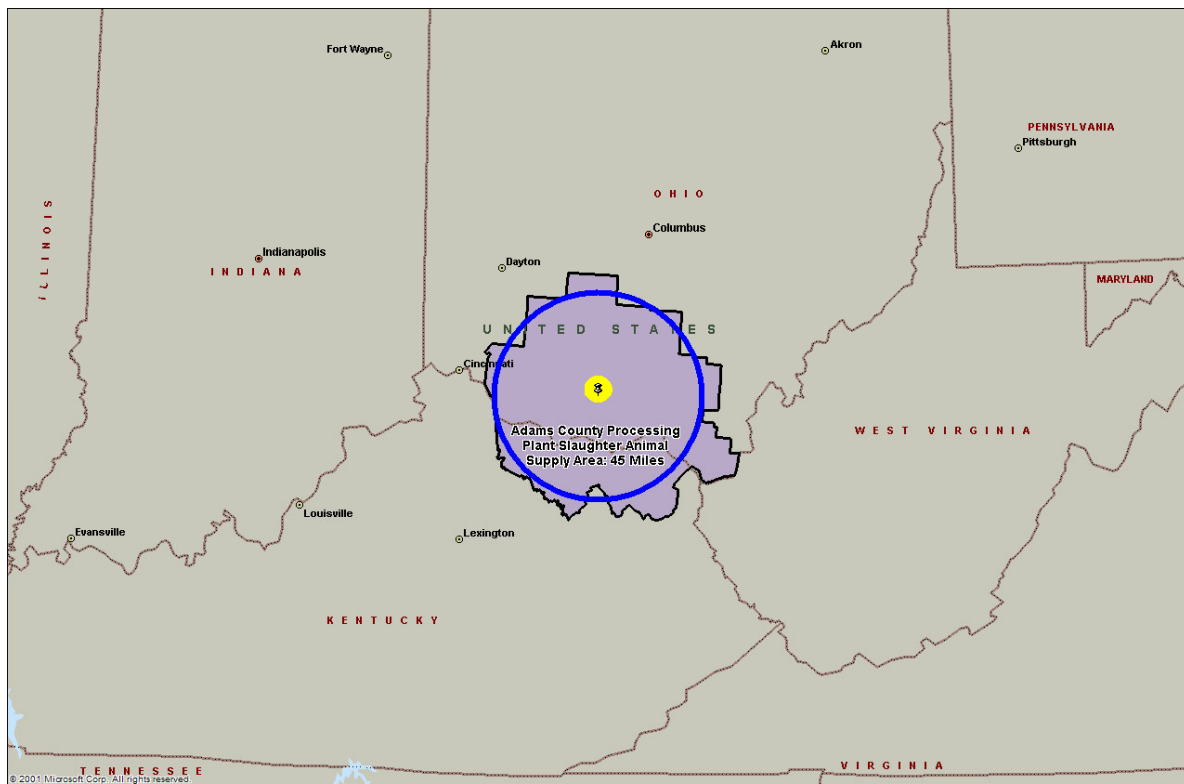


# Economic Feasibility Study of a Small Multi-Species Processing Plant in Adams County, Ohio

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# Economic Feasibility Study of a Small Multi-Species Processing Plant in Adams County, Ohio

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## Abstract

At the request of producers, the economic feasibility of a small multi-species slaughter and meat fabricating plant in Adams County, Ohio is assessed. The founders of this project are livestock producers in and around Adams County. Currently, they feel they lack convenient access to custom slaughter and processing. The economic feasibility of the proposed processing facility in Adams County contains specifications in terms of plant, equipment, and throughput. The plant could process beef, hogs, sheep, and goats. This facility is then assessed in terms of economic sustainability. Such a facility could provide livestock producers in this general geographic area access to custom fabrication and potential access to value added sales of meat products. A facility that could slaughter and process 6,000 head of cattle, 500 head of hogs, 350 head of sheep, and 100 head of goats per year represents an initial investment of \$3.3 million to \$3.7 million. Results are that the proposed facility is economically sustainable, even on a 100% custom slaughter and fabrication basis. However, if the facility slaughters and processes beef cattle to quarters only, the economic feasibility is sensitive to the fee charged per head for this custom service. To be sustainable the analysis indicates that a fee of \$125 per beef animal slaughtered and quartered must be generated. These results are also contingent upon 175 livestock producers in the general geographic area of Adams County, Ohio providing equity capital and an initial one-time contribution for shackle space in the facility. Of three scenarios analyzed, Scenario B is recommended because the facility is a custom slaughter facility; the plant would never take ownership of the animals. Additionally, greater revenue is earned by processing into smaller cuts of meat, such as primals or sub-primals. Even when the custom charge per species is lowered and the variable costs are increased this scenario is still profitable, unlike the other scenarios.

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## **Economic Feasibility Study of a Small Multi-Species Processing Plant in Adams County, Ohio**

### **Introduction**

A feasibility study is an investigation which determines whether a new business start-up project is economically viable and provides an assessment of the probability that the project may achieve the founders' expected results. In essence, the feasibility study is a careful and thorough process of documenting a new business proposal, mostly from the technical and operational aspects. Such a study usually provides a detailed evaluation of a project's technical design, the costs of that design relative to throughput, and the potential for earning a profit from the operation. Feasibility studies typically are completed prior to the completion of a business plan for the project.

The purpose of this manuscript is to present an assessment of the economic feasibility of a small multi-species slaughter and meat fabricating plant in Adams County, Ohio. The founders of this project are livestock producers in and around Adams County that currently do not have convenient access to custom slaughter and processing. The proposed processing facility in Adams County is modeled in this research and assessed in terms of economic sustainability. Such a facility could provide livestock producers in this general geographic area access to custom fabrication and potential access to value added sales of meat products.

### **Profile of the Proposed Facility**

The specifics of the proposed new slaughter and fabrication facility are a small plant located in Adams County, in or near Peebles, Ohio. The processing facility would be built as new construction. Additional specifics about the proposal involve the projected type and volume of throughput of the plant, the project's meat inspection status, and the supply area that the plant may draw upon for business.

The size of the plant is small by today's standards. In terms of proposed throughput, the processing plant would be built to accommodate, on average, the slaughter and fabrication/further processing of about 120 fed cattle per week and about 10 market hogs per week. This represents the equivalent annual capacities of 6,000 fed cattle and 500 market hogs. Other species, specifically goats (100 per year) and sheep (350 per year) also are included in the throughput projected for the slaughter and fabrication facility.

On any given day or week only one species might be processed, but the mean average daily slaughter and throughput for the plant was assumed to average this daily throughput. The capacity for the facility is based on an 8 hour day for 5 days per week during a 50 week year. Downtime for maintenance and cleaning is an additional cost included in the hours of operation for the plant workers.

The new facility is assumed to be federally-inspected rather than state-inspected. Even though by law state inspection must be equivalent to federal inspection, state inspection restricts the transport of product from the facility to within Ohio (see Sporleder, Belleville,

and Jackson). However, even with state-inspected facilities the slaughter animals may be supplied from outside the state.

A realistic supply area was configured for the Adams County facility. To investigate the potential supplies of slaughter cattle and market hogs, the area of supply for this facility is the counties within a 45-mile of the processing facility's location, defined by the map of Figure 1. This supply area is circled on the map. This 45-mile geographic area includes all or at least a portion of the following counties: Adams, Brown, Clermont, Clinton, Fayette, Highland, Jackson, Lawrence, Pike, Ross, and Scioto in Ohio; and Bracken, Carter, Fleming, Greenup, Lewis, Mason, and Robertson in Kentucky (see Figure 1).

The Census of Agriculture for 2002 indicates that the annual number cattle, 500 pounds or over, sold from this 18-county area was 90,960 while the number of hogs sold from this same geographic area was 98,039. The number processed in terms of assumed throughput for this Adams County facility represents roughly 8% of 500 pound and over cattle sales and less than 1% of the hog sales.

According to the Census of Agriculture for 2002, the annual number of sheep and lambs sold from the 18-county area was 6,361 and the number of goats sold in this 18-county area was 1,779. The number processed in terms of assumed throughput for the Adams County facility represents roughly 5% of sheep sales and about 6% of goat sales.

