

# **FEASIBILITY STUDY FOR ENERGY EFFICIENT ON-FARM POULTRY AND SMALL RUMINANT PROCESSING PLANTS**



A NYSERDA-funded study conducted by:  
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## 1. INTRODUCTION AND DEFINITION OF THE PROBLEM —

### INTRODUCTION

This study of the feasibility of building on-farm meat processing facilities was made possible by a New York State Energy, Research and Development Authority (NYSERDA) grant to CADE. CADE, the Center for Agricultural Development and Entrepreneurship, is a non-profit agricultural development organization located in central New York State. Its mission is to work with farmers, association of farmers, agricultural entrepreneurs, consumers and the general public to develop profitable and environmentally responsible farm enterprises. Saving energy costs is an important component of CADE's mission.

### DEFINITION OF THE PROBLEM

The need for the study arose from CADE's work for five years with a group of farmers in central New York to develop opportunities in energy - and-cost efficient production and sale of poultry, veal and small ruminants (lambs and goats). The group has formed a legal association, the Meadow Raised Meats Association (MRMA), and now has nine members with projected gross sales of \$270,000 in 2002. The production method involves raising the meat animals on pasture with no use of growth hormones and antibiotics. This method employed by the Association meets the demand of niche consumers who value pasture-raised meats for the enhanced taste, texture and the humane treatment of animals. In addition, pasture-raised production methods are low-energy, cost effective and environmentally sound.

One of the major challenges faced by the Meadow Raised Meats Association and other poultry and small ruminant operations is the lack of processing facilities in the area. At this time, the closest poultry processing facility is 50 miles away. The time, energy (fuel for transportation) and cost of transporting chickens to remote poultry processing plants cuts deeply into the profit margin of the farmers. Thus, CADE is conducting this study to examine the feasibility of constructing on-farm meat processing plants to serve the Meadow Raised Meats Association and other local farm enterprises. The study will evaluate the potential energy savings from reducing transportation for processing at remote sites, constructing a state-of-the-art, energy efficient facility, and using innovative methods such as composting.

## 2. PROJECT PARAMETERS AND RESEARCH METHODOLOGY

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The following are the on-farm meat processing facility design parameters and research methodology used for the study.

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### PARAMETERS

- Facility designed for an on-farm location meeting all local and state zoning and building regulations.
  - New construction (slab and pole barn construction).
  - Facility designed for maximum annual processing of 20,000 poultry units which is the maximum currently allowed by the USDA and New York State for on-farm processing operations.
  - Facility also handles small ruminants for custom exempt processing (e.g. rabbits and other exotic animals).
  - The facility meets New York State regulations for a meat processing plant.
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### RESEARCH METHODOLOGY

CADE partnered with the following organizations to conduct the study:

- The Oneida County Cornell Cooperative Extension, Oriskany, NY
  - Cornerstone Farm Ventures - Agricultural Consulting, Norwich, NY
  - Wayne C. Mellor - Business Consultant, Fly Creek, NY
  - South Central New York Resource, Conservation & Development, Norwich, NY
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The work completed in support of the project was:

1. A review of the current New York State and Federal laws and regulations pertaining to meat processing and specifically how they apply to small-scale on-farm meat processing facilities.
2. Research on the laws and regulations related to waste disposal for meat processing facilities.
3. Building design including local zoning and state regulations, siting, construction, and equipment.
4. A study of the improvement in energy savings and profitability for farms using on-farm processing with energy efficient techniques and equipment.
5. A financial projection incorporating the final design specifications, expected production and projected capital costs.
6. Facility conforms to USDA specifications. Farm owner decides on whether to license based on production needs or if selling to out of state markets.

### 3. USDA AND NYS REGULATORY ISSUES PERTAINING TO ON-FARM MEAT PROCESSING FACILITIES

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The following is a summary of federal and custom exempt regulations.

Under the Federal Poultry Products Inspection Act and the regulations implementing the Act, the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA) is responsible for ensuring that poultry products distributed in United States commerce are safe, wholesome, not adulterated, and are properly marked, labeled and packaged. In most states, federal FSIS inspectors oversee the facilities that slaughter and process poultry. In New York custom exempt facilities are reviewed under contract with the state.

The federal Poultry Products Inspection Act and its regulations provide exemptions for small-scale poultry processors. These "exemptions from inspection" mean that a federal inspector does not need to be present to examine the birds as they are being slaughtered and processed. Small-scale (or low-volume) processors qualify for these exemptions simply by meeting the requirements, which are described below. There is no process for applying to the USDA or FSIS for these exemptions.

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The smallest-scale processors are exempt from the federal inspection requirements if the following conditions are met:

1. The producer slaughters no more than 1,000 poultry during the calendar year for which the exemption is claimed.
2. All of the poultry was raised on the producer's own farm.
3. The poultry producer is not in the business of buying or selling poultry products other than those produced from poultry raised on his or her farm.
4. None of the poultry is distributed outside of the state where the poultry is raised.

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The federal inspection requirements also do not apply to poultry producers or other persons who raise and slaughter or process 20,000 or fewer poultry in each calendar year as long as all of the following conditions are met:

1. They do not slaughter or process poultry products at a facility used for slaughtering or processing poultry by any other person.
2. The poultry are sound and healthy before slaughtering.
3. The poultry is slaughtered, handled, and otherwise processed under sanitary conditions, practices and procedures. The resulting poultry products must be sound, clean, and fit for human food when distributed.
4. The poultry products are distributed with a label that includes the producer's name, the producer's address, and the statement "Exempted-P.L. 90-492." The poultry products must not be misbranded in any way.
5. The poultry products may be distributed only in the state in which the poultry is raised and processed.
6. In the current calendar year the poultry producer or distributor may not engage in the business of buying or selling any poultry products other than those described in this exemption.

