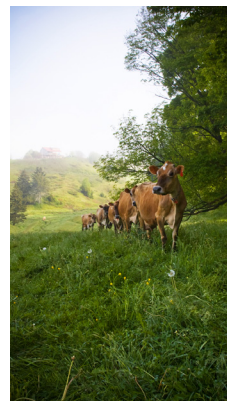
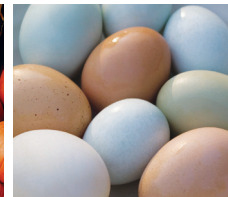




farm to plate

STRATEGIC PLAN



A 10-YEAR STRATEGIC PLAN FOR VERMONT'S FOOD SYSTEM

Executive Summary | Updated July 2013

Acknowledgments

The Farm to Plate (F2P) Strategic Plan is dedicated to all the hardworking farmers and food enterprises that supply nourishment for our bodies, create jobs for Vermonters, maintain our working landscape, and are the backbone of our communities.

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- Growald Family Fund
- Eagleridge Fund
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***also a member of the Sustainable Agriculture Council**

A Big Thank You to all those who participated in one of the focus groups and / or local food summits that took place between November 10, 2009, and January 15, 2010, in eight regions of the state and to those who attended the statewide summit on April 10, 2010, in Rutland. We had an incredible turnout all over the state—over 1,200 Vermonters attended these events. We could not have written this Plan without you!

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Interviews with nearly 250 individuals and organization representatives were critical to the F2P research process. In-depth working sessions were held with 162 participants to vet initial goals, objectives, and strategies. We'd like to thank all of you who generously shared your time and input during interviews and as ongoing contacts to answer questions and review content and strategies. Your knowledge of Vermont's food system and guidance have been critical to shaping the recommendations in this Plan.

We hope this Strategic Plan is a seed that will bear fruit for years to come. Everyone has a stake in our food system: We need your help to *implement* the plan, coordinate actions, and maximize impacts.

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FOREWORD

Food System Development Is Economic Development



The Farm to Plate Strategic Plan links Vermont's agricultural history and entrepreneurial spirit with a forward-looking plan for a strengthened local economy. It provides our state with a road map to new jobs and increased market share as well as improved physical, environmental and economic health. By working together to implement this Plan, we will grow our economy, maintain our working landscape, and strengthen our communities.

In the coming years, agriculture will be one of my Administration's key areas of focus for economic development. By tapping into Vermont's land resources and farming history, our diverse food manufacturing know-how, as well as considerable training and support services, there is great opportunity for new and expanded food enterprise development in our state. While keeping farmland in farming, we will be creating and retaining jobs for Vermonters.

Our commitment to an expanded agricultural economy will also improve the health of Vermonters. Expanding access to fresh, healthy, locally grown products enhances the ability of Vermont families, schools and institutions to serve nutritious and balanced meals. Creating more livable-wage jobs in agriculture for Vermonters ensures that our rural communities will thrive. These positive changes go hand in hand with efforts to improve our health care system.

Expanding our agricultural development efforts will allow Vermont to take advantage of our proximity to the over 38 million consumers within a 200-mile radius of our borders. These regional markets value the Vermont brand and are primed to buy more of our high-quality products.

Climate change and oil addiction threaten the long-term viability of Vermont's food system. But by relocalizing food production and boosting on-farm renewable energy production, Vermonters can lead the nation in proactively responding to these challenges. Unlike many other parts of the country, Vermont is not at a loss for water—an essential input to the production of a wide variety of products—from forage and oilseed crops to fruits and vegetables, from maple syrup and honey to perennial grasses for biomass production.

We are looking forward to working with Vermont's farmers, entrepreneurs, consumers, and nonprofit organizations to implement the strategies contained in this Strategic Plan. It's going to take everyone working together to grow our agricultural future. Now let's get to work!

The Honorable Peter Shumlin
Governor of Vermont

Chuck Ross
Secretary, Agency of Agriculture, Food and Markets

Lawrence Miller
Secretary, Agency of Commerce and Community Development

PREFACE

Overview of Vermont Agriculture: How the Past Influences the Future

*By Roger Allbee, Secretary of the Vermont Agency of Agriculture,
Food and Markets, 2007-2010*



*Secretary Allbee takes part in first
State House Food Garden planting*

The Farm to Plate strategic planning process has been a wonderful way to review where Vermont agriculture has been, where it is today, and what its economic advantages are going into the future. It will assist in identifying the resources as well as policy changes necessary to sustain an economically viable agricultural sector within the state.

The first white settlers learned a great deal about food production, hunting, and maple sugaring from the Abenaki and other Native peoples who were here before them. Since then, Vermont has had a very rich and ever-changing agricultural history. From this history some common themes emerge that provide valuable insights for the future.

It is important to understand that agricultural production in Vermont has never been insulated from larger regional, national, and international economic forces. Beginning in the 1830s, Vermont became known as the sheep capital of the world when William Jarvis, the U.S. consul to Portugal, purchased prized merino sheep from the Spanish royal flock, which he brought to Weathersfield, Vermont. Demonstrating great animal husbandry and aided by a tariff on wool imports and a climate and topography conducive to growing grass and other forage crops, Vermont farmers excelled in raising these sheep; by 1840,

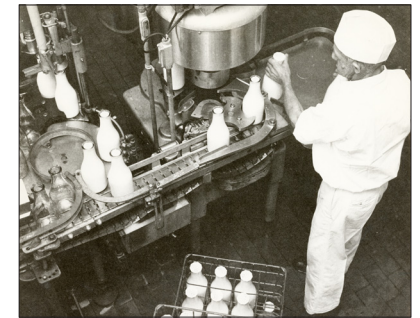


Vermont farmers excelled in raising merino sheep in the 19th century.

over 1.5 million sheep occupied the landscape of the state. Merino sheep had the best wool, and Vermont was known worldwide for having some of the best merino sheep, winning first prize at the Hamburg Exposition in Germany in 1861. With the opening of the West and the reduction in tariffs on wool imports, however, the sheep industry lost its economic advantage and foothold and was replaced in economic importance by an emerging dairy industry after 1850.

As Vermont's wool industry declined, our farmers understood that advantages with climate, soil, and animal husbandry, along with access to a large emerging market up and down the eastern seaboard, provided new economic opportunities. Boston became the main market for Vermont's well-known butter, and the first butter train left St. Albans on its once-per-week journey in 1854. Vermont butter became known regionally, nationally, and internationally for its quality, winning first place awards in Paris and at the Chicago World's Fair.

By the late 1890s, St. Albans had become the butter capital of the world with 60 separators, 1,000 farms, and 15,000 cows. Local creameries and cheese factories and related support industries sprang up quickly, and by 1900, Vermont had 186 creameries and 66 cheese facilities. However, again with competition from the West, Vermont butter lost its competitive edge and butter production was replaced by fluid milk production, even though milk could not be easily transported great distances at that time. Today, Vermont remains a major supplier of fluid milk to the New England markets and still is well known for award-winning cheddar and other specialty cheeses. Dairying accounts for about 73% of the gross farm income in Vermont and is the predominant agricultural land use.



*Vermont became a major milk producer in the 20th
century.*

The ingenuity of Vermont farmers in recognizing market niches has allowed them to adapt to economic forces and market changes. Although Vermont has always had one or two predominant agricultural industries, such as maple syrup, wool, butter and cheese, and then fluid milk, other enterprises have existed as well. In the mid-1800s, Vermont was the breadbasket of New England. Farmers in the Champlain



Farmers scything hay, circa 1937.

Valley grew wheat, barley, and oats. Potatoes, hemp, hops, apples, other fruits and vegetables, and tobacco were significant crops in various regions. Farmers recognized early on that diversity of enterprise was important for economic survival. In 1885, almost every Vermont town had market days during which local products such as eggs and honey were sold, according to the Vermont *Yearbook of Agriculture*. In the late 1800s and early 1900s, Vermont developed an aggressive campaign to draw tourists to the state, publishing many copies of the book *Our Farmers*.

Vermonters recognized early that Vermont farmers would never be able to compete with the West on a commodity basis. For instance, in 1872, in a paper written to the Vermont Board of Agriculture titled "Vermont Farmers' Future," the Rev. Wright of Bakersfield wrote:

It is useless for the Vermont farmer to compete with those of the West in raising those few staples of product that can be naturally raised in the West. The great increase of population and of wealth at the East indicates a growing market for milk, for the first quality butter, veal, mutton, and for products of the garden, the bee hive, the poultry yard, and the fish pond. Only those will prosper who use their minds in studying how to cater to the demands of this growing market and this changing state of things.

In 1913, commissioner of agriculture E. S. Brigham again asserted that "farm products that belong in the East are those that are adapted to our soil and climate and are needed in large market centers."

History has demonstrated that Vermont farmers prosper when they take advantage of their location, brand, and environment, as well as local and regional markets, to develop their farms and enterprises and distribute products that appeal to consumers. Joint marketing and distribution through farmer-owned cooperatives have helped products such as milk, cheese, and vegetables reach a variety of consumer markets.

Farmers, food system businesses, and support organizations have continued to be industry leaders in maple production and processing, organic farming, agro and culinary tourism, specialty food production, and related endeavors. Today, a "Renaissance of Vermont Agriculture" is reflected in a growing interest at the state and regional levels in local food systems. People increasingly want to know where their food is coming from and want to connect with the farmers who produce that food. All we have to do is look at the growth in farmers' markets, farm stands, and community supported agriculture within the state, the growing artisan cheese industry, vineyards, and other specialty agricultural operations to find evidence of this exciting trend.

Challenges as well as opportunities exist for Vermont and its agriculture going forward, just as in the past. Outside economic forces will continue to influence this change, as recently witnessed in the dairy industry. The state is not an island. Nevertheless, we have advantages in serving local and regional markets with products that consumers want, as history demonstrates. The Farm to Plate Initiative and this Strategic Plan identify these forces as well as some possible opportunities. As in the past, Vermont will need new policies; greater collaboration among the educational, public, private, and not-for-profit sectors; patient sources of financing and capital; and new invigorated approaches to product development, storage and processing, marketing, and distribution.

The Farm to Plate Strategic Plan is exciting because it holistically evaluates all the issues necessary for Vermont to have a more economically vibrant and sustainable agriculture sector over the next 10 years, as change continues to take place.



Young farmers cultivating corn.

Executive Summary

Setting the Table for Farm to Plate

In the past 10 years, a growing movement in sustainable agriculture—involving increased local food production and consumption, value-added processing, and diversified farms—has taken off. During the 2009 legislative session, two member-based public policy organizations, [Vermont Businesses for Social Responsibility](#) and [Rural Vermont](#), and a number of state legislators (including Representatives Chris Bray, Will Stevens, Carolyn Partridge, Shap Smith, Bill Botzow, Martha Heath and Senators Vince Illuzzi, Sara Kittell, Susan Barlett and Peter Shumlin) crafted and helped win legislative approval for the creation of a **Farm to Plate Investment Program (F2P)**. It was approved by the Senate and House in May 2009 and signed by Governor Douglas, as Sec. 35. 10 V.S.A. chapter 15A § 330. The legislation tasked the [Vermont Sustainable Jobs Fund \(VSJF\)](#), in consultation with the [Vermont Sustainable Agriculture Council \(SAC\)](#), with crafting a **strategic plan** based on a broad scope of work.

The primary goals of the legislation are to:

1. Increase economic development in Vermont’s food and farm sector.
2. Create jobs in the food and farm economy.
3. Improve access to healthy local foods.

Building on what former [Agency of Agriculture, Food and Markets \(VAAF\)](#) Secretary Roger Allbee calls a “renaissance in Vermont agriculture,” VSJF coordinated an 18-month statewide public engagement process to craft a 10-year strategic plan for food system development to achieve these legislated goals. **The F2P plan encompasses all types and scales of agricultural-related production and processing, from small-scale diversified production to commodity dairy production, from on-farm processing to commercial scale food manufacturing.** It acknowledges and highlights the important role of various markets within the food system, including:

- Local markets (i.e., Vermont plus 30 miles)
- Regional markets (i.e., New England, New York, and southern Quebec)
- National and international markets

A key goal of the F2P plan is to identify infrastructure investments and public policy recommendations that will support new and existing agricultural enterprises that increase local resiliency in today’s changing times. There are both historic and recent threats to the future of agriculture in the state, including the loss of dairy farms, rising energy and feed costs, the volatility of commodity markets, global competition, and climate change. There are also many signs of expansion and opportunity, especially for diversified and organic farm operations as the model of industrial agriculture faces increasing public scrutiny. **The F2P Plan’s ultimate purpose is to encourage policies and strategic investments that accelerate the movement toward strong local and regional food systems.**

Vermont’s major agricultural and food product output totaled \$2.7 billion in 2007, the latest year of the Census of Agriculture. We estimate that the direct economic impact of just a 5% increase in farming and food manufacturing in Vermont would generate \$135 million in annual output. When the multiplier effect is considered, total output would increase by an average of \$177 million per year from 2011 to 2020. A 5% increase in production would also boost total food system employment by an average of 1,500 jobs over the 10-year period.

PHOTO CREDIT: Senator Leahy Press Office



Congressman Peter Welch, Senator Patrick Leahy, and Senator Bernie Sanders at the traditional Milk Toast in celebration of the renewal of the Milk Income Loss Contract (MILC) Program's charter on May 22, 2008.

The Vermont Congressional Delegation strongly supports the efforts of the Farm to Plate Initiative. For the first time, we will now have a concrete, systematic plan to reenergize the farm and food sector in Vermont in a way that includes new thinking, solid data, and partnerships organized to get the job done.

USDA programs now emphasize the “Know Your Farmer, Know Your Food” mission, and Vermonters, already known for their national leadership in this issue, stand ready to present a model that can be replicated throughout the country. Senators Leahy and Sanders and Congressman Welch have offered to help in any way they can and their positions on key committees overseeing the FDA, USDA, DOE and Federal Appropriations puts them in a unique position to have a significant impact. From organic standards and food safety regulations, interstate commerce laws, and energy efficiency, to land conservation and beginning farmer programs, they are there to make sure the federal government is a true partner in the effort. They are proud of all the hard work and foresight of the Vermont Legislature, and the effort of agricultural producers and manufacturers in our state who provide a healthy, secure food source, create new jobs, and stimulate our economy in the 21st century.

Strategic Plan Development Process

To develop the F2P Strategic Plan, VSJF staff worked with nine researchers, a Geographic Information Systems (GIS) specialist, and several interns and volunteers to assemble and analyze food system data and to conduct in-depth stakeholder interviews and new research on the major elements of Vermont’s food system.

The F2P team spent 18 months conducting research and consulted with over 1,200 Vermonters, ranging from interested consumers to experts in the field. Specifically, the F2P team examined and analyzed existing data sets, conducted interviews, and organized a number of focus groups and summits to gather feedback and information about how the food system operates today and how it can and should be strengthened into the future.



Jed Davis edits F2P strategies at the statewide food summit.

The F2P team examined studies, reports, articles, and websites for each component of Vermont’s food system. Public feedback from interviews, focus groups, local food summits, web surveys, a statewide food summit, working sessions, and meetings informed the “Analysis” component of each section of Chapters 3 and 4. The F2P Strategic Plan goals, objectives, and strategies described in Chapter 2 were developed through this public feedback process. Six in-depth working sessions were conducted to bring together key stakeholders who had knowledge, influence, and commitment in particular subject areas to review the initial research findings and to comment on draft goals, objectives, strategies, and priority investment recommendations.

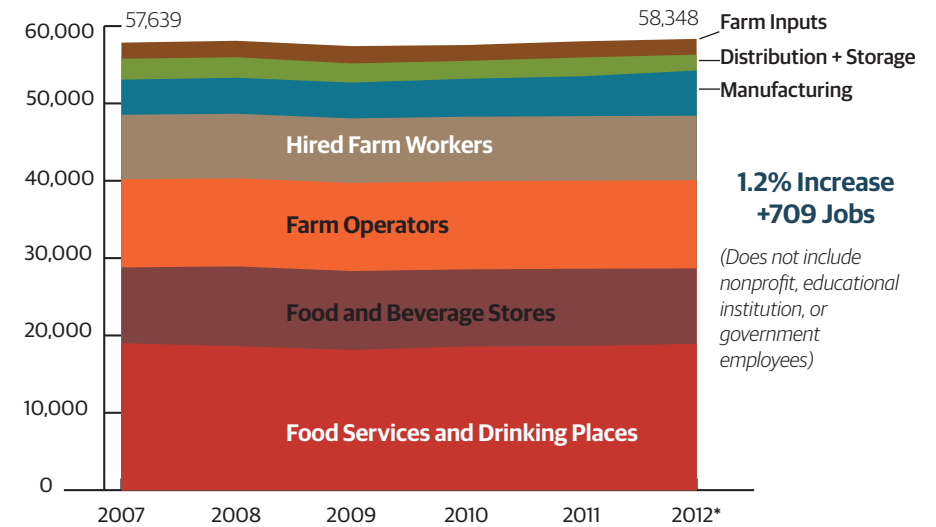
Our Food System Economy

A food system encompasses all of the **resources** (e.g., land, soil, crops, equipment), **activities** (e.g., growing, harvesting, researching, processing, packaging, transporting, marketing, consuming, and disposing of food), and **people** (e.g., farmers, bakers, policy makers) involved in providing nourishment to people and many kinds of animals.

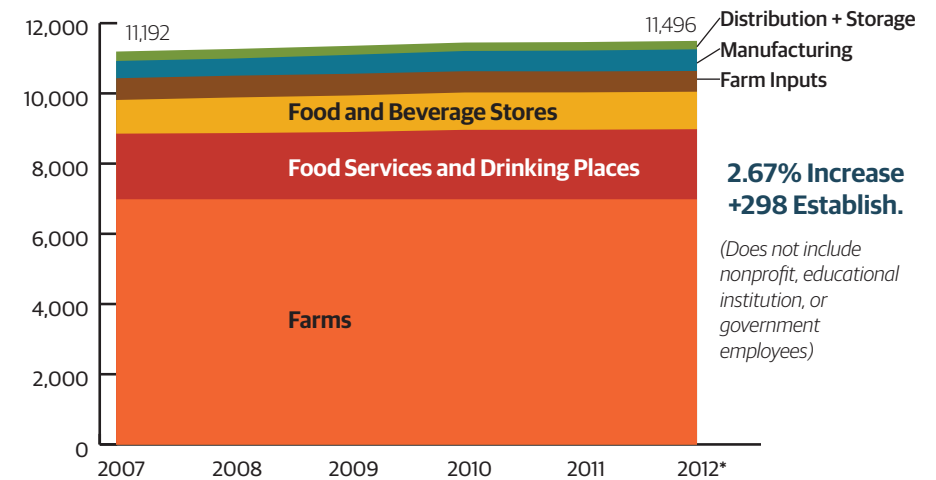
Vermont's food system is critical to our economy, identity, quality of life, and sustainability. **Jobs throughout the entire food system represent over 16% (or 58,348) of all private sector jobs and over 13% (or 11,496) of all private businesses in the second quarter of 2012.** According to the 2007 Economic Census, retail food purchases generated over \$2 billion in sales.¹ When measured by employment and gross state product, **food manufacturing is the second-largest manufacturing industry in Vermont.** Dairies producing fluid milk dominate farm production in Vermont, but a wide range of nondairy farms of all sizes produce conventional and organic fruits and vegetables, livestock, hay, maple products, and specialty crops for local, regional, and national markets. This dynamic and evolving sector is also made up of entrepreneurs of all stripes creating a variety of value-added products (e.g., cured meats, granola, salsa, chocolate); a number of distribution networks; and dozens of organizations, programs, and volunteer-driven activities that provide technical assistance, education, and outreach.

