



Regional Food System Plan for Vermont's Northeast Kingdom



CONTENTS

Chapter 1:	
Introduction and Perspective	3
Chapter 2:	
Profile of the Northeast Kingdom	15
Chapter 3:	
Regional Food System Assets	29
Chapter 4:	
Cross Cutting Issues	71
Chapter 5:	
Implementation Plan	103
Glossary	126
Bibliography	130

CASE STUDIES

Vermont Chevron	26
Northeast Kingdom Processing	46
Farm Connex	50
Northeastern Vermont	
Regional Hospital	56
Newport. Fresh by Nature	60
Fresh Start Community Farm	
and Cornucopia	80
Sterling College	88
Lake Region Union High School	92
The Vermont Farm Fund	98



Funding for *Regional Food System Plan for Vermont's Northeast Kingdom* was made possible in part with a Rural Business Development Grant from USDA Rural Development. This publication is the result of tax-supported funding from USDA, Rural Development, and as such is not copyrightable. It may be reprinted with the customary crediting of sources.

ACKNOWLEDGEMENTS

The development of the 2016 NEK Food System Plan for Vermont's Northeast Kingdom was a highly collaborative effort among many individuals and organizations. The project was funded by a USDA Rural Business Opportunity Grant to the Center for an Agricultural Economy (CAE), in partnership with the Northeastern Vermont Development Association (NVDA). **Principal:** Sarah Waring, Executive Director CAE; **Project Manager:** Taylor Foster; **Senior Planner:** Alison Low, NVDA; **Design and Layout:** Ravenmark (www.ravenmark.com); **GIS Specialist:** Tracy McIntyre, NVDA; **Storage and Distribution Study Consultant:** Rosalie J. Wilson, Business Development Services (www.rosewilson.com). Unless otherwise noted, all photos provided by Taylor Foster.

NEK Food System Steering Group

Lila Bennett, Tangletown Farm; Hope Colburn, Community National Bank; Heidi Cooperstein, Northeast Kingdom Community Action; Matthew Derr, Sterling College; Andre Messier, Lake Region Union High School; Jon Ramsay, Vermont Land Trust; Katelyn Robinson, Northern Community Investment Corporation (NCIC); Laural Ruggles, Northeastern Vermont Regional Hospital (NVRH); Katherine Sims, Green Mountain Farm to School; Stephanie Smith, Vermont Agency of Agriculture, Food, & Markets (VAAF); David Snedeker, Northeastern Vermont Development Association; Max van Houten, Lake Region Union High School; Christopher Wenger, St. Johnsbury Area Local Food Alliance

Center for an Agricultural Economy Board of Directors

Paul Costello, Vermont Council on Rural Development; Matthew Derr, Sterling College; Tom Gilbert, Black Dirt Farm; Pete Johnson, Pete's Greens; Andy Kehler, The Cellars at Jasper Hill; Emily Maclure, Craftsbury General Store; Linda Markin, Vermont Community Loan Fund (retired); Andrew Meyer, Vermont Soy & Vermont Natural Coatings; Jon Ramsay, Vermont Land Trust; Tom Stearns, High Mowing Seeds (board member through May 2016)

Center for an Agricultural Economy Staff

Sarah Waring, Executive Director; Kristin Blodgett, Financial Manager; Bethany Dunbar, Community Programs Manager; Connor Gorham, Facilities Manager; Daniel Keeney, Farm and Food Business Advisor; Alissa Matthews, Special Projects Manager.

Additional support was provided by the following individuals who were interviewed, offered information or guidance, or lent their assistance to the vast outreach effort: Kristyn Achilich, St. Michael's College; Jenna Banning, Hunger Free Vermont; Nancy Baron, Vermont Farm Fund; Simeon Bittman, Sterling College; Jennifer Black Leithead, Fresh Start Community Farm; Farley Brown, Sterling College; Erin Buckwalter, Northeast Organic Farming Association of Vermont; Butterfield Brothers, Brian Cassino, Upper Valley Produce; Nicole Civita, Sterling College; Jenn Colby, UVM Center for Sustainable Agriculture; Ben Copans, Vermont Department of Environment Conservation; Roger Dekett, USDA Natural Resource Conservation Service; Alex DePillis, VAAF; Ben Doyle, Cheryl Ducharme, USDA Rural Development; Jane Edwards, Upper Kingdom Food Access; Maxfield English, Danville School; Elizabeth Everts, Too Little Farm/Caledonia Farmers' Market; Christian Feuerstein, Seth Fineman, Sterling College; Ginny Flanders, NVRH; Karen Geraghty, NVDA; Reg Godin, VAAF; Karen Guile-Caron, Peaslee's Potatoes; Gwyneth Harris, Sterling College; Jeff Jones, Vermont Hydroponics; Eleanor Leger, Eden Ice Cider Company; Edmund Lessard, Northeast Kingdom Processing; Chelsea Lewis, VAAF; Vaunne Masse, Cornucopia; Don Maynard, Farm Connex; Jeremy Michaud, Kingdom Creamery; Sharon Murray, Front Porch Community Planning & Design; Jon Osborne, Vermont Land Trust; Susan Poland, USDA Rural Development; Carl Powden, Vermont Land Trust; Shirley Richardson, Vermont Chevron; Charlotte Rosedahl, Sterling College; Annie Rowell, Sodexo; Pat Sagui, Composting Association of Vermont; Kristy Scott, Farm Connex; Paul Tomasi, Northeast Kingdom Waste Management District; Mike Welch, NCIC; Abbey Willard, VAAF; Sienna Wolf, Flourish Farm; Tracy Zschau, Vermont Land Trust

The NEK Food System Summit also received the generous support of these local food producers: The Cellars at Jasper Hill, Jocelyn and Cinta's Bakery, Patchwork Bakery, Sweet Rowen Farm, Vermont Chevron, and Vermont Switchel.

Finally, a special thank you to the Vermont Farm to Plate staff of the Vermont Sustainable Jobs Fund, whose guidance and generous support was vital to this plan update: Ellen Kahler, Erica Campbell, Rachel Carter, Jake Claro and Scott Sawyer.

Regional Food System Plan for Vermont's Northeast Kingdom







Chapter 1

Introduction & Perspective

Why Develop a Regional Food System Plan?

Food has enormous impacts on society and the environment, from production to consumption. Beyond basic nourishment, food touches many segments of daily living including jobs and the economy, health, land conservation, environmental quality, and community quality of life. People are becoming more aware of how fresh, healthy food is important for a healthy society, and these foods are increasingly accessed from local farmers and food producers. Communities throughout the country are planning for food systems that are ecologically sustainable; supportive of local farmers, food producers, and economies; and respectful of social equity.

We were not always disconnected from the food we ate. The Abenaki Indians and other Native Americans hunted, fished, gathered wild food, and made maple syrup. Vermont has enjoyed a longstanding tradition of growing and raising a variety of food, “putting food by” and processing it into many kinds of products, and giving away, bartering, and selling the food produced. While we honor and recognize these traditional local food activities, a contemporary local food movement has emerged that aims to reclaim our connection with food.

The Purpose and Context of our Regional Food System Plan

A food system, as defined by the American Planning Association, is “the chain of activities connecting food production, processing, distribution and access, consumption, and waste management, as well as all the associated supporting and regulatory institutions and activities.” (APA, 2005) By contrast, the terms “local” and “regional” lack a shared, formal definition and are highly dependent on geography and context. (Martinez et al., 2010) While this plan defines “regional” as primarily focused on the three counties of the Northeast Kingdom — Caledonia, Essex, and Orleans — the plan does not rigidly adhere to those geopolitical boundaries. In fact, many of our food system’s stakeholders enjoy and depend on dynamic relationships with enterprises in neighboring Vermont counties, New Hampshire, and Canada.

The Regional Food System Plan for Vermont’s Northeast Kingdom (herein referred to as “the NEK Plan”) was initially developed in 2011. This Plan is a substantive update to reflect recent developments, not to mention lessons learned. As with the original 2011 Plan, the revised NEK Plan represents an



attempt to develop a vibrant agricultural economy and food system in the region through a regional planning process that builds on the strengths of regional and statewide planning, as well as local and decentralized planning. The ultimate goal of this Plan remains unchanged: To drive the development of new and more diverse agricultural activity and to develop a comprehensive strategy to stimulate this innovative food system sector for Caledonia, Essex, and Orleans Counties. Specifically:

- provide strategic guidance to the area's key businesses and non-profits;
- integrate agriculturally focused approaches with existing land use and community development priorities;
- identify economic growth opportunities for the major constituent groups in the agricultural sector in the region;
- provide coordination of existing and future technical assistance providers to maximize benefit to working lands enterprises;
- energize and support regional public health and social equity initiatives; and
- provide an informed basis for coordination with ongoing regional planning efforts.

The 2016 Plan was developed under the aegis of two entities that share vested interests in the health and sustainability of the region's agricultural economy.

The Hardwick-based **Center for an Agricultural Economy (CAE)** is nationally recognized as a leader in the local food movement. Its stated mission is to “engage the public in building a regenerative, locally-based, healthy food system through collaboration opportunities, food access and hunger relief, educational outreach and providing infrastructure.” Since 2005, the CAE has served as the region's resource for farm and food producers looking to connect to the local food system initiative, as well as a coordinator for other organizations and educational institutions. (Figure 1.1) In addition to running the Vermont Food Venture Center, the CAE helps communities meet their own food needs locally while determining and building the best opportunities for value-added agricultural exports.

As the regional planning and development organization, the **Northeastern Vermont Development Association (NVDA)**, provides technical assistance in land use planning and regulation, natural resource planning, transportation planning and economic development. Agriculture is a cornerstone of the Northeast Kingdom's culture and economy. NVDA's 2015 Regional Plan for the Northeast Kingdom contains the following overarching goals for land use and economic development, all of which are supported by recommended strategies that include technical assistance programming, financing, and industry support:

- Farming and agriculture will remain an important and viable sector of the regional economy.
- Contiguous tracts of agricultural soils will be preserved.
- Development of residential and commercial uses will not significantly reduce the amount of open and productive farm land.
- The region's agricultural output should increase and diversify. Value should be added to local staple products and raw materials.

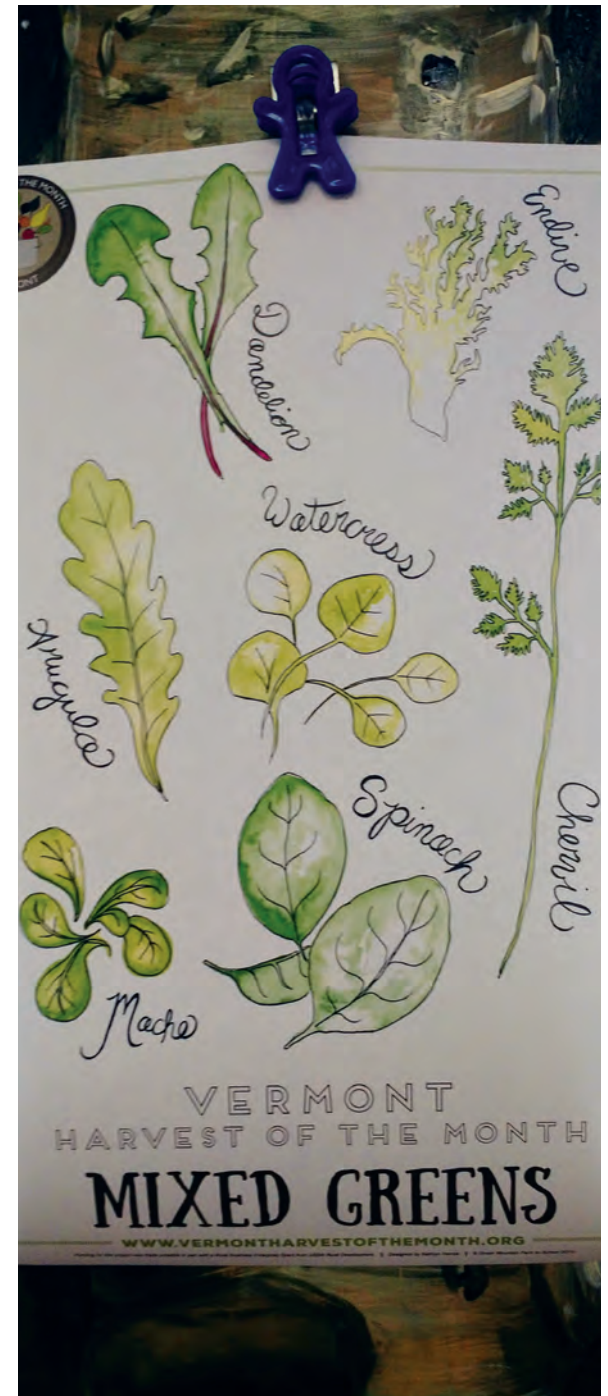




Figure 1.1:
Mural of Local Food System at CAE

How this Plan Was Developed

Like the original plan, the 2016 NEK Food System Plan is based on the soil-to-soil food system model from research and planning literature. This model has served as the basis for development of the Hardwick food system, as well as the statewide Farm to Plate Strategic Plan. The model is comprehensive and deliberate in its design to engage with all individuals and organizations with a stake in the economic, social, and environmental wellbeing of the food system. The NEK Plan identifies seven core elements in the soil-to-soil model: Production Inputs, Production, Processing, Wholesale Distribution, Retail Distribution, Consumption and Consumer Demand, and Waste Management. The loop is “closed” between waste management (composting) and production inputs (soil). Cross-cutting issues affect several, if not all, of the core elements. (Figure 1.2)



The CAE and NVDA initiated the planning process by forming a steering committee that included individuals from farms, value-added food production, farm-to-school programming, conservation, land use planning, public policy and health, secondary and higher education, financing, and economic development. The steering group reviewed and developed revised goals and helped to identify strategies and measures.

A program manager was hired to guide the public input process and coordinate a day-long Food System Summit held at Sterling College. At this event, about 100 attendees had the opportunity to review goals and strategies in a series of eight facilitated breakout sessions, each of which was accompanied by relevant data and key developments from the past five years:

Soil to Soil: Localizing, making affordable, and sustaining farming and production inputs.

Value-Added Production: Growing the processing and manufacturing sector on-farm and off-farm for local and regional markets.

Buying Local: Marketing and increasing the demand for local food.

Investing in Infrastructure: Supplying storage, aggregation, distribution, telecommunication, and on-farm and commercial infrastructure to grow the local food economy.

Land Availability: Maintaining farmland access and stewardship for future generations.

Farm to Workforce: Developing and offering education, training, and workforce development for the food economy.

Fair Food: Ensuring food security, health, and food justice across the food system.

Profitable farms and food producers: Diversifying and increasing local food production.

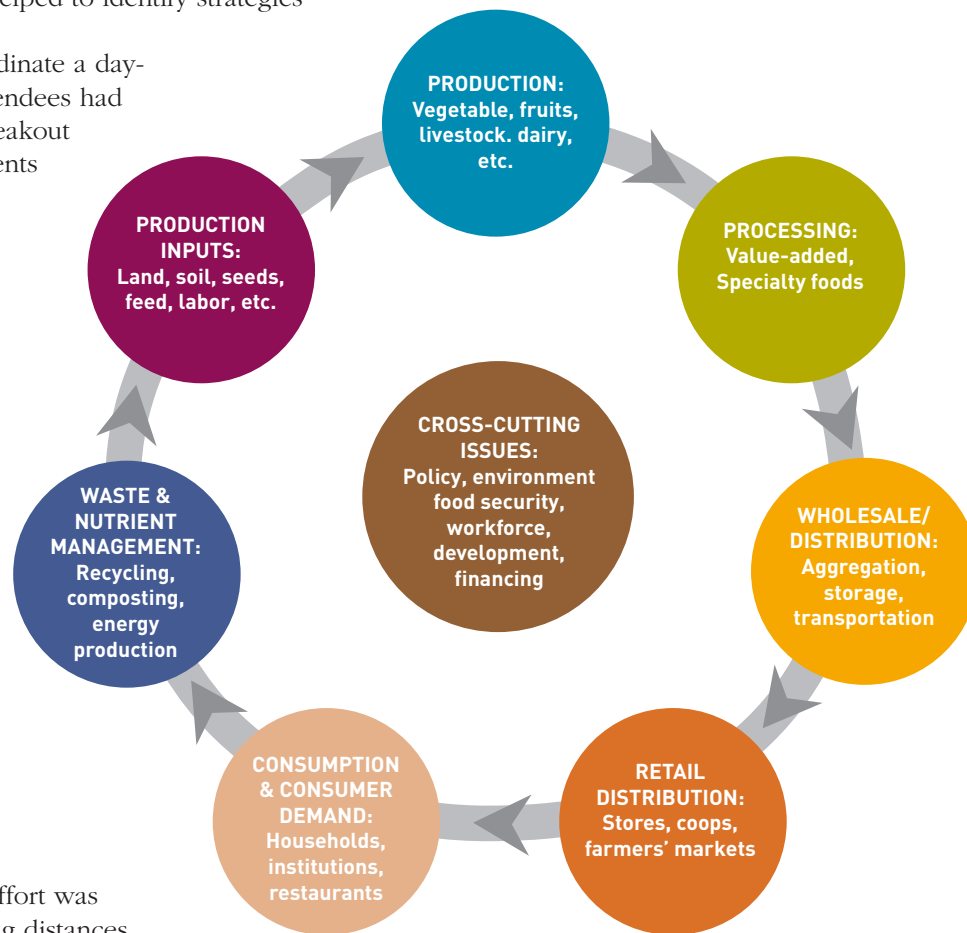


Figure 1.2 NEK Food System Model

Early in the development of the plan, it became apparent that additional effort was needed to study the movement of food to market. Rough rural terrains and long distances continue to pose a constant barrier for any farmer or producer, whether they are moving product to markets within the region or beyond. A consultant was hired to interview producers and distributors with the goal of identifying opportunities for improving efficiency of local food movement. Initial findings of this study were presented and discussed at the Food System Summit, and key findings have been incorporated into the NEK Plan. The final report, *Storage and Distribution Report for Local Food in the Northeast Kingdom* is an appendix to this plan.

Throughout the planning process, stakeholders in the regional and statewide food system were consulted, including farmers, value-added producers, purchasers, farmers' market managers, as well as support system personnel, including farm-to-school, business assistance, land conservation, economic development, waste management, community development, and food access and security.

A large amount of data was collected from numerous sources to provide a current snapshot of the NEK food system, as well as progress made since 2011. Sources include the U.S. Census of Agriculture, the U.S. Department of Agriculture, the Bureau of Labor Statistics, American Community Survey, the Vermont Department of Health, NOFA-VT, Vermont Agency of Agriculture, Food and Markets, the Vermont Agency of Natural Resources, and the Vermont Land Trust. Findings were incorporated into the plan, and, where relevant, targets from the 2011 plan were used to measure progress made to date. Many of these sources will continue to provide relevant data that can be used to monitor our progress over the next five years.

An important note about the Census of Agriculture: This plan cites data from the Census of Agriculture extensively. Unless otherwise noted, charts, tables, and data are assumed to come from the Census of Agriculture (aka "Ag Census").

Finally, case studies were developed to illustrate how the goals of the NEK Food System Plan related to the day-to-day activities of its stakeholders. Case study subjects should not be considered an exclusive list of ongoing efforts in the region. Rather, they were carefully selected to answer the following questions:

1. Can this effort be replicated by other stakeholders in the NEK food system — and, if so, how can others benefit?
2. What are the challenges to keeping this effort sustainable?
3. Are there lessons learned that can be applied to similar efforts — whether or not the effort was ultimately successful?

Case studies are integrated throughout the plan.

Using This Plan

This plan is organized into the following sections:

Chapter 2: PROFILE OF THE NORTHEAST KINGDOM: A demographic and economic snapshot of the region, as well as an overall perspective of the current state of the region's agricultural economy. Additionally, this Chapter (as well as Chapters 3 and 4) contain selected updates to the statistical targets originally developed for the 2011 NEK Plan. These targets were originally intended to measure the strength of the region's food system as well as progress made over time.



Chapter 3: REGIONAL FOOD SYSTEM ASSETS: An analysis of each element of the NEK Soil-to-Soil model with key developments over the past five years.

Chapter 4: CROSS-CUTTING ISSUES: An analysis of the broader influences on the NEK Food System.

Chapter 5: IMPLEMENTATION: Each goal is supported by a series of objectives and specific actions that can be coordinated by an NEK-focused leadership team over the next five years. The Implementation Plan identifies potential measures for success, as well as individuals and organizations that can either facilitate or support these endeavors. Finally, this section includes overall recommendations for moving the plan forward, as well as an inventory of the many support systems that play a role in furthering the region's food system.

A note about Implementation: The goals of our plan are supported and guided by five overarching objectives. These should be considered focal points for creating a collaborative structure that will allow for measurable success in the agricultural and food system economy in the NEK. They are:

- **Coordinated Leadership Team:** To fully measure, track and encourage the investment to achieve activities within this plan, a Leadership Team should be formed. This Team could take the form of a Collaborative, a Task Force, a Working Group, or a Food System Council, but it should act as the resource group for food systems activities, and take an active role in measuring success.
- **Inventory and Outreach on Existing Assets and Resources:** The NEK already has many successful businesses, many systems of support, and many emerging entities that are deeply involved in advancing specific objectives, and yet due to distance and communication method, there is a gap in public awareness. All communications should include all relevant assets and resources, so that critical investment is not spent unwisely.
- **Technical Assistance:** Many of the goals in the plan require new management practices, new collaborative efforts, or implementation of new regulations. To prepare for any full scale activities, appropriate and timely technical assistance from service providers is crucial. Technical assistance for the NEK should be collaborative and not duplicative.
- **Marketing/Matchmaking:** To advance the food system economy, specific goals in the plan identify increasing sales and expanding markets. Several activities will require significant marketing efforts (outreach, advertising, branding, matchmaking, etc). Marketing efforts for the NEK, due to its size and geographic scale, should likewise be coordinated and not duplicative.
- **Policy/Advocacy:** For several of the NEK Plan goals, coordinated advocacy to our legislative decision makers is required/recommended. This strategy should be coordinated within the NEK, with clear communication and public input opportunities, so that it is most effective.



Who can use this plan? The short answer is EVERYONE! There are numerous stakeholders in the NEK Food System. Local planning and conservation commissions, for example, are strongly encouraged to reference and integrate any relevant portions into municipal plans and conservation efforts. Food access advocates can use the plan goals and strategies as a way to further the efficacy of existing programs and initiatives. Anyone with a mission for furthering the region's food economy can use this information to support business plans, grant funding applications, and other initiatives.

Aligning This Plan with Vermont Farm to Plate Strategic Plan

Vermont remains one of the few states in the country with a statewide strategic plan for food systems and agricultural development. In 2009, Farm to Plate Investment Program legislation was signed into law and tasked the Vermont Sustainable Jobs Fund (VSJF) with the creation of a ten year **Farm to Plate Strategic Plan** to:

- increase economic development in Vermont's farm and food sector;
- create jobs in the farm and food economy;
- improve access to healthy local food for all Vermonters.

There are 25 goals of the statewide plan, ranging from Food Access to Farm Viability. The 25 goals of Farm to Plate are divided into specific sections, each relating to a component of the greater food system. (Figure 1.3) In addition, the Vermont Farm to Plate plan defines 'local' as any products made in Vermont, plus 30 miles beyond Vermont's border.

Goal categories include:

- 3.1 Understanding Consumer Demand (1-3)
- 3.2 Farm Inputs (4-6)
- 3.3 Food Production (7-10)
- 3.4 Food Processing and Manufacturing (11)
- 3.5 Wholesale Distribution and Storage (12)
- 3.6 Retail Distribution and Market Outlets (13)
- 3.7 Nutrient Management (14)
- 4.1 Food Security in Vermont (15)
- 4.2 Food System Education (16)
- 4.3 Food System Labor and Workforce Development (17 & 18)
- 4.3 Food System Business Planning and Technical Assistance (19)
- 4.5 Financing the Food System (20 & 21)
- 4.6 Food System Energy Issues (22)
- 4.7 Food System Regulation (23)
- 4.8 Food System Leadership, Communication and Coordination (24 & 25)



The NEK will continue to support and work toward the achievement of the 25 Farm-to-Plate Goals. As we implement the NEK plan, we hope to leverage the expertise and resources of the F2P Network as appropriate. The F2P Network is a statewide collaborative of over 350 organizations working together to achieve the plan's goals.

Table 1.1 shows how the 25 goals of the statewide Farm to Plate Plan align with NEK Plan goals. Our Implementation Plan (Chapter 5) identifies many groups and committees of the F2P Network that will provide invaluable assistance and expertise as we move forward. Nevertheless, it is important to view this plan and accompanying goals as specific to the unique needs of the region.



Figure 1.3: Web Portal of the Vermont Farm to Plate Goals and Indicators

		RELATED CASE STUDIES								
		Vermont Chevron	Farm Connex	Vermont Farm Fund	Cornucopia & Fresh Start Community Farm	Lake Region Union High School	Northeast Kingdom Processing	Northeastern VT Regional Hospital	Sterling College	Newport Fresh by Nature
1: The NEK will have localized, affordable, and sustainable farming and production inputs, including energy, fertilizer, seeds, forage, and feed.	4: Options for farmers to reduce their production expenses will be widely disseminated and utilized. 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, and other agricultural products. 22: Food system enterprises will minimize their use of fossil fuels and maximize their renewable energy, energy efficiency, and conservation opportunities.					✓				
2: Farms and other food system operations will improve their overall environmental stewardship to deliver a net environmental benefit to the region.	6: Farms and other food system operations will improve their overall environmental stewardship to deliver a net environmental benefit to the state. 22: Food system enterprises will minimize their use of fossil fuels and maximize their renewable energy, energy efficiency, and conservation opportunities.					✓			✓	
3: The demand for local food will increase, and food production will increase and diversify to meet the demand.	1: Consumption of VT-produced food by Vermonters and regional consumers will measurably increase. 2: Consumers in institutional settings will consume more locally produced food. 7: Local food production—and sales of local food—for all types of markets will increase. 13: Local food will be available at all VT market outlets and increasingly available at regional, national, and international market outlets. 17: The number of locally owned and operated food system businesses in VT is expanding. 23: Regulations and enforcement capacity will ensure food safety, be scale appropriate, and allow VT food enterprises to increase production and expand their market outlets.	✓			✓		✓	✓	✓	✓
4: Farmers and food producers will be profitable.	8: VT's dairy industry is viable and diversified. 9: The majority of farms will be profitable. 19: Business planning and technical assistance services will be highly coordinated, strategic, and accessible to Vermont's food businesses. 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. 23: Regulations and enforcement capacity will ensure food safety, be scale appropriate, and allow VT food enterprises to increase production and expand their market outlets.	✓		✓			✓			

Table 1.1 NEK Food Systems Plan Goals in Relation to Vermont Farm to Plate; Illustrative Case Studies

Continued on next page

		RELATED CASE STUDIES								
RELEVANT FARM TO PLATE GOALS*		Vermont Chevron	Farm Connex	Vermont Farm Fund	Cornucopia & Fresh Start Community Farm	Lake Region Union High School	Northeast Kingdom Processing	Northeastern VT Regional Hospital	Sterling College	Newport Fresh by Nature
5: The food processing and manufacturing sector will grow by increasing value-added production by helping farmers and producers scale up to access domestic and international markets.	11: Vermont's food processing and manufacturing capacity will expand to meet the needs of a growing food system.	✓		✓			✓			
6: Infrastructure: Storage, aggregation, distribution, telecommunications, and other forms of on-farm and commercial infrastructure will be sufficient to meet increasing year-round consumer demand.	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. 13: Local food will be available at all Vermont market outlets and increasingly available at regional, national, and international market outlets.	✓	✓							
7: Appropriate marketing and promotion for retail, wholesale, institutional, and direct market channels will drive up demand for local food.	1: Consumption of VT-produced food by Vermonters and regional consumers will measurably increase. 2: Consumers in institutional settings will consume more locally produced food. 13: Local food will be available at all VT market outlets and increasingly available at regional, national, and international market outlets.									✓
8: The region will achieve food sovereignty, providing residents with economic access to fresh, healthy and local foods, and food-related health outcomes will be improved.	3: Vermonters will exhibit fewer food-related health problems (e.g. obesity and diabetes). 10: All Vermonters will have a greater understanding of how to obtain, grow, store, and prepare nutritional food. 15: All Vermonters will have access to fresh, nutritionally balanced food that they can afford.				✓			✓		

Continued on next page

		RELATED CASE STUDIES								
		Vermont Chevron	Farm Connex	Vermont Farm Fund	Cornucopia & Fresh Start Community Farm	Lake Region Union High School	Northeast Kingdom Processing	Northeastern VT Regional Hospital	Sterling College	Newport Fresh by Nature
9. Establish a model food justice that will articulate an actionable food policy for the NEK, Vermont, and our nation.	15: All Vermonters will have access to fresh, nutritionally balanced food that they can afford. 18: VT's food system establishment will provide safe and welcoming working conditions, livable wages, and have access to a skilled, reliable workforce.				✓					
10. Agricultural land will be open and available to future generations of farmers.	5: Agricultural lands and soils will be available, affordable, and conserved for future generations of farmers and to meet the needs of VT's food system.			✓						
11. Food system development will have positive economic impacts through food system education and workforce development in schools and training programs.	18: VT food system establishment will provide safe and welcoming working conditions, livable wages, and have access to a skilled, reliable workforce. 16: VT 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 VT's food system.				✓	✓			✓	

* *Goals 21, 24 and 25 from the Farm to Plate Strategic Plan align with this plan's five overarching strategies for implementation:*

- 21: Private foundations, state and federal funding sources, the Vermont Legislature, the governor's administration, and food system investors will coordinate and leverage available resources to maximize the implementation of this Plan.
- 24: Vermont's governor, legislature, and state agencies will champion Vermont's food system as an economic development driver for the state and Vermont will demonstrate national leadership on food system development.
- 25: Food system market development needs will be strategically coordinated.

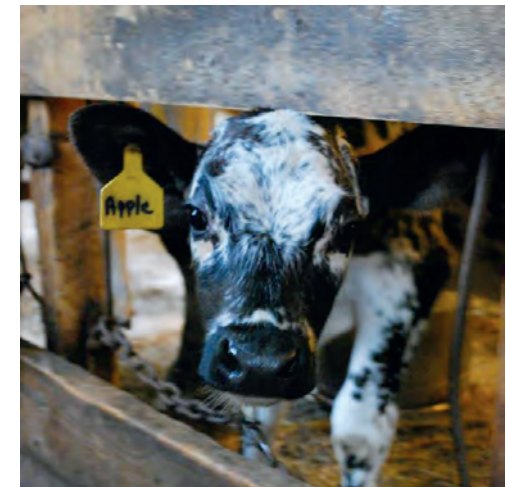




Photo: Black Dirt Farm



Chapter 2

Profile of the Northeast Kingdom

Demographics and Economics

Tables 2.1 and 2.2 present baseline demographic data for the three counties of the NEK. Residents are older and have significantly lower incomes than the rest of the state. Although property values are also lower, NEK residents are more likely to pay a proportionately higher share of income for housing, which may ultimately reduce food budgets. The region also tends to have a larger share of seasonal homes than statewide. According to the 2010 Census, more than one out of every five housing units in the NEK is a vacant housing unit intended for “seasonal, recreational, or occasional use.”

The region continues to have high percentages of owner-occupied housing units — a misleading figure that is not an indicator of economic well-being or affordability. Rather, it may be a reflection of the relative lack of alternatives to home ownership, such as apartments and home shares. For example, Essex County, which has the lowest median household income in the state, also has the second highest rate of owner occupancy in the state of just over 80%. By contrast, Chittenden County, which has the highest median household income, has the lowest rate of owner-occupancy in the state of just over 65%. According to most recent population estimates, the region has seen a drop of about 1% since the 2010 Census.



Data Measures	Caledonia	Essex	Orleans	Vermont
Population 2010	31,227	6,306	27,231	625,741
Estimated Pop. 2014*	30,981	6,125	27,082	626,562
Median Age 2010	42.1	47.4	43.7	41.5
Median Age 2000	38.5	39.0	39.3	37.7
Households 2010	12,553	2,818	11,320	256,442
Avg. Household Size (2010)	2.4	2.2	2.3	2.3
Avg. Household Size (2000)	2.5	2.5	2.5	2.4
Housing Units	15,942	5,019	16,162	322,539
<i>Occupied</i>	12,553	2,818	11,320	256,442
... Owner Occupied	73.6%	80.2%	75.6%	70.7%
... Renter Occupied	26.4%	19.8%	24.4%	29.3%
<i>Vacant units for seasonal, recreational or occasional use</i>	14.9%	38.4%	24.4%	15.6%

Table 2.1 NEK Population and Housing Units by County. Source: US Census Bureau, 2010 Census
*US Census Bureau, Population Division: Annual Estimate of the Resident Population, July 1 2014

Data Measures	Caledonia	Essex	Orleans	Vermont
Median Household Income	\$45,089	\$35,567	\$41,437	\$54,447
Median Housing Unit Value	\$161,800	\$120,300	\$155,600	\$216,200
% of housing unit with mortgage that costs 35% or more of household income	27.4%	28.9%	29.7%	27.0%
% of rented units that cost 35% or more of household income	44.4%	48.9%	44.9%	42.2%

Table 2.2 Income and Housing Characteristics. Source: US Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

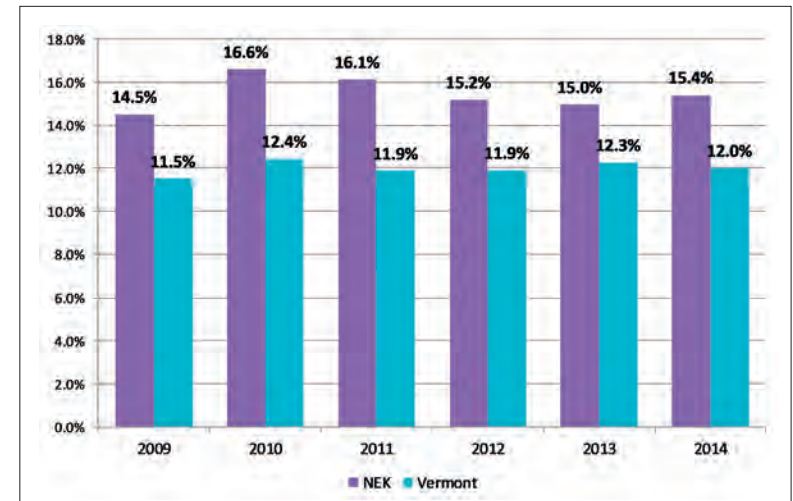


Figure 2.1: All Persons Living in Poverty, 2009-2014. Source: U.S. Census Bureau, Small Area Income and Poverty Estimates

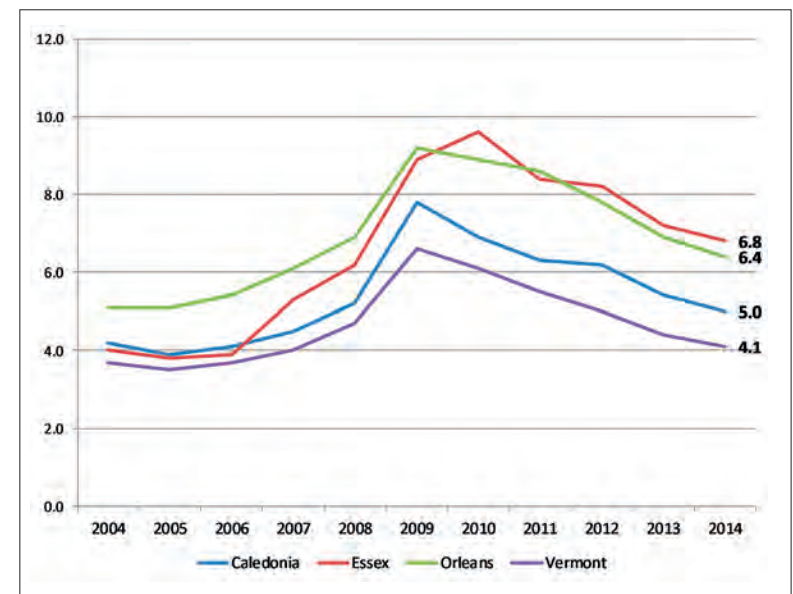


Figure 2.2: Annual Average Unemployment Rate, NEK & Vermont, 2004-2014. Source: Vermont Department of Labor, Economic & Labor Market Information, in cooperation with the U.S. Bureau of Labor Statistics.

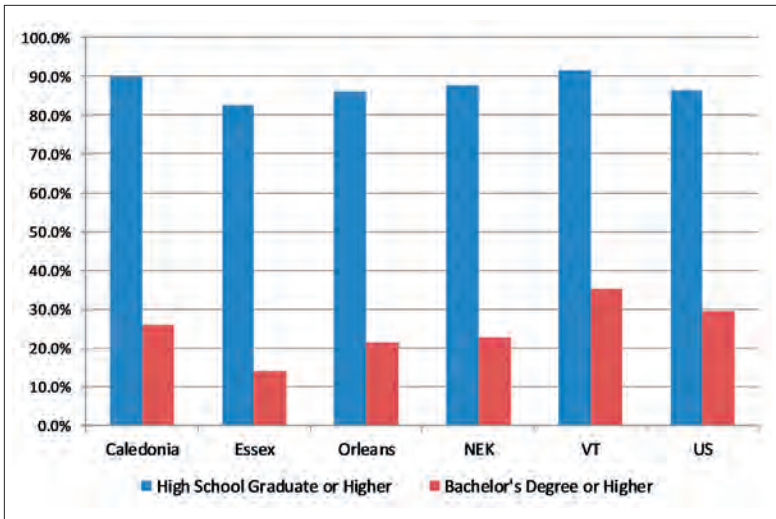


Figure 2.3: Education Level by % of Population Aged 25+.

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

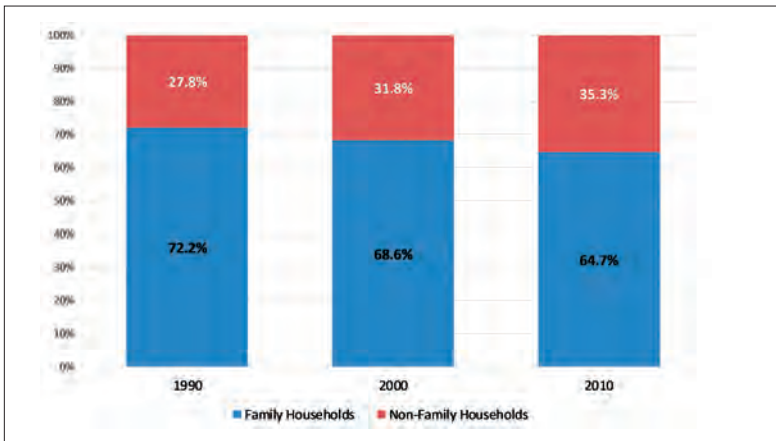


Figure 2.4: Makeup of Households in the Northeast Kingdom, 1990-2010.

Source: U.S. Census Bureau 2000-2010. 1990 data comes from Minnesota Population Center. National Historical Geographic Information System: Version 2.0 Minneapolis, MN: University of Minnesota 2011.



Like the rest of the state, the region is undergoing a fundamental demographic shift that may have long-range implications for how we purchase, prepare, and consume food. (Figures 2.4-2.5) Households are getting smaller, and this change is accompanied

by a significant decrease in family households. Non-family households now account for more than 35% of all households in the NEK, up from just 28% in 1990. This is significant because family households typically enjoy greater cost efficiency over non-family households, resulting in more disposable income.

The overwhelming majority of non-family households are individuals who live alone. More than a third of those who live alone are 65 years or older. (This sector of the region's population grew by more than 15% over the previous decade.)

According to the latest Census, about a quarter of the NEK's population is aged 65 and older. By 2030, however, this age group could account for nearly 40% of the population. In 2013, the State of Vermont released two sets of population projections based on: a) more robust growth and migration rates seen in the 1990s; and b) slower migration rates seen in the 2000s. Both sets of projections show a decrease in every age group under 60 and an increase in every age group over 60. Populations aged 70+ could more than double.

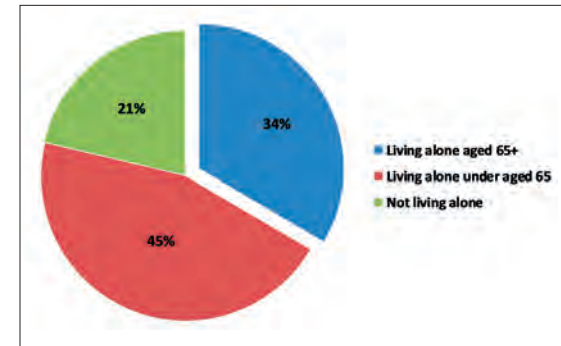


Figure 2.5: Non-family households in the NEK 2010

Source: U.S. Census Bureau 2010

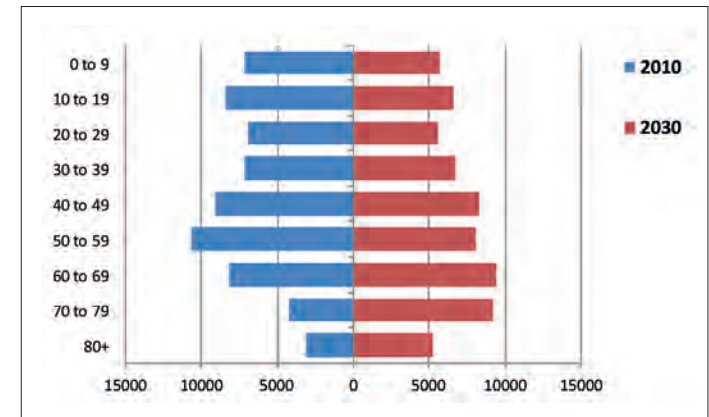


Figure 2.6: Age Projections for the Northeast Kingdom.

Source: State of Vermont, Vermont Population Projections, 2010-2030 (Scenario B)

	Caledonia		Essex		Orleans		Vermont	
	2010	2014	2010	2014	2010	2014	2010	2014
Average Annual Wage, 2014	\$34,422	\$37,215	\$30,893	\$34,752	\$31,661	\$34,450	\$39,425	\$43,017
Covered Employment 2014	10,966	10,911	1,146	1,058	9,701	10,543	293,088	304,554
Establishments	1,028	1,019	170	180	946	928	24,159	24,398
Agriculture, Forestry, Fishing and Hunting	16	20	15	12	28	35	387	447
% of Establishments	1.6%	2.0%	8.8%	6.7%	3.0%	3.8%	1.6%	1.8%
Crop Production	5	4	2	3	3	5	86	112
Animal Production & Aquaculture	5	5	4	4	14	16	169	191
Agriculture & Forestry Support Activities	2	4	1	-	4	10	59	64
Employment in Manufacturing	1,502	1,361	n/a	144	1,057	1,325	30,803	31,200
Food Production (NAICS 311)	113	118	-	-	141	181	4,123	5,281
Employment in Services	6,620	6,700	368	409	5,812	6,246	192,896	201,915
Employment in Government	2,100	2,053	406	415	2,076	2,080	52,824	53,026

Table 2.3 Covered Employment 2010-2014. Source: Vermont Department of Labor, Economic & Labor Market Information, in cooperation with the U.S. Bureau of Labor Statistics

Measuring employment related to the food system can be difficult given the nature of employment patterns. The following tables examine the nature of employment and relation to the food system through two lenses: *covered employment* and *non-employers*. By both measures, the NEK has a relatively high proportion of employment activity in the land-based economy, although much of this is focused on forestry, rather than agriculture. The region also has seen significant expansion in value-added processing, which is reflected in the food manufacturing (NAICS 311) total. (Tables 2.3 -2.4)

Covered employment refers to employers subject to Vermont’s Unemployment Compensation Law and includes: private for-profit businesses with one or more employees; government agencies, non-profit religious, charitable, or educational firms with at least four employees; and farms employing ten or more workers. Self-employed and many farms are therefore excluded from covered employment figures. Non-employers constitute the majority of all business establishments in the United States, yet according to the US Census Bureau, these firms average less than 4 percent of all sales and receipts nationally. Most nonemployers are self-employed individuals operating unincorporated businesses (known as sole proprietorships), which may or may not be the owner’s principal source of income.



Photo: Fresh Start Community Farm

	Caledonia	Essex	Orleans	Vermont
All establishments	3,001	560	2,540	60,181
All receipts (in 1000s)	\$117,581	\$20,562	\$106,549	\$2,536,019
Agriculture, Forestry, Fishing and Hunting (NAICS 11)	244	72	208	1,921
% of all establishments	8.1%	12.9%	8.2%	3.2%
Receipts	\$12,403	\$ 4,519	\$8,482	\$ 84,000
% of all receipts	10.5%	22.0%	8.0%	3.3%
Establishments - Support Industries for Agriculture, Crop and Animal production (e.g. soil prep, fertilization, picking, breeding, boarding)	51	4	56	554
Receipts (1000s)	\$1,261	\$195	\$1,828	\$19,367
Establishments-Food Production (NAICS 311)	31	8	47	588
Receipts (1000s)	\$773	\$ 104	\$1,075	\$17,003

Table 2.4 Non-Employers in the Northeast Kingdom, Vermont. Source: U.S. Census Bureau



Photo: Green Mountain Farm to School

Agricultural Trends in the Northeast Kingdom

According to the 2012 Ag Census, there are 1,291 farms in the region, up from 1,260 farms in 2007. The largest gain was in Caledonia County (up by 29 farms), which helped to offset a small drop in Essex County. The region — like the rest of the state — is experiencing an agricultural renaissance that directly counters a national trend of decline: The 2012 Ag Census shows a loss of 94,489 farms nationwide since 2007.