CADE also received clarification that if the on-farm processing facility is owned by a legally incorporated cooperative, each member of the cooperative is entitled to slaughter up to 20,000 units without Federal inspection as long as the six conditions continue to be met. Each member must keep their own records and units from separate farms cannot be slaughtered in the same batch.

The poultry products produced under these exemptions may be distributed by the poultry producer or other person directly to household consumers, restaurants, hotels, and boardinghouses for use in their own dining rooms, or in the preparation of meals for sale to direct consumers.

The agency responsible for poultry inspection in New York is the Department of Agriculture and Markets, Division of Food Safety and Inspection. New York requires inspection of poultry and poultry products, except as exempted by the provisions of the federal Poultry Products Inspection Act. The small farm exemption applies for operations up to 1,000 birds.

There are two distinctions concerning the processing of poultry:

- 1) the licensing of facilities where poultry are slaughtered or processed into products for human consumption, and
- 2) the inspection of the birds themselves as they are processed.

“**FEDERAL INSPECTION**” usually refers to examination of the birds themselves while they are being processed, and “**state licensing**” usually refers to the physical design and equipment requirements for poultry processing facilities.

The federal **POULTRY PRODUCTS INSPECTION ACT** allows states to establish their own state poultry inspection programs, which must be at least as rigorous as the federal inspection program. Poultry products inspected under state inspection programs may be sold, transported, and used only within the state boundary, but not across state lines.

Despite these exemptions from inspection of the birds themselves as they are being processed, the federal FSIS as well as state regulatory agencies may choose to examine processing facilities of any size to be sure that they are in compliance with the laws, including the requirement that poultry and poultry products are processed under clean and sanitary conditions. If the facility is not in compliance with the law, the FSIS or the state may suspend or terminate the facility's exemption from the law and impose penalties provided under federal or state law.

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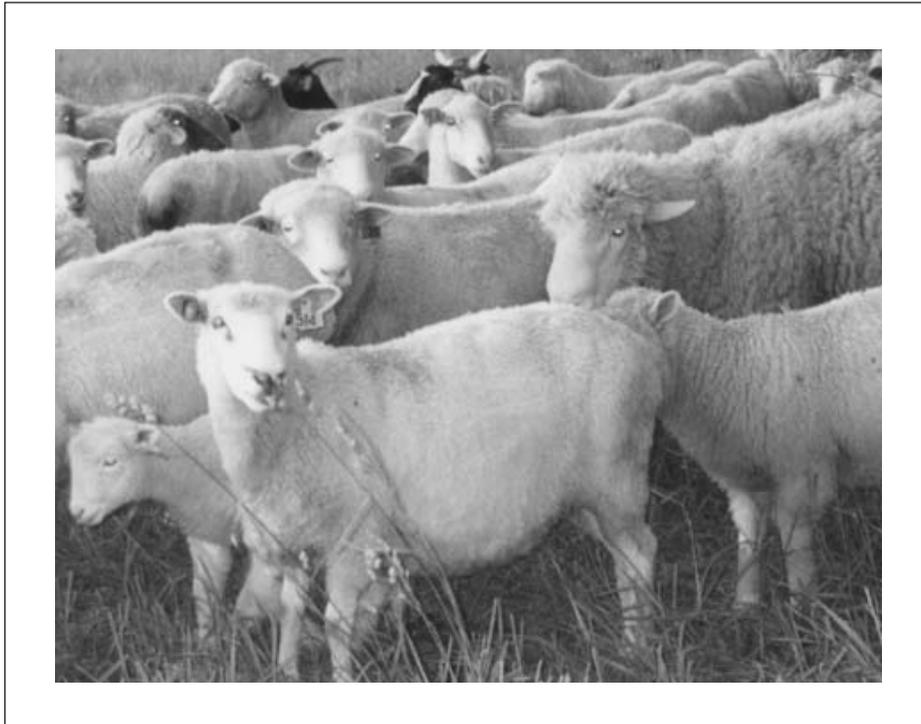
**SPECIFICALLY NYS AG & MARKETS ARTICLE 5-A READS IN PART:**

**SECTION 96-B. LICENSE REQUIRED.**

*No person, firm, partnership or corporation not granted inspection pursuant to the federal meat inspection act, the federal poultry products inspection act, article five-b or article five-d of this chapter shall operate any place or establish where animals or fowls are slaughtered or butchered for food unless such person, firm, partnership or corporation be licensed by the commissioner...*

**SECTION 96-C. APPLICATION OF ARTICLE.**

*This article shall not apply to (a) any bona fide farmer who butchers his own domestic animals or fowl on his farm exclusively for use by him and members of his household and his non-paying guests and employees, or (b) any custom slaughterer, (as used in this section, "custom slaughterer means a person, firm, corporation or association who or which operates a place or establishment where animals are delivered by the owner thereof for slaughter exclusively for use, in the household of such owner, by him, and members of his household and his non-paying guests and employees, provided, that such custom slaughterer does not engage in the business of buying or selling any carcasses, parts of carcasses, meat or meat products of any animal), or (C) any person who slaughters not more than two hundred fifty turkeys or an equivalent number of birds of all other species raised by him on his own farm during the calendar year for which an exemption is sought (four birds of other species shall be deemed the equivalent of one turkey), provided that such person does not engage in buying or selling poultry products other than those produced from poultry raised on his own farm. In addition, all new construction and major alterations to existing buildings must be submitted to the department before construction is begun.*



## 4. DESIGN ELEMENTS

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The following design elements are required for an on-farm meat processing facility capable of processing 20,000 poultry units per year.

