POTENTIAL FOR GROWTH IN Local Processing and Sales of Utah Beef

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UDAF is one of the state's oldest agencies. It oversees dozens of legislatively mandated programs that promote the healthy growth of Utah agriculture and food, the conservation of our natural resources, and the protection of our food supply.

UDAF's Utah's Own program works to reconnect consumers with their food supply and promotes the benefits of Utah's locally grown and processed foods.

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EXECUTIVE SUMMARY

This paper's overall objective is to examine the potential for increasing meat processing capacity in Utah and assess the potential demand for local Utah beef. Coronavirus Disease 2019 (COVID-19) highlighted the need for increased capacity and resiliency in our meat supply chain, with bottlenecks resulting from decreased production. To address this, several states earmarked Coronavirus Aid, Relief, and Economic Security (CARES) Act funds to assist meat processing facilities with infrastructure expansion and COVID-related expenditures. The Utah Department of Agriculture and Food (UDAF) performed in-person site visits to a sampling of small to medium-sized meat harvest and processing facilities across the state.

The COVID-19 pandemic has had a significant impact on processing plants in Utah. Harvest and processing numbers are approximately double those from the same period of the previous year. While backlog was not initially a concern for these plants, many of them rapidly booked out for six to twelve months. For growth, physical needs included additional equipment and cooler space, access to trained butchers and meat cutters, and affordable insurance for facility staff. Another concern was access to capital for expansion.

The Utah Department of Agriculture and Food (UDAF) implemented a 90-day "Temporary Grant of Inspection" which allowed qualifying custom exempt establishments to market their product wholesale and retail within the state of Utah. These businesses provided an important service to consumers who were unable to find red meat during the initial COVID-19 food chain disruption. UDAF also compiled a list of policy recommendations based on interviews with processing plants in Utah and provided the funding to conduct this preliminary feasibility study of expanding both meat processing capacity and sales of Utah beef.

Overall, there is potential growth for Utah beef processing and sales. Utah consumers desire local beef products, and a significant portion are willing to pay a premium for it. A very small-scale meat processing facility can be feasible but would require that beef is sold and positioned as a premium product. Smaller processing plants in regional areas can increase the resiliency of the meat supply in Utah and provide the potential for ranchers to develop additional revenue streams.

Financial feasibility was estimated for a very small-scale meat processing plant with a maximum capacity of 750 head per year. This capacity is based on a singly shift, additional shifts may be used to increase the capacity, but are not considered here. With the price of livestock estimated at $115 per cwt. and wholesale meat at $6.50 per pound, the estimated net income is over $75,000. With an investment of $1.4 million, this equates to a return on investment of 8%. It is financially feasible if the meat is positioned as a premium product. The internal rate of return is 8.2%, and the modified internal rate of return is 7.4%. The desired pre-tax rate of return, discount rate, was 10%, with a desired after-tax rate of return at 6.5%. There is the possibility of negative returns with lower premiums or other assumptions.

Steers are normally sold in Utah at approximately 550 lbs. At a price of $1.55 per pound, this equates to $853 per head. The wholesale value of the meat would be $2,275 per head, and the retail value of the meat would be $2,844, which is over three times higher than the value of the steer calf.

Efforts to build awareness of the brand and availability will be needed. Some programs like Utah's Own and social media may help with this process. An association or cooperative could collectively cover the cost of the marketing to jointly build a brand and market the products. Programs that could help defray the cost of the initial investment could increase the financial feasibility.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) highlighted the vulnerability in our meat supply chain with production falling by over 40% for pork, 30% for beef, and 15% for chicken in the spring of 2020, within weeks of the declaration of the nation's pandemic status (Reiley, 2020a,b; McDougal, 2020). As larger harvest and processing facilities shut down, limited hours, or implemented social distancing measures that slowed output, ranchers were forced to consider other options, including diverting livestock to approved small to mid-sized facilities. The resulting bottleneck highlighted the need for increased capacity and resiliency in the supply chain. To address this, several states earmarked Coronavirus Aid, Relief, and Economic Security (CARES) Act funds to assist meat processing facilities with infrastructure expansion and COVID-related expenditures (see Appendix A for more information).

As a response to the resulting meat shortages, the Utah Department of Agriculture and Food (UDAF) implemented a "Temporary Grant of Inspection" which was good for a period of 90 days, and allowed qualifying custom exempt establishments with solid kill floors the ability to market their product wholesale and retail within the state of Utah. (Note: custom exempt is only approved for private, noncommercial use.) Those plants that participated were then able to supply their processed meat to restaurants and grocery stores within Utah. Additional requirements for these plants to participate were:

- Provide a written sanitation program approved by the state
- Develop a hazard analysis and critical control points (HACCP) program approved by the state
- Develop a written recall program approved by the state
- Submit labels for approval by the state

These businesses provided an important service to consumers who were unable to find red meat during the initial COVID-19 food chain disruption. Both of the plants that participated were financially rewarded and have decided to come under a full grant of inspection moving forward.

Not all of the qualified establishments were interested, partly because they were already at capacity. In many cases, for an individual to get a few head harvested, there was a four- to six-month wait time in spring 2020 (Appendix E). Currently, wait times can be more than one year.

This paper's overall objective is to examine the potential for increasing meat processing capacity in Utah and assess the potential demand for local Utah beef. Specifically, we need to understand Utah's current meat processing situation, understand the potential demand within Utah for Utah beef products, determine the financial feasibility, and finally assess potential economic contribution.

UTAH'S AGRICULTURE INDUSTRY

Utah's cattle industry accounts for roughly 78% of the state's cash receipts for meat animals, coming in just shy of $450 million (UDAF, 2020). In 2019, Utah had 820,000 cattle and calves. Figure 1 shows the cash receipts for different agricultural sectors in Utah from 2013–2019. Two other large sectors in Utah agriculture are dairy and hay. Both of these sectors are favorably impacted by local cattle and meat processing. Currently, most of the cattle are sold as calves that are then taken out of state to be finished. If processing facilities were able, and there was enough demand for Utah beef products, cattle could stay in the state of Utah to be processed and sold. This would potentially provide additional revenue streams for ranchers and increased economic impacts. Assessing the issues with finishing animals in Utah is beyond the scope of this study. However, a first step is determining the potential desire of consumers for local Utah beef and if it is feasible to process it in Utah.

Various meat processing feasibility studies have been completed. Focusing on the Intermountain West, the most recent research in this area was completed in 2014. A study that year in Montana examined 250 head per day (Bitz et al., 2014) and a study in the same year completed in Idaho primarily focused on a larger scale operation processing more than 8,000 head per year (Saul et al., 2014). These more recent studies join a small body of literature that is generally more than 10 years old (Curtis et al., 2006 and 2008; Yorgey, 2008; Schahczenski, 2009). While these studies offer good background information, most data need to be updated with current pricing and cost structures. In addition to a much larger-scale operation focus than we use in this research, many of the studies completed in this area are in locations that are geographically dissimilar to Utah.

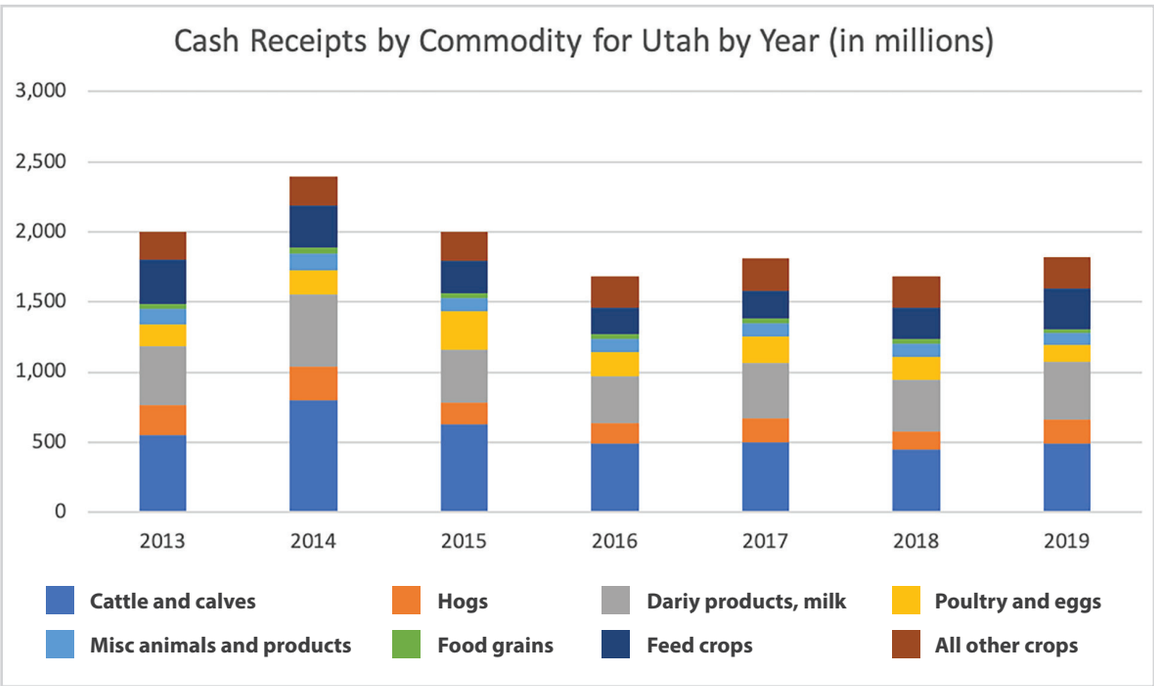

Figure 1. *Cash Receipts for Utah Commodities 2013–2019*

Source: Utah Agriculture Statistics

MEAT HARVESTING AND PROCESSING REGULATIONS

The Federal Meat Inspection Act grants regulatory authority over the harvest and processing of most common meats and poultry to the USDA (21 USC §601-695). Federal inspections are carried out by the Food Safety Inspection Service (FSIS) branch of the USDA, and require that an inspector be on-site at all stages from pre-harvest to final processing and packaging. These standards can be applied to both permanent and mobile facilities. The Wholesome Meat Act of 1967 sets minimum sanitation standards for facilities inspected under state authority. In the 23 states that have chosen not to participate or were unable to meet the minimum standards, the FSIS assumed jurisdiction over meat harvest and processing activities within the state. The remaining states participate in state-federal inspections, or State Cooperative Meat Poultry Inspection (MPI) programs (Table 1). State inspection requirements must meet an "at least equal to" standard, meaning they can differ from federal requirements as long as the same level of safety and sanitation is met. State-inspected meat can only be sold in intrastate commerce. States participating in MPI programs can also choose to participate in federal-equivalent inspections, such as the Talmadge-Aiken (TA) Cooperative Inspection program or the Cooperative Interstate Shipment (CIS) program. Both of these inspection schemes require federal-equivalent inspections to be conducted by state inspectors, but the restrictions on intrastate commerce are lifted.

