ANALYSIS OF VERMONT'S FOOD SYSTEM

Food Production: Livestock and Meat

Are there opportunities to expand livestock production in Vermont to meet local and regional demand? Is current slaughter service capacity a significant limiting factor in Vermont food enterprises reaching local and regional markets?

Consumer interest in source-verified, organic and/or grass-fed meat produced using specific standards creates a significant advantage for Vermont livestock farms.[1] Vermont livestock producers range from families with a few animals kept mainly for their own use, to hundred-head operations raising for the commercial market. As the Vermont dairy industry continues to respond to market stresses, dairy farmers may wish to explore other forms of production, or former dairy farm land may be available for other types of livestock husbandry. **Although demand for Vermont grown meat typically outstrips supply, farmers face considerable challenges to increased livestock production, including the cost and seasonality of production, access to slaughter, and insufficient production assistance for the development of high quality animals for the market.**

According to the 2007 Census of Agriculture, Vermont had 2,459 cattle and calve farms (with at least 44 certified organic), 1,944 poultry and/or egg farms (with at least 20 certified organic), 1,047 sheep and/or goat farms (with at least two certified organic), and 249 hog farms (with at least nine certified organic). **Livestock sales generated over $76 million for Vermont farmers and accounted for about 42% of nondairy sales in 2007.** The total *inventory* (i.e., the count of animals on December 31) of livestock decreased slightly from 1997 to 2007, but the inventory of livestock raised for meat increased by 46% during this period. The inventory of broilers, in particular, saw a substantial increase (161%).

Farmers interviewed as part of this study believe that a 25 to 55% increase in the production of beef from Vermont-grown animals is possible (i.e., 2,500 to 5,500 more beef animals slaughtered per year).

Several producers expressed an interest in regulatory changes to allow the retail sale of meat derived from on-farm, uninspected slaughter. However, a number of producers cited grave concern about any decrease in the regulatory oversight of slaughter and meat processing. **This issue was perhaps the most commonly voiced concern during the development of this plan, with strongly held opinions both in favor of and opposed to selling uninspected meat (including on-farm direct sales).**

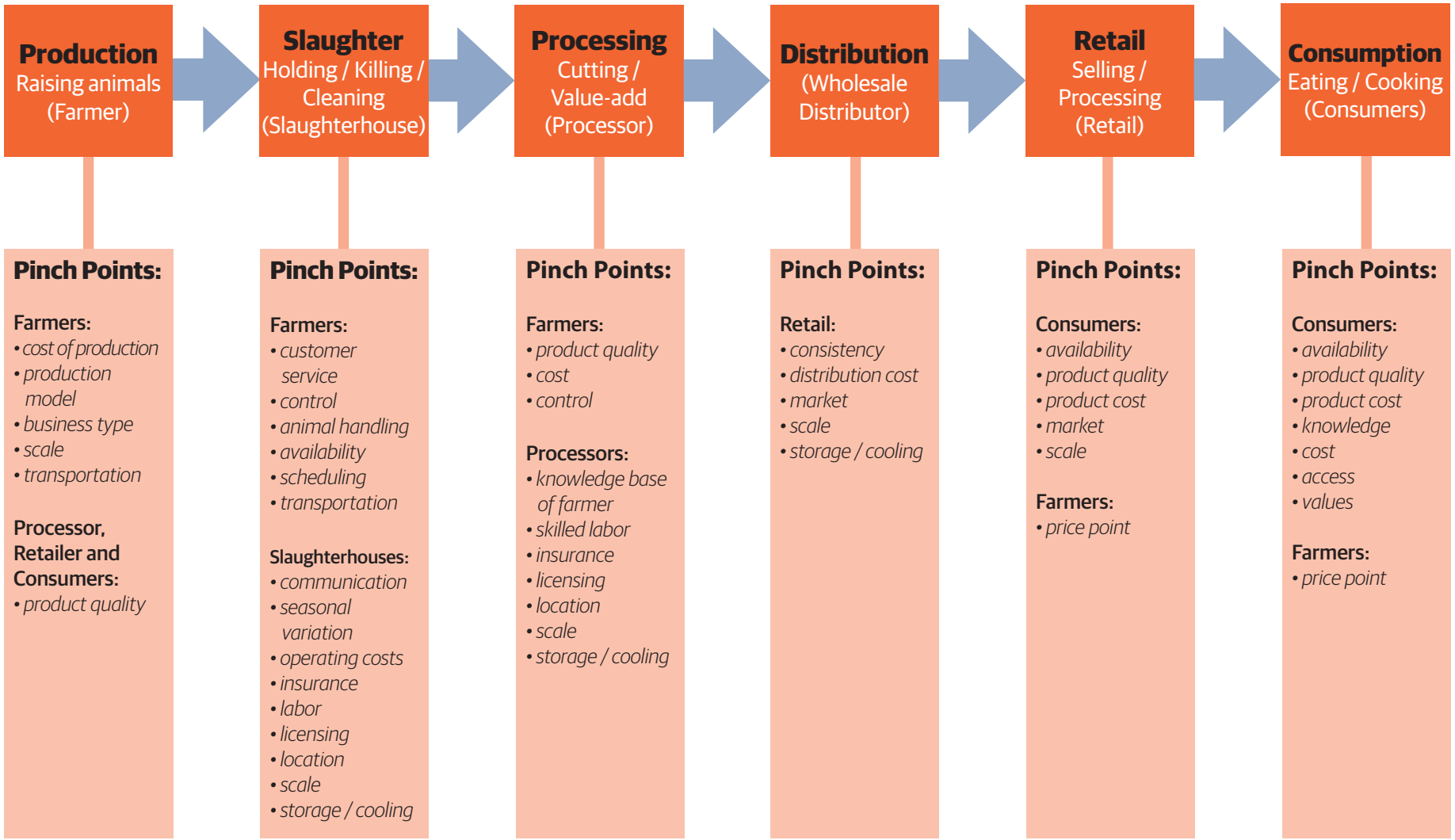
PHOTO CREDIT: Anthony Kretowicz

Anthony Kretowicz slaughtering a hog in 1972.

CURRENT CONDITIONS

Sam Fuller, a Technical Assistance Program Administrator at NOFA Vermont, developed Figure 3.3.1 to illustrate the "pinch points" along the supply chain, from livestock production to meat consumption. Increasing production of Vermont livestock involves numerous steps including access to quality Vermont-based animal slaughter and processing. This section reviews the numerous issues along this continuum, beginning with the raising of livestock in Vermont and ending with consumer education about the value of locally raised meat.

Figure 3.3.1: Moving Meat from Farm to Plate



GETTING TO 2020

Many of the goals of the Farm to Plate Strategic Plan focus on increasing food production, including dairy production, for local and regional markets and improving the environmental performance of farm operations.

Goal 6: Farms and other food system operations will improve their overall environmental stewardship to deliver a net environmental benefit to the state.

Goal 7: Local food production—and sales of local food—for all types of markets will increase.

Goal 9: The majority of farms will be profitable.

Goal 11: Vermont's food processing and manufacturing capacity will expand to meet the needs of a growing food system.

Goal 13: Local food will be available at all Vermont market outlets and increasingly available at regional, national, and international market outlets.

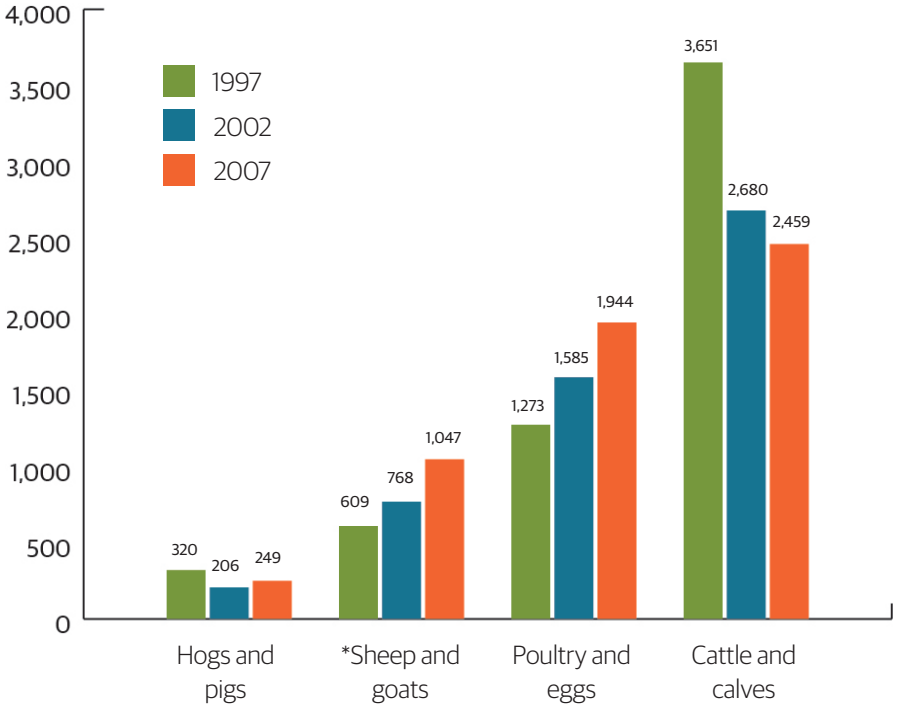
Livestock Production

How Many Animals Are Raised and Sold as Livestock in Vermont?

The Census of Agriculture provides an *inventory of farm types* in Vermont on December 31 of the year that each census is conducted. Figure 3.3.2 shows the inventory of Vermont's major livestock farm types for 1997, 2002, and 2007 and indicates a decrease in the number of Vermont farms raising cattle and calves (from 3,651 farms on December 31, 1997, to 2,459 on December 31, 2007, a 33% decrease). The number of Vermont farms raising hogs decreased from 320 in 1997, to 249 in 2007, a 22% decrease. The number of farms raising sheep and goats increased 72%, from 607 in 1997 to 1,047 in 2007. The number of farms raising poultry[2] (and eggs) increased over the decade between 1997 and 2007 (from 1,273 to 1,944, a 53% increase).

The Census of Agriculture also provides an *inventory of the number of livestock* in Vermont on December 31 of the year that the census is conducted. As Table 3.3.1 indicates, the number of Vermont's hogs and pigs decreased (22%), the number of sheep and goats slightly increased, the number of poultry increased (7.8%), and the number of cattle and calves decreased from 1997 to 2007 (13%). Although the total inventory of livestock decreased slightly from 1997 to 2007, the inventory of livestock raised for meat increased by 46%. The inventory of broilers, in particular, saw a substantial increase (161%).

Figure 3.3.2: Inventory of Vermont Livestock Farms



Source: USDA Census of Agriculture, multiple years, www.agcensus.usda.gov.
***Total includes farms raising goats for fiber (mohair) and milk.**

Table 3.3.1: Inventory of Vermont Livestock

	1997	2002	2007
Hogs and pigs	3,477	2,019	2,701
Other hogs and pigs	2,718	1,590	2,186
Sheep	16,589	14,743	13,925
Ewes 1 yr old or older	11,099	9,189	9,162
Goats	3,892	4,133	6,593
Raised for meat	1,281	940	1,813
Poultry	279,470	280,671	301,274
Broilers	16,233	20,753	42,485
Turkeys	4,570	1,909	5,748
Cattle and calves	304,639	283,619	264,823
Beef cows	12,871	11,276	10,002
Total Livestock	608,067	585,185	589,316
Subtotal: Livestock raised for meat	**48,772**	**45,657**	**71,396**

Source: USDA Census of Agriculture, multiple years, www.agcensus.usda.gov. Note: 1997 poultry inventory does not include pullets or "other" poultry types. 2002 poultry inventory suppresses quail data. 2007 poultry inventory suppresses quail and pheasant data.

In addition, the Census of Agriculture provides *livestock sales* figures for the entire year in which the census was conducted (Table 3.3.2). The number of broilers sold in 2007 was suppressed, so the total amount of livestock sold in 2007 is unclear, though it likely increased from 2002 levels. Between 1997 and 2002, the total amount of livestock sold increased slightly, while the total amount of livestock sold for meat increased by about 52%.

Table 3.3.2: Number of Vermont Livestock Sold

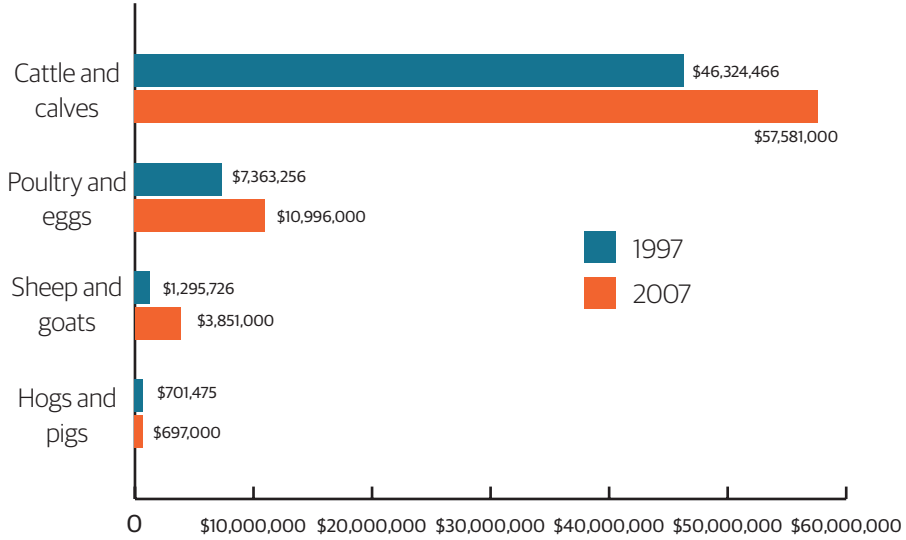
	1997	2002	2007
Hogs and pigs	6,553	4,933	4,968
Sheep	13,951	8,509	9,837
Ewes 1 yr old or older	11,612	8,341	9,262
Goats	1,822	1,223	2,728
Raised for meat	741	341	1,166
Poultry	335,806	357,863	218,786
Broilers	50,135	113,776	Suppressed
Turkeys	37,056	53,956	52,721
Cattle and calves	142,916	136,244	107,049
Beef cows	23,219	14,779	15,638
Total Livestock	501,048	508,772	343,368
Subtotal: Livestock raised for meat	**129,316**	**196,126**	**83,755**

Source: USDA Census of Agriculture, multiple years, www.agcensus.usda.gov. Note: 2007 poultry broiler sales were suppressed. Livestock raised for meat subtotal includes hogs and pigs.