In terms of total farms, Caledonia, Essex, and Orleans Counties rank 8th, 14th, and 6th, respectively. However, our uniquely rural settlement patterns and low development densities contribute to a significantly higher number of farms per capita than statewide — and that figure has increased from the 2002 and 2007 Ag Censuses. (Figure 2.8)

Ironically, the overall increase in the number of farms was accompanied by a drop in total land in farms by 1,222 acres from the 2007 Census. The decrease is likely attributed to the declining role of dairy in farming. The most significant drop in farmland was land used for pasture and grazing, down by 6,232 acres from 2007. (For more land data, see Chapter 3, Table 3.2.)

The region is seeing a shift toward smaller sized farms. (Figure 2.9) Very small farms (fewer than 50 acres) now account for 35% of all farms in the region, up from 31% in 2007 and 28% in 2002.



Photo: Green Mountain Farm to School

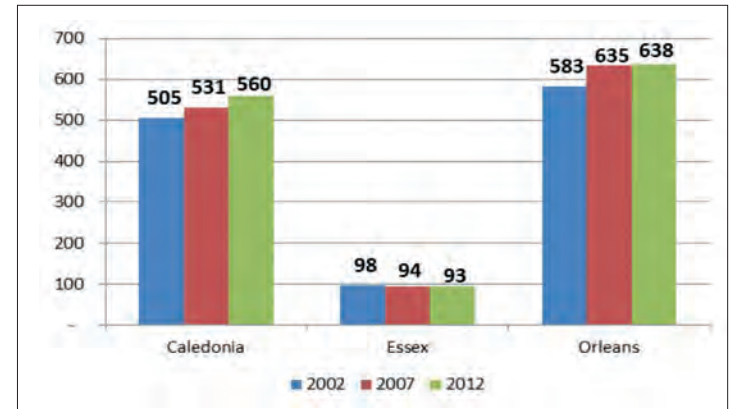


Figure 2.7: Number of Farms 2002-2012

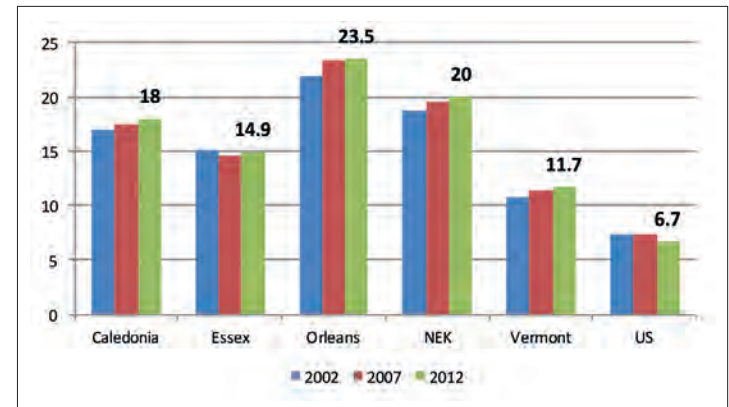


Figure 2.8: Farms Per Capita in the NEK, VT, and the US 2002-2012

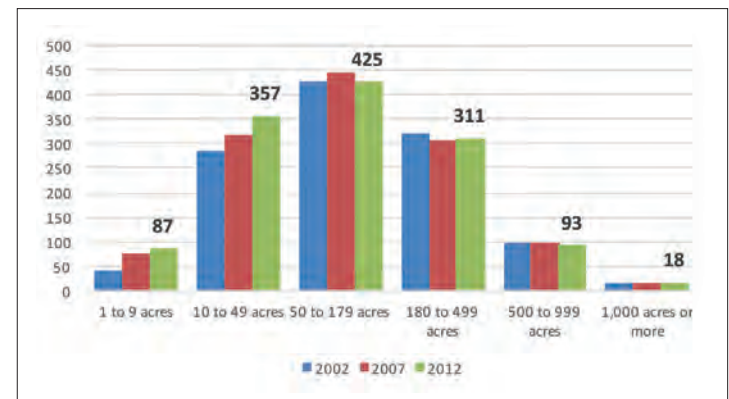


Figure 2.9: Distribution of Farms by Size, 2002-2012

Sales and Profitability

The 2012 Ag Census suggests that NEK farms, in general, are producing higher incomes than 2007, although there are some statistical aberrations. More than half of the farms in the region — 55% — reported sales of under \$10,000. However, that represents an overall drop from nearly 57% of all farm from the 2007 Ag Census. Table 2.5 shows the changes in income categories for each county.

It is possible that many of these low-income farming operations (i.e. less than \$10,000) are only producing hay. However, Caledonia County, which reported the greatest increase in total farming operations, saw a drop in the overall share of low-income farming operations, down from 63.3% in 2007 to 59.6% in 2012, suggesting some of the growth in agriculture in that county may have come from new agricultural enterprises, such as diversified production, value-added production, and direct sales (such as CSAs).

When adjusting for inflation, however, average sales per farm dropped, with the notable exception of income ranges between \$40,000 and \$49,999. (Table 2.6) Caledonia and Orleans are analyzed only because of data suppression in Essex.



	Caledonia		Essex		Orleans		NEK	
	2007	2012	2007	2012	2007	2012	2007	2012
Less than \$10,000	336	334	56	49	323	328	715	711
\$10,000 to 49,999	96	112	10	14	150	126	256	252
\$50,000 to 99,999	30	38	4	12	37	53	71	103
\$100,000 to \$249,999	37	39	5	1	68	60	110	100
\$250,000 to \$499,000	20	28	11	12	32	35	63	75
\$500,000 or more	12	9	8	5	25	36	45	50

Table 2.5 Farms by Income Category, 2007-2012.

	2012	2007*	Change	Avg. 2012	Avg. 2007*	Change
10,000 to \$19,999	\$ 1,892	\$ 2,285	-20.8%	\$ 14.67	\$ 15.23	-3.9%
\$20,000 to \$24,999	\$ 627	\$ 627	0.0%	\$ 21.62	\$ 24.12	-11.5%
\$25,000 to \$39,999	\$ 1,738	\$ 1,679	3.4%	\$ 31.60	\$ 34.27	-8.4%
\$40,000 to \$49,999	\$ 1,143	\$ 584	48.9%	\$ 45.72	\$ 27.81	39.2%
\$50,000 to \$99,999	\$ 6,496	\$ 5,252	19.2%	\$ 71.38	\$ 78.39	-9.8%
\$100,000 to \$249,000	\$ 16,516	\$ 19,200	-16.3%	\$ 166.83	\$ 182.86	-9.6%
\$250,000 to \$499,999	\$ 21,209	\$ 19,980	5.8%	\$ 336.65	\$ 384.23	-14.1%
\$500,000 or more	\$ 85,254	\$ 74,220	12.9%	\$ 1,894.53	\$ 2,005.95	-5.9%

Table 2.6: Sales from Caledonia and Orleans Farms with Annual Sales of \$10,000 or More

*2007 sales figures are adjusted for 2012 inflation.

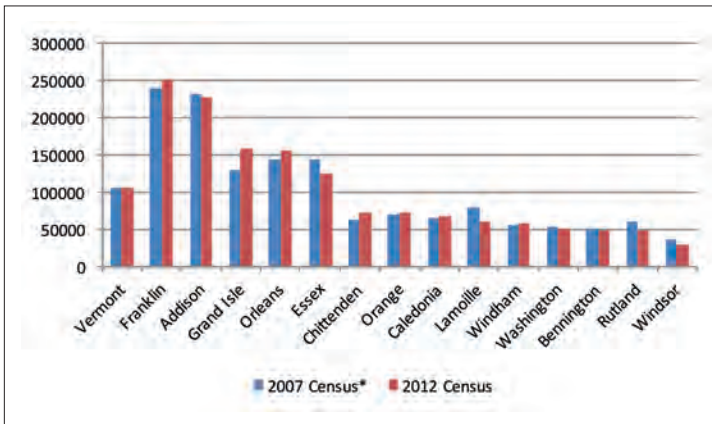


Figure 2.10: Average Sales Per Farm, 2007-2012 (in dollars)

Ag Census, saw a 12.4% decrease in average sales, the fourth largest drop in the state behind Lamoille, Rutland, and Windsor Counties. (Figure 2.10)

Regional gains came from crop sales. (Figure 2.11) All three counties experienced a drop in total sales in livestock. Essex County, where farming tends to be less diversified and more reliant on dairy, experienced a 38% drop in livestock sales. (Figure 2.12)

The Ag Census considers a farm that at least broke even (i.e., total production expenses equaled all sales and income) to be a *net gain farm*. By that definition, farms in the region are more likely to be profitable than statewide. More than half of all farms in Orleans County are net gain farms. However, in 2012, net gain farms accounted for a smaller percentage of all farms than the previous Census. (Figure 2.13)

Interestingly, Caledonia County, which has the lowest *percentage* of net gain farms in the region, reported an *absolute increase* of 9 net gain farms from 2007 to 2012. During that same period, the entire state experienced an absolute increase of only 27 net gain farms, which

means that one-third of net gain growth can be attributed to Caledonia County.

In the region, average net gain per farm rose slightly from the previous Census when adjusted for inflation. The significant exception is Essex County, where one or more outliers may be skewing averages upward. By contrast, average net gain per farm statewide dropped from the previous Census. (Figure 2.14)

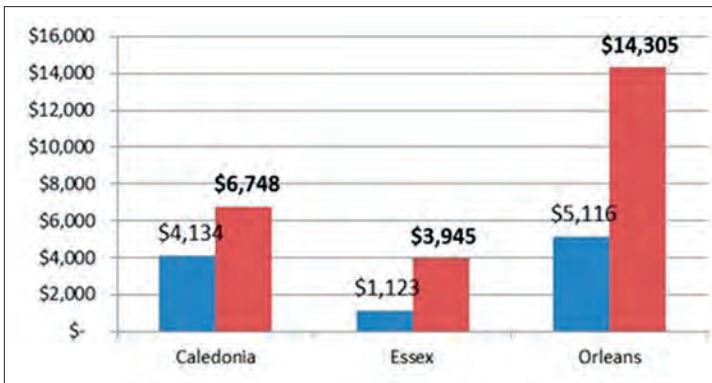


Figure 2.11: Market Value of all Livestock Sold, 2007-2012 (in 1000s)

Orleans and Essex Counties rank fourth and fifth in the state in terms of average sales per farm for all agricultural products sold. Caledonia ranks eighth. After adjusting for inflation, Orleans County saw an 8.4% increase in average sales from the previous Ag Census, while Caledonia saw a more modest 1.1% increase. By contrast, Essex County, which has experienced a net loss of five farms since the 2002

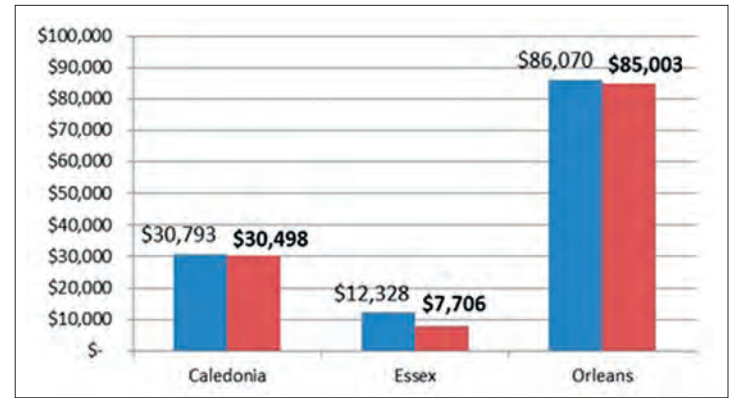


Figure 2.12: Market Value of Crops Sold, 2007-2012 (in 1000s)

*2007 figures adjusted for inflation

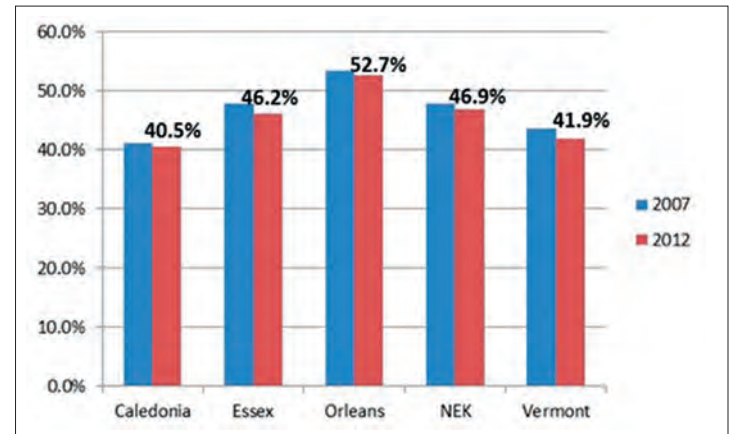


Figure 2.13: Net Gain Farms as a % of all Farms, 2007-2012

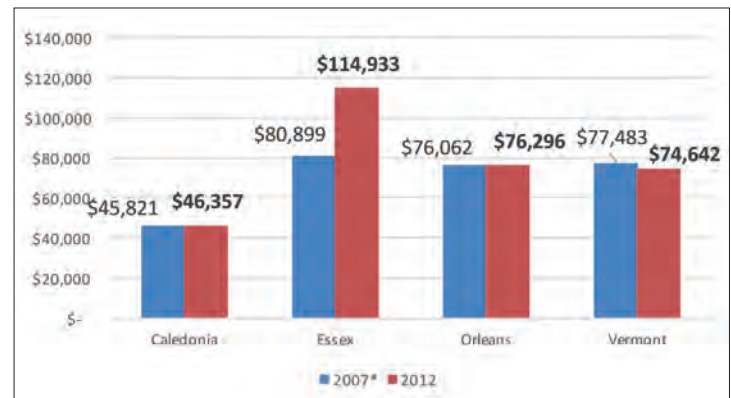


Figure 2.14: Average Net Gains Per Farm, 2007*-2012

*2007 figures adjusted for inflation.

Farm Operations and Operators

According to the Ag Census, the vast majority of farms in the region and state are considered family farms (98% and 97% respectively), which is defined by USDA as any farm where the majority of the farm is owned by the operator and/or individuals who are related to the operator, including those who do not live in the operator's household. This is consistent with nationwide trends: The 2012 Ag Census reports that 97% of US farms are considered family farms.

Farms in Caledonia and Essex County have a higher proportion of farms with only one operator than statewide. (Figure 2.15)

The region's share of farms where the principal operator worked off-farm for 200 days or more has increased from the previous Ag Censuses. The most recent Ag Census shows that of the three counties, Caledonia has the highest percentage of principal operators working off the farm. (Figure 2.16) This is likely attributed to the county's relatively large share of smaller farms and operations with total sales of less than \$10,000.

USDA defines a *beginning farmer* as a principal operator who has operated the farm for ten years or less, either as a sole operator or with others. Research has shown that beginning farmers are more likely to face obstacles, such as high start-up costs and limited availability of land. (Ahearn and Newton, 2009). Published Census tables do not line up exactly with that definition, but it is reasonable to estimate that about a third of all NEK farmers are beginning farmers, which is more or less in line with statewide figures.

The 2012 Agricultural Census collected new data on experience working on *any* farm. According to this data, about one in every five farmers in the region has worked on any farm for less than 10 years, but experience levels vary significantly among the three counties. (Figure 2.17)

Beginning farmers are not necessarily young farmers. A 2016 study by the American Farmland Trust and Land for Good found that 58% of beginning farmers in Vermont were aged 45 or older. (Beginning farmers in this study were defined as having 10 years or less experience operating any farm.) This research has important implications for aligning services and policies to assist beginning farmers. For example, older beginners may be bringing assets from previous careers, so technical and business support may be more critical than capital. Additionally, the study identified the following trends. Compared to their younger counterparts, older beginners:

- tend to farm less acreage (76 acres compared to 112);
- generate less in average agricultural sales (\$15,000 compared to \$53,000); and
- operate with a net loss of \$8,000 (compared to a net gain of \$8,000).

Ironically, many of these older beginners may need to think about succession planning, even as they are growing their businesses. (American Farmland Trust, 2016)

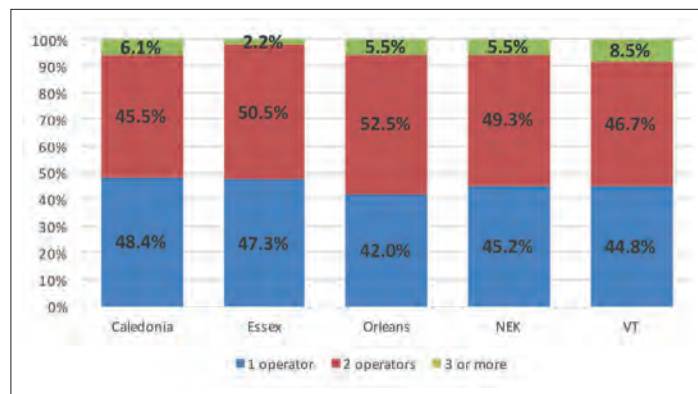


Figure 2.15: Number of Operators as a % of Farms, 2012

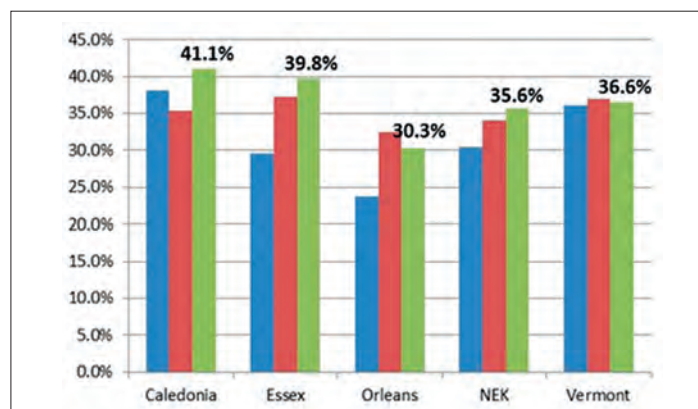


Figure 2.16: % of Principal Operators Working Off-the Farm for 200 Days or More, 2002-2012

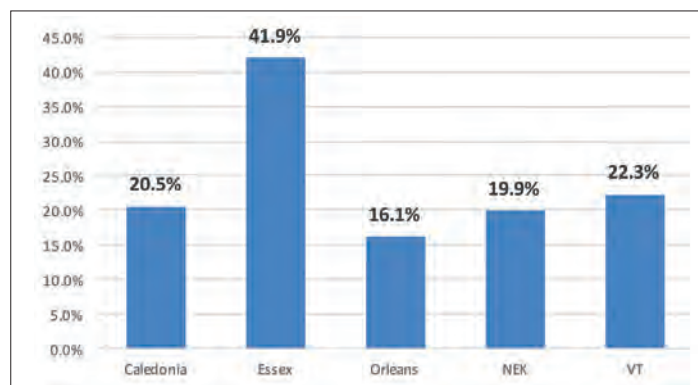


Figure 2.17: % of Principal Operators with Less than 10 Years' Experience on ANY Farm, 2012

Senior Farmers

According to the 2012 Census, farmers aged 55 and older operate 60% of all NEK farms, up from 53% in 2002. (Figure 2.18)

The vast majority of Vermont farmers aged 65 and older do not have a younger farmer (under aged 45) working alongside them. While this does not necessarily mean that these senior farmers do not have a succession plan, the future of many of these farms is uncertain. Technical services, outreach, and public policy must be better aligned to facilitate succession planning to qualified successors (American Farmland Trust, 2016).

With roughly a third of our region's farmers likely to leave farming in the next two decades, the future of the NEK's farms is especially unclear. Using a special tabulation 2012 of Ag Census data at the county level, we can determine that:

- There are 151 farms in Caledonia County with a principal operator aged 65 or older. Only 5 of these farms have identified a potential successor (i.e. an additional operator under the age of 45).
- Of the 21 farms in Essex County with a 65+ principal operator, only 1 farm has a potential successor.
- There are 173 farms in Orleans County with a 65+ principal operator, only 13 with a potential successor.

Women in Farming

Women are increasingly accounting for a greater percentage of principal farm operators in Vermont. Collectively, there are 213 women principal operators in the NEK, down from 216 in 2007. While Caledonia County (home to Vermont Chevron, see Case Study on page 26) saw a sizeable increase in women principal operators from 2007 to 2012, this was offset by decreases in Essex and Orleans Counties. The region still falls well below the state average, but is above the national average. More than half of women principal operators in the NEK do not farm as a primary occupation, suggesting that more resources and services are needed to help women farmers enter farming and expand their existing businesses.

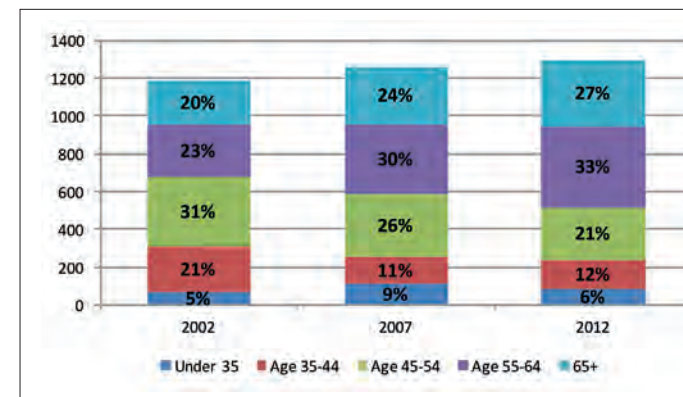


Figure 2.18: NEK Principal Farm Operators by Age, 2002-2012

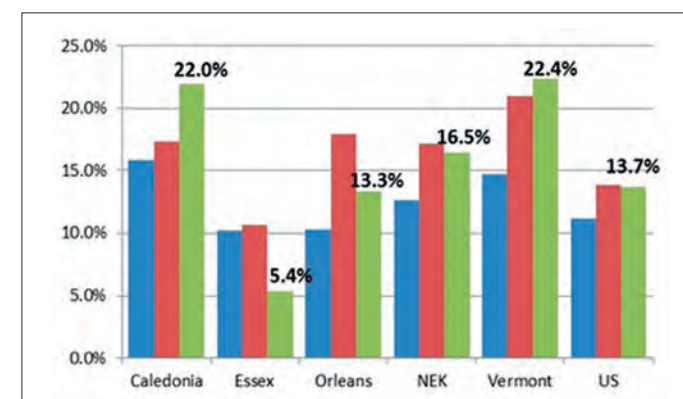


Figure 2.19: Women Principal Operators in the NEK, VT, and US, 2002-2012



Selected Statistical Updates from 2011: Farm Viability in the NEK

Target	Measurement	Update
By 2017, the number of farms will increase by 15% from 2007 levels.	Total number of farms in the NEK, Ag Census	In 2012, the number of farms in the NEK increased by 2.5% from 2007. Caledonia gained 29 farms, Orleans County 3. Essex County lost one farm.
By 2017, there will be a 5% increase (above annual inflation) in total market value of agricultural products sold in the NEK from 2007 levels.	Total value of agricultural products sold, Ag Census	In 2012, the market value of all agricultural products sold was \$150,216,000, up from \$139,464 in 2007, when adjusted for inflation. This represents a 7.6% increase in the value of all products sold.
By 2017, there will be a 15% increase (above annual inflation) in the sales of crops and livestock.	Total value of sales of crops and livestock, Ag Census	In 2012, the value of all crops sold rose from 2007 by 141% when adjusted for inflation. The value of all livestock products sold dropped by 4.6% over the same period.
By 2017, the total sales of farms making more than \$10,000 per year will increase by 50% (above annual inflation) from 2007 levels	Net cash income of farm operations, Ag Census	In 2012, total sales from Caledonia and Orleans farms with sales of \$10,000 or more amounted to \$137,800,000, representing a 9.5% increase from 2007, when adjusted for inflation.
Farm business net income will increase above annual inflation	Ag Census	In 2012, net farm income in the region was just over \$32 million, representing a .1% increase when adjusted for inflation.
Percentage of farms with female principal operators is increasing	Ag Census	In 2012, the percentage of female principal operators was 16.5%, down from 17.1%. Caledonia county, however, experienced an increase from 17.3% to 22% during the same period.
Mean age of farmers will decrease	Ag Census	In 2012, the mean age of the NEK farmer was 56.1 years, up from 55.4 in 2007, but lower than the statewide mean of 57.3 years.

CASE STUDY: VERMONT CHEVON

Since 2011, Vermont Chevon has been slowly building a second-life for Vermont's goat industry. Vermont Chevon buys surplus livestock and turns it into a premium protein source that is healthier and leaner than other meats.

Likewise, Shirley Richardson has built a second career for herself, starting Vermont Chevon after retiring from education. Richardson grew up on a dairy farm. Before starting Vermont Chevon, she ran Tannery Farm out of her home, raising goats for cashmere and meat, finding tenderness for the lovable creatures.

After learning the U.S. imports millions of pounds of goat meat each year and hearing from dairy-goat farmers that they had no use for bucks (male goats) and doe kids, Richardson decided to focus on farming goats. The launch of Vermont Chevon came soon after.

Goat meat (or *chevon*, the French word for it) is prized in many cultures around the world. In 2014, the U.S. imported roughly 43.2 million pounds of goat meat valued at \$95 million, a dramatic increase from 3 million pounds valued at \$2 million in 1990. Australia supplies the U.S. with 97% of its commercial goat meat.

Two factors account for the increase in goat meat demand. First is the rise of ethnic immigrants. In Boston, for instance, over 50% of the population is now an ethnicity that is not white American or European ancestry. Many immigrant cultures seek a desire to enjoy familiar foods and to pass on their heritage to their children.

Second is the "foodie" culture that is driving experimentation and enjoyment of unique and gourmet foods. Take butcher Adam Danforth, the winner of a 2015 James Beard award for his book on meat, who not only wrote about the culinary

joys of goat meat but who has also used meat from Vermont Chevon in demos.

Vermont Chevon provides a solution for a farm problem: what to do with goats six years old or younger that have reached the end of their dairying years or are culled from the herd. The kids (young goats) go to one of three places, Richardson's farm in Danville, a Vermont Chevon-farm in Randolph, or 40-acres of pasture that is unusable to a dairy farmer in Benson but is perfect for goats, who will eat anything. After age six, goat meat loses the type of flavor for which it is known. Kids have not built up the muscle mass to provide the type of rich flavor and tenderness desired by goat-meat connoisseurs.

Richardson and one of her partners, Katja Evans, a veterinarian technician, care for the goats. Richardson started Vermont Chevon with a partner who left the company once it was in a stable position. Then, Richardson brought on Evans and Miles Hooper, the son of Allison Hooper. Miles Hooper was all too familiar with dairy goats from his mom's years running Vermont Creamery.

The work, and the youthfulness of Evans and Hooper, is "fun, exciting, and energizing" for the 71-year old Richardson. Her retirement turned into a full time job. The three divide up the tasks of running the company, which was largely self-financed. Early on, Richardson received some grants to do market exploration and business planning. She tried crowdfunding – seeking contributions to help businesses start or scale-up new ventures – but the partners decided to continue the road of self-financing.



CASE STUDY: VERMONT CHEVON, Continued

Richardson finds good company in her fellow food and farm businesswomen. She cites Allison Hooper as a good example of a woman who has the really good skills of bringing in people to fit a business; Hooper started Vermont Creamery in 1984, being one of the first people nationally to make goats' milk chèvre – today a cheese that is ubiquitous in grocery stores but was “exotic” to the American palate. Laini Fondillier of Lazy Lady Farm is another woman Richardson cites as a good example of excelling in the food business. For 32 years, Fondillier has operated a goat cheese farm in Westfield, fueled by renewable energy. Fondillier sells her excess goats to Richardson, making for a symbiotic partnership of the goats' useful life.

Challenges

For Richardson, her biggest challenge is transportation. There is a high demand for goat meat outside of Vermont, specifically in Boston and New York City. Getting it from here to there is a puzzle Richardson has yet to solve. She has tried harvesting and trucking from one company, harvesting and distribution from other companies, harvesting from another facility, or trying to hitch a ride with other trucks heading to bigger cities. The numbers of refrigerated trucks that go to Boston – especially those that go directly to the buyer, and those with available space – are limited. Those that do go often charge prices Richardson cannot afford. Some distributors or truckers will go to a warehouse in Boston, but that means the customers (butchers, chefs, etc.) need to find their own transportation from the warehouse.

Butchers usually want whole carcasses, which are larger and heavier to transport,

taking up more space than the boxes of meat cut “8-ways” or “4-ways” desired by chefs. Whole carcasses need to stay below 40 degrees. Richardson is on the lookout for creative opportunities and collaborations to move the goat meat to Boston. Richardson also faces an almost bigger hurdle: public perception. While many in the ethnic market may prefer goat to other meat, there is still a lot of work to do around getting the majority of Americans to try goat. Richardson is always on the go leading tastings and cooking demonstrations, or cold-calling potential customers.

Richardson has carved a niche in marketing to participate in regional and national organizations. The Chefs Collaborative, a national network of chefs and food professionals, is how Richardson and Danforth connected. She is involved in Vermont's Farm-to-Plate Network and the Vermont Sheep and Goat Association.

A 2016 partnership with the Moringa Project in Boston is raising greater awareness of Vermont Chevon. Moringa as a city-wide effort showcasing one crop, one meat (goat), and one fish through a coordinated marketing campaign.

Richardson envisions the future to include fewer trips to Boston to sell goat and more opportunities to share transportation costs. She is exploring potential large contracts. It is not hard for her to imagine needing to import goats from outside Vermont, an effort that

requires working closely with state agencies and inventorying the availability of goats in Vermont.

Richardson knows it is not easy to create a market for something that is still considered exotic to many palates. She continues to build her business by cultivating relationships, working with available resources like the Center for an Agricultural Economy, and surrounding herself with other accomplished business people such as Hooper and Charlene Lewey. She is willing to explore creative partnerships, take risks, and get her hands dirty. For her, it is all part of being an educator and a woman with a keen eye whose age seems limitless.

For more information:

www.vermontchevon.com







Chapter 3 Regional Food System Assets

Production Inputs

Production inputs include land; energy; seeds, feed, and forage; labor; and soil and water. Soil health and water quality are inextricably linked as environmental concerns and are addressed in Chapter 4.

Inputs driving costs in farming are complex and may be a function of multiple factors, including scale of operations, farm practices, proximity to resources and supplies, and type of production. The Ag Census reports that average costs per farm (calculated among all farms in the NEK) saw an overall increase. Essex County, however, saw a net reduction in several cost categories, including utilities, interest expense, rents, fuels, and livestock. (Figure 3.1) This drop might be attributed to scale, since the county has a few very large operations.

In general, New England farms spend more for feed, labor, property taxes, repair and maintenance, and electricity than the national average. (VSJF, 2013) According to data from the 2012 Ag Census, feed now constitutes the largest expense category for NEK farms (30%), followed by labor (11%), supplies, repair, and maintenance (11%), and gas, fuel, and oils (7%). (Table 3.1)

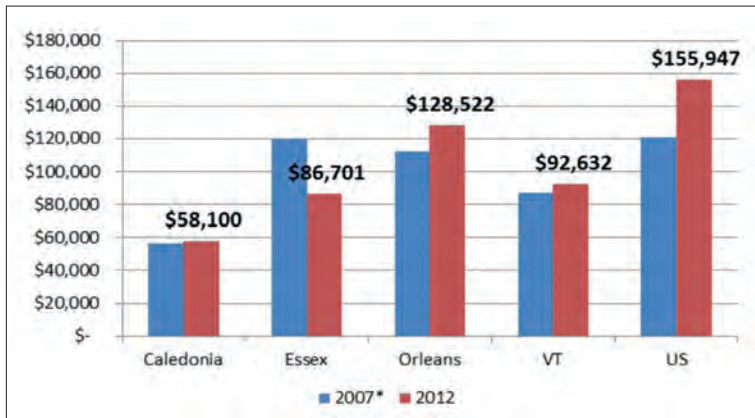


Figure 3.1:
Average
Production
Costs Per
Farm,
2007-2012
[*2007 is
adjusted for
inflation]

Cost Category	2007	2012
Fertilizer	6%	4%
Chemicals	2%	1%
Seeds, Plants, etc.	3%	2%
Livestock & Poultry	4%	4%
Feed Purchased	8%	30%
Gas, Fuel, and Oils	15%	7%
Utilities	8%	4%
Supplies, Repair, & Maintenance	14%	11%
Hired and contract farm labor	5%	11%
Custom work & hauling	3%	4%
Cash rent for land & buildings	3%	2%
Cash rent for machinery	1%	0%
Interest expense	5%	3%
Property taxes	14%	4%
All other	9%	11%

Table 3.1:
Distribution of
Production Costs,
2007-2012

Land

The vast majority of the NEK is forested. Vermont's forestland acreage had been expanding for most of the 20th century, as trees grew over land once cleared for pasture and crops. The USDA Forest Service data indicate that forestland throughout Vermont has decreased since 1997, although the decrease in the NEK was nominal. (Morin and Riemann, 2014)

According to the 2012 Ag Census, land in farms in the NEK accounted for 237,764 acres, which represents more than 18% of the total land area. It is the second largest land use in the region, and has provided a livelihood for generations of residents. The future of farming in the region is evolving to respond to the challenges of low commodity prices and competition from within the U.S. and abroad. (NVDA, 2015) Table 3.2 shows the changes in land use for agriculture from 2002 to 2012. There was a net loss of 1,222 acres of farmland in the NEK between 2007 and 2012. In 2012 Orleans County had the most farmland in the region, comprising about 55% of all agricultural land, while Caledonia County accounted for about 34% and Essex County about 11%.

While the total land in farms decreased from the 2007 Ag Census, the region still has a net increase from 2002. Nevertheless, total land use for cropland, pasture, and grazing has decreased significantly since 2002. This long-term decrease is likely due to the shift toward smaller sized farms and the declining role of dairy in farming.

The Cropland Data Layer, developed by USDA's National Agricultural Statistics Service (NASS) uses satellite imagery to identify digital, crop-specific acreage estimates. Although crop-specific data are probably unreliable, the dataset as a whole depicts the extent of active agricultural production that is occurring. We can see from Table 3.3 that the most land-intensive crops are hay and corn.

Figure 3.2 illustrates the average market values, per acre, for farmland and buildings since 2002. In general, values for land and buildings in the NEK are higher than the national average, but lower than the state average.

NEK (acres)	2002	2007	2012	Change from 2007	Change from 2002
Land in Farms	236,396	238,986	237,764	(1,222)	1,368
Total Cropland	109,625	97,544	89,601	(7,943)	(20,024)
Harvested/ cropland	89,318	83,014	83,851	837	(5,467)
Pasture/ grazing	15,796	8,406	2,174	(6,232)	(13,622)
Idle*	2,909**	5,160	2,641	(2,519)	n/a

Table 3.2: Acres in Agriculture Production, Change from 2002-2012

*Idle includes lands used for cover cropping. **2002 data for idle acreage in Essex County is not available.

Class/Name	Caledonia	Essex	Orleans	Total
Other Hay/Non Alfalfa	42,117.31	7,862.34	63,311.90	113,299.31
Corn	3,734.98	1,922.32	8,632.56	14,290.14
Grassland/Pasture	801.54	76.32	4,548.83	5,427.56
All other crops	55.13	15.06	444.17	514.36
Fallow land	53.94	22.17	906.12	982.23
Developed land	23,851.39	7,395.86	20,741.52	51,988.77

Table 3.3: Active Agricultural Production in the NEK (in Acres)

Source: NASS, USDA, 2015 Cropland Data Layer

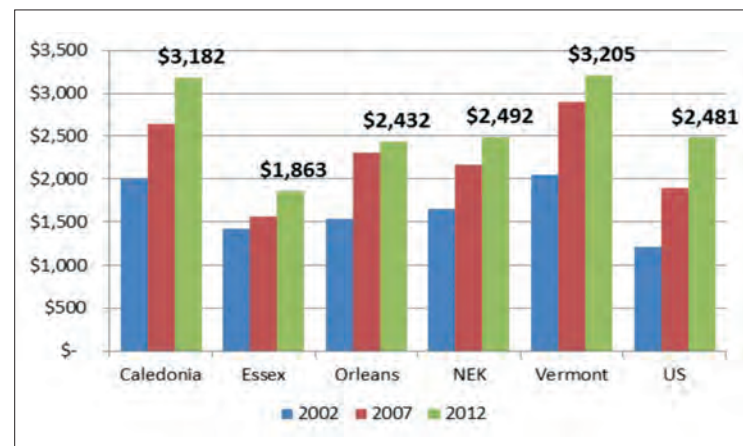


Figure 3.2: Estimated Market Value of Farmland and Buildings, Per Acre* (*2007 and 2002 not adjusted for inflation)



Development Trends in the Northeast Kingdom

Ironically, the attributes that make the region desirable for farming (good drainage and little slope) also make the land desirable for large lot residential development. The NEK is well known for its rural beauty, and the area has seen a significant amount of vacation home development. According to the 2010 Census, more than one of every five housing units in the NEK is a vacant housing unit intended for “seasonal, recreational, or occasional use.” A recent GIS analysis shows that over the past decade (2005-2014), more than 95% of residential development in the NEK occurred outside of development centers characterized by compact settlement patterns and clusters of mixed uses. (NVDA, 2015) Maintaining contiguous tracts of farmland for future generations will be a challenge.



Land Use Regulations

In theory, land use regulations (such as zoning and subdivision) can be an effective way to protect agricultural resources. Through the use of regulatory tools such as agricultural overlay districts, low density zoning coupled with planned unit development, or density-based zoning, towns can assure that agricultural resources are preserved while property owners can develop their property in an efficient manner for other uses, including residential or commercial developments. (NVDA, 2015)

In reality, zoning in the region has been almost exclusively focused on large-lot zoning. Low development densities have been typically enforced through minimum lot sizes of 5 to 10 acres, resulting in lots that have been famously described as “too small to farm and too big to mow.” (Arendt, 1994) There are a few exceptions: The Town of Sutton is currently evaluating a density-based approach that would eliminate the minimum lot size and establish incentives for keeping large tracts of working lands intact. The Town of Maidstone has an agricultural overlay along the Connecticut River that effectively prohibits all new development except for agricultural buildings.

More education and outreach to communities is needed to ensure the viability of working lands for the next generation. In 2014, Vermont Farm to Plate released “Sustaining Agriculture,” a series of training modules that covers the full spectrum

Town	Prime Ag “Opportunities” * (acres)	Ag-Focused Zoning Districts?	Lowest allowable density	VLT Conserved Agricultural Lands (acres)	Current Use Enrollment – Agriculture (acres)
Derby	2,452	Yes	5 acre minimum	0	3,443
Brownington	2,282	No zoning		195	1,210
Holland	1,759	No zoning		703	4,290
Troy	1,684	No	1 acre minimum	1852	3,495
Craftsbury	1,572	No zoning		466	3,823
Sutton	2,054	Yes	10 acre minimum	612	2,345
Hardwick	1872	Yes	3 acre minimum	650	3,854
Burke	1,402	Yes	5 acre minimum	12	583
Lyndon	1,190	No	60,00 sq. ft.	63	2,153
Danville	920	No	10 acre minimum	84	4203
Lunenburg	715	No zoning			1,144
Canaan	572	Yes	10 acre minimum	631	1,619
Maidstone	495	Yes	N/A	379	854
Guildhall	420	Yes	25 acre minimum	112	941
Brunswick	323	No	2 acre minimum	75	271

Table 3.4: Top 5 Towns in with Agricultural Potential in Each County Source: NCIC, NVDA, VLT, Vermont Department of Taxes. *Prime Agricultural Opportunity is measured in the NCIC study as Prime Agricultural lands, minus developed areas

of land use planning tools, including conservation, taxation, and regulation. These modules provide guidance on innovative approaches (both regulatory and non-regulatory) that may be more effective than large-lot zoning.

Table 3.4 lists the top five communities in each county with the largest acreages of “agricultural opportunities.” These opportunities were identified in a 2014 spatial analysis commissioned by Northern Community Investment Corporation, which subtracted developed areas from prime agricultural soils. (Soils of statewide importance were not included.) Table 3.4 also identifies any existing local zoning provisions for protecting agricultural resources. With the exception of Maidstone and Guildhall, zoning provisions tend to yield densities that are more suited for rural residential development rather than agriculture.

Land Conservation

The Vermont Land Trust (VLT) has an NEK office in St. Johnsbury and actively works to promote farmland conservation in the region. There are also local land trusts working to conserve land in the NEK. Northern Rivers Land Trust, representing seven neighboring towns (Albany, Craftsbury, Greensboro, Hardwick, Walden, Wolcott and Woodbury) helps protect the natural, scenic, and working landscapes in the headwaters of the Winooski, Lamoille, and Black Rivers. The Passumpsic Valley Land Trust represents the towns of St. Johnsbury, Barnet, Waterford, Danville, Lyndonville, Burke, Walden, Kirby, Wheelock, Sheffield, Sutton, and Newark.

Roughly 40% of VLT’s conservation projects are achieved through the purchase of conservation easements on qualified properties, such as farmland supporting commercial agricultural operations. Funds for these purchases often come from state and federal agencies, such as the Vermont Housing and Conservation Board (VHCB) and USDA Natural Resource Conservation Service (NRCS), as well as donations from private foundations, businesses, and individuals. The remainder are achieved through easement donations.

Presently, VLT, at times in partnership with VHCB and the Vermont Agency of Agriculture, Food and Markets (VAAF), has conserved 31,925 acres of land on 150 farms throughout the region. Of these farms, 54 are in Caledonia County, 17 in Essex, and 79 in Orleans. The majority are dairy farms (98), followed by farms with cropland or vegetables (44), and farms with livestock or other uses, such as sugaring (8). (VLT, 2016)

Farmland Access

While a conservation easement keeps the land *available* for the next generation of farmers, it doesn’t ensure that it will be *affordable*. In fact, farmlands are also highly attractive to non-farmers with the financial means to establish rural residential properties, and even the most experienced farmer may not be able to compete with them pricewise.

To meet this challenge, VLT has added an affordability option to its conservation easements known as Option to Purchase at Agricultural Value (OPAV). The option gives the holder of the conservation easement (such as VLT or VHCB) the ability to purchase the farm at its agricultural value if the farm would otherwise be sold to a non-farmer. All new conservation easements carry an OPAV, and in many cases, VLT has been adding the options to existing easements. An OPAV, however, doesn’t necessarily improve land access for new and beginning farmers. Research has found that about 78% of “arms-length”



Photo: Green Mountain Farm to School

sales (i.e. sales to non-family members) of Vermont farmland through OPAV involved *existing* farmers who were expanding their operations. Additional financial supports may therefore be needed for *new* farmers. (Land for Good, 2013)

VLT's Farmland Access Program has been connecting beginning and expanding farm operations with affordable land since 2004. Sales of conservation easements are used to defray the cost of purchasing farms outright and reselling the property at an affordable price to an interested farmer looking to buy or lease land. Three farmers in this region have purchased land through this program since 2011.

Vermont Land Link (www.vermontlandlink.org) was created with the support of Lamoille Economic Development Corporation to help Vermont's farm seekers and farm property holders find each other. This site makes it easy for properties to be posted, and for farm seekers to search for them. The site's format is similar to "for sale by owner" sites or classified listings. Because it is free, simple, state-wide, automated, and constantly current, it can serve as a friendly portal for Vermont property holders and farmland seekers.

Several groups are collaborating to conserve and maintain good stewardship of working lands, including VLT, UVM Center for Sustainable Agriculture, USDA Farm Service Agency, VAAF, VHCB, the Composting Association of Vermont (CAV), and the regional planning commissions. All of these stakeholders participate in the Vermont Farm to Plate Network's Farmland Access and Stewardship Working Group. Key issues for this Working Group include enhancing the suite of existing and emerging programs for conserving land and expanding access to land.

