunner operator can touch should be covered with heavy insulating materials such as a plastic meat cutting board.

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Guide to Designing a Small Red Meat Plant with Two Sizes of Model Designs

IOWA STATE UNIVERSITY
University Extension

PM 2077 March 2009

. . . and justice for all

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CAUTION!

These plans are intended for informational purposes only and are *not* intended for direct construction use. Due to the constantly changing nature of regulations we cannot guarantee that all of the specifications of these plans are up to building code in your specific location. You are strongly encouraged to check with your food safety inspection agency and local building authorities before beginning any construction.

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Additional professional services will be required to create plan designs tailored to your specific situation, including but not limited to: assurance of compliance with codes and regulations regarding food safety and building construction; review of specifications for materials and equipment; supervision of site selection, bid letting and construction; and provision for utilities, waste management, roads or other access. ***Furthermore, improper construction may result in structural failure, property damage and personal injury including loss of life.***

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About this Guide and Model Designs

Meat plants are not easy to build. Build one like a house, and it will likely fall down in a few years. Put your work areas together in the wrong layout or in the wrong proportions, and things could take twice as long to get done. Put the drains in the wrong spot and you could have to jackhammer out the floors.

Meat plants can vary widely in use and design. How you build a plant depends on the types of processes you intend to have as part of your plant (e.g. slaughter, fabrication, production of ready-to-eat product). *These designs are ONLY intended for “locker-type” small-scale meat processing plants.* That is to say small-scale plants that intend to slaughter red-meat animals, fully fabricate carcasses, and produce both raw and fully-cooked processed meat products. *These designs are NOT intended for plants that seek to slaughter and/or process poultry, solely can meat, solely make prepared entrees which include meat (e.g. pizzas), and process other species not normally processed at a locker-type plant (e.g. fish).*

If you intend to construct, expand, or upgrade a locker-type meat plant, these plans were created to help you avoid some headaches, including determining whether or not you should actually expand—sometimes a bottleneck can be corrected by upgrading or moving equipment without adding more space, by changing the way you schedule your product processes, increasing batch size, or changing product flow in other ways. The final design of your plant should be based on the specific needs of your particular business. While these designs are NOT intended to be directly built from, they are intended to give you a good start in the right direction. An experienced meat plant consultant created these designs for the Iowa Meat Processors Association and the Small Meat Processors Working Group, a collaboration of Iowa organizations seeking to support small meat processors. *We strongly encourage you to check with your food safety inspection agency and local building authorities before beginning any construction.*

How to Use this Book Successfully¹

As stated on earlier pages, these designs are intended NOT for direct construction use. These designs are ONLY intended to offer information for “locker-type” small-scale meat processing plants—those that slaughter red-meat animals, fully fabricate carcasses, and produce both raw and fully-cooked processed meat products (e.g. sausages, ham, bacon, beef jerky).

In order to successfully use these plans to build, upgrade, or expand a locker-type meat processing plant, we strongly recommend that you go through the following eight steps. Some of these steps need to be taken concurrently, so understand the whole process thoroughly before physically starting any project.

1. *Determine what types of products and/or services you will offer and the production steps needed for each.*

If you operate an existing business and are considering building a new facility, now is the time to think deeply about what your future products and/or service options might look like as your business grows. Ultimately, you want to design a facility that will help you focus on the products and services that are most profitable. Consider the following two examples:

- a. If you find that hogs are more profitable for you to process than beef, and you plan to process a larger proportion of hogs in your new facility than you currently do, this could reduce the amount of hanging cooler space needed.

- b. If you plan to produce a high-volume sausage product in your new plant, you might consider purchasing a rollstock packaging machine, which is large and might require additional space in your packaging area.

How product flows through your plant will be critical for both plant efficiency and food safety. That flow will be partially dependent on the processes and equipment you will use. Make a list of the equipment you will need by processing area. Understanding all the steps necessary to produce all your products (raw and fully-cooked) will help you modify the designs to efficiently meet your needs. As you consider this, it may help to draw flow charts of how products move through your plant. Flow charts will also help you write your hazard analysis and critical control point (HACCP) plan and sanitation standard operating procedures (SSOPs). It is often easier to build food safety into your design—with proper flow to avoid cross-contamination—than to write operational SSOPs that you must constantly monitor to ensure that employees follow.

An **HACCP** plan includes a written document that outlines the manufacturing processes in a plant and the recordkeeping used to monitor critical control points for food safety hazards.

SSOPs are documented procedures as to how a plant cleans (sanitizes) all processing areas (equipment, surfaces, etc.).

¹ This section draws from the following documents: “Simplified Systematic Plant Layout” by Jeff Mohr and Mike Willett of the Center for Industrial Research and Service (CIRAS), *CIRAS News*, Vol. 34, No. 1, Fall 1999. Used with permission. [http://www.ciras.iastate.edu/publications/management/SimplifiedSystematicPlantLayout\(1999Fall\).pdf](http://www.ciras.iastate.edu/publications/management/SimplifiedSystematicPlantLayout(1999Fall).pdf), and Muther, Richard and John D. Wheeler. 1994. *Simplified Systematic Layout Planning*. Marietta, Georgia: Management & Industrial Research Publications.

2. *Determine which markets you will sell to and what services you will provide so you can identify the types of inspections you will need.*

Inspection by the USDA Food Safety and Inspection Service (FSIS)—often referred to as “federal inspection”—will allow you to sell product to anyone throughout the United States and to many overseas markets. State inspection will allow you to sell product to anyone within your state.

A “custom-exempt” plant can only slaughter and process animals for the exclusive use of the animal owner(s). A “retail-exempt” plant can further fabricate or process meat for sale from animals that were slaughtered in a federally- or state-inspected facility (state-inspected only if you operate in the same state). A red meat plant can simultaneously do work that is “custom-exempt,” “retail-exempt,” and state- or federally-inspected; a poultry plant cannot. In Iowa, a plant cannot be both state- and federally-inspected; however, other states vary on this point.

3. *Chart the relationships of activities and work areas.*

In order to determine an optimal process flow for your plant, many factors must be considered: every process of plant production operations, taking orders, employee break room, utilities, ventilation, and potential cross-contamination. Since it is difficult to take so many different factors into account, a systematic approach is needed to arrive at the best layout for you.

Begin by identifying all the activities and work areas that need to be included in your plant, for example slaughter, fabrication, sausage kitchen, smokehouse, raw packag-

ing and cooked packaging. It may be helpful to use your HACCP flow charts to help you think about all the areas that product moves through in your plant. It is best to keep the number of work areas or workrooms in the range of 10 to 15 with a maximum of 20. If more than 20, the number of possible arrangements becomes overly complicated.

You can create a Relationship Chart using a spreadsheet format or a mileage-type chart. An example of a filled-out Relationship Chart for XYZ Meat Processors (designed for a real business) is shown in Figure 1 on page 4. (Figure 2, a blank chart for your use, is located on page 5.) The Relationship Chart is used to document the desired “closeness” between a work area relative to all the other work areas. Use the letters A, E, I, O, U and X to indicate the relationship between each pair of activities: from A=Absolutely Necessary, to U=Unimportant, and X=Not Desirable (see Table 1 below for all definitions).

You’ll notice that in the sample chart for XYZ Meat Processors on page 4, only the important (A, E, and I) relationships are noted. There is no need to note the unimportant (U) relationships. Depending on your needs you may or may not want to chart the ordinary (O) relationships.

Table 1. Relationship Values

VALUE	CLOSENESS
A	Absolutely necessary
E	Especially important
I	Important
O	Ordinary closeness okay
U	Unimportant
X	Not desirable

Work area relationships can generally be defined as follows:

A relationships = more than 75% of product moves between them

E relationships = 50-75%

I relationships = 25-50%

O relationship = less than 25%

For example, slaughter and holding pens will always have an A relationship because 100% of the animals in the holding pens will go to slaughter (unless an inspector determines an animal is unfit for slaughter). Two cautions about these percentages: 1) they are general, use what makes the most sense to you; 2) they apply to both product flow and people flow. Furthermore, there may be solid reasons why two areas with only a small percentage of product or people flow need to have a much closer relationship—such as supervision, restroom access, or waste removal.

Each relationship can also be documented with a specific reason or reasons for the desired closeness. A small table with number codes is provided on Figure 2 to record each reason. It is important to record your reasons as you work on the layout so you have documentation to rely on—you might not remember what your reason was at a later date. Also, if you are considering multiple plant layouts, each layout will have different reasons for locating certain work areas in certain places. Having these reasons written down will keep things easier to understand.

Some examples of reasons for a specific relationship value are:

- Product flow
- Shared personnel
- Food safety / cross-contamination
- Movement of supplies or waste
- Supervision

This is by no means a complete list, but it should give you an idea of what is meant by the reason for a closeness value or relationship. Do not forget to consider which work areas need to be close to the exterior of the building (this criteria is modeled in Figure 1). If you find that the relationships for a certain work area are similar to that of another work area, think about combining the two into a common area. Two examples to consider are:

- a. A sausage kitchen and curing cooler could be located in the same area since they both can lead into a smokehouse.
- b. The processing (fabrication) room and the sausage kitchen do not necessarily need a wall between them.

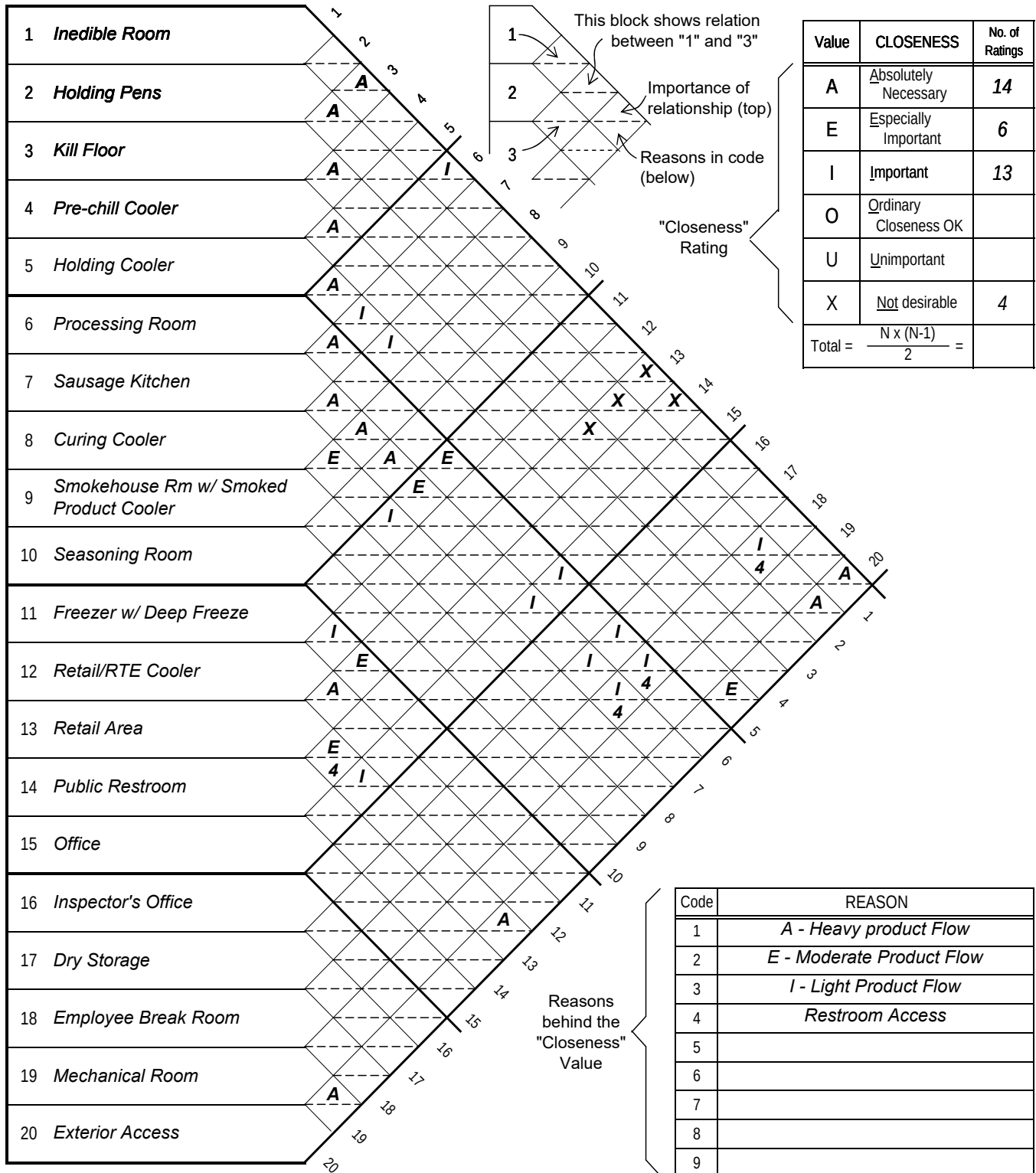
4. *Draft plant room layout.*

The next step is to combine the relationships charted in the previous step with space requirements for each activity. The first time you try to do this, review the designs in this book and draw the rooms individually from one of these designs onto graph paper. Cut them out and move them around on a table or other flat surface until you find a floor plan layout that best fits your production activity relationships from the previous step. Then tape them in place on a piece of cardboard. Lay out all of the A relationships first, then build in the E and the I (and, if needed, O) relationships next, keeping the X relationships in mind. You can leave spaces where you want hallways and enlarge, shrink, or change the shape of rooms as you see fit by cutting new pieces of graph paper. Make sure to cut all rooms to the same scale (graph paper helps with this). Figure 3 (page 6) is a picture of one plant owner's result from this process that matches with the Relationship Chart in Figure 1.

Figure 1

RELATIONSHIP CHART

Plant (Company) XYZ Meat Processor Project _____
 Charted by Bob the Butcher With _____
 Date 11/30/2008 Sheet _____ of _____
 Reference _____



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Figure 2

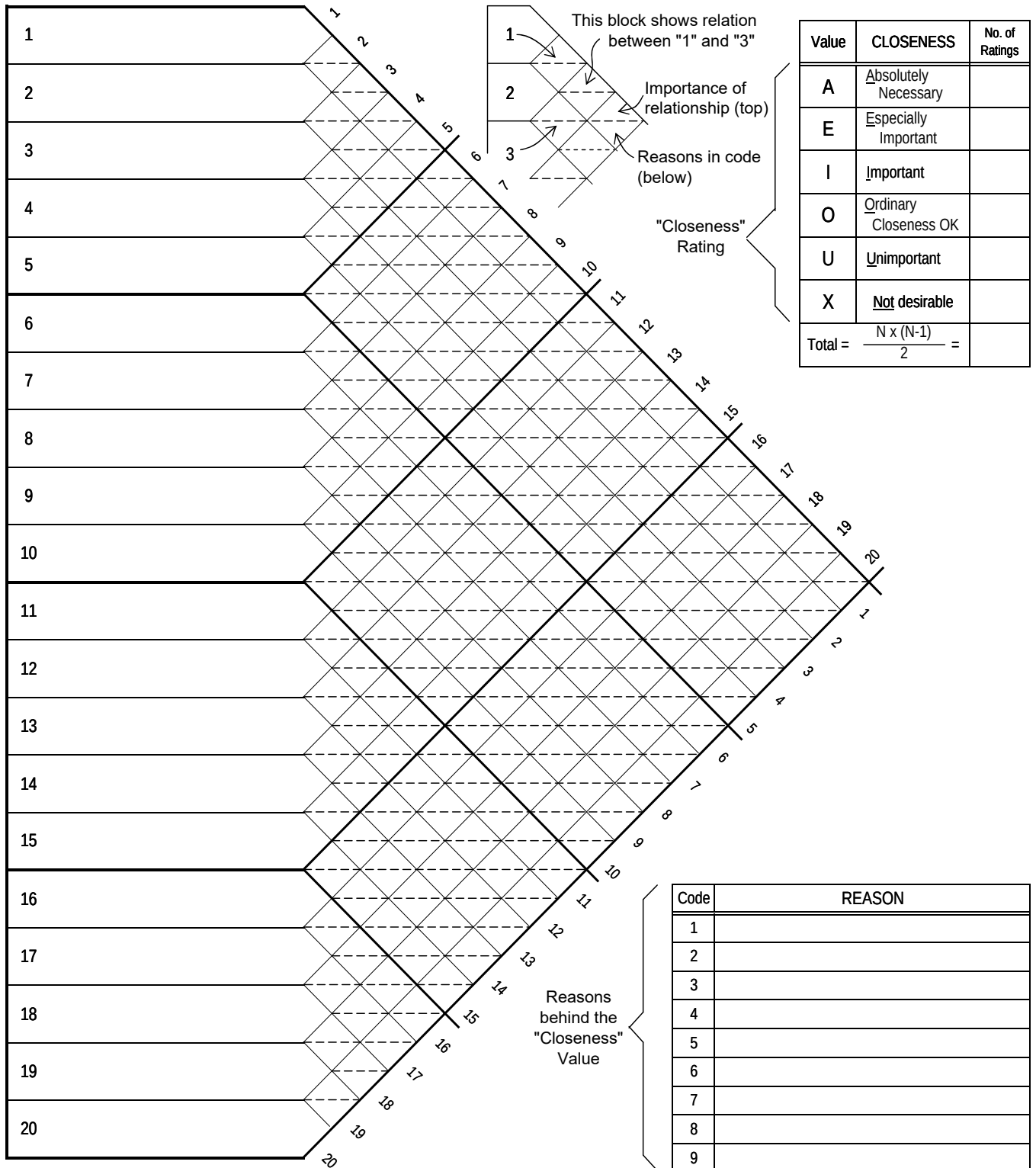
RELATIONSHIP CHART

Plant (Company) _____ Project _____

Charted by _____ With _____

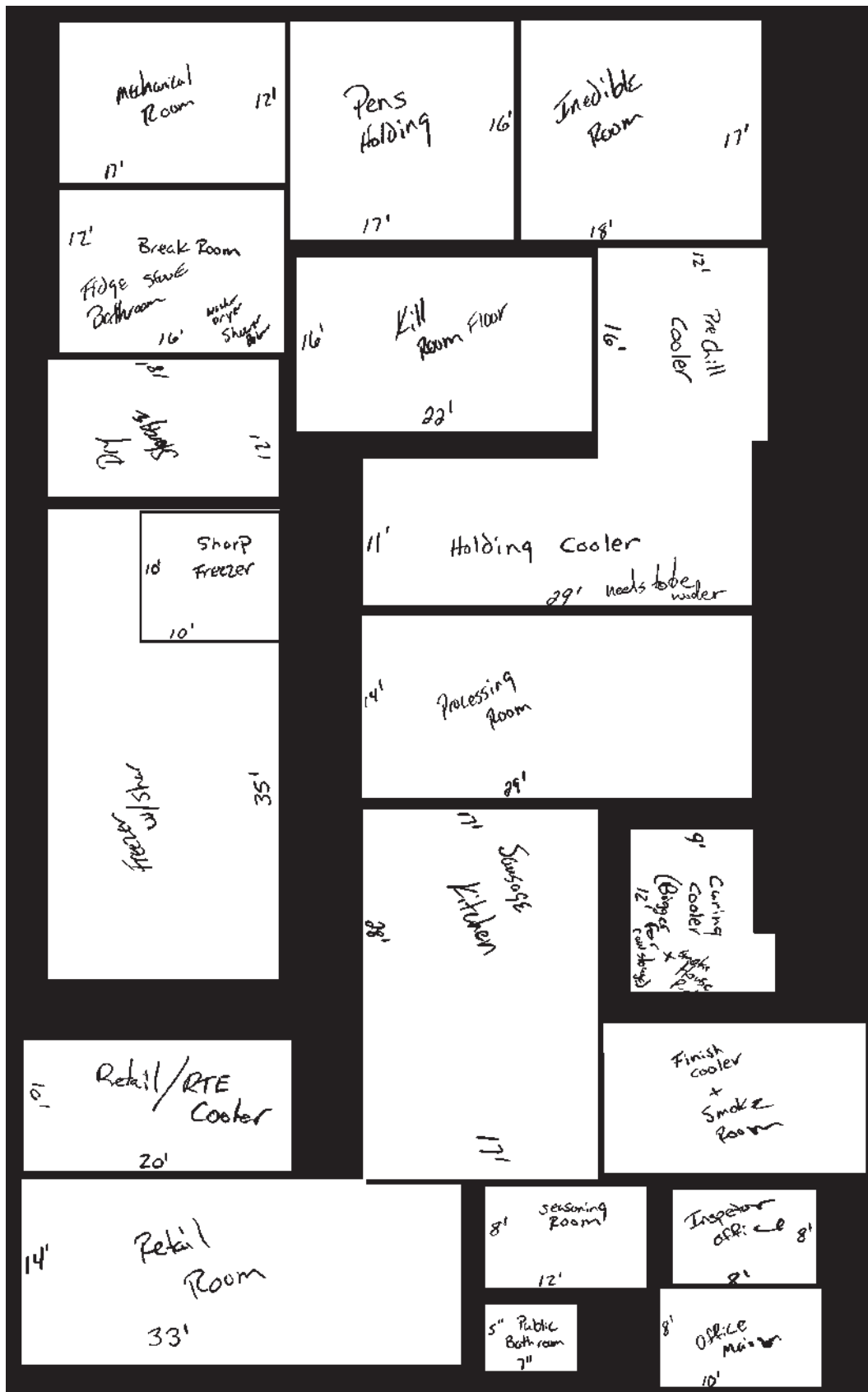
Date _____ Sheet _____ of _____

Reference _____



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Figure 3



Once you have a rough floor plan with activity relationships that you like, contact an equipment dealer and get the physical dimension of all the pieces of equipment you plan to buy and make sure each fits in your floor plan with adequate room for operation, cleaning, and maintenance. (It is always easier to give yourself an extra foot or two on paper than to move a wall once your plant is built.) As you position your equipment, think about the placement in similar terms to the way you have just worked out your room positions. Your breaking table and your saw should be next to each other. Your boning table should probably be close by, against a wall. The placement of your grinder, stuffer, and mixer in relation to each other will be entirely up to the needs of your plant.

Adjustments to room sizes should be made in order to create a realistic exterior building shape with straight lines. Make sure to show any dominant physical features such as columns, access doors, walls, etc. If the building or addition already exists, overlay your layouts on the building outline. Depict permanent physical features like load-bearing walls, loading docks, windows, and doors, etc. Once you have arranged things to your liking and everything fits, you might consider going out to a large field (or your building site) and staking out your floor plan on the ground—this might help you get a better feel of how things might look than just reviewing the paper plan.

We strongly recommend trying to make two to three different draft plant layouts. Work with your employees to get their input on the work areas they know best. Perhaps even ask lead employees to come up with their own draft layouts. The more options you consider, the more confidence you will have in the final layout you choose.