Despite an overall decrease in Vermont's inventory and sales of cattle and calves, the value of the products sold from cattle and calf farms increased between 1997 and 2007: from $46,324,466 to $57,581,000, a 24% increase (Figure 3.3.3). The income from the sale of hogs, sheep and goats, and poultry either increased, or in the case of pigs and hogs, remained essentially unchanged (from $9,359,457 to $15,544,000, a 66.1% increase).

Table 3.3.3 shows that Vermont livestock sales accounted for a considerable portion (42.3%) of nondairy sales in 2007. The USDA provides sales figures for beef cows and hogs and pigs, but not for broilers, goats for meat, lamb, or specific "other" livestock types.

Figure 3.3.3: Value of Sales from Vermont-Raised Livestock, 1997 to 2007



Source: USDA Census of Agriculture, multiple years, www.agcensus.usda.gov.

Table 3.3.3: Value of Vermont Livestock Sales as a Percentage of Total Sales and Nondairy Sales, 2007

	Value of Sales	% of Total Sales	% of Nondairy Total Sales
Cattle and calves	$57,581,000	8.5%	32.0%
Poultry and eggs	$10,996,000	1.6%	6.1%
Sheep, goats, and their products	$3,851,000	0.6%	2.1%
Other animals and their products	$2,957,000	0.4%	1.6%
Hogs and pigs	$697,000	0.1%	.4%
Total	**$76,082,000**	**11.3%**	**42.3%**

Source: USDA 2007 Census of Agriculture, Table 2 page 9, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1_Chapter_1_State_Level/Vermont/st50_1_002_002.pdf.
Note: Other animals include bison, deer, elk, and bees.

The following sections on beef, sheep and goats, hogs and pigs, and poultry address major categories of livestock production in Vermont.

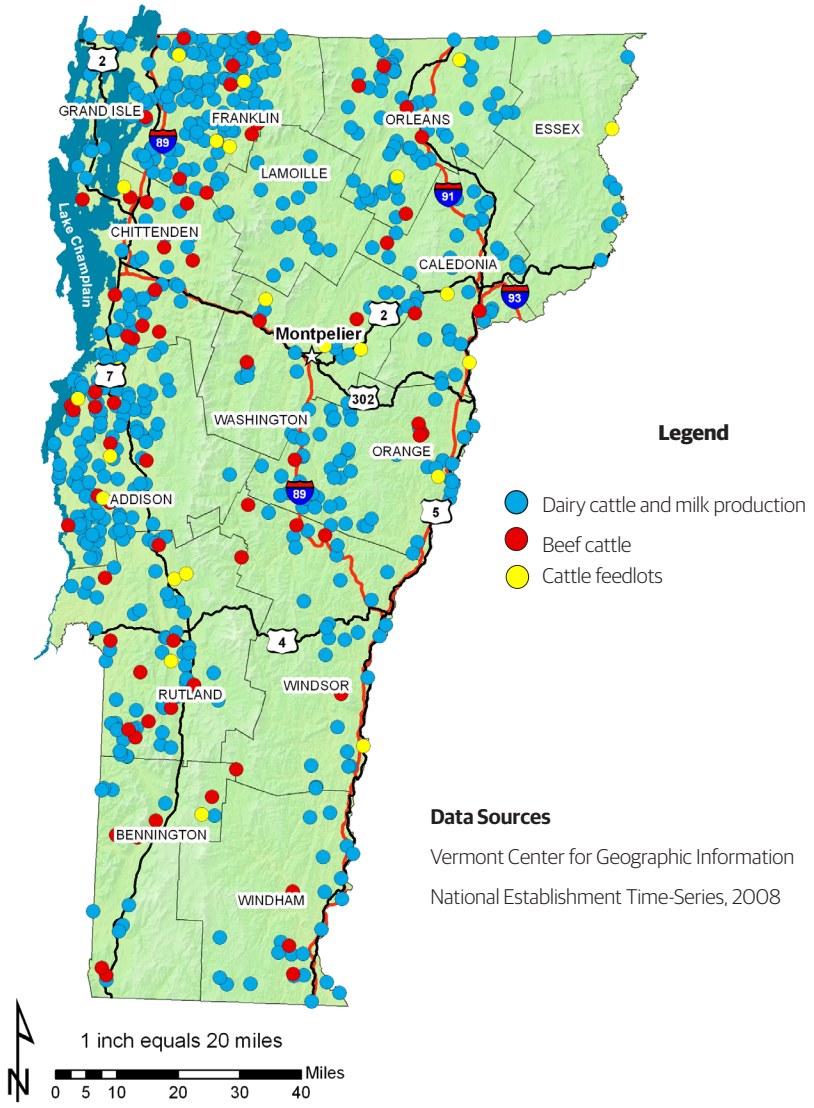
Beef

Figure 3.3.4 shows where dairy cows and beef cattle are currently raised in the state. While the vast majority of dairy production occurs in Franklin and Addison counties, beef cattle and cattle feedlots are distributed more evenly across the state. The size of Vermont's total cattle inventory declined by 13.1% from 1997 to 2007, from 304,639 to 264,823 animals. According to Sam Comstock of UVM Extension, "Vermont production of beef and veal is dominated by cull dairy cattle and bull calves, but the vast majority of this production is shipped out of the state as live animals, especially since the closing of Swanton Packing."[3] The beef cow portion of Vermont's total inventory decreased 22% from 1997 to 2007, from 12,871 to 10,002 animals (Figure 3.3.5). According to the USDA Economic Research Service (ERS), higher grain prices and reduced demand brought about by the global economic recession have pushed cattle inventories down. The ERS predicts that lower production at higher prices combined with increased exports will lead to a moderate expansion in the livestock production sector in the years ahead.[4]

PHOTO CREDIT: Maple Wind Farm

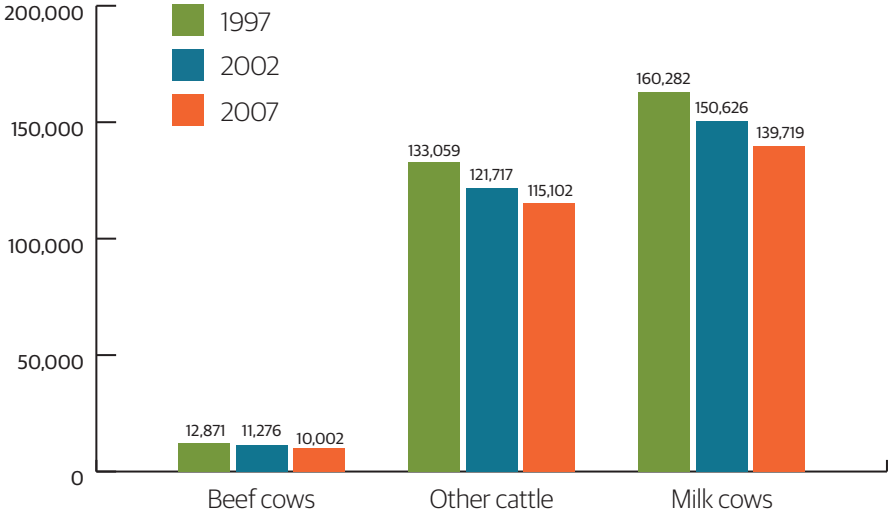
Cattle grazing at Maple Wind Farm.

Figure 3.3.4: Vermont Cattle Operations



For the most up to date maps, please visit the Vermont Food System Atlas at www.vtfoodatlas.com

Figure 3.3.5: Vermont Cattle Inventory



Source: USDA Census of Agriculture, multiple years, www.agcensus.usda.gov. Note: "Other cattle" are largely young stock raised on dairy farms to replace dairy cows.

Vermont has at least 1,048 farms producing beef cows with at least 44 certified organic, according to *NOFA Vermont*. As indicated in Table 3.3.4, the majority of beef cow farms (1,024 farms, or 97.7% of all beef cow farms) account for 78% (7,806 animals) of Vermont's beef cow inventory, whereas just 24 farms account for the remaining 22% (2,196 animals).

In 2007, at least 693 farms with beef cow herds reported sales of 15,638 animals for a total of $10,113,000 in sales (Table 3.3.5). About 97% of the farms reporting sales (669 farms) accounted for 81% ($8,185,000) of beef cows sales. Although the value of sales is suppressed in the Census of Agriculture data, the remaining 24 farms (3%) accounted for 19% ($1,928,000) of beef cows sales.

Table 3.3.4: Vermont Beef Cow Inventory, 2007

Farms by Inventory	Farms	Inventory	Average per farm
1-9	756	2,895	4
10-19	161	2,041	13
20-49	107	2,870	27
50-99	19	Suppressed	–
100-199	3	Suppressed	–
200-499	2	Suppressed	–
Total	**1,048**	**7,806**	

Source: USDA 2007 Census of Agriculture, Table 14 page 20, www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/st50_1_014_016.pdf. Inventory does not equal 10,002 because some records are suppressed.

Table 3.3.5: Vermont Beef Sales by Size of Farm, 2007

Farms with beef herd size of:	Farms	Number sold	Value	Average per Farm
1-9	451	7,476	$4,068,000	$9,020
10-19	124	1,610	$1,179,000	$9,508
20-49	94	4,717	$2,938,000	$31,255
50-99	19	1,009	Suppressed	–
100-199	3	Suppressed	Suppressed	–
200-499	2	Suppressed	Suppressed	–

Source: USDA 2007 Census of Agriculture, Table 14 page 20, www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/st50_1_014_016.pdf.

PHOTO CREDIT: Rich Kaszeta

Bull warning on Cloudland Farm (Pomfret).

Because of an outstanding climate for grass production and farmers with significant experience with dairy herd management, Vermont has the potential to increase production of beef cattle. Dairy management skills, equipment, and infrastructure are transferrable to both beef and sheep production. Opinions on the ability to profitably increase the number of beef animals grown in Vermont vary widely. A number of established farmers interviewed for this report described strong consumer demand and good prices paid for the popular cuts of beef, although the majority of their carcasses are processed into ground beef that is sold at a much lower profit margin. Several producers indicated that consumers are willing to pay a bit more for locally produced, source-verified meat, but the producers need

to keep their prices close to supermarket prices to ensure the marketing of entire carcasses, not just favorite cuts.

Tom Biggs of *Black River Produce*, a food distributor, reports that his customers show a strong demand for the more expensive cuts of meat, and he has no problem selling sufficient quantities of ground beef to provide a steady market for entire carcasses.[5] Biggs' remarks confirm the importance of appropriate market access for successful support of sales.

Based on farmer interviews conducted as part of this study, it is plausible to consider a 25 to 55% increase in the production of beef from Vermont-grown animals (i.e., 2,500 to 5,500 more beef animals slaughtered per year). Comstock uses a figure of 2 acres of land required per cow, so 5,000 to 11,000 more acres would be needed. Other producers were more reserved about the potential for growth of the Vermont beef industry. **Building awareness among Vermonters that locally grown, high-quality meat is worth the price, and increasing consumer accessibility to Vermont-raised meat are clear needs based on the interviews we conducted.**

Vermont has often been considered a lucrative location for the production of veal calves because of the steady supply of large-framed dairy bull calves, a preferred veal animal. In reality, expensive housing needs and the relatively small market for veal has reduced the profit potential for this perceived opportunity. Limited numbers of producers are raising "grass-fed veal," animals that run with their mothers and are slaughtered at a young age. The market appeal of grass-fed veal is strong, but without a robust marketing effort by producers or their trade association, significant growth is unlikely (per capita availability of veal in the U.S. is approximately 1 pound per person).[6]

Vermont farmers often have higher capital expenses than farmers in other regions because of the cost of housing animals in winter and imported grain. Although the cost of producing livestock in the state is higher than in many areas of to the United States, as a result of the size and scale of farms and the northern climate, Vermont is competitive within the New England region. The profit per animal is normally very small, requiring the production of either a large number of animals or marketing to customers who can pay top dollar for their meat. Interviews conducted for this report indicate wide variations in how producers choose to achieve profitability.

Sheep and Goats

Vermont had at least 626 farms with sheep, with a combined total of 13,925 animals on December 31, 2007 (Table 3.3.6). There are at least two certified organic sheep/lamb farms in Vermont, according to *NOFA Vermont*. The majority of these farms, 98% (614 farms), maintain 74% (10,319 animals) of the sheep inventory, while just 12 farms (2%) maintain the rest (26% or 3,606 animals).

The Census of Agriculture reports 300 farms sold ewes one year old or older in 2007 (Table 3.3.7). Ninety-seven percent of these farms (290 farms) generated 64% (5,937 animals) of total sales, while just 10 farms (3%) had 36% (3,325 animals) of total sales.

Table 3.3.6: Vermont Sheep and Lamb Inventory, 2007

Farms by inventory	Farms	Inventory	Average per Farm
1-24	488	4,706	10
25-99	126	5,613	45
100-299	7	1,322	189
300-999	5	2,284	457
Total	**626**	**13,925**	

Source: USDA 2007 Census of Agriculture, Table 29 page 25, *www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/st50_1_029_031.pdf.*

Table 3.3.7: Vermont Ewes 1 Year or Older Sales, 2007

Farms by inventory	Farms	Inventory	Average per Farm
1 - 24	224	2,763	12
25 - 99	66	3,174	48
100 - 299	4	775	194
300 - 999	6	2,550	425
Total	**300**	**9,262**	

Source: USDA 2007 Census of Agriculture, Table 29 page 25, *www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/st50_1_029_031.pdf*.

Despite significant effort, expansion of the Vermont sheep industry for meat production has been limited. The few producers that have approached sheep production as a commercial undertaking have been marginally successful, but have found it difficult to compete with the very low prices for high-quality New Zealand and Australian lamb that is imported into the U.S. market. The United States has never been a nation of lamb consumers. In 1950 per capita availability was 4 pounds per person per year, by 1980 per capita availability had dropped to 1 pound per person and has remained at that amount ever since.[7] But local producers such as *Tamarack Tunis* in South Corinth are trying to bring back heritage breeds such as the Tunis, because of the combination of their history, rarity, and exceptional taste, despite the $7-per-pound price.

Vermont's ethnic population, as well as the ethnic population throughout the Northeast, which is increasing, is often considered an emerging market for lamb and goats. The U.S. Census Bureau reports that minorities, now roughly one third of the U.S. population, are expected to become the majority in 2042. It is estimated that 13% of U.S. ethnic lamb consumers currently reside in New York (relatively close to Vermont farms). If these growth rates in ethnic populations hold, then lamb consumption could grow.

