



ECONOMIC DEVELOPMENT
& FINANCING CORPORATION
631 South Orchard Avenue
Ukiah, CA 95482

Introduction

Some time ago, a proposal was presented to the citizens of Mendocino County about the prospect of establishing a slaughterhouse/meat processing plant in this area. There are many reasons to consider such a project, including the obvious economic benefits to our local ranchers. An added benefit would be to create a viable source for locally grown meat, supporting the growing movement to buy locally produced food. The goal of this report is to foster factual and objective consideration of locating a meat processing operation in Mendocino County.

The Mendocino County Economic Development & Financing Corporation (EDFC), is a county-wide, independent organization whose Board of Directors includes representatives from each of the four cities in the county, members of the County Board of Supervisors, Tribal representatives, as well as the local banks, Chambers of Commerce, business owners and concerned citizens. EDFC lends money to local businesses to enable them to grow and to create and retain local jobs. In addition, EDFC also helps to create jobs by identifying business opportunities in the county, encouraging and enabling businesses to locate and grow in our county.

In this spirit, EDFC commissioned an Economic Development Administration study to determine the feasibility of developing a meat processing operation in this county that would revitalize the current livestock industry and maintain and protect the bucolic and pastoral surroundings on which they depend. The study was commissioned by the Economic Development and Financing Corporation of Mendocino County (EDFC), with funding from the Economic Development Agency (EDA), a division of the US Department of Commerce, and was conducted by area Livestock Advisors from the University of California Cooperative Extension and a State Specialist from

the University of California Davis Agricultural Economics Department and Small Farms Program. The accompanying documents are the results of the study, outlining, among other things, the economic impacts in Mendocino County.

The following is a brief synopsis of what would occur if a meat processing facility, as outlined in the study, were to be built:

- The study proposes a small, multi-species processing facility that would slaughter and process 80 head of cattle and 50 head of lamb or goat per day to start.
- The facility would be designed and built according to practices used in the meat industry in New Zealand - meaning smaller, cleaner, slower paced, and safer
- Outcomes from this facility would include:
 - The cattle ranching employment multiplier of 1.4 means that for every full-time equivalent job added in cattle ranching, a 0.4 job is created in the region's other industries. The 6.0 value-added multiplier for cattle ranching implies that every \$1.0 million of value added in cattle ranching through employee compensation, indirect business taxes, proprietary and other property type income results in \$5.0 million of value added in other industries within the region.
 - Gross value of livestock in the region would increase from \$15.8 million to \$29 million annually
 - The value of the harvested and processed meat would be worth \$58.2 million
 - 682 additional full-time equivalent jobs (10% increase) would be created. 44 jobs would be created in the facility, the rest would be created in associated activities
 - Labor income would rise a net \$16 million (31% increase)
 - Total value added to the regional economy would increase by \$23 million (47%)
- The study identifies two areas (Tiers 1 & 2) from which the animals would be supplied:
 - Tier 1 includes Mendocino, Lake, Sonoma, Marin, & Napa Counties

- Tier 2 includes Glenn, Colusa, Contra Costa, Yolo & Solano Counties
- The Facilities section of the study presented a design that was estimated to cost around \$18 million to build. However, it was determined that this is strictly a rough estimate, and it is probable that a more realistic amount would be much less.
- The principal market for the meat product would be in the Bay Area and Sacramento, with a smaller amount of the meat being sold locally.
- As noted above, the major benefit of this facility would be to help our local ranchers and farmers, as well as to create local jobs. A secondary, but equally important benefit would be to increase local food production capabilities - providing a means for local residents to buy locally raised and processed meat from a known, safe source.

When the prospect of building a meat processing facility was first presented about 3 or 4 years ago, there was some opposition to the project. One of the goals of this introductory letter was to address some of the concerns that were expressed by the public and to identify means by which these concerns would be resolved and corrected. EDFC has identified the major objections and have attempted to answer them:

- The biggest objection to the facility was water use. The study estimated that the facility would use about 45,000 gallons of water per day, about the same as a typical winery uses. It was agreed that using this amount of water, particularly given our current water situation, would amount to a fatal blow to the project, and despite the projected economic benefits, it would be extremely hard to justify building this facility. It became apparent that the only way to overcome this problem was to find a way to recycle most of the wastewater to be reused in the facility.
 - After some research, we found a company that has developed a wastewater treatment process used to treat slaughterhouse effluent. (See attached proposal)
 - According to the company - BioDyne, Inc. - their IBAC (Integrated Bio-Active Clarifier) will be able to recycle about 80% of the effluent for reuse.

- The IBAC consists of a single tank - 24'-6" diameter by 36'-0" tall, containing aerobic, anoxic and clarification zones.
- A budgetary cost would be about \$330,000.
- While more specific and closer scrutiny would be required, it is clear that this technology would answer the issue of water use. The IBAC is currently in use in several locations in the U.S. and Canada, including slaughterhouse and municipal waste treatment facilities.
- Closely related to water usage and waste treatment is the disposal of solid waste. Until now, the prevalent methods have been to send the waste products to rendering plants. We are fortunate to have, in Mendocino County, a company that produces bio-fuels from organic waste. EDFC has been in contact with the company about using the solid waste from the facility, creating a probable solution to that issue.
- Another objection that was raised involved the nature of a slaughterhouse operation. Historically, slaughterhouses in America have been characterized as being noisy, dirty, smelly and dangerous. Working conditions have been described as being very poor, with poorly paid, under-trained workers being exploited by management. This image was indelibly engraved in the national consciousness in 1906 in the book by Upton Sinclair called "The Jungle", in which the awful conditions of the meat packing industry were exposed.
 - The New Zealand meat industry, upon which this study is based, has undergone major changes in the last 15 years as outlined in an article that recently appeared in Meat Processing Magazine. (See attached)
 - The article describes the working conditions in the processing plants that are clean enough to provide tours to the public.
 - The pace of the production line is slower than that found in traditional processing plants creating a safer environment for the workers. Increased training of the workers as well as the ability to modify techniques based on worker input helps to constantly improve the safety and quality of the working conditions as well as the product.
 - As a result of these practices, the meat product has an extremely low incidence of recall or pathogen presence.

- EDFC was presented with a fact sheet from the New Zealand Career Services Department of the government of New Zealand. In the report, four meat-processing jobs were listed along with the job average income as well as the national average income.
- The attached spreadsheet compares these jobs as a percentage of the national average. In addition, these same percentages were applied to these jobs if they were located in the California North Coast Region. The spreadsheet lists the possible wage associated with these jobs as well as other jobs with comparable wages.
- Of the four jobs that were considered, one was 79% of the North Coast Region average, one was 82%, and two were at 104%. Clearly decent paying jobs.

Early on, EDFC recognized that a key component to this project was to identify possible investors who would be interested in pursuing the project. As mentioned above, the EDFC Board includes representatives from the local Native-American community, and it soon became apparent that the tribes could play a key role in the establishment of the meat processing facility. Preliminary discussions with the tribes are underway at this time. An obvious benefit to this arrangement would be the potential of opening markets to local ranchers to sell their product to the casinos around the state.

Beyond local markets, the Bay Area and Sacramento are major markets for locally grown meat. A key to developing a good distribution system in these areas involves opening distribution facilities close to the Bay Area and Sacramento markets. This is necessary because the customers need almost daily shipments of meat of the cuts that their customers demand. Such a supply requirement would be next to impossible to accomplish if the meat was shipped direct from Mendocino County not to mention the expense of running trucks daily from here to there. Shipping requirements could be handled if we were to establish distribution centers supplied from here once or twice a week.

The text of the report will be posted on the EDFC website (<http://edfc.org/>) and the local UCCE website (<http://cemendocino.ucdavis.edu>).

IBAC

with

ESP

Electronic Sensory Processing

Advanced Technology Water Reclamation System

100 - 22,000 BOD-5 Treatment Range

Highly Effective and Economical Solution
For Industrial and Municipal Applications

Dynamically Responds To Unstable Influent

IBAC Process - An Exciting Organic Technology

BioDyne's patented IBAC (Integrated Bio-Active Clarifier) process represents a unique, wide-range, highly effective, highly economical and advantageous biological water reclamation technology. It incorporates aerobic, anoxic, anaerobic, facultative, clarification and sludge treatment in a **single vessel**, resulting in less tankage, controls and equipment. IBAC systems also remove harmful biological nutrients, require much less space than conventional waste activated sludge plants and are more economical.

Now IBAC II - For Unstable Environments

IBAC II is specifically designed to maintain a tight and dynamically responsive control of the biological processes within the single multi-zone bioreactor when influent characteristics undergo upheavals, interruptions and batch-related changes. Cutting-edge technology is used for on-the-fly, optimum control and response to changes, with full facilities for remote monitoring.

IBAC II Mimics Nature - But In Fast-Forward

In the aerobic zone, the microbes degrade and solubilize COD, breaking long chain carbon compounds into easily degradable substrates. The organisms within the micro-aerophilic and the anaerobic zones further absorb the organic matter, converting it to short chain fatty acids which are then oxidized by aerobic action within the upper aerobic region. BioDyne's accelerant is added to enhance the treatment through microbial diversity.

Major Benefits of Electronic Sensory Processing

Now the benefits of biological wastewater treatment are combined with modern technologies to achieve a dynamic response to influent changes. Results:

- Fast stabilization after major influent interruptions
- Fast stabilization after influent upheavals
- On-the-fly response to batch-related influent changes

Major Benefits From Co-Treatment

An important benefit of the IBAC treatment process is that solids and liquids are co-treated. The solids are degraded and stabilized conjointly with the liquids in the same vessel. The lower amount of solids results in reduced disposal costs.

Simplified Biological Nutrient Removal

The three zones in the IBAC process provide biological nutrient removal (BNR) in the single vessel, without the need for increased tankage, recycling pumps, complex process controls and additional operators.

IBAC Process and IBAC II Technology Protection

BioDyne technology is protected by US and international patents. BioDyne is expanding its intellectual property and innovations through continuous research and development..

US Patent 5,441,634	US Patent 6,086,765
International Patents	US Patent 7,008,538

Lower capital cost
50% less operating cost
Modularly Expandable
Co-treats liquids & solids
Up to 60% smaller footprint

Single Vessel Plant – No Pretreatment Required

*Direct input of high strength wastewater into the reactor
Degrades wastes for direct return to the ecology at regulatory levels required*

No Chemicals Required

*Unique reactor activity degrades wastewater without chemicals
Produces up to 70% less biosolids-sludge*

Easy To Operate – Simple To Maintain

*Minimal mechanical elements simplify operation and maintenance
No full-time staff required - Over 50% savings*

BioDyne, Inc.

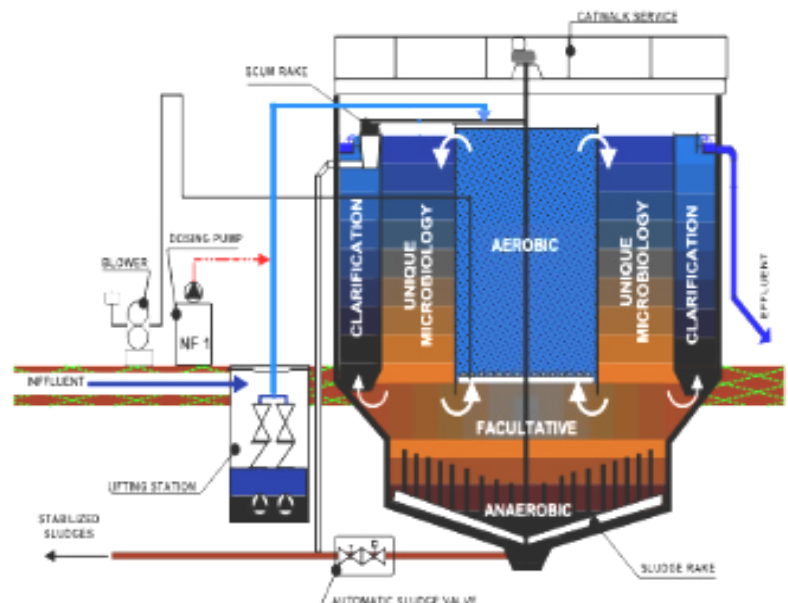
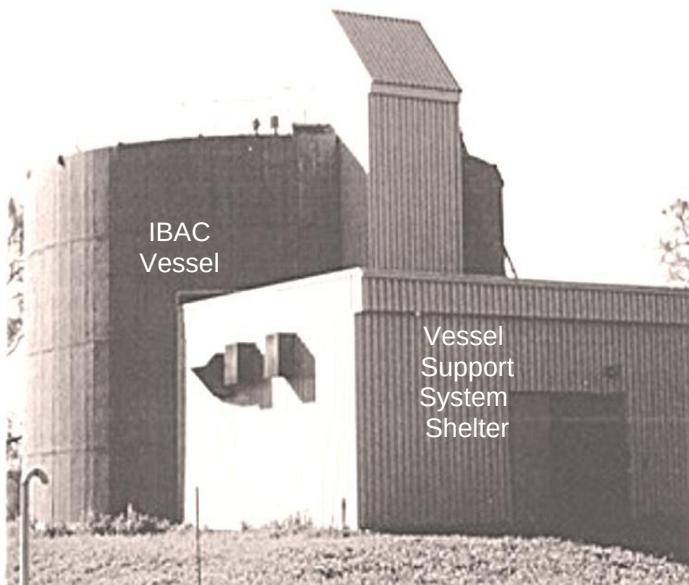
4701 Scollay Court, Raleigh, NC 27609 USA - Phone 919.981 0001 - Fax 919.981 790 9610
10755 Avenue Sacre Coeur, Montreal, QC Canada H2C 2T2 - Phone 514.343.7777



IBAC II SPECIFICATIONS

Type of Processing	Biological Process
Influent Characteristics	100 - 22,000 BOD-5 Mg / L (Biochemical Oxygen Demand) 0 - 20,000 of TSS Mg / L
Effluent Characteristics*	* Actual effluent characteristics can be designed to meet higher standards and more stringent requirements
BOD5	< 30 Mg / Liter
TSS	< 30 Mg / Liter
TKN	< 10 Mg / Liter
Phosphorus	< 10 Mg / liter
Ammonia	< 5 Mg / Liter – no discernable odor
Methane	Nil
Treatment Zones	Aerobic, anoxic, clarification, facultative-transition, anaerobic and sludge
Treatment Plant	Single Vessel (Reactor / Clarifier) – Modularly expandable
Treatment Capacity	50 – 10,000 Cubic Meters / Day / Vessel using different vessel sizes
Other Vessel Configurations	Multiple Parallel vessels for higher treatment capacity Dual vessels in series for special effluent quality
Relative Energy Consumption	66% typical compared to conventional Activated Sludge systems
Electrical Power Source	190/220/240 Volts and 380/440 Volts 50 or 60 Hz
Return Pumps	Not required
Control System	Automated response system for influent changes. Interlocked control system with standby and safety provisions. Optional wireless control, telemetry and remote control.
System Data Management and Control	PH Dissolved Oxygen Suspended Solids Effluent Turbidity Ambient Temperature Horsepower In use Liquid Levels
Example Of Dimensions	11 Meters Diameter by 8 Meters Height for 650 Cubic Meters / Day at 1200 BOD
Other IBAC Applications	Municipal wastewater treatment and industries including food processing, brewery, pulp and paper, animal rendering, cosmetics, dairy, refineries, slaughterhouses, fisheries and hog production

Specifications subject to change. ©Copyright BioDyne, Inc. 2003



HOW "NEW GENERATION" MEAT PLANTS FOREVER CHANGED NEW ZEALAND'S INDUSTRY

By STEVE BJERKLIE - Meat Processing Magazine Editor

The millions of film-viewers worldwide who have admired the New Zealand landscape so stunningly captured in the film "The Lord of the Rings: Fellowship of the Ring" know it can be a powerfully transformative place: No less than all of the evil held by the One Ring itself can be literally melted away by the white-hot fires inside Mt. Doom or, as it is known on maps in real life, Mt. Ruapehu, an active volcano within Tongariro National Park on New Zealand's North Island which stands in handsomely for J.R.R. Tolkien's mountain of magical forces. But what only a handful of people who have seen "The Lord of the Rings" know is that New Zealand is indeed a place of transformation and metamorphosis in reality as well as in the movies, as proven by the nation's extraordinary meat industry.

That industry is in a boom. The fiscal year 2000-2001 showed significant increases in export volumes and prices in the European and North American markets for New Zealand beef and lamb, supported by good gate prices at home. "This excellent result has been due to the hard work and expertise at all levels of the New Zealand meat industry: farmers, processors, and exporters, which combine to make us a world leader," said Jeff Grant, chairman of Meat New Zealand, at the release of the agency's annual report late last year. Meat New Zealand's strategic plan, "Food for the Future," will "help the industry continue its success by securing a position for New Zealand beef and lamb as a food for the future that is no longer just a commodity, but is fast and convenient, offers taste and variety, and is a safe and natural option for consumers," Mr. Grant said.

In fact, more meat consumers in North America than ever are eating New Zealand beef, thanks to an unprecedented move by McDonald's, the fast-food giant, which announced in early April that it would begin using imported New Zealand and Australian product in the hamburgers it sold in some of its restaurants in the United States. Until the announcement, McDonald's, the world's largest buyer of beef, had exclusively used U.S. beef in its U.S. outlets. "We have absolutely no doubt that McDonald's will find the quality of NZ beef very desirable, and that price won't be the only consideration," said Meat New Zealand's chief executive, Neil Taylor, at the time of the McDonald's announcement. "The NZ beef industry has long had its eye on McDonalds as a group that would provide a great opportunity to showcase our naturally farmed leaner, grass-fed beef. The short supply of lean beef in the U.S. is driving up prices, forcing major users like McDonald's to source beef elsewhere to remain competitive. Other major U.S. fast-food companies use NZ beef, so it would be a fillip for New Zealand if McDonald's started sourcing from us, too, as they're the largest buyer of U.S. beef."

He added: "Finding another major buyer for NZ beef is good, because the extra demand should further improve prices. Beyond that, we're limited by the annual tariff quota for beef into the U.S., which is about 213,400 metric tonnes, worth around NZ\$ 1 billion at present. So we can't increase the volume willy-nilly but we can enjoy better prices for what we do get in."

Taylor's remarks reveal the New Zealand meat industry's penchant for strategic opportunism in the global market, for quick adjustment to shifting markets and openings. No one expected McDonald's announcement but when it came, New Zealand was prepared. "We'll certainly be looking for improved access for NZ beef to the U.S. in the new World Trade Organization round," Mr. Taylor commented. "This may not be a popular move with the U.S. beef producers, but they understand that our supplies complement theirs the leaner NZ beef will need to be mixed with U.S. beef to fit with their tastes." Perhaps he was being diplomatic, aware of New Zealand's growing importance in the world meat market. Or perhaps New Zealand's meat industry is serving notice.

What allows such a strategy of opportunism to successfully operate is an industry that has undergone profound change over the past 15 years a transformation as radical indeed as anything the fires of Mt. Doom can accomplish. Until the late 1980s, the industry was dominated by a small group of large packer-processors, much as the U.S. beef industry is today. But, like the tiny proto-mammals that scurried under the plodding feet of behemoth dinosaurs in prehistory, beginning in about 1985 small, versatile processing plants began showing up in New Zealand. "At first, the big companies laughed," remembered Graeme Baker, who at the time worked for one of the major NZ packers and heard the guffaws and scoffs first-hand. Today Baker is a director at ProAnd, an engineering and design firm established in 1984 that was a key player in the New Zealand industry's transformation and has since become a leading supplier of technology and ideas to meat industries worldwide. "They really thought someone must be joking. The big companies had almost all the market share, they had the supplies locked up, and of course they were closely tied into the system of subsidies that supported New Zealand's agriculture at the time. They could not conceive that a small company would last more than a week. How could a small company even export?"

What the small companies and ProAnd proved, however, was that small companies could not only export competitively, they could process a higher-quality, safer product that in the long run brought a better profit on the world market. The meat from these firms had longer shelf-life, a better microbiological profile, and better packaging than the product from the major firms. Buyers abroad began to seek out New Zealand's specialty beef and lamb.

This was no small matter. Meat and related products account for 20 percent of New Zealand's total exports, and exports are the lifeblood of the nation's economy. In terms of value, more than half of NZ's beef exports, 58 percent, are shipped to the United States; more than two-thirds of the country's huge lamb-exporting business goes to Europe. New Zealand annually

slaughters more than 27 million lambs and nearly 6 million cattle; a growing deer-farming industry produces a half-million head. Turning this industry upside down, as the so-called "new generation" meat plants began to do by the late 1980s, meant changing some of the very foundation of New Zealand's economy. Yet in the end "at the end of the day," as it is always said by Kiwis the new-generation plants simply had too many good ideas and contained too much processing innovation to be stopped.

The new-generation secret of success, Baker and ProAnd's other executives, including Nook Yule and Mike Nidd, are quick to point out, is really no secret at all. The smaller plants, running at lower volumes and slower speeds, can give particular attention to the myriad processing details that improve quality and safety. A tour of one such operation, a beef plant in Eltham on the North Island operated by the Riverlands company, reveals this attention to detail. Like most New Zealand beef plants, Riverlands Eltham exports just about everything it produces, and most of these exports head to the United States, a 90-day journey by ship. To give its products a margin for delays, Riverlands aims for a 120-day shelf-life for its manufacturing beef.

The plant slaughters 135 head per shift, and the carcasses are hot-boned unusual even in New Zealand. But hot-boning means the time from stunning to packaging is measured in minutes (about 45) rather than hours. The beef is in the cooler less than an hour after the animal from which it came was still breathing. Another Riverlands plant on the North Island, a bull operation, was labeled by Booze-Allen, the international consultants, the most efficient beef plant in the world.

In order to achieve a four-month shelf-life, meat products need to be clean as a whistle, microbiologically, when they're bagged and packaged for shipping. Yet the kill line at Riverlands Eltham features none of the pathogen intervention equipment common to large-volume U.S. plants indeed, the kind of technologies a typical U.S. slaughterhouse can't imagine being without. But in fact there are no intervention steps at Riverlands. "You Yanks assume the meat's dirty coming into the plant and you've got to clean it up," Wayne Fergus, the production manager, told me. "We assume it's clean and we've got to keep it that way." In fact, outside the slaughterhouse, Riverlands washes down cattle in the holding pens with cooling sprays of water. When the animals are stunned, hung, and bled, there is virtually no dirt or fecal material clinging to the hide. They are the cleanest cattle I've ever seen inside a packinghouse.

Rather than trust machines, Riverlands trusts the judgement and training of its workers. When inspection data revealed that Salmonella counts were climbing, Gary Lindsay, the compliance manager, worked with employees to find the cause. Earlier, they had helped him write detailed job descriptions for every job in the facility. They understood what they did and why, and how their jobs fit into the purpose and goal of the company. It turned out that one of the men preparing hides for stripping was wetting his hand each time he sterilized his knife between cuts, and so he dripped a little water from his wrist onto each carcass. At the worker's suggestion the procedure was slightly changed to keep his hand dry. The Salmonella count returned to the very low level typical for the plant. Close management of details like this has encouraged a precise, clean-room processing environment. Riverlands Eltham, in operation since the early 1990s, has never had a product recall, not one.

Annual employee turnover at the plant is seven percent, the result of good pay and thorough training, and most of the Riverlands workers are long-time residents of local communities. In addition to continuous training and task refinement, Riverlands respects the comfort of its workers by broadcasting music inside the plant. In fact, during part of my tour of the facility Bono, the singer and front-man for the Irish rock band U2, sang from radio speakers mounted above the slowly moving kill-floor chain. Sting followed Bono, and The Beatles followed Sting. Familiar chords announced "Listen to the Music" by the Doobie Brothers. According to Gary Lindsay, the radio is one of the plant's true critical-control points. "If it goes out, we've got to get it fixed absolutely right away or more quickly than that," he said, not really joking. "Our production otherwise plummets." It's easy to see why. The music, an endless string of "classic rock" hits, backgrounds the cacophony of heavy kill-floor machinery with recognizably human-made sounds. It creates an opportunity for Riverlands' in-plant workforce and the front-office management to jointly acknowledge the grim reality of working in a slaughterhouse. The music flows by, song after song, pushing time along just a little bit faster than it would pass otherwise.

At another operation on the North Island, Lamb Packers Ltd. in Feilding, the most striking feature is a glassed-in gallery that parallels the slaughter line. The gallery serves two purposes: natural light from the outside floods the inside of the plant, especially the work area, creating a much more pleasant work environment than is typical in a meat plant, and the gallery provides visitors with an up-close but clean view of every detail of what happens on the line, from sticking through dehiding through final dressing. Not a step along the way is shielded or hidden.

John Signal, the facility's general manager, said that visitors who watch his operation from the gallery include equipment suppliers, local businessmen, local farmers who sometimes want to make sure the lambs they've raised are dressed right, his bankers, and groups of school children. He noticed my amazement at that last category. "The boys like the blood, of course," he said, slightly smiling boys will be boys -- "and the girls don't usually say much." Later, in his office, he added: "The kids are the consumers of tomorrow, and someday, if they're buying lamb, I'd like them to buy their lamb from me." He said he considers the tours he gives to school groups as long-term investments in the market as "consumer futures," if you will.

The Lamb Packers plant was built 15 years ago, and, like Riverlands Eltham, is typical of the new-generation operations, all of which feature slower rail speeds and reduced production compared to the behemoth abattoirs typical of North and South America. It was designed by ProAnd, and features a straight slaughter line about 50 meters long that is, the chain and

carcasses follow no curves from stunning through evisceration, dehiding, and entry into the plant's cooler. It's a simple, well-paced operation that comfortably fits its location, about two blocks from the center of town.

Outside the walls of the processing area, out in the holding pens, a company called Klenzion Ltd. has installed a prototype lamb washer at Lamb Packers to cleanse mud and filth from the animals prior to slaughter. Right off the truck, the lambs pass through a spray-sudsing unit one by one, then, just prior to stunning, ride on a center-rail through a washing tunnel, about 10 meters long, that rinses away all the dirt and manure the suds have loosened; at the end of the tunnel the animals are literally blow-dried. By the time the lambs emerge, just before the knocking pen, they're as clean and fluffy as new wool slippers. This is a more thorough, even radical, animal-washing arrangement than at Riverlands Eltham, but the more uniform size of lambs and their smaller size make the sudsing unit and washing tunnel possible. More passive than cattle, the sheep don't seem to mind going through what looks like a down-sized car-wash.

The new-generation plants typically produce at a rate 50-80 percent below the traditional large-volume plants, but the benefits of the smaller rate are several. Mechanization on the slaughter lines tend to be lower; there are more hand-done tasks, but by well-trained workers, and differences in carcass size matter less. Productivity actually increases: in a new-generation beef plant, for example, 20 cattle can be processed per-man- per-day, compared to 12 in a traditional large-volume plant with mechanical dressing, a difference of 65 percent.

In addition to smaller labor requirements, which helps encourage stability in the workforce, New Zealand's new-generation plants also don't need as many animals on a daily basis to keep operating at full capacity. That allows the plants to buy from mainly local farmers and ranchers, which in turn helps support local economies. In the bright green hills above Feilding, ProAnd's Graeme Baker drove me to a cattle and sheep farm that has thrived in the wake of New Zealand's dismantling of its complex national system of agricultural subsidies, which occurred in 1985. Among other results, the disappearance of the subsidies revealed how much the old, big meat packers in New Zealand depended on them, however indirectly. Just as the dinosaurs could not adapt to a changing global climate, these meat giants found it suddenly difficult to compete with the new-generation processors, who had never relied on government largess. The farmer in Feilding acknowledged that when the subsidies disappeared, many a farmer's business disappeared as well. "But at the end of the day I think it was right by all of us," he said in his car as we bounced down a dirt track that crossed a gorgeous cattle pasture dotted with livestock that practically shined with health. "The price market became meaningful, if you know what I mean. The connection between the farmer and the price became uncluttered by the government."

In the wake of its calamitous but successful agricultural subsidy cull, the New Zealand government and its various agencies such as Meat New Zealand have not missed an opportunity to expound on the virtues of a subsidy-free agriculture. A government-issued book on the subject, "Farming Without Subsidies: New Zealand's Recent Experience," can't resist quoting Disraeli: "Change is inevitable. In a progressive country, change is constant."

But it is likely that New Zealand's progressive approach to processing safe, secure meat products is more easily exported than radical ideas about management of agricultural economies. At ProAnd's office in Feilding, Graeme Baker and Nook Yule hosted for me a parade of suppliers of interesting, and sometimes innovative, processing technologies and ideas, all from New Zealand. Adept Ltd. manufactures the simplest of products, plastic weasand clips, yet these clips, stronger and more easily applied than other clips, solve a pernicious slaughterhouse problem, leakage of pathogen-loaded fecal material out the weasand and on to the carcass during evisceration; Lamb Packers uses them. Triton Commercial Systems' data-capture and reporting systems, which utilize bar-code and laser-scan technology, help processors track and manage product from kill-floor to shipping dock without a lot of messy paperwork; one such system is installed at Riverlands Eltham and is enthusiastically endorsed by that plant's management. The Realcold Group, including Realcold Milmech, builds and installs a variety of meat-processing technologies, including super-efficient plate-freezing and carcass-chilling equipment.

"We think what goes on inside a plant is more important than the building surrounding the process," Graeme Baker summed. "At the end of the day, it's all about the integrity of the product. Sometimes we have a difficult time understanding why in the U.S. you are so devoted to volume when it is clear that throughput does not equal quality, that they are not even connected in the same equation" though it perhaps should be pointed out that ProAnd, in addition to being the design force behind New Zealand's transformative new-generation meat plants, also designed the largest meat plant in the world, a 275,000-square-meter lamb abattoir in Mecca, Saudi Arabia. This plant slaughters a mind-boggling 300,000 head per day and employs 24,000 workers. Baker laughed when he called it "the exception for us rather than the rule." Typically, ProAnd prepares detailed layout drawings and schematics for competitive bidding, oversees plant construction and equipment installation, and offers post-start-up management and technical advice.

"The key thing is to focus on details. That's what we think the new- generation plants are so good about, and that's what we design for. It's no accident that Riverlands Eltham, for example, has never had a product recall. With slower lines and better technology and a well-trained workforce, they can fully devote their attention to producing absolutely the best product possible." He reminded me of a package of beef we had seen inside Riverlands' cooler, which the plant's compliance manager, Gary Lindsay, had bought for himself and his family. "He said it was six months since that beef had been processed," said Baker. "Yet it was still in perfect shape." It was true; I couldn't recall seeing beef with better color or presentation even a week after slaughter, let alone 120 days. "Details are what make that possible. Now, maybe it is because we are a small country down here and have nothing better to do than think about these sorts of things, but I think product like has a real story to tell."