5. *Evaluating plant layout options.*

To decide which layout will best meet your needs, decide on the three to five evaluation factors that are most important to you. Your list might include:

- Ease of expansion
- Cost to build
- Product flow
- Ease of supervision

Next, rate your evaluation factors based on importance to you and assign **priority scores** for each on a scale of 1 to 10. The most important factor gets a **priority score** of 10. Less important evaluation factors get proportionally lower scores.

Priority Score (Example):

Evaluation Factors	Priority Score
Ease of expansion	7
Cost to build	9
Product flow	10
Ease of Supervision	5

Next, **rank** each of your layout options for each of the evaluation factors (tied rankings for multiple layouts are okay). Do not confuse the **rank** with the **priority score** from the previous step (see example on page 8).

Now go back to your priority scores and for each evaluation factor for each layout option, divide the **rank** by the **priority score**, and then add these to find the new weighted values for each layout (see example on page 8).

Rank (Example):

Layout	Ease of expansion	Cost to build	Product flow	Ease of supervision
Option 1	1	1	2	3
Option 2	2	3	2	1
Option 3	1	2	1	2

Weighted Evaluation Factors (Example):

Layout	Ease of expansion	Cost to build	Product flow	Ease of supervision	Total
Option 1	$7 \div 1 = 7$	$9 \div 1 = 9$	$10 \div 2 = 5$	$5 \div 3 = 1.67$	22.67
Option 2	$7 \div 2 = 3.5$	$9 \div 3 = 3$	$10 \div 2 = 5$	$5 \div 1 = 5$	16.5
Option 3	$7 \div 1 = 7$	$9 \div 2 = 4.5$	$10 \div 1 = 10$	$5 \div 2 = 2.5$	24

The layout with the highest total score *should* be the best alternative. In this example that would be Option 3, but Option 1 would be a close second choice. If the **priority scores** were to change slightly, the highest layout score could easily change. As you can see, there is a lot of subjectivity in this process, but the point is to try to make the subjectivity visible and well thought-out so that this important decision is not made blindly.

6. *Work with your contractors (and architect, if needed) to detail your plant's design.*

How will the plumbing, electricity, refrigeration, and ventilation work? What types of interior, exterior, and insulation materials will you use? Up to this point, the layout consists of blocks or various shapes for work areas. Now you can develop the final plan that will be used as a guide to show precisely where everything goes in the plan.

Reproduce the selected layout plan, preferably to a scale of 1/8 or 1/4-inch equals a foot. First, draw in the major equipment and then the smaller equipment and label them. As you begin to do this, you will find yourself re-evaluating the fit of these details and making minor adjustments for such things as door swings, adequate aisle space, and space

for maintenance, service, etc. As you position equipment, you should also document other physical features that may be required on separate features "schedules" such as:

- Ceiling heights
- Fire or other hazards
- Door sizes and types
- Finishing materials
- Adequate room for cleaning of areas and equipment
- Minimum support column spacing for carcass rails
- Ventilation
- Hot and cold water lines and drains
- Cooler lines and compressors
- Electrical and natural gas lines and hookups

The above list of features should NOT be considered all-inclusive. Each meat plant will have its own unique considerations, and the plans should be created to include any necessary features. Schedules for many of these features are included with each of the two model designs in this book.

Make sure the arrangement is functionally sound. One of the best ways to accomplish this is to involve employees from the individual work areas in this step. By using teams, not only will you find that you develop a

better layout, but you will have less resistance in installing the plan because employees will take ownership of a plan they helped develop.

7. *Review and revise, revise, revise until you are completely happy with all of the details.*

You want to build your new plant right *the first time*. There are suggestions in this book about possible ways to do it, but these may not be right for the specifics of your plant and/or geographic area.

If you are not near a municipal sewer system, you will need to consult with the Iowa Department of Natural Resources about wastewater management. You might also want to consult with a certified civil engineer and/or the Cornell Waste Management Institute in New York State (<http://cwmi.css.cornell.edu/>), a national leader in this area.

8. *If you have not done so already, contact your food safety inspection service and work with them to finalize the details of your plant before you begin construction.*

While federal or state food safety inspectors cannot tell you how to build your plant, they may suggest ways your plant can meet the Sanitation Performance Standards of Title 9, Code of Federal Regulations, Section 416.2 (this code, 9 CFR 416.2, is included in the appendix for your reference). These requirements are based on performance, but the code provides no specifics on how you must meet the requirements. The requirements are primarily concerned with:

- Pest management
- Use of tested potable water
- Adequate drainage that prevents back-flow and keeps sewage lines distinct from wastewater
- Adequate lighting and ventilation

- Adequate rest rooms, handwashing stations, and garbage cans.
- Walls, floors, and ceilings must be impervious to moisture and easily sanitized.
- And the catch-all: Building conditions must not result in product adulteration or the creation of insanitary conditions.

There are no regulated metrics for adequacy. You must be able to show that your facilities will be adequate. The idea behind *performance standards* is similar to HACCP, but the requirements for scientific documentation are not as strict. Usually, the guidance of a professional construction contactor or engineer is sufficient.

Food Safety Inspection Agencies

State Inspection for Iowa

Iowa Department of Agriculture and Land Stewardship

Meat & Poultry Inspection Bureau

(515) 281-3338

www.iowaagriculture.gov/MeatAndPoultry.asp

Federal Inspection

USDA Food Safety and Inspection Service (FSIS)

Des Moines Office of Field Operations

(OFO, covers all of Iowa and Nebraska)

(515) 727-8960 or 1-800-990-9834

Contact information for other FSIS OFO offices can be found online at:

www.fsis.usda.gov/Contact_Us/Office_Locations_&Phone_Numbers/index.asp

Note on Improving Plant Productivity

For an existing plant, an expansion or upgrade to the facility may *not* be necessary. You may be able to increase the volume of product you can process without a bricks and mortar change. Before you jump head-first into a project that could cost hun-

dreds of thousands of dollars or more, consider your plant as a whole system of activities that are linked together in a certain order.

For example, slaughter leads to fabrication leads to grinding and packaging. The activities that make up a meat processing business are really a chain of dependent events, including the movement of product between different processing areas and storage. A plant cannot sell products until they are packaged, cannot package products until they are moved to the packaging area, and cannot move products to the packaging area until the products are cut, smoked, etc.

Each step is dependent upon what happens before it. The amount of product being processed at each step should match up with what is happening in the steps before and afterwards, otherwise bottlenecks occur. For example, if your sausage kitchen was twice as large, but you had the same size smokehouse, would you be able to produce product twice as fast? Probably not. Before you make the decision to physically expand any part of your plant, ask yourself, “If I had the capacity to do twice as much in this area or process, would I make twice as much money overall or would things just start backing up in the areas and processes afterwards?” Perhaps you don’t need a new building, but rather a bigger smokehouse and/or faster packaging equipment. *Processors building new plants should also keep this in mind as you select equipment and design your layout.*

Arrangement of the Designs in this Book

This book contains designs for two different sized plants: a *small* plant measuring 2,600 square feet. and a *large* plant measuring 5,250 square feet. A table providing an overview of each design's capacity and details is provided on the next page. Pages 11 through 13 contain general considerations from the Iowa Meat & Poultry Inspection Bureau broken down by plant area. Page 14 contains comments and considerations specific to the designs contained in this book from veteran Iowa meat processors. Sanitation Performance Standards are included in the Appendix on page 63. These sections should provide food for thought about the needs of your own plant.

The designs for each plant are arranged in the following order:

- Floor Plan
- Plumbing Plan
- Electrical Plan
- Refrigeration Plan
- Equipment Plan
- Exterior Elevations Sketches
- Building Specifications

A key of respective icons is placed on the opposite page from each plan. Following the elevation sketches, building specifications are displayed in detailed tables by plant room. The small plant is displayed first, on page 17, followed by the large plant, beginning on page 41.

Questions about these designs can be directed to any of the following persons:

Arion Thiboumery, Coordinator
Small Meat Processors Working Group
North Central Regional Center
for Rural Development
108 Curtiss Hall
Iowa State University
Ames, IA 50011-1050
(515) 294-2882
arion@iastate.edu

Marcia and Kenneth Richmann,
Executive Directors
Iowa Meat Processors Association
P.O. Box 334
Clarence, IA 52216
(563) 452-3329

Plant Capacities and Utilities

	Small Plant	Large Plant
Dimensions	50' X 50' + 10' X 10'	70' X 75'
Size	2,600 sq. ft.	5,250 sq. ft.
Holding Cooler Size	13 Beef*	20 Beef*
Pre-chill Cooler size	7 Beef*	10 Beef*
Number of Employees	3 – 4	6 – 10
Water Use and Output	150-200 gallons per beef equivalent, average One beef should be equivalent to 2 hogs, sheep, or goats	
Electrical amp service needed	Depends on equipment, consult a licensed electrician	
Possible interior materials	Block tile, glass board, stainless steel, concrete block covered with epoxy paint**	
Possible exterior materials	Steel siding, vinyl siding, cement board siding, tip-up concrete, insulated concrete forms	
Heating	Options include forced warm air and hot water heating. Hot water heating is an excellent source of heating for plants. You can reclaim some heat from refrigeration compressors, and do not have to purchase a separate hot water heater. However hot water heating costs more and you will need air conditioning in certain areas (e.g. retail), so some type of forced air is still needed.	
Ventilation	Proper ventilation is very important, as bad smells can taint products. Ventilation methods vary depending on the building materials used. Consult a licensed contractor.	
Vermin Barrier	Proper construction will keep out most vermin. Sometimes an air curtain or another method is needed at exterior doors for fly control.	
Price per sq. ft.	~\$100, depending on materials used	
How might this plant be expanded?	For both designs, the left-hand side of the plant could be extended to make more room that could be utilized for anything that would be needed, except slaughter.	

* Cooler space for one beef will provide space for 1.5 to 2 hogs, sheep, or goats.

** When painting or touching up epoxy, it is critical to seal the area off from the rest of the plant to avoid contamination of food materials, finished products, and packaging.

General Plant Design Considerations from Iowa Meat & Poultry Inspection Bureau

These are provided as suggestions, NOT regulatory requirements. Iowa Meat & Poultry Inspection Bureau, USDA Food Safety and Inspection Service(FSIS), or your local food safety inspection agency will make the final determination if your plant meets all food safety regulatory requirements.

Animal Holding Areas

Construction of animal holding areas should address the following:

1. Unloading of animals.
2. Design of animal paths for fluid movement.
3. Ample space for animals of all sizes.
4. Availability of water for each animal.
5. Ventilation to provide proper cooling/heating.
6. Lighting.
7. Contact your regional Iowa State University Extension Livestock Specialist for more detailed information.

Slaughter Areas

Construction of slaughter areas should address the following:

1. Is there a sterilizer in the slaughter room?
2. Is the knock box in the slaughter able to withstand the animals that it is intended to hold?
3. Is there an adequate inspection pan and head loop for official slaughter rooms?
4. Do you have 50 foot candles at the inspection station on the slaughter floor?
5. Are the rails in slaughter and coolers located at an adequate height for the purpose intended? Is the bleeding rail height adequate?

6. Are toilet facilities located near slaughter floor to prevent slaughter room employees from traveling through plant.

Inedible Areas

Construction of inedible areas should address the following:

1. Inedible rooms need to limit access to the facility (e.g. an interior door for the establishment to place inedibles in the room and an exterior door for the rendering truck to pick up the inedibles without entering the plant).

Receiving and Shipping Areas

Construction of receiving and shipping areas should address the following:

1. Load out areas should be located so that product is not transported back through production areas.
2. Receiving and shipping areas should not open up into a processing room.
3. Receiving and shipping areas should be adjacent or close to where products/supplies are being stored.

Coolers and Freezers

Construction of cooler and freezer areas should address the following:

1. Are there separate coolers for storage of raw and cooked products?
2. Do the coolers have drains in them and are they adequately sized?

Storage Areas

Construction of storage areas should address the following:

1. Is there adequate storage for dry and non-meat ingredients.

2. Is there adequate storage for packaging and labeling supplies?
3. Is there storage for equipment?
4. Is there storage for maintenance tools?
5. Is there separate storage for cleaning tools, supplies, and chemicals—away from food?
6. Is there storage for employee belongings?

Processing Areas— RAW, COOKED, SMOKEHOUSE

Construction of processing areas should address the following:

1. Are there separate areas for processing cooked and raw products?
2. Is the processing room refrigerated?
3. Is the smokehouse in a room by itself with a drain?
4. Do carcass rails lead all the way into the processing areas for convenience and safety of dropping carcasses to tables or work areas?
5. Are floors sloped to drains?
6. Consider placement of equipment for ease of transition from one machine to another, e.g., meat saw close to boning table.

Employee/Welfare Areas

Construction of welfare/employee areas should address the following:

1. Do the bathrooms have separate sewer lines until outside the building or is there a backflow preventative device?
2. Does the restroom have a self-closing door and ventilation that is turned on with the light?
3. Is there a bathroom that customers can use easily?
4. Is there a separate break area for employees?

5. Is there a separate storage area and refrigerator for employee food?
6. Consider the location of the management office within plant—should it be closer to the retail area, employee welfare area, production area? Where does management spend most time? Is other office space necessary?
7. If you operate under FSIS-inspection, a separate office area is needed. If Iowa-inspected, a work area and place to store plant files is needed.

Retail/Customer Areas

Construction of retail/customer areas should address the following:

1. Is the retail area sufficiently separated from processing areas?
2. Can customers pick up their products without causing contamination of processing areas?
3. Are finished product storage areas (e.g., freezer, ready-to-eat cooler) located close or adjacent to retail area (and/or to shipping area)?

Traffic Patterns

Traffic pattern items that should be considered:

1. Is the flow of the product from animal arriving to packaged meat leaving adequate to prevent contamination of areas or products?
2. Is the traffic flow for delivered goods adequate to prevent contamination in processing areas?
3. Are traffic patterns planned to retain separation of cooked and raw products—including people (employees and non-employees), equipment and product?
4. What paths do delivery or pick-up persons take within your plant? How do you prevent contamination from the outside?

Sewer and Water

Sewer and water items that should be considered:

1. Do you have a sewer certificate? (If hooked up to a municipal system, this would come from the city.)
2. Do you have the water tested at least annually? Does your city?
3. What is the source of the water for the plant? City water (public) or private well?
4. Are sewer pipes from toilets/welfare areas separate from sewer pipes from production areas?
5. Is there proper water disposal (sewer) to protect food production areas from contamination—backflow devices?

General Construction Considerations

1. Are the floors, walls, and ceilings in wet areas smooth, impervious to water, and easily cleanable?
2. Are doors and hallways wide enough for the intended purpose—people, product, and equipment movement—e.g., smoke-house trucks?
3. Are there hose bibs in wet areas so that proper washing can be performed?
4. If there are windows, are the windowsills built to prevent accumulation of debris and dirt (no ledges is preferred)?
5. Do the floors in wet areas slope toward the drains and are the drains adequate in size? Do the drains have adequate traps?
6. Are the hands-free handwash sinks located in areas where they will be easily accessible and useable?
7. Is the lighting adequate for the purpose and is it protected?
8. Is there a three compartment sink for cleaning equipment?

9. Will there be curbing around the rooms? What will it be constructed with and how will it be constructed to ensure cleanability and a good seal at the junction where the wall meets the floor?
10. Consider which direction doors open—freezers, coolers, etc.
11. Consider what type of doors are needed—swinging doors, lockable doors?
12. What type of security is needed?
13. Determine the volume of your business and growth of your business when determining the size of coolers, freezers, processing, storage areas, and retail areas.
14. Determine how plant can grow in the future with building additions.
15. Air flow (ventilation, heating, cooling, etc.) inside the plant should be addressed so that positive and negative air pressure are balanced and do not cause adverse situations in the plant—odor from animal holding pens/offal/slaughter area filtering to other parts of the plant. The retail packaging area should be positively pressurized to push air out into the rest of the plant.
16. Will any other operations be happening in the plant? Other non-meat food processing? Catering? Retail sales of non-meat foods and other items. What space is designated for those operations?

Comments from Veteran Iowa Meat Processors for Consideration Based Upon the Needs of Your Particular Business

These comments are made in relation to the plant designs contained in this book and will only make sense by referring to the respective plant design for each comment.

For both plant designs:

- You may want your freezers and/or coolers to be bigger or smaller based on the nature of your business.
- If you plan on a lot of retail business, you might want to design a larger retail area.
- You may not need both a public and an employee restroom.
- You may not need a door between your break room and the retail area.
- Depending on your ventilation set up, you may want to place your livestock pens and/or inedibles outside of the building. You should always have ventilators pulling air from these areas to the outside.
- Depending on your food safety inspection agency, you may only need to provide a desk with a locking file cabinet for your inspector, not a separate office.
- You may want a separate ready-to-eat packing area.
- You may want a laundry washing room/area.
- You may want your pens to be bigger and/or have a larger outside staging area.
- You may want a built-in finished product cooler with glass retail-display doors that open into your retail area, rather than a stand-alone retail cooler unit. (**Note:** “Finished Product Cooler” on both floor plans is ONLY for cooling product coming out of the smokehouse, NOT packaged and/or raw product.)

For the small plant design:

- For the freezer next to the retail area, you may want to have the door open in the other direction.
- You may want the offal cooler to have its own exterior door for after-hours pick-up.
- You will likely want a door between the processing area and the kill floor in order to move bone barrels into the offal cooler (for use only while the kill floor is clean and not in use).
- You may want an equipment wash sink in the processing area.
- If you plan to produce a lot of ready-to-eat product, you will likely want a vacuum packaging machine.

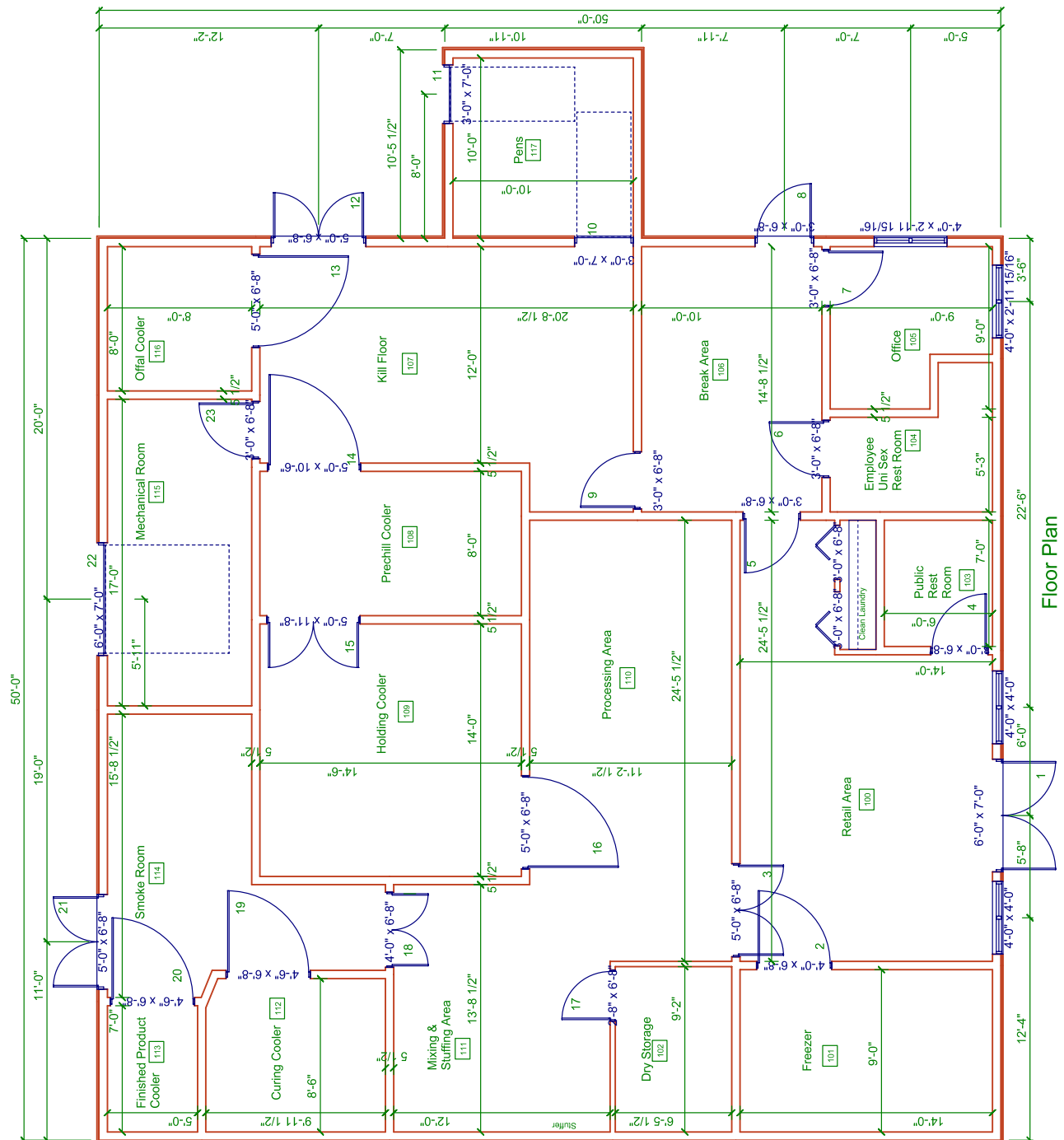
For the large plant design:

- If you personally will often be working in the retail area, you may want to position the office closer to it.
- You may want to place your meat saw closer to your boning table.
- You may want to make your freezer directly accessible from your retail area.
- If you have sufficient volume, you might consider a roll-stock packaging machine (or leave room for one in your designs should you wish to buy one later).