Research conducted in 2009 for the *American Sheep Industry Association* (ASIA) confirms an increased demand for lamb in the growing ethnic market in the United States. Interestingly, 22% of ASIA survey respondents reported that the lamb they purchased came from Walmart, Sam's Club, or Costco. Another 38% bought lamb at other grocery stores excluding natural and ethnic grocery stores. In all probability, the majority of lamb sold in these outlets is imported either from New Zealand or Australia. The most frequently cited reason for market choice was convenience, followed by price and freshness. Respondents indicated per capita consumption of lamb to be approximately 5.6 pounds per year.[8] So, although the ethnic market might indeed open opportunities for Vermont sheep producers, they will have to provide a convenient product at a price point that can rival that of large-scale retailers.

Dairy sheep producers have found limited profitability in crossbreeding some of their ewes and raising the resultant lambs for value-added meat products such as sausage.

PHOTO CREDIT: Tonia Sing

Goats at the Green Mountain Girls Farm.

Interviews of meat buyers at a number of Vermont food cooperatives indicate strong demand for sausage processed from all types of animals, and at least one Vermont slaughterhouse is considering upgrades to support significant sausage processing.

Vermont had at least 247 farms that raised goats for meat (1,813 animals) on December 31, 2007. The dairy goat population produces buckling kids that are garnering increased interest as meat animals, beyond the traditional ethnic market, and are being featured at high-end restaurants in Vermont and large cities within the region. Unfortunately, the small animals are extremely challenging to produce profitably, because slaughter fees are spread over a very small carcass yield. The potential increased demand for goats most likely mirrors the demand for lamb—to meet the requirements of an ethnic market.

All of the projections for future demand of lamb and goat reviewed in support of this document indicated growth based on increased consumption by ethnic minorities. Although it is true that increased population diversity will increase the consumption of these meats, it is also possible that a certain percentage of immigrants will switch their meat consumption to beef, pork, and chicken.

Hogs

The number of hogs raised in Vermont fell sharply from 1997 to 2002 (from 3,477 to 2,019, a 42% decrease) and then showed a marked increase between 2002 and 2007 (from 2,019 to 2,701, a 34% increase); this mirrors U.S. production. As Table 3.3.8 indicates, 21 hog farms (9%) accounted for 69% of sales ($481,000) in 2007, while 218 farms (91%) accounted for only 31% of sales ($217,000). There are at least nine certified organic hog farms in Vermont, according to *NOFA Vermont*.

Table 3.3.8: Vermont Hog and Pig Sales, 2007

Farms by number sold	Farms	Number sold	Value	Average per farm
1-24	207	1,088	$164,000	$792
25-49	11	429	$53,000	$4,818
50-99	7	447	$79,000	$11,286
100-199	8	1,139	$101,000	$12,625
200-499	6	1,865	$301,000	$50,167
Total	**239**	**4,968**	**$697,000**	

Source: USDA 2007 Census of Agriculture, Table 20 page 22, *www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/st50_1_020_022.pdf*.

Consumer interest in pork from heritage breeds and hogs raised on pasture is fueling a growth in small hog operations, although challenges in long-term profitability exist. Financial estimates developed by Ed Jackson of the *Vermont Agency of Agriculture, Food, and Markets* (VAAFM) indicate that Vermont farms producing fewer than 100 market hogs per year experience difficulty covering operating and capital replacement costs. Greg Finch of *Vermont Family Farms* in Enosburg, Vermont, currently owns a 32-sow farm and sells his market hogs through a distributor. After careful analysis of his expenses, including a farm mortgage, Greg has concluded that a minimum of 18 sows producing 250 to 275 piglets per year (sold as 40-pound feeders or 230-pound market hogs) is the minimum size farm possible in Vermont to cover all expenses and return sufficient cash to support family living.[9] Research conducted in Minnesota,[10] Iowa,[11] and Pennsylvania[12] on small system hog farms generally assumes marketing between 300 and 2,000 piglets per year. Most Vermont pork producers are "micro" in scale, not "small."

Vermont-grown pork is at a significant price point disadvantage compared to pork raised closer to grain-producing regions, since a hog's diet consists primarily of grain. However, feeding pigs whey from farmstead cheese operations appears to be a possibility. A feasibility study conducted by Louise Calderwood in 2007 indicates that significantly reducing the amount of grain fed to pigs and charging a premium price for the pork could result in successful pork production.

Vermont Smoke and Cure has developed a growing business based on high-quality processed pork products. Despite offering a steady market and paying attractive prices for fresh pork, *Vermont Smoke and Cure* has experienced difficulty sourcing Vermont-grown hogs of the consistency and volume needed to meet its standards. Working directly with interested producers, *Vermont Smoke and Cure* is starting to develop a consistent supply of hogs of the quality needed to meet its market demands. The *Brattleboro Food Coop* currently sources its "local" pork from *DuBreton* in Quebec because of difficulty finding reliable and affordable sources of high-quality pork from a closer location.

PHOTO CREDIT: North Branch Farm

Sebastian Miska and Kate Corrigan at North Branch Farm.

Tom Biggs of *Black River Produce* stated that meat sales have been limited by an inability to source enough Vermont-raised pork and beef to meet rising consumer demand. Many of the producers *Black River* buys from have indicated that they do not wish to grow any larger. This suggests that to meet growing consumer demand, more producers need to enter the market. In 2009, Biggs worked directly with a hog producer to increase the amount of pork available for distribution through *Black River Produce*.[13]

To be successful, Vermont pork producers need to develop sufficient scale to cover operating and capital costs and to produce pork to the standards demanded by consumers. Producers are further challenged by the need to sell entire carcasses, not just popular fresh cuts and bacon. Because of the small number of hog producers in Vermont, very little technical assistance is available to help them with production or business practices.

Poultry

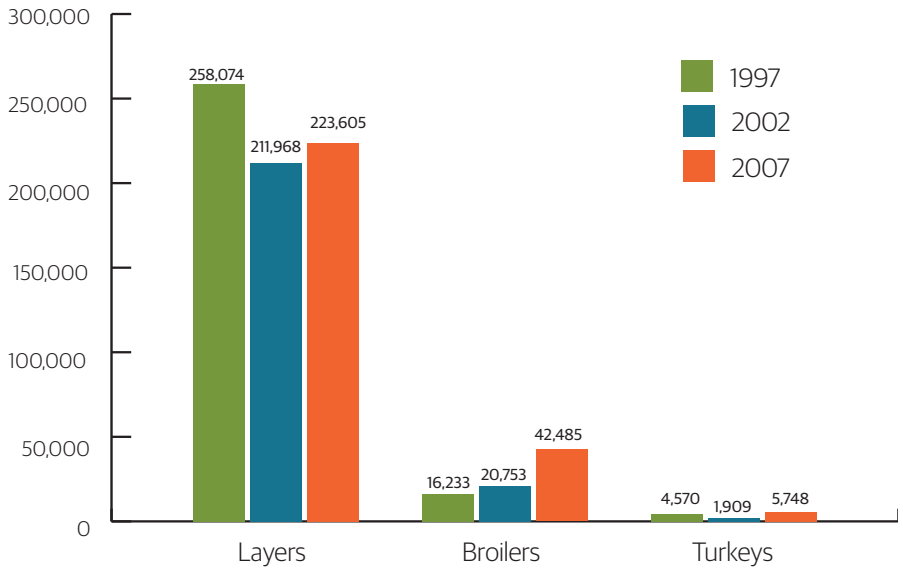
In 2007 at least 149 Vermont farms were raising 42,485 broilers (meat-type chickens). This is 192% more broilers than were reported in 1997. In addition, 1,068 farms had layers[14] in 2007; together, the farms that raised broilers and t t raised layers had 246,829 birds (this number includes 23,224 replacement "pullets"). At least 20 certified organic farms are raising chickens in Vermont, according to *NOFA Vermont*. The number of broilers sold in 2007 was suppressed in the Census of Agriculture. Of the chicken farms that reported broiler sales in 2007, 131 of the 133 farms ranged in size from 1 to 1,999 birds. One farm ranged in size from 2,000 to 15,999 birds, while one farm ranged in size from 100,000 to 199,999 birds.

At least 106 farms (6 are certified organic) raise a total of 5,748 turkeys. Of the turkey farms that reported sales in 2007, 101 of 104 farms ranged in size from 1 to 1,999 birds. One farm ranged in size from 2,000 to 7,999 birds, while two farms ranged in size from 16,000 to 29,999 birds. The number of turkeys sold in 2007 was also suppressed in the Census of Agriculture.

As shown in Figure 3.3.6, between 1997 and 2007, the number of chicken layers and turkeys in the state remained relatively constant while the number of chicken broilers increased 162% from 16,233 to 42,485.

After ground beef, chicken is the most popular type of locally grown meat sold in Vermont co-ops. The Vermont meat bird industry consists almost entirely of small

Figure 3.3.6: Vermont Poultry Inventory



Source: USDA Census of Agriculture, multiple years, *www.agcensus.usda.gov*.

flocks grown in association with other livestock on diversified farms. Consumers are increasingly interested in "pastured poultry," meat from birds that derive a substaintial portion of their dietary intake from foraging on pasture. A few significant producers of meat chickens, turkeys, and quail exist in Vermont and are operating well-established businesses (e.g., *Misty Knoll Farm* in New Haven and *Cavendish Game Birds* in Cavendish). All of these producers have on-site slaughter facilities.

According to Diane Imrie, Director of *Nutrition Services at Fletcher Allen Health Care*, the hospital is close to reaching its goal of obtaining 40% of its chicken (60,000 pounds) from local and sustainable sources. The goal is to obtain all 150,000 pounds of its chicken, and as much of its other meat as possible, from local or sustainably produced sources if a sufficient and consistent high-quality supply can be found.[15]

Poultry slaughter regulations contain seven exemptions from inspection based on the type of market outlet for the bird and number of birds slaughtered. Regulatory changes implemented in 2007 allow restaurants to purchase uninspected poultry, but market demand for this product has been limited. In 2009, the VAAFM successfully

Misty Knoll Farms

Yes, there is a knoll—and it's misty.

PHOTO CREDIT: Caroline Abels

Rob Litch with turkey flock.

At least it was on the day this past October when I visited *Misty Knoll Farms*, Vermont's largest chicken producer. Standing on the small rise at the eastern edge of the farm in New Haven, facing a swath of Addison County dairy land below and the spine of the Green Mountains beyond, I spotted a light fog in the valley that looked misty enough.

"There are wealthier farmers who have more than one knoll, but we have only one," quipped my tour guide.

He was Rob Litch, farmer and part owner of *Misty Knoll*, and I was to become familiar with his droll sense of humor during my visit. But although there's only one knoll on the farm, Litch and his business partner (and uncle), John Palmer, can boast of having something far more valuable, something the majority of American poultry farmers do not have: total control over how their birds are raised, processed, and marketed.

At their 412-acre farm, located on the sites of two former dairy operations, there are barns that house tens of thousands of chickens and turkeys—Rob and John decide exactly what those birds are fed and how they're housed. There's an on-site slaughter facility staffed by a USDA inspector and a series of rooms where 18 employees (a mix of local residents and Jamaicans with H2A guest worker permits) transform whole birds into parts—Rob and John oversee these parts of the operation, too. They also decide how much to charge for their poultry and where to sell it.

Contrast this with most poultry farmers in America, who must follow the dictates of the large agribusinesses they work with—Tyson, Perdue, Pilgrim's Pride. These corporations often own the birds even as the farmers raise them and take on the debt of building the infrastructure to house them. The birds must be grown to the corporation's specifications; they are then trucked miles away to slaughter facilities the farmer never sees.

Misty Knoll is far and away Vermont's largest producer of chickens: 225,000 are raised there annually.

From "Counting Their Chickens," Vermont's Local Banquet, Winter 2011, www.localbanquet.com/issues/years/2011/Winter%2011/misty_knoll_W11.html

launched a mobile poultry processing unit[16] that has significantly increased access to state-inspected poultry slaughter services. A *case study* has been written and is available at the *UVM Extension* website. The unit cost $93,000 and can process up to 250 chickens or 100 turkeys per day (state-inspected and custom-exempt options). The VAAFM recently auctioned off the unit to *Tangletown Farm*.

Marketing of whole chickens is easily implemented with the current list of inspection exemptions and slaughter opportunities available to Vermont poultry producers. Sale of chicken parts requires slaughter at an inspected facility and access to more costly meat-cutting expertise. Beth Cate, the meat buyer at *Buffalo Mountain Food Coop* in Hardwick, indicated that although demand is quite strong for whole birds, she quickly sells out of breasts and legs when they are available.[17]

PHOTO CREDIT: Alan Lankin

Free range chickens at Green Mountain College.

Meeting the Demand?

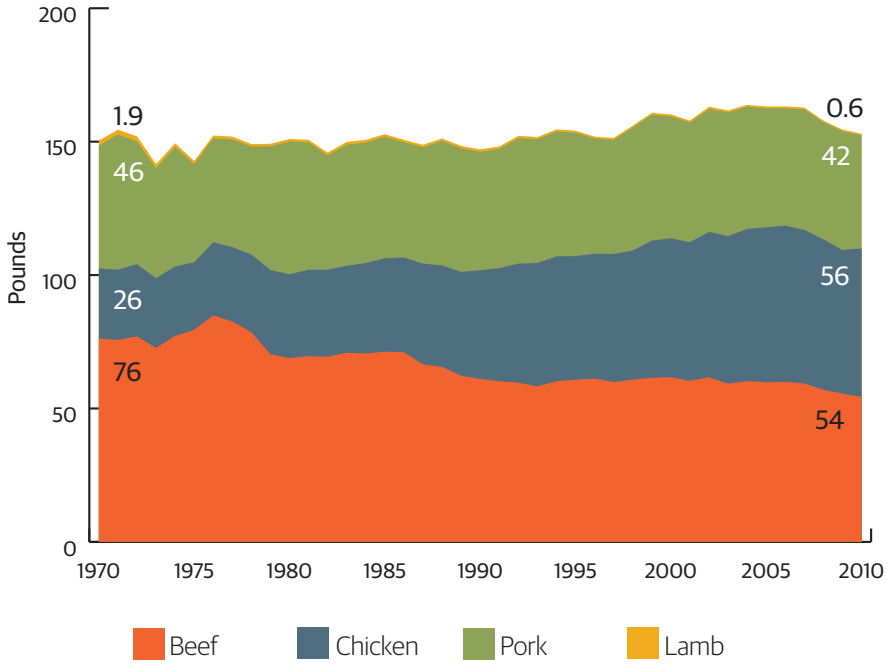
Many Vermonters are interested in whether we can feed ourselves with local food production. Unfortunately, no comprehensive data exist to indicate exactly how much and what type of food—including meat—is currently being consumed by Vermonters. While we do not know how much of the meat produced in Vermont is consumed in Vermont, throughout the F2P Strategic Plan we use the *food availability per capita estimates* of the *USDA Economic Research Service* and the *dietary guidelines* of the USDA to contextualize current Vermont production.