Table 1. *Meat Inspection*

Inspection program	Inspection agency for Utah establishments	Sales restrictions	Requirements for state participation	Example of inspection stamp
Federal inspection	USDA Food Safety & Inspection Service	None	• Not applicable	
State-federal inspection	Utah Dept. of Agriculture and Food	Intrastate only, wholesale or retail	• aka State Cooperative Inspection or Meat Poultry Inspection (MPI) Program (9 CFR §321.1) • State inspection conducted by State inspector – "at least equal to" USDA • Utah is one of 27 participating states	
Federal-state inspection	Utah Dept. of Agriculture and Food	None	• aka Talmadge-Aiken (TA) Cooperative Inspection Program (9 CFR §321.2) • State must participate in approved MPI • Federal inspection conducted by State inspector – "same as" USDA • Utah is one of 9 states with TA facilities	Same as Federal Inspection Stamp
Cooperative Interstate Shipment Program	Not applicable (Utah opted to remain under TA program)	None	• aka CIS Program (9 CFR §321.3 and §332) • State must participate in approved MPI • Federal inspection conducted by State inspector – "same as" USDA • Only facilities with 25 or fewer employees • 8 states participate • Modified Federal Inspection Stamp	
Custom-exempt	Depends on other activities conducted in facility	Cannot be sold, donated, or otherwise enter commerce*	• Slaughter-for-fee for owner of animal (9 CFR §303.1) • Federal facilities inspected by FSIS • MPI facilities inspected by State • TA and CIS facilities inspected by State per cooperative agreement • CE-only facilities inspected by State (if MPI or cooperative agreement) or FSIS	Must be stamped "NOT FOR SALE"

Utah is one of 27 states with an approved MPI program. State inspections are conducted by UDAF, and meat carrying the UDAF inspection stamp can be sold to restaurants, grocery stores, and other retail outlets within Utah. Utah is one of nine states with TA establishments, all of which opted out of CIS participation when the program was introduced (Cooperative Inspection Programs Interstate Shipment of Meat and Poultry Products, 2009) because TA is generally viewed as the preferred inspection scheme. See Figure 2 for the statewide distribution of meat establishments as of November 2020. Federal (yellow) and TA (red) establishments can ship inspected product interstate and export. State (blue) establishments can sell within Utah.

There is recognition at the federal level that very small- to mid-sized plants may view the shift to a federal inspection scheme as too difficult or expensive. The House Agriculture Committee proposed a new program to address this. The Requiring Assistance to Meat Processors for Upgrading Plants (RAMP-UP) Act of 2019 would provide grants for meat and poultry facilities to make improvements necessary to pass federal inspection. If facilities do not become federally-inspected establishments within 36 months, the amount of the grant must be repaid. State (blue) establishments (Figure 2) would be eligible to use RAMP-UP Act funds to upgrade to a federal inspection scheme.

Custom-exempt (CE) facilities can harvest and process privately-owned livestock that is not intended for commercial sale. CE activities require minimal inspection (typically annually), and can be conducted in state- or federally-inspected facilities as long as the activities and resulting products are kept separate. The Processing Revival and Intrastate Meat Exemption (PRIME) Act of 2019 was introduced in both the House (H.R. 2859) and the Senate (S. 1620) to allow intrastate sales of CE products. The PRIME Act would allow CE products to be sold direct-to-consumer, to restaurants, and through grocery stores within the same state. Plants conducting CE activities (circles) would be eligible to sell CE product within state under PRIME Act (Figure 2).

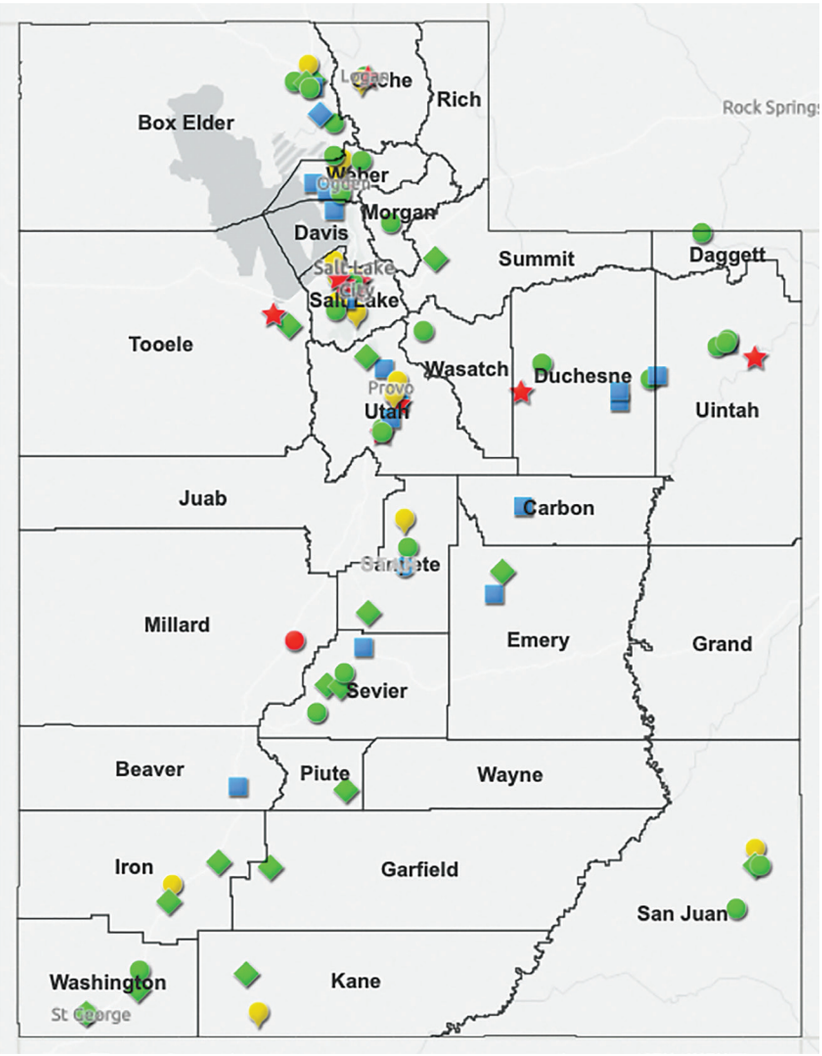

Figure 2. *Meat Establishments in Utah*

Source: Utah Department of Agriculture and Food

CURRENT MEAT PROCESSING IN UTAH

UDAF performed in-person site visits to a sampling of small to medium-sized meat harvest and processing facilities including Custom Exempt, State inspected, Talmadge Aiken, and USDA inspected plants across the state (see Appendix E) to see firsthand what the demand was at that point in time for locally processed meats, find out how the meat plants were responding to demand, whether or not they were planning to grow their businesses, and what type of support or resources they needed to be able to grow. Surveys were completed in person. Data was gathered on each facility, including information on current operating capacities, pre- and post-COVID-19 outbreak harvest and production information, and type of inspection they were under. Questions were asked on the owner's interest and limitations in growth of the facility, employment information, and disposal of hides and offal. There was also an opportunity for the respondent to offer opinions on regulatory issues and suggestions as well as challenges they faced.

The COVID-19 pandemic has had a significant impact on processing plants in Utah. Harvest and processing numbers are approximately double those of the same time period of the previous year. Of the 15 plants that were visited and interviewed, nine of them were operating at well over 100% capacity, adding additional labor and operating days, such as weekends, to their facility to meet the increased demand. While backlog was not initially a concern for these plants, many of them rapidly booked out for six to twelve months. As the interviews progressed over a two-month period in summer 2020, the wait times for processing were increasing. Recent anecdotal accounts have some producers indicating they are booked for 18 to 24 months. Ten of the operations' owners expressed strong interest in growth opportunities. For growth, physical needs included additional equipment and cooler space, access to trained butchers and meat cutters, and affordable insurance for facility staff. Another concern was access to capital for expansion. As shown in Appendix A, these expenses were covered with CARES Act funds for eligible facilities in several states. In addition to the interest in expanding the capacity of current facilities, this year there are at least seven new meat processing plants being developed or considered in Utah.

Regulatory recommendations were compiled by UDAF based on input from owners/operators of 15 Utah meat plants visited during July and August 2020. These issues, summarized below, represent a sampling of small to medium-sized meat harvest and processing facilities including CE, MPI, TA, and federal. Find the full list in Appendix F.

- Hazard Analysis and Critical Control Points (HACCP): Small- to medium-sized plants face a higher burden for regulation requirements since they are using similar amounts of employee time as larger plants, but it is for less quantity. Though the USDA provides assistance and resources targeted toward small and very small plants, the cost of implementation and record-keeping is still a financial burden. A proposed solution is to offer federal tax credits to offset the increased cost of regulation compliance.
- Increased Options for Sale to Neighboring States: Small- and medium-sized plants would like to have more access and options for the sale of meat to adjacent states. In states with an "at least equal to" MPI program (Table 1), state-inspected meat cannot be shipped outside the state boundaries. A proposed solution is to allow neighboring states to enter cooperative agreements to allow the sale of state-inspected meat across state lines. This would require a change to the Federal Meat Inspection Act.
- Estate Tax and Family Business Succession: Current estate tax laws can be burdensome for transferring family-owned businesses to the next generation. While this tends to affect large companies more than small companies, there are instances that can pose a significant burden to a family-owned business. This is a larger issue for family-owned businesses compared to estates composed of stock portfolios. A proposed solution might entail tax law changes at the federal level.