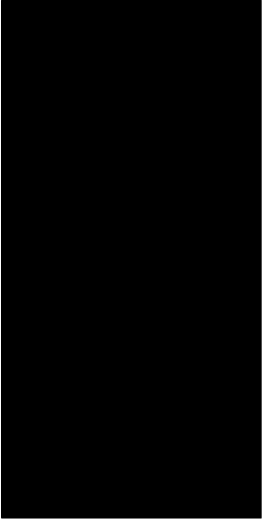
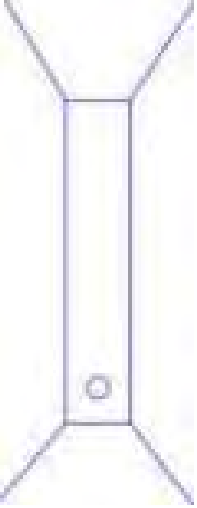
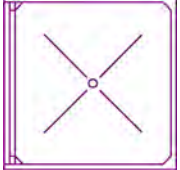
Small Plant Design—2,500 square feet

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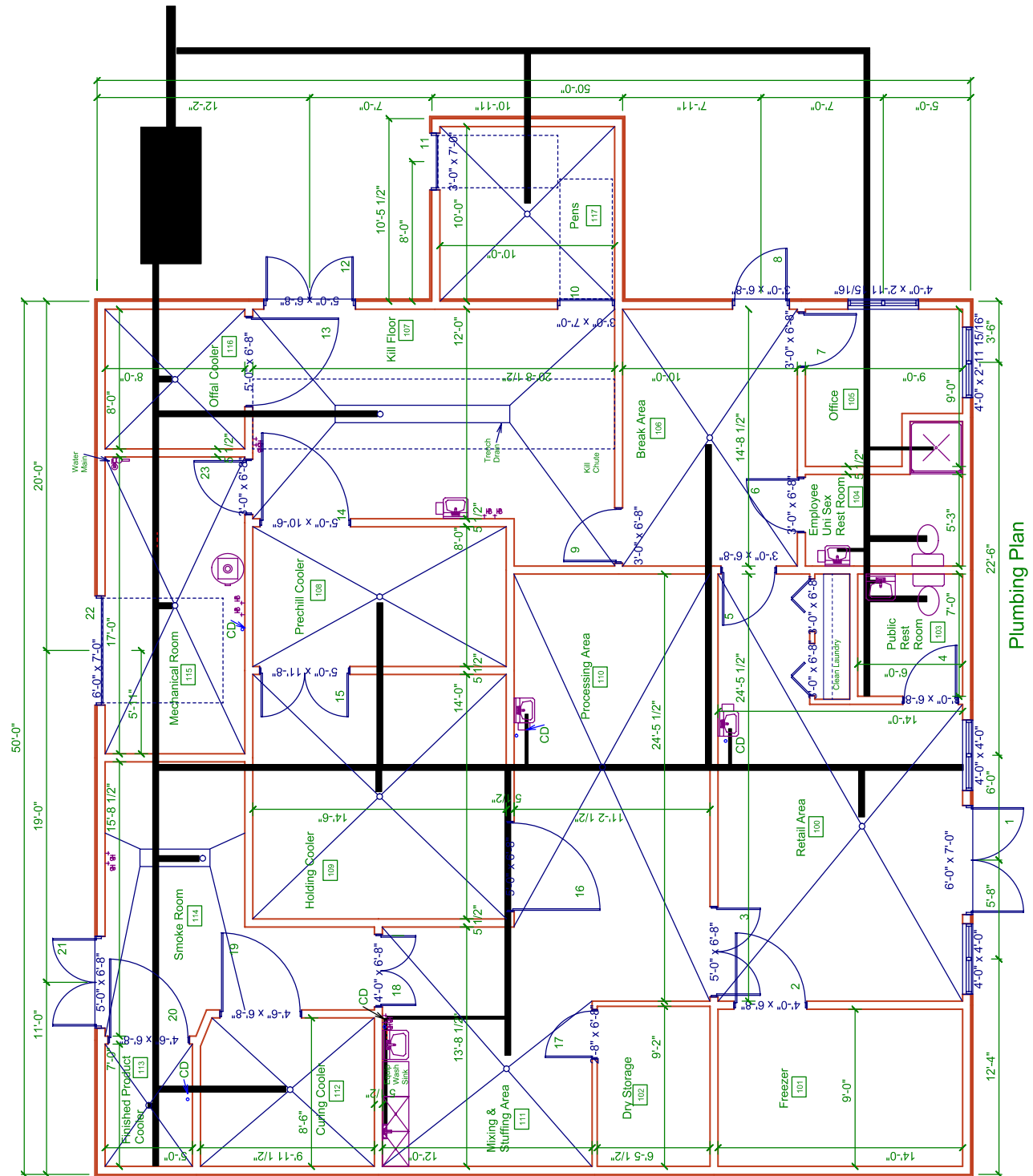
Small Plant, Floor Plan (Not for Construction Use)



Plumbing Symbol Key Plan

	4" PVS Sewer Line		Hose Bib Hot & Cold Domestic Water
	2" PVC Sewer Line		Hand Wash Sink with Knife Sterilizer
	Grease Interceptor Size will be determined by gallons of water used daily		Equipment Wash Sink
	4" Floor Drain Floor Sloped to Drain		Trench Drain with Floor Sloped to Drain
	2" Condensate Drain for Refrigeration Evaporators		Shower 32" x 32"

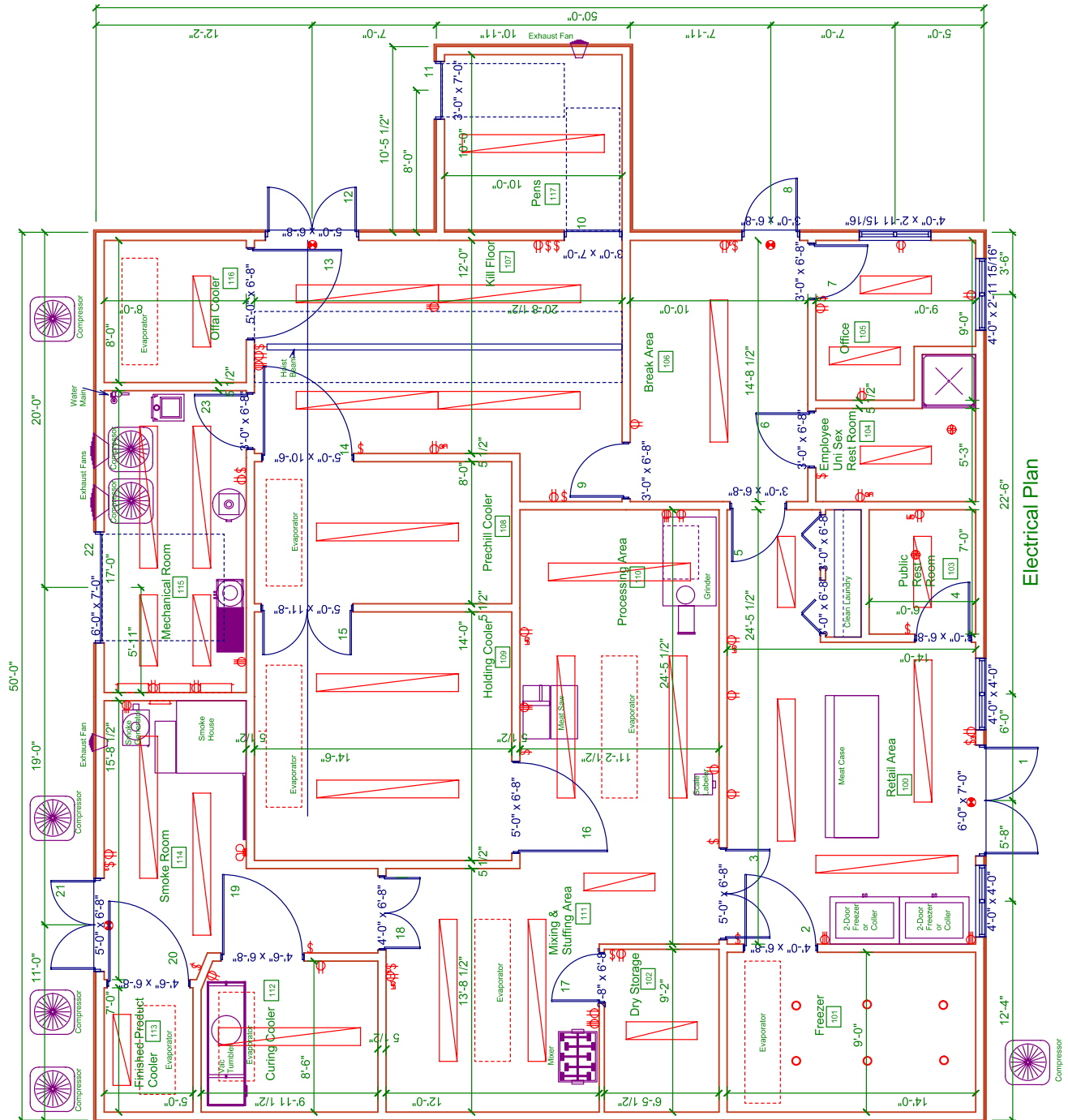
Small Plant, Plumbing Plan (Not for Construction Use)



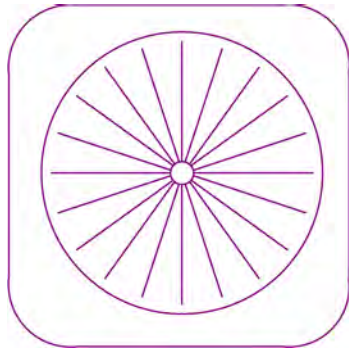
Electrical Symbol Key Plan

	Flourescent Light (8' Vapor Tight, High Output, T-8)
	Fluorescent Light (4' Vapor Tight, High Output, T-8)
	Emergency Lights
	Lighted Exit Signs
	Incandescent Jar Lights
	GFI Outlet 115v
	Regular Outlet 115v
	208, 220, 230 v outlet
	Light Switch
	Light Switch 3-Way
	Rest Room Exhaust Fan
	Electrical Panel
	Exhaust Fan

Small Plant, Electrical Plan (Not for Construction Use)



Refrigeration Symbol Key Plan



Compressor Condenser Unit

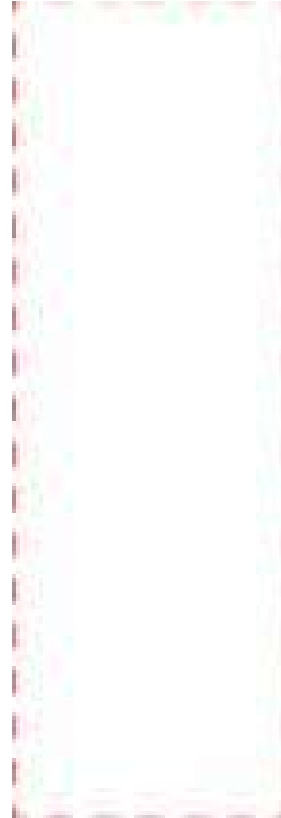
Freon Line



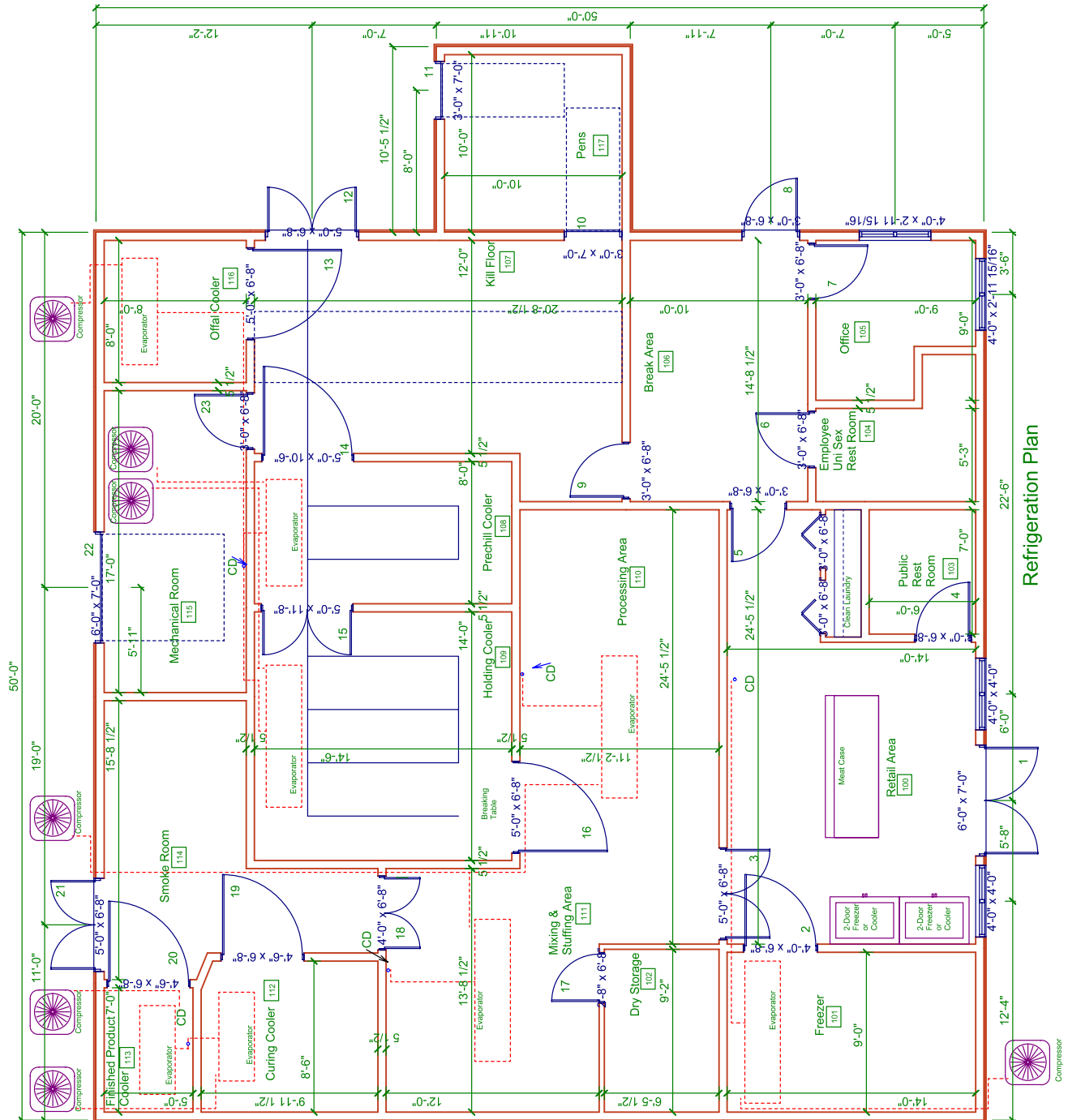
Evaporator Drain Line



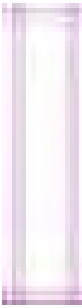
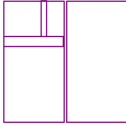
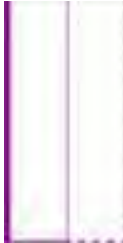
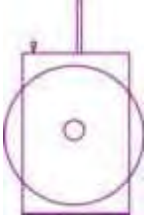
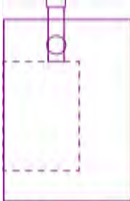
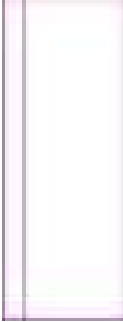
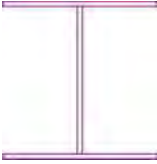
Evaporator



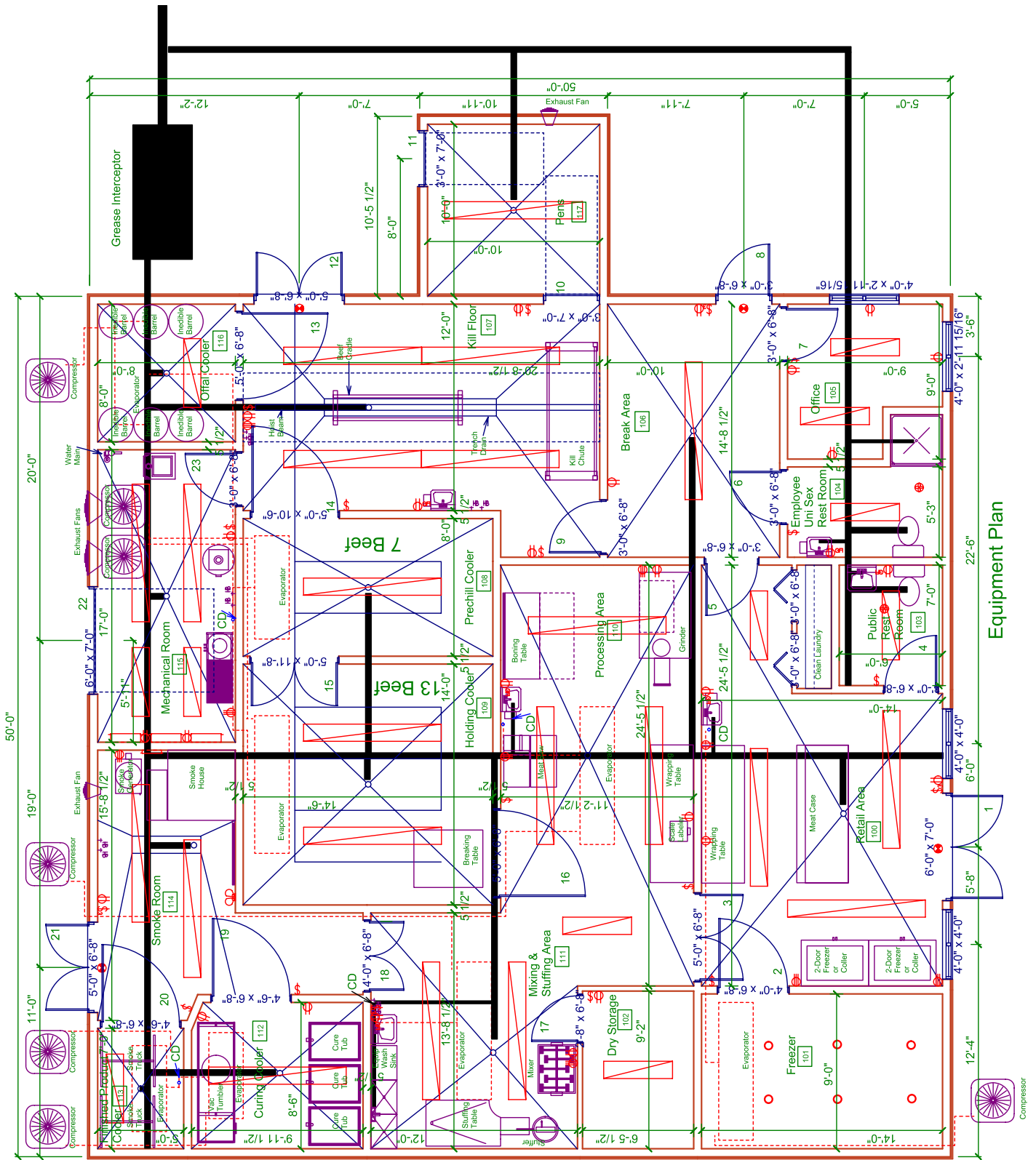
Small Plant, Refrigeration Plan (Not for Construction Use)



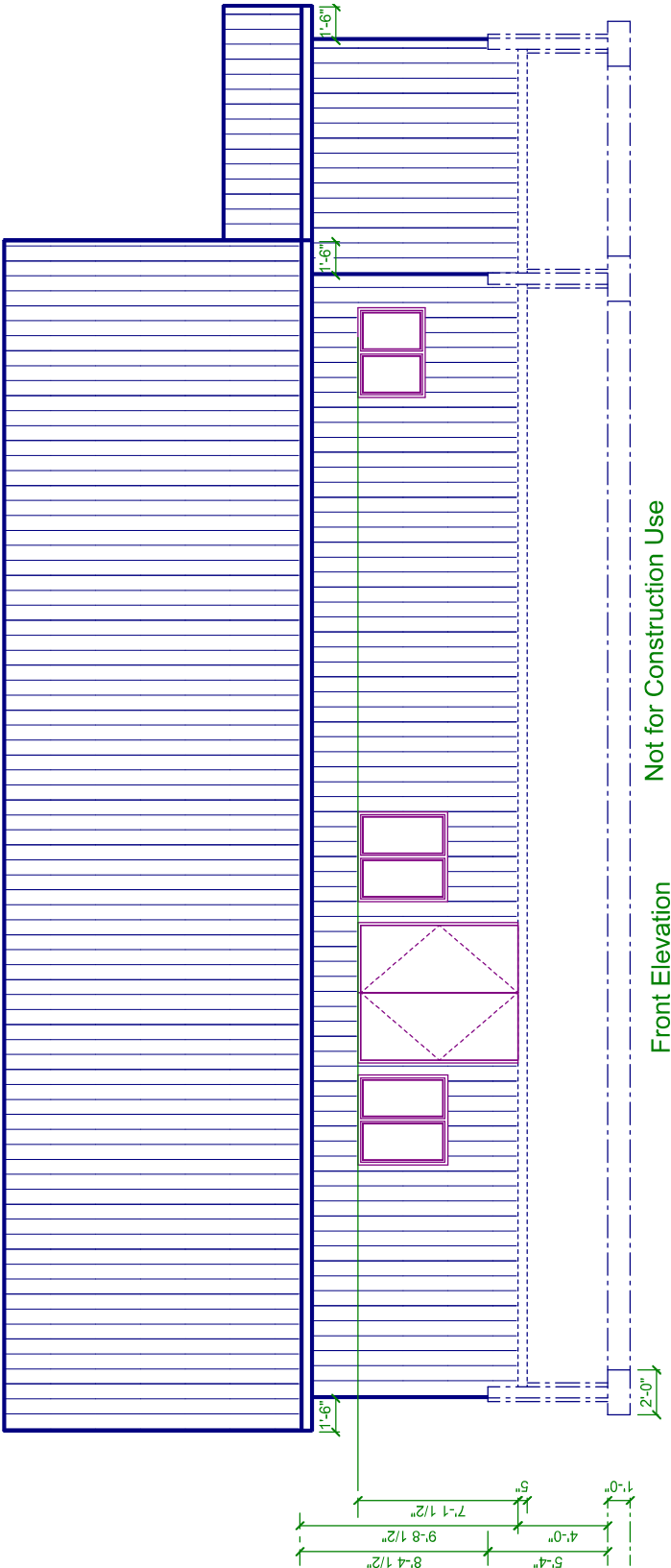
Equipment Symbol Key Plan

	Beef Cradle		Power Washer		Meat Saw
	Boning Table		2-Door Freezer or Cooler		Tumbler
	Curing Tub		Wrapping Table		Stuffer
	Grinder		Kill Chute		Stuffing Table
	Inedible Barrel		Smoke Generator		Breaking Table
	8' Meat Case		Smoke House 1-Truck		
	Mixer		Smoke Truck		

