Overview for Developing a Custom or USDA-Inspected Meat Processing Plant

Kentucky Center for Agriculture and Rural Development

Careful planning should take place when considering building a custom meat processing plant. Putting work areas together in the wrong layout or in the wrong proportions could cause work to take twice as long to get done. Most custom or USDA-inspected meat processing plants (especially those in Kentucky) are relatively small and range in size from approximately 3,000 to 6,000 square feet. A few plants in Kentucky are much larger. Larger plants require greater business activity for adequate cash flow and to operate.

Total start-up costs (including land, equipment, construction, and working capital) for a typical processing facility generally range from $600,000 to $1 million, with a cost per square foot from $150 to $180. Construction costs typically range from $80 to $100 per square foot. Equipment costs typically run from $150,000 to $250,000. Below is a table with average plant size, costs, and cost per square foot for meat processing plants built in Kentucky in the last 10-12 years.

Comparison of Meat Processing Plant Costs

Plant Size (square feet)	**< 4000**	**5000 - 6000**
Construction Cost	$ 250,000 - $ 350,000	$ 490,000 - $ 600,000
Equipment Cost	$ 90,000 - $ 250,000	$ 160,000 - $ 350,000
Total Start-up Cost	**$ 340,000 - $ 600,000**	**$ 650,000 - $1,000,000**
BLDG Cost/Sq. Ft.	$ 85.00 - $ 100.00	$ 70.00 - $ 115.00
Total Cost/Sq. Ft.	**$ 150 - $ 180**	**$ 100.00 - $ 200.00**

Controlled Temperature Storage

In general, processing plant capacity is driven by cooler size, which can be the biggest production bottleneck if not big enough. Most custom meat processing plants handle 25 to 50 beef a week depending on the size of the cooler and the average number of days that the beef hang (3 to 5 days for carcasses with little or no fat cover and 7 to 10 days for standard carcasses). Cooler and freezer areas are fixed after construction, meaning the space to house product cannot be adjusted with volume fluctuations. In contrast, adjusting labor on the kill floor and in processing rooms can accommodate changing numbers of animals for processing.

Accurately estimating animal volume and frequency to calculate temperature controlled storage is a critical factor to success. **Average cooler storage requirements are 15 square feet per one whole beef and 9 square feet per one hog.** Pre-chill coolers should be separate from aging space to allow freshly-killed hot carcasses to cool prior to being mixed with aging product to help reduce utility expenses.

Other space requirements include: the "gut room" that provides a confined storage area for waste products which is a USDA requirement; the USDA-required office to provide a work area for the local inspector; and, the break room and restrooms that conform to local health department standards to provide a designated area for employee hygiene maintenance. Kentucky Food Safety Branch has certain requirements, that can be found at http://chfs.ky.gov/NR/rdonlyres/CC5DF026-6A6A-412B-BA25-59E9DDA2FF86/0/CommercialFoodManufacturinginKentuckyAStarterGuide.pdf.

Equipment Listing for Custom Meat Processing Plants

This list is not all-inclusive. But it is a good general list of equipment needed for a start-up meat processing facility

Large and Medium Kill Floor (Beef, Pork, Lamb, Goat)

Quantity	Equipment
1	Holding Pen (Fabricated)
2	1 Ton Hoist
1	Hog Stunner
1	Cartridge Stunner
1	Mono-Rail
1	Mono-Rail Scale
35	Beef Split Bar
25	Meat Tree
1	Split Saw and Blades
2	Skin Cradle
2	Carcass Drop
3	Gut Cart
20	Gut Drums
6	Knives

Optional Kill Floor Equipment

1	Hog Scalder
1	Hide Puller/Stand/Roller
1	1 Ton Hoist

Processing (ALL)

Quantity	Equipment
4	Stainless Steel Tables
1	Band Saw
1	Meat Grinder
1	Carcass Drop
1	Scales – Bench and Price
1	Vacuum Sealer
1	Stainless Steel Cart
9	Knives
2	Hack Saw

Value-Added Processing

Quantity	Equipment
1	Patty Maker
1	Mixer – 200 LB
1	Sausage Stuffer
1	Slicer
1	Tenderizer
1	Smoker

Additional Resources

Iowa State University – University Extension Guide to Designing a Small Red Meat Plant
https://store.extension.iastate.edu/product/Guide-to-Designing-a-Small-Red-Meat-Plant

UT Center for Profitable AG Value-added Beef Program
https://ag.tennessee.edu/cpa/Pages/VA%20Beef.aspx

Initial Considerations for Starting a Small-Scale Livestock Processing Facility

https://ag.tennessee.edu/cpa/Information%20Sheets/CPA%20221.pdf

USDA Slaughter Inspection 101
https://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/production-and-inspection/slaughter-inspection-101/slaughter-inspection-101