

Modeled Size and Scale of Beef and Lamb Processing Preliminary to Business Planning

Conducted for:

CalaverasGROWN

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Conducted by:

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Section 1 Introduction

CalaverasGROWN is a county-wide cooperative marketing program designed to assist agricultural producers market their products. One of the goals for the organization is to develop an expanded demand for locally grown and processed foods. Because there are many livestock producers in Calaveras and surrounding counties in California, beef is a locally produced food targeted for this project. Small marketing efforts by local beef producers in selling their home-grown beef products have been successful. But, because there are no nearby, affordable harvest and processing plants in the region, there is little opportunity to expand beyond the small amount being done.

Food and Livestock Planning, Inc., a food industry technical firm based in Kansas City, MO experienced in the meat packing business, was engaged to help develop enterprise and financial models evaluating different size and scale of beef harvest and processing facilities to be located in the county. The outcomes of these models are reported in this manuscript.

DISCLAIMER:

The models developed in this project were based on similar-sized meat processing plants in the industry of which the author is familiar. Estimated costs of construction, materials, equipment, and costs of processing are based on the author's experience only and have not been vetted by architects, engineers, or builders. The outcomes of these models are for the purposes of deciding to proceed to professional business planning for a certain size and scale of operation only and are not intended to be used to make actual investment decisions.

Section 2 Meat Processing Scenarios Evaluated

2.1 Description of Processing Scenarios

Three enterprise and financial models were developed covering three different size and scale scenarios:

- A. Harvest and process for 3,500 cattle per year (and some lambs) inclusive of both custom beef processing and the marketing and processing of meat from cull beef cows.
- B. Custom harvest and process for 2,000 cattle per year (and some lambs).
- C. Custom harvest only for 1,000 – 2,000 cattle per year (and some lambs). Processing occurs at separate facility. This plant will be a facility using shipping containers configured into a harvest and carcass chilling plant.

2.2 Model Assumptions

2.2.1 Plant siting location

It is assumed all three scenarios are located in Calaveras County located outside the city limits of a municipality.

2.2.2 Structure

Scenario A and B will be steel structures and Scenario C will be configured with shipping containers designed by Sustainable Foods, LLC of Wala Wala, WA. The plant structure for Scenario A and B is depreciated over 30 years, whereas Scenario C depreciation covers 10 years. Equipment is depreciated over 7 years.

2.2.3 Wastewater

It is assumed that screened wastewater will be contained in an evaporative pond with a synthetic liner. The pond size will differ according to plant size. The cost of building an evaporative pond is highly speculative at this point. Environmental laws in California vary greatly by region. Some regions within California prohibit any type of discharge; so, evaporative ponds may be the only alternative other than having a municipality treat the plant's wastewater.

2.2.4 Revenue Determination

Revenue from custom processing was determined by a set margin above total processing cost. Margins account for depreciation, amortization plus the profit. The margins in each model are adjustable in order to predetermine financial return and were set to achieve a particular end point processing fee.

Even though each model is broken into monthly cost and revenue projections, the results in Year 3 will be used for actual processing fees determination for

each year. The first year processing animals is typically very inefficient and charging actual processing costs plus a markup will not be competitive with other processors in the state. By the third year in production, the plant should be running efficiently and close to processing capacity.

2.2.5 Cost estimates

The cost estimates for plant structures, site development, utility hookups, equipment, labor, and plant overhead expense are determined by Food and Livestock Planning, Inc.' professional experience with similar-sized facilities.

The amount and cost of labor is highly speculative at this time. The author was aggressive with the total numbers of direct workers so as to not under estimate the cost of processing.

2.2.6 Debt assumptions

All models assume 50% of the plant, property and equipment to be covered with bank long term debt and interest at the rate of 6%. The models allow for a bank line-of-credit for short term debt to finance operating costs.

2.2.7 Rendering and byproducts

It is assumed in all models that rendering material (blood, bones, inedible offal, heads, feet, and waste fat) will be either delivered to or picked up by Northern State Rendering, Oroford, CA. A fee will be assigned to each carcass for this service.

It is assumed that hides will be kept by the packing company for revenue generation, stored in a separate building, salt cured, palletized and sold to a hide company. For price determination, a discount for being a small supplier was added to the USDA 2011 average hide price. For all models it was assumed the mix of hides at 70% steer hides and 30% cow hides with a \$10 discount for being a small supplier.

