

Home Grown:

THE ECONOMIC IMPACT OF



Local Food Systems *in New Hampshire*

CURRENT STATUS AND PROSPECTS FOR GROWTH

Food Solutions New England

University of New Hampshire

Matt Magnusson, M.B.A.

Ross Gittell, James R Carter Professor

April 2010



Matt Magnusson, M.B.A.
*University of New Hampshire
Whittemore School of Business and Economics*

Ross Gittell, James R Carter *Professor*
*University of New Hampshire
Whittemore School of Business and Economics*

© 2010

Food Solutions New England

University of New Hampshire Office of Sustainability
107 Nesmith Hall, 131 Main Street
Durham, NH 03824
603-862-4088

Food Solutions New England (FSNE) is a University of New Hampshire-based initiative designed to promote food systems that support sustainable farm and food enterprises and sound nutrition in New England communities. FSNE promotes comprehensive, systemic approaches linking farm, food, nutrition, and social justice issues using analysis and visualization to help improve the integrity and viability of the regional food system. Find out more about FSNE at www.foodsolutionsne.org

FSNE Executive Committee

Celina Adams
*Senior Program Officer, Piscataqua Region,
New Hampshire Charitable Foundation*

Amy Barr
FSNE Graduate Research Assistant

Joanne Burke
*Clinical Assistant Professor & Director,
UNH Dietetic Internship, UNH Department of Molecular,
Cellular and Biomedical Sciences*

Elisabeth Farrell
*Program Coordinator,
UNH University Office of Sustainability*

Tom Kelly
*Chief Sustainability Officer and Director,
UNH University Office of Sustainability*

| | | |
|-------|---|----|
| 1 | EXECUTIVE SUMMARY | 2 |
| 2 | INTRODUCTION | 4 |
| 2.1 | Overview | 4 |
| 2.2 | SWOT Analysis..... | 4 |
| 2.3 | NH Local Food System Dynamics..... | 5 |
| 2.4 | NH Local Agriculture Industry..... | 6 |
| 3 | METHODOLOGY & ASSUMPTIONS | 8 |
| 3.1 | Food System Sector Definitions | 8 |
| 3.2 | Employment..... | 9 |
| 3.3 | Location Quotient | 9 |
| 3.4 | Sales Quotients | 9 |
| 4 | ANALYSIS | 10 |
| 4.1 | Gross State Product (GSP) | 10 |
| 4.1.1 | Food System | 10 |
| 4.1.2 | Local Agriculture | 11 |
| 4.2 | Farm Profitability..... | 12 |
| 4.3 | Employment & Income | 13 |
| 4.3.1 | Food System | 13 |
| 4.3.2 | NH Farming Employment Income | 14 |
| 4.4 | Agricultural Product Sales..... | 15 |
| 4.5 | Scenario Analysis..... | 16 |
| 4.5.1 | Increase Land in Farms | 16 |
| 4.5.2 | Increased Profitability of Existing Farms in NH..... | 16 |
| 5 | DISCUSSION & NEXT STEPS | 17 |
| 6 | APPENDIX: Potential Activities to Increase Local Food Production | 18 |
| 7 | APPENDIX: Location Quotient by NAICS Code | 19 |
| 7.1 | New Hampshire Location Quotient by NAICS..... | 19 |
| 7.2 | Maine Location Quotient by NAICS | 20 |
| 7.3 | Vermont Location Quotient by NAICS..... | 21 |

What are local, healthy foods, and the food system that supports them, worth? *Home Grown* presents one way to answer that question. Its analysis is purposefully focused on specific subsectors of the food system and their real and potential direct contribution to economic output and employment. In this sense, *Home Grown* presents a conventional look at some of the economic value of local food systems and concludes that the local food system contributes to the New Hampshire economy and that it could contribute much more.

Home Grown points to significant direct economic potential of local agriculture and food manufacturing that could be realized in the Granite State. Proposing the achievable goal of increasing the contribution of these two sectors' contribution to the state's economy by 25%, this analysis shows that significant employment benefits within a strategic public food policy environment could be achieved.

This is all good news and gives sufficient cause to develop policies and practices designed to achieve such a goal. But as important as the direct contribution of local food systems' are to employment and economic output, the benefits of increasing their economic vitality extend to many other factors impacting quality of life and sustainability in New Hampshire. Profitable farm enterprises serve as a bulwark against sprawl while maintaining an open, working landscape that helps sustain the entrepreneurial, rural character that we cherish and that attracts tourists. It also supports efforts such as farm-to-institution initiatives that are responding to a rapid growth in demand for local, healthy food and contribute to sustainable community development.

These are not new issues. It is instructive to recall that more than 30 years ago Maynard C. Heckel, former Director and Associate Dean of New Hampshire Cooperative Extension Service, introduced the report of the New Hampshire Food Policy Study Committee by noting "a quiet, but widespread concern among the citizens of our state about the future availability of food at a price we can afford to pay, and at a price that is adequate to assure producers a fair return on their investment." Both issues are still very much before us and were highlighted just a few years ago by the New Hampshire Farm Viability Task Force report.

It has become commonplace that ever-greater numbers of New Hampshire residents are discovering and re-discovering the value of local agriculture and regional food to their quality of life. This recognition has been accompanied by a genuine concern for the security and stability of our food supply, particularly when food vulnerability is experienced as it was in the aftermath of the 2008 and 2010 ice storms. It is also accompanied by an alarming increase in childhood and adult obesity that, locally and nationally, threatens to reverse more than half a century of increasing life expectancy for each succeeding generation.

In response to these persistent and emerging trends, the University of New Hampshire initiated Food Solutions New England (FSNE). The purpose of FSNE is to link the analytical capabilities of the university with the perspectives of stakeholders from across the food system to support sustained, grounded and transparent discussion of the status and direction of our state and regional food system. *Home Grown* is one example of how FSNE works: it is collaborative, forward looking and solution-oriented. It builds upon and complements related efforts to contribute to a common point of reference for contemplating the future of our food system and with it, our quality of life.

TOM KELLY

CELINA ADAMS

LORRAINE MERRILL



THE LOCAL FOOD system contributes to the New Hampshire economy. The local food system includes agriculture and food production and processing components, and also when considered more broadly, food security, the environment, health, and nutrition systems.

This analysis could be considered to be conservative in its overall estimates of local food system economic impact in NH. The analysis considers four specific sectors of the food system in the state: local agriculture (e.g., farming), food manufacturing, food support services (e.g., food distributors), and food retailers (e.g., supermarkets, and restaurants). Economic output and employment directly attributable to these sectors is considered.

This study does not consider broader prospective impacts, such as potential improved health through local food purchases and it does not evaluate the relationship between NH agricultural capacity, farm production, manufactured food product output and total food demand in NH. This study also does not consider food service related employment and purchases by institutions, such as hospitals and schools, in the State.

In 2007, total food expenditures in New Hampshire totaled \$3.2 billion (12.5% of total NH retail sales). The local food system in New Hampshire contributed \$3.3 billion in Gross State Product (GSP), or 5.7% of NH's \$58 billion economy. In terms of relationship to overall GSP, NH was above the U.S. average in the contribution of food retailers (3.9% in NH vs. 3.3% U.S. average), average in the contribution of food support services (0.9% in NH vs. 0.9% U.S.), below average in the contribution of food manufacturing (0.8% in NH vs. 1.3% U.S. average), and significantly below average in the contribution of local agriculture (0.28% in NH vs. 1.0% U.S. average).

In 2007, the four sectors of the food system employed 81,000, or 15% of NH's 544,000 employed in private (non-government) establishments. Local agriculture accounted for 9,000 employees (11% of total NH food system employment); food manufacturing accounted for 1,800 employees (2% of total NH food system employment); food support services accounted for 3,800 employees (5% of total NH food system employment); and food retailers were

the highest employer in NH with 66,500 employees (82% of total NH food system employment).

The total local food system average annual wage was \$17,217. This was 60% less than the overall average annual wage in NH of \$43,210. Local agriculture paid the lowest average annual wage at \$6,220 (85% less than the overall average annual wage in NH); food manufacturing paid an average annual wage of \$35,461 (18% less than the overall average annual wage in NH); food support services paid the highest average annual wage at \$48,735 (12% higher than the overall average annual wage in NH); and food retailers paid an average annual wage of \$16,387 (62% less than the overall average annual wage in NH).