Food availability per capita is commonly used as a proxy for food consumption, even though it does not measure actual consumption. The ERS calculates food availability per capita by adding total annual national production, imports, and beginning stocks of a particular commodity and then subtracting exports, ending stocks, and nonfood uses. This number is then divided by population estimates for the area of interest to arrive at per capita estimates of available food for any particular year. The ERS also attempts to account for food losses, from farms to retailers to consumers (e.g., spoilage and waste). Across the F2P Strategic Plan we use the **consumer weight** to reflect the state of a product at the time of purchase.

The national per capita availability of meat, fish, eggs, and nuts increased slightly, from 213.1 pounds in 1970 to 219.6 pounds in 2010. Beef, chicken, pork, lamb, and eggs accounted for about 83% of per capita available pounds in the total meat, fish, eggs, and nuts category in 2010, down from about 88% of per capita available pounds in 1970. The per capita availability of beef has declined about 29% over the past 40 years, from 76.2 pounds (or 35.7% of all pounds from beef, chicken, pork, lamb, and eggs) in 1970 to 54.3 pounds (or 24.7% of all pounds from beef, chicken, pork, lamb, and eggs). This decrease likely reflects a trend away from red meat consumption for health reasons.[24] Lamb and pork availability were relatively constant over the past 40 years, and chicken availability is up nearly 112%. In fact, chicken availability increased from 12.3% of per capita available pounds from beef, chicken, pork, and lamb in 1970 to 25.4% in 2010 (Figure 3.3.7).[18]

Sam Comstock, the former *University of Vermont* (UVM) Livestock Specialist, applied U.S. per capita meat availability statistics to Vermont's population to arrive at Vermont per capita meat consumption proxies.[19] Comstock's white paper calculated how many

Figure 3.3.7: U.S. Per Capita Meat Availability (Consumer Weight, Boneless Equivalent), 1970-2010



Source: USDA Economic Research Service, "Food Availability (Per Capita) Data System," *http://www.ers.usda.gov/data-products/food-availability-(per-capita)-data-system.aspx#26705*.

live animals would be required if every Vermonter matched per capita averages (i.e., if Vermonters only ate meat produced in Vermont and not taking into account vegetarians, vegans, and others who do not eat meat). Although the Census of Agriculture data are now five years old, they represent the best currently available information for most food categories (e.g., more recent information is available for a few categories such as dairy production and maple syrup production, but not for many others). Replicating Comstock's method with 2007 ERS per capita meat availability data and 2007 Census of Agriculture livestock *sales* data for Vermont, we estimate that it would take **85,505 beef cattle, 11,951,255 chickens, 258,404 hogs, and 9,987 lambs to match per capita meat availability figures with just Vermont livestock (Table 3.3.9).**

Table 3.3.9: Comparing Food Availability Data and Dietary Guidelines with Vermont Meat Production

	U.S. per capita availability (consumer weight adjusted for loss)	Amount required if Vermont matched per capita availability	How much does Vermont produce?	Vermont per capita availability
	Pounds	Pounds	Pounds	Pounds
Total Meat Products	**221.2**	**138,413,909**	**>8,112,509 to 18,706,325**	**>12.9 to 29.9**
Selected meat products	**192.1**	**120,204,846**	**≈8,112,509 to 18,706,325**	**≈12.9 to 29.9**
Beef	59.4	37,169,015 (85,505 beef cows)	≈6,800,184 - 17,394,000 (15,638 beef cows plus ≈40,000 dairy cows)	≈10.9 - 27.8
Chicken	57.5	35,980,108 (11,951,255 chickens)	≈342,466 (113,776 chickens)[e]	≈0.5
Pork	45.2	28,283,493 (258,404 hogs)	≈543,251 (4,968 hogs)	≈0.9
Lamb	0.7	438,019 (9,987 lambs)	≈426,608 (9,262 ewes 1 year or older)	≈0.7
USDA MyPlate dietary guidelines	**Annual recommendations**	**Amount required if Vermont matched guidelines**	**How much does Vermont produce? (2007)**	**Surplus or deficit?**
	Pounds	Pounds	Pounds	Pounds
Protein				
Males (ages 20 - 49)	137 to 148	16,940,779	≈8,112,509 to 18,706,325	≈33,035,352 to 43,629,168 deficit
Males (ages 50+)	125	13,876,969		
Females (ages 20 - 49)	114 to 125	14,283,427		
Females (ages 50+)	114	14,015,502		
	Subtotal	**59,116,677**	**≈ 40,410,352 to 51,004,168**	**≈40,410,352 to 51,004,168 deficit**

Source: Conversion factors from ERS were used to arrive at live animal estimates: 434.85 pounds per beef cow (retail weight), 109.35 pounds per hog, 46.06 pounds per lamb, and 3.01 pounds per chicken. Vermont's population is estimated at 625,741.

Meat Per Capita Availability

Deficit: ≈119,707,584 to 130,301,400 pounds

MyPlate Dietary Guidelines for Protein

Deficit: ≈ 40,410,352 to 51,004,168 pounds

As Table 3.3.9 indicates, except for lamb production, Vermont produces nowhere near the per capita meat availability estimates. According to a recent article in *Local Banquet*, upwards of 40,000 Vermont dairy cows are culled each year. Most of these cows are sent to Pennsylvania for slaughter and processing.[20] If these animals were included, then Vermont could match about half of the per capita beef availability estimates. Additionally, Comstock's research indicated that he believed that the Census of Agriculture data for hog estimates captured only half of the animals in Vermont, and it is highly likely that the Census significantly undercounts poultry production because of the large number of families raising small flocks for their own consumption.

The MyPlate dietary guidelines for females in the 19 to 30 year old category are 5.5 ounces of protein per day (125 pounds per year), and 5 ounces per day (114 pounds per year) for both the 31 to 50 year old and the over 50 year old categories. The MyPlate dietary guidelines for males in the 19 to 30 year old category are 6.5 ounces of protein per day (148 pounds per year), 6 ounces per day (137 pounds per year) for the 31 to 50 year old category, and 5.5 ounces (125 pounds per year) for the over 50 years old category. **With 475,486 men and women over 20 in Vermont, 59,116,677 pounds of meat/protein would be required to meet the MyPlate dietary guidelines. In comparison, protein available from livestock sales in Vermont is estimated at somewhere between 8 million and 17 million pounds** (Table 3.3.9).

Of course, people consume protein from a variety of sources and many people do not eat any meat. However, **it is clear that 1) except for lamb, Vermont produces nowhere near enough meat to match national per capita meat availability figures with just Vermont livestock; 2) Vermont-produced meat allocated just to Vermonters yields very little meat per person; and 3) Vermont-produced meat allocated just to Vermonters comes nowhere close to matching USDA dietary guidelines for protein.** The potential exists to significantly expand Vermont livestock production to meet local demand, but many hurdles must be addressed.

Access to Slaughter

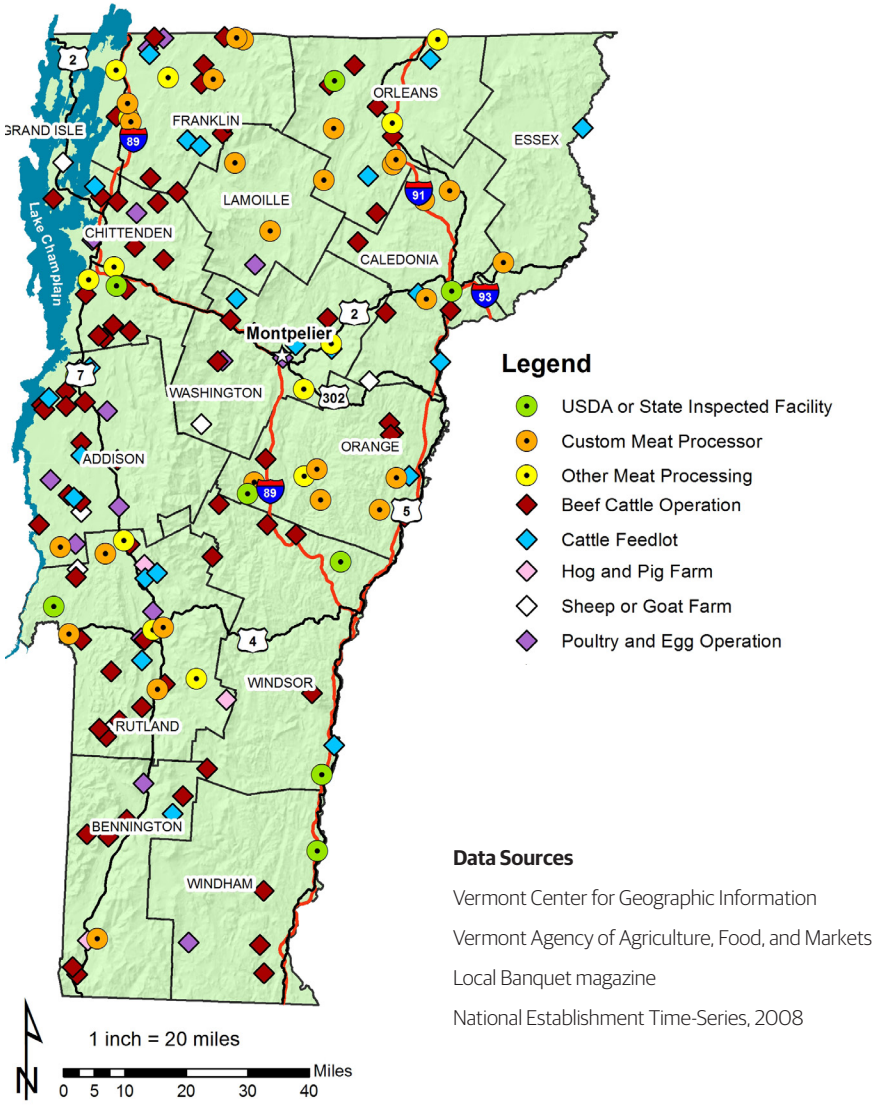
Farmers need to be able to slaughter their animals in a timely manner with the appropriate regulatory oversight for their desired method of marketing to consumers. As part of the F2P planning process, interviews were conducted with existing slaughter and processing establishments to assess their capacity to increase their profitability and animal throughput. Farmers were interviewed to learn their perspective on needed improvements to the existing slaughter infrastructure. The availability of various types of slaughter services, regulatory oversight of slaughter, and access to inspected slaughter facilities have concerned Vermont livestock producers since the mid-1990s and generated significant discussion during the statewide Farm to Plate meetings. Figure 3.3.8 shows the location and type of animal slaughtering and processing facilities in the state.

Over the past 20 years, the number of state- and federal-inspected slaughter and processing facilities in Vermont has slightly increased (Table 3.3.10). The number

Alan Cushing at Vermont Livestock Slaughter.

PHOTO CREDIT: Vermont Livestock Slaughter and Processing

Figure 3.3.9: Animal Slaughtering and Processing Facilities with Production Locations by Type



For the most up to date maps, please visit the Vermont Food System Atlas at *www.vtfoodatlas.com*

of state- and federal-inspected red meat slaughter facilities and state-inspected processing facilities have decreased as owners aged and new operators have not stepped up to take over the facilities. *Bushway Packing Inc.* in Grand Isle was closed in 2010 by the USDA after film footage of animal cruelty was released. Many small grocery stores that had the capacity to process slaughtered carcasses have dropped the service, placing additional pressure on meat processing plants.

Table 3.3.10: Vermont Inspected Slaughter Facilities

Inspected Facilities	State			Federal			Total		
	97	05	10	97	05	10	97	05	10
Commercial red meat slaughter and processing	3	1	1	9	7	7[21]	12	8	8
Commercial red meat slaughter (no processing)	1	0	0	1	0	0	2	0	0
Commercial red meat processing (no slaughter)	11	2	4	12	13	10	23	15	14
Custom red meat slaughter (no processing)	0	1	1	1	0	0	1	1	1
Custom red meat processing (no slaughter)	14	22	28	0	0	0	14	22	28
Commercial poultry slaughter and processing	2	1	3[22]	2	2	3	4	3	6
Custom poultry slaughter only	0	1	1	0	0	0	0	1	1
Total unique facilities	**31**	**28**	**38**	**25**	**22**	**20**[9]	**56**	**50**	**58**[23]

Note: The Westminster Meats plant and the mobile poultry unit are unique. Westminster does both red meat and poultry and thus is counted in both categories above. The mobile unit does only slaughter.

Increased public and private financing, increased technical assistance, and the creation of several foundation-supported grant programs have resulted in a steady growth in the number of Vermont meat processing facilities over the past five years, while the

number of slaughterhouses has held steady. Perhaps just as important, existing plants have expanded their operations thereby increasing Vermont's total slaughter capacity.

Compared to other New England states, Vermont has maintained a fairly diverse system of state-inspected and other slaughter options for meat producers, including itinerant slaughterers (on-farm slaughter for home consumption), custom slaughterhouses (for home consumption), and commercial slaughter plants (for meat sold commercially). The *Vermont Meat Inspection Program* also provides services to three of the six federally inspected red meat slaughter plants in Vermont. Thus far, the Vermont Meat Inspection Program has managed to avoid cuts in staffing during the current contraction of state government services. Some of Vermont's federally inspected plants occasionally have difficulty receiving timely feedback from federal resources. Unanswered questions can hamper plants as they attempt to make necessary upgrades to improve efficiency and customer service.

A new state-of-the-art 18,000-square-foot USDA-inspected plant, *Westminster Meats*, recently opened in southern Vermont. A number of new state- or federal-inspected processing and fabrication facilities are on the brink of opening, including one in Orleans that will further reduce the bottleneck for access to slaughter in a timely manner. The creation of satellite processing under the ownership of existing slaughterhouses would increase the ability for slaughterhouses to process the maximum number of animals on a weekly basis.

A *Slaughterhouse Feasibility Report* prepared for Pride of Vermont by *Sleeping Lion Associates* in 2005 found that **Vermont had more than enough slaughtering capacity but insufficient processing and fabrication capacity.** That is, even with the decrease in red meat slaughtering facilities, Vermont has sufficient "kill floor" square footage to slaughter a consistent number of animals five days a week, year-round. Currently, most Vermont slaughterhouses kill animals only one to three days per week and spend the other days processing carcasses.