### SITE REQUIREMENTS

Level, graded with enough space for a 1,000 gallon septic with a 1,000 gallon grease trap and leach field for one bathroom. Plant blood waste will be composted. Setbacks will conform to site-specific (i.e. township/local) regulations. Building will face south to maximize solar heating.

### ARCHITECTURAL AND SPACE REQUIREMENTS

20' x 30' pole barn building with 6" concrete floors. Building siding and windows conform to existing farmstead. Building has 11' x 13' kill room, 11' x 16' eviscerating room, 8' x 8' walk-in cooler, 8' x 8' freezer, office and bathroom.

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### ENERGY EFFICIENT EQUIPMENT REQUIREMENTS AND OPTIONS

	100 Birds per Hour
Four Bird Picker	\$ 1,250
Scalder	\$ 1,100
Four Kill Cones	\$ 60
Two Turkey Kill Cones	\$ 50
Walk In Cooler	\$16,800
Walk In Freezer	\$ 6,200
Two Stainless Steel 8' Tables	\$ 900
Two Chill Tanks	\$ 200
Ice Machine	\$ 450
Knocking Pen	\$ 1,000
8' Overhead Rail	\$ 400
Winch	\$ 500

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### ENERGY REQUIREMENTS AND OPTIONS

#### HEATING OPTIONS

Option 1: Radiant Heat

Supplier: Space Ray Infrared Gas Heaters

Fuel Source: LP Gas

Estimated Annual Cost: \$261

Option 3: Oil Forced Air

Supplier: Various

Fuel Source: Fuel Oil

Estimated Annual Cost: \$88

Option 2: Electric Heat

Supplier: Various

Fuel Source: Electricity (\$.12 per kWh)

Estimated Annual Cost: \$327

Option 4: LP Forced Air

Supplier: Various

Fuel Source: LP Gas

Estimated Annual Cost: \$333

## **EQUIPMENT**

### 1) Scalding

Supplier: Poultry Man

Fuel Source: LP Gas

Estimated Annual Cost: \$260

Energy Efficiency Features: LP Gas, Auto Controls Temp/Timer

### 2) Plucker

Supplier: Poultry Man

Fuel Source: Electric

Estimated Annual Cost: \$18

### 3) Cooler/Freezer

Supplier: Various - Built to Spec

Fuel Source: Electric

Estimated Annual Cost: \$984

Energy Efficiency Features: 8x8 walk-in cooler and 8x8 freezer. Outside Compressor, 4" to 6" insulation, evaporator fan controller for variable fan speed, control unit for outside air exchange, permanent split capacitor compressor motor, and low voltage regulator for non-duty cycle compressor operation (total potential energy savings 10 - 60 %)

### 4) Ice Machine

Supplier: Various (Manitowoc, Scotsman)

Fuel Source: Electric

Estimated Annual Cost: \$221

Energy Efficiency Features: 250 lbs. Minimum capacity. Water cooled ice making head.

5.9kWh DOE efficiency rating.

## **WASTE WATER REQUIREMENTS AND OPTIONS**

Blood waste will be composted. Approximately 40,000 lbs. of blood waste compostable material will be added to offal compost per year.

### **SEPTIC SPECIFICATIONS**

1000 Gallon Septic Tank	\$ 400
1000 Gallon Grease Trap	\$ 400
Pipes and Connectors	\$ 200
Engineering Excavation, Perk Test, Etc...	\$3,000

## **OFFAL DISPOSAL REQUIREMENTS AND OPTIONS**

### **OPTION 1: SMALL SCALE METHANE DIGESTER**

The economics of a small-scale digester were investigated. There are approximately 36 agricultural digesters in operation in the U.S. None of the researched applications were small scale (250 pounds of biomass per day). The chart below displays a brief analysis using data from the NYSERDA dairy farm project and applying it on a pro rata basis to the on-farm model. Poultry offal should generate more gas than manure so this projection is conservative on the amount of energy output.

### Digester Analysis

	<b>Lbs. Per Unit</b>	<b>kWh per 100 Lbs.</b>
Cow Manure	100	2.400
Poultry Offal	4	0.096
Small Scale Number of Units		20,000
Total Potential kWh		1,920
Total Potential BTUs		6,552,960
Net Propane Value per Year		\$ 212.07
Annual Maintenance Cost per Lb.		\$ 0.01
Total Maintenance Cost		\$ 876.71
Net Value to Farm		\$ (664.64)

The large capital and annual operating costs for extant systems and the lack of any researched systems scaled to an on-farm poultry processing application indicate that a digester would be a high risk project for a small scale operation except on an experimental basis. In addition, there is a significant amount of technological expertise needed to operate these systems. The labor input for a small-scale digester needs to be researched to determine the feasibility of an installation.