To estimate costs, revenues, and economic viability various scenarios were used as the basis for calculations. Some of the scenarios rely on revenue from custom slaughter and meat fabrication exclusively. For these totally- or partially-custom scenarios, the throughput of the processing plant is 'custom' slaughter and/or fabrication of meat animals when the processing facility does not take title to the animals that are being processed on a 'custom' basis.

## **Business Structure**

The legal business structure of a start-up is always an important consideration. How the processing facility is operated initially and over time may have a major influence on its sustainability. The advantages and disadvantages of alternative business structures depends mostly upon factors such as the extent of value added processing done at the facility, the number of producers and the volume that each producer commits' annually, the amount of capital each producer is willing to commit to the project, and the nature and number of markets served by the facility. The major alternative legal structures for this type of facility include, but are not limited to, the following: 1) C corporation, 2) limited liability corporation (LLC), and 3) cooperative. A primary distinguishing feature between the C corporation and a limited liability corporation is taxation.

The normal business structure would be to start a for-profit investor-owned firm incorporated in the state of Ohio. This is called a C corporation and has the advantage of low cost of start-up and the C corporation can easily accommodate entry and exit of ownership from the facility by producers or others that may be interested in ownership. In forming a C corporation, prospective shareholders exchange money, property, or

both, for the corporation's capital stock. A corporation generally takes the same deductions as a sole proprietorship to figure its taxable income. A corporation can also take special deductions. A relative disadvantage of this type business structure is that the profit of a corporation is taxed to the corporation when earned, and then is taxed to the shareholders when distributed as dividends. However, shareholders cannot deduct any loss of the corporation.

Limited liability companies, or LLCs, are becoming more popular. They combine the personal liability protection of a corporation with the tax benefits and simplicity of a partnership. In other words, the owners (or 'members') of a LLC are not personally liable for its debts and liabilities, but also have the benefit of being taxed only once on their profits. Moreover, LLCs are more flexible and require less ongoing paperwork compared to a corporation. Ohio has 'friendly' laws relative to the start-up of this type business structure.

Another business structure is an agricultural marketing cooperative. Formation of a cooperative can easily accommodate special objectives that the founder group may have for initiating a project such as the packing facility. For example, there may be an objective of the 'commitment' of some minimal annual volume to the facility. This could be thought of as 'reserving shackle space' and could also carry with it some capital contribution by the producer to the project. Pooling of sales from a facility also can be accommodated through the structure of an agricultural marketing cooperative. This business structure is specialized in nature and expert assistance to the founder group could be available from the Ohio Cooperative Development Center (<http://ocdc.osu.edu/>) if they are interested in pursuing this type of business structure.

### **Technical Feasibility**

This economic feasibility study is designed to provide objective information to assist livestock producers in making decisions regarding the processing plant in the location specified with the characteristics as profiled above. One important consideration in the decision-making for the total project is whether the proposed processing facility is feasible from a technical standpoint. Information to assist with this part of the decision is provided in Appendix A and Appendix B of this document. These appendices are based on information from the Ohio Department of Agriculture (Ohio Department of Agriculture).

Guidelines for the equipment and space necessary in the slaughter area of the facility by species are provided in Appendix A. Equipment and space necessary in the fabrication or processing area of the facility is provided in Appendix B. This information should be useful to the founders of the project in judging the technical merit of it.

## Economic Feasibility

The economic feasibility requires estimates of the revenues and costs associated with building and operating the facility. Many variables influence the final estimate of economic sustainability. The most important variables that influence the economics so that the sensitivity of the final estimates to certain assumptions is definitive are listed here.

- Will the proposed processing facility be feasible from an operational standpoint?
  - Input sourcing and procurement
  - Operations and production
  - Warehousing, storage, and delivery
  - Sales and marketing
  - Non-market factors
- Revenue estimates (average per head basis for three years for three distinct scenarios, given in items below)
  - *Scenario A:* Revenues from the throughput of the processing facility consisting of all custom slaughter and processing of the following type annually: 5,000 cattle processed into quarters only (no further fabrication); 1,000 cattle processed into freezer beef, 500 market hogs processed for home consumption; and 350 lambs and 100 goats processed for home consumption.
  - *Scenario B:* Revenues from the throughput of the processing facility consisting of all custom slaughter and processing of the following type annually: 6,000 cattle processed into freezer beef, 500 market hogs processed for home consumption; and 350 lambs and 100 goats processed for home consumption.
  - *Scenario C:* Revenues from the throughput of the processing facility consisting of 350 lambs and 100 goats custom slaughter and processing for home consumption but no custom slaughter of cattle or hogs. This scenario is based on 6,000 cattle fabricated into vacuum-packaged boxed beef sub-primals and 500 market hogs fabricated into vacuum-packaged boxed pork sub-primals. For all sub-primal boxed meat, sales are at current market price, based on U. S. Department of Agriculture quotes.

- Cost estimates (average per head basis for three years for three distinct scenarios, given above)
  - The fixed costs of operation: investment in land, plant and equipment for the assumed capacity
  - Major items that influence the variable cost and profitability are estimated for each of the three scenarios provided in item II above.

### **Annual Profitability Projections for the Initial Three Years of Operation**

Two computer models serve as the basis for this research. One model was developed for the National Pork Producers Council for hog slaughter and processing while the other was developed by North Dakota State University for cattle slaughter and processing (Eide, Meyer). The financial estimates for the facility operation are based on the technical coefficients from these two models combined and customized for Adams County, Ohio. The amounts of input for certain tasks on the processing line were adjusted for this facility based on information provided by Dr. Zerby of the Animal Science Department at The Ohio State University. Three scenarios are analyzed for estimating the economic feasibility of the plant.

Operating a small multi-species plant means that much of the same equipment can be used regardless of species. Some factors need to be taken into consideration, however, when designing the facility. For example, it was assumed that, on average, 1200 pound steers would be slaughtered. However, to allow for accommodation of larger cattle such as bulls, the rails installed should be capable of handling the additional weight and also set high enough from the floor to accommodate larger animals. Appendix C includes a list of equipment that was identified for use in the slaughter and fabrication/processing procedures in the plant.

For all three scenarios certain assumptions are made and not varied.

- First, it is assumed that 175 producers, which represent less than 5% of all cattle producers in the 18-county geographic supply area around the plant, would become a founder group and provide initial equity capital necessary to start the project.
- The project's debt to equity ratio is calculated at 60% debt to 40% equity because this is typical for start-up businesses.
- The land for the physical facility would be leased and not purchased. Therefore, the company is responsible for the property tax on the building but not on the land.
- The building is 7,180 square feet and estimated to cost approximately \$1.4 million.
- Property tax for the building is calculated using the Peeble's tax rate of \$58.68 per \$1,000 and based on half of the book value of the building. It may be possible for this business to get tax abatement, thereby reducing or eliminating the property tax for this facility. If so, the yearly expenses could decrease by \$40,812.

### **Scenario A**

The first scenario is based on custom slaughter and processing. This scenario is based on weekly slaughter and fabrication of 20 cattle custom slaughtered and processed and 100 cattle slaughtered and quartered only. In addition 10 hogs, 7 sheep, and 2 goats are custom slaughtered and processed. The other input assumptions for this scenario are shown in Table 1.