Average wages paid				
New Zealand			California North Coast region 2008	
		% of average	Average - all occupations	Projected income at NZ percentages
National Average Income	\$ 38,900		\$ 37,491	
Meat processor	\$ 30,800	79%		\$ 29,618
Meat Inspector	\$ 40,500	104%		\$ 38,991
Meat grader	\$ 40,500	104%		\$ 38,991
Butcher	\$ 32,000	82%		\$ 30,743
Comparable incomes - California North Coast Region				
Meat processor	Meat inspector	Meat grader	Butcher	
\$ 29,618	\$ 38,991	\$ 38,991	\$ 30,743	
Social & Human	Purchasing agents & buyers		Rehab Counselors	
Service Assistants	\$ 39,167		\$ 32,528	
\$ 29,605	Environmental Engineering Techs		Health Educators	
Preschool teachers	\$ 40,127		\$ 33,635	
\$ 27,493	Social workers		Dental Assistants	
Library Techs	\$ 39,235		\$ 30,915	
\$ 31,226	Public Relations Specialists		Healthcare support	
Broadcast Techs	\$ 38,824		\$ 31,222	
\$ 28,344				
Medical Assistants				
\$ 29,726				

Average income figures for North Coast Region were obtained from the 2007 Occupational Employment statistics survey. The North Coast Region includes Del Norte, Humboldt, Lake and Mendocino Counties.

The New Zealand income figures were obtained from a Career Services fact sheet for New Zealand, sent to us by John Harper.

The percentages are used as a common denominator to estimate the projected wages for the meat facility.



Meat Industry Capacity and Feasibility Study of the North Coast Region of California

Award No. 07 79 05983



This Report was Prepared under an Award from the U.S. Department of Commerce Economic Development Administration for the Mendocino County Economic Development and Financing Corporation.

This publication was prepared by Shermain Hardesty, John Harper, Yoko Kusunose, Morgan Doran, Stephanie Larson, Theresa Becchetti, Roger Ingram, Lauren Gwin and Ed Wright. The statements, conclusions, and recommendations are those of the authors and do not necessarily reflect the views of the Economic Development Administration.

March 31, 2009

Project Team

Shermain Hardesty, Cooperative Extension Specialist, Department of Agricultural and Resource Economics, UC Davis and Director, Small Farm Program, University of California

John Harper, Mendocino County Director and Livestock & Natural Resources Advisor U.C. Cooperative Extension Mendocino & Lake Counties

Yoko Kusunose, Graduate Student Researcher, Department of Agricultural and Resource Economics, UC Davis

Morgan Doran, Livestock & Natural Resources Advisor U.C. Cooperative Extension, Yolo, Solano and Napa Counties

Stephanie Larson, Livestock & Natural Resources Advisor U.C. Cooperative Extension, Sonoma and Marin Counties

Theresa Becchetti, Livestock & Natural Resources Advisor U.C. Cooperative Extension, Stanislaus and San Joaquin Counties

Roger Ingram, Placer-Nevada County Director and Livestock & Natural Resources Advisor U.C. Cooperative Extension Placer and Nevada Counties

Lauren Gwin, Subcontractor

Ed Wright, Facility Group Inc.

Reference as:

Hardesty, S., J. Harper, Y. Kusunose, M. Doran, S. Larson, T. Becchetti, R. Ingram, L. Gwin, and E. Wright. 2009. Meat Industry Capacity and Feasibility Study of the North Coast Region of California. University of California Cooperative Extension Mendocino County, University of California Davis Department of Agricultural and Resource Economics, Mendocino Economic Development and Financing Corporation, Award No. 07 79 05983, U. S. Department of Commerce Economic Development Administration. 106 pgs.

Acknowledgements:

We want to thank the cooperating ranchers, distributors, chefs, and meat buyers for grocery chains and niche meat markets, which gave of their time and participated in our surveys.

Abstract

This report summarizes four separate studies to determine the capacity and feasibility of creating a modern small scale (80 head of cattle and 50 head of lamb or goat kids per day) multi-species harvest and meat processing plant (Facility) that is based on “localized” facilities now only found in New Zealand. The advantages of this type of facility include improved safety for workers, humane handling of animals, environmentally- friendly, energy efficient, local production and sale of meat products that are branded in the growing niche meat market, consumers are demanding. These niche meats include, natural, grass-fed, kosher, Halal and organic as well as value-added products like smoked meats and sausages. The four studies were: Facilities Design, Potential Livestock Supply, Northern California Niche Meat Market Demand and Economic Analysis. The first three studies provided the necessary data to be used in the fourth to determine the economic impact to the region and feasibility based on risk, supply and demand. Details of each study are summarized in the Executive Summary and corresponding chapter.

Establishment of the Facility would have the following impacts:

- Gross value of livestock in region would increase from \$15.8 million to \$29 million annually
- Production of \$58. 2 million of harvested and processed meat
- 682 additional full-time equivalent jobs (10% increase only 44 jobs directly attributable to the Facility)
- Labor income would rise a net \$16 Million (31% increase)
- Total value added to regional economy by 3 industries would increase by 47% (\$23 million)

Executive Summary

This report summarizes four separate studies to determine the capacity and feasibility of creating a modern small scale (80 head of cattle and 50 head of lamb and goat kids per day) multi-species harvest and meat processing plant (Facility), based on “localized” facilities now only found in New Zealand. The advantages of this type of facility include improved worker safety, humane animal handling, environmentally friendly, energy efficient, local production and sales of branded meat products in the growing niche meat market. These niche meats include natural, grass-fed, kosher, Halal and organic as well as value-added products such as smoked meats and sausages. Findings from the first three studies— Facilities Design, Potential Livestock Supply, and Northern California Niche Meat Market Demand—were used as the basis for the fourth study, Economic Analysis.

Facilities Design

The Facility design and cost estimates were developed by the Facility Group, Inc. with specific design considerations provided by GHD of New Zealand. The design criteria included an approximately 44,000 square foot USDA-approved structure with livestock receiving and holding areas, two complete kill and evisceration lines for beef and lamb or goat, carcass chill coolers, by-products processing , fabrication, further processing and packaging, fresh and frozen product storage, and employee welfare and administrative office space. The Facility Group estimated the Master Plan project budget to total \$17,962,000. Extensive details and project drawings are provided in the accompanying Master Planning Report.

Potential Livestock Supply Study

We evaluated the potential livestock supply for the Facility within a two-tiered region. Tier 1 includes counties that are geographically located within the traditional concept of locally-based for the North Coast Region--Mendocino, Lake, Sonoma, Marin and Napa. Tier 2 counties represent the next sphere which many would still consider local production--Yolo, Solano, Glenn, Colusa and Contra Costa. Our primary data source for this assessment was a survey that was developed and conducted by University of California Cooperative Extension in 2006. To expand the number of respondents for the North Coast, four of the Cooperative Extension Livestock Advisors conducted facilitated questionnaire completion sessions in 2008 with a slightly modified survey instrument. Our findings are summarized below.

- The majority of North Coast ranchers are cow-calf producers. Over 85% of the livestock raised by ranchers participating in our survey are marketed traditionally; the weaned calves and feeder cattle are sold through auctions or contracted sales.
- In our survey, most of the respondents are 45 or older (86%). Over 86% of them had gross farm incomes of \$250,000 or less. Such small farms usually have limited financial resources, implying that these ranchers have limited capacity to invest as part-owners in the Facility.
- USDA’s 2007 Census of Agriculture data indicate that livestock sales volumes are more than adequate to support involvement in the Facility along with continued sales through traditional markets.
- Sixty-one percent of the ranchers in our survey rated their access/availability of slaughter and processing facilities as “very deficient”.

- While the ranchers in our survey have a strong interest in the Facility, they preferred to participate as suppliers to a branded program, rather than as direct marketers of the custom-processed meats or as part-owners.
- Ranchers rated their interest in the potential services offered by the Facility on a 5-point scale as follows.

Service	Tier 1 and 2 Counties Combined	
	% rating 5	Mean rating
Meat delivery to final destination	49	3.9
Animal pick-up	41	3.4
Advertising & marketing support	40	3.6
Pasturing finishing	36	3.1
Dry aging	34	3.2
Organic processing	34	3.2
Label design & approval	29	3.1
Smoking & curing	25	3.0
Sausage production	21	2.9
Feedlot grain finishing	21	2.3
Kosher slaughter	15	2.3
Jerky	14	2.6
Halal slaughter	10	2.1

- Although 71% of the ranchers indicated that they would be willing to travel up to 90 minutes one-way to deliver their livestock to the Facility, two of their three most desired services were meat delivery to final destination and animal pick-up.
- The expected delivery volumes to the Facility reported by ranchers for beef and the other species were only 6% and 13% higher, respectively, than the Facility's planned processing capacities; this leaves little room for changing commitments. The critical unanswered question is how many of the ranchers marketing through traditional channels who did not respond to our survey would be interested in partial or full participation in the Facility.
- The strong seasonality in projected deliveries could be problematic in regard to both processing capacity and marketing of the meat products.
- Ranchers' finishing capacity is a major consideration since their expected deliveries of finished cattle represented less than 20% of the Facility's projected capacity. Furthermore, 60% of the ranchers indicated that they had very little or no finishing capacity. The establishment of multiple small-scale local grain-finishing feedlots will be necessary.

Northern California Niche Meat Market Demand Study

We assessed market prospects for niche meats in the San Francisco/Sacramento region. After reviewing the recent literature regarding the U.S. niche meat market, we conducted 42 interviews with individuals responsible for meat purchasing in three key sectors of the food distribution system: restaurants and institutional food service providers (IFSPs); retail grocers (primarily regional chains); and distributors. Our findings are summarized below.

- Demand for niche meats is growing rapidly in the U.S. In 2006, sales of natural and organic beef in grocery stores increased over the previous year by 28.4% in dollar value and 24.5% in pound value. Three-fourths of our respondents expected their niche meat volumes to increase over the next year and also over the next three years.
- Consumer demand for niche meats is often motivated by beliefs that natural and organic meats are fresher, have better nutritional value, taste, and long-term health benefits than conventional meats, and that the animals are healthier and better treated than conventional livestock.
- The most popular red meats are beef, pork and lamb. The most popular niche categories are naturally-raised (no hormones or antibiotics administered during the animal's lifetime, often referred to as "never/ever"), grass-fed, and local.
- Price premiums for niche meats (over conventional) depend on the cut, niche attribute, brand, and shifts in conventional pricing. Premiums of 10-30% were common, though certified organic meats were typically much higher.
- Across all three market sectors, fresh meats are preferred over frozen. Purchases of whole carcasses are usually limited to hogs and lambs; beef carcasses were typically considered too large to handle in-house. Restaurants, IFSPs, and distributors are more willing to work with seasonally available meats than are retailers.
- More than half (59%) of the restaurant/IFSP respondents said that high-end cuts were the most popular, while the rest use more burger and lower end cuts for braised dishes. Nearly half of the retailers sell mostly middle meats. Most distributors found a market for everything and grind any extra end meat.
- Respondents were asked to rate the importance of various attributes, on a scale ranging from 1 to 5, with 5 meaning "very important." Taste had the highest average rating (4.9), followed by "no hormones/antibiotics" (4.0), "consistent cut size/shape" (4.0), "health benefits" (3.9) and "humanely raised" (3.7). Despite the fact that they are frequently mentioned, the least important attributes were grass-fed (2.7) and certified organic (2.6); grass-fed is not satisfactory to the typical U.S. consumer palate in terms of taste and texture, and organic is not different enough from other niche meats to justify its high price. "Local", "family farmed" and "personal connection with producer" had similar average ratings (3.4 and 3.5).

- Although commonly used, there is no common understanding of the terms “naturally raised,” “local,” and “certified humane.”
- Less than half of respondents are interested in three younger grass-fed beef products – vitello, vitellone, and manzo – which are listed in order of declining popularity; restaurants were the most interested.
- The most common challenge with purchasing local meats was volume – having enough and having it regularly available. The next most common challenge was “quality,” including taste, texture, size of cuts, fat content, and variability among individual cuts.
- The majority of respondents identify their niche meat suppliers in some way to their customers.
- Based on the average volumes of niche beef bought and sold by distributors in this study, we estimate that ten such distributors would account for more than 14 million pounds of niche beef per year.
- A broad range of niche meat offerings, including the “never/ever,” humanely raised and locally produced attributes, and with pork and lamb in the species mix, is desirable. There is also considerable demand among retailers for kosher and processed niche meats.

Economic Analysis of North Coast Multi-species Niche Meats Processing Facility

This economic analysis examined the Facility’s risks, potential funding sources and economic impact to the region.

- Risk management is critical for this long-term project, given its \$18 million Master Plan budget and additional land acquisition costs. Most risks during the planning and construction phase should be avoidable with thorough pre-development analysis and project management.
- Potential losses associated with internal risks associated with the Facility’s ongoing operations can be minimized by hiring experienced management, maintaining the facility in good operating condition, continual evaluation of operations and contingency planning. External risks can be mitigated by having a strong trend monitoring program and adjusting product lines in response to changing market conditions and regulatory requirements.
- The Facility’s environmental and social features will enhance its fundability, particularly since there is growing support for smaller-scale regional food processing facilities.
- A mix of funding sources appears to be the most likely. Potential private sources include regional banks, specialized banks such as Shorebank and CoBank, socially-minded venture capitalists, ranchers and preferred stock. The 2008 Farm Bill provided for loan guarantees for businesses involved in local and regional food distribution. Public funding sources include grants from USDA Rural Development, industrial revenue bonds and Community Development Block Grants.

- We estimated that the direct economic impact of the facility construction activities to be less than \$7 million for the \$18 million project, primarily because many of the inputs are specialized and will be brought in from other regions.
- We applied the widely-used software program, IMPLAN, which utilizes input-output analysis to incorporate the ripple effects of the economic activity in the 10-county region associated with the increased values of meat processing and livestock production attributable to the Facility. Our model included two livestock industries--cattle ranching and other livestock (includes sheep, hogs, goats, and various minor species, but not poultry)—and animal slaughter. IMPLAN considered the Project's direct, indirect and induced effects; induced effects incorporate the local household spending on goods and services resulting from the labor income generated through the direct and indirect effects.
- IMPLAN calculated the following multipliers for economic activity within the region:

	Multiplier
EMPLOYMENT (full time job equivalents)	
Cattle ranching and farming	1.4
Other livestock production	1.2
Animal, except poultry, slaughtering	2.9
LABOR INCOME	
Cattle ranching and farming	3.8
Other livestock production	2.2
Animal, except poultry, slaughtering	2.1
TOTAL VALUE ADDED	
Cattle ranching and farming	6.0
Other livestock production	3.3
Animal, except poultry, slaughtering	2.5

The cattle ranching employment multiplier of 1.4 means that for every full-time equivalent job added in cattle ranching, a .4 job is created in the region's other industries. The 6.0 value-added multiplier for cattle ranching implies that every \$1.0 million of value added in cattle ranching through employee compensation, indirect business taxes, proprietary and other property type income results in \$5.0 million of value added in other industries within the region.

- We estimated that the gross value of livestock sales in the region would increase from \$15.8 million to \$29.0 million annually, and that the Facility would produce \$58.2 million of slaughtered and processed meat.

- The Facility's activities are projected to generate an additional 682 full-time equivalent jobs (a 10% increase, including the Facility's 44 employees), labor income would rise a net \$16 million (a 31% increase) and the total value added to the regional economy would increase by 47% (\$23 million).

Table of Contents

Project Team	ii
Acknowledgements:.....	ii
Abstract.....	iii
Executive Summary	iv
Facilities Design.....	iv
Potential Livestock Supply Study	iv
Northern California Niche Meat Market Demand Study.....	vi
Economic Analysis of North Coast Multi-species Niche Meats Processing Facility	vii
List of Tables	xiii
List of Figures	xv
Introduction	16
Potential Livestock Supply	16
Northern California Niche Meat Market Demand	16
Facilities and Process Design Study	17
Economic Analysis.....	17
Potential Livestock Supply Study	19
Executive Summary.....	19
Introduction	21
Methodology.....	25
Findings	25
<i>Respondent Demographics</i>	<i>25</i>
<i>Current Marketing Volumes.....</i>	<i>26</i>
<i>Existing Marketing Channels.....</i>	<i>28</i>
<i>Use of Existing Facilities</i>	<i>28</i>
<i>Marketing Systems.....</i>	<i>30</i>
<i>Interest in New Facility.....</i>	<i>30</i>
<i>Potential Animal Supplies</i>	<i>33</i>
Conclusions Regarding North Coast Region Livestock Supply and Processing Needs Assessment	35
APPENDIX for Potential Livestock Supply Study	36
Northern California Niche Meat Market Demand Study	62

Executive Summary.....	62
Introduction	64
Background	64
Methodology.....	66
Results & Discussion	67
Red Meats Sold	67
Niche Meats Sold	67
Approximate Volumes of Niche Meats Sold	69
Increases in Niche Meat Use.....	70
Niche Meats Wanted If Supply Were Available	71
Price Premiums Paid For Niche Meat	72
How Retailers Sell Meats	72
Use of Frozen Meats	72
Use of Whole Carcasses	72
Use of Seasonal Meats.....	73
Most/Least Popular Cuts.....	73
Attribute Ratings	74
Interest in New Grass-fed Beef Products: Vitello, Vitellone, and Manzo	75
How to Define “Local” For Meats	76
How Long Respondents Have Carried Local Meats	76
Where They Buy Local Meats	76
Challenges in Purchasing Local Meats	76
Customer Requests for Niche Meats	77
Niche Customer Profile (Retailers Only)	78
Number of Meat Suppliers.....	78
How Respondents Identify Suppliers to Their Customers	78
Orders and Deliveries.....	79
Biggest Challenges in Purchasing Niche Meats.....	79
Conclusions	80
APPENDIX: Northern California Niche Meat Market Demand Study.....	82
Economic Analysis of North Coast Multi-species Niche Meats Processing Facility	86
Executive Summary.....	86

Assessment of Risk Factors Affecting Project Feasibility	88
Financial Capital Structure and Availability	90
<i>Private Funding Sources</i>	90
<i>Public Funding Sources</i>	93
Regional Economic Impact of Proposed Facility	95
<i>Construction Impacts</i>	95
<i>Input-Output Analysis of Ongoing Activities</i>	95
The Approach	97
Geographic Area Multipliers	98
Estimating the Economic Impact of the Meat Processing Facility	100
Conclusions	102
APPENDIX: Economic Analysis of North Coast Multi-species Niche Meats Processing Facility	103
References	106

List of Tables

Table 1: Age Composition of Respondents Tier 1 & 2 Counties Combined.....	24
Table 2: Livestock sales as reported in 2007 Census of Agriculture - Tier 1 & 2	25
Table 3: Comparison of Reported Livestock Sales	26
Table 4: Animal Sales by Marketing Channel Tier 1 & 2 Combined.....	27
Table 5: Satisfaction with Current Slaughter and Processing Facility Tier 1 and 2 Combined	27
Table 6: Animals Transported, Mileage and Travel time to Slaughter and Processing Facility Tier 1 and 2 Combined.....	28
Table 7: Current Availability/Accessibility of Facilities Tiers 1 & 2 Combined.....	29
Table 8: Interest in Alternative Marketing Structures Tiers 1 & 2 Combined	29
Table 9: Maximum One-way Travel Time to Processing Facility Tiers 1 & 2 Combined.....	30
Table 10: Interest in Services Offered (5 point rating scale)	32
Table 11: Expected Annual Livestock Deliveries to Facility by Animal Type.....	32
Table 12: Expected Livestock Deliveries by Species and Month Tiers 1 and 2 Combined.....	33
Table 13: Season Extension Capacity - Tier 1 and 2 Counties Combined	33
Table 14: Finishing Capacity - Tier 1 and 2 Counties Combined	34
Appendix Table A: Comparison between 2006 and 2008 Annually Marketed Animals [TIER 1].....	36
Appendix Table B: Comparison between 2006 and 2008 Operation Size Category: Cow-Calf [TIER 1]	39
Appendix Table C: Comparison between 2006 and 2008 Operation Size Category: Weaned Calves [TIER 1].....	40
Appendix Table D: Comparison between 2006 and 2008 Operation Size Category: Sheep [TIER 1]	41
Appendix Table E: Comparison between 2006 and 2008 Operation Size Category: Goats [TIER 1]	42
Appendix Table F: Comparison between 2006 and 2008 Gross Revenue [TIER 1] (Chi-squared test).....	43
Appendix Table G: Comparison between 2006 and 2008 Principal Operator Age [TIER 1]	45

Appendix Table H: Comparison between 2006 and 2008 Annually Marketed Animals [TIER 1 & 2 COUNTIES COMBINED] (T-Test for independent samples).....	46
Appendix Table I: Comparison between 2006 and 2008 Operation Size Category: Cow-Calf [TIER 1 & 2 COUNTIES COMBINED]	48
Appendix Table J: Comparison between 2006 and 2008 Operation Size Category: Weaned Calves [TIER 1 & 2 COUNTIES COMBINED]	49
Appendix Table K: Comparison between 2006 and 2008 Operation Size Category: Sheep [TIER 1 & 2 COUNTIES COMBINED]	50
Appendix Table L: Comparison between 2006 and 2008 Operation Size Category: Goats [TIER 1 & 2 COUNTIES COMBINED]	51
Appendix Table M: Comparison between 2006 and 2008 Age of Principal Operator [TIER 1 & 2 COUNTIES COMBINED]	52
Appendix Table N: Comparison between 2006 and 2008 Annual Gross Revenue [TIER 1 & 2 COUNTIES COMBINED]	53
Table 15: Red Meat Species Marketed	66
Table 16: Use of Specific Categories of Niche Meats.....	67
Table 17: Pounds of Niche Meats Sold Per Week.....	69
Table 18: Belief That Niche Meat Volumes Will Increase In 1, 3 Years	69
Table 19: Knowledge of, Interest in Three Grass-fed Beef Products	74
Table 20: Challenges in Purchasing Local Meats	75
Table 21: Methods of Identifying Suppliers to Customers	77
Table 22: Challenges in Purchasing Niche Meats	78
Table 23: Projected Master Plan Budget	94
Table 24: Economic Impact Effects and Multipliers Tiers 1 and 2 Combined.....	97
Table 25: Estimated Regional Economic Impacts of Facility Tier 1 and Tier 2 Counties Combined	100

List of Figures

Figure 1: Cattle Production Timeline	22
Figure 2: Lamb Production Timeline	22
Figure 3: Map of Tier 1 and Tier 2 Counties.....	23
Figure 4: Time to Transport - Tiers 1 & 2 Combined.....	28
Figure 5: Maximum One-way Travel Time to Processing Facility Tiers 1 & 2 Combined.....	31
Appendix Figure A: Cattle Prices	35
Appendix Figure B: Gross Revenue Distribution	44
Appendix Figure C Gross Farm Revenues	54
Figure 6: Red Meat Species Marketed	66
Figure 7: Use of Specific Niche Red Meats.....	67
Figure 8: Average Attribute Ratings (1-5), All Respondents	74
Figure 9: Input and Output Flows in a Local Economy	96

Introduction

Authors: John Harper and Shermain Hardesty

A small scale, multi-species harvesting and processing facility has been proposed for the North Coast Region of California to rebuild the local meat production industry. It will incorporate the latest innovations in health and safety, optimal energy utilization, humane slaughter, and environmental controls. The University of California Cooperative Extension has contracted with the Mendocino County Economic Development and Financing Corporation to conduct a Meat Industry Capacity and Feasibility Study of the North Coast Region of California to determine the viability of such a facility and the economic impact to the region. There are four components to this study: Potential Livestock Supply, Northern California Niche Meat Market Demand Study, Facilities and Process Design Study, and an Economic Analysis. Each component's scope of work is described below and methods, results and conclusions are provided in the respective section for that component. The Facilities and Process Design Study, however, is a separate body of work by the Facility Group, Inc. of the USA and GHD Company of New Zealand. Their information resulted in a Master Planning Report that accompanies our report. It was used in our livestock supply and economic analysis.

Potential Livestock Supply

Our first goal is to establish the capacity of the meat production industry to rebuild in Northern California focusing on the North Coast region. We will look at two distinct tiers within this region. Tier 1 will include Mendocino, Lake, Sonoma, Marin and Napa Counties. Tier 2 will include Contra Costa, Glenn, Colusa, Yolo and Solano Counties. We will research the current capacity through traditional and guided survey methods to determine:

- The number of animals potentially available for processing
- The elasticity of production
- The potential production under different pricing scenarios
- The potential for custom slaughter by species
- The potential use by livestock producers of a new facility

Northern California Niche Meat Market Demand

Our second goal is to assess consumer demand on the West Coast for four species (beef, pork, lamb and goat) of niche meats, such as organic, grass-fed, humanely slaughtered, Kosher and halal. Along with reviewing information from published sources, interviews with individuals in the food industry (grocery, food service and meat distribution) will be conducted to assess the current and future market on the West Coast for such products. Trends and preferences for niche meats will be measured for key retailers, chefs and distributors of such products.

The following approach will be used for this part of the analysis:

- Review information in the popular press, and meat and restaurant industry publications regarding trends in niche meats
- Conduct approximately 35 interviews with distributors, leading chefs and meat buyers for grocery chains and niche meat markets on the West Coast regarding their buying practices and

unmet needs for niche meats (note that Bon Appétit Management and Sodexo Foods will be included in the chef interviews; both of these food service firms have made commitments to support local agriculture)

The distributors, chefs and retail meat buyers will be queried regarding their niche meats buying practices, preferences and needs. Potential interview topics include:

- Current and projected niche meats purchasing volumes by species and niche type (such as organic, grass fed, kosher, Halal)
- Price premiums paid for different types of niche meats
- Seasonality of demand
- Sourcing practices
- Packaging and cut preferences, most popular cuts
- Quality factors
- Use of lesser cuts
- Labeling and product information needs
- Niche meat customer demographics

Facilities and Process Design Study

The facilities and process design study will be contracted out to the Facility Group Inc. of Smyrna, GA, USA and they will work in concert with the GHD Company from New Zealand. Their charge is to develop a concept and budget for a unique multi-species harvest and processing facility based on the new (to the United States) designs currently being used in New Zealand. Foremost in these designs are support of the regional family farmer by provision of an organized and consolidated approach to production, processing and marketing high quality natural, organic, and grass fed meat products; access to a larger market; and realization of value added products that would be offered to high end specialty, niche and consumer markets. The unique designs and work flow allow workers and animals a safe and humane environment presently not routinely found in typical US facilities.

Economic Analysis

The economic analysis will be initiated after the Facilities and Process Design, Northern California Niche Meat Market Demand and Potential Livestock Supply studies have been completed. There are three components to the economic analysis: assessment of risk factors, capital structure and availability, and the project's impact on the local economy.

Various types of risk factors will be examined—such as those related to project development costs and construction delays, availability of specialized labor, availability of specific types of animals for processing, market demand for products, and regulatory requirements.

The review of the capital structure and availability will depend largely on the findings of the Facilities and Process Design Study. Reliable cost estimates for land, plant construction, equipment and operations are essential for determining the amounts of investment capital and working capital needed. Also, sources of public funding for this economic development project will be investigated.

Traditional measures of local economic impact include output (gross sales of the new plant), jobs created, labor income and value added (the sum of all wage and salary payments made to workers, normal profits accruing to investors and tax payment made by individuals to governments). There are three dimensions of this economic activity: direct, indirect and induced. The direct values are those impacts attributable solely to the new plant. Indirect values are the processing inputs that the plant purchases, such as the animals, feed and energy. The induced effects result from the economic activity that occurs when the new plant's employees spend their labor income on local household goods and services.

Potential Livestock Supply Study

Authors: Shermain Hardesty, Yoko Kusunose and John Harper

Executive Summary

We evaluated the potential supply of livestock for the Facility. We defined two tiers of counties that could provide the required resources. Tier 1 includes counties that are geographically located within the traditional concept of locally-based and for the North Coast Region--Mendocino, Lake, Sonoma, Marin and Napa. Tier 2 counties represent the next sphere out which many would still consider local production. These counties include Yolo, Solano, Glenn, Colusa and Contra Costa. For this assessment of the livestock supply and processing needs of livestock producers on the North Coast, our primary data source was a survey that was developed and conducted by University of California Cooperative Extension in 2006. In order to have a larger set of respondents for the North Coast, four of the Cooperative Extension Livestock Advisors conducted facilitated questionnaire completion sessions in 2008 with a slightly modified survey instrument. We also used the recently released data from USDA's 2007 Census of Agriculture. Our findings are summarized below.

- Prior to World War II, many ranches had small feedlots for local sales of finished cattle. Many farms grew their own grain also. Inexpensive fossil fuel and the post-World War II growth of the large retail stores favored transporting cattle--and to some extent lambs--to the sources of grain production; this resulted in the disappearance of local feedlots and grain production.
- The majority of North Coast commercial cattle producers follow a fall-calved production cycle, but some do spring-calving too. Most of these cattle producers, regardless of when they calve, are cow-calf producers. Over 85% of the livestock raised by ranchers participating in our survey are marketed traditionally; this means they sell weaned calves or feeder cattle through auctions or contracted sales.
- For current cow-calf producers to change their marketing, they would need to receive a premium price for either the lighter, younger cattle or the grass-finished animal to offset the reduced size of their cow herd, if they cannot expand the forage resource on their ranches. Alternatively, they would need to purchase or raise their own grain and build feedlot facilities. Additionally, selling locally produced meat requires a USDA inspected harvest and processing facility within a cost-effective distance to the livestock producer.
- In our survey, most of the respondents are 45 or older (86%); one-third are 65 or older. Over 86% of them had gross farm incomes of \$250,000 or less, which qualifies them as a "small farm" under USDA's definition. Most small farms are considered to have limited financial resources; thus, our survey respondents have limited capacity to invest as part owners in the Facility.
- The Census of Agriculture data indicate that livestock sales volumes are more than adequate to support involvement in the Facility along with continuation of sales through traditional markets.
- Sales of finished cattle reported in our survey in the Tier 1 and Tier 2 counties were more than double the sales reported in the Census.
- Sixty-one percent of the ranchers in our survey rated the access/availability of slaughter and processing facilities as "very deficient".

- Ranchers in our survey have a strong interest in participating in the Facility. Their highest level of interest with the Facility is in participating in a branded program, rather than in direct marketing custom-processed meats or in part ownership of the Facility.
- Ranchers rated their interest as follows in the services to be offered by the Facility on a 5-point scale.