UTAH BEEF DEMAND

Understanding consumer demand for local beef is an essential part of assessing the growth for Utah beef sales. There have been several definitions of what "local" means. For this study, local is defined as beef produced within the state of Utah. Recently, the authors completed a study of consumer preferences for local beef in Utah and Nevada. Find detailed results in "Consumer Preferences for Locally Raised Beef" (Ward et. al, 2021). Highlights on the desire of Utah consumers to purchase Utah beef are provided here. The study used an outside company to administer an online survey, which yielded 1,000 responses evenly split between residents of Utah and Nevada. That survey indicated that consumers generally define "local" to be within 100 miles of their residence.

In Utah, 42% of respondents had purchased meat or produce directly from a local producer, while only 28% had in Nevada, and of all respondents, 65% had never purchased meat directly from a local farmer. Of those respondents, only 30% said price was a concern, though they believed it was cheaper to purchase meat from their regular retailer.

Many participants were willing to pay a premium for locally raised ground beef (Figure 3). At an equal price to other beef products, about two-thirds of Utah respondents would prefer locally raised ground beef. The questions about price premiums were structured to make the results more accurate, which is why we see a slightly higher percent desiring local beef at a 30% markup than at a 20% markup. Statistically, there is no difference between the two. The consumers' willingness to pay a 40% markup drops to about one-fourth of respondents. These are stated preferences and do not mean every purchase will be local beef, but does indicate desires. This indicates consumers desire locally raised ground beef. Utah respondents had a higher desire for local beef but were more price-sensitive than Nevada respondents.

Quality of the food was the most influential factor in determining where to shop (Table 2). Price was also influential or very influential. This would indicate that Utah beef sales could increase as consumers are willing to pay more, but any local product or brand would need to be positioned as a premium, quality product.

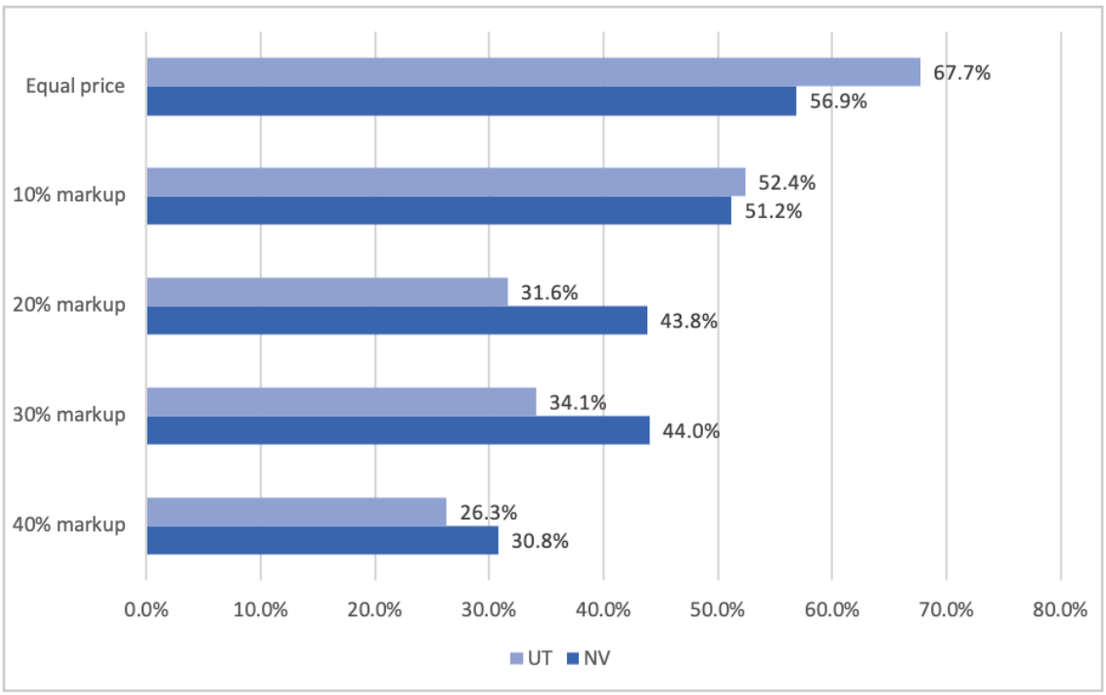

Figure 3. *Percent of Participants Willing to Purchase Locally Raised Ground Beef at Various Markups*

Table 2. *Factors Influencing Utah and Nevada Consumers' Shopping Location*

Shopping factors	Before COVID-19		After COVID-19	
	Most influential	Very influential	Most influential	Very influential
Online, self-pickup	6.3%	11.4%	14.7%	16.0%
Online, delivery	6.5%	9.8%	13.4%	16.0%
Price	20.5%	34.8%	23.8%	35.3%
Quality of food	19.9%	43.7%	21.7%	40.5%
Cleanliness	20.3%	38.9%	32.8%	31.7%
Mask mandate	--	--	36.4%	24.1%

Location and convenience are also important aspects in looking at increasing sales of Utah beef. Over half of Utah respondents ranked supermarkets as their desired place to purchase locally raised meat (Figure 4). This was followed by almost a quarter of consumers desiring to purchase directly from the farm. This was also the least preferred by a large part of the respondents.

The same study found the most common reason for consumers not purchasing their meat products directly from the producer was the ease of getting meat from their regular retailer (33%), followed closely by not knowing how to purchase meat directly from the producer (24%). This information indicates the demand for locally produced meat is present, even at a premium price, if producers are able to make it easy for consumers to know how to purchase their products. Programs such as Utah's Own might serve a role in educating consumers about locally produced purchasing options.

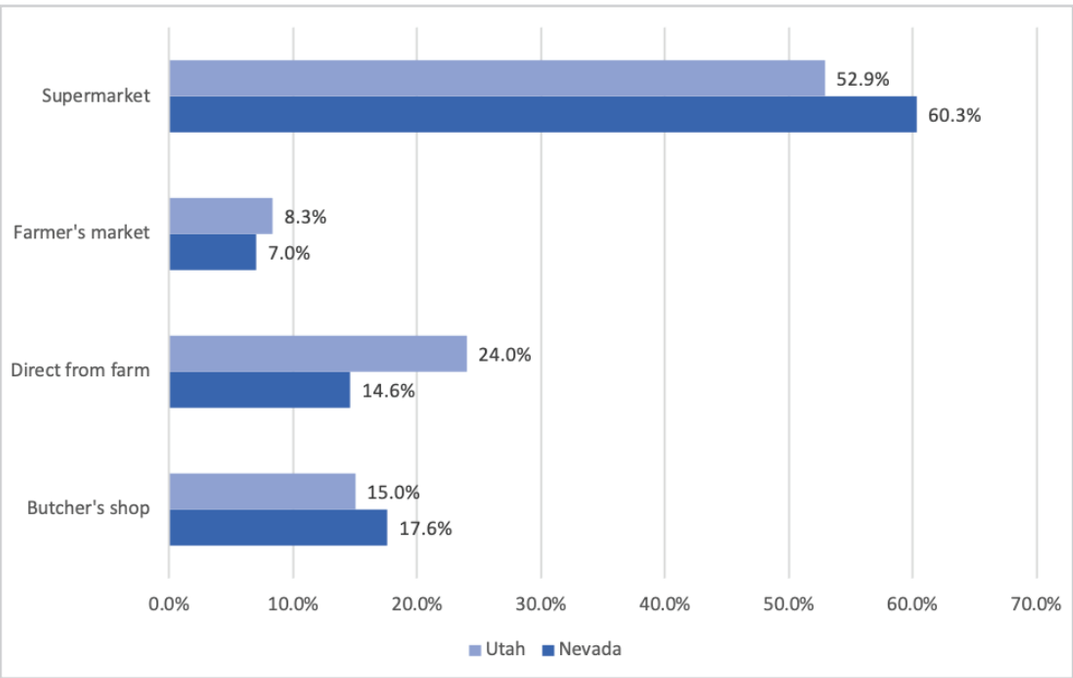

Figure 4. *Retailer Preference for Purchasing Locally Raised Meat*

FINANCIAL FEASIBILITY ASSESSMENT

Given respondents' desired outlets of supermarkets and purchasing locally raised meat directly from the farmer, the financial feasibility provided focuses on a combination of wholesale and CE processing. To examine the financial feasibility of a very small-scale meat processing plant (maximum 750 head per year) in Utah, this study includes a budget, analysis of profit sensitivity, and capital budgeting analysis, summarized below. Additional details are provided in the appendices. It should be noted that the maximum capacity is based on a single shift. Additional shifts could increase capacity, but are not considered here.

ESTIMATED VERY SMALL-SCALE MEAT PROCESSING BUDGET

A sample Utah meat processing facility operating budget was built using current budgeting information for the USU Meats Lab and gathering current market pricing data from Waltons, Inc., Processor Division Koch Supplies, and Ultra Source for equipment and supplies. Given the variance of land prices across the state and other initial startup costs such as running utilities to the building location, this budget focuses on the operating costs of current facilities, with a number of assumptions. Based on the survey discussed above, our budget shows a combination of wholesale meat and custom harvesting.

The budget in Table 3 is based upon a wholesale average price of $6.50 per pound for meat. This is the mid-point high and low retail price with a 30% price premium and a 30% retail margin or price spread. A survey of meat pricing in supermarkets and grocery stores in regions throughout Utah was completed through online shopping websites at each store location. Prices of individual cuts of meat were aggregated into categories and weighted based on the general percentage of meat that comes from each major section of the carcass. See Appendix C for regional summary pricing. A price of $115 per cwt for cost of purchasing cattle is used. Additional details of assumptions and a breakout of sales and expenses can be found in Appendix B. While custom harvesting does not provide a large profit, it is used to help cover labor and overhead expenses. In the example budget, the estimated net income is over $75,000. With an investment of $1.4 million, this equates to a return on investment of 8%. Actual results will vary and are dependent on various sets of assumptions.