#### **OPTION 2: COMPOSTING**

The estimated offal and usable blood waste for a 20,000 bird processing plant is 40,000 lbs. per year. A poultry carcass with blood has a Carbon/Nitrogen ratio = 5 and a water content of 65%. The optimal targets for composting are C/N = 30 and H<sub>2</sub>O = 50-60%. A ready supply of other compostable material is necessary to achieve the proper C/N ratios and water content.

Wood chips are available on the farm. Wood chips have a C/N ratio of 560 and negligible water content. The optimal mix is 20 parts offal and blood waste to one part wood chips.

Each poultry carcass has 2 lbs. compostable materials x 20,000 per year = 20 tons + one ton of chips = total of 21 tons processed. The compost does not require turning.

## 5. MATRIX OF DESIGN ELEMENTS WITH ENERGY AND COST FACTORS

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The chart on the following page shows the total amount of energy consumption in BTUs for shipping 20,000 units to a USDA facility 50 miles away in batches of 500 units compared to processing 20,000 units on-farm.

The on-farm energy consumption includes an analysis of four different methods of heating the building, determining the energy used to process one poultry unit based on the design specifications, and calculating the transportation savings of not having to ship offal waste to a landfill. The on-farm processing energy consumption is calculated using the latest in energy efficient equipment design and installation and the lowest consumer of BTUs in heating the facility. The total savings versus using conventional equipment, heating and installation is 20%.

For the final comparison the amount of energy consumed in transporting 40 batches of 500 units in a panel truck a distance of 100 miles per batch is calculated. The same values for the BTUs consumed per unit in heating the USDA facility and the on-farm facility are used under the assumption the both would maximize efficiencies in heating and insulation.

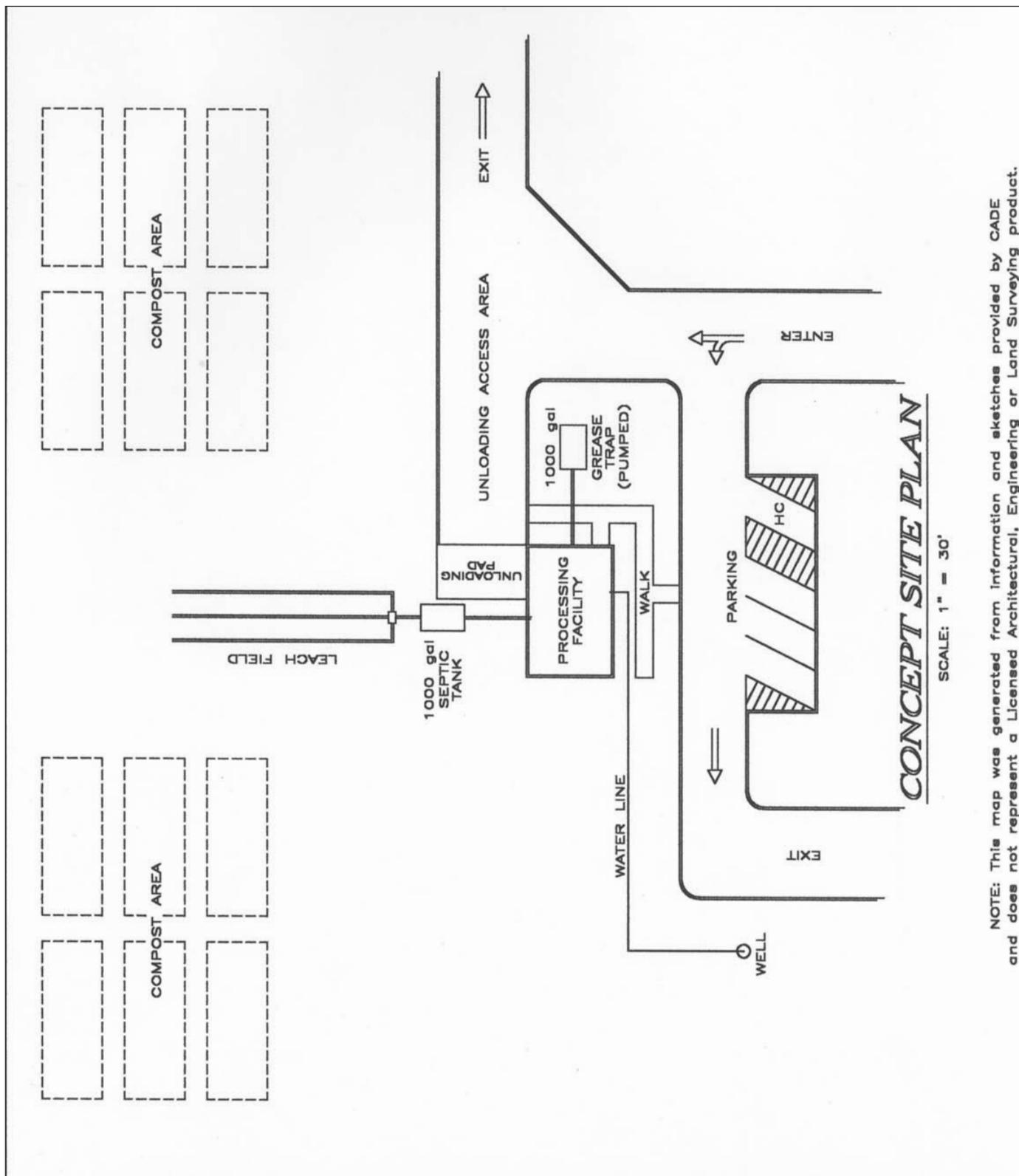
**TOTAL ENERGY CONSUMPTION FOR ON FARM PROCESSING VERSUS PROCESSING IN THE NEAREST USDA FACILITY**