Despite Vermont's long history of agricultural production, a number of recurring weaknesses, gaps, and barriers have affected our food system. Vermont's small size, relatively short growing season, and topography (which is more suited to small-scale than large-scale farming) have been barriers to generating the volume of products needed to access larger markets. The price points in institutional and other medium- and large-scale markets' business models are commonly not viable for small-scale farmers, and these institutions frequently lack the flexibility to manage local food sourcing. At the same time, Vermont has an underdeveloped and fragmented agricultural infrastructure that makes it difficult for smaller producers to serve larger markets by scaling up or aggregating products. Many small producers are unaware of procurement specifications, and the scale and stage of development of many producers are not matched with particular markets.

Vermont Food System Employment, 2007 through 2nd Quarter 2012



Vermont Food System Establishments, 2007 through 2nd Quarter 2012



■ + ■ = 2007 Census of Agriculture

■ + ■ + ■ + ■ + ■ = 07-10 Nonemployer Statistics, Vermont Department of Labor, Quarterly Census of Employment and Wages 2007-2012

The [Vermont Council on Rural Development's](#) recent *Vermont Working Landscape Partnership Action Plan* reports that “Vermont faces a fundamental contradiction: while the public desires a strong working landscape for all its scenic, cultural, environmental, and recreational attributes, state and local public policies have not defined the working landscape effectively or built a strategic plan of action and investment commensurate with its importance.”² Access to affordable land for new and expanding farms, insufficient farm business transfer and land transfer support, and limited access to flexible capital in the food system, especially for new, undercapitalized farmers and food entrepreneurs, are all chronic problems.

The need for highly networked communication and coordination among food system enterprises, markets, technical assistance providers, and advocacy organizations regarding products, activities, and services is more acute than ever. To expand our food system efficiently and effectively, we must significantly improve access to accurate and timely information about land access, product availability, market data, rules and regulations, distribution systems, and other issues.

Getting to 2020

Many believe that a more proactive and strategic approach to food system development could lead to additional growth in this sector, spurring job creation and benefiting the state through import substitution (which cycles dollars locally rather than exporting them), the expansion of the export economy, and healthier, more accessible food.

Our soil-to-soil analysis of Vermont’s food system attempts to examine all of the **inputs** (Chapter 3.2) that convert energy into food, feed, or other forms of energy. It then follows these agricultural **products** (Chapter 3.3) through any additional **processing** (Chapter 3.4) before they are **distributed** (Chapter 3.5) to **market outlets** such as grocery stores and restaurants (Chapter 3.6). Finally, it considers what happens to these agricultural products when they are **returned to the environment** in one form or another (Chapter 3.7). The F2P Strategic Plan also analyzes a variety of **crosscutting issues** that impact the entire food system, including education, regulations, workforce development, and energy (Chapter 4).

Vermont’s food system operates within, and is influenced by, social, political, economic, and environmental contexts that are local, regional, national, and global in scope. A

sizable **support system** of nonprofit organizations, government agencies, educational institutions, investors, and others also exists to aid Vermont’s food system development. And of course, food system businesses (like all businesses) have needs such as financing, workforce development, organizational development, and marketing, among others.

As the F2P analysis in Chapters 3 and 4 navigates through Vermont’s food system—from farm inputs to nutrient management—it analyzes the internal needs and external contexts affecting food system enterprises. Based on an analysis of the strengths, weaknesses, opportunities, and threats facing Vermont’s food system, a number of goals, objectives, and strategies were developed.



3.1 Understanding Consumer Demand

How much food is consumed in Vermont? How much local food do Vermonters eat?

Consumer demand for Vermont made food products drives activities throughout our food system. Data does not exist to measure local food consumption with certainty, however, **official data sources indicate that Vermonters and visitors spent over \$2 billion on food in 2007.**³ Most of the food Vermonters consume is imported from elsewhere, and imports have increased over the past decade.

F2P researchers worked with Dr. David Conner, Dr. Linda Berlin, and graduate student Florence Bécot at UVM to estimate the value of *local* food purchases in Vermont. Researchers made direct inquiries to several types of data sources:



Checking out at Healthy Living, South Burlington.

Food System Diagram

TOTAL JOBS & BUSINESSES	
Jobs	Businesses
58,348 total	11,496 total
16.4% of private jobs	13.6% of private businesses

Updated January 2013



Elements of the Food System

Consumer Demand refers to demand for food products in Vermont and demand for Vermont food products throughout the state and region.

Farm inputs include resources such as land, soil, fertilizer, feed, seed, labor, equipment, and energy, as well as the businesses that provide farm inputs. Farm support businesses include all the businesses that rent, sell, and repair equipment (e.g., plows, tractors) needed for production and merchants of farm supplies (e.g., animal feeds, fertilizers).

Food Production is defined as growing or raising a raw food product, such as hay and other forage crops, fruits and vegetables, dairy animals and fluid milk, livestock grown for meat, maple syrup, grains, honey, and fish.

Food Processing refers to the transformation of a raw product or products into a value-added product prior to entering the marketplace (e.g., livestock must be slaughtered, processed, and packaged before entering the marketplace for sale as meat).

Wholesale Distribution is defined as the process of aggregating and delivering food from the primary producer to end consumers, whether they are found at supermarkets, restaurants, schools, and convenience or general stores. At times, it also requires short-term storage.

Retail Distribution refers to the variety of locations where consumers purchase food, such as grocery stores, country stores, food co-ops, farmers' markets, CSAs, restaurants, superstores, schools, and hospitals.

Nutrient Management refers to the management of food waste and livestock manure to minimize negative impacts of nutrient losses on the environment and to provide sufficient nutrients for crop and animal growth throughout their life cycles.

- 🍌 Institutional food service operations that purchase and serve locally grown foods, including K-12 schools, colleges and universities, and hospitals
- 🍌 Statewide nonprofit organizations that conduct surveys on sales at farmers' markets, community supported agriculture, sales to restaurants and hospitals
- 🍌 Produce distributors and food hubs
- 🍌 Retailers (mainstream grocery stores and natural food stores)
- 🍌 State government

We conservatively estimate that local purchases make up 2.5% (>\$51 million) of all food purchases. However, we are still awaiting data from several key sources, including food distributors and grocery stores. Because most people buy their food at grocery stores, we believe that local purchases at grocery stores (e.g., milk, Ben & Jerry's ice cream, Green Mountain Coffee Roasters coffee, King Arthur Flour products, apples, and maple syrup) may constitute an additional \$50 million in sales, for a total of over 5% (\$100 million) of all food purchases.⁴

Low Cost vs. Local

Vermonters buy local food for a wide variety of reasons, including a desire for quality and freshness, to support the local economy, and to reduce the environmental impacts caused by so much of our food coming from thousands of miles away. On the other hand, in numerous studies, consumer surveys, F2P focus group meetings, and interviews, the predominant barrier identified to purchasing local foods was cost. For example, nearly one third of respondents to a 2010 [Center for Rural Studies](#) 'Vermont Poll' cited **income** and **cost** as an obstacle for purchasing more

"One of the core issues is artificially low and subsidized food prices. That is an especially huge challenge for us as small diversified farms starting out. Last year, I raised 10 piglets and was on my way to drive the hogs to slaughter when I passed this huge banner for a Truck Load Meat Sale with pork chops at \$0.99/pound, and here I'd worked so hard to raise these 10 hogs! I think that's a huge barrier and gets back to respecting farmers as part of the community."

—Focus group participant from Northern Vermont

local foods. The artificially low cost of our industrial food system impacts demand for local products, making it difficult for local farmers to provide their products at the price points expected by the average consumer.

Cheaper food, of course, does not necessarily mean safer and healthier food. The increased availability of cheaper food, larger portion sizes, the reliance on high-calorie ingredients, and other lifestyle choices have led to an array of health problems. Vermonters tend to eat healthier than most Americans—38% of adult Vermonters eat fruit two or more times a day, tied for third in the nation, while 30% of adult Vermonters eat vegetables three or more times a day, tied for sixth in the nation.⁵ The *United Health Foundation* named Vermont the healthiest state in the nation from 2010 through 2012.⁶ However, **58.5% of Vermont adults were considered overweight or obese in 2010**, and the percentage of overweight and obese Vermonters increased 4.8% and 63.7%, respectively, from 1995 to 2009.⁷ The [Vermont Department of Health](#) estimates that nearly 9% (55,000) of Vermonters have diabetes.⁸

GETTING TO 2020

Goals 1, 2, and 3 of the F2P Strategic Plan focus on increasing the amount of and demand for healthy, locally produced food for Vermonters and the region and to reduce food related health problems:

Goal 1: Consumption of Vermont-produced food by Vermonters and regional consumers will measurably increase.

Goal 2: Consumers in institutional settings (e.g., K-12 schools, colleges, state agency cafeterias, hospitals, and prisons) will consume more locally produced food.

Goal 3: Vermonters will exhibit fewer food-related health problems (e.g., obesity and diabetes).

To achieve these goals, improving consumer education was among the top three most frequently mentioned needs for strengthening the local food system during the stakeholder input process. Consumer education campaigns should, for example, provide Vermonters with information about the economic, social, environmental, and

health benefits of buying locally and regionally produced food, including addressing the “price” barrier with specific information (e.g., average price per pound of food from a CSA share compared to the supermarket prices), the hidden costs of imported food, and should profile farm families and food enterprises actually benefitting from their purchases.

See Chapter 3, Section 1 for more information: www.vtfoodatlas.com/plan/chapter/3-1-consumer-demand



3.2 Farm Inputs

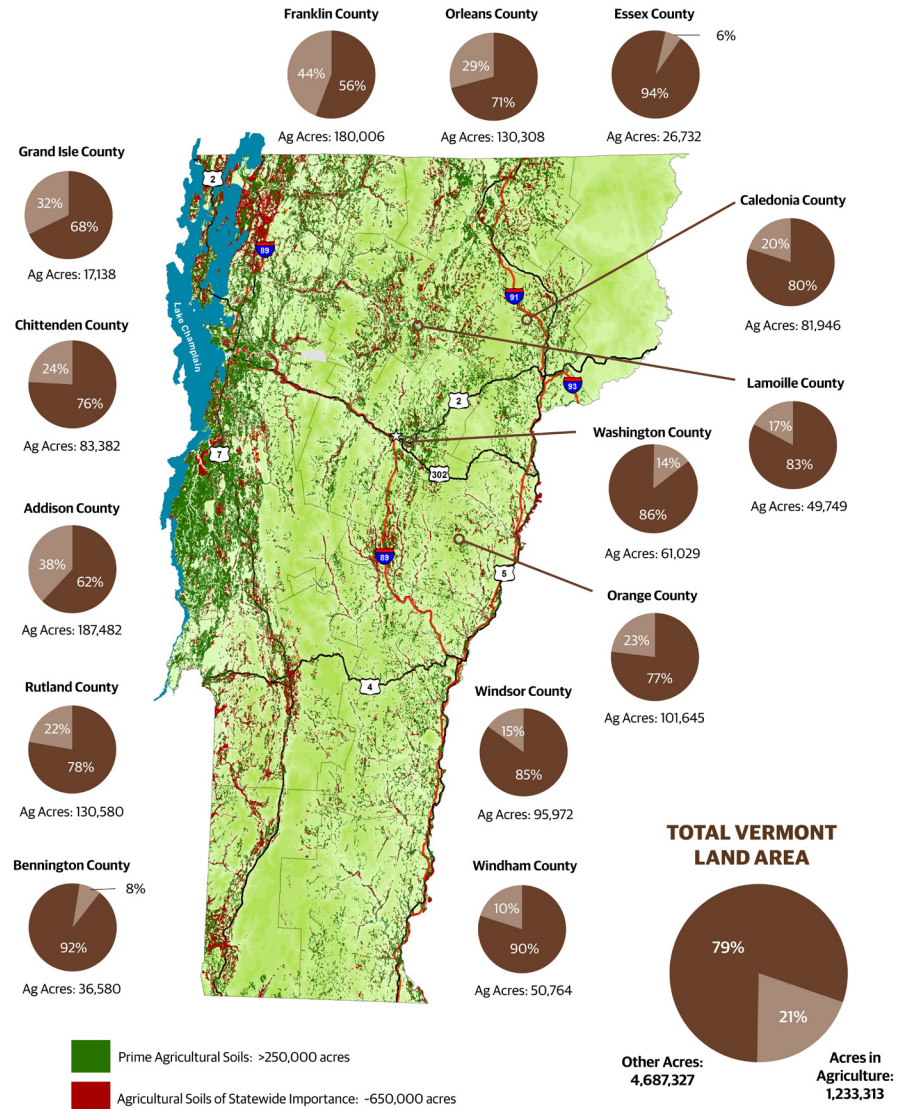
What kinds of resources are needed to produce food in Vermont?
 How can Vermont farms deal with rising production costs? How much farmland is available in Vermont?

Before food production can occur, a number of critical inputs are required, from land to labor and from seed to feed. Most Vermont farms today rely on out-of-state sources for equipment, seeds, fuel, fertilizer, and parts. Vermont has at least **1,068 farm support establishments that collectively employ at least 2,035 people.**⁹ These establishments depend on the viability of Vermont’s dairies and other farms to stay in business. As the owner of the largest feed business in Vermont, *Bourdeau Brothers*, Jim Bushey knows the close financial connection between his business and so many other farms and supply vendors. “Their success will be our success,” he stated.

Rising Input Costs

Since 1948, American farmers have made more food and other agricultural products on less land and with less labor but with more petroleum-based material inputs, and most farmers have made less money in the bargain. Vermont farmers have produced slightly more milk, with fewer cows and fewer dairy farms, but the volatility of milk pricing and increased material input costs have meant that, on average, many farmers are making less now than they did in 1970. The U.S. Department of Agriculture (USDA) attributes much of the increased cost of farm inputs to rising crude oil prices.

Acres in Agriculture by County, 2007



Source: Agricultural soils - Vermont Center for Geographic Information; agricultural soils by county - 2007 Census of Agriculture. Note: Agricultural soils maps for Essex County are not available.

In 2007, **Vermont farmers spent almost \$550 million for inputs, mostly from out of state.** Vermont dairy farms account for the majority of farm input expenses (e.g., 89% of feed purchased). Animal feed constituted 26% (\$144 million) of total farm production expenses, with hired labor (\$72 million) and liquid fuels (\$32 million) making up an additional 19%. The cost of liquid fuels and fertilizers increased by 137% and 94%, respectively, from 1997 to 2007 in Vermont.¹⁰

Developing solutions for rising input costs, as well as a variety of issues such as land access and availability, water use and pollution, on-farm energy production, and soil health, is key to the sustainability of Vermont's food system.

LAND: In 2007, over 1.2 million acres, or 21% of Vermont's land, was in agriculture. Land in agriculture decreased over 6% from 1997 to 2007, from 1,315,315 acres to 1,233,313 acres. Cropland made up 516,924 of agricultural acres (42% of total land in agriculture), and **crops grown for animal feed—corn for grain, corn for silage, and all forages—constituted nearly 98% of all harvested cropland acreage in 2007.** Agricultural activity can be found in every county. Addison, Franklin, Rutland, Orleans, and Orange counties contain 59% of the agricultural land in Vermont.¹¹ According to the *Farmland Information Center*, nearly 41,000 acres of agricultural land, including 11,000 acres of prime agricultural land, was converted to developed land between 1982 and 2007.¹² Because of Vermont's small size, the loss of about 41,000 acres is nearly the lowest of any state. But, relative to total agricultural acreage, this loss ranks Vermont 23rd in the nation for agricultural land conversion.¹³ Ongoing conservation efforts, especially for prime agricultural farmland, are essential to the future viability of farming in the state.

Affordable access to farmland was described by F2P stakeholders as a serious barrier for new farmers or those seeking to grow and expand. Farm incubator programs and sites have been identified as a way to help new farmers overcome capital barriers and gain access to affordable leased land, shared equipment, other infrastructure, and mentors while they are in the startup phase of their businesses. Embedding agriculture in residential areas closer to active markets has recently been studied in Vermont. Residents in Chittenden County were surveyed about their interest in this model of "cooperative land management," and although the agricultural quality of land parcels is unknown, the total landmass of those interested in leasing

their land for farming activities was over 5,800 acres!¹⁴ Zoning ordinances, town and regional plans, and statewide planning legislation must be reviewed and adapted to encourage local agriculture and food distribution.

SOIL: Access to highly fertile soils, and proper soil monitoring and management, are central to the future of a strong Vermont food system. Soil quality makes a critical difference between a productive farm and a struggling farm business, and healthy soils with high levels of organic matter provide a wide range of other ecological services such as improved water quality and carbon sequestration. Vermont has over 250,000 acres of "prime agricultural soils" and almost 650,000 acres of "farmland of statewide importance." Maps show where these soils are, but we do not know how many acres of "prime" and "statewide" land have already been developed or paved over, or how many parcels are too small or lack good access. Soil monitoring for a wide range of biological, chemical, and physical soil properties is critical for achieving greater soil fertility, reduced erosion, increased productivity, improved water quality, and increased soil carbon.

ANIMAL FEED: Vermont farmers spent over \$144 million for feed in 2007, the highest single input cost. Most animal feed is purchased at local dealers, but the bulk of actual grains and supplements are not grown in Vermont. With recent record low milk prices, many farmers have experienced difficulty paying their grain bills, and some grain



Field of hay bales.

suppliers are facing receivables nearing 90 days past due. As a result, some Vermont grain companies are experiencing difficulty accessing the credit necessary to maintain their cash flows. To reduce costs, many farmers have developed comprehensive nutrient management plans and grow their own feed crops or are raising their livestock on pasture.