Service	Tier 1 and 2 Counties Combined	
	% rating 5	Mean rating
Meat delivery to final destination	49	3.9
Animal pick-up	41	3.4
Advertising & marketing support	40	3.6
Pasturing finishing	36	3.1
Dry aging	34	3.2
Organic processing	34	3.2
Label design & approval	29	3.1
Smoking & curing	25	3.0
Sausage production	21	2.9
Feedlot grain finishing	21	2.3
Kosher slaughter	15	2.3
Jerky	14	2.6
Halal slaughter	10	2.1

- The relatively low interest ratings for the value-added products (such as smoking, sausage production and Kosher slaughter) should not be construed as a signal to not offer these services at the Facility. Rather, ranchers are currently prevented from utilizing a custom processing facility because of transportation issues. Thus, most of them are currently not marketing their own meats and do not have a framework for understanding the importance of marketing value-added products.
- Although 71% of the ranchers indicated that they would be willing to travel up to 90 minutes one-way to deliver their livestock to the Facility, two of their three most desired services are: meat delivery to final destination and animal pick-up.
- It is unlikely that the 22% who are currently traveling 30 minutes or less to a facility would be willing to travel longer to a new facility, unless it offered more services and/or charged less.
- The Facility is designed with annual slaughter capacity for 20,800 cattle and 13,000 sheep, with future operations to include to hogs and goats. The expected delivery volumes to the Facility reported by ranchers in our survey for beef and the other species were only 6% and 13% higher, respectively, than the Facility's planned processing capacities; this leaves little room for changing commitments.
- Thus, utilization of the Facility needs to extend beyond the ranchers who responded to our survey. One of the critical questions that remains unanswered is how many of the ranchers marketing through conventional channels who did not respond to our survey would be interested in the future in partial or full participation in the Facility.

- There is strong seasonality in the projected deliveries could be problematic in regard to both processing capacity and marketing of the meat products.
- Ranchers' finishing capacity is a major consideration since the expected deliveries of finished cattle represented less than 20% of the Facility's projected capacity. Furthermore, 60% of the ranchers indicated that they had very little or no finishing capacity.
- In addition to the small-scale feedlot planned for the Facility, similar feedlots scattered throughout the region will be needed. Commitment by UCCE livestock advisors will also be necessary to support ranchers in their efforts to re-establish pasture finishing capacity.

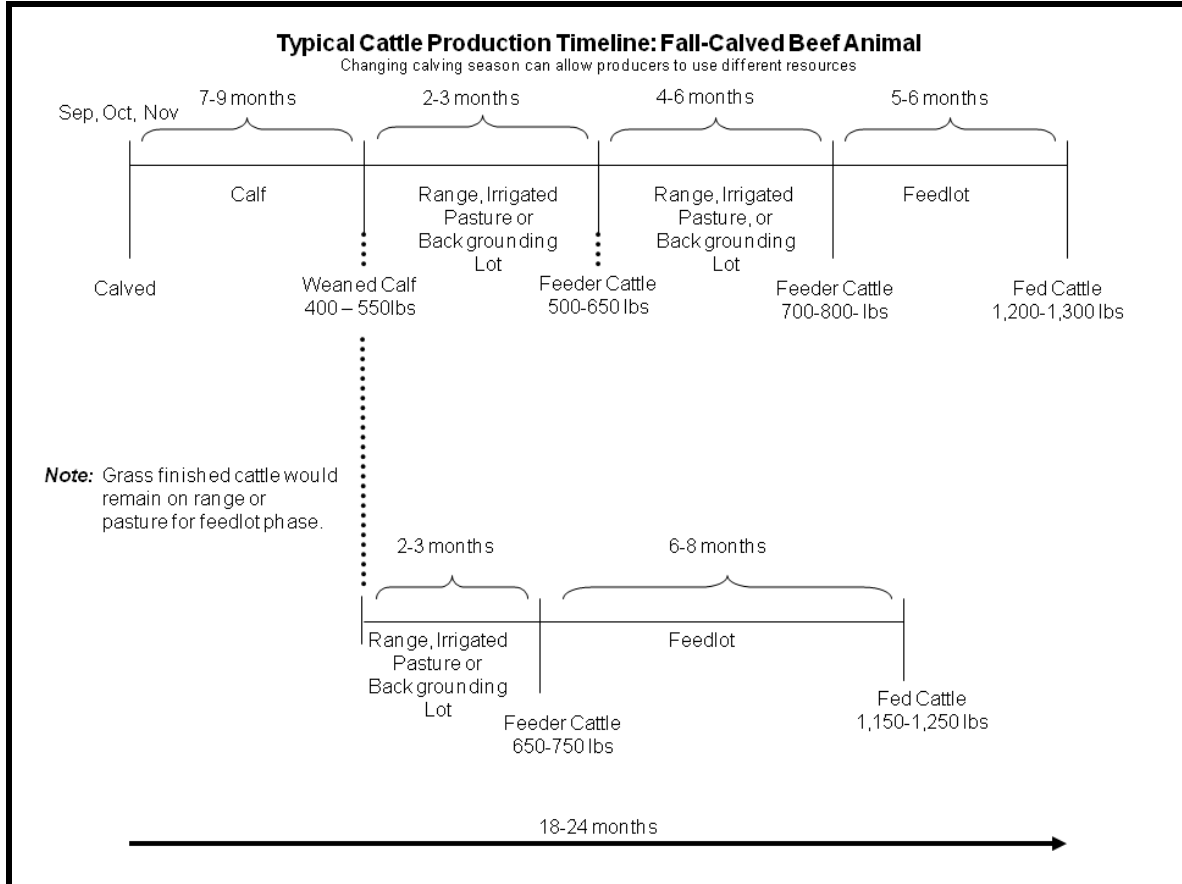
Introduction

For a regional multi-species niche meat harvest and processing center to be viable, an adequate and consistent supply of animals is necessary. For a grass-finished cattle operation, there must also be sufficient pasture resources to carry the animals to an appropriate harvest weight normally taking 18 to 24 months or longer. For organic, natural or traditional grain-finished cattle operations, animals typically spend 4-6 months in a feedlot. Younger and consequently lighter weight beef could be marketed in one grass production cycle, if that market existed in the United States. There are three classifications for these younger and lighter weight cattle known in Italy as vitello, vitellone, and manzo. They are harvested for meat at 3-4 months, 6-8 months and 11-13 months, respectively. Sheep and goats can be finished on grass within one grass production year usually at slightly lighter weights than California's average of 133 pounds. Traditional cattle and sheep production cycles are shown in Figures 1 and 2. Meat goat production follows a similar cycle as sheep.

The majority of North Coast commercial cattle producers follow a fall-calved production cycle, but some do spring-calving too. Most of these cattle producers, regardless of when they calve, are cow-calf producers. This means they sell weaned calves or feeder cattle. Prior to World War II, many ranches had small feedlots for local sales of finished cattle. Many farms grew their own grain also. Inexpensive fossil and the post-World War II growth of the large retail stores favored transporting cattle--and to some extent lambs--to the sources of grain production; this resulted in the disappearance of local feedlots and grain production.

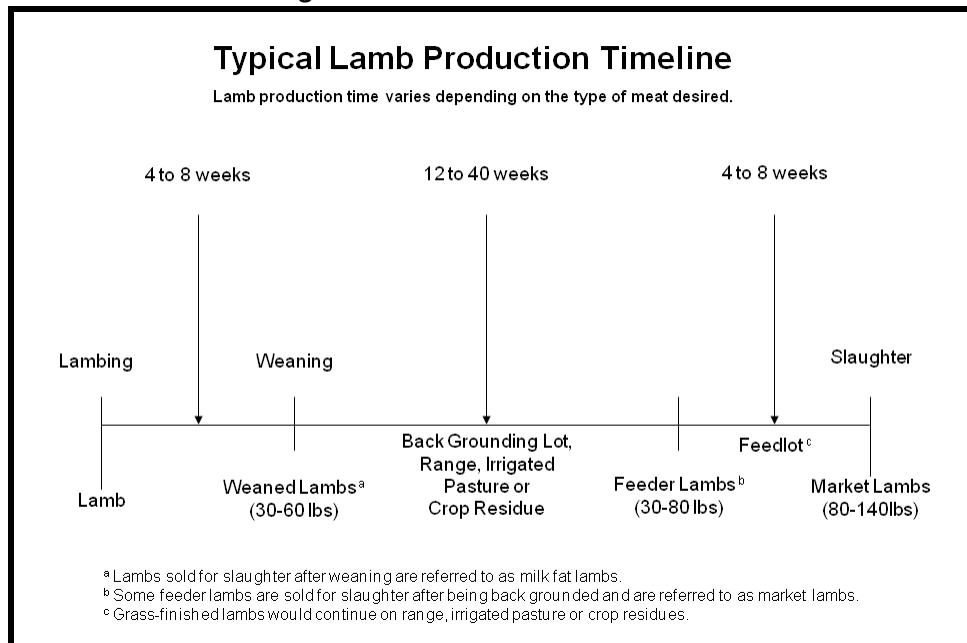
For current cow-calf producers to change their marketing, they would need to receive a premium price for either the lighter, younger cattle or the grass-finished animal to off-set the reduced size of their cowherd, if they cannot expand the forage resource of the ranch. Alternatively, they would need to purchase or raise their own grain and build feedlot facilities. Additionally, selling locally produced meat requires a USDA inspected harvest and processing facility within a cost-effective distance to the livestock producer.

Figure 1: Cattle Production Timeline



Adapted from 2007 GIPSA Livestock and Meat Marketing Study Volume 3: Fed Cattle and Beef Industries Final Report prepared by RTI International Health, Social, and Economics Research, Triangle Park, NC 27709

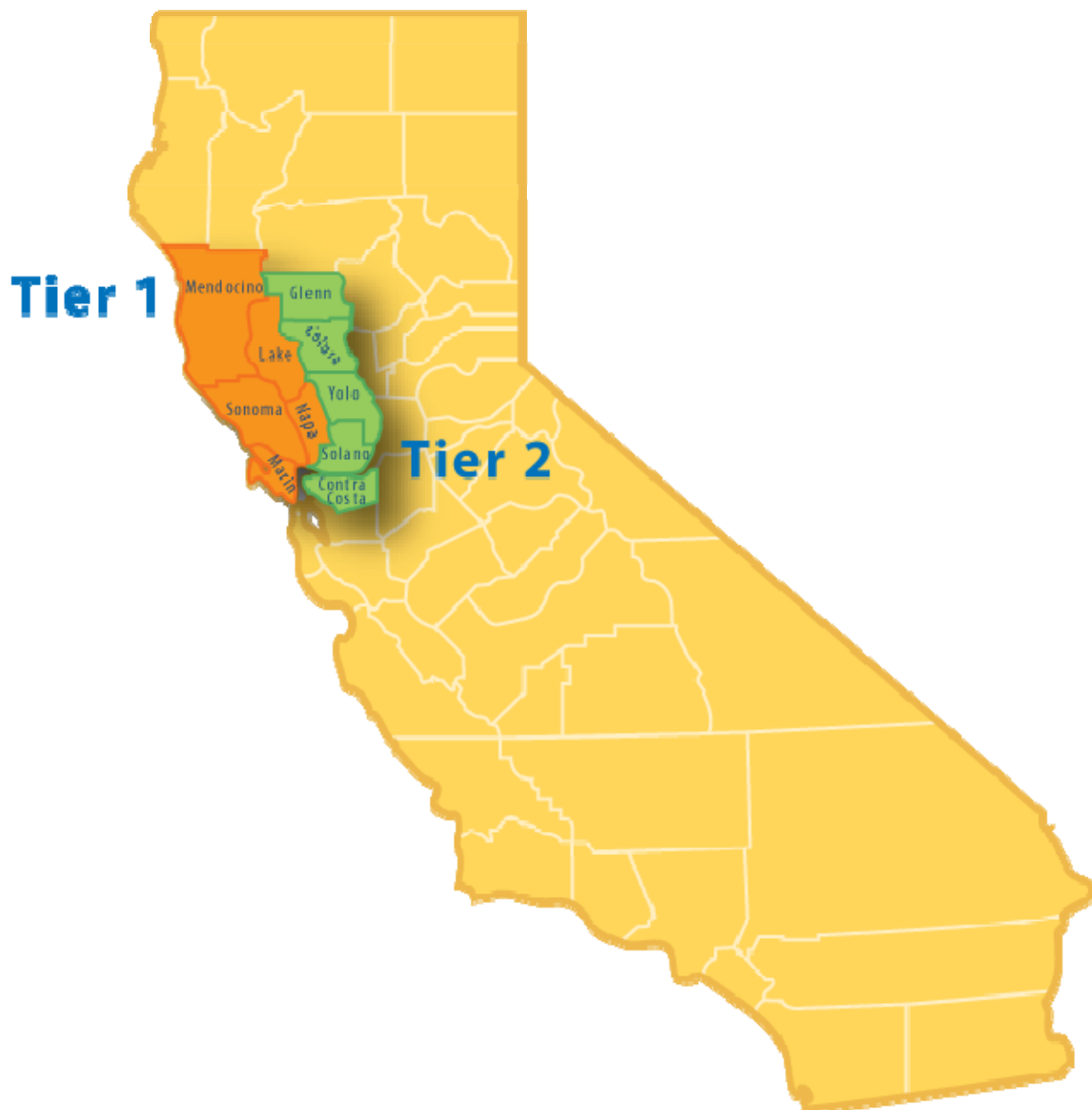
Figure 2: Lamb Production Timeline



*Adapted from 2007 GIPSA Livestock and Meat Marketing Study Volume 5: Lamb and Lamb Meat Industries Final Report
prepared by RTI International Health, Social, and Economics Research, Triangle Park, NC 27709*

In the remainder of this section, we discuss the potential supply of livestock for the regional niche meat harvest and processing facility (Facility). We defined two tiers of counties that could provide the required resources. Tier 1 includes counties that are geographically located within the traditional concept of locally based and for the North Coast Region, these counties include Mendocino, Lake, Sonoma, Marin and Napa. Tier 2 counties represent the next sphere out which many would still consider local production. These counties include Yolo, Solano, Glenn, Colusa and Contra Costa. Figure 3 shows the relationship between these counties and the major niche meat target market, California's San Francisco Bay area, which was part of the niche meat marketing study summarized in the Northern California Niche Meat Market Demand Study section in this report.

Figure 3: Map of Tier 1 and Tier 2 Counties



Methodology

We relied on two sources of data for this assessment of the livestock supply and processing needs of livestock producers on the North Coast. Our primary source was a survey that was developed and conducted by University of California Cooperative Extension in 2006. In order to have a larger set of respondents for the North Coast, four of the Cooperative Extension Livestock Advisors conducted facilitated questionnaire completion sessions in 2008 with a slightly modified survey instrument. This source provided excellent data for those livestock producers who are actively interested in local niche meat sales and a regional harvest and processing plant. This group could be classified as the “early adopters”. Our second source, USDA’s 2007 Census of Agriculture, reports livestock sales, which are not ideal production estimates due to how the data are collected and reported. However, these data include producers who did not participate in our survey but who might possibly become involved with a regional niche meat facility once it is built.

Before pooling the responses from our 2006 and 2008 surveys, we tested the hypothesis that the two groups are comparable along the following characteristics: herd size by species, animals marketed annually, gross farm income and principal operator age. The hypothesis was tested for two samples: respondents from the Tier 1 counties and those from the Tier 1 and Tier 2 counties combined. In the combined sample, the annually marketed number of finished sheep was significantly different (at the 5% significance level) between the 2006 and 2008 respondents. Since there were no statistically significant differences between the two groups for four of the five animal types, we concluded that it was appropriate to combine the two data sets. Our detailed test results are discussed in [Appendix 7.1.A](#). Below, we present the results of our analysis regarding livestock supply and service needs in Northern California. We first discuss the respondents’ demographics, followed by the current situation and the ranchers’ interest in a new facility.

Findings

Respondent Demographics

The respondents are profiled below by their age. Because the age distributions of the respondents in the Tier 1 and Tier 2 counties were similar, only data for Tiers 1 and 2 combined are displayed. Most of the respondents (86%) are 45 or older; one-third are 65 or older (Table 1). These proportions mirror the pattern among agricultural producers in general in California and the rest of the nation. The aging population is problematic; managing estate taxation and management transition both require significant planning. Furthermore, making significant changes in livestock production and marketing methods can require substantial investment by the rancher, in terms of both finances and personal energy; this could be especially challenging for older ranchers.

Table 1: Age Composition of Respondents Tier 1 & 2 Counties Combined

Age	Frequency	Valid Percent	Cumulative Percent
under 25 years	5	2.3	2.3
25 to 34 years	11	5	7.3
35 to 44 years	15	6.8	14.1
45 to 54 years	52	23.6	37.7
55 to 64 years	62	28.2	65.9
65 years or older	75	34.1	100
Total	220	100	

In our survey, the income variable is measured as gross farm revenue, rather than as net income. As indicated in Appendix Table F, there are statistically significant differences in the distribution of the gross farm revenues from the previous year for the respondents of the 2006 and 2008 surveys. However, the most significant observation about these revenues for both groups of respondents is that 86% of the respondents in the 2006 survey and 98% of the respondents of 2008 survey had gross farms revenues of under \$250,000, which qualifies them as a “small farm” as defined by USDA. Small farms are considered to have limited financial resources. It is quite likely that the ranchers who responded to the UCCE survey are “asset rich but cash poor”; that is, the value of their acreage could be substantial but they lack cash¹. Thus, it is likely that the ranchers lack the cash for the feed needed to finish out their livestock, and they have limited capital to invest to become part owners in the proposed Facility.

Current Marketing Volumes

We first reviewed data from the newly released USDA 2007 Census of Agriculture. The number of livestock marketed in 2007 in Tier 1 and Tier 2 are reported in Table 2. These data indicate that sales in each tier exceed the Facility’s planned processing capacities for beef and for other species. With the exception of hogs, total sales of all species in Tier 2 were greater than those in Tier 1. Next, we compare the Census sales volumes with those reported by our survey respondents to determine how much of the overall population we capture through our survey, since one of the major purposes of conducting the survey in 2008 was to gather reliable estimates of producer interest in utilizing the Facility.

Table 2: Livestock sales as reported in 2007 Census of Agriculture - Tier 1 & 2

Counties	Cattle & Calves	Calves <500 lbs	Cattle >500 lbs	Fed Cattle	Sheep & Lambs	Meat Goats	Hogs & Pigs	Total Livestock Sold
Tier 1								
Mendocino	8,881	3,048	5,833	104	3,174	195	747	12,997
Lake	1,271	308	963	11	463	280	510	2,524
Sonoma	32,328	9,390	22,938	347	13,397	291	979	46,995
Marin	14,866	4,313	10,553	14	4,918	0	0	19,784
Napa	3,878	740	3,138	0	372	0	189	4,439
Subtotal	61,224	17,799	43,425	476	22,324	766	2,425	86,739
Tier 2								
Glenn	31,546	11,086	20,460	444	2,008	627	1,150	33,767
Colusa	8,649	2,556	6,093	0	3,841	83	0	12,573
Contra Costa	12,459	1,179	11,280	0	391	0	94	12,944
Yolo	10,221	2,170	8,051	281	4,929	0	992	16,142
Solano	29,765	1,309	28,456	510	22,798	1,409	228	54,200
Subtotal	92,640	18,300	74,340	1,235	33,967	2,119	2,464	131,190
Total	153,864	36,099	117,765	1,711	56,291	2,885	4,889	217,929

Source: 2007 Census of Agriculture - California County Data, USDA National Agricultural Service

¹ Alternatively, they could have nonfarm sources of income that provide cash.

Table 3: Comparison of Reported Livestock Sales

Region	Cattle & Calves	Calves <500 lbs	Cattle >500 Lbs	Fed Cattle	Sheep & Lambs	Meat Goats	Hogs & Pigs	Total Livestock Sold
<i>Tier 1</i>								
Census	61,224	17,799	43,425	476	22,324	766	2,425	86,739
Survey	8,960	4,618	4,342	861	4,653	520	527	14,660
Survey/ census	15%	26%	10%	181%	21%	68%	22%	17%
<i>Tier 2</i>								
Census	92,640	18,300	74,340	1,235	33,967	2,119	2,464	131,190
Survey	13,700	5,127	8,108	3,144	7,936	729	145	22,510
Survey/ census	15%	28%	11%	255%	23%	34%	6%	17%
<i>Tier 1 & 2</i>								
Census	153,864	36,099	117,765	1,711	56,291	2,885	4,889	217,929
Survey	22,660	9,745	12,450	4,005	12,589	1,249	672	37,170
Survey/ census	15%	27%	11%	234%	22%	43%	14%	17%

Although the survey in aggregate captured 17% of livestock sales in both tiers (Table 3), the proportions vary noticeably by animal type within each tier. Our survey respondents in both tiers over-reported their fed cattle sales when compared to the 2007 Census of Agriculture in their regions; sales of finished cattle reported by the ranchers in our survey for the combined Tier 1 and Tier 2 counties were more than double the sales reported in the Census. It is possible, particularly among the smaller producers, that some of our survey respondents did not participate in the Census. Since most cattle in the region are sold and transported elsewhere for finishing, the fact that the survey respondents represented only 10-11% of the cattle marketed over 500 pounds in the 2007 Census is not at all unexpected. Most of the regions' ranchers market their livestock through conventional channels and would not have responded to our survey because they do not have an interest in alternative marketing and utilizing the proposed facility.

A similar finding holds for the sheep producers; the survey respondents represent 21% and 23% of the sheep marketed in the two regions; this is not surprising since Superior Packing in Dixon is a major lamb processor that also provides custom services for producers. The highest response rate in our survey was for goat producers in Tier 1; the lower response in Tier 2 could be due to the presence of other facilities in Tier 2. Since the conventional market for hogs is very limited in Northern California, it was surprising that the hogs marketed by the survey respondents represented only 22% and 6% of all the hogs marketed in the two regions. The survey was expected to capture a high proportion of hog producers who are seeking alternative markets for their animals. Survey respondents also reported marketing a total of 130 bucks; the volume was considered to be too low to warrant additional analysis for this species.

Existing Marketing Channels

As previously noted, most of the livestock produced in the region is sold through traditional marketing channels. Approximately one in seven animals produced in Tier 1 and 2 combined is sold through a nontraditional channel (Table 4). The largest nontraditional channel is branded programs, such as Harris Ranch and Niman Ranch; such programs arrange for the slaughter and processing of their animals. Currently, 7.8% of the beef and 7.2% of the sheep sold by our survey respondents in Tier 1 and 2 combined require the animal to be custom slaughtered and processed.

Table 4: Animal Sales by Marketing Channel Tier 1 & 2 Combined

Species	Conventional Markets	Branded Programs	Direct Sales to Individuals	Farmers Markets	Direct Sales to Retail or Restaurants	Other Nontraditional Channels
Beef	85.7%	6.5%	1.3%	2.9%	1.4%	2.2%
Lamb	87.9%	4.9%	4.6%	0.4%	0.1%	2.1%

Use of Existing Facilities

The 98 ranchers engaged in direct sales represent 44% of all of the Tier 1 and Tier 2 respondents in our survey; they were asked about their use of existing slaughter and processing facilities. They rated their satisfaction with the quality of service at existing slaughter and processing facilities, using a 5-point rating scale, where 1 represents “not satisfied” and 5 means “very satisfied”. The average satisfaction rating of ranchers in the combined Tier 1 and 2 counties with the quality of service and timeliness of service of existing slaughter and processing facilities were 3.7 and 3.6, respectively (Table 5). One in five ranchers were very dissatisfied with both the quality and timeliness of the service, rating it as either “1” or “2”.

Table 5: Satisfaction with Current Slaughter and Processing Facility Tier 1 and 2 Combined

	Average Rating (1-5 scale)
Satisfaction with quality of service of existing slaughter and processing facilities	3.7
Satisfaction with timeliness of service of existing slaughter and processing facilities	3.6

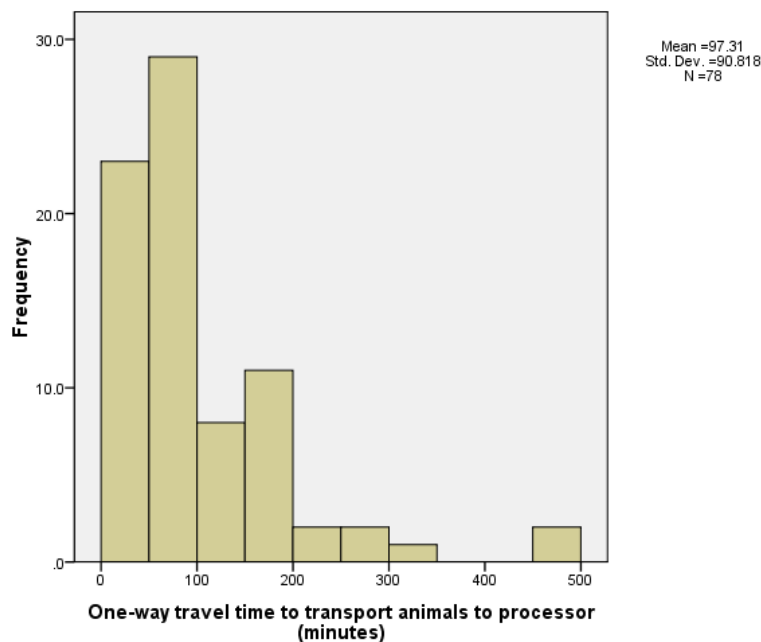
The number of animals transported in a single trip to a facility ranged widely, from 1 to 380, and averaged 19 for ranchers in the combined Tier 1 and 2 counties (Table 6). The one-way transport distance ranged from 2 to 360 miles and averaged 64 and 61 miles, respectively for the Tier 1 and combined Tier 1 and 2 counties.

**Table 6: Animals Transported, Mileage and Travel time to Slaughter and Processing Facility
Tier 1 and 2 Combined**

	N	Minimum	Maximum	Mean
Animals transported to processor per each trip	80	1	380	18.91
Miles (one way) to processor	78	2	360	61.27
One-way travel time to transport animals to processor (minutes)	78	5	480	97.31

Although the travel distance of the facility ranged from 2 miles to 360 miles, two-thirds of the ranchers in the combined Tier 1 and 2 counties drove 60 miles or less one way. The one-way transport time also ranged widely, from 5 minutes to 8 hours; it averaged 97 minutes in the combined Tier 1 and 2 counties (Table 6). However, two-thirds of these ranchers drove for one and a half hours or less one way.

Figure 4: Time to Transport - Tiers 1 & 2 Combined



All ranchers responding to the survey (not just those engaged in direct sales of their meat products) were asked to assess the current availability and accessibility of slaughtering and processing facilities in Northern California. The assessments were similar among ranchers in the Tier 1 counties and the combined Tier 1 and 2 counties. The larger group of 204 ranchers in the Tier 1 & 2 counties was noticeably less satisfied with the situation than the subset of ranchers who were actually involved in direct marketing; 61% assessed availability was “very deficient” while 26 percent rated it as “just enough” or “very available” (Table 7). This disparity implies that many of the respondents (particularly the 61% who rates the availability as “very deficient”) would be inclined to utilize a facility that was more accessible.

Table 7: Current Availability/Accessibility of Facilities Tiers 1 & 2 Combined

Rating	Frequency	Valid Percent	Cumulative Percent
very deficient	125	61.3	61.3
slightly below	26	12.7	74.0
just enough	37	18.1	92.2
very available	16	7.8	100.0
Total	204	100.0	

Marketing Systems

Ranchers were asked to indicate their levels of interest for three potential marketing systems: direct marketing, a branded program, and a part-ownership entity. (Two-thirds of all ranchers in Tier 1 and Tier 2 counties responded; respondents were limited to those who had stated some interest in small-scale processing facilities.) For each of these marketing systems, respondents rated their interest on a scale of 1 to 5, where 1 represented “not at all interested” and 5 meant “very interested.” Ranchers in both study regions express the greatest interest in a branded program, followed by direct marketing, and lastly a part-ownership entity. Forty percent of the ranchers in the combined Tier 1 and 2 counties indicated that they were “very interested” in a brand program (Table 8), and 79% rated their interest in branded programs as a “3” or higher.

Table 8: Interest in Alternative Marketing Structures Tiers 1 & 2 Combined

Interest level	Percent Interested		
	Direct Marketing	Branded Programs	Part Ownership
not at all interested	22.1	15.4	39.6
2	8.7	5.4	10.4
3	16.8	23.5	18.1
4	12.8	16.1	16.0
very interested	39.6	39.6	16.0
Average rating	3.4	3.6	2.6

Forty percent were very interested in direct marketing (Table 8). Over two-thirds (69%) rated their interest in direct marketing as a “3” or higher in the Tier 1 and 2 counties combined. As expected, interest levels for part-ownership in a livestock processing entity were lower. Only 16% of the ranchers were “very interested” in this option.

Interest in New Facility

Only ranchers participating in the 2008 survey were asked to indicate their interest in utilizing a hypothetical multi-species processing facility in the north coast region of California. They were told that

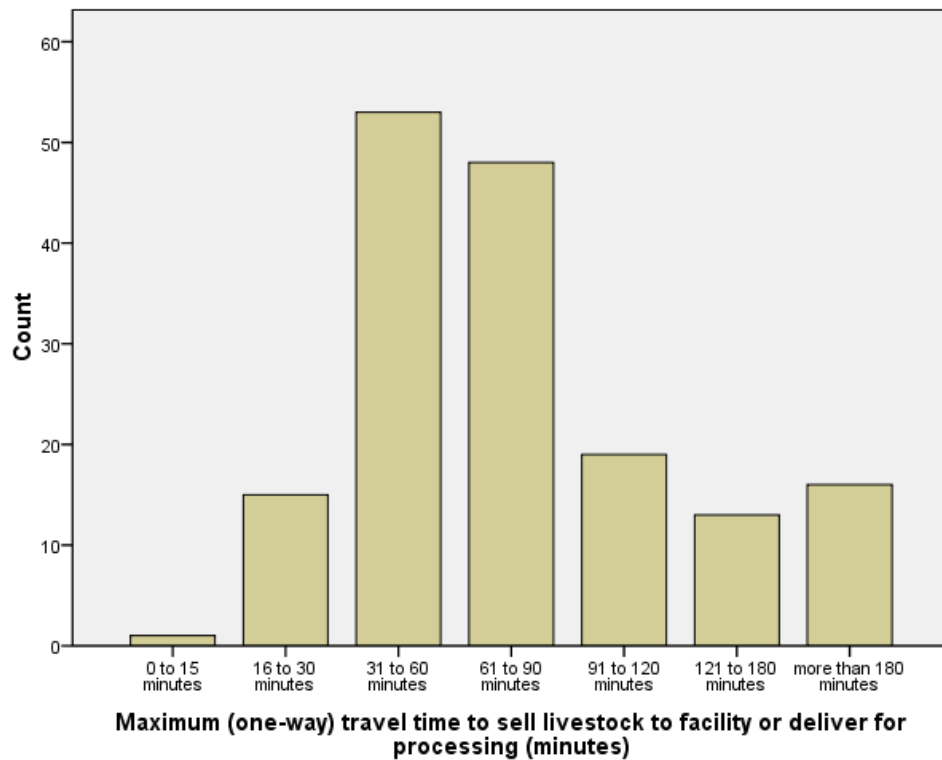
the facility would buy livestock (both feeders and finished animals) from local producers and slaughter, process and market the niche meats in regional markets under its own brand name. It would provide custom slaughter and processing services to producers. Producers would also have the option of becoming part owners. Given the existence of such a facility, ranchers were asked if they would utilize the facility, the maximum time that they would be willing to travel one-way to do so, and their level of interest in a broad array of services.