The local agriculture sector output is estimated to equal approximately 6% of total food demand in New Hampshire. While there is considerable interest in setting goals to increase the percentage of local food consumed within the State, it is difficult to measure the actual percentage of food produced from local agriculture and food manufacturing and its relationship to NH food needs. A more practical, yet still effective, measure of increased local agriculture and food manufacturing output would be to evaluate the contribution to GSP from these sectors.

Currently, local agriculture and food manufacturing are significant contributors to GSP at \$560 million. A potential goal for New Hampshire could be to increase the contribution from these sectors to GSP to \$700 million (a 25% increase) by 2015. A goal, such as this, should be ambitious but achievable, and could have significant employment benefits depending on the types of public food policies that are implemented at the state level.

Specific areas that could significantly increase the contribution to GSP from these sectors include: increasing the amount of food manufactured in the state, and increasing the profitability of NH's small and fragmented farm system. The type of policies devoted to local agriculture specifically need to take into account that there are many, smaller farms with small contributions to overall local agricultural profit and that only a few, larger farms constitute the majority of local agriculture profits.

There are many opportunities to expand the local food system, some specific examples include: increased aquaculture, meat and dairy production, and specialty food products. Opportunities to share knowledge with positive economic impact include: business and entrepreneurship education and mentoring, and food safety certification.



There are significant challenges to increased local food production, including high energy, land and labor costs. These challenges are increased by the relatively low food prices for commodity products brought on through intense global competition. In 2007, only 30% of NH farms had positive net income; this was the lowest percentage in the region and was much lower than U.S. average of 47% of U.S. farms having positive net income. NH farms had the second lowest average net income (\$56,467) for New England farms with positive income. Only Rhode Island fared worse in New England.

NH has strength in the retail sector, and an essential part of any strategy to promote increased local food production and consumption should involve the state's retail sector. Maine and Vermont's economies show strength in both food retailing and local food production, illustrating the potential for New Hampshire to add to its local food production base.

It is recommended that New Hampshire establish a food production target (based on GSP) and form a State Food Council to develop policies and strategies to meet that food target. The state's efforts in promoting renewable energy and energy efficiency may provide insights for policies to promote local food production and the State's food system.





2.1 Overview

THERE IS SIGNIFICANT interest and effort in increasing the food produced by the local food system. This can be seen in all areas of the food system: from increased demand for local foods at grocery stores, farmers' markets, and restaurants to concerns over adult and childhood obesity. New Hampshire citizens are asking for food that has been produced locally for reasons including individual health, support of local communities, and as way to reduce environmental impact. This is all taking place in the context of a growing awareness of the importance of community food security, or food systems that "ensure access to affordable, nutritious, and culturally appropriate food for all people at all times" and doing so in a way that promotes greater "justice, democracy, and sustainability."

Given this increased interest, the New Hampshire Department of Agriculture contracted with Professor Ross Gittell from the

University of New Hampshire's Whittemore School of Business and Economics to independently examine the direct economic impact of the NH local food system and conduct a strategic assessment of selected components of the local food system. This analysis took a focused approach on the direct impact of the local food system in the State. It did not take a more holistic view to consider the economic value of open space, visual amenities, health and tourism. The New Hampshire Charitable Foundation through the University of New Hampshire-based organization Food Solutions New England, the New Hampshire Department of Agriculture and the University of New Hampshire (UNH) Office of Sustainability provided financial support for this analysis.

In conducting this analysis, the research team drew from previous research on the economic impacts of local food systems on the overall economy. The research team also utilized economic and employment statistics obtained from government sources. The research team gave specific focus and consideration to the local agricultural sector during the analysis. This sector required additional analysis and data sources relative to the other sectors due to many of the unique features of local agriculture.

2.2 SWOT Analysis

A SWOT analysis (Strengths, Weaknesses, Opportunities, & Threats) was conducted to use as a strategic planning tool in developing policies supportive of NH local food initiatives.

Strengths

- Large market for food at \$3.2 billion in NH household food demand
- High percentage of locally produced food is directly marketed (12% vs. the U.S. average of 0.5%).
- Strength in food retail sector
- Strong food and beverage industry leaders, e.g., Stonyfield, Lindt, Smuttynose

Opportunities

- Strong interest in "Buy Local" movement by consumers
- Strong consumer demand for locally produce foods
- Strong interest in preserving open space
- Strong interest from institutional partners, e.g. hospitals, coops, hotels in supporting local food
- High income population

Weaknesses

- Low food manufacturing levels relative to other New England States
- Limited agricultural output relative to other New England states – does not provide the consistency and volume to meet large user needs
- Non-contiguous land areas and small farm size
- Dependent on inputs from outside the region (grain, corn)
- Limited processing capabilities
- Lowest profitability per farm in New England

Threats

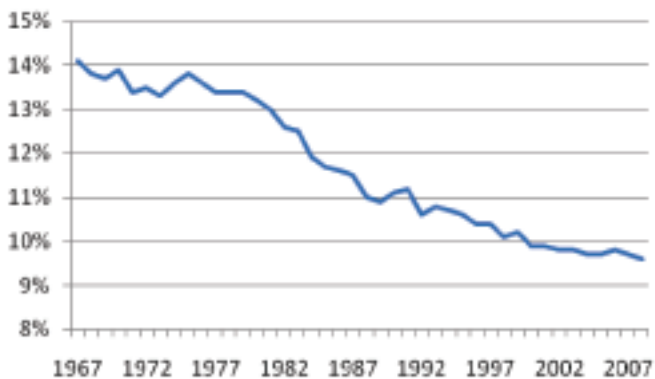
- Relatively low food prices from large scale farming and imported foods
- Region's high costs, especially for land, energy and labor
- Dairy pricing system
- Federal regulations can adversely impact small farms
- Volatility in profit in farming industry

2.3 NH Local Food System Dynamics

THE AVERAGE NEW Hampshire household expends \$3,500 for food consumed at home and \$2,800 for food consumed away from home annually. This translates into home food expenditures of \$1.8 billion annually within New Hampshire. New Hampshire purchase of food away from home is \$1.4 billion annually. Total food expenditures in New Hampshire are believed to total \$3.2 billion. The economic value of NH food purchased is approximately 12.5% of total NH retail sales.

Nationally, food purchases as a percentage of disposable personal income have been declining steadily. In 1990, food purchases were 11.1% of disposable personal income and by 2008 had declined to 9.6%. The decreasing relative cost of food can put local food production at a disadvantage, as it tends to be higher cost, and also indicates lower revenue potential for food producers.

Figure 1: U.S. Food Purchases as a Percentage of Disposable Personal Income from 1967 - 2008

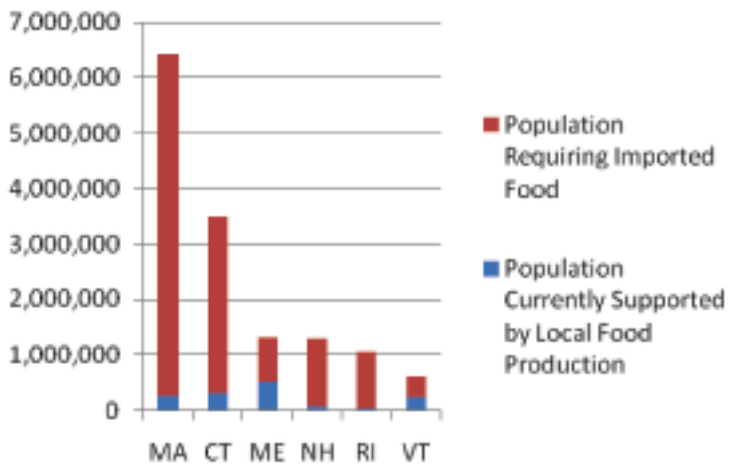


Source: USDA Economic Research Service

A research team from the University of Vermont and University of Massachusetts created an estimate of local food agricultural food production for all 50 states. The estimate was expressed as a percentage of total food demand and was based on 2002 USDA agricultural census data. The percentage developed in the study was applied to New England State population estimates to approximate the number of people that could be supported by current local agriculture production.

The study estimated that 6% of NH's population (76,000 out of 1.3 million people) could be supported by NH's current level of local agricultural production. While there are limitations to the estimates developed, it does help to inform the scale of current local agricultural production.