Table 3. *Summary Enterprise Budget for Very Small-Scale Processing Plant in Utah with 675 Head of Cattle*

	Total		Wholesale		Custom
	Dollars	**Percent**	**Per head**	**Per pound**	**Per head**
Sales	$1,132,875	100%	$2,275	$6.50	$485
Cost of goods sold:					
· *Animals*	$672,750	59%	$1,495	$4.27	
· *Marketing & distribution*	$31,500	3%	$70	$0.20	
· *Labor*	$155,480	14%	$230	$0.66	$230
· *Supplies/inputs*	$28,658	3%	$42	$0.12	$42
Total cost of goods sold	$888,388	78%	$1,838	$5.25	$273
Gross income	$244,487	22%	$437	$1.25	$212
Overhead	$128,268	11%	$190	$0.54	$190
Net income	$116,219	10%	$247	$4.71	$22
Tax	$40,677	4%	$86.51	$0.25	$7.76
Net income after tax	$75,542	7%	$160.66	$4.46	$14.41

SENSITIVITY OF PROFITABILITY

Overall, we found that the local meat products would need to be positioned as a premium product and have a higher price compared to other meat. As seen in the previous section, while consumers are price-sensitive, a portion do indicate a desire for a local Utah meat product. Around 30% of consumers are willing to pay a 30% price premium, and around 25% indicated a willingness to pay a 40% price premium.

Three factors affect the level of returns and financial feasibility of the operation. These include the cost of cattle, the markup at the retail establishment, and the price premium the meat products will have. Table 4 examines the average wholesale price per pound based upon current meat prices and a 20, 30 or 40% price premium. This is accomplished by looking at three different retail margins or price spreads (20, 30, and 40%). The price spread or margin is the percentage difference between the retail price and the wholesale price. The average price spread according to USDA-ERS is 40% over the last 10 years (Figure A1). From anecdotal information, we have seen average margins at some stores in Utah of 20%. This analysis provides 24 estimations of wholesale prices. For each of these, we estimated the profit (or loss) assuming operating at 100, 90, and 80% capacity. The results in Table 4 are based upon purchasing beef at $115 per cwt. We also examined the wholesale prices and profit estimations of all the combinations using $100 and $130 per cwt cost of meat. See the results in Appendix C.

Overall, we find that profit is very sensitive to wholesale price changes. A Utah beef product would need to be positioned as a premium product with a minimum 20% price premium on average. Because consumers are price-sensitive and this product will cost more, not every consumer would choose it. However, given that 25% of consumers indicated a wiliness to pay a 40% premium, a potentially viable business and market exists. Further research could examine consumers desire for particular quality characteristics such as natural, organic, or grass-fed in combination with locally produced beef products.

CAPITAL BUDGETING ANALYSIS

Capital budgeting analysis is done by estimating the annual cash flows over a period of time. A discount rate can be used to find net present value (NPV), internal rate of return (IRR), and a modified internal rate of return (MIRR). Appendix D provides details for a 20-year capital budget. This is based on a discount rate of 10% pre-tax or 6.5% after tax. While similar to an ROI, this is a more robust technique and allows accounting for the timing of the cash flows. It also allows for assumptions on decreased operating levels in the first years as the business is starting. Only 50% capacity was assumed the first year and 75% in year two. Half of the initial investment was financed at 5% for 15 years. We also added an extra $20,000 in the first year to the overhead to account for additional small tools purchased. Additional costs were added in year 10 for purchasing new equipment.

The NPV is over $150,000 which indicates a higher return than the discount rate. This does not account for all risk as seen in the sensitivity section above. This was only done for the scenario in the summary budget in Table 3. The MIRR was 7.4%. MIRR is a more accurate measure than the IRR which was over 8.2%. More information about the differences in these measures can be found in Appendix D.

There are various programs for financing a small-scale meat processing facility. USDA-Rural Development has several of these programs, including the Value-Added Producer Grant. This is a competitive grant program with a goal to help agriculture producers enter into value-added activities related to the processing and marketing of new products. It can provide up to $75,000 for planning grants and $250,000 for working capital grants. Another program is the One RD Guarantee which can be used to guarantee loans for financing up to 80% of the project. Other possibilities for financing include Small Business Administration loans along with USDA - Rural's Business and Industry Loan Guarantees (B&I). Several of the Associations of Governments have revolving loan funds with gap financing. The Rural Office at the Governor's Office of Economic Development (GOED) administers the Targeted Business Tax Credits which may also help defray the costs. They are associated with Enterprise Zone Areas in counties with a population of less than 25,000.

Table 4. *Wholesale Price and *Net Income Estimation of Very Small-Scale Processing Plant in Utah*

	Avg. retail prices		20% Premium		30% Premium		40% Premium	
Retail price	$5.74	$8.52	$6.89	$10.22	$7.46	$11.08	$8.04	$11.93
% Margin retail	**Wholesale prices**							
40%	$3.44	$5.11	$4.13	$6.13	$4.48	$6.65	$4.82	$7.16
30%	$4.02	$5.96	$4.82	$7.16	$5.22	$7.75	$5.63	$8.35
20%	$4.59	$6.82	$5.51	$8.18	$5.97	$8.86	$6.43	$9.54
% Margin retail	**Estimated net income for various wholesale prices at 100% capacity****							
40%	(370,956)	(79,056)	(250,416)	99,864	(190,146)	189,324	(129,876)	278,784
30%	(270,506)	70,044	(129,876)	278,784	(59,561)	383,154	10,754	487,524
20%	(170,056)	219,144	(9,336)	457,704	71,024	576,984	151,384	696,264
% Margin retail	**Estimated net income for various wholesale prices at 90% capacity**							
40%	(365,101)	(102,391)	(256,615)	58,637	(202,372)	139,151	(148,129)	219,665
30%	(274,696)	31,799	(148,129)	219,665	(84,846)	313,598	(21,562)	407,531
20%	(184,291)	165,989	(39,643)	380,693	32,681	488,045	105,005	595,397
% Margin retail	**Estimated net income for various wholesale prices at 80% capacity**							
40%	(359,246)	(125,726)	(262,814)	17,410	(214,598)	88,978	(166,382)	160,546
30%	(278,886)	(6,446)	(166,382)	160,546	(110,130)	244,042	(53,878)	327,538
20%	(198,526)	112,834	(69,950)	303,682	(5,662)	399,106	58,626	494,530

**Note: The estimated net income is a before tax profit estimation. Typically, owner(s) would need to pay self-employment and income tax on the profits. However, the rates would vary and losses could be used to reduce tax obligations from other income.*

***100% capacity is 500 head processed wholesale and 250 head custom processed. 90% capacity is 450 wholesale and 225 custom with 400 head wholesale and 200 custom for 80% capacity.*

POTENTIAL ECONOMIC IMPACTS

The majority of Utah's cattle and calves currently are sold at about 550 pounds, subsequently being taken out of state to be finished. Table 5 shows the difference in value if livestock could be kept in Utah to be finished and processed. The value of the meat would be over three times the value of the calf. For the size of this facility, that would be the difference between $575,000 and $1.9 million. There would also be four additional jobs created just from the processing of that meat.

Table 5. *Value of Steer Calf in Utah Versus Value if Finished and Processed in Utah*

Item	Number	Weight	Price	Total		Per head
Steer calf	675	550	$1.55	$575,438	1.00	$853
Fed cattle	675	1300	$1.15	$1,009,125	1.75	$1,495
Wholesale meat	675	350	$6.50	$1,535,625	2.67	$2,275
Retail meat	675	350	$8.13	$1,919,531	3.34	$2,844

CONCLUSION AND DISCUSSION

Overall, there is potential growth for Utah beef processing and sales. Utah consumers desire local beef products, and a significant portion are willing to pay a premium for it. A very small-scale meat processing facility can be feasible but would require that beef is sold and positioned as a premium product. This works for niche products. Smaller processing plants in regional areas can increase the resiliency of the meat supply in Utah and provide the potential for ranchers to develop additional revenue streams. Some of the issues that should be considered are below.

This analysis is for a very small-scale operation. The advantages of small and very small-scale operations include increasing the resiliency of the meat supply by allowing for multiple regionally located operations in Utah. These operations could be located in rural areas and provide meat to local retailers. This could increase efficiency from a transportation standpoint. One of the dangers is being highly dependent on one customer. Making a very long-term investment in a facility based upon only one customer is very risky. Local arrangements have benefits, but an overall plan should look at having multiple customers, such as a few stores in a region.

The feasibility of selling a local Utah beef product and making a very small-scale processing plant work is dependent on positioning it as a premium product. Utah consumers want local products, but are unsure where or how to find and buy local meat. Efforts to build awareness of the brand and availability will be needed. Some programs like Utah's Own and social media may help with this process. It will also be difficult for one small business to hire a brand manager to build the brand and do the marketing on their own. An association or cooperative could collectively cover the cost of the marketing to jointly build a brand and market the products. Additionally, utilizing sources of startup funding such as grants and tax breaks could increase the financial feasibility. Further research could examine Utah consumers' desire for particular quality characteristics of beef in combination with locally produced.

As stated earlier in the paper, the actual cost for the land and infrastructure will vary based upon location. The infrastructure would include any hookups required for water, electricity, and other necessary utilities. There may be issues with access to these utilities in urban areas and even rural counties. These issues will only increase as the population grows.