<b>BUILDING HEAT</b>						
<b>Fuel</b>	<b>Efficiency</b>	<b>Heat Load</b>	<b>Fuel Price</b>	<b>Fuel Consumption</b>	<b>Total BTUs</b>	<b>Annual Cost</b>
Oil	90	9.8	0.309 Per Liter	285.05	10,288,503	\$ 88.19
Electric	100	9.8	0.120 Per kWh	2722.22	9,290,944	\$ 326.67
LP	90	9.8	0.773 Per Liter	430.39	10,286,005	\$ 332.88
Radiant(LP)	92	7.8	0.773 Per Liter	336.83	8,049,917	\$ 260.52
*Heat Load for Local Climate						
<b>PROCESSING ENERGY CONSUMPTION</b>						
	<b>HP</b>	<b>Watts</b>	<b>BTU per Unit</b>	<b>Processed</b>		
Plucker	1.0		25			
Scalder	13.4		340	Cost per BTU 9% Higher for LP		
Cooler	1.5		764	4000 Hour Duty Cycle		
Freezer	1.5		764	4000 Hour Duty Cycle		
Ice Maker			315	5.9 kWh Water Cooled Ice Making Head		
Water Pump			28			
Water Heater	0.5					
Gas			*1150			
Electric			785	4600 Hour Duty Cycle		
Lighting		1192	14	2.2 Watts per Foot Manufacturing ASHREA 9.3.11		
Btus Per Unit			3033			
Total BTU per 20,000 Units			60,700,955			
Total kWhs Per 20,000 Units			17,785			
Price per kWh			\$ 0.12			
Total Annual Cost			\$ 2,134.23			
<b>ENERGY USED IN TRANSPORTATION</b>						
	<b>Trips</b>	<b>Mileage</b>	<b>MPG</b>	<b>BTU Consumed</b>		
Processing	40	100	15	37,333,333		
Waste Disposal	40	25	15	9,333,333		
Total				46,666,667		
Total Annual Cost				\$ 483.33		
<b>TOTAL FUEL CONSUMED IN BTUs (HIGHEST EFFICIENCY)</b>						
	<b>USDA</b>		<b>On-Farm</b>			
Heat	8,049,917		8,049,917			
Processing	72,841,146		60,700,955			
Transportation	46,666,667		--			
Total	127,557,730		68,750,872			
Energy Savings	58,806,858		46.1%			
Processing 20% More Energy Efficient						

Transportation consumes 37% of the total BTUs consumed for 20,000 units slaughtered at a USDA facility. The on-farm method eliminates the need for this energy. Coupled with the 20% savings in processing efficiencies results in a total energy savings of 46% (\$910) for on-farm versus conventional USDA processing. Although oil heat is the least expensive, the lowest consumer of energy, radiant infrared, is chosen based on the financial analysis.