According to the Census of Agriculture, forage land decreased by **over 54,000 acres between 1997 and 2007**, much of it to nonfarm development. Forage (e.g., hay) still covers 330,984 acres, and maintaining forage land is important for soil and water quality, reducing erosion, reducing imported feed costs, and expanding grass-fed livestock production.

SEED: *High Mowing Organic Seeds* has put Vermont on the map for organic seed production and has been party to successful court battles against *Monsanto* regarding seed sovereignty. The 2007 Census of Agriculture reports that seven Vermont farms are growing seeds on 7,224 square feet under glass or other protection. However, most seeds sold in Vermont are grown out of state. Many seeds for plants needed for a diverse diet cannot be grown in Vermont. For those seed crops that can be cultivated here, increased support is needed to advance locally based plant breeding for crops aligned with Vermont's climate.

WATER: Vermont's abundance of water for livestock, crop production, and food processing facilities is an important asset. Food system activities account for about 2% (8.1 million gallons)¹⁵ of daily freshwater withdrawals, but they are estimated to contribute 38% of nonpoint source pollutants—primarily phosphorus and other agricultural runoff—to Lake Champlain.¹⁶ Mutually agreed upon goals for improving the health of Lake Champlain have been established by the *Vermont Agency of Natural Resources* and the *Lake Champlain Basin Program*, and over \$100 million has been invested in the past decade. A number of programs and organizations exist to manage nutrient flows, conserve soils, and protect waterways.

OTHER FARM INPUTS: Vendors such as farm equipment and parts sales companies, contractors focusing on building farm infrastructure (e.g., barns), mechanics, veterinarians, and feed dealers are critical to the viability of Vermont's food system.

However, detailed information on the impact and needs of these businesses is not readily available.

GETTING TO 2020

Goals 4 through 6 of the F2P Strategic Plan address the need to reduce the cost of farm inputs, conserve agricultural land and soils, and protect the natural environment from the impacts of agricultural practices.

Goal 4: Options for farmers to reduce their production expenses will be widely disseminated and utilized.

Goal 5: Agriculture lands and soils will be available, affordable, and conserved for future generations of farmers and to meet the needs of Vermont's food system.

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

To accomplish these goals, we have identified many objectives and strategies, such as improving statewide land use/land cover maps to identify available farmland for facilitating access for the next generation of farmers. Matching farmers seeking land with retiring farmers or others selling farmland is a critical function for strengthening Vermont's food system. Expertise and resources available from the *University of Vermont* (UVM), the *USDA Natural Resources Conservation Service* (NRCS), local watershed groups, farmers, and other soil-building experts should be employed to develop a more comprehensive soil-monitoring program in Vermont, including additional assistance to help farmers conduct regular soil tests, develop nutrient management plans, create soil fertility enhancement and erosion control strategies, and pilot monitoring projects for various soil-building strategies.

See Chapter 3, Section 2, for more information: www.vtfoodatlas.com/plan/chapter/3-2-farm-inputs

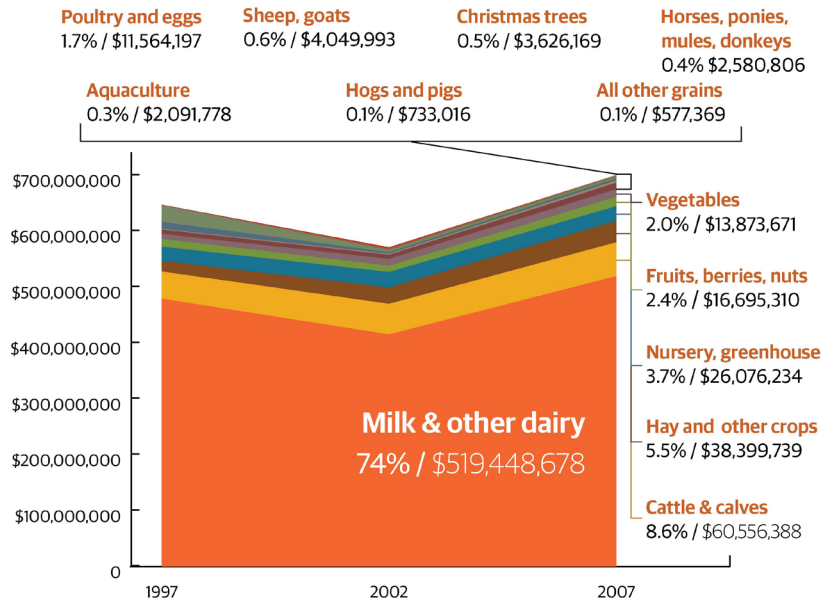


3.3 Food Production

What types of food are produced in Vermont? Can we feed ourselves?

The market value of Vermont farm products was estimated at nearly \$674 million in 2007. Dairy production alone accounted for 73% (nearly \$494 million) of that total.¹⁷ Vermont had 6,984 farms that provided employment for 19,735 people (including farm operators).

Total Market Value of Vermont Farm Products, 1997-2007



Source: Census of Agriculture, adjusted for inflation to 2010 dollars.

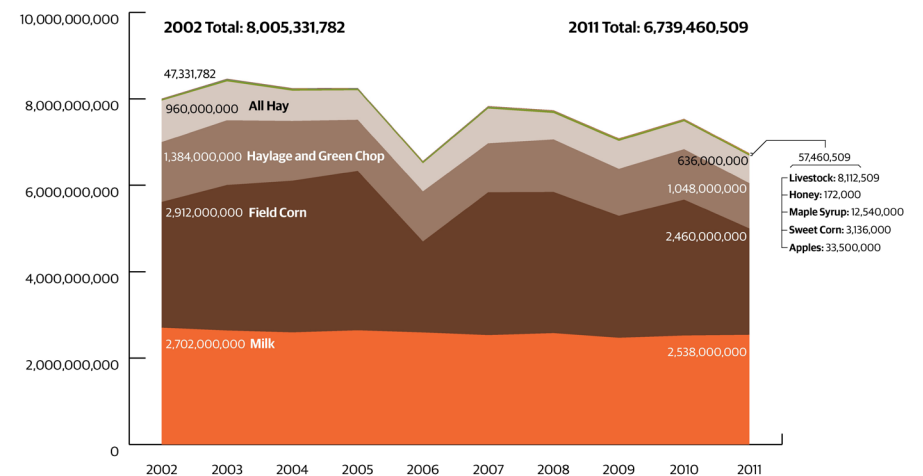
The market value of Vermont farm products were equal to 0.22% of the market value of all farm products sold in the U.S. and rank Vermont 41st in the country. This was the highest value of any New England state, equal to about 26% of the market value of farm products sold by New England states. Taken together, the market value of farm products sold by New England farms was \$2,597,235,000, or 0.88% of the market value of farm products sold in the United States in 2007.

Can Vermont Feed Itself?

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—local or imported—is currently being consumed by Vermonters. Comparing food production data from [USDA National Agricultural Statistics Service](#) (NASS) with USDA's [MyPlate dietary guidelines](#) we find that food production in Vermont can only meet the dietary guidelines for dairy products. We estimate that food production in Vermont is likely short—by hundreds of millions of pounds—for meeting the needs of Vermont's population for fresh and lightly processed food products.

Although it is unrealistic for all Vermonters to adhere to USDA's dietary guidelines, we believe our estimates are conservative and very likely undercount the gap between local food production and consumption.

Vermont Food Production in Pounds, 2002-2007



Source: USDA Census of Agriculture, USDA NASS, multiple years. *Note: fruit and vegetable production, other than apple and sweet corn production, are not included in this graphic due to small production values that would not be visible. Apple production, for example, which is represented by the small green line, accounts for 91% (3,547 acres) of noncitrus fruit orchard acres in Vermont. In comparison, berry farm production occurred on 705 acres, approximately 20% of the apple orchard acreage. Sweet corn production, which is barely visible on this graph, accounted for approximately 39% of all acreage in vegetable production in Vermont.

In short, Vermont's food system has a "scalability challenge." Ecological limits (e.g., climate, geography, and soil quality), existing food system infrastructure, types of farms, types of food produced, federal and state government policies and support, and many other factors impact the extent to which Vermont can ramp up food production.

Comparing Dietary Guidelines with Vermont Food Production

Food Product	Amount required if VT matched USDA MyPlate dietary guidelines	How much does Vermont produce? (2007)	Surplus or deficit?
Dairy	336,515,401	≥2,036,735,575	≥1,700,220,174 surplus
Protein	59,116,677	≈15,487,509 to 26,081,325	≈33,035,352 to 43,629,168 deficit
Fruits	154,792,667	>42,406,000	≈112,386,667 deficit
Vegetables	216,708,621	>40,265,500	≈176,443,121 deficit
Grains	34,375,163	≈166,102	≈34,209,062 deficit
Added Fats and Oils	10,663,036	<504,650,052 (mainly butter)	<493,987,016 surplus
TOTAL*	812,171,565	>2,639,710,738	>1,827,539,173 surplus
TOTAL W/O DAIRY	464,993,128	>98,325,111	≈366,668,017 deficit

Sources: Based on Vermont population of 621,760. See Chapter 3, Section 1: Understanding Consumer Demand for more information. *Empty calories—which include maple syrup and honey—are not shown here.

DAIRY PRODUCTION: Vermont is the largest dairy producing state in New England, and dairy products (milk, dairy beef, and forage crops grown for livestock) account for upwards of 83% (≈ \$584 million, adjusted for inflation to 2010 dollars) of the state’s agricultural products’ sales, and as much as 90% depending on market prices. Even though the number of dairy cows has declined, the average amount of milk produced per cow has increased, and total milk production has consistently exceeded 2 billion pounds of milk per year for the past 50 years.

Dairy farms define the working agricultural landscape across Vermont, making up a significant percentage of all farms in each county. Fluid milk can be transformed into many products: fluid milk, cheese, cultured products (e.g., yogurt, cottage cheese, sour cream, dips) and an umbrella category that includes cream, skim milk, condensed skim milk, butter, and milk powder. This last category generally represents components used in the processing and manufacturing of products such as *Ben & Jerry’s Ice Cream*.

The number of dairy farms has decreased by 96% over the last nine decades.

In 1920 there were 25,336 farms that milked cows. By 1980 that number had dropped to 3,372, and by 2007 it was down to 1,141. By August 2011, the number of dairy farms in Vermont was down to 991. There has been a nearly 50% decline in the number of dairy cows from 257,000 in 1950 to 191,089 in 1982, and 139,710 in 2007 although the average gallons of milk produced per cow has increased by 311% since 1950. Per cow production increased from 686 gallon of milk per year in 1950 to 1,430 gallons by 1980 and 2,137 gallons by 2008. Advances in dairy cattle genetics, feeding and housing methods, and other technologies have resulted in this increased yield. Most Vermont dairy farmers belong to farmer cooperatives that aggregate milk supply, manage trucking and processing, and find markets for the milk.

At the Crossroads

The downside of dairy’s dominant role in Vermont’s food system is that when dairy suffers, the entire food system economy of the state suffers too. Not only do milk prices routinely drop below the costs of production, but highly volatile milk prices create dramatic swings from one year to the next. **The primary challenge facing the dairy**



Grazing cows at Family Cow Farmstand.

PHOTO CREDIT: Lindsay Harris

industry is the lack of price stability. Current pricing formulas do not take into account the vast differences in production costs among different regions. Most Vermont dairy farmers believe a fundamental restructuring is required to better cover the real costs of production and to minimize price volatility.

The organic dairy industry manages price minimums differently from the federal system for conventional dairy. Unlike the federal management system or the conventional cooperatives, organic cooperatives, such as *Organic Valley*, exercise supply management. When supply gets too high for demand, producers are required to cut back by a certain percentage. The ability to control supply and match it with demand in the market prevents overproduction from bringing down the price received by farmers. About 20% of Vermont dairy farms are now certified organic.

For example, according to the Northeast Dairy Summary prepared by Farm Credit, during the last dairy crisis in 2009 the New England net average cost of production for a conventional dairy farm was \$16.19 per hundred pounds (cwt), but the price paid in Middlebury was only \$12.41 cwt. Milk prices declined sharply in 2009 as a result of an oversupply of milk and a decrease in the domestic and international demand for dairy products brought on by the global economic crisis. In contrast, Vermont organic milk producers had an estimated average cost of production in 2009 of \$25 but still received a price of \$27.75 cwt for their milk as a result of the premiums paid for organic milk.

Larger states, such as California, have instituted a state-controlled milk marketing order to be more responsive to local conditions for farmers than the federal system. New England may wish to institute state-managed milk marketing orders to manage local prices. Discussions are also underway at the national level with various members of Congress and [Dairy Farmers Working Together](#) to explore the creation of a regional milk pricing system that would be linked with supply management.

Goat milk for cheese production has been growing steadily in Vermont for several years and presents an opportunity for farm viability into the future due to high local and regional consumer demand and viable product price points. Challenges in this sector include maintaining strong animal genetics and production expertise to ensure high-quality goat milk. According to Allison Hooper of [Vermont Butter and Cheese Creamery](#), "Ten farms milking 600 goats, equivalent of a 200-cow dairy, would fill our current need without looking to future growth potential. In 2010 we purchased 7.3 million

pounds of milk to make our cheese. In 2011 we need to purchase 8.5 million pounds. Unfortunately, because there is not enough supply here in Vermont, about 65% of the milk we buy comes from outside the state."

LIVESTOCK PRODUCTION: Vermont's small livestock farms cannot compete on price with the large grain-fed "factory farm" operations in the Midwest and California, but they are ideally suited for raising grass-fed livestock. Vermont livestock producers range from families with a few animals kept mainly for their own use, to hundred-head operations producing for the commercial market.



Cerridwen Farm chickens at Green Mountain College.

The U.S. Census of Agriculture provides an inventory of farm types in Vermont on December 31 of the year that each census is conducted. Based on the last Census, the number of Vermont farms raising cattle and calves decreased 33%, from 3,651 farms in 1997 to 2,459 on 2007. The number of Vermont farms raising hogs decreased 22%, from 320 in 1997, to 249 in 2007. 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 (and eggs) increased over the decade between 1997 and 2007 (from 1,273 to 1,944, a 53% increase). The number of livestock sold as meat declined for every category, except poultry and goats, from 1997 to 2007. (Note: This figure does not include dairy beef.)¹⁸

Meeting the Demand

During our interviews, Vermont producers and retailers indicated a strong demand for local, source-verified 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., [Healthy Living](#), [Shelburne Supermarket](#)), at food co-ops, and through CSA shares. Some 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.

Although demand for Vermont-grown meat typically outstrips production, farmers face considerable challenges to increased livestock production, including the high cost and seasonality of production, limited access to slaughter, and limited technical assistance for the development of profitable production models. 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 other producers cited grave concern about any decrease in the regulatory oversight of slaughter. **This issue was one of the most commonly voiced concerns during the development of this report, with strongly held opinions both in favor of and opposed to selling uninspected meat.** Additionally, many consumers voice an interest in procuring source-verified food, yet often hesitate at the price tag. Increasing consumer awareness of the cost of producing food, especially meat, in Vermont is a necessary step to increasing sales of Vermont-raised meat.

FRUIT, VEGETABLE, AND NUT PRODUCTION: Corn rows and apple orchards are familiar sights from Vermont's roads, but other vegetables, fruits, berries, and nuts are also produced by Vermont farmers. The 2007 Census of Agriculture estimated a **market value of over \$29 million for Vermont vegetable, fruit, berry, and nut production.**

Vermont has at least 494 vegetable farms on 2,927 acres.¹⁹ Sweet corn is planted on about 38% of these acres, while pumpkins make up another 14%. Fruit trees are grown on 3,480 acres by 305 farms. Apple orchards make up 93% of these acres, while grapes are grown on about 5%. Vermont apples are considered one of Vermont's larger-scale commodity products, and they are processed and packed in Vermont and shipped and sold throughout the Northeast. Improved atmosphere-controlled storage facilities have enabled some innovative orchards to sell apples throughout the year. Additional fruit trees, including peaches, pears and cherries, are grown on a relatively small scale in Vermont. Nuts are grown on at least 68 acres, and walnuts (62% of the nut total) are the most prevalent type.

Many kinds of berries are grown in Vermont, including blueberries (51% of total berry acres), strawberries (26% of total berry acres), cranberries, raspberries, blackberries,



Vermont apples at harvest time.



Corn harvest.

currants, and gooseberries. Several Vermont farms specialize in berry production, and many include a variety of berries in CSA shares or farmers' market offerings. Given the short growing season in Vermont and the fragile nature of berries, berries must be sold immediately after harvesting, or processed for freezing or cooking into preserves, jams, jellies, or other sauces. On average, an acre of land in vegetable production grossed around \$4,500 in 2007. This is almost nine times the value of the statewide average for all other agricultural activities. An acre of fruits, berries, or nuts grossed nearly \$3,800 in 2007.

Vineyards and wineries are a recent development in Vermont. New, cold-hardy wine grapes are being grown, and Vermont vineyards and wineries are fermenting wines. There are nearly 30 wineries in Vermont, and many are growing their own grapes.

Leaping the Gap

Good Agricultural Practices (GAP) are currently voluntary for produce growers. GAP guidelines include such actions as testing irrigation water for the presence of contaminants. After the dramatic increase in foodborne illnesses in the last decade many buyers, particularly chain supermarkets and wholesalers, began requiring their produce growers to undergo a third party audit to certify that they were following GAP.

Several stakeholders interviewed during the F2P Strategic Plan development process expressed the belief that GAP certifications are not appropriate for Vermont-scale producers, which tend to be smaller than those in other states. As a result of intense lobbying efforts, important changes were included in the Food Safety and Modernization

Act (FSMA), which passed Congress at the end of 2010. For example, produce growers that direct-market more than 50% of their food products, have gross sales of less than \$500,000 per year, and sell products in-state or within 275 miles of the farm, will be able to develop food safety practices that are appropriate for their farms. Several provisions require the *Food and Drug Administration (FDA)* to be flexible to help small food processors and manufacturers meet costly safety and record-keeping requirements. Interested stakeholders will need to be vigilant and engaged over the next several years as the FDA begins rule-making to implement the FSMA. The [UVM Center for Sustainable Agriculture](#) recently added a GAP Outreach Coordinator position and created a GAP Working Group to focus on providing technical support to growers and to identify solutions to food safety challenges.