Many facilities operate on a limited basis from February through August. In 2010, Sam Fuller of *NOFA Vermont* conducted a survey of slaughterhouses and processors and found that they operated from 30 to 80% capacity during this off-season. The seasonality of grass-fed livestock production in Vermont places a premium on slaughterhouse access, processing, and fabrication from September through January. On one hand, if facilities were sized to accommodate high fall demand, then expensive space would be underused for most of the year. On the other hand, limited slaughter and meat processing capacity during the high-demand September to January season hampers the production of livestock and poultry in Vermont. Some livestock producers book slots more than six months in advance to ensure the timely slaughter of their animals, and some Vermont slaughterhouses are currently booking slaughter dates a year in advance.

PHOTO CREDIT: Tonia Sing

Courtney slaughters a pig at Essex Farm across the border in New York

Slaughterhouses should consider offering incentives to encourage the year-round production of meat animals. Processors of goat's milk provide premiums for milk produced "out of season" (during the winter months) and in some cases charge producers a penalty when their milk production varies significantly between winter and summer. Slaughterhouses could charge a premium for winter slaughter if a producer does not provide animals during the summer months or offer incentives and discounts for off-season processing.

A combination of increased regulations and operating costs (especially for energy) has created extremely tight margins for slaughterhouse operators. Examples include the requirement to develop hazard analysis critical control point (HACCP) plans and the decreased marketability of slaughterhouse by-products, which raises waste disposal costs. According to the USDA *Food Safety and Inspection Services* (FSIS), the number of federally inspected meat-processing plants in the United States fell by about 200 between 2001 and 2005. About half the plants that disappeared were very small, with 10 or fewer employees and no more than $2.5 million in annual sales. The smaller businesses simply couldn't compete because of labor costs and stringent new food safety regulations. At the same time, big slaughterhouses consolidated into just 366 giant centers across the country.

Slaughterhouse owners would benefit from help with issues common to many small business owners, such as compliance with regulations, product quality, opportunities for expansion, management of human resources, and analysis of operating expenses. Because most slaughterhouse owners work at the plant during business hours, assistance must be available outside of customary business hours and, ideally, would not require extensive travel.

Many small farm owners have expressed a desire to slaughter animals on their own premises for retail sales direct from their farms. The Vermont Meat Inspection Program and water quality regulatory programs are supportive of the development of small custom-exempt slaughter facilities.

In the mid-2000s, the Vermont Legislature enacted several statutes to ease the regulatory oversight of food safety requirements for poultry processing, and placed more responsibility for making informed decisions on food sourcing into the hands of consumers. Similar efforts are underway to increase consumer access to uninspected and farm-slaughtered beef, hogs, and sheep. Current federal regulatory language limits the opportunity for inspection flexibility at the state level. Agricultural producers differ in their opinions about the wisdom of this effort. Any regulatory changes to the Vermont meat inspection program must be made only after careful consultation with a true cross section of all producers.

During the 2010 legislative session, language was developed to address inhumane slaughter practices by creating a system of administrative and punitive penalties and allowing video installation at slaughter plants at the discretion of the Vermont Secretary of Agriculture. It is essential that slaughter be carried out in a humane manner; however, several interviewees mentioned that regulatory requirements cannot be so burdensome as to limit the operation and expansion of Vermont slaughterhouses.

Several producers expressed an interest in regulatory changes to allow the retail sale of meat derived from on-farm, uninspected slaughter. However, a number of producers cited grave concern about any decrease in the regulatory oversight of slaughter. This issue was perhaps the most commonly voiced concern during the development of this report with strongly held opinions both in favor of and opposed to uninspected meat entering retail sales. Several slaughterhouse owners pointed to the number of animals being slaughtered and sold outside of appropriately constructed and inspected facilities as a significant contributor to their profitability challenges. Slaughterhouse owners interviewed for this report frequently stated their impression that uninspected facilities are able to charge less for their services and therefore draw business away from inspected facilities. Damage to the strong Vermont brand could result if the highest of standards are not maintained, which could cause a negative ripple effect throughout the industry.

Slaughtering/Processing Regulatory Issues

(Note: Most of the information in this section was drafted by Nancy Wasserman of *Sleeping Lion Associates* as part of a 2005 feasibility study for Pride of Vermont. Changes have been made as necessary to reflect updates in state and federal law).

Food Safety and Labeling

The Federal Meat Inspection and Poultry Products Inspection Acts as well as state laws govern the slaughtering and processing of meat and poultry for human consumption. The USDA's Food Safety and Inspection Services (FSIS) is responsible for ensuring that meat and poultry are safe; wholesome; not adulterated; and properly marked, labeled, and packaged. These federal acts define the process for pre- and postmortem inspection and describe specific marking, labeling and packaging requirements.

Vermont is home to a number of "itinerant" custom slaughterers who slaughter animals on farms for home (noncommercial) consumption. An itinerant custom slaughterer may slaughter livestock owned by an individual who has entered into a contract with a customer to raise the livestock on the farm where it is intended to be slaughtered. There has been some confusion around the amendment to 6 V.S.A. 3306(f), dubbed the "on-farm slaughter amendment," which was adopted in 2009. The Vermont Agency of Agriculture, in consultation with the USDA, has clarified the federal regulations that govern this particular type of custom slaughter in a document available at *www.vermontagriculture.com/fscp/meatInspection/documents/update_on_farm_slaughter.pdf*.

Meat to be sold through institutional or retail channels must be slaughtered and processed in a state- or federal-inspected facility. Generally, federal inspectors oversee facilities that slaughter and process meat and poultry. FSIS has cooperative agreements with many states, including Vermont, that allow state inspectors to enforce requirements

"at least equal to" those imposed under the federal acts for state-inspected facilities. Regardless of how a facility chooses to operate, federal and Vermont law require it to be licensed if it is engaged "in the business of buying, selling, preparing, processing, packing, storing, transporting or otherwise handling meat, meat food products or poultry products."[24]

Because the federal acts prohibit products produced under state inspection from being sold outside the state, slaughterhouses processing product for commercial consumption or sale out-of-state must secure a USDA license. Farmers in smaller states who use these slaughterhouses, as well as food safety professionals, are often frustrated by the time it can take to get answers to their questions from offices out of state. In addition to the custom slaughterhouse exemptions explained earlier in this document, the federal regulations provide exemptions for small-scale poultry producers. Producers slaughtering no more than 1,000 birds annually are exempt from the federal act under the following conditions:

1. All of the poultry was raised, slaughtered, and sold on the producer's own farm, and the seller (farmers market, restaurant, or other food service establishment) clearly states that the poultry is from uninspected sources.
2. The poultry producer is not in the business of buying or selling poultry products other than those produced from its own birds.
3. None of the poultry is distributed or sold outside of the state in which it is produced.

Vermont now allows producers to sell whole poultry carcasses at farmers markets if they register for and meet the requirements for being Vermont exempt poultry processors. To the best of our knowledge, no producers have yet taken formal advantage of this exemption.

Poultry producers raising and slaughtering no more than 20,000 birds are exempt from state and federal inspection under the following conditions:

1. They meet conditions 2 and 3 in the preceding list.
2. They do not slaughter or process poultry products at a facility used for slaughtering or processing poultry by any other person.
3. Poultry are sound and healthy before slaughter and "sound, clean and fit for human food when distributed." Vermont requires that inspectors conduct an initial inspection of the facility and approve sanitation and HACCP plans.[25]
4. The poultry products have a label that identifies the name and address of the producer and a statement that the product is exempt from Public Law 90-493. Vermont inspectors have interpreted this to mean that the label must state that the poultry "was not slaughtered under inspection and is to be used for home consumption only," even though Vermont regulations only require that the label state "Exempted – 6 V.S.A., Chapter 203(sic)." State inspectors also require that the label name the vendor if a mobile slaughter facility was used.

State inspectors also require the producer to keep records on the number of animals slaughtered and processed. Federal and state regulations clearly allow the farmer to sell these birds on or off the farm. Nonetheless, Vermont inspectors have been reluctant to allow off-farm sales with the exception of registered exempt poultry producer being allowed to sell at farmers markets.

Water Supply

To provide meat or poultry that is clean and fit for human consumption, commercial slaughtering and processing facilities must have access to potable hot and cold water including "conveniently located" sanitary facilities (i.e., toilet and washing facilities) for the inspector. Commercial facilities require permits as a "non-public" water system. In Vermont, the sanitary facilities requirement has been interpreted to mean that these facilities need to be accessed on-site. Vermont allows the use of farmhouse facilities or composting toilets for custom-exempt plants and for the inspector assigned to mobile slaughtering facilities.

Environmental Considerations

Slaughtering and processing facilities need to meet Vermont environmental regulations. Expanding an existing facility or building a new one usually requires permits related to the appropriate disposal of wastewater and solid waste. The project may also be subject to local community regulations and Act 250, although as explained below, the facility may qualify for an agricultural exemption if it is located on a farm and therefore engaged in an "on-farm activity."

Solid waste regulations seek to prevent or mitigate the disposal of materials that emit noxious odors or that compromise the waters of the state. With a slaughtering facility, solid waste regulators are concerned about the proper disposal of rendered material and other residuals including hides, bones, feathers, blood, and animal fat. Much of this material may be composted on-site if the property has sufficient available land, appropriate soils, and good setbacks from waterways and neighbors. When looking at the land availability, regulators want to be certain that the footprint is large enough to accommodate the composting matter as well as any needed stockpiles of carbon materials and bulking agents and the machinery required to manage the piles.

Vermont's solid waste management rules define when certification is required and should be consulted as part of developing a business proposal for any type of slaughter facility.

The disposal of wastewater presents some additional issues. If the wastewater will drain into a municipal sewage treatment plant, the treatment plant would most likely need to request an amendment to its operating permit. This amendment would detail the conditions or management approach required to accommodate the high nutrient value of blood waste. An alternative approach would be to compost as much blood as possible by designing appropriate drains and collection systems.

Indirect discharge permits are required for on-site systems unless the waste is less than 6,500 gallons per day or the wastewater is afforded an agriculture exemption. This agricultural exemption is allowed for waste generated on the same property on which it will be discharged.

Other Factors Affecting Slaughterhouses and Meat Processors

Slaughterhouse and meat processing plant owners interviewed by Sam Fuller of *NOFA Vermont* in 2010 identified several factors that limit their ability to increase production, although no single factor was mentioned often enough to indicate a trend. The factors were as follows:

- Limited labor pool
- High cost of utilities
- Low profit margins
- High cost of equipment for specialized processing (e.g., carcass pasteurization, hamburger patty formation)
- Low processing capacity and carcass storage capacity
- Limited access to capital because of current debt, low margins, and lack of time and resources to find capital
- Difficulty negotiating wastewater permitting and other regulatory considerations for expansion

All of Vermont slaughterhouse owners interviewed for this report were over 45 years old. Slaughterhouse work is hard and dirty, the hours are long, and the profit margin is extremely slim. In a May 25, 2010, interview in *USA Today*, Marty Broccoli, agriculture development specialist at Cornell Cooperative Extension of Oneida County, New York, said that as owners approach retirement age, family members or other interested parties have not stepped up to take over the business and that skilled workers and training funds to develop them have diminished.[26]

Conversations with slaughterhouse owners in Vermont for this project indicated that lack of consistent access to suitably trained employees often reduces the processing efficiency and retail value of meat from Vermont slaughterhouses. Many facilities have invested in improved wrapping equipment so they can vacuum-pack their meat for a more professional appearance, but they lack skilled workers to produce expertly cut servings of meat. *Sleeping Lion Associates'* Slaughterhouse Feasibility Report identified substantial concerns about the quality of fabrication and packaging. Livestock producers who raise high-quality lamb, beef, pork, and goat meat need attractive cuts and packaging to command premium prices. Poorly cut carcasses, unattractive packaging, and sloppy labeling all eat into profit margins. The packaging and presentation demands of consumers are often unfamiliar to slaughterhouses, which are used to packaging cuts in freezer wrap. Because processing services are in such high demand, commercial livestock producers have been stymied in their attempt to encourage greater attention to packaging and presentation.[27] As producers and processors attempt to increase the sale of Vermont-raised meat to high-margin clients, the butchering quality must enhance, rather than degrade, the value of the meat.

Access to three-phase power is limited in the rural areas where most slaughterhouses are located. Because of equipment and refrigeration requirements, slaughterhouses use significant amounts of electricity. Access to three-phase power would reduce the expense of the equipment and significantly reduce operating expenses. For many of Vermont's small slaughter and processing plants, electricity and heating represent over 20% of their operating costs. Some slaughterhouse owners in Vermont are willing to expand their facilities or make capital improvements to increase slaughter and processing efficiency and overall throughput. Many of these owners indicated interest in the grant program facilitated by the *Vermont Housing and Conservation Board's Farm Viability Program* (FVP). FVP director Ela Chapin stated that they had received a large number of qualified applications for assistance during a recent grant application round (spring 2010), indicating optimism on the part of many slaughterhouse and processing plant owners.

Some meat processors who are willing to expand are having difficulty finding capital. Finding a landlord willing to pay for the cost of bringing a meat processing operation up to code is difficult, and as stated earlier, equipment is expensive. Even with good growth potential, businesses can struggle to find the capital they need.

Despite the desire for capital improvements, several slaughterhouse owners interviewed indicated concern about their ability to invest in new equipment and create improved business models that could lead to greater profitability. There appears to be little interest on the part of young people to enter the heavily capitalized, labor-intensive field of animal slaughter given the current thin returns earned. Darryl Potter of *Sharon Beef*, a USDA-inspected facility in Sharon, Vermont, recognizes that the heavy capital outlay, coupled with high operating expenses, are severe burdens that affect the profitability of his business.[28] Although the capital expenditures for the development of slaughterhouses are daunting, creating new capacity may be possible through the creation of alternative models, such as mobile facilities and custom plants.

The cost of workers' compensation insurance is generally much higher in Vermont than in surrounding states. There has not been specific research conducted on the cost of workers' compensation insurance for slaughterhouses, but in 2007 the former owners of *Swanton Packing* reported to a study committee convened by the VAAFM that the escalating cost of workers' compensation insurance factored heavily in the closing of their plant, the largest slaughterhouse in New England.

Custom-Exempt Slaughter Facilities

Farmers who wish to slaughter their own animals for retail sale to consumers directly from their farms can develop a custom slaughterhouse to meet the requirements of the federal slaughter regulatory standards located in 9 CFR sec. 416. 1-5.

