Montana Mobile Processing Company

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Executive Summary

Currently, livestock raised in Montana are largely exported to other states for finishing and processing. The processed meat can then go through several transactions before it ends up in a grocer’s retail case or a food service cooler. [[1]](#footnote-2) The production and distribution system in Montana (and remainder of the U.S.) developed in this manner, due to relatively inexpensive energy costs (transportation costs) and economies of scale in livestock finishing and processing plants.

The intent of this study is to evaluate the market demand for a mobile slaughter unit that would give ranchers the ability to slaughter cattle, hogs, sheep or bison on the farm-site. The concept of the mobile slaughter unit (MSU) is that it would be federally inspected, so ranchers could sell the meat across state borders is so desired, as long as any processing in the value chain for the final product was also federally inspected.

To accomplish this task, the project team hosted focus group sessions with producers and interviewed industry experts and slaughter houses / cut and wrap facilities in the area. The findings from this market research are that there is tremendous interest in local meat processing services, especially in the fall season. However, producers that seem most interested in this concept are relatively small in size, creating volume and pricing hurdles for any enterprise that would develop such services.

Focus group sessions and interviews with key stakeholders also identified key challenges to the MSU concept. The main challenge identified is the high cost per unit (head) to perform the kill service. Even though MSU operations are much cheaper as a capital expense than a fixed facility with a kill floor, the small number of animals that are generally processed at one site, along with the additional transportation costs, create a situation where a higher than normal slaughter fee needs to be charged for the service. There are obvious benefits and cost savings experienced by the clients, such as: reduced or eliminated transportation costs, less stress to the animal, less bruising, etc. This challenge could be mitigated through an educational marketing campaign that educates producers on these key benefits and cost savings.

MSU operations are well suited for processing the carcass to the point where it is dressed, but the deboning, retail cuts and associated wrapping needs to occur at a fixed facility. Several facilities with cut and wrap capabilities that we spoke with indicated they would be interested in working with a MSU, but the processor would need to pay the cut and wrap fee, which would likely make the arrangement cost prohibitive for many people. In some markets (restaurants and grocery stores) it may be possible to sell meat directly from the MSU as several restaurants and grocery stores have the capability to cut their own retail cuts from primal cuts. While this is a potential benefit of the MSU, it is not likely to constitute a large portion of the total meat sales in the region.

Further complicating the operation of the MSU is the location of a cooler for aging. It is not viable to age meat in the cooler on board the MSU, as it would take valuable cooler space that could be used for transporting carcasses. This complication could be resolved with a refrigerated trailer or partnership with an existing facility that has excess cold storage.

Seasonality and weather issues other key challenges for an MSU operator. Every slaughter house and cut and wrap facility that we spoke with indicated that the fall is their busiest time of year. There is documented demand for an MSU during this season, but greater uncertainty on the volume of animals to be slaughtered and processed in the other seasons. Additionally, severe weather may impede the MSU operation in events such as strong wind, heavy snow, heavy rain, or hail. These challenges could be mitigated through partnerships with large producers of livestock or bison who slaughter there animals year-round, and would thus, provide a steady stream of business to the MSU.

Addressing and planning for these challenges at this stage in the business planning process will benefit Montana Mobile Processing Company in the future. As part of this study, the project team also evaluated the financial viability of operating a MSU. The financial analysis indicates that there is a reasonable degree of certainty that this venture will be financially viable. However, it is also likely that operating margins will be slim. Thus, planning and coordination to achieve the breakeven volumes and keep costs in check will be critical for the future success of an MSU in the study area.

Another component of the study was a reconnaissance level evaluation of a small cut and wrap facility that could be a component in the future business operation with the MSU. A simple design and cost estimate for this facility was completed. It is likely that the capital expenditure for this type of facility would be greater than $363,000 and possibly as high as $573,000.

Finally, a regional economic impact analysis was completed to measure the potential economic impact of the MSU and cut and wrap facility modeled. The IMPLAN analysis results indicate that most of the economic output supported with this business concept would be in the form of livestock used as an input in the meat processing. Total economic output supported by the MSU would likely approach $10 million annually. Furthermore, nearly 90 jobs (indirect, induced and direct) would be supported annually through operation of the MSU.

# Introduction

Meat processing has historically been a high risk, low margin business in the United States. Recently, most states have shown a trend of meat processing plant closures due to aging facilities, increased government regulation, and retiring age of owners with no succession plan. This reduction of small meat processors is happening at a time of increasing interest of small farmers and livestock producers desiring to direct market their own meat products or market through a local or regional marketing program featuring locally grown, niche, natural or organically produced products.

The intent of this study is to investigate key market and development considerations for a locally owned and operated mobile slaughter facility, including:

* Market demand projections
* Facility and Infrastructure needs and development
* Environmental and permit issues
* Financial feasibility projections
* Economic impacts of proposed business model

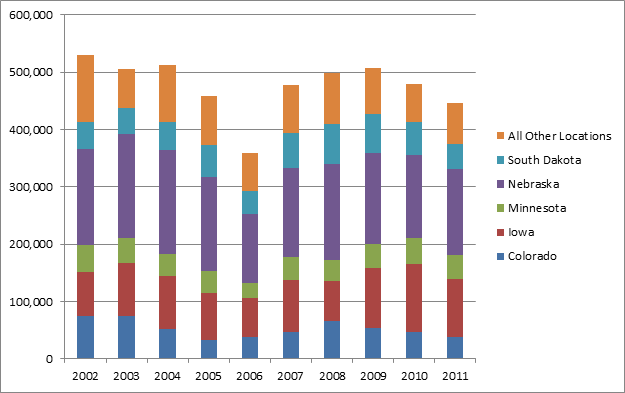
This investigation was conducted via a market survey of animal producers who would potentially be clients and/ or suppliers in the value chain of locally sourced meat products. In addition, case studies from mobile slaughter unit operations around the country were evaluated to identify key opportunities, challenges, and “lessons learned.” Financial modeling of the proposed business using Monte Carlo simulations was also conducted to gain a sense of the viability of the proposed business under various operating scenarios. Finally, an input-output model was conducted to estimate the “ripple effect” of economic impacts that would likely occur as a result of business development. The results of this study provide a comprehensive investigation of viable business scenarios for a mobile slaughtering unit based in western Montana. A logical next step in the planning process is to use this information in modifying Montana Mobile Processing Company’s business plan, outlining the actions needed to take the proposed business concept from “idea” to “reality.”

# Local Food System Characteristics

## Supply Side – Meat Products

The value chain for meat products in western Montana is characterized by producers shipping their cattle out of state for finishing. In other words, the livestock producers in western Montana generally operate cow – calf operations. The most common destinations for cattle from Montana cow-calf operators are Nebraska, Iowa, South Dakota, Colorado, and Minnesota as shown in figure 2.1 below. The exceptions to this rule include a handful of small beef producers including: Mannix Beef, Lifeline, Garden City, Opportunity Resources, Flathead Farms, a few producers within the Western Montana Growers Cooperative (WMGC) and a small number of other producers who finish cattle, process at a licensed slaughter facility and sell under their own label

Figure 2.1 Common Destinations for Montana Cattle



For purposes of this analysis a closer examination was conducted on cattle inventory from a seven county region in western Montana, including Beaverhead, Flathead, Granite, Lake, Missoula, Ravalli, and Sanders counties. According to National Agricultural Statistics Service (NASS) data the inventory for all cattle, calves and cows in the seven county region have declined in the past ten years by 17 percent. Inventory estimates also indicate that nearly half of the beef cattle inventory in the study area over the past ten years has been concentrated in Beaverhead County. The table below displays the average number of beef cattle reported by county over the 2002 – 2011 period.

Table 2.1 Inventory of Beef Cattle in the Study Area

|  |  |  |
| --- | --- | --- |
| County | Beef Cattle  Inventory (head) | Percent of Total |
| Beaverhead | 76,120 | 47% |
| Flathead | 6,420 | 4% |
| Granite | 15,190 | 9% |
| Lake | 29,200 | 18% |
| Missoula | 5,800 | 4% |
| Ravalli | 16,770 | 10% |
| Sanders | 11,590 | 7% |
| **Total** | **161,090** |  |

Sheep and hog inventories are relatively small within the study area, with a maximum at just 3,000 head of hogs in the study area over the past ten years. Nearly the entire hog inventory reported over the past decade within the study area has been located in Flathead County. The trend has been for smaller inventories of hogs, with several large (greater than 100 head) operations shutting down over the course of the last decade. The table below presents inventories of hogs in the study area.