MAPLE PRODUCTION: Vermont is the largest producer of pure maple syrup in the United States; it accounted for 41% of total U.S. production in 2011 - the highest year of production on record year. Total U.S. production of maple syrup grew about 72% from 1992 to 2011, from 1,629,000 gallons to 2,794,000 gallons. Vermont's maple production grew 100% during this time frame, from 570,000 gallons, to 1,140,000 gallons. National production plummeted about 32% in 2012—and Vermont production decreased by 34%—as a result of weather that was too warm for sap runs. **Maple syrup production is a significant economic engine for the state with a market value of over \$50 million in 2011.**²⁰



Grades of syrup and logging sugar making activities.

Vermont currently produces more than enough maple syrup to meet local demand and exports most of its annual crop. On a sheer volume basis, maple syrup production will never displace that of high fructose corn syrup, corn syrup, and other refined sugars, but the greatest market opportunity exists in replacing the use of some percentage of artificial

syrup in other parts of the country with Vermont maple syrup. Expanding the number of acres devoted to sugaring, allocating significant dollars to marketing maple syrup as the natural replacement to artificial syrups, and streamlining Vermont's maple industry organizations were all identified by interviewees as next steps. The *U.S. Global Change Research Program* predicts that maple-beech-birch forests will shift dramatically northward as the climate changes.

BEES AND HONEY PRODUCTION: With a market value estimated at \$396,000 in 2011 by NASS,²¹ the economic contribution of honey production in Vermont is a small component of the value of the state's total food system. However, this figure misses small-scale honey production and value-added products (e.g., candles), and undercounts the essentially free ecosystem services provided by domesticated exotic honey bees and native bees for agricultural crops, gardens, and wildlife habitats.

Vermont has about 2,000 registered beekeepers with about 11,000 hives, according to state apiculturalist Stephen Parise at the Vermont Agency of Agriculture, Food, and Markets (VAAF). Several commercial beekeepers and apiaries operate in Vermont (e.g., Champlain Valley Apiaries in Middlebury, in operation for 80 years), but most beekeepers do it for "love and honey," according to the Vermont Beekeepers Association (VBA). There are approximately 400 VBA members, ranging from commercial producers to hobby beekeepers. Incidences of colony collapse disorder, a sudden decline in honey-bees, have generated concern around the world, but no precipitous decline in the Vermont honey bee population is evident to date.

GRAIN PRODUCTION: Before the completion of the Erie Canal and greater Midwest transportation routes in the mid-1800s, thousands of acres of Vermont farmland were planted in a variety of grains, especially wheat and oats. Better transportation access for grain distribution, more compatible weather, and landscapes more suited to grain



Beekeeping Workshop, 2004

growing all led to the concentration of U.S. grain production in Midwestern states. The localvore movement in Vermont brought the grain issue to the forefront a few years ago because no local bread flour existed. Consumer demand is strong for local grain and is expected to grow in the future. According to the 2007 Census of Agriculture, **12 Vermont farms are growing oats on 211 acres, 7 farms are growing rye on 100 acres, and 9 farms are growing wheat on 379 acres.**²²

Small-scale mills, such as [Gleason Grains](#), may be viable to support smaller-scale growers through aggregation and equipment sharing. But stakeholders and industry experts recognize that a regional, collaborative approach to production and infrastructure development will be necessary to meet the larger-scale consumer demand. For instance, a grain cooperative made up of grain-milling companies, bakeries, and other end users throughout northern New England and southern Quebec may have a greater ability to invest in drying, storage, and milling infrastructure as a means of sharing the risk inherent in local grain growing.

Oilseed crops such as sunflowers, canola and soybeans are also being grown in Vermont, primarily in Bennington, Franklin, Addison, Rutland, and Caledonia counties. Soybeans have always been grown as part of dairy feed rations and most recently as inputs for the [Vermont Soy Company's](#) line of organic tofu and soy milk. All three grains can be expeller pressed to yield oil that can be either used as culinary oil or processed further into biodiesel, and the meal can be fed to a variety of livestock.

DRY BEAN PRODUCTION: Demand for locally produced dry beans such as kidney and pinto beans has grown, and some farmers are responding. The *Neighboring Food Co-op Association*, which includes more than 20 food co-ops in New England, reported that its members purchased over 30,000 pounds of black turtle beans, pinto beans, and kidney beans. All of these are currently being grown by a small number of Vermont farmers.

FISH PRODUCTION: With global fisheries in severe decline, local and regional fish production is an important opportunity for Vermont's food system. The last Census of Agriculture reports that **23 Vermont aquaculture farms generated nearly \$2 million in sales in 2007.** While most existing farms are for pond stocking programs, two full-time food fish producers currently exist. A few businesses have been established in Vermont and Massachusetts to demonstrate that contained, sustainable, recirculating

fish production facilities can be viable. Domestic aquaculture facilities focus primarily on tilapia and a variety of trout species.

Developing solutions to the problems of dairy pricing and ramping up meat, fruit, vegetable, grain, and bean production to meet local and regional demand are major challenges. Marketing efforts to raise awareness among consumers about the dairy crisis and the discrepancy between milk prices and cost of production, and to increase the regional consumption of Vermont milk especially in public and other large institutions, are critical. Technical assistance and transition compensation is needed to support dairy diversification strategies, including transition to organic; enterprise budgets for on-farm dairy processing; livestock production; and grain, feed, and forage production, to name a few.

Livestock farmers have an opportunity to voluntarily embrace animal care standards as a marketing tool to appeal to consumer interest in animal management practices. Advertising humanely produced, source-verified meat could be a way for livestock producers to capture a premium in the marketplace for their products and ensure the strength of the Vermont brand.

The process of developing scale-appropriate GAP legislation is still in flux. Clearly needed now are ongoing technical assistance and a matching grant program for GAP-related physical infrastructure for growers in their first year seeking GAP certification, especially smaller growers.

GETTING TO 2020

Goals 7 through 10 of the F2P Strategic Plan focus on increasing food production for local and regional markets.

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

Goal 8: Vermont's dairy industry is viable and diversified.

Goal 9: The majority of farms will be profitable.

Goal 10: All Vermonters will have a greater understanding of how to obtain, grow, store, and prepare nutritional food.

See Chapter 3, Section 3, for more information: www.vtfoodatlas.com/plan/chapter/3-3-food-production



3.4 Food Processing and Manufacturing

How big is Vermont's food processing and manufacturing industry? How can Vermont increase its capacity for processing local food?

Vermont has at least **616 food processing/manufacturing establishments that employ about 6,000 people** and food processing/manufacturing is the second-largest manufacturing sector employer in the state, behind computer and electronic products. The average wage in the food processing and manufacturing industry is \$40,233 per year. **Food manufacturing is one of only four manufacturing sectors that saw establishment and employment growth from 1997 to 2012.**

Farmers may wish to use processing to recover value from an overabundance of fruits and vegetables or when cosmetic or other minor blemishes keep them from being sold as fresh, whole produce. Other forms of processing transform a commodity ingredient into a specialty food with a significantly higher retail value, such as transforming milk into artisan cheese or yogurt. And some of our favorite foods and beverages are manufactured in large commercial facilities, such as [Lake Champlain Chocolates](#), [Magic Hat](#) beer, [Madhouse Munchies](#), and [Ben & Jerry's](#) ice cream. Processing can also open up new markets for producers, such as high-volume, year-round businesses (e.g., hospitals and school cafeterias), many of which are interested in lightly processed foods to reduce the labor that would otherwise go into peeling winter squash or washing and chopping vegetables for salad bars. In-state processing facilities allow producers to expand their product lines, gain greater control over the process of bringing food to market, and capitalize on "local" branding as well as other certifications based on processing procedures (e.g., GAP certification).

Throughout the F2P planning process, many Vermonters expressed a desire for additional in-state processing facilities to serve the needs of farmers and food entrepreneurs. However, getting from that expressed desire to viable businesses is not a simple process. A number of recently completed economic feasibility studies have revealed the challenges of developing processing businesses in the state.

Localizing Milk Processing Infrastructure

Within New England, the centers of milk production, processing, and consumption are not in the same location. Vermont farms provide the major share of raw milk, while processing occurs in multiple locations (particularly Massachusetts), and most consumers are in urban centers such as Boston and Hartford. One major drawback of this arrangement is that Vermont dairy producers cannot set the price of their products, and milk prices do not necessarily reflect the true cost of production.

It is difficult for a new local processing facility to enter the marketplace, but there are also advantages to creating this local capacity, and at least five Vermont-based processors have succeeded in doing so: [Strafford Organic Creamery](#), [Monument Farms](#), [Thomas Dairy](#), [Kimball Brook Farm](#), and [Sweet Rowen Farmstead](#). All of these local processors tout local sourcing, personal connections, and healthy, hormone-free cows as reasons people purchase their product. A renewed commitment to help more fluid milk stay in state for processing or other types of value-added products, such as cheese and yogurt, would go a long way to helping to stabilize Vermont's dairy industry.

Relieving Bottlenecks in Current Meat Processing Capacity

A primary challenge for the Vermont meat production and slaughter industry is the seasonality of livestock production. Access to high-quality and timely slaughter services continues to be a major hurdle for livestock producers. Producers who raise only a small number of animals experience the greatest difficulty accessing slaughter spots as most animals in Vermont are slaughtered between September and January. Interviews with slaughterhouse owners revealed that operations drop to between 80% and 30% of total capacity from February to August, respectively. If the number of animals processed could be maintained year-round, slaughterhouses would more easily realize a return on their significant capital investment. Assisting farmers with winter grass management strategies so they can profitably finish animals year-round would increase their ability to secure slaughter spots. Most kill floors in Vermont slaughterhouses are used only two or three days per week because of various meat processing and storage constraints, suggesting a significant opportunity to expand the slaughter capacity of existing facilities with additional investment.

Custom-exempt slaughter plants can process livestock for the exclusive use of the owner, the owner's family, and nonpaying guests. To increase the use of custom-

exempt slaughter plants, livestock producers could sell live animals ready for slaughter to customers who could then arrange to have them slaughtered at custom-exempt slaughter plants.

Other concerns around slaughterhouse/meat processing include a lack of training for the next generation of workers, especially skilled meat cutters; a need for transition planning for existing owners nearing retirement; more brokers to help get Vermont meat into regional markets; and a lack of infrastructure to process dairy beef for sale to schools and institutions (e.g., hamburger patty machines).

Vertically Integrating Operations

Vertical integration happens when a business consolidates along a supply chain—from growing or raising food to processing and from distribution to marketing. By controlling multiple stages of product development, a business can control costs at each stage, receive all the profits at those stages, and directly manage for quality. These benefits must be weighed against the need for a diverse set of management skills in-house and the need for equipment and facilities for each step in the process of getting to market.

For example, Bill Suhr of [Champlain Orchards](#) has brought his processing to a highly integrated level. The products he creates on-farm include fresh cider, applesauce, apple pies, turnovers, apple butter, cider syrup, fresh sliced apples for sale to commercial buyers, and dehydrated apples. He also works with [Eden Ice Cider](#) to press apples for making ice cider at their facilities. In 2009, he also began contract pressing apple cider for [Sunrise Orchards](#)' branded line of cider. *Champlain Orchards* is also one of a few farms in Vermont that has built cold storage to keep local apples available.



Bill Suhr with crates of apples at Champlain Orchards.



Racks of cheese in the Cellars at Jasper Hill in Greensboro.

Light processing of fruits and vegetables commanded a high level of interest at the F2P local food summits, and is the subject of a number of feasibility studies. For example, schools, restaurants, hotels, and other large-scale food service establishments can integrate local foods into their meals more easily when pre-preparation, such as slicing apples, saves them from costly labor. However, generating the volumes necessary for commercial processing is currently a limiting factor, and the best business model for most farmers, at this time, is to target the fresh market and limit the time or money that goes into salvaging produce that can't be sold there. As production volumes increase over time, commercial processing facilities will likely become viable.

Over the past 15 years, Vermont's artisan (i.e., cheese made in small batches) and farmstead (i.e., cheese made by the farmers who raise the animals) cheese makers have demonstrated the value of vertical integration, garnering consistent first place finishes in the *American Cheese Society's* annual competition, and price premiums in the marketplace. Integrating the supply chain of a cheese-making operation, or transitioning from other forms of dairy to cheese making, requires a significant investment in training and capital, patience for product development of a slow-aging food, and a skill set that ranges from milking to processing to marketing.

Increasing Locally Grown Inputs in Specialty Foods

The use of Vermont-grown ingredients varies across manufacturers. Some manufacturers use only local ingredients (e.g., maple products), whereas others specialize in foods that can't be grown or sourced in Vermont, such as coffee and chocolate. Many others contain a mix of local and nonlocal ingredients either within a product or across a product line. Vermont is home to hundreds of exceptional specialty food makers that have contributed to the state's reputation for quality food and that have built processing capacity within the state. The [Vermont Specialty Food Association](#), counts 385 specialty food businesses in the state making over 1,500 Vermont specialty food products. Making a local ingredient connection for these specialty food manufacturers is not always practical. A recent VAAFM study found that price and availability were the primary obstacles to sourcing local ingredients.²³

Developing Localvore Products along the Supply Chain

Vermont has recently seen the emergence of new localvore items such as culinary oils, dry beans, liquor, wine, vinegar, kombucha, mushrooms, oats, cornmeal, barley, flour, bread, and hops for beer making. Entrepreneurs face a number of issues when introducing previously unavailable locally sourced products to a larger audience. In the case of localvore bread, the small number of local grain growers, the quality and yield of Vermont wheat, a lack of processing infrastructure, and baker requirements are all challenging factors. It took the combined effort of growers, millers, bakers, and consumers, along with technical assistance from *UVM Extension* and peer-to-peer assistance in the [Northern Grain Growers Association](#), for two bakeries ([Red Hen Bakery](#) and [King Arthur Flour](#)) to offer localvore bread.

Promoting Mobile Processing

In 2008, VAAFM piloted two mobile processing units, one for the individual quick freezing of berries and the other for poultry processing. Mobile units are designed to bring processing to the farm, with the hope of building enough volume (through visiting farms) to create a viable business, as well as preventing stress to animals or damage to product caused by transport. Vermont is also home to a new mobile pasteurization and cheese-making unit that produces cheese curds with the milk collected from livestock at state and county fairs.

GETTING TO 2020

Goal 11 of the F2P Strategic Plan address the need to strengthen Vermont's food processing and manufacturing sector, thus providing farmers with more outlets for their products both locally and beyond Vermont and providing consumers with more year-round Vermont-produced choices.

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

To achieve these goals, the F2P team developed strategies that address underlying issues in processing research, infrastructure development, aggregation, workforce training, and regulatory assistance, as well as specific products (e.g., dairy, meat, and produce). For example, a feasibility study for a medium- to large-scale fruit and vegetable processing facility aimed at serving institutional markets would identify the types of products needed to meet demand, viable price points, the number of production acres needed per product, the facility service area, and the number of facilities needed. A survey of Vermont Specialty Food Association members could identify which raw inputs are used in the greatest quantities, and additional research could identify a group of growers interested in providing these local products.

See Chapter 3, Section 4, for more information: www.vtfoodatlas.com/plan/chapter/3-4-food-processing-and-manufacturing



3.5 Wholesale Distribution and Storage

How does the food distribution system connect Vermont farmers and food enterprises with local and regional markets? Are there significant inefficiencies in the current food distribution system?

Vermont and the Northeast region are home to a number of wholesalers and food distributors that provide a wide variety of customized services to individual farms.

Vermont has at least 241 wholesale distribution establishments that employ at least 2,057 people. Wholesalers and distributors sell to markets as varied as individual restaurants and supermarket chains. The wholesalers and distributors themselves range in size from single individuals with small trucks handling a limited range of products, such as Brad Earl of *B&D Distributors*, to sophisticated wholesaler operations able to source and deliver a wide range of products, such as *Black River Produce* and *Upper Valley Produce*. Some wholesalers such as *Dole & Bailey* and *Red Tomato* work with producers to ensure the quantity and quality of the food they require.

During the course of our interviews, we heard a variety of perspectives on food distribution issues in Vermont. For example, some producers had difficulty paying the added expense of shipping small quantities while they were developing a market presence for their products. Other producers voiced concern about wholesalers' and distributors' handling of high-value perishable products such as meat and dairy products, while some dairy producers had no problems at all. Several vegetable producers mentioned the significant expense of purchasing high-quality waxed cartons to maintain the value of their products as they are shipped by wholesalers.

Alignment and Aggregation

The consolidation and concentration of processing, distribution, and retailing over the past 50 years has made it difficult for small and medium-sized food enterprises to gain access to traditional retail markets. **A key insight of our research is that, to be successful, food enterprises must align their stage of development and the type and scale of their operations with suitable market outlets.** Improved access to all types of markets can be strengthened by improving the connections among (1) small-scale producers who self-distribute and direct sales venues (e.g., farmers' markets); (2) medium-scale producers, wholesalers, and medium-sized retailers (e.g., co-ops, restaurants); and (3) large producers, wholesalers, and large markets (e.g., grocery stores).

A number of emerging models that embrace supply chain collaborations, including regional aggregation facilities and incubators and regional food centers hold promise for small and medium-sized food enterprises to reach larger markets.



Sorting fruits and vegetables at Black River Produce warehouse.

PHOTO CREDIT: Black River Produce

Regional Aggregation Facilities and Incubators

Distributors and farmers interviewed frequently referred to the expense of collecting small amounts of product from dispersed and remote locations. It may be advantageous to develop dispersed warehousing to aggregate products for entry into the distribution system; however, it is equally important for farms to produce at scales that existing distributors require. Consideration should also be given to building new storage capacity to increase the year-round availability of local food for all types of markets (including processing markets), as an interim step in the development of additional multipurpose aggregation centers.

Regional Food Centers

Several of Vermont's food centers are currently exploring the economic feasibility of community kitchens or commercial-scale facilities to provide aggregation and distribution, storage, and light processing services to help small producers add value to their products.

Storage Infrastructure

As reliance on imported and industrially produced food has increased over the past 50 years, **Vermont has lost much of the infrastructure necessary to store food for out-of-season use.** Several controlled atmosphere facilities for apple storage have been converted to alternative uses. Many small groceries that could store carcasses for on-site processing have transformed these spaces and now buy all of their meat in retail packages. Even wholesale distributors such as [Black River Produce](#) and [Vermont Roots](#) have limited storage and rely on producers to regularly provide relatively small quantities of food for distribution. Some farms have increased their on-farm storage by adding freezers and root cellars.