Eighty one percent of the ranchers in the combined Tier 1 and 2 counties indicated that they would be interested in selling livestock to the Facility and 75% in using its custom slaughter/processing services for direct marketing. When asked about the maximum amount of time that they would be willing to travel one-way in order to use such a facility (Table 9 and Figure 5), 18% of the ranchers in the combined Tier 1 and 2 counties would travel over two hours, 58% would travel over an hour, and 90% over 30 minutes. Among the subset of 78 ranchers in the Tier 1 and 2 counties who are currently having their livestock processed, 26% are traveling over two hours, 47% over an hour and 78% over 30 minutes. It is unlikely that the 22% who are currently traveling 30 minutes or less to a facility would be willing to travel longer to a new facility, unless it offered more services and/or charged less.

Table 9: Maximum One-way Travel Time to Processing Facility Tiers 1 & 2 Combined

	Frequency	Valid Percent	Cumulative Percent
0 to 15 minutes	1	.6	.6
16 to 30 minutes	15	9.1	9.7
31 to 60 minutes	53	32.1	41.8
61 to 90 minutes	48	29.1	70.9
91 to 120 minutes	19	11.5	82.4
121 to 180 minutes	13	7.9	90.3
more than 180 minutes	16	9.7	100.0
Total	165	100.0	

**Figure 5: Maximum One-way Travel Time to Processing Facility
Tiers 1 & 2 Combined**



Transportation services are highly desired by ranchers (Table 10). The three most desired services are very clear by viewing both the proportion of respondents rating the service as a “5” and the mean rating; they are (in declining order): meat delivery to final destination, animal pick-up, and advertising and marketing support. It is not surprising that 40% rating advertising and marketing support as “very important”, since ranchers, like most agricultural producers, lack marketing expertise. The next group of services that ranchers were interested in are: pasture finishing, organic processing and dry aging; one-third of the ranchers rated each of these services as “very important”.² The least desired services were kosher slaughter, grain finishing and Halal slaughter.

The relatively low interest ratings for the value-added products (such as smoking, curing and kosher slaughter) should not be construed as a signal to not offer these services at the Facility. Rather, ranchers are currently prevented from utilizing a custom processing facility because of transportation issues. Thus, most of them are currently not marketing their own meats and do not have a framework for understanding the importance of services to produce value-added products.

² It should be noted, however, that interest in pasture finishing, organic processing and dry aging was bi-modal; that is, there were relatively large proportions of ranchers that were either strongly interested or strongly disinterested in these services.

Table 10: Interest in Services Offered (5 point rating scale)

Service	Tier 1 and 2 Counties Combined	
	% rating 5	Mean rating
Meat delivery to final destination	49	3.9
Animal pick-up	41	3.4
Advertising & marketing support	40	3.6
Pasturing finishing	36	3.1
Dry aging	34	3.2
Organic processing	34	3.2
Label design & approval	29	3.1
Smoking & curing	25	3.0
Sausage production	21	2.9
Feedlot grain finishing	21	2.3
Kosher slaughter	15	2.3
Jerky	14	2.6
Halal slaughter	10	2.1

Potential Animal Supplies

The total volume and timing of animal deliveries are both critically important for efficient facility utilization. Ranchers were asked to indicate the number of animals by species that they expect to deliver monthly to the hypothetical slaughter and processing facility. The annual totals are displayed below. The Facility is designed with annual slaughter capacity for 20,800 cattle (80 head per day, 5 days a week, 52 weeks a year) and 13,000 sheep (50 head per day, 5 days a week, 52 week a year), with future operations to include to hogs and goats. As indicated in Table 11, deliveries by ranchers in the Tier 2 counties, as well as the Tier 1 counties, are needed to keep the facility operating at close to full capacity. Deliveries of hogs and goats will fill in the unused sheep processing capacity.

Table 11: Expected Annual Livestock Deliveries to Facility by Animal Type

	Cow-calf culls (# cows)	Weaned calves	Stockers	Finished	Sheep culls (# ewes)	Feeder sheep	Finished sheep	Goats	Hogs	Subtotal, Cattle	Subtotal, Other Species
Tier 1	1,011	4,618	2,470	861	489	1,903	2,261	565	989	8,960	6,207
Tier 1 & 2 combined	1,816	9,745	6,629	4,005	856	4,158	7,575	1,171	990	22,195	14,750

As shown in Table 12, the projected monthly animal delivery totals for ranchers in the combined Tier 1 and Tier 2 counties display strong seasonality. Projected deliveries of cattle could exceed the monthly processing capacity of 1,633 head during October. Also, the combined deliveries of lamb, goats and hogs in June, November and December could be problematic, given the estimated monthly processing capacity of 1,021 head. However, such assessments assume that all of the delivered animals would be ready for slaughter, which is not likely.

Table 12: Expected Livestock Deliveries by Species and Month Tiers 1 and 2 Combined

Month	Steers/Heifers	Lamb	Goats	Hogs
Jan	312	102	25	41
Feb	178	74	0	35
Mar	250	91	0	57
Apr	398	151	120	55
May	1616	228	174	62
June	1175	1009	164	67
Jul	856	791	105	92
Aug	776	481	138	90
Sep	866	515	110	155
Oct	1672	348	75	79
Nov	388	1014	235	132
Dec	252	1286	25	125

Ranchers were asked how easily they could adjust their livestock management practices to extend their production season for finished animals (Table 13). Twenty-three percent of the ranchers who are interested in using the hypothetical facility indicated that they could adjust their livestock feeding practices to extend their finishing season, while an additional 29% could do so with some strain. One-third could make the adjustment, but preferred not to. Only 13% indicated that they would be incapable of extending their finishing season. Some ranchers will need guidance to implement a finishing program.

Table 13: Season Extension Capacity - Tier 1 and 2 Counties Combined

Season Extension Capacity	Frequency	Valid Percent	Cumulative Percent
can adjust to year-round	37	22.8	22.8
can adjust with some strain	47	29	51.9
can adjust but prefer not to	50	30.9	82.7
cannot adjust at all	28	17.3	100
Total	162	100	

Ranchers' finishing capacity also needs to be considered in assessing potential deliveries. The expected number of deliveries of finished cattle comprised only 19% of the Facility's planned cattle processing capacity (Table 11). Ranchers were asked to indicate their ability to finish animals on either grass or grain, given the amount of pasture and/or feedlots available in their area. The ranchers' finishing capacity is significantly more constrained than their season extension capacity. Forty percent of the ranchers interested in the facility have capacity to finish their livestock, half have very little finishing capacity and 10% have none (Table 14). Additional analysis indicated that finishing capacity did not vary by herd size or between the two regions.

As in most parts of the western United States, ranchers' finishing capacity diminished significantly after World War II as smaller local feedlots were replaced by large operations and pasture finishing lost

popularity. Significant effort by ranchers and UCCE livestock advisors will be needed to re-establish pasture finishing capacity. Another possibility is to establish several small-scale local grain-finishing feedlots; the preliminary design for the proposed Facility included a feedlot next to it.

Table 14: Finishing Capacity - Tier 1 and 2 Counties Combined

Finishing Capacity	Frequency	Valid Percent	Percent of Interested Ranchers
more than adequate	16	7.6	10.2
adequate capacity	83	39.3	30.1
very little capacity	50	23.7	50.0
no capacity	17	8.1	9.6
no interest in small-scale processing facilities	45	21.3	29.0
Total	211	100	

Conclusions Regarding North Coast Region Livestock Supply and Processing Needs Assessment

Our survey results indicate that there is strong interest among ranchers in the Tier 1 and 2 counties in participating in the Facility. Currently, 86% of their livestock is being sold through conventional channels. Sixty-one percent rated the access/availability of slaughter and processing facilities as “very deficient”. The ranchers’ highest level of interest with the Facility is in participating in a branded program. Although 71% of the ranchers indicated that they would be willing to travel up to 90 minutes one-way to deliver their livestock to the Facility, they are most interested in the transportation services the Facility would provide; the three most desired services are (in declining order): meat delivery to final destination, animal pick-up, and advertising and marketing support.

There appears to be a limited number of ranchers in the Tier 1 and Tier 2 counties who would be interested in becoming part owners in the Facility. Furthermore, their relatively old age profile (62% of the respondents were 55 years or older) and low gross farm incomes make such an investment questionable.

One of the critical questions that remains unanswered is how many of the ranchers marketing through conventional channels who did not respond to our survey would be interested in the future in partial or full participation in the Facility. The Census of Agriculture data indicate that livestock sales volumes are more than adequate to support involvement in the Facility along with continuation of sales through traditional markets. Utilization of the Facility needs to extend beyond the ranchers who responded to our survey. The expected delivery volumes to the Facility reported in our survey for beef and other species were only 6% and 13% higher, respectively, than the Facility’s planned processing capacities; this provides little insurance for unfilled commitments.

Additionally, finishing capacity is a major consideration since the expected deliveries of finished cattle represented less than 20% of the Facility’s projected capacity and 60% of the ranchers indicated that they had very little or no finishing capacity. In addition to the small-scale feedlot planned for the Facility, similar feedlots scattered throughout the region will be needed. Commitment by UCCE livestock advisors will also be necessary to support ranchers in their efforts to re-establish pasture finishing capacity.

APPENDIX for Potential Livestock Supply Study

Differences between 2006 and 2008 UCCE Survey Respondents

Testing Differences in Responses for the Two Respondent Sets

Before pooling responses from the 2006 and 2008 surveys, we tested the hypothesis that the two groups are comparable along the following characteristics: herd size by species, animals marketed annually, gross farm income and principal operator age. The hypothesis was tested for two samples: respondents from the Tier 1 counties and those from the Tier 1 and Tier 2 counties combined. The data tables and test statistics are displayed in this Appendix.

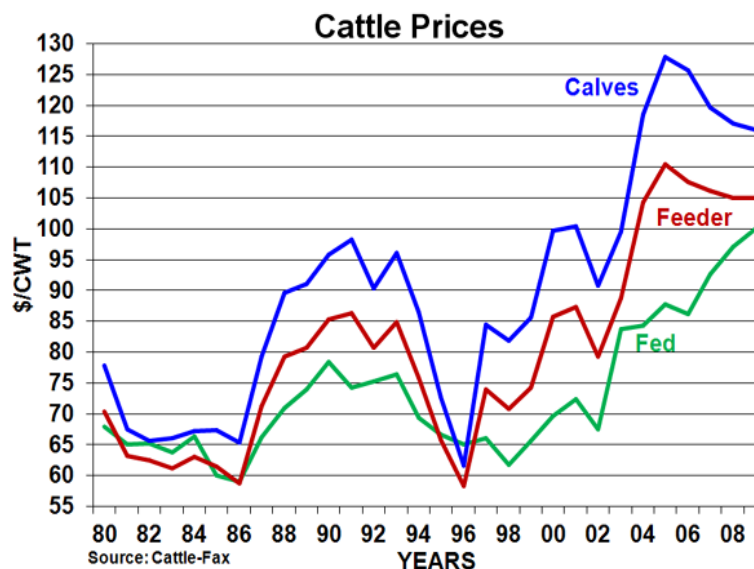
Operation Size: For both samples (Tier 1, and Tier 1 and 2 combined) we cannot reject the hypothesis that the two groups represent the same distribution of operation sizes across all species and animal type.

Animal Marketed Annually: For both samples, we cannot reject the hypothesis that the number of annually marketed culled cows, weaned calves, feeder calves, finished calves, sheep culls, feeder sheep, goat culls, feeder goats, and finished goats represent the same distribution for the 2006 respondents and the 2008 respondents. In the combined sample, however, the annually marketed number of finished sheep was significantly different (at the 5% significance level) between the 2006 and 2008 respondents. Since there were no statistically significant differences between the two groups for four of the five animal types, we concluded that it was appropriate to combine the two data sets.

Operator Age: For both samples we cannot reject the hypothesis that the distribution of operator age is the same between the two groups.

Gross Annual Revenue: Respondents in the 2006 survey reported 2005 gross farm revenue, and the respondents in the 2008 survey reported 2007 gross farm revenue. As we expected, we reject the hypothesis that the distribution of gross revenue is the same between the two groups. Cattle-Fax data displayed indicate that prices for feeder cattle and calves dropped noticeably between 2004 and 2008 (Appendix Figure A); this had a substantial impact on ranchers' gross annual incomes. These differences in gross farm revenue did not have a substantive impact on the types of variables we evaluated in the two data sets.

Appendix Figure A: Cattle Prices



**Appendix Table A: Comparison between 2006 and 2008 Annually Marketed Animals [TIER 1]
(T-Test for independent samples)**

	survey	N	Mean	Std. Deviation	Std. Error Mean
Cow-calf culls (# cows marketed annually)	2006 survey	35	11.09	11.025	1.864
	2008 survey	50	12.46	12.316	1.742
Weaned calves (# calves marketed annually)	2006 survey	37	51.59	44.679	7.345
	2008 survey	44	61.57	70.274	10.594
Stockers (# calves marketed annually)	2006 survey	17	59.18	86.198	20.906
	2008 survey	26	56.31	67.034	13.146
Finished (# calves marketed annually)	2006 survey	10	42.80	91.988	29.089
	2008 survey	21	20.62	37.352	8.151
Sheep culls (# ewes marketed annually)	2006 survey	19	12.37	12.549	2.879
	2008 survey	23	11.04	11.117	2.318
Feeder sheep (# ewes marketed annually)	2006 survey	18	64.72	74.925	17.660
	2008 survey	15	49.20	57.324	14.801
Finished sheep (# ewes marketed annually)	2006 survey	24	56.46	66.938	13.664
	2008 survey	25	36.24	59.463	11.893
Goat culls (# does marketed annually)	2006 survey	2	4.00	.000	.000
	2008 survey	4	6.75	3.948	1.974
Feeder goats (# does marketed annually)	2006 survey	1	50.00	.	.
	2008 survey	2	45.00	21.213	15.000
Finished goats (# does marketed annually)	2006 survey	3	60.67	78.621	45.392
	2008 survey	8	20.38	14.579	5.155

Appendix Table A: (continued)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Cow-calf culls (# cows marketed annually)	Equal variances assumed	1.421	.237	-.528	83	.599	-1.374	2.602	-6.549	3.800
	Equal variances not assumed			-.539	78.030	.592	-1.374	2.551	-6.452	3.704
Weaned calves (# calves marketed annually)	Equal variances assumed	2.686	.105	-.745	79	.458	-9.974	13.379	-36.604	16.657
	Equal variances not assumed			-.774	73.884	.442	-9.974	12.891	-35.661	15.714
Stockers (# calves marketed annually)	Equal variances assumed	.397	.532	.122	41	.903	2.869	23.423	-44.435	50.173
	Equal variances not assumed			.116	28.321	.908	2.869	24.696	-47.693	53.431
Finished (# calves marketed annually)	Equal variances assumed	2.627	.116	.964	29	.343	22.181	23.015	-24.890	69.252
	Equal variances not assumed			.734	10.440	.479	22.181	30.209	-44.747	89.109
Sheep culls (# ewes marketed annually)	Equal variances assumed	.762	.388	.363	40	.719	1.325	3.653	-6.058	8.708
	Equal variances not assumed			.358	36.391	.722	1.325	3.696	-6.168	8.818
Feeder sheep (# ewes marketed annually)	Equal variances assumed	1.092	.304	.657	31	.516	15.522	23.614	-32.640	63.684
	Equal variances not assumed			.674	30.811	.506	15.522	23.042	-31.484	62.529

Appendix Table A: (continued)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		t-test for Equality of Means		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.						Lower	Upper
Finished sheep (# ewes marketed annually)	Equal variances assumed	1.765	.190	1.119	47	.269	20.218	18.070	-16.134	56.570
	Equal variances not assumed			1.116	45.838	.270	20.218	18.114	-16.247	56.684
Goat culls (# does marketed annually)	Equal variances assumed	12.519	.024	-.929	4	.406	-2.750	2.961	-10.970	5.470
	Equal variances not assumed			-1.393	3.000	.258	-2.750	1.974	-9.031	3.531
Feeder goats (# does marketed annually)	Equal variances assumed	.	.	.192	1	.879	5.000	25.981	325.117	335.117
	Equal variances not assumed			.	.	.	5.000	.	.	.
Finished goats (# does marketed annually)	Equal variances assumed	19.872	.002	1.517	9	.164	40.292	26.558	-19.788	100.371
	Equal variances not assumed			.882	2.052	.469	40.292	45.684	-151.589	232.172

Appendix Table B: Comparison between 2006 and 2008 Operation Size Category: Cow-Calf [TIER 1]

Cow-calf (# cows)		2006 survey	2008 survey	Total
less than 50	Count	21	26	47
	% within survey	42.9%	45.6%	44.3%
50 to 99	Count	10	10	20
	% within survey	20.4%	17.5%	18.9%
100 to 199	Count	13	12	25
	% within survey	26.5%	21.1%	23.6%
200 to 499	Count	4	9	13
	% within survey	8.2%	15.8%	12.3%
500 or more	Count	1	0	1
	% within survey	2.0%	.0%	.9%
Total	Count	49	57	106
	% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.908 ^a	4	.573
Likelihood Ratio	3.328	4	.504
Linear-by-Linear Association	.002	1	.967
N of Valid Cases	106		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .46.

**Appendix Table C: Comparison between 2006 and 2008 Operation Size Category: Weaned Calves
[TIER 1]**

Weaned Calves (# calves)		2006 survey	2008 survey	Total
less than 50	Count	20	36	56
	% within survey	57.1%	62.1%	60.2%
50 to 99	Count	6	10	16
	% within survey	17.1%	17.2%	17.2%
100 to 199	Count	7	8	15
	% within survey	20.0%	13.8%	16.1%
200 to 499	Count	2	3	5
	% within survey	5.7%	5.2%	5.4%
500 or more	Count	0	1	1
	% within survey	.0%	1.7%	1.1%
Total	Count	35	58	93
	% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.225 ^a	4	.874
Likelihood Ratio	1.553	4	.817
Linear-by-Linear Association	.109	1	.741
N of Valid Cases	93		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is .38.

Appendix Table D: Comparison between 2006 and 2008 Operation Size Category: Sheep [TIER 1]

Sheep (# ewes)		2006 survey	2008 survey	Total
less than 50	Count	19	20	39
	% within survey	50.0%	60.6%	54.9%
50 to 99	Count	8	8	16
	% within survey	21.1%	24.2%	22.5%
100 to 199	Count	7	4	11
	% within survey	18.4%	12.1%	15.5%
200 to 499	Count	4	0	4
	% within survey	10.5%	.0%	5.6%
500 or more	Count	0	1	1
	% within survey	.0%	3.0%	1.4%
Total	Count	38	33	71
	% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.519 ^a	4	.238
Likelihood Ratio	7.433	4	.115
Linear-by-Linear Association	1.453	1	.228
N of Valid Cases	71		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is .46.

Appendix Table E: Comparison between 2006 and 2008 Operation Size Category: Goats [TIER 1]

Goats (# does)		2006 survey	2008 survey	Total
less than 50	Count	4	5	9
	% within survey	80.0%	55.6%	64.3%
50 to 99	Count	0	4	4
	% within survey	.0%	44.4%	28.6%
100 to 199	Count	1	0	1
	% within survey	20.0%	.0%	7.1%
Total	Count	5	9	14
	% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.321 ^a	2	.115
Likelihood Ratio	5.884	2	.053
Linear-by-Linear Association	.015	1	.902
N of Valid Cases	14		

a. 5 cells (83.3%) have expected count less than 5. The minimum expected count is .36.

Appendix Table F: Comparison between 2006 and 2008 Gross Revenue [TIER 1] (Chi-squared test)

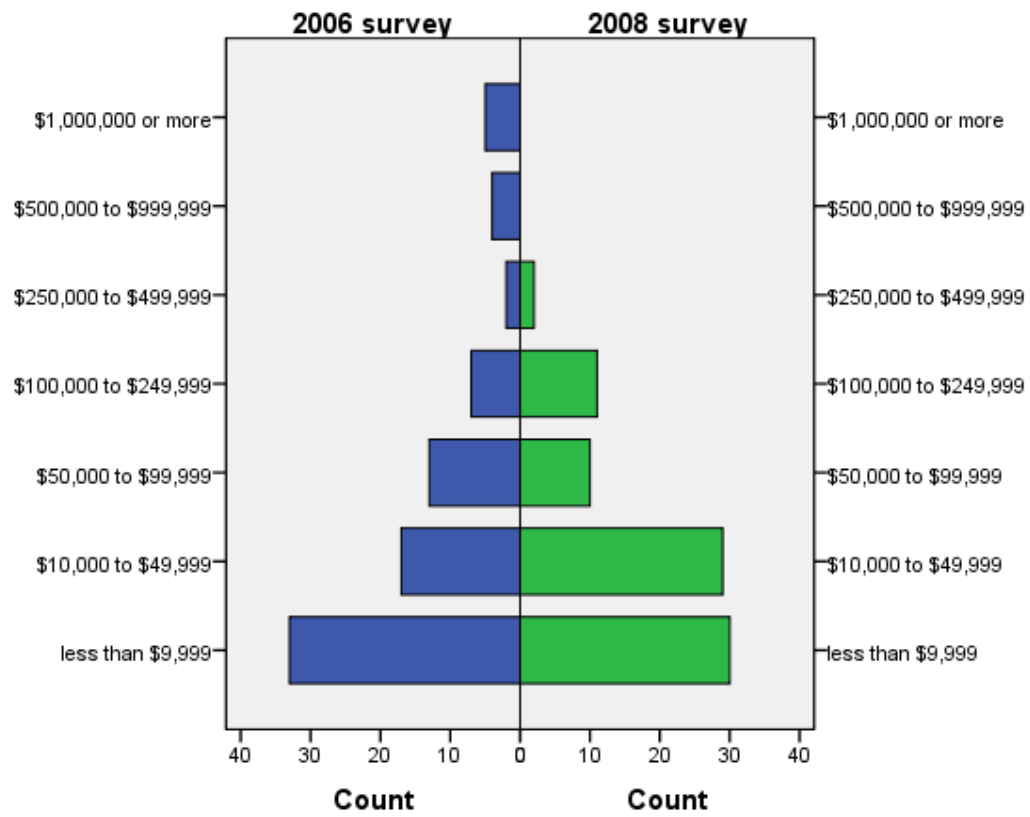
			2006 survey	2008 survey	Total
Annual gross revenue	less than \$9,999	Count	33	30	63
		% within survey	40.7%	36.6%	38.7%
	\$10,000 to \$49,999	Count	17	29	46
		% within survey	21.0%	35.4%	28.2%
	\$50,000 to \$99,999	Count	13	10	23
		% within survey	16.0%	12.2%	14.1%
	\$100,000 to \$249,999	Count	7	11	18
		% within survey	8.6%	13.4%	11.0%
	\$250,000 to \$499,999	Count	2	2	4
		% within survey	2.5%	2.4%	2.5%
	\$500,000 to \$999,999	Count	4	0	4
		% within survey	4.9%	.0%	2.5%
	\$1,000,000 or more	Count	5	0	5
		% within survey	6.2%	.0%	3.1%
	Total	Count	81	82	163
		% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.548 ^a	6	.035
Likelihood Ratio	17.069	6	.009
Linear-by-Linear Association	2.993	1	.084
N of Valid Cases	163		

a. 6 cells (42.9%) have expected count less than 5. The minimum expected count is 1.99.

Appendix Figure B: Gross Revenue Distribution



Appendix Table G: Comparison between 2006 and 2008 Principal Operator Age [TIER 1]

Age of principal operator		2006 survey	2008 survey	Total
under 25 years	Count	0	2	2
	% within survey	.0%	2.4%	1.2%
25 to 34 years	Count	4	6	10
	% within survey	4.8%	7.3%	6.1%
35 to 44 years	Count	6	4	10
	% within survey	7.2%	4.9%	6.1%
45 to 54 years	Count	23	17	40
	% within survey	27.7%	20.7%	24.2%
55 to 64 years	Count	25	23	48
	% within survey	30.1%	28.0%	29.1%
65 years or older	Count	25	30	55
	% within survey	30.1%	36.6%	33.3%
Total	Count	83	82	165
	% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.232 ^a	5	.517
Likelihood Ratio	5.014	5	.414
Linear-by-Linear Association	.002	1	.962
N of Valid Cases	165		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is .99.

**Appendix Table H: Comparison between 2006 and 2008 Annually Marketed Animals
[TIER 1 & 2 COUNTIES COMBINED] (T-Test for independent samples)**

	survey	N	Mean	Std. Deviation	Std. Error Mean
Cow-calf culls (# cows marketed annually)	2006 survey	59	18.61	33.331	4.339
	2008 survey	53	13.55	13.368	1.836
Weaned calves (# calves marketed annually)	2006 survey	61	106.16	246.976	31.622
	2008 survey	46	71.07	94.332	13.908
Stockers (# calves marketed annually)	2006 survey	31	163.39	420.498	75.524
	2008 survey	27	57.93	66.268	12.753
Finished (# calves marketed annually)	2006 survey	26	112.77	392.014	76.880
	2008 survey	24	44.71	104.353	21.301
Sheep culls (# ewes marketed annually)	2006 survey	27	21.37	33.377	6.423
	2008 survey	25	11.16	10.676	2.135
Feeder sheep (# ewes marketed annually)	2006 survey	24	134.17	257.061	52.472
	2008 survey	16	58.62	66.994	16.749
Finished sheep (# ewes marketed annually)	2006 survey	35	186.83	374.430	63.290
	2008 survey	27	38.37	58.455	11.250
Goat culls (# does marketed annually)	2006 survey	7	5.86	2.911	1.100
	2008 survey	4	6.75	3.948	1.974
Feeder goats (# does marketed annually)	2006 survey	2	27.00	32.527	23.000
	2008 survey	2	45.00	21.213	15.000
Finished goats (# does marketed annually)	2006 survey	10	87.40	153.355	48.495
	2008 survey	8	20.38	14.579	5.155

Appendix Table H: (continued)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Cow-calf culls (# cows marketed annually)	Equal variances assumed	3.432	.067	1.033	110	.304	5.063	4.900	-4.647	14.773
	Equal variances not assumed			1.075	77.848	.286	5.063	4.712	-4.318	14.444
Weaned calves (# calves marketed annually)	Equal variances assumed	2.623	.108	.914	105	.363	35.099	38.400	-41.041	111.239
	Equal variances not assumed			1.016	81.398	.313	35.099	34.546	-33.631	103.829
Stockers (# calves marketed annually)	Equal variances assumed	5.360	.024	1.288	56	.203	105.461	81.885	-58.575	269.497
	Equal variances not assumed			1.377	31.706	.178	105.461	76.593	-50.610	261.533
Finished (# calves marketed annually)	Equal variances assumed	2.392	.129	.823	48	.414	68.061	82.653	-98.124	234.246
	Equal variances not assumed			.853	28.801	.401	68.061	79.777	-95.150	231.271
Sheep culls (# ewes marketed annually)	Equal variances assumed	5.638	.021	1.461	50	.150	10.210	6.989	-3.827	24.247
	Equal variances not assumed			1.508	31.645	.141	10.210	6.769	-3.584	24.004
Feeder sheep (# ewes marketed annually)	Equal variances assumed	3.677	.063	1.145	38	.259	75.542	65.960	-57.988	209.072
	Equal variances not assumed			1.371	27.488	.181	75.542	55.080	-37.380	188.464
Finished sheep (# ewes marketed annually)	Equal variances assumed	13.145	.001	2.037	60	.046	148.458	72.866	2.705	294.212
	Equal variances not assumed			2.309	36.135	.027	148.458	64.282	18.105	278.812
Goat culls (# does marketed annually)	Equal variances assumed	1.107	.320	-.433	9	.676	-.893	2.064	-5.562	3.777
	Equal variances not assumed			-.395	4.917	.709	-.893	2.260	-6.731	4.946
Feeder goats (# does marketed annually)	Equal variances assumed			-.656	2	.579	-18.000	27.459	-136.147	100.147
	Equal variances not assumed			-.656	1.720	.589	-18.000	27.459	-156.602	120.602
Finished goats (# does marketed annually)	Equal variances assumed	4.681	.046	1.224	16	.239	67.025	54.748	-49.037	183.087
	Equal variances not assumed			1.374	9.203	.202	67.025	48.768	-42.927	176.977

**Appendix Table I: Comparison between 2006 and 2008 Operation Size Category: Cow-Calf
[TIER 1 & 2 COUNTIES COMBINED]**

			2006 survey	2008 survey	Total
Cow-calf (# cows)	less than 50	Count	37	27	64
		% within survey	43.5%	45.0%	44.1%
	50 to 99	Count	15	10	25
		% within survey	17.6%	16.7%	17.2%
	100 to 199	Count	19	13	32
		% within survey	22.4%	21.7%	22.1%
	200 to 499	Count	8	9	17
		% within survey	9.4%	15.0%	11.7%
	500 or more	Count	6	1	7
		% within survey	7.1%	1.7%	4.8%
	Total	Count	85	60	145
		% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.100 ^a	4	.541
Likelihood Ratio	3.397	4	.494
Linear-by-Linear Association	.116	1	.733
N of Valid Cases	145		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 2.90.

**Appendix Table J: Comparison between 2006 and 2008 Operation Size Category: Weaned Calves
[TIER 1 & 2 COUNTIES COMBINED]**

			survey		
			2006 survey	2008 survey	Total
Weaned Calves (# calves)	less than 50	Count	36	36	72
		% within survey	55.4%	59.0%	57.1%
	50 to 99	Count	8	11	19
		% within survey	12.3%	18.0%	15.1%
	100 to 199	Count	12	8	20
		% within survey	18.5%	13.1%	15.9%
	200 to 499	Count	4	3	7
		% within survey	6.2%	4.9%	5.6%
	500 or more	Count	5	3	8
		% within survey	7.7%	4.9%	6.3%
	Total	Count	65	61	126
		% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.791 ^a	4	.774
Likelihood Ratio	1.803	4	.772
Linear-by-Linear Association	.808	1	.369
N of Valid Cases	126		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 3.39.