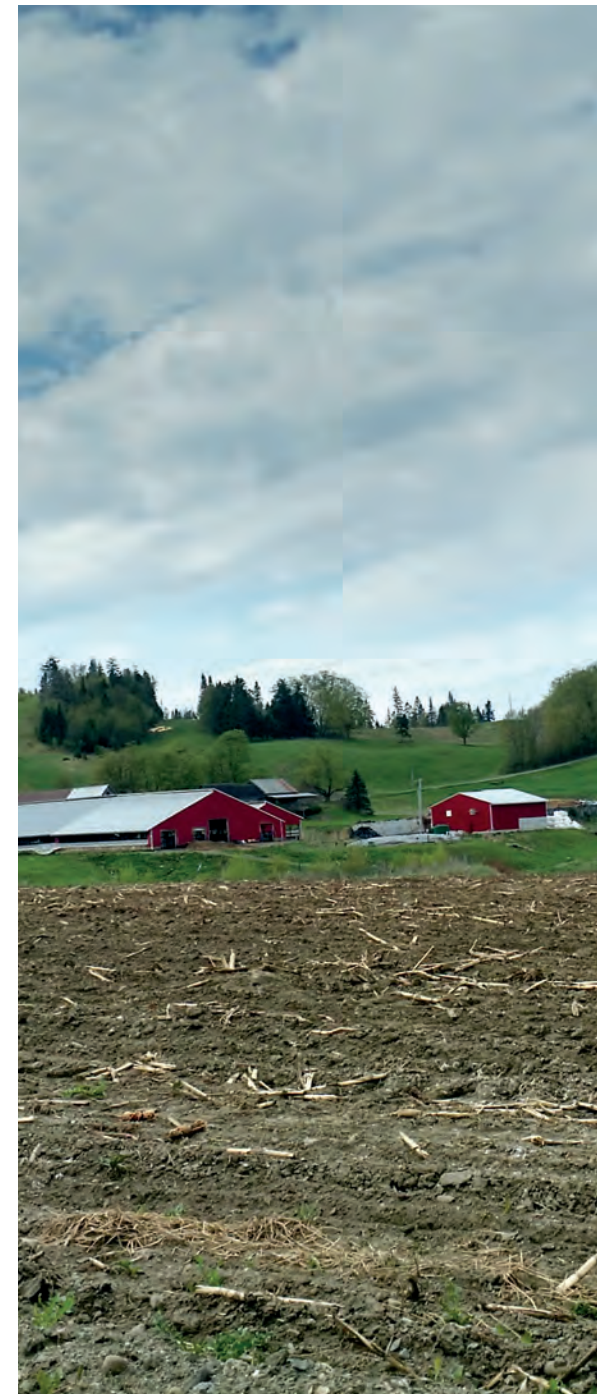
Current Use

The Vermont Department of Taxes' Use Value Appraisal Program (also known as "Current Use") is a tax program designed to support the state's agriculture and forest products economy. It relieves the burden of property taxes on farmers by assessing taxes based on the productive agricultural value of the land rather than on the land's potential for development for other uses. While enrollment in Current Use does place a lien on the property that remains in place until the Land Use Change Tax is paid, it does not place a permanent deed restriction. The Land Use Change Tax is due when property is developed, which provides a significant financial incentive to landowners to keep the land in production rather than develop it for other residential or commercial uses.

As of January 2016, a total of 3,104 parcels in the NEK region were enrolled in Current Use, comprising a total of 564,556 acres. The majority of the enrolled acres, 475,366 acres, were enrolled as managed forest. Only about 16% of land enrolled (89,201 acres) was for agricultural use. Twenty towns in the region each had more than 2,000 acres of agricultural lands enrolled. The top three towns were Irasburg (6,390 acres), Newport Town (5,669 acres), and Holland (4,290 acres).

To be eligible for enrollment, farmland needs to have produced income in either one of the two, or two of the five, preceding years:

- At least 25 contiguous acres in active agricultural use; or
- Up to \$2,000 of income for parcels up to 25 acres; and
- \$75 for each acre over 25 acres, with a minimum requirement not to exceed \$5,000.



Rented Land

For beginning farmers who cannot afford to purchase land, leasing can help launch a farm enterprise. According to the 2012 Ag Census, there are 62 tenant farms in the NEK, down from 64 in 2007. The NASS conducts periodic surveys of farmers, and if there is sufficient data, publishes average rates per acre. According to most recent data (2014), market rates for non-irrigated cropland in Caledonia and Orleans are \$33.00/acre and \$30.50/acre respectively, compared to the statewide average of \$48.00/acre. Rents for pasture land in Caledonia and Orleans are \$14.50/acre and \$13.00/acre respectively, also lower than the statewide average of \$21.00/acre. Rates are also considerably lower here than other agriculture-focused counties such as Addison and Franklin. However, one can still expect rates to vary widely due to site-specific factors such as soil quality, availability of water or infrastructure, access to markets, and field conditions. (Cannella and Waterman, 2014)

Tax abatement programs, such as the Current Use Program, may also help to entice landowners to rent land to farmers. Lands may become eligible for enrollment if it is used by a farming operation under written lease for three years. However, our outreach identified several farmers who had difficulty renting land. Lack of start-up financing for beginning farmers and Current Use eligibility requirements were cited as hurdles.

Public and Mitigated Farmland

Publicly held land may present agricultural opportunities. For example, VLT purchased the 129-acre Bluffside Farm in Newport City in late 2015. While VLT does not intend to be the permanent owner, it is working closely with the community to identify an appropriate use for Newport City's largest agricultural property, which contains about 60 acres of high-quality tillable and pasture land.

Criterion 9B of the Act 250 review process determines whether or not a proposed development may result in a reduction in the land's agricultural potential. If warranted, a developer may have to address the impact to productive soils through off-site mitigation (a payment to the VHCB Trust Fund) or on-site mitigation, which entails setting aside the productive lands. Permit requirements may require right-to-farm language as well as periodic brush-hogging to keep the land open. On-site mitigation, however, does not guarantee that farming will occur on the site. There are currently some lands in Derby that have been set aside through on-site mitigation. Regional and local planning commissions can help to realize their potential use by documenting and promoting their availability.

Energy

According to the 2012 Ag Census, energy expenses in the NEK — which includes gasoline, fuel, oil, and utilities — accounted for 11% of production costs, down from 22% of all farm input costs in 2007. The drop likely reflects innovations and investments in renewable energy generation and energy conservation. Nevertheless, utility expenses in the region and in Vermont still account for a larger share of total production costs than the rest of the nation. (Figure 3.3)

When petroleum-based energy costs were rising, farmers and food system businesses sought other means of fuel inputs, including conservation. In the face of climate change impacts and the challenge of national security issues, alternative

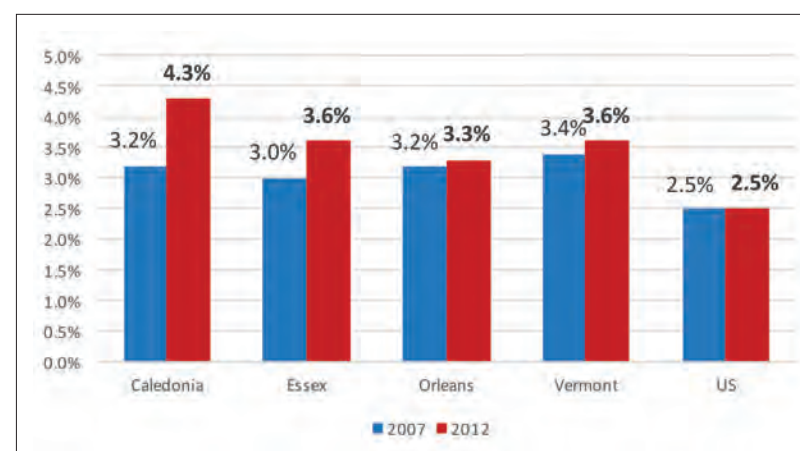


Figure 3.3: Utilities as a Share of Total Cost, 2007-2012

energy production has been on the rise. There are several types of alternative and renewable energy used in the area (solar, biomass, microhydro, and wind). Researchers are developing new technologies that could improve the efficiency and lower the environmental impacts of biofuels production. Switch grass and other plant materials are being explored by research firms in parts of the country. Soybeans and seed oil crops are being explored at the state level.

Biofuels, including ethanol and biodiesel, are potential sources of energy that could reduce greenhouse gas emissions and reduce the use of oil. There is some disagreement around the industrial practices associated with biofuels that may contribute to rainforest destruction or impact food availability by converting food crops for energy crops. However, local or regional sustainable biofuels production methods have the potential to be a viable renewable fuel source with positive environmental outcomes. Production of oilseed crops, such as soy, canola and sunflower, to produce biodiesel, livestock feed and food-grade oil, is technically feasible in Vermont. (White, 2007) Wind, solar, biomass, and methane digesters are other renewable energy sources that can be used to decrease the amount of fossil fuels used in the food system.

According to the Ag Census, Vermont is one of the leading generators of renewable energy. Census data, however, are not likely to reflect the rapid pace of investment in renewable energy generation and energy conservation. A number of renewable energy projects have been put into place since the 2011 NEK Food System Plan was published. Lazy Lady Farm in Westfield, which has been off-grid for three decades, made a major upgrade in a solar array. Many installations, however, are on-grid, or “net-metered,” and have required a Certificate of Public Good (CPG) from the Public Service Board. Since the 2011 plan, the Public Service Board has issued CPGs for two methane generators: Chaput Family Farms in North Troy and Maplehurst Farm in Greensboro. Pete’s Greens in Craftsbury, Snug Valley Farm in Hardwick, and Sweet Stone Maple Farm in Hardwick all installed solar arrays. A CPG for net-metered wind and photovoltaic was issued to Harvest Hill Farm in Hardwick. CPGs were also issued for single wind towers in Grand View Farm and Smuggler’s Hill Farm (both in Derby), but the projects did not go forward due to opposition from neighbors.

Alternative energy development may help create economic opportunity not only for farmers, but for alternative energy companies that may find the NEK attractive due to the abundance of land. A combination of federal and state tax breaks, not to mention a net-metering structure that requires utilities to purchase solar generated power at a higher rate, has made Vermont very attractive for renewable investment. Unfortunately, these substantial incentives also have the potential to effectively remove farmland from production for a generation or more. Act 174, also known as the Energy Development Improvement Act, was passed in the 2016 legislative session. Under this law, VAAF will



Photo: Green Mountain Farm to School

be a party to and provide testimony on installations sited on agricultural soils that have the capacity to generate more than 500 kilowatts. VAAFM also has the option to participate in proceedings for installations that generate less than 500 kilowatts.

In addition to encouraging on-farm energy production, it is important to consider energy use reduction. Efficiency Vermont has programs to decrease farm energy consumption by providing financial incentives to change farm lighting to LED. Since 2011, USDA Rural Development has awarded six NEK farms a total of \$135,923 to assist with renewable energy or efficiency upgrades, including the purchase and installation of reverse osmosis systems to reduce energy costs of maple syrup production.

Seeds, Feeds and Forage

Farmers need a steady, affordable supply of high quality seeds, feed, and forage. According to the latest Ag Census, 681 farms in the NEK reported producing forage (hay, haylage, grass silage, greenchop), down from 745 farms in 2007. But while total acreage was down slightly, collective output in dry tons was higher: 215,529, up from 207,905 in 2007. While much of the hay is grown in the NEK, most seeds and feed are sourced from national and multi-national corporations. Increasingly, farmers and the general public are concerned about genetically modified seeds.

Feed companies in the NEK include Morrison's Feed Bag (St. Johnsbury); Morrison's Custom Feeds (Barnet); Poulin Grain (Newport); Old Mill Feeds Store (Troy); and EM Brown and Son (Barton). Companies just outside the region include Guy's Farm and Yard (Morrisville); Blue Seal Feeds (Richford); Colebrook Feeds (Colebrook, NH); and Brooks Farm and Home (Colebrook, NH).

According to data from the 2012 Ag Census the average cost of feed per farm in the NEK is at \$56,082, which marks a 16% increase from 1997 when adjusted for inflation. Our outreach identified a growing need for a reliable "middle ground" feed, i.e. a lower-cost alternative to organic grain that is sourced as locally as possible and certified free of GMOs and persistent herbicides and pesticides (see Chapter 4). This product would provide critical cost savings to farmers who see a greater demand for locally produced meat than organic.

Additional savings may be achieved by sourcing food scraps and food processing residuals. Two hay laying operations are currently sourcing food scraps, and an NEK pork producer is using whey and dairy processing residuals. Finally, rotational grazing practices may help to reduce feed expense, not to mention minimize erosion and improve water quality.

High Mowing Seeds is the region's only seed company. Located a few miles outside of the NEK border in Wolcott, the seed company offers over 500 varieties of organically grown seeds. High Mowing Seeds employs 35 people and produces 30% of the seed they sell on their 40-acre farm. The company largely sells to commercial growers, although 20% sell in retail establishments and 10% are purchased directly by home gardeners.



Labor

Labor is an essential input for a vibrant agricultural economy. There are 379 farms in the NEK with hired labor, up from 340 farms in 2007. Collectively, they hire 1,300 workers, up from 1,088 in 2007. More than half of these workers are seasonal and work less than 150 days a year.

In general, the NEK and Vermont have a slightly higher percentage of farms with hired labor. (Figure 3.4) However, hired workers are working fewer days on the farm. The 2012 average payroll per hired worker decreased by more than 15% from 2007, when adjusted for inflation. (Figure 3.5)

Unpaid workers, which includes agricultural workers not on the payroll who performed activities or work on the farm, was a new Census item in 2012. NEK farms have a higher percentage of unpaid labor than the state or the U.S. (Figure 3.6)

Migrant labor has been on the rise in Vermont. According to the latest Ag Census, there were 20 farms that hired immigrant labor, up from 18 in 2007. (By contrast, Orleans County saw a slight drop.) Collectively, they represent 110 workers.

Measure	Caledonia	Essex	Orleans
# of farms with hired labor	150	37	189
# of hired laborers	399	94	807
Payroll for hired labor	\$3,238,000	\$624,000	\$8,283,000
Average payroll per hired worker	\$8,115	\$ 6,638	\$10,264
Average payroll per farm	\$21,587	\$16,865	\$43,825
Farms with 1-4 workers	132	32	147
Farms with 5-9 workers	14	3	17
Farms with 10+ workers	4	2	25
Workers working 150 days or more	153	35	397
Workers working less than 150 days	246	59	410

Table 3.5: Farm Labor

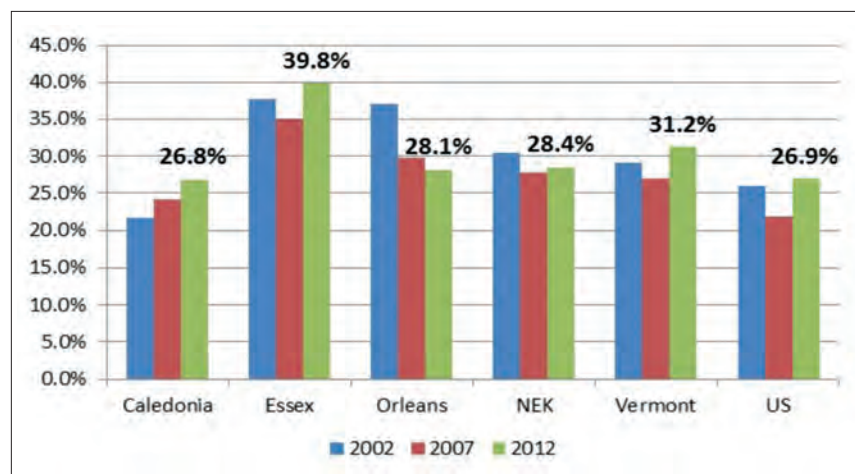


Figure 3.4: Percentage of Farms with Hired Labor, 2002-2012

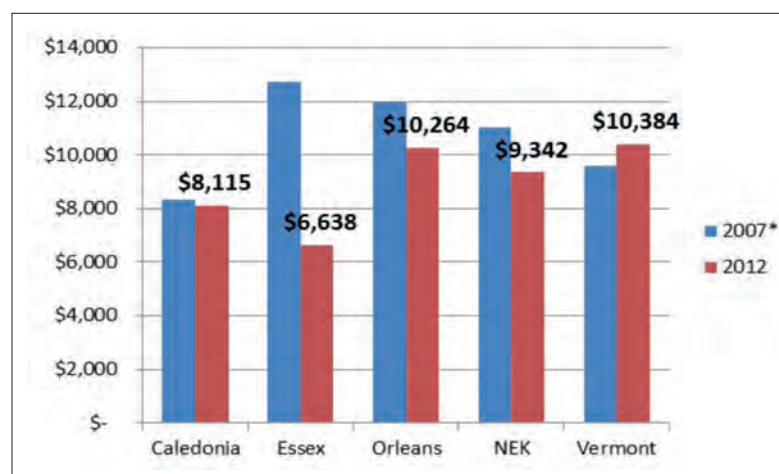


Figure 3.5: Average Payroll Per Worker, 2007-2012

*2007 is adjusted for inflation.

Production

Orleans County contributes more than two-thirds of the region's farm products, Essex County, less than 8%. Even though the most recent Ag Census indicates a significant increase in crop production and sales, dairy remains the most significant contributor to



the region's agricultural economy. The largest single agricultural product is milk from cows, which totals \$109,925,000 and accounts for nearly three-quarters of all agricultural products in the region. The next largest single crop is cattle and calves, with a value of \$10,595,000.

Dairy

Even though the number of dairy farms continues to decline, it remains the backbone of the agricultural economy in the region and continues to be the prevailing land use throughout the state, with over 80% of Vermont's farmland supporting production. According to VAAF, there were 215 dairy farms in the NEK as of 2015, marking a 10.8% drop from the 2012 Ag Census. Orleans County continues to be the third largest dairy producer, behind Franklin and Addison Counties. (Table 3.6)

In 2015, the Vermont Dairy Promotion Council commissioned an economic assessment of Vermont's dairy industry, known as *Milk Matters*. Developed in collaboration with the Vermont Agency of Commerce and Community Development and VAAF, the report identifies about \$2.2 billion in direct, indirect, and induced sales that can be attributed to the Vermont dairy industry. For example, Vermont dairy businesses purchase about \$500 million annually in agricultural goods and services (feed, equipment, veterinary services, etc.). The report also attributes between 6,000 to 7,000 jobs associated with dairy, from processing to equipment sales, and dairy farming is credited with the physical beauty of the landscape, which draws 13.5 million visitors to the state each year. Given the dairy industry's pivotal role in the regional and state economy, the price instability of conventional milk must be addressed at a state and national level. However, there are additional opportunities that may help some producers remain viable.

Organic: To address volatile milk prices, organic cooperatives use supply management, requiring farms to cut back on production to match the current demand. This allows for more stable prices for farmers. Organic dairy farmers have not faced the severe market volatility that conventional farmers have endured.

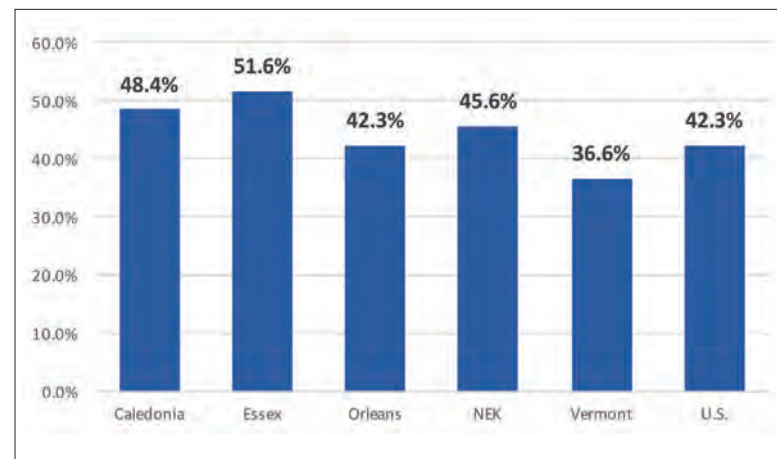


Figure 3.6: Percentage of Farms with Unpaid Labor

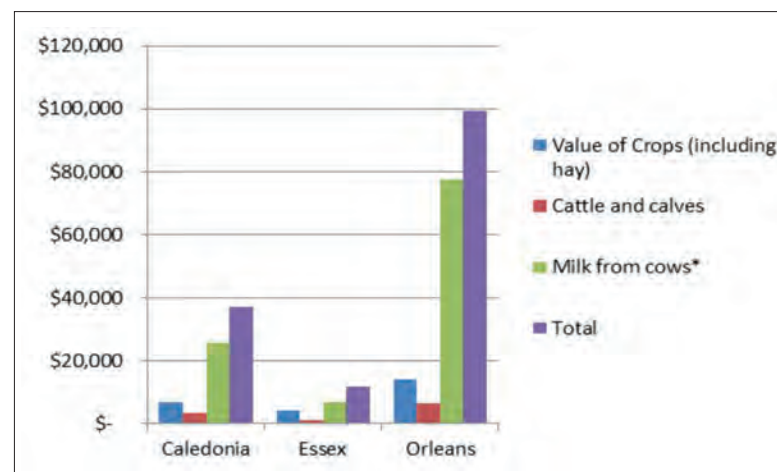


Figure 3.7: Market Value of Top Gross Products (1000s)

* Milk from cows does not include other dairy products.
This figure is not comparable to the 2007 Ag Census.

	# of farms	# of dairy cows	% of dairy cows	milk sales (\$ millions)	% of milk sales
Addison	124	32,498	24.2%	132.1	26.2%
Bennington	16	1,429	1.1%	5.3	1.0%
Caledonia	73	6,739	5.0%	25.7	5.1%
Chittenden	39	5,065	3.8%	18.1	3.6%
Essex	11	1,841	1.4%	6.7	1.3%
Franklin	184	35,736	26.6%	132.0	26.1%
Grand Isle	14	3,330	2.5%	11.5	2.3%
Lamoille	34	2,856	2.1%	9.2	1.8%
Orange	84	8,618	6.4%	33.6	6.7%
Orleans	131	21,081	15.7%	77.5	15.3%
Rutland	67	4,687	3.5%	15.3	3.0%
Washington	35	4,368	3.5%	15.9	3.1%
Windham	20	3,069	2.3%	12.7	2.5%
Windsor	36	2,826	2.1%	9.1	1.8%

Table 3.6: Vermont Dairy Farming by County. Source: VAAFM, updates to 2012 Ag Census

Value-Added Dairy: More farmers are hoping to stay viable by adding value to their milk by producing dairy products. Fluid milks can be transformed into many value-added products, including cheese, cream, and cultured products such as yogurt, farmers cheese, and ice cream.

Raw Milk: Direct, on-farm sale of raw milk for personal consumption is legal in Vermont. In 2009, changes to legislation raised the limit for weekly sales of unpasteurized product and allowed for delivery if certain thresholds were met. In 2014, the legislature enabled the delivery of milk at farmers' markets for registered producers selling more than 350 quarts per week. The 2015 legislative session also contained some changes to the law that specifically addressed milk testing, the upper limit of sales for certain registered producers, and sign requirements for delivery to consumers at farmers' markets.

Dairy Beef: When cows cease or reduce milk production, they are "culled" and sent to a processing facility for ground meat production. Some farmers in Vermont are sending their dairy beef to local slaughterhouses instead, and this can provide additional farm revenue. A study among institutional buyers indicated that institutions (such as schools and hospitals) would purchase up to 25% of their volume needs for un-pasteurized, un-cooked, bulk, ground beef from a local source, if the source could hit a price point of \$2 to \$3 a pound (Wilson, Anderson, Calderwood and Rumley, 2011).

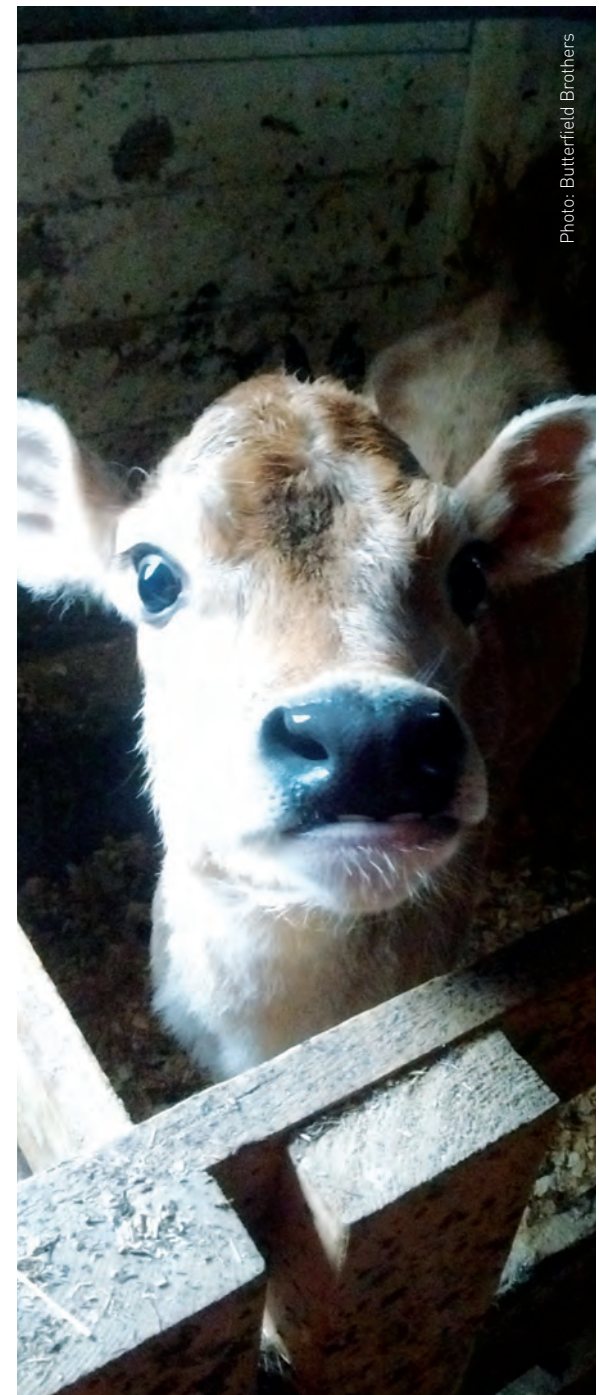


Photo: Butterfield Brothers

Livestock and Poultry

The NEK has a variety of livestock and poultry production with capacity to increase supply. According to the 2012 Ag Census, 562 farms reported having cattle and calves, up from 511 in 2007. Of these farms, 214 farms in the NEK have beef cows, up from 211 in 2007. However, only 18 of the 214 farms have more than 20 cows, and more than 91% have fewer than nine cows.

Poultry farming is on the rise, with 276 farms in 2012, up from 168 farms from the previous Ag Census. More than 93% of these farms have layers, and the majority have fewer than 50 layers. Meat bird production is also on the rise, with 46 farms producing broilers (up from 23 farms); 36 farms producing turkeys (up from 8); and 59 farms producing ducks, geese and miscellaneous poultry (up from 39). Hog and pig production increased by nearly two-thirds from the previous Ag Census, with 80 farms raising hogs and pigs in 2012, up from 48. The vast majority (93%) of these farms have fewer than 25 hogs and pigs, and there were only two farms in the region with more than 100.

Goats and Sheep

According to the 2012 Ag Census, the region reported \$940,000 in sales from sheep, goats, wool, mohair, and milk. Due to changes in data collection methodology, there is no directly comparable sales data from the 2007 Census. Traditionally, there have been very few dairy goat farms in the NEK. In 2011, NVDA, USDA, and the Northeast Kingdom Travel and Tourism Association commissioned a feasibility study to expand fluid goat milk production, which comes without the price fluctuations associated with commodity based cow dairy production. The study identified opportunities to improve production practices, resulting in higher wages through increased production, better quality milk, and out-of-season production to capitalize on higher pay price. (Harris, 2011)

There is also an opportunity to find better use for the annual spring arrival of buck kids, which have little value and require intensive care and feeding. Vermont Chevon, a Danville-based business, was created in 2011 to capitalize on a value-added market for surplus kids. The company contracts with “finishing” farms to raise the goats, giving farmers an opportunity to diversify their production. Additionally, the region does have some goat cheese and other value added product. Lazy Lady Farm in Westfield and Crooked Mile Farm in Waterford both produce goat cheese. Huard Family Farm in Craftsbury, Vermont’s only tier-two raw milk goat dairy, also produces meat and cajeta (goat milk caramel).

The 2012 Ag Census reports that there are 79 farms with 3,098 sheep and lambs, up from 70 farms with 1,877 sheep and lambs. Bonnieview Farm in Albany raises sheep and makes sheep milk cheese, as does Hope Farm in East Charleston.

Vegetables and Fruits

The 2012 Ag Census shows that there are 327 acres of vegetables harvested in the NEK, representing a 102% increase from 2007. The number of NEK farms producing vegetables increased from 79 to 127 over the same period. Most of the acreage is harvested for fresh market, but at least 24 acres are used for processing, so some farms may be capitalizing on minimal or value-added processing opportunities. Additionally, there are 81 farms producing berries on 99 acres, up from 42 farms on 61 acres in 2007. Finally, the Ag Census identifies 10 farms producing fruit on an unspecified number of acres. At least one of these farms is not yet of fruit bearing age.



	Milk Goats Farms 2012	Number 2012	Farms 2007	Number 2007
Caledonia	43	275	14	116
Orleans	19	1712	18	734
NEK	62	1987	32	850
	Meat Goats Farms 2012	Number 2012	Farms 2007	Number 2007
Caledonia	11	204	17	82
Essex		4	62	
Orleans	15	70	19	n/a
NEK	26	274	40	144



Table 3.7: Milk and Meat Goats in the Northeast Kingdom, 2007-2012

The most commonly produced crops in the region are potatoes, pumpkins, sweet corn, snap beans, and tomatoes. Most vegetable crops experienced an increase in farm production from the previous Ag Census, with the exception of spinach, cauliflower, eggplant, fresh cut herbs, and lettuce. Some vegetable crops previously reported on the 2007 Ag Census were not reported in 2012: watermelons, rhubarb, green onions, and cantaloupe (even though these fruits and vegetable are available from local growers). Some vegetable crops that were not grown on NEK farms in 2007 are now available: lima beans (5 farms), Brussels sprouts (7), kale (9), mustard greens (1), Chinese peas (1), radishes (2), sweet potatoes (4), and turnips (3).

The region saw substantial growth in vegetable sales from the 2007 Ag Census, when only Caledonia County reported sales. In 2012, the three counties combined reported \$1,405,000 in vegetable sales: Caledonia County (\$689,000), Essex (\$44,000), and Orleans (\$672,000). By contrast, sales from fruits and berries are difficult to report, as only Orleans County has reported sales of \$248,000.

Maple

Maple production in Vermont, a \$49 million industry in 2013, still retains a strong presence in the region, with 268 farms identified as maple producers in the 2012 Ag Census, up from 238 in 2007. Collectively, the region produces about 12% of all maple syrup in the state. By contrast, Franklin County alone produces more than a third of all maple syrup in the state. The 2012 Ag Census shows a significant rebound in regional production from 2007, thanks in part to technological investments to improve production and reserve energy.

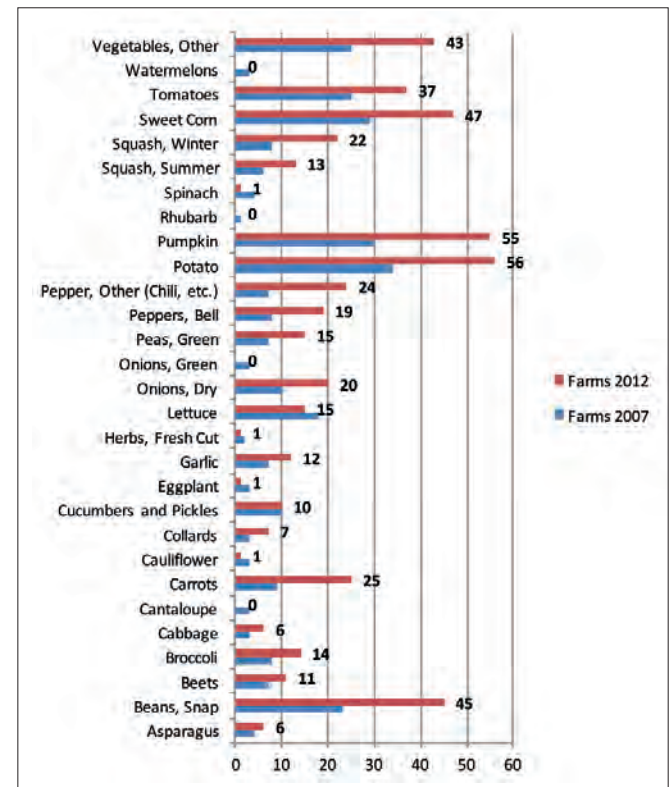


Figure 3.8: Number of NEK Farms Harvesting Vegetables, 2007-2012

The region can expect to see a greater share of maple production in the immediate future. In 2014, Connecticut-based Sweet Tree Holdings 1, LLC purchased the former Ethan Allen plant in Island Pond, which now houses the largest single maple producer in the country. Sweet Tree has acquired about 7,000 acres of land in the region and has established more than 250,000 taps. The company currently has about 50 employees.

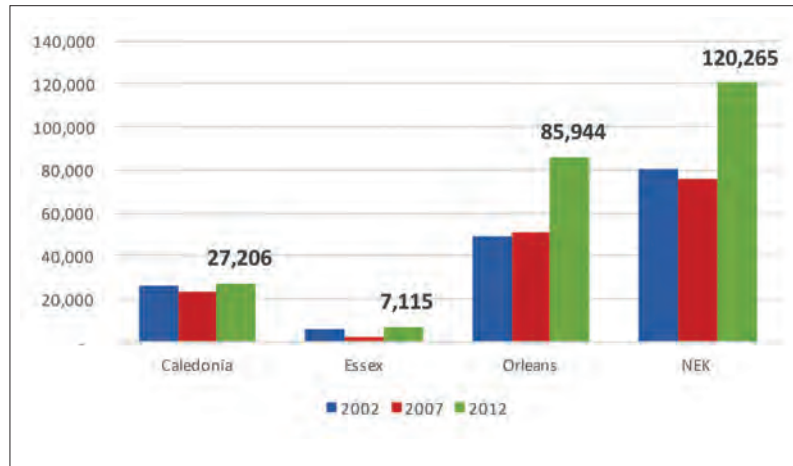


Figure 3.9: Maple Syrup Production (Gallons), 2002-2012

In 2013, VAAFM adopted new regulations to facilitate the marketing of maple product beyond state and international borders and to protect the Vermont brand. New grades with a color and flavor descriptor were created to assist consumers. Additionally, strict regulations now prohibit the labeling of any maple syrup, maple product, maple flavored product, or artificial maple flavored product in any manner that is untruthful, unfair, or deceptive. These prohibitions include labelling maple syrup as a Vermont product, unless it is entirely produced in Vermont, or using the term “maple syrup” or “maple sugar” to describe any artificially flavored product.

Other Products

Honey: According to the 2012 Ag Census, 42 farms in the NEK keep bees, up from 28 farms in 2007. Collectively this represents 192 colonies. While Census data on pounds collected and honey sold is largely suppressed, the Farm to Plate Atlas identifies six apiaries in the region. It is likely that many farms that keep bees do so as a part of diversified farming. In recent years, beekeeping has become a popular trend for home hobbyists.

Fish & Aquaculture: According to the 2012 Census, there are four aquaculture (trout) operations in Caledonia County, up from two in 2007. Collectively, they account for \$48,000 in sales. Mountain Foot Farm in Wheelock has been raising spring-fed trout for over two decades, supplying them to local restaurants and selling at farmers’ markets. The learning curve is steep and the risk of loss from disease and predators is high. Also, the time from hatching to harvesting is about three years. Aquaculture may therefore be best suited to complement a diversified farm rather than serve as a sole source of income.

Mushrooms: Local chefs are eager to source locally produced mushrooms. The 2012 Ag Census does not report any mushroom producing operations, but in 2015 the Mushroom King opened in the former Caledonia Kiln site in St. Johnsbury. The facility is growing shiitake, oyster, and reishi mushrooms, which are sold directly to restaurants and through Black River Produce.



Photo: Getty/Stock

Grains, Beans, and Oil Seeds: Grains have not been grown in Vermont on a large scale since the mid-19th century, when wheat was a large part of the economy. Twenty-two farms reported sales from grains, oil seeds, dry beans, and dry peas, up from 8 farms in 2007. Collectively, sales exceeded \$2 million. Jack Lazor of Butterworks Farm in Westfield has been growing grains for nearly four decades. He is considered a pioneer in the cultivation of food grain and has published a book on growing grains on a small, organic scale. While there is a demand for locally sourced grains, the lack of processing infrastructure poses a significant financial hurdle for growers. With the nearest off-farm mills in Quebec and New York, Vermont-grown flour is primarily available from small on-farm processing operations.

Vermont Soy in Hardwick has sourced soybeans from Vermont growers, including Butterworks Farm. Because of their volume needs, the bulk of their supply comes from growers in Quebec. The lack of storage and ability to clean the beans remain obstacles for more local sourcing.

Diversified Farming

Diversified farming is defined as the practice of producing a variety of crops and/or animals on one farm, as distinguished from specializing in a single commodity. (Random House Dictionary, 2016) Even though the Ag Census does not capture data on diversification, there are several indicators that farms in the NEK continue to diversify, as witnessed by the expanding practice of direct-to-consumer sales operations among well-established NEK farms that are highly diversified, including Butterworks Farm, Westfield; Riverside Farm, East Hardwick; Harvest Hill, Walden; Pete's Greens, Craftsbury; Chandler Pond, Lyndon; and Joe's Brook Farm, Barnet. In a sense, most farms in the NEK have been diversified to some degree. Dairy farms, for example, may also do some sugaring, and many of the region's growers are expanding into meat production. However, there is little understanding about how much farms must diversify in order to remain profitable and economically resilient. Nor do we know about the support systems they need. Clearly, more research is needed to identify best practice models for sustaining truly diversified operations.

Grow-Your-Own

Few indices exist to measure the extent of the NEK's "informal economy," but there are many reasons to believe that the region's residents have not lost touch with the ability to feed themselves. Large-lot rural residential development enables residents to maintain gardens and livestock. The region is well served by a range of custom cutters for both homesteaders and hunters. Additionally, the expansion of community gardens is providing access to urban dwellers, renters, and other residents who may not otherwise be able to garden. A number of residents keep chickens, and more may feel compelled to do so as food scraps are banned from the waste stream. Backyard farming, however, does not always fit neatly into downtown and village environments, and there have been some instances where homesteaders have either been hampered by animal ordinances or have clashed with neighbors. More technical assistance to municipalities and homeowners may be needed, as the practice of backyard homesteading is likely to expand.



Processors and Value-Added Processing

Covered employment in the food manufacturing sector (NAICS 311) increased by 27% over the past five years — and by 153% since 2001. This figure does not include the 5 covered employers in beverage manufacturing (NAICS 312), as employment counts are suppressed. Nor does it include the roughly 85 non-employer food manufacturers (e.g. sole proprietors) in the region (Table 3.8). Average annual wage for covered employment in the 311 sector in Caledonia is \$41,694, which is 11% higher than the overall county wage. In Orleans, the average wage for 311 sector is \$49,045, which is 38% higher than the county average for all job sectors.

Processing Infrastructure

The Vermont Food Venture Center (VFVC), which represented a \$3.2 million federal investment, was completed in 2011. Operation and ownership was assumed by the Center for an Agricultural Economy (CAE). Between 30 and 50 small food producers have used the facility each year. To date, 27% of the kitchen and storage clients using the shared-use facility have been located in the NEK. The VFVC also operates the Farm to Institution program, which produces fresh-cut, minimally processed local fruits and vegetables from area farms for distribution to schools, college, and hospitals. In 2014, the VFVC received a Working Lands Enterprise Capital and Infrastructure Investment with the Mad River Food Hub to establish the Equipment Access Program, which leases new equipment to businesses using local products.

In 2014 NCIC commissioned an exhaustive study of opportunities to further food system development in the Northern Tier (Vermont, New Hampshire, and Maine). The study identified an overarching need for technical assistance to grow or make products of optimum quality and consistency and to meet USDA regulations, while being profitable. Technical assistance needs included livestock and dairy production, cured meats, value-added products, grain production, and business planning. Participants in the study also emphasized a need for expanded aggregation facilities, transportation, and distribution networks. However, this study fell short of green-lighting construction of additional shared processing facilities. Rather, it cited recent experiences with several food and product aggregators or processors and raised significant questions about the efficacy of these operations. The authors of the study voiced serious reservations of establishing a processing facility, especially a regional one, as it was felt that such an enterprise would not in and of itself be commercially feasible. Rather a food hub with various services including storage and freezing may be a potential opportunity for private-public partnership to support the growth of agricultural industry in the region. (Wilson and Roberts, 2014) In short, building smart — and strategically — will be critical to sustaining the region's value-added processing infrastructure. Focusing on alignment and coordination of technical services, rather than bricks and mortar, will avoid expensive redundancies in the future.

Sector	Description	2001	2006	2009	2011	2014	2015
311	Food manufacturing	132	211	177	264	299	334
	Caledonia	33	101	37	115	118	142
	Orleans	97	110	140	149	181	192
	Essex	2	0	0	0	0	0

Table 3.8: Covered Employees in Food Manufacturing. Source: Vermont Department of Labor



On-Farm Value-Added Processing

Vermont and the NEK have traditionally seen a higher degree of value-added production among farmers than nationwide, with the exception of Essex County. Even though Essex County continues to see less value-added activity than the rest of the state, the county also has experienced a substantial increase since 2007.

Much of the expansion has been dominated by dairy, as farmers continue to find a way to make profits in the face of falling milk prices. The NEK is home to internationally recognized award-winning artisanal cheesemakers, such as the Cellars of Jasper Hill. At the time of the 2011 NEK Plan's release Butterworks Farm was the only producer of yogurt, and it continues to be the only regional producer of heavy cream. Since then, investments — made possible through a combination of funding sources, such as Working Lands Enterprise Grants, the Vermont Farm Fund, and USDA Rural Development programs — allowed for expanded value-added dairy opportunities on other farms. These expansions include:

Sweet Rowen Farmstead: This Albany dairy farm opened an on-farm creamery in 2012, offering bottled gently- pasteurized milk, farmers cheese, and a variety of small-batch artisanal cheeses.

Bonnieview Farm: This Albany-based farm established a cheese-aging cave for sheep and cow milk cheeses, and now offers a variety of unpasteurized artisanal cheeses.

Kingdom Creamery: This East Hardwick dairy (Clair-a-den) diversified in 2011 by constructing an ice cream and yogurt production facility on the property. Kingdom Creamery also bottles milk.

Cate Hill Orchard: The Greensboro-based farm made infrastructure investments to accommodate cheese making and added coolers for storage of apples and cider.

Ironically, the U.S. is currently experiencing its largest cheese and butter surplus since 1984. (McFerron, 2016) While much of the surplus is American cheese (the brightly colored and highly processed product not associated with the output of this region), European producers are exporting more cheese, due to surplus milk and a weak Euro. It remains to be seen how the global surplus will affect the region.

Meat Processing

The NEK has a long-held tradition of producing and consuming locally raised and slaughtered meat. And, like the rest of the state, there is an increased demand for local meat, which is a far cry from its industrially-produced cousin. Animals are more likely to spend their lives grazing in the open land, free of antibiotics or hormones. There are three options for slaughter of locally raised meat:

On-farm slaughter: This is exempt from inspection requirements, so no meat generated from this type of slaughter may be sold or offered for barter. A farmer may sell a live animal “on the hoof” to another buyer who may then slaughter the animal (or have an itinerant slaughterer do it on the buyer's behalf). There is a limit to how many animals a farmer may sell each year, and the farmer is required to register and maintain quarterly reporting. In 2016, changes in state regulations raised the on-farm sales limit from 3,500 lbs. liveweight up to 6,000 lbs. per year.

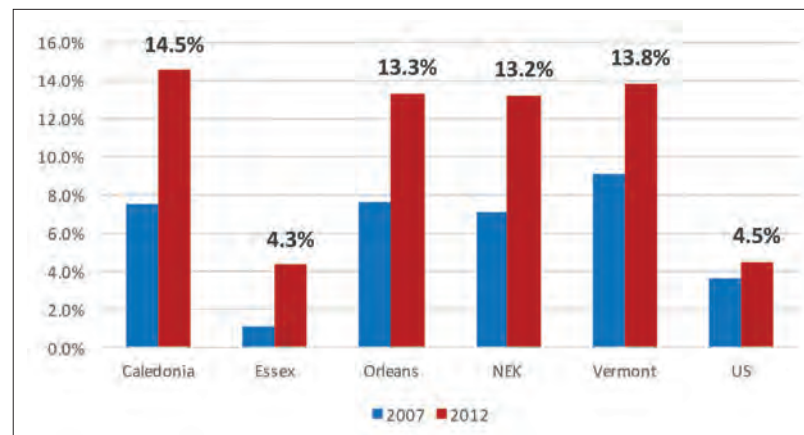


Figure 3.10: Percentage of Farms Producing and Selling Value-Added Commodities



CASE STUDY: NORTHEAST KINGDOM PROCESSING

When many of us think of slaughterhouses, images from Upton Sinclair's 1906 expose of the meatpacking industry, *The Jungle*, probably come to mind. And it's likely the images are not pretty.

Those days are long gone. The state-of-the-art, modern slaughter facility that is Northeast Kingdom Processing is USDA-certified, with a USDA inspector based on-site to monitor everything.

Northeast Kingdom Processing opened in 2014, providing farms with ways to diversify and add value to their products, in the St. Johnsbury-Lyndon Industrial Park. It is also a USDA-certified organic facility.

The facility offers both slaughtering, which is the practice of killing and butchering meat, and processing, which is the cutting, wrapping, and deboning of animals. It can handle beef, hog, lamb, sheep, and goat. An on-site smoker allows the facility to further add value and reduce the turnaround time by one-third from slaughter to smoke rather than sending product off-site. A retail store is also located at the facility selling an assortment of locally-grown meats and dry goods.

Scott Oeschger, a local entrepreneur, started Northeast Kingdom Processing. The facility meets a need in the region for slaughtering and processing. In fact, even nationally there is a shortage of certified slaughter and process facilities. In the NEK, Brault's Market & Slaughterhouse in Troy is the only other facility that offers similar services. It has been at least five years since the southern part of the NEK had a facility. The proximity of Northeast Kingdom

Processing helps cut down on transportation costs, keeping meat truly local, allowing it to be raised, processed, and sold for consumption within a short distance.

When Oeschger started Northeast Kingdom Processing, he also purchased Spring Hill Angus, now Spring Hill Meats, as an anchor client for the facility. Spring Hill raises Angus, meat steers, and Beefalo (a cross between a cow and a buffalo). The Angus cuts are sold on-site and sold wholesale to retailers across the state.

