

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

Conducted for:

**CalaverasGROWN**

August 30, 2012

Conducted by:

**Food & Livestock**  

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## Section 1 Introduction

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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.

The Calaveras County Fair has an active fair and fair board who would also like to see a local livestock harvest and meat processing facility to service county fair participants. The fairgrounds are being investigated as a possible location for the plant site because of the possibility of shared infrastructure that would reduce construction costs (livestock pens, roads, utility hookups, etc.). Differing ownership scenarios of the plant, equipment and operating entities are currently being investigated. .

Food and Livestock Planning, Inc., a food industry technical firm based in Kansas City, MO experienced in the meat packing business, was engaged to develop enterprise and financial models evaluating different scenarios of plant size and scope 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

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### 2.1 Description of Processing Scenarios

Three enterprise and financial models were developed and include:

- A. Harvest and process for 3,300 cattle per year and some lambs and hogs from the fair. This model is inclusive of both custom animal 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 and hogs from fair).
- C. The same as B except the facility would be located on the Calaveras County Fairgrounds and owned by a separate entity.

### 2.2 Model Assumptions

#### **2.2.1 Plant siting location**

It is assumed scenario A and B are located in Calaveras County outside the city limits of a municipality. Scenario C is located on the Calaveras County Fairgrounds.

#### **2.2.2 Structure**

All three scenarios will be steel structures with subterranean floors. These plant structures will be depreciated over 30 years and equipment over 7 years.

#### **2.2.3 Wastewater**

It is assumed that screened wastewater will be contained in an evaporative pond with a synthetic liner for Scenario A and B. The pond size will differ according to plant size. The cost of constructing 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.

The plant in Scenario C will construct some type of wastewater pretreatment strategy with the residual wastewater extracted to the city sewer.

#### **2.2.4 Revenue Determination**

Revenue from custom processing was determined by using competitive processor rates.

Plant = Johansen's, Orland, CA  
Harvest fee = \$75 per animal  
Boning and packaging fee = \$0.75/lb

Assuming a 675 lb cold weight beef carcass (which has shrunk 10%) =  
 $\$75 + (750 \times 0.75) = \$581.25/\text{beef}$

Assuming a 165 lb skinned hog carcass =  $165 * \$0.75 + \$75 = \$198.75$

Assuming a 65 lb lamb carcass = \$90 straight fee

### **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 Sacramento Rendering Company. 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 or basement of the plant, 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 Harvest and processing of fair animals**

All models use the month of May (Fair month) for harvest and processing of primarily animals used in the county fair. It is assumed that additional part-time workers would be hired to assist in the processing of these animals. Standard processing fees will be assessed owners of these livestock.

### **2.2.9 Dry aging assumptions**

It is assumed that 50 percent of the beef carcasses will hang in the carcass coolers for a period of 21 days for the purpose of dry aging. It is understood that this requires additional cooler capacity and railing equipment but that a \$25 fee will be charged for this service.

## Section 3 Model Results

	<b>Scenario A</b>	<b>Scenario B</b>	<b>Scenario C</b>
# of beef cattle custom processed in 3 <sup>rd</sup> year	3,300	2,000	2,000
# of lambs custom processed in 3 <sup>rd</sup> year	790	790	790
# of cull cows processed and marketed in 3 <sup>rd</sup> year	500	0	0
Approximate plant size, sq. ft.	10,300	7,300	7,300
Approximate total plant, property and equipment cost	\$3,266,00 (\$2,866,000 without pond)	\$2,373,500 (\$2,073,500 without pond)	\$1,643,500
Total project cost (includes preoperational working capital)	\$3,541,000	\$2,600,000	\$1,810,000
Revenue in 3 <sup>rd</sup> year	\$2,648,236	\$1,452,847	\$1,452,847
Total processing cost per beef processed in 3 <sup>rd</sup> year (does not include depreciation and amortization)	\$328	\$346	\$346
Processing cost margin over competition fees (Johansen's) in 3 <sup>rd</sup> year	77%	68%	68%
Total processing cost per lamb processed in 3 <sup>rd</sup> year (does not include depreciation and amortization)	\$40	\$49	\$49
Processing cost margin over competition fees in 3 <sup>rd</sup> year	123%	83%	83%
Earnings before interest, taxes, depreciation, amortization (EBITDA) in 3 <sup>rd</sup> year	\$1,069,109	\$664,304	\$664,304
% return on sales in 3 <sup>rd</sup> year	30%	33%	n.a. <sup>a</sup>
% return on equity in 3 <sup>rd</sup> year	43%	15%	n.a. <sup>a</sup>
Total direct and indirect workers in 3 <sup>rd</sup> year	29	19	19

<sup>a</sup>. Not applicable because it is not known who owns the plant and what the debt service would be.

## **Section 4            Discussion**

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### **4.1    Model Comparisons**

Scenarios A, B and C are all considered feasible with good net income potential. Because Scenario A has the greatest throughput, it has a lower projected cost of processing, a higher net income, and a higher percent return on equity compared to smaller plants.

Elimination of the land cost, cost of constructing an evaporative pond, the cost of livestock pens, and some of the site development work saves between \$700,000 and \$800,000 in equity requirements for the fair site. It is uncertain how the building ownership and business management would work, but cost savings is considerable. The footprint of available space for plant construction at the fairgrounds is small and there would not be much opportunity to expand the building later, but the cost savings and business synergy with the fair would be great.

### **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 and hogs**

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. In all three scenarios, lambs could be harvested and either packaged as a bone-in carcass or processed into boneless cuts for net margins above \$40 per lamb.

Hog processing was only modeled during the fair month. It is unlikely that there would be much hog processing outside the fair month. It is assumed that hogs would be skinned rather than scalded to save additional equipment costs.

#### **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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