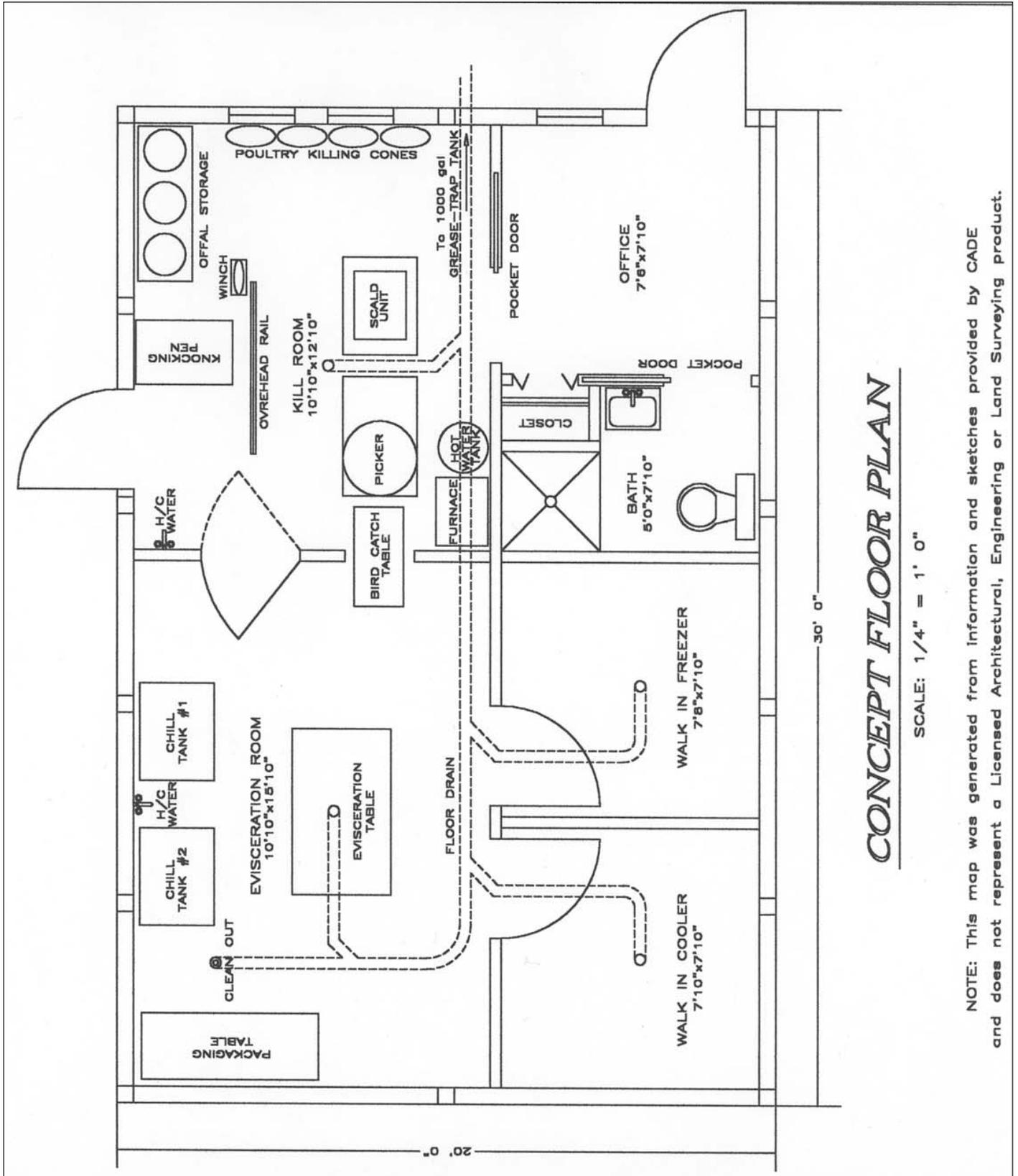


6. ARCHITECTURAL / ENGINEERING DESIGN



NOTE: This map was generated from information and sketches provided by CADE and does not represent a Licensed Architectural, Engineering or Land Surveying product.

SHEET 2 of 5	SCALE: 1" = 30'	<b>ON-FARM PROCESSING FACILITY</b> PREPARED FOR <b>CADE</b> <b>CENTER for AGRICULTURAL</b> <b>DEVELOPMENT and ENTREPRENEURSHIP</b>	PREPARED BY <b>REGEN</b> MAPPING Oneonta, N.Y. 807-432-3648
	DATE: October 15, 2002		
	MAP NO. R140		



# CONCEPT FLOOR PLAN

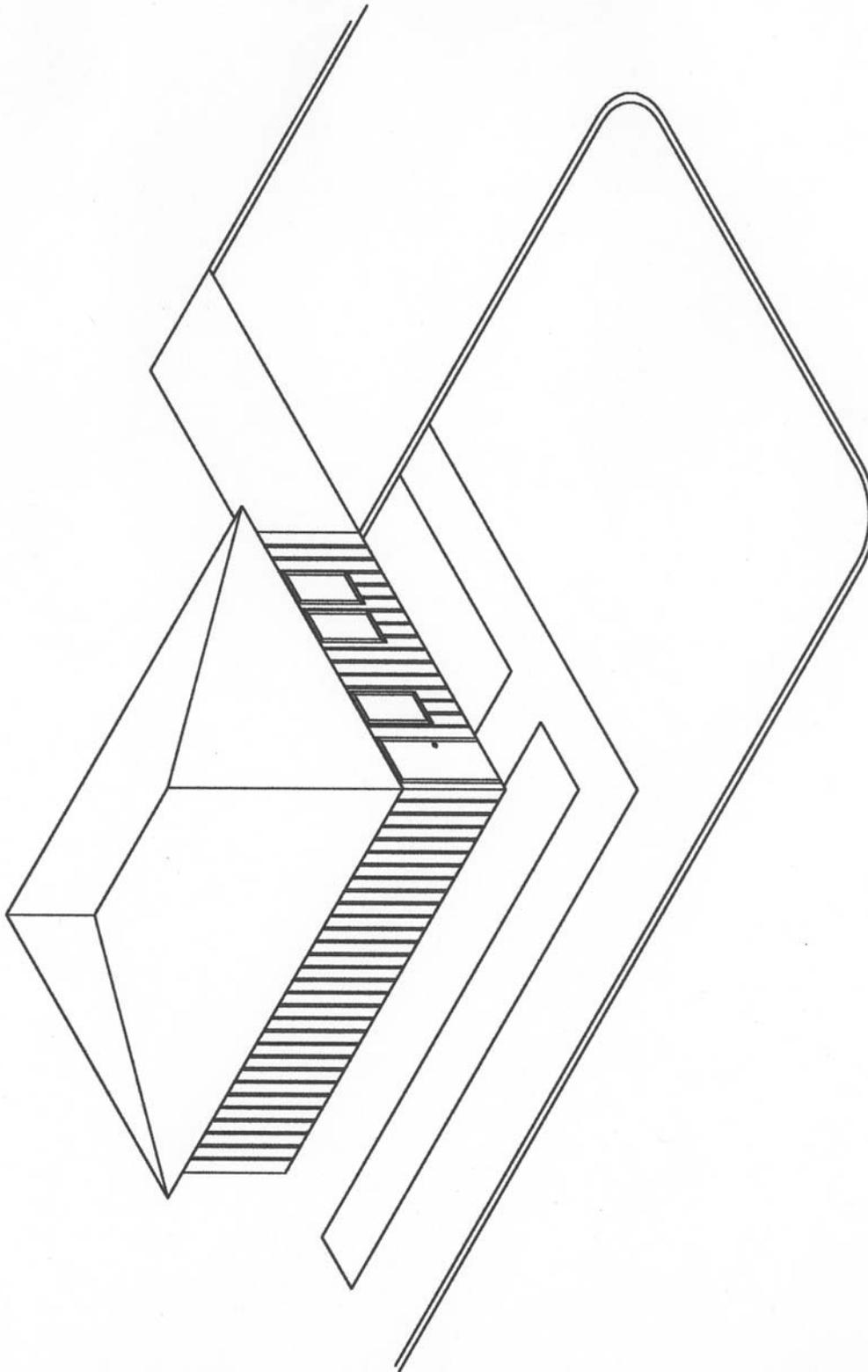
SCALE: 1/4" = 1' 0"