The facility can process up to about 30 pigs a day or 14 cows a day. The facility operates year-round with the slow season in February, but pre-scheduled commercial accounts space their processing out, which helps the facility stay active all year. There is no shortage of business, with some livestock raisers scheduling dates for slaughter sometimes six months in advance for the end of summer season.

Edmond Lessard (shown right) is the manager. With over 20 years of experience in slaughtering, he has made a name for himself across Vermont. He estimates there are about 50 –100 customers that use the facility throughout the year. The customers vary from hobby farmers who process one or two animals annually to large-scale commercial operators. His clients come from all over New England – from Cape Cod to the coast of New Hampshire to Enosburg Falls.



CASE STUDY: NORTHEAST KINGDOM PROCESSING, Continued

Challenges

According to Lessard, the biggest challenge Northeast Kingdom Processing faces is regulation. More specifically, failure to follow “humane handling” rules has a threat of shutting down a slaughter facility. Federal regulations are specific when it comes to how an animal must be treated before and during the slaughter. Any mistake is grounds for a violation that could cause a ripple effect delay in the processing schedule.

The slaughter industry is heavily regulated, with regulations consistently changing for facilities. Every time there is a change, the Hazard Analysis and Critical Control Points plan (HACCP) needs to be updated. The HACCP is the management system for food safety. The on-site inspector is a great resource for helping interpret regulations as they are amended.

Lessard’s other challenge? Finding and keeping a well-trained workforce. Northeast Kingdom Processing employs eight people. Being short one person is a difficult complication. If needed, the facility could employ up to 16 people. But finding qualified workers is not easy and those who are qualified are usually already employed elsewhere. Lessard instead hires employees who are “green,” those with desirable employee traits with the motivation to learn the skills needed and who can withstand the tough conditions of standing on concrete for long hours and handling meat according to the strict regulations.

Ability to Replicate

When asked if it was possible to replicate the Northeast Kingdom Processing model elsewhere, Lessard was quick to reply, “Sure!” But locally, the demand for a third NEK slaughterhouse is not evident, at least not in the near future. Being modest, Lessard downplays the important role he plays in the day-to-day operations of the facility. Finding a dedicated, experienced person like Lessard may not be easy to replicate!

Nor is the ability to finance. Oeschger, a local entrepreneur with other successful businesses, financed the facility on his own through conventional means.

From its first full year to its second full year, Northeast Kingdom Processing doubled its sales using an almost exclusive word-of-mouth advertising campaign. Its prospects for continued growth in volume of animals and sales is promising. If trends towards smaller scale, specialty meat markets and homesteading continue, in 5 –10 years, the facility may have to consider some kind of expansion or facility redesign to keep up with the demand. More customers would also mean more workers. For now, Northeast Kingdom Processing is focused on providing consistent, high quality service, taking the time to meet and talk with customers to give them what they want while performing their slaughtering to perfection. This is what keeps Lessard’s customers coming back.

For more information:
www.nekprocessing.com

The proximity of Northeast Kingdom Processing helps cut down on transportation costs, keeping meat truly local, allowing it to be raised, processed, and sold for consumption within a short distance.



Custom-exempt: Someone other than the owner of the animal may slaughter and process the animal under specific sanitary conditions, although a state or federal inspector is not on duty. Meat can only be for personal consumption and cannot be sold, although there are some exceptions for poultry. The region has a handful of exempt itinerant slaughterers, as well as stationary operations which primarily serve homesteaders and hunters.

Inspected facility: Livestock are killed in the presence of an inspector, under regulated physical and operational standards. Animals killed in an inspected facility may then be sold to the public, either from the farm, a farmer's market, or to restaurants and retailers. The meat can also be sold in pieces, such as ground meat, steaks, and tenderloin.

Given the surging demand for locally raised meats, the availability of slaughterhouses and meat processing cannot be overstated — they are essential to the viability of livestock farmers. There are two inspected slaughterhouses serving the region. Brault's Market in Troy is a state-inspected facility that processes beef, pork, sheep, and goats for local trade or in-state retail or wholesale. The facility is organic process certified. In 2010, a Farm Viability grant helped to establish an attractive storefront and retail space. In 2014, Northeast Kingdom Processing opened in the St. Johnsbury-Lyndon Industrial Park, filling a void created when PT Slaughterhouse took its operations to New Hampshire (See Case Study, page 46).

Poultry

The Agriculture Viability Act of 2007 allows farmers to sell poultry from the farm, at farmers' markets, and to restaurants, even if the poultry was not slaughtered at an inspected facility. Under the law, farmers may sell uninspected poultry in state, provided they are sold whole, and with appropriate labelling that identifies the product as uninspected. Currently farmers may sell up to 1,000 birds a year under these conditions, but Rural Vermont has been advocating for higher limits. Poultry processing is typically undertaken through on-farm slaughter, or at Masse Poultry Processing in Craftsbury, a custom-exempt facility.

Mobile poultry units can provide on-site inspected slaughter. Spring Hill Poultry Processing, just outside of the region in Morrisville, provides custom or inspected slaughter. In 2012 Tangletown Farm in Glover purchased a mobile inspected facility from the State of Vermont. The mobile unit was put up for sale in 2016, and the farm is currently building a larger on-site facility.

Beverages

The demand for locally-produced beverages continues to grow. Beverage manufacturers are using a variety of locally produced grains, maple, fruit, herbs, and vegetables in products. The NEK has an expanding variety of beer, cider, mead, and spirits. The Farm to Plate Atlas identifies a number of beverage producers, including Caledonia Spirits, Dunc's Mill, Artesano, Eden Ice Cider, Chateau Tarbox, Hill Farmstead Brewery, Kingdom Brewing, and Covered Bridge Craft Brewing. Hill Farmstead Brewery has been named "Best Brewery in the World" by RateBeer, the world's largest beer review and rating website. In October 2015, Hill Farmstead opened its new tasting room and retail space, securing its



reputation as a premier beer drinker's destination. Barr Hill Gin, produced by Caledonia Spirits, has won multiple awards at international spirits competitions. In addition to maintaining a downtown retail presence, Eden Ice Cider has been successfully cross-promoted as a key ingredient in Burke Mountain Confectionery's handcrafted truffles.

Inputs for Processing

Producing Vermont-made products with Vermont-made ingredients presents a variety of challenges. The opening of the VFVC and the expansion of Green Mountain Farm Direct leverage a regional advantage by connecting processors with local ingredients through aggregation. Nevertheless, the region can benefit from a more concerted matchmaking effort to 1) find local food producers to grow and sell specific quantities of items to be processed, and 2) broker relationships between these processed foods and institutions. Cider processors, for example, continue to face a lack of locally-sourced apples, which presents an opportunity for growers to expand and diversify.

In 2013, the NEK established a Foreign Trade Zone. The zone was expanded in 2015 to include Lamoille County businesses. Legally, a Foreign Trade Zone (FTZ) is an area within the United States that the federal government considers outside the country, or at least, outside of the U.S. Customs territory. Certain types of merchandise can be imported into a Zone without going through formal Customs entry procedures or paying import duties. The benefits of operating within an FTZ are obvious: At the very least an FTZ can help a business defer paying duties. How the FTZ can benefit regional processors will likely depend on the ability to aggregate demand. For example, area distillers and maple producers import bottles from Italy, but none currently import enough to save money through the FTZ. There may be untapped potential for an import operator to achieve cost-efficiency.

Wholesale Distribution and Freight Movement

Infrastructure to store, aggregate, and distribute product is an essential component of local and regional food systems. The NEK accounts for one-fifth of the state's land mass, but only one-tenth the population, making our region the most rural and remote region of the state. Getting product to market is a particularly arduous task for growers and producers, who must travel greater distances between development centers through mountainous terrain.

The region's highway network provides the vast majority of internal and external movement of food. There are 2,507.5 miles of roadway located in the region that range from Interstates 91 and 93 to local gravel roads and everything in between. Approximately 66 miles of I-91 and 11 miles of I-93 provide good north-south access for the region, with I-93 connecting to New Hampshire, continuing south to Boston, and I-91 connecting the region to Canada in the north and to Massachusetts in the south. U.S. Route 2 serves as the primary east-west corridor. US-5 also provides important north-south access through the region's economic and population core, while VT-14 provides north-south access in the western part of the NEK, and VT-114 provides north-south access on the eastern side of the NEK. VT-58, VT-105, and portions of VT-15 and US-302, generally provide access from the east and west. Significant portions of the region, particularly in Essex County, lack any high level access either north-south or east-west.



CASE STUDY: FARM CONNEX

Farm Connex is a local delivery service operating out of Greensboro. It picks up and drops off frozen, refrigerated, and dry food stuffs across Vermont year-round.

“We are lucky enough to see all aspects of agricultural related business from the farm to consumer. We take great pride in being part of the local food system on multiple levels. Our goal is to help keep local food sustainable as it benefits us all from the ground we plant in, to the mouths of many,” says Don Maynard, who, along with Kristy Scott, own Farm Connex.

Although Maynard has been picking up and dropping off food for 25 years, Farm Connex (formerly D&S Distributors) started in 2009 and is now primarily a delivery service, meaning they pick up directly from producers and drop off the product directly to the buyer. There is no “middle man”; the producer connects with the buyer and arranges for Maynard to do the transportation piece.

Traditional distributors buy goods from producers, market them, and then sell them to buyers at a higher price. Farm Connex does not do any marketing or re-selling. Its clients, almost 60 of them, include farms, apiaries, processors, and beverage companies. The 150-some buyers include restaurants, retail stores, food pantries, schools, hospitals and institutions. Additionally, the business offers limited storage for refrigerated, dry products and cross-docking, which allows them to move product from one truck to another with little to or no storage required.

Orders are placed with Scott on a 24-hour notice. Maynard delivers orders across Vermont, taking the NEK’s products as far south as Woodstock and as west as Hinesburg.

When Maynard started, he was delivering products for Vermont’s WIC (Women, Infants, and Children) program. Slowly he started increasing distribution for milk producers. In 2009, the “agricultural renaissance” was underway in Hardwick and Maynard started growing with that movement. In 2010, he formed a relationship with Green Mountain Farm Direct as a trial one-year project to increase sales. That’s where he met Scott.

Five years later, the two chose to branch out on their own. Their similar business style and commitment to the NEK’s food economy makes their business partnership successful. Today, they also operate the Vermont HandCrafter’s Hub out of their office in Greensboro, the next-door down from Hill Farmstead, selling artisan crafts, beer, and local food.

Farm Connex is largely self-financed. Maynard purchased the vehicles through conventional loans with traditional lenders. Maynard, operating as D&S Distributors, was able to combine existing routes through WIC distribution that allowed him to do pick-ups and deliveries that financed Farm Connex.

Challenges

The food delivery business is not easy. Maynard’s days are long, starting as early as 2 a.m. He has two trucks and two vans and buys and sells vehicles as the business evolves. While some businesses have found vehicle maintenance to be a challenge, a local mechanic and multiple vehicles keep this from becoming insurmountable for Farm Connex. But roadwork, gas, and the wear and tear on vehicles are all routine challenges. Finding reliable drivers to share the driving duties at a price they can afford is a bigger challenge;



Photo: Farm Connex

CASE STUDY: FARM CONNEX, Continued

Maynard is assisted in driving duties by one full-time and two part-time drivers.

Because Farm Connex has few staff, it has limited ability to market itself or work directly with producers. In their experience, they have seen farmers stretch themselves too thin to try and grow, market, and deliver their product. Maynard and Scott would like to do more work with farmers to demonstrate their ability to move the product to market more effectively and with less cost to the producer; time is the only barrier that stands in the way.

Another challenge affecting Farm Connex is remaining competitive with traditional distribution companies. Large distribution companies, even those that are Vermont-based, have more extensive routes than Farm Connex. The marketing component of a traditional distribution service is something Farm Connex does not currently offer, either.

Farm Connex's small size is a challenge in trying to scale up. Many institutions like to conduct business only with "preferred vendors." Preferred vendors have been pre-approved by institutions/ companies and enter onto a preferred list – a powerful position. Becoming a preferred vendor often requires a more sophisticated level of product tracking that is difficult for small companies to achieve. That status gives large or pre-specified companies a distinct advantage.

Ability to Replicate

The delivery service model, as opposed to a distribution service, offers a simpler way of moving product from one place to another. The concept is one that Scott and Maynard believe can be replicated, but perhaps not in the NEK, at least not yet. It takes time to gain the trust and build the clientele, which is what Farm Connex has done for the past seven years. There are a limited number of accounts in the NEK, and large food businesses often buy their own trucks. Businesses in other parts of Vermont, for example Chittenden County, may benefit from a delivery service like Farm Connex.

Getting locally produced goods to local markets quickly, efficiently, and affordably is a vital component of a healthy food system. Farm Connex offers this type of delivery for farms and food businesses, meeting an expressed need in the NEK's food system, where the market is limited but the number of producers is steadily growing.

Building and growing connections is vital to Farm Connex. They form close partnerships with customers, who entrust Maynard and Scott to deliver their product on time and in the condition it was picked-up. Maynard and Scott are committed to seeing the NEK's food system grow and prosper in the same way that many of the companies they work with have grown and prospered. Success for Farm Connex is not just measured monetarily; it is knowing that the business is making a difference in the NEK food system.

“We are lucky enough to see all aspects of agricultural related business from the farm to consumer. We take great pride in being part of the local food system on multiple levels. Our goal is to help keep local food sustainable as it benefits us all from the ground we plant in, to the mouths of many”

– Don Maynard

The Role of Food Hubs

Understandably, small- and mid-sized growers and producers face the greatest challenges, because they cannot afford or manage the infrastructure required to move product quickly and efficiently. Food hubs provide a critical entry point at this scale. While definitions for food hubs may vary, USDA's working definition is "a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products." By coordinating these activities along the value chain, food hubs are providing wider access to institutional and retail markets for small- to mid-sized producers, and increasing access of fresh healthy food for consumers, including underserved areas and food deserts. (Barham, 2010)

The region has become more agile in internal movement through the expansion and maturation of existing food hubs in the region. The VFVC significantly contributes to the area's food hub activities by aggregating, processing, and marketing local products. The VFVC's Farm to Co-Packer program helps farmers expand their markets by helping them identify crops that grow well in volume, identifying retail and institutional markets looking for product, and processing the fresh-cut and frozen product. The program includes supply chain facilitation, where technical service is provided to both buyers and growers to ensure success.

Green Mountain Farm Direct (GMFD), a program of Green Mountain Farm-to-School, expanded on its highly flexible and streamlined ordering and sourcing process for institutional buyers, allowing buyers to receive products from multiple farms in a single delivery. Each week, GMFD consolidates availability from farms, markets their products to institutions, and coordinates order fulfillment and product pick up from farms to deliver to customers. In addition to sourcing, ordering, and delivery services, GMFD provides their customers with extensive educational and marketing support, including purchasing advice, recipe development, and educational programming. GMFD currently works with 15 producers in the NEK, including the VFVC, which provides fresh-cut and frozen vegetables, such as frozen broccoli and shredded carrots from local growers.

In 2013, GMFD developed a business plan with the assistance of the VHCB's Farm Viability Program. This process helped GMFD identify areas of growth, liability, and strength. A key outcome from the business plan was to begin receiving payment for the services they provide, moving the entity towards financial sustainability.

The St. J Area Local Food Alliance (St. J ALFA) — which seeks to improve access to affordable, healthy, and locally produced food in the St. Johnsbury area — is an emerging food hub in the region. Connecting farmers with consumers is at the heart of St. J ALFA's mission, and they currently strive to reach more customers by promoting farms and farmers' markets through their online presence and printed local food guides. St. J ALFA also attempted to aggregate and distribute sales through an online farmers' market. The entirely volunteer-driven effort was ultimately unsustainable and the market closed. However, lessons from this experience can help to strengthen future efforts. In 2014 St. J ALFA achieved 501(c)(3) charitable organization status and has ramped up fundraising efforts in an attempt to hire its own staff and make the group sustainable.



Photo: Pete's Greens

Storage

The opening of the VFVC made available shared storage space — for dry, refrigerated, and frozen — at a monthly rate. Climate controlled areas are served by a backup generator. Nevertheless, there is an additional need for storage of all types.

The 2014 feasibility study conducted by NCIC indicated that a standalone leased vegetable storage facility would not be financially viable. Given the rates producers were willing to pay (about \$5 per pallet per month), a standalone operation could not generate sufficient revenue to cover operating costs. While a shared use commercial facility may not be sustainable in and of itself, opportunities exist among potential public-private partnerships — or simply through a collaborative effort among area producers. Additionally, producers who either have excess storage capacity or who are planning to invest in their own infrastructure may be able to reduce their own operating expenses by leasing out to other producers.

Distribution and Wholesale

In 2011, two Vermont-based wholesale distribution companies providing pickup and transportation primarily served the region. Black River Produce accommodates shelf-stable, refrigerated, and frozen products and travels throughout New England and New York. Black River leases space in the St. Johnsbury-Lyndon Industrial Park, where regular truck deliveries are off-loaded into smaller box trucks for local transport. Upper Valley Produce can accommodate shelf-stable and refrigerated products and currently reaches locations as far north as Lyndonville. (Additional pickup may be arranged for a minimum of a half-truckload.)

Some of the region's cheesemakers use Provisions International (based in White River Junction), which provides weekly delivery to restaurants, food cooperatives, independent grocers, and specialty food stores in Vermont, as well as regions of New Hampshire, Maine, New York, and Massachusetts. Operating just outside of the NEK in Johnson, Deep Root Organic, is a co-op serving organic vegetable growers. One farm in the region currently uses Deep Root, which delivers to several co-ops around the state, including Buffalo Mountain in Hardwick.

Since 2011, two additional service providers have now entered the scene. Myers Produce is a Hardwick-based regional wholesale distributor that buys fruit and vegetables from small, primarily organic farms in Vermont and Massachusetts, and sells to wholesale customers in New York City and the Boston area. Farm Connex (formerly D&S) is distinctly different from wholesale because it exclusively provides point-to-point freight shipping. (See Case Study, page 50)

Regional Storage and Distribution Study Findings

Because storage and distribution remains such a critical challenge, the CAE and NVDA commissioned a study among producers, growers and distributors to support this plan update. Regional outreach through online surveys and personal interviews found that a significant volume of the region's producers are actively delivering and storing product. Specifically:

- 73% of producers responding deliver product and 80% store product now.
- 60% would like additional logistics support.
- 20% of respondents were interested in storage only, 33% were interested in delivery only, and 44% would like both storage and delivery support.



- Of all respondents seeking delivery, 31% of producers are seeking delivery access to markets outside of Vermont, 38% for service in the NEK, 38% percent for service along the Montpelier to Burlington corridor, and 23% percent for service into New Hampshire.
- Almost three quarters of the producers responding — 73% — are interested in collaboration. Of the producers interested in collaborating, 62% percent were seeking delivery, while 48% had delivery capacity to offer. 52% were seeking storage, and 52% had storage capacity to offer.
- 80% of distributors surveyed indicated an interest in collaboration. All of these indicated an interest in collaborating on delivery. Only 50% were interested in storage.

The study also identified and assessed the continuum of logistical models available, as well as an analysis of the strengths and weaknesses of each. The pyramid chart on the following page (Figure 3.11) places these models on a continuum of investment, with the least level of investment (collaboration) for the producer at the top, the most intensive level (building or acquiring one's own storage and distribution infrastructure) at the bottom.

Collaboration, the lowest level of investment, has been occurring throughout the region in a number of ways. Collaboration often entails sharing existing underutilized storage space, co-shipping product on less-than-truckload deliveries, or even backhauling product. While these relationships are most likely to be informal or even transitory, the study identified the following hallmarks of a successful collaboration:

- **Qualifications and capabilities of the management:** In a community-led initiative that evolved not because it is one's core competency but rather to address a need, success is highly dependent on the ability to secure qualified, capable management.
- **Commitment and reliability of the participants:** Participants need to honor time commitments and schedules. The effort won't succeed for long if it takes more effort to coordinate than the effort it saves working solo.
- **Establishment of and adherence to guidelines for product safety and product requirements:** In shared use spaces, strict protocols for cleanliness and product safety need to be set and adhered to so as not to jeopardize any individual's products or markets. Likewise, in products being aggregated for group marketing, product guidelines need to be set on minimum product standards to ensure product submitted for group sales meets acceptable minimum standards.
- **Shared values and mutual respect:** Collaborative efforts tend to occur at the micro-level, so personalities can become a critical issue. Clearly, the efforts work best when the individuals participating like and respect each other. However, participants must also similarly value the services they receive in exchange for the effort. The price-value relationship may vary for each collaborative effort. Some, for example, may want complete compensation for the service offered, while others are happy to simply have some of their overhead expense offset. Regardless of the pricing structure, there must be a consensus on what constitutes a fair price, and that price needs to be sustainable so that safety and reliability are not jeopardized.

The most pressing and immediate need identified by the study was **awareness**. Sharing information about opportunities for collaboration on storage, aggregation, and distribution is critical. The region needs to designate an entity to champion this cause by serving as a central hub for accumulating and disseminating information, and most importantly, providing leadership and support for growth and innovation among producers and delivery/distribution service providers. This hub could help propel ideas



from conception to implementation. Lastly, this hub could support individual projects and conversations, facilitating communication and dialogue between links in the supply chain.

In addition to sharing information about collaboration, there needs to be greater awareness of lesser-known models such as freight service and shared-use infrastructure. When discussing storage needs many producers were still unaware of regional storage facilities such as the VFVC. Another form of shared-used infrastructure, based loosely on the zipcar® model emerged as a potential cost-effective solution for highly specific and intermittent delivery needs. Under this model, the cost of infrastructure can be diffused over multiple users, and high cost of delivery per unit can be mitigated by the owner assuming some of the responsibility or burden for travel. Additional research and planning is needed to make this approach viable. *Complete findings from the study are included as an Appendix to this plan.*

Retail Distribution

As demand for local food grows, more producers and growers participate in their respective food systems through direct-to-consumer (DTC) and through intermediated channels (such as sales to institutions and distributors).

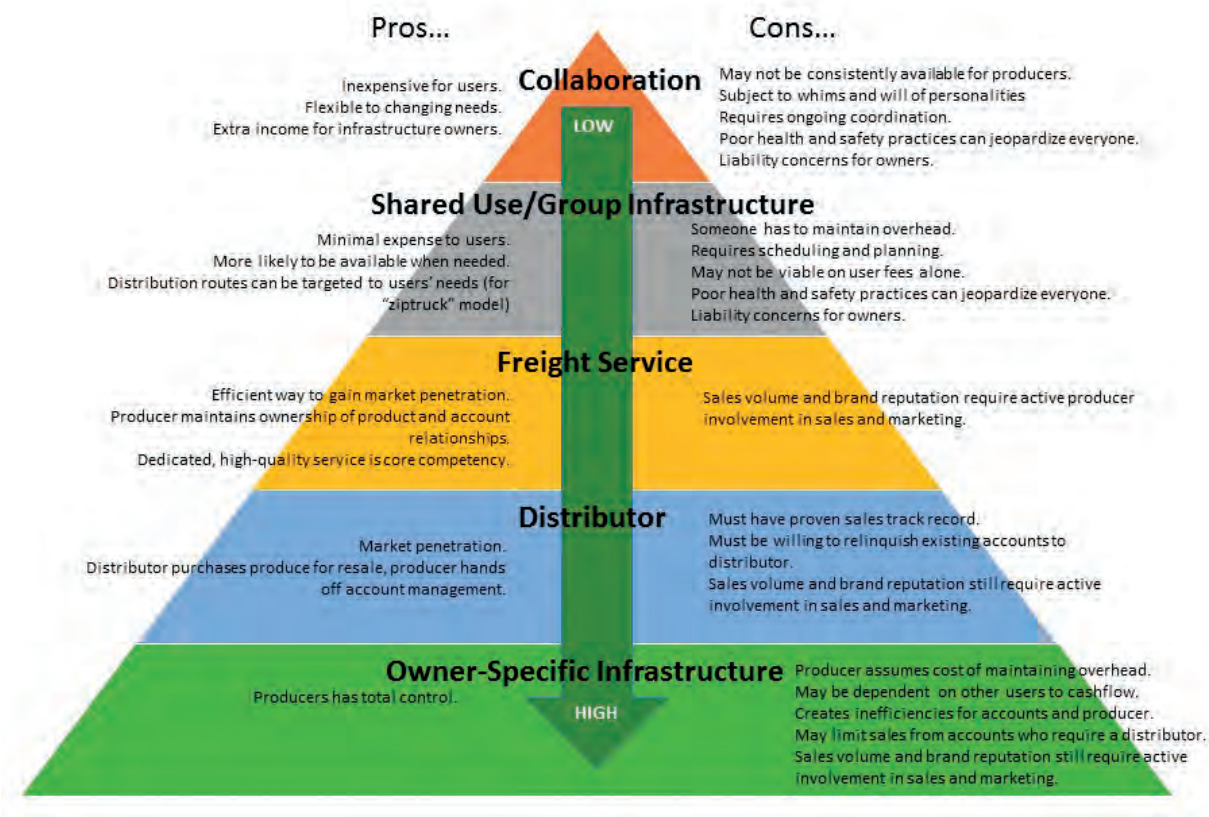
The Ag Census defines DTC sales (i.e. products sold directly to individuals for human consumption) to include roadside stands, farmers’ markets, pick-your-own sites, CSAs, and the sale of livestock (“on the hoof”). It does not include non-edible products, nor does it include the sales of agricultural products by vertically integrated operations through their own processing and marketing operations.

Recent research suggests that farms selling local food through DTC channels were more likely to remain in business over 2007-2012 than farms not selling through DTC channels. However, they tended to experience smaller increases in sales. According to the 2012 Ag Census, the number of farms using DTC channels increased nationwide by 5.5% from 2007, but the value of DTC sales actually declined by nearly 1% over that same period when accounting for inflation. The drop in national sales may be due to a plateau in consumer demand or it may simply reflect a growth in intermediated sales like grocery stores and institutions, which are not measured by the Census (Low et al, 2015).

Figure 3.11: Logistical Models for Storage and Distribution



Photo: Black Dirt Farm



CASE STUDY: NORTHEASTERN VERMONT REGIONAL HOSPITAL (NVRH)

How can a hospital contribute to the NEK's food system? NVRH in St. Johnsbury does so by sourcing locally made food from regional producers, offering educational programming to improve eating and cooking knowledge, and collaborating on innovative and new endeavors to secure access to food for those most in need.

In 2008, NVRH received a grant to supplement the cost of purchasing vegetables directly from a farmer. Over the three-year funding period, the grant was reduced until the hospital was able to continue on its own. Today, the hospital sources locally made products without any noticeable increase in food costs, demonstrating that institutional buyers are able to adapt to a different purchasing model.

NVRH participates in the Vermont Working Group for Healthy Food in Healthcare, which defines local food as coming from a 250-mile radius. For NVRH, this means buying dairy products, eggs, and apples from within 250 miles. Within a 20-mile radius, organic vegetables from Harvest Hill Farm (Walden), beef from Tamarlane Farm (Lyndonville), and maple syrup from Elouise Pearl (Barnet) appear in meals at the hospital. Food Service also works to locate foods processed locally such as grain products. The hospital's search is open for new growers, with plans to source mushrooms from a local grower in the works.

While buying and serving healthy (and local) food is one part of NVRH's healthy community vision, so too are the ideas that all people should have access to healthy food. This is why NVRH is one of five health care facilities partnering with the Vermont Foodbank's VeggieVanGo® program.

VeggieVanGo is a healthy food initiative to bring fresh fruits and vegetables to people who are food insecure where and when it is most needed. With hospitals as a delivery site, program organizers are able to work with doctors and staff to identify patient and employee families who are experiencing hunger and "prescribe" fresh vegetables and a more nutritious diet.

The program started in January 2016, with 40 people utilizing VeggieVanGo. By April, that number was 145. Winter vegetables, such as squash, cabbage, potatoes, and onions, plus fruits such as apples, oranges, and melons, have been available, so far. While this program is designed for people who may have trouble stretching their food budget, participants do not need to demonstrate that they qualify for the benefit.

NVRH provides a number of community health and wellness resources to help all members of the community commit to healthy lifestyles. This includes a 3-part cooking class for people with chronic conditions and offering a community grant that can be used to fund projects such as stocking food shelves or education sessions on preparing children's packed lunches.

Ability to Replicate and Challenges

NVRH sees its commitment to supporting the local economy and developing relationships with farmers as part of leading by example: By creating a healthy environment for employees, visitors, and patients and making available good jobs for employees, other institutions and employers can do the same.



CASE STUDY: NORTHEASTERN VERMONT REGIONAL HOSPITAL (NVRH), Continued

This does not come without challenges. For NVRH, the Senior Management Team is supportive of taking a holistic approach to a healthy community. Without this support, staff would not be able to be creative.

Creative initiatives and partnerships such as VeggieVanGo make space constraints a challenge. Additionally, VeggieVanGo is only able to come once a month on a Thursday morning. Patients and customers may not be accustomed to eating a wholesome diet. Some have found it less satisfying and desirable, not understanding the benefits. To combat this challenge, the hospital strives to make meals delicious and nutritious.

As NVRH grows its local buying, it struggles with a different set of challenges. Cost and a reliable local supply can be difficult to plan meals around. The Director of Food Service orders from multiple vendors and produce coming in whole from growers add new levels of complexity to food preparation. These challenges, however, are not insurmountable and part of NVRH's success is that it is replicable to other institutions.

NVRH is creating its own food system: sourcing NEK-produced food, composting food scraps in the region, offering CSA pick-ups on-site to employees, providing the infrastructure to house a Vermont Foodbank food share program, and promoting food and lifestyle educational access resulting in healthier patients, customers, and community members. While there are challenges to this systemic approach, NVRH offers a replicable model for other institutions.

Links for more information:

www.nvrh.org

www.vtfoodbank.org



Richard Foster of Stannard, Vermont

NVRH participates in the Vermont Working Group for Healthy Food in Healthcare, which defines local food as coming from a 250-mile radius. For NVRH, this means buying dairy products, eggs, and apples from within 250 miles.

DTC venues, such as farmers' markets and farmstands, are an integral part of the NEK's culture. It's not surprising then that more than 26% of the region's farms reported direct sales, compared to just under 7% of all farms nationwide. According to the latest Ag Census data, the number of NEK farms selling direct increased by 51% from 2007. (Figure 3.12)

DTC sales as a percentage of total sales saw a marginal increase from 2007– just a little over 2%. What's more, the total value of sales, when adjusted for inflation, did not increase evenly. The region saw a 21% increase, but this is because Caledonia County farms more than doubled their sales, which offset a decline in sales in Essex and Orleans. (Figure 3.13).

The drop in sales in Essex County may be attributed to an overall decrease in farming activity, as well as a drop in population. The drop in Orleans County, however, may be due to the region's expansion of aggregation and distribution through food hubs like the VFVC and GMFD, vertically integrated operations (such as Sweet Rowen's bottling operations), and the availability of freight services to smaller retail outlets.

Farmers' Markets and Farmstands

The Farm to Plate Atlas lists 15 farmstands currently in operation and an additional farmstand opened in Ryegate in late 2016.

The region currently has 15 farmers' markets, four of which operate winter markets. In Vermont, farmers' markets sales are voluntarily reported to Vermont's chapter of the Northeast Organic Farming Association (NOFA-VT), so tracking trends and growth is difficult. Some of the larger markets have reported flat or even declining year-to-year sales, which may be attributed either to sales lost to smaller emerging markets or the loss of specific vendors. Winter markets, however, may be an important opportunity to expand sales. The St. Johnsbury Caledonia Winter Market, which started out as a monthly market, is now twice monthly, and continues to be a popular draw in the St. Johnsbury Welcome Center. Opportunities to make winter markets more viable include marketing to seasonal tourist markets (e.g., ski resorts), sourcing more variety of products, and developing a website to highlight vendors and products.

Community Supported Agriculture (CSA)

Community Supported Agriculture (CSA) has become a well-established way for consumers to buy local, seasonal food directly from a farmer. Individuals purchase CSA member shares upfront to support a farm's production, and in turn receive a share of the harvest. Farmers benefit by receiving early payment to help with cash flow and being able to market prior to the busy farming season. CSA members benefit by developing a direct relationship with their farmers. In addition to receiving farm-fresh food, members often get recipes as well as an overall discount on food prices. The majority of CSAs offer vegetables and fruits, but some are expanding into meat, eggs, cheese, and other products. The 2011 plan noted 11 CSAs in the region. According to the latest Ag Census, there are now 36 CSAs, but the current figure

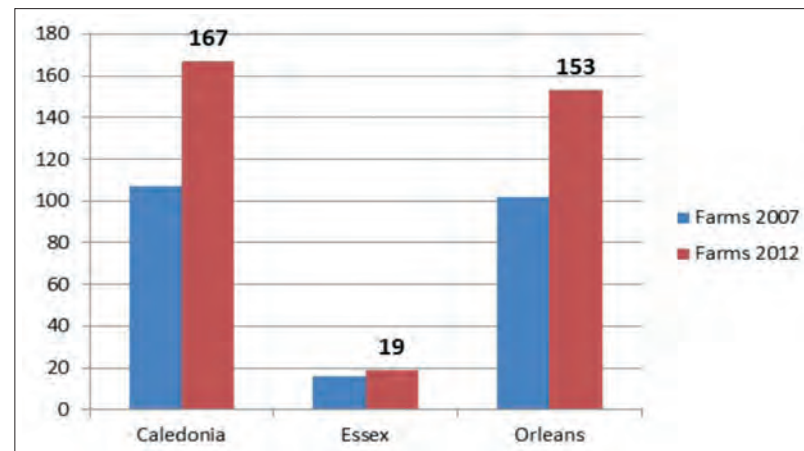


Figure 3.12: Number of Farms Reporting Direct Sales

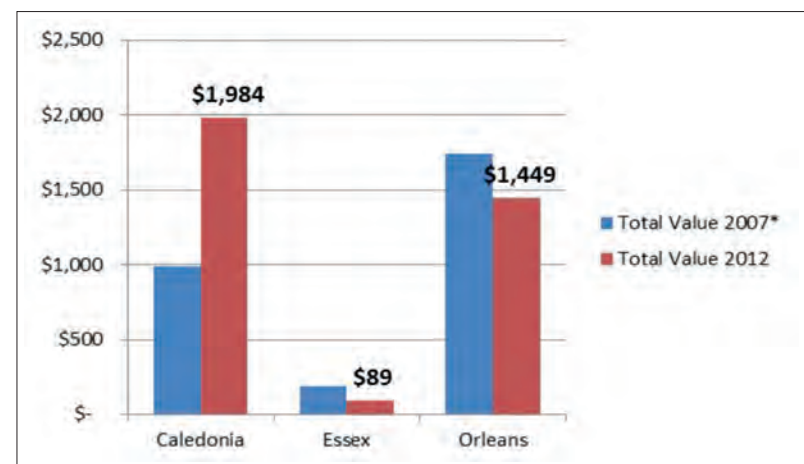


Figure 3.13: Total Value of Direct Sales, 2007-2012 (in 1000s)
(*2007 sales data adjusted for inflation)

may actually be higher (for example, a new CSA was opened in Ryegate in 2016). Nevertheless, the region's farm still probably have a lower percentage of CSAs than statewide, but considerably more than the national percentage. (Figure 3.14)

Agritourism

Building a viable agritourism and culinary tourism industry will help increase demand for local products by heightening their presence in the community. Agritourism includes income from recreational services such as hunting, fishing, farm tours, hay rides, and other on-farm activities. The latest Ag Census data show a drop in sales from agritourism and recreation in the region — from \$366,000 in 2007 to only \$68,000 in 2012. Data for Orleans and Essex, however, are suppressed. It is also highly possible that this activity is under-represented by the Census and its indirect contribution to the local economy is inadequately measured. Kingdom Farm and Food Days, for example, is an annual weekend celebration of local farms, gardens, and food producers. The NEK Travel and Tourism Association heavily promotes the “farm to table” experience as an essential element of the visitor experience, touting destinations such as Juniper’s at the Wildflower Inn, Agape Hill Farm, and the NEK Tasting Center. (www.travelthekingdom.com)

Intermediated Sales

Research from Vermont Farm to Plate suggests that local food accounts for 6.9% of all food sales. Direct sales account for just over 15% of local food purchases and the balance consists of *intermediated* sales, such as restaurants, institutions, food hubs, farm-to-school programs, and retail outlets. (Bécot and Connor, 2015) Regional data are hard to obtain, but the statewide estimates provide some insight into the capacity for local food sales and consumption.

Grocery Stores

Vermont Farm to Plate estimates that co-ops and grocers account for more than 50% of local food purchases. The 2012 Economic Census shows that there are 49 food and beverage stores in the NEK, representing nearly \$105 million in sales. Of these stores, 32 are grocery stores (25 of which are identified as supermarkets). More than 80% of retail food sales occur at supermarkets, warehouse clubs, and supercenters. (USDA ERS, 2014) We have no regional sales data for supermarkets, but according to the Economic Census, supermarkets in the region account for about 78% of all grocery stores, so that estimate is probably accurate. In general, supermarkets do not carry local food. Smaller grocery chains like White’s Market either carry or have carried local products, including Vermont Soy and Kingdom Creamery milk and ice cream. Supermarkets often pose a difficult point of entry for local food because they require certain labeling, volumes, and a distributor relationship, which is out of scale for many small producers. Further, buying local food in these outlets often requires the formation of relationships, and with high staff turnover, these relationships can be interrupted.

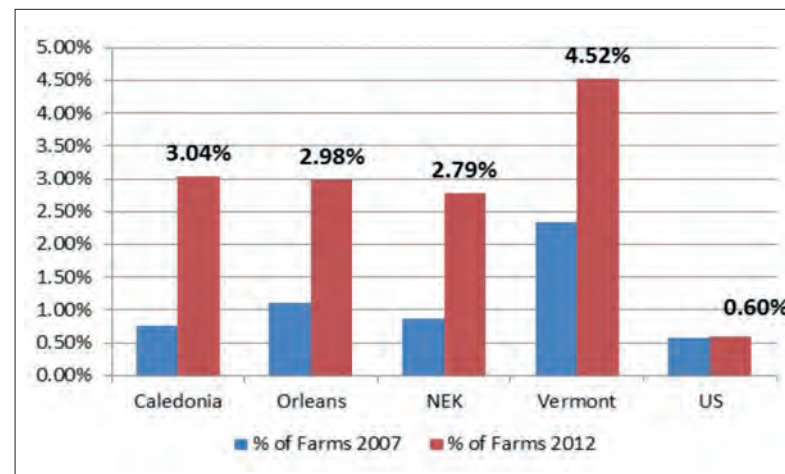


Figure 3.14: Percent of Farms Offering CSAs, 2007-2012



CASE STUDY: NEWPORT. FRESH BY NATURE.

For some restaurants, using locally grown food is the obvious option. For others, it is a logistical challenge, a financial balancing act, and an untapped potential. The Newport. Fresh by Nature. approach under the Newport City Renaissance Corporation (NCRC) aims to connect restaurant consumers with growers and food makers in the Newport area .

Where you see the program's symbol (at right), you find partner producers and eateries. Green Mountain Farm Direct, based in Newport, helps distribute food from partner producers to the restaurants, delis, and other eateries around the city. It was integral in identifying farmers and producers to connect with the program.

The symbol helps highlight the connection that local food has to local producers; for consumers, it can be daunting to know what "buying local" means. Seeing a symbol for food produced in your community helps remind consumers of the labor and resources that go into producing it, and that by buying locally, your dollar goes back to your neighbor.

The program was funded through a Rural Business Enterprise Grant (RBEG) from USDA. The \$300,000 grant funded photography, design work, a video, website, and print advertisements.

Farms and restaurants in the Newport. Fresh by Nature. program are showcased each year with the summertime Taste of Newport organized by NCRC. Money raised through the fundraiser goes back into NCRC's travel and tourism marketing and outreach.



Challenges and Ability to Replicate

The crux of the Newport. Fresh by Nature. lesson is that sustaining marketing campaigns is not easy. Two challenges with this program impact the ability to replicate it in the future.

First, while the RBEG funds provided the seed to start the campaign, there has not been continued funding to expand or sustain it. The marketing materials were developed with the grant, but a lack of capacity to spread the message – and benefits – has hindered its reach.

Proponents recognize the concept is needed but without the budget to keep it going, it has stagnated. The outreach needed to connect producers with restaurants and food outlets leads to the second challenge.

In many ways, Newport. Fresh by Nature. was ahead of its time. It recognized an oft-overlooked gap in the food system – the direct marketing of local food served at restaurants to engage local consumers – and sought funding to fill the gap. But instituting a program like this one takes a lot of prep work. Restaurants in Newport were not necessarily ready for a local food campaign when it was launched, and few restaurants have since utilized the logo on their menus.

Future marketing efforts appear to be needed in the NEK to connect residents and visitors to local foods, but the verdict is out on which approach works best: an individual city, town, or village campaign, or a regional or a statewide one.



CASE STUDY: NEWPORT. FRESH BY NATURE., Continued

Along with identifying the appropriate approach, other considerations in moving a marketing campaign forward include: initial and sustained funding; programmatic oversight to actively manage it; resources to go “door to door” with restaurants, cafes, delis, retailers, and other eateries to explain the campaign and its benefits; and a coordination between the multiple campaigns for different food programs (e.g. Vermont Fresh Network, a chef and producer network).

Consumers are inundated with choices and decisions in daily lives. A key rule of marketing effectiveness is repeated messaging; if you want someone to buy your product, they need to be touched in at least six different ways, some experts say even as many as 20 different ways.

For Newport. Fresh by Nature. (and similar marketing campaigns) to have the greatest impact, sustainable funding and programmatic support to oversee the campaign are necessary. Marketing campaigns are critical and the opportunity to create a unique identity around a local food system has great potential, so long as they are nurtured with sufficient resources.

For more information:

<http://discovernewportvt.com/fresh-by-nature.html>



In many ways, Newport. Fresh by Nature. was ahead of its time. It recognized an oft-overlooked gap in the food system — the direct marketing of local food served at restaurants to engage local consumers — and sought funding to fill the gap.

Co-ops, Health Food, and Specialty Stores

There are three health food stores in the NEK and one food co-op. Buffalo Mountain Co-op in Hardwick began in 1975 and provides whole, organic, and local products. This community-oriented market is a not-for-profit corporation owned by its members and managed by a paid staff and a member-elected board of directors. The Co-op serves as a vital community meeting place for members who live scattered throughout northeastern Vermont. Year 'round, it carries a variety of locally grown produce, meats, cheeses, milk and Vermont specialty products, including jam, salsa, tea, coffee, granola, and snacks.

The St. Johnsbury Food Co-op was a community-based, co-operatively owned natural foods store from 1996–2016. In addition to selling a variety of fresh, local, and organic foods, the Co-op maintained a dynamic relationship with the St. J Area Local Food Alliance and worked with local schools on farm-to-school education and community programming. After struggling with declining sales and an operating debt, the co-op closed, leaving a significant void in local food access in the St. Johnsbury area. The area is served by Natural Provisions, a health food store in downtown St. Johnsbury, which does offer some local food.

Newport Natural offers health food and a wide variety of local products in downtown Newport City. The Northeast Kingdom Tasting Center opened in 2013, in a space formerly occupied by a department store in downtown Newport. Led by Eleanor and Albert Legere of Eden Specialty Ciders and investors, the Tasting Center maintains a retail presence and a bakery, as well as processing space dedicated to Eden Ice Cider's production.

The region's balance of retail food stores consists of convenience stores (like country stores and general stores), as well as a few specialty food stores. Additionally, there are 48 gas stations that also function as convenience stores. Since many people in the NEK do not live in close proximity to a supermarket, the role of these retail outlets in the local food system cannot be overstated. In general, they do not serve fresh local food, although many serve locally baked goods. There are a few important exceptions. Marty's Quick Stop in Danville carries local meats, eggs, cheese, and produce, as well as a wide variety of locally-baked goods. Craftsbury General Store, Willey's Store in Greensboro, Lake Parker General Store in West Glover, Currier's Market in Glover, and Westfield General Store also sell a variety of local meat, eggs, produce, beverages, breads, and specialty products.

Restaurants

Vermont Farm to Plate research indicates that purchases by chefs and restaurants account for just under 10% of local food sales. According to the 2012 Economic Census, there are 101 restaurants in the region, accounting for just over \$38.5 million in sales. Of these, 60 are full-service restaurants, and the balance are limited-service establishments and snack bars. Restaurants contribute to the leisure and hospitality sector, a growing component in the region's already strong tourism industry. Since 2011, a number of high-quality, commercial recreation facilities and tourist attractions have led to an uptick in sales and receipts. The region can expect to see more activity in this sector, including new hospitality and tourism jobs related to the resort developments in Jay Peak and Burke.

Several restaurants in the NEK are served by Black River Produce. Restaurants that feature local foods include Juniper's at the Wildflower Inn, the Newport Ciderhouse Bar & Grill (in the NEK Tasting Center), the Freighthouse in Lyndon, Parker Pie in West Glover, and Bailiwicks, the Kingdom Taproom,



and Casa Aguilera in St. Johnsbury. The Freighthouse recently remodeled their space to include a natural food store which carries many of the brands formerly carried by the St. Johnsbury Food Co-op. Claire's in Hardwick opened in 2008, positioning itself as a uniquely mission-driven local food restaurant, attributing as much as 80 cents of every dollar to locally-sourced food. In 2014 Claire's closed, as did its two successors. Operators of the second successor cited cost as one factor for the closing, explaining that the restaurant could not deliver a quality locally-sourced product at a price local patrons were willing to pay.