Figure 2: Population Supported by Current Local Food Production for New England States



Source: "Local Foods: Estimating Capacity", U.S. Census Bureau

Table 1: Local Food Supply Statistics

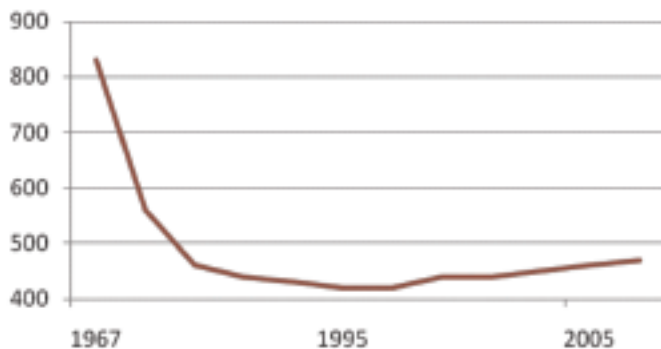
| State | Local Food Production | Population Currently Supported by Local Food Production | Population Requiring Imported Food | Total Population |
|-------|-----------------------|---|------------------------------------|------------------|
| CT | 9% | 306,811 | 3,179,679 | 3,486,490 |
| ME | 39% | 517,015 | 795,207 | 1,312,222 |
| MA | 4% | 257,165 | 6,171,972 | 6,429,137 |
| NH | 6% | 75,580 | 1,227,532 | 1,303,112 |
| RI | 3% | 27,735 | 1,038,986 | 1,066,721 |
| VT | 38% | 234,260 | 385,476 | 619,736 |
| Total | 10% | 1,418,568 | 12,798,850 | 14,217,418 |

Source: "Local Foods: Estimating Capacity", U.S. Census Bureau

2.4 NH Local Agriculture Industry

In 2007, 4,166 farms in New Hampshire occupied 472,000 acres (7% of NH's total land area). Farms and farmland were lost at an alarming rate between the 1960s and the 1990s, with farm acreage declining from 830,000 acres in 1967 to 420,000 acres in 1995. But recently the amount of farmland has actually started to increase, rising to 470,000 acres in farmland in 2007 (1.2% annual growth rate from the trough in 1997 up until 2007).

Figure 3: NH Land in Farms from 1967- 2007 (1,000 acres)
Source: U.S. Department of Agriculture



Approximately 100,000 acres in New Hampshire is being actively harvested (2% of NH's total land area) with the majority being grown for hay and pasture. 3,500 acres are being harvested for vegetables and 3,200 acres are being harvested for fruit (2,300 acres in orchards and 900 acres in berries).

Table 2: NH Top Crop Items (Acreage) in 2007

| | |
|---|--------|
| Forage-land used for all hay and haylage, grass silage, and greenchop | 76,877 |
| Corn for silage | 12,640 |
| Vegetables harvested, all | 3,408 |
| Cut Christmas trees | 2,356 |
| Apples | 2,070 |

Source: USDA 2007 Census of Agriculture

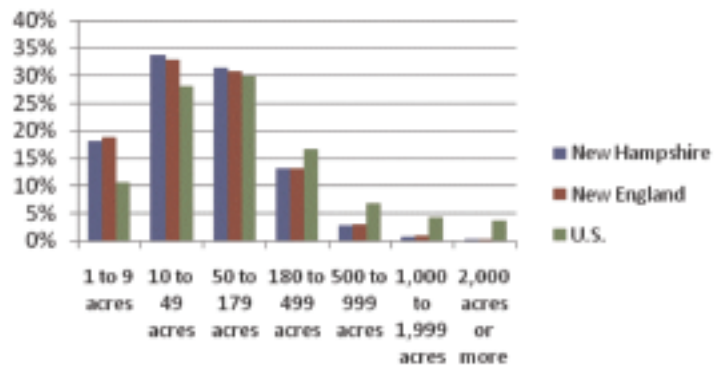
The average farm size in NH is 113 acres; this is well below the U.S. average farm size of 418 acres. New Hampshire and New England have a higher proportion of smaller farms than the U.S. average and significantly less (almost non-existent) larger scale farms.

Table 3: Percentage of Farms by Size in 2007

| | 1 to 9 acres | 10 to 49 acres | 50 to 179 acres | 180 to 499 acres | 500 to 999 acres | 1,000 to 1,999 acres | 2,000 acres or more |
|---------------|-----------------|----------------------|-----------------------|------------------------|------------------------|----------------------------|---------------------------|
| New Hampshire | 18% | 34% | 31% | 13% | 3% | 1% | 0% |
| New England | 19% | 33% | 31% | 13% | 3% | 1% | 0% |
| U.S. | 11% | 28% | 30% | 17% | 7% | 4% | 4% |

Source: USDA 2007 Census of Agriculture

Figure 4: Percentage of Farms by Size in 2007



Source: USDA 2007 Census of Agriculture

While New Hampshire and New England do not supply a large percentage of food consumed locally, New Hampshire and the New England region rank high nationally in the direct marketing of farm food products. Direct marketing includes: farmers' markets, farm stands and pick your own fruits and vegetables. Direct marketing accounts for 12% of NH farm food sales. This is a sharp contrast to the 0.5% of food marketed directly at the national level. New Hampshire also has the highest percentage of farm produced food directly marketed food of the three northern New England States (Maine, New Hampshire and Vermont). Vermont has a directly marketed ratio of food sales of 3.8% and Maine has a ratio of 3.3%. However, these states also have significantly higher farm produced food sales, with Vermont at \$607 million and Maine at \$566 million.



Table 4: Direct and Total Farm Food Sales in 2007

| | Farm Direct Sales (millions) | Total Farm Food Sales (millions) | Direct/Total Sales |
|------|------------------------------|----------------------------------|--------------------|
| CT | \$30 | \$207 | 14.4% |
| MA | \$42 | \$299 | 14.1% |
| ME | \$18 | \$566 | 3.3% |
| NH | \$16 | \$134 | 12.0% |
| RI | \$6 | \$25 | 25.3% |
| VT | \$23 | \$607 | 3.8% |
| U.S. | \$1,211 | \$262,097 | 0.5% |

Source: USDA 2007 Census of Agriculture

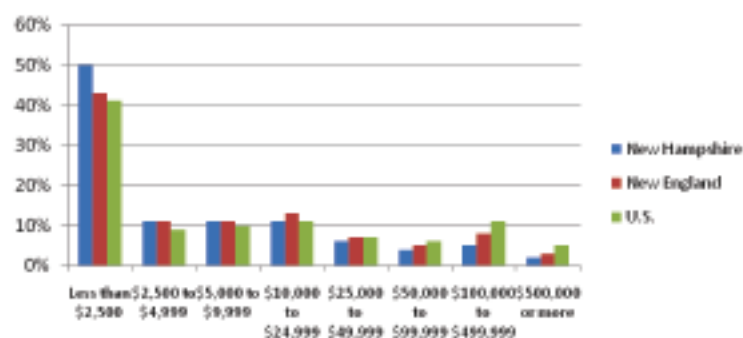
The average annual sales of a NH farm in 2007 were \$47,800. However, 90% of NH farms were below the average in sales, with 50% having less than \$2,500 in sales. New Hampshire has a slightly higher proportion of farms with sales below \$25,000 than the national average (83% in NH vs. 71% U.S. average) and a slightly lower proportion of farms with sales above \$25,000 than the national average (17% in NH vs. 29% U.S. average).

Table 5: Percentage of Farms by Sales Volume in 2007

| | Less than \$2,500 | \$2,500 to \$4,999 | \$5,000 to \$9,999 | \$10,000 to \$24,999 | \$25,000 to \$49,999 | \$50,000 to \$99,999 | \$100,000 to \$499,999 | \$500,000 or more |
|-------------|-------------------|--------------------|--------------------|----------------------|----------------------|----------------------|------------------------|-------------------|
| NH | 50% | 11% | 11% | 11% | 6% | 4% | 5% | 2% |
| New England | 43% | 11% | 11% | 13% | 7% | 5% | 8% | 3% |
| U.S. | 41% | 9% | 10% | 11% | 7% | 6% | 11% | 5% |

Source: USDA 2007 Census of Agriculture

Figure 5: Percentage of Farms by Sales Volume in 2007



Source: USDA Census of Agriculture 2007



3.1 Food System Sector Definitions

IN THIS ANALYSIS, the food system was divided into four distinct industry sectors.

1. Local Agriculture – Local farm based production of crops and animals.
2. Food Manufacturing – Industries that transform raw food inputs into value added food products.
3. Food Support Services – Industries that provide goods and services that supports the food industry including distribution and warehousing.
4. Food Retailing– Supermarkets, restaurants and other outlets that directly market food to consumers.

