

NVDA-Strategic Industries in the Northeast Kingdom

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Table of Contents

Executive Summary

Table of Contents

List of Tables

List of Figures

Part I. Economic Profile and Recent Performance of Northeast Kingdom

- I. Geography and Land of the Northeast Kingdom
- II. Population
- III. Labor Market and Employment Trends in the Northeast Kingdom
- IV. Personal Income Growth and Change in the Northeast Kingdom

Part II. Industry Cluster Analysis of the Northeast Kingdom

V.

List of Tables

- Table 1. Population change by County and Town in the Northeast Kingdom, 1990, 2000 and 2010 Census years
- Table 2. Age Composition in Selected Counties, 2010
- Table 3. Racial and Ethnic Distribution in Selected Counties, 2010
- Table 4. Educational Attainment for Selected Counties, 2000
- Table 5. Employment Structure by Major Occupational Groupings, 2009
- Table 6. Non-employers in the Northeast Kingdom and Vermont, 2008
- Table 7. Economic Specialization in the Northeast Kingdom, 2001, 2006 and 2009
- Table 8. Employment Change in the Northeast Kingdom, 2001, 2006 & 2009
- Table 9. Shift-Share Analysis of the Northeast Kingdom, 2001-2009
- Table 10. Current Transfer Receipts in the Northeast Kingdom: 1990, 2000, and 2009 (in millions of \$2009)
- Table 11. Personal Income Change in the Northeast Kingdom, Southern Vermont, Vermont, and the United States: 1990-2009
- Table 12. Industry Earnings in the Northeast Kingdom, 2001, 2003, 2006 & 2009 (Millions of \$2009)
- Table 13. Typology of Industry Clusters
- Table 14. Major Industry Cluster Classes with Economic Growth Paths
- Table 15. Summary Screening Criteria of Northeast Kingdom Industry Clusters
- Table 16. Agricultural Economy of the Northeast Kingdom, 2007

List of Figures

- Figure 1. State of Vermont Map
- Figure 2. Composition of the Total Population in the Northeast Kingdom
- Figure 3. Comparison of Population Growth for Select Regions
- Figure 4. Components of Population Change in the Northeast Kingdom, 1995-2009
- Figure 5. Annual Percent Change in Population and Employment
- Figure 6. Civilian labor force in the Northeast Kingdom, 1990-2010
- Figure 7. Ratio of Service-providing to Goods-producing Jobs, Northeast Kingdom, Vermont and United States:2001-2009
- Figure 8. Northeast Kingdom Regional Employment by Major Sector, 2001 and 2009
- Figure 9. Unemployment Rates for the Northeast Kingdom, Southern Vermont, Vermont and the United States
- Figure 10. Proprietors and Wage & Salary Employment in the Northeast Kingdom, 1990-2009
- Figure 11. Economic Specialization in the Northeast Kingdom, 2001 and 2009
- Figure 12. Northeast Kingdom Employment Specialization and Change, 2001-2009
- Figure 13. Shift-Share Analysis for the Northeast Kingdom, 2001-2009
- Figure 14. Share of Total Northeast Kingdom Personal Income, 2009
- Figure 15. Real per capita incomes in Northeast Kingdom, Southern Vermont, Vermont and United States: 1990-2009
- Figure 16. Median income in the Northeast Kingdom, Southern Vermont, State of Vermont, and the United States: 2000-2009 (in \$2009)
- Figure 17. Number of Persons in Poverty, as a percent of Total Population, 2000-2009
- Figure 18. Major Sources of Personal Income in the Northeast Kingdom, Southern Vermont, Vermont and US Non-metropolitan regions, 2009
- Figure 19. Changing Shares of Major Components of Northeast Kingdom Personal Income, 1990-2009
- Figure 20. Average Wage & Salary and Nonfarm Proprietor Income for the Northeast Kingdom, 1990-2009 (\$2009)
- Figure 21. Northeast Kingdom Employment, Level and Concentration Analysis by Cluster, 2009
- Figure 22. Farm Employment in the Northeast Kingdom, 1990-2009
- Figure 23. Cash receipts from marketing of livestock products and crops in the Northeast Kingdom, 1990-2009 (Millions of \$2009)
- Figure 24. 2009 Composition of the Northeast Kingdom Agribusiness, food processing and technology cluster
- Figure 25. Measure of Specialization of the Agribusiness, Food Processing and Technology Cluster, 2001-2009
- Figure 26. Biomedical and biotechnical industry cluster employment in the Northeast Kingdom, 2001-2009

Figure 27. Measure of specialization in the biomedical/biomedical cluster in the Northeast Kingdom, 2001-2009

Figure 28. Measure of specialization in the education and knowledge creation cluster, 2001-2009

Figure 29. Measure of specialization in fabricated metals and machinery, 2001-2009

Figure30. Composition of Fabricated Metals and Machinery Manufacturing in the Northeast Kingdom, 2001-2009

Figure 31. Composition of the fabricated metals and machinery manufacturing industries, 2009

Figure32 . Average annual wages per worker (\$2009) in the fabricated metals and machinery industries, 2001-2009

Figure 33. Employment specialization of forestry & wood products in the Northeast Kingdom, 2001-2009

Figure 34. Wood production in the Northeast Kingdom, 1997-2009

Figure 35. Forest & wood products employment in the Northeast Kingdom, 2001-2009

Figure 36. Composition of the Visitor and Tourism Cluster in 2009

Figure 37. Average annual wages per worker in the visitor and tourism cluster, 2001-2009 (\$2009)

Figure 38. Changing Composition of the Visitor and Tourism Cluster, 2001-2009

Figure 39. Measure of Specialization of the visitor and tourism cluster, 2001-2009

NVDA—Strategic Industries in the Northeast Kingdom

Executive Summary

The Northeast Kingdom is a rural, sparsely populated region in the northeastern corner of Vermont, comprising of Caledonia, Essex, and Orleans counties. Its name is attributed to the late George D. Aiken—former Governor of Vermont and US Senator—who quipped in a 1949 speech, “you know, this is such beautiful country up here, it should be called the Northeast Kingdom.” The region is a year-round travel and tourism recreation destination, known for its skiing, mountain biking, fall foliage viewing, covered bridges, and maple syrup production. The Northeast Kingdom has a land area about one-fifth of the state of Vermont and is bounded by the Connecticut River to the east, which also corresponds to the border with New Hampshire; the Province of Quebec of Canada to the north; the Vermont counties of Franklin, Lamoille, and Washington to the west, and the Vermont county of Orange to the south.