Table 2.2 Inventory of Hogs in Study Area

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| County | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| FLATHEAD | 3,000 | 1,500 | 1,400 | 1,700 | 1,500 | 1,500 | 1,400 | 1,300 | 1,200 | 1,200 |
| LAKE |  |  |  |  |  | 100 | 100 | 100 | 100 | 100 |
| MISSOULA |  |  |  |  |  | 100 | 100 | 100 | 100 | 100 |
| RAVALLI | 900 |  |  |  | 600 | 200 | 200 | 200 | 200 | 200 |
| SANDERS |  |  |  |  |  | 100 | 100 | 100 | 100 | 100 |
| BEAVERHEAD |  |  |  |  |  | 100 | 100 | 100 | 100 | 100 |
| **Total** | **3,900** | **1,500** | **1,400** | **1,700** | **2,100** | **2,100** | **2,000** | **1,900** | **1,800** | **1,800** |

According to the most recent estimates market lamb inventory estimates presented by NASS, sheep inventory estimates are roughly one-eighth of cattle inventory estimates for the study area. Sheep inventory is largely concentrated in Beaverhead County as well, with significant inventories reported in the Mission Valley (Flathead, Lake and Sanders counties), and the Bitterroot Valley (Ravalli County). The table below reports inventories of sheep in the study area.

Table 2.3 Inventory of Sheep in Study Area

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| County | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| BEAVERHEAD | 18,000 | 16,000 | 15,200 | 16,000 | 14,100 | 16,600 | 14,800 | 13,700 | 12,000 | 15,000 |
| FLATHEAD | 1,100 | 600 | 700 | 700 | 600 | 600 | 400 | 400 | 400 | 300 |
| LAKE | 3,600 | 1,800 | 1,600 | 1,800 | 1,600 | 1,600 | 1,400 | 1,200 | 1,300 | 1,200 |
| MISSOULA | 1,500 | 1,800 | 1,500 | 1,800 | 1,700 | 1,900 | 1,200 | 1,700 | 1,700 | 1,500 |
| RAVALLI | 3,900 | 4,500 | 3,800 | 4,100 | 3,200 | 3,500 | 4,500 | 4,200 | 4,100 | 3,700 |
| SANDERS |  |  | 600 | 600 | 500 |  | 500 | 500 | 500 | 400 |
| **Total** | **28,100** | **24,700** | **23,400** | **25,000** | **21,700** | **24,200** | **22,800** | **21,700** | **20,000** | **22,100** |

Bison are also raised, slaughtered and marketed as niche meat product in the study area. While government statistics do not count bison in any official statistical category for animal production, it is estimated that there are approximately 1,000 head of bison finished and marketed under private labels from farms in or directly adjacent to the study area. This estimate is derived from interviews with bison producers in the study area.

### Producer Focus Group Summary

In order to gauge the level of interest in utilizing mobile slaughter unit (MSU) services, a series of focus groups and interviews were conducted with local producers over the course of March and April of 2013. Focus group sessions were conducted with producers at the following locations:

* Community Food & Agriculture Coalition (CFAC) offices in downtown Missoula
* Western Montana Growers Cooperative (WMGC) offices in Arlee
* Lake County Community Development (LCCD) offices in Ronan
* Natural Resources Conservation Service (NRCS) offices in Hamilton

Workshop participants included cattle, sheep, hog and bison producers. A mixture of small, medium and large sized producers were represented at these focus groups. A wide range of how the producers marketed their meat was also represented at these meetings, including producers (like Mannix Beef) who finish and market their own cattle to cow-calf operators who only sell their animals through live animal auctions.

The focus group participants were given a brief introduction to mobile slaughter units and the proposed business concept of Montana Mobile Processing Company. Afterward, the workshop participants were asked a series of questions related to the size of their operation, how they currently market their animals, their interest in a mobile slaughter unit service, and what infrastructure they might have to accommodate such service on their farm. Responses collected during these focus groups and follow up conversations are documented in Appendix B.

Responses collected from the focus group sessions revealed the following:

* Finishing of beef on-farm is largely done for personal use, not sold at the retail level.
* Some focus group participants did not feel like the additional premium for grass-finished, local, organic or natural beef sold into local markets warranted the additional costs of finishing and processing, especially given the recent historic high prices for live cattle.
* Those who are selling a finished meat product in the local market expressed mixed satisfaction of their current slaughter houses / cut and wrap facilities. Some were satisfied with the current services provided, but specific issues were raised in the focus groups, including:
  + White’s Meats (Polson) does not process sheep, implying there is unmet demand for an inspected facility in the Mission Valley for sheep processing.
  + Several facilities do not offer aging of meat for more than a couple weeks, and two producers mentioned the need to age beef for longer periods of time (up to 28 days).
  + Several producers cited difficulties of processing animals in the fall, as many of the fixed slaughter facilities also process wild game and hunting season is their busiest time. In a related manner, lack of consistency was mentioned as a problem, as there is a flux of temporary help with the cut and wrap facility in the fall season.
  + Similarly, several producers cited concerns that wild game and finished beef or sheep were being stored in the same coolers, or processed with the same equipment.
  + Several producers mentioned that the current fixed slaughter house they utilize is aging and infrastructure is outdated.
  + Bison transportation and handling at the slaughterhouse was a concern for several participants, as these animals are more prone to stress which likely impacts meat quality.
* There was significant interest expressed in utilizing a MSU service. However, the number of animals that would be processed at one time on the farms represented often did not meet the minimum (or breakeven) level proposed by Montana Processing Company (see the financial analysis below for more details on breakeven). This implies either a need for coordination of meat processing with the producer and Montana Processing Company, or need to market MSU services to larger producers.
* The main characteristics that attracted focus group participants to the MSU service proposed included: humane treatment, federal inspection and not stressing the animal with transportation.
* Most respondents indicated that infrastructure was available on farm such as corrals, restrooms for employees, and potable water source. However, several respondents indicated that installing a wastewater catchment system could be a barrier. As a form of mitigation for this potential barrier, it will be important to identify select areas (farms) within the regions serviced where processing could occur that meets county sanitarian requirements.

## Demand Side – Meat Products

The most populated area within the study area is the City of Missoula, which also is the likely location for the greatest retail level demand of beef products. The Missoula and surrounding areas are home to very few meat distribution companies, beyond the private label producers mentioned above. There is only one dedicated meat distribution company in the area, Rocky Mountain Steaks, located in west Missoula toward Wye. However, this company purchases processed beef from slaughter facilities in Nebraska.

Most of the large retail grocery chains such as Safeway, Costco, and Albertsons have warehouses in Oregon and / or Utah where they source their meat products from national meat distribution companies. There are a small number of grocery stores (primarily Good Food Store) and several restaurants in and around Missoula that offer local meat products. Additionally, The University of Montana has been at the forefront of making local meat products available into the food supply on campus. Other institutions such as Thomas Cuisine, who serve several hospitals in the area, may offer specialty items of meat products from local sources but not on a consistent basis.

While the market demand for local meat is growing in the study area, it still constitutes a small percentage of total meat sales. Ken Meter, from Crossroads Resource Center, suggests that $1.2 million annually of total livestock and livestock product sales from farms in the western Montana region are consumed locally.[[2]](#footnote-3) Total demand for relevant meat products (including beef, pork, and lamb) in western Montana is estimated at 30.1 million pounds annually, based on per capita consumption statistics reported by The Daily Livestock Report.[[3]](#footnote-4) The retail value of this demand is valued at approximately $90 million (assuming an average price per pound of $3), of which it is estimated by Ken Meter that local meat producers supply one percent, as depicted in the figure below.

Figure 2.2 Local Meat Sales as a Percent of Total Sales

There are several state and federal inspected meat processing facilities in the study area. The figure below identifies and provides a map of meat processing facilities in the study area.

Figure 2.3 Meat Processing Facilities in Montana



Key findings through discussion with several of these entities revealed the following:

* All slaughter facilities / cut and wrap facilities interviewed would be willing to work with an independent MSU to bring product in.
* All facilities interviewed suggested that it would be difficult to take additional product during the fall season, due to the abundance of game animals being processed. In some cases their workforce increase three fold during the fall season.
* Cut and wrap facilities in the Bitterroot Valley suggested that the market for such services is “saturated” in the area.
* Cut and wrap facilities that do not have slaughter floors but do have retail outlets could be a potential opportunity, such as H&H Meats or Diamond Meats in Missoula.