Multi Species Processing Facility - Scenario A  
 Adams County, Ohio  
 General Assumptions applied to all years

**Raw Materials**

Hogs custom processed per week	10
Cattle custom processed per week	20
Cattle custom processed per week to quarters	100
Lambs custom processed per week	7
Goats custom processed per week	2
Average hog weight	270
Average steer weight	1200
Average goat weight	70
Average lamb weight	135

**Revenue**

	assumed charge per head
Hogs Custom Charge	200.00
Cattle Custom Charge	425
Cattle Quartering only Charge	125
Goat Custom Charge	115
Lamb Custom Charge	115

**Variable Costs per head**

Hogs variable cost (no utilities or mkting)	4.19
Cattle variable cost (supplies, grading, plant)	26
Goat and Sheep variable cost	4.19
Marketing as % of sales	1%

**Rendering Costs**

Pick Ups per week	2
Cost per pick up	75

**Fixed Costs per head (not including administrative labor, workers com**

Hogs overhead	0.20
Cattle overhead	4.5
Goat and Sheep overhead	0.20
Land Rent per month	500

**Financing Information**

% Equity	40%
% Financed	60%
Interest Rate	8%
Length of note (in years)	15
Assumed ST interest rate	9.50%

**Labor Information**

Position	Salary
Plant Manager	60,000
Clerical	25,000
Hourly Labor Rate	10
Benefits	25%
Contract Services (accounting, legal)	20,000

**Insurance Information**

Product Liability insurance per year	7,200
Worker's compensation	12.0637%

**Property Taxes**

Peebles tax rate	58.68
Assessed Value (1/2 book)	695,500

**Depreciation Information**

Method	Straight line
Salvage Value	0
Buildings Life (in years)	30
Equipment Life (in years)	10

**Start Up Costs**

Consultant/Engineer/Architect Fees	50,000
Soil Scientists/Soil Testing	4,000
EPA Permits	15,450
Environmental Attorney	50,000
Cost of Business Incorporation	1,000

**Other Assumptions**

50 weeks per year

Table 1: Assumptions for Scenario A - All Throughput Custom:  
 Pork, Beef, Beef Quarters, Goats, and Lambs

One of the major costs for any slaughter facility is the input cost for the animals. However, because this facility is modeled to be a custom facility it would not take title to the animals. Thus, no input cost per animal would be incurred. If the facility would like to sell meat or other products from a retail front, then additional cost would be incurred to procure animals to use for this purpose, or special arrangements could be made with individual producers to sell their meat from a joint sales area.

Since this facility performs custom processing only, revenue may vary widely from year-to-year. A primary result of the economic feasibility for this facility is that break-even in years two and three requires an average of \$200 per custom hog, \$425 per custom beef animal, \$116 per quartered beef animal, and \$105 per goat and lamb. Typically, there is a charge for the slaughter and a per pound charge for processing and packaging. On average a processing facility would generate \$360 to \$425 of revenue for the slaughter and processing of a beef animal. Scenario A is based on \$425 of revenue per beef animal custom slaughtered. The revenue for custom slaughtered hogs is based on \$200 per head and \$115 of revenue per goat and lamb custom slaughtered. The most throughput comes from the 120 cattle to be quartered each week and so generates the most revenue per week.

Calculating the amount to charge for the slaughtering and quartering only service influences plant profitability in a major way. At least \$75 per head should be charged to cover the cost of the direct labor, utilities, and grading costs. However, at this rate, break even would not be achieved. The break even charge of \$116 is 50% greater than a quartering only charge at other facilities. This scenario is based on a charge of \$125 per head for the beef animal to be slaughtered and quartered, which is important if the plant is to achieve profitability.

The profit and loss statement for the custom slaughter scenario at the prices outlined above is shown in Table 2.

	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>
<b>ProForma Profit and Loss</b>			
<b>Total revenues</b>	\$ 1,201,750	\$ 1,201,750	\$ 1,201,750
Custom Pork Process fees	\$ 100,000	\$ 100,000	\$ 100,000
Custom Beef Processing fees	\$ 425,000	\$ 425,000	\$ 425,000
Beef Quartering fees	\$ 625,000	\$ 625,000	\$ 625,000
Custom Goat Process fees	\$ 11,500	\$ 11,500	\$ 11,500
Custom Lamb Process fees	\$ 40,250	\$ 40,250	\$ 40,250
Other credits / revenues	\$ -	\$ -	\$ -
<b>Cost of Goods Sold</b>			
Direct labor	\$ 312,000	\$ 312,000	\$ 312,000
Pork Packaging	\$ 2,774	\$ 2,774	\$ 2,774
Beef Packaging	\$ 20,000	\$ 20,000	\$ 20,000
Goat/Sheep Packaging	\$ 1,248	\$ 1,248	\$ 1,248
<b>Total COGS</b>	\$ 336,022	\$ 336,022	\$ 336,022
<b>Gross Margin</b>	\$ 865,728	\$ 865,728	\$ 865,728
Gross Profit Margin %	72.04%	72.04%	72.04%
<b>Variable Operating costs</b>			
Pork Variable Costs	\$ 2,094	\$ 2,094	\$ 2,094
Beef Variable Costs	\$ 156,000	\$ 156,000	\$ 156,000
Goat/Sheep Variable Costs	\$ 1,886	\$ 1,886	\$ 1,886
Pork Marketing	\$ 1,000	\$ 1,000	\$ 1,000
Beef Marketing	\$ 4,250	\$ 4,250	\$ 4,250
Goat Marketing	\$ 115	\$ 115	\$ 115
Sheep Marketing	\$ 403	\$ 403	\$ 403
Utilities	\$ 98,448	\$ 98,448	\$ 98,448
<b>Total variable operating costs</b>	\$ 264,195	\$ 264,195	\$ 264,195
<b>Fixed Operating costs</b>			
Management/Admin. Labor	\$ 126,250	\$ 126,250	\$ 126,250
Land Rent	\$ 6,000	\$ 6,000	\$ 6,000
Depreciation	\$ 143,639	\$ 143,639	\$ 143,639
Insurance	\$ 47,565	\$ 47,565	\$ 47,565
Pork Overhead	\$ 100	\$ 100	\$ 100
Beef Overhead	\$ 27,000	\$ 27,000	\$ 27,000
Goat/Lamb Overhead	\$ 90	\$ 90	\$ 90
Property Taxes	\$ 40,812	\$ 40,812	\$ 40,812
Start Up Costs	\$ 120,450		
<b>Total fixed costs</b>	\$ 511,906	\$ 391,456	\$ 391,456
<b>Total Operating Costs</b>	\$ 776,101	\$ 655,651	\$ 655,651
<b>Operating Income</b>	\$ 89,627	\$ 210,077	\$ 210,077
<b>Other Expenses</b>			
Short term Interest Expense	\$ 7,221	\$ 7,176	\$ 7,127
Long term Interest Expense	\$ 156,274	\$ 150,518	\$ 144,302
<b>Total Other Expenses</b>	\$ 163,495	\$ 157,694	\$ 151,429
<b>Earnings Before Taxes</b>	\$ (73,868)	\$ 52,383	\$ 58,648
Taxes (34% fed. & 6% state)	\$ -	\$ 20,953	\$ 23,459
<b>Net Income</b>	\$ (73,868)	\$ 31,430	\$ 35,189

Table 2: Profit and Loss Statement for the Custom Slaughter Scenario A

The loss in year one largely is due to one-time start-up costs, such as architect fees and EPA permits, incurred in the first year. It is possible for the plant to offset or completely cover this loss by perhaps charging a one time shackle space fee per person for the opportunity to have his/her animals slaughtered at the facility. In order to cover the \$73,868 loss, the shackle space fee is approximately \$425, based on 175 livestock producers in the Adams County area participating.

The total cost of constructing this facility is approximately \$3.3 million. Of this amount, about \$1.4 million is for the construction of the building. The next largest cost is for the equipment, including the coolers and freezers, needed to operate this facility. This equipment expense is roughly \$973,000. Costs for site work and a septic system are also included. These costs combined were approximately \$772,000. It is assumed that the producers would generate 40% equity for this project which equates to slightly over \$1.3 million. Forty percent equity was used because that is the prevalent rate in the market. Based on 175 producers participating in this project, each producer would contribute \$7,442 in equity. If a more advantageous debt/equity split could be attained such as 80/20, the individual contribution would decrease. However, net income would decrease as well due to the increased interest payment.

Direct labor for the slaughter and processing of the animals is the largest variable expense per year for the plant. For this size processing plant 12 employees would be needed on the floor, exclusive of management and office personnel. The prevailing wage in Adams County for this type of work is \$10.00 per hour. This rate was used in the model and a fringe benefit rate of 25% was also used, exclusive of workers compensation expense. Increasing the hourly wage by \$1.00 decreases the net income on average by \$25,270. Therefore, if it is necessary to pay a greater hourly wage to attract and maintain employees the plant profitability decreases.