This report is divided into two separate but closely interrelated studies. An economic overview of the Northeast Kingdom is first presented, with a particular focus on the regional economic performance over the course of the last business cycle (i.e., 2001-2009). Here, the focus is on population, employment and labor force, and personal income trends; along with a determination of regional industries of economic significance.

The second part of this report is a detailed analysis of key strategic industries in the Northeast Kingdom. The particular organizational framework used in this regional industry analysis is the “cluster.” An industry cluster represents a group of firms with related economic actors and institutions that are situated near one another and thereby draw productive/competitive advantages from their mutual proximity and connections. Cluster analysis can help diagnose a region’s economic strengths and challenges and help identify realistic ways to shape the region’s economic future. In this study, we have selected seven industry clusters for detailed analysis:

- Agribusiness and food processing
- Biomedical/biotechnical (Life sciences)
- Education and knowledge creation
- Fabricated metal products
- Forestry and wood products
- Machinery manufacturing
- Visitor and tourism

The report concludes with a set of recommendations for the study sponsor, Northeastern Vermont Development Association. A number of recommendations

are overarching, while others are specific to four industry clusters, namely agribusiness and food processing, fabricated metal products and machinery manufacturing, and visitor and tourism. These industry-salient recommendations are based on extensive interviews with company executives in each of these key industry clusters.

Economic Profile and Recent Performance of the Northeast Kingdom

The 2,014 square mile Northeast Kingdom hosts a 2010 population of 64,764 which amounts to a population density of approximately 32 people per square mile, compared to the state of Vermont with a population density of 68 people. While each of the three counties has approximately the same land area, their respective regional population shares differ. Caledonia County held the largest share with 48.2 percent of NEK's regional population residing there, which corresponds to 31,227 people; Orleans County was not far behind with a share of 42.0 percent (or a population level of 27,231); and Essex County with a population of 6,306, accounts for only 9.4 percent of the total regional population. The Northeast Kingdom encompasses 55 towns and gores, with the largest population centers being St. Johnsbury, Lyndon, Derby, Newport, and Hardwick.

With the exception of the first half of the 1980s, population growth in the Northeast Kingdom has been slow and steady from the latter 1980s to 2010. Population can change in two ways—natural increase (births minus deaths) and net migration (balance of persons moving into and out of an area). Natural increase plays a much more important role in most rural areas. The Northeast Kingdom is not an exception to this rule—gains from net migration are highly variable (and dependent upon such reasons as perceived employment opportunities). With the exception of the 2000s, net migration has played a relatively modest role in population change in the Northeast Kingdom. While most migrants move to an area for economic reasons, one should not dismiss the importance of attracting retirees to the region. Orleans County, in particular, has attracted a disproportionately large number of retirees, making it one of two counties in Vermont designated as “retirement destinations.”

The Northeast Kingdom's labor market is undergoing fundamental changes. While employment in the Northeast Kingdom increased by one-sixth between 1990 and 2010, employment growth has been virtually flat during the latter half of the 2000s. Significant structural change occurred within the Northeast Kingdom economy during the 2000s. Employment shares in the goods-producing sectors of agriculture, forestry, mining; construction and manufacturing continued to fall. Services, trade, transportation, and finance and insurance combined now employ about three in every four workers in the region.

Unemployment is a significant indicator of the vitality of a region's economy. The unemployment rate in the Northeast Kingdom during the Great Recession spiked, reaching its 20-year high in 2009 with an annual unemployment rate of 7.2 percent was consistently higher—by around 2 percentage points—than the

statewide rate. Thus far in 2010, unemployment rates in the Northeast Kingdom have once again trended downward reaching 7.8 percent.

While employers in the Northeast Kingdom have not added much employment in recent years, there has been a marked increase in self-employment. Compared with the state and other counties, self-employed workers in the Northeast Kingdom compose a significant share (a third) of total employment.

Analysis of the regional economy reveals that agriculture, forestry; durable manufacturing; and selected services represent the major export-oriented sectors for the Northeast Kingdom. Like other rural counties in Vermont, natural resources (agriculture, and forestry) are leading export sectors. The Northeast Kingdom also appears to specialize in other selected sectors of construction, retail trade, educational services, and healthcare and social services. On an aggregate basis, the Northeast Kingdom does not appear to specialize in the major industry groups of transportation and warehousing; information; professional and technical services; finance and insurance; real estate and renting/leasing; and wholesale trade.

Economic specialization of regional industries was further analyzed with respect to growth and change during the business cycle years of 2001-2009. Growing export-oriented sectors are labeled “stars”—animal agriculture, educational services, healthcare and social services, miscellaneous manufacture, and retail trade. Growing sectors below the export-orientation threshold, called “opportunities,” include arts, entertainment and recreation; food manufacturing; wholesale trade; professional, scientific and technical services; and administrative and support services. Challenges—those sectors below the export-orientation threshold with eroding employment bases—include building construction, accommodation and food services, other services, information, and finance and insurance. Finally, there are those industry sectors, labeled “mature,” that have significant export orientation but in recent years have seen their employment base erode—wood product manufacturing, machinery manufacturing, fabricated metals, furniture manufacturing, truck transportation, and crop production.

Employment measures only tell part of the economic story of a region. Personal income in the Northeast Kingdom, the most broad-based measure of general purchasing power available at the local level, amounted to nearly \$2.03 billion in 2009. Real personal growth in the region has been below trend and the statewide average during the 2000s. In terms of per capita income, the gap between the Northeast Kingdom and the national and statewide averages has grown to where it is currently around 80 percent.