## Regulations and Permits

In 2010 the United States Department of Agriculture (USDA) published a compliance guide for mobile slaughter units. This guide presents recommendations to the operators of MSUs to help meet food safety requirements.[[4]](#footnote-5) The Montana state inspection authority has not developed any food safety regulations specific to a MSU, therefore all current and normal regulations are enforced. These regulations are vast, and a detailed examination of the regulations is beyond the scope of this analysis. However there are key facilities and functions of the MSU that are addressed below.

### Waste Management

Some counties will require water used for rinsing and washing to be collected and properly disposed. As part of this analysis the project team had several communications with county sanitarians. Jenna Miller, a registered sanitarian in Missoula County mentioned that the disposal system mandated by Missoula County was not intended for a MSU, but it may be too difficult and cumbersome to write a rule that is specific to the MSU. Therefore, she suggested that a MSU operating in Missoula County apply for a variance to the wastewater regulation. There would be a $700 fee for this application, but without the variance the waste water would have to be captured and either disposed of in the farmer’s septic system or a tank to be taken to an approved waste water dump site.[[5]](#footnote-6) Missoula county likely has the strictest environmental regulations within the seven county region. It is possible, but unlikely, that a variance would be required in the other counties considered.

Composting of offal on-farm may be permissible by some counties within the study area, but it may be difficult in many parts of the region due to activity from predators such as bear, wolf, cougar, and others. Some counties in Montana allow for offal to be disposed of at a landfill. Alternatively, offal can be disposed of via a render out of Spokane, Baker Commodities. This is the only renderer with services in Montana.[[6]](#footnote-7)

### Water

Any process water used for washing down carcasses and sterilizing equipment must be potable and the MSU must have a letter certifying this. This requires either municipal water or private well as long as there is a written water report certifying the potability of the water source. Additionally, there must be bathrooms on site that MSU employees could access if needed.

# Operating Structure

As Appendix A shows, the MSUs operating today are either structured as a cooperative, partnership, non-profit entity, owned by an economic development group or operated as a business incubator. The one MSU that is operated as a private entity is the Broken Arrow Ranch who purchases wild game from ranchers in Texas and sells the meat as a niche product across the United States. The lack of MSU’s operated solely as private entities could be further indication that margins on the operation of such a venture may not be sufficient to attract much private investment. See Appendix A for further details on the structure of MSUs in operation today.

The focus group sessions revealed that there is interest in utilizing a privately operated MSU in the region. Key difficulties / challenges for making a privately operated MSU viable in the study area include:

* Volume: Most operations are cow / calf and ranchers generally only finish a couple head of cattle per year. The financial analysis revealed a breakeven point of just over 930 head of cattle annually (or cattle equivalent).[[7]](#footnote-8) Similarly, even though the MSU costs less than a fixed facility, the inability to process more than a couple head of cattle at one time drives the operating costs per head too high for many individual producers to consider.
* Seasonality: It appears that there may be significant demand for animal slaughter services / processing in the fall (when most slaughter facilities are busy with wild game). However, it may be difficult to keep the MSU booked throughout the year on a consistent basis.
* Coordination: Sending an MSU to a site for less than 5 head per day (cattle or cattle equivalent) will be below the breakeven point (see Financial Analysis). Coordinating the slaughter of cattle for a community may be necessary, but then clients are required to transport their animals to the centralized slaughter point which would negate a key benefit of utilizing the MSU.
* Quality: It will be necessary to find an experienced butcher to operate the MSU. Many people interviewed mentioned a preference for one slaughter facility over others due to consistency, less mistakes, fewer hackmarks on the meat, better preparation of meat, and other issues. Consistently, Clark Fork Custom Meats was mentioned as the preferred slaughter facility, and clients would often transport cattle from Missoula to Plains (nearly 80 miles) to transport live animals for slaughter and processing because of the quality service they receive.
* Next Step in the Value Chain: Without long term cold storage or a fixed location for cutting and wrapping the meat the client will be dependent on cut and wrap facilities for these services.

In order to address these challenges the Montana Mobile Processing Company may wish to consider the following partnerships or joint ventures with key entities that could provide for partnership or joint venture possibilities in structuring Montana Mobile Processing Company.:

* Partner with or contract with large producers in the region who have significant volumes of finished beef, bison, sheep or hogs to slaughter annually. This would include:
  + Flying D Ranch, Bozeman MT: It is believed that this bison ranch finishes approximately 500 head per. Bison and transported live to slaughter facilities in Colorado where they are processed for Ted Turner’s restaurant – Ted’s Montana Grill – with locations throughout the United States. Key contact information at the Flying D Ranch is Danny Johnson, 406.546.7266. The project team tried several times to contact Mr. Johnson with no success. It should be noted that this ranch is outside the pre-defined study area boundary but may be worth further consideration.
  + Other significant producers that finish over 100 head each annually were identified in the focus group forms (contact information identified in Appendix A).
* Partner with or contract with meat cut and wrap facilities. A partnership of this nature would be ideal as it would allow for access to cold storage of the carcass for aging; the cutting and wrapping could occur at a state or federally inspected facility, and often these places retail a portion of their meat for sale direct to the public. Locally, this would include: H&H Meats, Diamond Bar Meats, and K&C Foods. A full list of meat depots and packing houses is identified in the map titled “State and Federally Inspected Meat Processing Facilities in Montana,” above.
* Partner with Western Montana Growers Cooperative and other distributors of primal cut meats locally.
* Partner with Good Food Store, and other grocery stores or restaurants who prefer primal cuts of meat so they can further break them down in their own custom manner.

# Financial Analysis

As part of the market analysis and financial feasibility report prepared for Montana Mobile Processing Company the project team reviewed the financial pro forma statements prepared by Mark Estep and created a financial model using the statistical programming software @Risk. This allowed sensitivity and variability to be built into the financial projections. For purposes of this analysis we evaluated the financial viability of the mobile processing unit solely (did not consider further cut and wrap processing).

This section of the report presents the key variables used in the financial analysis, along with key outcomes and findings of the financial model.

## Key Variables

The key revenue variables modeled with probability distribution curves included the kill fee and dressing fee charged, along with the volume by month. Key expense variables modeled included the cost of transportation (fuel, repair, maintenance and insurance on the MSU), wages for staff and the federal inspector, taxes, and other overhead. These variables are further defined below:

### Revenue Variables

The number of head processed per month was defined in the model at rates identified in the table below:

Table 4.1 Volume by Month Estimates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Dec – Mar | Apr – Jun | Jul – Nov | Annual |
| **High** | 160 | 160 | 240 | 2,320 |
| **Expected** | 80 | 120 | 160 | 1,480 |
| **Low** | 0 | 0 | 40 | 200 |

The representation of these estimates graphically is presented in the figure below. This graph represents the frequency (y axis) of volumes (x axis) that are simulated as a function of revenue in the financial model prepared.

Figure 4.1 Volume Estimate Modeled (Annually)



The above graph can be interpreted in the following manner: there is a 10 percent probability that the MSU will process 1,257 head (cattle equivalent) annually; there is a 10 percent chance that the MSU will process 1,555 head (cattle equivalent) annually; and the MSU will most likely process 1,407 head (cattle equivalent) annually.

Two fees were modeled as part of this analysis, including a kill fee and a dressing fee. The kill fee was modeled at a high value of $90 per head, a low value of $55 per head and a most likely value of $75 per head. Similarly, the dressing fee was modeled at a high value of $0.35 per pound, a low value of $0.20 per pound, and a most likely value of $0.25 per pound. For purposes of the financial analysis a typical weight of a dressed steer carcass was assumed to be 540 pounds. Therefore, for purposes of this financial analysis the total fee per head was modeled at between $109 and $279 per head, with a most likely value of $183 per head. Through conversations with slaughter facilities it was revealed that most operations have a similar pricing structure (base fee per head and a price per pound for cut and wrap), however most slaughter facilities include the dressing fee in with the kill fee. It is recommended that when the MSU is in operation that the fees be presented in as a total per head, as having a per pound dressing fee and a per pound cut and wrap fee on top of that (at the cut and wrap facility) would likely confuse and frustrate potential clients.

Furthermore, a clear explanation of the benefits and cost savings of a MSU will need to be conveyed to the potential clients, as the rates modeled in the financial analysis are significantly higher per head than fixed facility slaughter houses. Most slaughter facilities in the study area charge between $50 and $80 per head for slaughtering and dressing a carcass that the proposed MSU will charge$109 to $279 per head to perform.

Gross revenues modeled for this analysis were a function of the volume per head and the fees charged. Total annual gross revenues were modeled at a level of between $209,000 and $320,000, with a most likely estimate of $262,500. See the figure below for a complete histogram of potential gross revenue results from the model.