**Appendix Table K: Comparison between 2006 and 2008 Operation Size Category: Sheep
[TIER 1 & 2 COUNTIES COMBINED]**

			survey		
			2006 survey	2008 survey	Total
Sheep (# ewes)	less than 50	Count	23	21	44
		% within survey	45.1%	60.0%	51.2%
	50 to 99	Count	10	8	18
		% within survey	19.6%	22.9%	20.9%
	100 to 199	Count	7	4	11
		% within survey	13.7%	11.4%	12.8%
	200 to 499	Count	5	1	6
		% within survey	9.8%	2.9%	7.0%
	500 or more	Count	6	1	7
		% within survey	11.8%	2.9%	8.1%
	Total	Count	51	35	86
		% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.550 ^a	4	.337
Likelihood Ratio	5.022	4	.285
Linear-by-Linear Association	4.153	1	.042
N of Valid Cases	86		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is 2.44.

**Appendix Table L: Comparison between 2006 and 2008 Operation Size Category: Goats
[TIER 1 & 2 COUNTIES COMBINED]**

			survey		
			2006 survey	2008 survey	Total
Goats (# does)	less than 50	Count	10	6	16
		% within survey	66.7%	60.0%	64.0%
	50 to 99	Count	1	4	5
		% within survey	6.7%	40.0%	20.0%
	100 to 199	Count	2	0	2
		% within survey	13.3%	.0%	8.0%
	200 to 499	Count	2	0	2
		% within survey	13.3%	.0%	8.0%
	Total	Count	15	10	25
		% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.042 ^a	3	.110
Likelihood Ratio	7.477	3	.058
Linear-by-Linear Association	.727	1	.394
N of Valid Cases	25		

a. 6 cells (75.0%) have expected count less than 5. The minimum expected count is .80.

**Appendix Table M: Comparison between 2006 and 2008 Age of Principal Operator
[TIER 1 & 2 COUNTIES COMBINED]**

Age of principal operator		2006 survey	2008 survey	Total
under 25 years	Count	3	2	5
	% within survey	2.3%	2.3%	2.3%
25 to 34 years	Count	5	6	11
	% within survey	3.8%	6.9%	5.0%
35 to 44 years	Count	11	4	15
	% within survey	8.3%	4.6%	6.8%
45 to 54 years	Count	34	18	52
	% within survey	25.6%	20.7%	23.6%
55 to 64 years	Count	37	25	62
	% within survey	27.8%	28.7%	28.2%
65 years or older	Count	43	32	75
	% within survey	32.3%	36.8%	34.1%
Total	Count	133	87	220
	% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.926 ^a	5	.711
Likelihood Ratio	2.960	5	.706
Linear-by-Linear Association	.165	1	.684
N of Valid Cases	220		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 1.98.

**Appendix Table N: Comparison between 2006 and 2008 Annual Gross Revenue
[TIER 1 & 2 COUNTIES COMBINED]**

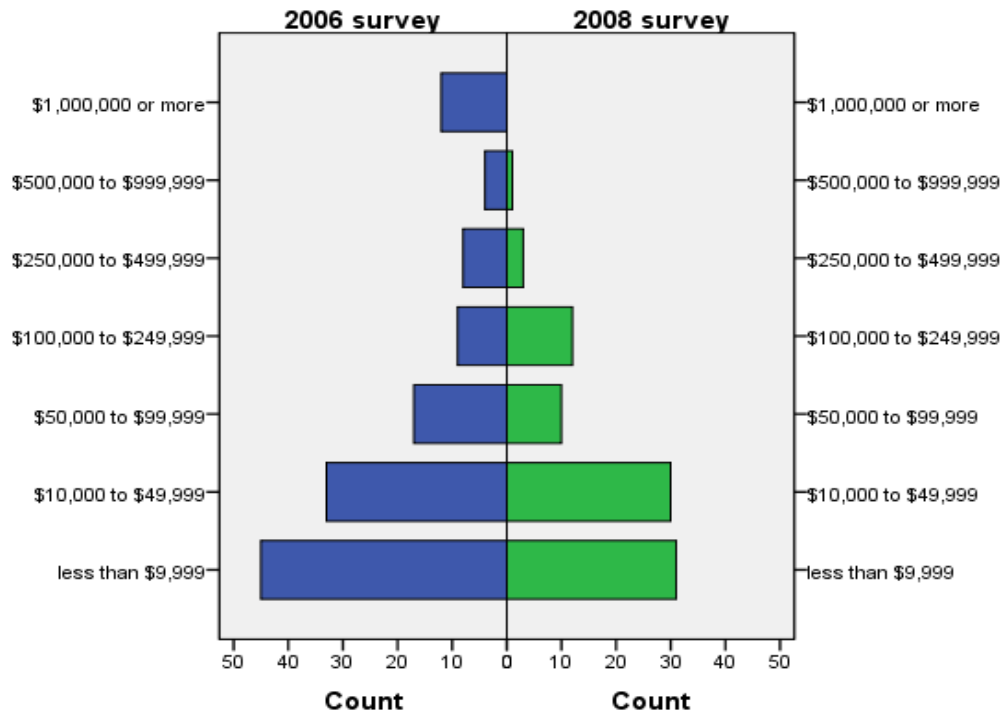
Annual Gross Revenue		survey		
		2006 survey	2008 survey	Total
less than \$9,999	Count	45	31	76
	% within survey	35.2%	35.6%	35.3%
\$10,000 to \$49,999	Count	33	30	63
	% within survey	25.8%	34.5%	29.3%
\$50,000 to \$99,999	Count	17	10	27
	% within survey	13.3%	11.5%	12.6%
\$100,000 to \$249,999	Count	9	12	21
	% within survey	7.0%	13.8%	9.8%
\$250,000 to \$499,999	Count	8	3	11
	% within survey	6.2%	3.4%	5.1%
\$500,000 to \$999,999	Count	4	1	5
	% within survey	3.1%	1.1%	2.3%
\$1,000,000 or more	Count	12	0	12
	% within survey	9.4%	.0%	5.6%
Total	Count	128	87	215
	% within survey	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.718 ^a	6	.033
Likelihood Ratio	18.057	6	.006
Linear-by-Linear Association	4.869	1	.027
N of Valid Cases	215		

a. 4 cells (28.6%) have expected count less than 5. The minimum expected count is 2.02.

Appendix Figure C Gross Farm Revenues



Example Guided Survey

If you filled out a survey similar to this one a year ago, please check here: ☐

Optional Information:

Name: _____

Address: _____

Phone: _____

Email: _____

If you'd like a copy of the final Feasibility Report, please check here: ☐

➡ 1. In which county is your primary livestock operation?

➡ 2. For each type of livestock, **circle** the size category that best reflects the size of operation you have maintained over the past three years. (Note: Finished animals are animals ready for slaughter.)

Cow-calf	Weaned Calves	Sheep	Goats	Other:	Other:
# cows	# calves	# ewes	# does	#	#
0	0	0	0	0	0
Less than 50	Less than 50	Less than 50	Less than 50	Less than 50	Less than 50
50-99	50-99	50-99	50-99	50-99	50-99
100-199	100-199	100-199	100-199	100-199	100-199
200-499	200-499	200-499	200-499	200-499	200-499
500 or more	500 or more	500 or more	500 or more	500 or more	500 or more

➡ 2. (a) For each category above, record the number of animals you market annually in the gray boxes below.

Culls	Weaned Calves	Stockers	Finished	Culls	Feeders	Finished	Culls	Feeders	Finished	Culls	Other:	Culls	Other:

➡ 3. In the table below, indicate in the appropriate gray box how many animals you currently sell annually through the following markets.

Market	Number of Animals Sold			
	Beef steers & heifers	Lambs	Goats	Other:
Branded programs (i.e. Harris Ranch, Niman Ranch, Western Grasslands Beef)				
Direct sales to individuals for meat				
Direct sales to farmers markets				
Direct sales to retail or restaurants				
Other (specify):				

⇒ If you reported direct sales in question 3, answer questions 4-8. If you don't do direct sales, skip to question 9.

Questions 4-8 refer to your experience with existing slaughter and processing facilities.

4. Rate your satisfaction with respect to quality of service: _____ (1 to 5: 1=not satisfied, 5=very satisfied)

5. Rate your satisfaction with timeliness of service: _____ (1 to 5: 1=not satisfied, 5=very satisfied)

6. How many animals are you transporting to the processor on each trip? _____

7. How many miles (one-way) do you transport your animals to the processor? _____ miles

8. How long (one-way) does it take to transport your animals to the processor? _____ hours
_____ minutes

⇒ 9. How would you describe the current availability and accessibility of livestock slaughtering and processing facilities in Northern California? **Check one:**

_____ Very deficient for current demand

_____ Slightly below current demand

_____ Just enough to meet current demand

_____ Very available and accessible

⇒ 10. What barriers limit producers' participation in alternative niche meat markets, either for sales to branded programs or for direct sales by producers?

(Rate each option on a scale of 1 to 5 by filling in the box for the appropriate number next to each option: 1=not a barrier, 5=very significant barrier) *To be answered by everyone.*

1 2 3 4 5

Lack of land/feed to hold and finish livestock

1 2 3 4 5

Access to slaughter services

1 2 3 4 5

Access to processing (butchering) services

1 2 3 4 5

Transportation to processing facilities

1 2 3 4 5

Finding customers

1 2 3 4 5

Access to marketing and distribution

1 2 3 4 5

channels

1 2 3 4 5

Capital needed to get started

1 2 3 4 5

Knowledge about doing direct sales

1 2 3 4 5

Organic certification process and costs

1 2 3 4 5

USDA regulation/label requirements

1 2 3 4 5

Sales negotiations & payment collections

1 2 3 4 5

Knowledge of customers' preferences/consumer trends

1 2 3 4 5

Customer education about product

1 2 3 4 5

Matching customer demand with product availability

1 2 3 4 5

Lack of cash flow while feeding livestock out

1 2 3 4 5

Time away from ranching activities

1 2 3 4 5

Insurance requirements

1 2 3 4 5

Other: (specify) _____

1 2 3 4 5

Other: (specify) _____

1 2 3 4 5

Other: (specify) _____

⇒ 11. Rate your interest in participating in each of the following marketing systems.
(1 to 5: 1=not at all interested, 5=very interested) *To be answered by everyone.*

_____ **Direct marketing** in which you, or your business, make all marketing arrangements.

_____ **Branded program** in which you sell livestock into an existing system with its own protocol and label.

_____ **Part-ownership entity** in which you share ownership of a business through which you market your livestock for a fixed price and you share the profits, but do no direct marketing.

_____ Other: (specify) _____

- ⇒ **12.** A new multi-species processing facility, North Coast Meats, is proposed to be built in the north coast region of California. North Coast Meats proposes to buy livestock (both feeders and finished animals) from local producers and will slaughter, process and market the niche meats in regional markets under its own brand name. It will also provide custom slaughter and processing services to producers. Producers would have the option to become part-owners in North Coast Meats.

___ Check here if you are **NOT** interested in either of these options:

- 1) Selling any of your livestock to a niche meats facility; **OR**
- 2) Having your livestock processed by a niche meat processing facility for your own direct marketing program.

SKIP TO QUESTION 22.

- ⇒ **13.** Which of North Coast Meats' services would you potentially consider utilizing for some or all of your livestock? (Check all that apply)

___ Sell livestock to North Coast Meats

___ Use North Coast Meats' custom slaughter and/or processing services to direct market the meat yourself.

___ Not interested in working with North Coast Meats

- ⇒ **14.** If you are interested in using North Coast Meats or another small scale processing facility to direct market your own meat products, which types of direct markets would you target? Check here ☐ if you're not interested in direct marketing.

(Rate on scale of 1 to 5: 1= low priority, 5= high priority)

___ Private individuals

___ Farmers markets

___ Specialty grocery stores

___ Restaurants

___ Other: (specify) _____

___ Other: (specify) _____

- ⇒ **15.** If you are interested in using North Coast Meats or another small scale processing facility to direct market your own meat products, which geographic regions would you target to market your products? Check here ☐ if you're not interested in direct marketing.

(Rate on scale of 1 to 5: 1= low priority, 5= high priority)

___ Local county

___ Adjacent counties

___ Sacramento region

___ Bay Area

___ Southern California

___ Internet sales (nationwide)

___ Other: (specify) _____

___ Other: (specify) _____

⇒ **16.** What is the **maximum** time you are willing to travel (one-way) to sell your livestock to a niche meats marketing facility or to deliver it for processing for your own direct marketing program? **Check one:**

☐ 0-15 min.	☐ 91-120 min.
☐ 16-30 min.	☐ 121-180 min.
☐ 31-60 min.	☐ More than 180 min.
☐ 61-90 min.	

⇒ **17.** What types of additional services from a livestock processor would you find most important that would encourage you to use the facility?

(Rate each option on a scale of 1 to 5 by filling in the box for the appropriate number next to each option: 1= not important, 5=very important)

☐ ☐ ☐ ☐ ☐ Animal pick up	☐ ☐ ☐ ☐ ☐ Advertising & Marketing Support
☐ ☐ ☐ ☐ ☐ Delivery of meat products to final destination	☐ ☐ ☐ ☐ ☐ Organic processing
☐ ☐ ☐ ☐ ☐ Sausage production	☐ ☐ ☐ ☐ ☐ Kosher slaughter
☐ ☐ ☐ ☐ ☐ Smoking and curing	☐ ☐ ☐ ☐ ☐ Halal slaughter
☐ ☐ ☐ ☐ ☐ Dry aging	☐ ☐ ☐ ☐ ☐ Feedlot grain finishing
☐ ☐ ☐ ☐ ☐ Jerky	☐ ☐ ☐ ☐ ☐ Pasture finishing
☐ ☐ ☐ ☐ ☐ Label design and approval	☐ ☐ ☐ ☐ ☐ Other: (specify) _____

⇒ **18.** If a slaughter and processing facility were readily available and accessible, how much would you use this facility? **Provide your answer by writing in each gray box how many animals of each species you would like to have processed each month of the year.**

Class of animal	# in Jan	# in Feb	# in Mar	# in Apr	# in May	# in Jun	# in Jul	# in Aug	# in Sep	# in Oct	# in Nov	# in Dec
Steer/heifer												
Lamb												
Goat												
Hog												
Other:												

⇒ **19.** How easily can you adjust your livestock management practices to extend your production season of finished animals? **Check one:**

☐ Can adjust to year-round	☐ Can adjust but prefer not to
☐ Can adjust with some strain	☐ Cannot adjust at all

- ⇒ 20. What was the average price per pound you received for **feeder** livestock sold in 2005? **Provide your answer by writing the price in the gray boxes.**

Class of animal	Avg. weight (lbs.)	2005 Avg. Price per Pound
Cattle		
Lamb		
Other: (specify)		
Other: (specify)		

- ⇒ 21. What is the **minimum** price per pound (live weight) you need to receive at slaughter to begin retaining feeders to sell as finished animals? This may require you to compare the weight and price for an animal you sell at a lower weight to an animal sold at a finished weight as well as all the costs to achieve a finish weight.

Provide your answer by writing the price in the gray boxes.

Class of animal	Finish Weight	Minimum Price per Pound
Cattle		
Lamb		
Other: (specify)		
Other: (specify)		

- ⇒ 22. If you received the price per pound you specified in question 18, what percentage of the animals that you normally sell as feeders would you retain and sell as finished animals? **Place a check next to your answer.**

Cattle		Lambs		Other: (specify)	
☐ 0%	☐ 40%	☐ 0%	☐ 40%	☐ 0%	☐ 40%
☐ 5%	☐ 50%	☐ 5%	☐ 50%	☐ 5%	☐ 50%
☐ 10%	☐ 60%	☐ 10%	☐ 60%	☐ 10%	☐ 60%
☐ 15%	☐ 70%	☐ 15%	☐ 70%	☐ 15%	☐ 70%
☐ 20%	☐ 80%	☐ 20%	☐ 80%	☐ 20%	☐ 80%
☐ 25%	☐ 90%	☐ 25%	☐ 90%	☐ 25%	☐ 90%
☐ 30%	☐ 100%	☐ 30%	☐ 100%	☐ 30%	☐ 100%

- ⇒ 23. Indicate your capacity to finish animals from your answer in question 19 (grass or grain finished) given the amount of pasture available or feedlot facilities in your area. **Check one.**

☐ No capacity to finish animals
 ☐ Adequate capacity to finish animals
☐ Very little capacity to finish animals
 ☐ More than adequate capacity to finish animals

⇒ **24.** What was the total market value of all agricultural products sold by your operation in 2005? **Check one:**

☐ Less than \$9,999	☐ \$250,000-\$499,999
☐ \$10,000-\$49,999	☐ \$500,000-\$999,999
☐ \$50,000-\$99,999	☐ \$1,000,000 or more
☐ \$100,000-\$249,999	

⇒ **25.** How old is the principal operator of your ranch? **Check one:**

☐ Under 25 years	☐ 45-54 years
☐ 25-34 years	☐ 55-64 years
☐ 35-44 years	☐ 65 or older

General comments regarding slaughter and processing facilities: (use additional sheets if necessary)

If needed, may we contact you about your responses? If yes, provide telephone #

THANK YOU!

Northern California Niche Meat Market Demand Study

Authors: Lauren Gwin and Shermain Hardesty

Executive Summary

This section is part of a feasibility study for a mid-scale, USDA-inspected multi-species slaughter and processing facility to be built on the northern coast of California. We assessed market prospects for “niche” red meats – such as certified organic, grass-fed, naturally-raised, local, kosher, and Halal – in the San Francisco/Sacramento region.

Below is a summary of our findings. We conducted 42 interviews with individuals responsible for meat purchasing in three key sectors of the food distribution system: restaurants and institutional food service providers (IFSP); retail grocers, primarily regional chains but also one-store operations and national chains; and distributors. We also examined the recent literature – articles in academic, trade and mass media publications – regarding the U.S. niche meat market.

- Demand for niche meats is growing rapidly in the U.S. In 2006, sales of natural and organic beef in grocery stores increased over the previous year by 28.4% in dollar value and 24.5% percent in pound value. Three-fourths of our respondents expected the volume of niche meats they handle to increase over the next year and also over the next three years.
- Consumer demand for niche meats is often motivated by the belief that natural and organic meats are fresher, have better nutritional value, taste, and long-term health benefits than conventional meats, and that the animals are healthier and better treated than conventional livestock.
- The most popular red meats are beef, pork, and lamb. The most popular niche categories are naturally-raised (no hormones or antibiotics administered during the animal’s lifetime, often referred to as “never/ever”), grass-fed, and local.
- Price premiums for niche meats (over conventional) depend on the cut, niche attribute, brand, and shifts in conventional pricing. Premiums of 10-30% were common, though certified organic meats were typically much higher.
- Across all three market sectors, fresh meats are preferred over frozen. Purchases of whole carcasses are usually limited to hogs and lambs; beef carcasses were typically considered too large to handle in-house. Restaurants, IFSP, and distributors are far more willing to work with seasonally available meats than are retailers.
- More than half (59%) of the restaurant/IFSP respondents said that high-end cuts were the most popular, while the rest use more burger and lower end cuts, e.g. for braised dishes. Nearly half of the retailers sell mostly middle meats. Most distributors found a market for everything and could grind any extra end meat.
- Respondents were asked to rate the importance of various attributes, on a scale ranging from 1 to 5, with 1 for “not important at all” and 5 for “very important.” Taste had the highest average

rating (4.9), followed by “no hormones/antibiotics” (4.0), “consistent cut size/shape” (4.0), “health benefits” (3.9) and “humanely raised” (3.7). Despite the fact that they are frequently mentioned, the least important attributes were grass-fed (2.7) and certified organic (2.6); grass-fed is not satisfactory to the typical U.S. consumer palate in terms of taste and texture, and organic is not different enough from other niche meats to justify its high price. “Local” (3.5), “family farmed” (3.5), and “personal connection with producer” (3.4) were all rated similarly.

- Although commonly used, there is no common understanding of the terms “naturally raised,” “local,” and “certified humane.”
- Less than half of respondents are interested in three younger grass-fed beef products – vitello, vitellone, and manzo – which are stated in order of declining popularity. Restaurants were the most interested of the three sectors.
- Producers are the most common source for local meats. The most common challenge with purchasing local meats was volume – having enough and having it regularly available. The next most common challenge was “quality,” including taste, texture, size of cuts, fat content, and variability among individual cuts.
- The majority of respondents did identify their niche meat suppliers in some way; as one said, “Product identity is important.” Only half of restaurants put supplier names on their menus.
- Based on the average volumes of niche beef bought and sold by distributors in this study, we estimate that ten such distributors would account for more than 14 million pounds of niche beef per year – a substantial portion of the capacity of a plant processing 17.5 million pounds of beef per year (25,000 beef cattle, 700 lbs yield each).
- A broad range of niche meat offerings, marketing the “never/ever,” humanely raised and locally produced attributes, and with pork and lamb in the species mix, is desirable. There is also considerable demand among retailers for kosher and value-added niche meats (cured, smoked, deli, and ingredients for prepared foods).
- Distributors are logical alliance partners for a regional niche meats slaughter and processing facility; they already have resources in place – from well-established customer bases and extensive (often decades-deep) market knowledge to fleets of trucks and dry-aging facilities – that the new facility would not need to build from scratch.

Introduction

In this section, we present the results of research on market demand for “niche” red meats – such as certified organic, grass-fed, naturally-raised, local, kosher, and Halal – in the San Francisco/Sacramento region.³ It is one part of a three-pronged feasibility study, now underway, for a mid-scale, USDA-inspected slaughter and processing facility to be built in a coastal Northern California county.⁴ The purpose of the market study was to determine if there is sufficient market demand for niche meats among restaurants, retailers, and distributors to make such a facility feasible.

Background

Consumer demand for niche meats, such as grass-fed, certified organic, or Kosher, has grown rapidly during the past five years; it is driven primarily by consumers’ concerns about sustainable production, food safety, traceability, humane animal production, and/or specific health benefits. Furthermore, religious preferences are increasing demand for Kosher and Halal meats.

The rapid rise in U.S. demand for niche meats has been documented in a range of studies. Organic meat, though only 8% of total organic food sales, is the fastest growing segment of the organic food business, expanding by 140% from 2004 to 2006 (Mintel Organic Foods, 2006, quoted in Knudson, 2007). In 2006, sales of natural and organic beef in grocery stores increased over the previous year by 28% in dollar value and 25% percent in pound value, compared to increases, respectively, of 0.4% and 1.7% for all beef (National Cattlemen’s Beef Association, 2007). Grass-fed meats are also on the rise: estimates suggest that U.S. production of grass-fed beef reached 65,000 head in 2006, rose to 100,000 in 2007, and will rise to 250,000 – 400,000 by 2010 (Gwin, 2007). Grocery sales of brand-name beef with a “natural” claim on the label totaled \$69.8 million for the 52-week period ending March 25, 2006, a 51% increase from the previous year (Food Marketing Institute and ACNielsen, 2006).

Looking at buyer behavior, a study released in 2007 showed that more than one in five shoppers bought natural or organic meat, an increase over the previous year (Food Marketing Institute and American Meat Institute, 2007). The study also found that at least 40% of these shoppers are motivated by the belief that these meats are fresher, have better nutritional value, taste, and long-term health benefits than conventional meats, and that the animals are healthier and better treated than conventional livestock.

Interest in locally grown foods is spreading nationwide, as indicated by the rise in the number of farmers markets, community supported agriculture programs, local meat buying clubs, local food policy councils, and other entities supporting local food systems (Halweil, 2002; Pirog and Larson, 2007; Roosevelt, 2006; Burros, 2007). The “locavore” or “100 mile diet” movement, inspired by books like Gary Nabhan’s *Coming Home to Eat* (2002), Michael Pollan’s *The Omnivore’s Dilemma* (2006), and Barbara Kingsolver’s *Animal, Vegetable, Miracle* (2007), encourages a diet of foods produced within 100 miles of home, and “locavore challenges” have been “popping up all over the country” (Burros, 2007). Locally grown food is increasingly considered an “eco-healthy choice” (Roosevelt, 2006), and a 2007 national study found that 69% of respondents believe local food is better for their personal health than food that has traveled across the country (Pirog and Larson, 2007). There is also evidence that consumers “place a high value

³ This study was prepared by University of California--Cooperative Extension. It was funded by a grant from the U.S. Department of Commerce’s Economic Development Administration to the Economic Development and Financing Corporation—Mendocino County.

⁴ The other two elements of the feasibility study are facility design and a supply-side analysis.

on their perception that purchasing local foods supports local farms” and believe that local foods deliver freshness, taste, and quality (Pirog et al., 2003).

The Hartman Group (2008) conducted a nationwide survey in December, 2007, regarding consumers’ interest in buying local. Half of the respondents defined “local” as “made or produced within 100 miles, and 37% chose “made or produced in my state.” Over half reported that they most frequently buy locally produced products at grocery stores (62%), farmers markets (61%) and farm stands (44%), while 28% stated that they buy “direct from the producer.” Locally produced fruits and vegetables were the category for which the greatest proportion of consumers wanted increased variety of offerings (73%), followed by locally produced fresh meats, poultry, and fish (57%)⁵.

More specific to the San Francisco Bay Area and Northern California, market research indicates that this geographic region has the highest potential demand in the nation for grass-fed, natural, and/or organic beef products (Spectra Marketing Systems, quoted in Lorenzo et al., 2007). This is consistent with the fact that California – the San Francisco Bay Area in particular – has long been a leader in culinary trends, from sourdough bread and coffee roasting (Saekel, 2005; Bauer, 2001) to organic agriculture (Guthman, 2003). The region was one of the main birthplaces of the alternative food movement (Belasco, 2007). The iconic Chez Panisse, founded by Alice Waters, inspired a “food revolution” with its focus on fresh, local ingredients (McNamee, 2007), and the region is today a hot spot for the “Slow Food” movement (Hopkins, 2003).

Even with the rapid growth indicated above, niche meats such as natural, grass-fed, and organic are still a small fraction of total beef sales. In the first quarter of 2007, dollar sales of natural and organic beef dollar sales comprised 2.1% of all fresh beef sales and 1.4% of all fresh beef volume in retail supermarkets (National Cattlemen’s Beef Association, 2007).⁶ Price is part of the story: 63% of shoppers said they would buy more of these products if prices were closer to those for conventional meats (Food Marketing Institute and American Meat Institute, 2007).

Yet other factors have also hampered the growth of the niche meat sector, especially limited processing capacity. After World War II, the meat industry in the United States underwent intense consolidation, especially in the processing sector. Many small-scale livestock processing facilities closed, limiting the processing capacity necessary for livestock producers focused on niche production, typically small- and mid-sized operations, to access markets and provide the products many consumers are demanding.

In Northern California, many livestock producers are looking toward niche markets as more profitable outlets for meat products from their livestock. However, their efforts are constrained by the lack of USDA-inspected slaughter and processing facilities (Gwin et al., 2005; Kleber et al., 2007).⁷ Considerable interest has been expressed by ranchers, buyers (e.g. retailers, chefs, distributors), and end consumers, and others involved in the niche meat supply chain to construct new processing facilities in Northern California.

⁵ Meat, poultry and fish were not separated into different categories.

⁶ Interestingly, the beefretail.org study says that by 2007, 25% of ground beef in retail meat cases carried labels with “natural” claims, versus 4% for muscle cuts. However, at least some of this beef is likely “natural” per the USDA definition of no additives or preservatives to the meat, which says nothing about antibiotics or hormones used in livestock production.

⁷ In California, which lacks a state-level meat inspection program, meat cannot be sold unless it is slaughtered and processed at USDA-inspected facilities.

Methodology

We assessed market prospects for niche meats in Northern California by interviewing individuals responsible for meat purchasing in three key segments of the food distribution system: restaurants and institutional food service providers (IFSP) (N=17); retail grocers, primarily regional chains but also one-store operations and national chains (N=15); and distributors (N=10). In total, forty-two businesses were interviewed.

We did not interview consumers because it has been well documented that self-reported purchase intentions as gathered through consumer surveys do not match purchase behavior (for two good reviews of this literature, see Wright and MacRae, 2007 and Chandon et al., 2005). Other, potentially more accurate methods of forecasting consumer behavior from intentions are also limited in their predictive capability (Moritz and Fitzsimons, 2004); also, they were beyond the scope (time, expense) of this study. Additionally, research by the National Cattlemen's Beef Association has indicated that consumers are not very knowledgeable about beef cuts; there is considerable consumer confusion caused by the proliferation of multiple names used to describe a single cut (National Cattlemen's Beef Association, 1999). Grunert (1997) found that most consumers judge the quality of a cut of beef based on its color and the quantity of fat.

All of the businesses interviewed are located in the greater San Francisco Bay Area or the Sacramento metropolitan area (with the exception of the national retail chains and IFSP, all of which have sales units in these regions). Several of the distributors have hundreds of customers throughout northern and central California and even farther afield (e.g. San Diego north to southern Oregon and east to Nevada). The Bay Area is known for its high profile chefs and cutting-edge restaurants, many of which have been in the forefront of using and promoting sustainable foods, including meats – Chez Panisse and Acme Chophouse, for example. We intentionally chose not to interview these leaders to avoid bias; many of these chefs had been contacted recently by local niche meat producers and provided with sample product and information. Instead, we focused on the “next tier,” a broader range of operations with highly-trained chefs and innovative menus. The grocery firms interviewed can be described as “progressive”; they include many of the operations frequented by the region's “foodies” and include regional chains as well as specialty meat markets. Although none of the larger grocery firms that specialize in Asian consumers was willing to participate, we believe that we have input about this sector's demand through the interviews with the distributors. We chose not to interview any of the small ethnic meat markets, recognizing that relationships are needed to obtain credible input in this sector.

Of the 42 businesses interviewed, only nine were owned by parent corporations; the rest are independent. Regional retail chains range in size from two stores to more than 100, and several restaurant respondents are responsible for a group of restaurants, typically two to four locations (ten in one case), often with different names and identities. In nearly all multiple-unit cases, meat buying is done centrally or is at least coordinated.

Interviews were done either in person or by phone. Questions addressed the following topics:

- The company's current red meat purchasing practices, both conventional and niche
- Niche meat sales volumes and estimates of future sales trends
- The use of frozen meats, whole carcasses, seasonally available meats, and local meats;
- The importance of specific product and production attributes to the company and its customers

- Perceptions about specific constraints to purchasing and using niche meats.

Data were analyzed for each of the three categories of respondents and also for the group as a whole. In some cases, respondents could not or would not answer specific questions (e.g. niche meat volumes marketed); in what follows, results are often reported as percentages, due to slight question-to-question variability in the numbers of respondents.