The operator of a custom slaughterhouse must be licensed. If the animal is to be processed at a custom-exempt plant, then licensing for a custom processing plant is also required. The Vermont Agency of Agriculture has exhibited a willingness to work with farmers to meet these requirements. Increasing the number of custom-exempt plants would relieve pressure on inspected facilities and free up access for animals that must be slaughtered under inspection for marketing.

Following are the minimum requirements for a custom slaughterhouse:

- Potable hot and cold running water
- Washable floors, ceilings, and walls
- Adequate lighting
- The ability to hang and chill carcasses
- $50 custom slaughter license
- $50 custom processing license and a custom processing room (if cutting meat)
- Signed statement of sale from all prospective buyers prior to slaughter

The purchasers of custom slaughtered meat can choose where they take the meat for cutting. If more than four people are purchasing the meat (i.e., an animal is to be divided into portions smaller than quarters), all portions of the animal would probably need to go to the same place for cutting, and the names of all purchasers would need to be on the owners certificate at the custom cutting shop. Few custom cutters are willing to separate the cut products into multiple equal portions, so although it is legal to divide custom slaughtered meat into small portions for sale, it might not be practical.

The state of Vermont has developed several regulatory exemptions for small agricultural producers and processors to encourage the development of Vermont's agricultural production and processing capacity.

Market and Brand Opportunity: Humane Certified

Vermont has the opportunity to provide national leadership in the movement to promote the humane treatment of food-producing animals. Livestock producers have new opportunities to explore as the market for products from food-producing animals that have been raised and slaughtered humanely is growing as a result of consumer demand.

Consumers and Humane Farm Animal Treatment

Consumers are increasingly concerned about the quality of their food and of the food production process. Survey results consistently show that consumers are willing to pay more for agricultural products that meet higher animal welfare standards. In a 2004 survey by *Ohio State University* researchers, 59% of respondents stated that they would pay more for meat and dairy labeled as humane. In the same study, 92% of respondents agreed that it is important "that animals on farms are well cared for," and 85% agreed that "even though some farm animals are used for meat, the quality of their lives is important."[29] A 2007 *American Farm Bureau Federation*–funded study out of Oklahoma State University showed that the majority of respondents believe that higher welfare standards produce meat that tastes better and is safer to consume.[30]

What does it mean to be humane?

In the United States, several certification programs have been created to give consumers the assurance they are looking for when they wish to purchase products made from humanely raised and slaughtered animals.These programs have precise, science-based, objective standards to which certified producers adhere, yet requirements vary among programs giving producers options to choose the certifier who best fits the circumstances on each individual farm. The programs are also transparent in that the requirements are freely available to consumers. The three programs most widely accepted within the national animal protection community are *Global AnimalPartnership* (GAP), *Animal Welfare Approved* (AWA), and *Humane Farm Animal Care* (HFAC). Although many other programs with meaningful requirements exist, only these, which are endorsed by respected nonprofit humane organizations, will withstand consumer scrutiny. Standards established and promoted by industry associations are, by and large, less well received by consumers, who perceive those organizations as having conflicting interests.

How have producers and food retailers responded to consumer interests?

Many large and small producers have embraced the animal welfare concept and are using it as a marketing tool. For example, *Smithfield Foods* announced it will phase out the use of restrictive gestation crates to confine pregnant sows,[31] and *Niman Ranch* has committed to selling only natural, sustainable, and humanely produced meat. Several retail grocery outlets, restaurant chains, and fast-food marketers, including *Safeway* stores, *Wendy's*, and *Burger King*, are increasingly requiring their suppliers to meet strict criteria for animal care and treatment. *Whole Foods Market* sells only cage-free eggs in the United States and internationally. A 2008 survey conducted by *Harris Interactive* on behalf of *Whole Foods Market* found that despite rising food prices, nearly 80% of consumers would not compromise on the quality of the food they buy.[32]

In Vermont, 129 retail establishments sell HFAC–certified products. For example, *Hannaford*, *Shaw's*, *Price Chopper*, and several co-op and natural foods markets carry a variety of Certified Humane eggs, meat, and cheese.[33] Several Vermont farms are certified by AWA."[34]

Humane Handling Improves the End Product

Humane handling not only improves the welfare of the animals, but also results in tangible meat quality and productivity improvements. Acute preslaughter stress due to excitement or rough handling can affect the quality of pork, beef, and lamb. Studies of pigs show that highly negative interactions, such as prods with an electric goad, can increase muscle glycogenolysis;[35] increase plasma lactate concentrations;[36] and produce pale, soft, and exudative (PSE)[37] meat. Stress can also reduce beef tenderness[38] and cause dark-cutting problems in the meat of cattle[39] and sheep.[40]

Inspections that audit animal handling at slaughter plants have led to reductions in steer and heifer carcass bruises from 48 to 35%.[41] In contrast, crowding cattle during transport and using a stick to drive them can lead to bruising.[42] Pen, ramp, and race designs can be improved to facilitate the quiet movement of animals into the stunning box, reducing excitement, bruises, and injuries prior to slaughter.[43]

Certification programs that follow the animals through slaughter and include a respected auditing system, such as the *American Meat Institute's* Recommended Animal Handling Guidelines and Audit Guide, can drastically improve animal handling, reduce animal fear and stress, and improve meat quality and yield. As explained by the *American Meat Institute*:

> *Animals that are handled calmly and humanely produce higher quality meat. Stress hormones can cause quality problems called "bloodshot" in beef or "PSE" in pork, both of which require that parts of the meat be trimmed away. Plants with optimal animal handling produce higher and better meat yields. Good animal handling also enhances safety for workers. Animals that become agitated due to rough handling can injure workers – and themselves. Calm animals also are less likely to damage equipment – but a stressed or struggling animal might.*[44]

What are the costs and revenues of going humane?

The costs of becoming certified by reputable programs vary. Some programs charge an inspection fee as well as a certification fee assessed per head, based on the amount of product processed and the number of certified animals or animal products sold. However, the inspection fee can often be shared by farms in close geographical proximity, and small operations may be subsidized with a grant through the certifying program.

The program with the highest standards for animal welfare, *Animal Welfare Approved*, is free to producers. As stated in the AWA policy manual, "There is currently no charge for joining the Animal Welfare Approved program, for audits or for any other services."[45] Additional costs may be associated with improving facilities to meet the requirements for humane certification.

The promotion of humanely raised meat, milk, and eggs in the state of Vermont could have carryover effects into other areas, including agricultural and culinary tourism. Humane-certified establishments can confidently allow guests to view all aspects of animal production, because the high standards required by certification programs make it easy for farmers to explain agricultural practices to urbanites who may have never set foot on a farm.

To prevent "bad actors" from casting Vermont agriculture in a negative light, high standards of animal care with effective oversight and enforcement should be implemented. Incidents such as the *Bushway* slaughter plant investigation in 2010 give the entire industry a bad image, and must be avoided in the future.

Vermont agriculture could benefit from certifying humane farming, transport, and slaughter, thereby tapping into the demographic of consumers who care about the treatment of food-producing animals. Humane certification could also be used as a marketing tool to differentiate Vermont farms from those in other states. Certifying animals through a well-respected program and auditing slaughterhouses would be good first steps in preventing future problems. Given the level of social awareness of this issue in the wider context of natural, sustainable, and "green" production, the meat quality and productivity benefits, and the domestic and international trend toward humane farming, Vermont could and should be a leader in this effort.

Act 158, passed by the Vermont legislature in 2010, created a Livestock Care Standards Advisory Council, meant to get members of the farming, veterinarian and animal welfare communities together to discuss farm animal policy issues and deliver opinions to VAAFM and the legislature. The Act also gives the Secretary of Agriculture the option of taking any appropriate action, including installing video cameras, should a plant fail to comply with state humane handling laws; requires slaughterhouse owners to submit a written humane handling plan for review by the state, and requires them to tell the Agency within five days if they have received any documentation from the USDA about violations of the federal Humane Slaughter Act; and raises the fines and maximum imprisonment for people convicted of state humane handling laws.

> *"If Vermont is to retain and grow its unique brand reputation as a traditional pastoral producer of high-quality, natural agricultural products, it will need to focus not only on those production techniques that enhance margin, production, and quality, but also on those that are intrinsic to its tradition of benign animal husbandry."*
>
> **— Bill Schubart testimony before the Vermont House Committee on Agriculture, 2010.**

Act 250 exemptions for the disposal of wastewater and solid waste from the slaughterhouse:

- Farmers can compost slaughterhouse waste and can apply wastewater to land if it doesn't contain human waste. Both of these actions are exempt from permitting.
- Farmers can apply to the Vermont Agency of Natural Resources for an exemption from the requirement for an engineered septic system.
- A household toilet or composting toilet is sufficient for custom slaughter facilities provided a hand-washing station is provided.

Packages of custom-processed meat and poultry must be labeled "Not for Sale." Slaughter and processing businesses that operate under this exemption are inspected by the Vermont Agency of Agriculture on a regular basis, typically once or twice annually. Custom-exempt slaughter and processing plants are expected to meet the same requirements for sanitation and construction that Vermont Agency of Agriculture–inspected and USDA-inspected plants must meet.

The owner of a custom slaughterhouse cannot also hold a retail meat license. Some custom slaughterhouse owners have addressed this by creating two separate LLCs, one for the slaughter business and one for the retail business, with each owned by a different family member.

Accessing Local and Regional Markets

The many steps necessary to move an animal from birth through maturity to slaughter and marketing create challenges for farm growth and profitability. It is important to recognize that even with a significant increase in demand for locally produced meat, farm families cannot be assured of earning a livable income from livestock production. Strategies for expanding Vermont's meat-producing industry must include producing high-value products for export from the state, as well as for local markets. The disparate nature and low volume of Vermont meat consumption provides challenges to marketing locally produced meat profitably. Thus, to profitably provide an increased supply of Vermont-grown meat for local consumption, the industry must also thoroughly develop and access the export market. According to Rob Litch, CEO of *Misty Knoll Farm*, 70% of *Misty Knoll's* total sales are to in-state market outlets, and 30% are to regional outlets. He indicated that to be economically viable, his company has to sell poultry products outside the 30-mile "local" boundary of Vermont.[46]

Meat department at Healthy Living Market

PHOTO CREDIT: Healthy Living Market

Tom Biggs from *Black River Produce* indicated an increasing opportunity to sell to urban chefs within the Northeast, but said that improvement is needed in meat cutting and distributor customer service to successfully access this market. Tom believes there are additional value-added opportunities (e.g., for selling dry aging meat) that will be essential to Vermont producers' success in these markets.[47]

To increase beef cattle production in the state, more effort is needed to assist producers who have difficulty accessing their local grocery stores, despite price points comparable to beef from nonlocal sources. During the April 2010 Farm to Plate statewide summit, Bryan Hathaway of *Hathaway Farm* in Rutland, expressed frustration at not being able to supply a local grocery store with properly inspected and labeled ground beef from his farm despite repeated requests from his clients to be able to purchase the meat. His price point is only slightly higher than that of the ground meat currently carried by the local store, but the manager is not willing to sell the locally produced meat. Often, the local marketplace does not support sufficient volumes of sales to consistently use complete carcasses, which results in producers having to access retail outlets outside of Vermont.

The small scale of Vermont meat production creates gaps in the availability of products regionally and by season. The development of a producer-driven cooperative approach to production, slaughter, and marketing could alleviate market gluts and shortfalls in meat products by increasing both the number of outlets and the number of producers. Coordination of animal production to streamline slaughter could alleviate frustration and increase sales.

Scale Matters

In the high-cost, low-margin world of livestock production and slaughter, the scale of farming and slaughter has a profound impact on profit margins. William Boyce, the dairy manager for *Shamrock Farms* in Phoenix, Arizona, the largest family-owned dairy in the Southwest, stated that when the company considered building a slaughterhouse to process the 3,000 dairy cows annually culled from their 10,000-head dairy herd, they discovered they could procure meat at retail at a lower cost because of the insufficient scale of their operation. It is no wonder then that Vermont slaughterhouses, which sometimes process as few as 10 animals per day, operate at a disadvantage. The high cost of operating a small slaughterhouse therefore is passed on to the farmers who are normally operating on a micro scale. Few Vermont farmers ship more than 10 beef animals per month to slaughter. The small number of animals grown by most producers cause slaughter-houses to spend a disproportionate amount of time servicing small accounts rather than doing business with a smaller number of significant customers. This increases the time and administrative support spent per animal processed. A small number of Vermont hog producers are increasing the scale of their operations, but most of the industry remains at a "cottage" size.

Some end users of meat require additional processing steps such as carcass pasteurization and the production of preformed hamburger patties. Access to this equipment, such as has been recently installed at *Westminster Meats*, could open the market for Vermont-grown meat in institutional settings (e.g., hospitals and schools) and large retailers. Unfortunately, the cost of even the smallest versions of specialized equipment is prohibitive for most Vermont slaughterhouses. A pasteurizer costs approximately $250,000 to purchase and even more to install, and a patty machine costs approximately $75,000.

Seasonality: Selling Animals at Different Times of Year

As animals move from farms to slaughter and processing to the consumer, small margins are gained at each step in the value chain. No single point in the system realizes significant profit from the production, sale, or use of Vermont-grown meat. A number of successful Vermont farmers buy and sell meat animals at various ages to maximize profitability. For example, some producers plan for calves born in late winter to run

Developing Out-of-State Markets for Vermont-Raised Meat

Access to out-of-state markets is essential to provide sufficient consumer diversity to support increased in-state sales of Vermont-raised meat. *Vermont Quality Meats* is one example of a business providing an outlet for fresh, whole carcasses to markets outside of Vermont. It provides a vital service to a small number of farms because entrance into markets outside of Vermont requires federally inspected carcasses and often involves the use of a distributor. For a complete discussion of distribution of Vermont food products, please read *Appendix C, Connecting the Dots*.

Businesses considering the use of a distributor will need to address several issues. The following list is not exhaustive, and issues will vary from distributor to distributor. Successful distribution can help a company expand its consumer access, but practices vary greatly among distributors. Producers must do their homework to find the distributors that are the right match for their products.