Personal income consists of three major components: net earnings for labor services, property incomes, and transfer payments. Net earnings (\$1,151 million), which accounted for 56.6 percent of Northeast Kingdom’s total personal

income in 2009, can be considered payment for current labor services. Net earnings include wage and salary disbursements, proprietors' income, and other labor income which are mostly employer contributions to private pension and welfare funds. The contributions that individuals make to social insurance programs (e.g., Social Security taxes) are excluded from net earnings. The remaining non-labor portion (\$882 million or 43.4 percent) of the Northeast Kingdom's personal income was split between dividends, interest, and rent (which is also called property income) and transfer receipts. While wages and proprietor income are the return to productive labor, dividends, interest and rent are the return to fixed assets like stocks, bonds, and rental property. Property incomes (\$318 million) account for 15.7 percent of regional income; slightly below the statewide average. Transfer receipts, the other portion of non-labor income, accounts for 27.7 percent of Northeast Kingdom's personal income (\$564 million); significantly above the state's share. Transfer receipts are commonly referred to as "unearned income," receipts from the government to people (and non-profit institutions) for reasons other than labor services. Transfer receipts share of total personal income in the Northeast Kingdom are among the highest in the state.

Growth in personal income—both total and major components—has slowed considerably over the 2000-2009 period. While total personal income in the Northeast Kingdom grew 3.28 percent on an average annual basis during the 1990s, total personal income growth slowed on average to 1.88 percent annually during the 2000s. The personal income slowdown occurred virtually everywhere else—in the nation, State of Vermont, and the peer region of Southern Vermont. Particularly telling was the significant decline in net earnings growth during the last decade. Much of the growth in personal income during the 2000s was found in the major component of personal current transfer receipts (particularly medical benefits).

Transfer payments are an increasing important part of total personal income in the Northeast Kingdom and elsewhere. Transfer payments, which are commonly referred to as “unearned income,” are payments from the government for reasons other than labor services. They include payments by government and businesses to individuals and nonprofit institutions; in particular retirement-related payments from Social Security and other specific retirement programs; and medical payments from such programs as Medicare and Medicaid. About half of current personal transfer receipts are within these two categories of retirement-related and medical payments. The changing composition of the major sources of personal income in part reflects two important demographic and economic trends: the aging of the American population; and the vast improvements in the economic well-being and financial security of senior adults.

Industry Cluster Analysis of the Northeast Kingdom

Industry clusters are defined as groups of inter-related industries. Clusters have two key elements. First, firms within the cluster must be linked; and second,

groups of inter-linked companies locate in close proximity to each other. Clusters are geographically close groups of interconnected companies and associated institutions in a particular industry linked by common technologies and skills. Industry clusters are common in both rural and urban areas; yet, each cluster is unique because of differences in firm sizes, core industries, and inter-firm relationships. A cluster may consist of firms engaged in producing similar products, or may comprise firms in value or supply chains. Still other clusters result from firms locating in close proximity to a shared resource/raw material or market.

One of the biggest challenges facing the local economic development practitioner is simply identifying the industry clusters for targeting in the local region. The process of identifying Northeast Kingdom's industry clusters begins with an iterative analysis of detailed sector data, including employment concentration, wage performance and stability, growth and change, and supply chain interrelationships. Similar to the detailed analysis of major sectors, clusters can be typecast as mature, challenge, opportunity, or star.

- Mature Cluster: These clusters are composed of traditional mainstay companies operating in a region having a large number of employees, a high level of concentration (as measured by employment specialization ratio), but in recent years their collective performance is one of stagnation or decline
- Challenge Cluster: These clusters, while potentially large, may lack key industries or be dominated by a small number of firms. Collectively, this cluster has two characteristics that evoke the moniker of "challenging;" namely, a lower level of concentration and an eroding base of employment.
- Opportunity Cluster. These clusters, also called potential or emerging, show strong growth in both firms and employment in a number of segments, but overall lack the critical mass or collective concentration. For instance, if a cluster is composed of about 10 interrelated industries, an opportunity or emerging cluster would show firms and employment in only about half to two-thirds of these industries.
- Star Cluster: These clusters are identified as stars given both their high level of concentration and their solid recent performance. Given the recent "great recession" in the United States, there are few star clusters that have retained their economic luster in any particular geographic region.

Seven primary industry clusters were selected based on the analysis of various screening criteria of growth and expansion, competitiveness, linkage strength, and overall position (and subsequent label).

- Agribusiness, food processing & technology cluster. One of the "stars" of the Northeast Kingdom, this cluster is made up of twelve production, processing and distribution segments. With a 2009 critical mass of 75

establishments, employing 654 workers with average wages of \$33,270; this cluster has exhibited strong growth over the business cycle period of 2001-2009. Its measure of economic specialization (called location quotient) has increased over time; meaning its export orientation continues to strengthen. Overall, the Northeast Kingdom's agribusiness cluster has outperformed its national counterpart over the study period. Finally, this regional cluster has not gone unnoticed—growth and developments in the Northeast Kingdom agribusiness cluster has been cited in national studies and the popular press.