The cost of utilities is a large portion of the total variable costs for the processing plant. Slaughtering and processing beef animals requires the most electricity, water, propane, and dry ice as compared to hogs, lambs, and goats. The vast majority of utilities are consumed during the slaughtering process. Beef animals require 530 gallons of water per head, 50 KWH of electricity per head, 1.978 gallons of propane per head, and 28.7 pounds of dry ice per head. Hogs require 19.34 gallons of water per head, 27.5 KWH of electricity per head, and 1.15 gallons of propane per head. Goats and lambs require 9.67 gallons of water per head, 27.5 KWH of electricity, and 1.15 gallons of propane per head. The prevailing rates in Adams County were used when calculating the utilities costs.

### **Scenario B**

The second scenario is similar to the first because it is based on a custom slaughter and processing facility. However for this scenario, weekly volumes are 120 cattle, 10 hogs, 7 sheep and 2 goats custom slaughtered and processed. No beef animals are slaughtered and processed to quarters only. The other input assumptions for this scenario are shown in Table 3.

Multi Species Processing Facility - Scenario B  
 Adams County, Ohio  
 General Assumptions applied to all years

**Raw Materials**

Hogs custom processed per week	10
Cattle custom processed per week	120
Lambs custom processed per week	7
Goats custom processed per week	2
Average hog weight	270
Average steer weight	1200
Average goat weight	70
Average lamb weight	135

**Revenue**

	assumed charge per head
Hogs Custom Charge	170
Cattle Custom Charge	400
Goat Custom Charge	70
Lamb Custom Charge	70

**Variable Costs per head**

Hogs variable cost (no utilities or mkting)	4.19
Cattle variable cost (supplies, grading, plant)	26
Goat and Sheep variable cost	4.19
Marketing as % of sales	1%

**Rendering Costs**

Pick Ups per week	2
Cost per pick up	75

**Fixed Costs per head (not including administrative labor, workers cor**

Hogs overhead	0.20
Cattle overhead	4.5
Goat and Sheep overhead	0.20
Land Rent per month	500

**Financing Information**

% Equity	40%
% Financed	60%
Interest Rate	8%
Length of note (in years)	15
Assumed ST interest rate	9.50%

**Labor Information**

Position	Salary
Plant Manager	60,000
Clerical	25,000
Hourly Labor Rate	10
Benefits	25%
Contract Services (accounting, legal)	20,000

**Insurance Information**

Product Liability insurance per year	7,200
Worker's compensation	12.0637%

**Property Taxes**

Peebles tax rate	58.68
Assessed Value (1/2 book)	695,500

**Depreciation Information**

Method	Straight line
Salvage Value	0
Buildings Life (in years)	30
Equipment Life (in years)	10

**Start Up Costs**

Consultant/Engineer/Architect Fees	50,000
Soil Scientists/Soil Testing	4,000
EPA Permits	15,450
Environmental Attorney	50,000
Cost of Business Incorporation	1,000

Other Assumptions  
 50 weeks per year

Table 3: Assumptions for Scenario B - All Throughput Custom:  
 Pork, Beef, Goats, and Lambs (no beef quarters)

A major result for this scenario is that break-even in years two and three requires an average of \$120 per custom hog, \$236 per custom beef animal, and \$50 per goat and lamb of revenue. These breakeven custom fees are significantly lower than those in Scenario A. This implies that it is more profitable to fully process animals rather than limit the processing to slaughter. The results for this scenario are based on revenue per animal of \$400 per beef animal, \$170 per hog, and \$70 per goat and lamb.

The profit and loss statement for this scenario at the prices outlined above is shown in Table 4.

	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>
<b>ProForma Profit and Loss</b>			
<b>Total revenues</b>	<b>\$ 2,570,050</b>	<b>\$ 2,570,050</b>	<b>\$ 2,570,050</b>
Custom Pork Process fees	\$ 85,000	\$ 85,000	\$ 85,000
Custom Beef Processing fees	\$ 2,400,000	\$ 2,400,000	\$ 2,400,000
Custom Goat Process fees	\$ 7,000	\$ 7,000	\$ 7,000
Custom Lamb Process fees	\$ 24,500	\$ 24,500	\$ 24,500
Sales of finished goat product	\$ 6,300	\$ 6,300	\$ 6,300
Sales of finished lamb product	\$ 47,250	\$ 47,250	\$ 47,250
Other credits / revenues	\$ -	\$ -	\$ -
<b>Cost of Goods Sold</b>			
Direct labor	\$ 520,000	\$ 520,000	\$ 520,000
Pork Packaging	\$ 2,774	\$ 2,774	\$ 2,774
Beef Packaging	\$ 120,000	\$ 120,000	\$ 120,000
Goat/Sheep Packaging	\$ 1,248	\$ 1,248	\$ 1,248
<b>Total COGS</b>	<b>\$ 644,022</b>	<b>\$ 644,022</b>	<b>\$ 644,022</b>
<b>Gross Margin</b>	<b>\$ 1,926,028</b>	<b>\$ 1,926,028</b>	<b>\$ 1,926,028</b>
Gross Profit Margin %	74.94%	74.94%	74.94%
<b>Variable Operating costs</b>			
Pork Variable Costs	\$ 2,094	\$ 2,094	\$ 2,094
Beef Variable Costs	\$ 156,000	\$ 156,000	\$ 156,000
Goat/Sheep Variable Costs	\$ 1,886	\$ 1,886	\$ 1,886
Pork Marketing	\$ 850	\$ 850	\$ 850
Beef Marketing	\$ 24,000	\$ 24,000	\$ 24,000
Goat Marketing	\$ 63	\$ 63	\$ 63
Sheep Marketing	\$ 473	\$ 473	\$ 473
Utilities	\$ 98,448	\$ 98,448	\$ 98,448
<b>Total variable operating costs</b>	<b>\$ 283,813</b>	<b>\$ 283,813</b>	<b>\$ 283,813</b>
<b>Fixed Operating costs</b>			
Management/Admin. Labor	\$ 126,250	\$ 126,250	\$ 126,250
Land Rent	\$ 6,000	\$ 6,000	\$ 6,000
Depreciation	\$ 185,639	\$ 185,639	\$ 185,639
Insurance	\$ 67,639	\$ 67,639	\$ 67,639
Pork Overhead	\$ 100	\$ 100	\$ 100
Beef Overhead	\$ 27,000	\$ 27,000	\$ 27,000
Goat/Lamb Overhead	\$ 90	\$ 90	\$ 90
Property Taxes	\$ 40,812	\$ 40,812	\$ 40,812
Start Up Costs	\$ 120,450		
<b>Total fixed costs</b>	<b>\$ 573,980</b>	<b>\$ 453,530</b>	<b>\$ 453,530</b>
<b>Total Operating Costs</b>	<b>\$ 857,793</b>	<b>\$ 737,343</b>	<b>\$ 737,343</b>
<b>Operating Income</b>	<b>\$ 1,068,235</b>	<b>\$ 1,188,685</b>	<b>\$ 1,188,685</b>
<b>Other Expenses</b>			
Short term Interest Expense	\$ 9,975	\$ 9,923	\$ 9,868
Long term Interest Expense	\$ 176,434	\$ 169,936	\$ 162,918
<b>Total Other Expenses</b>	<b>\$ 186,408</b>	<b>\$ 179,859</b>	<b>\$ 172,785</b>
<b>Earnings Before Taxes</b>	<b>\$ 881,826</b>	<b>\$ 1,008,826</b>	<b>\$ 1,015,899</b>
Taxes (34% fed. & 6% state)	\$ 352,731	\$ 403,530	\$ 406,360
<b>Net Income</b>	<b>\$ 529,096</b>	<b>\$ 605,296</b>	<b>\$ 609,540</b>

Table 4: Profit and Loss Statement for Scenario B



Many of the costs under this scenario are similar to Scenario A. However, this plant requires additional freezer and cooler space. Therefore, the equipment cost includes an additional \$420,000, making the total cost of constructing this plant approximately \$3.7 million. Due to the increased equipment cost, the depreciation expense also increased.