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APPENDIX A - State Programs CARES Act Funding Overview

Table A1. *Summary of State Programs Offering CARES Act Funding to Improve Meat Processing Capacity*

State	Program	Total funding	Program overview
Arkansas	Meat and Poultry Processing Grant	$5M	• Arkansas Department of Agriculture https://www.agriculture.arkansas.gov/arkansas-meat-and-poultry-processing-grant-program/ • Up to 90% reimbursement (depending on number of applicants) • Current and soon-to-open federal and custom-exempt facilities • Increasing slaughter and processing capacity • Worker safety and training
Indiana	Meat Processing Expansion & Development Grant	$4M	• Indiana State Department of Agriculture https://www.in.gov/isda/grants-and-funding-opportunities/ • 50% reimbursement up to $150K per facility, 41 processors funded • Federal and state-inspected facilities • Increasing slaughter and processing capacity • Worker safety and training
Iowa	Meat Processing Expansion and Development Program	$4M	• Iowa Department of Agriculture & Land Stewardship https://iowaagriculture.gov/grants • Business Improvement Grant o 109 processors funded o Increasing slaughter and processing capacity o Upgrades to allow participation in higher-level inspection program • Direct Marketing Grant o 85 livestock producers o Develop tools, services, and technology to promote direct-to-consumer sales
Kansas	Securing Local Food Systems Grant	$130M for entire program	• Kansas Department of Commerce https://www.kansascommerce.gov/covid19response/covidrelief/ • Portion of SPARK grant program available to all businesses, no specific dollar amount listed for meat establishment applicants • Federal, state and custom-exempt facilities with <200 employees • Increasing slaughter and processing capacity • Worker safety and training
Kentucky	KY CARES for Meat Processing	$2M	• Governor's Office of Agricultural Policy https://agpolicy.ky.gov/Pages/default.aspx • 75% reimbursement up to $250K per facility • Federal, state, and custom-exempt facilities • Supplements existing Meat Processing Investment Program • Increasing slaughter and processing capacity • Worker safety and training
Minnesota	Livestock Processing Rapid Response Mini-Grant	$720K	• Minnesota Department of Agriculture https://www.mda.state.mn.us/livestock-processing-rapid-response-mini-grant • 50% match up to $5K per facility • Federal, state, and custom-exempt facilities • Increasing storage and processing capacity
Montana	Montana Meat Processing Infrastructure Grant	$2M	• Montana Department of Agriculture https://commerce.mt.gov/Montana-Coronavirus-Relief/Awarded-Grants • Up to $150K per facility, 95 processors funded • Increasing storage and processing capacity • Upgrades to allow participation in higher-level inspection program

North Carolina	Increasing Meat Production Efficiency and Capacity Grant	$20M	• North Carolina Department of Agriculture & Consumer Services https://www.ncagr.gov/MeatProcessingGrants.htm • 66% reimbursement • Existing facilities only • Increasing slaughter and processing capacity • Worker safety and training
North Dakota	Meat Plant Cost Share Program	$1.3M	• North Dakota Department of Agriculture https://www.nd.gov/ndda/news/new-program-available-meat-processing-plants • Reimbursement dependent on total number of approved applicants • State-inspected and custom-exempt facilities only (cannot be under federal inspection) • Increasing slaughter and processing capacity
Vermont	Agricultural Producer and Processor Assistance	$5M	• Vermont Agency of Agriculture, Food and Markets https://agriculture.vermont.gov/covid-19-information/vermont-covid-19-agriculture-assistance-program/agriculture-and-working-lands • Up to $50K per facility, based on annual gross sales • Federal and state facilities only (cannot be solely custom-exempt) • Expenses must be directly related to COVID-19
Washington	Meat Processing Infrastructure and Capacity Relief Grant	$5M	• Washington State Department of Agriculture https://agr.wa.gov/services/grant-opportunities/meat-processor-grant-en • Up to $150K per facility, based on number of approved applicants • Federal or state facilities with <250 employees • Increasing slaughter and processing capacity • Worker safety and training
Wyoming	Meat Processing Expansion Grant	Not specified	• Wyoming Department of Agriculture https://wyagric.state.wy.us/component/content/article/42-press-releases/486-meat-processing-expansion-grant-program • 50% reimbursement up to $500K per facility • Federal, state and custom-exempt facilities with <200 employees • Increasing slaughter and processing capacity • Worker safety and training

APPENDIX B - Detailed Meat Processing Budget Estimation

This section provided additional details and analysis of the budget estimation. Below are details on the various assumptions, including the initial cost, and budget for a very small-scale meat processing facility. This is followed by an examination of the sensitivity of profit (Appendix C) and then a capital budgeting analysis (Appendix D). The tables in this and other sections of the appendices are part of a very small-scale meat processing financial feasibility tool (available at extension.usu.edu/apec) which would allow customization of individual plans. Items in gray are adjustable, and data adjusted on one table would be updated automatically on the others.

Enterprise Budget

A list of equipment and building startup costs for a very small-scale meat processing facility is included in Table A2. A detailed enterprise budget is provided in Table A3. As with any budget, this is only an estimate and actual profits will vary. Below is information on the various assumptions in each category. This is followed by a discussion and results of examining profit sensitivity. There is a net income of $116,219 with an 8% return on investment. After paying self-employment and income taxes, the after-tax net income is $75,542.

Building and equipment. The prices were gathered from personal communications with sales representatives and online sources from Waltons, Inc., Processor Division Koch Supplies, and Ultra Source. It should be noted that the costs of land and infrastructure needed, including various utility hookups, are not included in this budget. These costs would depend heavily on the actual situation and location. The building is estimated to be 1,600 square feet for the processing floor and 1,600 square feet for the harvest floor.

Sales. Sales come from a combination of wholesale and custom processing. Livestock processed for wholesale cuts are purchased and the meat is sold to retailers, such as grocery stores. The wholesale price used was $6.50 per pound. It was estimated that there would be a yield of 350 pounds of wholesale cut meat from each carcass. An explanation of the variance and risk is provided below in Appendix C on sensitivity of profit. At full capacity, three animals per day could be processed. Assuming 50 weeks for the year (two weeks for holidays), this would enable 750 animals to be processed. The budget assumes 90% of that will be done, with a mix of 450 head for wholesale and 225 head for custom processing. Additional shifts could be used to increase the capacity but are not considered here. While the profit on custom processing is low, adding it in allows for efficient use of labor and facilities. The rate used for custom processing was $485 per head.

Cattle. The cattle market goes up and down. A midpoint of $115 per cwt was used for this analysis. An explanation of the variance in the market and range of prices can be found in the section on sensitivity of profit below. A live weight on fed cattle of 1,300 pounds was used.

Marketing and distribution. This cost will depend on the actual situation (i.e., distance and how it is transported to the retail establishments and customers). In some situations, the plant may be in a rural area serving a local store. It could also be in a rural area and travel to other locations. An estimation of $0.20 per pound was used in the budget in Table A2. Because the products need to be sold at a premium price, a brand will need to be built. An association or some type of cooperative may accomplish this in a cost-effective manner.

Labor. Four employees would work full time. The three cutters would have a wage rate of $17.50. The wage rate for these types of jobs vary from $15 to $20 per hour. In addition, there would be a wrapper at $12.50 per hour. This is an entry-level position and wage rates could vary from $10 to $15 per hour. A benefits rate of 15% was used, which includes benefits, employment taxes, insurance, etc. This is the most significant cost behind purchasing cattle.

Supplies. The amount of supplies needed is based upon experience of the Utah State University Meat Lab. The prices were gathered from personal communications with sales representatives and online sources from Waltons, Inc., Processor Division Koch Supplies, and Ultra Source. The amounts and prices for each item is included in Table A3.

Cost of goods sold. This is the variable cost of operating the processing plant. It is the total of the cost of cattle, marketing and distribution, labor, and supplies.

Gross income. This is the income after deducting cost of goods sold from sales.

Overhead. This is the fixed costs of operating the business. Interest is included for working capital. This was estimated using an interest rate of 5% on 50% of the cost of goods sold. Maintenance is included at 1% of the initial cost of buildings and facilities. Property taxes will vary with each location. As estimate of 1% is used here. Insurance is based on personal communication and estimated at $6,000. Workman's comp insurance would be an additional $6,000 and is included as part of the labor costs. Insurance could vary quite a bit and depend on the situation. Some associations may provide members with access to reduced insurance rates. Business management, including accounting and legal, will vary on the individual situation, and $5,000 is used here. Depreciation is included using straight line depreciation with no salvage value. Most of the equipment has a 1-year life, with the building and stamps having a 30-year life. A breakout of equipment cost, life, and depreciation can be found in Table A3.

Net income. This is the gross income less overhead. This is also the net income estimation used in Tables A3 and A4.

Tax. This is for the self-employment and income tax. It is assumed that most very small-scale plants would be owned as a sole proprietor, LLC, or partnership, with all tax paid on the individuals' tax return as pass-through income. Self-employment tax is 15.3%, income tax for federal and state can vary on the individual situations, but we used 20% here (5% for state income tax and 15% for federal income tax).

Net income after tax. This is the net income after paying any federal and state income and self-employment taxes.

Table A2. *Initial Startup Costs for Very Small-Scale Meat Processing Equipment and Building**

Needed Property/ Equipment	Unit	Number	Cost/Unit	Total cost	Life	Depreciation
Kill floor building and equipment						
Building	Sq. ft.	1600	$400	$640,000	30	$21,333
Lean to shed	Sq. ft.	960	$13	$12,000	30	$400
20x30 aging cooler	Each	1	$19,600	$19,600	15	$1,307
20x10 drip cooler	Each	1	$14,700	$14,700	15	$980
Stun guns - cash specials	Each	2	$1,600	$3,200	10	$320
Gut cart	Each	2	$2,500	$5,000	10	$500
Knock box (must have head catch)	Each	1	$5,000	$5,000	5	$1,000
Chain hoist	Each	2	$2,700	$5,400	5	$1,080
Splitting saw	Each	1	$6,500	$6,500	5	$1,300
Well saw	Each	1	$1,220	$1,220	5	$244
Processing floor building and equipment						
Building	Sq. ft.	1600	$375	$600,000	30	$20,000
Rail	Feet	200	$57	$11,400	20	$570
Grinder	Each	1	$9,000	$9,000	10	$900
Band saw	Each	1	$4,000	$4,000	10	$400
10x10 cooler	Each	2	$9,800	$19,600	10	$1,960
10x10 freezer	Each	2	$10,800	$21,600	10	$2,160
Reefer truck	Each	1	$30,000	$30,000	10	$3,000
Vacum packager	Each	1	$17,000	$17,000	10	$1,700
				$1,425,220		**$59,154**

**Note: This does not include the cost of land and infrastructure. It is just for the building and equipment.*

Table A3. *Detailed Enterprise Budget for Very Small-Scale Meat Processing Facility with Mix of Meat Sold to Grocery Stores and Custom Processing*