The research team developed a list of industries for each of the food industry categories, based on the North American Industry Classification System (NAICS). NAICS is the classification standard used by Federal agencies, including the Bureau of Labor Statistics, in classifying business establishments for the purpose of collecting and reporting statistical data related to the U.S. economy.

This list of industries was used to determine wages and employment for the different types of industries in the food sector. Employment and wage data for 2007 was obtained from the U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages for this analysis.

In this analysis, several of the NAICS industries are not limited strictly to food industry employment. A factor was applied to each industry based on an estimate of the percentage of jobs within that industry that are related to the food industry. For example, Industry #4241, Paper and Paper Product Merchant Wholesalers, do not just support the food industry, but other industries as well. The percentage was based on the researchers' judgment from the data and discussion with industry professionals. In providing estimates of percentage of food employment, emphasis was placed on being conservative.

The tables below provide a full listing of the NAICS industries that comprise each of the food industry categories and their "allocated" percentage of food industry related employment.

Table 6: Local Agriculture NAICS Industries

| NAICS | Description | % Industry |
|-------|--|------------|
| 1111 | Oilseed and Grain Farming | 100% |
| 1112 | Vegetable and Melon Farming | 100% |
| 1113 | Fruit and Tree Nut Farming | 100% |
| 1114 | Greenhouse, Nursery, and Floriculture Production | 100% |
| 1119 | Other Crop Farming | 100% |
| 1121 | Cattle Ranching and Farming | 100% |
| 1122 | Hog and Pig Farming | 100% |
| 1123 | Poultry and Egg Production | 100% |
| 1124 | Sheep and Goat Farming | 100% |
| 1125 | Aquaculture | 100% |
| 1129 | Other Animal Production | 100% |

Table 7: Food Manufacturing NAICS Industries

| NAICS | Description | % Industry |
|-------|---|------------|
| 3111 | Animal Food Manufacturing | 100% |
| 3112 | Grain and Oilseed Milling | 100% |
| 3113 | Sugar and Confectionery Product Manufacturing | 100% |
| 3114 | Fruit and Vegetable Preserving and Specialty Food Mfg | 100% |
| 3115 | Dairy Product Manufacturing | 100% |
| 3116 | Animal Slaughtering and Processing | 100% |
| 3117 | Seafood Product Preparation and Packaging | 100% |
| 3118 | Bakeries and Tortilla Manufacturing | 100% |
| 3119 | Other Food Manufacturing | 100% |
| 3121 | Beverage Manufacturing | 100% |

Table 8: Food Support Services NAICS Industries

| NAICS | Description | % Industry |
|-------|---|------------|
| 1151 | Support Activities for Crop Production | 100% |
| 1152 | Support Activities for Animal Production | 100% |
| 4234 | Professional and Commercial Wholesalers | 10% |
| 4238 | Machinery, Equipment, and Supplies Merchant Wholesalers | 10% |
| 4241 | Paper and Paper Product Merchant Wholesalers | 10% |
| 4244 | Grocery and Related Product Merchant Wholesalers | 100% |
| 8113 | Commercial and Industrial Machinery Repair | 10% |

Table 9: Food Retail NAICS Industries

| NAICS | Description | % Industry |
|-------|----------------------------------|------------|
| 4451 | Grocery Stores | 100% |
| 4452 | Specialty Food Stores | 100% |
| 4529 | Other General Merchandise Stores | 40% |
| 7221 | Full-Service Restaurants | 100% |
| 7222 | Limited-Service Eating Places | 100% |
| 7223 | Specialty Food Services | 100% |

3.2 Employment

Employment was only considered for the year 2007 in this analysis; this was primarily due to the availability of detailed farm employment data for that specific year. All non-farm employment was based on federal data from the U.S. Bureau of Labor Statistics (BLS) Quarterly Census of Employment & Wages (QCEW).

Local agriculture employment was more complex to calculate and relied primarily on the 2007 Census of Agriculture prepared by the U.S. Department of Agriculture's National Agricultural Statistical Service (USDA NASS). Local agriculture also included as employment, sole proprietors as they comprise a significant amount of the local agriculture workforce. Unfortunately, there is a rather significant difference between farm employment (not including sole proprietors) as stated in the BLS QCEW and the USDA 2007 Census of Agriculture, even though they should have similar values. This analysis did not attempt to reconcile the differences between the two data

sources. This is not uncommon though when comparing government statistics collected by different agencies. In this analysis, BLS QCEW data was used for calculating location quotients for specific industries (as listed in the appendix) while the USDA 2007 Census of Agriculture was used to provide an indication of overall employment and wages.

Table 10: Comparison of employment between BLS QCEW (2007) and 2007 USDA Census of Agriculture

| | BLS QCEW (2007) | 2007 USDA Census of Agriculture | % Difference between 2007 USDA and BLS QCEW |
|------------------------------|-----------------|---------------------------------|---|
| Employment | 1,123 | 5,020 | 347% |
| Wages (\$ millions) | \$25.8 | \$36.2 | 40% |
| AAW | \$23,024 | \$7,206 | (69%) |
| Includes part-time employees | Yes | Yes | |

3.3 Location Quotient

A location quotient (LQ) was calculated for each industry. The LQ is a ratio of employment for a specific industry in the local economy compared to the employment for that same industry in the broader U.S. economy. Or more simply stated, the location quotient method compares local employment to national employment.

This ratio is calculated for industries of interest to determine whether or not the local economy has a greater share of that industry than expected based on employment. If an industry has a LQ greater than 1 then that is indicative of a region having strength in that particular industry. If an industry has a LQ equal to 1, then that is indicative of a region being average in that particular industry. If an industry has a LQ less than 1, then that is indicative of a region being weak in that particular industry.

$$\text{Location Quotient} = \frac{\text{Local Employment}_{\text{Industry } i}}{\text{Local Employment}_{\text{All Industry}}} \div \frac{\text{National Employment}_{\text{Industry } i}}{\text{National Employment}_{\text{All Industry}}}$$

3.4 Sales Quotients

Using a similar methodology to that used to calculate location quotients, a sales quotient was calculated to determine particular agricultural outputs that might be potential strengths for New Hampshire. These quotients are highlighted in the analysis section below. Simply stated, the sales quotient compares local relative sales of different products to national relative sales.

4 | ANALYSIS



4.1 Gross State Product (GSP)

4.1.1 Food System

THE OVERALL CONTRIBUTION to GSP by food system industries in NH in 2007 was \$3.3 billion (5.7% of the overall NH economy).

Table 11: Contribution to State GSP by Food System Industries in 2007

| | CT | ME | MA | NH | RI | VT | New England | U.S. |
|--------------------------------|---------|---------|----------|---------|---------|---------|-------------|-----------|
| Local Agriculture | \$385 | \$318 | \$290 | \$118 | \$43 | \$392 | \$1,546 | \$137,251 |
| Food Manufacturing | \$1,607 | \$578 | \$1,928 | \$445 | \$181 | \$392 | \$5,131 | \$174,696 |
| Food Support Services | \$1,948 | \$446 | \$3,162 | \$503 | \$293 | \$284 | \$6,636 | \$119,176 |
| Food Retailers | \$5,723 | \$2,122 | \$10,673 | \$2,236 | \$1,654 | \$981 | \$23,390 | \$447,122 |
| Food System Total | \$9,663 | \$3,464 | \$16,053 | \$3,303 | \$2,171 | \$2,049 | \$36,703 | \$878,245 |
| Food System % of Total Economy | | 4.6% | 7.2% | 4.6% | 5.7% | 4.6% | 8.3% | 6.9%6.4% |

Source: U.S. Bureau of Economic Analysis

Table 12: Food System Industry Proportion of Total GSP in 2007

| | CT | ME | MA | NH | RI | VT | New England | U.S. |
|-----------------------|------|------|------|------|------|------|-------------|------|
| Local Agriculture | 0.2% | 0.7% | 0.1% | 0.2% | 0.1% | 1.6% | 0.3% | 1.0% |
| Food Manufacturing | 0.8% | 1.2% | 0.5% | 0.8% | 0.4% | 1.6% | 1.0% | 1.3% |
| Food Support Services | 0.9% | 0.9% | 0.9% | 0.9% | 0.6% | 1.2% | 1.3% | 0.9% |
| Food Retailers | 2.7% | 4.4% | 3.0% | 3.9% | 3.5% | 4.0% | 4.4% | 3.3% |

Source: U.S. Bureau of Economic Analysis

In terms of relation to overall GSP, NH was above the U.S. average in the contribution of food retailers (3.9% in NH vs. 3.3% U.S. average), average in the contribution of food support services (0.9% in NH vs. 0.9% U.S.), below average in the contribution of food manufacturing (0.8% in NH vs. 1.3% U.S. average), and significantly below average in the contribution of local agriculture (0.28% in NH vs. 1.0% U.S. average).