Institutions

Vermont Farm to Plate estimates that “institutional” purchases (hospitals, higher education, farm-to-school, food hubs) account for just 4% of local food purchases. Given the strength of our region's food hubs, matched by an ongoing commitment to purchasing locally among schools and institutions, this estimate is probably low.

The NEK's institutional market consists of 40 public schools, 9 publicly-funded independent schools, and 6 independent schools serving the region, as well as four colleges. Additionally, there are two regional hospitals, two correctional facilities, and several nursing homes, community meal sites, and senior meal sites.

Schools and institutions in the region have significantly increased their local purchasing in the past five years. Hardwick Elementary School has been purchasing from local farms for more than a decade. Northeastern Vermont Regional Hospital has also sustained a concerted effort to purchase locally (see Case Study, page 56). Green Mountain Farm Direct has significantly expanded its institutional reach by sourcing product from 26 discrete producers in the region to serve 25 institutional users, including 16 of the region's schools. St. Johnsbury School has been able to source local food through its partnership with St. J ALFA. Sterling College consumes an astounding 74% of its food locally (see Case Study, page 88). Schools in Greensboro and Craftsbury have forged relationships with farms such as Pete's Greens to access free or reduced cost “seconds” or excess produce.

Large food service contractors have their own distribution systems, making it difficult for small Vermont-based distributors and producers to sell to them. Sodexo — which provides dining services for Lyndon State College — launched Vermont First to increase the amount of local food purchased by large institutions in the state. Sodexo's report for 2015 indicates \$3.22 million in purchases of locally-grown food, accounting for 15.4% of all purchases. There is significant opportunity to increase local purchases of products like potatoes, beef, milk, and maple syrup. (*Vermont Business Magazine*, 2016)

Consumer Demand for Local Food

In order to increase the demand for more local food, there must be a concerted effort to educate the public about its benefits and to market these products to both residents and visitors.

Several groups in the NEK are working to educate consumers. St. J ALFA, for example, maintains a website listing dozens of places to buy local food and espouses the benefits of eating local. The CAE also provides information on how to access local foods and provides materials on the benefits of local food systems.



Green Mountain Farm-to-School (GMFTS) offers nutrition and farm based education in public schools, helping families to make healthy food choices and encouraging people to grow their own food or buy local. GMFTS's Vermont Harvest of the Month program is a monthly, statewide campaign that provides materials for classrooms, cafeterias, and communities to promote local, seasonal foods. To date, 32 institutional buyers in the NEK participate in Harvest of the Month. Statewide, 87% of participants reported an increased capacity to educate around local foods. (GMFTS, 2015)

The Vermont Fresh Network is dedicated to promoting and publicizing Vermont chefs and restaurants that use Vermont grown and produced foods, which ultimately promotes the region's working landscape and contributes to visitor tourism. There are 25 regional partners currently participating in the Vermont Fresh Network.

Branding

Throughout our outreach and planning process, a number of stakeholders called for the development of a regional brand to promote greater awareness of the region's many locally-produced foods. This effort does face some challenges. To date, the closest regional branding effort has been the Newport City Renaissance Corporation's "Fresh. By Nature" campaign that is geared to heighten the "field to fork" experience for residents and visitors (see Case Study, page 60). Additionally, Newport City Renaissance Corporation hosts an annual "Taste of Newport" celebration, with proceeds from the event supporting downtown revitalization efforts. Coordinated regional branding of the NEK's food system could be strengthened.

Closing the Affordability Gap

Although there are several compelling reasons to eat local, an affordability gap keeps many of our residents from participating in the regional food system. To be successful, any regional marketing effort must honestly and openly address this issue. The NEK is the poorest region in the state, and many residents must make tough spending choices. They believe in supporting local producers — and they know that they need to eat healthy, whole foods. The complexities of limited wages, transportation, and housing make spending choices difficult. In one conversation or another, community members, food access advocates, businesspeople, and technical service providers questioned the affordability of "buying local." Common themes to emerge from the Food System Plan Summit, in interviews for the case studies, and in meetings with stakeholders, included:

- Cost of wages relative to the cost of food
- Decision-making on a limited budget
- Myths and perceptions about the costs of certain types of food (e.g. organic, local, healthy) and food retailers (e.g. farmers' markets vs. supermarket)
- Understanding the profit of a farmer vs. product cost
- Understanding how local dollars are re-circulated into a community ("multiplier effect")
- Cost of product quality and smaller scale production
- Knowledge of cooking food from scratch or buying processed or packaged items



Photo: Seth Fineman

Two recent studies shed some insight into affordability issues. This research should be considered while developing any regional marketing or branding effort.

1. In 2015 VAAFM tackled the persistent notion that farmers' markets were too expensive. A pilot project gathered pricing information on more than 50 local products found at 13 farmers' markets across the state. Prices were then compared to similar products offered at five grocery stores and convenience stores in central Vermont. The study found that many commonly purchased foods can be affordably obtained at farmers' markets (i.e. within a 10% price range). There are some notable exceptions, however, such as pork and organic blueberries. Among the findings:
 - 89% of local, certified organic produce at farmers' markets was competitively priced, including carrots, chard, garlic, lettuce, summer squash, tomatoes and zucchini.
 - 45% of non-organic local produce at farmers' markets was price-competitive, including apples, carrots, cucumbers, kale and tomatoes.
 - 57% of local meat and proteins at farmers' markets are competitively priced with the same items at retail establishments, including eggs, ground beef, ham and sirloin beef. But another 43% were not, including ground pork, pork chops and pork loins.
 - 66% of items less expensive at farmers' markets than retail establishments include chard, garlic, lettuce, summer squash, tomatoes and zucchini.

VAAFM will continue to collect and aggregate pricing data on a variety of fruit and vegetable crops, as well as a selection of meat and poultry products grown and sold in Vermont. Updated pricing reports can be found on USDA's Agricultural Marketing Service reports at <https://www.ams.usda.gov/market-news/local-regional-food>.

2. For many local farmers, putting forth a quality product takes significant financial input, and the profit margin is narrow. This struggle is especially apparent in light of a recent beef production study in Vermont, which has found that the only market opportunity for the average producer is to sell direct. Even the most efficient producers cannot support the minimal wholesale price currently offered in Vermont. In fact, they would be losing \$0.05/lb. hanging weight, without accounting for overhead expenses. The study recommends closing the pricing gap by raising awareness of the true cost of sustainable production in Vermont, supporting a fair price for Vermont farmers, and seeking opportunities to maximize efficiencies, such as avoiding overstocking and extending the grazing season. (Wilson and Flack, 2016)

Composting

Capturing our food and farm residuals is the critical element of the food system that “closes the loop,” transforming a linear system into a circular system. The practice is referred to by many names, including waste management, nutrient organics management, or organics recycling. For the sake of simplicity, we refer to this practice as composting.



Composting has numerous benefits to our food system. It helps to build soil quality, reduce soil erosion and runoff of nutrients, and increase crop production. It also diverts organic residuals from landfills, thereby reducing the release of greenhouse gases. Despite these benefits, the Agency of Natural Resources (ANR) estimates that diversion of discarded materials (through recycling and composting) has largely stagnated at about 30% for the past decade. In 2012, Act 148 was signed into law, introducing sweeping changes to the way we manage wastes in Vermont. The Act effectively mandates universal recycling and bans all organics (including food scraps and yard wastes) from the landfill by 2020.

Note: *While Act 148 clearly has a dramatic impact on composting, there will be other significant impacts to the food system, including reduction of food waste, food recovery, farm animal feeding, and energy generation. A discussion of the broader impacts to the NEK's food system is addressed in Chapter 4: Food System Policy.*

Act 148 has a phased-in schedule for implementation. For example:

- In July 2015, statewide unit-based pricing for residential waste took effect. Also known as “pay-as-you-throw”, this provision establishes a cost incentive for households to compost. In that same year, food scraps (i.e. inedible fragments of discarded or leftover food, such as apple cores) began to be diverted from landfills. Generators producing a ton of scraps per week or more were required to divert materials to any certified facility within 20 miles.
- As of July 1, 2016, food scrap generators who produce a half-ton per week are required to divert materials to a certified facility within 20 miles. Additionally, yard and leaf debris (from businesses and residences) are banned from the landfill.
- By July 2017, food scrap generators of 18 tons per year will be required to divert materials to a certified composting facility within 20 miles. Transfer stations and haulers will be required to offer food scrap collection by this date.
- By July 2020, all food scraps will be banned from the landfill, with no exception for distance of a certified facility.

Meeting the 2020 Challenge

A February 2015 report to the Vermont legislature by the Solid Waste Infrastructure Advisory Committee surmises that the state's existing infrastructure (e.g. composters, on-farm digesters, farm animal feed operations, and food rescue groups) has the potential capacity to meet demand for handling organics. However, nearly \$30 million in infrastructure expansions, upgrades, and investments will be required by 2020 statewide.

As of January 2016, ANR had identified two certified compost facilities in the region: Kingdom View Compost (Tamarlane Farm) in Lyndonville and Wise Worm Compost in Burke. In February, Wise Worm announced that it was closing operations, citing nuisance complaints and regulatory oversight. Farms may accept up to 1,000 cubic yards of *food processing residuals* (i.e. byproducts from food processing) per year. Residuals may be used for composting or as animal feed. On-farm composting of imported food processing residuals and animal mortalities must be sited appropriately to protect water quality. Some residuals, like whey and spent brewer's grain, are being fed to pigs and are covered by the Vermont Commercial Feed Law, administered by VAAFM.



Photo: Fresh Start Community Farm

To date, some of the region’s largest food scrap generators – including those in Jay, Newport City, and Derby — are NOT served by a certified facility within a 20-mile radius. However, two hen-laying operations — Black Dirt Farm in Stannard and Cloud’s Path Farm in Sheffield – are collectively capturing about 11 tons of food scraps per week for feeding their hens. Black Dirt Farm also provides commercial food scrap hauling for at least nine communities in the NEK, as well as the Jay Peak Resort. Black Dirt has capacity to service additional large scrap generators.

The closing of Wise Worm highlights a critical challenge for the region. Neighbors of certified facilities may be concerned about aesthetic impacts, odors, noise, and traffic. Yet given the critical need for composting facilities by 2020, it is important for municipalities to understand the regulatory backdrop to composting and develop acceptable guidelines for accommodating these uses. Table 3.9 provides a summary of the regulatory jurisdictions for composting operations. Backyard home composting and on-farm composting of on-farm wastes are exempt from local zoning regulation. The latter, however, falls under the jurisdiction of VAAFM as a required agricultural practice. ANR’s Solid Waste Management Program grants three types of composting facility certifications: Registration Certificate (small composter); Categorical Certificate (medium composter); and Full Certificate (large composter). Medium- and large-scale composters also may be subject to Act 250 permitting and require notifying neighboring properties of the intent to pursue certification. The only large-scale composter accepting food scraps in the state is Green Mountain Compost in Williston. Kingdom View is considered a small composter, as was Wise Worm. All three ANR certification classes are subject to limited local regulation, although those regulations may not have the effect of prohibiting the use outright.

Exempt	Small	Medium	Large
No local regulation	ANR Certification Subject to local regulation		
Composting <100 cy/yr Subject to VAAFM (RAPs): On farm-compost that is made with farm wastes, manures, bulking agents, and up to 1,000 cy/yr food processing residuals	Compost area less than 4 acres (not including finished compost or leachate storage areas) Manage up to 5,000 cy/yr total organics, including Up to 2,000 cy/yr food scraps No animal mortalities, butcher waste, or offal	Compost area less than 10 acres Manage less than 40,000 cy/yr total organics, including Up to 5,000 cy/yr of food scraps Up to 10 tons/ month of animals, butcher waste, or offal	Compost area more than 10 acres Manage more than 40,000 cy/yr total organics Or More than 5,000 cy/yr food scraps Or More than 10 tons/ month animals, butcher waste, or offal

Table 3.9: Regulatory Jurisdiction of Composting Operations. Source: Vermont Farm to Plate, Sustaining Agriculture Module 4



Photo: Black Dirt Farm

Home Composting

Although commercial haulers are not required to accommodate food scraps until 2017, there are three haulers already serving the region. Residents may opt to avoid a curbside hauling fee by taking their scraps to a collection site (see Table 3.10), or they may start composting at home, which may in turn require education and outreach.

Town	Tons	Town	Tons
Albany School	2.7	Irasburg School	1.43
Brighton School*	1.03	Jay School	40.02
Brownington	3.98	Lyndon*	191.43
Concord School*	1.85	Newark	7.72
Derby*	10.35	Peacham School	2.0
Danville School*	36.14	Ryegate*	2.61
Glover	2.33	Sheffield School	11.7
Greensboro	25.09	Stannard	1.14
Hardwick	n/a	Waterford School	3.22

Table 3.10: Residential Food Scrap Collection Sites, 2015

Source: NEK Waste Management District, Central Vermont Waste Management District (Hardwick); *Denotes collections facilities for leaf and yard wastes, totals collected regionally are not available. Food scraps are also collected at transfer stations in East Haven, Westmore, and Wheelock, as well as Black Dirt Farm.



Photo: Black Dirt Farm



Photo: Black Dirt Farm

Partners and Resources

Solid Waste Management Districts/Solid Waste Implementation Plans: Strategies for meeting the 2020 challenge are documented in the region’s solid waste implementation plans (SWIP). Vermont law requires all municipalities to develop a SWIP. Most of the towns in the NEK are members of the NEK Waste Management District, which maintains a SWIP for all its 49 member communities. Walden and Hardwick are part of the Central Vermont Solid Waste Management District, while Craftsbury is a member of the Lamoille Regional Solid Waste Management District. The remaining towns have their own SWIPs and are not members of any waste management district.

Compost Association of Vermont (CAV): The non-profit promotes composting as a vital link between soil health and sustainable agriculture and communities. CAV’s public outreach, advocacy, and educational programming promotes the production and use of compost products.

Master Composting: As a Certified Master Composter, volunteers can become trained in the basic concepts of backyard composting in order to participate in community outreach and education, mostly through schools and community gardens. The certification program is very similar to the Master Gardener program. Participants complete the Vermont Master Composter Course through the University of Vermont Extension then complete 20 hours of approved community outreach over a two-year period.



Selected Statistical Updates from 2011: Regional Food System Assets

TARGET	MEASUREMENT	UPDATE
By 2013, the percent of farms that market through CSAs will increase by 50%.	Percent of farms in the NEK marketing through CSAs, Ag Census	The Census reports that 2.79% of NEK farms offer CSAs, up from only 0.87% in 2007. Several new CSAs have become available since the 2012 Census, so the actual percentage is likely higher.
By 2017, the percent of farms with value-added commodities will double from 5% (2007 level) to 10%.	Percent of farms selling value-added commodities. Ag Census	Census data already indicate the region is close to reaching this target, 13.2% in 2012, up from just 7.1%.
The total number of food manufacturing establishments in the NEK will increase by 5% per year.	Measure: Number of jobs in food manufacturing establishments, Bureau of Labor Statistics	The region hasn’t seen an increase in the number of establishments in the food manufacturing sector (NAICS 311) or beverage sector (NAICS 312) in the past five years. However, the total number of establishments in the two sectors has increased by more than 40% since 2001.
The Vermont Food Venture Center will serve at least 10 clients from the NEK annually	NEK-based clients served, Vermont Food Venture Center	Since the VFVC has opened, it has worked with farmers and food businesses on various capacities. NEK based clients include Snug Valley in Hardwick; Sawmill Brook Farm and Wood’s Edge Farm in Greensboro; Burke Mountain Confectionery, Riverside Farm in Hardwick, Peaselee’s Potatoes in Guildhall, Badger Brook Meats in Danville, and Heartwood Farm in Albany.
By 2015, the number of agricultural acres protected by the Vermont Land Trust in the NEK will increase by 10%.	Areas protected, Vermont Land Trust	In 2011, the Vermont Land Trust had conserved 22,881 acres of land on 106 farms. As of 2016, there are 31,925 acres of land on 150 farms, representing an increase of nearly 40%.
Number of farms associated with Green Mountain Farm Direct (or any newly emerged food hub distribution models) will increase	Measure: Number of farms offering product through Green Mountain Farm Direct	In FY2015, Green Mountain Farm Direct reported more than \$350,000 in gross sales from 45 producers statewide to 96 customers, representing an increase of more than 2300% from 2011, when gross sales were \$14,544 from 20 producers.





Chapter 4

Cross-Cutting Issues

There are certain issues that do not fit neatly into any one element of the soil-to-soil food system model explored in Chapter 3. This plan has identified five critical “cross-cutting” issues that affect multiple elements in the NEK’s food system:

- Policy and Regulation
- The Environment
- Food Security and Food Justice
- Education and Workforce Development
- Financing and Technical Support

Policy and Regulation

From food safety to environmental regulation to workers’ compensation, there are many policies that can alter, support, or even hinder the local food system. It is essential for stakeholders to support a balanced regulatory environment by offering input on proposed legislation, facilitating education in support of new regulation, and, if necessary, advocating for change.

Three examples of regulation illustrate the potential impacts on food system development:

- Zoning
- Vermont’s Universal Recycling Law (Act 148)
- FDA Food Safety Modernization Act (FSMA)

This selection is by no means exclusive. For example, Act 64 also has significant implications for farmers (and is addressed in the following subchapter on the Environment). Those who wish to navigate the complexities of the regulatory background should look to these excellent resources:

A Legal Guide to the Business of Farming in Vermont: Originally developed in 2006 with funding from Northeast Sustainable Agriculture Research and Education and the USDA Risk Management Agency, this guide addresses a range of topics, including the legal structure of the farm business, farmland tenure and leasing, and farm labor regulation. Periodic updates will be published as funding is available: <http://www.uvm.edu/farmtransfer/?Page=legalguide.html>



Farm to Plate Strategic Plan: Provides a comprehensive overview of Vermont’s regulatory framework http://www.vtfarmtoplate.com/assets/plan_sections/files/4.7_Food%20System%20Regulation_MAY%202013.pdf

Food System Legislative Tracker: Vermont Farm to Plate maintains an annual summary of bills passed each year starting in 2012. <http://www.vtfarmtoplate.com/getting-to-2020/23-balanced-regulations>

Zoning

Vermont has some of the strongest right-to-farm provisions in New England, and statute largely exempts most traditional forms of farming from zoning. This exemption includes all practices that fall under the jurisdiction of the Vermont Agency of Agriculture Food and Markets (VAAFAM), including the construction of “farm structures,” which can be: a building, enclosure, or fence for: (1) housing livestock; (2) raising horticultural or agronomic plants; or (3) carrying out other practices associated with agricultural or farming practices. The third category is fairly expansive and incorporates all of the practices included in the legal definition of “farming” under Vermont statute. (VLS, 2012)

Despite this exemption, towns with zoning may fail to accommodate agricultural enterprises such as:

- Agritourism, such as farm stays, on-farm cafes, or corn mazes
- On-farm processing, such as micro-brewing and cheese making
- On-farm retail, where more than 50% of an agricultural product is produced off the farm

During the 2015-2016 legislative session, House Bill 779 proposed to increase opportunities for on-farm enterprises by establishing statewide “allowable” uses, such as storage, preparation, processing, or sale of a raw agricultural commodity or value-added agricultural product not principally produced on the farm; or an agricultural accessory use on a farm. The bill did not make it out of committee.

Raising backyard chickens is another practice that may be hindered by local regulations. Newport City, for example, requires residents to have at least three acres of land to raise a chicken, thereby prohibiting most residents from owning one. The planning commission has considered changes to the regulation.

Municipalities with zoning may need technical assistance to tailor their zoning regulations to encourage agricultural enterprises that are compatible with the community. VAAFAM has worked with Northeast Organic Farming Association-VT (NOFA-VT), the Vermont Natural Resources Council, and Shelburne Farms to produce training materials on this endeavor. Vermont Law School also has published a guide on this issue.

Vermont’s Universal Recycling Law (Act 148)

Vermont’s Universal Recycling Law will certainly advance composting (addressed in Chapter 3), but it will also have a far-reaching effect on the way we purchase, prepare, and consume food. The law reflects a hierarchy of actions businesses and residents can take to divert food from the waste stream to provide the greatest benefit to our environment, society, and economy. All efforts represent broad cultural changes that will require ongoing outreach and education. (Figure 4.1)



While there has been a concerted effort to divert food scraps from the landfill, perfectly edible food often gets discarded as well. Food waste can occur at any point along the supply chain: from produce left to rot in the fields, from expired foods discarded by the retailer, to leftovers scraped from dinner plates into the garbage bin. The Food Waste Reduction Alliance estimates that anywhere from 25% to 40% of the food that is grown, processed, and transported in our country will never be consumed. Instead, it ends up in the landfill, where, according to the EPA, it produces methane that is 21 times more potent than CO₂ as a greenhouse gas.

Focusing solely on composting food scraps therefore misses the big picture. We need to waste less food by changing the way we source, distribute, and use it. Buying in smaller quantities, planning meals, and carefully disregarding expiration dates will help private households save money and prevent waste. In the institutional environment, where food waste can be as high as 10%, integrated software systems that weigh and track food usage and waste, as well as performance-based contracts, have been found to bring wastes to as low as 3% (UVM, 2014).

Since food can be damaged or spoiled during transportation, sourcing local food can reduce time spent in transit and reduce food waste as well. “Ugly” fruits and vegetables that do not meet retailers’ high cosmetic standards are often needlessly discarded. Instead, retailers can redirect product to food insecure populations, sell at a discount, add value as prepared takeout food, or simply work with consumers to lower cosmetic standards for otherwise perfectly healthy food.

Gleaning is the act of harvesting excess or unmarketable produce from a farm. Salvation Farms, a statewide nonprofit committed to gleaning Vermont’s agricultural surplus, estimates that 14.3 million pounds of Vermont-grown vegetables and berries are lost each year because produce is either left in the field or goes unsold. Clearly, there are opportunities to minimize food loss by redirecting locally grown fruits and vegetables to people’s plates.

The Vermont Foodbank runs a statewide program that uses volunteers to glean produce from Vermont farms. Food is then distributed through the Foodbank’s network. While several thousand pounds of produce are gleaned each year from NEK farms, much of this produce is not distributed in the NEK. The region needs a comprehensive gleaning program, either through the expansion of the Vermont Foodbank program, the development of a new region-wide program, or the integration and coordination of new and existing community-based efforts. Fresh Start Community Farm in Newport has indicated an interest in establishing a dedicated gleaning operation.

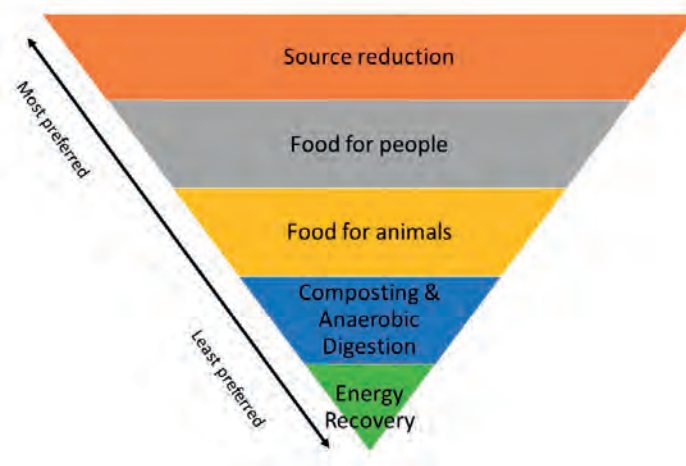


Figure 4.1: Vermont’s Hierarchy for Food Wastes
Source: Vermont Agency of Natural Resource, Dept. of Environmental Conservation



Photo: Fresh Start Community Farm

Food recovery includes gleaning, but it also extends to recapturing food from non-farms, including perishable and prepared foods rescued from wholesale and retail food outlets, restaurants, and hotels, as well as non-perishables collected from manufacturers, wholesalers and distributors. The region currently lacks infrastructure to receive and process rescued food. Willing Hands in White River Junction has developed an efficient weekly pickup from more than 20 donors and distributes the food to 50 food charity organizations. The NEK does not currently have such a system in place, but food security groups are looking to implement a similar model.

The Food Safety Modernization Act (FSMA)

FSMA was signed into law in 2011, giving the Food & Drug Administration (FDA) broad authority over several types of food production, processing, and distribution. Considered the most sweeping food safety regulation since 1938, FSMA includes three rules which are of particular concern to Vermont growers and producers. There are rolling implementation dates for these rules, based on the size of the farm or business.

The Produce Safety Rule: Applies to the production of agricultural products that are typically consumed raw, such as lettuce, spinach, and strawberries, and establishes practices for protecting them from contamination.

The Feed Rule: Applies to manufacturers of domestic and imported animal food, including pet food, animal feed, and raw materials and ingredients.

The Preventive Controls Rule: Addresses facilities that process food for human consumption, including value-added production (such as cheese) on farms and at food hubs.

The Preventive Controls Rule contained a provision that reduced the level of non-toxigenic e coli in raw milk cheese to a ten-thousandth of the previously allowed level, despite testimony from UVM's Department of Nutrition and Food Sciences that the e coli was not harmful. Cheesemakers contended that this provision of FSMA would effectively put them out of business. The Cellars at Jasper Hill launched an aggressive outreach campaign and enlisted the support of Vermont's congressional delegation, who signed a letter on the cheesemakers' behalf. The hard work eventually paid off: After the FDA deputy administrator traveled to Vermont to visit with the cheesemakers, the FDA waived implementation of the regulation.



Photo: Fresh Start Community Farm

The Environment

Energy Use

Energy use affects the entire food system, which in turn impacts environmental outcomes. In addition to agricultural practices, there are other important ways to conserve energy in food manufacturing, distribution, transport, retail, consumption, and waste management. This reduction in energy use can be accomplished at the organization level (energy efficiency policies in the workplace, energy efficiency measures for manufacturing facilities, etc.) and the individual/household level (e.g., home composting, buying food products with less packaging, etc.). Further, just by purchasing local food or growing one's own, the energy use and the overall carbon footprint from transport is significantly lower.

The Nexus of Soil Health and Water Quality

Soil health is inextricably linked to water quality. Soil erosion and fertilizer runoff are common contributors to water pollution. While compacted soils encourage runoff, healthy soils that are rich in organic materials retain moisture and nutrients.

Watersheds and runoff do not adhere to geopolitical boundaries. It is therefore essential to consider how our soil management practices impact water quality well beyond the region's borders. Agricultural runoff from our region ultimately delivers phosphorus to Lake Champlain and Lake Memphremagog and nitrogen to Long Island Sound.

Because Lake Champlain has the highest levels of phosphorus in Vermont, much of the funding for water quality improvement programs has gone to that watershed. Programs in the NEK to mitigate farm-related water pollution are focused on Lake Memphremagog, particularly in Newport, which also has had significant phosphorus problems from manure runoff.

Elevated nitrogen loading in Long Island Sound can lead to lower levels of dissolved oxygen, which in turn can endanger natural habitat and aquatic species. Research suggests that about 21% of Vermont's nitrogen export into Long Island Sound originates from agricultural land. (Moore et al, 2004) One source of this nitrogen is from the Connecticut River watershed, including the Passumpsic and upper Connecticut River basin.



Photo: Butterfield Brothers

Basin	Water	Status	Pollutant
6	Mud Creek (Troy Town Line to Canada)	Stressed	Nutrients, turbidity
14	Ticklenaked Pond (Ryegate)	Impaired with an EPA approved TMDL	Phosphorus
17	Memphremagog	Impaired	Phosphorus
17	Stearns Brook Tributary (Holland)	Impaired, Stressed	Nutrients (impaired), Sediment (stressed)
15	Millers Run	Stressed	Sediment
15	Chesterfield Valley/Moose River	Stressed (improvements noted from Best Management Practices)	E Coli
17	Johns River	Stressed	Nitrogen

Table 4.1: Impaired or Stressed Water Bodies Receiving Runoff from the NEK

Source: Vermont Agency of Natural Resources, 2014 lists of impaired and stressed waters

It will take an array of best practices to mitigate the loss of precious topsoil and stem soil erosion, which washes nutrients into rivers and streams and lakes.

Cover cropping helps to prevent soil erosion and protect water quality by reducing nutrient leaching. The practice establishes a seasonal cover on annual cropland and consists of close growing grasses, legumes, forbs, or other herbaceous plants to provide effective soil coverage. The VAAFM Farm Agronomic Practices (FAP) Program provides funding to help Vermont farms implement cover cropping. A follow-up survey with participating farms is needed to determine if these practices remain in place when their eligibility for funding ceases.

Conservation tillage refers to a variety of practices to manage crop and plant residue on the soil surface and limit soil disturbance to only practices necessary to place nutrients and plant crops. One of these practices, no-till farming, was highlighted at the 2015 Vermont Farm to Plate Gathering. The technique has been shown to dramatically reduce runoff by increasing the amount of water that filtrates into the soil and increasing organic matter retention and cycling of nutrients in the soil. A few farms in our region have taken on this practice, including Peace of Earth Farm in Albany and Chaput Family Farms in North Troy.

Grass farming, grazing, and pasture raised livestock is becoming increasingly popular with farmers and consumers. These methods of raising livestock consume considerably fewer energy inputs, and instead acquire inputs from the sun in the form of grass. The Vermont Grass Farmers' Association (VGFA) is a membership-based 501(c)(3) that works with farmers to generate wealth from grass-based farming, provide leadership on grazing issues, and support the Center for Sustainable Agriculture's Pasture Program. Numerous studies cite the benefits of rotational grazing: improved herd health, reduced soil erosion, and improved water quality. Studies have also shown that it can be as profitable (or even more profitable) than conventional milk production, due to reduced variable costs in feed, labor, fuel, and veterinary expenses.

According to the 2012 Ag Census, the number of Vermont farms practicing rotational or management-intensive grazing increased by 3% from 2007. Despite the statewide increase, the NEK saw a decrease in this practice, suggesting that more outreach, advocacy, and technical support is needed.

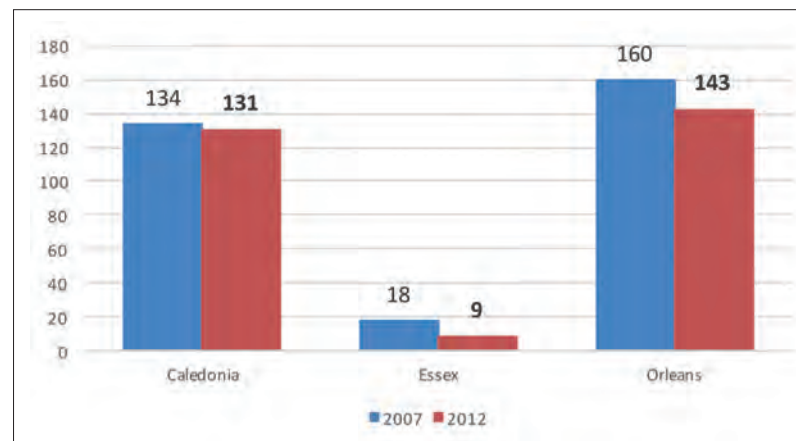


Figure 4.2: Number of Farms Practicing Rotational- or Management-Intensive Grazing



	# Farms	Total Acres	Dollars Received
Caledonia	34	3,279.3	\$ 91,525
Orleans	28	3,649.3	\$ 96,815
Total	62	6,928.6	\$ 188,340

Table 4.2: FAP Support to NEK Farms, FY2011-FY2016

Source: VAAFM

Vermont's Clean Water Act (Act 64)

Vermont's Clean Water Act (Act 64) is the most comprehensive water quality legislation in Vermont's history. It creates new regulations and devotes more resources to reduce pollution from roads, impervious surfaces, and farms. New Required Agricultural Practices (RAPs) will replace Accepted Agricultural Practices (AAPs). Significant changes to law include required certification of small farm operations by 2017. (The AAPs currently do not define "small farms.") Other changes include required certification for custom manure applicators (a person who applies manure for compensation) and changes to manure spreading setbacks.

As Act 64 is implemented, organizations involved in basin planning will continue to monitor the impacts to impaired and stressed watersheds. How farms will be affected by the legislation remains to be seen. Technical assistance and outreach will obviously be critical in helping them meet the new RAPs. There are three Natural Resource Conservation Districts (NRCs) in the NEK, St. Johnsbury (Caledonia), Brunswick (Essex), and Newport (Orleans). The NRCs work to improve the management of natural resources through education and technical assistance to farmers. They partner closely with Vermont Association of Conservation Districts, UVM Extension, and USDA Natural Resource Conservation Service (NRCS) to develop nutrient management plans and link farmers with additional technical resources. NRCS offers a variety of technical and financial assistance programs to help farmers plan and implement conservation practices that improve environmental impacts.

Monitoring Soil Health

The NRCS conducts soil surveys on *types* of soil. All three counties have been mapped for Prime Agricultural Soils as well as soils of Statewide Importance. However, the NEK lacks regional data for monitoring soil *health*. VAAFM is currently piloting the Vermont Environmental Stewardship Program. The five-year program is available to up to 10 farms from across the state, and participants are selected through a competitive ranking process. One of the goals of this program is to improve soil health. Participants, as part of the pilot, will receive Cornell soil health tests for their farm fields. Outside of this program, farm operators may employ specific management practices on their farms to foster soil health and access the same tests being used by VAAFM in its program.

Organic Farming and Sustainable Agriculture

Organic farming techniques include crop rotation, compost, and biological pest control to maintain soil productivity and control pests. The use of manufactured fertilizers, pesticides, hormones, livestock antibiotics, food additives, and genetically modified organisms is restricted.

NOFA-VT, the oldest organic farming association in the U.S., currently certifies 589 farms and processors in Vermont to the USDA National Organic Program Standards (with 91 located in the NEK). Farms with more than \$5,000 in gross sales of organic product must be certified. Farms with gross sales of \$5,000 or less do not require certification but must meet other NOP requirements, such as using composts approved for use on organic farms. Besides certification, the member-based organization works to increase the acreage of verified organic land in the state while also increasing the access of local organic food to all Vermonters. NOFA-VT also offers a low-interest revolving loan fund for farmers transitioning to organic production.



Photo: Getty/Stock

Ag Census data do not necessarily line up with NOFA-VT information, and changes to Census data collection make it difficult to measure regional changes to total acres in production. Nevertheless Ag Census data indicate an increase in the number of certified organic operations in the region since 2007. The reason for the decrease in exempt organic farms is unclear, but it is possible that some farms saw an increase in revenue, thereby requiring certification.

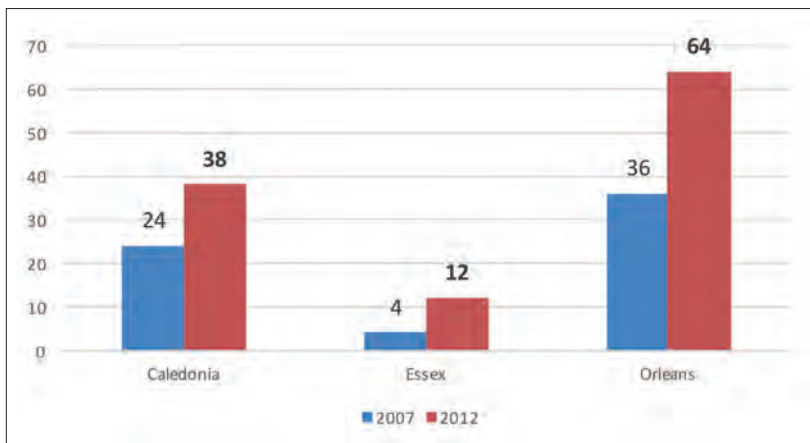


Figure 4.3: Certified Organic Farms, 2007-2012

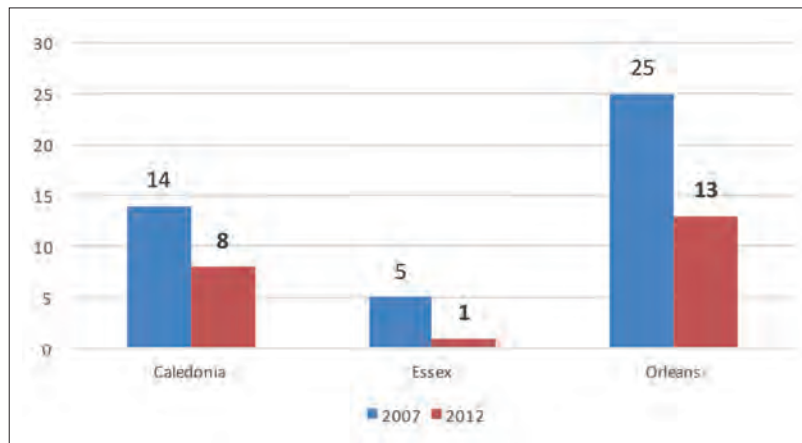


Figure 4.4: Farms Exempt from Certification, 2007-2012

Herbicides and Pesticides

Persistent herbicides are used to kill weeds that compete with grain and other crops. Unfortunately, they may remain present in hay, and can even be found in grains and other ingredients that go into commercial animal feeds. Although animals that eat treated feed are unharmed, the herbicide remains present in the manure, and even survives the heating and composting process. In 2012, compost made from herbicide-contaminated manure caused hundreds of thousands of dollars in crop damage throughout the state. VAAFM responded to this situation by regulating the use of Aminopyralid and Clopyralid products with pasture and hay sites as a “Class A State Restricted Use,” which means that applicators have to be licensed and certified. Ongoing outreach and education to horse and livestock owners will be needed to ensure that herbicides are used responsibly and with full accountability from application to manure disposal.

Commercial crop seeds are often treated with a class of pesticides known as neonicotinoids, which have been linked to bee die-offs in numerous studies. In 2016, Act 99 gave VAAFM the authority to regulate pesticide-treated articles. The Act gives additional responsibility to the Pesticide Advisory Council to recommend programs and policies for the regulation of a treated article when it is determined to have a hazardous or long-term deleterious effect on the environment, or presents a risk to the human health, or is dangerous. The Act authorizes VAAFM to regulate treated articles based on recommendations from the Council.



Photo: Getty/Stock

Participants at the NEK Food System Summit voiced strong support for reducing the overall use of herbicides and pesticides in agriculture. There are some hopeful signs: Latest Ag Census data does indicate that chemical purchase and use may be declining in the region. Nevertheless, it is critical that regional food system planning efforts broaden awareness by supporting research from the UVM Center for Sustainable Agriculture and other advocates for sustainable farming and food production practices.

Food Security and Food Justice

Ensuring a healthy, sustainable food system that provides equitable and affordable access to its residents is arguably the biggest challenge facing the NEK, and the tensions between affordability and buying locally is no more evident than in the complex challenges of food security and justice. Numerous participants in the outreach process cited concerns about balancing the need for producers and growers to make a profit with the needs of those whose food choices are limited by entrenched rural poverty. Many stressed education and outreach on the benefits of eating local to improve health outcomes of the region's food insecure. Others countered that affordability is the real issue, and when faced with the challenges of low wages and limited transportation and housing options, many residents are simply forced to make unhealthy compromises. Both sides may be right. Ultimately stakeholders from the public and private sectors will need to work together to achieve a greater understanding of the food environment to eliminate the barriers that limits our residents' food choices.

Food Insecurity in the NEK

The US Department of Agriculture (USDA) defines food insecurity as the lack of access, at times, to enough food for an active, healthy lifestyle for all household members and limited, or the uncertain, availability of nutritiously adequate foods. Quantifying it, however, poses a statistical challenge. Poverty rates alone are inadequate because data have shown that more than half of those struggling with hunger actually have incomes above the federal poverty level and vice versa. Feeding America has developed a methodology that analyzes the relationship between food insecurity and indicators of food insecurity and child food insecurity (poverty, unemployment, median income, etc.) at the state level. Essex and Orleans are the two most food insecure counties in the state respectively, and Caledonia County is tied with Bennington County for third.

According to Hunger Free Vermont, the childhood food insecurity rate statewide is about one in every five. This is determined by the percentage of school-age children eligible for Free and Reduced Meals and the percentage of children reported to be food insecure by USDA. Caledonia County is slightly higher than the statewide rate, and Essex and Orleans Counties are among the highest rates in the state.

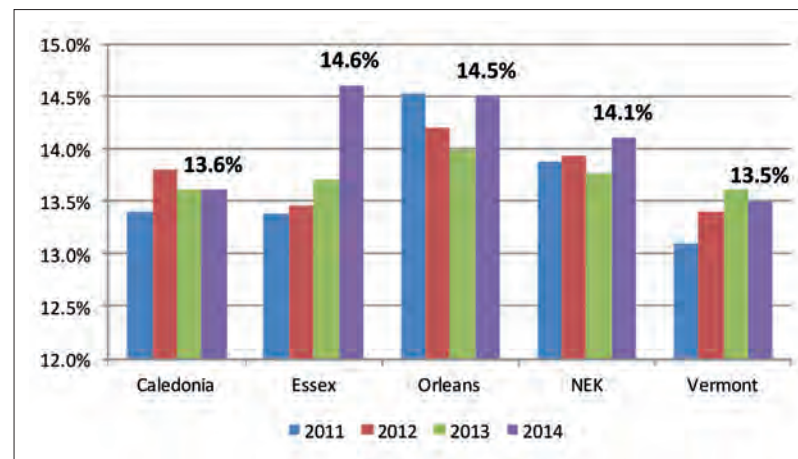


Figure 4.5: Overall Food Insecurity, 2011-2014

Source: Source: Feeding America, Map the Meal Gap, <http://www.feedingamerica.org/hunger-in-america/our-research>



CASE STUDY: FRESH START COMMUNITY FARM AND CORNUCOPIA

Two programs based in Newport address food justice and food access: Fresh Start Community Farm uses community gardens to grow community, mentoring, and food, while Cornucopia provides women with on-the-job training in the culinary arts. Both programs are quietly building a healthier food system utilizing innovative and creative means to bring justice to food access.

The Fresh Start Community Farm (the Farm) story is a recipe of magnificent proportions: Start with a group of committed citizens, add in a dash of vacant land, a dollop of energy, a pinch of seed funding, and a splash of faith. Mix together and let sit. Five years later, reap the rewards of community strength and power.

The Farm actually consists of three community gardens in Newport and two in Derby. Its gardens are lawns, lots, public parks, and other reclaimed green spaces. Its gardeners are both the oldest and the newest generations of growers, intergenerational teams of neighbors who strive “to cultivate a baseline of food access in our city through gardens that create social, cultural, and economic hubs within the communities they serve.”

The initial idea to re-purpose an underutilized plot amidst single- and multi-family houses faced pushback by some community members. As the volunteer-based effort grew legs and the plot was transformed, skeptics who thought the neighborhood was too dangerous came on board.

The Farm’s original funding came from a Municipal Planning Grant, which are state funds awarded to municipalities for planning activities. Newport’s grant was for community revitalization around the Summer Street area, a

neighborhood adjacent to the Main Street. Out of the revitalization planning work was interest in starting a garden that met community needs for improved safety, a space for kids to play, and a place that seniors could enjoy. Jennifer Bernier and Jen Leithead, two members of the Leadership Team, taught themselves how to operate a community garden (and how to garden!) by utilizing available resources.

Community gardens are any plot of land gardened by two or more people. Their benefits range from access to fresh produce to exercise to crime prevention. All community gardens have a unique structure. The Farm has a Leadership Team consisting of five people. Three Team members, Bernier, Leithead, and Paul Dreher (who wrote the original grant) have been a part since the beginning. Two members started as novice gardeners.

Working volunteer gardeners receive weekly shares of vegetables and fruit as their payment, tracking their time at each site, while on-site managers coordinate daily activities. Volunteers can work at any of the sites so long as they record their time. Vegetables are picked, washed, and distributed among volunteers weekly, with extra produce going to local food shelves, churches, schools, and senior meal sites – including Cornucopia. In 2015, about 40 – 50 people gardened throughout the year.

After the Leadership Team – and the community – saw the success of the Summer Street garden (the first), the Farm slowly expanded. Now, the multiple gardens produce about 6,000 pounds of food annually, all going to members of the Newport community. Produce includes traditional staples – tomatoes, peas,



CASE STUDY: FRESH START COMMUNITY FARM AND CORNUCOPIA, Continued

string beans, and zucchini – as well as unusual varieties of tomatoes, hot peppers, purple cauliflower and purple peas, and anything else they can get to grow!

In 2013, the Farm started the Adopt-a-Grandparent program, a partnership with an adult day care center. The program matches the elderly with neighborhood kids, providing opportunities to learn, garden, and share ageless experience.

Cornucopia is a program run by Umbrella NEK, a non-profit community organization dedicated to improving the lives of women surviving domestic abuse and in transition from unsafe and unstable living conditions.

Job training, which is central to Cornucopia's mission, is much more than teaching someone a specific skill. For Cornucopia participants, it is about learning cooking skills, what ingredients make healthy recipes, and about how to use whole foods. Cornucopia's job training also includes leadership, customer service, confidence building, and financial management.

The program has a full-time manager. It runs three times a year in 17-week increments. During the first four weeks, participants learn job readiness essentials such as writing a resume, interview skills, and the role of the tourism industry in the NEK's economy. For the next 13-weeks, participants are in the kitchen. Under the guidance of a professional chef, women learn as they prepare meals for area senior citizens.

The participants provide senior citizens with access to healthy food. Cornucopia cooks for the Meals on Wheels program, which delivers food to elderly residents in the Newport area. On Fridays, Cornucopia runs a community lunch that also serves mostly senior citizens. The two programs

give Cornucopia participants experience in the "back of the house" and the "front of the house": kitchen essentials such as knife skills, cooking and baking, safety, and sanitation, as well as hospitality skills greeting, serving, and working the lunch floor.