Lack of storage is often cited as the reason for low quantities of year-round Vermont-grown food. The [Deep Root Cooperative](#) has gained greater efficiency by supporting a centralized aggregation center with storage infrastructure dispersed on farms. Farmers maintain produce at their own locations and deliver it to a common area for pick-up and distribution. Centralized storage is available at facilities such as the [Vermont Commercial Warehouse](#) in Williston, which provides the added bonus of flexibility in the type and amount of storage required. [Vermont Refrigerated Storage](#) in Shoreham provides apple storage for many growers and is exploring other uses for their underutilized space.

GETTING TO 2020

Goal 12 of the F2P Strategic Plan addresses the need to ensure that appropriate distribution and storage infrastructure is in place over the next 10 years.

Goal 12: A sufficient supply of all scales and types of on-farm and commercial storage, aggregation, telecommunications, and distribution services will be available to meet the needs of increasing year-round food production and consumer demand.

Strategies for accomplishing this goal include, for example, developing a brokering or matchmaking function throughout Vermont. Producers, wholesale distributors, some private consultants, and regional food centers often play a broker role, helping local food producers and retailers find each other in the marketplace. A dedicated match-

maker role in every region of Vermont could help bring greater quantities of locally produced food into mainstream retail outlets.

At present a comprehensive inventory of existing food storage facilities does not exist. A central online database of commercially available storage options to help farmers and food entrepreneurs locate needed storage could be part of the solution to this problem because smaller farms and enterprises may not have the financial ability or desire to own their own storage facilities.

See Chapter 3, Section 5, and Appendix C for more information: www.vtfoodatlas.com/plan/chapter/3-5-wholesale-distribution-and-storage; www.vtfoodatlas.com/plan/chapter/appendix-c



3.6 Retail Distribution

What do retailers of food need in order to provide more local or regional food to their customers? What do food producers need to know in order to access new market outlets?

There are at least 2,587 retail distribution establishments employing at least 28,675 Vermonters. NOFA Vermont and VAAFM report at least 87 farmers' markets, 86 CSAs, and 119 farm stands operating in Vermont, but we do not know how many people are employed at these establishments. There are at least 8 correctional facilities, 15 hospitals, 355 schools, and 26 colleges in Vermont, but we do not know how many people at each institution are involved in food services. Supermarkets, warehouse clubs, and supercenters now account for about 80% of all food purchased for consumption at home. In 2007, 92% of all Vermont retail food sales occurred in supermarkets, including *Costco* and *Walmart*. The shift to larger stores reflects significant concentration in the market. The top four retailers (i.e., *Walmart*, *Kroger*, *Safeway*, and *Costco*) now have more than one-third of total sales in the country.²⁴

Connecting the Dots

In speaking with a broad cross-section of Vermont producers, we heard accounts of successful marketing of Vermont-grown and -processed food as well as difficulty accessing grocery and institutional outlets. Likewise, in speaking to experts in retail groceries, restaurants, and institutions, we learned about the existing structure of these mainstream outlets, the efforts being made to increase sales of local products, as well as the continued barriers and hurdles local producers face in trying to gain access to these markets. **To increase the amount of local food in institutions, traditional supermarkets, and restaurants, producers need to understand the current system of food distribution and may have to work with other producers to aggregate their products for sale to these outlets and/or increase their own scales of production.**

For example, producers planning to work with supermarkets need to understand how supermarkets operate. They should particularly be prepared to deal with the following issues:

- 🍏 Supermarkets are often not prepared to source products with unknown sales records or those available only seasonally or in small quantities.
- 🍏 It is standard practice for large supermarkets and distributors to rotate or change buyers; producers can lose access to supermarkets when key store personnel leave their positions.
- 🍏 Most buyers require producers to carry general liability insurance. Although in the past, many stores and institutions required only \$1 million in coverage, many are now requiring \$2 million.
- 🍏 Supermarkets normally require delivery at specific times, often quite early in the morning.
- 🍏 Supermarket chains have difficulty sourcing food into individual stores to target consumers most interested in certain specialty products.
- 🍏 Producers need to provide sufficient packaging to maintain product quality.

A number of opportunities exist for strengthening connections between local food producers and larger market outlets, including encouraging supermarkets to track their



Healthy Living's produce section

PHOTO CREDIT: Healthy Living

GETTING TO 2020

Goal 13 of the F2P Strategic Plan addresses the need to strengthen Vermont's retail distribution system, to provide food enterprises with a growing number of market outlets in Vermont and beyond, and to provide consumers with more year-round Vermont-produced choices.

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

purchase and sale of local products so that they can be more responsive to changes in consumer demand. Or, funding a pilot project to work with various types of institutions to identify internal barriers to purchasing and tracking local food procurement and organizing more matchmaker events between producers and purchasers. By analyzing what products can be substituted at different times of the year and identifying food producers that can provide the desired products, more local food can be served in these institutions.

See Chapter 3, Section 6, for more information: www.vtfoodatlas.com/plan/chapter/3-6-retail-distribution



3.7. Nutrient Management

How much food waste do Vermonters generate?

Nutrient management covers several important dimensions:

1. Applying and managing nutrients in a way that maintains soil productivity but does not diminish environmental quality;
2. Reducing waste production at the source;
3. Limiting the amount of food being discarded in order to feed more people;
4. Feeding food residuals to animals;
5. Composting food scraps;
6. Energy recovery (e.g., through digesters).

Despite notable productivity gains that have occurred with the introduction of manufactured inorganic fertilizers, concerns have emerged over the negative impacts of nutrient losses into the environment from over-applied and mismanaged fertilizer.

In Vermont, the primary source of crop nutrients is actually an organic fertilizer, animal manure, that is commonly integrated into the nutrient cycle on Vermont farms (e.g., spreading on corn fields). The combination of manure and fertilizer runoff, along with soil erosion and livestock access to waterways, have been implicated in the pollution of Lake Champlain and other waterways. Effective and efficient nutrient management has, consequently, become an issue that is critical to not only farm productivity and profitability, particularly as fertilizer costs increase and availability of phosphate rock declines, but ecosystem health.

According to the *Vermont Department of Environmental Conservation*, 28.1% of residential waste and 18% of institutional, commercial, and industrial waste is organic material that could be diverted to charitable food organizations, composted, fed to animals, or used for energy production by methane digesters.²⁵ In 2012 the Vermont legislature passed *Act 148*, which will require, through a phased implementation plan, that all food scraps be diverted from landfills by 2020. It will be a challenge to achieve the ambitious and progressive goal of Act 148, but the law also acts as an opportunity for the agricultural community to diversify their operations and/or reduce input costs.

GETTING TO 2020

Goal 14 of the F2P Strategic Plan addresses the need to develop closed loops systems for nutrient management.

Goal 14: Organic materials from farms (e.g., livestock manure) and food scraps will be diverted from landfills and waterways and used to produce compost, fertilizer, animal feed, feedstock for anaerobic digesters, or other agricultural products.

To achieve Goal 14, additional personnel and funding for manure nutrient management programs are necessary. For example, VAAFM has one large farm operation (LFO) coordinator for 20 LFOs, and three medium farm operation (MFO) coordinators for 152 MFOs. For the over 800 smaller dairy farms the VAAFM relies on assistance from the Conservation Districts and complaints from the public. Increased coordination among funding organizations and prioritization of funding for projects with high impact results (e.g., allocating \$240,000 to install the necessary water quality practices at remaining LFOs, or allocating more funding for soil aerators) could maximize the reach of limited financial resources. Additionally, in order to achieve the goals of Act 148, stakeholders need to understand the types of infrastructure required for expanding food scrap diversion, articulate the kinds of management options and incentives available to farmers, and develop a public education campaign highlighting best practices of compost production at different scales.



Food scraps for composting

See Chapter 3, Section 7, for more information: www.vtfoodatlas.com/plan/chapter/3-nutrient-management

A number of crosscutting issues impacting the entire food system were identified, including food security, education, workforce development, regulatory issues, and energy.



4.1 Food Security in Vermont

How can we reduce food insecurity in Vermont?

Hunger (i.e., a painful sensation caused by a lack of food) and **food insecurity** (i.e., an inability to access enough food to meet basic needs due to financial constraints) are areas of growing concern in this country. **The percentage of food insecure Vermont households increased from an average of 9.1% (over 22,000 households) from 1999 to 2001 to an average of 12.8% (over 33,000 households) from 2009 to 2011. Vermont ranks 20th in the nation for the prevalence of food insecurity, third highest in New England after Maine and Rhode Island.**²⁶ Emergency food assistance organizations reported an increasing number of clients in recent years. As the cost of food continues to rise and the impacts of the recession linger, many Vermonters, including many farmers, are forced to make difficult choices. They may choose inexpensive, unhealthy food so that they can afford basic necessities such as heat, transportation, and medicine. At the same time, many farmers in Vermont are struggling. Although the local food movement has provided access to an expanding market for Vermont producers, many farmers are not able to secure a reasonable standard of living for their families, and low income Vermonters are not able to incorporate fresh and affordable local foods in their diets.

Dissolving the Double Bind: Improving Access to, Availability of, and Utilization of Local Food

A double bind is a situation in which conflicting messages from a single source inhibit a person's ability to make an appropriate response. It could be argued that efforts to enhance food access and the economic success of Vermont agriculture constitute a double bind for policy makers, businesses, philanthropists, and communities: How do we, as a state, increase the vitality and value of Vermont agriculture while ensuring that

all citizens have equitable access to fresh, healthy, local food? When problem solving around these two issues is conducted separately, the success of one effort may come at the expense of the other.

This does not have to be the case. By dissolving the myth of the double bind, applying creative problem solving, and leveraging appropriate resources, economic and social justice can be achieved

for both food insecure Vermonters and Vermont farmers. Many organizations and individuals in the state are working on these issues simultaneously. Given Vermont's highly localized food system relative to other states, we are well positioned to lead the way in developing programming at the intersection of food access and farm viability.



Garden educator Jim Flint teaches children how to plant seedlings.

PHOTO CREDIT: Friends of Burlington Gardens

GETTING TO 2020

Goal 15 addresses the need to increase access to fresh, local food for all Vermonters.

Goal 15: All Vermonters will have access to fresh, nutritionally balanced food that they can afford.

F2P researchers identified many strategies to improve local food access, availability, and utilization for food insecure Vermonters, including the following:

FOOD ACCESS: Institute a state refundable tax credit for a percentage of the value of all donated food to reimburse farmers for making donations to gleaning programs and encourage more farmers to participate in gleaning programs, or agree to below cost sales to schools or food outlets (food shelves, meal sites).

FOOD AVAILABILITY: Fund organizations that develop and sustain community and school gardens. Senator Sanders recently secured a \$120,000 federal grant for

[Friends of Burlington Gardens](#) and the [Vermont Community Garden Network](#) to create a statewide, school-based summer gardening initiative that teaches Vermont children and youth how to grow fresh produce using land on or adjacent to school campuses.

FOOD UTILIZATION: Expand Farm to School programs to all 119 schools located in areas where 50% or more of the households have net incomes that make their children eligible for free school meals. Expanding this valuable program would bring food literacy and nutrition education to more food insecure households and introduce more low income youth to fresh, whole foods.

See Chapter 4, Section 1, for more information: www.vtfoodatlas.com/plan/chapter/4-1-food-security-in-vermont



4.2. Food System Education

What education and workforce developments needs does the food system workforce of the 21st century require?

The success of Vermont's food system depends, in part, on its educational institutions for scientific knowledge, resources, best practices, skilled leadership, networking opportunities, and student training. **School leaders we spoke with felt Vermont could build on its reputation and marketability to become the premier food education location in the United States, given sufficient funding and collaboration across the educational spectrum.** Vermont's K-12 *Farm to School* offerings are already considered a model by the national farm to school movement. Many out-of-school activities are grounded in farming: Thousands of Vermont residents have participated in 4-H activities related to agriculture, and thousands more have participated in the [Future Farmers of America](#) Vermont state chapter. Also, several of Vermont's colleges and the *University of Vermont* offer an expanding array of food system course offerings.

Declining Enrollments and Increasing Tuition Costs

Food system education takes place in a larger context of declining public school enrollments and increasing higher education tuition costs. **Vermont public school**

enrollment in 2010 was over 10% lower than enrollment in 2001.²⁷ With the exception of two career and technical education centers, [Hannaford Career Center](#) and [North Country Career Center](#), enrollments in agriculture and natural resources programs have declined or stayed flat, with an overall decline of 11% statewide over three years.

Vermont students and their families incur 16% more debt for bachelor's degrees than the national average. Student debt in Vermont continues to grow with the average student debt reaching \$27,786 for graduates of the class of 2009. This ranks Vermont the fifth highest in the nation for debt loads.²⁸ Debt loads are even more challenging for students in agriculture and food system work given the barriers to successfully entering into those careers, and low wages in certain food system professions.

Other issues specific to food system education identified during the F2P planning process include the following:

- 🍏 Inconsistent investment in the professional development of agriculture and natural resources teachers
- 🍏 Restricted opportunities in work-based learning and education in the fields of food processing and marketing
- 🍏 Underutilization of current infrastructure to capture student interest in food, farming, and the culinary arts
- 🍏 Inadequate two-year education options in food systems and a lack of flexible degree programs between technical centers and a 13th year
- 🍏 Lack of clearly communicated career pathways in agriculture and food systems in middle and high schools

GETTING TO 2020

Goal 16 highlights priority areas in the effort to improve food system education, from kindergarten to college.

Goal 16: Vermont K-12 schools, Career and Technical Education Centers, and institutions of higher education will offer a wide range of curricula, certificate and degree programs, and conduct research aimed at meeting the needs of Vermont's food system.

A wide variety of objectives and strategies were identified to improve and increase food system education in Vermont, including the following:

- 🍷 Encouraging coordination among institutions of higher education (e.g., [New England Culinary Institute](#), [Sterling College](#), [UVM](#), [Green Mountain College](#), [Vermont Law School](#), and [Vermont Technical College](#)) to collectively fill education and research gaps and market food education opportunities in Vermont
- 🍷 Assisting Vermont's 17 career and technical education centers in building matriculation agreements with in-state colleges to increase the number of food system and natural resources programs that offer college credits
- 🍷 Improving research coordination and sharing findings among all Vermont colleges and [UVM](#)

See Chapter 4, Section 2, for more information: www.vtfoodatlas.com/plan/chapter/4-2-food-system-education



4.3 Food System Labor and Workforce Development

What labor issues are effecting employers, employees, and job creation in Vermont's food system?

Farming has always been a hard way to make a living with long hours, strenuous labor, no holidays, and little access to health insurance or other workplace benefits. **Nearly 90% of Vermont farms are family owned, and the principal operators are primarily male (79%). The average age of Vermont farmers is 56, and over a quarter are 65 or older.** Yet a growing number of people—particularly young people—are looking to build careers in Vermont's food system by becoming farmers or starting food enterprise businesses. The percentage of women who are principal operators on Vermont farms has increased notably. While the overall number of principal farm operators rose by only 4%, female principal operators increased by 43% in the last decade. Changing demographics can also be found on Vermont organic farms, which draw a higher percentage of female farmers (25% vs. 21% nonorganic), farmers 35 years old or younger (14% vs. 5% nonorganic), and people whose primary occupation is farming (70% vs. 48% nonorganic).²⁹

The majority of Vermont's farmers derived less than 25% of their household income from farming in 2007. Farmers interviewed during the F2P process described the necessity of one or more family members holding a full-time job to supplement farm income, maintain access to health insurance, or in some cases, cover farm expenses. Farm work is notoriously labor intensive with fluctuating seasonal demands, and farm businesses struggle with high labor costs relative to overall business income. Longtime farmers, beginning farmers, and hired workers all identified the high cost of health insurance as a major barrier to job creation and the ability to farm full-time.

According to the Vermont Department of Labor, the average wage for farm workers is \$11.32 per hour (the median wage is \$10 per hour).³⁰ Although this rate is significantly higher than federal and state minimum wages, it is far from a livable wage, especially considering that most farmworkers work part-time. Many farms, especially dairy and larger-scale fruit and vegetable farms, depend on guest and migrant workers from Mexico, other Latin American countries, and the Caribbean. Although the exact number of undocumented workers in Vermont is unknown, VAAFM estimates that about 1,500 to 2,500 undocumented migrant workers are on dairy farms throughout the state.

Both farmers and the undocumented workers they hire face significant risks because of the workers' illegal status. Comprehensive immigration reform on a national level has been stalled for many years, though seasonal and temporary workers may be hired through the H-2A visa program. Because the H-2A program allows for the hiring of only seasonal or temporary laborers, it does not help farms that require dependable year-round labor, such as Vermont's dairy and livestock farms.

Across the food system, the highest-paying jobs are for agricultural engineers, technicians, scientists, butchers, chefs, and supervisors and managers of food preparation and food service enterprises, while lower paying jobs include restaurant cooks, food servers, dishwashers, and food preparation workers. The trend is the same among other private sector professions that are partially related to the food system, including other forms of retail sales. Only 25% of these jobs have median wages over \$15 per hour, and those are associated with management, science, or wholesale delivery. The other 75%, which have a median wage of about \$12.25 per hour, include cashiers, packers, salesclerks, and retail salespeople.³¹

There is concern about potential shortages of certain professionals, such as large animal veterinarians.³² These veterinarians are needed to work with farmers on practices that focus on herd nutrition, preventive health care, and herd production. Veterinarians often serve as the first line of defense against the introduction and spread of livestock diseases and diseases that can spread from livestock to humans.

GETTING TO 2020

Goals 17 and 18 of the F2P Strategic Plan address the need to increase the number of new farmers and food system entrepreneurs and respond to the needs of a 21st century food system workforce.

Goal 17: The number of locally owned and operated food system businesses is expanding.

Goal 18: Vermont's food system establishments will provide safe and welcoming working conditions, livable wages, and have access to a skilled, reliable workforce.

The next generation of food system workers must be lured not only by a sense of stewardship of the land, but also by the ability to make a living and support their families. Vermont farmers and entrepreneurs looking to earn more income and hire additional full-time or seasonal employees will require assistance with business planning, marketing, and navigating the myriad of regulations for operating safe and legal businesses.

Policies and programs that address health care (e.g., cooperative health insurance), workers' compensation, and guest workers are also important. For example, the H-2A Improvement Act, co-sponsored by U.S. Senator Leahy and introduced in September 2010, would authorize foreign dairy workers, sheep and goat herders to remain in the United States for an initial period of three years, after which they would be allowed to petition to become lawful permanent residents.