Maine and New Hampshire have similar food system GSP figures (\$3.5 billion for Maine vs. \$3.3 billion for NH). Both of these states have similar proportional contributions to GSP for food support services and food retailers. If New Hampshire were to have local agriculture and food manufacturing contributions to GSP that were proportional to that of Maine than the contribution of the food system to NH GSP would increase \$265 million for local agriculture and \$250 million for food manufacturing.



4.1.2 Local Agriculture

The contribution of crop and animal production to GSP was \$118 million in 2007. This was up 51% from the previous year. GSP for New Hampshire, New England and the United States overall each appear to have similar magnitudes of change each year. For example, in 2007, New Hampshire, New England and the U.S contribution of local agriculture were all up 50%. The year before for these three regions, they were all down 11% to 16% in contribution to GSP. This indicates that New Hampshire's farm value added is very much in step with other states and the country. It also highlights that the profitability of the NH farm industry is very much dependent upon national trends in agriculture and that there is considerable volatility in profit for the farming industry.

Table 13: Crop & Animal Production Contribution to GSP (\$2007 millions)

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|-------------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|---------|
| NH | 73 | 75 | 77 | 73 | 71 | 66 | 80 | 89 | 93 | 78 | 118 |
| New England | 1,011 | 1,001 | 995 | 1,066 | 967 | 837 | 970 | 1,091 | 1,149 | 1,025 | 1,546 |
| U.S. | 88,142 | 78,901 | 68,774 | 71,526 | 73,134 | 70,819 | 88,267 | 114,673 | 104,123 | 91,118 | 137,251 |

Source: U.S. Bureau of Economic Analysis

Table 14: Annual Change in Crop & Animal Production Contribution to GSP (Current Dollars)

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|-------------|------|------|------|------|------|------|------|------|------|------|
| NH | 3% | 3% | -5% | -3% | -7% | 21% | 11% | 4% | -16% | 51% |
| New England | -1% | -1% | 7% | -9% | -13% | 16% | 12% | 5% | -11% | 51% |
| U.S. | -10% | -13% | 4% | 2% | -3% | 25% | 30% | -9% | -12% | 51% |

Applying a conservative economic multiplier of 1.6 to the local agriculture industry developed an estimate of the overall impact of local agriculture on the New Hampshire economy. This means that every dollar in agricultural economic activity creates an additional \$0.60 in economic activity in other industries in the State. This indicates an additional \$70 million in NH GSP is due to local agriculture. At least \$188 million in GSP (0.3% of total NH GSP) is dependent on local agriculture in New Hampshire

4.2 Farm Profitability

In 2007, 30% of NH farms had positive net income; this was the lowest percentage in the region and was lower than U.S. average of 47%. New Hampshire farms also had the lowest average net income for farms with income gain at \$56,467 of all New England states except for Rhode Island. This was far below (37% less) the average net income for farms with income gain in the U.S. at \$89,479.

Table 15: Farms with Net Gains in 2007

| | Farms with Net Gains | Total Income Gain (\$millions) | Average Net Income | % of Farms with Gains |
|-------------|----------------------|--------------------------------|--------------------|-----------------------|
| CT | 1,770 | 185 | \$104,632 | 36% |
| ME | 3,231 | 228 | \$70,623 | 40% |
| MA | 2,947 | 187 | \$63,560 | 38% |
| NH | 1,310 | 74 | \$56,467 | 31% |
| RI | 445 | 24 | \$53,944 | 37% |
| VT | 3,044 | 214 | \$70,144 | 44% |
| New England | 12,747 | 912 | \$71,561 | 38% |
| U.S. | 1,037,041 | 92,793 | \$89,479 | 47% |

Source: USDA 2007 Census of Agriculture

In 2007, 70% of NH farms had a net loss; this was the worst percentage in the region and significantly higher than U.S. average of 53%. New Hampshire farms were consistent with the New England regional average for average net income loss for farms with net loss at \$16,395. This was about 5% higher than the average net income loss for farms with net loss in the U.S. at \$15,596.

Table 16: Farms with Net Losses in 2007

| | Farms with Net Losses | Total Income Loss (\$ millions) | Average Net Income Loss | % of Farms with Losses |
|-------------|-----------------------|---------------------------------|-------------------------|------------------------|
| CT | 3,146 | 61 | \$19,429 | 64% |
| ME | 4,905 | 62 | \$12,696 | 60% |
| MA | 4,744 | 92 | \$19,288 | 62% |
| NH | 2,856 | 47 | \$16,395 | 69% |
| RI | 774 | 17 | \$22,056 | 63% |
| VT | 3,940 | 54 | \$13,748 | 56% |
| New England | 20,365 | 333 | \$16,350 | 62% |
| U.S. | 1,167,751 | 18,212 | \$15,596 | 53% |

Source: USDA 2007 Census of Agriculture



4.3 Employment & Income

4.3.1 Food System

Employment in the selected sectors of the food system in New England tops 800,000, accounting for 14% of all New England employment. Local agriculture employed 86,000, food manufacturing employed 48,000, food support services employed 46,000, and food retailers employed 641,000.

New Hampshire has 81,000 employed in food system industries with 9,000 employed in local agriculture, 1,800 employed in food manufacturing, 3,800 employed in food support services and 66,500 employed in food retail.

Table 17: Food System Employment

| | CT | ME | MA | NH | RI | VT | New England | U.S. |
|-----------------------|---------|--------|---------|--------|--------|--------|-------------|------------|
| Local Agriculture | 17,248 | 22,954 | 19,592 | 8,987 | 2,576 | 14,649 | 86,006 | 4,549,509 |
| Food Manufacturing | 7,335 | 6,049 | 22,159 | 1,785 | 3,202 | 4,199 | 44,729 | 761,081 |
| Food Support Services | 11,879 | 3,726 | 21,601 | 3,843 | 2,101 | 2,520 | 45,671 | 886,026 |
| Food Retailers | 139,187 | 61,217 | 298,184 | 66,537 | 48,132 | 27,426 | 640,683 | 12,441,110 |
| Food System Total | 175,649 | 93,946 | 361,537 | 81,152 | 56,011 | 48,795 | 817,089 | 18,637,727 |

Local agricultural employment accounted for 1.7% of overall employment in NH. This was above the New England regional average of 1.4% but below the U.S. average of 4.0%. Vermont leads the region with local agriculture accounting for 5.8% of their total employment, with Maine close behind at 4.6%.

Food Manufacturing accounted for 0.3% of overall employment in NH. This was below the New England regional average of 0.7% and below the U.S. average of 0.7%. Vermont leads the region with food manufacturing accounting for 1.7% of their total employment, with Maine close behind at 1.2%.

The percentage of New Hampshire employment in food support services is about the same as both the New England regional and U.S. average employment in food support services at 0.7% of total employment. New Hampshire ties Maine for employment in food retail at 12.2%; this is above the regional average of 10.7% and above the U.S. average of 10.9%.

Table 18: Food System Employment as a Percentage of Overall Employment

| | CT | ME | MA | NH | RI | VT | New England | U.S. |
|-----------------------|-------|-------|-------|-------|-------|-------|-------------|-------|
| Local Agriculture | 1.2% | 4.6% | 0.7% | 1.7% | 0.6% | 5.8% | 1.4% | 4.0% |
| Food Manufacturing | 0.5% | 1.2% | 0.8% | 0.3% | 0.8% | 1.7% | 0.7% | 0.7% |
| Food Support Services | 0.8% | 0.7% | 0.8% | 0.7% | 0.5% | 1.0% | 0.8% | 0.8% |
| Food Retailers | 9.7% | 12.2% | 10.6% | 12.2% | 11.5% | 10.9% | 10.7% | 10.9% |
| Food System Total | 12.2% | 18.7% | 12.8% | 14.9% | 13.4% | 19.4% | 13.7% | 16.3% |

The overall average annual wage (AAW) in the food system in New England in 2007 was \$20,300. The lowest average annual wage is in local agriculture at \$10,000. Vermont was significantly above the local agriculture AAW at \$13,900. Food retailers paid the next lowest average annual wage at \$17,800. Food manufacturing paid \$38,000 in annual wages and food support services was the highest paying at \$56,800.