Marketing expense increases from Scenario A to Scenario B. Under the previous scenario the plant did not actively market the custom quarters so no marketing expense was included for the quarters. However, under this scenario all of the cattle are being custom slaughtered and processed, so the plant needs to actively market this service to assure a minimum average of 120 cattle per week. The marketing expense is based on 1% of sales or custom processing fees.

Direct labor also increased for this plant. Since all of the beef animals are processed to freezer beef, eight additional employees are required for this plant as compared to Scenario A. Thus this plant is based on 20 employees for the slaughter and processing of the animals. The increased number of employees caused the amount of workers compensation insurance expense to increase as well. Again it was assumed that these employees would be paid \$10.00 per hour and would receive benefits. In this scenario, increasing the hourly rate by 10% causes the net income to decrease by roughly 6%.

### **Scenario C**

The third scenario analyzed is for a plant that only custom slaughters goats and lambs and sells its beef and pork products through the marketplace. In this scenario the processing facility owns the hogs and cattle, so they are purchased at prevailing market prices. The economic results from this scenario are based on historic market average prices for all species. The per head throughput is the same as in Scenario B. Thus, 120 cattle, 10 hogs, 7 lambs, and 2 goats are slaughtered and processed per week in this plant. The input assumptions for this scenario are shown in Table 5 and the profit and loss statement for this scenario is shown in Table 6.

Multi Species Processing Facility - Scenario C  
 Adams County, Ohio  
 General Assumptions applied to all years

<b>Raw Materials</b>	
Hogs processed per week	10
Cattle processed per week	120
Lambs custom processed per week	7
Goats custom processed per week	2
Average hog weight	270
Average steer weight	1200
Average goat weight	70
Average lamb weight	135
<b>Revenue</b>	
Goat Custom Charge	70
Lamb Custom Charge	70
Pork price	based on USDA
Beef price	based on USDA
<b>Sales Related Expenses</b>	
Food Broker's fees as a % of sales	2%
Direct Selling & Delivery as a % of sales	3%
<b>Variable Costs per head</b>	
Hogs variable cost (no utilities or mkting)	4.19
Cattle variable cost (supplies, grading, plant)	26
Goat and Sheep variable cost	4.19
Marketing as % of sales	1%
<b>Rendering Costs</b>	
Pick Ups per week	2
Cost per pick up	75
<b>Fixed Costs per head (not including administrative labor, w</b>	
Hogs overhead	0.20
Cattle overhead	4.5
Goat and Sheep overhead	0.20
Land Rent per month	500
<b>Financing Information</b>	
% Equity	40%
% Financed	60%
Interest Rate	8%
Length of note (in years)	15
Assumed ST interest rate	9.50%
<b>Labor Information</b>	
Position	Salary
Plant Manager	60,000
Clerical	25,000
Marketing/Sales	60,000
Hourly Labor Rate	10
Benefits	25%
Contract Services (accounting, legal)	20,000
<b>Insurance Information</b>	
Product Liability insurance per year	7,200
Worker's compensation	12.0637%
<b>Property Taxes</b>	
Peebles tax rate	58.68
Assessed Value (1/2 book)	695,500
<b>Depreciation Information</b>	
Method	Straight line
Salvage Value	0
Buildings Life (in years)	30
Equipment Life (in years)	10
<b>Start Up Costs</b>	
Consultant/Engineer/Architect Fees	50,000
Soil Scientists/Soil Testing	4,000
EPA Permits	15,450
Environmental Attorney	50,000
Cost of Business Incorporation	1,000
<b>Other Assumptions</b>	
50 weeks per year	

Table 5: Assumptions for Scenario C: Pork and Beef  
 Sub-primals Sold Wholesale, Goats and Lambs Custom

		<i>Year 0</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>
<b>ProForma Profit and Loss</b>					
<b>Total net revenues</b>		\$	<b>6,287,681</b>	\$	<b>6,287,681</b>
Sales of finished pork product	\$	-	\$ 69,614	\$	69,614
Sales of Boxed Beef	\$	-	\$ 6,515,840	\$	6,515,840
Broker fees & commission			\$ (131,709)	\$	(131,709)
Direct Selling & Delivery Expense			\$ (197,564)	\$	(197,564)
Custom Goat Process fees			\$ 7,000	\$	7,000
Custom Lamb Process fees			\$ 24,500	\$	24,500
Other credits / revenues	\$	-	\$ -	\$	-
<b>Cost of Goods Sold</b>					
Live hog cost	\$	-	\$ 57,164	\$	57,164
Live cattle cost			\$ 4,896,720	\$	4,896,720
Direct labor	\$	-	\$ 520,000	\$	520,000
Pork Packaging	\$	-	\$ 1,939	\$	1,939
Beef Packaging			\$ 120,000	\$	120,000
Goat/Sheep Packaging			\$ 1,248	\$	1,248
<b>Total COGS</b>	\$	-	\$ <b>5,597,070</b>	\$	<b>5,597,070</b>
<b>Gross Margin</b>	\$	-	\$ <b>690,610</b>	\$	<b>690,610</b>
Gross Profit Margin %			10.98%		10.98%
<b>Variable Operating costs</b>					
Pork Variable Costs	\$	-	\$ 2,094	\$	2,094
Beef Variable Costs			\$ 156,000	\$	156,000
Goat/Sheep Variable Costs			\$ 1,886	\$	1,886
Pork Marketing	\$	-	\$ 696	\$	696
Beef Marketing			\$ 65,158	\$	65,158
Goat Marketing			\$ 70	\$	70
Sheep Marketing			\$ 245	\$	245
Utilities	\$	-	\$ 98,448	\$	98,448
<b>Total variable operating costs</b>	\$	-	\$ <b>324,597</b>	\$	<b>324,597</b>
<b>Fixed Operating costs</b>					
Management/Admin./Sales Labor			\$ 201,250	\$	201,250
Land Rent			\$ 6,000	\$	6,000
Depreciation	\$	-	\$ 185,878	\$	185,878
Insurance	\$	-	\$ 74,877	\$	74,877
Pork Overhead			\$ 100	\$	100
Beef Overhead			\$ 27,000	\$	27,000
Goat/Lamb Overhead			\$ 90	\$	90
Property Taxes			\$ 40,812	\$	40,812
Start Up Costs			\$ 120,450		
<b>Total fixed costs</b>	\$	-	\$ <b>656,457</b>	\$	<b>536,007</b>
<b>Total Operating Costs</b>	\$	-	\$ <b>981,054</b>	\$	<b>860,604</b>
<b>Operating Income</b>	\$	-	\$ <b>(290,444)</b>	\$	<b>(169,994)</b>
<b>Other Expenses</b>					
Short term Interest Expense	\$	-	\$ 11,340	\$	11,288
Long term Interest Expense	\$	-	\$ 176,548	\$	170,046
<b>Total Other Expenses</b>	\$	-	\$ <b>187,888</b>	\$	<b>181,334</b>
<b>Earnings Before Taxes</b>	\$	-	\$ <b>(478,331)</b>	\$	<b>(351,328)</b>
Taxes (34% fed. & 6% state)	\$	-	\$ -	\$	-
<b>Net Income</b>	\$	-	\$ <b>(478,331)</b>	\$	<b>(351,328)</b>

Table 6: Profit and Loss Statement for Scenario C

The revenue is calculated based on U. S. Department of Agriculture (USDA) published prices for various cuts of beef and pork and \$70 per head custom charge for goats and sheep. (<http://www.ams.usda.gov/lsmnpubs/Meat.htm>) The total revenue is decreased by commissions and discounts. Often when selling meat in the retail market it is necessary to use the services of a food broker. Typically food brokers charge 2% of sales as a fee for their services. Additionally, costs for direct selling and delivery also are incurred.

The cost of goods sold increases dramatically under this scenario due to the additional cost to purchase the animals for slaughter. This cost is the 10 year average market price of cattle and hogs in Ohio.<sup>2</sup> The total cost to purchase the animals is approximately \$4.95 million. Changing this cost significantly affects the profitability of the plant. If the cost to purchase animals is increased by 10%, the overall net income is decreased by approximately 130%. If the market price decreases by 10%, net income increases by roughly 118% and thus making the plant more profitable. Under this circumstance, where the market price of purchasing hogs and cattle is decreased by 10% and all else remains constant, the plant would earn a positive net income in years two and three.