- Biomedical/biotechnical (life sciences) cluster. One of the “opportunity” clusters in the Northeast Kingdom, this cluster is made up of biomedical-oriented manufacturing sectors, equipment and supplies wholesalers, health and personal care stores, and ambulatory health care services. Overall, this cluster experienced modest employment growth with some erosion of export orientation. Although it includes the relatively recent (and potential) “stars” of biotech/biomed manufacturers, there remains some question marks about composition and related performance. In particular, there appear to be strong interconnections between the existing biomedical/biotechnical segments with area hospitals. Hospitals and other ambulatory health care services are directly tied to the significant and growing medical payment transfer receipts within the region.
- Education and knowledge creation cluster. Composed of education services (private), publishers and other information services, the education and knowledge creation cluster is in its incipient stage, with limited interconnections with other sectors in the region. This cluster showcases a number of nationally (and internationally renowned) educational institutions such as the St. Johnsbury Academy, Burke Mountain Academy, and Sterling College.
- Fabricated metals and machinery manufacturing cluster. A “mature” cluster, fabricated metals and machinery manufacturing is diversified. The combined industry is in the midst of a recovery after the debilitating great recession. Several fabricated metals segments were hollowed out by the recession. Given the significant orientation toward national and international markets, many firms within this cluster are once again showing signs of life and beginning to hire-back laid off workers and expand production. Workforce training issues are paramount within this cluster.
- Forest and wood products cluster. Overall, a cluster composed of several “mature” sectors including wood products manufacturing, paper manufacturing, and furniture products manufacturing. Though showing significant signs of decline (employment base of 2,500 workers in 2001 to 1,450 workers in 2009), the churning has spawned a number of developments in niche markets. As in the agribusiness and food processing cluster, forest and wood products is part of the traditional economic base of the Northeast Kingdom and as such have many

opportunities for convergence and intersection with other economic activities, including visitor and tourism.

- Visitor and tourism cluster. Another “star” cluster for the Northeast Kingdom with solid growth during the study period of 2001-2009. Significant investments will help make the region a year-round destination. Though these developments will continue to add jobs to its solid base of nearly 1,000 workers; wages remain relatively low within this industry, due largely to continued seasonality and part-time opportunities.

Recommended Policies and Actions

In addition to the economic evaluation, more focused interviews of managers/principles of leading companies/organizations were conducted in three industry clusters: Fabricated metals and machinery manufacturing, Agribusiness and food processing, and Visitor and tourism. These interviews resulted in a set of recommended actions/policies for the lead economic development group in the Northeast Kingdom—the Northeastern Vermont Development Association (NVDA).

1. Communication, coordination and regional marketing support. In general, the NVDA received positive marks from businesses that have experienced recent contact, joint effort on a project or direct service. There were comments expressing frustration that the State had “forgotten” the manufacturing sector and to an extent that reflects negatively on the NVDA in their “eyes and ears” role. Also, there was frustration in all three sectors with the lack of awareness and support from local government. The region’s municipalities are the member base of the NVDA so this concern, broadly expressed by key businesses, again demonstrates an opportunity for improvement in communication and coordination by the NVDA. Municipal government in rural Vermont has not traditionally been viewed as having an obligation to provide services specifically for a local business. NVDA can play a role of convener and if needed mediator to solve problems.
2. Workforce/Entrepreneurial Development. Frustration and concern with finding suitable employees from among the population of the Northeast Kingdom was expressed by all fifteen business leaders interviewed. For some it was recruiting executives and specialized and technical employees such as engineers. For others it was finding production workers and “front of the house” employees. A common theme of interview comments is that the high schools and post high school training programs in the area over the years have not worked. However as an exception, Lyndon State College’s Management training programs were cited as effective. Another common theme was the aging of the workforce. Another training issue arising from the economic analysis rather than the interviews, is education in business skills for entrepreneurs. In the Northeast Kingdom, one in three workers is a proprietor.

3. Cluster Support and Development. Although the issues of cell phone and high speed internet service and health insurance reform are already prominent, timely and receiving a lot of attention, this study would be incomplete without mentioning them. All businesses interviewed, with the exception of those in the Interstate 91 corridor, stated that cell phone and high speed internet were problems for the business and its employees. All were hopeful that current efforts underway would finally bring these services to all rural Northeast Kingdom locations. Concern about health insurance reform was also very common. The smaller businesses were looking for an affordable way for their employees to obtain the coverage that they as employers could not afford to provide. The larger manufacturing companies were concerned that the coverage they have in place for employees will be replaced by something mandated that will be more costly and of lower quality.

NVDA—Strategic Industries in the Northeast Kingdom

Part I. Economic Profile and Recent Performance of the Northeast Kingdom, Vermont

I. Geography and Land of the Northeast Kingdom

The northeastern corner of the state of Vermont, comprising Caledonia, Essex, and Orleans counties, is known as the Northeast Kingdom (NEK). The term is attributed to the late George D. Aiken, former Governor of Vermont and U.S. Senator; who quipped in 1949 “you know, this is such beautiful country up here, it should be called the Northeast Kingdom.” The region is a year-round travel and tourism recreation destination, known for its skiing, mountain biking, fall foliage viewing, covered bridges, and maple syrup production. Back in 2006, the *National Geographic Society* named the Northeast Kingdom as the most desirable place to visit (and the ninth most desirable place in the world)¹; and the New York Times best-selling travel guide *1,000 Places to See Before You Die*² lists the NEK³ as one of the top places in North America.

The Northeast Kingdom is a rural, sparsely populated region with a land area of 2,014 square miles, about one-fifth of the state of Vermont. Individually, Caledonia, Essex, and Orleans counties comprise 651 square miles, 665 square miles, and 698 square miles respectively. The area is bounded by the Connecticut River to the east, which also corresponds to the border with New Hampshire; the Province of Quebec of Canada to the north; the Vermont counties of Franklin, Lamoille, and Washington to the west, and the Vermont county of Orange to the south.

Much of this land is covered by dense forests with gentle rolling topography punctuated by several mountains with elevations of more than 3,000 feet. The area is sub-divided into two physiographic regions, the Green Mountains and the Northeast Highlands. In the western part (Orleans county) is the northern portion of the Green Mountains, with Jay Peak the highest mountain within the Northeast Kingdom at 3,858 feet. Within the rolling hills and valleys are many lakes and

¹ National Geographic Center for Sustainable Destinations in collaboration with National Geographic Maps produced a *Geotourism MapGuide of Vermont's Northeast Kingdom* (2006).

² Patricia Schultz is the author. Originally published in 2006; it has been recently updated (2010) and is published by Workman Press.