Figure 4.2 Annual Gross Revenues Modeled



### Expense Variables

The greatest uncertainty surrounding expenses is the distance that the MSU will be required to travel to serve the client’s needs. The financial analysis assumed the MSU will get 5 miles per gallon (mpg) and that the MSU will travel between 75 and 300 miles roundtrip daily, with a most likely estimate of 150 miles roundtrip daily. Diesel was modeled at $3.50 per gallon. Fuel alone accounts for roughly 12 percent of the total expenses of the MSU.

Figure 4.3 Fuel Expenses



The estimated annual cost of fuel is between $16,600 and $27,000 with a most likely estimate of $21,356 as presented in the figure above. Similarly, the repairs, maintenance and insurance on the unit were modeled at a rate of $0.20 per mile.

Labor is another key expense of the proposed MSU, accounting for 50 to 55 percent of the total expenses modeled. One crew consists of a butcher, assistant butcher, driver and federal inspector. It was assumed that one crew could operate for a maximum of 20 days per month. Therefore, at certain times a second crew would be required (July through November). In this modeled the second crew was utilized for up to 270 hours per year during the busy season or roughly 7 weeks out of the year. The federal inspector’s time was modeled as overtime only, as the base salary of the inspector would be paid out of the USDA / FSIS budget. Hourly rates for each of the positions modeled are provided in the table below.

Table 4.2 Hourly Rates for Staff

|  |  |
| --- | --- |
| Position | Hourly Rate |
| Butcher - Crew 1 | $30 |
| Asst. Butcher - Crew 1 | $19 |
| Butcher - Crew 2 (seasonal) | $27 |
| Asst. Butcher - Crew 2 (seasonal) | $17 |
| Driver - Crew 1 | $12 |
| Driver - Crew 2 | $12 |
| Federal Inspector (OT) | $85 |

In addition to the base salary, payroll expenses were modeled at 20 percent of wages. Based on this payroll tax rate, the hourly rates above, and volume (mentioned in the revenue variables) total labor costs were assumed to be between $93,500 and $169,000 annually, with a most likely estimate of $126,200. The figure below provides additional details on the expected labor costs of the MSU.

Figure 4.4 Total Labor Costs



Other overhead costs were modeled as between $20,000 and $30,000 annually with a most likely estimate of $25,000 annually. These costs include business insurance, licenses and certifications, office supplies, marketing, rent for the unit space, and other costs. Total expenses (summation of the above) are estimated as an output of the model to be between $140,000 and $228,100 with a most likely value of $178,700 as depicted in the figure below.

Figure 4.5 Total Expenses



## Financial Analysis Output and Findings

This section of the report presents findings from the financial analysis including key capital budgeting and financial pro forma results of the financial model described above.

### Earnings before Interest, Taxes, Depreciation, and Amortization (EBITDA)

Earnings before interest, taxes, depreciation and amortization (or EBITDA) is used as a measure of company performance and indicator of value. EBITDA is often considered a valuable measure of a company’s operating performance. The projected EBITDA for Montana Mobile Processing Company slaughter operation is between $20,400 and $147,100 annually, with a most likely value of $83,800 (see the figure below). It should be noted that there is a 5 percent probability that EBITDA will be negative. Also, the seasonality issue mentioned above is evident in the month to month results; the off-peak months of December through March have 7.5 percent probability of negative EBITDA.

Figure 4.6 EBITDA



EBITDA does not consider non-cash items so a company that is “asset heavy” may look better on paper than the actual financial situation when considering EBITDA. As part of the financial analysis, a loan payment on the MSU was considered at the following terms: 7 percent interest, 15 years, and $175,000 principal. Under these assumptions, the range of profit for the MSU is estimated at between $-1,907 and $119,000 annually, with a most likely value of $52,000. Similarly, the model shows an 11 percent probability that the annual profit will be negative.

### Net Present Value (NPV)

Net Present Value (NPV) is used in capital budgeting to analyze the profitability of an investment or project, and is defined as the difference between the present value of future cash flows and cost of an investment. Developing the infrastructure, coordination and marketing required to support the MSU is assumed to take one year (year 0 in the NPV calculation). Because the plant has a useful life of 7 years, the NPV calculation is extended through this time frame. The table below summarizes assumptions for the NPV calculation.

Table 4.3 NPV Assumption Summary

|  |  |  |
| --- | --- | --- |
|  | Year 0 | Years 1-7 |
| Capital Costs | -$200,000 |  |
| EBITDA |  | See “EBITDA” |
| Discount Rate |  | 7.5% |

By structuring the analysis in this manner, the discount rate represents the weighted average cost of capital (WACC). The NPV calculation of the investment proposed for the MSU is estimated to be between $-85,000 and $539,000 with a most likely value of $227,000. A positive NPV is an indication of a sound investment. Under the existing assumptions, there is an 83 percent probability that the NPV will be positive. See the figure below for additional details.

Figure 4.7 Net Present Value (NPV)



### Internal Rate of Return (IRR)

The internal rate of return (IRR) is the discount rate at which the net present value of cash flows equals zero and is often used in capital budgeting to evaluate the profitability of investments. The IRR for the proposed MSU ranges from a low of 3.3 percent (10th percentile) and a high of 72.5 percent (90th percentile) with a most likely value of 38.6 percent (see figure below). The general rule of thumb is that the IRR must be greater than the WACC in order for the investment to be financially sustainable. According to the assumptions used in this financial model, there is a 92.5 percent probability that the IRR will be above the WACC.

Figure 4.8 Internal Rate of Return (IRR)



### Breakeven

The breakeven point of the MSU was considered at three different levels; daily, annually, and number of days operating. The breakeven point represents the point at which all operating costs can be covered by the revenue to be brought in for the service provided. Based on the above assumptions the breakeven point for one day was calculated to be 5.1 head. Therefore, this is the minimum number of head needed to achieve a positive EBITDA. It is recommended that this be used as a general guideline for scheduling and coordinating with clients. The minimum number of head per year to achieve breakeven was calculated to be 933. This represents the sales to cover all operating costs. Similarly, if the daily breakeven were achieved, approximately 183 days of operation would provide for breakeven annually.

### Sensitivity Analysis - Diesel Costs

Sensitivity analyses are used to determine how different values of an independent variable will impact a particular dependent variable under a given set of assumptions. For this analysis, a sensitivity analysis was conducted to evaluate the impact that diesel prices ($ / gallon) have on the projected output of EBITDA, NPV and IRR. As mentioned above, the main financial model was set up with a diesel price of $3.50 per gallon. This sensitivity analysis considers a range of diesel prices from as low as $3.50 per gallon to as high end diesel cost is $6 per gallon. The table below shows how the key financial outputs would vary across seven different diesel cost prices per gallon.

Table 4.4 Sensitivity Results – Diesel Fuel Cost per Gallon

|  |  |  |  |
| --- | --- | --- | --- |
| Diesel Cost / Gallon | EBITDA | NPV | IRR |
| **$3.50** | $84,004 | $227,074 | 39% |
| **$3.92** | $80,954 | $212,043 | 37% |
| **$4.33** | $77,905 | $197,011 | 36% |
| **$4.75** | $74,856 | $181,980 | 35% |
| **$5.17** | $71,807 | $166,949 | 33% |
| **$5.58** | $68,758 | $151,917 | 32% |
| **$6.00** | $65,708 | $136,886 | 30% |

While the other variable ranges considered in the model (labor, distance, etc.) do create ranges of outputs for each sensitivity simulation, the output results for EBITDA, NPV and IRR presented in the table above represent the mean or “most likely” output results. The results from the sensitivity analyses shows that a profitable operation is possible even at high costs of diesel (up to $6 per gallon). It should be noted that the margins are greatly diminished at this high diesel cost, and the low and high end estimates for all output categories are also lowered (not shown in the table above).

### Conclusion

All indications are that the MSU will be a viable operation. Financial results imply that the investment into purchasing the MSU will likely yield low to reasonable returns to the investor. It should be noted that the financial model is only as accurate as the projections of sales and costs. While the model attempts to mimic likely results of the proposed business, there is no guarantee of financial success from this investment. In addition, there are significant challenges to be faced in how the service is marketed, how the business might be structured, and other variables that will likely impact the future performance of the MSU.

# Fixed Facility Alternative

Montana Mobile Processing Company also wanted to answer the question of what it would take (infrastructure and investment) to operate a fixed facility as a cut and wrap / retail meat operation in coordination with the MSU. This section presents results of that analysis.