- **UPC labels:** Many distributors require universal product code labels before they will include a product in their inventory; this requires a minimum payment of $760.
- **Payment schedules:** Many distributors pay on 30 days net, and some may not pay for product until 45 to 60 days after pickup; a producer must be prepared to accommodate this.
- **Consistent supply:** Distributors understand the seasonality of production, but they expect a producer to meet production targets within reason.
- **Quantity:** Different distributors have different minimum amounts. Some distributors will pick up a single box; others have a four-pallet minimum.
- **Packaging:** Distributors will require product to be packaged in an appealing manner that can stand up to repeated handling.
- **Pricing:** Product price should be within the category of similar items.
- **Product liability insurance:** Distributors and retailers often require product liability insurance.

with their mothers on pasture in the summer, and then sell them at feeder sales in October, thereby limiting their need for facilities and feed to overwinter them. Some Vermont beef farmers buy yearling animals monthly to finish on stored feed, minimizing the need to move large volumes of animals in the fall when slaughter access is at a premium. Other producers buy stocker calves in the spring to feed on pasture over the summer and slaughter them the following fall. At least one significant producer of grass-fed beef plans his operation to slaughter 80% of his stock between February and September when space is available at the local slaughterhouse.

An important (and often missed) component of beef production is marketing flexibility. In regions of the United States with large numbers of beef producers, farmers follow the market and move cattle whenever a price point suggests a profit (i.e., they might be sold as calves, yearlings, or market-weight animals). Vermont beef producers seldom use this flexible model. Producers should consider selling animals at various points in their productive lives rather than focusing entirely on moving animals from birth to slaughter.

☼ Climate Change Impacts on Livestock Production

The *USDA* and the *U.S. Global Change Research Program* indicate that climate change will produce detrimental effects on most crops, livestock, and ecosystems that will vary somewhat by region in the century ahead. Crop sector impacts from weather are likely to be greatest in the Midwest, and these impacts will likely expand due to damage from crop pests. Decreased yields in the major corn and soybean supplying region of the country will, of course, have ripple effects, including impacting the cost and availability of animal feed in Vermont—already the largest production expense for dairy and livestock farmers.

Livestock production systems are vulnerable to temperature stresses, rapidly changing weather conditions, and exposure to different diseases and parasites. The direct effect on livestock and livestock management systems may include lowered feed efficiency, reduced forage productivity, reduced reproduction rates, and costs associated with modifying livestock housing to reduce thermal stress. Temperature stresses can be mitigated for animals raised indoors but hotter summer temperatures may require new thermal environment control systems and the cost and availability of animal feed will likely be a problem in the years ahead. Many livestock farmers are interested in expanding grass-fed livestock production to reach regional markets for organic meat. It is unclear how temperature stresses will impact the expansion of livestock production in Vermont, but the USDA states that the negative effects of hotter summers will likely outweigh the benefits of warmer winters. More rain in the Northeast and a longer growing season may lead to an expansion of forage production in Vermont, but increased concentrations of carbon dioxide in the atmosphere effect plant nitrogen and protein content, impacting the quality of the forage.[48]

ANALYSIS

Livestock/Meat Market Development Needs

As demand for locally sourced meat continues to increase, it is reasonable to expect the slaughter infrastructure to expand as well. Several meat processing and slaughter businesses that have opened within the last five years indicated that demand has outpaced their estimates. While one or two new facilities may be needed in underserved areas of the state, it is also important to address profitability, quality, and efficiency issues at existing establishments.

Our interviews and Sam Fuller's slaughterhouse/processor survey confirm the 2005 findings of *Sleeping Lion Associates* that Vermont does not lack for slaughter capacity but rather must develop profitable models for year-round livestock production, slaughter, and processing. More specifically, there is

- a need for higher-quality cutting, packaging, and wrapping;
- a need for pasteurizing and processing equipment (to make hamburger patties);
- a need to lower the cost of slaughtering and processing;
- greater awareness among Vermont consumers of the quality and price of Vermont-grown meat;
- concern about animal handling procedures; and
- a need to develop a year-round animal production model.

Although many efforts are in place to increase the use of Vermont-grown meat in schools, hospitals, the *Vermont Foodbank*, and other institutions, price point issues caused by production and processing costs will continue to make significant purchases by these organizations a challenge. However, if increased meat processing using high-quality dairy beef cows for the institutional market could be developed, this market could increase demand for slaughterhouse plant use during nonpeak times of the year such as March through May. Additionally, meat from cows slaughtered in August before the start of the slaughter season could be stored for use at the beginning of the school year.

A model deserving attention involves a small number of dairy producers reducing their herd size and using a single freestall group (normally between 50 and 100 stalls) to finish stocker (beef) animals on high-quality dairy forages. The animals can be sent to slaughter during the summer months when space is available at slaughterhouses.

This provides an income stream to dairies experiencing low milk prices and increases the use of Vermont's slaughterhouses during the summer months. To develop this new profit center, dairy farmers would need access to low-interest operating loans to help with cash flow until the beef animals are ready for market.

The *Pennsylvania Agricultural Alternatives Center* has developed guidelines for dairy producers considering adding beef production to their operations. A possible added bonus is recent animal nutrition research that has led to the production of higher-value carcasses from dairy bull calves.[49] Over the past few years, dairy beef carcasses marketed from young animals fed high-energy diets have been priced closer to their true value. This change allows dairy producers to add value to bull calves by growing them for the beef market.

Despite the increased demand for locally produced meat, technical assistance to support its production is decreasing. Tight budgets have resulted in the elimination of key positions at *UVM Extension* and in state government that have historically provided production and marketing support. For example, steps to increase farmer access to quality animals such as the spring and fall graded feeder sales cannot happen without paid staff supporting the large number of producer volunteers who organize and staff these events.

Increased use of itinerant slaughterers and custom-exempt plants by small producers would reduce demand on inspected facilities allowing them to meet the needs of commercial-scale livestock producers. Relaxing regulatory requirements governing the sale of meat from on-farm slaughtered animals beyond what is currently allowed, however, should be carefully considered before any changes are made to the existing system for several reasons:

- Inspection is a necessary step when the consumer is no longer directly tied to the production and processing of the meat.
- Many slaughter plants are operating on marginal profits. Although access to plants is difficult during the fall and early winter, the volume is needed to maintain their economic viability and existence.
- Moving animals destined for commercial use away from plant-based slaughter could lead to the closure of plants. This would limit plant availability for producers requiring inspection for sales.
- Damaging the strong Vermont brand could result if the highest of standards are not maintained, which would cause a negative ripple effect throughout the industry.

Research: Animal Care and Slaughter Standards

In the wake of the *Bushway Packing, Inc.*, animal cruelty scandal in 2010, Vermont developed a Livestock Care Standards Advisory Council to advise the Secretary of Agriculture on standards governing the care and well-being of livestock and poultry in the state, subject to the authority of the Vermont Legislature. In recommending these standards, the Council will consider factors that include agricultural best management practices for the care and well-being of livestock and poultry species, biosecurity, disease prevention, animal morbidity, food safety practices, and the protection of local, affordable food supplies for consumers.

Producers have an opportunity to voluntarily embrace animal care standards as a marketing tool to appeal to consumer interest in animal management practices. Following are common topics considered in the development of animal care standards:

- **Food and water:** Provide access to quality water and nutritionally balanced diets as appropriate for the species.

- **Health and veterinary care:** Implement science-based animal health programs, including prudent product use, and provide appropriate veterinary care when required.
- **Environment:** Provide high-quality living conditions as appropriate to each species.
- **Husbandry practices:** Implement science-based husbandry practices appropriate to the species.
- **Handling:** Ensure proper handling practices throughout the life of the animal as appropriate to each species.
- **Transportation:** Provide transportation that avoids undue stress as appropriate to each species.

A recent *Washington Post* article reported that "Consumers are increasingly demanding grass-fed beef, pork and lamb raised on local pastures by farmers who can vouch for the animals' diet and treatment. The USDA estimates that the market for locally grown food will be about $7 billion by 2012, up steeply from $4 billion in 2002."[50] Pastured animals command a premium in the market place if farmers successfully capture consumers' interest in taste and human health and ecological benefits, consistent with grass-based production practices. The December 2008 Nielsen Label Trends report indicated that Americans spent $2.4 billion on meat products that are hormone and antibiotic free, an increase of 11% since December 2007 and 66% since December 2004.[51]

During our interviews, Vermont producers and retailers indicated strong demand for local, source-identified meat. Because of the relatively small quantities of livestock produced in the state, the majority of Vermont-grown meat is sold at small, locally owned grocery stores (e.g., *Shelburne Supermarket* and *Lantman's Best Yet Market* in Hinesburg), at food co-ops, and through CSA shares. Some branded Vermont meat products, such as *Vermont Smoke and Cure* meats, are sold in regional supermarkets such as *Hannaford* and *Shaw's*. Vermont-grown meat is also increasingly finding its way onto the menus of hundreds of Vermont and regional restaurants. Businesses such as *Vermont Quality Meats* and the *Vermont Highland Cattle Company focus on the export of Vermont-raised meat to other areas of the Northeast.*

The Brattleboro Food Coop reports strong sales of source-verified meat, even though all of the pork and lamb and some of the beef and chicken sold by the co-op is raised and slaughtered outside of Vermont. At the *Brattleboro Co-op*, sales of lower-value cuts are strong, and some of the more expensive cuts are not even carried by the store.

In the last year, *City Market/Onion River Co-op* in Burlington sold $450,000 in *Misty Knoll Farms* chicken, *Hardwick Beef*, and LaPlatte River Angus Farm beef. Both LaPlatte and Misty Knoll are in the top 10 of all the local products City Market sells. The *Hanover Coop* sold over $425,000 in locally produced meat in 2009. The *Hunger Mountain Coop's* (Montpelier) meat category, which is composed primarily of Vermont-raised product, is seeing annual growth of approximately 12%. Beth Cate of *Buffalo Mountain Coop* and Mark Braskie at the *Brattleboro Food Co-op* both reported strong sales of source-verified ground meat and chicken in their stores. However, based on interviews, sales of more expensive beef cuts and of lamb and pork, while increasing, lagged significantly behind.

The *Eatwild* website lists over 1,300 providers of source-verified food nationwide. Several Vermont-based websites such as the *Vermont Growers Guide* list local producers of meat, largely available as direct sales. It can be assumed that consumers purchasing from these farms have an interest in supporting local agriculture and an interest in animal production methods. The number of livestock producers listed in the *Vermont Growers Guide* reflects the national per capita consumption of various types of meat: 44 beef producers, 38 chicken producers, 21 lamb producers, 6 meat goat producers, and 1 veal producer.

As more Americans become concerned about health and animal welfare issues related to large concentrated animal feeding operations (CAFO) in other parts of the United States, and as oil prices rise (putting upward pressure on food prices), consumer demand may continue to shift toward more locally and regionally raised livestock. Demand for Vermont-raised meats in the Boston and New York marketplaces is strong. *Black River Produce* frequently sells out of Vermont-sourced meat in the Boston area, and *Vermont Quality Meats* is able to successfully market Vermont livestock carcasses for Vermont farmers in New York City.

Marketing and Public Outreach

In *Chapter 3, Section 1: Understanding Consumer Demand* we recommend viewing food purchases as a set of behaviors that move along an adoption curve—from unsure to influenced, from influenced to proactive, and from proactive to committed—and that vary by combinations of **attitudinal factors** (e.g., values); **socio-demographic factors** (e.g., where a person grew up); **habits** (e.g., brand loyalty); **personal, household, and organizational capabilities**; and **contextual factors** (e.g., the ubiquity of fast food chains).

For example, fast food hamburgers have been a cheap and easily accessible staple for the past 60 years. Many unsure or influenced consumers might be interested in buying source-verified and/or organic meat, yet often hesitate at the price tag or have a hard time finding it. Increasing consumer awareness of the cost of producing food, especially livestock, in Vermont is a necessary step to increasing sales of Vermont-raised meat. Several livestock producers interviewed for this project stated that they can easily sell lower-cost cuts of meat but have difficulty marketing the entire animal. Likewise, farmers need to develop animal production systems that support marketable price points for their meat. Increased awareness of the reasons for the cost of locally produced meat may well increase the value consumers place on it.

Sales and Distribution

For Vermont livestock producers to realize a profit, they need to market the majority of their meat as high-value cuts to local and out-of-state consumers rather than institutional buyers. These customers will demand high-quality production, processing, and wrapping of meat.

The *Vermont Foodbank* is actively pursuing the use of dairy beef cows as a protein source for food assistance programs. Numerous conversations have also taken place around the incorporation of beef from high-end dairy beef cows for school lunch programs. It is estimated that processing 13 cows per week in-state would meet the needs of the schools with which the *Vermont Food Education Every Day* (VT-FEED) program currently works. Assuming a comparable need for the *Vermont Foodbank*, this demand would create a significant increase in off-season business for several Vermont slaughter facilities.

In 2006, consultant Rose Wilson conducted a study exploring producing ground beef from Vermont-sourced dairy beef cows to increase the use of locally grown food in Vermont schools and institutions. Although her research indicated that a patty machine was not needed, current potential customers have identified it as a necessary item. Perhaps the most telling information from Wilson's report was the requirement that Vermont-sourced ground beef would need to be priced very closely to ground beef available from other sources. At an estimated slaughter/processing cost in 2010 of $1.25 to $1.50 per pound, there is very little margin for selling a Vermont-sourced product, since hamburger can easily be sourced from distributors at $2.50 per pound (from Midwest beef operations). Wilson's work indicates that for the use of Vermont product to be successful, pricing must remain equal to, or be only slightly higher than, commodity pricing. However, the demand curve had a range that seemed to give potential market openings to higher-priced product.[52]

Even if the ground meat could be sold to institutions, the return on the animal to the farmer could be smaller than if the famer had simply shipped the animal out of state and received a "live weight" payment. Competing with commodity-scale processing is clearly a challenge for Vermont slaughter facilities. Continued increases in feed and fuel costs (which would be passed on to customers in the form of higher prices) and consumer interest in source-verified food, however, might increase the use of locally grown meat in institutional settings. Some Vermont slaughterhouses now possess the meat pasteurization equipment required to sell to institutional settings.

Technical Assistance and Business Planning

Limited education in management is available to Vermont livestock producers. Cheese producers have access to the *Vermont Institute for Artisan Cheese*, the *Vermont Cheese Council*, and leadership from flagship companies for education and marketing assistance. Although the *Vermont Beef Industry Council* and the *Vermont Grass Farmers' Association* both do outstanding work, neither is addressing the myriad issues facing the full range of Vermont meat producers and slaughterhouse owners.[21]

Value-added meat processors such as *Vermont Smoke and Cure* have indicated that they need farmers to raise hogs to certain specifications and that there is a lack of general knowledge of how to do so. The collapse of the Extension system nationwide

has left farmers without adequate access to needed animal and crop management assistance. Until the early 1990s *UVM Extension* had two agricultural agents in Franklin, Orleans, and Addison Counties and one in each of the other counties, plus significant faculty at the university level. Currently, one dairy specialist and one livestock specialist cover the entire state, although significant business management staff still exists. As *UVM Extension* moves to fill agriculture agent positions, it is hoped the new staff will bring valued skills to assist with the development of Vermont's livestock industry.