³ NEK and the Northeast Kingdom are used interchangeably throughout this report; the area is often referred by Vermonters simply as “The Kingdom.”

ponds, with the largest Lake Memphremagog (which much of surface area in Quebec), Lake Willoughby, Seymour Lake, and Crystal Lake. This area is unique in that its major rivers (Barton, Black, Clyde and Missisquoi) flow north as part of the St. Lawrence River basin. The Northeast Highlands are characterized by granite mountains that reach heights of 2,700 to over 3,300 feet (highest are Gore Mountain, Burke Mountain, and Mt. Monadnock). These granite mountains are divided by swift rivers and a number of lakes and bogs. The largest river in the Northeast Kingdom is the Connecticut River, which runs along the eastern border of the region, which also corresponds to the Vermont-New Hampshire State line. Two other major rivers in Vermont—Winooski and Lamoille—have their headwaters in the Northeast Kingdom.

About one-tenth of the Northeast Kingdom's land area is under public ownership, with 146 square miles in public state forest lands and parks (including the Brighton State Forest, Darling State Forest, Groton State Forest, Kingdom State Forest, and Willoughby State Forest); 43 square miles of public federal lands (mostly the Nulhegan Basin of the Silvio O. Conte National Fish and Wildlife Refuge, Essex county); and 9 square miles of public town park lands. In addition, the Northeast Kingdom has two National Natural Landmarks, Barton River Marsh and Lake Willoughby Natural Area.⁴ Land ownership has broad implications for economic developments within any region; including possible and existing land uses and collection of property-related taxes.

The transportation infrastructure in the NEK is a mix of paved and unpaved roads, railways and small regional airports. There are roughly 2,500 miles of roads in the NEK of which roughly 60 percent are unpaved; and 480 bridges with spans of 20 feet or more. The region is bisected by Interstate 91 (I-91) and US Route 5 and represents the major north-south highways connecting the NEK with the rest of New England. Interstate 91 and US Route 5 connect many of the major population centers within the Northeast Kingdom and both terminate at Derby Line, the US-Canada border. In St. Johnsbury, I-91 intersects with the northern terminus of Interstate 93 (I-93), connecting many of the major cities in New Hampshire with its southern terminus in Boston.

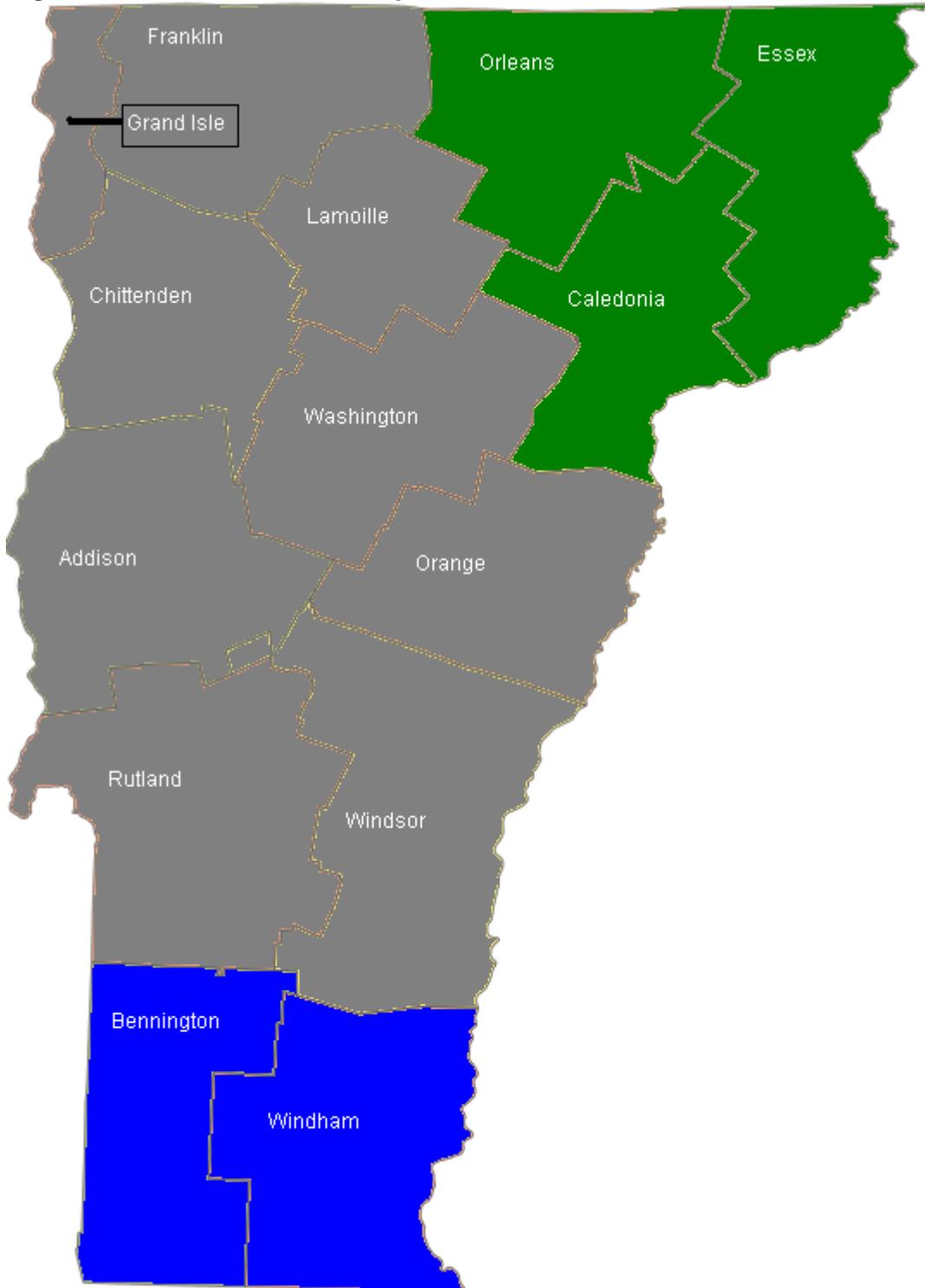
Roads are not the only means of getting in and around the Northeast Kingdom there are also three state-owned airports, the John H. Boylan Airport in Island Pond (Essex county), the Caledonia County Airport in Lyndon, and Newport State Airport in Coventry (Orleans county). Each of these general aviation facilities do not support commercial passenger aircraft; but the airports do provide access to the region through smaller aircraft travel. The John H. Boylan Airport is not fully open year round; during the winter months the runway is not plowed making it only usable for ski equipped aircraft. The Caledonia County

⁴ The National Natural Landmarks (NNL) program is administered by the National Parks Service. Landmarks are selected for their unique biological/geological features and are owned by a variety of land stewards—public and private. Both of the NNLs in the Northeast Kingdom are under state ownership.