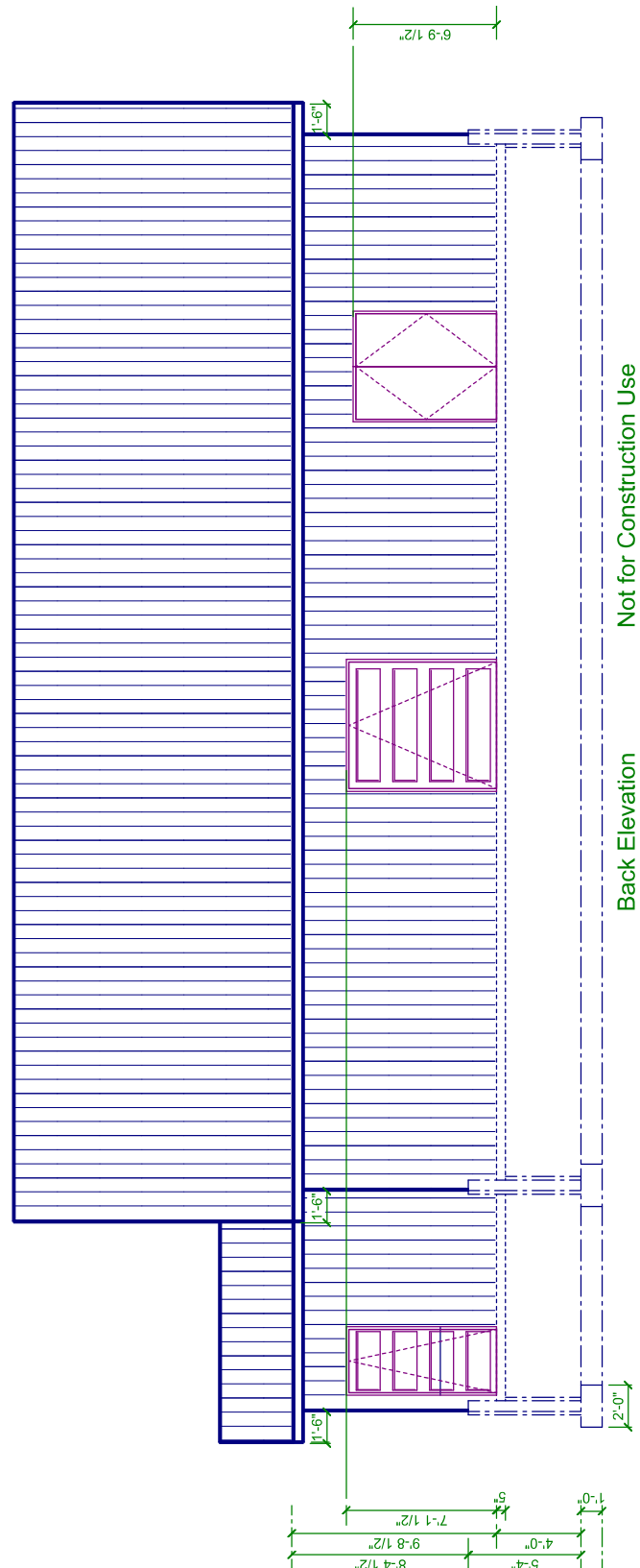
Small Plant, Equipment Plan (Not for Construction Use)



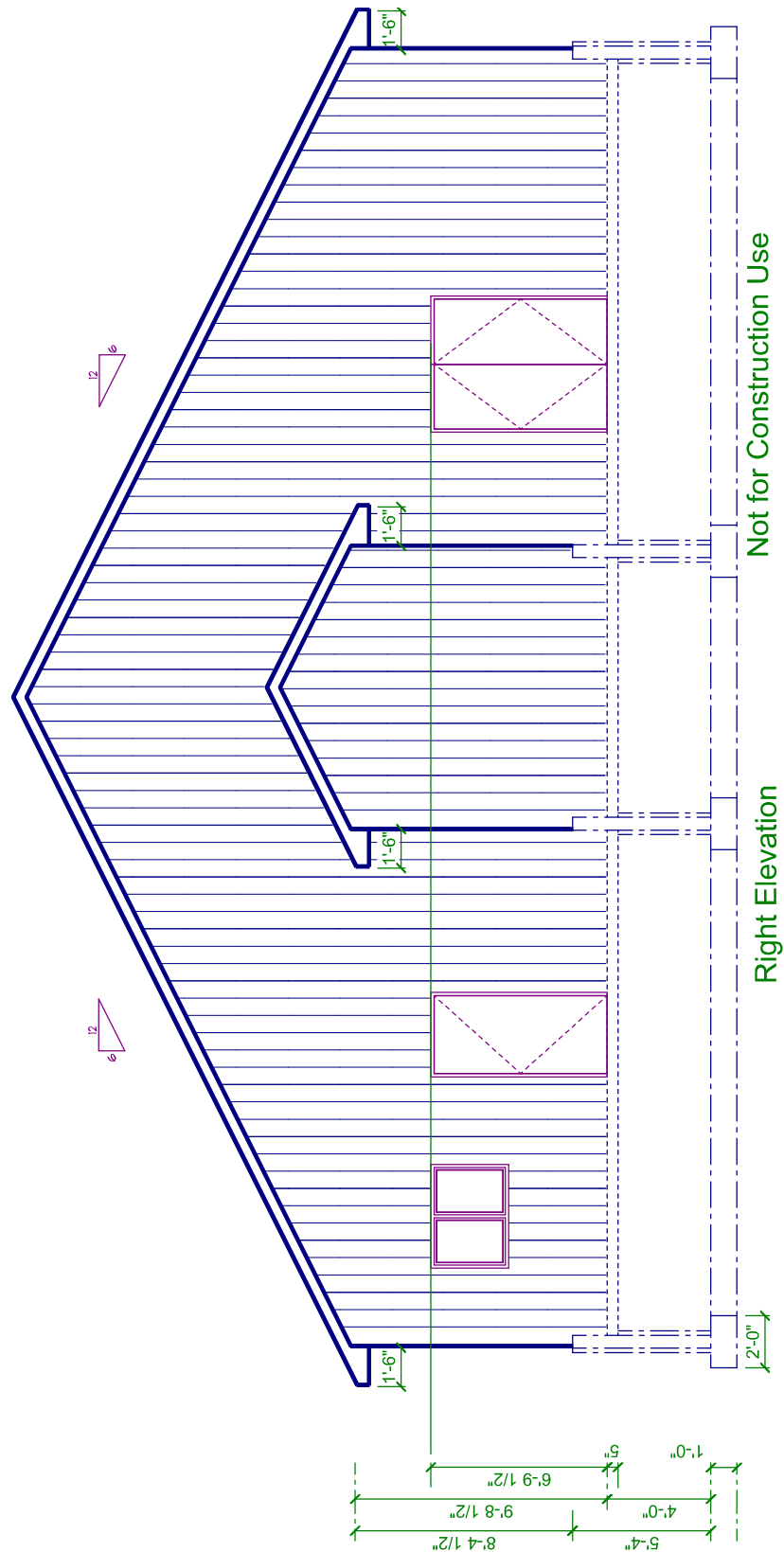
Small Plant, Front Elevation (Not for Construction Use)



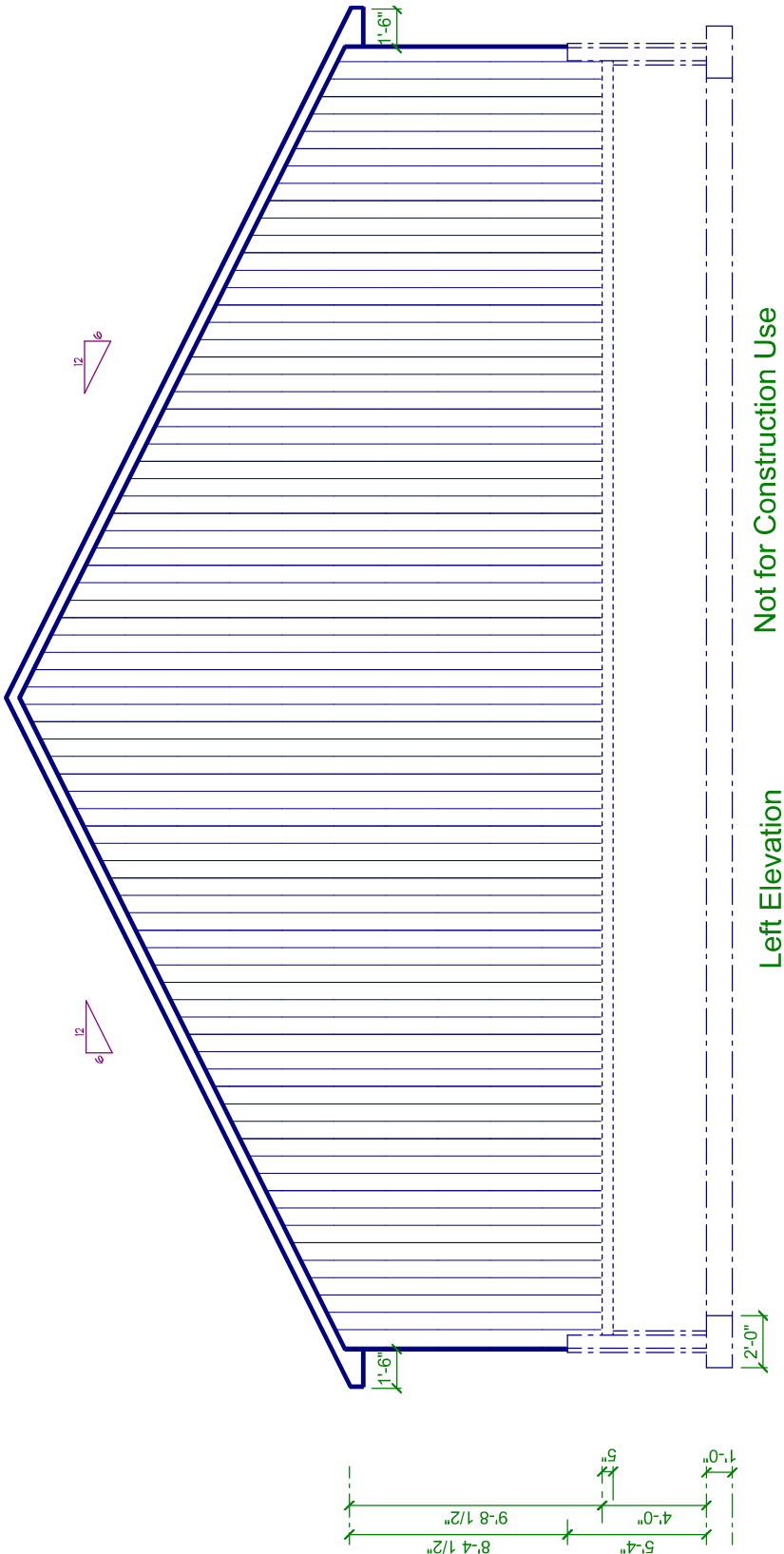
Small Plant, Back Elevation (Not for Construction Use)



Small Plant, Right Elevation (Not for Construction Use)



Small Plant, Left Elevation (Not for Construction Use)



Building Specifications

Small Plant Design

Room Finish Schedule

Room No.	Room Name	Floor	Base	Walls N	Walls E	Walls S	Walls W	Ceiling	Ceiling Height
100	Retail Area	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
101	Freezer	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
102	Dry Storage	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
103	Public Rest Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
104	Employee Rest Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
105	Office	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
106	Break Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
107	Kill Floor	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	14'
107	Kill Floor Cupola	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	18'
108	Prechill Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	14'
109	Holding Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	14'
110	Processing Area	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
111	Mixing & Stuffing Area	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
112	Curing Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
113	Finished Product Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
114	Smoke Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
115	Mechanical Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
116	Offal Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
117	Pens	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'

Laminated Product

Fluted Polypropylene .400" back

.05" sealed fiberglass reinforced plastic (FRP) panel, single sided skin

FRP

(Glasbord is a tradename for FRP)

PVC Trim Boards

1/2" thick x 3" wide

22.5° angle cut on top (minimum)

PVC cove

Door Schedule

Door No.	Room	Size Width	Size Height	Material Type	Finish	Remarks
1	Entry	6'-0"	7'-0"	Glass	Factory	Lockable
2	Freezer	4'-0"	6'-8"	Wood	Factory	Insulated Freezer Door
3	Retail Area	5'-0"	6'-8"	Wood	SS	Double Swing
4	Public Rest Room	3'-0"	6'-8"	Steel	Painted	Lockable Inside
5	Retail Area	3'-0"	6'-8"	Steel	Painted	No Knob (Push & Pull handle)
6	Employee Rest Room	3'-0"	6'-8"	Steel	Painted	Lockable Inside
7	Office	3'-0"	6'-8"	Steel	Painted	Lockable w/Dead bolt
8	Break Room	3'-0"	6'-8"	Steel	Painted	Steel Insulated (Lockable)
9	Kill Floor	3'-0"	6'-8"	Steel	Painted	No Knob (Push & Pull handle)
10	Pens	3'-0"	7'-0"	Steel	Painted	Insulated Roll up Door (Lockable)
11	Pens	3'-0"	7'-0"	Steel	Painted	Insulated Roll up Door (Lockable)
12	Kill Floor	5'-0"	6'-8"	Steel	Painted	Steel Insulated (Lockable)
13	Offal Cooler	5'-0"	6'-8"	Wood	Factory	Insulated Cooler Door
14	Pre chill Cooler	5'-0"	10'-6"	Wood	Factory	Insulated Cooler Door
15	Holding Cooler	5'-0"	11'-8"	Steel	Clear	Double Swing
16	Holding Cooler	5'-0"	6'-8"	Wood	Factory	Insulated Cooler Door
17	Dry Storage	2'-8"	6'-8"	Wood	SS	Double Swing
18	Mixing & Stuffing Area	4'-0"	6'-8"	Wood	SS	Double Swing
19	Curing Cooler	4'-6"	6'-8"	Wood	Factory	Insulated Cooler Door
20	Finished Product Cooler	4'-6"	6'-8"	Wood	Factory	Insulated Cooler Door
21	Smoke Room	5'-0"	6'-8"	Steel	Painted	Steel Insulated (Lockable)
22	Mechanical Room	6'-0"	7'-0"	Steel	Painted	Overhead Steel Insulated (Lockable)

NOTE: Owner may need to furnish cooler doors, freezer door, and double swing doors to contractor.

Concrete Finish Schedule

Room No.	Room Name		Floor Drains	Insulation Thickness Under floor	Remarks
100	Retail Area		1		
101	Freezer		0	8"	
102	Dry Storage		0		
103	Public Rest Room		0		
104	Employee Rest Room		0		
105	Office		0		
106	Break Area		1		
107	Kill Floor		1		Trench Drain
108	Pre chill Cooler		1	2"	
109	Holding Cooler		1	2"	
110	Processing room		1	2"	
111	Mixing & Stuffing Area		1	2"	
112	Curing Cooler		1	2"	
113	Finished Product Cooler		1	2"	
114	Smoke Room		1		Trench Drain
115	Mechanical Room		1		
116	Offal Cooler		1	2"	
117	Pens		1		

NOTES:

All Floors will be concrete with a non-slip finish (4000#).

All floors 5" thick with rebar spaced at 2' on center and places on 2-1/2" chairs.

Floor slopes to drains have to be 3/16" per foot or greater (no standing water on floors).

Under floor insulation must have a density of 2.5 lbs. per cubic foot or 2" thick equals R-value of R-10.

Ground under insulated floors must be properly bedded with gravel and/or sand for proper ventilation to avoid ice heaving.

Plumbing Specifications

Room No.	Room Name	Room Size	Remarks
100	Retail Area	17'x14'x10'	1 Floor Drain 1 Wall-mount handwash sink
103	Public Rest Room	7'x6'x10'	1 Toilet 1 Wall-mount handwash sink
104	Employee Rest Room	5'x9'x10'	1 Toilet 1 Wall-mount handwash sink Enclosed Shower
106	Break Area	15'x10'x10'	1 Floor Drain
107	Kill Floor	21'x12'x14'	1 Floor Drain (Trench Drain) 1 Wall-mount handwash sink 2 sets of Hose Bibs (Hot & Cold domestic water)
108	Pre chill Cooler	8'x14'6"x14'	1 Floor Drain
109	Holding Cooler	14'x14'6"x14'	1 Floor Drain
110	Processing room	25'x11'x10'	1 Floor Drain 1 Wall-mount handwash sink 1 Condensate Drain (On sink drain)
111	Mixing & Stuffing Area	14'x12'x10'	1 Floor Drain 1 Equipment wash sink (3 compartment) 1 Wall-mount handwash sink 1 Condensate Drain (On sink drain)
112	Curing Cooler	8'6"x10'x10'	1 Floor Drain
113	Finished Product Cooler	5'x7'x10'	1 Floor Drain 1 Condensate Drain
114	Smoke Room	8'x16'x10'	1 Floor Drain (Trench Drain) 1 Set of Hose Bibs (Hot & Cold Domestic water) Cold domestic water hook-up to smokehouse
115	Mechanical Room	8'x17'x10'	1 Floor Drain Water Main 1 Set of Hose Bibs (Hot & Cold Domestic water) 1 Condensate Drain Water Heater Power washer hook-up
116	Offal Cooler	8'x8'x10'	1 Floor Drain
117	Pens	10'x10'x10'	1 Floor Drain

Owner may need to supply wall mount hand wash sinks & equipment wash sinks to contractor.

NOTES:

All plumbing to meet state and local codes.

All floor drain and risers to be 4" diameter.

Condensate drains for refrigeration need to be 2" diameter lines.

Public and employee rest rooms must be a separate drain line out of building.

All water lines surface mounted in plant.

All water lines 1/2" or larger diameter.

All floor drains need covers and must have deep seal trap and properly vented.

Electrical Specifications

Room No.	Room Name	Lighting Type	Lighting FCP	Switches	Outlets 115v	Outlets 220v	Exhaust Fan	Remarks
100	Retail Area	8'VT, H0 T8 4'VT, H0 T8	50	1 1-3way	3 1 GFI	2		Needs a night light
101	Freezer	Incandescent	30					Light switch in Retail Room
102	Dry Storage	4'VT, H0 T8	30	1	1			
103	Public Rest Room	4'VT, H0 T8	30	1	1 GFI		1	Exhaust fan on with light
104	Employee Rest Room	4'VT, H0 T8	30	1	1 GFI		1	Exhaust fan on with light
105	Office	4'VT, H0 T8	50	1	4			
106	Break Area	4'VT, H0 T8	30	1-3way	2			
107	Kill Floor	8'VT, H0 T8	50	4	3 1 GFI	2		
108	Pre chill Cooler	8'VT, H0 T8	30					Light switch in Kill Floor
109	Holding Cooler	8'VT, H0 T8	30					Light switch in Process Room
110	Processing Room	8'VT, H0 T8	50	2	2 1 GFI	2		
111	Mixing & Stuffing Area	8'VT, H0 T8	50		1 1 GFI	1		Lights on with Process Room lights
112	Curing Cooler	8'VT, H0 T8	30	1	2			Light switch in hallway
113	Finished Product Cooler	4'VT, H0 T8	30	1				Light switch in hallway
114	Smoke Room	8'VT, H0 T8	50	1-3way	1	2	1	
115	Mechanical Room	8'VT, H0 T8 4'VT, H0 T8	50	1	3	1	2	
116	Offal Cooler	4'VT, H0 T8	30					Light switch in Kill Floor
117	Pens	8'VT, H0 T8	30					Light switch in Kill Floor

NOTES:

Lights shown on drawing are only showing placement between rails, beams, etc. (may need more or less lights).

Owner may change lighting type, but lighting foot candle power (FCP) must be at least what is shown on specifications.

Need lighted exit signs wherever needed by code.

Need emergency lighting wherever needed by code.

All pvc conduit used in all rooms (metal conduit can be used in mechanical room and above ceilings only).

No #14 wire used.

Must bid Square D equipment only.

GFI outlets must have lighted trip light.

This specification sheet does not include any refrigeration electrical needs (will be provided by refrigeration supplier).

Refrigeration Room Specifications

Room No.	Room Name	Room Size	Ceiling R-value	Walls R-value	Floor R-value	Workers in room	Product Temp in	Product Temp out	Remarks
101	Freezer	14'x9'x10'	30	23	40	0	50°F	0°F	Run room temp at 0 - 10°F Freezer 2000# in 24 hours
108	Pre chill Cooler	8'x14'6"x14'	30	23	10	0	100°F	36°F	Cool 5000# product in 24 hours
109	Holding Cooler	14'x14'6"x14'	30	23	10	0	40°F	34°F	Hold product at 34°F Up to 15000# product
110	Processing Room	24'x11'x10'	30	23	10	5	40°F	40°F	Run room temp at 55°F
111	Mixing & Stuffing Area	14'x12'x10'	30	23	10	3	40°F	50°F	Run room temp at 55°F
112	Curing Cooler	8'6"x10'x10'	30	23	10	0	50°F	36°F	Hold product at 34-36°F
113	Finished Product Cooler	5'x7'x10'	30	23	10	0	120°F	40°F	2000# product in 12 hours
116	Offal Cooler	8'x8'x10'	30	23	10	0	100°F	50-60°F	Run room temp at 50°F 3000# product in 48 hours

NOTES:

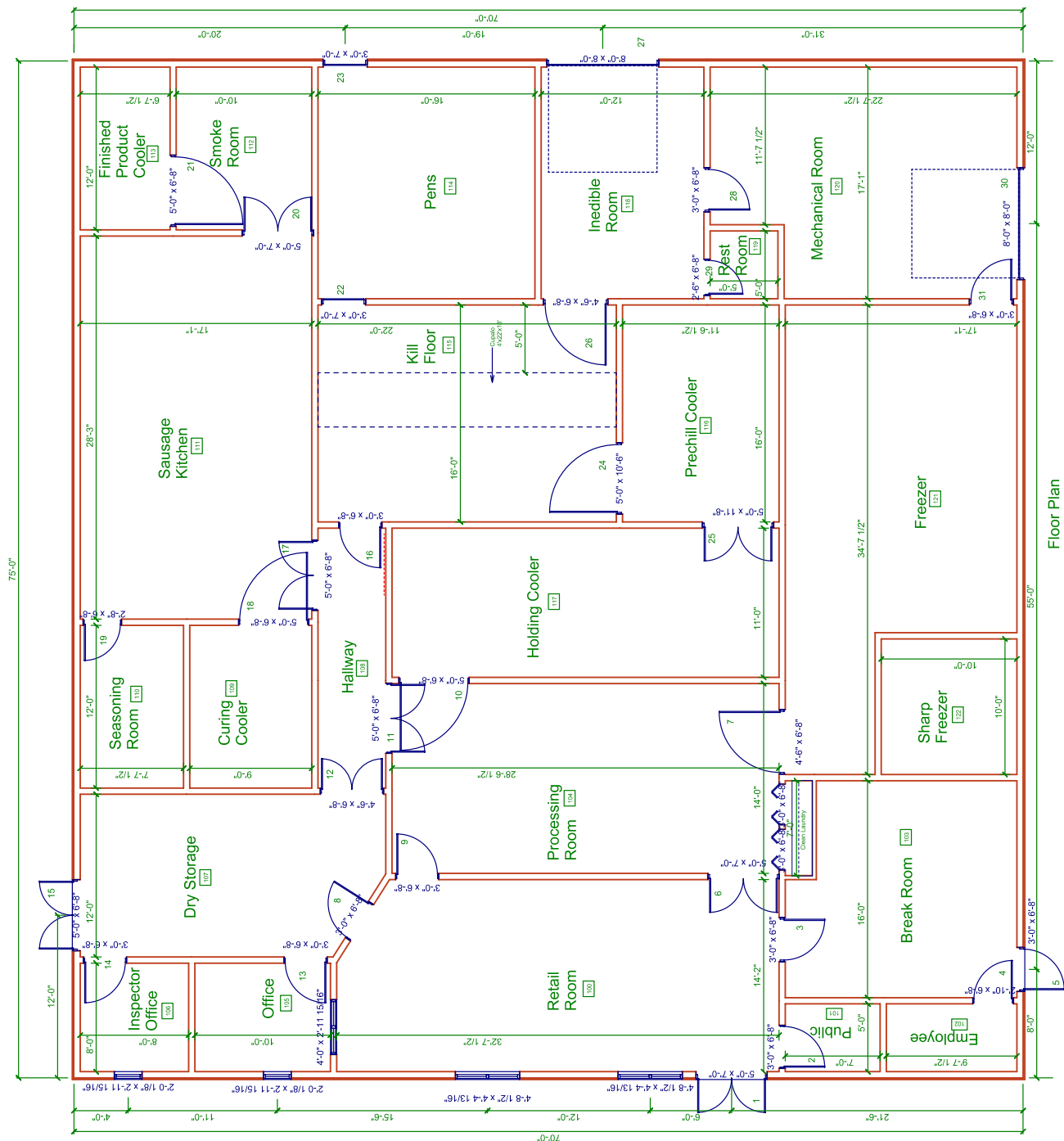
Need to supply electrical needs for refrigeration to electrical contractor.