Sales	Unit	Quantity		Price	Total	%
Wholesale to stores	pounds	157,500		$6.50	$1,023,750	90%
Custom processing	head	225		$485	$109,125	10%
Total sales					**$1,132,875**	**100%**

Cost of goods sold	Unit	Quantity		Unit cost	Total	%
Cattle	head	450	cwt/hd	$/cwt	$672,750	59%
			13	$115.00		
Marketing and distribution	pounds	157,500		$0.20	$31,500	3%

Labor costs:	*Unit*	*Quantity*	*% benefits*	*Unit cost*	*Total*	*%*
· Cutters	Hours	6,240	15%	$17.50	$125,580	11%
· Wrappers	Hours	2,080	15%	$12.50	$29,900	3%
Total Labor					**$155,480**	**14%**

Supplies:	*Unit*	*Quantity*		*Price*	*Total*	*%*
· PPE						
> Hair nets	box	12		$8.00	$96	0.0%
> Gloves	box	48		$14.00	$672	0.1%
> Cut gloves	each	8		$18.50	$148	0.0%
> Boots	pair	4		$90.00	$360	0.0%
> Aprons	each	4		$14.00	$56	0.0%
> Whites	each	12		$23.00	$276	0.0%
· Packaging						
> Tape	case	1		$120.00	$120	0.0%
> Paper	each	72		$32.00	$2,304	0.2%
> Plastic	each	48		$73.00	$3,504	0.3%
> Vacuum bags	each	3,000		$0.60	$1,800	0.2%
> Boxes	each	2,625		$2.00	$5,250	0.5%
· Cutting						
> Band saw blades	each	16		$10.50	$168	0.0%
> Knives	each	32		$20.00	$640	0.1%
> Knife scabbards	each	1.33		$20.00	$27	0.0%
> Sharpening stone	unit	0.33		$195.00	$64	0.0%
> Grinder knives	each	2		$60.00	$120	0.0%
> Grinder plates	each	2		$130.00	$260	0.0%
> Hand saw blades	each	6		$4.00	$24	0.0%
> Steels	each	1.33		$22.00	$29	0.0%
· Other						
> Baskets	each	4		$25.00	$100	0.0%
> Barrels	each	12		$50.00	$600	0.1%
> Tubs	each	5		$13.00	$65	0.0%

Supplies:	*Unit*	*Quantity*		*Price*	*Total*	*%*
>Thermometers	each	2		$42.00	$84	0.0%
> Scale	unit	0.33		$600.00	$198	0.0%
· Harvest floor						
> Gut and bone pick up fee	Each	52		$83.00	$4,316	0.4%
> Gut and bone barrel fee	Barrel	1,013		$4.00	$4,052	0.4%
> Ecoili/salomella tests	Each	6		$80.00	$480	0.0%
> Generic tests	Each	13		$40.00	$520	0.0%
> Heating elements	Each	2		$100.00	$200	0.0%
> Gut barrels	Each	7.5		$48.00	$360	0.0%
> Acid applicator	Each	4		$50.00	$200	0.0%
> Splitting saw blades	Each	6		$10.00	$60	0.0%
> Hose	Each	1		$220.00	$220	0.0%
> Spray nozzels	Each	1		$85.00	$85	0.0%
	Month	12		$100.00	$1,200	0.1%
Total supplies					**$28,658**	**2.5%**
Total cost of good sold					$888,388	78%
Gross income					**$244,487**	**22%**

Overhead costs	Unit	Quantity		Price	Total	%
Interest	Percent	5%		$444,194	$22,210	2%
Maintenance	Percent	1%		$1,425,220	$14,252	1%
Property taxes	Percent	1%		$1,425,220	$14,252	1%
Insurance					$6,000	1%
Business management (accounting, hr, etc.)					$4,000	0%
Utilities (power, water, sewer, etc.)					$8,400	1%
Depreciation					$59,154	5%
Total overhead					**$128,268**	**11%**
Net income					**$116,219**	**10.3%**
Tax (self-employment and income)	Percent	35%			$40,677	3.6%
Net income after tax					**$75,542**	**6.7%**

APPENDIX C - Sensitivity of Profit

Three factors significantly affect the estimated profitability. Each of them would depend on the individual situation and current market. An explanation of each is given here.

Price of cattle: The cattle market changes frequently. In the last year, it has gone from below $100 per cwt to over $130. This is a typical range over time. In the main body of the paper on Table 4, a midpoint of $115 was used. Tables A4 and A5 are estimated wholesale prices for meat, as well as net income, using $100 and $130 per cwt. It should be noted that net income varies widely from negative amounts (losses) and positive amounts. An owner would need to pay both self-employment tax and income tax on profit. Losses could be used against other sources of income to reduce tax liability. Because the income varies so widely, the tax rate would also vary and depend on the actual circumstances. As such, net income is presented without deducting self-employment and income tax.

Premium price on retail meat: Another factor that could vary widely and depends on the actual situation is the average retail price of the meat. This would depend on how it is positioned relative to other meat. To make a very small-scale meat processing plant feasible, the product would need to be positioned as a premium product and require a higher price. The high and low average retail price per pound was found by using prices posted online for various cuts of beef at grocery stores in 11 cities across Utah. An average price per pound of each of seven sections of the carcass was found for each store and then a weighted average was applied based on typical carcass breakout to find an estimated average price per pound for each store. For each city, the minimum, average, and maximum price was observed. We then took the minimum across cities and the maximum across cities as a high and low. Three levels of price premium were applied (20%, 30% and 40%). This information is given in Tables A6 and A7.

Price spread or margin at retail store: The price spread or margin can also vary widely. This is the difference between the wholesale price and the retail price. For example, if the retail price is $10 and the wholesale price is $7, the spread, or margin, would be 30%. Anecdotal evidence says that this could be as low as 20% and the average price spread for fresh choice beef according to USDA-Economic Research Service is around 40%. Tables A4 and A5 provide four levels of margins from 40% to 20%.

Table A4. *Estimated Net Income of Very Small-Scale Meat Processing Operation for Various Prices Assuming a Cattle Price of $100 per cwt**

	Avg. retail prices		20% Premium		30% Premium		40% Premium	
Retail price	$5.74	$8.52	$6.89	$10.22	$7.46	$11.08	$8.04	$11.93
% Margin retail	**Wholesale prices**							
40%	$3.44	$5.11	$4.13	$6.13	$4.48	$6.65	$4.82	$7.16
30%	$4.02	$5.96	$4.82	$7.16	$5.22	$7.75	$5.63	$8.35
20%	$4.59	$6.82	$5.51	$8.18	$5.97	$8.86	$6.43	$9.54
% Margin retail	**Estimated net income for various wholesale prices at 100% capacity****							
40%	(273,456)	18,444	(152,916)	197,364	(92,646)	286,824	(32,376)	376,284
30%	(173,006)	167,544	(32,376)	376,284	37,939	480,654	108,254	585,024
20%	(72,556)	316,644	88,164	555,204	168,524	674,484	248,884	793,764
% Margin retail	**Estimated net income for various wholesale prices at 90% capacity**							
40%	(22,066)	109,289	32,177	189,803	59,298	230,060	86,420	270,317
30%	23,136	176,384	86,420	270,317	118,061	317,283	149,703	364,250
20%	68,339	243,479	140,663	350,831	176,825	404,507	212,987	458,183
% Margin retail	**Estimated net income for various wholesale prices at 80% capacity**							
40%	(54,326)	62,434	(6,110)	134,002	17,998	169,786	42,106	205,570
30%	(14,146)	122,074	42,106	205,570	70,232	247,318	98,358	289,066
20%	26,034	181,714	90,322	277,138	122,466	324,850	154,610	372,562

**Note: The estimated net income is a before tax profit estimation. Typically, owner(s) would need to pay self-employment and income tax on the profits. However, the rates would vary and losses could be used to reduce tax obligations from other income.*

***100% capacity is 500 head processed wholesale and 250 head custom processed. 90% capacity is 450 wholesale and 225 custom with 400 head wholesale and 200 custom for 80% capacity.*

Table A5. *Estimated Net Income of Very Small-Scale Meat Processing Operation for Various Prices Assuming a Cattle Price of $130 per cwt**

	Avg. retail prices		20% Premium		30% Premium		40% Premium	
Retail price	$5.74	$8.52	$6.89	$10.22	$7.46	$11.08	$8.04	$11.93
% Margin retail	**Wholesale prices**							
40%	$3.44	$5.11	$4.13	$6.13	$4.48	$6.65	$4.82	$7.16
30%	$4.02	$5.96	$4.82	$7.16	$5.22	$7.75	$5.63	$8.35
20%	$4.59	$6.82	$5.51	$8.18	$5.97	$8.86	$6.43	$9.54
% Margin retail	**Estimated net income for various wholesale prices at 100% capacity****							
40%	(468,456)	(176,556)	(347,916)	2,364	(287,646)	91,824	(227,376)	181,284
30%	(368,006)	(27,456)	(227,376)	181,284	(157,061)	285,654	(86,746)	390,024
20%	(267,556)	121,644	(106,836)	360,204	(26,476)	479,484	53,884	598,764
% Margin retail	**Estimated net income for various wholesale prices at 90% capacity**							
40%	(452,851)	(190,141)	(344,365)	(29,113)	(290,122)	51,401	(235,879)	131,915
30%	(362,446)	(55,951)	(235,879)	131,915	(172,596)	225,848	(109,312)	319,781
20%	(272,041)	78,239	(127,393)	292,943	(55,069)	400,295	17,255	507,647
% Margin retail	**Estimated net income for various wholesale prices at 80% capacity**							
40%	(437,246)	(203,726)	(340,814)	(60,590)	(292,598)	10,978	(244,382)	82,546
30%	(356,886)	(84,446)	(244,382)	82,546	(188,130)	166,042	(131,878)	249,538
20%	(276,526)	34,834	(147,950)	225,682	(83,662)	321,106	(19,374)	416,530

**Note: The estimated net income is a before tax profit estimation. Typically, owner(s) would need to pay self-employment and income tax on the profits. However, the rates would vary and losses could be used to reduce tax obligations from other income.*