Airport and Newport State Airport are open year-round and have planned improvements and expansions through the Vermont Department of Transportation and Federal Aviation Administration.⁵

⁵ All improvements and/or expansions must be approved by the Federal Aviation Administration, which funds about 95 percent of the approved projects at general aviation facilities. Newport State Airport is currently undertaking a plan of action to make substantial improvements in its facility (EPR, 2011).

Figure 1. State of Vermont Map



Notes: Northeast Kingdom is green-coded; Southern Vermont is blue-coded.
Prepared by Economic & Policy Resources, Inc.

There are also three short-line freight railroads that currently service the Northeast Kingdom: Montreal, Maine, and Atlantic Railway; Washington County

Railroad; and St. Lawrence and Atlantic Railroad. The Montreal, Main and Atlantic Railway runs a spur down from its main line at Farnham, Quebec to Richford, Vermont with its Vermont terminus in Newport. The Washington County Railroad runs north-south between Newport and White River Junction⁶, connecting to other lines such as the New England Central Railroad and the Green Mountain Railroad. The St. Lawrence and Atlantic Railroad runs between Portland, Maine and Montreal and Sherbrooke, Quebec passing through the Northeast Kingdom servicing the Island Pond area before crossing into Canada at Norton. There are no passenger rail service that run through the Northeast Kingdom, leaving private airplanes, personal automobile, and public transit⁷ the only means of getting to and from and in and around the Northeast Kingdom.

Peer Region of Southern Vermont

For this economic study of the Northeast Kingdom, a peer region of southern Vermont was selected for comparative purposes. Southern Vermont is composed of two counties: Bennington and Windham. Throughout this economic profile of the Northeast Kingdom, various performance metrics are utilized and compared with the peer region of southern Vermont, the State of Vermont, and the United States.

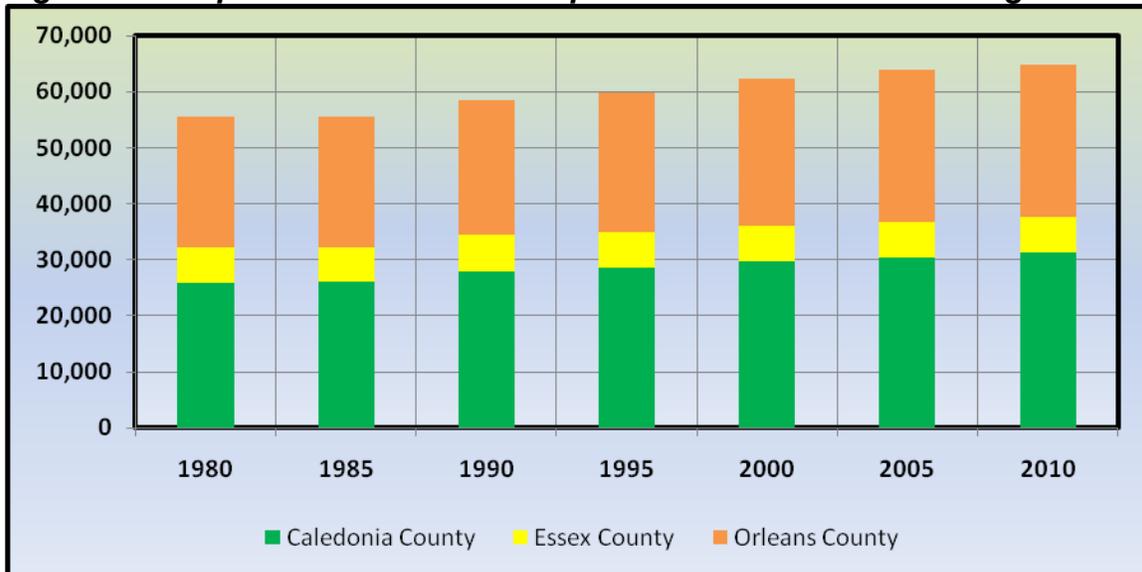
⁶ Washington County Railroad provides service at other locations in the Northeast Kingdom including Orleans, Barton, West Burke, Lyndonville, St. Johnsbury, Barnet, East Ryegate, and Wells River.

⁷ Rural Transportation Inc offers limited services to special needs populations in the Northeast Kingdom.

II. Population

The 2,014 square mile Northeast Kingdom hosts a 2010 population of 64,764 which amounts to a population density of approximately 32 people per square mile. In comparison, Vermont has a population density of approximately 68 people per square mile; and the United States a density of 87 people per square mile.

Figure 2. Composition of the Total Population in the Northeast Kingdom



Note: 1980, 1990, 2000, and 2010 are Census years, issued on April 1; 1985, 1995, and 2005 are population estimates, issued on July 1.

Source: US Census Bureau

Prepared by Economic & Policy Resources, Inc.

While each of the three counties has approximately the same land area, their respective regional population shares differ. As of April 1, 2010 Caledonia County held the largest share with 48.2 percent of NEK's regional population residing there, which corresponds to 31,227 people (Figure 2). Orleans County was not far behind with a share of 42.0 percent (or a population level of 27,231). Essex County with a population of 6,306, accounts for only 9.4 percent of the total regional population.