Refrigeration lines should be insulated and covered with PVC or other sealed vapor barrier to avoid condensation.

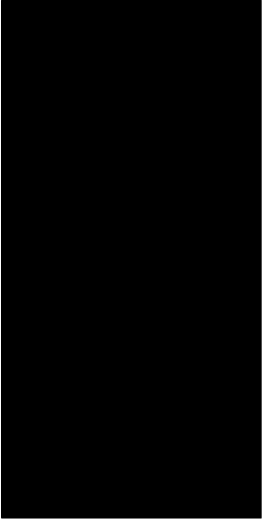
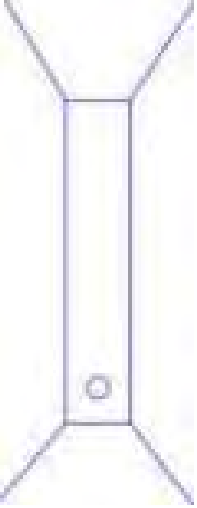
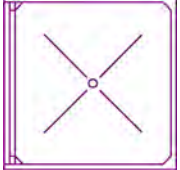
Large Plant Design—5,250 square feet

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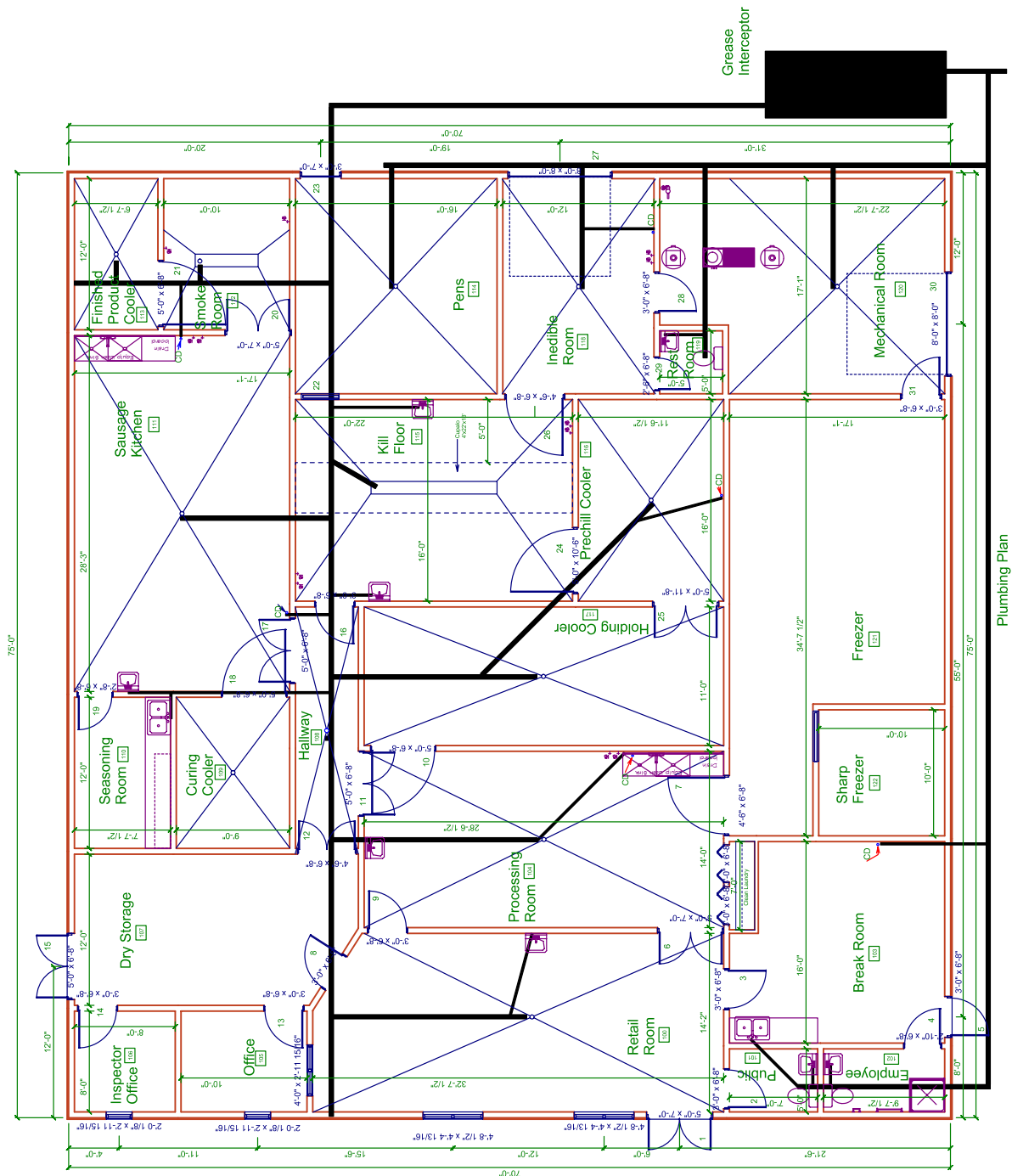
Large Plant, Floor Plan (Not for Construction Use)



Plumbing Symbol Key Plan

	4" PVS Sewer Line		Hose Bib Hot & Cold Domestic Water
	2" PVC Sewer Line		Hand Wash Sink with Knife Sterilizer
	Grease Interceptor Size will be determined by gallons of water used daily		Equipment Wash Sink
	4" Floor Drain Floor Sloped to Drain		Trench Drain with Floor Sloped to Drain
	2" Condensate Drain for Refrigeration Evaporators		Shower 32" x 32"

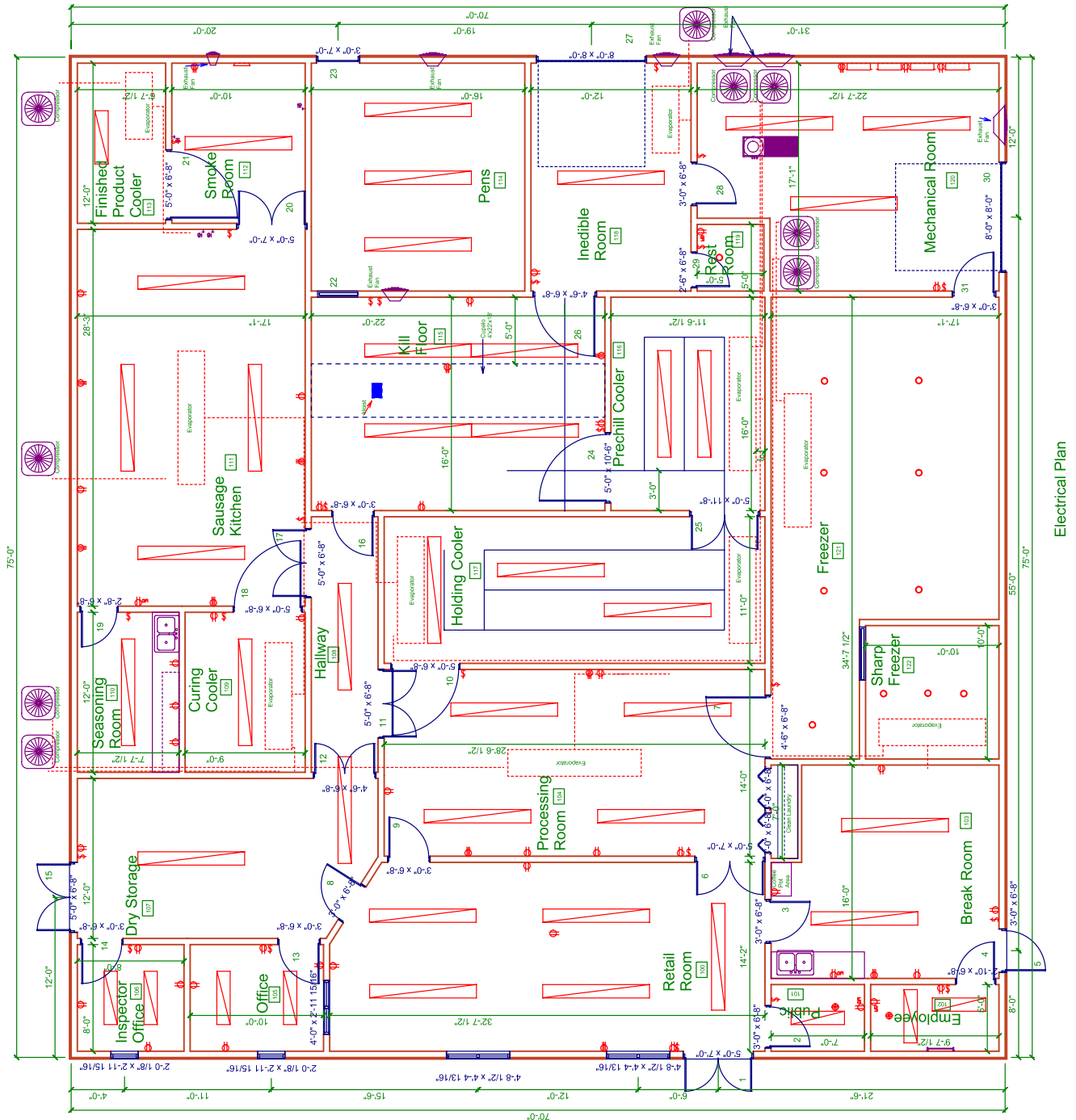
Large Plant, Plumbing Plan (Not for Construction Use)



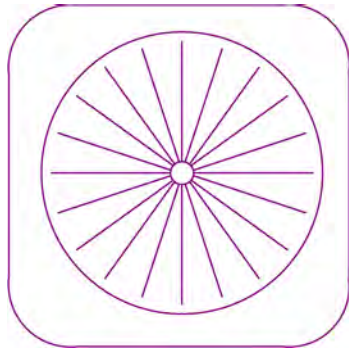
Electrical Symbol Key Plan

	Fluorescent Light (8' Vapor Tight, High Output, T-8)
	Fluorescent Light (4' Vapor Tight, High Output, T-8)
	Emergency Lights
	Lighted Exit Signs
	Incandescent Jar Lights
	GFI Outlet 115v
	Regular Outlet 115v
	208, 220, 230 v outlet
	Light Switch
	Light Switch 3-Way
	Rest Room Exhaust Fan
	Electrical Panel
	Exhaust Fan

Large Plant, Electrical Plan (Not for Construction Use)



Refrigeration Symbol Key Plan



Compressor Condenser Unit

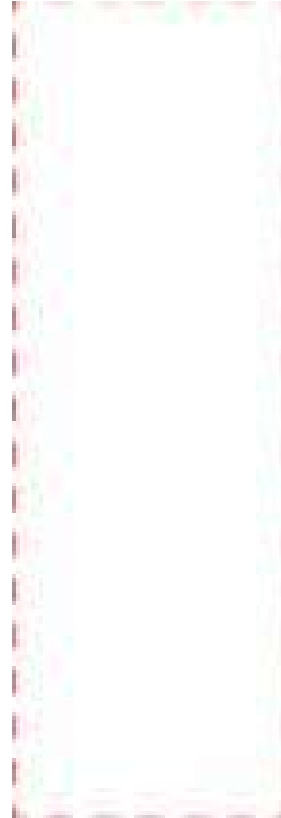
Freon Line



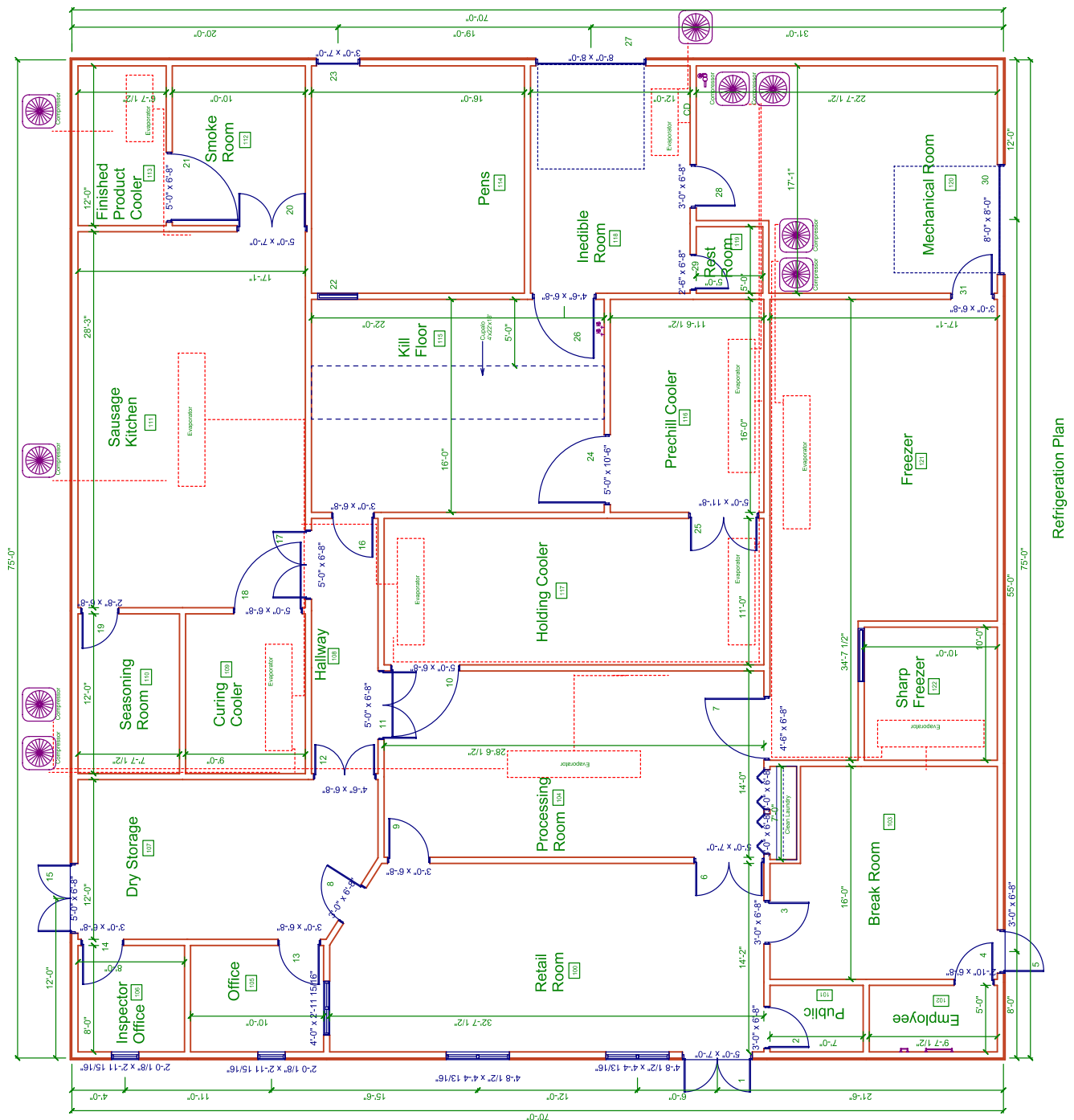
Evaporator Drain Line



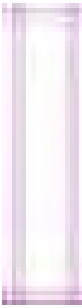
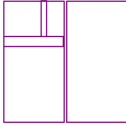
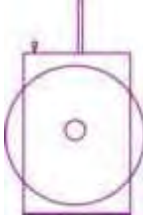
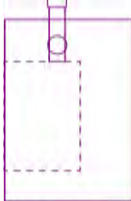
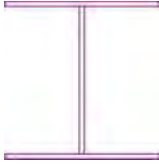
Evaporator



Large Plant, Refrigeration Plan (Not for Construction Use)



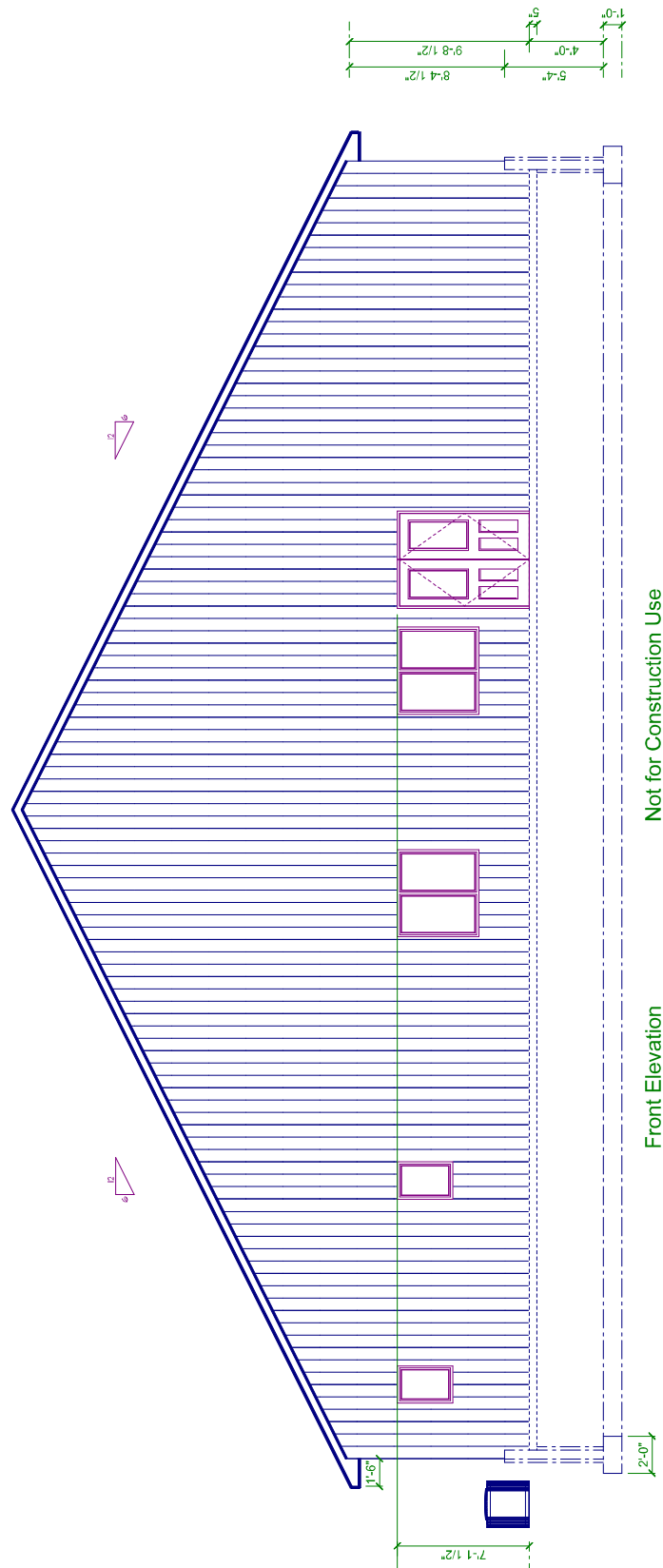
Equipment Symbol Key Plan

	Beef Cradle		Power Washer		Meat Saw
	Boning Table		2-Door Freezer or Cooler		Tumbler
	Curing Tub		Wrapping Table		Stuffer
	Grinder		Kill Chute		Stuffing Table
	Inedible Barrel		Smoke Generator		Breaking Table
	8' Meat Case		Smoke House 1-Truck		
	Mixer		Smoke Truck		