Many of the operating costs under this scenario are very similar to Scenario B. The major difference that was not present in the other scenarios is the need for a sales force. Because this plant would be selling meat in the marketplace, it is necessary to have at least one employee managing this area of the business. Therefore, the administrative salaries reflect this addition. The total cost of constructing this plant is approximately \$3.7 million.

### **Comparison of the Three Scenarios**

Based on the results shown above, Scenario B seems to be the most economically feasible scenario. However, examining a range of results of most likely, best case, and worst case is also helpful. Therefore the revenue was varied by changing the custom fees received and the market prices. Additionally, variable costs that are relatively uncertain were also varied. The variable costs that were changed are the wage rate and the variable cost per species. The results for each of these variations can be seen in Appendix D.

### **Other Considerations**

For this study the option of performing ritual slaughter was not fully explored. If the plant wanted to provide kosher beef strict guidelines would need to be followed. In order for meat to be considered kosher it must be slaughtered by a “shochet” which is trained in kosher slaughter and is Jewish. A sharp knife called a “chalet” must also be used during slaughter. The animal must be killed with one cut of the knife across the throat. The

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<sup>2</sup> Based on market price received by farmers in Ohio for steers & heifers as well as barrows & gilts from 1995 - 2004 as reported in Agricultural Prices, Agricultural Statistics Board, NASS, USDA.

meat is then inspected and certain veins and all of the blood are removed from the meat. Typically only the front quarters are used for kosher beef. In order for the hindquarters to be kosher the sciatic nerve and the fat around it is removed which is rarely done. (American Meat Institute, Wikipedia) If the plant wanted to explore this option, further investigation would need to be performed to determine the demand for kosher beef in the area or through a specialized food broker. Additional cost to hire a shochet would also be incurred which would also need to be explored further.

Another type of ritual slaughter is Halal slaughter which is described under Islam. Some Muslims prefer goat meat but have trouble finding goat meat that was slaughtered under Halal guidelines. Under Halal the slaughter should be performed by a trained Muslim using a sharp knife. Before slaughtering the animal the person should also say "Bismillah" meaning "In the name of Allah." (American Meat Institute, Codex Alimentarius) This could also be another niche market for this facility. Again, if ritual slaughter is of interest to the project's owners, further investigation needs to be completed about the demand for meat by Muslims in the area and the cost of following Halal guidelines.

## **Conclusions**

Three scenarios are examined to determine if a processing facility in Adams County would be economically feasible. Of the three scenarios, Scenario B is the most profitable. Even when some of the variables are changed, as shown in Appendix D, the plant remains profitable. Scenario B is based on a plant that is performing custom slaughter and fully processing the animals; no beef animals are processed to quarters only. Because of the full processing the plant is more profitable than the operation modeled in Scenario A.

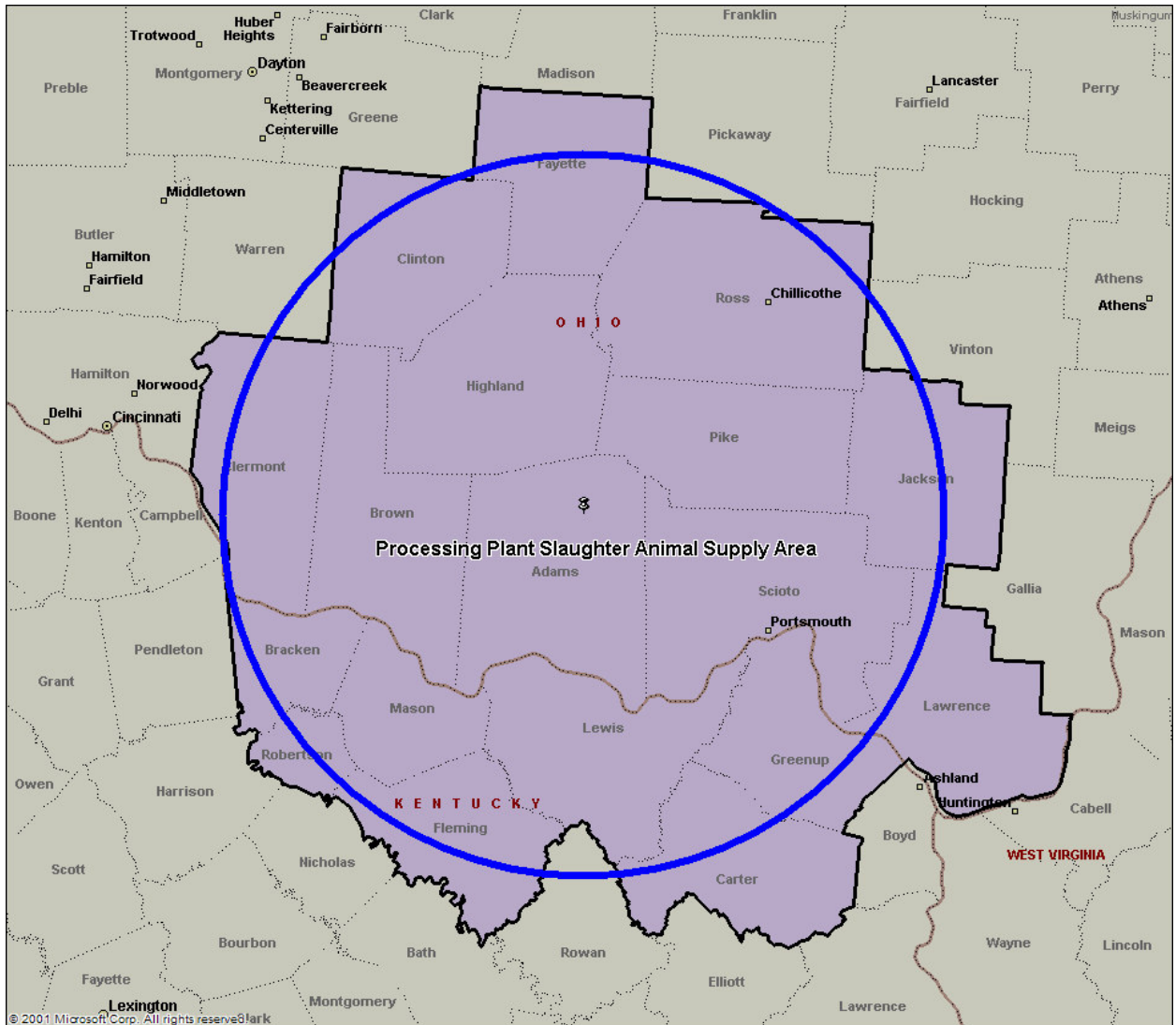
Scenario A also simulates a custom plant, but in this case the majority of the beef animals are slaughtered and processed to quarters only. Profitability of the plant is based primarily on the level of custom fees per head for the beef quarters. As modeled, this plant would have a net loss in year one. However, this loss could be eliminated if 175 producers pay a one-time shackle space fee of \$425. To break even the charge per head for slaughtering and processing to quarters is \$116. This price is higher than for other facilities in the area performing similar services. Therefore, it may be difficult to attract customers at the higher custom fee. Under the worst case for Scenario A, the plant would have a net loss in the initial three years of operation.

Scenario C's profitability relies on the market price of live cattle and hogs as well as cuts of beef and pork. Because of the volatility in the market, the range of earnings from Scenario C is quite volatile as well. Current market conditions would need to improve considerably for this plant to be profitable.

Based on this research a small meat processing facility in Adams County is economically feasible. A facility that could slaughter and process 6,000 head of cattle, 500 head of hogs, 350 head of sheep, and 100 head of goats per year represents an initial investment of \$3.3 million to \$3.7 million. If a founder group of producers are interested in this project, Scenario B is recommended. Because the facility is a custom

slaughter facility, the plant would never take ownership of the animals. Additionally, more revenue can be earned by processing all of the animals into smaller cuts of meat, such as primals or sub-primals. Even when the custom charge per species is lowered and the variable costs are increased this plant is still profitable, unlike the other scenarios.