See Chapter 4, Section 3, for more information: www.vtfoodatlas.com/plan/chapter/4-3-food-system-labor-and-workforce-development



The next generation of farmers at Intervale Farms Program, 2009

PHOTO CREDIT: Intervale Center



4.4 Food System Technical Assistance and Business Planning

What technical assistance and business planning services are needed to strengthen Vermont's food system?

Technical assistance and business planning services represent an important form of **infrastructure** that supports the development of our food system. These services take many forms, from work sessions with consultants, business advisors, and "farm teams," to classes, clinics, and workshops. Technical assistance and business planning services are provided at all stages of development from beginner farmer programs to intergenerational farm transfer assistance.

Nearly 25 nonprofit organizations, dozens of staff at various state agencies, and private consultants deliver technical and business planning assistance to farmers

and food entrepreneurs in Vermont. Based on stakeholder input, this assistance is helping many food system businesses thrive.

One theme expressed throughout the F2P process was that farmers do not think of their farms as businesses; most entered farming as a lifestyle choice or because it is what their family has always done. Farmers and entrepreneurs have a natural tendency toward self-sufficiency that can lead to decision making in a vacuum or the feeling that no one understands what they are going through. In recent years, with the growth in demand for local and value-added products, more emphasis has been placed on how to run a profitable farm or food enterprise and how to earn a livable income.

The F2P planning process included a daylong work session in which over two dozen providers discussed the current state of technical assistance services, identified gaps, and discussed ways to meet emerging needs. The following needs will become the focus of various implementation strategies over the next few years:

- 🍷 Wider availability of and a proactive focus on farm and value-added business transition planning because so many farmers and business owners are reaching retirement age
- 🍷 Specialized assistance to farmers and entrepreneurs interested in scaling up their operations to reach new markets
- 🍷 An agricultural development entity that can work with strategic value-added food enterprises to secure alternative financing to expand their businesses
- 🍷 Coordination among service providers, and increased professional development to keep pace with the changing marketplace and the needs of farmers and entrepreneurs

GETTING TO 2020

Goal 19 of the F2P Strategic Plan addresses the need to increase the coordination between technical assistance and business planning providers to further strengthen Vermont's food system.

Goal 19: Business planning and technical assistance services will be highly coordinated, strategic, and accessible to Vermont's food system businesses.

A number of opportunities exist for accomplishing this goal. For example, the newly launched [Vermont Agriculture Development Program](#), a joint partnership between [VSJF](#) and the [Farm Viability Program](#), will assist a select number of strategic agricultural enterprises to grow faster and more sustainably through "deep dive" business assistance and access to flexible capital. The [Vermont Small Business Development Center](#), in collaboration with the [Center for an Agricultural Economy](#) in Hardwick, recently added more staff specifically to assist agriculture-related businesses in the Northeast Kingdom (NEK).

See Chapter 4, Section 4, for more information: www.vtfoodatlas.com/plan/chapter/4-4-food-system-business-planning-and-technical-assistance



4.5 Financing the Food System

Where can food system entrepreneurs turn to fund and finance their activities? What models are emerging to fund and finance the development of Vermont's food system?

A wide variety of financing options are available to assist Vermont's start-up, growth stage, and mature food enterprises to access capital. Despite this mix of financing options, weaknesses remain in Vermont's financing system. Financing opportunities for food system businesses in Vermont are heavily weighted toward collateralized lending, which is limiting for many small-scale or start-up/early stage enterprises that have little collateral to speak of or whose cash flow is constrained as the business tries to grow. In addition, a lack of understanding of more complex deals on the part of many borrowers and businesses (often related to equity, convertible debt, and near equity instruments), and a lack of intermediaries who can help them understand the *language of financing*, add expense and time to the financing process. Equity capital (whereby an investor takes an ownership position in a business) is not readily accessible to most food-related enterprises (with the exception of agriculture technology enterprises and value-added food manufacturing), nor is it necessarily the right type of capital because of the mismatch of expected rate of return, growth rates, and margins between business and investor. Often, a food enterprise needs equity-like, risk capital to grow, they just need it in smaller amounts and at lower returns than are available to them.

Increasing Access to Capital

A new paradigm of financing the development of our food system is emerging—one that recognizes that a start-up farmer has drastically different financing needs than a growth company selling value-added meat products, a dairy farmer selling milk into the commodity market, or a distributor of local and regional foods that is expanding its service territory. In short, **agricultural businesses have different financing needs depending on their size, stage of growth, and market outlets.** A key development in this paradigm shift is that investors, lenders, foundations, the public sector, and philanthropic grant makers are all increasingly interested in sustainable agriculture as an important funding area, investment opportunity, or both. Members of the Slow Money Alliance and other values-driven investors are revisiting their expectations on rates of return to better fit the cycle of agricultural enterprises. Social and environmental returns, and local and community investment opportunities, are now being considered as part of a financial investment strategy.

GETTING TO 2020

Goals 20 and 21 of the F2P Strategic Plan address the need to increase the awareness of and access to funding and financing opportunities for food system entrepreneurs and farmers to further strengthen Vermont's food system.

Goal 20: Food system entrepreneurs and farmers will have greater access to the right match of capital (grants, loans, mezzanine debt, equity, loan guarantees, leases, and incentives) to meet their financing needs at their stage of growth and for their scale of business.

Goal 21: Private foundations, federal funding sources, the Vermont Legislature, the governor's administration, and food system investors will leverage each other's available resources to maximize the implementation of this Plan.

There are clear opportunities to meet these goals, and one of the most effective is to proactively connect food entrepreneurs with the appropriate capital providers who can help them grow and sustain their enterprises. This can be done, in part, by centralizing financing information and providing a one-stop shop that (1) offers expertise to help

entrepreneurs differentiate among all the financing programs available to ensure the best match of capital with enterprise need, (2) assembles financing packages, and (3) educates and improves borrower readiness. Improving agricultural enterprises readiness for capital, in combination with attracting new kinds and models of financing (i.e., Slow Money, royalty financing) for agricultural enterprises, will facilitate the healthy growth of Vermont's food system.

The burgeoning interest in food system development throughout the country has led to a marked increase in philanthropic, state, and federal grant funding for agricultural enterprises. In 2008, a group of private philanthropic funders began to meet and explore collaborative grant making in the state. This group, now known as the *Vermont Food Funders Network*, is an informal network of at least 10 foundations that meet at least quarterly. The F2P planning process was the Network's first jointly funded project. According to grant-making data collected by the *Vermont Community Foundation*, the funders collectively made 739 grants totaling \$12.1 million between 2006 and 2009.

See Chapter 4, Section 5, for more information: www.vtfoodatlas.com/plan/chapter/4-5-financing-the-food-system



4.6 Food System Energy Issues

What are the opportunities for saving energy and increasing on-farm renewable energy production?

Major productivity gains in America's food system have been made through the increased availability and use of non-renewable energy sources. Food system activities consume a lot of energy, "from the manufacture and application of agricultural inputs, such as fertilizers and irrigation, through crop and livestock production, processing, and packaging; distribution services, such as shipping and cold storage; the running of refrigeration, preparation, and disposal equipment in food retailing and foodservice establishments; and in home kitchens." The USDA reports that food-related energy use increased from 12.2% of national energy use in 1997 to 14.4% in 2002, and was an estimated 15.7% of use in 2007.³³

About 93% of U.S. energy production is generated from nonrenewable energy sources, including coal, petroleum, and nuclear energy. Vermont consumes the least energy of any state in the country (154 trillion BTUs in 2008), but ranks 42nd on a per capita basis. Petroleum (51% of energy consumed in 2008) and nuclear energy (33% of energy consumed in 2008) are Vermont's major energy sources, followed by renewables (16%), and natural gas (6%).

The amount of money Vermont farmers spent on fuel increased 83% from \$17.8 million in 1997 to \$32.6 million in 2007, even though less fuel was purchased in 2007. Between 1984 and 2009 Vermont farmers purchased an average of 6,074,462 gallons of diesel fuel per year. Data about on-farm electricity and thermal energy consumption is not readily available.

Across the state, Vermonters are stepping up to create a new vision of the future premised on the relocalization of food and energy production. A wide variety of technical assistance providers, renewable energy businesses, and funding sources are helping farmers and other food system businesses install renewable energy systems and become more energy efficient. In 2007, the [Vermont Environmental Consortium](#) developed a "Farm Energy Handbook" that covered such topics as biodiesel and wind power and distributed it to 1,200 farmers. [Efficiency Vermont](#) has worked with most of the state's dairy farms to install energy-saving devices and has historically offered an agricultural equipment rebate program for lighting, plate coolers for dairies, and other types of equipment. The [Clean Energy Development Fund](#), [VAAFM](#), [USDA Rural Development](#), [NRCS](#), and Vermont's largest utility have provided major funding for the development of anaerobic digesters.

On-farm renewable energy production provides an opportunity for farmers to reduce input costs and greenhouse gas emissions while generating energy and new revenue. For example, farmers can replace petro-diesel with biodiesel made from oilseed crops such as sunflowers grown in Vermont. Animal feed imports can also be reduced by feeding the meal to livestock left after oil is squeezed from oilseeds. Twelve dairy farms enrolled in *Green Mountain Power's Cow Power* program generate thousands of megawatt hours of electricity per year through anaerobic digesters that turn the methane in animal manure into energy. Solids left over after anaerobic digestion can also be used as animal bedding, cutting down on another input cost. Food system activities off the farm can also produce energy: waste vegetable oil from fried foods can



Biodiesel workshop at State Line Farm in Shaftsbury.

PHOTO CREDIT: VSJF

be turned into biodiesel and food decomposing at landfills produces methane which can be captured to generate electricity.

GETTING TO 2020

Goal 22 of the Farm to Plate Strategic Plan focuses on reducing non-renewable energy use, while increasing efficiency and renewable energy production.

Goal 22: Food system enterprises will minimize their use of fossil fuels and maximize their renewable energy, efficiency, and conservation opportunities.

Most, if not all, of the pieces to accomplish this goal are already in place. For example, the Farm Energy Handbook could be updated to provide cost estimates for every type of on-farm renewable energy and efficiency project and their application on a farm, update lists of financing options and technical assistance providers, and conduct workshops to explore options with the farm community.

See Chapter 4, Section 6 for more information: www.vtfoodatlas.com/plan/chapter/4-6-food-system-energy-issues



4.7 Food System Regulation

What is Vermont's regulatory framework for food system activities?

The state's regulatory environment needs to be in alignment with the current and future state of Vermont's increasingly diverse food system. The existing regulatory structure is an amalgam of federal, state, and local municipal laws and rules. The food system is governed by a series of federal and state regulations that sometimes offer exemptions for small businesses and small farms. State agencies and departments work with the Governor and the legislature to create regulations in which the state has discretion separate from federal regulations. Private sector and nongovernmental rules also shape food enterprises. For example, some major retailers have chosen to make the federal government's recommended food safety practices for fresh produce mandatory for farms wishing to sell into their stores. Voluntary certification systems exist for those producers who seek to differentiate themselves in the marketplace by meeting certain standards such as organic, eco-friendly, or humane certified.

Maintenance of a credible and accountable regulatory structure is essential for the continued expansion of food production in Vermont. Unlike most northeastern states, Vermont has continued to support a state-based agriculture regulatory program rather than relying only on federal oversight. This policy has been particularly important for the maintenance of a slaughter and meat processing infrastructure, the growth of on-farm dairy processing, and the protection of water quality. State-based regulatory systems reflect the substantial differences in farming practices that exist across the country and may be most appropriate for achieving consumer protection without impeding farmers' access to the marketplace. In addition, state-based inspectors are more accessible to Vermont farmers and can answer questions and work within the collaborative framework established between VAAFM and other state inspection programs.

Striking a Balance: Public Safety and Regulations

Striking a balance between consumers' freedom to choose what they want to eat and the public trust in the safety and quality of Vermont foods is often a challenge. Many

farmers expressed a desire to do more on-farm processing of livestock, fruits, and vegetables, and their frustration with existing federal and state regulations that seem to be designed to fit the larger, commercial operations. F2P researchers also heard concerns about relaxing regulations, including public health concerns, the potential for consumer backlash against the entire Vermont brand in the case of a food safety problem, and the unfair competition that might result for livestock producers and meat processors who are following established food safety regulations. One of the most commonly discussed topics during F2P stakeholder meetings was regulations related to all types of on-farm processing.

GETTING TO 2020

Goal 23 of the F2P Strategic Plan are geared toward achieving good public policy and an appropriate regulatory framework, all designed to strengthen Vermont's food system.

Goal 23: Regulations and enforcement capacity will ensure food safety, be scale appropriate, and allow Vermont food enterprises to increase production and expand their market outlets.

A number of objectives and strategies were identified to meet these goals, including the following:

- Building on existing online resources and training sites to create a centralized clearinghouse of food-related safety regulations for all aspects of food production, processing, and value-added production
- Developing a formal structure for using existing Vermont institutions such as [UVM](#) and [Vermont Law School](#) to provide legal advice related to emerging ownership, processing, and marketing models
- Ensuring that farms and food processors using Vermont-grown products have easy access to accurate permitting information so they can make informed decisions regarding expansion or diversification of their enterprises.

See Chapter 4, Section 7, for more information: www.vtfoodatlas.com/plan/chapter/4-7-food-system-regulation



4.8 Leadership and Collective Impact

What additional leadership, communication, and coordination is needed to ensure the success of Vermont's food system?

Many organizations and institutions have important leadership roles to play, alongside Vermont's food-related enterprises, in ensuring that the F2P Strategic Plan gets implemented over the next 10 years. For instance, because the F2P Investment Program was created by the Vermont Legislature, state government has an important enabling, funding, and regulatory role to play. VAAFM has been deeply engaged in this 18-month-long planning process, and our hope is that the Plan will be embraced as the Agency's plan and implemented within the confines of the Agency's staff and funding resources. An example of the divergence between the food sector's importance and state support is that **General Fund appropriations for the VAAFM equaled only 0.3% of Vermont's total budget for fiscal year 2011.**

The economic development and planning communities, the [Agencies of Commerce and Community Development](#) (ACCD) and [Natural Resources](#), and the [Departments of Education](#) and [Health](#) also have important roles to play. In addition, many statewide and local organizations, such as the *Sustainable Agriculture Council*, feel a sense of ownership for the plan and can be helpful in implementing specific strategies. The *Vermont Agricultural Development Board*, the *Vermont Food Funders Network*, federal agencies, and Vermont's congressional delegation will also be key players in implementing the plan.

Communication, Coordination, and Collaboration

Given the sheer number of programs, activities, and organizations working to strengthen our food system, many are understandably confused about roles and responsibilities.

Because the food system is so large and so complex, communication, coordination, and collaboration among stakeholders must evolve to a higher level.

This is especially true for the community of nonprofit organizations, trade associations, state agencies, and funders that provide critical technical assistance for our food system.

Collectively, our leadership capacity needs to develop, and we must all be open to new voices and mentor young people to become the next generation of food system leaders.

Ongoing Role of the F2P Investment Program

VSJF has statutory responsibility for maintaining this strategic plan and monitoring its progress over time. VSJF will continue to work closely with the Governor's office, VAAFM, ACCD, the Vermont Legislature, Vermont's U.S. congressional delegation, the *Agricultural Development Board*, the *Sustainable Agriculture Council*, and stakeholder organizations to ensure that the goals, objectives, and strategies included in this plan are achieved in a cost-effective and efficient manner. A [Farm to Plate Network](#) will be established to review progress and provide guidance for the implementation of the strategic plan, and various Working Groups, Cross-cutting Teams, and Task Forces will be created as needed to more closely monitor the implementation of priority strategies over the next 10 years.

GETTING TO 2020

Goals 24 and 25 address the need to improve communication, coordination, and collaboration among food system stakeholders and to firmly link food system development with economic development.

Goal 24: Vermont's governor, legislature and state agencies will continue to celebrate Vermont's food system and will champion it as an economic development driver for the state.

Goal 25: Food system market development needs will be strategically coordinated.

Annually evaluating progress and refocusing priority strategies for the coming year will be a critical part of keeping this strategic plan alive and responsive to changes in the marketplace. A [Vermont Food System Atlas](#) (i.e., a GIS-based website and information portal) will act as a central access point for food system stakeholders. The Shumlin Administration has publicly stated its desire for greater coordination and communication across agencies and departments, especially between the VAAFM and ACCD.

See Chapter 4, Section 8, for more information: www.vtfoodatlas.com/plan/chapter/4-8-leadership-and-collective-impact

Economic Impact of Increased Production and Consumption of Local Food

With the help of Nic Rockler (Kavet, Rockler and Associates), we conducted an economic impact assessment of our current food system and estimated the direct and indirect economic impacts of a 5% increase in farming and food manufacturing in Vermont.³⁴ Specifically, we estimated the expected changes in employment, gross domestic product, and personal income from such growth.³⁵

Based on recent economic census data (adjusted to 2010 dollars³⁶), **Vermont's major agricultural and food product output totaled \$2.7 billion in 2007.**³⁷ Therefore, the direct impact of a 5% increase equals \$135 million in annual output. When the multiplier effect is considered, total output would increase by an average of \$177 million per year from 2011 to 2020.³⁸

A 5% increase in production would boost total food sector employment by an average of 1,500 jobs over the 10-year period, with the greatest concentration being in farming, forestry, fishing, and related activities (which include agricultural services).³⁹ Other industries that would experience substantial growth include construction and manufacturing.

A 5% increase in food production (and related output) would generate an average annual increase in the gross domestic product of \$88 million per year. As a result, personal income would increase by an average of \$110 million per year.⁴⁰ This represents income from wages for the new jobs created and business income from the expanded food system activity. Real disposable income (i.e., income after taxes and social insurance contributions) would rise by an average of \$80 million per year.

So how can Vermonters help achieve this 5% increase in overall food system production? According to the U.S. Census Bureau's 2009 Consumer Expenditure Survey (CEX), families earning between \$50,000 and \$70,000 per year spent on average \$6,420 for food (\$3,755 for food eaten at home and \$2,666 for food eaten

away from home). We assume that, on average, Vermont families spend 5% of their food budget on Vermont food products. **Therefore, if a Vermont family were to double its local purchases, it would mean increasing purchases of local goods from \$321 to \$642 per year** (this does not mean adding \$321 to the total spent, just substituting \$321 for imported food with \$321 for local goods). Because the average household in the CEX survey had 2.7 people, **the cost of the shift to purchasing more local food would be about \$9.92 per person per month.** In some cases, the shift to local food may cost more. But even if we assume that local food costs 10% more, the total cost of food would increase by one half of one percent.