***100% capacity is 500 head processed wholesale and 250 head custom processed. 90% capacity is 450 wholesale and 225 custom with 400 head wholesale and 200 custom for 80% capacity.*

Table A6. *Weighted Retail Prices Across Major Regions in Utah by Category of Beef Cut*

Location	Minimum	Average	Maximum
Logan	$5.74	$6.63	$ 7.21
Ogden	$5.85	$6.39	$ 7.23
Layton	$5.94	$7.13	$7.91
SLC	$5.77	$6.63	$8.02
Provo	$5.94	$6.87	$7.79
Park City	$6.14	$7.25	$8.27
Cedar City	$6.13	$7.29	$8.52
St George	$6.18	$7.10	$8.09
Moab	$6.59	$6.92	$7.25
Price	$6.26	$7.10	$7.65
Vernal	$6.02	$6.80	$7.57
State of Utah	$5.74	$6.92	$8.52

% of Carcass	
Other (including ground beef)	38%
Round	17%
Chuck	18%
Rib	8%
Loin	6%
Sirloin	4%
Shank and brisket	9%

Table A7. *Percentage of Carcass in Each Beef Cut Category for Weighted Retail Prices Across Utah*

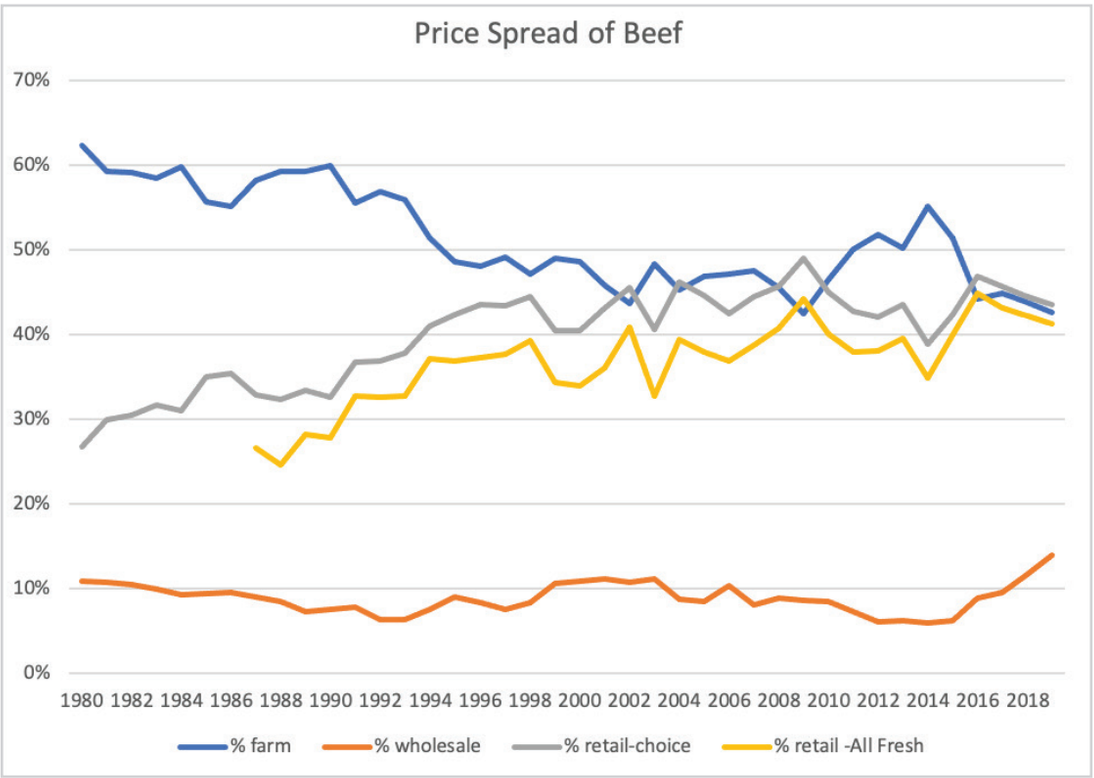

Figure A1. *Price Spread of Beef*

Source: USDA-ERS

APPENDIX D - Capital Budgeting Analysis

The budget in Table A3 is for an average year enabling comparison of several assumptions. Table A9 provides estimated annual cash flows for 20 years, which allows for a more robust analysis of cash flow over several years. This also allows for including a ramping up period in the early years as the business is established. Explanations of assumptions and formulas are included below. Capital budgets for 10, 20, and 30 years are included in the very small-scale meat processing feasibility tool (available at extension.usu.edu/apec). Only the 20-year capital budget is included here.

Receipts. The cash receipts come from a combination of sales of wholesale meat and custom processing. The number of head for each one is multiplied by the sales per head from Table A3 for year 1. This is then multiplied by the capacity percent. The sales per head is increased each year by an inflation rate of 2%.

Terminal value. The terminal value would be dependent upon what the building and equipment could sell for and would differ depending on location. We assume that the terminal value is equal to the remaining book value (any amount not depreciated).

Cash inflow. This is the receipts and terminal value added together.

Down payment. This is 50% of the total cost of the building and equipment from Table A2.

Operating expense. This is the head per year for both wholesale and custom multiplied by the variable cost per year per head. This is all multiplied by the percent capacity. Each year, the variable cost per head is increased by 2% for inflation.

Cash overhead. This includes all overhead expenses from Table A3, except for depreciation which is a non-cash expense. In year 1, over $20,000 was added to account for additional small tool and supply purchases (Table A8). Ongoing, these would be replaced as needed as part of maintenance or miscellaneous expenses.

Depreciation. Depreciation is based on Internal Revenue Service guidelines using the tables for General Depreciation System (GDS). The truck is considered a 5-year class property and the equipment is in the 7-year class. They are both depreciated based on rates for GDS depreciation, using tables which are 150% declining balance switching to straight line (USDT-IRS, 2020). The building is considered non-residential property and is depreciated over 39.5 years using straight-line depreciation. In year 10, new equipment is purchased and is depreciated in years 11 to 18.

Interest and principal. The loan is 50% of the initial cost for building and equipment, financed for 15 years at 5% interest. The payment is $34,583 per year. It is separated into interest and principal because only the interest portion is tax deductible.

Payoff loan/New investment. This is to account for additional purchases of equipment in year 10. The amount of purchases is all equipment, using the cost from Table A2 adjusted for inflation at 2% annually. This also includes any amount in the final year that is remaining on the loan. In this case, it is $0.

Taxable income. This includes the cash inflow minus operating expenses, cash overhead expenses, depreciation, and interest. In the final year, there is also a deduction for any remaining book value on the building.

Income taxes. This is taxable income multiplied by the tax rate of 35%.

Cash outflow. This includes the operating expenses, cash overhead, interest, principal, payoff loan/new investment, and income taxes.

Net cash flow. Cash inflow less cash outflow.

Results of Capital Budgeting Analysis

Net present value (NPV). The NPV is the amount that is the sum of all future returns discounted to the beginning of the project and added together, or, the sum of the present value of all new cash flows. An after-tax discount rate of 6.5% is used. This is the equivalent of 10% pre-tax. The NPV is just over $150,000. A positive NPV indicates that the investment is earning more than the desired rate of return.

Internal rate of return (IRR). IRR is the rate that the project is returning on the initial investment. It should be noted that this is the return to the down payment and not the full cost of equipment since the investor would only be paying the down payment. It should also be noted that IRR assumes reinvestment at the IRR rate which, when above the discount rate, causes the IRR to be overstated. The IRR is just over 8% which is above the 6.5 percent after-tax discount rate, indicating the investment is profitable.

Modified internal rate of return (MIRR). The MIRR is a modification of the IRR that assumes a reinvestment rate at the discount rate, not the IRR. It is a more accurate measure. In this case, it is just over 7%, indicating the investment is profitable and higher than the after-tax discount rate used of 6.5%.

Table A8. *Additional Small Tool Purchases in Year 1 for Capital Budget*

Item	Unit	Number	Cost/Unit	Total cost	Life	Annual cost
Sterilizer boxes		2	$120	$240	5	$48
Stamps	each	45	$15	$675	30	$23
Hand saw	unit	1	$50	$50	10	$5
Paper holder	unit	2	$60	$120	10	$12
Tape dispensor	unit	1	$195	$195	10	$19
Hose rack	unit	3	$70	$210	10	$21
Drop hooks	unit	10	$20	$200	30	$7
Head loop	unit	1	$160	$160	30	$5
Loop holder	unit	1	$200	$200	30	$7
Meat tree	unit	3	$60	$180	30	$6
Cutting table tops	sq ft	30	$20	$600	31	$19
Anti mortem pens	panels	9	$130	$1,170	5	$234
(4) 16 x 12	Gates	4	$170	$680	5	$136
	man gates	2	$110	$220	5	$44
Office furniture equip.		1	$5,000	$5,000	15	$333
Triple sink	unit	1	$1,500	$1,500	10	$150
Hand sink	unit	1	$700	$700	10	$70
Tables	each	2	$580	$1,160	10	$116
Cutting tables	each	2	$450	$900	10	$90
Foot pedal sinks	each	2	$790	$1,580	10	$158
Brower water	each	2	$400	$800	5	$160
Skinning cradle	each	2	$1,300	$2,600	30	$87
Single meat trolleys	each	45	$40	$1,800	30	$60
Total				$20,939		$1,810

Table A9. *20-Year Capital Budget for Very Small-Scale Meat Processing Operation in Utah*