Results & Discussion

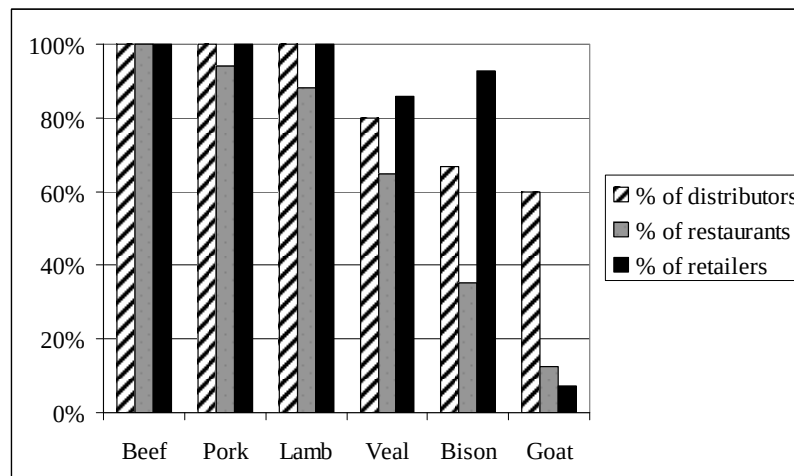
Red Meats Sold

Respondents were asked which red meats they offer their customers. Beef is sold by all, followed closely by pork (98%) and lamb (95%). Veal (76%) and bison (63%) are less often sold but still offered by a majority, while goat (23%) and emu/ostrich (28%) are far less common. Subgroups vary in their offerings: for example, restaurants are less likely than retailers and distributors to sell lamb, veal, bison, and emu, while only distributors are likely to sell goat.

Table 15: Red Meat Species Marketed

	Beef	Veal	Bison	Pork	Lamb	Goat	Emu/Ostrich	Venison
% of distributors	100%	80%	67%	100%	100%	60%	44%	50%
% of restaurants	100%	65%	35%	94%	88%	13%	6%	38%
% of retailers	100%	86%	93%	100%	100%	7%	43%	36%
% of all respondents	100%	76%	63%	98%	95%	23%	28%	40%

Figure 6: Red Meat Species Marketed



Niche Meats Sold

Respondents were asked about their use (purchases and sales) of red meats that have one or more of the following attributes: grass-fed, certified organic, naturally-raised (no hormones or antibiotics⁸),

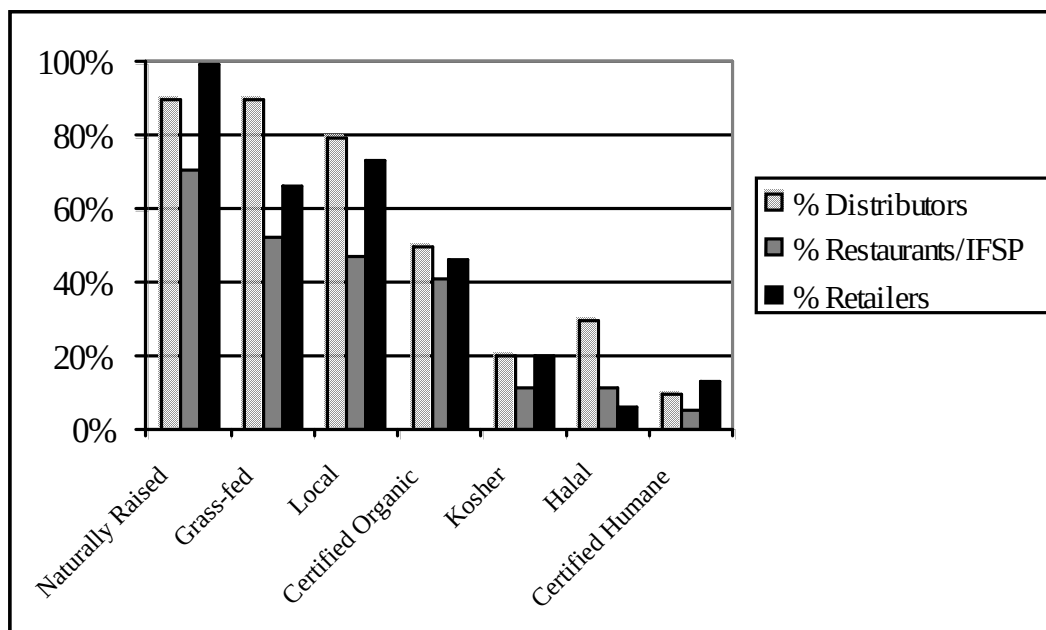
⁸ As discussed below, there is much confusion over what “natural,” “naturally-raised,” and other variations on this theme mean, and how they differ from each other. For this study, we defined “naturally-raised” as being from animals with no hormones or antibiotics administered over the animal’s lifetime; these meats are often called “never/ever,” i.e. these substances are “never/ever” administered, though this is a marketing term rather than a legal definition. The USDA has proposed a new “naturally raised” label, which will meet “never/ever” expectations; see FN 8.

certified humane, Halal, kosher, and local. Naturally-raised is the most common (86%), followed by grass-fed (67%) and local (64%). Certified organic meats are less commonly marketed (45%). Certified humane (10%) is the least common niche category, exceeded only by Kosher and Halal (17% and 14%, respectively).

Table 16: Use of Specific Categories of Niche Meats

	Grass-fed	Certified Organic	Naturally Raised	Certified Humane	Local	Kosher	Halal
% Distributors	90%	50%	90%	10%	80%	20%	30%
% Restaurants/IFSP	53%	41%	71%	6%	47%	12%	12%
% Retailers	67%	47%	100%	13%	73%	20%	7%
% All respondents	67%	45%	86%	10%	64%	17%	14%

Figure 7: Use of Specific Niche Red Meats



Of the three respondent groups, distributors are most likely, and restaurants least likely, to carry grass-fed and local meats, while 100% of retailers said they carried naturally-raised meats. This was a somewhat surprising finding, as we expected restaurants to be ahead of retailers in working with niche meats. One explanation may be that retailers can carry even minimal amounts of naturally-raised meats, in order to satisfy a potentially small segment of their customer base, while restaurants do not put something on their menu unless they are committed to it.

However, variation in niche attribute definitions – and knowledge of how their own meats fit those definitions – was apparent, especially regarding naturally-raised, local, and certified humane. Respondents generally understood the other niche terms and could answer with certainty about whether their meats fit those categories.⁹

We defined “naturally-raised” as meat from animals with no added hormones and no antibiotics administered during their lifetime; this is often referred to as “never/ever,” i.e. these substances are never, ever administered.¹⁰ Some respondents weren’t sure if their meats qualified as never/ever or as the less stringent variation, that no hormones/antibiotics were administered within a given period (often 120 or 240 days) before slaughter (a practice referred to as “withdrawal”). They also did not know if antibiotics were allowed for therapeutic purposes (to treat sick animals) even if feed-grade antibiotics (given to healthy animals, to speed growth) were not used.

“Local” was also defined differently, geographically-speaking, by respondents (as discussed later in this report). In addition, some respondents considered a supplier to be “local” if the processing facility itself was local (e.g. Superior Lamb in Dixon, CA). When asked whether the animals themselves were raised locally, many respondents did not know; of these, most were not concerned. The supplier was local, therefore the meat was local.

Finally, “certified humane” caused some confusion, primarily because respondents lacked information about what it meant (and who certifies it) and whether their suppliers were certified. Several indicated that their suppliers used humane treatment, following “Temple Grandin guidelines,” referring to Grandin’s work to overhaul standard operating procedures at large, conventional meat processing facilities; however, this is not the same as “certified humane.” This category may have been slightly under-reported; e.g. Meyer, a never/ever meats company, is certified by Humane Farm Animal Care, but no respondent handling Meyer meats identified it as such.

Approximate Volumes of Niche Meats Sold

We asked respondents how much of these niche meats, by volume, they sold. Their answers were typically rough estimates, often given with wide ranges and as combined totals (e.g. X lbs of naturally-raised, organic, and grass-fed, of all red meat species, together); some respondents were unwilling or unable to share sales data. The following table gives volumes for the three different species and three different attributes for which we had the most complete data.¹¹ The wide range of volumes given for each of the three groups of respondents reflects not only variation in use but variation in business sizes; e.g. a retail chain will use far more meat than a single-store grocer.

⁹ In November 2007, the Agricultural Marketing Service (AMS) of USDA finalized the legal definition of “grass-fed” when used on meat labels: 100% forage-fed (except in emergencies) and on pasture during the grass-growing season. This may actually add to confusion, since it says nothing about the use of hormones or antibiotics, which most grass-fed producers do not currently use, at least for growth promotion.

¹⁰ In November 2007, AMS issued for public comment a proposed definition for a “naturally raised” voluntary marketing claim for meats; it prohibits any use of antibiotics or hormones and requires a vegetarian diet. This effort is meant to clear up consumer confusion caused by the current USDA definition of “natural,” which says nothing about how livestock are raised and only indicates that the *meat* has no additives or preservatives, which is true of most conventional meat sold fresh.

¹¹ Volumes for meats both organic AND grass-fed are registered in both columns, such that the sums of individual niche categories exceed actual total usage. Head of livestock are converted to pounds of meat based on the following conversion factors: 700 lbs/head for a steer; 50 lbs/head for a lamb; 140 lbs/head for a hog.

Table 17: Pounds of Niche Meats Sold Per Week

	Pounds of Niche Meats Sold per Week					
	Beef	Pork	Lamb	Grass-fed	Organic	Naturally Raised
Distributor average	26,718	3225	1916	4804	4482	33,797
Distributor range	525-89,500	1400-4900	230-7500	720-10,000	38-7500	800-86,600
Restaurant average	257	303	105	234	1114**	234
Restaurant range	35-650	100-640	30-200	50-490	nd	55-200
IFSP average*	6000	5000	nd	1750	nd	9250
Retail average	14,765	5613	835	808	1070	16,164
Retail range	145-107,400	65-25,000	35-2500	60-3500	40-2100	90-105,000

* No range is given for IFSP, as only one IFSP respondent provided volume data.

** Data from only one restaurant respondent with two locations

Some respondents measured niche meat volumes in sales dollars or percentages of their total meat purchases. For example, while two IFSP respondents said that niche meats are less than 1% of their total meat sales, one distributor said that niche red meats are 60-70% of total meat sales, and three retail estimates ranged from \$1-2.5 million.

Increases in Niche Meat Use

When asked whether the volume of niche meats they use would increase over the next year and/or over the next three years, 76% of all respondents said yes, for both time periods. Distributors were the most optimistic of the three groups, with 90% saying yes to both time periods. Restaurants/IFSP's were also enthusiastic, with 75% predicting an increase in the next year, and 69% in the next three years. Retailers were less optimistic in the short-term though more so for the longer-term, at 64% and 73%, respectively.

Table 18: Belief That Niche Meat Volumes Will Increase In 1, 3 Years

	Increase in 1 year	Increase in 3 years
Distributors	90%	90%
Restaurants/IFSP	75%	69%
Retailers	64%	73%
All respondents	76%	76%

When asked to estimate by what volumes their use of niche meats would increase, very few respondents would venture to guess specific numbers, but they had opinions about which niches would grow more than others.

Of the restaurant/IFSP group, volume increase estimates ranged from 7-10% for "all niches" to 50% growth for naturally-raised pork in three years, to 100% growth for grass-fed beef in the next six months. Of those who predicted which niches would increase most, 50% said naturally-raised, grain-fed beef would outstrip organic or grass-fed; in the U.S., respondents said, meat eaters were unlikely to shift away from preferring a grain-fed taste. Two specifically rated "local" as the highest growth category for

the Bay Area. As one executive chef explained, her customers “want the healthy, right thing to eat.” Yet at the same time, “they won’t sacrifice taste for conscience.”

The three distributors who ventured specific percentage increases predicted slightly larger growth, of 20% per year for naturally-raised, grain-fed beef and “all niches.” Opinion about which niche categories would climb the most leaned toward naturally-raised, grain-fed meats (beef and pork), and local meats. Grass-fed and organic were predicted to rise less, both because of popular tastes (the former) and cost (the latter). “Organic is too expensive, and most people don’t think it’s better than never/ever,” said one respondent. “People will pay \$25 for [never/ever] Kobe beef, because they see the marbling, the quality. They won’t pay \$29/lb for organic beef that has less or no marbling.”

Interestingly, one distributor explained that his company expected “exponential growth” in niche meats – local in particular – as it actively shifted to a more “white tablecloth restaurant” client base. “Sysco can’t do local, so that’s a point of differentiation.”

Retailers ranged widely in their predictions. The nine respondents who expect annual increases (5-30%) in niche meat sales were mixed regarding which niches would grow the most. Four said organics, four said grass-fed, three said naturally-raised grain-fed, and three said local meats. Grass-fed was identified as both a booming growth area (“local grass-fed beef quickly overtook non-local organic beef”) and a static category (“mainstream tastes aren’t going to change”). One respondent said that with the increased availability of natural meats, organics would be a point of differentiation for retailers.

The remaining six respondents were pessimistic about increased niche meat sales. For one, this was because, after 10 years of selling niche meats, local demand was saturated. Two others said growth would depend on how the federal government ultimately defined “naturally-raised” and “grass-fed”: stricter definitions would restrict supplies and keep prices high. Three noted that overall red meat sales were down, due to price hikes and broader economic uncertainty. Though customers might want to buy niche meats, they may not be willing to pay: “It depends on education... everyone’s health conscious, to a certain price point.”

Niche Meats Wanted If Supply Were Available

Respondents were asked what niche meats they would like to offer their customers if they could find a supplier, i.e. products they don’t currently carry. Answers were quite mixed.

In the restaurant/IFSP group, the most desired quality (five respondents) was local in several varieties: naturally-raised, value-added (e.g. cured, smoked, and deli meats), beef and pork. The second most desired quality was naturally-raised. In addition, four respondents specifically asked for niche meats at lower prices than they currently paid.

Distributors were mixed: three said more organic (beef and pork) at a more affordable price, two said naturally-raised grain-fed, two said grass-fed, and one said local, all species. Two said niche value-added meats (e.g. organic beef dogs, organic burrito beef, and local deli meats) were in high demand but difficult to find.

Kosher was mentioned most often by retailers (N=4). In addition, three retailers wanted more affordable organic meats; one wanted humanely-raised, local pork and lamb. Seven respondents already had what their customers wanted; one of these explained that adding any other offerings to his meat case would simply confuse his customers.

Price Premiums Paid For Niche Meat

Respondents reported paying a wide range of premiums (over conventional), depending on cut, niche attribute, brand, and shifts in conventional pricing. Premiums of 10-30% were common, though certified organic meats were typically much higher.

Retailers reported premiums from 0-10% for imported grass-fed beef to 200-300% for domestic, certified organic middle meats; most said 10-30% was typical. Restaurant/IFSP respondents pay from 7-10% to 50-60%, centering on 15-30%. Distributors also commonly paid 10-30% more, though this was for naturally-raised, non-local meats; premiums rose 40-60% for local, naturally-raised meats and to 60-70% for domestic organic meats. Such high premiums were what led at least three respondents to buy imported grass-fed and organic-grass-fed beef, for which they paid little or no premium.

How Retailers Sell Meats

Most retailers sold meats in more than one format: 87% sell fresh meats at a full-service counter; 60% sell fresh meat, self-service (i.e. pre-packaged); 73% sell frozen meat.

Use of Frozen Meats

Across all three sectors, the majority of respondents preferred fresh meats and avoided frozen, except for value-added products or meats that sell sporadically.

More than half of restaurant/IFSP respondents (56%) did not buy or use frozen meats, citing quality concerns (taste, texture, purge of liquids during defrosting). However, two of these said they would be willing to use frozen meats for braising and sauces. Three respondents that did use frozen meats said they preferred fresh, while two that did not use frozen meats were willing to try.

Retailers also preferred to avoid frozen meats. Though 67% did sell such meats, these were primarily burger patties, which freeze well, and also meats (e.g. venison and bison) that do not sell quickly. In general, they said, retail customers demand fresh meat and believe that freezing red meats compromises quality.

Half of the distributor respondents did handle frozen meats, though for two, this was mostly value-added products (e.g. burger patties, breaded veal cutlets). The rest carried only fresh meats, citing customer preferences or a lack of demand.

Use of Whole Carcasses

Respondents who bought (or were willing to buy) whole carcasses primarily limited this to pigs and lambs; beef carcasses were typically considered too large to handle in-house.

A majority (56%) of restaurants/IFSP did not buy whole carcasses, because they lacked the facilities, skills, and/or time, and/or saw no price advantage. Only 44% bought or were willing to buy whole carcasses, though all but one limited this to lambs and pigs. This outlier, with two restaurants and a third in the works, planned to buy whole animals and split them among the three locations; this was, he said, a way to support local farmers: "if they can't sell the whole carcass, they'll have to sell portions of that really good meat into the commodity market... a big waste."

Retailers (53%) were more willing and able to work with whole carcasses, saying this allowed them to get a better price from their suppliers and to provide their customers the highest quality meat possible

“If you know what you’re doing,” said one). The rest lacked facilities and/or skilled staff; most of these also said that there were no cost savings in taking whole carcasses. “You’ll sell more of one part of the carcass than of the other, and you’ll have to raise prices on the former to compensate for the latter.” Another, with 47 years experience in meat retailing, said that “being able to buy only the cuts you sell is such a benefit.”

While half of the distributors purchase whole carcasses, two of these said this was rare. The rest did not have facilities or skilled workers. Said one, “I have 65 meat cutters but no butchers except me,” and meat cutters “Don’t know how to make the whole animal go away.”

Use of Seasonal Meats

While restaurant/IFSP and distributors were willing to use meats that are only available seasonally, retailers were far more resistant.

More than half (59%) of restaurant/IFSP respondents used or were willing to use such meats. Of the unwilling remainder, several said it was too hard to track what meats were available when. In some cases, they could not easily change menus. Most distributors (70%) were also willing and able. However, one noted, a part-time presence with a customer can be risky: “if you’re off the shelf for six months, you don’t know what will happen with that account.”

In contrast, 80% of retailers were unwilling to carry seasonal meats, and most pointed to customer expectations. Said one, “when we bring a product in, it has to be here every day of the year. Customers demand it.” Another explained, “You either sell it or you don’t. Customers don’t understand seasonality for meats ... except maybe wild salmon.”

Most/Least Popular Cuts

The popularity of specific cuts of meat with the respondents’ customers depended on a variety of factors, including customer demographic and the season, i.e. braising cuts like pot roast sell better in the winter, while porterhouses are popular in late spring.

More than half (59%) of the restaurant/IFSP respondents said that high-end cuts, such as filet, ribeye, tenderloins, and tri-tip, were the most popular, while the rest used more burger and lower end cuts, e.g. for braised dishes.

Nearly half of the retailers sold mostly middle meats. As one explained, “90% of the people want 10% of the animal: steaks.” Three retailers sold the whole range, middles and ends, and two said ground meat was most popular, because of its relatively low cost and multiple uses.

All distributors sold a wide range of cuts, depending on their specific markets. Only a third identified a “popular” cut: they sold more ground meat overall, as a good way to sell ends otherwise difficult to move. Another third said they have to sell it all, because they handle whole carcasses.

The least popular cuts, unsurprisingly, were more typically but not wholly end meats and less familiar cuts (e.g. flatiron and baseball steaks). Among the restaurant/IFSP respondents who identified any unpopular meats, most said end and organ meats (“the good stuff”) moved less quickly.

A third of the retailers sell fewer end meats, such as pot roasts and shoulders: “people don’t know how or don’t have time to cook them.” For 27%, sales of middles versus ends were quite balanced – sometimes by necessity, because these retailers buy whole carcasses. In an interesting side note, one

retailer said that his customers were far less willing to pay a premium for less desirable cuts of the more expensive niche meats.

More than two-thirds (70%) of distributors found a market for everything and could grind any extra end meat. As one explained, “Nothing is ‘less popular.’ You have to know how to market the various parts, by finding appropriate markets. Like skirt steaks to the high end Hispanic trade.”

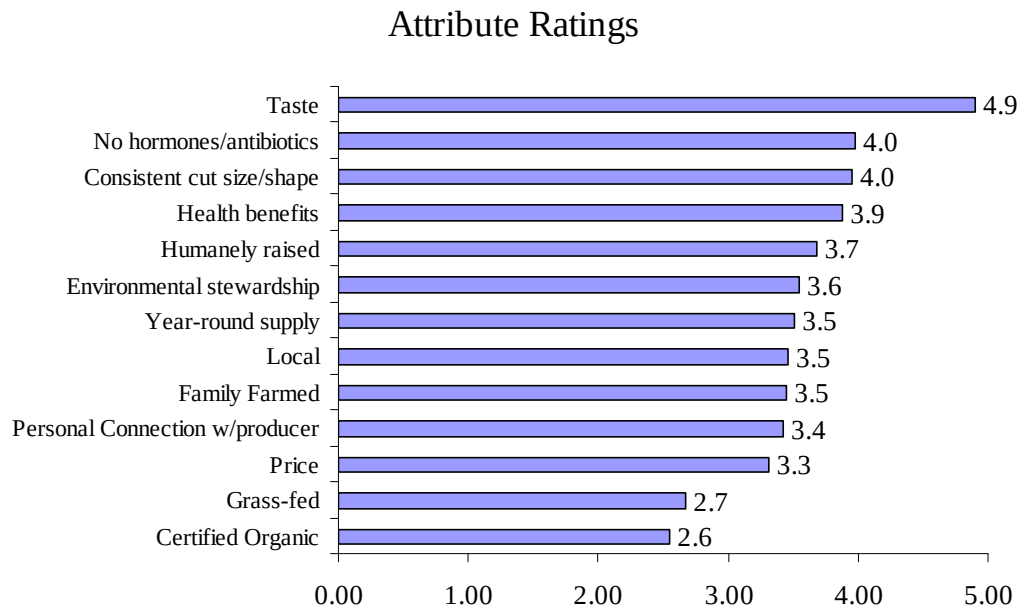
Attribute Ratings

Respondents were asked to rate the importance of various attributes, regarding both the meat products themselves and production practices. The rating scale ranged from 1 to 5, with 1 for “not important at all” and 5 for “very important.” All three respondent groups rated these attributes similarly.¹²

Not surprisingly, “taste” had the highest average rating. “Price” was the least important product attribute and the third least important attribute overall. This is not unexpected, because the other attributes distinguish the niche products from price-driven commodity meats. Price, said one restaurateur, “is the bottom line, but customers are willing.” The highest-ranked production practice was no hormones/no antibiotics. Although “health benefits” rated fourth highest, the healthfulness of grass-fed meats was not compelling enough to make “grass-fed” a highly important attribute; respondents commented that grass-fed is not satisfactory to the typical U.S. palate in terms of taste and texture. The average ratings for “local,” “family farmed,” and “personal connection with the producer” were similar, but not as high as “no hormones/ antibiotics,” which provides more direct benefits to consumers. Both “humane treatment” and “local” had higher rating averages than either grass-fed or organic. Organic, which had the lowest average rating overall, was said to be not different enough from naturally-raised meats to justify the extra cost. Survey respondents consistently ranked “no hormones/antibiotics,” “local,” and “humanely raised” more important than “grass-fed” (pairwise t-test; $p < 0.0001$).

¹² Per ANOVA. The one possible exception is taste: retailers said taste is less important than did the other two groups. But the difference is not statistically significant ($p=0.07$).

Figure 8: Average Attribute Ratings (1-5), All Respondents



Several respondents predicted that certain attributes, such as environmental stewardship and family farming, though not so important to their customers now, would increase in importance in the future. One IFSP respondent said, regarding the production attributes, “If I were king, these would all be a 5”; the company, he explained, was moving that way, albeit slowly.

Interest in New Grass-fed Beef Products: Vitello, Vitellone, and Manzo

Seasonality in grass-based cattle production in Northern California has prompted some producers to develop new grass-fed beef products in order to extend the harvest period for livestock. We asked respondents if they had heard of and/or were interested in trying three products – none of which have been fed grain or formula, and all of which have free access to pasture:

- “vitello,” veal harvested at 3-4 months of age, which has pinkish-white meat;
- “vitellone,” harvested after weaning, at 6-8 months; the meat is more red than vitello and should be dry-aged;
- “manzo” is harvested at 11-13 months; the meat is dark-red and should also be dry-aged.

Table 19: Knowledge of, Interest in Three Grass-fed Beef Products

	Heard of (%)			Interested (%)		
	Vitello	Vitellone	Manzo	Vitello	Vitellone	Manzo
Distributors	70	50	20	40	50	20
Restaurants/IFSP	87	47	33	60	53	33
Retailers	64	64	36	43	14	14
All respondents	74	54	31	49	38	23

Just under half of all respondents were interested in vitello, more than a third in vitellone, and fewer than a quarter in manzo. One of the concerns expressed about vitello and vitellone was that veal is hard to sell, because of “too much bad publicity.” A distributor with experience in upscale, natural foods

retail said that even when customers claim they want veal raised humanely on pasture, they then don't like the taste ... "they don't accept the uniqueness of that product." But some respondents were interested if these products were humanely raised on pasture, or family farmed. "The story matters." A few respondents said they already carry a version of vitello and/or vitellone and were therefore not interested in a new line.

The lack of interest in manzo was, in part, due to concerns about the lack of marbling – "sounds like select beef," said one respondent – and also due to the facilities/cost involved in the recommended dry-aging periods.

Several retailers and distributors said that all three products are more appropriate for chefs, "who can communicate more directly with customers, talk about the preparation, and then can charge for it. You can't do that in retail." In addition, they explained, it can be difficult to educate retail customers on all these points of difference. One retailer said that after a year of education about "never/ever" versus conventional meats, 40% of his customers still did not understand the differences.

How to Define "Local" For Meats

Respondents were asked how they defined "local" for meats, geographically. Answers ranged from "our county" and adjoining counties to "California and Nevada," reflecting a significant lack of consensus. Most definitions tended to be narrower than the whole state of California, such as within a radius of 50, 100, or 200 miles.

How Long Respondents Have Carried Local Meats

Again, answers ranged widely and were complicated by the varying definitions of "local." The eight restaurant/IFSP respondents who buy local meats have done so for as long as 25 years to as recently as within the last year. The twelve retailers buying locally have done so over a range from 45 years to six months, and the eight distributors buying local meats range from one year to 30 years.

Where They Buy Local Meats

The most common source for local meats was direct from the producer. Of the eight restaurant/IFSP respondents who use local meats, all sourced directly from producers, while five also bought from distributors and one from farmers markets. Of the twelve retailers buying locally, ten bought from producers and two from distributors. All eight distributors who handle local meats bought directly from producers.

Challenges in Purchasing Local Meats

When the many, wide-ranging responses regarding challenges in purchasing local meats were grouped, five basic themes emerged; the frequency of these responses is displayed in the table below.

Table 20: Challenges in Purchasing Local Meats

	Restaurant/IFSP (%)	Retail (%)	Distributor (%)	All (%)
Sufficient volume	33	64	67	53
Consistent volume	27	36	11	26
Quality	53	21	11	32
Cost	33	14	22	24
Processing	13	29	22	21

Volume – having enough and having it regularly available – was by far the most cited concern. Respondents said they were unable to source an adequate volume of local meats on a regular basis. However, some had adjusted. One restaurateur has learned to be flexible with variable supplies: her distributor can only get 20 rabbits each week, “so we take the 20 and use them, and when the rabbit’s gone, it’s gone.” Similarly, a retailer explained that “It’s not a bad thing to run out of a product – that means it’s in hot demand,” and customers will learn when to come in to get it. “I’m not afraid to run out of anything.” A distributor said it can be difficult to get enough local products to satisfy his larger accounts; but by working with a number of small, local suppliers, he can usually assemble enough volume.

Under the heading of “quality” – the next most frequent area of concern – respondents noted an array of factors they often found unsatisfactory with niche meats, including taste, texture, size of cuts, fat content, and variability among individual cuts. One retailer said that small, local farms lacked the technology (e.g. tenderness testing or computerized ration management) to raise meats consistent in taste, texture, and size of cuts; for example, he wanted all the lamb carcasses he buys to be the same size, so that all the chops are the same size. “Everything’s on computer, so you get a consistent product. Locals can’t do that.”

Cost, while not the most cited challenge, was still a deterrent. Said one distributor, “It’s not that domestic grass-fed is undesirable or low quality. The price is just astronomical.” Cost was mentioned the most by restaurant/IFSP. However, some restaurants explained that if certain meats were too costly, they could alter menus to serve them differently, perhaps in smaller portions and/or not as often. Less cited than the other concerns but still a factor, “processing” was also seen as a challenge for respondents: processing facilities were unavailable, too far away, unreliable, or did not provide desired services, which meant producers were unable to meet the needs of their customers.

Related to processing, one large-scale IFSP respondent said that insurance was the critical challenge: all of its suppliers are required to have liability insurance, to protect all parties in case of food safety problems. However, he explained, many small producers are unable to afford this insurance, so this IFSP often works with regional suppliers, which can provide umbrella liability coverage for multiple producers.

Customer Requests for Niche Meats

The majority of respondents in all three groups reported that their customers did not ask (or asked very rarely) for specific niche meats. In some cases, this was because the respondents already offered a satisfactory array of niche meats. As one restaurateur explained, “Having [a few] niche meats on the menu satisfies the small percentage of people who care, who ask about those issues.” In other cases, customers didn’t ask, according to respondents, because they were not interested in other options. Of the five restaurant/IFSP respondents that did receive requests, the majority were for meats with no hormones or antibiotics. “In a meat shop, you have to train your customers to buy what you put out there... if they want something special, we can order it.” Only three retailers received requests more than rarely, primarily for organic and grass-fed meats, but also for Halal. One retailer said that grass-fed was “the biggest consumer-driven push in the last 10 years.”

Only four of the ten distributors reported requests for a range of products: three varieties of niche pork: never/ever, organic, and heirloom; grass-fed beef; and game (e.g. venison). However, customer demand

was acknowledged as a driver of product offerings: “I hear it all. If there’s enough demand for something, I’ll see what I can do.” However, he continued, “We can’t be all things to all people.”

Niche Customer Profile (Retailers Only)

When asked if their customers who bought niche meats had similar characteristics, retailers described them as highly educated, professional, and affluent; health conscious and concerned about the environment and what they feed their children; and focused on their families and involved in their communities. They are educated about and attentive to food-related issues, such as the use of antibiotics and hormones in meat production, humane treatment, and family farming. These customers were also said to have and spend more time (than other customers) on shopping and cooking. One retailer said that, in particular, grass-fed meat customers tended to be younger than other customers, because younger shoppers perceive grass-fed as more valuable and of higher quality than grain-fed.¹³

Number of Meat Suppliers

In general, restaurants/IFSP’s used the fewest meat suppliers, and distributors used the most. Restaurant/IFSP respondents used an average of three, ranging from one to seven, and up to twelve for IFSP. Retailers use an average of twelve suppliers and ranged from three to forty-two. Distributors ranged even more widely, from one to 170.

How Respondents Identify Suppliers to Their Customers

Table 21: Methods of Identifying Suppliers to Customers

	Labels	Point of Sale Info	Meet Producer Days	Don't ID	On Menu
Distributors	10	4	4	0	NA
Restaurants/IFSP	0	1	4	5	8
Retailers	13	8	6	2	NA
All respondents	23	13	14	7	8
% of all respondents	58%	33%	35%	18%	47%

The most common method of identifying suppliers was the product label/invoice, or the menu for restaurants/IFSP. Only half of restaurants put supplier names on their menus; for some, this depended on how well-known the supplier was (Niman would be listed). If not, restaurant staff could often give this information if asked by a customer.