The Northeast Kingdom encompasses 55 towns and gores⁸. According to the 2010 Census, the largest population centers in the Northeast Kingdom are: St.

⁸ A gore (or grant) is an unincorporated area of a county that is not part of any town and has limited self-government, as most are uninhabited. Historically, gores were generally the result of errors when the land was first surveyed and towns were laid out. A gore (or grant) would lie in an area between two (supposedly abutting) townships but would technically be in neither town. Surrounding towns have absorbed some gores while others have become towns, such as Stannard, Caledonia County. There are four remaining gores (or grants) in Vermont; three of which are located in Essex County: Averys Gore, Warner's Grant, and Warren's Gore.

Johnsbury, Caledonia County (7,603); Lyndon, Caledonia County (5,981); Derby, Orleans County (4,621); Newport City, Orleans County (4,589); and Hardwick, Caledonia County (3,010).

Table 1. Population change by County and Town in the Northeast Kingdom, 1990, 2000 and 2010 Census years

| Name | Census Population | | | Percent change | | |
|-------------------------|-------------------|---------------|---------------|----------------|-------------|--------------|
| | 1990 | 2000 | 2010 | 1990-2000 | 2000-2010 | 1990-2010 |
| Caledonia County | 27,846 | 29,702 | 31,227 | 6.7% | 5.1% | 12.1% |
| Barnet | 1,415 | 1,690 | 1,708 | 19.4% | 1.1% | 20.7% |
| Burke | 1,406 | 1,571 | 1,753 | 11.7% | 11.6% | 24.7% |
| Danville | 1,917 | 2,211 | 2,196 | 15.3% | -0.7% | 14.6% |
| Groton | 862 | 876 | 1,022 | 1.6% | 16.7% | 18.6% |
| Hardwick | 2,964 | 3,174 | 3,010 | 7.1% | -5.2% | 1.6% |
| Kirby | 347 | 456 | 493 | 31.4% | 8.1% | 42.1% |
| Lyndon | 5,371 | 5,448 | 5,981 | 1.4% | 9.8% | 11.4% |
| Newark | 354 | 470 | 581 | 32.8% | 23.6% | 64.1% |
| Peacham | 627 | 665 | 732 | 6.1% | 10.1% | 16.7% |
| Ryegate | 1,058 | 1,150 | 1,174 | 8.7% | 2.1% | 11.0% |
| St. Johnsbury | 7,608 | 7,571 | 7,603 | -0.5% | 0.4% | -0.1% |
| Sheffield | 541 | 727 | 703 | 34.4% | -3.3% | 29.9% |
| Stannard | 148 | 185 | 216 | 25.0% | 16.8% | 45.9% |
| Sutton | 854 | 1,001 | 1,029 | 17.2% | 2.8% | 20.5% |
| Walden | 703 | 782 | 935 | 11.2% | 19.6% | 33.0% |
| Waterford | 1,190 | 1,104 | 1,280 | -7.2% | 15.9% | 7.6% |
| Wheelock | 481 | 621 | 811 | 29.1% | 30.6% | 68.6% |

With the lone exception of Lyndon, these major population centers grew much slower than the overall Northeast Kingdom region. Population growth is occurring within smaller towns in the Northeast Kingdom for a variety of reasons. For instance, population within the towns of Burke (Caledonia) and Jay (Orleans) are increasing at twice or more the regional rate. Both Burke and Jay have been buoyed by increased visitation and growth of ski resorts as well as increased residential developments at nearby Burke Mountain and Jay Peak.

Table 1. Population change by County and Town in the Northeast Kingdom, 1990, 2000 and 2010 Census years (continued)

| Name | Census Population | | | Percent change | | |
|---------------------|-------------------|--------------|--------------|----------------|--------------|--------------|
| | 1990 | 2000 | 2010 | 1990-2000 | 2000-2010 | 1990-2010 |
| Essex County | 6,405 | 6,459 | 6,306 | 0.8% | -2.4% | -1.5% |
| Averill | 7 | 8 | 24 | 14.3% | 200.0% | 242.9% |
| Avery's Gore | 0 | 0 | 0 | --- | --- | --- |
| Bloomfield | 253 | 261 | 221 | 3.2% | -15.3% | -12.6% |
| Brighton | 1,562 | 1,260 | 1,222 | -19.3% | -3.0% | -21.8% |
| Brunswick | 92 | 107 | 112 | 16.3% | 4.7% | 21.7% |
| Canaan | 1,121 | 1,078 | 972 | -3.8% | -9.8% | -13.3% |
| Concord | 1,093 | 1,209 | 1,235 | 10.6% | 2.2% | 13.0% |
| East Haven | 269 | 301 | 290 | 11.9% | -3.7% | 7.8% |
| Ferdinand | 23 | 33 | 32 | 43.5% | -3.0% | 39.1% |
| Granby | 85 | 86 | 88 | 1.2% | 2.3% | 3.5% |
| Guildhall | 270 | 268 | 261 | -0.7% | -2.6% | -3.3% |
| Lemington | 102 | 107 | 104 | 4.9% | -2.8% | 2.0% |
| Lewis | 0 | 0 | 0 | --- | --- | --- |
| Lunenburg | 1,176 | 1,315 | 1,302 | 11.8% | -1.0% | 10.7% |
| Maidstone | 131 | 105 | 208 | -19.8% | 98.1% | 58.8% |
| Norton | 169 | 214 | 169 | 26.6% | -21.0% | 0.0% |
| Victory | 50 | 97 | 62 | 94.0% | -36.1% | 24.0% |
| Warner's Grant | 0 | 0 | 0 | --- | --- | --- |
| Warren's Gore | 2 | 10 | 4 | 400.0% | -60.0% | 100.0% |

Since 1980, the population in the Northeast Kingdom has grown slowly, albeit consistently; as has the population for Vermont (Figure 3). In 1980, the population of the Northeast Kingdom was 58,304 and in the three decades since grew to 64,764 (2010 population census), representing an overall increase of 16.6 percent (or 0.55 percent per year). In comparison, the United States, Vermont, and Southern Vermont (comprised of Bennington and Windham Counties), realized percent increases of 36.3%, 22.3%, and 16.2%, respectively, over that same 30-year period (or on an annual basis, 1.21 percent, 0.74 percent, and 0.54 percent, respectively).