Year >>	0	1	2	3	4	5	6	7	8	9	10
% Capacity		50%	75%	90%	90%	90%	90%	90%	90%	90%	90%
Receipts		629,375	962,944	1,178,643	1,202,216	1,226,260	1,250,786	1,275,801	1,301,317	1,327,344	1,353,890
Terminal value											
Cash inflow		629,375	962,944	1,178,643	1,202,216	1,226,260	1,250,786	1,275,801	1,301,317	1,327,344	1,353,890
Down	$727,610										
Operating expenses		493,549	755,130	924,279	942,765	961,620	980,852	1,000,469	1,020,479	1,040,888	1,061,706
Cash overhead		90,053	91,854	93,691	95,565	97,476	99,426	101,414	103,443	105,511	107,622
Depreciation		55,729	74,475	64,586	59,080	59,080	79,072	54,082	42,746	31,392	31,392
Interest		36,380	34,695	32,924	31,066	29,114	27,065	24,913	22,653	20,281	17,790
Principal		33,719	35,405	37,175	39,034	40,986	43,035	45,187	47,446	49,818	52,309
Payoff loan/new investment											197,258
Taxable income		-46,337	6,790	63,163	73,741	78,970	64,371	94,923	111,996	129,270	135,380
Income taxes		-16,218	2,377	22,107	25,809	27,640	22,530	33,223	39,199	45,245	47,383
Cash outflow		637,484	919,460	1,110,177	1,134,239	1,156,835	1,172,908	1,205,206	1,233,220	1,261,744	1,484,068
Net cash flow	-727609.99	-8,108.63	43,483.58	68,466.42	67,977	69,425	77,878	70,595	68,098	65,600	-130,178

Table A9 *continued*

Year >>	11	12	13	14	15	16	17	18	19	20
% Capacity	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Receipts	1,380,968	1,408,588	1,436,759	1,465,495	1,494,805	1,524,701	1,555,195	1,586,298	1,618,024	1,650,385
Terminal value										612,152
Cash inflow	1,380,968	1,408,588	1,436,759	1,465,495	1,494,805	1,524,701	1,555,195	1,586,298	1,618,024	2,262,537
Down										
Operating expenses	1,082,940	1,104,599	1,126,691	1,149,225	1,172,209	1,195,654	1,219,567	1,243,958	1,268,837	1,294,214
Cash overhead	109,774	111,970	114,209	116,493	118,823	121,199	123,623	126,096	128,618	131,190
Depreciation	52,519	69,128	61,040	55,556	55,556	55,556	55,556	43,484	31,392	31,392
Interest	15,175	12,428	9,545	6,517	3,338	0	0	0	0	0
Principal	54,925	57,671	60,555	63,582	66,762	0	0	0	0	0
Payoff loan/new investment										0
Taxable income	120,561	110,463	125,274	137,703	144,878	152,291	156,448	172,760	189,177	413,337
Income taxes	42,196	38,662	43,846	48,196	50,707	53,302	54,757	60,466	66,212	144,668
Cash outflow	1,305,010	1,325,330	1,354,846	1,384,014	1,411,839	1,370,155	1,397,947	1,430,520	1,463,667	1,570,072
Net cash flow	75,958	83,257	81,914	81,481	82,965	154,546	157,248	155,779	154,358	692,465

APPENDIX E - Utah Department of Agriculture and Food Compiled Meat Plant Data

During July and August of 2020, the Utah Department of Agriculture and Food (UDAF) toured a sampling of small to medium-sized meat harvest and processing facilities including Custom Exempt, State inspected, Talmadge Aiken (T&A), and USDA inspected plants. The purpose of the tour was to see firsthand what the demand was at that point in time for locally processed meats, find out how the meat plants were responding to demand, whether or not they were planning to grow their businesses, and what type of support or resources they needed to be able to grow.

Plant data points of note are:

1. 9 of the 15 plants visited were operating well over 100% of their plant capacity
2. 10 of the 15 plants visited expressed strong interest in growth
3. Physical needs expressed include additional equipment and cooler space, access to trained butchers and meat cutters, and affordable insurance for staff
4. Harvest and processing numbers were approximately double compared to the previous year during the same time period
5. While backlog was not initially a data point, the majority of the plants visited were booked until spring or summer of 2021

In addition to the qualitative data from the 15 meat plants UDAF visited in person, UDAF collected the following quantitative data. This data reflects harvest numbers for State and T&A inspected plants only, verifying the increase in demand for locally sourced meat in Utah.

Fiscal Year (July through June) Slaughter Totals for UDAF Inspected Facilities:

FY16 - 9,710

FY17 - 10,276

FY18 - 9,663

FY19 - 10,074

FY20 - 14,495

APPENDIX F - Utah Department of Agriculture Compiled Regulatory and Statutory Recommendations

The following list of regulatory and statutory issues and recommendations was collected from owners/operators of 15 Utah meat plants visited by representatives of the Utah Department of Agriculture and Food (UDAF) during July and August 2020. Their responses represent a sampling of small to medium-sized meat harvest and processing facilities including custom exempt, state inspected, TA, and USDA.

Issue:
Compliance with federal regulations, such as Hazard Analysis and Critical Control Points (HACCP), can take hours each day to complete paperwork and perform other regulatory tasks, requiring at least 1 FTE, even for small to medium-sized meat plants with very few employees. The HACCP program was developed in the early 1990s to ensure that all sizes of establishments are producing safe products. At that time numerous small to medium-sized meat plants were under the impression that these new regulations were developed with large meat packing plants in mind. Many chose not to continue in the meat packing field due to the new HACCP regulations or elected to not be state or federally inspected. The USDA has since provided helpful HACCP training for smaller meat plant businesses.

Proposed Solution:
Provide a federal tax credit that would compensate small to medium-sized meat packing businesses for the cost of regulatory compliance, as the burden of compliance is relatively larger for small businesses.

Issue:
Some states, like Utah, have a state meat inspection program that is equal to USDA inspection. State inspected meat, however, is currently not allowed to be sold or transported across state boundaries.

Proposed Solution:
Provide the option for state inspected meat to be transported for sale or distribution to neighboring states with cooperation agreements. This would encourage growth in regional meat production and distribution, which would strengthen local food supply chains. Note: This is not the same as the Cooperative Interstate Shipment Program. The above solution would require a change in the Federal Meat Inspection Act.

Issue:
Agriculture related businesses, including production agriculture and food manufacturing businesses such as small to medium-sized meat packing plants, are often family-owned and managed. Current estate tax laws reduce the potential for food producing families to be able to pass on their business to the next generation.

Proposed Solution:
Provide federal tax changes to support passing all agriculture related businesses on to the next generation.

APPENDIX G - Definitions

Capital budgeting – Estimating the annual cash flows over a period of time.

Cooperative Interstate Shipment Program (CIS) – Cooperative inspection program as described in 9 CFR §321.3 and §332. Inspection of harvest and processing is conducted by an inspector employed by the participating state. CIS programs must be "equal to" federal inspection programs, meaning they must follow the same format and standards. The CIS inspection program is only available to plants with 25 or fewer employees.

Custom exempt (CE) – Facilities participating in the slaughter- or processing-for-fee of privately owned animals as described in 9 CFR §303.1. CE products cannot be sold, donated, or otherwise enter commerce. Inspection requirements depend on other activities conducted by the facility:

- Federal facilities are inspected by the FSIS.
- MPI facilities are inspected by the state.
- TA and CIS facilities are inspected by the state per cooperative agreement.
- CE-only facilities are inspected by the state (if MPI or cooperative agreement is in place) or the FSIS.

Custom harvest – Harvest or slaughter of an animal for the owner's personal use. Custom harvest meat cannot be sold. See also custom exempt.

Custom processing – Butchering, fabricating, cutting, grinding, or otherwise preparing harvested meat for the owner's personal use. See also custom exempt.

Enterprise Zone Area – Geographical rural areas that are designated for state tax credit eligibility to encourage development and economic growth.

Federal inspection – Inspection conducted by the FSIS under authority granted by the Federal Meat Inspection Act as described in 21 USC §601-695.

Food Safety Inspection Service (FSIS) – Branch of the U.S. Department of Agriculture (USDA) tasked with overseeing safety of USDA-regulated products. The FSIS mission statement reads: Protecting the public's health by ensuring the safety of meat, poultry, and processed egg products.

General Depreciation System (GDS) – A method used to compute personal property's depreciation that allows for the use of tax depreciation.

Harvest – See slaughter.

Internal rate of return (IRR) – IRR is the rate that the project is returning on the initial investment.

Markup – When retailers add a certain amount to the cost of goods to cover overhead and profit, it's markup.

Meat Poultry Inspection Program (MPI) – A state-federal inspection cooperative program as described in 9 CFR §321.1. Inspection of harvest and processing is conducted by an inspector employed by the participating state. State MPI programs must be "at least equal to" federal inspection programs, meaning they maintain the same sanitation and safety standards.

Modified internal rate of return (MIRR) – The MIRR is a modification of the IRR that assumes a reinvestment rate at the discount rate, not the IRR.

Net present value (NPV) – The NPV is the amount that is the sum of all future returns discounted to the beginning of the project and added together, or, the sum of the present value of all new cash flows.

Offal – Viscera and organs removed during the evisceration step of slaughter. Edible offal, also called variety meats, can be harvested, cleaned, and sold following specific procedures.

Price premium – The percentage by which a product's selling price exceeds (or falls short of) a benchmark price.

Price spread – See retail margin.

Processing – Butchering, fabricating, cutting, grinding, or otherwise preparing harvested meat. In this paper processing is used in a broad sense to include slaughter.

Profit sensitivity – How profit reacts to changes in various key variables that make up the overall profit number

Retail margin –The percentage difference between the retail price and the wholesale price.

Return on investment (ROI) –The benefit (or return) of an investment divided by the cost of the investment.

Salvage value – The estimated book value of an asset after depreciation is complete, based on what a company expects to receive in exchange for the asset at the end of its useful life.

Slaughter –The process of taking a live animal to a whole, half, or quarter carcass. Slaughter activities must meet safety, sanitation, and humane handling standards.

State inspection – Inspection of processing or harvest facilities conducted by an employee of the state. See also Meat Poultry Inspection Program.

Straight-line depreciation – A method of depreciation where the value of a fixed asset is reduced gradually over its useful life.

Talmadge Aiken Cooperative Inspection Program (TA) – A federal-state inspection cooperative program as described in 9 CFR §321.2. Inspection of harvest and processing is conducted by an inspector employed by the participating state. TA programs must be "equal to" federal inspection programs, meaning they must follow the same format and standards.

Very small plant –This is a low-volume plant as defined in 9 CFR §310.18. Specifically, in this paper, "very small" refers to slaughter facilities processing no more than 6,000 cattle annually.

Wholesale –The selling of goods in large quantities to be retailed by others.