## Facility Layout & Cost

Cardno ENTRIX largely relied on published data regarding the size, and type of facility that would be ideal for a cut and wrap facility. A small scale cut and wrap facility was designed in Autocad for purposes of this report. The main source of information used in generating this facility description was: Watkins, James, Planning a Small Meat-Packing Business, The Pennsylvania State University College of Agriculture, University Park, Pennsylvania, IVD-IM384.

Figure 5.1 Small Processing Plant Layout



In total, there are nearly 3,600 square feet of space required for a small scale cut and wrap facility. Typical construction or purchase prices for light industrial buildings in the area were modeled at between $85 and $110 per square foot.[[8]](#footnote-9) Total investment required for the building only is therefore calculated to be approximately $350,000.

## Equipment and Tools

There are several specialized pieces of equipment and tools for processing meat into retail cuts. There is also a wide range for prices to be paid for these items, as many can be found for sale as used. In addition, within the new product category there are various degrees of quality and price that can be purchased. Below is a list of equipment and tools modeled, along with a low, mid and high cost estimate for each piece. Sources for these price estimates were largely online suppliers of these specialty items, such as: Meatprocessingproducts.com, Katom.com, Kraus, Costco, and various other online suppliers.

Table 5.1 Equipment and Tool Requirements

|  |  |  |  |
| --- | --- | --- | --- |
| Equipment & Tools | Costs Estimates | | |
|  | low | mid | high |
| Meat Saw | $1,500 | $3,000 | $7,500 |
| Double Sink | $400 | $600 | $1,000 |
| Step Sink | $100 | $100 | $100 |
| Grinder | $1,000 | $1,200 | $1,500 |
| Utility Tables (10) | $1,500 | $2,500 | $3,000 |
| Slicer | $2,000 | $3,500 | $6,000 |
| Cuber | $300 | $500 | $1,300 |
| Scales: Platform (2) | $160 | $300 | $500 |
| Stuffer: sausage | $1,000 | $5,000 | $12,000 |
| Table: ham pumper with pump and scale | $200 | $250 | $300 |
| Kettle: Steam (30 gal) | $150 | $1,000 | $1,500 |
| Smoker | $1,000 | $3,000 | $4,600 |
| Rollers | $1,000 | $2,500 | $5,000 |
| Boiler | $1,000 | $2,000 | $3,000 |
| Heater, hot water | $1,000 | $2,000 | $3,000 |
| Rail | $1,000 | $2,500 | $5,000 |
| Scales (utility) | $200 | $500 | $700 |
| Knife Sharpener | $200 | $400 | $500 |
| Lugs and Tubs | $500 | $1,000 | $1,200 |
| Saws (4 - hand) | $200 | $200 | $200 |
| Mixer | $2,000 | $5,000 | $10,000 |
| Misc (Gambrels, hooks, other) | $3,500 | $6,000 | $10,000 |
| Freezer (17 x 26) | $6,000 | $7,500 | $9,000 |
| Cooler (17 x 23) | $7,000 | $10,000 | $12,000 |
| Cooler (12 x 10) | $5,000 | $8,000 | $10,000 |
| Office Misc | $1,000 | $1,000 | $1,000 |
|  | $38,910 | $69,550 | $109,900 |

## Utility hookups, permitting and compliance

Finally, it is assumed that utility hookups for water, natural gas, and power along with the necessary wastewater and business permits would cost 10 to 20 percent of total costs. Due to the variability in prices mentioned above, a reasonable estimate for this cost category is represented as the range between $20,000 and $70,000.

A reasonable range for the total investment required for a fixed cut and wrap facility in Missoula, Montana is summarized in the table below.

Table 5.2 Cut and Wrap Facility Cost Summary

|  |  |  |
| --- | --- | --- |
| Category | Low | High |
| Equipment & Tools | $38,910 | $109,900 |
| Facility | $303,875 | $357,500 |
| Utility Hookups / Other | $20,000 | $70,000 |
|  | $362,785 | $537,400 |

## Key Property Characteristics to Consider

Key characteristics of a property that would meet these criteria above for a cut and wrap facility should have the following characteristics:

* Ample space that is easily accessed to maneuver the MSU for unloading / loading
* Adequate frontage to attract retail clientele
* Access to necessary water, power and natural gas
* Cold storage or ability to install coolers (mainly in-floor drains are required)
* Waste disposal options for trimmings

Currently, there is one site in Missoula that offers many of these amenities. The brick building near the intersection of Reserve and Broadway would accommodate these requirements. The building was formerly used as a cut and wrap facility for Rocky Mountain Gourmet Steaks prior to their move to the new facility off of Broadway and Expressway. Before that the facility in question was a distribution center for a regional restaurant chain. The building is currently available for lease, but is 10 x larger than would be utilized by the facility described above (approximately 35,000 square feet).

# Regional Economic Impacts

The regional economic impacts of the MSU and the cut and wrap facility were estimated using IMPLAN (Impact Analysis for Planning), a commonly used economic input-output (I-O) model. I-O models are constructed based on the concept that all industries within an economy are linked together; the output of one industry becomes the input of another industry until all final goods and services are produced. I-O models can be used both to analyze the structure of a regional economy and to estimate the total economic impact of projects or policies. For this analysis, an economic model of Beaverhead, Flathead, Lake, Missoula, Ravalli, Sanders and Granite Counties was constructed using 2006 IMPLAN data.

IMPLAN I-O models provide three economic measures that describe the economy: output, income, and employment. Output is the total value of the goods and services produced by businesses in the region. Labor income is the sum of employee compensation (including all payroll and benefits), proprietor income (income for self-employed work), and other property income (payments for rents, royalties, and dividends). Employment represents the annual average number of employees, whether full or part-time, of the businesses producing output. Income and employment represent the net economic benefits that accrue to the region as a result of increased economic output.

This section presents the results of the analysis: estimated total economic impacts of the mobile processing unit and the cut and wrap facility in terms of output, jobs (full and part-time), and income supported annually within the seven-county region. The total economic impact, or economic contribution, of the mobile processor and the associated cut and wrap facility includes several components:

* **Direct** output, income, and employment generated during the operations of the mobile processor and both the construction and operations of the cut and wrap facility,
* **Indirect** output, income, and employment generated by increased economic activity in sectors that provide inputs to the mobile processor and the cut and wrap facility, such as livestock production and the plastic packaging material industry,
* **Induced** output, income, and employment generated by increased household spending (in retail, service, and other sectors) due to increased income in the directly and indirectly affected sectors.

## IMPLAN Model Input

Table X below summarizes the estimated local proportion of operational and construction expenditures by sector for the cut and wrap facility. The MSU unit will be constructed outside of the seven-county region; therefore only operational expenditures were modeled whereas the construction expenditures for the mobile unit were excluded from analysis.

More than 90 percent of operational expenditures for the MSU are for materials and raw inputs required for meat production. The major input requirement for meat processing is livestock, which accounts for roughly 80 percent of sector’s total input expenditures. All livestock processed by the mobile processor are assumed to be sourced locally.

Table 6.1 Estimated Expenditures for Mobile Processor and Cut & Wrap Facility

|  |  |  |
| --- | --- | --- |
| **IMPLAN Sector** | **Sector Description** | **Total Expenditure** |
| Mobile Meat Processor Operations | | |
| 5001 | Employee Income | $135,000 |
| 6001 | Proprietor Income | $52,000 |
| 67 | Industry spending pattern for animal slaughtering sector | $3,837,000 |
| 10005 | Income for household $35-50k | $48,000 |
| 499 | State and local government | $12,000 |
| **Total** | | **$4,084,000** |
| Cut and Wrap Operations | | |
| 5001 | Employee Income | $173,000 |
| 30 | Natural gas distribution | $6,000 |
| 31 | Natural gas distribution | $400 |
| 32 | Water, sewer and other systems | $2,000 |
| 422 | Telecommunications | $2,000 |
| 489 | Dry-cleaning and laundry services | $1,000 |
| 410 | General merchandise stores | $10,000 |
| 43 | Maintenance and repair of nonresidential buildings | $2,000 |
| 32 | Water, sewer and other systems | $1,000 |
| 499 | Other state and local government enterprises | $11,000 |
| **Total** | | **$209,000** |
| Cut and Wrap Facility Construction | | |
| 404 | Building material retail (margined) | $70,000 |
| 37 | Construction of industrial buildings | $344,000 |
| 40 | Construction of water, sewer, and pipelines | $48,000 |
| **Total** | | **$462,000** |

## Economic Impact Estimates

Economic impacts to the study area are concentrated in the direct contribution of mobile processing to manufacturing income and employment and within the indirectly-linked agriculture sectors. Approximately 60 of the 88 jobs supported by the MSU are in animal and livestock production sectors. The cut and wrap facility is anticipated to support a total of 5 jobs throughout the seven-county region. Short-term employment impacts are anticipated to occur during the construction of the cut and wrap facility in which a total of 7 jobs are anticipated to be supported throughout the region.