Even though most respondents did not have “meet the producer days” for customers, several retailers and distributors did ask suppliers to meet and train their staff. The majority of respondents did identify suppliers in some way; as one said, “Product identity is important.”

¹³ One retailer offered an interesting perspective on niche buyers, which he estimated as about six percent of his customer base. While they do spend a lot of money, not only on meats but on “attributing items” like wine and cheese that go with those meats, they rarely buy large volumes of any item. They also shop more often and require more service per visit, which in the long run means they are more costly to serve than non-niche customers.

Orders and Deliveries

Half the restaurant/IFSP respondents made orders and received deliveries of meats every day of the week; the others typically took deliveries at least twice a week. Retailers ranged from once a week to every day, depending on store volume; at least three times a week for half of them. Distributors ordered and received much more often: as needed, every day, “all day,” and typically no less than five times a week.

Biggest Challenges in Purchasing Niche Meats

Respondents were asked what their biggest challenges were in purchasing niche meats. Responses to this question significantly overlapped with challenges in purchasing local meats, discussed above. Again, the table indicates the number of times each theme was mentioned by respondents.

Table 22: Challenges in Purchasing Niche Meats

	Restaurant/IFSP (%)	Retail (%)	Distributor (%)	All (%)
Volume (sufficient, consistent)	33	53	90	55
Quality	13	40	30	28
Cost	33	27	0	23
Customer education	27	13	20	20
Supply chain	13	17	10	18

As with local meats, accessing niche meats in adequate volumes (and, for many, consistently over time) was the challenge most often cited by respondents. As one chef said, “We really want this stuff – we need the volume.” Distributors were the group most likely to have this problem (90%). One distributor explained that being able to offer a sufficient supply is as important to its customers as price and the niche attribute itself.

Yet there were exceptions to this opinion: one IFSP considered limited supply to be almost a given with niche products: “you get what you can get, when you can get it. Is it okay to have it on the menu and then run out? Sure. You have to educate the consumer and the [unit] operator on how best to manage it.”

Cost was only slightly more important than quality (again, encompassing a range of factors, from taste and texture to consistency in individual cut size and shape). A retailer said, “People will pay extra for something they value” and may even accept slightly reduced quality in exchange for other perceived values. “These niches will sell if the product quality is consistent and the supply is consistent and large enough.”

Supply chain challenges included several difficulties, including lack of access to appropriate facilities and distribution systems for small producers and the complexity, for buyers, of managing multiple suppliers. Regarding distribution, one chef knew of producers raising high quality meat, “in all the right ways,” who then can only “throw it in the freezer” after processing, because they don’t have a distribution system to get the meat to local restaurants. Regarding supplier management, the manager of a restaurant group said that each chef had to spend a great deal of time finding and working with multiple sources: “The chefs do it, and they like it, but it’s a big pain.”

Respondents discussed two customer education challenges: why niche meats cost more and what all those labels really mean. Customers, respondents said, are confused by the range of definitions, e.g. all the varieties of “natural.” One retailer said, “people still don’t know what ‘marbling’ means, what it contributes.” For customers to be willing to pay the higher price for niche meats, they need to understand the health and taste benefits. The need for education wasn’t limited to customers: respondents said they had to educate their own personnel (especially chefs and kitchen staff) how to handle niche meats.

Another challenge mentioned specifically by retailers (4) was a lack of steady demand. One retailer, typical of those who mentioned this problem, explained that when he considers new suppliers, he looks at their marketing strategy. “Are they using billboards...radio? Are they positioning themselves? Are they creating customer demand? ... If you take up space in my case, it had better sell!” Niche suppliers, he said, typically did not understand that retail is “all about turns: you gotta get it in and out. If I have to do anything to get rid of that product, it’s not worth it to me to carry it.”

Finally, it is worth noting that two respondents who said they had no challenges in sourcing niche meats attributed this to the solid, long-term relationships they have built and maintained with their suppliers, both producers and distributors.

Conclusions

This market study offers an assessment of demand – and various aspects of that demand – for niche red meats in the greater San Francisco Bay Area and Sacramento metropolitan area. Primary findings are as follows.

The most popular red meats are beef, pork, and lamb, in that order. The most popular niche categories, also in declining order of popularity, are naturally-raised, humanely raised, local and grass-fed; however, there are varying interpretations, among respondents and their customers, over definitions of some niche attributes, including naturally-raised and local (most broadly California but often more narrowly defined). Retail niche meat customers are highly educated, professional, affluent, health-conscious, and care about the environment, their families, and their communities.

The volume of niche meat demand in this geographic area looks promising in terms of supporting a mid-sized processing plant, especially if demand continues to increase, as is predicted by three-quarters of all respondents. Difficulty in obtaining accurate volume data, the varying definitions of specific niche categories, and the fact that many of the retail/restaurant/ IFSP respondents are customers of the distributors interviewed in this study, make it challenging to extrapolate the capacity for a slaughter and processing facility that would best fit near-term demand in this geographic region. However, some tentative estimates can be made.

For example, based on the average volumes of niche beef bought and sold by distributors in this study, ten such distributors would account for more than 14 million pounds of niche beef per year – a substantial portion of the capacity of a plant processing 17.5 million pounds of beef per year (25,000 beef cattle, 700 lbs yield each). A larger plant (e.g. 75,000 head/year) might need to look beyond this region to move all of that meat.

Fresh meats are preferred to frozen. About half of respondents can and do purchase whole carcasses, though primarily smaller stock (pigs and lambs) rather than cattle. Restaurants, IFSP, and distributors are far more willing to work with seasonally available meats than are retailers.

Price premiums (over conventional meats) depend on the specific niche, brand, meat cut, and sometimes time of year; that said, 10-30% premiums were common, and many respondents had to pay far more, especially for organic meats.

The biggest challenge in buying and using niche meats – and local meats more specifically – is obtaining them in adequate and regular volumes. Regional and national chains, in particular, may balk at any product they cannot carry in all of their stores. The ability for a regional plant to satisfy those volumes will, of course, depend heavily on the availability of livestock that meet the desired niche categories. Respondents also discussed challenges regarding meat quality, cost, the need for customer education about niche products, and the supply chain/processing.

One final important finding that emerged during our interviews – and not from a specific question – is the existence of an enthusiastic and already well-functioning link in the niche meat supply chain: distributors. Several of the distributors interviewed were very interested in having a new USDA-inspected slaughter and processing plant in this region; they saw the need from both the customer and livestock producer perspectives. Their interest in niche meats appears to be growing for at least two reasons (apart from an overall rise in demand). First, independent distributors see niche products as a way to differentiate themselves from the more consolidated, corporate distribution companies. Second, as fuel prices rise, retail and restaurant buyers may wish to do more of their purchasing with a single distributor, which means that distributors are looking for a wider range of products, including niche meats.

Clearly, some consumers and restaurants prefer to purchase their niche meats directly from producers. However, distributors have the capacity to handle larger volumes. They are logical alliance partners for a regional niche meats processing facility, in that they already have resources in place – from well-established customer bases and extensive (often decades-deep) market knowledge to fleets of trucks and dry-aging facilities – that would not need to be built from scratch.

APPENDIX: Northern California Niche Meat Market Demand Study

QUESTIONNAIRE/INTERVIEW GUIDE

INTRODUCTION

Thank you for agreeing to participate in this research to measure market demand for niche meats in the San Francisco Bay Area. This research is part of a feasibility study, conducted by University of California Cooperative Extension, for a meat processing, distribution, and marketing facility proposed for Northern California. Information you give us will remain confidential.

Interview information

1. Interview date/time _____
2. Interview location _____
3. Interviewers _____

Interviewee information

1. Name _____
2. Position _____
3. Company name _____
4. Contact info (phone/email/address) _____

Company information

1. Type of company
 - a. distributor
 - b. restaurant/food service
 - c. retail grocer
 - d. other _____
2. Ownership status
 - a. chain/franchise
 - b. corporate
 - c. independent
 - d. other _____

Niche meat purchasing/sales

Niche meats are non-commodity meats with one or more of these attributes: grass-fed/finished, certified organic, no hormones/no antibiotics, free-range, certified humane, Halal, kosher, local.

We're asking about fresh and frozen meats, plus "value added" products like sausage or jerky.

1. What varieties (species) of red meat do you currently market?

Circle all that apply:

beef veal bison pork lamb goat emu venison

2. Which niche meats do you currently market?

Circle all that apply:

- a. Grass-fed
- b. Certified Organic
- c. Naturally raised (no hormones/no antibiotics)
- d. Certified Humane
- e. Locally-grown
- f. Kosher
- g. Halal
- h. Other _____

3. What are the approximate volumes of the niche meats you market? (lbs per week/month)

4. Do you expect the volume of niche meats you sell to increase during the next year? During the next three years?

5. If so, which types of niche meats and approximately how much of an increase? (> or < 5%)

6. What other niche meats would you like to sell if you could find a supplier?

7. Niche meats may often cost more than commodity meats. On average, what kind of premium do you typically pay for the niche meats you market?

8. RETAILERS ONLY: How do you sell meats?

- a. Fresh – meat case (full-service)
- b. Fresh – pre-packaged (self-service)
- c. Frozen

9. Do you purchase/sell frozen meats? Why or why not?

10. Do you purchase any meats by the whole or half carcass? Why or why not?

11. Do you sell any meats that are only available seasonally? If not, why not?
12. What cuts are most popular with your customers?
13. What cuts are least popular?
14. Rate these product qualities on a scale of 1 to 5, with 1 = not important, 5 = very important:
- a. Taste12345
 - b. Consistent size and shape of cuts12345
 - c. Health benefits12345
 - d. Price12345
 - e. Year-round supply (not seasonal)12345
15. Rate these production-oriented qualities, 1 to 5, with 1 = not important; 5 = very important:
- a. No added hormones or antibiotics12345
 - b. Certified organic 12345
 - c. Grass-fed12345
 - d. Environmental stewardship 12345
 - e. Humane treatment12345
 - f. Family-farmed12345
 - g. Locally-grown12345
 - h. Personal connection with producer12345
16. Have you heard of any of these beef products? Are you interested in them?
- a. **Vitello** = veal, harvested at 3-4 mo.; fed on mother's milk (not formula); calf has free access to pasture; meat is pinkish-white, very tender
 - b. **Vitellone** = harvested at 6-8 mo. (after weaning), fed on mother's milk supplemented with grazing; meat is pale red & should be hung (dry-aged) 1-2 wks for best flavor. Tender, low in fat. Must be cooked longer than veal. Once known as "kip."
 - c. **Manzo or "baby beef"** = harvested at 11-13 months, when feeding entirely on pasture; meat is dark red & should be dry-aged 3-4 weeks. Lower fat than mature beef but flavorful & tender. Cook quickly, but chuck & round good for braising, roasting.
17. How do you define "local" for meats?

18. If you do purchase/sell locally-grown meats:

- a. How long have you done so?
- b. Where do you purchase them? (e.g. direct from the producer, farmers market, distributor)
- c. What challenges are most difficult in purchasing locally-grown meats?

19. Do your customers ever ask for specific niche meats? If so, which species and qualities?

20. FOR RETAILERS: How would you describe your customers who buy niche meats? Do they have similar characteristics?

21. How many meat suppliers do you use? Who are they?

22. How do you identify your suppliers to your customers?

- a. labels
- b. brochures and other in-store information
- c. meet-the-producer days
- d. don't identify them

23. How often do you place meat orders and receive deliveries?

24. What are your biggest challenges in purchasing niche meats?

CONCLUSION: Thank them for their time, remind them that their answers will be kept confidential, discuss any follow-up, and ask if they want a summary report.

Economic Analysis of North Coast Multi-species Niche Meats Processing Facility

Author: Shermain Hardesty

The economic analysis presented in this section was prepared using the findings from the potential livestock supply study and the facilities and process design study (Facility Group's Master Plan Report). We included three components in this analysis: assessment of risk factors, financial capital structure and availability, and the project's impact on the local economy. Each is presented below in a separate section, followed by a conclusion of the economic issues associated with the project.

We based this economic analysis on the ~\$18.0 million estimate for the Master Plan project budget for the processing facility, which was provided by the Facility Group in its final report dated March 31, 2008. The estimate is for a 44,000 square foot facility that includes livestock receiving and holding areas, two kill and evisceration lines for beef and lamb, carcass chill coolers, by-products processing, fabrication and further processing and packaging, fresh and fresh product storage, administrative office space and employee welfare space. The estimate does not include land acquisition costs for the Facility site, located at an undetermined location on the North Coast. The Facility has a minimum estimated life of at least forty years.

Various types of risk factors were examined—including those related to the project development and to the ongoing operations of the Facility. Our review of the capital structure and availability is largely dependent on the findings of the Facilities and Process Design Study; reliable cost estimates for land, plant construction, equipment and operations are essential for determining the amounts of investment capital and working capital needed. We examined both private and public funding sources for this economic development project. Our assessment of the Facility's local economic impact included the traditional measures: output (gross sales of the new plant); jobs created; labor income; and value added (the sum of all wage and salary payments made to workers, normal profits accruing to investors and tax payment made by individuals to governments). We applied an input-output framework to conduct this review.

Executive Summary

- Risk management is critical for this long-term project, given its \$18.0 million Master Plan budget and additional land acquisition costs. The Facility faces risks during the planning and construction phase; most of them should be avoidable with thorough pre-development analysis and project management.
- The Facility's ongoing internal risks can be minimized by hiring experienced management and maintaining the facility in good operating condition. Continual evaluation of operations and contingency planning will reduce potential losses associated with internal risks.
- External risks arise from events either upstream or downstream in the supply chain and are considerably more difficult to mitigate. Thus, the Facility needs to have a strong trends monitoring program and be willing to shift its product line to respond to changing market conditions, as well as regulatory requirements.

- Both internal and external risks need to be addressed in depth prior to developing financing proposals for the Facility.
- There are numerous private and public potential funding sources for the Facility. Its environmental and social features will enhance the fundability, particularly since there is growing support for smaller-scale regional food processing facilities.
- A mix of funding sources appears to be the most likely. Potential private sources include regional banks, specialized banks such as Shorebank, RSF and CoBank, socially-minded venture capitalists, ranchers (even if the Facility is not structured as a rancher-owned cooperative) and preferred stock. The 2008 Farm Bill provided for loan guarantees for businesses involved in local and regional food distribution; this should enhance the possibility of obtaining bank loans. Public funding sources include USDA's Rural Business Enterprise Grants and Value Added Program Grants, industrial revenue bonds and Community Development Block Grants. Mountain States Lamb, Country Natural Beef and West Liberty Foods are examples of producer-owned meat marketing ventures that have been innovative in obtaining financing.
- We estimated that the direct economic impact of the facility construction activities is likely to be less than \$7 million for the total \$18 million project, primarily because many of the inputs, such as equipment and labor, are specialized and will be brought in from other regions.
- We applied the widely-used software program, IMPLAN, which utilizes input-output analysis to take into account the ripple effects of the economic activity in the 10-county region associated with the increased values of meat processing and livestock production attributable to the Facility. There were two livestock industries: cattle ranching and other livestock (includes sheep, hogs, goats, and various minor species, but not poultry). IMPLAN incorporates the project's direct, indirect and induced effects. The **direct effects** represent the direct output of a particular industry (such as animal slaughter). The **indirect effects** reflect the local inputs required to produce the direct effects; for example, in order to operate the animal slaughter plant, the plant must purchase products, raw materials and services from other companies. The **induced effects** measure the results of local household spending on goods and services resulting from the labor income generated through the direct and indirect effects. The sum of the direct, indirect and induced effects is the total economic effects.

- IMPLAN calculated the following multipliers of economic activity for the region:

	Multiplier
EMPLOYMENT (full time job equivalents)	
Cattle ranching and farming	1.4
Animal production, except cattle and poultry	1.2
Animal, except poultry, slaughtering	2.9
LABOR INCOME	
Cattle ranching and farming	3.8
Animal production, except cattle and poultry	2.2
Animal, except poultry, slaughtering	2.1
TOTAL VALUE ADDED	
Cattle ranching and farming	6.0
Animal production, except cattle and poultry	3.3
Animal, except poultry, slaughtering	2.5

For example, the cattle ranching employment multiplier of 1.4 means that for every full-time equivalent job added in cattle ranching, a .4 job is created in other industries in the region. The labor income multiplier of 3.8 means that for every \$1.0 million of increased cattle ranching output, \$2.8 million of labor income is generated within the region annually. Similarly, the 6.0 value-added multiplier for cattle ranching implies that every \$1.0 million of value added in cattle ranching through employee compensation, indirect business taxes, proprietary and other property type income results in \$5.0 million of value added in other industries within the region.

- We estimated that the gross value of livestock sales in the region would increase from \$15.8 million to \$29.0 million annually, and that the Facility would produce \$58.2 million of slaughtered and processed meat.
- Based on the calculated multipliers and our estimated values for livestock production and meat processing, we determined that the establishment of the Facility would generate an additional 682 full-time equivalent jobs (a 10% increase, with only 44 of the jobs directly attributable to the Facility), labor income would rise a net \$16 million (a 31% increase) and the total value added to the regional economy by the three industries would increase by 47% (\$23 million).

Assessment of Risk Factors Affecting Project Feasibility

The Facility is a long-term project with an \$18.0 million master plan budget plus land acquisition costs. There are various risk factors associated with this project that affect its feasibility and viability. The risk factors can be initially categorized into two phases--those occurring during the facility's planning and construction, and then during its operation. Risks for each phase are listed below and discussed briefly.

Planning and Construction Phase Risks

- Obtaining appropriate site—the site needs to be zoned for the proposed type of use (or have a strong likelihood of obtaining such zoning) and have access to the necessary support services, such as sewer, water and major roads

- Financing availability (this is addressed in the following section on capital structure)
- Availability of specialized construction labor and equipment
- Regulatory delays—since animal slaughter is a contentious issue and sewer and water access can be very costly, extensive project management is essential during the pre-development phase of this project
- Cost overruns— As noted on pages 1-2 of the Facility Group’s final report, the \$18.0 million Master Plan project budget should be evaluated and that a contingency be included “...to allow for flexibility in dealing with site and process adjustments that may be required once a site is selected and the process design development has been fully coordinated...” (Facility Group, page 1-2).
- Planning oversights--the pre-development phase project management noted above should minimize these

The risk factors associated with the facility’s ongoing operations are divided into two categories: internal and external (Kiser and Cantrell, 2006). Internal risks are those within the control of the company that operates the facility; they have some potential for mitigation. They can be classified into the following categories:

Internal Risks

- Business risks—caused by changes in key personnel or administrative processes, such as communications with ranchers regarding animal delivery schedules
- Processing risks—caused by disruptions of plant operations, such as an employee shortage due to a flu outbreak.
- Planning and control risks—caused by inadequate assessment and planning, such as failure to recognize the need to schedule more employees for a shift because some employees will be attending training programs.

Internal risks can be reduced by hiring experienced management and maintaining the Facility in good operating condition. Continual evaluations of the operations and contingency planning will minimize the potential losses associated with internal risks.

External risks result from events either upstream or downstream in the supply chain, and are considerably more difficult to mitigate. There are five main types of external risk:

External Risks

- Demand risks—due to the unpredictable nature of customer demand. While the demand for meat cuts for barbequing can be expected to increase during the summer months, an unanticipated event, such as a poultry-related E. coli outbreak, could cause a sharp increase in the overall demand for beef.

- Supply risks—caused by disturbances in the flow of product within the supply chain, such as delays in the delivery of animals due to the closure of a major road near the Facility.
- “Environmental” risks—these originate from outside of the supply chain. Common sources include economic, social, government and climatic factors. For example, USDA could change the regulations defining “grass fed.”
- Business risks—related to factors such as suppliers’ financial or management stability, such as the decision of the new manager of a large ranch to shift to a different processor.
- Physical plant risk—caused by the physical condition of the facility, such as a blockage in the sewer system.

While there is no way to control these external risks, appropriate planning processes can be used by developing contingency plans to minimize the disruptions caused by such risks. Also, there is overlap in the risk areas; disasters often occur because of the combined effects of these factors. For example, if the facility had only one rancher supplying all of its organic beef while its single large customer for organic beef decided to have an unplanned promotion for organic beef, then any disruption in the operations of the organic beef rancher would make the facility highly vulnerable to losing its large organic beef customer.

“Environmental” risks can be particularly significant in the long-term for a niche meats processing facility. Over time, some niche products can become commodities, which could adversely impact the facility since it is not designed to compete against low-cost operations. Similarly, other products can lose favor with consumers. Thus, the Facility needs to have a strong trends monitoring program and be willing to shift its product line to respond to changing market conditions, as well as regulatory requirements.

Both internal and external risks need to be addressed in depth prior to developing financing proposals for the Facility.

Financial Capital Structure and Availability

Given the relatively high project cost, it is highly likely that multiple sources of capital will be needed to fund the Facility. Reliable cost estimates for land, plant construction, equipment and operations are essential for determining the amounts of investment capital and working capital needed. As discussed in the next section of this report regarding regional economic impacts (Section 9.4), the Facility qualifies as an economic development project. It has significant social capital features (humane and environmentally friendly slaughter, substantial pollution controls, environmentally sound waste emissions and natural resource utilization practices, and employee-friendly management philosophies) that should make it attractive to private social capital funds, as well as government grant programs. As discussed below, both private and public funding sources should be considered for this project.

Private Funding Sources

Private funding sources include banks, venture capital funds, investment from ranchers and preferred stock.

Banks

Numerous banks provide loans for food processing facilities. Since the proposed project is associated with a new entity, specialized banks are likely to be more receptive. This includes regional banks, such as Umpqua and North Valley.

Shorebank differentiates itself as a lender with strong environmental values. It strives to meet three objectives simultaneously: building wealth for all in economically integrated communities, promoting environmental health and operating profitably (Shorebank, 2009). Other lenders with similar objectives include RSF Social Finance and Washington, DC-based NCB. RSF is based in San Francisco; it provides medium- and long-term asset-backed loans at variable or fixed rates, typically ranging from \$200,000 to \$5 million.

While the Farm Credit System's Cobank is focused on agricultural cooperatives as its primary clientele, it also lends to other agribusinesses. Headquartered in Denver with an office in Sacramento, it is cooperatively-owned.

Venture Capital

As noted above, several of this project's features could qualify it for partial or complete funding through social venture capital programs. In particular, Investors' Circle is a network of over 200 angel investors, professional venture capitalists, foundations and others using private capital to promote the transition to a sustainable economy. It is striving to steer meaningful quantities of investment capital and sustainable capital to build local food systems, enabling "...the financial and cultural transformation toward rebuilding social and environmental relationships that industrialization has destroyed" (Weiss, 2008). The founder of Investors' Circle, Woody Tasch, noted that Investors' Circle is developing small food enterprises as a new asset class, and specifically mentioned local meat processing facilities. He expected highly diversified portfolios of small food enterprises to generate modest but predictable long-term returns that will look increasingly attractive in the years to come.

Rancher Investment

The individual ranchers who utilize the facility, both as suppliers of livestock and as users of the facility's custom slaughter and processing services, should be considered as potential sources of capital for the facility. However, as discussed in Chapter 7, this option may be limited given the elderly profile and limited gross farm incomes of most of the ranchers who responded to the UCCE survey. Traditionally, agricultural producers have invested in processing facilities by being members of an agricultural cooperative. The Facility could be owned partially or completely by an agricultural cooperative; that is, the ranchers who used the Facility would be members of the cooperative. As members, they would be required to provide the cooperative's equity capital; this is the member-financed feature of a cooperative. Alternatively, the ranchers could form a limited liability corporation (LLC), which is a specialized form of a partnership. Typically, a producer-owned LLC has less rigid structural features and offer greater liquidity than a cooperative; in particular, the owners' capital investment in an LLC does not need to be proportionate their use of the facility.

Given the significant amount of equity capital needed to fund this facility, it is likely that the producer cooperative or LLC could be an equity partner in the facility with venture capitalists or other investors. With such a shared ownership structure, the cooperative would have less governance power, as well as less financial commitment, than if it were the sole owner of the facility.

Mountain States Lamb and Wool (MSL&W) is an example of the flexibility provided by the LLC structure over the traditional cooperative structure. Mountain States Lamb Cooperative was organized in 1999 as a traditional, producer-owned cooperative by sheep ranchers and feeders in several Western States to develop lamb and sheep products and markets for those products. MSL&W was formed in 2001 after the state of Wyoming adopted the “Wyoming Processing Cooperative Statute” which allows individuals who are not ranchers to be investors in a cooperative (Hardesty, 2004). MSL&W was organized as a separate entity by Mountain States Lamb Cooperative, which is its sole member. A total of 450,000 shares of Class A stock were sold to ranchers at \$22 per share, generating \$9.9 million in equity capital. These shares entitle and obligate the share owner to deliver one lamb to the co-op for every share owned. They can be bought and sold among members as ranchers’ livestock delivery volumes change. The share value changes with market conditions and the cooperative’s financial performance. Class B shares were also sold; they have a guaranteed return of 8% but do not have voting privileges or lamb delivery obligations. Approximately 75% of Class B shareholders also own Class A shares and about 80% of the equity in MSL&W is held by Class A members (Boland, Bosse and Brester, 2007).

In March, 2003, MSL&W created a joint venture, Mountain States Rosen (an LLC) by buying a 50% interest in B. Rosen & Sons, a leading supplier to processed lamb meats and products which markets much of its product under the Cedar Springs brand. Lambs are slaughtered at a Swift facility in Greeley, Colorado and processed at Rosen processing and distribution facilities in Greeley and New York. Most MSL&W carcasses are marketed on the West Coast and members share in the profits of Mountain State Rosen’s eastern operations (Boland, Bosse and Brester, 2007).

Rancher-members of Oregon Country Beef (operating under the name Country Natural Beef) have relatively little equity capital invested in their cooperative. Instead, most of their capital is invested in the production costs they incur while raising their animals. The cattle are fed only a vegetarian diet and raised with no antibiotics or hormones. Oregon Country Beef does not own any feedlots or processing facilities; instead, it contracts for these services. Currently, the members’ cattle are finished at the Beef Northwest Feeders feedlot in Boardman, Oregon and slaughtered and processed at AB Foods (operating as Washington Beef) in Toppenish, Washington (Oregon Country Beef, 2009). The cooperative’s primary purpose is to enhance returns to members by controlling the production, processing and marketing of each animal from birth to the retailer cooler. Many of the members are actively engaged in promoting the Country Natural Beef brand; they are frequently seen talking to consumers at grocery stores throughout the West Coast (known fondly by members as “marketing blitzes”.) Oregon Country Beef is committed to long-term relationships with its affiliated feedlot company, slaughter and processing company and retail and foodservice customers. Its customers have agreed to adjust the prices they pay for Oregon Natural Beef as cattle production and processing costs change, because they support the values embraced by the rancher-members. This type of relationship is known as a “values-based supply chain”. More information about values-based supply chains is available at the web site organized by agricultural researchers across the nation, <http://www.agofthemiddle.org/>.

Preferred Stock

Preferred stock is also a potential source of equity capital for this project. The dairy marketing cooperative, CROPP, which operates as Organic Valley, is using a unique form of relationship financing to capitalize its growth. It began selling Class E, Series 1 preferred stock in May of 2004. Almost \$16 million of stock has been sold in 23 states and the District of Columbia (Figenbaum, 2009.) Organic Valley markets its products extensively through consumer cooperatives, many of which have purchased the stock along with their individual consumer members. The minimum purchase of the non-voting stock is \$5,000, or 100 shares; the quarterly dividends provide a 6% annual rate of return. As a Section 521

cooperative, Organic Valley is exempt from securities registration requirements. Organic Valley's CEO noted that the preferred stock offers shareholders steady long-term financial value and social/environmental returns without forecasting big year-over-year growth (Figenbaum, 2009).

New USDA Loan Guarantee Program

Loan Guarantees can enable firms to obtain loans that they would otherwise not be able to secure. The 2008 Farm Bill provided for loan guarantees for businesses involved in local and regional food distribution, processing, aggregation, and marketing. These guarantees are designed to secure private bank loans of up to \$5 million to receive an 80% guarantee. The maximum loan value is \$25 million, and up to \$40 million for cooperatively-organized entities of agricultural ranchers. The average loan value being guaranteed by this program is for \$2 million. The projects must be located in rural areas, but there are criteria which can allow producer-owned cooperative entities and other urban-located cooperatives to be eligible. The "rural" definition includes communities of "rural character." (USDA-Rural Development, 2008).

Public Funding Sources

As described below, there are three primary public sources available to provide financing for the Facility: USDA Rural Development grants, industry development bonds and community development block grants. There is potential for this project to receive funding through a new rural business development initiative under the national Economic Stimulus Program.

USDA's Rural Business Enterprise Grants Program (RBEG)

Infrastructure costs could potentially be funded using the RBEG program. Examples of eligible uses for the RBEG program include: Acquisition or development of land, easements, or rights of way; construction, conversion, renovation, of buildings, plants, machinery, equipment, access streets and roads, parking areas, utilities; pollution control and abatement; capitalization of revolving loan funds including funds that will make loans for start-ups and working capital (USDA-Rural Development, 2009)

USDA's Value Added Producer Grants Program (VAPG)

A portion of the planning activities and operating capital for the Facility could be funded through USDA's Value Added Producer Grants Program, which issues a call for proposals once a year. Eligible projects include those for marketing value-added agricultural products. Eligible applicants are independent producers, farmer and rancher cooperatives, agricultural producer groups, and majority-controlled producer-based business ventures (USDA—Rural Development, VAPG, 2008).

Industrial Development Bonds

Industrial development bonds (IDBs) can be issued to provide up to \$10 million in financing for processing plants; up to 25% of the bond proceeds may be used for land acquisition. The bond maturity cannot exceed 40 years. Benefits of IDBs include interest rates considerably below standard commercial lending rates, and long-term loans with no balloon or prepayment penalty. Criteria for the issuance of IDBs include public benefits associated with job creation or retention, community economic need and average hourly wage paid to workers; the state is currently considering a proposal to include environmental stewardship criteria. The interest received by bondholders is exempt from both state and federal income taxation. In 2008, California's Industrial Development Financing Advisory Commission approved the issuance of IDBs totaling \$118.3 million for 18 projects.

Community Development Block Grants

Depending on where this project is located, a portion of its development costs could potentially be covered by Community Development Block Grant (CDBG) funds from the Federal government. The CDBG program allows a city or county to issue grants to local organizations for the implementation of eligible CDBG activities including construction or improvement of public facilities and infrastructure such as streets, sidewalks, sewers and storm drainage, economic development, revitalization efforts, and other activities that benefit low and moderate-income individuals and areas.