The overall average annual wage in the food system in New Hampshire in 2007 was \$17,217 (15% less than the New England average). The AAW in local agriculture was \$6,200 (this was the lowest in the region and is reflective of the low level of net income for NH sole proprietors), and the AAW in food manufacturing was \$35,500. Food support services paid an AAW of \$48,700 and food retailers paid an AAW of \$16,400.

Table 19: Food System Average Annual Wages

| | CT | ME | MA | NH | RI | VT | New England | U.S. |
|-----------------------|----------|----------|----------|----------|----------|----------|----------------|----------|
| Local Agriculture | \$12,125 | \$8,608 | \$9,201 | \$6,220 | \$7,793 | \$13,910 | \$10,082 | \$14,029 |
| Food Manufacturing | \$39,106 | \$35,115 | \$39,640 | \$35,461 | \$31,195 | \$36,281 | \$37,854 | \$84,727 |
| Food Support Services | \$64,140 | \$41,173 | \$59,411 | \$48,735 | \$47,619 | \$43,386 | \$56,828 | \$50,408 |
| Food Retailers | \$19,036 | \$15,495 | \$18,404 | \$16,387 | \$16,254 | \$16,203 | \$17,798 | \$16,372 |
| Food System Total | \$22,246 | \$16,094 | \$21,657 | \$17,217 | \$17,896 | \$18,647 | \$20,266 | \$20,209 |

Location quotient analysis for the different food system showed that overall New England has strengths in food manufacturing (1.34), food support services (1.18) and food retail (1.17), but is weaker in local agriculture (0.43). New Hampshire has strengths in food retail (1.23), is average for food support (1.0), and is weak in local agriculture (0.45) and food manufacturing (0.54). Vermont is the only state in New England that has strengths in both local agriculture (1.23) and food manufacturing (2.11).

Table 20: Food System Location Quotients

| | CT | ME | MA | NH | RI | VT | New England |
|-----------------------|------|------|------|------|------|------|----------------|
| Local Agriculture | 0.40 | 1.00 | 0.22 | 0.45 | 0.19 | 1.23 | 0.43 |
| Food Manufacturing | 1.02 | 1.58 | 1.50 | 0.54 | 1.40 | 2.11 | 1.34 |
| Food Support Services | 1.42 | 0.83 | 1.26 | 1.00 | 0.79 | 1.09 | 1.18 |
| Food Retailers | 1.19 | 0.98 | 1.24 | 1.23 | 1.29 | 0.84 | 1.17 |

4.3.2 NH Farming Employment Income

In 2007, 9,000 workers in New Hampshire were engaged in either full or part-time employment in the farming sector paying \$56 million in wages and earnings. Proprietors accounted for 4,000 workers (44% of total farm employment) and \$20 million in earnings (35% of total wages/earnings). 860 of New Hampshire's 4,166 farms (21% of total farms) hired 5,000 employees (56% of total farm employment) paying \$36 million in wages (65% of total farm employment).

Table 21: NH Employment & Earnings in Farming in 2007

| | Number | Earnings/Wages (Millions) | Average Annual Wage |
|----------------------------|--------|------------------------------|------------------------|
| Farm Proprietors | 3,967 | \$19.8 | \$4,985 |
| Workers | 5,020 | \$36.2 | \$7,206 |
| Working 150 days or more | 1,727 | \$26.8 | \$15,522 |
| Working less than 150 days | 3,293 | \$9.4 | \$2,845 |
| Total Employment | 8,987 | \$55.9 | \$6,220 |

Source: USDA 2007 Census of Agriculture

The average wage in 2007 in the Northeast for all hired farm workers was \$10.49 per hour. Based on average annual wages reported, this would imply an average 1475 hours worked (74% Full-Time Equivalent) for workers working more than 150 days and an average 264 hours (13% Full-Time Equivalent) for workers working less than 150 days. Assuming a similar distribution of time for farm proprietors, this would put full-time equivalent for local agriculture employment at 1725 for employees and for proprietors in New Hampshire in 2007.

A factor that needs to be considered in evaluating local agriculture employment is that 70% of NH farmers engage in off-farm work to supplement their farm earnings. This is not unique to NH, as nationally 65% of U.S. farmers do the same. So while the actual annual average wage in farming is low, it is not necessarily reflective of actual individuals' annual earnings. The lower average annual wage is reflective of the small number of farms in New Hampshire with 70% having less than \$10,000 in annual sales. This indicates that farming for many individuals in New Hampshire is a part-time endeavor that may be undertaken for a variety of reasons. This report did not focus on uncovering the links between farm employment and other forms of employment.

Table 22: Percentage of Proprietors by Days Spent in Off-Farm Work

| | 0 days | 1 to 199 days | 200 days or more |
|---------------|--------|---------------|------------------|
| New Hampshire | 30% | 29% | 41% |
| U.S. | 35% | 25% | 40% |

Source: USDA 2007 Census of Agriculture

4.4 Agricultural Product Sales

Agricultural product sales were analyzed to uncover areas of agriculture in which NH or the neighboring states of Maine and Vermont may have strengths. In NH, the two largest types of agricultural products in terms of sales are nursery products (\$66 million) and milk and other dairy products (\$59 million).

Table 23: Select Crop Sales in 2007 (\$ millions) by Region

| | Aquaculture (see text) (\$1,000) | Cattle and calves (\$1,000) | Fruits, tree nuts, and berries (\$1,000) | Milk and other dairy products from cows (\$1,000) | Nursery, greenhouse, floriculture, and sod (see text) (\$1,000) | Poultry and eggs (\$1,000) | Tobacco (\$1,000) | Vegetables, melons, potatoes, and sweet potatoes (\$1,000) |
|-------------|--|-----------------------------------|--|--|---|----------------------------------|----------------------|--|
| CT | 15 | 9 | 29 | 72 | 269 | 45 | 57 | 30 |
| ME | 26 | 16 | 85 | 126 | 52 | 76 | 0 | 155 |
| MA | 19 | 12 | 101 | 50 | 169 | 13 | 16 | 59 |
| NH | 4 | 7 | 13 | 59 | 66 | 15 | 0 | 13 |
| RI | 2 | 1 | 4 | 5 | 41 | 2 | 0 | 8 |
| VT | 2 | 58 | 16 | 494 | 25 | 11 | 0 | 13 |
| New England | 67 | 103 | 248 | 807 | 621 | 163 | 73 | 279 |

Source: USDA 2007 Census of Agriculture

Sales quotient for a selected group of crops indicates that NH has strengths in aquaculture (4.17), fruits (1.10), dairy (2.94), nursery (6.23), and vegetables (1.37) relative to the overall U.S. economy. Also of note for agriculture products is hay; hay wasn't reported in the 2007 census due to disclosure requirements, but accounted for \$8.3 million in sales in 2002.

Table 24: Sales Quotient of Select Crops by Region

| | Aquaculture (see text) (\$1,000) | Cattle and calves (\$1,000) | Fruits, tree nuts, and berries (\$1,000) | Milk and other dairy products from cows (\$1,000) | Nursery, greenhouse, floriculture, and sod (see text) (\$1,000) | Poultry and eggs (\$1,000) | Tobacco (\$1,000) | Vegetables, melons, potatoes, and sweet potatoes (\$1,000) |
|-------------|--|-----------------------------------|--|--|---|----------------------------------|----------------------|--|
| CT | 5.60 | 0.08 | 0.81 | 1.19 | 8.48 | 0.64 | 23.53 | 1.08 |
| ME | 9.52 | 0.13 | 2.34 | 2.03 | 1.59 | 1.05 | – | 5.41 |
| MA | 8.20 | 0.13 | 3.38 | 0.99 | 6.36 | 0.22 | 7.78 | 2.52 |
| NH | 4.17 | 0.17 | 1.10 | 2.94 | 6.23 | 0.66 | – | 1.37 |
| RI | 5.18 | 0.06 | 1.07 | 0.64 | 10.87 | 0.23 | – | 2.45 |
| VT | 0.63 | 0.42 | 0.38 | 6.90 | 0.66 | 0.13 | – | 0.40 |
| New England | 5.56 | 0.20 | 1.55 | 2.96 | 4.36 | 0.51 | 6.70 | 2.22 |

4.5 Scenario Analysis

Two scenarios were analyzed to help inform the economic impacts on local agriculture: increasing the land in farming and increasing farm profitability.