Five people can participate per session, with about a 75% graduation rate. Many women go on to further education programs, either obtaining their GED, enrolling in the Community College of Vermont, or other tertiary education programs. Some graduates go directly into the workforce, in the food business or in another field. As the NEK's service sector continues to grow, filling vacant positions with women who may not otherwise have had the opportunity to apply is a win-win situation for all.

Cornucopia contributes to the food system in another way: It is a member of the Vermont Fresh Network, a statewide partnership of farmers, food producers, and chefs to improve the relationship between producers and consumers to eat more locally grown and produced food. Being a member of the Network means committing to purchasing from at least four Vermont farmers year-round, purchasing a minimum 15% of annual food purchases from Vermont grown or produced food, and keeping a menu that contains at least three of the six USDA food groups from Vermont products. Cornucopia uses grains and flour, dairy, fruit, meat and protein, and vegetables from Vermont producers.

Challenges

The biggest challenge for both programs is funding. Local stores like the Pick and Shovel offer discounts and High Mowing Seeds donates many of the seed packets. While the Farm does not need much funding, they operate on a very low budget. Bernier and Leithead are volunteers; they receive payment in produce, but they both have families and work outside of the gardens. Materials, tools, and equipment are largely donated or reclaimed. Bernier uses her personal vehicle to haul, move, and transport supplies.

Cornucopia relies on a basket of diverse funding sources, much of which comes from the Economic Services Division of the Vermont Agency of Human Services. The Vermont Department of Labor helps pay the stipends for trainees.

The Vermont Council on Aging pays for the food for Meals on Wheels, but the number of meals prepared is determined by the cost of food and the food budget. A bigger budget would mean more food for seniors. Some years there is less money for food, which means fewer meals are prepared for residents. The Friday lunches bring in some funds but payment is by donation. If someone comes in who is unable to donate, they are still fed.

The Farm's limited budget can be challenging to ensure that enough volunteers are able to maintain the gardens. Some outreach beyond word-of-mouth and Facebook is desired. The ability to expand the gardens is limited by the number of volunteers to maintain and coordinate new gardens.

Continued on next page

CASE STUDY: FRESH START COMMUNITY FARM AND CORNUCOPIA, Continued

Other challenges are in the nature of the work. For the Farm, having guidelines and rules with clear-cut consequences for behavior not conducive to the well-being of the garden is important. Volunteers are the core of the Farm's successes. Leaders find that diplomacy is key, so responding to an unworkable idea in a way that keeps the volunteer interested and involved is important.

The women who participate in Cornucopia have suffered trauma or abuse and many have never been financially independent. Program Manager Vianne Masse tries to build in conflict resolution and communication skills to the training program, but day-to-day it can be very difficult.

Masse sees the reality of hunger every day, in both her program participants and in the elderly who rely on Cornucopia for meals. For her, it is a struggle to reconcile the wealth of some with the poverty of many. Many of the women she works with find eating a piece of fruit a luxury, something that they know is important to eat but is out of their normal budget. One program participant spoke of her own food budget. She and her son consume about \$300 worth of food a month but her EBT benefits are \$123. She is working and attending Community College of Vermont but still she puts feeding her son before feeding herself.

It is not that the participants do not understand the benefits of healthy eating. They simply cannot afford certain food items. Masse challenges the assumptions that people who are low-income do not care about eating well. All too often, she sees women of all ages get caught in a spiral effect of poor health due to poor eating habits due to lack of income, which is further fueled by lack of sufficient, affordable

transportation. "Access is not the problem, it's the justice piece we need to work on," said Masse, acknowledging that many area stores and markets have made fresh fruits and vegetables available. The barrier is affordability.

Ability to Replicate

One of the keys to the Farm's success has been its dedicated volunteer base. To assess how replicable this idea is, one must assess the capacity of volunteers, or paid staff, to take on a project of this size. And one must be ready to start small but dream big.

The Farm benefits from workshops, trainings, and a community of support through the Vermont Community Garden Network. Bernier visited other community gardens to see how they function and High Mowing Seeds to learn best growing practices. Initial funding sources included the New England Grassroots Environmental Fund, the AARP, and the local Rotary Club.

The community outreach that was pivotal to the Farm's success is something that members of the Leadership Team now travel the state and country talking about to other communities. Using a door-to-door political campaign-style approach, block parties, music, and other methods, they were able to listen to and connect with community members. Getting the support of the one particular landowner was crucial. It took some convincing that four dump truck loads of dirt would be a higher use of parking space.

The Leadership Team recommends the "tactical urbanism" approach: Just do it! They needed to get the first garden going to build the trust and support of municipal leaders and neighbors, but that garden came as the result of following a list of steps in community dialogue and participation.

Umbrella is already hoping it can replicate what it has done so far with Cornucopia in Newport. Umbrella is in the works of offering a second Cornucopia program in St. Johnsbury. The ability to replicate is largely limited by the ability to access funds.

Many employers throughout the NEK and Vermont recognize gaps in the workforce of job readiness skills. Programs like Cornucopia seek to fill those gaps. Creative partnerships and funding options – Cornucopia is exploring a for-market product to provide a consistent revenue source – are critical to meeting present and future workforce needs.

The stories of Cornucopia and Fresh Start Community Farm are two different approaches to addressing food justice issues in the Newport community. While their approaches are different, they have many similarities. One is challenging the perception that people do not care about accessing good, affordable, healthy food. Both programs highlight issues of hunger and economics in Newport, and both are working to make positive community impacts with socially engaged citizens across the age spectrum, using food as the tool.

See also:

www.umbrellanek.org

<http://discovernewportvt.com/community-farm.html>

www.grassrootsfund.org

www.highmowingseeds.com

www.vcgn.org

www.vermontfresh.net

<http://www.aarp.org/livable-communities/livable-in-action/info-2015/how-to-create-maintain-intergenerational-community-garden.1.html>

Hunger Free Vermont reports that about 11% of Vermont seniors face the threat of hunger. Seniors who are food-insecure are more likely to have type 2 diabetes, suffer from depression, have limited daily activities, and are far less likely to be considered in excellent or good health. The Northeast Kingdom Council on Aging reports high demand for the Meals on Wheels program. There are 17 different sites providing service in the region, and the Council on Aging provides technical service to each. Some of these sites operate congregant meals that are open to everyone, regardless of age. The Council reports that it receives requests for assistance from “young seniors” (age 50-55), and they are unable to assist them because of the programming restrictions of their funding sources.

Supplemental Assistance Programs

The Supplemental Nutrition Assistance Program (SNAP) is the largest federal program in the domestic hunger safety net, accounting for nearly three-quarters of all funding for federal food assistance programs. In Vermont, this program is known as 3SquaresVT and is administered by Vermont Department of Children and Families (DCF).

Enrollment statewide has increased over the past five years from 11.1% in 2009 to as high as 16.4% in 2013. Participation rates have declined since then, but the drop can be attributed to policy changes in the program. Totals from the DCF show that the NEK’s participation rates are among the highest in the state. (Figure 4.6) 3SquaresVT benefits are deposited on EBT (Electronic Benefit Transfer) Cards. EBT cards act as debit cards, bearing the value of food or cash from federal benefit programs. They have taken the place of paper food stamps, which creates a logistical challenge for smaller, local retail outlets and farmers’ markets.

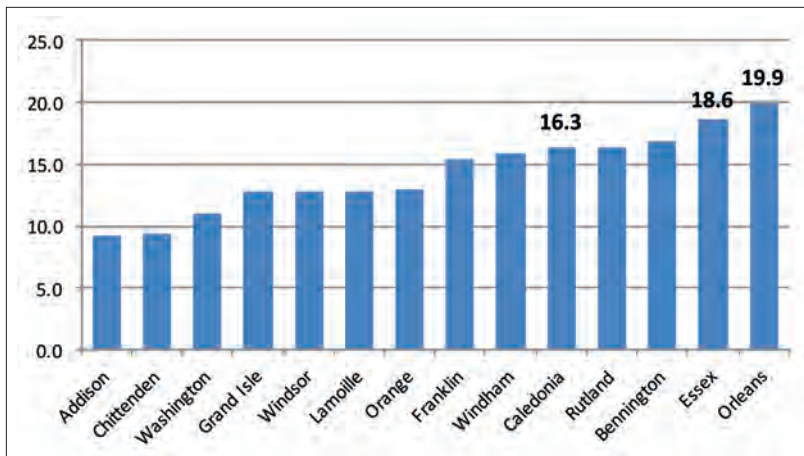


Figure 4.6: SNAP Participation Rate 2015 as a Percentage of the Population. Source: Enrollment totals: Economic Services Division, Dept. of Children and Families, 2015; Population Estimates: U.S. Census Bureau: 2015

	% eligible for F&R Meals (2014-2015)	USDA % of F&R w/Food Insecurity, 2014	% Food Insecure	1 in _Kids
Caledonia	46.11%	47.50%	22%	1 in 5
Essex	65.36%	47.50%	31%	1 in 3
Orleans	65.40%	47.50%	31%	1 in 3
Vermont	42.52%	47.50%	20%	1 in 5

Table 4.3: Food Insecurity Among Children. Source: Hunger Free Vermont



Although access to SNAP authorized stores has improved since 2008, there is still only about one SNAP store for every 1,000 people in Caledonia and Orleans Counties. Essex County falls well below that threshold. Nearly one-third of Essex County residents live more than 10 miles from a store, as do 16% of Orleans County residents. More than 3% of residents region-wide may be particularly vulnerable to food insecurity because they do not have a car. (Table 4.4; Low access is measured in rural areas as being more than 10 miles away.)

	Caledonia	Essex	Orleans
Population estimate 2013	31,121	6,226	27,109
Poverty rate (2010)	16.1	17.2	17
% Population, low access to store, (2010)	6.4%	29.8%	16.0%
% Low income population, low access to store (2010)	2.1%	11.8%	5.5%
% of children and low access to store (2010)	1.4%	5.2%	3.3%
% of seniors and low access to store (2010)	1.1%	6.5%	2.7%
% of households with no car and low access to store (2010)	2.9%	4.5%	3.4%
SNAP authorized stores per 1,000 population (2012)	1.090	0.880	1.690
SNAP authorized stores per 1,000 population (2008)	0.837	0.374	1.409
SNAP redemptions per authorized store, dollars (2012)	\$185,150	\$44,504	\$140,729

Table 4.4: Food Access and Security in the NEK. Source: USDA Food Environment Atlas, 2015

In 2007, SNAP recipients could not use EBT cards at any farmers' markets. NOFA-VT and several partners, including DCF, Hunger Free Vermont, and VAAF, have worked to give SNAP recipients access to fresh and local food while supporting the agricultural economy. A grant program helps subsidize the cost of setting up card readers at farmers' markets (which can cost as much as \$1,200). The SNAP recipient can swipe the debit cards at the farmers' market information booth and receive wooden coins to redeem with market vendors.



Photo: CAE staff

Health and Obesity

Ironically, populations that are vulnerable to food insecurity are also more likely to be obese. Latest research shows an increase in adult obesity rates in the NEK and a greater disparity from statewide rates. (Figure 4.7) Orleans and Caledonia Counties have the highest adult obesity rates in the state. Essex County is the third highest, tied with Franklin and Rutland Counties.

In 2014, Vermont Foodbank was able to get hunger data from participants visiting Vermont Foodbank partners in Caledonia County, shedding light on the health struggles of the food insecure. Among their findings:

- 54.7% have members in the household with high blood pressure
- 18.8% have diabetes
- 3% report they are in poor health
- 39.4% have unpaid medical bills
- 51.5% are currently receiving SNAP benefits

Participants reported using the following strategies to feed their families:

- 49.7% ate food past the expiration date
- 48.1% grew food in garden
- 33.7% watered down food or drinks
- 57.7% purchased inexpensive, unhealthy food

Food Access Sites in the Northeast Kingdom

Vermont Foodbank, the state's largest hunger relief organization, distributes food to numerous sites throughout the region, including food pantries, meal sites, senior meal sites, and other distribution outlets. United Way's 211 maintains a directory of food access options at www.vermont211.org.

Community dinners are also an important part of the food access delivery system. Fresh prepared food is often sourced locally, and leftovers are boxed up and delivered to those who need them. Meals are typically by donation only. Churches with long-running community meal programs include Craftsbury United, Hardwick United, Danville Congregational UCC, and St. Andrews Episcopal in St. Johnsbury.

Local Food and Fresh Food Access

Fresh produce is often the most expensive part of a grocery budget and is largely inaccessible to food insecure families. While some food shelves may be constrained by limited refrigeration or freezer space, cost is also a major obstacle. A survey of Vermont Foodbank partners in late 2014 found that less than one-third had a monthly budget that allowed them to purchase additional produce. The remainder either had no produce or would have to give up something else to access fresh produce. (Lecesse, 2015) Despite these challenges, fresh local fruits and vegetables are made available to the region's food insecure population in a number of ways:

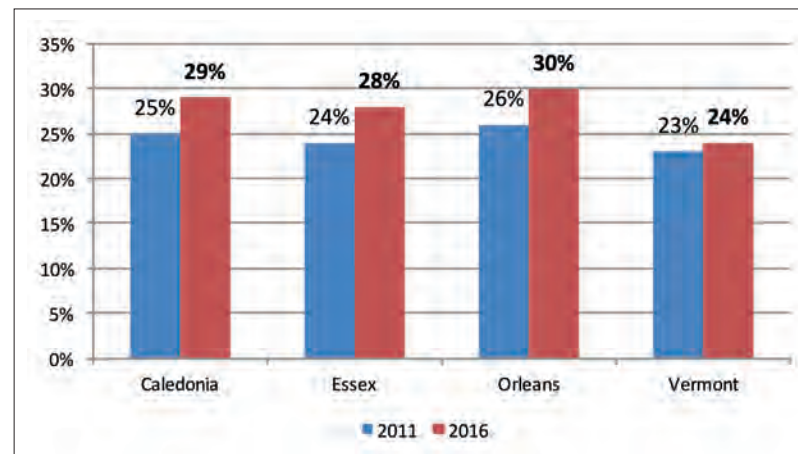


Figure 4.7: Adult Obesity Rates, 2011-2016. Source: Robert Wood Johnson Foundation (County Health Rankings 2016)



- Green Mountain Farm Direct connects more than 40 local producers and growers with more than 100 commercial and institutional customers, senior meal sites, Head Start, afterschool programs, and others.
- Cornucopia, a program of Umbrella NEK (and a Green Mountain Farm Direct customer), operates a commercial kitchen and dining room that provides fresh, locally sourced foods in weekly community and senior meals, as well as packed lunches for delivery to seniors.
- The Green Mountain Farm-to-School (GMFTS) Lunchbox Food Truck delivers free, nutritious meals to more than 1,300 children during the summer in areas where at least 50% of students qualify for free and reduced lunches. Operating through the USDA Child Nutrition Program, the Lunchbox is able to source more than 60% of its ingredients locally. Adults may purchase meals as well, which helps to defray the cost of operations.
- The GMFTS Fresh Fruit and Vegetable Coupon Pilot Program allows Essex and Orleans SNAP recipients to purchase up to \$75 of fresh fruits and vegetables from five NEK grocers.
- Faith in Action (FIA) distributes food to sites in Lyndonville, Barton, Island Pond, Gilman, Westfield, and Troy twice a month on a rotating basis and has been able to incorporate fresh and local food into distribution. In the past, FIA has operated gardens in Barnet, St. Johnsbury, Lyndon, Westmore, and Danville and has gleaned from a farm in Barnet.

Vermont Fresh, a program of the Vermont Foodbank, aims to increase access and improve availability of fruits and vegetables at community food shelves and reinforce core nutrition messages with cooking demos, taste tests, and promotional displays. Vermont Fresh currently operates in the Hardwick Area Food Pantry and Northeast Kingdom Community Action food pantry in Newport.

The Potential Role of Minimal Processing

Minimal processing, the industrial preparation and packaging of food for consumption at a later date, could fill the need for healthy, local produce in the charitable food system. Minimal or light processing of agricultural surplus diminishes the barriers to cooking fresh produce by making produce easy to prepare and serve. (Lecesse, 2015) Informal interviews among food pantry managers, clients, and congregant meal sites identified ways minimal processing could address barriers to local food consumption:

- Receiving processed and packaged foods increases the likelihood that clients will use it.
- Preparation time is reduced, making it easier for working families to prepare healthy meals.
- Some product can be eaten microwaved or raw, making it more accessible to those with limited access to kitchen facilities.
- Product can be easier to consume by seniors and others with health conditions that make it difficult to prepare and chop raw vegetables.
- Product will be more consistent, making it easier to incorporate into menus for congregant meal sites, which are often planned weeks in advance.



Photo: CAE staff

While processing ventures in the charitable food system are rare, the Vermont Food Venture Center (VFVC) and the Vermont Foodbank may overcome the cost barriers through a partnership that uses free or donated materials (like gleaned product), a minimal “value-added” processing fee, creative labor partnerships, or the development and sale of private-labelled product. This potential partnership merits further exploration.

Vermont Farm to Family

The Farm to Family Program has two goals: (1) to get nutritionally at risk people to eat more fresh fruits and vegetables and (2) to expand access to farmers’ markets. In Vermont, the Department for Children and Families Economic Services Division (ESD) manages the program. Qualifying program participants are in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). WIC can be used to subsidize purchase of local foods so that they are at parity with nationally available brands. Purchases are limited to fresh, locally grown fruits, vegetables, and cut herbs. Although each participant receives only \$30 a year in coupons, more than 78% of recipients surveyed said that they ate more fruits and vegetables, and 81% said that they planned to eat more fresh produce year-round. The Newport Farmers’ Market had the 4th highest coupon redemption rate among 61 locations statewide.

Community Gardens

Community gardens provide participants with space to grow food and often share overhead costs and equipment. They are particularly beneficial for residents without access to home gardening space. In 2011 Fresh Start Community Farm was established in Newport City. Additional gardens in the NEK are:

- **The Hardwick Community Garden**, an allocation-style garden of 40 raised beds and a hoop house at Atkins Field, is overseen by the Center for an Agricultural Economy. Many beds are used by the Hardwick Area Food Pantry. There is a waiting list for garden beds.
- **Northeastern Vermont Regional Hospital** has the region’s oldest community garden, which was started in the late 1970s. The allotment-style garden now has 35 plots, some of which are multi-family.
- **St. Johnsbury Area Local Food Alliance (St J ALFA)** has been managing the three-acre St. J Community Farm on Old Center Road since 2013. The majority of the garden is used to grow food for the local food shelf and meal sites, and to conduct community outreach and gardening workshops. Community members are encouraged to donate work time at the garden in exchange for fresh vegetables. In 2016, St J ALFA began renting out private garden parcels to community members.
- **The Green Mountain Bible Church** in Island Pond manages a community garden on Route 105. Extra produce from the garden goes to a nearby assisted living facility and a local Head Start program.

Food Access Organizations

In 2015, the Hunger Council of the Northeast Kingdom was established with support from the Canady Family Trust. The group meets quarterly. Hunger Free Vermont operates the Councils, comprised of local leaders who are committed to learning about hunger and improving community and household



CASE STUDY: STERLING COLLEGE

Academics contribute to the food system through a number of mechanisms, from course selections, to local buying to environmental impact. Sterling College, Vermont's only environmental stewardship college, utilizes those mechanisms throughout its coursework, college operations, and partnership with the community.

Located in Craftsbury Common, Sterling College has an average graduating class size of 40 – 50 students. It offers programming in sustainable agriculture and food systems, with courses such as Whole Farm Planning, Regenerative Agriculture, Agricultural Policy, Introduction to Value-Added Food Products, and Pollinator Conservation. In recent years, the College has added continuing education classes for lifelong learners. Workshops, classes, and certifications cover a spectrum of topics from food writing and beekeeping to canning and butchering.

Not only do students learn in the classroom, hands-on working is integrated into graduation requirements. Students work in the kitchen and learn sugaring in the College's forest. Students are integral to the Sterling Farm at the Rian Fried Center for Sustainable Agriculture, which is managed by four staff and faculty. Over 130 acres of farm, gardens, and hoop houses produce 20% of campus food. Students are able to learn everything about growing and raising produce and animals, from starting seedlings to rationing and caring for livestock to pest management.

Students are required to do internships for at least 10 weeks. Many do so in Craftsbury but others are encouraged to seek experiences outside Vermont. Often, class projects involve a community component, with Craftsbury Academy or other public schools coming to Sterling or Sterling's students providing service learning. For example, classes have partnered on farm-to-school projects, nutrition education, or using a "consultant model" to help Salvation Farms with a gleaning guide.

Forty percent of Sterling's alumni are currently in Vermont. Today, more Vermonters are enrolled at Sterling than ten years ago – representing about 20% of all students.

In its day-to-day functions, the College is a leader in buying locally and seasonally. In 2014 and 2015, Sterling won a national "Real Food Challenge" among college campuses for its commitment to making campus food more local, healthful, and sustainable.

The Sterling Kitchen sources from over 20 vendors, including buying direct from local producers, Black River Produce's "Native" selection, Green Mountain Farm Direct, and even Reinhart, one of the country's largest distributors.

Sterling's small faculty and staff work closely together. For the kitchen, the Executive Chef and the Farm Manager regularly discuss food availability for upcoming meals. The Farm grows staple crops (potatoes, onions, garlic, kale, etc.) for the Kitchen, as well as other fruits and vegetables. The flexibility of menu planning and on-site production work well, with the kitchen staff being nimble when needed based on the Farm's harvest.



CASE STUDY: STERLING COLLEGE, Continued

The Farm also raises livestock – chickens, beef cows, turkeys, and pigs. Poultry and rabbits can be processed on site but other animals are taken to Brault’s Slaughterhouse in Troy. The Kitchen is able to smoke and cure meat.

Academically, the Farm is integrated into the curriculum. Students use the farm as part of their research for projects. Soil science classes monitor changes in soil health based on testing agricultural practices. The social sciences are key to making the Farm and gardens pleasing and accessible to students and community members. Blacksmithing is conducted on site, and courses that cover ethics use the farm as fodder for debate.

The hands-on teaching style of the Sterling Farm is to help students learn not only the systems approach to agriculture but also the resources that are required to sustain the system. This approach allows students to experience the real world of problem solving in food production rather than learning theoretical approaches – a difference between Sterling and other campuses.

Gwyneth Harris, current Farm Manager, is re-envisioning the Farm’s managerial role so that staff and students can handle day-to-day minutiae. Her vision is for the farm to operate on a truly ecological model. The Farm practices humane livestock standards and is organic (although not certified since production is only for on-site consumption). Attention is given to pollinators and habitat concerns for those pollinators; the Farm is even starting its own bee colony.

But Harris sees more integration of livestock with crop production, which are currently housed in two separate parts of the campus. She sees the Farm producing the hay for animals. She also envisions more inter- and cover cropping, more perennial crops, and decreased rototilling.

The College has a systems approach to its entire operations. Weekly staff and faculty meetings provide the opportunity for all to assess what is happening in one part of the campus and how that impacts what happens in another part of campus. For the Farm, that is an important function to keep it actively engaged in academics, the Kitchen, and the work program.

Challenges

As a private college, Sterling has unique opportunities and challenges. For example, it is unable to access some grant programs that land grant universities can which allow them to purchase infrastructure or pilot programs. The College can control costs but infrastructure investments or upgrades to equipment must be planned out well in advance.

Its size is a challenge and a benefit. Being so small, if even one student decides not to attend in the fall, the budget for the school year needs to be adjusted. At the same time, adaptability and creativity are benefits because of its small size. Still, Sterling faces the challenge that many schools face: how to integrate a food systems curriculum across all disciplines and how to build understanding that eating is an environmental act.

“Our minds are constraints,” said Nicole Civita, Assistant Director of the Rian Fried Center for Sustainable Agriculture. Students and faculty tend to stay in their silos, so the connection

between food and the environment gets lost in many other academic courses. Students come to the campus from a variety of backgrounds and the limited culinary opportunities available on campus and in Craftsbury is a new experience for many.

The Kitchen is challenged by that need to be adaptable. Simeon Bittman, Executive Chef of the Sterling Kitchen, is a trained, professional chef with years in the restaurant business. Chefs are trained to generate a consistent product. Buying locally produced vegetables and fruits from relatively small-scale producers inevitably means there is variability among produce. Getting consistent quality can be a challenge and the kitchen then has to pivot to use the product; a well-planned menu now becomes a living experiment.

The Farm and the Kitchen have learned not to set rigid expectations for vegetables; for example, a menu will read “salad mix” to provide flexibility among which greens are available in sufficient quantity on a given day. The Kitchen must be nimble to craft a menu with the given supply.

Ordering from so many different producers is a balancing act for Bittman. But for him, and for many of Sterling’s diners, it is one that is worth it to ensure they are living their mission. And, having a variety of vendors means the Sterling Kitchen is able to support its alumni; at one count, at least four alumni-run farms were included in that 20 vendor count.

In addition to the Farm Manager, there are two assistants (staff), and two associates (paid student workers), plus student workers and a draft horse manager. While student workers are exposed to the array of chores needed to keep the

Continued on next page

CASE STUDY: STERLING COLLEGE, Continued

farm operating, they only have to work 80 hours a semester, less than the equivalent of one month of working. Keeping the farm going requires constant oversight by the Farm Manager.

The School of the New American Farmstead is helping Sterling expand its name further. A barrier of Sterling's small size is its name recognition. While the College has been working hard to increase its presence outside the NEK, it is concerned that significant players in the food system do not know it exists. New partnerships with food producers, and with Chelsea Green Publishing, are helping Sterling expand its reach and offer mutually beneficial partnerships.

Ability to replicate

"Scale" is something that comes up when assessing whether or not Sterling's approaches to food system and environmental education can be replicated at other colleges or universities. Academically, Civita ties replication into the resources a college devotes to its curriculum integration. The principles of learning objectives and competencies are the same from college to college. It is the mindset that can be hardest to move.

Sterling aims to be a node for collaboration and change, providing a cross-disciplinary education with service learning rooted in environmental stewardship. In that regard, many colleges and universities are halfway there to replicating Sterling's model. Breaking down the silos of an agro-ecological approach is about dismantling the solid walls of the silo. Sterling's advantage is that it is smaller and has a different level of bureaucracy that allows faculty to tear down those silos faster than larger institutions.



In the kitchen, Bittman conducted a cost per plate analysis comparing Sterling College's meals with the national average cost per plate of campus meals. He found, much to his surprise, that Sterling's costs are on par with the national average.

For Sterling, the costs of providing whole, local food to students is a trade-off. The Farm and the Kitchen work to "balance the budget": just because food is grown on-site does not mean that it is "free". The costs saved by the kitchen to use what is produced at the Farm go back into paying for Farm operations and are spent in the Kitchen through other costs, such as more labor needed to process raw ingredients and relying on a largely student-run staff.

Other schools may be intimidated by the thought of using so much student labor for the farm or kitchen, or by processing raw ingredients rather than food that comes already prepared. But the cost per plate analysis is a good place to start. So much so that Bittman and Harris are about to go on tour to other colleges to share their lessons learned and train others in how Sterling College is able to make its system work.

Finding the right people to fill the roles that Bittman and Harris play is also key. Being a quick thinker in the kitchen may run contrary to the training of conventional chefs, many of whom could not keep track of so many vendors, plus the Farm, plus the local producers who unexpectedly offer their surplus to the College. For the Farm Manager, Harris's ability to juggle farm management, academics, visitors, student labor, and everything else in between takes flexibility, organization, and willingness.

The struggle to nurture the agro-ecological approach to academics is real, even at Sterling. Take a perennial concern about jam: there comes a point each year where the budget for jam is expended and students vie for more jam. But this allows a campus discussion about food choices such as eating seasonally, food waste, and food costs. Students must learn to weigh their values. Open dialogue between staff, faculty, and students about food decision making is part of the norm at Sterling College. That ongoing dialog is setting a national example for how an academic institution can incorporate food systems into academic courses, sustain local food producers, and be environmental stewards.

For more information:
<http://www.sterlingcollege.edu/>

food security. The Councils coordinate efforts and build strong nutrition safety nets at the community level and statewide. Membership in the Hunger Councils is open to anyone with an interest in furthering the Council's vision that all Vermonters have access to an adequate supply of nutritious food.

The Upper Kingdom Food Access is a consortium of partners and initiatives that grew out of a well-attended community development initiative (Take Charge) facilitated by UVM Extension in early 2015. Its mission is to foster better eating through education about choices in the food system. The group formed a Facebook page in 2015 and now has upwards of 800 members. Ongoing efforts include Vermont Fresh food tastings and distribution of produce at the Brighton Elementary School. The group is currently developing a food access and nutrition education directory for distribution to schools, medical providers, and social service providers.

Education and Workforce Development

A vibrant sustainable food system needs education and workforce development to ensure not only properly trained workers, but also informed consumers. There are many organizations in the NEK working to develop our food system along the continuum from elementary school to college and adult education.

From early ages, children learn eating habits — often indirectly — from their family, peers, and through popular media. School also plays a part by teaching nutrition education through physical education, health, and wellness classes. With obesity and type 2 diabetes on the rise, it is becoming increasingly important to teach children about healthy eating habits.

Farm-to-school programs are one way to teach children, as well as provide farm-based education. By connecting children directly to the source of food through school gardens and farm field trips, students are learning to make better choices in the school cafeteria, and hopefully, this carries through to their choices beyond the school. Working in school gardens or visiting farms may also help encourage a lifelong love of producing and eating healthy food.

More than half of all students in the NEK are served by Green Mountain Farm-to-School (GMFTS). There are currently 23 schools in the region with active Farm-to-School programs. Curriculum has been expanded in recent years to include hands-on nutrition and agriculture programming from K through 8th grade. In November 2015, the 2nd Annual Northeast Kingdom Farm to School conference was held at Sterling College to bring together teachers, food service professionals, farmers, students, parents, administrators, and farm-to-school professionals for a day of learning, collaboration, and networking.

There are other schools in the region, including Hardwick Elementary and St. Johnsbury School, that are not connected with GMFTS. Some of these schools have been supported by the statewide Food Education Every Day (FEED) program, a farm-to-school support program provided in collaboration with NOFA-VT, Shelburne Farms, and Food Works.

4-H is an informal educational program for youth. 4-H programs are cooperatively developed in partnership with the USDA, UVM Extension, and local communities. 4-H includes clubs, as well as projects and programs for non-club members. Many 4-H programs and clubs focus on agricultural and nutrition education. There are 28 clubs in the NEK, focusing on a variety of activities, including all kinds of farming, gardening, fishing, and veterinary science.



Photo: CAE staff

CASE STUDY: LAKE REGION UNION HIGH SCHOOL

Sometimes, a leap of faith is all it takes. “Principal Messier went out on a limb,” said Max Van Houten, Vocational Agriculture Teacher at Lake Region Union High School. Andre Messier hired Van Houten to restructure the school’s Diversified Agriculture Program. Van Houten did just that: He sold some equipment, planted an orchard, and expanded the school’s sustainability initiatives, all within his first three years.

Lake Region is located in the village of Orleans. It serves roughly 360 grade 9 – 12 students from Albany, Barton, Brownington, Glover, Irasburg, Orleans, and Westmore. Lake Region is one of the NEK’s eight public high schools.

Van Houten tries to teach students the skills that are “gonna stick around,” the skills and proficiencies that are authentic and interesting. The Diversified Ag Program includes classes in horticulture and greenhouses, landscaping, sustainable living, woodworking, welding, and natural resources. “I want the students to have a broad spectrum of skills,” Van Houten explains.

To him, this means that students use hands-on lessons to build capacity for lifelong learning. His courses build on one another, connecting lessons to physical projects that allow students to develop proficiency while contributing to the classroom. For example, Van Houten planted an apple/ pear orchard in his first year. Woodworking students hone their saw skills – the handsaw before the power saw – building apple boxes that are used by the horticulture students.

The school has a garden that is over an acre in size and a greenhouse for year-round growing. A 2014 grant from the New England Grassroots Environmental Fund and a partnership

with Highfields Center for Composting resulted in installation of an innovative, large-scale enclosed composting system that serves dual purpose as a learning lab and the school’s way of diverting organics from landfills.

It is these initiatives, plus many more sustainability practices, that make Lake Region an Energy Star school and a “Green Ribbon School”. In 2013, Lake Region was named one of Vermont’s first Energy Star schools, placing it in the top 25% of energy efficient schools in the country, meeting stringent Environmental Protection Agency standards for healthy ventilation and lighting quality.

Lake Region went further in 2014, winning more accolades as a Green Ribbon School from the U.S. Department of Education for its school-wide approach to sustainability, one among fewer than 50 schools across the country. Highlights include: a student-teacher project to install solar-powered lights on the athletic field scoreboard; a prohibition on the sale of sugary foods; a strictly enforced “no-idling” vehicle policy; physical education classes largely held outdoors; a physics class report identifying ways the school can increase its energy efficiency; and, the innovative agricultural and food systems work undertaken by Van Houten, the food service department, and others.



Photo: LRUHS

Challenges

For Van Houten, his biggest challenge is time. Lake Region has period scheduling, with more, shorter classes during a school day. This does not leave much time for students to work on projects. Teachers are notoriously stretched thin, and it is no different for Van Houten. He had talked with Sterling College about dual enrollment for his students. Large containers to demonstrate aquaculture still need some preparation before being used. Learning how to can produce to be able to teach students how to put up food is also on his list. Maintaining the garden over the summer? Not on the list.

With no one to care for the garden over the summer – volunteer or paid – the students plant crops that need little maintenance, such as corn, squash, and garlic. The garden food and most of

CASE STUDY: LAKE REGION UNION HIGH SCHOOL, Continued

the crops grown in the greenhouse get used in the lunch cafeteria. (Excess greenhouse crops are sold as a fundraiser for the ag program.) As it is, says Van Houten, “the dedication to creating this program is bigger than the paycheck.”

But, by the time students are in high school, notes Van Houten, their eating habits are largely well established. He acknowledges that kids need to eat good food and to know how to cook good food; if kids know the foods, they will eat them. It can be too late for them by 9th grade. Take, for instance, the student who grew mixed greens but prefers “regular lettuce” or the student who shrugs off recognition for growing garlic used in a dish on the hot lunch line.

Trying to integrate food system education into the high school curriculum is a constant challenge. Van Houten sees a lot of teacher coordination at the middle school level but at the high school, it is harder to have teachers coordinate their curriculum. While he highlights the integration of physics, geometry, chemistry, and other topics into his classes, he has a harder time seeing agriculture play out in other academic areas.

Van Houten is hopeful the new Personalized Learning Plans (PLPs) will help address this gap. The Vermont Legislature enacted Act 77, requiring PLPs for each student.

For students at Lake Region, Van Houten sees PLPs benefitting the future of food systems by helping students identify different career pathways and internships. He hopes the PLPs also help students focus on proficiencies that allow them to feel like they are a part of something bigger than the school and expose them to great agricultural education. The intent is for PLPs to give students different tools to apply their skills to

what they learn, encouraging better coordination and integration of learning and doing.

Connecting student work to the community is a key value for Van Houten: “To be a responsible teacher, you need to bring in the community and connect kids with the community.” With schools being a part of the public investment system, creating the type of capacity and infrastructure to integrate food system values into day-to-day curriculum should be a community concern.

Part of how Van Houten is making education a community concern is through a Diversified Agriculture Board, a group of professionals that meets three times a year to act as a sounding board for the Program, similar to a Career and Technical Education Center. The Board helps Van Houten stay current on trends in the changing face of agriculture.

For his Ag Program, it goes back to teaching students proficiencies using different methods so long as the basic skill is learned, such as measuring and cutting in a straight line. Van Houten would use farm-to-school resources but much of the literature is intended for elementary schools.



Ability to Replicate

Public high schools across Vermont have started to integrate food system, or “farm-to-school”, approaches into their academics and school operations. However, few have the type of program that Lake Region offers, and there are fewer still in the NEK. Van Houten is pressed to think of any in the NEK as advanced as his, and credits much of his success to Messier’s support.

However, Van Houten does share information with Maxfield English at the Danville School. English is the Technology teacher and runs a similar but less elaborate program than Lake Region’s. He teaches welding, construction, woodworking, family and consumer science, and sustainable agriculture, which will be combined with forest and lake ecology for 2016 – 2017. Danville School has a small garden that has been used for cooking in English’s classes but he hopes to start producing for food service. He keeps layer hens in a student-built henhouse fed with food scraps from the cafeteria. Students are also working on building a three-bay composting system.

The busy-ness that Van Houten and other adults feel is one that he sees modeled in students. Instilling a solid work ethic and strong “soft skills” for future employment is something teachers can model. In fact, Van Houten has a sign at the front of his classroom reading “School is Work: Do Your Job!” The message? You are expected to show up on time, every day, and apply yourself as a courteous member of this team; to self-evaluate your performance and your knowledge; and to reflect on what you did and the process you used.

Secondary Schools and Post-Secondary Education

The NEK already has a few innovative food systems and agriculture education programs in our secondary schools. In addition to Lake Region Union High School, Hazen Union School, Craftsbury Academy, Canaan School, and Danville High School offer food system and agricultural programming. There are three high school Career and Technical Education (CTE) centers in the NEK as well: North Country Career Center in Newport, Lyndon Institute, and St. Johnsbury Academy. Lyndon Institute offers a diversified agriculture course. (LI's greenhouses also serve as an adult education site in sustainable home gardening.) Both St. Johnsbury Academy and North Country Career Center focus on culinary arts and hospitality training and offer courses in forestry and agriculture, addressing topics such as natural resources management, equipment maintenance, and maple syrup production. North Country also offers adult education in food preparation and food safety. Some NEK students in the Hardwick area attend Green Mountain Technical School in Lamoille County, where courses on sustainable agriculture and culinary arts are available.

The NEK's secondary schools have successfully integrated entrepreneurial activities in the curriculum. Danville's agriculture students, for example, learn to develop, price, and market a value-added product. St. Johnsbury Academy students operate the Hilltopper Restaurant during the school year.

Of the region's four colleges, Sterling College has one of the nation's leading programs in sustainable agriculture. In 2013 Sterling College announced the launch of The Rian Fried Center for Sustainable Agriculture & Food Systems.

Lyndon State College does not offer agricultural degree programs, but it offers a course on sustainable food systems. Community College of Vermont offers a course on sustainability, which addresses agriculture. (The course is taught on the Montpelier campus.)

Act 77 & Flexible Pathways to Education

Act 77 was signed into law in 2013 in order to create a public education system in which every student graduates, and every graduate is college- and career-ready. At the heart of the legislation is the "Flexible Pathways to Graduation" concept, which allows students to access any combination of high-quality academic and experiential components to achieve graduation and post-secondary readiness. The concept is not built on a rigid pre-selected menu of choices, rather it empowers each student to draw from a variety of options that can build on his or her unique abilities and interests. By the 2018-2019 school year, all students in grades 7 through 12 will have a Personalized Learning Plan (PLP), an evolving plan that may include a variety of components, including.:

- Work-based learning
- Career and Technical Education
- Dual Enrollment
- Early College

The PLPs will expand access to food system education, potentially broadening career paths for the next generation in the NEK's food system workforce. For example, all students with an interest in pursuing a CTE course must have a meaningful opportunity to do so. Additionally, juniors and seniors in public secondary schools can receive dual enrollment two vouchers, each good for one college credit. Participating dual enrollment colleges in the NEK include Sterling College and Lyndon State College.



Photo: Green Mountain Farm to School



Photo: Green Mountain Farm to School

Opportunities in the NEK's Food System Economy

Growth in the region's agribusiness cluster has been well documented in national studies and the popular press. The 2011 Economic & Policy Resources study (released just after the 2011 NEK Food System Plan was published) identified and analyzed key industry clusters for the NEK using an iterative analysis of sector data, including employment concentration, wage performance and stability, growth and change, and supply chain interrelationships. Clusters were ranked as *mature*, *challenge*, *opportunity*, or *star*. Agribusiness (food processing and technology) was ranked as a star cluster for the region's economy. This cluster is made up of twelve production, processing and distribution segments: crop production; animal production; support activities for crop production; support activities for animal production; food processing, and beverage manufacturing; agricultural chemical manufacturing; agricultural implement manufacturing; food product machinery manufacturing; farm and garden equipment merchant wholesalers; farm product raw material merchant wholesalers; farm supplies, and merchant wholesalers.

Overall, the NEK's agribusiness cluster outperformed its national counterpart over the study period. The industry cluster analysis found this sector to be reasonably well paying by NEK standards: a critical mass of 75 establishments, employing 654 workers with an average annual wage of \$33,270. The study also found that the agribusiness cluster in the NEK was increasingly converging and intersecting with the visitor and tourism cluster, another strong economic engine in the region, although averages wages are relatively low. The NEK has seen significant investments within the tourism and visitor cluster in recent years, with a particular focus on Jay Peak and Burke Mountain, leading to more year-round visitor opportunities.

There are several workforce development needs to support the food systems cluster: diversified farming, meat processing, value-added production, business planning and marketing, as well as the need for interns and apprentices. In the intersecting visitor and tourism cluster, workforce needs are typically in food service and retail. While some training programs and apprenticeships exist, the NEK planning process has revealed that the current workforce does not have enough trained workers to develop this expanding food systems economy. Several employers in the region have used www.goodfoodjobs.com, an online search tool for "gastro-jobs," i.e. opportunities in the art or practice or choosing, preparing, or eating good food. Employment opportunities include farming, artisanal food producers, policy making, food retail and restaurants, and more. Nevertheless, during the NEK planning process, some food systems businesses — particularly value-added processors — noted it can be difficult to find properly trained workers.

Like much of the region's economy, employer establishments tend to be relatively small. Food manufacturing establishments, for example, have an average of only 10 employees. Absences and turnover are therefore likely to be felt deeply. Additionally, these firms are likely to require technical skills for operating food processing equipment or meeting health and safety practices, thereby creating additional workforce challenges.

The Center for an Agricultural Economy (CAE) supports food production and food businesses in the Hardwick area and the NEK, and also manages the VFVC. This organization plays a key role in providing business and technical training to food systems workers.

Numerous farms and businesses in the NEK hire interns and apprentices. In recent years there has been a flood of interested farm interns, many coming with an ideological drive and even romanticism



Photo: Green Mountain Farm to School

about farming. Statewide internship programs include NOFA-VT's Apprentice and Farm Worker Directory, which connects farms with interested individuals. The Vermont Department of Labor coordinates a registered apprentice program, an employer-sponsored training program that includes both supervised work experience and related instruction in several occupations including cheesemaker, farmer, dairy farmer, butcher/meat cutter, equipment repair and horticulturalist.

Lyndon State College and Sterling College offer internship programs. There are also several training programs in the NEK that serve adult learners and provide training in food systems and agricultural workforce development. Further coordination of internships and apprenticeships will be important to adequately meet the needs of training and education, as well as the needs of farmers and food producers.

Financing and Technical Support

Access to capital and financing are critical for food systems businesses to start up and expand. There are a variety of traditional banks and lending institutions in the NEK, the state, and northern New Hampshire. Nearly any start up or expanding businesses will be required to develop a loan proposal or business plan for a lender that demonstrates an understanding of finances and the business. The lender considers factors such as capacity to repay the loan, capital previously invested in the business, collateral, risk, and market trends.

The NEK's food and agriculture entrepreneurs have seen considerable innovation in terms of new product development and technological innovation. In general, the greater the innovation, the higher the risk. Additionally, traditional financing cannot always cover all of the investment needs for a project. Banks therefore frequently partner with a variety of non-traditional lending sources, such as government programs and private foundations to develop a tailored program that distributes the risk among multiple stakeholders and minimizes front-end debt as the new borrower launches or expands the new business.

Governmental lending institutions, such as the USDA Farm Service Agency and the Vermont Agricultural Credit Corporation, offer entry loans at subsidized rates to encourage new and expanding businesses.