Table 6.2 Total Economic Impacts of Mobile Processor and Cut and Wrap Facility

|  |  |  |  |
| --- | --- | --- | --- |
| **Impact Type** | **Output** | **Income** | **Employment (Jobs)** |
| Mobile Meat Slaughter Unit Operations | | | |
| Direct | $4,072,000 | $186,000 | 8 |
| Indirect | $5,092,000 | $830,000 | 73 |
| Induced | $757,000 | $216,000 | 7 |
| **Total** | **$9,921,000** | **$1,232,000** | **88** |
| Cut and Wrap Operations | | | |
| Direct | $1,539,000 | $173,000 | 4 |
| Indirect | $46,000 | $13,000 | 0 |
| Induced | $128,000 | $36,000 | 1 |
| **Total** | **$1,713,000** | **$223,000** | **5** |
| Cut and Wrap Facility Construction | | | |
| Direct | $411,000 | $181,000 | 5 |
| Indirect | $84,000 | $27,000 | 1 |
| Induced | $148,000 | $42,000 | 1 |
| **Total** | **$643,000** | **$250,000** | **7** |

Results of the IMPLAN model suggest that the operation of the MSU would support 88 jobs and $1.2 million in labor income annually, plus $9.9 million in economic output annually across the 7 county region. A small cut and wrap facility operation would additionally support 5 jobs and $223,000 in labor income and $1.7 million in economic output annually. Finally, the one-time economic impact from construction of a local cut and wrap facility would support 7 jobs representing $250,000 in labor income; plus $643,000 in economic output total.

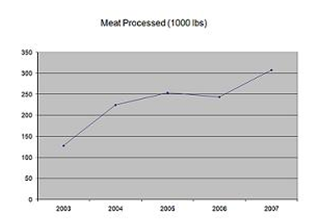
Montana Mobile Processing Company

|  |
| --- |
| APPENDIX  relevant Case Studies |
|  |

1. Relevant Case Studies
   1. Island Grown Food Coop

Bow, Washington: The Island Grown Farmers’ Cooperative (IGFC) mobile processing unit (MPU) was the first USDA-inspected mobile slaughter facility for red meat in the U.S. Further processing is done at a permanent plant in Bow, WA (also USDA-inspected). The MPU can process 9-10 head beef (or 40 sheep or 24 pigs) each day, 3-4 days a week. By 2007, the IGFC MPU had handled 308,000 lbs of meat, with a retail value of $1,044,000, for 50 producers.

**Questions:**

* Where do they take for cut and wrap?
  + The cut and wrap facility is located approximate 75 minutes away from member farms in Bow, Washington.
* Do they have their own facility?
  + The Island Grown Food Coop leases their own cut and wrap facility.
* Do they have their own label or sell the under the farm’s label?
  + IGFC has a retail outlet that operates under the name Northwest Homegrown, which is located at the meat processing plant in Bow, Washington. All of the retail meat is frozen and is sold in standard meat market size packages, including all of the common cuts of beef, pork and lamb. They also sell various sausages, bacon and other specialty products.[[9]](#footnote-10) Some co-op members have their own labels.
* Do they sell out of their trailer and if so, do they sell primal and sub-primal / retail cuts?
  + Island Grown Food Co-op can also sell wholesale or split carcasses to restaurants and grocery stores that cut and sell meat under the USDA retail meat exemption. As described in the bullet above, IGFC sells out of their facility in Bow, Washington.
* How many head are slaughtered / dressed from the mobile unit in a given year?
  + The MPU processed more than 300,000 lbs. of meat in 2007, with a retail value of $1,044,000.[[10]](#footnote-11)
  + 
* Somewhat related question: are there swings seasonally or is it steady business year-round? What species generally are harvested by season?
  + As is typical for the meat processing industry, seasonality is an issue. Business is slow February through April, so they encourage employees to take unpaid vacations during that time. It works out for everyone, because the employees can log some overtime in the busy summer months.[[11]](#footnote-12)
  + The MPU can process 9-10 head beef (or 40 sheep or 24 pigs) each day, 3-4 days a week.
* What are regulatory and permitting agencies for wastewater and offal disposal?
  + The state of Washington allows for the onsite composting of offal.
  + The MPU is USDA inspected. To understand the USDA regulations, two IGFC members took a HACCP class (required). They wrote their first plan, based on the generic Hazard Analysis and Critical Control Points (HACCP) plan and guidelines on the USDA website. They reviewed it with their HACCP class trainer and then presented it to USDA.
  + The HACCP plan and operating procedures are separate documents. Care should be taken as to what goes in which. IGFC has adjusted this over the years, with guidance from their USDA inspectors. USDA requires specific “Sanitation Standard Operating Procedures” (SSOPs), including pest control and water supply testing. For the most part, USDA requires you to have a plan and follow it.
  + Apart from USDA regulatory requirements, IGFC’s processing operations required no other permits. The cut and wrap facility in Bow already had a conditional use permit for meat cutting. (A new or expanded facility would require a building permit.)
  + The MPU required no county permits, because it isn’t a building, so the county had no jurisdiction. Rinse water and offal are composted on-farm, but the amounts are small, and the county health department hasn’t objected. The MPU may visit each farm ten times a year, using 300 gallons each time: 3,000 gallons per year is minimal for land application. As for offal, there are plenty of studies showing on-farm composting is safe (see, e.g. Washington State Department of Ecology guidelines): http://www.ecy.wa.gov/biblio/0507034.html).
  1. Puget Sound Meat Producers Coop

Tacoma, Washington: The Puget Sound Meat Producers Coop (PSMPC) is a non-profit cooperative of local ranchers, farmers, butchers, restaurant owners, and others who jointly operate a mobile, USDA-inspected slaughter unit. It initially services King, Kitsap, Lewis, Mason, Pierce, and Thurston counties. The MSU is owned by the Pierce Conservation District; PSMPC leases it. The first animals were slaughtered in the unit in October 2009.

**Questions:**

* Where do they take for cut and wrap?
  + Meat is taken to one of two producers’ cooperative approved cut and wrap facilities in Rochster, WA and in Bremerton, WA.
* Is it a combination of places?
  + No
* Do they have their own facility?
  + The cut and wrap facilities are cooperative partners, but separate entities
* Do they have their own label or sell the under the farm’s label?
  + The cooperative does not sell or market meat for livestock producers, however they help producers members locate and network with purchasers of their meat products. The producer member retains ownership of the meat during processing, unless some other arrangements have been made by the livestock producer.[[12]](#footnote-13)
  + The cooperative is comprised of livestock producers, meat fabricators and end-users that connect to distribute and market meat.
* Do they sell out of their trailer and if so, do they sell primals and sub-primal / retail cuts?
  + No
* How many head are slaughtered / dressed from the mobile unit in a given year?
  + Over 1,000 animals were slaughtered in 2012, totaling over 365,000 pounds of carcasses.[[13]](#footnote-14)
  + Production is estimated at 10-15 animals per day.
* Somewhat related question: are there swings seasonally or is it steady business year-round? What species generally are harvested by season?
  + Starting in the spring of 2012, the processing unit began travelling between two slaughter sites, using one weekly and one every other week. The frequency is projected to ramp up in late summer and fall to as many as 4 days/week.
  + “Production is increasing each year; in 2010, the first full year of operations, 516 animals (beef, sheep, pigs, and goats) were processed. In 2011, this had risen to 850.”
  + Current estimates report a total of 90 processing days in 2012.[[14]](#footnote-15)
  + The unit processes cattle, sheep, pigs and goats.[[15]](#footnote-16)
  1. Kentucky Mobile Poultry Processing Unit

Frankfort, Kentucky: This small, mobile poultry processing unit was built in Kentucky in 2001 by Heifer International with Kentucky State University (KSU), Partners for Family Farms (PFF), and the National Center for Appropriate Technology (NCAT). State-approved but inspected, the MPU is owned and maintained by KSU. Farmers use it on a rental basis to process poultry and aquaculture.[[16]](#footnote-17)