Figure 1: Adams County Processing Plant Location, Counties of Supply for the Plant, and a 45-mile Radius Around the Facility



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## **Appendices**

**Appendix A - Processing Plant Blueprint for the Slaughter Area of the Facility**

**Appendix B - Processing Plant Blueprint for the Processing Area of the Facility**

**Appendix C - Estimated Type, Amount, and Price of Equipment Needed**

**Appendix D - Most Likely, Best Case, and Worst Case Comparison of Scenarios, First  
Three Years**

Appendix A  
**Processing Plant Blueprint for the Slaughter Area of the Facility**

Processing Plant Blueprint for the Slaughter Area  
of the Facility from the Ohio Department of Agriculture.

**General Facilities for Slaughter**

**Pens**

- Identify the location of the holding area in reference to the operation
- Reference odor control, dust control, waste control
- Identify construction
  - Floors, curbing, drainage
  - Partitions, comers, maintenance
  - Chutes, alleys, gates
- Maintenance items including clean-up, solid residue removal, etc.
- Identify the method of overhead cover and note any provisions for shading,
- Cooling, etc. animals during the holding time
- Suspect/Condemn pen location and special provisions for food, water, and handling
- Identify approximate capacities of pens and provisions for food and water
- Note the means of movement for animals during inspection
- Identify safety features for inspection, catwalks, etc.
- Identify the measures taken in transporting crippled animals

**Slaughter**

- Identify method of movement to the slaughter area from the holding area
- Type separation to control dust, odor, pests - including self-closing devices, air screens, etc.
- Identify overall construction of slaughter area floors, walls, and ceilings as to types of material used and any maintenance requirements

**Stunning**

- Identify the method of restraint utilized for each species handled
- Discuss the method of stunning per specie including any special procedures required by the method
- Discuss any ritualistic procedures utilized and the requirements of the procedure
- Identify the construction of the area and equipment in the area including curbing,
- Safety features, dry landing provisions or procedures
- Identify any operational procedures specific to the establishment operation in this area.

## **Rails and Truck Ways**

- Discuss the method of arranging the transportation system in relation to the prevention of contamination from fixed objects, operational debris.
- Identify the heights of the transportation system per specie slaughtered
- Discuss traffic flow in the areas as it relates to work stations, trash removal, inedible removal, spur lines for trim salvage, special areas due to procedures.
- Identify locations and flow for specialty equipment for specific areas like hooks, rollers, gambrels, shrouds, pins, etc.
- Identify airflow in respect to product flow
- Discuss any special provisions required due to facility limitations

## **Viscera Separation**

- Identify method of transportation of viscera
- Discuss removal of viscera to prevent cross-contamination
- Identify location of area utilized in separation
- Discuss the removal routes for edible parts in relation to inedible parts
- Identify any special room temperatures

## **Carcass Washing**

- Identify special provisions for this area
- Identify method of performing the washing procedure
- Identify any special equipment required to perform the operation

## **Retention Rooms or Compartments**

- Identify the equipment provided to retain carcasses and parts
- Discuss the location of this area and the method of moving product to this area as it relates to cross contamination
- Discuss any other provisions for this area like refrigeration, etc.

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## **CATTLE**

- Identify the type layout for the operation, including kill rates, number of work stations, number of inspectors
- Identify each workstation and the approximate square footage floor space available for each work station
- Discuss each station and identify any special provisions in each station; i.e. platforms, hand wash sinks and sanitizers, railings, hoists, air equipment, water wasting equipment, cross-utilization with other employees
- Indicate the method of evisceration
- Discuss the location of the Inspection areas in reference to the work stations and approximate the travel distance for each inspection employee

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## **SWINE**

- Identify the type layout for the operation, including kill rates, number of work stations, number of inspectors
- Identify each workstation and the approximate square footage floor space available for each work station
- Discuss each station and identify any special provisions in each station; i.e. platforms, hand wash sinks and sanitizers, railings, hoists, air equipment, water wasting equipment, cross-utilization with other employees
- Indicate the method of evisceration
- Discuss the location of the Inspection areas in reference to the work stations and approximate the travel distance for each inspection employee

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## **SHEEP and GOATS**

- Identify any special equipment or procedures relating to each species differing from the facility, equipment, or procedures discussed for cattle and/or swine
- Inspection areas - Identify equipment provided for each specie

Appendix B  
**Processing Plant Blueprint for the Processing Area of the Facility**

## Processing Plant Blueprint for the Processing Area of the Facility from the Ohio Department of Agriculture

Briefly describe the business:

Names and addresses of owners

Type of operation and products proposed and the proposed hours of operation

Any affiliated official operations

- Location Narrative vs. plot plan
- Describe the location of the plant
- Address
- Streets bordering
- Location of sewage system
  - Name of the agency having jurisdiction location of water supply
  - The type of supply (certification if required)
- Describe any allied business associated with the plant and the nature of the business and association to the official establishment
- Note the size of the building(s) and the operations housed in each
- Describe any adjoining properties that might impact the area around the official establishment
- Describe any other unofficial operations in the same building and how separation is maintained

### **Flow of operation:**

- Describe the steps/processes the product goes through from receipt to shipment describe the methods used to move the product through the various steps and the means available to provide product protection from contamination during movement describe how inedibles are handled in reference to product flow
- Describe how trash is handled in reference to product flow
- Describe how people move through the plant in reference to product flow
- Describe how separation if required is accomplished
- Raw products from ready to eat products
- Edibles and inedibles condemned animal foods saved in the production areas
- Describe lotting/codes
- Describe warehouse operations; rotation. storage, order make-up, truck loading.
- Construction of facility
  - General statement of types of construction materials overall or by room following product
    - Flow including floors, walls, and ceilings.
    - Type materials (absorbency, toxicity, corrosiveness, color)
    - Type workmanship in construction
  - Type maintenance program (if materials differ along the process, indicate as product flows what are the variables)
  - Describe any exposed wood construction and maintenance provided floors, catwalks, platforms

- Safety, drainage, slope, surface aggregate, coving, curbs, etc.
- Walls, posts, partitions, doors, doorways, windows
- Nature of finish, ability to clean, sealed seams, cracks, absorbency, slopes of sills, door width, product passageways providing protection, screening, curtains, self-closing devices
- Ceilings, skylights, rails, overhead mounted equipment
- Nature of finish, ability to clean, height, rust control, condensate prevention, painted areas, moisture resistance, and glass breakage prevention.

### **Lighting**

- Describe the lighting available at various steps in the product flow where required, state the fcp available
- Describe the method used to protect product from breakage of lights

### **Ventilation**

- Describe the method of allowing air to enter the facility
- Describe the flow pattern of air
- Describe any filtering methods used
- Indicate how steam vapors, odors and objectionable conditions are handled
- Include welfare room and restroom ventilation and handling of airflow from these areas

### **Refrigeration**

- Indicate processes in the product flow that occur in refrigerated areas
- Describe the type of refrigeration available
- Describe control measures to help prevent condensation
- Indicate how drainage is accomplished
- Discuss control measures for prevention of frost and ice accumulation in freezers

### **Equipment**

- Describe the material types in product contact zones
- Describe nature of surfaces
- Identify any areas that could be a source of direct contamination
- Painted, toxic material, rough surface, unacceptable types of material away from product zones
- Wall mounts sealed to walls or spaced correctly
- Water wasting equipment drainage
- Clean in place equipment
- Piping equipment disassembly



## Plumbing

- Certificates if required
- Method of control of back siphonage
- Control measures to prevent cross contamination by cross connections
- Condensate on overhead pipes control measures
- Availability of supply to all areas of operation
- Volume sufficient for purpose
- Applicable temperatures met
- Hand wash facilities available at work stations
- Facilities have required provisions available
- Clean up hoses available, adequate for purpose, proper storage
- Describe drainage for work areas and ability to prevent objectionable conditions drains trapped using approved methods
- Drain sizes and locations in reference to wet operations
- Cook vat curbing to control floor drainage.
- Gutter type drains and flow troughs properly trapped

## Sewage

- Indicate the method of treatment
- Indicate any size limitations
- Indicate any special treatment requirements or operating requirements
- Identify the location of traps, screens or interceptors
- Discuss the means of preventing backflow
- Identify separation of house lines from processing room lines and points of connection
- Plant waste disposal.
- Describe how solid waste is handled to prevent possible product contamination
- Indicate the frequency of removal and the location of storage on premise