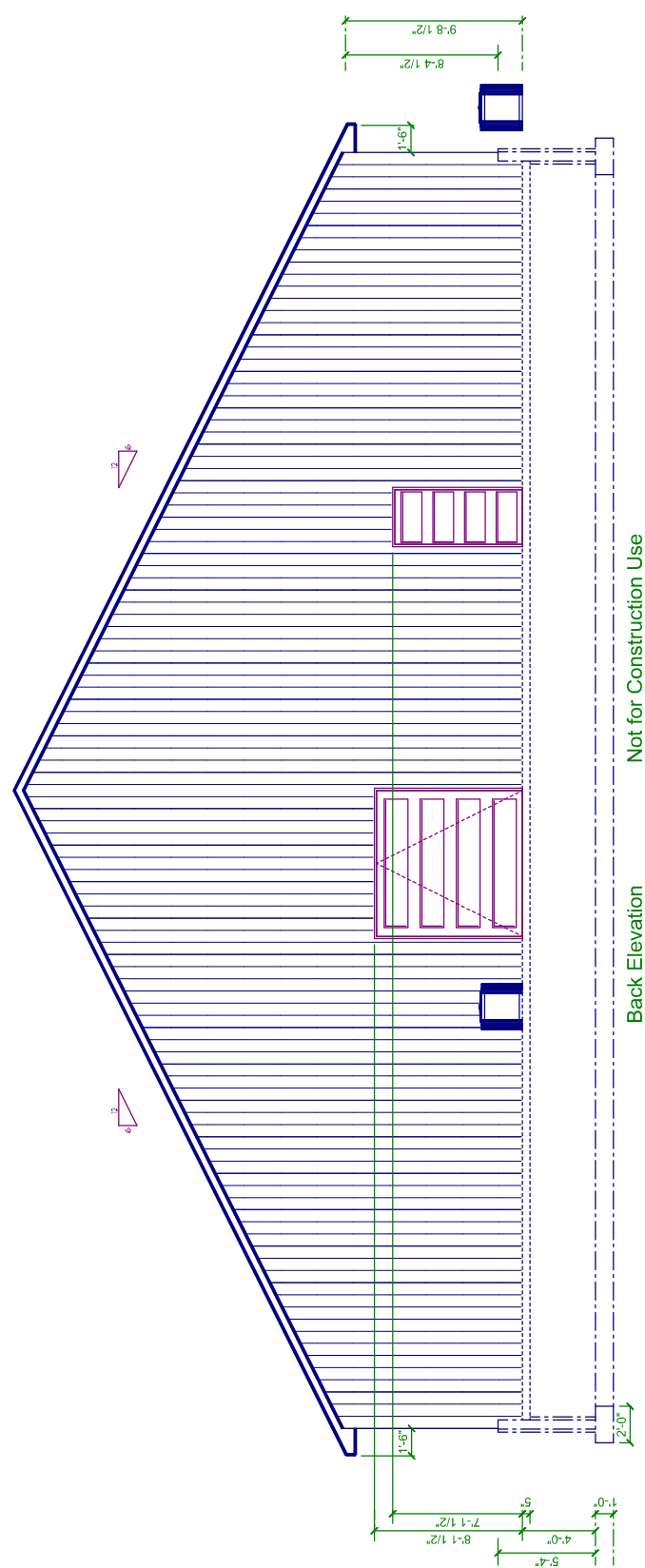
Grease Interceptor



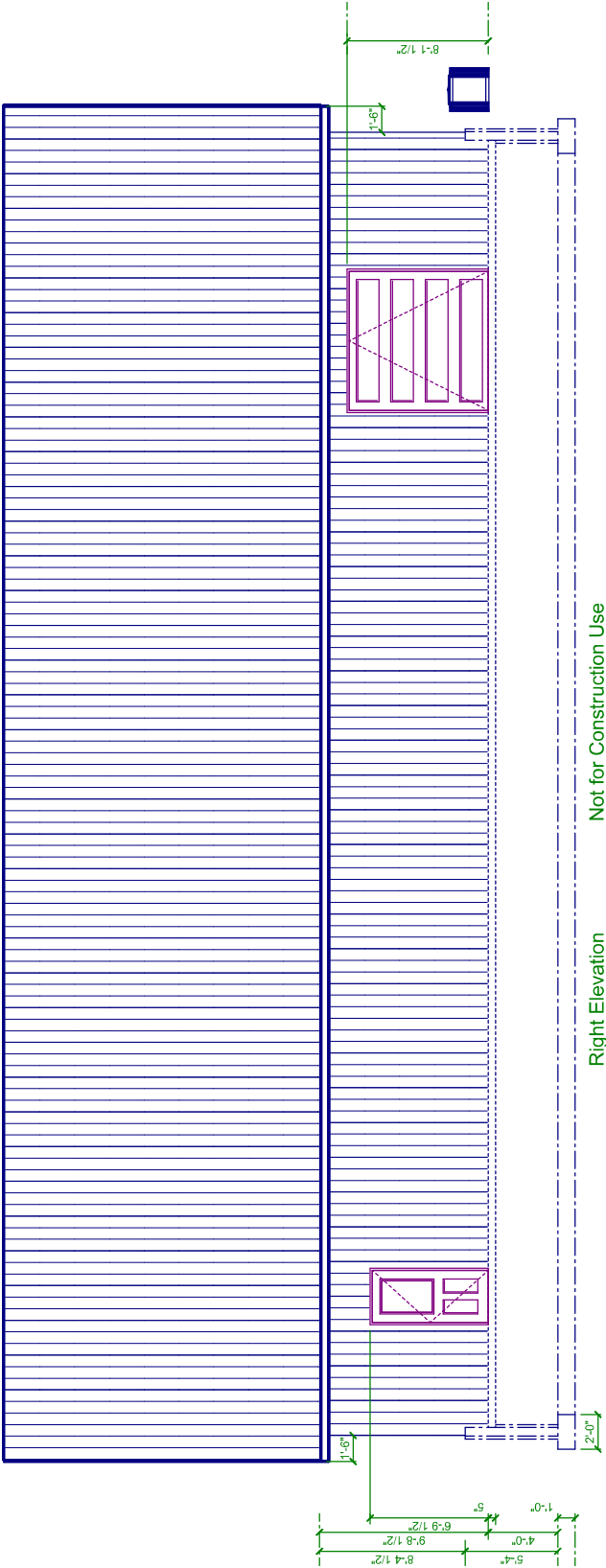
Large Plant, Front Elevation (Not for Construction Use)



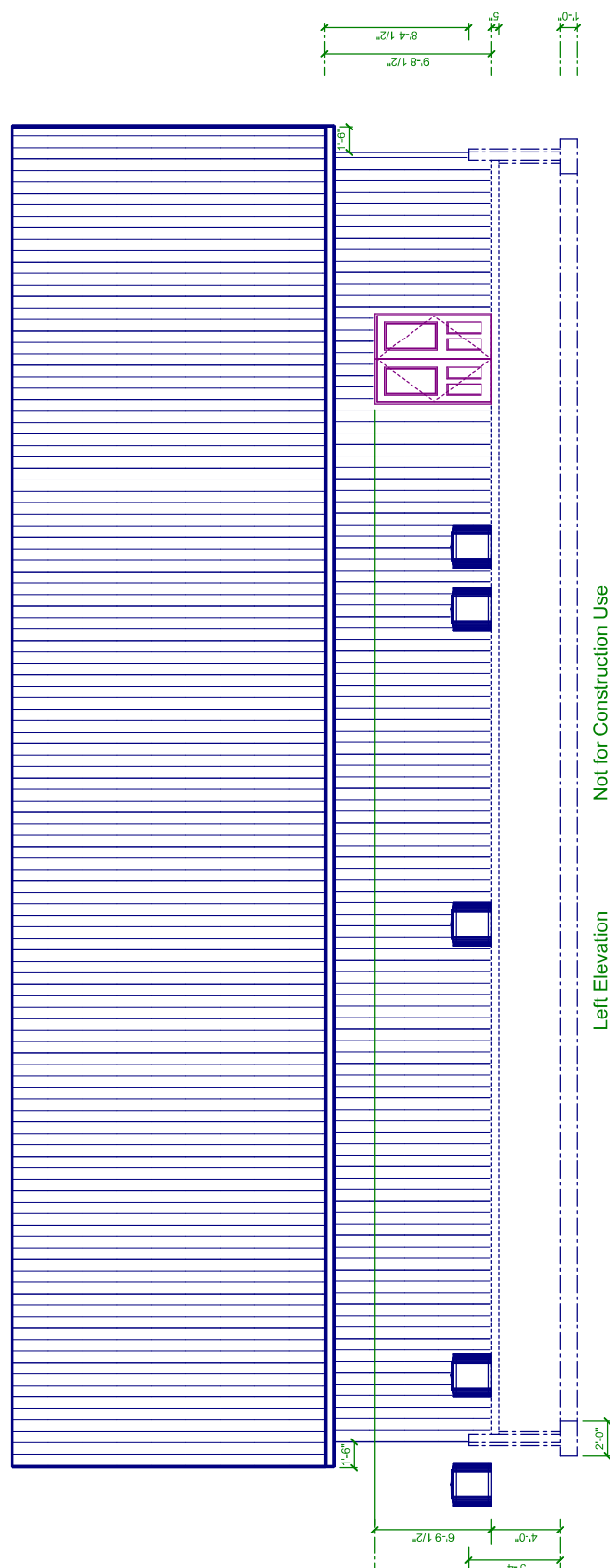
Large Plant, Back Elevation (Not for Construction Use)



Large Plant, Right Elevation (Not for Construction Use)



Large Plant, Left Elevation (Not for Construction Use)



Building Specifications

Large Plant Design

Room Finish Schedule

Room No.	Room Name	Floor	Base	Walls N	Walls E	Walls S	Walls W	Ceiling	Ceiling Height
100	Retail Area	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
101	Public Rest Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
102	Employee Rest Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
103	Break Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
104	Processing Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
105	Office	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
106	Inspection Office	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
107	Dry Storage	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	14'
108	Hallway	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	14'
109	Curing Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	14'
110	Seasoning Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
111	Sausage Kitchen	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
112	Smoke Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
113	Finished Product Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
114	Pens	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
115	Kill Floor	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	14'
115	Kill Floor Cupalo	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	18'
116	Pre chill Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	14'
117	Holding Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	14'
118	Inedible Cooler	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
119	Rest Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
120	Mechanical Room	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
121	Freezer	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'
122	Sharp Freezer	concrete	PVC cove	FRP	FRP	FRP	FRP	FRP	10'

Laminated Product

Fluted Polypropylene .400" back

.05" sealed fiberglass reinforced plastic (FRP) panel, single sided skin

FRP

(Glasbord is a tradename for FRP)

PVC Trim Boards

1/2" thick x 3" wide

22.5° angle cut on top (minimum)

PVC cove

Door Schedule

Door No.	Room	Size Width	Size Height	Material Type	Finish	Remarks
1	Entry	6'-0"	7'-0"	Glass	Factory	Lockable/Dead bolt
2	Public Rest Room	3'-0"	6'-8"	Steel	Painted	Lockable Inside
3	Break room	3'-0"	6'-8"	Steel	Painted	No Knob (Push & Pull handle)
4	Employee Rest Room	3'-0"	6'-8"	Steel	Painted	Lockable Inside
5	Break Room	3'-0"	6'-8"	Steel	Painted	Lockable/Dead bolt
6	Retail Room	5'-0"	6'-8"	Wood	SS	Double Swing
7	Freezer	5'-6"	6'-8"	Wood	Factory	Insulated Freezer Door
8	Retail Room	3'-0"	6'-8"	Steel	Painted	No Knob (Push & Pull handle)
9	Retail Room	3'-0"	6'-8"	Wood	SS	Double Swing
10	Processing Room	5'-0"	7'-0"	Wood	Factory	Insulated Cooler Door
11	Processing Room	5'-0"	6'-8"	Wood	Factory	Double Swing
12	Hallway	4'-6"	6'-8"	Wood	Factory	Double Swing
13	Office	3'-0"	6'-8"	Steel	Painted	Lockable/Dead bolt
14	Inspection Office	3'-0"	6'-8"	Steel	Painted	Lockable
15	Dry Storage	5'-0"	6'-8"	Steel	Painted	Lockable/Dead bolt
16	Kill Floor	3'-0"	6'-8"	Steel	Painted	No Knob (Push & Pull handle)
17	Sausage Kitchen	5'-0"	6'-8"	Wood	SS	Double Swing
18	Curing Cooler	5'-0"	6'-8"	Wood	Factory	Insulated Cooler Door
19	Seasoning Room	2'-8"	6'-8"	Steel	Painted	No Knob (Push & Pull handle)
20	Smoke Room	5'-0"	6'-8"	Wood	SS	Double Swing
21	Finished Product Cooler	5'-0"	6'-8"	Wood	Factory	Insulated Cooler Door
22	Pens	3'-0"	7'-0"	Steel	Painted	Roll up Steel Insulated (Lockable)
23	Pens	3'-0"	7'-0"	Steel	Painted	Roll up Steel Insulated (Lockable)
24	Pre chill Cooler	5'-0"	10'-6"	Wood	Factory	Insulated Cooler Door
25	Holding Cooler	5'-0"	11'-8"	Steel	Clear	Double Swing
26	Inedible Cooler	4'-6"	6'-8"	Wood	Factory	Insulated Cooler Door
27	Inedible Cooler	8'-0"	8'-0"	Steel	Factory	Overhead Steel Insulated (Lockable)
28	Mechanical Room	3'-0"	6'-8"	Steel	Painted	No Knob (Push & Pull handle)
29	Rest Room	2'-6"	6'-8"	Steel	Painted	Lockable Inside
30	Mechanical Room	8'-0"	8'-0"	Steel	Factory	Overhead Steel Insulated (Lockable)
31	Freezer	3'-0"	6'-8"	Wood	Factory	Insulated Freezer Door

NOTE: Owner may need to furnish cooler doors, freezer door, and double swing doors to contractor.

Concrete Finish Schedule

Room No.	Room Name		Floor Drains	Insulation Thickness Under floor	Remarks
100	Retail Area		1		
101	Public Rest Room		0		
102	Employee Rest Room		0		
103	Break Area		0		
104	Processing Room		1	2"	
105	Office		0		
106	Inspection Office		0		
107	Dry Storage		0		
108	Hallway		1		
109	Curing Cooler		1	2"	
110	Seasoning Room		0		
111	Sausage Kitchen		1	2"	
112	Smoke Room		1		Trench Drain
113	Finished Product Cooler		1	2"	
114	Pens		1		
115	Kill Floor		1		Trench Drain
116	Pre chill Cooler		1	2"	
117	Holding Cooler		1	2"	
118	Inedible Cooler		1	2"	
119	Rest Room		0		
120	Mechanical Room		1		
121	Freezer		0	8"	
122	Sharp Freezer		0	8"	

NOTES:

All Floors will be concrete with a non-slip finish (4000#).

All floors 5" thick with rebar spaced at 2' on center and places on 2-1/2" chairs.

Floor slopes to drains have to be 3/16" per foot or greater (no standing water on floors).

Under floor insulation must have a density of 2.5 lbs. per cubic foot or 2" thick equals R-10.

Ground under insulated floors must be properly bedded with gravel and/or sand for proper ventilation to avoid ice heaving.

Plumbing Specifications

Room No.	Room Name	Room Size	Remarks
100	Retail Area	14'x32'x10'	1 Floor Drain and 1 Wall-mount handwash sink
101	Public Rest Room	7'x5'x10'	1 Toilet and 1 Wall-mount handwash sink
102	Employee Rest Room	9'8"x5'x10'	1 Toilet 1 Wall-mount handwash sink Enclosed Shower
103	Break Room	16'x17'x10'	Kitchen Sink and 1 Condensate Drain
104	Processing Room	14'x28'x10'	1 Wall-mount handwash sink 1 set of Hose Bibs (Hot & Cold domestic water) 1 Equipment Wash Sink 1 Floor Drain
108	Hallway	5'x17'x10'	1 Floor Drain
109	Curing Cooler	9'x12'x10'	1 Floor Drain
111	Sausage Kitchen	17'x28'x10'	1 set of Hose Bibs (Hot & Cold domestic water) 1 Floor Drain 1 Equipment Wash Sink (3 compartment) 1 Wall-mount handwash sink 1 Condensate Drain (On equipment sink drain)
112	Smoke Rooms	10'x12'x10'	1 Floor Drain (Trench) 1 Cold water hookup for smokehouse 1 Cold water hookup for kettle
113	Finished Product Cooler	6'8"x12'x10'	1 Floor Drain
114	Pens	16'x17'x10'	1 Floor Drain
115	Kill Floor Kill Floor Cupalo	16'x22'x14' 4'x22'x18'	1 Floor Drain (Trench) 2 Wall-mount handwash sinks 2 sets of Hose Bibs (Hot & Cold domestic water)
116	Pre chill Cooler	11'6"x16'x14'	1 Floor Drain and 1 Condensate Drain
117	Holding Cooler	11'x18'x14'	1 Floor Drain
118	Inedible Cooler	12'17'x10'	1 Floor Drain 1 Condensate Drain 1 sets of Hose Bibs (Hot & Cold domestic water)
119	Rest Room	5'x5'x10'	1 Toilet and 1 Wall-mount handwash sink
120	Mechanical Room	17'x22'7"x10'	1 Floor Drain Water Main & Water Heater hookups Power washer hookup

Owner may need to supply wall mount hand wash sinks and equipment wash sinks to contractor.

NOTES:

All plumbing to meet state and local codes.

All floor drain and risers to be 4" diameter.

Condensate drains for refrigeration need to be 2" diameter lines.

Public and employee rest rooms must be a separate drain line out of building.

All water lines surface mounted in plant.

All water lines 1/2" or larger diameter.

All floor drains need covers and must have deep seal trap and properly vented.

Electrical Specifications

Room No.	Room Name	Lighting Type	Lighting FCP	Switches	Outlets 115v	Outlets 220v	Exhaust Fan	Remarks
100	Retail Area	8'VT, H0 T8	50	1	4	1		Needs a night light
101	Public Rest Room	4'VT, H0 T8	30	1	1 GFI		1	Fan on with light
102	Employee Rest Room	4'VT, H0 T8	30	1	1 GFI		1	Fan on with light
103	Break Room	8'VT, H0 T8	30	1	4 1 GFI	1		
104	Processing Room	8'VT, H0 T8	50	2	4	2		
105	Office	4'VT, H0 T8	50	1	4			
106	Inspection Office	4'VT, H0 T8	50	1	4			
107	Dry Storage	8'VT, H0 T8	30	1	1			
108	Hallway	8'VT, H0 T8	30					Lights on with Dry Storage light
109	Curing Cooler	8'VT, H0 T8	30	1	2			
110	Seasoning Room	8'VT, H0 T8	50	1	3			Outlets on separate circuits
111	Sausage Kitchen	8'VT, H0 T8	50	2	4	4		
112	Smoke Room	8'VT, H0 T8	50	1		2	1	Smoke house needs disconnect box
113	Finished Product Cooler	4'VT, H0 T8	30					Light switch in Smoke Room
114	Pens	8'VT, H0 T8	50				1	Light & Fan switch in Kill Floor
115	Kill Floor	8'VT, H0 T8	50	4	4	2	1	
116	Pre chill Cooler	8'VT, H0 T8	30					Light switch in Kill Floor
117	Holding Cooler	8'VT, H0 T8	30					Light switch in Processing Room
118	Inedible Cooler	8'VT, H0 T8	30	2	1		1	
119	Rest Room	Incandescent	30	1	1 GFI			
120	Mechanical Room	8'VT, H0 T8	50	2	4	2	3	Main Power and Panels
121	Freezer	Incandescent	30	1				1 switch in Mechanical Room
122	Sharp Freezer	Incandescent	50					Lights on with Freezer lights

NOTES:

Lights shown on drawing are only showing placement between rails, beams, etc. (may need more or less lights).

Owner may change lighting type, but lighting foot candle power (FCP) must be at least what is shown on specifications.

Need lighted exit signs and emergency lighting wherever needed by code.

All pvc conduit used in all rooms (metal conduit can be used in mechanical room and above ceilings only).

No #14 wire used.

Must bid Square D equipment only.

GFI outlets must have lighted trip light.

This specification sheet does not include any refrigeration electrical needs (will be provided by refrigeration supplier).

Refrigeration Room Specifications

Room No.	Room Name	Room Size	Ceiling R-value	Walls R-value	Floor R-value	Workers in room	Product Temp in	Product Temp out	Remarks
104	Processing Room	14'x28'x10'	30	23	40	6	40°F	45°F	Run room temp at 55°F
109	Curing Cooler	9'x12'x10'	30	23	10	0	50°F	36°F	Cool 1500# product in 24 hours
111	Sausage Kitchen	17'x28'x10'	30	23	10	3	40°F	55°F	Run room temp at 55°F
113	Finished Product Cooler	6'7"x12'x10'	30	23	10	0	120°F	40°F	Cool 1000# product in 12 hours
116	Pre chill Cooler	11'6"x16'x14'	30	23	10	0	100°F	40°F	Cool 6000# in 24 hours
117	Holding Cooler	11'x28'x14'	30	23	10	0	40°F	34°F	Hold 20000# at 34-36°F
118	Inedible Cooler	12'x17'x10'	30	23	10	0	100°F	50-60°F	Run room temp at 50°F 6000# product in 48 hours
121	Freezer	23'x35'x10'	30	23	40	0	0°F	0°F	Hold frozen product 30000#
122	Sharp Freezer	10'x10'x10'	30	23	40	0	50°F	-20°F	3000# in 12 hours

NOTES:

Need to supply electrical needs for refrigeration to electrical contractor.

Refrigeration lines should be insulated and covered with PVC or other sealed vapor barrier to avoid condensation.

APPENDIX

Sanitation Performance Standards of Title 9, Code of Federal Regulations, Section 416.2

PART 416—SANITATION

Sec. 416.2 Establishment grounds and facilities.

(a) Grounds and pest control. The grounds about an establishment must be maintained to prevent conditions that could lead to insanitary conditions, adulteration of product, or interfere with inspection by FSIS program employees. Establishments must have in place a pest management program to prevent the harborage and breeding of pests on the grounds and within establishment facilities. Pest control substances used must be safe and effective under the conditions of use and not be applied or stored in a manner that will result in the adulteration of product or the creation of insanitary conditions.

(b) Construction.

(1) Establishment buildings, including their structures, rooms, and compartments must be of sound construction, be kept in good repair, and be of sufficient size to allow for processing, handling, and storage of product in a manner that does not result in product adulteration or the creation of insanitary conditions.

(2) Walls, floors, and ceilings within establishments must be built of durable materials impervious to moisture and be cleaned and sanitized as necessary to prevent adulteration of product or the creation of insanitary conditions.

(3) Walls, floors, ceilings, doors, windows, and other outside openings must be constructed and maintained to prevent the entrance of vermin, such as flies, rats, and mice.

(4) Rooms or compartments in which edible product is processed, handled, or stored must be separate and distinct from rooms or compartments in which inedible product is processed, handled, or stored, to the extent

necessary to prevent product adulteration and the creation of insanitary conditions.

(c) Light. Lighting of good quality and sufficient intensity to ensure that sanitary conditions are maintained and that product is not adulterated must be provided in areas where food is processed, handled, stored, or examined; where equipment and utensils are cleaned; and in hand-washing areas, dressing and locker rooms, and toilets.

(d) Ventilation. Ventilation adequate to control odors, vapors, and condensation to the extent necessary to prevent adulteration of product and the creation of insanitary conditions must be provided.

(e) Plumbing. Plumbing systems must be installed and maintained to:

(1) Carry sufficient quantities of water to required locations throughout the establishment;

(2) Properly convey sewage and liquid disposable waste from the establishment;

(3) Prevent adulteration of product, water supplies, equipment, and utensils and prevent the creation of insanitary conditions throughout the establishment;

(4) Provide adequate floor drainage in all areas where floors are subject to flooding-type cleaning or where normal operations release or discharge water or other liquid waste on the floor;

(5) Prevent back-flow conditions in and cross-connection between piping systems that discharge waste water or sewage and piping systems that carry water for product manufacturing; and

(6) Prevent the backup of sewer gases.

(f) Sewage disposal. Sewage must be disposed into a sewage system separate from all other drainage lines or disposed of through other means sufficient to prevent backup of sewage into areas where product is processed, handled, or stored. When the sewage disposal system is a private system requiring approval by a State or local health authority, the establishment must furnish FSIS with the letter of approval from that authority upon request.

(g) Water supply and water, ice, and solution reuse.