Other Potential Public Funding

California could follow Iowa's lead and established a program similar to Value-Added Agricultural Products and Processes Financial Assistance Program (VAAPFAP), which Iowa created in 1994. Iowa's current economic development program, Iowa Values Fund, has a \$35 million annual allocation, part of which is used to fund VAAPFAP (Iowa Department of Economic Development, 2008). No project can receive more than 25% of the program's annual allocation; private matching funds are required. One of the VAAPFAP's categories is "Organic Processing and Emerging Markets."

Iowa's West Liberty Foods is an excellent example of public-private ownership. When Oscar Mayer announced that it was closing its processing plant in West Liberty, Iowa at the end of 1996, turkey growers recognized the need to retain a market for their turkeys and organized themselves as a cooperative. In less than a year, financing totaling \$16.2 million was raised, divided among more than 16 million shares held by 45 individuals representing 47 enterprises. The financing package included (Holmes and Curry, 2001):

- \$2.4 million in cash equity provided by the cooperative's members
- \$900,000 grant and loan package from Iowa's Department of Economic Development (IDED) through its VAPPFAP program
- \$875,000 in forgivable loans from Iowa's Dept. of Economic Development's Economic Set-Aside Program (using the city of West Liberty and Muscatine County as sponsors)
- \$50,000 low interest loan from Iowa Corn Promotion Board
- \$50,000 loan from Muscatine County
- \$75,000 loan from the city of West Liberty
- \$1.25 million loan from the Iowa Farm Bureau Federation
- \$15,000 grant from the Iowa Turkey Federation
- \$8.0 million loan from Norwest Agricultural Credit
- USDA-Rural Development guaranteed 70% of an additional \$7.0 million loan from Norwest.

West Liberty Foods endured three recapitalizations during its early years of operation. Originally, members were required to contribute \$1 in equity for each bird they processed. A liquidity crisis caused the cooperative to require an additional \$1 equity for each bird processed, followed by an additional \$1 per bird assessment in the following year. Currently, the unit delivery price paid to members is specified

in advance and the cooperative no longer shares the input costs. West Liberty Foods owns and operates three processed meat plants in Iowa and opened a \$70 million facility in Utah in 2007 (West Liberty Foods, 2008). The company specializes in slicing and co-packing cooked red meat and poultry products, and processed 217.5 million live pounds in 2008.

Regional Economic Impact of Proposed Facility

Public funding programs are often interested in the economic impact a project is expected to have on the local economy. We examined both the direct and indirect impacts of the Facility on the local economy. We defined “local” as the combined Tier 1 and Tier 2 counties previously defined in this report--Mendocino, Sonoma, Marin, Napa, Lake, Colusa, Glenn, Yolo, Solano and Contra Costa. First, we derived a simple estimate of the impact of the project construction. Next, we applied an input-output framework to assess the economic activity generated by the Facility’s ongoing operations.

Construction Impacts

The impact of the project begins with the construction of the facility. The expenditures included Master Plan project budget (without land acquisition costs) of \$18.0 million estimated by the Facility Group are listed below.

Table 23: Projected Master Plan Budget

Architectural, engineering and construction mgt. services	\$1,753,000
Site work	\$831,000
Wastewater treatment equipment and installation	\$1,567,000
Building construction	\$6,997,000
Process Support Utilities	\$825,000
Refrigeration system equipment and installation	\$2,177,000
Plant equipment acquisition	\$2,840,000
Plant equipment installation	\$972,000
TOTAL PROJECT	\$17,962,000

It is likely that most of the equipment will be manufactured outside of the region, since it is highly specialized. Similarly, much of the architectural and engineering services will also be procured from outside of the region. The elements that are most likely to be sourced within the region are site work and portions of the building construction expenses--particularly the labor and the process support utilities. Thus, we estimate that the direct economic impact of the facility construction activities will be \$7 million or less for the total \$18 million project. Most of the project’s economic impact will occur because of the facility’s ongoing operations, rather than the one-time construction activities. We excluded these construction activities from the remainder of our analysis of the economic impacts of the proposed facility.

Input-Output Analysis of Ongoing Activities

IMPLAN software

There are two major sources for the ongoing economic impacts related to the Facility: the plant operations and associated livestock production activities. Both types of economic activity are analyzed

using an input-output analysis software program, IMPLAN Pro® version 2.0 (IMPLAN), and the accompanying 2002 dataset. IMPLAN determines multiplier effects by modeling the interrelationships between various economic sectors. The data sources used to drive the model include the US Bureau of Economic Analysis, the US Bureau of Labor Statistics, the US Census Bureau, and USDA (Lindahl and Ohlson, undated). We applied the multiplier values derived by IMPLAN to calculate estimates of annual economic activity in the local economy, based on the specific employment and production values we have projected for the Facility.

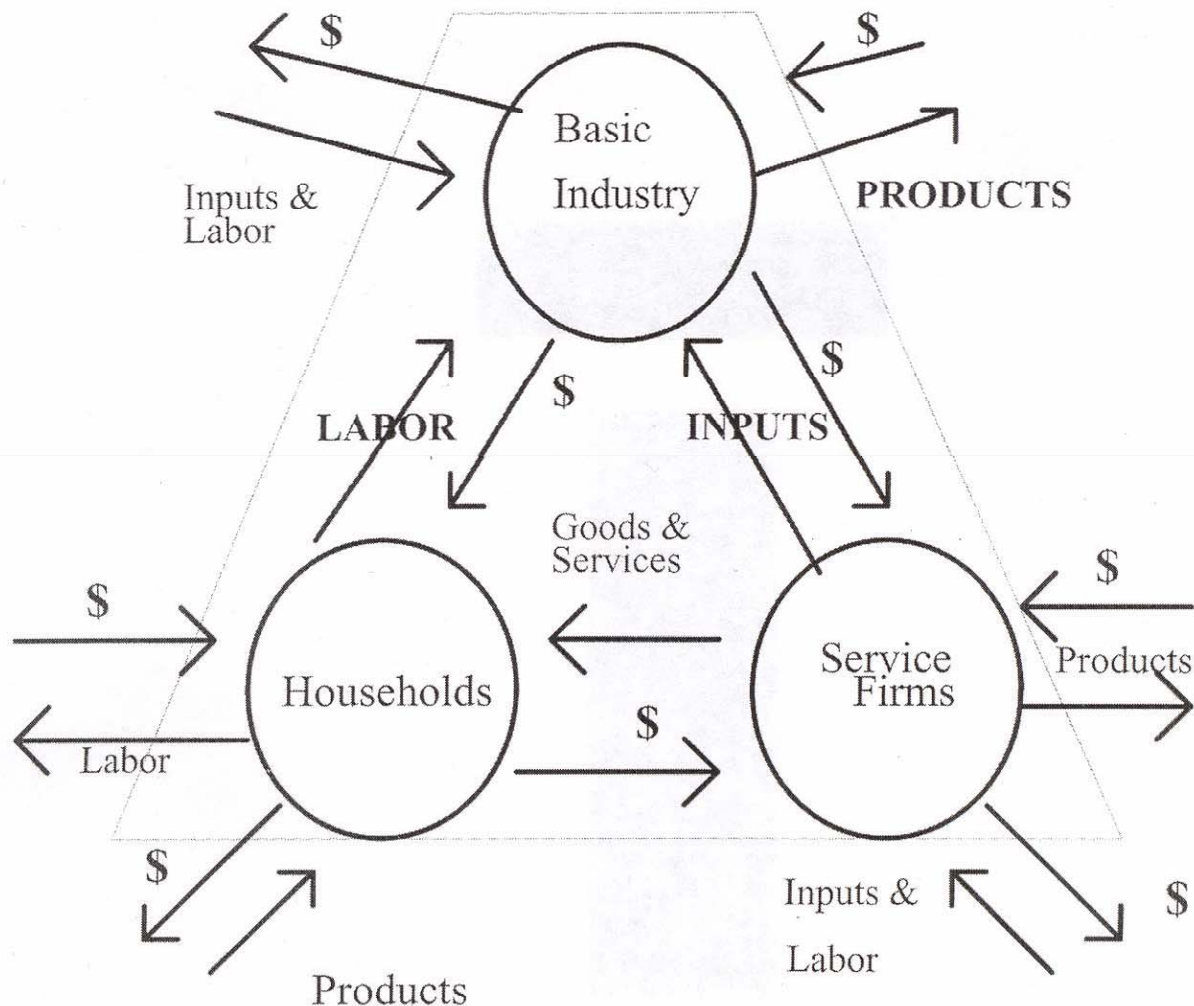
IMPLAN divides the economy into 20 sectors comprised of a total of 509 industries. The three industries of direct interest for this study are: “animal, except poultry, slaughtering” (which also includes meat cutting and processing that is conducted in slaughtering plants); “cattle ranching and farming”; and “animal production, except cattle and poultry” which we will refer to as “other livestock production”. The specific components of each industry are listed in Appendix 9.4.A. Unfortunately, dairy cattle are included within “cattle ranching and farming”. “Other livestock production” includes aquaculture, horse and pet breeders, and apiaries, in addition to sheep, goats and hogs; however, it is not likely that these “irrelevant” species had much impact in this analysis. The specific components of the IMPLAN processing industry “Animal, except poultry, slaughtering” appear to be a good match to the expected activities involved in the proposed facility.

For each industry, IMPLAN measures the value of production, jobs, labor income and value added directly on the entire economy in a specific region (such as a county, group of counties, state or larger area), which is the 10-county region for this analysis. IMPLAN also calculates the same indicators after taking into account the ripple effects of the economic activity—direct, indirect and induced effects. The **direct effects** represent the direct output of a particular industry (such as the gross revenues of an animal slaughter/processing facility). The **indirect effects** reflect the local inputs required to produce the direct effects; for example, in order to operate the animal slaughter plant, the plant must purchase products, raw materials and services from other companies. The **induced effects** measure the results of local household spending on goods and services resulting from the labor income generated through the direct and indirect effects. The sum of the direct, indirect and induced effects is the total economic effects.

These effects are used to calculate different multipliers. A multiplier measures the total impact of a change in a given economic activity. It is calculated by dividing the total economic effect by the initial change, or direct value. Three multipliers are commonly used to assess impacts of an initial increase in production (or processing): employment, income and value-added. An **employment multiplier** of 1.5 means that for every job in the meat slaughter industry, an additional .5 jobs are created in the remainder of the local economy (due to related activities, such as the need for trucking and sanitation services.) The **income multiplier** reflects the total increase in labor income in the local economy resulting from a one dollar increase in income received by workers at the meat slaughter and processing facility. Finally, the **value-added multiplier** measures the additional value added to the product as a result of this economic activity. IMPLAN (Lindahl and Ohlson, undated) defines “value added” as including employee compensation, indirect business taxes, proprietary and other property type income. Employee compensation includes wages, salaries and benefits. Indirect business taxes consist primarily of sales and excise taxes. Proprietary income is income produced by self-employed individuals (such as ranchers). Other property type income consists of royalty payments, rents and dividends, including corporate profits. It is unlikely that there is proprietary income associated with the meat processing facility, but land lease payments are likely to be involved with ranching.

IMPLAN is designed to capture the linkages between different industries in a local economy, as illustrated in Figure 9. It demonstrates how a basic industry, such as cattle ranching, can be linked to household income in the local area, and the household component of final demand reflects how cattle ranching are impacted by local household spending. Changes in the cattle ranching industry affect other industries of the local economy through the linkages indicated. Estimating such effects is the focus of economic impact analyses.

Figure 9: Input and Output Flows in a Local Economy



Source: Fadali and Harris, 2005, p. 12.

The Approach

Our analysis is predictive, rather than descriptive, since the Facility is yet to be built. Given its progressive design, the most similar facility is probably in New Zealand. Thus, we lack the actual data to “plug into” the IMPLAN model regarding the actual flow of activity that would occur in the Tier 1 and Tier 2 counties with the establishment of the Facility; our analysis will provide only a rough estimate of

the Facility's economic impacts. As previously noted there are two major components of the economic impact of the proposed facility--the plant operations and associated livestock production activities.

Geographic Area Multipliers

The multipliers calculated through IMPLAN are reported in Table 24 and discussed below, followed by the estimated impacts of the processing facility. Multipliers were derived for the Tier 1 and Tier 2 counties combined. To simplify the presentation in Table 24, we rounded off the values to the nearest tenth value, although the actual impact calculations were derived and applied using values to six decimal points.

Table 24: Economic Impact Effects and Multipliers¹⁴ Tiers 1 and 2 Combined

	Direct Effects	Indirect Effects	Induced Effects	Total Effects	Multiplier
EMPLOYMENT					
Cattle ranching and farming	17.5	4.9	1.9	24.3	1.4
Other livestock production	35.7	4.0	2.3	42.1	1.2
Animal, except poultry, slaughtering	2.7	3.7	1.5	7.9	2.9
LABOR INCOME					
Cattle ranching and farming	0.1	0.2	0.1	0.3	3.8
Other livestock production	0.2	0.1	0.1	0.4	2.2
Animal, except poultry, slaughtering	0.1	0.1	0.1	0.3	2.1
TOTAL VALUE ADDED					
Cattle ranching and farming	0.1	0.3	0.1	0.5	6.0
Other livestock production	0.2	0.3	0.2	0.6	3.3
Animal, except poultry, slaughtering	0.1	0.1	0.1	0.4	2.5

The direct effect value for employment in the cattle ranching indicates that 17.5 jobs are generated for every \$1 million increase in cattle production, as well as almost 5 jobs in other industries within the Tier 1 and Tier 2 counties. There are 1.9 jobs resulting from the increased household spending generated by the direct and indirect effects. The employment multiplier of 1.4 for cattle ranching means that for every new job in ranching generated as a result of the new processing facility, 0.4 additional jobs are created outside of cattle ranching in the local economy.

Increases in the production value of other livestock generate more jobs than a comparable increase in cattle ranching; this is probably attributable to the higher employee/revenue ratio for sheep, hogs and goats associated with their smaller size and more rapid growth. The values for the other effects and multipliers of other livestock production are similar to those for cattle production.

The fact that IMPLAN includes dairy cattle and feedlots within the "cattle ranching and farming" industry may actually give us better employment multipliers for this analysis. Based on the survey findings reported in the Potential Livestock Supply section, we had concluded that additional feeding and

¹⁴ We are grateful to Kurt Richter, Graduate Student Researcher with the Agricultural Issues Center--University of California, for running the IMPLAN software and deriving these estimates.

finishing capacity will be necessary in the region to provide sufficient livestock for the Facility. Additional analysis of the 2007 Census of Agriculture data indicates that the average number of employees on a beef cattle operation in California is 3.5, compared to 12.0 employees for a cattle feeding operation and 13.3 employees for a dairy operation. Thus, the unintentional inclusion of these more worker-intensive cattle operations within IMPLAN's cattle industry (and the associated data in the IMPLAN model) appears to better capture the changes that will be required to increase the number of finished cattle in the region.

The employment related effects in the slaughter industry are much different than those for the animal production industries; a \$1.0 million increase in slaughter production is associated with an increase of only 2.7 jobs, since processing is considerably more mechanized than animal production. However, the relative values of the indirect and induced effects are higher than for animal production; the jobs multiplier of 2.9 means that for every job created in the processing industry, an additional 1.9 jobs are created in other industries within the Tier 1 and 2 counties.

Clearly, there are increases in labor income associated with the jobs created. A \$1.0 million increase in cattle production creates only a \$100,000 increase in labor income in the cattle production industry, while a similar increase in production of other livestock generates a \$200,000 increase in labor income. The higher 3.8 value for the labor income multiplier in the cattle industry, relative to the other livestock production industry reflects the mathematical impact of the lower direct effect value in the cattle industry along with similar values for the other effects (recall that the multiplier is calculated by adding up the direct, indirect and induced effects and dividing this sum by the direct effect). The economic effects associated with labor income in the slaughter industry are similar to those in the two animal production industries.

Value-added is often the most meaningful measure of economic impact; it represents the amount an industry contributes to the economy in terms of payments to capital, labor and other forms of income (including indirect business taxes). The 6.0 value-added multiplier for cattle ranching means that for every \$1.0 million dollars of value added in cattle production, \$5.0 million dollars of other economic activity occurs within the Tier 1 and Tier 2 counties. Again, this relatively high value could be partially attributable to the high feed costs associated with dairy production and feeding operations; as discussed above, these feed costs are also relevant for our analysis since much of the increased economic activity will relate to finishing the cattle. For other livestock, such as sheep, goats and hogs, the value-added multiplier is still a substantial 3.3 value; again, the fact that this multiplier is lower than the comparable value for the cattle is acceptable to us because we do not expect as much incremental feeding for the "other" livestock species. Similarly, each \$1.0 million of value added in meat processing generates an additional \$1.5 million of economic activity within the Tier 1 and Tier 2 counties; some of this could be attributable to the production of packaging materials for the meat products, property taxes and even vehicle and gas taxes paid for transporting the processed meats. It should be noted that, in recognition of the fact that the animal production and slaughter facilities are vertically connected, animal production costs were specifically excluded in the calculation of the multipliers for the slaughter industry. Otherwise, these expenses would have been double-counted in our analysis.

The University of California's Agricultural Issues Center calculated even higher multipliers related to the beef and dairy cattle industry in the Central Valley (University of California, 2006); they reported the following multipliers for beef and dairy cattle industry: Employment--2.44, Labor income--9.00; and Value Added--7.80. They attributed the relatively large magnitude of these multipliers partially to the fact that the IMPLAN database uses national parameters that reflect a large share of activity from "very

small, part time cattle farms contributing little or no value added” (p. 8). The national parameters are more applicable to the types of ranchers who would be most likely to utilize the proposed meat processing facility, than to the large-scale cow-calf operations dominating California’s Central Valley. Thus, there is a logical and valid explanation of why the estimated multipliers for beef production are large.

Estimating the Economic Impact of the Meat Processing Facility

The multipliers discussed above were derived in order to estimate the dollar value of the Facility’s annual economic impact. First, we assumed that all of the 20,000 cattle and 13,800 sheep, goats and hogs processed at the Facility will be grown in the Tier 1 and Tier 2 counties. As noted in Chapter 7 regarding our survey of ranchers, 74% of the cattle and 33% of the sheep raised in these counties are sold before they reach their finish weights. With the Facility, we assumed that these animals would be kept by the ranchers until they are ready for slaughter. Thus, there is an increase in the value of these animals when they are “sold” to the Facility because of their higher weight, as well as the preservation of their niche characteristics.

We obtained current sales data from USDA’s Market News service for live animals to estimate the sales values of the animals. We assumed that 45% of the Facility’s meat will be sold at commodity meat prices. Another 45% will earn the 40% premium we determined for local and naturally-raised beef and lamb in our Niche Meats Demand Study. We estimated that 10% of the Facility’s sales volumes will earn an organic premium of 60%. The estimated value of the output from cattle ranching and other livestock production rises by \$13.2 million and the value of livestock slaughter and processing increases by \$43.9 million within the region.

We use the multipliers discussed above to calculate both gross and net estimated economic impacts of this increased value of production attributable to the Facility; they are displayed in Table 9.4.B. The gross economic impacts reflect the total economic activity associated with the livestock production and slaughter industries associated with this project. However, this does not reflect the incremental impact of the proposed facility. We need to subtract the impacts of the existing animal production and processing activities. The net estimated impacts dropped to approximately 60 percent of the gross economic impacts.

The net impacts of economic activity associated with both the animal production and slaughter facility are substantial; 682 new jobs are projected in the 10-county region, which represents a 10% increase in jobs currently attributable to the three industries we evaluated (cattle production, other livestock production, and livestock slaughter and processing). Labor income is estimated to rise by \$15.5 million over a variety of industries; this is a 31% gain. Additionally, the total value added in the ten-county region will equal \$23 million annually, comprising a cumulative 47% increase among the three industries.

Table 25: Estimated Regional Economic Impacts of Facility Tier 1 and Tier 2 Counties Combined

Industry	Industry Output (\$ mil)	Employment full time equivalent jobs	Employee Compensation (\$ mil)	Total Value Added (\$ mil)
Cattle ranching and farming	318.3	5575.0	32.1	28.4
Direct effect		17.5	0.1	0.1
multipliers		1.4	3.8	6.0
Direct project impact	26.5	463.5	2.3	2.4
Gross multiplier effect		643.3	8.6	14.1
Current value	14.3	347.3	4.6	7.6
<i>Net multiplier effect</i>	<i>12.2</i>	<i>296.1</i>	<i>4.0</i>	<i>6.5</i>
 Other livestock production	 24.3	 869.0	 4.5	 4.4
Direct effect		35.7	0.2	0.2
multipliers		1.2	2.2	3.3
Direct project impact	2.5	88.6	0.4	0.4
Gross multiplier effect		104.3	1.0	1.5
Current value	1.5	63.7	0.6	0.9
<i>Net multiplier effect</i>	<i>1.0</i>	<i>40.6</i>	<i>0.4</i>	<i>0.6</i>
 Animal (except poultry) slaughter	 111.1	 299.0	 13.1	 16.0
Direct effect		2.7	0.1	0.1
multipliers		2.9	2.1	2.5
Direct project impact	58.2	156.7	7.0	8.4
Gross multiplier effect		457.9	14.7	21.2
Current value	14.3	112.5	3.6	5.2
<i>Net multiplier effect</i>	<i>43.9</i>	<i>345.4</i>	<i>11.1</i>	<i>16.0</i>
 GROSS CUMULATIVE IMPACT		1205.6	24.3	36.7
ADJUSTED CUMULATIVE IMPACT		682.0	15.5	23.0

Conclusions

In addition to the regional economic impact analysis, this economic analysis covered the potential risks associated with the construction and operation of the Facility, and the financial capital and funding availability for the Facility. Many of the potential risks can be minimized with thorough pre-development project management and experienced managerial oversight during the Facility's operation. Our review of private and public financing sources indicates that there are numerous avenues to be explored to fund the Facility. The Facility's environmental and social features should enhance its funding opportunities; in particular, funding sources for local food processing are beginning to expand. A mix of sources, similar to how West Liberty Foods was financed, is probably the most likely. Some rancher investment is important; it will be viewed as a sign of commitment and confidence in the Facility.

Our multiplier analysis indicates that the direct addition of the 44 jobs associated the Facility leads to the creation of 682 new full-time equivalent jobs and \$16 million of increased labor income in the region, due to the ripple effects of the economic activity associated with the Facility. Additionally, we estimate that the Facility will generate an additional \$23 million annually of total value added (including employee compensation, indirect business taxes, and proprietary and other property type income) in the region. Given the value added by the slaughter and processing activities, it is not surprising that the Facility will cause the total economic activity in the region's slaughter and processing industry to exceed the economic activity in the combined livestock production industries in the region.

These estimated economic impacts are considerable, given the \$18.0 million investment required to construct the Facility. It could serve as an example of the type of project needed to remedy the economic downturn being experienced in many communities across the nation.

APPENDIX: Economic Analysis of North Coast Multi-species Niche Meats Processing Facility

IMPLAN Codes

Source: www.IMPLAN.com

IMPLAN Industry Description: *Cattle ranching and farming* (combines NAICS codes 11211, 11212, 11213)

Veal calf production
Beef cattle feedlots (except stockyards for transportation)
Cattle feedlots (except stockyards for transportation)
Fattening cattle
Feed yards (except stockyards for transportation), cattle
Feedlots (except stockyards for transportation), cattle
Dual-Purpose Cattle Ranching and Farming
Dairy cattle farming
Stocker calf production
Milk production, dairy cattle
Milking dairy cattle
Dairy heifer replacement production
Cattle farming or ranching
Cattle conditioning operations
Calf (e.g., feeder, stocker, veal) production
Beef cattle ranching or farming
Backgrounding, cattle
Feeder calf production

IMPLAN Industry Description: *Animal production, except cattle and poultry and eggs* (combines NAICS codes 1122, 1124, 1125, 1129)

Sheep farming (e.g., meat, milk, wool production)
Lamb feedlots (except stockyards for transportation)
Dairy sheep farming
Goat farming (e.g., meat, milk, mohair production)
Dairy goat farming
Angora goat farming
Weaning pig operations
Pig farming
Hog feedlots (except stockyards for transportation)
Hog and pig (including breeding, farrowing, nursery, and finishing activities) farming
Feedlots (except stockyards for transportation), hog
Feeder pig farming
Farrow-to-finish operations
Bison production
Fox production
Burro production
Donkey production
Horse (including thoroughbreds) production
Horses and Other Equine Production

Mule production
Fur bearing animal production
Chinchilla production
Royal jelly production, bees
Apiculture
Pony production
Queen bee production
Propolis production, bees
Honey bee production
Fur-Bearing Animal and Rabbit Production
Bee production (i.e., apiculture)
Buffalo production
Other livestock Production
Other Animal Aquaculture
Frog production, farm raising
Beeswax production
Deer production
Worm production
Rattlesnake production
Raising swans, peacocks, flamingos, or other adornment birds
Llama production
Laboratory animal production (e.g., guinea pigs, mice, rats)
Kennels, breeding and raising stock for sale
General combination animal farming
Elk production
Bird production (e.g., canaries, love birds, parakeets, parrots)
Dog production
Mink production
Cricket production
Companion animals production (e.g., cats, dogs, parakeets, parrots)
Combination livestock farming (except dairy, poultry)
Cat production
Aviaries (i.e., raising birds for sale)
Breeding of pets (e.g., birds, cats, dogs)
Animal aquaculture (except finfish, shellfish)
Alpaca production
Rabbit production
Earthworm hatcheries
Animal Aquaculture
Mohair farming
Alligator production, farm raising
Feedlots (except stockyards for transportation), lamb
Trout production, farm raising
Shrimp production, farm raising
Shellfish hatcheries
Oyster production, farm raising
Mussel production, farm raising
Mollusk production, farm raising

Hatcheries, shellfish
Fish farms, shellfish
Cultured pearl production, farm raising
Crustacean production, farm raising
Clam production, farm raising
Finfish production, farm raising
Goldfish production, farm raising
Catfish production, farm raising
Baitfish production, farm raising
Finfish, hatcheries
Crawfish production, farm raising
Fish farms, finfish and
Tropical fish production, farm raising
Hatcheries, finfish and Tilapia production
Hybrid striped bass production
Ornamental fish production, farm raising

IMPLAN Industry Description: *Animal, except poultry, slaughtering (same as NAICS code 311611)*

Variety meats, edible organs, made in slaughtering plants
Lamb carcasses, half carcasses, primal and sub-primal cuts, produced in slaughtering plants
Lard produced in slaughtering plants
Luncheon meat (except poultry) produced in slaughtering plants
Meat canning (except poultry) produced in slaughtering plants
Meats, cured or smoked, produced in slaughtering plants
Pork carcasses, half carcasses, and primal and sub-primal cuts produced in slaughtering plants
Sausage casings, natural, produced in slaughtering plant
Veal carcasses, half carcasses, primal and sub-primal cuts, produced in slaughtering plants
Tallow produced in a slaughtering plant
Inedible products (e.g., hides, skins, pulled wool, wool grease) produced in slaughtering plants
Canned meats (except poultry) produced in slaughtering plants
Boxed meats produced in slaughtering plants
Abattoirs and Custom slaughtering
Animal fats (except poultry and small game) produced in slaughtering plants
Bacon, slab and sliced, produced in slaughtering plants
Beef carcasses, half carcasses, primal and sub-primal cuts, produced in slaughtering plants
Beef produced in slaughtering plants
Boxed beef produced in slaughtering plants
Hot dogs (except poultry) produced in slaughtering plants
Cured hides and skins produced in slaughtering plants
Fats, animal (except poultry, small game), produced in slaughtering plants
Hams (except poultry) produced in slaughtering plants
Horsemeat produced in slaughtering plants

References

- Boland, Michael A., Alena Bosse, and Gary W. Brester. *Review of Agricultural Economics*, 29:1 (Spring 2007), 157-169.
- Fadali, Elizabeth and Thomas R. Harris. 2006. "Estimated Economic Effects of the Cattle Ranching and Farming Sector on the Elko County Economy." *Technical Report UCED 2005/06-26*, University of Nevada, Reno.
- Figenbaum, C. 2009. "Going Green: From Your House to the White House." *Green Money Journal*, <http://www.greenmoneyjournal.com/article.mpl?newsletterid=44&articleid=607>
- Ginder, Roger, Brent Hueth and Philippe Marcoul. 2005. Cooperatives and Contracting in Agriculture: The Case of West Liberty Foods. Center for Agricultural and Rural Development, Working paper 05-WP 408. http://www.econ.iastate.edu/research/webpapers/paper_12443.pdf
- Hardesty, Shermain D. "New State Statute Allow For Nonmember Equity Capital for Cooperatives." 2004. http://cooperatives.ucdavis.edu/reports/report_pdf/wyoming.htm
- Holmes, Mary Swalla and Daniel Curry. 2001. "Iowa Turkey Growers Cooperative and West Liberty Foods" in *New Generation Cooperatives: Case Study*. Illinois Institute for Rural Affairs, Western Illinois University. http://www.iira.org/pubs/publications/IVARDC_CS_198.pdf.
- Iowa Department of Economic Development. 2009. Value-Added Agricultural Products And Processes Financial Assistance Program. <http://www.iowalifechanging.com/business/vaapfap.html>
- Kiser, James and George Cantrell. 2006. "6 Steps to Managing Risk". *Supply Chain Management Review*. April, 2006.
- Lindahl, Scott and Douglas Ohlson. Undated. The IMPLAN Input/Output System. MIG, Inc.
- Oregon Country Beef, 2009. http://countrynaturalbeef.com/index.php?option=com_content&task=view&id=18&Itemid=68.)
- Shorebank. 2009. http://www.shorebankcorp.com/bins/site/templates/child.asp?area_4=pages/nav/story/right_side.dat&area_7=pages/titles/shore_story_title.dat&area_2=pages/about/shore_story.dat).
- USDA--Rural Development, 2008. "Business Programs Farm Bill Rural Area Definition." <http://www.rurdev.usda.gov/regs/an/an4406.pdf>
- USDA—Rural Development. 2009. Rural Business Enterprise Grants Program. <http://www.rurdev.usda.gov/rbs/busp/rbeg.htm>
- USDA—Rural Development, VAPG. 2008. Value Added Producer Grant. <http://www.rurdev.usda.gov/rbs/coops/vadg.htm>

University of California-Agricultural Issues Center. 2006. "'Agriculture's Role in the Economy" in *Measure of California Agriculture*.

http://www.aic.ucdavis.edu/publications/MOCA_Ch_5.10aPrePrint.pdf

Weiss, Jean. 2008. "Is Slow Money the Future of Finance." MSN Green. <http://green.msn.com/Green-Living/Is-Slow-Money-The-Future-Of-Finance/1>

West Liberty Foods. 2008. "Our Story." <http://www.wlfoods.com/history.aspx>