4.5.1 Increase Land in Farms

Assuming productivity remained the same, different percentage increases in farmland were analyzed from 5% to 25%. A 25% increase in farmland would take land in farms in New Hampshire up to 588,000 acres, a level not seen since 1975. Every 5% increase of land in farms from current levels would be expected to increase GSP by \$9 million, employment by 700, and farming wages by \$4.5 million. With an expansion of farmland by 25%, overall GSP would be expected to rise by almost \$50 million to about \$170 million. This would increase employment in agriculture to 12,500 (this would change the NH workforce in farming from 1.7% to 2.2% of overall employment in New Hampshire).

Table 25: Increase of Land in Farms Scenarios

| | 5% | 10% | 15% | 25% |
|----------------------------|---------|---------|---------|---------|
| Total Land in Farms | 494,296 | 517,834 | 541,372 | 588,448 |
| GSP Increase (\$ millions) | \$9.4 | \$18.9 | \$28.3 | \$47.2 |
| Employment Increase | 719 | 1,438 | 2,157 | 3,595 |
| Wages (\$ millions) | \$4.5 | \$8.9 | \$13.4 | \$22.4 |

4.5.2 Increased Profitability of Existing Farms in NH

Another scenario was run to see the impacts of NH farms approaching the regional average for profitable farms. Scenario analysis shows that if NH were to have an average farm profitability of that of the region it would be expected to boost net income (a component of GSP) by \$40 million. This is similar to the GSP gain seen if the land in farms was expanded by 25%. If NH had economic performance in farms similar to Vermont, an additional \$69.5 million gain in NH GSP would be expected.



THE LOCAL FOOD system is a complex system that involves the intersection of social, economic and environmental dimensions. This study attempted to identify some of the opportunities and challenges that are present in the current food system as well as to highlight the direct economic impacts of the different parts of the food system. The food system is far more complex and far-reaching than its direct economic influences. This analysis should be viewed as one component in the overall food production strategy for NH.

There is potential for expansion of local food production in New Hampshire and with that expansion there is economic opportunity. Establishing a target for local food production based on GSP would be a

clear and effective goal for NH to consider. Forming a NH food council to develop strategies using this analysis and other sources to develop informed public policy recommendations is an actionable course for increasing local food production and related infrastructure. The process that the State has taken to address climate change, implementing a NH Climate Action Task Force, has proven to be an effective strategy for moving forward and may be a useful model to follow as it has provided an excellent opportunity to develop networks and partnerships that would be useful for creating the farm – manufacturer – retailer partnerships needed to expand local food system economic activity.

A good first step would be to evaluate why NH farms have some of the worst profitability in the region and to implement a plan to bring profitability in line with the regional average. This would help strengthen the local agricultural sector, which could help to promote expansion of land in farms to further increase the economic contribution of local agriculture to the state.

NH needs to build on its strengths, such as an affluent, engaged population, and one of the strongest retail sectors in New England. NH's small, fragmented farms and competition from the global food system are all challenges that must be overcome, but there is significant opportunity for expansion of the local agriculture and food manufacturing sectors in NH.

Some areas of future research that would specifically support the local agriculture aspect of the local food system in New Hampshire include:

- 1 Mapping farmland and identifying areas that are “threatened” from a development and profitability standpoint. This information could be used to help inform smart growth planning initiatives.
- 2 Additional research to understand the traits of farms that are successful financially versus those that are not. This could be used to help increase the profitability of NH farms.
- 3 A more frequent survey mechanism administered by the State could help track progress of agriculture and inform the effectiveness of policy changes. (The majority of agricultural data is from the USDA agricultural census conducted on a 5-year basis.)
- 4 Integrated analysis and scenario development looking at the interactions among policies and practices across the full breadth of the food system over multiple decades. This long-term, integrated perspective can facilitate systemic discussion across the public and private sectors for building resilience and health into our state and regional food system.



6 | APPENDIX: Potential Activities to Increase Local Food Production



1. Extend both the season for Farmers' Markets and their geographic scope
2. Increase the presence of Coops and CSAs
3. Develop root crops and their markets
4. Create farm-to-regional distributor partnerships
5. Create farm-to-institution partnerships (direct or through coops) to hospitals, large employers, schools, etc.
6. Increase the link between NH food and beverage manufacturing and local farms
7. Expand grass-fed "specialty" beef and dairy
8. Expand tillable crop production
9. Promote home-based agriculture, i.e. gardening
10. Focus on protein-based economy (dairy, meat, aquaculture)
11. Increase state government support of GAAP and other food safety certification
12. Create a business incubator to help entrepreneurs create new businesses in agriculture and food manufacturing
13. Advocate for a dairy pricing system that allows local farmers to cover costs and earn a profit
14. Focus on heirloom crops or high margin specialty fruits and vegetables
15. Develop apprenticeship programs to train the next generation of farmers

7.1 New Hampshire Location Quotient by NAICS

| NAICS | Description | Employees | Total Wages | Average Annual Pay | LQ |
|-------|---|-----------|---------------|--------------------|------|
| 1111 | Oilseed and Grain Farming | #N/A | #N/A | #N/A | #N/A |
| 1112 | Vegetable and Melon Farming | 116 | \$1,720,391 | \$14,831 | 0.26 |
| 1113 | Fruit and Tree Nut Farming | 167 | \$2,561,113 | \$15,344 | 0.21 |
| 1114 | Greenhouse, Nursery, and Floriculture Production | 436 | \$11,706,039 | \$26,838 | 0.52 |
| 1119 | Other Crop Farming | 33 | \$1,139,381 | \$34,353 | 0.10 |
| 1121 | Cattle Ranching and Farming | 253 | \$5,497,111 | \$21,699 | 0.41 |
| 1122 | Hog and Pig Farming | — | \$ — | \$ — | — |
| 1123 | Poultry and Egg Production | 85 | \$2,248,336 | \$26,555 | 0.44 |
| 1124 | Sheep and Goat Farming | #N/A | #N/A | #N/A | #N/A |
| 1125 | Aquaculture | — | \$ — | \$ — | — |
| 1129 | Other Animal Production | 13 | \$300,939 | \$23,299 | 0.14 |
| 1151 | Support Activities for Crop Production | — | \$ — | \$ — | — |
| 1152 | Support Activities for Animal Production | 73 | \$1,987,156 | \$27,284 | 0.54 |
| 3111 | Animal Food Manufacturing | — | \$ — | \$ — | — |
| 3112 | Grain and Oilseed Milling | — | \$ — | \$ — | — |
| 3113 | Sugar and Confectionery Product Manufacturing | 492 | \$23,723,161 | \$48,218 | 1.40 |
| 3114 | Fruit and Vegetable Preserving and Specialty Food Mfg | 41 | \$1,088,266 | \$26,871 | 0.05 |
| 3115 | Dairy Product Manufacturing | — | \$ — | \$ — | — |
| 3116 | Animal Slaughtering and Processing | 76 | \$2,685,254 | \$35,216 | 0.03 |
| 3117 | Seafood Product Preparation and Packaging | 287 | \$12,477,031 | \$43,550 | 1.53 |
| 3118 | Bakeries and Tortilla Manufacturing | 588 | \$14,558,809 | \$24,781 | 0.44 |
| 3119 | Other Food Manufacturing | 301 | \$8,764,818 | \$29,151 | 0.39 |
| 3121 | Beverage Manufacturing | — | \$ — | \$ — | — |
| 4234 | Professional and Commercial Wholesalers | 249 | \$22,463,948 | \$90,168 | 0.80 |
| 4238 | Machinery, Equipment, and Supplies Merchant | 222 | \$13,320,929 | \$59,914 | 0.68 |
| 4241 | Paper and Paper Product Merchant Wholesalers | 58 | \$2,692,298 | \$46,701 | 0.83 |
| 4244 | Grocery and Related Product Merchant Wholesalers | 3,254 | \$145,754,326 | \$44,787 | 0.95 |
| 8113 | Commercial and Industrial Machinery Repair | 60 | \$3,058,527 | \$51,103 | 0.68 |
| 4451 | Grocery Stores | 19,328 | \$345,964,302 | \$17,900 | 1.64 |
| 4452 | Specialty Food Stores | 1,008 | \$21,663,190 | \$21,488 | 0.91 |
| 4529 | Other General Merchandise Stores | 2,370 | \$51,932,588 | \$21,912 | 0.87 |
| 7221 | Full-Service Restaurants | 24,603 | \$400,851,280 | \$16,293 | 1.14 |
| 7222 | Limited-Service Eating Places | 17,080 | \$228,507,276 | \$13,379 | 0.88 |
| 7223 | Specialty Food Services | 2,148 | \$41,397,471 | \$19,276 | 0.83 |