(1) A supply of running water that complies with the National Primary Drinking Water regulations (40 CFR part 141), at a suitable temperature and under pressure as needed, must be provided in all areas where required (for processing product, for cleaning rooms and equipment, utensils, and packaging materials, for employee sanitary facilities, etc.). If an establishment uses a municipal water supply, it must make available to FSIS, upon request, a water report, issued under the authority of the State or local health agency, certifying or attesting to the potability of the water supply. If an establishment uses a private well for its water supply, it must make available to FSIS, upon request, documentation certifying the potability of the water supply that has been renewed at least semi-annually.

(2) Water, ice, and solutions (such as brine, liquid smoke, or propylene glycol) used to chill or cook ready-to-eat product may be reused for the same purpose, provided that they are maintained free of pathogenic organisms and fecal coliform organisms and that other physical, chemical, and microbiological contamination have been reduced to prevent adulteration of product.

(3) Water, ice, and solutions used to chill or wash raw product may be reused for the same purpose provided that measures are taken to reduce physical, chemical, and microbiological contamination so as to prevent contamination or adulteration of product. Reuse that which has come into contact with raw product may not be used on ready-to-eat product.

(4) Reconditioned water that has never contained human waste and that has been treated by an onsite advanced wastewater treatment facility may be used on raw product, except in product formulation, and throughout the facility in edible and inedible production areas, provided that measures are taken to ensure that this water meets the criteria prescribed in paragraph (g)(1) of this section. Product, facilities, equipment, and utensils coming in contact with this water must undergo a separate final rinse with non-reconditioned water that meets the criteria prescribed in paragraph (g)(1) of this section.

(5) Any water that has never contained human waste and that is free of pathogenic organisms may be used in edible and inedible product areas, provided it does not contact edible product. For example, such reuse water may be used to move heavy solids, to flush the bottom of open evisceration troughs, or to wash antemortem areas, livestock pens, trucks, poultry cages, picker aprons, picking room floors, and similar areas within the establishment.

(6) Water that does not meet the use conditions of paragraphs (g)(1) through (g)(5) of this section may not be used in areas where edible product is handled or prepared or in any manner that would allow it to adulterate edible product or create insanitary conditions.

(h) Dressing rooms, lavatories, and toilets.

(1) Dressing rooms, toilet rooms, and urinals must be sufficient in number, ample in size, conveniently located, and maintained in a

sanitary condition and in good repair at all times to ensure cleanliness of all persons handling any product. They must be separate from the rooms and compartments in which products are processed, stored, or handled.

(2) Lavatories with running hot and cold water, soap, and towels must be placed in or near toilet and urinal rooms and at such other places in the establishment as necessary to ensure cleanliness of all persons handling any product.

(3) Refuse receptacles must be constructed and maintained in a manner that protects against the creation of insanitary conditions and the adulteration of product.

[64 FR 56417, Oct. 20, 1999]

Effective Date Note: At 64 FR 56417, Oct. 20, 1999, Sec. 416.2 was added, effective Jan. 25, 2000.



Techniques and hygiene practices in slaughtering and meat handling

EQUIPMENT

Slaughtering equipment, particularly for smaller-scale operations, need not be elaborate and expensive. The amount of equipment will depend on the slaughtering procedures employed. If possible, all equipment should be made of stainless steel or plastic, be rust resistant and easily cleaned and sanitized. Equipment which does not get in contact with the meat (e.g. overhead rails, working platforms, knocking pen) is usually made of galvanized steel.

Basic equipment needed for the slaughtering operation:

- stunning gun, electrical head tongs or simple stunning equipment for direct blow
- knives:
 - sticking - 15 cm sharpened on both sides
 - skinning - 15 cm curved
- a sharpening steel
- oil or water sharpening stone
- scabbard and belt for holding knives
- meat saw - hand or electric and cleaver
- block and tackle or chain hoist strong enough to hold the weight of the animal to be slaughtered
- pritch, chocks or skinning rack (dressing cradle)
- a strong beam, tripod or track 2.4 to 3.4 m from floor
- spreader - gambrel or metal pipe
- several buckets
- working platforms
- scalding barrel or tank
- pot, barrel or system for boiling water
- bell scrapers
- solid scraping table or platform
- thermometer registering up to 70°C
- hog or hay hook
- torch or flame for singeing

The last seven items indicate additional equipment required when hogs are scalded and scraped rather than skinned.

Useful additional equipment:

- knocking pen
- bleeding hooks (for vertical bleeding)
- blood-catching trough
- wash trough (tripe) Sanitation of hands and tools:
- hand wash-basin
- implement sterilizers

Means should be available to clean thoroughly all equipment coming into contact with carcasses or meat. Implement sterilizers are stainless-steel boxes holding hot (82°C) water, shaped to suit particular equipment knives, cleavers, saws, etc. (Fig. 2). Knife sterilizers should be placed in positions where every operator who uses a knife has immediate access. Handles as well as blades must be sterilized. Each operator should have at least two knives etc., one to use while the other sterilizes (Figs 10 and 11).

Failure to sterilize all knives and equipment regularly will result in carcass contamination. Bacteria will be transferred from the hide to the carcass and from carcass to carcass (Fig. 12).

TREATMENT OF LIVESTOCK BEFORE SLAUGHTER AND ITS IMPACT ON MEAT QUALITY

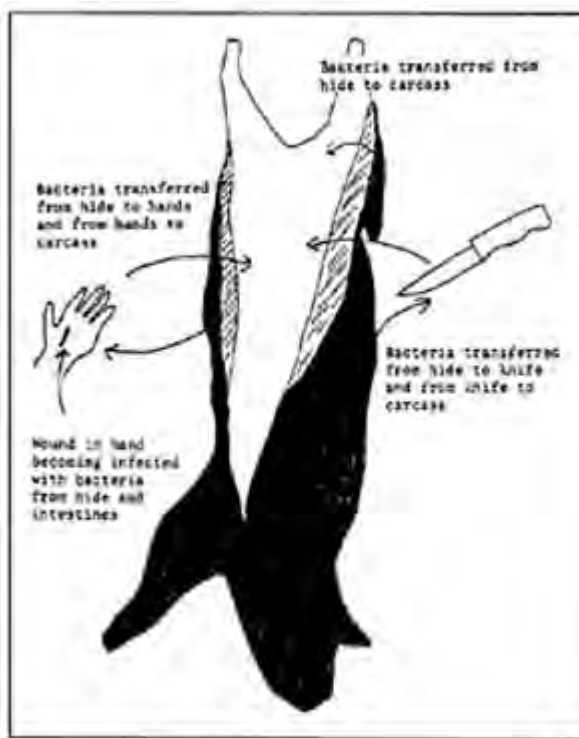
Stress in its many forms, e.g. deprivation of water or food, rough handling, exhaustion due to transporting over long distances, mixing of animals reared separately resulting in fighting, is unacceptable from an animal welfare viewpoint and should also be avoided because of its deleterious effects on meat quality. The most serious consequence of stress is death which is not uncommon among pigs transported in poorly ventilated, overcrowded trucks in hot weather. From loading on the farm to the stunning pen animals must be treated kindly, and the lorries, lairages and equipment for livestock handling must be designed to facilitate humane treatment. Stress immediately prior to slaughter, such as fighting or rough handling in the lairage, causes stored glycogen (sugar) to be released into the bloodstream. After slaughter this is broken down in the muscles producing lactic acid. This high level of acidity causes a partial breakdown of the muscle structure causing the meat to be pale, soft and exudative (PSE). This condition is mostly found in pigs.

10. Plastic (right) handles are more hygienic than wooden (left) for knives and other equipment. Note the excessively worn knife (third from left) which should be discarded



11. Knives and other equipment should be kept sharp and in good repair

12. Poor hygiene during carcass dressing causes the spread of bacteria from the skin of the carcass to knives and to operators' hands



Handling animals during transport and lairage

An electric goad (Fig. 13) should be used rather than a stick or tail-twisting not only to avoid stress but also to prevent carcass bruising. Grabbing sheep by the fleece also causes bruising (Fig. 14).

To avoid fighting, animals not reared together must not be mixed during transport and lairage. Load and unload using shallow stepped ramps to avoid stumbles. Trucks should be neither over- nor underloaded. Overloading causes stress and bruising due to crushing. Underloading results in animals being thrown around and falling more than necessary. Drivers should not corner at excessive speed and must accelerate and decelerate gently.

The lairage should have small pens. Corridors must curve and not bend sharply so that stock can see a way forward. Stock must not be slaughtered in sight of other stock. Plenty of clean water must be available. The lairage must be well lit and ventilated. Do not hold stock in lairage for more than a day. Only fit, healthy stock may be slaughtered for human consumption.

Fasting before slaughter reduces the volume of gut contents and hence bacteria and therefore reduces the risk of contamination of the carcass during dressing. It is usually sufficient for the animals to receive their last feed on the day before slaughter. Stock should have a rest period after arrival at the slaughterhouse. However, long periods in the lairage can lead to DFD if the animals are restless and fighting or mounting.

Animals should be as clean as possible at slaughter. Producers should wash their animals before leaving the farm. Trucks used for transport must be washed after each load and the lairage at the slaughterhouse should be kept clear of faecal matter and frequently washed (Figs 15 and 16).

STUNNING AND BLEEDING OF SLAUGHTER ANIMALS

Stunning prior to bleeding

Most countries have legislation requiring that animals are rendered unconscious (stunned) by a humane method prior to bleeding. Exceptions are made for religions which require that ritual slaughter without prior stunning is practised, provided the slaughter method is humane. Stunning also makes sticking (throat-slitting) less hazardous for the operator. The animal must be unconscious long enough for sticking to be carried out, and for brain death to result from the lack of blood supply.

13. An electric goad delivers a small electric current via two electrodes to encourage animals to move. It avoids stress and carcass damage



15. Trucks must be thoroughly washed after each load

14. Unsightly bruising caused by striking the animal with a stick. This not only causes loss of product but is also inhumane



16. Pens will need washing after emptying

Methods of stunning

Direct blow to skull using a club or poleaxe. The blow must be dealt with precision and force, so that the skull is immediately smashed, causing instantaneous unconsciousness. In cattle the aiming point is in the middle of the forehead in line with the ears, where the skull is thinnest. Horses have thinner skulls and are therefore easier to stun by this method. In sheep and goats the brain is more easily reached from the back of the neck. Pigs have a well-developed frontal cavity so the blow should be aimed slightly above the eyes.

Slaughtering mask. A bolt held in the correct position by the mask is driven into the animal's brain by a hammer blow. The device is usually fitted with a spring which returns the bolt to its original position.

Free bullet fired from a pistol into the skull is effective but unsafe. This method has been used on horses and cattle.

Captive-bolt pistols fitted with a blank cartridge are effective on cattle and sheep but not pigs whose skulls are thicker (Figs 17 and 18). After firing, the bolt returns to its original position in the pistol. The bolt may or may not be designed to penetrate the skull. With penetrating types the brain becomes contaminated with hair, dirt and bone fragments. If brains are to be saved as edible tissue then the non-penetrating type with a mushroom-shaped head should be used.

Electrical stunning. An electric current of high frequency but, in the case of manually operated equipment, of relatively low voltage (60–80 V) is passed through the brain of an animal for a few seconds to produce unconsciousness. If applied correctly a deep state of unconsciousness is invariably achieved. Strict safety rules must be observed. Head tongs (Fig. 19) are suitable for pigs and sheep but not for cattle. The electrodes carried on the ends of the tongs must be accurately placed (Figs 20 and 21). Places where the skull is thick must be avoided. Electrical contact is impeded by hair and caked mud. Water or brine will improve contact but the head must not be completely wet otherwise the current will have a short-circuit path avoiding the brain. The electrodes must be applied with strong pressure.

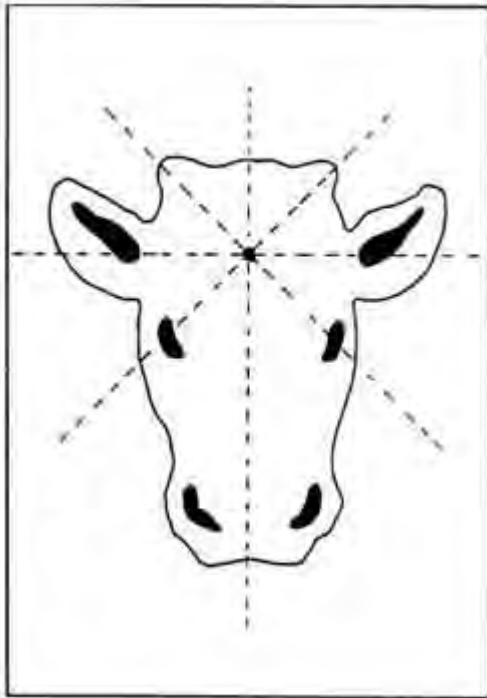
19. Head tongs are used to stun pigs and sheep electrically but are not suitable for cattle. The electrode on the end of each tong is ridged for better contact



17. Captive-bolt stunner suitable for cattle



20. The electrodes must be applied firmly to either side of the head so that the electrical current passes through the brain causing unconsciousness in a few seconds



18. Aiming point for stunning cattle



21. Head tongs are also suitable for stunning pigs



Carbon dioxide stunning is used only in large pig abattoirs. Pigs are induced into a chamber and exposed to a concentration of 85 percent CO₂ for about 45 seconds. Although effective for anaesthetizing sheep, it is impractical because of large amounts of CO₂ collecting in the wool and affecting operators on the killing line.

Bleeding after stunning

The objectives of bleeding are to kill the animal with minimal damage to the carcass and to remove quickly as much blood as possible as blood is an ideal medium for the growth of bacteria.

Sticking, severing the major arteries of the neck, should immediately follow stunning. Care must be taken not to puncture the chest cavity or it will fill with blood.

22. Immediately following stunning the animal

23. The sticking point for

is hoisted by one leg and stuck. For sheep the sticking point is in the side of the neck, the gash cut severing all the major blood vessels in a single movement

pigs is in the centre of the neck just in front of the breastbone



Cattle. Insert the sticking knife carefully just above the breastbone at 45° pointed toward the head. Ensure that the carotid arteries and jugular veins are severed in one movement.

Sheep. Draw the knife across the jugular furrow close to the head severing both carotid arteries. Alternatively, the knife may be inserted through the side of the neck, though this requires more skill (Fig. 22).

Pigs. As for cattle but do not go in too far or a pocket of blood will collect at the shoulder (Fig.23). To reduce contamination by the scalding tank water the cut should be as small as possible.

Bleeding on a rail

The most hygienic system of bleeding and dressing is to shackle the animal immediately after stunning, then hoist it on to a moving rail. The animal is stuck while being hoisted to minimize the delay after stunning. Bleeding continues until the blood flow is negligible when carcass dressing should begin without further delay (Fig. 24)

Blood for human use must be collected with special equipment to avoid contamination from the wound, the gullet of the knife. A hollow knife directs blood away from the wound into a covered stainless-steel container without touching the skin or hide. The knife may be connected to a hose to reduce the risk of contamination. The hose may even be connected to a pump to speed the blood flow. Between 40 and 60 percent of the total blood volume will be removed though this will be reduced if sticking is delayed. To prevent coagulation, citric acid solution made up with one part citric acid to two parts water is added at a rate up to 0.2 percent of the blood volume. The main sources of contamination during sticking and bleeding include the knife, the wound and the food-pipe. The knife should be changed after each operation and returned to a sterilizer. Cutting the hide of sheep and cattle and opening out to make a clean entry for the sticking knife reduces contamination from the wound. If the food-pipe is pierced semi-digested food may be regurgitated contaminating the blood and neck wound.

Horizontal bleeding

Horizontal bleeding is claimed to give faster bleeding rates and a greater recovery of blood. This may be due to certain organs and blood vessels being put under pressure when animals are hoisted, thus trapping blood and restricting the flow. Bleeding on the floor is very unhygienic. The operation should take place on a specially designed, easily cleaned stainless-steel table which should be cleaned frequently. If blood is to be saved it must not come in contact with the table before reaching the collecting vessel.

24. After sticking, the animal should

25. Scalding/dehairing tank which accommodates four pigs: one



be left to bleed until the blood flow becomes negligible

awaiting immersion, two immersed and one just completing immersion. When the bars are rotated the pigs change position



26. After immersion any remaining loose hairs are scraped from the skin

27. Simple tank for combined scalding/ dehairing. The tank is filled with water at 60°C, a pig is lowered in, the lid is closed and the paddles rotate, the rubber tips loosening the hairs



Bleeding without stunning

The Jewish and Muslim religions forbid the consumption of meat which was killed by any method other than bleeding. Since it is difficult to guarantee that all animals will recover consciousness after being stunned by any particular method, stunning is not generally allowed. There are exceptions, however. Some communities do accept low-voltage electrical stunning.

Because animals are fully conscious at the time of sticking, ritual slaughter may be less humane than sticking after stunning. To reduce the suffering operators must be highly skilled so that a successful gash cut severing all the veins and arteries is made quickly at the first attempt. Different communities have different regulations as to the orientation of the animal at sticking, some favouring a position lying on its side, others insisting it lie on its back. The animal should not be hoisted until unconsciousness due to lack of blood supply to the brain is complete.

SCALDING AND DEHAIRING OF PIGS (USING SIMPLE EQUIPMENT)

Scalding in water at around 60°C for about six minutes loosens the hair in the follicle. Too low a temperature and the hair will not be loosened and too high a temperature and the skin will be cooked and the hair difficult to remove. The simplest equipment consists of a tank into which the pig is lowered by a hoist. The water is heated by oil, gas, electricity or an open steam-pipe.

To check the effectiveness of the scald, rub the skin with the thumb to see if hair comes away easily. Some machines have the thermostatic controls and timers. To reduce contamination, scalding water should be changed frequently, pigs should be as clean as possible at sticking, and bleeding should be fully completed before immersion.

In large factories pigs are transported through scalding tanks with rotating bars (Fig. 25) or through long scalding tanks stretching from the sticking point to the dehairing point in the time required for an effective scald.

Dehairing is done with a specially formed scraper (bell scraper or knife). If the scald is effective all the hair can be removed by this manual method (Fig. 26). Another simple method is to dip the pig in a bath containing a hot resin adhesive. The pig is removed from the bath and the resin allowed to set partially when it is peeled off pulling the hair with it from the root. This is less labour-intensive than scraping and produces a very clean skin. After use the adhesive is melted again, strained to remove the hair and returned to the tank.

Another method of removing dirt and hair in one operation is to skin the carcass though this is only done when the skin is required for leather goods.

With the simple scalding tank, dehairing and scalding may be combined in one operation. Inside the tank are rotating rubber-tipped paddles which are started after closing the lid. As the hair is loosened by the scalding water it is removed by the rubbing effect of the paddles against the skin (Fig. 27).

Singeing removes any remaining hairs, shrinks and sets the skin, decreases the number of adhering micro-organisms and leaves an attractive clean appearance. It may be done with a hand-held gas torch (Fig. 28). Automated systems transport the pig into a furnace and leave it long enough for an effective singe.

After singeing, black deposits and singed hairs are scraped off (Fig. 29) and the carcass is thoroughly cleaned before evisceration begins.

SKINNING OF CATTLE AND SMALL RUMINANTS

Cattle

The outer side of the hide must never touch the skinned surface of the carcass. Operators must not touch the skinned surface with the hand that was in contact with the skin.

Combined horizontal/vertical methods

Head. After bleeding, while the animal is still hanging from the shackling chain, the horns are removed and the head is skinned. The head is detached by cutting through the neck muscles and the occipital joint. Hang the head on a hook (Fig. 30). Lower the carcass on its back into the dressing cradle.

Legs. Skin and remove the legs at the carpal (foreleg) and tarsal (hind leg) joints. The forelegs should not be skinned or removed before the carcass is lowered on to the dressing cradle or the cut surfaces will be contaminated. The hooves may be left attached to the hide.

28. After scraping away loose hairs any remaining hairs can be singed and the skin set with a hand-held gas torch

30. The head is completely skinned and hung on a hook to await inspection



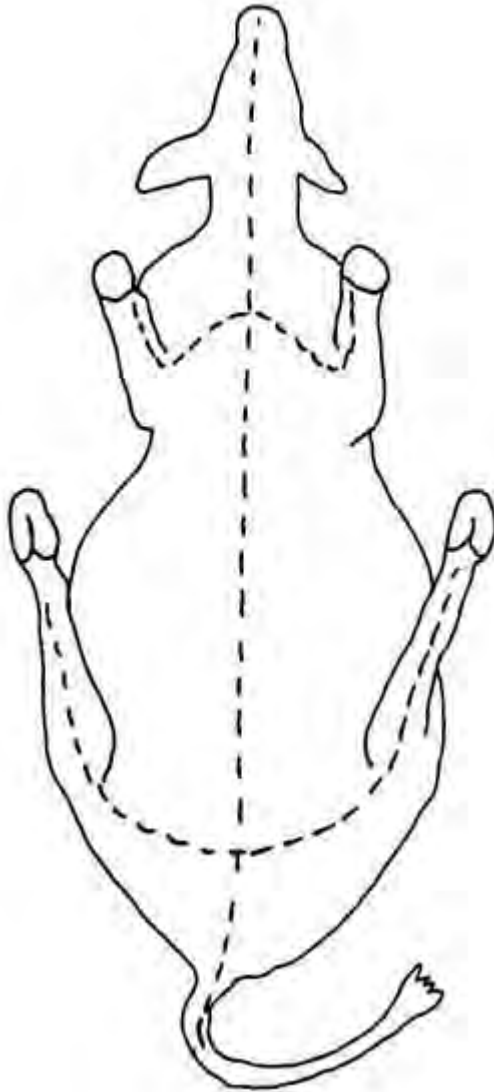
29. A special knife, the black scrape, is used to scrape off any singed hairs and black deposits

32. In the combined horizontal/vertical dressing method the carcass is lowered on to a cradle, the legs, brisket and flanks are skinned, then the carcass is raised to the half-hoist position. Note that this is much less hygienic than vertical dressing on a rail



33. Note the possible contamination of the carcass by

the intestines and the hide
dragging on the floor in the
combined horizontal/vertical
dressing method



31. Correct cutting lines for hide removal

Flaying. Cut the skin along the middle line from the sticking wound to the tail. Using long firm strokes and keeping the knife up to prevent knife cuts on the carcass, skin the brisket and flanks, working backwards toward the round (Fig. 31). Skin udders without puncturing the glandular tissue and remove, leaving the supermammary glands intact and attached to the carcass. At this point raise the carcass to the half-hoist position, the shoulders resting on the cradle and the rump at a good working height (Figs 32 and 33).

Clear the skin carefully from around the vent (anus) avoiding puncturing it and cut the abdominal wall carefully around the rectum. Tie off with twine to seal it. Skin the tail avoiding contamination of the skinned surface with the hide. Raise the carcass free of the floor and finish flaying.