**Questions:**

* Do they have their own label or sell the under the farm’s label?
  + For full traceability, each product label has the user name, address, telephone, and the user’s facility manager number, which the user is given after passing the biannual training course. All labels are also marked “Exempt Poultry P.L. 90-492.”
* Do they sell out of their trailer and if so, do they sell primal and sub-primal / retail cuts?
  + Marketing is done by individual producers, who report that they consistently sell everything they can process. They sell to farmers markets, restaurants, and some even to grocery stores. One couple simply put an ad in their local paper and can barely keep up with demand; one of their customers regularly drives 72 miles to buy a dozen at a time.
* How many head are slaughtered / dressed from the mobile unit in a given year?
  + As of 2008, it has eleven regular users, two of which use it weekly. In 2007, users processed ~4000 birds, and coordinator Skelton expects business nearly to double in the coming year, with the Morehead docking station up and running and a third planned for Jackson County.
* Somewhat related question: are there swings seasonally or is it steady business year-round? What species generally are harvested by season?
  + It is busy almost year-round: aquaculture from January – March; poultry starts in April; in November, KSU uses it for campus farm turkeys. Some months it’s used Mon-Thurs every week.
* What are regulatory and permitting agencies for wastewater and offal disposal?
  + The MPU was immobilized shortly after being constructed in 2001: both the USDA and state agencies required changes related to waste water and it to have an enclosed room for slaughter, separate from the processing area. In 2005, a permanent, enclosed docking station was built at KSU that satisfied the regulators.
  + At the beginning, the regulatory requirements were not at all clear, even to the agencies themselves. Heifer, with help from PFF, consulted with both federal and state agencies and then built the MPU. But once it was up & running, problems arose.
  + Health Services required the waste water to be treated and not spread on farm fields. They also required an enclosed kill area that was less flimsy than the original, moveable awning. The solution that was finally approved was a docking station that met specific sanitation requirements. A farmer can use the MPU for on-farm processing if he builds an approved docking station, but it is much less expensive to travel to the existing ones.
  + As noted above, the MPU was originally meant to be used at many sites, both farms and fairgrounds. But state agency site and docking station requirements prevented that. The MPU cannot be hooked into a municipal waste water system. Instead, it must have its own septic system, but few septic contractors are willing to come to pump out waste water. (KSU contracts with a septic company to pump it out occasionally.)
  + The MPU must be used within a docking station that meets these requirements:
    - Level pad to park the unit;
    - An additional concrete pad for the slaughter area, sloped to drain;
    - Electric: 200 amp service panel that is either waterproof/covered;
    - Water: from an approved municipal source or a tested well, with a flow rate of at least 10 gallons per minute;
    - Wastewater treatment: 750-gallon grease trap and a 1500-gallon septic tank that has a float sensor with an alarm or light as a fill indicator; water must be pumped out and hauled to an approved wastewater treatment plant;
    - MPU user must bring a 100-lb. propane tank to provide heat for the scalder (propane tanks cannot travel with MPU due to risk);
    - Ability to maintain high level of sanitation and exclude insects/pests (at KSU, it is a pole barn).
  1. Coast Grown Mobile Harvest Unit

Central Coast Region, California: This mobile unit was built in 2002 by ranchers who wanted better access to an inspected slaughter facility. Regulatory complexities paired with uncertain markets kept it parked for seven years. In 2009, it finally began operations as a USDA inspected unit. This case study, written after the first few months, describes the long and often confusing path to getting it up and running, and the plan for its future success.

**Questions:**

Where do they take for cut and wrap?

* + J&R Natural Meat & Sausage leases the processing unit and also does the cut and wrap in their facilities located in Paso Robles, CA.[[17]](#footnote-18)
* Is it a combination of places?
  + No.
* Do they have their own facility?
  + The cooperative owns the processing unit, but the lessee owns the cut and wrap facility where meat is packaged.
* Do they have their own label or sell the under the farm’s label?
  + Meat is sold under farm’s labels.
* Do they sell out of their trailer and if so, do they sell primal and sub-primal / retail cuts?
  + No retail sales are done out of the trailer.
  + They sell meat categorized by farm and quality of meat.
* How many head are slaughtered / dressed from the mobile unit in a given year?
  + Capacity per days is 5-6 cattle, equivalent to 10 lambs/goats/hogs.
* Somewhat related question: are there swings seasonally or is it steady business year-round? What species generally are harvested by season?
  + The processing unit operates 2-3 days a week year-round, on demand.
  + Currently processes beef, but will begin processing pigs and sheep soon.[[18]](#footnote-19)
* What are regulatory and permitting agencies for wastewater and offal disposal?
  + In 2002, just after the MPU was built, regulatory requirements stalled them from beginning to operate. They had not aligned with a USDA processing facility at that time and the closest one did not have a good reputation. Regulations were frustrating to navigate through and by 2005, the MPU parked and stalled.
  + In 2007, the Central Coast Ag Network expressed interest in reviving the project. The regulations were difficult to navigate through, as California does not have a state inspection program ‘per se’. The USDA’s Alameda District provided the correct information (previous information and applications were stated incorrect by the District). The FSIS, Small/Very Small Plant Guide: Applying for a Federal Grant of Inspection for Meat and Poultry Establishments proved to be helpful in navigating through the requirements and regulations.
  + Requirements:
    - Animals must be slaughtered on cement pads (must be covered) on the farm. County requirements include a written set of guidelines by the Natural Resource Conservation Service for disposing of rinse water and approval from the California Regional Water Quality Control Board.
    - Offal is not allowed to compost on farm in California and must be taken to a rendering plant. The cooperative transports offal to the cut and wrap in 44 gallon Rubbermaid tubs, which are then picked up by the local rendering company. The fee is $6 per animal.
    - Ante-mortem inspection pen with shade for waiting animals.
    - Suspect pen.
    - “Slip proof alley way leading to a welded metal stun box where the animal is held still during slaughter, and a door off that box for the animal to fall out afterward, onto the slab.”
  1. Taos County (NM) Economic Development Corporation Mobile Matanza

TCEDC, founded in 1987, is a non-profit, community economic development organization, “supporting people, land, cultures, and food of Northern New Mexico.” More than 40 local food businesses work out their “Taos Food Center,” a 5,000 sf commercial kitchen, which now serves as the cut and wrap facility for the TCEDC MSU, called the “Mobile Matanza.” The Matanza, completed in 2006, received its grant of federal inspection in May of 2008, and the Food Center came under inspection soon after.[[19]](#footnote-20)

**Questions:**

* Where do they take for cut and wrap?
  + The “Taos Food Center,” a 5,000 sf commercial kitchen, serves as the cut and wrap facility for the TCEDC MSU
* Do they have their own facility?
  + The cut and wrap facility is owned by TCEDC.
* Do they have their own label or sell the under the farm’s label?
  + Farmers and ranchers retain ownership throughout the process of production, processing and marketing.[[20]](#footnote-21)
* Somewhat related question: are there swings seasonally or is it steady business year-round? What species generally are harvested by season?
  + The unit processes bison, beef, hogs, goats, and sheep.[[21]](#footnote-22)
* What are regulatory and permitting agencies for wastewater and offal disposal?
  + NMED allows TCEDC to let the waste water used during carcass cleaning and preparation run off onto the soil at the ranch site. The run-off includes the 2.5% acid solution (a mixture of white vinegar and potable water) used to wash the carcasses to control pathogens. The total amount of water used each slaughter day is small, only a few hundred gallons.
  + TCEDC worked with NMED and FSIS to establish that offal is recognized as the responsibility of the rancher, and that the rancher may compost it on his own land. The offal is placed into bins as it is removed from the animals, and the ranchers compost it accordingly. They are permitted to take bones to the landfill. TCEDC offers an organic butcher waste composting workshop for 11 ranchers to teach them proper composting methods and assure they do not violate NMED regulations.
  1. [Renewable Harvest and Ranch Foods Direct](http://www.extension.org/pages/66222/renewable-harvest-mobile-meat-processing-unit)

Over the last decade, while demand for local meats appeared to be increasing, small farmers and ranchers in Nebraska were having difficulty finding small meat processors. The Nebraska Environmental Action Coalition (NEAC), a local affiliate of the Socially Responsible Agriculture Project (SRAP), wanted to help. In 2009, after consulting with farmers, local retailers, and others, NEAC decided to build a USDA-inspected MSU; SRAP dedicated $200,000. Once it was built, they planned to find someone to lease and use it commercially.[[22]](#footnote-23)

Shortly after construction began, Krebsbach met and partnered with Mike Callicrate, of Ranch Foods Direct, who was looking for other slaughter options. Renewable Harvest would own the unit, and Ranch Foods Direct would use it, paying the operational costs. If the MSU worked well, Callicrate would eventually build his own, and Krebsbach would make the MSU available as a teaching tool and business incubator for other producers.