2.2.8 Custom processing charges competition or comparison

Plant = Johansen's, Orland, CA

Harvest fee = \$75 per animal

Boning and packaging fee = \$0.75/lb

Assuming a 750 lb beef carcass = $\$75 + (750 \times 0.75) = \637.50 / beef

Assuming a 65 lb lamb carcass = $\$75 + (65 \times 0.75) = \123.75 /lamb

Section 3 Model Results

	Scenario A	Scenario B	Scenario C
# of beef cattle custom processed in 3 rd year	3,000	2,000	1,920
# of lambs custom processed in 3 rd year	500	500	300
# of cull cows processed and marketed in 3 rd year	500	0	0
Approximate plant size, sq. ft.	9,000	6,000	Unknown yet
Approximate total plant, property and equipment cost	\$3,060,000 (\$2,660,000 without pond)	\$2,160,000 (\$1,860,000 without pond)	\$745,000 (\$495,000 without pond)
Total project cost (includes preoperational working capital)	\$3,329,000	\$2,380,000	\$909,000
Revenue in 3 rd year	\$2,335,000	\$1,228,000	\$250,496
Total processing cost per beef processed in 3 rd year (does not include depreciation and amortization)	\$314	\$342	\$108
Margin applied to beef processing costs in 3 rd year	75%	70%	57.5%
Total processing charge with margin applied = beef custom processing fees in 3 rd year.	\$549	\$581	\$124
Total processing cost per lamb processed in 3 rd year (does not include depreciation and amortization)	\$60	\$73	\$52
Margin applied to lamb processing costs in 3 rd year	75%	70%	57.5%
Total lamb processing charge with margin applied = lamb custom processing fees in 3 rd year.	\$104	\$124	\$76
Earnings before interest, taxes, depreciation, amortization (EBITDA) in 3 rd year	\$748,000	\$470,000	\$111,000
% return on sales in 3 rd year	21%	24%	2%
% return on equity in 3 rd year	28%	24%	1%
Total direct and indirect workers in 3 rd year	29	19	4

Section 4 Discussion

4.1 Model Comparisons

Based on data generated from the enterprise and financial models, Scenario C is not feasible. Competing custom packing plants charge around \$75 per beef cattle for harvest. Based on results of this model, charging \$75 per beef carcass will result in financial losses every year. Competing custom plants are likely to be older, with less depreciation expense, and a more stable labor and cost structure. The combination of a harvest fee generated in Scenario C and the further processing costs plus freight to deliver carcasses to another facility will make this combined processing strategy cost prohibitive.

Scenarios A and B are considered feasible. Scenario A costs more but has more profit potential and will allow the entrance into a separate profit center by adding value to the cull cows produced in the region.

Is it possible to build a smaller plant and then add additional carcass and boxed cooler space if the need arises to expand the plant. However, it is much more cost effective to build as much capacity the first time. If you take Scenario B and double the plant capacity, the processing costs for beef decline from \$342 to \$234 and lambs from \$73 to \$57. Obviously, this drop in overhead costs per animal results in much greater margin potential.

In summary, there is an approximate \$1 million capital requirement difference between Scenario A and B. If CalaverasGROWN is able to raise the difference using both equity and debt, there should be a good return on the investment.

4.2 Cull Cows

The presence of cull cows in Scenario A does complicate the comparison with Scenario B. Information generated in Scenario A demonstrates that there is currently more margin generated from custom processing cattle than purchasing cull cows, processing them into beef products, and marketing the meat. The reason for this is the current high cost of purchasing cows. Because of reduced supply, and increased demand for ground beef, cull cows are priced at a premium. Although beef supplies will be very short for several more years, the USDA's Cattle Report indicates that the very early stages of beef cattle expansion have begun as heifer retention has increased a modest 1 percent (Hurt, 2012). Therefore, it is expected that cull cow prices will remain high for at least another year. Seasonally, cow prices are typically lower in the late fall and early winter when their availability is always greater. The decision of whether to process and market the meat from cull cows needs to be made on the basis of developing a successful meat program in future years and not on current market conditions.

4.3 Lambs

Lambs represent a small (14 – 20% of total animals) percentage of custom processing in each scenario. At this point, the demand for custom processing capacity for lambs is not known. However, based on the large number of lambs produced and the scarcity of processing capacity in the region, there is expected to be some demand. Equipment to process lambs will not be a significant cost addition to capital requirements. Based on Scenarios A and B, lambs could be harvested and either packaged as a bone-in carcass or processed into boneless cuts for net margins above \$40 per lamb.

4.4 Beef Hides

Most small custom processors charge harvest fees under their cost of processing because they make up for it by taking ownership of beef hides and some offal. There is a reported hide market by both the USDA and the Jacobsen Report. Year ending 2011 reported prices (USDA) for butt branded steer hides and cows were \$81 and \$50 per piece, respectively. However, these are reported prices for the average of the trade, which largely represents larger beef packers. Small processors receive large discounts to the reported trade due to the small volume they represent and large variations in quality and type. For the basis of this modeling, it is assumed that attempts to salt cure, manage and sell high quality hides will be the goal so as to achieve high quality hide revenues with only a modest discount. The likely destination for selling these hides is Southwest Hides at Modesto, CA.

Section 5 Information Sources

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