Vertical methods

High-throughput plants have overhead rails which convey the carcass from the sticking point to the chills. Hide removal is carried out on the hanging carcass (Figs 34, 35 and 36). The operations are as in the combined horizontal/vertical method, but as it is not possible to reach the hide from ground level more than one operator is needed. A single operator may work with a hydraulic platform which is raised and lowered as required.

Automatic hide pullers are used in high-throughput slaughterhouses. Some types pull the hide down from the hind, others from the shoulders upwards toward the rump.

Automation of hide removal reduces contamination since there is less handling of the carcass and less use of knives. Moving overhead rails also improve hygiene by reducing carcass contact with operators, equipment such as dressing cradles and with each other since carcasses are evenly spaced.

Small ruminants

Sheep fleeces can carry large volumes of dirt and faeces into the slaughterhouse. It is impossible to avoid contamination of sheep and lamb carcasses when the fleece is heavily soiled. The fleece or hair must never touch the skinned surface, neither must the operator touch the skinned surface with the hand that was in contact with the fleece.



34. The leg is freed from the skin and the hock cut off

35. Pneumatically operated rotating knives (flayers) speed the removal of the hide from the flanks



36. Flaying knives are used for the more intricate parts of hide removal



Combined horizontal/vertical method

The animal is turned on its back and cuts are made from the knuckles down the forelegs. The neck, cheeks and shoulders are skinned. The throat is opened up and the gullet (food-pipe) is tied off (see Fig. 41). The skin on the hind legs is cut from the knuckles down to the tail root. The legs are skinned and the

sheep is hoisted by a gambrel inserted into the Achilles tendons. A rip is made down the midline and skinning proceeds over the flanks using special knives or the fists (see Fig. 39). The pelt is then pulled down over the backbone to the head. If the head is for human consumption it must be skinned or it will be contaminated with blood, dirt and hairs.

Moving cratch and rail system. The hanging carcass is lowered on to a horizontal conveyor made up of a series of horizontal steel plates, bowed slightly and divided into sets large enough to cradle a single animal. Two operators usually work together on each lamb performing the legging operations and opening the skin to the stage where it can be pulled off the back. When the gambrel is inserted into the hind legs it is hoisted on to a dressing rail.

Vertical method

At sticking the animal is shackled by one hind-leg and left to bleed. Dressing commences with the free leg which is skinned and the foot removed (Fig. 37). A gambrel is inserted into this leg and hung on a runner on a dressing rail. The second leg is freed from the shackle, skinned and dressed, then hooked on to the other end of the gambrel. The skin is opened down the midline and cleared from the rump.

A spreader frame (a bar U-shaped at each end) spreads the front legs to simplify work on the neck, breast and flanks. The front toes are held in each end of the frame which is then slung up on to a separate travelling hook. The animal is therefore suspended by all four legs belly uppermost (Figs 38 and 39). Skinning continues as in the combined horizontal/vertical method. To clear the shoulders and flanks, the forelegs are freed from the spreader and the feet removed, the animal returning to a vertical position. The skin can now be completely pulled off (Fig. 40), including the head if this is for consumption, though this takes some work with the knife. In both methods, after fleece removal the vent and food-pipe are cleaned and tied off (Fig.41).

37. Fleece removal starts with skinning the free hind leg. Care must be taken to avoid the hide touching the skinned surface or the carcass will be contaminated with faecal matter



38. With forelegs in a spreader frame and hind legs in a gambrel, the sheep is suspended in a horizontal position



40. After skinning the neck and breast, the front legs are freed and skinning continues in the vertical position with the flanks and back

39. The fists can be used to clear the

fleece from the breast



41. After skinning the neck, the food-pipe is freed and tied off to prevent regurgitation of stomach contents

EVISCERATION

With all species care must be taken in all operations not to puncture the viscera (Fig. 42). All viscera must be identified with the carcass until the veterinary inspection has been passed. After inspection the viscera should be chilled on racks etc. for better air circulation (Fig. 43).

Cattle

The brisket is sawn down the middle (Fig. 44). In the combined horizontal/ vertical system this is done with the animal resting on the cradle. The carcass is then raised to the half-hoist position and when hide removal is complete the abdominal cavity is cut carefully along the middle line. The carcass is then fully hoisted to hang clear of the floor so that the viscera fall out under their own weight (Fig. 45). They are separated into thoracic viscera, paunch and intestines for inspection and cleaning (Figs 46 and 47). If any of the stomachs or intestines are to be saved for human consumption, ties are made at the oesophagus/stomach, stomach/duodenum boundaries, the oesophagus and rectum having been tied off during hide removal. This prevents cross-contamination between the paunch and the intestines.

Small ruminants

A small cut is made in the abdominal cavity wall just above the brisket, and the fingers of the other hand are inserted to lift the body wall away from the viscera as the cut is continued to within about 5 cm of the cod fat or udder.

The omentum is withdrawn, the rectum (tied off) loosened, and the viscera freed and taken out. The food-pipe (tied off) is pulled up through the diaphragm. The breastbone is split down the middle taking care not to puncture the thoracic organs which are then removed.

Pigs

Loosen and tie off the rectum. Cut along the middle line through the skin and body wall from the crotch to the neck (Fig. 48). Cut through the pelvis and remove the bladder and sexual organs. In males the

foreskin must not be punctured as the contents are a serious source of contamination. All these organs are considered inedible.

42. When cutting through the abdomen wall, if the viscera are punctured their contents will severely contaminate the carcass



43. A portable rack suitable for hanging offal for chilling



44. A mechanical saw speeds the splitting of the brisket but care must be taken not to puncture the viscera



45. After carefully cutting the abdominal wall along the midline the viscera fall out under their own weight

46. A suitable receptacle should catch the viscera so that they are not contaminated by contact with the floor



47. A portable cart suitable for catching cattle stomachs and intestines with a separate tray for edible offal such as liver, heart and lungs



Remove the abdominal and thoracic viscera intact. Avoid contact with the floor or standing platform.

The kidneys are usually removed after the carcass has been split down the backbone. The head is usually left on until after chilling.

SPLITTING, WASHING AND DRESSING OF CARCASSES

Hygienic carcass splitting with simple equipment

Cattle

Work facing the back of the carcass. Split the carcass down the backbone (chine) with a saw or cleaver from the pelvis to the neck (Figs 49 and 50). Sawing gives a better result but bone dust must be removed (Fig. 51). If a cleaver is used, it may be necessary to saw through the rump and loin in older animals.

The saw and cleaver should be sterilized in hot (82°C) water between carcasses. Power saws increase productivity.

48. The body wall is split down the midline taking care not to puncture the viscera



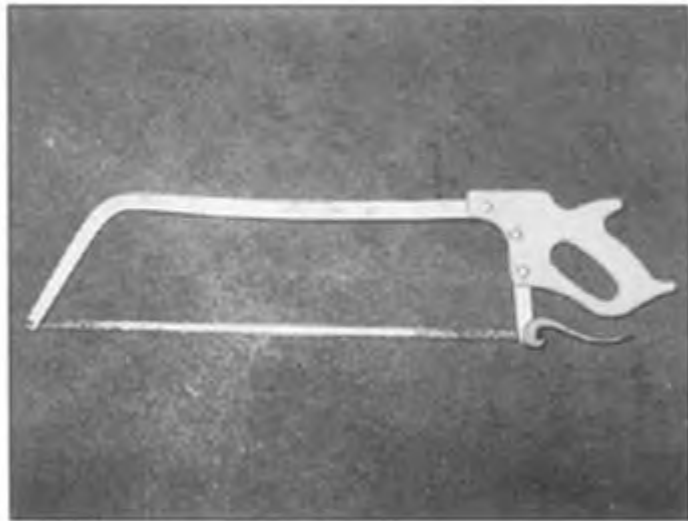
51. Carcasses should be spray-washed to remove visible staining, paying particular attention to bone dust and the internal surface, but without using excessive amounts of water

49. Mechanical saw for splitting the backbone (chine) of beef carcasses



50. Hand-saws are much slower than mechanical saws though they are preferable to cleavers which splinter bones





Pigs

These are suspended and are split down the backbone as for cattle, but the head is generally left intact (Fig. 94).

Sheep

Sheep and lamb carcasses are generally sold entire. If necessary they can be split by saw or cleaver, but a saw will probably be necessary for older animals.

Carcass washing

The primary object of carcass washing is to remove visible soiling and blood stains and to improve appearance after chilling (Fig. 51). Washing is no substitute for good hygienic practices during slaughter and dressing since it is likely to spread bacteria rather than reduce total numbers. Stains of gut contents must be cut off. Wiping cloths must not be used.

Carcass spraying will remove visible dirt and blood stains. Water must be clean. Soiled carcasses should be sprayed immediately after dressing before the soiling material dries, thus minimizing the time for bacterial growth. Under factory conditions bacteria will double in number every 20 or 30 minutes.

In addition to removing stains from the skinned surface, particular attention should be paid to the internal surface, the sticking wound and the pelvic region.

A wet surface favours bacterial growth so only the minimum amount of water should be used and chilling should start immediately. If the cooler is well designed and operating efficiently the carcass surface will quickly dry out, inhibiting bacterial growth.

Bubbling of the subcutaneous fat is caused by spraying with water at excessively high pressure, which may be due to the pressure in the system or a result of holding the spray nozzle too close to the carcass.

Carcass dressing

The object of carcass dressing is to remove all damaged or contaminated parts and to standardize the presentation of carcasses prior to weighing. Specifications will differ in detail for different authorities. Veterinary inspection of carcasses and offal can only be carried out by qualified personnel. Where signs of disease or damage are found the entire carcass and offal may be condemned and must not enter the food chain, but more often the veterinarian will require that certain parts, for instance those where abscesses are present, be removed and destroyed. Factory personnel must not remove any diseased parts until they have been seen by the inspector otherwise they may mask a general condition which should result in the whole carcass being condemned. Any instructions from the inspector to remove and destroy certain parts must be obeyed.

REFRIGERATION, HANDLING AND TRANSPORT OF CARCASSES AND MEAT

Refrigeration of carcasses

Carcasses should go into the cooler as soon as possible and should be as dry as possible. The object of refrigeration is to retard bacterial growth and extend the shelf-life. Chilling meat post-mortem from 40°C down to 0°C and keeping it cold will give a shelf-life of up to three weeks, provided high standards of hygiene were observed during slaughter and dressing.

Carcasses must be placed in the cooler immediately after weighing. They must hang on rails and never touch the floor (Fig. 52). After several hours the outside of a carcass will feel cool to the touch, but the important temperature is that deep inside the carcass. This must be measured with a probe thermometer (not glass), and used as a guide to the efficiency of the cooling.



52. Sheep carcasses in the chill-room, hung on rails clear of the floor and spaced to allow air circulation to speed drying

The rate of cooling at the deepest point will vary according to many factors including the efficiency of the cooler, the load, carcass size and fatness. As a general guide a deep muscle temperature of 6–7° C should be achieved in 28 to 36 hours for beef, 12 to 16 hours for pigs and 24 to 30 hours for sheep carcasses. Failure to bring down the internal temperature quickly will result in rapid multiplication of bacteria deep in the meat resulting in off-odours and bone-taint.

High air speeds are needed for rapid cooling but these will lead to increased weight losses due to evaporation unless the relative humidity (RH) is also high. However, if the air is near to saturation point (100 percent RH) then condensation will occur on the carcass surface, favouring mould and bacteria growth. A compromise between the two problems seems to be an RH of about 90 percent with an air speed of about 0.5 m/second. Condensation will also occur if warm carcasses are put in a cooler partially filled with cold carcasses.

The cooler should not be overloaded beyond the maximum load specified by the manufacturers and spaces should be left between carcasses for the cold air to circulate. Otherwise cooling will be inefficient and the carcass surface will remain wet, favouring rapid bacterial growth forming slime (see below).

Once filled, a cooler should be closed and the door opened as little as possible to avoid sudden rises in temperature. When emptied, it should be thoroughly washed before refilling. Personnel handling carcasses during loading and unloading operations should follow the strictest rules regarding their personal hygiene and clothing and should handle carcasses as little as possible.

Marketing of meat under refrigeration

Chilled meat must be kept cold until it is sold or cooked. If the cold chain is broken, condensation forms and microbes grow rapidly. The same rules about not overloading, leaving space for air circulation, opening doors as little as possible and observing the highest hygiene standards when handling the meat apply. An ideal storage temperature for fresh meat is just above its freezing point, which is about - 1°C (-

3°C for bacon because of the presence of salt). The expected storage life given by the International Institute of Refrigeration of various types of meat held at these temperatures is as follows:

<i>Type of meat</i>	<i>Expected storage life at - 1°C</i>
Beef	up to 3 weeks (4–5 with strict hygiene)
Veal	1–3 weeks
Lamb	10–15 days
Pork	1–2 weeks
Edible offal	7 days
Rabbit	5 days
Bacon	4 weeks (at - 3°C)

Under commercial conditions, meat temperatures are rarely kept at - 1°C to 0°C, so actual storage times are less than expected. The times would also be reduced if RH were greater than 90 percent.

Meat should be placed in the refrigerator immediately following receipt. Any parts which show signs of mould growth or bacterial slime should be trimmed off and destroyed. Hands must be thoroughly washed after handling such trimmings and knives must be sterilized in boiling water. The refrigerator should be thoroughly cleaned after finding such meat and should also be cleaned on a regular basis.

Carcasses, quarters and large primals should not be cut into smaller portions before it is necessary as this will expose a greater surface area for bacteria to grow. Freshly cut surfaces are moist and provide a better medium for bacterial growth than the desiccated outer surfaces of cuts that have been stored for some time.

An accurate thermometer should be placed in the refrigerator and checked regularly. The temperature should remain within a narrow range (0° to + 1°C).

Transport of meat

Vehicles for transporting meat and carcasses should be considered as an extension of the refrigerated storage. The object must be to maintain the meat temperature at or near 0°C. Meat should be chilled to 0°C before loading. Meat should hang on rails, not on the floor. If stockinettes are put on carcasses they must be clean. Meat trucks should not carry anything other than meat.

The refrigeration is usually produced by injecting liquid nitrogen or carbon dioxide (CO₂) into the compartment or by blowing air over CO₂ chunks (dry ice). The temperature in these vans can be set and controlled to minimize the temperature rise and to avoid condensation on the meat surface (Fig. 53).

Insulated vans without refrigeration may be refrigerated by adding dry ice. While this is a reasonably good alternative to the refrigerated truck it does not allow the temperature to be controlled.

Uninsulated vans and open trucks should not be considered as suitable transport for meat, particularly in hot climates. In addition to the temperature abuse, condensation will occur when the meat goes back into refrigeration, and in open trucks the meat is exposed to attack from insects. Loading and unloading should be done quickly. If there are any unavoidable delays then dry-ice blocks should be placed in the partly filled van.

53. Insulated vans with refrigeration units should be used for transporting meat



Carcass and meat handling and marketing without refrigeration

Where refrigeration is unavailable either owing to financial or technical reasons (e.g. no power supply), the shelf-life of meat is reduced to days or hours, not weeks. Slaughter and dressing must be near the point of sale and it must be quick and clean. If carcasses and meat are kept in well-insulated rooms, the temperature can be reduced with dry-ice blocks, if these are available. Since it is easier to chill boneless cuts rather than whole carcasses, hot-boning should be considered.

Stock must be handled carefully to avoid producing high-pH meat which will spoil more quickly. Rooms used for slaughter and handling meat must be clean and well ventilated, but out of direct sunlight, dust-free and verminfree (rodents and insects). Hot water (82°C) must be available to clean all equipment and surfaces and personnel must work very hygienically. Receive all blood into sealed containers and have separate skips on wheels for hooves, skins, green offal and trimmings.

54. Processing and packing of offal must be done in a room separated from the slaughter hall or other meat-handling facilities



Dressing on a vertical hoist will minimize contamination by floor or cradle contact. Let nothing drop on the floor, only into skips. Personal hygiene must be scrupulous. Any spills of gut contents on to the meat should be cut off, but careful work will avoid this. The dressed carcass should be hung on rails. If beef is quartered to facilitate handling, the cut surface is at risk.

Red offal should be hung on hooks. Any offal processing must be in rooms away from meat-handling facilities (Fig. 54). Intestines for human consumption must be thoroughly cleaned and washed.

Storage and transport without refrigeration

Meat should be put on sale within a day of slaughter. If it has to be held it should be hung in a clean, well-lit hall with good ventilation. Insects, rodents and birds must be kept out, dust must not blow in. Trays of offal should be on shelves, not on the floor. Barrows for wheeling carcasses and quarters are better than carrying on shoulders, as they can be cleaned frequently. All staff must wear clean clothing and observe strict personal hygiene. Transport of non-refrigerated meat is very hazardous. If meat is to be put in stockinettes and sacks these must be very clean. Meat should be on rails in the truck or wagon, and it is not advisable to carry it more than a day's journey before sale.



Housing Data

HOME VALUES

Zillow Home Value Index (ZHVI): A smoothed, seasonally adjusted measure of the typical home value and market changes across a given region and housing type. It reflects the typical value for homes in the 35th to 65th percentile range. The raw version of that mid-tier ZHVI time series is also available.

Zillow publishes top-tier ZHVI (\$, typical value for homes within the 65th to 95th percentile range for a given region) and bottom-tier ZHVI (\$, typical value for homes that fall within the 5th to 35th percentile range for a given region).

Zillow also publishes ZHVI for all single-family residences (\$, typical value for all single-family homes in a given region), for condo/coops (\$), for all homes with 1, 2, 3, 4 and 5+ bedrooms (\$), and the ZHVI per square foot (\$, typical value of all homes per square foot calculated by taking the estimated home value for each home in a given region and dividing it by the home's square footage). Check out this overview of ZHVI (<https://www.zillow.com/research/zhvi-methodology-2019-highlights-26221/>) and a deep-dive into its methodology (<https://www.zillow.com/research/zhvi-methodology-2019-deep-26226/>).

Here's a handy ZHVI User Guide (<https://www.zillow.com/research/zhvi-user-guide/>) for information about properly citing and making calculations with this metric.

Data Type

ZHVI All Homes (SFR, Cc

Geography

ZIP Code

[Download \(https://files.zillowstatic.com/research/public_csvs/zhvi/Zip_zhvi_uc_sfrcondo_tier_0.33_0.67_sm_sa_month.csv?t=1633523756\)](https://files.zillowstatic.com/research/public_csvs/zhvi/Zip_zhvi_uc_sfrcondo_tier_0.33_0.67_sm_sa_month.csv?t=1633523756)

HOME VALUES FORECASTS

The **Zillow Home Value Forecast (ZHVF)** is the one-year forecast of the Zillow Home Values Index (ZHVI), which is above. ZHVF is created using the all homes, mid-tier cut of ZHVI and is available both raw and smoothed and seasonally adjusted.

Data Type

ZHVF (Forecast), All Hor

Month

Most current month

[Download \(https://files.zillowstatic.com/research/public_csvs/zhvf/zhvf_uc_sfrcondo_tier_0.33_0.67_sm_sa_month.csv?t=1633523756\)](https://files.zillowstatic.com/research/public_csvs/zhvf/zhvf_uc_sfrcondo_tier_0.33_0.67_sm_sa_month.csv?t=1633523756)

RENTALS

Zillow Observed Rent Index (ZORI): A smoothed measure of the typical observed market rate rent across a given region. ZORI is a repeat-rent index that is weighted to the rental housing stock to ensure representativeness across the entire market, not just those homes currently listed for-rent. The index is dollar-denominated by computing the mean of listed rents that fall into the 40th to 60th percentile range for all homes and apartments in a given region, which is once again weighted to reflect the rental housing stock. Details available in ZORI methodology (<https://www.zillow.com/research/methodology-zori-repeat-rent-27092/>).

Data Type

ZORI (Smoothed, Seaso

Geography

Metro & U.S.

[Download \(https://files.zillowstatic.com/research/public_csvs/zori/Metro_ZORI_AllHomesPlusMultifamily_SSA.csv?t=1633523756\)](https://files.zillowstatic.com/research/public_csvs/zori/Metro_ZORI_AllHomesPlusMultifamily_SSA.csv?t=1633523756)

INVENTORY

- **For-Sale Inventory:** The count of unique listings that were active at any time in a given month.
- **Newly Pending Listings:** The count of listings that changed from for-sale to pending status on Zillow.com (<http://zillow.com/>) in a given time period.
- **Days to Pending:** How long it takes homes in a region to change to pending status on Zillow.com (<http://zillow.com/>) after first being shown as for sale. The reported figure indicates the number of days (mean or median) that it took for homes that went pending during the week being reported, to go pending. This differs from the old “Days on Zillow” metric in that it excludes the in-contract period before a home sells.
- Note: “Weekly” means you can see the metric’s value on a weekly cadence. The CSVs are updated monthly.

Data Type

For-Sale Inventory (Smc)

Geography

Metro & U.S.

Download (https://files.zillowstatic.com/research/public_csvs/invt_fs/Metro_invt_fs_uc_sfrcondo_sm_month.csv?t=1633523756)

LIST AND SALE PRICES

- **Median List Price:** The median price at which homes across various geographies were listed.
- **Median Sale Price:** The median price at which homes across various geographies were sold.
- Note: “Weekly” means you can see the metric’s value on a weekly cadence. The CSVs are updated monthly.

Data Type

Median List Price (Smoc)

Geography

Metro & U.S.

Download (https://files.zillowstatic.com/research/public_csvs/mlp/Metro_mlp_uc_sfrcondo_sm_month.csv?t=1633523756)

SALES COUNT AND PRICE CUTS

- The **Sales Count Nowcast** is available only for the raw cut of all homes.
- **Share of Listings With a Price Cut:** The number of unique properties with a list price at the end of the month that’s less than the list price at the beginning of the month, divided by the number of unique properties with an active listing at some point during the month.
- **Price Cuts:** The **mean** and **median** price cut for listings in a given region during a given time period, expressed as both dollars (\$) and as a percentage (%) of list price.
- Note: “Weekly” means you can see the metric’s value on a weekly cadence. The CSVs are updated monthly.

Data Type

Sales Count Nowcast (R)

Geography

Metro & U.S.

Download (https://files.zillowstatic.com/research/public_csvs/sales_count_now/Metro_sales_count_now_uc_sfrcondo_month.csv?t=1633523756)

Note: We make frequent changes to the download paths for CSVs and ask that users who have standard code to ingest our data consider switching to the Econ Data API (<https://documenter.getpostman.com/view/9197254/SzRuZCCj?version=latest>) to avoid that code being affected by these changes.

DEFINITIONS OF HOME TYPES

- All Homes: Zillow defines all homes as single-family, condominium and co-operative homes with a county record. Unless specified, all series cover this segment of the housing stock.
- Condo/Co-op: Condominium and co-operative homes.
- Multifamily 2+ units: Units in buildings with 5 or more housing units, that are not condominiums or co-ops.
- Duplex/Triplex: Housing units in buildings with 2 or 3 housing units.

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