Employment Impact of 5% Increase in Food Production 2010-2020

Industry	# of new jobs
Forestry, Fishing, Related Activities (includes Ag. Services)	274
Farming	247
Construction	156
Government	125
Manufacturing	106
Retail Trade	87
Wholesale Trade	66
Professional and Technical Services	48
Accommodation and Food Services	41
Transportation and Warehousing	33
All Other ⁴¹	319
Total Employment Change (Jobs)	1,502

Climate Change and Vermont's Food System

Two recent reports from the [USDA](#) and a draft report from the [U.S. Global Change Research Program](#) indicate detrimental effects from climate change on most crops, livestock, and agricultural production systems that will vary somewhat by region. Since most of the food consumed in Vermont is imported from somewhere else, we need to pay particular attention to the impacts of climate change on other parts of the world. Here are a few highlights from these reports:⁴²

- ☀ Rising temperatures and altered precipitation patterns will affect agricultural productivity. 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, soybean, and wheat supplying region of the country will, of course, have ripple effects, including impacting the cost and availability of animal feed in Vermont—already the biggest production expense for dairy farmers—and the cost and availability of ingredients for marquee Vermont food processors like [King Arthur Flour](#). Since the impacts of climate change are global, the availability of food products that we have grown accustomed to enjoying—and that Vermont companies use as key ingredients—will diminish. For example, [cocoa production](#) in Ghana and the Ivory Coast is expected to decline (which will impact [Ben & Jerry's](#), [Lake Champlain Chocolates](#), and other chocolatiers), as is [coffee production](#) (which will impact [Green Mountain Coffee Roasters](#) and other coffee companies). In the Northeast, most forest cover models show the composition of forest species changing from maple-beech-birch to oak and hickory by 2100. The implication of these changes is that the appearance, composition, and functioning of Vermont's working landscape—including maple syrup production—will be dramatically different in the years ahead.
- ☀ Livestock production systems are vulnerable to temperature stresses, rapidly changing weather conditions, and exposure to different diseases and parasites. Many Vermonters are interested in expanding livestock production to reach regional markets for grass-fed, pasture-raised meat. It is unclear how temperature stresses will impact the expansion of livestock production in Vermont, but the direct effects on livestock and livestock management systems may include

lowered feed efficiency, reduced forage productivity, reduced reproduction rates, and higher costs associated with modifying livestock housing to reduce thermal stress. The USDA also states that the negative effects of hotter summers will likely outweigh the benefits of warmer winters.

- ☀ Warming temperatures in the Northeast may mean more habitable environments for insects, invasive plant species, and other pests that may exacerbate current stresses on plants and animals; climate change will also alter pollinator life cycles, which will impact all types of crop and livestock production in Vermont.
- ☀ Ecosystem services (e.g., maintenance of soil and water quality, flood control) that food systems depend on may be damaged as a result of cumulative stresses.
- ☀ Increased incidences of extreme weather events will impact food production around the world. For example, Tropical Storm Irene—viewed as a harbinger of things to come—flooded 20,000 acres of farmland and impacted 463 Vermont producers when it struck in 2011.
- ☀ Finally, under high emissions scenarios Vermont could experience conditions similar to the South—hotter temperatures and more humidity during the summer. Farmers and farm workers will be on the frontline of these changes—since they spend most of their days outside—and may experience more illnesses, injuries, and premature deaths due to extreme heat, allergy and respiratory symptoms related to increased plant and mold allergens, and increased exposure to infectious diseases.

Farmers, researchers, food manufacturers, technical assistance providers, health care providers, planners, state agency personnel, and many others should start planning now—not five years from now, not ten years from now—to prepare for, mitigate against, and adapt to the challenges posed by climate change. As a practical matter, the [Agroecology and Rural Livelihoods Group](#) at the University of Vermont, [Resilient Vermont](#), and the [Climate Change Team](#) at the Agency of Natural Resources, and others have started this process, but all stakeholders should start engaging in these conversations.

Objectives and Strategies for Strengthening Vermont's Food System

After analyzing existing data sets, published materials, and public feedback for strengths, weaknesses, opportunities, threats, gaps, barriers, and needs affecting Vermont's food system, we developed a set of objectives and strategies to overcome obstacles, realize opportunities, and strengthen Vermont's food system. These strategies acknowledge and support **existing** programs, projects, and initiatives because so much innovative, high-impact work is already happening that should be continued and coordinated. The strategies also seek to advance **new** ideas that have a high likelihood of strengthening Vermont's food system over the long haul.

The following table lists examples of high-priority objectives and strategies that should be advanced over the next ten years. Financing these strategies will come from a combination of private sector, public sector (state and federal), and foundation sources. Many more objectives and strategies are outlined throughout Chapters 3 and 4. Some strategies can be implemented at the same time, whereas others will need to be sequenced. And some may never come to pass if the right market conditions do not emerge. It is important to note that these strategies are not prioritized within the table.

VSJF's market development approach was used to organize these objectives and strategies. This approach operates from the premise that there is no "invisible hand" guiding markets, but rather, consumers, governments, businesses, nonprofits, farmers, and others continuously make and shape markets. Addressing these ten market development needs is important for the success of individual businesses and for the development of the food system as a whole.

Market Development Needs

- **Research** (e.g., new data, mapping, market research, and new product research)
- **Natural Resource, Physical Infrastructure, and Technology** (e.g., land use and land access issues, developing new equipment, building needs, energy needs)
- **Sales and Distribution** (e.g., matching supply and demand, working with supermarkets to adjust business models to work with smaller growers)
- **Marketing and Public Outreach** (e.g., need for consumer food literacy and education and building consumer awareness)
- **Technical Assistance and Business Planning** (e.g., producer alignment with processor and wholesaler specifications, Good Agricultural Practices, Hazard Analysis & Critical Control Points, trainings, mentoring, and financial management)
- **Financing** (e.g., for specific types of businesses and stages of development)
- **Network Development** (e.g., support for existing networks and trade associations or the creation of new ones)
- **Education** (e.g., food system education at elementary schools, tech centers, and institutions of higher education)
- **Workforce Development** (e.g., need for skilled labor, health care and workers comp needs, needs of H-2A/guest workers)
- **Regulation and Public Policy** (e.g., new regulations or state and federal policies).

High Priority Objectives and Strategies

CHAPTER	OBJECTIVE	STRATEGIES/ACTIONS
<i>Research Strategies</i>		
3.1 Consumer Demand	To develop valid and accurate local food consumption data for use in tracking the progress of the F2P Plan.	<i>Measure consumer demand:</i> Establish a statistically valid, credible methodology and begin collecting data on how much locally and regionally produced food Vermonters are purchasing and how much Vermont-produced food regional consumers are purchasing.
	To preserve and enhance Vermont's quality brand and related value-added premiums.	<i>Develop and establish a Vermont branding program:</i> Continue researching options for additional value-added premiums such as reserved designations, geographical indications, and terroir certifications.
3.2 Farm Inputs	To improve access to viable and affordable agricultural land and secure tenure for farmers (ownership and leases).	<i>Land use mapping:</i> Create and update a land use statewide spatial LiDAR database of agricultural land usage and an inventory of agricultural land that captures information on soil type, current land use, accessibility to roads, proximity to market areas, etc. Call attention to publicly owned land locations conducive to food production adjacent to publically owned buildings.
		<i>Infill farming:</i> Support legal research on embedding new farming activity in established and developing residential areas on productive agricultural land owned by nonfarmers. This effort should be coordinated with existing farmland access programs and should be included in the web-based Vermont Food Atlas.
	To improve water quality, soil fertility, and organic matter and reduce erosion.	<i>Comprehensive soil monitoring:</i> Develop a more comprehensive soil monitoring program for a wide range of biological, chemical, and physical soil properties, including additional assistance to farmers to conduct regular soil tests and develop nutrient management plans, soil fertility enhancement strategies, erosion control strategies, flood mitigation strategies, and matching funds for farmers to comply with Ecosystem Restoration Program best practices.
3.3 Production	To increase the availability of Vermont-grown grains and dry beans in retail and wholesale market outlets.	<i>Grain and dry bean market and processing infrastructure analyses:</i> Conduct a regional market analysis of demand, packaging options, and marketing opportunities for a variety of grain and dry bean products. Include an analysis of the processing infrastructure needed to support high-demand products. Conduct an inventory of grain milling and other processing facilities in existence or being considered in Vermont and the region. Include recommendations for the grower and processor regarding packaging and marketing. Include an assessment of opportunities for value chain partnerships.
	To increase access to locally and regionally grown fish.	<i>Fish production feasibility research:</i> Conduct a feasibility study for developing economically viable recirculating fish production facilities that are heated with renewable fuels and can also support fruit and vegetable production in greenhouses. Advance associated research on algae as a fish food.

CHAPTER	OBJECTIVE	STRATEGIES/ACTIONS
Research Strategies		
3.4 Processing	To maximize opportunities for local producers to access existing institutional wholesale markets with lightly processed fruits and vegetables.	<i>Serving institutional markets:</i> Conduct a feasibility study for a medium- to large-scale fruit and vegetable processing facility specifically to serve institutional markets. The study would include the amount and types of product needed to meet demand, procurement specifications, viable price points, number of production acres needed per product, interested producers at various scales, facility service area, number of facilities needed in Vermont, and annual operating budget.
4.2 Education	To track the reach and impact of Farm to School programs.	<i>Farm to School evaluation system:</i> Establish an evaluation system for schools participating in Farm to School activities. Establish a methodology to track education impact, local food procurement levels, and overall health improvements. Survey public schools to provide a benchmark for excellence in food and agriculture education in K-12 curricula.
4.8 Leadership + Collective Impact	To conduct an annual assessment of progress in reaching 2020 F2P Goals.	<i>F2P progress indicators:</i> Develop data collection protocols for all relevant stakeholder groups and provide training in data collection and outcomes development and tracking. See Chapter 2 for suggested measures.
Natural Resource, Physical Infrastructure & Technology Strategies		
3.2 Farm Inputs	To improve water quality, soil fertility, and organic matter, and reduce erosion.	<i>Strip, zone, and no-till practices:</i> Establish a matching fund program to help farmers retrofit existing equipment and to offset the initial yield reductions associated with strip, zone, and no-till cultivation practices.
	To improve access to viable and affordable agricultural land and secure tenure for farmers (ownership and leases).	<i>Farmland conservation:</i> Establish a revolving loan fund in collaboration with the Vermont Land Trust (VLT), the Vermont Housing and Conservation Board (VHCB), and other farmland conservation partners for the purpose of <i>fee purchases of strategic farmland parcels</i> to be conserved (i.e., conservation easements applied), resold to farmers, and/or held as leased incubator farms or for other farming activities.
		<i>Farmland conservation:</i> Support VLT, VHCB, and other farmland conservation partners to set aggressive targets for conserving farmland for dairy, fruit and vegetables, livestock, grains, beans, oilseed, and other crop production.
3.3 Production	To improve access to viable and affordable agricultural land and secure tenure for farmers (ownership and leases).	<i>New incubator farm programs:</i> Establish additional farm incubator programs (providing land, technical assistance, equipment sharing) in underserved areas of the state. Develop a matchmaking database of existing farmers who want to host and mentor new farmers on a portion of their property (this is another form of farm incubation).
	To improve producers' ability to access retail market outlets that require GAP or other forms of food safety certification.	<i>Funding for GAP certification:</i> Establish a matching fund program to help producers obtain needed equipment and make building modifications to enable them to reach GAP or other food safety certifications (so they can access larger retail markets).

CHAPTER	OBJECTIVE	STRATEGIES/ACTIONS
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Natural Resource, Physical Infrastructure & Technology Strategies

3.3 Production	To increase local egg production to meet 50% of local demand by 2020.	<i>Increase egg production:</i> Encourage the development/scaling of poultry laying farms to 1,000 to 2,000 birds each to significantly increase the supply of locally produced eggs. These farms could serve the needs of schools that do not require liquefied/pasteurized eggs. Assess the annual institutional purchasing of eggs (shell eggs and liquefied/pasteurized eggs). Conduct an economic feasibility study to determine the capital expenditures needed for a liquid egg pasteurization machine at an appropriately scaled egg farm.
	To double in-state goat milk production to serve the value-added cheese industry.	<i>Goat dairy expansion:</i> Provide matching funds and production technical assistance to 10 goat dairies to allow them to scale up to a 600-goat herd. Improve production practices and herd genetics.
3.4 Processing	To support infrastructure improvements at slaughter and meat processing facilities.	<i>Financing for slaughter expansion:</i> Assist slaughterhouse owners in accessing funding for capacity improvements, such as additional storage and other systems improvements, to maximize plant use and profitability.
3.7 Nutrient Management	To build the infrastructure to divert 80% of Vermont's organic residuals to be used for composting and soil building.	<i>Expand composting:</i> Encourage the construction of an additional 5 to 10 commercial composting facilities and 20 to 25 on-farm composting facilities over the next 10 years.
4.8 Leadership + Collective Impact	To create a web-based portal to house everything related to Vermont's food system.	<i>Vermont Food Atlas:</i> Develop a statewide food atlas modeled after the <i>Renewable Energy Atlas of Vermont</i>. Include land use mapping data files, all F2P-related materials, a database of stakeholder organizations, links to local grower guides, matchmaking databases, capital provider sources and technical assistance program resources, a portal to regulatory information, a master calendar of events, job postings, etc., as well as links to all known organizational and business websites related to Vermont's food system. Completed May 2013.

Sales and Distribution Strategies

3.6 Retail Distribution	To increase producer access to market demand information.	<i>Strategic partnerships:</i> Encourage the formation of strategic partnerships between producers interested in scaling up to meet larger-scale markets and retailers interested in sourcing more local food (e.g., prebuy contracts similar to the CSA model, retailer and wholesaler investment in a producer's storage or equipment, investing in a farmer-owned processing facility, cooperative marketing, etc.).
		<i>Matchmaking events:</i> Increase the number of matchmaking events between sellers and local and regional buyers to increase the sale of local products in these markets, build strong relationships, and increase awareness about barriers and opportunities faced by both producers and market outlet staff and category managers.

CHAPTER	OBJECTIVE	STRATEGIES/ACTIONS
Sales and Distribution Strategies		
3.6 Retail Distribution	To increase the purchasing of local food by hospitals, state facilities, university and colleges, K-12 schools, senior meal centers, and other institutions.	<p><i>Sourcing local food:</i> Encourage the leadership of hospitals, K-12 schools, and higher education institutions to adopt a goal and/or policy directive to source as much locally produced food as budgets will allow, and to increase these budgets over time. This should include establishing a tracking system to analyze and monitor the progress in local food purchasing over time.</p> <p><i>Expand Farm to School programs:</i> Strategically focus funding to establish a Farm to School program in every school that has more than 50% of the students receiving free or reduced price meals.</p>
	To increase opportunities for local producers to access existing local retail markets.	<p><i>Consumer food co-ops:</i> Provide matching funds for the Neighboring Food Cooperative Association to conduct economic feasibility studies for the expansion of existing local food co-ops and/or the development of new ones throughout the region.</p>
	Marketing and Public Outreach Strategies	
3.3 Production	To increase the consumption of New England produced milk through regional marketing differentiation.	<p><i>Regional marketing for Northeast milk:</i> Encourage New England states to pool resources for regional marketing beyond the Keep Local Farms program. Encourage milk co-ops and processors to improve their regional marketing efforts. Work with the Northeastern Association of State Departments of Agriculture on this strategy.</p>
	To increase the amount of locally produced fluid milk that is locally consumed and/or used in value-added processing.	<p><i>Value-added dairy marketing:</i> Identify key marketing strategies for developing cheese and other value-added dairy products such as cottage cheese, yogurt, sour cream, and kefir, and nonfood dairy-based products. Marketing research-based strategies should be for both in-state and export markets and include terroir/taste of place content and case studies/storytelling of success stories. Ads for Vermont dairy products, and their origin stories, should be regularly placed in related industry and tourist publications.</p>
	To increase the marketing of local foods through statewide media and promotional campaigns.	<p><i>Buy Local marketing:</i> Develop and provide materials to distributors and retail outlets regarding the importance of buying local. Build on models such as USDA's Know Your Farmer, Know Your Food campaign, Vermont's Buy Local campaign, and the Vermont Fresh Network.</p>
Technical Assistance and Business Planning Strategies		
3.2 Farm Inputs	To increase information about viable and affordable agricultural lands and tenure models.	<p><i>Farmland lease resources:</i> Assemble information on farmland lease options and samples for secure tenure models, customize them for Vermont application, consolidate into a searchable database and online resource, and conduct four workshops for farmers and landowners that explain leasing and lease options and provide hands-on technical support.</p>

CHAPTER	OBJECTIVE	STRATEGIES/ACTIONS
Technical Assistance and Business Planning Strategies		
3.3 Production	<p>To increase the number of farmers participating in technical assistance and business planning services, especially related to diversification strategies, farm transfers, and retirement planning.</p>	<p><i>Farm management teams:</i> Provide 50% matching funds for volunteer farm management teams to work with farms throughout the state using skilled facilitators.</p> <p><i>Farmland and business transfers:</i> Conduct workshops and provide one-on-one assistance for farmers involved in farm and/or farmland transfers.</p> <p><i>Enterprise plans for diversification:</i> Develop detailed enterprise plan templates (i.e., budget calculator tools) for various diversification strategies including transition to organic production, on-farm liquid milk processing, biomass energy and forage crops, maple, livestock, value-added dairy products, grains, and high-demand large-scale fruits and vegetables.</p>
	<p>To achieve a 40% increase in the use of Vermont slaughterhouses between February and August.</p>	<p><i>Coordinated livestock management program:</i> Develop a coordinated livestock management program within the Farm Viability Program, UVM Extension/Vermont Pasture Network, NOFA-VT, and other livestock trade associations to improve winter management practices, carcass development, commercial hog production, and year-round beef and lamb production.</p>
	<p>To maximize the resources available to provide technical assistance to farmers and food entrepreneurs.</p>	<p><i>Training for scaling up:</i> 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.</p>
3.4 Processing	<p>To encourage the use of mobile slaughterers for the on-farm slaughter of animals raised for home use.</p>	<p><i>Increase custom and mobile slaughter capacity:</i> 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.</p>
3.5 Wholesale Distribution	<p>To increase opportunities for local producers to access existing local retail markets.</p>	<p><i>Food storage inventory:</i> Create a statewide inventory of all food storage facilities. List these on the Vermont Food Atlas website, once developed. Support the development of food aggregation centers throughout the state, or help expand the existing distributor warehouse network, so that small to medium-sized producers can more easily reach retail outlets.</p>
Financing Strategies		
4.5 Financing	<p>To increase the availability of flexible and/or non-asset-based risk capital and investments for food enterprises.</p>	<p><i>Public funds for non-asset-based lending:</i> For non-asset-based lending, invest public dollars (i.e., state general fund, state retirement investment funds) in alternative capital intermediaries and other organizations that offer new models of equity-like risk capital, at a Vermont scale, and provide technical assistance to early- and growth-stage food entrepreneurs who are starting to access risk growth capital.</p>

CHAPTER	OBJECTIVE	STRATEGIES/ACTIONS
Financing Strategies		
4.5 Financing	To increase the availability of flexible and/or non-asset-based risk capital and investments for food enterprises.	<i>Public funds to co-invest in slaughter and meat processing facilities:</i> Provide public funds to co-invest with private investors to accelerate the development of the critical, capital-intensive infrastructure needed for additional federally inspected slaughterhouses and meat processing facilities (both stationary and mobile plants). Benchmark other successful models in other parts of the country.
	To support efforts to transition conventional dairy farms to other types of production—in the event that a supply management system is not enacted—to maintain working farms.	<i>Farm transition fund:</i> Create a special multi-year farm transition fund and provide appropriate technical assistance to farmers that want to diversify or transition out of conventional milk production into other forms of production (e.g., organic milk, diversified vegetables, livestock, value-added products).
	To increase the amount of philanthropic funds and program-related investments invested in Vermont food enterprises and nonprofit support organizations.	<i>Attract national philanthropic funding:</i> Work with the Vermont Community Foundation and the Vermont Food Funders Network to increase funding from regional and national foundations. Proactively identify and build relationships with foundations outside of Vermont.
	To encourage more public and private investments in agricultural land that provide longer-term financial returns and flexible exit strategies, and that involve farmer lease-to-own contracts.	<i>Private agricultural land investment company:</i> Benchmark models such as Equity Trust and Farmland LP to identify agricultural land investment models that could work in Vermont. Then, create or leverage an existing intermediary that would raise private investment funds, purchase farmland, and create flexible lease-to-own contracts with farmers. Such contracts would allow farmers' lease payments to go toward building more equity each year, tie payments to annual farm performance/income, and provide exit options for farmers.
Network Development Strategies		
3.3 Production	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.	<i>Additional sourcer positions:</i> 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. Vermont Butter & Cheese employs a goat nanny to help partnering farms produce high-quality goat milk.).
	To increase opportunities for local producers to access retail markets.	<i>Food system brokers for effective matchmaking:</i> Identify, coordinate, and expand the number of food system brokers, or coordinator positions, to serve as matchmakers between buyers and sellers to increase local food consumption at all types of retail outlets, but especially at institutions. Identify existing programs and staff and hire additional personnel at various organizations and distributors, as needed.