NOTE: This map was generated from information and sketches provided by CADE and does not represent a Licensed Architectural, Engineering or Land Surveying product.

SCALE: 1/4" = 1' 0"
DATE: October 15, 2002
MAP NO. R140

**ON-FARM PROCESSING FACILITY**  
 PREPARED FOR  
**CADE**  
**CENTER for AGRICULTURAL**  
**DEVELOPMENT and ENTREPRENEURSHIP**

PREPARED BY <b>REGEN</b> MAPPING Ontario, N.Y. 607-432-3646
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***CONCEPT ISOMETRIC PLAN***

NOT TO SCALE

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NOT TO SCALE
DATE: October 15, 2002
MAP NO. R140

***ON-FARM PROCESSING FACILITY***  
 PREPARED FOR  
***CADE***  
***CENTER for AGRICULTURAL***  
***DEVELOPMENT and ENTREPRENEURSHIP***

PREPARED BY  
***REGEN***  
***MAPPING***  
 Oneonta, N.Y.  
 807-432-3848

## 7. BUSINESS PLAN PROJECTION

The following charts show the financial projection for a farmer processing 5000, 10000, and 20000 poultry units per year in a USDA facility compared to on-farm. Shipping in 500 unit batches results in no economies of scale for processing at the USDA facility, therefore the processing cost is a constant \$1.74 per unit.

The farmer needs to process greater than 10,750 units on-farm for profits to exceed those from processing at a USDA plant. A farm that slaughters 20,000 units on farm is projected to have a 47% improvement in profit versus using a USDA plant. 24% of the improvement is eliminating the total cost of shipping product to the USDA facility.

### FINANCIAL COMPARISON OF ON-FARM VERSUS CENTRALIZED PLANT POULTRY PROCESSING

COST OF USDA PROCESSING IN DELAWARE COUNTY		Poultry Units Processed Per Year		
		5000	10000	20000
Shipping Labor		\$ 450	\$ 900	\$ 1,800
Truck/Fuel		\$ 730	\$ 1,460	\$ 2,920
Processing		\$ 7,500	\$ 15,000	\$ 30,000
	Total Cost	\$ 8,680	\$ 17,360	\$ 34,720
	Per Bird	\$ 1.74	\$ 1.74	\$ 1.74
<b>COST OF ON-FARM POULTRY PROCESSING</b>				
Wages		\$ 2,667	\$ 5,333	\$ 10,667
Benefits (12.5%)		\$ 333	\$ 667	\$ 1,333
Utilities		\$ 795	\$ 1,329	\$ 2,397
Insurance		\$ 1,000	\$ 1,000	\$ 1,000
Office Expense		\$ 1,200	\$ 1,200	\$ 1,200
Interest		\$ 3,617	\$ 3,617	\$ 3,617
Depreciation		\$ 5,002	\$ 5,002	\$ 5,002
	Total Cost	\$ 14,613	\$ 18,148	\$ 25,216
	Per Bird	\$ 2.92	\$ 1.81	\$ 1.26
	Difference	\$ 1.19	\$ 0.08	\$ (0.48)
<b>FARM INCOME STATEMENT FOR POULTRY PROCESSING</b>				
<b>USDA Processing</b>				
Revenue	(3.5 Lbs./Unit at \$1.85 per Pound)	\$ 32,375	\$ 64,750	\$ 129,500
Expenses	Variable Cost \$3.45/Unit	\$ 17,250	\$ 34,500	\$ 69,000
	Overhead Cost (Amortized at 10 Years)	\$ 1,383	\$ 2,765	\$ 5,531
	Processing (USDA)	\$ 8,680	\$ 17,360	\$ 34,720
	Total	\$ 27,313	\$ 54,625	\$ 109,251
	Per Bird	\$ 5.46	\$ 5.46	\$ 5.46
Net Income		\$ 5,062	\$ 10,125	\$ 20,249

<b>ON-FARM PROCESSING</b>					
Revenue	(3.5 Lbs./Unit at \$1.85 per Pound)	\$ 32,375	\$ 64,750	\$ 129,500	
Expenses	Variable Cost \$3.45/Bird	\$ 17,250	\$ 34,500	\$ 69,000	
	Overhead Cost (Amortized at 10 Years)	\$ 5,531	\$ 5,531	\$ 5,531	
	Processing (On Farm)	\$ 14,613	\$ 18,148	\$ 25,216	
	Total \$ 37,394	\$ 37,394	\$ 58,179	\$ 99,747	
	Per Bird	\$ 7.48	\$ 5.82	\$ 4.99	
Net Income		\$ (5,019)	\$ 6,571	\$ 29,753	
	Percent Change	- 199%	- 35%	47%	