7.2 Maine Location Quotient by NAICS

| NAICS | Description | Employees | Total Wages | Average Annual Pay | LQ |
|-------|---|-----------|---------------|--------------------|------|
| 1111 | Oilseed and Grain Farming | 4 | \$98,688 | \$22,774 | 0.03 |
| 1112 | Vegetable and Melon Farming | 830 | \$16,645,944 | \$20,051 | 2.01 |
| 1113 | Fruit and Tree Nut Farming | 297 | \$7,946,363 | \$26,778 | 0.40 |
| 1114 | Greenhouse, Nursery, and Floriculture Production | 419 | \$9,714,455 | \$23,213 | 0.54 |
| 1119 | Other Crop Farming | 64 | \$831,344 | \$13,041 | 0.22 |
| 1121 | Cattle Ranching and Farming | 400 | \$8,874,415 | \$22,163 | 0.70 |
| 1122 | Hog and Pig Farming | #N/A | #N/A | #N/A | #N/A |
| 1123 | Poultry and Egg Production | 230 | \$6,072,872 | \$26,394 | 1.30 |
| 1124 | Sheep and Goat Farming | — | \$ — | \$ — | — |
| 1125 | Aquaculture | 122 | \$3,673,228 | \$ 30,129 | 4.28 |
| 1129 | Other Animal Production | — | \$ — | \$ — | — |
| 1151 | Support Activities for Crop Production | 130 | \$3,186,617 | \$24,528 | 0.10 |
| 1152 | Support Activities for Animal Production | 62 | \$1,128,732 | \$ 18,254 | 0.50 |
| 3111 | Animal Food Manufacturing | — | \$ — | \$ — | — |
| 3112 | Grain and Oilseed Milling | 120 | \$5,126,502 | \$42,662 | 0.44 |
| 3113 | Sugar and Confectionery Product Manufacturing | 223 | \$3,535,373 | \$15,836 | 0.68 |
| 3114 | Fruit and Vegetable Preserving and Specialty Food Mfg | 1,238 | \$38,303,136 | \$30,935 | 1.59 |
| 3115 | Dairy Product Manufacturing | 600 | \$28,529,895 | \$47,523 | 1.05 |
| 3116 | Animal Slaughtering and Processing | — | \$ — | \$ — | — |
| 3117 | Seafood Product Preparation and Packaging | 714 | \$19,120,545 | \$26,789 | 4.11 |
| 3118 | Bakeries and Tortilla Manufacturing | 1,711 | \$47,036,569 | \$27,485 | 1.39 |
| 3119 | Other Food Manufacturing | 230 | \$7,842,852 | \$34,149 | 0.32 |
| 3121 | Beverage Manufacturing | 1,213 | \$62,918,027 | \$51,870 | 1.58 |
| 4234 | Professional and Commercial Wholesalers | 154 | \$9,246,600 | \$60,212 | 0.53 |
| 4238 | Machinery, Equipment, and Supplies Merchant | 259 | \$12,068,575 | \$46,648 | 0.85 |
| 4241 | Paper and Paper Product Merchant Wholesalers | 34 | \$1,976,236 | \$57,658 | 0.53 |
| 4244 | Grocery and Related Product Merchant Wholesalers | 3,203 | \$126,107,464 | \$39,367 | 1.01 |
| 8113 | Commercial and Industrial Machinery Repair | 77 | \$4,021,021 | \$52,488 | 0.94 |
| 4451 | Grocery Stores | 16,939 | \$301,496,713 | \$17,799 | 1.55 |
| 4452 | Specialty Food Stores | 1,255 | \$31,149,857 | \$24,816 | 1.22 |
| 4529 | Other General Merchandise Stores | 2,904 | \$55,842,203 | \$19,233 | 1.16 |
| 7221 | Full-Service Restaurants | 22,847 | \$345,066,894 | \$15,103 | 1.14 |
| 7222 | Limited-Service Eating Places | 15,645 | \$189,786,526 | \$12,131 | 0.87 |
| 7223 | Specialty Food Services | 1,627 | \$25,239,505 | \$15,517 | 0.68 |

7.3 Vermont Location Quotient by NAICS

| NAICS | Description | Employees | Total Wages | Average Annual Pay | LQ |
|-------|---|-----------|---------------|--------------------|------|
| 1111 | Oilseed and Grain Farming | #N/A | #N/A | #N/A | #N/A |
| 1112 | Vegetable and Melon Farming | 97 | \$1,694,770 | \$17,562 | 0.47 |
| 1113 | Fruit and Tree Nut Farming | 94 | \$1,765,179 | \$18,829 | 0.25 |
| 1114 | Greenhouse, Nursery, and Floriculture Production | 202 | \$3,569,312 | \$17,663 | 0.52 |
| 1119 | Other Crop Farming | 56 | \$1,463,489 | \$26,330 | 0.38 |
| 1121 | Cattle Ranching and Farming | 1,287 | \$33,355,893 | \$25,918 | 4.53 |
| 1122 | Hog and Pig Farming | #N/A | #N/A | #N/A | #N/A |
| 1123 | Poultry and Egg Production | 69 | \$1,339,178 | \$19,408 | 0.78 |
| 1124 | Sheep and Goat Farming | — | \$ — | \$ — | — |
| 1125 | Aquaculture | #N/A | #N/A | #N/A | #N/A |
| 1129 | Other Animal Production | — | \$ — | \$ — | — |
| 1151 | Support Activities for Crop Production | 44 | \$1,440,383 | \$32,674 | 0.07 |
| 1152 | Support Activities for Animal Production | 210 | \$7,237,167 | \$34,422 | 3.39 |
| 3111 | Animal Food Manufacturing | 258 | \$13,122,115 | \$50,795 | 2.33 |
| 3112 | Grain and Oilseed Milling | — | \$ — | \$ — | — |
| 3113 | Sugar and Confectionery Product Manufacturing | 383 | \$13,035,469 | \$34,043 | 2.35 |
| 3114 | Fruit and Vegetable Preserving and Specialty Food Mfg | 223 | \$5,506,533 | \$24,730 | 0.57 |
| 3115 | Dairy Product Manufacturing | 1,657 | \$68,953,089 | \$41,626 | 5.78 |
| 3116 | Animal Slaughtering and Processing | 98 | \$2,441,152 | \$24,952 | 0.09 |
| 3117 | Seafood Product Preparation and Packaging | — | \$ — | \$ — | — |
| 3118 | Bakeries and Tortilla Manufacturing | 712 | \$19,371,251 | \$27,194 | 1.16 |
| 3119 | Other Food Manufacturing | 451 | \$15,514,986 | \$34,376 | 1.26 |
| 3121 | Beverage Manufacturing | 417 | \$14,398,251 | \$34,535 | 1.08 |
| 4234 | Professional and Commercial Wholesalers | 59 | \$4,152,373 | \$70,300 | 0.41 |
| 4238 | Machinery, Equipment, and Supplies Merchant | 101 | \$5,471,900 | \$54,110 | 0.67 |
| 4241 | Paper and Paper Product Merchant Wholesalers | 29 | \$1,052,653 | \$36,413 | 0.90 |
| 4244 | Grocery and Related Product Merchant Wholesalers | 2,331 | \$98,659,334 | \$ 42,331 | 1.47 |
| 8113 | Commercial and Industrial Machinery Repair | — | \$ — | \$ — | — |
| 4451 | Grocery Stores | 8,316 | \$154,752,905 | \$18,609 | 1.52 |
| 4452 | Specialty Food Stores | 947 | \$24,207,717 | \$25,572 | 1.84 |
| 4529 | Other General Merchandise Stores | 480 | \$9,695,115 | \$20,180 | 0.38 |
| 7221 | Full-Service Restaurants | 10,151 | \$150,281,524 | \$14,805 | 1.01 |
| 7222 | Limited-Service Eating Places | 5,693 | \$74,226,613 | \$13,038 | 0.63 |
| 7223 | Specialty Food Services | 1,839 | \$31,238,953 | \$16,985 | 1.54 |