Some other options include:

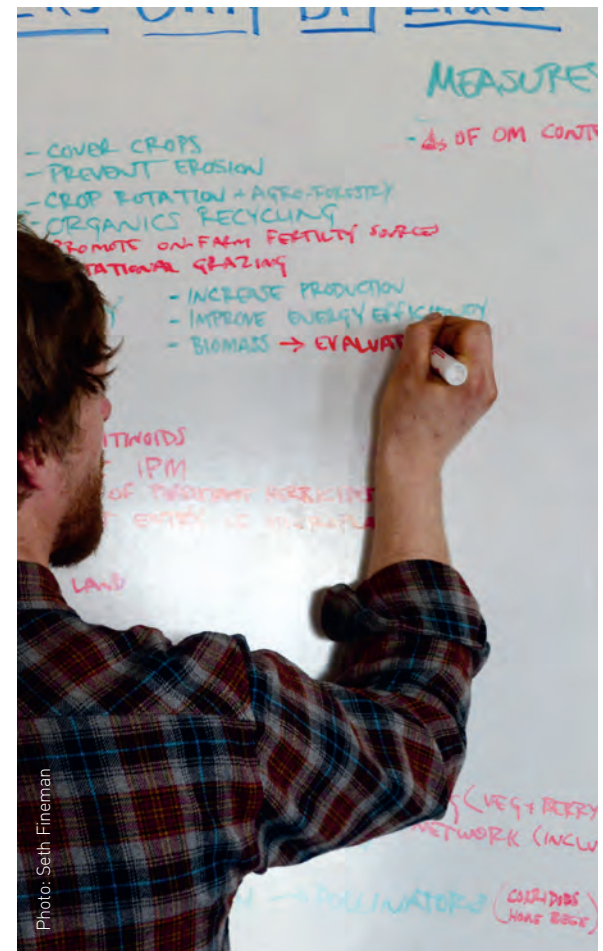
- Vermont Agency of Commerce and Community Development, Vermont Community Development Program (VCDP): This block grant program can provide capital for economic development projects. The money is typically "granted" to the municipality where the project is located, and the money is lent to the business. Repayment and interest can be structured to minimize the debt in the early years of the business, such as deferred interest and payment for first year, and very low interest rates that gradually increase over the term of the loan. VCDP grants were loaned for fit-up of the Cellars at Jasper Hill, as well as the new barn at Pete's Greens. Both loans are being recaptured into a Non-Profit Community Development (NCDO), which is administered by Northeastern Vermont Development Association (NVDA). As the NCDO gets recapitalized, re-lending opportunities should be identified and pursued.
- USDA Rural Development: USDA offers a broad combination of loans and grants, such as Business and Industry Guaranteed loans, as well as grants, such as Value-Added Producer Grants (VAPG), and Rural Energy for America Grants. In the past five years VAPG helped to fund three value-added enterprises: Sweet Rowan Farm, Kingdom Creamery, and Shadagee Farm. The NEK maintains



a unique advantage in leveraging USDA Rural Development funds because it maintains a Rural Economic Area Partnership (REAP) designation, one of only four such designations nationwide. The designation gives applicants access to some of USDA RD's 40 grant and loan programs through a special set-aside reserved only for REAP Zones. Since 2011, the region has received more than \$3.2 million in USDA funds for furthering food system development. In addition to VAPG, funding programs include Rural Business Development grants, Rural Energy for America grants, and Business and Industry Guaranteed Loans. This program has also allowed regional service providers, like Northern Community Investment Corporation (NCIC), the CAE, and GMFTS, to provide technical assistance to farm and food businesses. The REAP designation was established in 2001 and has been renewed multiple times since then. The designation is set to terminate at the end of 2017. Stakeholders in the NEK's farm and food economy should strongly advocate for its renewal.

- Working Lands Enterprise Grants: In 2012, the Vermont Legislature created a competitive grant program to spark investment in agriculture and forestry-based businesses. Business Investment Grants, ranging from \$5,000 - \$50,000 for new and expanding agriculture, forestry, and forest products enterprises, are available annually. Grant have been used to defray infrastructure upgrades for NEK producers and growers, including purchase of equipment for milk bottling, capital for transition to organic production, and upgrades to meet Good Agricultural Practices Certification.
- Northern Border Regional Commission (NBRC): This federally-funded grant program invests in economic infrastructure projects in the NEK, as well as Franklin, Lamoille, and Grand Isle Counties. Although the NBRC was established back in 2010, the program has received more funding in recent years.
- Economic Development Administration (EDA): The NEK, and Franklin, Lamoille, and Grand Isle Counties maintain a Comprehensive Economic Development Strategy, making the six-county region eligible for grants. The construction of the VFVC was supported by a \$1.5 million grant from EDA.
- Vermont Community Loan Fund: The Food, Farms & Forests Fund offers low-rate flexible financing.
- Vermont Sustainable Jobs Fund: The Farm to Plate Initiative offers a grant program for food systems businesses, and its Flexible Capital Fund provides working capital in the form of subordinated debt and royalty loans.
- NOFA-VT Offers loans \$2,000-\$15,00 for working capital, equipment, or improvement of business management. Loans cannot be used to purchase land.
- Slow Money Vermont is an emerging network that connects investors, philanthropists, individuals, and businesses with new sustainable food investment opportunities
- Economic Development Funds: NVDA offers revolving loan funds. NCIC offers a variety of economic development-based financial products to small businesses. Bank participation may be required.
- Foundations: There are several foundations that support food systems and offer competitive grants, including Castanea, High Meadows Fund, John Merck Fund, and the Vermont Community Foundation.

“Financing the Working Landscape” is an annual statewide conference that brings farmers, wood products industry businesses, and food-based businesses together to learn about the resources needed to support and expand their businesses. Lenders from the private and public sectors are well represented. In 2015, this event was hosted in the NEK at Sterling College. The 2016 event will be hosted in the NEK as well.



CASE STUDY: VERMONT FARM FUND

Financing is one of the most challenging aspects of operating a farm business. The Vermont Farm Fund is a revolving loan fund that provides minimal-hassle, zero and low-interest loans to farmers.

The outpouring of financial contributions following the devastating loss of his barn in 2011 led Pete Johnson, founder of Pete's Greens in Craftsbury, to "pay it forward." As Johnson kept his business going while constructing his new facility, the Vermont Farm Fund was created in partnership with the Center for an Agricultural Economy (CAE). When Tropical Storm Irene hit, Johnson pulled the money out of Pete's Greens to seed the Vermont Farm Fund, along with other contributions.

As loans are paid back, payments from one generation of loans help finance the next, promoting a virtuous lending cycle in the Vermont agricultural economy. The result? A community of farmers lending money to other farmers, quickly and easily. Multiplying the value of donated funds, the Farm Fund has been able to make \$571,000 worth of loans on a fund value of just over \$250,000 in five years.

With guidance and technical support provided by the CAE, the revolving loan fund now has two programs, Emergency Loans and Business Builder Loans. All loans are zero or low-interest. Interest rates are static, offering a predictable lending experience.

An advisory board with backgrounds in agriculture, business, finance, and community development responds to requests within 10 days. The Fund aims to start payments within 14 days of receiving all completed materials. Johnson still sits on that board.

The board reviews applications to assess the applicant's need with the ability to repay the loan. Applicants provide at least three references with their application. These personal recommendations tell a story beyond the numbers that is factored into each application – a notable difference from conventional lending. Projects with strong, realistic business plans and those scaling up new or innovative projects to strengthen the food system have more weight during the application review.

The application itself is simple and straightforward. A financial projections sheet and tax form Schedule F make up the application package, with business plans and balance sheets as optional attachments. The application forms have been tailored toward only the pertinent information for the board to make a decision.

To date, 41 loans have been made with 25 paid in full. Any farmer or agricultural operation in Vermont can apply. Emergency loans up to \$10,000 are available for farmers facing a devastating loss from a natural disaster, such as fire, flood, or drought.

The Business Builder Loan is for non-emergency situations and allows farmers and food producers to capitalize their businesses in increments from \$5,000 to \$30,000. Funds can be used, for example, for capital or process improvements – equipment, marketing, or expanding access to land. These loans are repaid over a two to four year period. Funding new business ventures with traditional lending sources, especially in the farming sector, can be difficult. The Farm Fund has a standard minimum two years of being in business, making it easier for an entrepreneur with a great idea to get off the ground.



Photo: Pete's Greens

CASE STUDY: VERMONT FARM FUND, Continued

Since 2011, five farms in the NEK have benefitted from the Vermont Farm Fund. Tangletown Farm and Pierce's Pastured Poultry have both used Business Builder Loans to increase and manage their flocks of laying hens, and the Butterfield Brothers are starting up a yogurt-making business on their Irasburg farm. Sweet Rowen Farmstead and Heartwood Farm both benefitted from the fast turnaround after a fire and hailstorm, respectively. Sweet Rowen needed funds to keep operations going, while Heartwood used its funds to simultaneously recover while investing in infrastructure.

Challenges

Obtaining funding quickly, easily, and at an affordable interest rate is often a challenge for farmers and food producers. The Vermont Farm Fund offsets those challenges with its program, but finds its own difficulties in operating. The CAE provides critical organizational infrastructure for the Farm Fund, which has only one minimal-time staff person. Advertising the Farm Fund is a Catch-22: More outreach means more requests for loans immediately after the outreach, which makes it a balancing act for the limited staff time.

The Farm Fund relies on two primary funding streams: donations from large and small philanthropists and the regular repayment of existing loans. The Farm Fund can manage about 8 – 10 loans in a given year, but needs the existing borrowers to pay their loans back (or forward!) in timely fashion. The Farm Fund also gets donations ranging in size from \$10,000 dollars to just \$35 or \$50 from supporters each year.

Spring can be a busy time for the Fund as farmers gear up for the season. It can be a challenge to ensure funds are available when most needed, while fall and winter slows down in lending. There is rarely a waitlist for loans but if there is, it is in the spring.

The advisory board has discussed what it would do should another statewide disaster, like Irene, hit. Securing pledges from individuals and organizations to contribute to the Fund or creating a reserve account should the need arise are options. Other ideas are on the table, but the board's main focus is on lending out the money available to farmers who need it today.

Ability to Replicate

This innovative financing model can be replicated, but a similar fund is not necessarily needed for farms and farm businesses. The model works because farmers are extremely committed to repaying their loans for the next farmer to use. More than late notices from a bank, knowing your payment directly helps another farmer launch a project, or your neighbor recover from disaster, is a very strong incentive. However, the model could be replicated for other industries. All it takes is a seed fund and programmatic oversight to get going.

The Vermont Farm Fund has opened new channels for farms and farm businesses across Vermont. Fundraising is done through the work of the Program Manager and the volunteer advisory board. If supporters are unable to help the Fund, or if administrative costs got too burdensome, it would be a threat to the future of the Farm Fund.

But the Farm Fund is a testament to how dedicated, hardworking, and visionary Vermont farmers are. There is an interest in seeing each other succeed. The Farm Fund is a vehicle to do just that: as farm and food businesses succeed and diversify, they increase the availability of local food in the community and continue to strengthen Vermont's agricultural economy.

For more information:

<https://www.vermontfarmfund.org>

The Farm Fund relies on two primary funding streams: donations from large and small philanthropists and the regular repayment of existing loans.

Emergency Financing

Vermont is fortunate to have helpful communities that support farmers who have experienced disasters, such as barn fires or crop disasters. There are also established funds and lenders for emergencies. While many farmers have various kinds of insurance, not all disasters are adequately covered. In addition to the Vermont Farm Fund, USDA offers several programs to help farmers recover financially from a natural disaster, including federal crop insurance, the noninsured assistance program, and emergency disaster loans.

There are also statewide and New England based programs that offer emergency assistance. NOFA-VT has the Farmer Emergency Fund that assists organic farmers adversely affected by natural disasters, as well as farm-specific losses such as barn fires and collapsed greenhouses. Grants and no-interest loans are awarded to farmers in need as funds are available. The Carrot Project's Strolling of the Heifers Microloan Funds are emergency funds for business interruptions due to natural disasters or other unforeseeable events.

Technical Service Providers

Technical services and grant funding are embedded in a number of capacities. Both the CAE and GMFTS, for example, have sought grant funds, such as USDA and Working Lands Service Provider Grants in order to offer technical assistance to growers and producers. NCIC has received USDA funds to support a one-on-one technical assistance program for entrepreneurs, as well as feasibility studies for expanding the food economy.

Some service providers often integrate grant funding with their technical assistance programs to ensure that funds are invested into carefully planned projects. For example, the Vermont Housing & Conservation Board occasionally offers Farm Viability Implementation Grants on a competitive basis. To be eligible for funding, farm businesses must have completed a full business plan or transfer plan through the Vermont Farm & Forest Viability Program. This program provides business planning and technical assistance to farms and businesses in the Vermont food system.

NOFA-VT, a service provider in the Farm Viability Program, offers business planning services to farming and farm-related businesses that have been in operation for at least one full year with over \$10,000 in gross income.

Small Business Development Center (SBDC) has a full time business advisor who works out of NVDA's locations in St. Johnsbury and Newport. Business planning services from start up, to expanding to transitioning is available.

The Northeast Sustainable Agriculture Research and Education (SARE) program offers grants to farmers and service providers to research new ways to improve profitability and sustainability of agriculture. Recent grants to NEK farms have been used to compare input costs and yields for organic strawberry production and testing for a low-cost aerated static compost pile.



Selected Statistical Updates from 2011: Cross Cutting Issues

Target	Measurement	Update
By 2020, the number of acres of agricultural land in the NEK enrolled in federal or state conservation programs will increase by 10%.	Number of acres of agricultural land enrolled in federal or state conservation programs Ag Census	There are 23 farms in the NEK with lands enrolled in federal conservation programs (i.e. Conservation Reserve, Wetlands Reserve, Farmable Wetlands, or Conservation Reserve Enhancement Programs), which is down from 25 farms in 2007. The region, and the state of Vermont both have significantly lower levels of enrollment than nationwide.
The percentage of farm expenses spent on chemicals will decrease	Chemical purchases as a percentage of total farm expenses Ag Census	Chemicals, as a percentage of all production expenses, decreased from 2% to 1% region-wide. The average spent on chemicals per farm (based on number of farms reporting chemicals purchased) decreased regionally and statewide. Orleans County, however, saw an increase.
By 2015, the adult obesity rate will decrease by 1% per county	Adult obesity rate County Health Ranking, Robert Wood Johnson Foundation	The adult obesity rates rose by 4 percentage points in each county since 2011. Orleans County has the highest obesity rate in the state.
By 2014, over half of all NEK food shelves will serve fresh fruits and vegetables	Number of food shelves serving fresh fruits and vegetables Green Mountain United Way	Less than one-third of area food shelves have the capacity to accommodate fresh fruits and produce.
By 2016, all NEK public primary, middle, and secondary schools will have active farm-to-school programs	Number of NEK public primary, middle, and secondary schools with active farm-to-school programs. GMFTS and St. J ALFA	As of 2016, there are 25 schools in the NEK with active farm-to-school programming, 23 of which are through GMFTS. This represents more than half of the 40 public schools and 9 publicly funded schools serving the region.
By 2014, all NEK Colleges will offer courses and/or programs in at least one element of the food system	Sterling, Lyndon State, Springfield College, and Community College of Vermont	Sterling, Lyndon State College, and Community College all offer programming that addresses some aspect of farm and/or food system.





Chapter 5 Implementation

This section is organized by GOAL, with five specific elements, each meant to assist in tracking NEK Plan impacts, and bring together groups or funding streams around specific activities. While the content within these tables is not meant to be comprehensive, it is intended as a way to move our efforts from trend data and long-term goals to specific performance measures for NEK farmers, food producers, communities and institutions. The five elements of implementation for each GOAL are:

1. **Objective:** Initiatives, as articulated in the NEK Food System Summit in 2016 and in general outreach, that can bring us closer to the GOAL.
2. **Specific Actions:** Methods that can be used to achieve the objective — although this list is not comprehensive.
3. **Performance measures and when are they measured:** Outcomes may be existing and could be tracked, but in some instances they will need to be established.
4. **Who can facilitate and monitor:** These are organizations and entities who are already working in this area — although this should be viewed as a starting point for involvement in NEK Food System planning efforts.
5. **Partners, advocates and potential funders:** This also is designed as a starting point for additional resources and key advocates to advance the goal and accompanying objectives.

*A glossary of acronyms of entities who can facilitate, monitor, support, advocate for and potentially fund is attached.



Goal 1: The NEK will have localized, affordable, and sustainable farming and production inputs, including energy, fertilizer, seeds, forage, and feed.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?*	Who are the partners, advocates & potential funders?*
<p>A. Support the implementation of Vermont’s Universal Recycling Law (Act 148) to ensure that farm and food wastes are converted into compost or energy for use as agricultural production inputs both at the commercial and residential scale.</p>	<p>Provide and increase opportunities for onsite and commercial composting training and education, sustainable farming methods focused on reduction and reuse of wastes (closed-loop nutrient systems), and shared facilities and infrastructure to transfer and store compost. Build markets for compost materials.</p>	<ul style="list-style-type: none"> • Workshops held to promote composting for each sector, annually • Materials diverted from the landfill for composting in tons, annually • Number of farms that use compost (certified organic), annually • Number of business that certify/ register with ANR as a compost facility, annually 	<p>CAV, NEKWMD, UVM Master Composters, NOFA-VT, peer-to-peer farmer learning, ANR (thru solid waste rule), VAAFM, GMFTS</p>	<p>Local energy committees and conservation commissions, UVM Master Gardeners, F2P Working Lands Farmland Access and Stewardship, ANR, USDA RD</p>
	<p>Assess adequacy of infrastructure and costs to facilitate food waste and organic matter recycling by incorporating nutrient management and food waste recycling into NVDA’s Regional Plan for the NEK and the region’s Solid Waste Implementation Plans.</p>	<ul style="list-style-type: none"> • NVDA’s solid waste management chapter updated with relevant data and mapping, 2017 • Solid waste implementation plans for municipal waste districts level addressing organics, 2020 • Total miles compost trucked from municipal collection facilities, annually • Number of compost facilities, digesters that can accept food waste, annually 	<p>NVDA, NEKWMD, local planning commissions, ANR, local haulers/ composting companies</p>	<p>CAV, farmers, St. J ALFA, UKFA, USDA RD, ANR</p>
<p>B. Invest in renewable energy for food production and energy efficiency programs to enable a steady supply of energy for food producers. Regional, local, or on-site energy-production facilities, such as biomass, solar, and wind, can be used by farmers to help lower production costs and reduce dependency on fossil fuels.</p>	<p>Provide technical support to achieve energy efficiency in farm operations. Provide technical and educational support around legal aspects of siting energy generation facilities on farmer-owned land (e.g. lease agreements, Current Use implications, preserving farmland access and the best soils).</p>	<ul style="list-style-type: none"> • Number of workshops, annually • Grants awarded (e.g. (Rural Energy for America Grant /Dept. of Energy vehicle grant), annually • Number of farms served by Efficiency Vermont, annually • Cost savings achieved through Efficiency Vermont improvements, annually 	<p>NEK Collaborative, Efficiency Vermont, NOFA-VT, NVDA</p>	<p>USDA RD, NVDA Energy Committee, F2P Energy Cross-Cutting Team, UVM Extension, Dept. of Energy</p>
	<p>Promote the use of and increase the amount of on-farm power and community energy generation and the use of renewable energy for farming and food production (such as anaerobic digesters, solar, wind, and biomass, in accordance with local and regional planning priorities).</p>	<ul style="list-style-type: none"> • CPGs issued for net metering and for anaerobic digesters, annually • Measurement/estimate annual energy produced in new and existing projects (kW-hr and Btu) e.g. Jasper Hill, Pete’s Greens, Butterworks, Lazy Lady, annually • Cases studies of successful projects, with specific funding resources made available, on a multi-year basis • Workshops/trainings with on-farm energy experts in the NEK for interested farmers- annually • Energy siting standards and priority locations for energy generation projects, 2017 	<p>DPS, utility companies, VAAFM, Efficiency Vermont, NVDA, CAE</p>	<p>USDA RD, VSJF, F2P Energy Cross-Cutting Team, CEDF (RFP released 5/2016)</p>

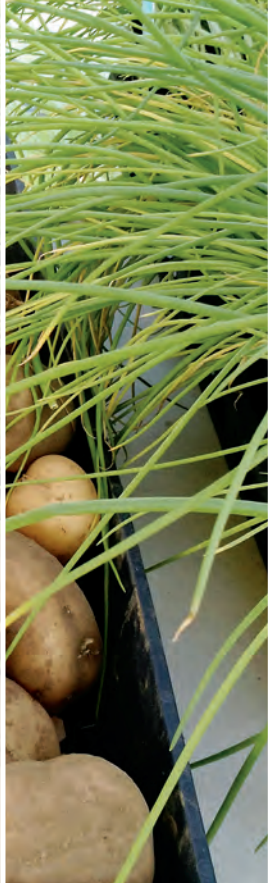
Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?*	Who are the partners, advocates & potential funders?*
	<p>Explore the use of compost heat recovery; identify challenges, opportunities, and funding sources</p>	<ul style="list-style-type: none"> • Install and monitor a pilot project on one farm; measure the reduction of carbon, 2020 	<p>CAV, partner farm, utility companies, VAAFM</p>	<p>USDA RD, F2P Energy Cross-Cutting Team; Food Cycle Coalition, funders, CEDF RFP</p>
<p>C. Encourage production of locally sourced feed</p>	<p>Work with feed retailers and producers to develop a moderately-priced, conventional grain that is grown as locally as possible and certified free of genetically modified organisms (GMOs) and persistent herbicides.</p> <p>Educate farmers and horse owners about the spread of herbicide through conventional graining.</p> <p>Work with farmers to increase production of feed on fallow land</p>	<ul style="list-style-type: none"> • Education and outreach to farmers and horse owners, annually • Feed produced in region, 2017 Ag Census • Availability of appropriate grain product, 2020 • Fallow land and on site mitigation land (Act 250) that can be used to produce feed identified, ongoing 	<p>UVM Extension, peer-to-peer learning, feed retailers and producers, VAAFM, ANR</p>	<p>Working Lands Enterprise Grant, organizations that connect farmers to land</p>



Goal 2: Farms and other food system operations will improve their overall environmental stewardship to deliver a net environmental benefit to the region.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
A. Improve overall health of soil	<p>Identify funding sources for monitoring soil, as well as best practices that encourage healthy soils.</p> <p>Publicize standard measures of soil health and invite agricultural operations to measure soil.</p> <p>Improve and publicize technical assistance for property owners on ways to improve soil health.</p> <p>Publicize success stories that demonstrate the effect of improved soil health.</p>	<ul style="list-style-type: none"> • Noted improvements in basin plans, 2020 • Gather baseline data to track soil health before and after health improvements, 2017 and annually thereafter • Number of landowners receiving technical assistance for soil health, annually • Number of news stories, outreach events, and best practice success stories made available, 2020 	<p>NRCS, NRCDs, UVM, Sterling College, VAAFM,</p>	<p>F2P Soil and Water Cross-Cutting Team, Working Lands Grants, USDA AMS</p>
B. Promote practices that improve environmental stewardship	<p>Connect farmers with technical assistance and resources that focus on the benefits of rotational grazing, erosion prevention, crop rotation, cover cropping, and other practices affecting the chemical and physical soil and water health.</p> <p>Support efforts to use floodplains and riparian buffers for agricultural uses that are also ecologically functional, e.g. blueberry bushes planted in and around vegetation buffers.</p>	<ul style="list-style-type: none"> • Cover cropping, based on financial assistance from VAAFM, annually • Number of farms participating in VAAFM FAP that continue to cover crop without financial assistance, 2018 • Changes in NASS Cropland Layer, annually • Number of farms that practice rotational grazing, 2017 Ag Census 	<p>NOFA-VT, NRCS, UVM Extension, VGFA, VAAFM, conservation districts, local planning commissions</p>	<p>UVM Master Gardener program, NRCDs, Intervale Center, ANR-Basin Planning (e.g. "Trees for Streams")</p>
C. Protect biodiversity of farms	<p>Work with farmers, pesticide applicators and retailers, other interested stakeholders to reduce or appropriately manage pesticides that harm or reduce pollinator populations.</p> <p>Share and disseminate research on pesticides and herbicides as it becomes available.</p> <p>Educate and promote integrated pest management as a practice on farms and backyard enthusiasts.</p> <p>Encourage agricultural operations to realize the benefits of "edge effect" on agriculture and pest management.</p>	<ul style="list-style-type: none"> • Bee population stability, UVM Gund Institute for Ecological Economics • Number of apiaries, VAAFM • Colonies of bees, inventory and honey sales, 2017 Ag Census • Wildlife corridors protected from development, ANR • Expenditure of chemicals, 2017 Ag Census 	<p>CAV, peer-to-peer learning, UVM Extension</p>	<p>NRCS, VAAFM, ANR</p>

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
<p>D. Support and develop legislative initiatives that: mitigate or lessen agricultural runoff (e.g. tax on phosphorus-based fertilizers); meet the needs of Vermont's Universal Recycling Law; identify appropriate locations for siting energy generation projects; labeling of persistent pesticides.</p>	<p>Publicize and attend legislative breakfasts.</p> <p>Report on legislative updates via organization newsletters, social media, and board meetings.</p> <p>Offer comment on proposed legislation.</p> <p>Support incentives for siting solar installations away from most productive soils.</p>	<ul style="list-style-type: none"> • Updated Natural Resources chapter of Regional Plan for the NEK, 2020 • Updated energy, natural resources, and agricultural language in municipal plans, ongoing 	<p>VAAFM, NRCS, NRCDs, basin planners, NVDA, F2P Soil and Water Cross Cutting Team, VPA</p>	<p>DPS, F2P, VNRC</p>



Goal 3: The demand for local food will increase, and food production will increase and diversify to meet the demand.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
<p>A. Encourage production of niche market and specialty items.</p>	<p>Conduct market analysis for specialty crops and livestock to understand expertise needed for production, market demand, and infrastructure (e.g. aquaculture, honey, beans, hogs, sheep and mushrooms). (Use NCIC's 2014 Action Plan for Agriculture and Food System Development as a resource.)</p>	<ul style="list-style-type: none"> • Updated market analysis, 2020 • Workshops/training for potential entrepreneurs/growers/producers held, annually • Matchmaking events between producers and buyers, annually • Food businesses receiving technical assistance, annually • Fruit and vegetable production, 2017 Ag Census • Market value of products sold, 2017 Ag Census • Number of specialty food producers, e.g. the Mushroom King, annually 	<p>NEK Leadership Team NCIC, NVDA with assistance of grant funds Existing local food systems orgs (GMFTS, CAE, St J ALFA) Existing technical service providers (CAE, SBDC, NCIC, NVDA, UVM Extension, VHCB's Farm and Forest Viability Program, NOFA-VT, Land for Good) Center for Rural Studies</p>	<p>Working Land Enterprise Grants, USDA RD, EDA, NBRC, SBDC, VLT</p>
<p>B. Encourage and support farms that want to diversify.</p>	<p>Study the challenges (e.g., safety, financing, business planning, etc.), activities, and profitability of diversified farms. Identify programs to better serve the overall needs of these farms</p>	<ul style="list-style-type: none"> • Number of businesses receiving technical assistance, annually • Fruit and vegetable production, 2017 Ag Census • Market value of products sold, 2017 Ag Census • Number of farms making more than \$10,000 a year, 2017 Ag Census 	<p>Existing technical service providers (CAE, SBDC, NCIC, NVDA, UVM Extension, VHCB's Farm and Forest Viability Program, NOFA-VT, Land for Good)</p>	<p>USDA RD, EDA, Vermont Fruit Growers' Association</p>
<p>C. Map the market gaps from distributors and buyers to promote production of products in high demand</p>	<p>Develop a diversity of products vs. diversity of markets matrix showing gaps in terms of production and need for products. (Use NCIC's 2014 Action Plan for Agriculture and Food System Development as a resource.)</p>	<ul style="list-style-type: none"> • Gather and collate existing data sets for wholesale purchasing needs; Create products matrix showing wholesale buyer need that is shared with producers, 2017 • Farmers and food producers assisted by food hubs and other distributors, annually 	<p>CAE, GMFTS, F2P, NOFA-VT, regional institutional buyers (hospitals, schools, colleges, prisons) Distributors and food hubs</p>	<p>Vermont Retailers Association, Independent Grocers Study (F2P Initiative), distributors</p>
<p>D. Help interested businesses scale up production or aggregate to find appropriate markets</p>	<p>Provide technical assistance to interested businesses on scaling up production. Provide opportunities to connect producers with markets. Help farm and food producers sell to wholesale distributors and restaurants, such as addressing GAP (Good Agricultural Practices) certification, distribution requirements, water quality, food safety, nutrient management plans, etc.</p>	<ul style="list-style-type: none"> • Number of farms selling through regional food hubs, such as GMFD, Farm to Copacker, etc., annually • Producers selling through co-ops and distributors, annually • Coordinated workshop series from technical assistance providers, annually 	<p>Existing technical assistance providers and food hubs: CAE, GMFTS, UVM Extension, NCIC</p>	<p>VHCB's Farm and Forest Viability Program, Working Lands Enterprise Grants, NBRC, distributors</p>



Photo: Green Mountain Farm to School

Goal 4: Farmers and food producers will be profitable.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
<p>A. Establish a system of “wraparound services” for farmers and food businesses.</p>	<p>Provide business planning and technical assistance for farmers of different experience levels to better assess risk, prioritize investments, and service debt.</p> <p>Promote existing technical assistance available in the NEK by type and by specialty, as well as developing a go-to resource to assist farmers and food producers navigate the types of assistance they need.</p>	<ul style="list-style-type: none"> • Farm businesses assisted (via grant funding or technical assistance), annually • Number of farms making more than \$10,000 a year, 2017 Ag Census • Number of farms working more than 200 days off the farm, 2017 Ag Census • Net farm profitability, 2017 Ag Census) • Increase in number of farms, 2017 Ag Census 	<p>Existing technical assistance providers (CAE, NCIC, }SBDC, UVM Extension, VHCB’s Farm and Forest Viability Program, Land for Good)</p>	<p>USDA RD, EDA, NBRC, Working Lands Enterprise Grants</p>
	<p>Engage farmers and food producers on navigating changing regulations, and keep them apprised of legislative updates via organization newsletters and social media.</p>	<ul style="list-style-type: none"> • Outreach to farm and food producers via list serves, newsletters, and social media, annually. • Peer-to-peer learning and workshops 	<p>NEK Food System Leadership Team, Existing tech service providers and farmer-based organizations (such as CAE, GMFD)</p>	<p>VAAFM, F2P, Rural Vermont</p>
<p>B. Explore opportunities to understand and/or reduce regulatory barriers to on-farm business expansion and diversification.</p>	<p>Educate farmers and municipalities about agricultural enterprises and permitting requirements.</p>	<ul style="list-style-type: none"> • Number of communities with zoning that accommodate uses that are not exempted under RAPs (e.g. more than 50% principally produced), annually • Number of on-site trainings and consultations, annually • Technical assistance provided to municipalities and farmers 	<p>NVDA</p>	<p>VAAFM, Municipal Planning Grants, “Sustaining Agriculture” Training Modules, “Facilitating Innovative Agricultural Enterprises”</p>
	<p>If appropriate support efforts to amend planning and zoning statute.</p>	<ul style="list-style-type: none"> • Comment provided on proposed/existing legislation, annually 	<p>NVDA</p>	<p>VPA, VAPDA, VAAFM</p>
	<p>Participate in legislative discussions and rulemaking that could unintentionally reduce viability of farms and food businesses.</p> <p>Host a symposium of farm and food regulations, (e.g. on-farm slaughter).</p>	<ul style="list-style-type: none"> • Outreach to farmers, businesses, and the agricultural community when legislation is proposed through newsletters, Town Meeting Day, producer associations, Legislative Breakfasts, etc., ongoing 	<p>NEK Food System Leadership Team</p>	<p>NVDA, VAPDA, VPA, producer associations, VAAFM, Dept. of Health</p>

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
C. Improve access to capital	Leverage more funds from philanthropic organizations and state and federal government sources by establishing a NEK Food Systems Leadership group to apply for and manage funds	<ul style="list-style-type: none"> • Leadership group established, 2017 • Tracking existing funding streams going to the NEK, annually 	NVDA, CAE, NCIC, USDA RD, SBDC	NEK Collaborative, EDA, F2P Financing Cross-Cutting Team, Vermont Food Funders Network
	Minimize front-end debt for farm and food endeavors by supporting creative and flexible partnerships area with banking institutions and non-profit community development entities, such as NCIC and NVDA, Community Capital, Kickstarter	<ul style="list-style-type: none"> • Number of loans to farm and food businesses, annually (both traditional and alternative) 	NEK Food System Leadership Team	NEK Collaborative, EDA, NBRC, F2P Financing Cross-Cutting Team, revolving loan funds
	Encourage private investment for food production and for the marketing local foods by tracking the private dollars leveraged by public investment, whenever feasible.	<ul style="list-style-type: none"> • Grants and low-interest loans awarded, annually 	NCIC, NEK Food System Leadership Team, VT Farm Fund	NEK Collaborative, EDA, NBRC, F2P Financing Cross-Cutting Team
	Explore interest in using alternative investment to fund food system opportunities, such as the non-profit lending of the Vermont Farm Fund.	<ul style="list-style-type: none"> • Survey producer interest in using crowd-funding; assess challenges and opportunities of this investment tool, 2017 • Outreach around existing models of alternative lending through Financing the Working Landscape and other workshops and conferences, annually 	NEK Food System Leadership Team, Financing the Working Landscape	F2P Financing Cross-Cutting Team, producers and growers who have used crowdfunding (Tom Gilbert, Peace of Earth)



Goal 5: The food processing and manufacturing sector will grow by increasing value-added production by helping farmers and producers scale up to access domestic and international markets.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
<p>A. Help value-added producers (such as Vermont Food Venture Center clients) connect to local food sources and promote local foods in their marketing</p>	<p>Promote the NEK Producer/Processor Forum at the VFVC to advance collaboration.</p> <p>Host value-proposition and marketing workshops to advance skill set for producers.</p> <p>Host matchmaking events for value-added producers with local growers.</p>	<ul style="list-style-type: none"> • Number of value-added NEK producers who utilize local foods in their products, VFVC, annually • Number of workshops/participants who advance their values-proposition annually • Number of matchmaking events annually 	<p>NEK Food System Leadership Team, NEK Tasting Center, CAE</p>	<p>VSJF, F2P, existing tech service providers, existing local food system organizations</p>
<p>B. Coordinate the outreach for existing technical service that is available to NEK food producers, and push more businesses to technical service providers</p>	<p>Communicate to farmers and food businesses about existing technical services available and how to access them (including recipe development, product pricing, value-added meat product, business planning, food safety, regulatory advising, etc.).</p> <p>Identify any technical assistance gaps that exist for the NEK farmers and food producers, create a resource hub for technical service in the NEK.</p>	<ul style="list-style-type: none"> • Business planning workshops attended, annually • Number of farms and food businesses served, annually 	<p>Existing tech service providers (CAE, SBDC, NCIC, VHCB Farm and Forest Viability Program, UVM Extension, NOFA-VT, Land for Good, independent service providers)</p>	<p>Working Lands Enterprise Grants, USDA RD, EDA, Food Export US</p>
<p>C. Support use of existing infrastructure</p>	<p>Lightly process NEK grown fruits and vegetables for various markets, including institutions, through existing infrastructure.</p> <p>Use processing facilities as training sites for workforce development and as a facility to hold canning, cooking, and food processing classes for the public.</p>	<ul style="list-style-type: none"> • New NEK growers and producers using the VFVC, NEK Processing, etc., annually • Workshops and trainings held, annually • Number of workforce development partners using the VFVC, annually 	<p>VFVC, emerging shared use kitchen facilities</p>	<p>USDA RD, Local Food Promotion Grant, EDA</p>

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
D. Support and expand the meat and meat processing industry, including regional efforts to bring more value to Vermont's dairy goat farming through goat meat processing.	<p>Help farmers stagger their slaughter dates to address the bottleneck in meat slaughter. This may be accomplished through education and financial incentives.</p> <p>Expand the practice of sending dairy beef (culled cows) to an NEK slaughterhouse to be processed into ground beef to sell to schools and institutions.</p> <p>Monitor water and wastewater capacity, and support creative solutions, including decentralized systems.</p> <p>Survey distributors for gaps in value-added meat markets in NEK and beyond</p>	<ul style="list-style-type: none"> Track slaughterhouse schedules and provide outreach/communication assistance to clients NEK meat processed through existing slaughterhouses, annually (set target in pounds or other measure) Survey existing dairy and value-added dairy operations for opportunities for culled animals, 2017 Survey distributors for meat/protein gaps that could filled with local products, 2017 Waste water planning, as needed 	<p>NEK Processing, Braults', other slaughterhouses, existing distributors (GMFD, Food Connex, BRP, UVP, VT Roots, Best of Vermont, etc), NVDA, UNH Cooperative Extension</p>	
	<p>Promote opportunities to farmers who may be interested in raising goats on forage/open land.</p> <p>Promote and publicize use of chevon for private and institutional markets.</p>	<ul style="list-style-type: none"> Meat goats, inventory and sales, 2017 Ag Census 1,000 kids on finishing farms, Vermont Chevon 2020 Tasting events, annually 	<p>Existing goat meat production operators (VT Chevon)</p> <p>Existing tourism/travel or public awareness entities (NEKTTA, GMFTS, CAE)</p>	
E. Support the fluid milk industry through innovative locally-based investments	<p>Support local milk bottling and on-farm micro-processing.</p> <p>Survey existing and emerging value-added dairy producers for specific gaps in infrastructure, processing or shared-use facility/equipment, and milk supply and identify areas for future investment.</p>	<ul style="list-style-type: none"> Farms with value-added processing, 2017 Ag Census Pounds of fluid milk bottled, annually Pounds of cheese and dairy products produced, annually 	<p>UVM Extension, NOFA-VT, CAE, VHCB Farm and Forest Viability Program, Dairy Vision</p>	<p>Vermont Farm Fund, Working Lands Enterprise Grants, USDA RD, NBRC</p>
F. Support the cider industry through scaled processing and matching supply/demand for raw product.	<p>Explore the feasibility of establishing an appropriately scaled cider press with ready highway access and cold storage capacity.</p> <p>Work with apple growers and cider processors to improve availability of locally grown apples at a price processors can afford.</p> <p>Identify growers and producers and conduct SWOT analysis for NEK regional products.</p>	<ul style="list-style-type: none"> Availability of cider press Farms and acres producing apples, 2017 Ag Census Number of cider operations, annually Identify actions steps, weaknesses and opportunities for cider industry in the NEK, 2020 	<p>Existing cider producers and apple growers (such as Eden Ice Cider, Cate Hill)</p> <p>Existing tech assistance providers and planning organizations (NVDA, CAE, UVM Extension, VHCB Farm and Forest Viability Program, etc.)</p>	<p>Working Lands Enterprise Grants, Vermont Farm Fund, USDA RD, NBRC</p>


Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
G. Identify and map production and processing gaps for farmers/food producers	<p>Provide coordinated outreach about existing licensed and non-licensed commercial, industrial and community sites for production and processing in the NEK, or add to existing online portal for existing resources (e.g. VT Food Atlas).</p> <p>Identify new sites in the NEK that can support additional processing, hydroponics, aquaculture, or other specialty businesses, e.g. mills along the CT River and other abandoned or underutilized facilities.</p>	<ul style="list-style-type: none"> • Inventory of all shared-use and private facilities in the NEK, 2018 • Public outreach via portal, websites, newsletters to farmers and producers, annually • Greenhouse vegetables, mushrooms, 2017 Ag Census • How to guides for value-added start up production, etc., 2017 	NCIC, NVDA, CAE	SBDC, USDA RD
H. Support minimal processing programs	<p>Increase access to equipment and infrastructure for small- to mid-sized farms</p>	<ul style="list-style-type: none"> • Inventory and publicize existing shared-use spaces and equipment by 2020 • Number of farms served by all tech assistance providers, annually • Number of farms receiving grants/loans to purchase infrastructure, annually 	NEK Food System Leadership Team	VHCB Farm Viability Program, Working Lands Enterprise Grants, Financial institutions, NVDA, NCIC, SBDC, USDA RD, EDA, NBRC
	<p>Support efforts to establish purchasing and leasing cooperatives for equipment and technology.</p>	<ul style="list-style-type: none"> • Technical assistance provided to producers for grant writing for equipment, annually • Marketing and promotion of existing innovative leasing/purchasing model, ongoing 	Peer-to-peer network collaboration, NVDA, CAE's VT Equipment Access Leasing Program	Working Lands Enterprise Grants, Vermont Farm Fund, USDA RD

SUMMER AT STERLING

2 Day Workshop



FOOD WRITING



SIERRA NEVADA
WILDERNESS FIELD PROGRAM

GLOBAL FIELD STUDY: SIERRA NEVADA




FIELD BOTANY OF FLOWERING
PLANTS & FIELD ORNITHOLOGY



BREWING & CIDER MAKING




REGENERATIVE AGRICULTURE



2 Day Workshop



WE ARE WHAT WE TELL: FAMILY
STORIES & CULTURAL IDENTITY



WETLANDS ECOLOGY



NATURAL HISTORY ILLUSTRATION



FORAGING & WILDCRAFTING

with Sarah Deader



HARE, HORSE, BUTCHERING, OR
FERMENTATION & CURING

with Pa...



2 Day Workshop



Summer Agriculture
PRACTICUM: I & II



THE ART OF FERMENTATION

with Sander Kats



GLOBAL FIELD STUDY: UNITED KINGDOM



WORKING HORSES.
WORKING LANDSCAPE.