The *Vermont Farm Viability Program* provides significant technical and business resources to Vermont producers, but even more direct farm assistance is needed. The *Vermont Butter and Cheese Creamery* funds a full-time staff position to work one on one with dairy goat producers, and *Dole & Bailey*, a Massachusetts-based food distributor with a commitment to locally raised meats, offers production assistance to livestock producers. Other companies also provide resources to producers to ensure the quality of livestock used as the source of their products.

Vermont's livestock industry also lacks research in and best practices for advanced forage development and ration balancing to achieve maximum production from pasture-grown forages. Because the cost of feed often accounts for 30% of the cost of raising an animal, the lack of properly balanced rations can lead to escalating expenses and, in some instances, disease situations for animals and thus more economic risk for producers.

In response to increasing consumer demand for local foods, many New England farmers are very interested in integrating poultry enterprises into their operations to increase farm income. Poultry are efficient converters of feed to meat and eggs, require less space than other animals, and fit nicely as a complementary enterprise on many types of farms. However, there is a need for service providers who understand poultry and can provide accurate and up-to-date advice to producers.

Technical assistance to help Vermont farmers derive value-added products from their livestock is also lacking. Opportunities for meat producers to partner with chefs to create innovative uses for Vermont-grown meat are increasing. And there is a lot of discussion taking place about how to increase meat processing (as opposed to slaughter) capacity in the state.

Vermont producers should consider adopting animal care standards as part of their marketing strategies. Recent reports of isolated instances of animal cruelty on farms and in slaughterhouses have led to consumer concern about animal handling procedures. Vermont farmers who are willing to verify animal care standards (e.g., space allocation for individual animals) and to verify animal identification from farm to marketplace (i.e., source verification) can often charge premium prices for their products. Assistance with developing new animal management practices and designing new facilities (e.g., changing from confining sows to using deep-bedded furrowing systems) would encourage farmers to adopt new methods of livestock management.

A primary challenge for the Vermont meat production and slaughter industry is the seasonality of livestock production. Because of the tight margins in livestock production, farmers must maximize the use of pasture. Historically, most animals in Vermont are slaughtered between September and January. Interviews with slaughterhouse owners show that operations drop between 30% and 80% of total capacity from February to August. If the number of animals processed could be maintained year-round, slaughterhouses would more easily realize a return on their significant capital investment. Extending the pasture season to allow grazing for more months of the year would also significantly reduce the fall season pressure on slaughterhouses.

As the demand for locally grown meat has increased, some farmers are able to realize more profit by shipping animals to slaughter in the spring and summer. Several producers interviewed for this report stated that farmers who can ensure the delivery of a predetermined number of animals year-round that are slaughtered in a consistently similar way are able to access slaughter spots to meet their needs. Producers who deliver only a small number of animals sporadically experience the greatest difficulty accessing slaughter spots. Assisting farmers with winter grass management strategies so they can profitably finish animals year-round would increase their ability to secure slaughter spots.

The production of pork is not as tied to pasture production as the production of beef and therefore does not create as much pressure on slaughterhouses for access to slaughter dates at the end of the pasture season. Additionally, the demand for pork products is strong among both distributors, who report that they routinely sell out on a weekly basis, and processing and curing enterprises such as *Vermont Smoke and Cure*, who want to source as much local pork as possible. As the pork industry continues to

grow, it will help maintain slaughterhouse operations through the summer months when demand for the slaughter of beef and lamb typically falls off.

Physical Infrastructure and Technology

New farmers often have difficulty accessing suitable land because parcel sizes do not match their production needs, the development value of land outstrips the agricultural value, or they do not have sufficient equity to buy land. Systems need to be developed to increase new farmers' access to farm land (both conserved and unconserved acreage).

Access to high-quality and timely slaughter services continues to be a major hurdle for livestock producers. Significant public and private resources have been expended to address this issue over the past 15 years, and some improvements have resulted. Several feasibility studies conducted in Washington and New York states have verified the merit of developing mobile slaughter facilities to meet the needs of small livestock producers spread over geographically large areas. Additionally, interviews conducted by Sam Fuller for this project indicated that most kill floors in Vermont slaughterhouses are used only two or three days per week, suggesting a significant opportunity to expand the slaughter capacity of existing facilities.

Network Development

Paid staff to assist with industry development is essential for the continued growth of Vermont livestock production. A shared commitment among producers to fund these positions (similar to dairy cooperative field staff) coupled with public support will provide leadership for various educational needs and industry marketing support. Although the industry is currently served by trade associations and educational programs (*Vermont Sheep and Goat Association*, *Vermont Meat and Poultry Processors Association*, *Vermont Beef Industry Council*, *Vermont Prime Emu Producers*, *Vermont Grass Farmers' Association*, and *Vermont Pasture Network*), no statewide meat industry council exists to unite the interests of all livestock producers and meat processors along the value chain.

Regulation

Several producers expressed an interest in regulatory changes to allow the retail sale of meat derived from on-farm, uninspected slaughter. However, a number of producers cited grave concern about any decrease in the regulatory oversight of slaughter. Unlike with poultry, the ability of the state meat inspection program to accommodate changes in the inspection structure is limited. This issue was perhaps the most commonly voiced concern during the development of this report with strongly held opinions both in favor of and opposed to selling uninspected meat.

GETTING TO 2020: GOALS, OBJECTIVES AND STRATEGIES

Consumer interest in source-verified meat produced using specific standards creates a significant advantage for Vermont livestock farms. Although opportunity for expanding livestock production exists, challenges persist, including the cost and seasonality of production, access to slaughter, and insufficient production assistance for the development of high quality animals for the market.

Table 3.3.11: Objectives and Strategies for Expanding Vermont Livestock Production

OBJECTIVE	STRATEGY
Research Strategies	
To help Vermont farmers and technical assistance providers adapt to climate change.	Climate change will directly impact Vermont's livestock farmers through 1) feed-grain production, availability, and price; 2) change in pastures and forage crop production and quality; 3) animal health, growth, and reproduction; and 4) disease and pest distributions. Farmers and technical assistance providers (including educational institutions) should begin exploring adaptation strategies.
To explore the creation of a Vermont-branded, humane-certified meat program to position Vermont producers in this emerging market segment.	Conduct market research to explore market opportunities for humane-certified meat and to determine the prices consumers would support.
	Provide technical assistance to help interested producers meet humane-certified meat standards.
Natural Resource, Physical Infrastructure, and Technology Strategies	
To improve farmer access to viable and affordable agricultural land through ownership or long-term leasing.	Provide sufficient funding to the *Vermont Natural Resource Conservation Service* to inventory farmland and create (and update) a database with information on location, soils, ownership, price, etc., to identify all dairy farms and other lands optimal for livestock production.
	Increase funding support for farmland matchmaking programs such as the *Vermont Land Trust's* Farmland Access Program and the *Vermont Farmland Access Network* (VFAN).
	Encourage *Vermont Technical College* and others to establish multi-farm incubators for new livestock producers to build their skills and experience while minimizing up-front costs and risk.
	Support additional research on promoting farmland access and farming in established and developing residential areas on productive agricultural land owned by nonfarmers.
	Increase access to secure lease tenure models and transparent lease prices for livestock producers and landowners.
To Increase slaughter capacity and meat-cutting quality in order to the increase the profitability of livestock producers and slaughterhouse owners, as well as increase local and regional consumers' access to locally grown meat.	Support the development of two new slaughterhouses (in underserved areas of the state), one new privately operated small ruminant mobile slaughterhouse, and three significantly expanded existing slaughterhouses in Vermont by 2020. This will provide for the slaughter of 20,000 beef animals, 4,200 lambs, and 4,200 hogs annually, with 10% of the meat processed being sold to Vermont institutions and food processors.
To encourage the use of mobile slaughterers for the on-farm slaughter of animals raised for home use.	Conduct a feasibility study of the potential impact on producers and existing slaughterhouses of developing additional mobile slaughter units in Vermont.
	Increase the number of trained mobile and custom-exempt slaughter plant operators in Vermont to serve small-scale livestock operations and those raising animals for home use.

OBJECTIVE	STRATEGY
Natural Resource, Physical Infrastructure, and Technology Strategies	
To encourage the use of mobile slaughterers for the on-farm slaughter of animals raised for home use.	Conduct outreach and education to livestock producers who raise animals for home use or direct sales from the farm, to increase their awareness and use of itinerant slaughterers and custom-exempt plants and to determine the demand for itinerant slaughterers and custom-exempt plants.
Sales and Distribution Strategies	
To increase the volume of high quality, locally grown meat at local and regional market outlets, and maximize the availability of dependable markets for local producers.	Establish a meat industry council to coordinate the education of institutional buyers about the reasons locally sourced meat is more expensive to increase their willingness to purchase meat from local sources.
	Provide funding to VAAFM, *Vermont Fresh Network*, and other related organizations to facilitate matchmaking and strategic partnership opportunities among producers, slaughter and processing facilities, and retailers.
	Encourage a greater use of sourcers at the intersection of production, processing, and retail outlets. Develop information resources about the cost and benefits of sourcer positions to improve relationships between processors/end markets and raw product producers (For example, *Dole & Bailey* sourcers provide technical assistance directly to their pork and beef producers to ensure high-quality meat).[53]
Marketing and Public Outreach Strategies	
To increase the number of local and regional consumers who understand why local, source-verified meat costs more to produce than conventionally produced meat, so they are more willing to pay for it.	Conduct a media campaign (including in-store retail advertising) to educate consumers and institutional buyers about the benefits of purchasing, and the costs associated with producing, local, source-verified meat.
	Support continued efforts to develop a market for high-end dairy beef animals that can be served in Vermont schools and distributed by the Vermont Foodbank to its partners.
	Support the expansion of services provided by the *Vermont Grass Farmers' Association*.
	Support the ongoing publication of, and online access to, a grass-fed product directory and other directories listing sources for Vermont-grown meats.
Technical Assistance and Business Planning Strategies	
To increase, by 40%, the use of Vermont slaughterhouses between February and August.	Develop a coordinated livestock management program within the *Farm Viability Program*, *UVM Extension*, *Vermont Pasture Network*, *NOFA Vermont*, and other livestock trade associations to improve winter management practices, carcass development, commercial hog production, and year-round beef and lamb production.
To maximize the resources available to provide technical assistance to farmers and food entrepreneurs.	Provide specialized scaling-up technical assistance and business planning services for farmers and value-added food entrepreneurs seeking to serve larger markets. Survey farmers to identify those interested in scaling up productions specifically for institutional markets.

OBJECTIVE	STRATEGY
Technical Assistance and Business Planning Strategies	
To provide ongoing support for grass-fed livestock producers and consider expanding the existing pasture coordinator position to include more staff for education.	Expand the use of *NOFA Vermont* workshops, pasture walks (informal, in-the-field educational gatherings) through *UVM Extension*, and other trade association offerings to provide hands-on education to grass-fed livestock producers.
	Support the expansion of the *Vermont Pasture Network's* education programming.
	Develop an enterprise budget template for grass-fed livestock producers.
Network Development Strategies	
To encourage greater coordination among meat producers, slaughter facilities, and meat processors to expand the production and use of Vermont-grown meat.	Provide early-stage, publically supported funding and organizational development assistance to create a statewide meat industry council (or Vermont Meat Guild), including three years of funding for a dedicated staff person to serve the council and industry.
	Provide funding and technical assistance to the meat industry council (or Vermont Meat Guild) to develop a five-year strategic plan for the industry, and then support efforts to implement that plan and track performance goals.
Workforce Development Strategies	
To ensure Vermont slaughterhouses and meat processors have access to an appropriate pool of skilled, trained workers for employment in their facilities.	In conjunction with the Workforce Investment Board, an exhaustive list of meat science schools, certificate programs, and college programs should be developed by 2012 for distribution to Vermont high schools, slaughterhouse owners, and livestock producers for the dual purpose of increasing awareness of meat science educational opportunities and awareness of potential employees.
	Appropriate Vermont private and public colleges, vocational career centers, slaughterhouse owners, livestock producers, the VAAFM, and other interested parties will collectively explore the development of a degree or certificate program in meat science in Vermont. Alternatively, a formalized mechanism will be developed to increase Vermonters' access to existing programs in other parts of the country.
	Conduct a feasibility study for the development of a full-service training center for livestock production, slaughtering, processing, cutting, marketing, etc., at a new slaughter/processing facility in an underserved region. The training center could help rebuild the industry in Vermont and throughout New England.
	Develop training programs for itinerant slaughterers through existing high school career centers or technical education programs, to increase the number and geographic distribution of itinerant slaughterers in the state.

OBJECTIVE	STRATEGY
Regulation and Public Policy Strategies	
To encourage Vermont's regulatory structure to support farmers' use of credible science-based animal care practices in the management of their herds and flocks, and have these standards be the foundation of the Vermont livestock brand.	Through appropriate consumer education and marketplace compensation, encourage farmers to adopt voluntary, credible, and science-based animal care standards, or to become humane certified, in order to sell to certain retailers.
	Coordinate with the Vermont Livestock Advisory Council to develop a set of animal care and slaughter standards to allow farmers to voluntarily differentiate their production methods to build a Vermont brand based on these standards.
To research any regulatory changes to the state meat inspection program necessary to increase access to slaughter capacity in Vermont, at all scales of production.	An in-depth analysis of the regulatory framework best suited for increasing the local production and sale of meat for all scales of livestock production in the state, which also ensures humane treatment and consumer health and safety, should be conducted by the VAAFM, relevant meat producers trade associations and advocacy organizations, and the agriculture committees in the Vermont House and Senate.

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Beef: 625,741 (VT population) x 55.6 (beef per capita availability) / 434.85 (weight) = 80,007.
Chicken: 625,741 x 53.8 / 3.01 = 11,184,341.
Pork: 625,741 x 44.5 / 109.35 = 254,645.
Lamb: 625,741 x .6 / 46.06 = 8,151.

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PHOTO CREDIT: Tamarack Tunis

Grace Bowmer with the first lamb of 2010 at Tamarack Tunis (South Corinth)

ANALYSIS OF VERMONT'S FOOD SYSTEM

Food Production: Livestock and Meat

Credits

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farm to plate STRATEGIC PLAN

farm to plate NETWORK

VERMONT FOOD SYSTEM ATLAS

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