CHAPTER	OBJECTIVE	STRATEGIES/ACTIONS
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Network Development Strategies

3.4 Processing	To encourage greater coordination among meat producers, slaughter facilities, and meat processors to expand the production and use of Vermont-grown meat.	<i>Statewide meat industry council:</i> 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.
4.1 Food Security	To increase the quantity of fresh local produce to all food shelves and charitable meal sites throughout the state.	<i>Expand gleaning programs:</i> Establish gleaning programs and coordinators in every county by 2014. Include on-farm harvest gleaning plus reclaimed food from restaurants, caterers, institutions, supermarkets, etc.
4.8 Leadership + Collective Impact	To encourage ongoing support by the governor, relevant state agencies, the legislature, and private and public stakeholders to ensure the implementation of the F2P Strategic Plan.	<i>Guardian of the F2P Plan:</i> Conduct an annual evaluation of progress on F2P Strategic Plan implementation, including data collection and analysis. With VAAF, convene key stakeholder groups to implement strategies from the F2P plan for which no organization is yet spearheading, or that need a group of stakeholders to implement. Convene an annual planning retreat to review progress on F2P goals and refocus priority strategies for the following year. F2P leaders will meet with the key government officials each January (and as often as necessary outside of the legislative session) to apprise them of progress being made toward implementing the F2P plan.

Education Strategies

4.2 Education	To fully leverage the resources of Vermont's public schools to support food systems education and engagement.	<i>More school farms and gardens:</i> Promote and support the existence of working farms, or larger-scale production gardens, at high schools and career and technical education centers.
	To improve the rigor of agriculture programs in both high schools and career and technical education centers.	<i>College credit courses at technical centers:</i> Assist career and technical education centers in building articulation agreements with state colleges and the University of Vermont to increase the number of food system and natural resources programs that offer college credits.

Workforce Development Strategies

3.4 Processing	To ensure a sufficient number of high-quality meat cutters and butchers to assist producers in accessing regional outlets.	<i>Skilled meat cutters:</i> Establish and fund technical assistance and educational training programs for skilled meat cutters and butchers through NECI, Vermont Tech, and high school technical education centers. Program now exists.
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CHAPTER	OBJECTIVE	STRATEGIES/ACTIONS
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Workforce Development Strategies

4.3 Labor and Workforce Development	To improve access to qualified farm labor.	<i>Guest workers:</i> Improve the system for hiring migrant farm workers/guest workers and the visa/H-2A program (federal policy changes are needed).
		<i>Increase the use of interns and apprentices:</i> Adjust labor regulations to encourage a greater use of interns and apprentices not directly associated with university programs.

Regulation and Public Policy Strategies

3.1 Farm Inputs	To encourage the creation of local zoning regulations to protect the right to farm and encourage the protection and active use of prime agricultural soils.	<i>Planning and zoning:</i> Review and update zoning ordinances to ensure, to the greatest extent possible, that prime agricultural soils are conserved for agricultural use. Develop tools such as those developed by the Delaware Valley Regional Planning Commission (dvrpc.org) to guide improvements to planning and zoning ordinances that support the further development of the food systems.
3.3 Production	To support the passage of Dairy Price Stabilization legislation in the U.S. Congress.	<i>Dairy price stabilization:</i> Work with Vermont’s congressional delegation and Dairy Farmers Working Together to develop a milk pricing system based on supply management.
	To increase local food consumption at state-owned institutions and facilities with food service by sourcing as much locally produced and fresh food as possible.	<i>Public procurement of local food:</i> Enforce the existing state policy (Act 38, 2007) that instructs VAAFM, the Agency of Administration, and the Department of Buildings and General Services to develop a system of local food and dairy purchasing within state government and government-sponsored entities. This provision should also be applied to businesses with food service that lease large parcels of real estate and/or receive significant funding from the state. Encourage farming on public lands that are adjacent to public facilities.
3.6 Retail Distribution	To maximize the amount of local food served in K-12 schools by increasing the number of schools participating in Farm to School programs.	<i>School food purchases:</i> Advocate for policies that enable school districts to take “cash in lieu of commodity food” whenever possible to increase funding and flexibility for school food purchasing.

Regulation and Public Policy Strategies

4.7 Regulation	Encourage Vermont’s regulatory structure to support the right of farmers to use science-based animal practices in the management of their herds and flocks.	<i>Humane certified:</i> Through appropriate 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.
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CHAPTER	OBJECTIVE	STRATEGIES/ACTIONS
Regulation and Public Policy Strategies		
4.7 Regulation	To maintain the Use Value Appraisal Program to keep farmland in farming.	<i>Changes to the Use Value Appraisal Program:</i> Support efforts to discourage short-term enrollments of land in the program that a landowner intends to develop, and convert paper documents to electronic files and GIS-based maps. The administration and legislature should also work with interested parties to identify other steps to improve the program's effectiveness, efficiency, and sustainability over the long run.
	To help producer cooperatives attract equity capital so they can expand into value-added processing and/or new markets.	<i>Enable Uniform Limited Cooperative Associations.</i> The Vermont Legislature should pass the Uniform Limited Cooperative Association Act, which would create a new corporate structure to allow producer co-ops to accept equity investments from nonproducer members (minority shares) (H.109 from the 2009 session). Became Act 84 in 2012.
	To increase funding to VAAFM to strengthen its capacity to help farmers and food entrepreneurs understand regulations, and to help VAAFM enforce those regulations.	<i>Technical assistance and enforcement funding for VAAFM:</i> Provide state general funds to ensure that VAAFM can provide proactive technical assistance to help farmers and food entrepreneurs understand regulatory issues, and also to ensure that VAAFM can adequately enforce state and federal regulations.

F2P Strategic Plan At a Glance

Chapter 1 provides an overview of the F2P Strategic Plan development process.

Chapter 2 highlights the major goals identified during the F2P Strategic Plan development process that will strengthen Vermont's food system by 2020.

Chapter 3 analyzes each section of Vermont's soil-to-soil food system and identifies objectives and strategies that will help Vermont achieve the goals set out in Chapter 2.

Chapter 4 analyzes cross-cutting elements of the food system and also identifies objectives and strategies for achieving Chapter 2 goals.

A set of appendices provides detailed analyses of the dairy industry and the food distribution system in Vermont.

End Notes

- 1 This figure is considered conservative because it is only our estimate of retail food purchases; it does not include sales in and revenues from support industries, manufacturing, wholesale, and so on.
- 2 Vermont Council on Rural Development. *Vermont Working Landscape Partnership Action Plan*. December 2010. <http://vtrural.org/sites/default/files/library/files/working%20landscape/WorkingLandscapePlatform.pdf>.
- 3 See Chapter 3, Section 1: Understanding Consumer Demand, www.vtfoodatlas.com/plan/chapter/3-1-consumer-demand.
- 4 Dr. David Conner, Florence Becot, Doug Hoffer, Ellen Kahler, Dr. Scott Sawyer, Dr. Linda Berlin, "Economic Opportunity in Local Food Systems: Baselines and Targets," *Journal of Agriculture, Food Systems, and Community Development*, 3(2): Spring 2013, <http://www.agdevjournal.com/current-issue/338-measuring-local-food-consumption-vermont.html?catid=133%3Aopen-call-papers>.
- 5 K. A. Grimm et al., "State-Specific Trends in Fruit and Vegetable Consumption Among Adults United States, 2000-2009." *Morbidity and Mortality Weekly Report*, 59 (35): 1125-1130.
- 6 United Health Foundation, www.americashealthrankings.org.
- 7 Centers for Disease Control and Prevention, <http://apps.nccd.cdc.gov/brfss/display.asp?TrendValue=3&state=VT&cat=OB&yr=0&qkey=4409&grp=0&SUBMIT5=Go>
- 8 Vermont Department of Health, <http://healthvermont.gov/prevent/diabetes/diabetes.aspx>.
- 9 Employment and establishments figures for farm inputs, food production, food processing, wholesale distribution, and retail distribution are based on the 2007 Census of Agriculture, *Vermont Department of Labor Quarterly Census of Employment and Wages* (second quarter, 2012), and the U.S. Census Bureau's 2010 nonemployer statistics.
- 10 United States Department of Agriculture, 2007 Census of Agriculture, Table 4, www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1_Chapter_1_State_Level/Vermont/st50_1_004_005.pdf.
- 11 United States Department of Agriculture, 2007 Census of Agriculture, Table 1: County Summary Highlights, www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1_Chapter_1_State_Level/Vermont/vtv1.pdf.
- 12 Farmland Information Center, www.farmlandinfo.org/agricultural_statistics/index.cfm?function=statistics_view&stateID=VT.
- 13 Farmland Information Center, Table 2, www.farmlandinfo.org/documents/38415/FIC_NRI_2007_Data_Tables.pdf.
- 14 Dan L. Erickson, Sarah T. Lovell, and V. Ernesto Mendez, "Landowner Willingness to Embed Production Agriculture in Residential Areas of Chittenden County, VT," *Landscape and Urban Planning*, 103 (2011): 174-184.
- 15 Laura Medalie and M.A. Horn, *Estimated Water Withdrawals and Return Flows in Vermont in 2005 and 2020*, U.S. Geological Survey Scientific Investigations Report 2010-5053, 2010, <http://pubs.usgs.gov/sir/2010/5053>.
- 16 Lake Champlain Basin Program, www.lcbp.org/Atlas/HTML/is_pnps.htm.
- 17 United States Department of Agriculture, 2007 Census of Agriculture, Table 2, www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1_Chapter_1_State_Level/Vermont/st50_1_002_002.pdf. Farm or agricultural sales represent the gross market value before taxes and production expenses of all agricultural products sold or removed from the place in 2007 regardless of who received the payment. The value of crops sold in 2007 does not necessarily represent the sales from crops harvested in 2007. Data may include sales from crops produced in earlier years and may exclude some crops produced in 2007 but held in storage and not sold.
- 18 United States Department of Agriculture, 2007 Census of Agriculture, Tables 12, 21, 27, and 28, www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1_Chapter_1_State_Level/Vermont/index.asp.
- 19 United States Department of Agriculture, 2007 Census of Agriculture, Tables 34 and 35, www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1_Chapter_1_State_Level/Vermont/index.asp.
- 20 USDA New England Agricultural Statistics, *Maple Syrup 2012*, June 13, 2012, www.nass.usda.gov/Statistics_by_State/New_England_includes/Publications/O605mpl.pdf.
- 21 National Agricultural Statistics Service, www.nass.usda.gov/Statistics_by_State/New_England_includes/Publications/Annual_Statistical_Bulletin/honey2011.pdf.
- 22 United States Department of Agriculture, 2007 Census of Agriculture, Table 33, www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1_Chapter_1_State_Level/Vermont/st50_1_033_033.pdf.
- 23 Vermont Agency of Agriculture, Food and Markets study, with assistance from the Center for Rural Studies and Dan Erickson (unpublished).
- 24 USDA Economic Research Service; Monthly Retail Trade Survey, Census Bureau; Company annual reports.

25 Vermont Department of Environmental Conservation, *State of Vermont Waste Composition Study, Final Report*, May 2013, www.anr.state.vt.us/dec/wastediv/solid/documents/finalreportvermontwastecomposition13may2013.pdf.

26 USDA Economic Research Service, www.ers.usda.gov/Briefing/FoodSecurity/stats/graphs.htm#geographic. Alisha Coleman-Jensen et al., *Household Food Security in the United States in 2011*, USDA Economic Research Service, ERR-141, September 2012, www.ers.usda.gov/publications/err-economic-research-report/err141.aspx.

27 Vermont Department of Education, www.education.vermont.gov/new/html/data/enrollment.html.

28 The Project on Student Debt, *Student Debt and the Class of 2009, 2010*, www.projectonstudentdebt.org.

29 United States Department of Agriculture, 2007 Census of Agriculture, www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1_Chapter_1_State_Level/Vermont/index.asp.

30 Vermont Department of Labor, www.vtلمي.info/oic3.cfm?occcode=45209202

31 Vermont Department of Labor, www.vtلمي.info/oic.cfm.

32 Report to House and Senate Committees on Agriculture and Education Related to Large Animal Veterinary Loan Repayment/Incentive Option, www.leg.state.vt.us/reports/2009ExternalReports/251134.pdf.

33 Patrick Canning, Ainsley Charles, Sonya Huang, Karen R. Polenske, and Arnold Waters, *Energy Use in the U.S. Food System*, ERR-94, U.S. Dept. of Agri., Econ. Res. Serv. March 2010, www.ers.usda.gov/publications/err94/.

34 We used an econometric model specific to Vermont that is also used for official state revenue estimates (REMI).

35 The U.S. Department of Agriculture, Census of Agriculture, 2007, and the U.S. Census Bureau, Census of Manufacturers, 2007, were the primary data sources used. In certain instances, the number of employees or the value of sales are disclosed only as a range value or not at all. In these cases, we used the employment range midpoints and/or value of shipments per employee from states believed to be comparable.

36 Measured in 2010 dollars, the 2007 figure of \$2.8 billion falls to \$2.7 billion, owing to declining price levels received by producers and manufacturers for dairy products, which have declined from 5% for fluid milk to as much as 17% for dry, condensed, or evaporated milk.

37 This figure does not include very small producers whose employment levels are too low to qualify for inclusion, nor does it include products that are not likely candidates for promotion under this initiative.

38 The multiplier effect includes indirect and induced impacts. Indirect impacts are those of local industries buying goods and services from other local industries. Induced impact (mostly) represents labor income recirculated through household spending patterns causing further local economic activity (e.g., workers and their families buying food, clothing, etc.).

39 The REMI econometric model uses employment figures from the Bureau of Economic Analysis, which are consistent with data from the Census and the Bureau of Labor Statistics for manufacturing but not as reliable for farming. When we use employment figures from the Census of Agriculture, estimated growth in farm employment would be twice that shown in the Table.

40 It is important to remember that the state product figure (equivalent to the value added in production) represents the true economic value of the growth in activity in Vermont. Output, the larger value, includes the value of inputs produced elsewhere for use in subsequent Vermont production, as in the case of petroleum products, transportation equipment, and a variety of goods not produced in Vermont, as well as a number of services that are also imported to the state. For the most part, the value of Vermont output leads growth in the state economy, although some interaction with the bordering states, as in the case of the dairy industry production using Vermont-produced milk, can generate small amounts of activity in the state when it is reimported and sold as a finished product.

41 All other: Health Care & Social Assistance; Other services, except Public Administration; Administrative & Waste Services; Real Estate, Rental & Leasing; Arts, Entertainment & Recreation; Finance & Insurance; Educational Services; Utilities; Information; Mining.

42 USDA, *Climate Change and Agriculture in the United States: Effects and Adaptation*, USDA Technical Bulletin 1935. Washington, DC, 2012, www.usda.gov/oce/climate_change/effects_2012/effects_agriculture.htm. Scott Malcolm et al., *Agricultural Adaptation to a Changing Climate: Economic and Environmental Implications Vary by U.S. Region*, USDA Economic Research Service, Economic Research Report No. (ERR-136), July 2012, www.ers.usda.gov/media/848748/err136.pdf.

Credits

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On the Cover: Bin of Vermont apples: Clint Atkinson; Beth Wood celebrates the harvest from her garden plot: Friends of Burlington Gardens; Parma the cow: Lindsay Harris, Family Cow Farmstand; Black River Produce delivery truck: Black River Produce; Carrots at Brattleboro market: Art Drauglis; Maplebrook Mozzarella: Healthy Living; Field of rolled hay: Anthony Carrino; Free range eggs: John Churchman; Pumpkins by the bushel: Matt Metcalf; Blueberry pancakes: Pinaki Chakraborty ; Leon Boyd: Michael Kormos; Line of Ladies: Josh Larkin; Checkout at Healthy Living: Healthy Living; Spring piggies running: Lindsay Harris; Turkeys at Green Mountain Girls: Tonia Sing; Compost pile: Highfields Center for Composting; Butterworks Farm Tractor: Tonia Sing.

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