## Dry storage

- Types of floor, wall, ceiling surfaces and ability to maintain acceptably potential for contamination
- Lighting availability and protection of fixtures
- Batching, mixing or other operations conducted in the areas
- Discuss the operation and ability to maintain the area
- Hand wash facilities, cleaning capabilities

## **Welfare facilities**

- Methods utilized by the plant to control cross contamination of product from employees utilizing welfare facilities, break rooms and other areas
- Describe the separation of the welfare areas from production areas ventilation and air flow
- Method of handling clothing
- Describe lunch and break areas and maintenance of the areas
- Availability of hand wash facilities prior to entering production areas
- Availability of lockers / clothing storage method
- Drinking fountains provided
- Inspection office provided
- Suitable to perform duties
- Identify available facilities provided
- Inedible products areas
- Separation of facilities for employees as required

Appendix C  
**Estimated Type, Amount, and Price of Equipment Needed**

Estimated Equipment Needed by Type, Amount, and Cost

Equipment	# needed	Price/unit	total price
Livestock Scales	1	4,000	4,000
Stun Gun	1	1,500	1,500
Electric Stun	1	1,000	1,000
1-2 ton hoist	1	2,500	2,500
skinning cradle	1	800	800
craddles (sheep & goats)	1	500	500
splitting saw	1	4,500	4,500
table saw	1	5,000	5,000
mixer grinder	1	4,000	4,000
cutting tables	3	500	1,500
sterilizers	3	250	750
hog gramblers	60	35	2,100
hog hooks w/ rail pulley	60	45	2,700
goat/sheep hooks w/ pulley	48	45	2,160
beef hooks w/ pulley	240	45	10,800
stuffer	1	4,500	4,500
vacuum packager	1	15,000	15,000
knives & hand saws	1	1,200	1,200
gut carts	3	1,250	3,750
slicer	1	1,500	1,500
tumbler	1	5,000	5,000
smokehouse	1	45,000	45,000
injector	1	35,000	35,000
offal barrels	60	45	2,700
lugs and carts	1	2,500	2,500
scales & label dispenser	1	4,000	4,000
carcass scales	1	4,000	4,000
patty machine	1	18,000	18,000
box coolers/freezers	1	450,000	450,000
side coolers	1	600,000	600,000
washer/dryer (industrial)	1	5,000	5,000
lockers	1	1,000	1,000
Miscellaneous	1	15,000	15,000
rail & I-beams	1	20,000	20,000
Optional			
wizzard knives	1	8,000	8,000
dehidors	1	8,000	8,000
hide puller	1	30,000	30,000
carcass wash cabinet	1	40,000	40,000
lifts	3	8,000	24,000
Plant Equipment			1,386,960
Computers, fax, printer, etc	1	3,000	3,000
Office Furniture	1	2,150	2,150
Breakroom Table & Chairs	1	615	615
Office Equipment			5,765
<b>Total Equipment</b>			<b>1,392,725</b>

Appendix D  
**Most Likely, Best Case, and Worst Case Comparison of Scenarios, First Three Years**

## Most Likely, Best Case, and Worst Case Comparison of Scenarios, First Three Years

The variables that were changed from the most likely case presented in the body of this paper are shown below.

### Scenario A:

- Best Case - Revenue per head: hogs = 220, cattle = 465, cattle quarters = 135, goats = 125, lambs = 125  
Hourly Wage Rate = 10  
Variable cost per head per species = decreased by 10%
- Worst Case - Revenue per head: hogs = 150, cattle = 300, cattle quarters = 75, goats = 60, lambs = 60  
Hourly Wage Rate = 12  
Variable cost per head per species = increased by 10%

### Scenario B:

- Best Case - Revenue per head: hogs = 220, cattle = 465, goats = 125, lambs = 125  
Hourly Wage Rate = 10  
Variable cost per head per species = decreased by 10%
- Worst Case - Revenue per head: hogs = 150, cattle = 300, goats = 60, lambs = 60  
Hourly Wage Rate = 12  
Variable cost per head per species = increased by 10%

### Scenario C:

- Best Case - Revenue: hogs = USDA current price + 10%, cattle = USDA current price + 10%, goats = 125 per head, lambs = 125 per head  
COGS: live hog price = historic USDA average - 10%, live cattle price = historic USDA average - 10%  
Hourly Wage Rate = 10  
Variable cost per head per species = decreased by 10%
- Worst Case - Revenue: hogs = USDA current price - 10%, cattle = USDA current price - 10%, goats = 60 per head, lambs = 60 per head  
COGS: live hog price = historic USDA average + 10%, live cattle price = historic USDA average + 10%  
Hourly Wage Rate = 12  
Variable cost per head per species = increased by 10%

Year 1	Scenario A - all throughput custom: pork, beef, beef quarters, goats, & lambs			Scenario B - all throughput custom: pork, beef, goats, & lambs (no beef quarters)			Scenario C - pork & beef sub- primals sold wholesale, goats/lambs custom		
	Most Likely	Best Case	Worst Case	Most Likely	Best Case	Worst Case	Most Likely	Best Case	Worst Case
Revenue	1,201,750	1,306,250	777,000	2,570,050	3,009,800	1,955,550	6,287,681	6,938,037	5,657,574
Cost of Goods Sold	336,022	336,022	398,422	644,022	644,022	748,022	5,597,070	5,101,682	6,196,459
Operating Costs	776,101	760,648	796,374	857,793	845,945	877,728	981,054	971,889	1,000,458
Operating Income (EBIT)	89,627	209,580	(417,796)	1,068,235	1,519,833	329,800	(290,444)	864,466	(1,539,343)
Net Income (after interest & taxes)	(73,868)	27,723	(581,898)	529,096	800,110	85,495	(478,331)	406,018	(1,728,173)
Estimated One time shackle space charge (to cover yr 1 loss)	425	-	3,325	-	-	-	2,735	-	9,875

Year 2	Scenario A - all throughput custom: pork, beef, beef quarters, goats, & lambs			Scenario B - all throughput custom: pork, beef, goats, & lambs (no beef quarters)			Scenario C - pork & beef sub-primals sold wholesale, goats/lambs custom		
	Most Likely	Best Case	Worst Case	Most Likely	Best Case	Worst Case	Most Likely	Best Case	Worst Case
Revenue	1,201,750	1,306,250	777,000	2,570,050	3,009,800	1,955,550	6,287,681	6,938,037	5,657,574
Cost of Goods Sold	336,022	336,022	398,422	644,022	644,022	748,022	5,597,070	5,101,682	6,196,459
Operating Costs	655,651	640,198	675,924	737,343	725,495	757,278	860,604	851,439	880,008
Operating Income (EBIT)	210,077	330,030	(297,346)	1,188,685	1,640,283	450,250	(169,994)	984,916	(1,418,893)
Net Income (after interest & taxes)	31,430	103,474	(455,647)	605,296	876,310	161,694	(351,328)	482,220	(1,601,169)



Year 3	Scenario A - all throughput custom: pork, beef, beef quarters, goats, & lambs			Scenario B - all throughput custom: pork, beef, goats, & lambs (no beef quarters)			Scenario C - pork & beef sub-primals sold wholesale, goats/lambs custom		
	Most Likely	Best Case	Worst Case	Most Likely	Best Case	Worst Case	Most Likely	Best Case	Worst Case
Revenue	1,201,750	1,306,250	777,000	2,570,050	3,009,800	1,955,550	6,287,681	6,938,037	5,657,574
Cost of Goods Sold	336,022	336,022	398,422	644,022	644,022	748,022	5,597,070	5,101,682	6,196,459
Operating Costs	655,651	640,198	675,924	737,343	725,495	757,278	860,604	851,439	880,008
Operating Income (EBIT)	210,077	330,030	(297,346)	1,188,685	1,640,283	450,250	(169,994)	984,916	(1,418,893)
Net Income (after interest & taxes)	35,189	107,233	(449,382)	609,540	880,554	165,938	(344,250)	486,467	(1,594,091)