**ASSUMPTIONS**

1. \$75,000 total cost financed over 10 years at 5%
2. Wages of \$10 per hour
3. One worker processes 150 birds per 8 day with 20 days in a month
4. Small panel truck mileage rate of \$.365 per mile
5. Four hours of trucking labor at \$10 per hour
6. 500 Birds per trip
7. FOB Farm

Cost per Chicken	Fixed	Variable	
HPI Study 1999	1257	3.45	
Pastured Poultry, a Heifer Project International Case Study Booklet the National Center for Appropriate Technology, 1999			



## 8. COST ESTIMATES

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The following is the capital cost estimate for building the plant. The farmer should also have \$4,000 of working capital (two months of total processing cost) for a 20,000 unit operation.

### **BUILDING**

Building	\$ 39,000 (\$65 per foot, 600 square feet)
Site Prep	\$ 1,000
Septic	\$ 4,000
Well	\$ 2,500
Total	\$ 46,500

### **EQUIPMENT**

Four Bird Picker	\$ 1,925
Scalder	\$ 1,445
Four Kill Cones	\$ 60
Two Turkey Kill Cones	\$ 50
8' x 8' , 10' x 16' Walk In Cooler	\$ 16,800
8' x 8' Walk In Freezer	\$ 4,800
Two Stainless Steel 8' Tables	\$ 900
Two Chill Tanks	\$ 200
Ice Machine	\$ 450
Knocking Pen	\$ 1,000
8' Overhead Rail	\$ 400
Winch	\$ 500
Total	\$ 28,530
Total Capital Cost	\$ 75,030

## 9. RECOMMENDATIONS FOR FUTURE ACTION

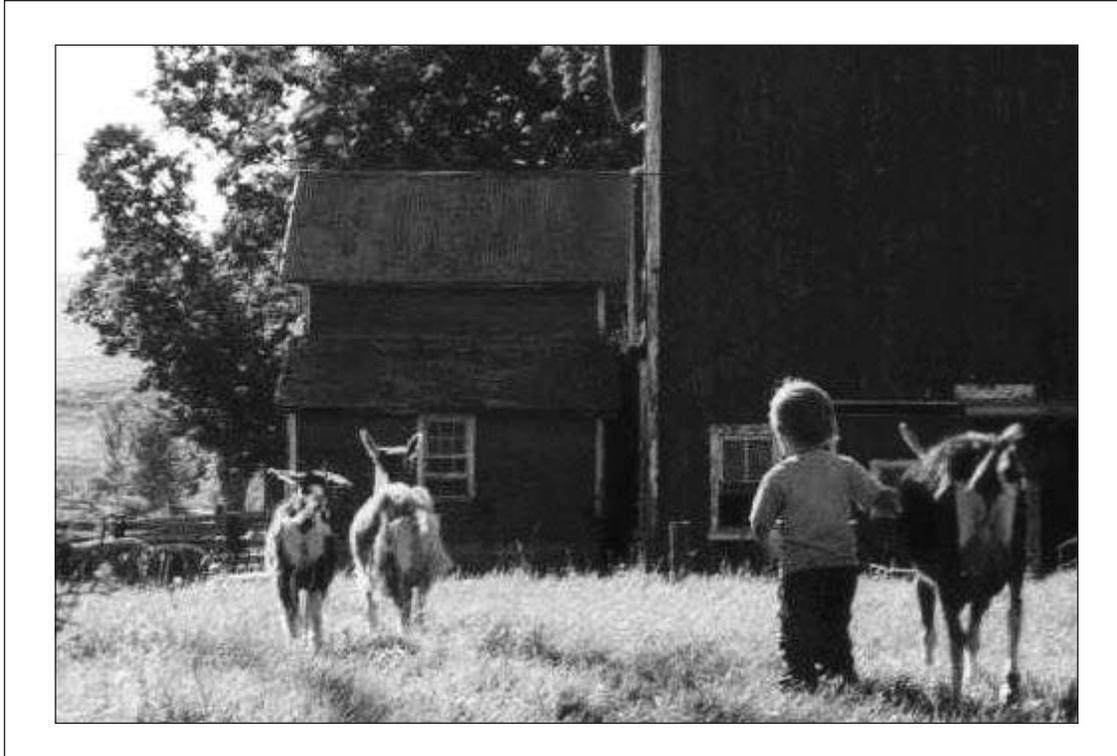
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This study shows the potential for energy- and cost-savings of on-farm meat processing facilities. An energy efficient meat processing facility design sited on a poultry farm coupled with transportation efficiencies will result in a total energy savings of 46% in comparison to shipping poultry to commercial processing plants. In terms of cost savings, an on-farm processing facility would result in savings of \$0.48 per poultry unit (based on 20,000 poultry units processed per year). This is a total potential savings of \$9,600 for an on-farm processing facility that handles 20,000 poultry units per year.

In addition, utilizing composting as a method for the handling of offal and waste products in a meat processing facility is both efficient and environmentally sound.

It is recommended that funds be sought to construct one or two on-farm meat processing facilities in central New York State. Should such a facility be built, energy and cost data could be collected and analyzed to further study the efficiencies gained in on-farm meat processing facilities.

CADE, in partnership with area farmers, plan to pursue funding to move from this feasibility study to the construction of an on-farm meat processing facility.



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