Ranch Foods Direct is a USDA-inspected cut and wrap processor in Colorado Springs. The MSU began inspected operations in 2011.[[23]](#footnote-24) The mobile unit has been stationed at the Calicrate Cattle Co in St. Francis, Kansas.

**Questions:**

* Where do they take for cut and wrap?
  + Ranch Foods Direct in Colorado Springs, Colorado.
* Is it a combination of places?
  + No
* Do they have their own facility?
  + Ranch Foods Direct has an existing joint-venture with G&C Packing Co. and will continue to use G&C for custom processing once Ranch Food Direct gets their own mobile unit up and running.[[24]](#footnote-25)
* Do they have their own label or sell the under the farm’s label?
  + Ranch Food Direct has own label.[[25]](#footnote-26)
* Do they sell out of their trailer and if so, do they sell primal and sub-primal / retail cuts?
  + No. Ranch Food Direct’s retail meat shop is located at 2901 N. Fillmore in Colorado Springs. They are working on opening another retail location this fall and also have plans for a restaurant, market and deli.[[26]](#footnote-27)
  + They also sell meat wholesale. They distribute products to over 45 restaurants and meat markets in the local area. They also have wholesale customers as far west as Durango, as far north as Casper, Wyoming, and as far east as Tulsa, Oklahoma.[[27]](#footnote-28)
* How many head are slaughtered / dressed from the mobile unit in a given year?
  + At full capacity, it can process 15 to 20 cattle a day, which are then delivered to Ranch Foods Direct in Colorado Springs for butchering and wrapping.[[28]](#footnote-29)
* What are regulatory and permitting agencies for wastewater and offal disposal?
  + All water used on the MSU is pre-treated with ozone, as a food safety and sanitation measure.[[29]](#footnote-30) Offal is composted on site, and Callicrate and Krebsbach worked with the Kansas Department of Health and Environment to classify rinse water from an MSU as agricultural waste, not industrial waste as for most slaughter plants, allowing for on-site disposal. The MSU includes a reverse osmosis water purification system because the state of Nebraska would not allow on-site discharge of rinse water, and NEAC wanted to be able to use any water source, potable or not. However, it has not worked effectively, because it is too small to clean sufficiently even the relatively small amount of water used daily. This is currently not a concern, because the MSU is operating not in Nebraska but Kansas, which has decided to allow on-site discharge.

## [Modular Harvest System](http://www.extension.org/pages/66275/modular-harvest-system-ny)

The Modular Harvest System, a four-part mobile slaughter unit, was built by the non-profit Glynwood Center to expand access to inspected slaughter in New York's Hudson Valley. Initial inspected operations in 2010 taught the first operators enough about the business to build their own on-farm inspected slaughter and processing plant. Based on this experience, the MHS is now transitioning to a business incubator model, to help other farmers learn the processing business. USDA inspected.

**Questions:**

* Where do they take for cut and wrap?
  + Facilities or directly to farmers
* Is it a combination of places?
  + Yes
* Do they have their own facility?
  + No
* Do they sell out of their trailer and if so, do they sell primals and sub-primal / retail cuts?
  + They do not sell out of the trailer.
* How many head are slaughtered / dressed from the mobile unit in a given year?
  + Approximately 10-12 cattle, 24 hogs, 30-40 sheep or goats are slaughtered per day.[[30]](#footnote-31)
* Somewhat related question: are there swings seasonally or is it steady business year-round? What species generally are harvested by season?
  + Beef, hogs, sheep, and goats.
* What are regulatory and permitting agencies for wastewater and offal disposal?
  + The MHS is one of only five mobile units for large animals licensed by the USDA and the first one for large animals licensed by the USDA east of New Mexico.  It is the first mobile processing unit to be designed to have the capacity for in-unit slaughter of large animals, enabling the entire process to be conducted indoors.[[31]](#footnote-32)
  + The first approved docking site for the MHS was in Delaware County at the Eklund Farm in Stamford, NY.   LILA is working with agricultural stakeholders in communities throughout the Hudson Valley, Massachusetts and Connecticut to identify next locations with the goal of having additional sites prepared for MHS replication. LILA intends to implement two to three docking sites throughout the region within two years.
  + The MHS is certified for kosher processing and pursuing organic and Halal processing certifcation.
  + Offal from each animal is segregated into a trolley that moves hydraulically from the slaughter trailer into the inedible trailer, where it can be separated into manure and offal and dropped down into receptacle bins under the trailer.[[32]](#footnote-33)
    - Offal can be composted in some areas under local authority; the differing regulation is whether it can be composed from multiple farms together. In areas where composting on farms is not allowed, offal is taken to renderers.
  + Specific Requirements:
    - A one acre paved or blacktopped level surface in an area zoned for agricultural or light industrial use with a secure perimeter.
    - Animal overnight housing for at least 20 cow-equivalents meeting welfare standards
    - Appropriate passage between livestock housing and the slaughter trailer
    - Exterior lighting of the trailer area
    - A plan for disposal of three separate waste streams; offal, wash water and manure
    - Electrical connectivity (220 V) and a potable water supply ≥ 20 g.p.m.
    - Connection to a sewage plant or in-ground tanks for temporary waste storage
    - On-site or nearby composting opportunity
    - Availability of a front-end loader or fork lift
    - A built structure, insulated and heated, for storage of materials and possibly for
    - Mechanical connections
    - Additional locked storage for holding hides and/or rendering products

## Community Agricultural Development Center (WA)

Located in Colville, Washington, Community Agriculture Development Center has contracted with S & K Processing of Chewelah to operate the livestock slaughter unit. USDA inspected.

**Questions:**

* Where do they take for cut and wrap?
  + Smokey Ridge in Chewelah, WA.
  + Livestock unit is also located at Smokey Ridge (transport 1-100 mi).
* Is it a combination of places?
  + No
* Do they have their own facility?
  + No
* Do they have their own label or sell the under the farm’s label?
  + All products sold under farm label.
* Do they sell out of their trailer and if so, do they sell primal and sub-primal / retail cuts?
  + Farm receives packaged meat. Then sold directly to consumers, farmers market, retail outlets.[[33]](#footnote-34)
* How many head are slaughtered / dressed from the mobile unit in a given year?
  + 6-7 beef, 20-25 sheep or hogs.
  + 1,000 animals per year.
* Somewhat related question: are there swings seasonally or is it steady business year-round? What species generally are harvested by season?
  + Cattle, sheep, hogs, goats, poultry.
  + Poultry unit operates April-Dec.
  + Livestock unit operates year-round, winter business is slower.
* What are regulatory and permitting agencies for wastewater and offal disposal?
  + Poultry is WSDA inspected.
  + Livestock is USDA inspected.
  + Offal is disposed at rendering facility.
  + Livestock wastewater goes into complex septic system.
  + Poultry wastewater is drained in pasture.

## Broken Arrow Ranch (TX)

Broken Arrow Ranch, located in Ingram, Texas, specializes in free-range wild game venison, antelope, and wild boar meat. Their services focus on population control for ranchers by selectively thinning out overpopulated species by field harvest. The MPU buys the meat from ranchers.

**Questions:**

* Where do they take for cut and wrap?
  + Facility is located at Broken Arrow Ranch[[34]](#footnote-35)
* Is it a combination of places?
  + No
* Do they have their own facility?
  + Yes, it is located at Broken Arrow Ranch
* Do they have their own label or sell the under the farm’s label?
  + Own label.
* Do they sell out of their trailer and if so, do they sell primal and sub-primal / retail cuts?
  + Products sold online
* How many head are slaughtered / dressed from the mobile unit in a given year?
  + 40 venison, elk or antelope, 50 wild boar.
* Somewhat related question: are there swings seasonally or is it steady business year-round? What species generally are harvested by season?
  + Deer, elk, antelope, and wild boar[[35]](#footnote-36)
* What are regulatory and permitting agencies for wastewater and offal disposal?
  + State-inspected for deer, elk and antelope, USDA-inspected for wild boar.[[36]](#footnote-37)
  + Suitable water source (hose bib hookup) must be on farm for equipment at the location where the harvesting trailer will be parked.[[37]](#footnote-38)
  + Dumping site located on farm for carcass inedible, head, feet, and viscera.

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