INTRO TO DAIRY




Goal 6: Storage, aggregation, distribution, telecommunications, and other forms of on-farm and commercial infrastructure will be sufficient to meet increasing year-round consumer demand.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
<p>A. Pursue cost effective distribution strategies to reach end users in Boston and New York markets.</p>	<p>Assess market demand for products and existing shippers and distributors already moving to these markets (including opportunities for backhauling).</p> <p>Explore feasibility of maintaining a leased refrigerated truck available for short-term use (i.e. following the “zip car” model).</p>	<ul style="list-style-type: none"> Feasibility and business planning study for transportation model, 2018 	<p>NVDA, NCIC, CAE, other regional food system or planning organizations</p>	<p>Interested businesses (eg. VT Chevron, Le Lapin de Stanstead), CAE, GMFTS/GMFD, Food Connex, Myers Produce, other regional distributors, Working Lands Enterprise Grant, USDA RD, NBRC, EDA</p>
<p>B. Coordinate movement of goods to achieve maximum efficiency.</p>	<p>Identify and publicize opportunities for shared truck space among existing growers and producers.</p> <p>Generate better awareness of existing resources, such as freight service.</p> <p>Create a central platform for sharing information about shared transportation opportunities.</p> <p>Create a food-based business networking support group that facilitates peer-to-peer support and instills best practices among users of shared infrastructure.</p>	<ul style="list-style-type: none"> Promotion of platform/central hub for publicizing information about shared transportation, 2018 Creation of food-based network, 2018 	<p>CAE, NCIC, food hub community of practice, GMFTS</p>	
<p>C. Coordinate storage of goods to achieve maximum efficiency</p>	<p>Identify and publicize opportunities for shared storage space among existing growers and producers.</p> <p>Explore the feasibility of establishing a leased storage facility through a public-private partnership or through a partnership with an existing business that can cover operating costs.</p> <p>Create a food-based business networking support group that facilitates peer-to-peer support and instills best practices among users of shared infrastructure.</p> <p>Explore cost-effective fit-up of the underutilized root cellar in Hardwick.</p>	<ul style="list-style-type: none"> Growers and producers leasing storage space, annually Feasibility study of leased storage facility, 2019 Exploration of feasibility of Hardwick root cellar use, 2017 Creation of food-based network, 2018 Number of farms collaborating on distribution thru distributing food hubs, annually 		<p>Current users of Hardwick root cellar, small vegetable producers, Farm Connex</p>

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
D. Centralize and strengthen existing food hubs, rather than developing duplicative infrastructure in our rural communities	<p>Communicate the food hub services, programs and fee-for-service structures to a wider audience (marketing).</p> <p>Coordinate and centralize services among existing food hubs to co-locate for efficiency of service delivery (e.g. online brokerages, shared storage, logistical support).</p>	<ul style="list-style-type: none"> • Increase in number of farms/food businesses served by existing food hubs, annually • Increase in number of institutions and markets served by existing food hubs, annually • Sales of local food products, annually • Volume of purchased food and farm products, annually 	CAE, GMFD, emerging shared-use kitchens	USDA RD, EDA, USDA Local Food Promotion Grant
E. Support further study of the freight movement of non-durable goods in the NEK.	<p>Identify infrastructure needed to maximize inbound, outbound, and internal freight movement.</p> <p>Explore the feasibility of a developing a food miles measurement that can be used in marketing local foods.</p> <p>Identify and utilize benefits of moving materials through the Foreign Trade Zone (e.g. aggregating supply of glass bottles for beverage and maple producers).</p>	<ul style="list-style-type: none"> • Transportation studies conducted by NVDA, 2017 and ongoing as needed • Outreach to growers and producers regarding the FTZ, annually 	NVDA, CAE, NCIC, NEK Food System Leadership Team	Tourism and Chamber organizations, Vermont Retailers Association

Goal 7: Appropriate marketing and promotion for retail, wholesale, institutional, and direct market channels will drive up demand for local food.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
<p>A. Help retail, institutional, and wholesale buyers connect with local food sources</p>	<p>Provide technical assistance and training to retail and wholesale buyers on the value-proposition of local sales, and training around best practices for selling.</p> <p>Promote existing NEK online purchasing portals for connecting institutional and wholesale buyers with local sources, using a user-friendly, geographically-based search engine; identify gaps that might exist for enhancement.</p> <p>Host a local food trade show for institutional buyers.</p>	<ul style="list-style-type: none"> • Number of institutions purchasing through local distributors, annually • Number of farms and producers participating in food hubs/distributors, annually • Regional products purchased through institutions, annually • Institutional buyers attending trade show, 2018 	<p>CAE, GMFTS/GMFD, existing distributors (GMFTS/GMFD, Food Connex, UVP, BRP, Myers Produce, etc), institutional tracking (Sodexo, Reinhart, schools, hospitals, etc.)</p>	<p>St. J ALFA, VAAFM, SBDC, NVDA, NCIC, existing venues/locations in the NEK that feature food and farms (NEK Tasting Center, etc.)</p>
<p>B. Establish a marketing campaign that helps residents see local food as “their own”.</p>	<p>Implement strategies to increase local sales by marketing Vermont and farm family connection through packaging and point of sale, using 2011 meat processing study as a starting point.</p> <p>Create a template marketing/ordering template that producers can use when working with restaurants that want to source locally.</p> <p>Support local foods in grocery stores with POS signage and literature.</p>	<ul style="list-style-type: none"> • Meat and other producers and processors assisted, annually • Templates produced and adapted, annually • Number of local food events branded/ marketed with campaign, annually 	<p>Existing technical service providers (CAE, UVM Extension NOFA-VT, etc.)</p>	<p>VAAFM’s 2011 Market Analysis of Meat Processing, VHCB Farm Viability Program, Working Lands Enterprise Grants</p>
<p>C. Promote the Northeast Kingdom’s brand of quality and unique identity.</p>	<p>Explore the feasibility of designing an NEK brand and logo; set standards for that brand.</p>	<ul style="list-style-type: none"> • Market research and feasibility assessment, 2020. 	<p>NVDA, NCIC, NEKTTA, GMFTS</p>	<p>Producers, VAAFM, F2P, Vermont Retailers Association, ACCD, VDTM, Vermont Dairy Council</p>
<p>D. New, emerging, and existing farmers’ markets leverage maximum impact and market reach.</p>	<p>Establish a coordinated marketing campaign that dispels the perceptions around local food costing more and extols the long-range benefits of staying local (e.g. dollars re-circulated into the economy, food miles travelled).</p>	<ul style="list-style-type: none"> • Point of sale signage and literature and other advertising campaigns, 2018 • Impressions or reach of campaign and earned media value, annually thereafter • Letters to editor, ongoing 	<p>Existing local food campaigns; Harvest of the Month, Newport Fresh by Nature, VSJF Farm to Plate Vermont Local Food campaign, etc.</p>	<p>USDA RD, F2P Consumer Focus Group</p>

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
E. Build a viable agritourism and culinary tourism industry.	<p>Market local foods through the hospitality and tourism industry (e.g. inns, resorts, bed and breakfasts).</p> <p>Create a common calendar which matches with state and regional events so as to maximize visitor seasons and farmer/food producer availability</p>	<ul style="list-style-type: none"> • Number of businesses participating in the Vermont Fresh Network, annually • Number of businesses participating in Newport. Fresh by Nature., annually • Number of farms reporting revenues from agritourism, 2017 Ag Census • Number of food related events, annually • Number of visitors to food related events, annually 	NEKTTA, GMFD, Newport City Renaissance, NEK Food System Leadership Team	Kingdom Provisions, St. Johnsbury Chamber, St J ALFA, DigIn Vermont, Vermont farm and food tours (e.g. VT Farm Tours, NEKTTA), Vermont Open Farm Week
F. Support Direct-to-Consumer sales	<p>Form multi-farm CSA or multi-farm buying club cooperatives, which would allow household and workplace CASE members more options.</p>	<ul style="list-style-type: none"> • Number of farms offering CSAs, 2017 Ag Census; NOFA-VT • Number of farms selling direct to consumer, 2017 Ag Census • Number of CSA shares purchased, annually • Zoning bylaws that allow for farmers' markets and farm stands that exceed the 50% principally produced rule, annually 	NEK Food System Leadership Team	Local food promotion grants, Farmer's market promotion grants, USDA RD, NVDA
				

Goal 8: The region will achieve food sovereignty, providing residents with economic access to fresh, healthy and local foods, and food-related health outcomes will be improved.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
A. Eliminate socio-economic barriers to fresh and local food.	Expand EBT machine usage to all farmers' markets in the NEK by 2020.	<ul style="list-style-type: none"> Number of farmers' markets accepting SNAP, measured annually 	NOFA-VT	
	Promote the use of Farm to Family, Fresh Fruit and Veggie, Crop Cash, and other coupons. Encourage strategies that promote usage, such as additional percentages off. Increase the number of summer meals programs and individuals served through schools and other organizations.	<ul style="list-style-type: none"> Farmers' markets redeeming Farm to Family and Crop Cash coupons, annually Number of retailers participating in program, annually Fresh Fruit and Veggie Coupons redeemed, annually 	Vermont Dept. of Health, GMFTS, farmer's market managers, NOFA-VT, Hunger Council of NEK	NEKCA, F2P Food Access Cross Cutting Team, USDA RD, Wholesome Wave
	Increase access to CSA shares for low-income families, exploring models such as VYCC Health Care Share. Increase access for low-income families to purchase local foods, exploring models that exist in other parts of the state	<ul style="list-style-type: none"> Funds raised by donations to support CSA shares at reduced cost, annually Number of low-income families receiving CSA or reduced-cost CSA share, annually Number of participants/attendees at farmer's markets or other methods/strategies, annually 	Hospitals, colleges, farmer's markets, St J ALFA, UKFA, Fresh Start	VYCC, existing farm businesses in the NEK, Wholesome Wave, NOFA-VT
B. Promote healthy lifestyles through eating	Support education efforts to develop an appreciation for healthy food among all ages, especially school-age and pre-school populations.	<ul style="list-style-type: none"> Number of schools participating in farm to school programming, annually Number of participants in Harvest of the Month program, annually Harvest of the Month tastings, annually 	Existing local food system organizations: GMFTS, CAE, St J ALFA, Dept. of Education	Vermont Food Funders Network – focus on food access funders
	Support workshops and cooking demonstrations	<ul style="list-style-type: none"> Number of workshops held, annually Number of food pantries participating in VT Foodbank's pantry programs, annually Number of people served through VeggieVanGo®, annually 	UKFA, NECKA, CAE, NVRH	Vermont Dept. of Health, VT Foodbank

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
C. Measure and promote the “informal economy,” e.g. the grow-your-own production and processing of food for direct consumption, including home and institutional gardens, and hunting.	Consider the development of a measurement index that can be used by food access and security groups and incorporated into the local planning process.	<ul style="list-style-type: none"> • Completion of Agricultural Land Use Planning Module 6: Food Access, 2018 • Number of local plans that address food access, annually 	NOFA-VT, F2P Food Access Team, NVDA	VPA
	Identify regulatory barriers to the region’s informal economy (such as “backyard chickens”) and work with municipalities to develop equitable solutions that promote food access and good neighbor practices.	<ul style="list-style-type: none"> • Technical assistance provided to municipalities and local planning commissions, annually 	NVDA, VLCT	Municipal Planning Grants
	Promote and expand community gardens in the region. Ensure they have adequate infrastructure to extend productivity and the growing season (e.g. hoop houses, water filtration systems).	<ul style="list-style-type: none"> • Number of community gardens, Vermont Community Garden Network, annually 	St. J ALFA, Fresh Start, NVRH, UKFA	USDA RD, Vermont Community Garden Network
D. Increase distribution of local produce through the charitable food system.	<p>Identify and address space and infrastructure needs to accommodate produce at local food shelves.</p> <p>Explore ways to make minimally processed produce available, such as value-added processing fees, or the development and sale of private-labeled product.</p>	<ul style="list-style-type: none"> • Number of food access sites offering local produce, annually. 	CAE, VT Foodbank, food shelves, FIA, NEKCA	
E. Integrate food access into affordable housing	<p>Promote and design appropriate on-site gardens for interested residents (e.g. raised beds for disabled residents).</p> <p>Coordinate delivery of CSAs and fresh produce to affordable housing sites.</p>	<ul style="list-style-type: none"> • Number of housing developments with food access programs, annually 	Rural Edge, LHP, SASH, Housing Vermont, VHCB, GMFTS, VT Foodbank	Hunger Council of the NEK, NEKCA, NOFA-VT, Rotary Clubs

Goal 9: Establish a model food justice that will articulate an actionable food policy for the NEK, Vermont, and our nation.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
A. Support and showcase equity efforts and best practices.	<p>Identify and publicize businesses that maintain transparency around farming, processing (including slaughter) and distribution practices.</p> <p>Support and showcase social equity efforts including gleaning efforts, foodbanks, community dinners, and senior meal sites.</p>	<ul style="list-style-type: none"> • Case studies, public outreach through social media, annual reports, annually 	<p>Hunger Council of the NEK</p>	<p>St J ALFA, UKFA, NVRH, NOFA-VT, Cornucopia, Fresh Start</p>
B. Support efforts to establish livable wage in Vermont.	<p>Develop a regional median hourly wage for all food system jobs in the NEK.</p> <p>Support broader efforts to advocate at the state level.</p>	<ul style="list-style-type: none"> • Median hourly wage, measured every three years. • Participation and outreach in statewide organizations, annually • Comments offered on legislation, annually 	<p>NVDA, NEK Food System Leadership Team</p>	<p>2011 Strategic Industries Report (updated), ACCD, Vt. Dept. of Labor, VT JFO</p>
C. Support a diverse region-wide food security task force.	<p>Communicate food security needs to broader audiences.</p> <p>Support specific programs to improve food access, affordability, availability and utilization of fresh, healthy, and local foods.</p>	<ul style="list-style-type: none"> • Public outreach, annually • Promote career/lifestyle awareness to inform general public about food system equity, annually • Number of programs improving food access and affordability, annually 	<p>Hunger Council of the NEK, CAE, NVDA</p>	<p>St. J ALFA, NVRH, UKFA, GMFTS, NEKCA</p>
D. Advocate for food sovereignty and justice through local planning.	<p>Address food access, community health, farm worker housing, and labor practices in plans and bylaws.</p> <p>Support efforts to establish municipal food system plans.</p>	<ul style="list-style-type: none"> • Plans and bylaws adopted with applicable language, annually • Trainings and consultations with municipalities on food system issues, annually 	<p>NVDA</p>	<p>Municipal Planning Grants, VPA, Sustaining Agriculture Training Modules</p>
E. Establish a comprehensive gleaning program and other mechanisms to reduce food waste.	<p>Support efforts to use existing shared-use facilities and/or find new sites for aggregation and distribution of gleaned product.</p> <p>Support efforts to implement performance-based contracts or LEAN PATH (or similar systems) at the institutional level.</p> <p>Support education and training efforts to use past-date and “ugly vegetables.”</p>	<ul style="list-style-type: none"> • Food diverted from waste stream, annually, waste management districts • Product gleaned and redistributed in the region, currently no measure • Workshops held, annually • Establishment of food rescue site in Newport, 2018 • Other potential sites identified, 2018 • Performance-based contracts and/or food waste reduction systems in place, ongoing 	<p>NEKWMD, Fresh Start, Vt. FoodBank, Hunger Council of the NEK, Salvation Farms, CAE’s VFVC</p>	<p>CAV, UKFA, Sterling College, St J ALFA, USDA RD, EDA, UVM</p>

Goal 10: Agricultural land will be open and available to future generations of farmers.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
A. Develop new and support existing programs to increase access to farmland.	Build community support for land trusts and their projects by publicizing their efforts and achievements.	<ul style="list-style-type: none"> • Newsletter, social media, other outreach to NEK residents and municipalities, annually and ongoing 	NVDA, local planning commissions	VLT, local land trusts
	Consider an art-oriented venue or event to build support for farmland conservation (similar to Farm to Ballet).	<ul style="list-style-type: none"> • Number of events held, number of attendees to event, annually 	NVDA, Catamount Arts, VLT, Summer Music on the Green, Greensboro Arts Alliance	NRCS, VT Arts Council
	Consider an NEK-based land trust farm fund to make more funds for farmland conservation and for land access (purchase or lease).	<ul style="list-style-type: none"> • Farmland conserved, annually 	Existing land trust entities: such as VLT, Northern Rivers Land Trust	F2P Farmland Access and Stewardship Group, VLT, local land trusts, local revolving loan funds
B. Promote a GIS-based farmland inventory of land for sale and lease.	<p>Promote Vermont Land Link to increase number of sale and leasable properties listed on site and connect farm seekers with landowners.</p> <p>Promote LandLink to retiring farmers.</p> <p>Promote farm seeker profiles to farmland owners.</p>	<ul style="list-style-type: none"> • Properties listed on Land Link (or similar Web-based portal, annually. • Outreach and events related to LandLink, annually 	<ul style="list-style-type: none"> - Existing land management: Vermont Realtors Assoc., UVM Extension, VHCB, Land for Good - Existing farmer events, such as NOFA-VT, Financing the Working landscape 	F2P Farmland Access and Stewardship Group, USDA RD, Intervale Center
C. Facilitate and support succession planning.	Identify and connect retiring farmers with prospective farmers.	<ul style="list-style-type: none"> • Farmland purchased or leased, annually • Number of farmers connected, annually 	Land for Good, UVM Extension, VHCB, Vermont Land Trust Farmland Access Program	VLT, F2P Farmland Access and Stewardship Group, Local land trusts, Master Grazer program
D. Make sure that agricultural land access is adequately addressed in all municipal planning and zoning efforts.	<p>Develop GIS-based resources for municipalities, including long-term development patterns in agricultural lands, conservation easements, and Act 250 mitigated lands.</p> <p>Identify potential lands for food production in more urban settings, e.g. community gardens and farms.</p> <p>Showcase best examples of municipal planning and zoning.</p> <p>Explore and promote alternative zoning techniques that minimize fragmentation of productive lands.</p>	<ul style="list-style-type: none"> • Number of plans that meet and exceed minimal statutory requirements (under Chapter 117), annually • Land studies completed (e.g. Land Evaluation and Site Assessment), annually • Meetings and trainings with local planning commissions, annually • Number of communities with agricultural overlays or alternative zoning technique (such as density-based), annually 	NVDA	VPA, F2P, "Sustaining Agriculture" Training Modules , Municipal planning grants, VLT, NASS data, local planning commissions
E. Better align taxation and conservation practices with existing farming practices.	<p>Review existing minimum farming requirements under the Current Use program and consider amending the threshold for eligibility to be consistent with the proposed definition of a "Small Farm" under the Required Agricultural Practices.</p> <p>Consider accommodating farm-based infrastructure on conservation easements (group housing, rural enterprises), that won't make the land unaffordable for the next generation.</p>	<ul style="list-style-type: none"> • Comment provided on existing programs, annually • Review of proposed conservation projects, annually • Outreach to farmers about legislative breakfasts, opportunities for public comment, annually 	Food System Leadership Team	VAAF, Dept. of Taxes, VPA, VLT, F2P Farmland Access and Stewardship Group

Goal 11: Food system development will have positive economic impacts through food system education and workforce development in schools and training programs.

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
A. Expand and coordinate food systems and agricultural education programs in secondary and post-secondary schools.	Every career and technical education center (CTE) should have a sustainable food systems program offered as both a secondary educational program and as an adult training program with career pathways, including diversified agriculture, meat and dairy processing, value-added entrepreneurship, and culinary arts with a local food/ culinary tourism emphasis.	<ul style="list-style-type: none"> All three CTEs will have a food systems program, 2021 Number of graduates of CTEs entering food system career Number of internships/out-ternships, shadowing, or other Act 77 PLP programming related to food systems in the NEK 	Lyndon State College, Sterling College, Community College of Vermont, St. Johnsbury Academy, Lyndon Institute, Green Mtn Technology & Career Center, CAE, North Country Career Center	Vermont Higher Education Food Systems Consortium, Food Systems Professional Learning Community
	Develop and enter into articulated agreements between secondary schools and colleges to earn college credits and provide a continuum for food systems education.	<ul style="list-style-type: none"> Develop model agreement outlining the curriculum and credit requirements that transfer, at least one agreement by 2018. Monitor efficacy of agreement. 	NEK Food System Leadership Team	Agency of Education, VT State Colleges, CTEs, supervisory unions, Vermont Higher Education Food System Consortium
B. Expand farm-to-school programming in elementary, middle, and high schools.	Increase the number of school gardens.	<ul style="list-style-type: none"> At least 95% of schools will have an active school garden (currently: 55%), 2020 	GMFTS	VCGN, High Mowing Organic Seeds, Shelburne Farms, VT- FEED
	Increase the amount of NEK produced food available in schools. Eliminate the gap between what schools can afford to pay and the price farmers can afford to sell products.	<ul style="list-style-type: none"> % of school food sourced from within 100 miles of the school, annually. Gap between school budgets and cost of local food, annually 	Existing food hubs and distributors (GMFTS/ GMFD, CAE, Food Connex, etc.)	NOFA-VT, supervisory unions
	Integrate sustainable food systems curriculum across classes, such as civics, health, and science.	<ul style="list-style-type: none"> Number of elementary, middle, and high schools with at least 1 food system-related class per grade, 2017 	GMFTS, supervisory district leadership	NOFA-VT, VT Farm-to-School Food Systems Professional Learning Community, peer-to-peer learning, VT FEED
C. Identify workforce needs and connect businesses, educators, and workforce support system organizations to help support these needs.	Align job training with NEK food system needs (eg. Washington County, Addison County).	<ul style="list-style-type: none"> At least 1 educator from the NEK participates in the Food Systems Professional Learning Community, annually Needs assessment/ asset map of gaps in food system employment needs, 2017 Annual food systems education and workforce development summit to ensure regional coordination, annually Training for delivery drivers and CDL certifications, annually Number of learning opportunities offered throughout the region for adults, annually 	Existing workforce development partners: NVDA, CTEs, LSC, CCV, Vt. Dept. of Labor Existing workforce development sites (CAE's VFVC, Umbrella, etc.)	Existing farm and food businesses (eg. Jasper Hill, High Mowing Organic Seeds, Eden Ice Cider, Cabot Creamery, Caledonia Spirits, Pete's Greens, etc)
	Evaluate existing metrics from 2011 NVDA study to measure jobs and wages in farms and the food sector, and if necessary refine methodology. Update and publish data.	<ul style="list-style-type: none"> Updated data on employment, wages, and export quotient in agribusiness sector, 2017 and every three years after 	NVDA	Economic & Policy Resources, Inc., Vermont ACCD, Vt. Dept. of Labor, F2P

Objective	Specific Actions	What are the performance measures, and when are they measured?	Who can facilitate and monitor?	Who are the partners, advocates & potential funders?
D. Provide greater visibility and awareness of food system employment.	Improve the visibility of food system job opportunities.	<ul style="list-style-type: none"> • NEK Food and Farm Job Fair, annually 	CAE and existing work-force development and education partners	Food Systems Professional Learning Community
	Increase direct exposure between secondary / college students and food system professionals.	<ul style="list-style-type: none"> • % of students from all high schools and college with a food system internship, 2018 • Number of food system professionals participating in career panels at high schools, annually • Compile and update list of food system jobs to share with students, annually • Annual training of career and guidance counselors about what food system jobs are and paths to get there, annually 	Food Systems Higher Education Learning Consortium, supervisory unions, CTEs, Agency of Education, Vermont State Guidance Counselors Association, technical educators guidance association (e.g. ACTE)	
E. Support flexible learning, adult education, and career pathways.	Coordinate existing and develop new internship and apprenticeship programs for farms and food system businesses.	<ul style="list-style-type: none"> • Number of scholarship, paid opportunities, and other incentives available, annually. • Participation rate increase over time, 2021. • Number of apprentices who continue in the field, annually. 	Lyndon State College, food system professional associations, Vt. Dept. of Labor State Apprenticeship Program and Project Worksafe, CTEs	
	Create a system for food-related employment education.	<ul style="list-style-type: none"> • Develop a clear flowchart for skills and certifications needed for less-obvious food system jobs, such as refrigeration/ HVAC. • Increase in number and type of learning opportunities, such as classroom, online, and hands-on courses. 	LSC, F2P Education & Workforce Development Working Group, CAE Workforce Development Training	
	Expand Cornucopia model of food-training through partnerships with employers.	<ul style="list-style-type: none"> • Number of employers with on-site training, annually. • Number of graduates from Cornucopia, annually 	Umbrella	NEKCA



Glossary

Facilitating and Supporting Organizations and Initiatives

The Implementation Plan contains several acronyms, terms, and organizations that may not be familiar to a general audience, or their role in the food system may not be readily apparent. This glossary is not intended to be a comprehensive directory of the many stakeholders and advocates in the regional food system, rather it is a starting point for bringing people and resources together.

ACCD: Vermont Agency of Commerce and Community Development, which houses three major state departments -- Economic Development, Community Development, and Housing. Administers Community Development Block Grants, as well as **Municipal Planning Grants**. <http://accd.vermont.gov/>

ANR: Vermont Agency of Natural Resources and its various departments charged with outreach, education, and enforcement on a variety of food system-related areas, including water quality and recycling. <http://anr.vermont.gov/>

CAE: Center for an Agricultural Economy, which operates the **Vermont Food Venture Center** (VFVC) and the Equipment Access Leasing Program, and facilitates workforce development training in cooperation with the Orleans Southwest Supervisory Union. <http://www.hardwickagriculture.org/>

CAV: Composting Association of Vermont, a nonprofit organization that promotes the production and use of compost as a vital link between soil health and sustainable agriculture and communities. <http://compostingvermont.org/>

CEDF: Clean Energy Development Fund, which was established by the Vermont General Assembly to support renewable energy generation through rebates, credit enhancements, and occasionally, grants. http://publicservice.vermont.gov/renewable_energy/cedf

Cornucopia: Umbrella's culinary arts and hospitality training program for women in transition. <http://umbrellanek.org/our-programs/cornucopia-2/>

CTE: Career and Technical Education. The NEK has three CTE centers: Lyndon Institute, St. Johnsbury Academy, and North Country Career Center. <http://education.vermont.gov/student-learning/flexible-pathways/career-technical-education>

Dairy Vision: A core group of service providers that offer funding and technical assistance to farmers. <http://www.dairyvisionvt.com/>

DigIn Vermont: An online portal to Vermont's culinary and agricultural experience. <https://www.diginvt.com/>

DPS: Vermont Department of Public Service, which provides long-range energy and telecommunications planning, promotes energy efficiency, and administers programs such as the **Clean Energy Development Fund** (CEDF). Not to be confused with the Public Service Board, which reviews applications for Certificates of Public Good. <http://publicservice.vermont.gov/>

EDA: Economic Development Administration of the Bureau of the U.S. Department of Commerce, which provides grants for economic development and infrastructure improvements to the NEK, as well as Lamoille, Franklin, and Grand Isle Counties. <https://www.eda.gov/>

F2P: Vermont Farm to Plate and its vast network of working groups, teams, and initiatives that may support the efforts of the NEK Food System Leadership Team, including Consumer Focus Group; Education & Workforce Development Working Group; Energy Cross-Cutting Team; Food Cycle Coalition; Farmland Access and Stewardship Group; Financing Cross-Cutting Team; Food Access Cross Cutting Team; Independent Grocers Study; Vermont Local Food campaign; and Soil and Water Cross Cutting Team

Farmer's market promotion grants: See USDA AMS.

FIA: Faith in Action Northern Communities Partnership. A nonprofit that seeks to empower communities to take care of their own, FIA distributes free food throughout the NEK. <http://www.fiancp.com/>

Financing the Working Landscape: An annual event where farmers, wood products industry businesses, and food-based businesses learn about the resources needed to launch and expand their operations. The event is held in various locations throughout Vermont, and was held in the NEK 2015-2016.

Food Hub Community of Practice: A member-based group of the National Good Food Network for discussing and exploring food hub issues. <http://www.ngfn.org/resources/food-hubs>

Food Systems Professional Learning Community: Funded by the VT Agency of Education and administered through F2P's Education & Workforce Development Working Group, this group meets regularly to expand curricula in support of furthering the food system. The group mainly consists of middle school, high school, and CTE centers professionals. <http://www.vtfarmtoplate.com/network/education-workforce-development/activity/71>

Fresh Start: Fresh Start Community Farm, a decentralized urban farming initiative in Newport City using green spaces, lawns, parks, and other reclaimed spaces. Fresh Start received a **Municipal Planning Grant** in its nascency.

GMFTS and GMFD: Green Mountain Farm-to-School, and its food hub, Green Mountain Farm Direct. <http://greenmountainfarmtoschool.org/>
<http://www.greenmountainfarmdirect.org/>

Intervale Center: A Burlington-based nonprofit that manages 350 acres of farmland and wildlife corridors within the city limits in support of strengthening the community food system. <http://www.intervale.org/>

Housing Vermont: A statewide nonprofit syndication and development organization that supports affordable housing. <https://www.hvt.org/>

Hunger Council of the NEK: A group of leaders who are committed to learning about hunger and improving community and household food security in Caledonia, Essex, and Orleans Counties.

<https://www.hungerfreevt.org/northeast-kingdom>

Land for Good: A New England-based organization that works to secure the future of farming by improving land access and tenure security for beginning and established farmers. <http://landforgood.org/about/>

LHP: Lamoille Housing Partnership, the nonprofit housing organization serving Hardwick. <http://www.lamoillehousing.org/>

Local Food Promotion Grant: See USDA AMS.

Municipal Planning Grant: An annual competitive grant program that funds a variety of efforts in support of statewide planning goals. <http://accd.vermont.gov/community-development/funding-incentives/municipal-planning-grant>

NBRC: Northern Border Regional Commission, a federal-state partnership that invests grant funds in economic and infrastructure projects in the NEK, as well as Franklin, Grand Isle, and Lamoille Counties. <http://www.nbrc.gov/content/vermont>

NCIC: Northern Community Investment Corporation, a non-profit, certified Community Development Financial Institution working in the NEK and New Hampshire's North Country. <http://www.ncic.org/>

NEKCA: Northeast Kingdom Community Action, which provides multiple services from its offices in Island Pond, Newport, and St. Johnsbury: Headstart, Parent-Child Center, restorative justice, microbusiness development, and assistance with transitional housing, home fuel, and food. <http://nekcavt.org/>

NEK Collaborative: A group of regional development organizations, educators, social service and employment agencies, local government officials, business people, nonprofit organizations, health care providers, and conservation organizations, who maintain a strategic plan for economic and community development in the NEK. This plan is used to maintain a USDA Rural Economic Area Partnership designation, which allows the NEK to apply for a substantial set-aside of USDA RD grant funds. (See USDA.)

NEK Food System Leadership Team: The collective that will be responsible for measuring and tracking the initiatives in the NEK Food System Plan.

NEKTTA: Northeast Kingdom Travel & Tourism Association, which promotes the NEK visitor experience, including agritourism and farm-to-table venues. <http://www.travelthekingdom.com/>

NEKWMD: Northeast Kingdom Waste Management District, which serves more than 46,000 individuals in 49 communities. <http://nekwmd.org/>

Newport City Renaissance: A nonprofit corporation operating Newport City's downtown program that includes agritourism and food marketing in its efforts, such as Taste of Newport and Newport.Fresh by Nature. <http://discovernewportvt.com/downtown-renaissance.html>

NOFA-VT: Northeast Organic Farming Association of Vermont, the oldest organic farming association in the U.S., which currently certifies 589 farms and processors in Vermont. <http://nofavt.org/>

NRCD: Natural Resource Conservation District, which provides technical assistance to farmers on water quality and other key environmental issues. Not to be confused with **NRCS**, although the two organizations frequently collaborate on projects. <http://www.vacd.org/districts>

NRCS: See USDA NRCS.

NVDA: Northeastern Vermont Development Association, the regional planning commission and economic development association serving the NEK. www.nvda.net

NVRH: Northeastern Vermont Regional Hospital in St. Johnsbury. Operates VeggieVanGo, which provides access to fresh local produce, as well as a community garden. <http://www.nvrh.org/>

Rural Edge: Regional nonprofit housing organization serving the NEK. <http://www.ruraledge.org/>

Rural Vermont: A nonprofit that provides information and resources to farmers and advocates for policies that will strengthen family farms and promote food sovereignty. <http://www.ruralvermont.org>

St. J ALFA: St. Johnsbury Area Local Food Alliance, which is a volunteer-driven nonprofit organization that seeks to increase local food production and consumption. Operates a 3-acre community farm in St. Johnsbury. <http://www.stjalfa.org/>

St. J Chamber: St. Johnsbury Chamber of Commerce, which also serves as the designated downtown organization for the community. <http://discoverstjohnsbury.com/>

Salvation Farms: A nonprofit organization that seeks to build increased resilience in Vermont's food system through agricultural surplus management (such as gleaning). <http://www.salvationfarms.org/>

SASH: Support and Services at Home, which coordinates the resources of social service agencies, community health providers, and nonprofit housing organizations to support Vermonters who choose to live independently at home. <http://sashvt.org/>

SBDC: Small Business Development Center. Funded by the U.S. Small Business Administration and the State of Vermont's Agency of Commerce and Community Development and hosted by the Vermont State Colleges, this group of certified professionals offers general and specialized business planning and support. <http://www.vtsbdc.org/>

UKFA: Upper Kingdom Food Access, a community initiative to support healthy food access for all in Orleans and northern Essex Counties. The group does not have a web site but maintains a very active Facebook page.

Umbrella: A nonprofit that exists to ensure that communities in the NEK offer safety, support, and options for self-determination to women and families. Operates Cornucopia in Newport. <http://umbrellanek.org/>

USDA: The U.S. Department of Agriculture has many technical assistance and funding programs to farmers, food producers, and other advocates for the NEK Food System. **USDA Rural Development** (USDA RD) offers a variety of grant programs for business expansion and development, including Value-Added Producer Grants, Rural Business Development Grants, and Rural Energy for America Grants. <http://www.rd.usda.gov/vt> **USDA Agricultural Marketing Service** (USDA AMS) offers Farmer's Market Promotion Grants, and Local Food Promotion Grants. <https://www.ams.usda.gov/> **USDA Natural Resource Conservation Service** (NRCS) offers a variety of technical assistance and funding programs to farms in order to improve soil health and water quality. <http://www.nrcs.usda.gov/wps/portal/nrcs/main/vt/contact/>

UVM Extension: Supports higher education, research and outreach to families, farms and businesses, towns and the natural environment. Includes the Master Gardeners and Master Composters programs, as well as the Center for Sustainable Agriculture, which supports innovative research and practices. <http://www.uvm.edu/extension> <http://www.uvm.edu/sustainableagriculture/>

VAAFM: Vermont Agency of Agriculture Food & Markets, which oversees Required Agricultural Practices, has four divisions that address the growth and viability of agriculture in Vermont: human health, animal health, plant health, consumers, and the environment. <http://agriculture.vermont.gov/>

VAPDA: Vermont Association of Planning and Development Agencies (NVDA is a member). Dedicated to promoting sound planning principals, they often sponsor and facilitate outreach initiatives. <http://www.vapda.org/>

VDTM: Vermont Department of Tourism and Marketing.
<http://www.vermont.com/businesses/vermont-dept-of-tourism/>

VCGN: Vermont Community Garden Network, which supports community and school gardens throughout the state. <http://vcgn.org/>

Vermont Dairy Council: A department of VAAFM that oversees the expenditure of the dairy promotion money collected through the sales of raw and fluid milk. http://agriculture.vermont.gov/food_safety_consumer_protection/milk_dairy/vdpc

Vermont Farm Fund: A revolving loan program exclusively available to Vermont farmers and food producers, and food related businesses that use Vermont inputs or support Vermont farmers. Administered by the CAE.
<https://www.vermontfarmfund.org/>

Vermont Higher Education Food System Consortium: Established by the Vermont Council on Rural Development, this group explores new ways to collaborate, share students and resources, and expand elective opportunities for food systems education. NEK-based Sterling College is a participant.
<http://vtrural.org/programs/facilitation/food-systems>

VT JFO: Vermont Legislative Joint Fiscal Office, which has been estimating the cost of basic needs and the equivalent livable wage since 2001.
<http://www.leg.state.vt.us/jfo/>

Vermont Open Farm Week: A collaborative statewide agritourism project organized by members of the Vermont F2P Network. Usually takes place in August.

VFVC: The Vermont Food Venture Center in Hardwick, operated by the CAE.

VGFA: Vermont Grass Farmers' Association, a membership-based nonprofit that helps farmers generate wealth from grass-based farming, provides leadership on grazing issues, and supports the vision for the UVM Center for Sustainable Agriculture's Pasture Program. <http://www.uvm.edu/~pasture/>

VHCB: Vermont Housing & Conservation Board, which conserves farmland and provides business planning and technical assistance to farmers and food producers through its **Farm & Forest Viability Program**.
<http://www.vhcb.org/>

VLT: Vermont Land Trust, a member-supported, nonprofit land conservation organization, which has a regional office in St. Johnsbury. <http://www.vlt.org/>

VNRC: Vermont Natural Resources Council, which offers programmatic outreach and support on environmental issues, such as water quality, energy and climate action, sustainable communities, and forests and wildlife.
<http://vnrc.org/>

VPA: Vermont Planners Association, a membership-based nonprofit organization of planning professionals, which supports outreach and education initiatives. <http://www.vermontplanners.org/>

VSJF: Vermont Sustainable Jobs Fund, which provides grants, technical assistance, and loans to accelerate the development of Vermont's green economy. Manages Vermont Farm to Plate and the Vermont Agriculture Development Program. <http://www.vsjf.org/>

VT FEED: Vermont Food Education Every Day, which supports farm to school programs through training and outreach. Managed by NOFA-VT and Shelburne Farms. <http://vtfeed.org/>

VT Foodbank: The state's largest hunger relief organization.
<https://www.vtfoodbank.org/>

VYCC: Vermont Youth Conservation Corps, a nonprofit conservation program that works with youth. Their Food and Farm Program addresses issues of hunger, nutrition, food access, sustainable agriculture, and responsible land use. <http://www.vycc.org/>

Wholesome Wave: A nonprofit that provides grants to help under-served consumers make healthier food choices by improving affordable access to locally grown produce. <http://www.wholesomewave.org/>

Working Land Enterprise Grants: A state-supported grant program that invests in Vermont's farm, forestry, and food economies.
<http://workinglands.vermont.gov/wlei>



Bibliography

Ahearn, Mary and Newton, Doris (2009, May). Beginning Farmers and Ranchers, Economic Information Bulletin Number 53 (EIB-53), Economic Research Service, USDA.

American Farmland Trust and Land for Good (2016, January). Keeping Farmers on the Land: New Research Underscores Need to Address Farm Transition in Vermont. Retrieved from <http://www.farmlandinfo.org/keeping-farmers-land-new-research-underscores-need-address-farm-transition-vermont>

American Planning Association (APA), Food System Planning Committee (2005). Food System Planning White Paper. Retrieved from https://planning-org-uploaded-media.s3.amazonaws.com/legacy_resources/resources/ontheradar/food/pdf/apafoodwhitepaper.pdf

Arendt, Randall (1994). Rural by Design. Cambridge, MA: Lincoln Institute of Land Policy

Barham, Jim (2010, December 14). Getting to Scale with Regional Food Hubs. USDA Blog. Retrieved from <http://blogs.usda.gov/2010/12/14/getting-to-scale-with-regional-food-hubs/>

Bécot, Florence and Conner, David (2015). University of Vermont, unpublished manuscript. Vermont Farm to Plate Strategic Plan. Retrieved from <http://www.vtfarmtoplate.com/getting-to-2020/1-total-local-consumption>

Cannella, Mark and Waterman, Ben (2014, July). Determining the Right Rental Rate, University of Vermont Extension, Center for Sustainable Agriculture. Retrieved from <http://www.uvm.edu/newfarmer/land/RentalGuide.pdf>

Center for an Agricultural Economy and Northeastern Vermont Development Association (2011, June). Regional Food System Plan for Vermont's Northeast Kingdom

Coleman-Jensen, A.; Rabbit, M., Gregory, C. and Singh, A (2015) Household Food Security in the United States in 2014. USDA ERS.

Economic Policy Resources, Inc. (2011, June). NVDA—Strategic Industries Report. Retrieved from http://www.nvda.net/files/NVDA-StrategicIndustries_Report_June_2011_WOR.pdf

Farm to Plate Agricultural Land Use Planning Task Force (2014). Sustaining Agriculture: Agricultural Land Use Planning Training Modules. Retrieved from <http://www.vtfarmtoplate.com/features/sustaining-agriculture-land-use-planning-modules#.V8h8TfkrKUK>

Feeding America. Map the Meal Gap. Retrieved from <http://www.feedingamerica.org/hunger-in-america/our-research/>

Food Waste Reduction Alliance. Retrieved from <http://www.foodwastealliance.org/services/>

Green Mountain Farm to School (GMFTS) Annual Report, 2014-2015. Retrieved from <http://greenmountainfarmtoschool.org/wp-content/uploads/2016/03/FY-2015.pdf>

Gresser, Joseph (2016, April 2). FDA Waives Cheese Making Regulation, Barton Chronicle.

Harris, Gwyneth (2012, October) Northeastern Vermont Dairy Goat Network: Final Project Report. NVDA.

Hunger Council of the Northeast Kingdom (2105, December 11). Meeting minutes. Retrieved from <https://www.hungerfreevt.org/northeast-kingdom>

Hunger Free Vermont, (2014). Childhood Insecurity Data by County, Received February 3, 2016

Land for Good (2013). Does the Option at Agricultural Value Protect Farmland for Beginning Farmers? A Policy Analysis. Retrieved from <http://landforgood.org/wp-content/uploads/LFG-Does-The-Option-At-Agricultural-Value.pdf>

Lecesse, Nora (2015). The Harvest Process: Maximizing Local Infrastructure to Benefit the Charitable Food System in Vermont. Center for an Agricultural Economy, Congressional Hunger Center, and Vermont Food Bank. Retrieved from <http://www.hungercenter.org/publications/the-harvest-process-maximizing-local-food-infrastructure-to-benefit-the-charitable-food-system-in-vermont/>

Low, Sarah A. (2015, January). Trends in U.S. Local and Regional Food Systems, AP-068, U.S. Department of Agriculture, Economic Research Service.

Martinez, Steve et al. (2010, May). Local Food Systems: Concepts, Impacts, and Issues, Economic Research Report No. (ERR-97).

McFerron, Whitney (2016, April 29). The U.S. is Sitting on a Mountain of Cheese. Bloomberg. Retrieved from <http://www.bloomberg.com/news/articles/2016-04-29/u-s-cheese-inventories-soar-to-highest-since-1984>

Moore, Richard Bridge; Johnston, Craig M.; Robinson, Keith W., and Deacon, Jeffrey R. (2004). Estimation of Total Nitrogen and Phosphorus in New England Streams Using Spatially Referenced Regression Models. United States Geological Survey in cooperation with the New England Interstate Water Pollution Control Commission and U.S. Environmental Protection Agency. Scientific Investigations Report 2004-5012

Morin, Randall S.; Riemann, R. (2015). Forests of Vermont, 2014. Resource Update FS-54. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. Retrieved from <http://www.treearch.fs.fed.us/>

National Sustainable Agriculture Information Service (2010, September). Rotational Grazing. Retrieved from <https://attra.ncat.org/>

Northeast Kingdom Waste Management District. Annual Report for the Year Ending December 31, 2015. Retrieved from <http://nekwmd.org/>

Northeastern Vermont Development Association (NVDA) (2015). Regional Plan for the Northeast Kingdom. Retrieved from <http://www.nvda.net/regional-plan.php>

Northern Community Investment Corporation (NCIC) (2014, June). Jobs Accelerator Action Plan for Agriculture and Food System Development. Retrieved from <http://www.ncic.org/resource-library/JobsAccelerator2014.aspx>

Random House Online Dictionary (2016). Retrieved from <http://www.dictionary.com/>

Robert Wood Johnson Foundation (2016). Vermont County Health Rankings. Retrieved from <http://www.countyhealthrankings.org/app/vermont/2016/overview>

Snow, Theresa and Dean, Elana (2016). Food Loss in Vermont: Estimating Annual Vegetable & Berry Loss. A Salvation Farms' Analysis Retrieved from http://salvationfarms.org/VT_Food_Loss_Study_2016.pdf

Solid Waste Infrastructure Advisory Committee (2015, February 4). Report to the Vermont Legislature. Retrieved from <http://dec.vermont.gov/sites/dec/files/wmp/SolidWaste/Documents/SWIACReportFINAL.PDF>

State of Vermont, Vermont Agency of Commerce and Community Development (2013, August). Vermont Population Projections, 2010-2030

U.S. Bureau of Labor Statistics, U.S. Department of Labor, CPI Inflation Calculator. Retrieved from <http://data.bls.gov/cgi-bin/cpicalc.pl>

U.S. Census Bureau
(2010-2014). American Community Survey 5-Year Estimates, Selected Housing Characteristics, Selected Social Characteristics.
(2000, 2010). Census, Profile of General Population and Housing Characteristics
(2012). Economic Census
(2014). Nonemployer Statistics, State and County Levels.
(2014, July 1). Population Division: Annual Estimate of the Resident Population
(2009-2014). Small Area Income and Poverty Estimates, State and County Data

All data sets retrieved from <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

U.S. Department of Agriculture Economic Research Service
(2015). Food Environment Atlas. Retrieved from <http://www.ers.usda.gov/data-products/food-environment-atlas.aspx>

(2014). Food Expenditure Series Accessed from <http://www.ers.usda.gov/data-products/food-expenditures.aspx>

U.S. Department of Agriculture, National Agricultural Statistical Service
(2016, February 12). Cropscape and Cropland Data Layer. Retrieved from the Cropscape Portal <https://nassgeodata.gmu.edu/CropScape/>
(2014). Survey of Cash Rents, at State and County Level. Retrieved from <http://quickstats.nass.usda.gov/>

U.S. Department of Agriculture, U.S. Census of Agriculture for 2002, 2007, and 2012, State and County Levels. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Full_Report/Census_by_State/

U.S. Environmental Protection Agency. Sustainable Management of Food Basics. Retrieved from <https://www.epa.gov/sustainable-management-food/sustainable-management-food-basics#what>

University of Minnesota, Minnesota Population Center (2011). National Historic Geographic Information System, Version 2.0

UVM Dining Blog. UVM Dining is Reducing Food Waste with LeanPath. Retrieved from <http://uvmdining.tumblr.com/post/141030789997/uv-m-dining-is-reducing-food-waste-with-leanpath>

Vermont Agency of Agriculture Food and Markets

(2016, March). Farm Agronomic Support to NEK Farms. Dataset produced for NVDA.

(2016, March). A Comparison Study of Product Pricing at Vermont Farmers' Markets and Retail Establishments. Retrieved from <http://agriculture.vermont.gov/node/1286>

(2014). Updates to the 2012 US Census of Agriculture Table 17. Milk Cow Herd Size by Inventory and Sales

Vermont Agency of Natural Resources, Department of Environmental Conservation (2016). 303(d) List of Impaired Waters; and (2014) Stressed Waters List Retrieved from <http://dec.vermont.gov/watershed/map/assessment>

Vermont Agency of Natural Resources; the Vermont Agency of Agriculture, Food and Markets; the Composting Association of Vermont; UVM Extension (2015, September 23). Persistent Herbicide Information for Horse and Livestock Owners. Retrieved from <https://www.uvm.edu/mastergardener/master-composter/documents/PersistentHerbicidesFlyer.pdf>

Vermont Business Magazine (2016, March 9). Sodexo Program Brings Over \$3 Million in Local Foods to Vermont Colleges. Retrieved from <http://www.vermontbiz.com/news/march/sodexo-program-brings-over-3-million-local-foods-vermont-colleges>

Vermont Dairy Promotion Council (2015). Milk Matters: The Role of Dairy in Vermont. Retrieved from http://vermontdairy.com/wp-content/uploads/2015/12/VTD_MilkMatters-Brochure_OUT-pages.pdf

Vermont Department of Children and Families Economic Services Division

(2015, January). Overview of the 2014 Vermont Farm to Family Program. Retrieved from <http://dcf.vermont.gov/sites/dcf/files/ESD/Report/2014-F2F.pdf>

(2015, August). SNAP Participation Rates by County. Retrieved from <http://dcf.vermont.gov/esd/statistics>

Vermont Department of Labor, Economic & Labor Market Information, in cooperation with the U.S. Bureau of Labor Statistics (2004-2014). Local Area Unemployment Statistics (LAUS) program. Retrieved from <http://www.vtlmi.info/labforce.cfm> (2010-2014). Covered Employment, State and County Levels. Retrieved from <http://www.vtlmi.info/indnaics.htm#industry>

Vermont Department of Taxes (2016). Current Use Appraisal Program Participant Tax Savings, Supplemental Data based on 2015 Grand List data. Retrieved from <http://tax.vermont.gov/research-and-reports/reports/pvr-annual-reports/supplemental-reports-2016>

Vermont Food Bank (2015, February 2). Hunger in Caledonia County. A Team Meeting Presentation

Vermont Land Trust (2016, March). Estimates of Conserved Agricultural Lands by Town and County

Vermont Law School Land Use Clinic (VLS) (2012, Spring). Facilitating Innovative Agricultural Enterprises Considerations and Example Language for Vermont Municipalities. Prepared for Vermont Planners Association and Composting Association of Vermont. Retrieved from <http://www.nvda.net/files/VT-Ag-Guide.pdf>

Vermont Sustainable Jobs Fund (VSJF) (2013, May). Farm to Plate Strategic Plan. Retrieved from <http://www.vtfarmtoplate.com/plan/>

White, Netaka (2007). Alternatives for On-Farm Energy Enhancement in Vermont: Oilseeds for Feed and Fuel, Executive Summary. Prepared for Vermont Sustainable Agriculture Council and Vermont Sustainable Jobs Fund.

Wilson, Rosalie J; Anderson, Charlene; Calderwood, Louise, and Rumley, Kate (2011, October 4). New England Beef-to-Institution Marketing Study, Retrieved from http://www.farmlandinfo.org/sites/default/files/New_England_Beef_to_Institution_Market_Study_2011_1.pdf

Wilson, Rose and Flack, Sarah (2016, January 15). Comparing Difference Ways to Produce and Market Your Beef. Presented at the 2016 Vermont Grazing and Livestock Conference.

Wilson, Rosalie and Roberts, Jeffrey (2014, July). Action Plan for Agriculture and Food System Development: Creating Job Growth in Agriculture and Food Production: Opportunities and Realities. NCIC Retrieved from http://www.ncic.org/uploads/research/NCIC_Report_Final_hires.pdf



Center for an Agricultural Economy

CAE

P.O. Box 422

Hardwick, VT 05843

802-472-5362

www.hardwickagriculture.org



NVDA

36 Eastern Avenue

St. Johnsbury, VT 05819

802-748-5181

www.nvda.net