Table 1. Population change by County and Town in the Northeast Kingdom, 1990, 2000 and 2010 Census years (continued)

| Name | Census Population | | | Percent change | | |
|--------------------------|-------------------|----------------|----------------|----------------|-------------|--------------|
| | 1990 | 2000 | 2010 | 1990-2000 | 2000-2010 | 1990-2010 |
| Orleans County | 24,053 | 26,277 | 27,231 | 9.2% | 3.6% | 13.2% |
| Albany | 782 | 840 | 941 | 7.4% | 12.0% | 20.3% |
| Barton | 2,967 | 2,780 | 2,810 | -6.3% | 1.1% | -5.3% |
| Brownington | 705 | 885 | 988 | 25.5% | 11.6% | 40.1% |
| Charleston | 844 | 895 | 1,023 | 6.0% | 14.3% | 21.2% |
| Coventry | 806 | 1,014 | 1,086 | 25.8% | 7.1% | 34.7% |
| Craftsbury | 994 | 1,136 | 1,206 | 14.3% | 6.2% | 21.3% |
| Derby | 4,479 | 4,604 | 4,621 | 2.8% | 0.4% | 3.2% |
| Glover | 820 | 966 | 1,122 | 17.8% | 16.1% | 36.8% |
| Greensboro | 717 | 770 | 762 | 7.4% | -1.0% | 6.3% |
| Holland | 423 | 588 | 629 | 39.0% | 7.0% | 48.7% |
| Irasburg | 907 | 1,077 | 1,163 | 18.7% | 8.0% | 28.2% |
| Jay | 381 | 426 | 521 | 11.8% | 22.3% | 36.7% |
| Lowell | 594 | 738 | 879 | 24.2% | 19.1% | 48.0% |
| Morgan | 497 | 669 | 749 | 34.6% | 12.0% | 50.7% |
| Newport City | 4,434 | 5,005 | 4,589 | 12.9% | -8.3% | 3.5% |
| Newport Town | 1,367 | 1,511 | 1,594 | 10.5% | 5.5% | 16.6% |
| Troy | 1,609 | 1,564 | 1,662 | -2.8% | 6.3% | 3.3% |
| Westfield | 422 | 503 | 536 | 19.2% | 6.6% | 27.0% |
| Westmore | 305 | 306 | 350 | 0.3% | 14.4% | 14.8% |
| Northeast Kingdom | 58,304 | 62,438 | 64,764 | 7.1% | 3.7% | 11.1% |
| State of Vermont | 562,767 | 608,827 | 625,741 | 8.2% | 2.8% | 11.2% |

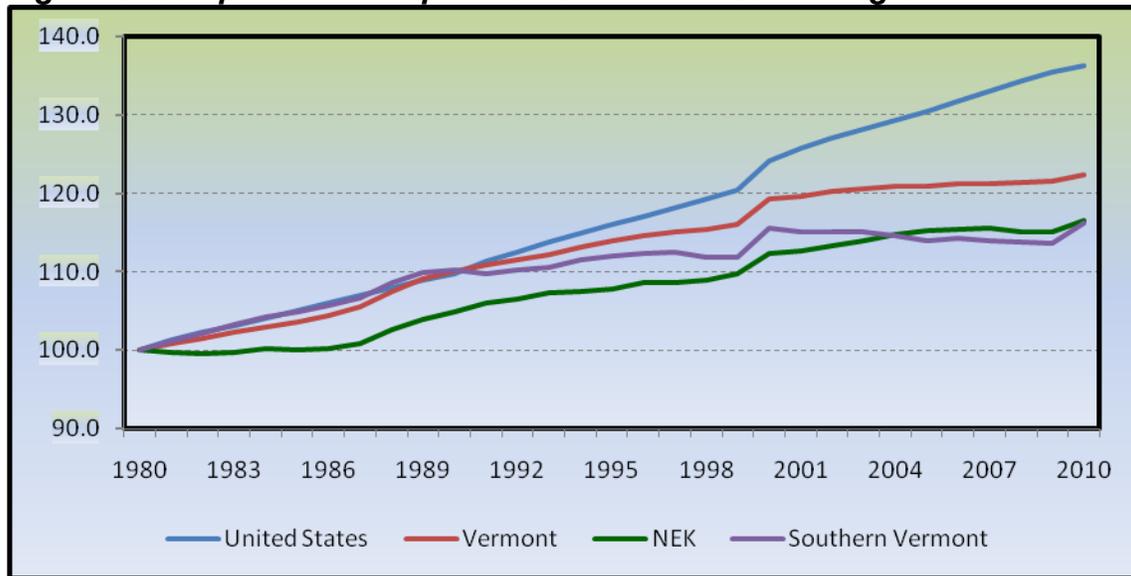
Source: US Census Bureau

Prepared by Economic & Policy Resources, Inc.

During much of the 1980s, population growth stagnated in the Northeast Kingdom; by the end of the decade, population gains for the region were around 5 percent. By contrast, population growth grew by 10 percent in each of the other areas: United States, State of Vermont, and Southern Vermont region.

For the 1990s, population growth increased by 7.5 percent in the Northeast Kingdom. Population gains in the United States and the State of Vermont surpassed the NEK with 14.4 percent and 9.2 percent growth respectively during the 1990s; in contrast, Southern Vermont's growth rate slowed considerably to 5.4 percent.

Figure 3. Comparison of Population Growth for Select Regions



Notes: Indexed to April 1, 1980 = 100.

Source: US Census Bureau

Prepared by Economic & Policy Resources, Inc.

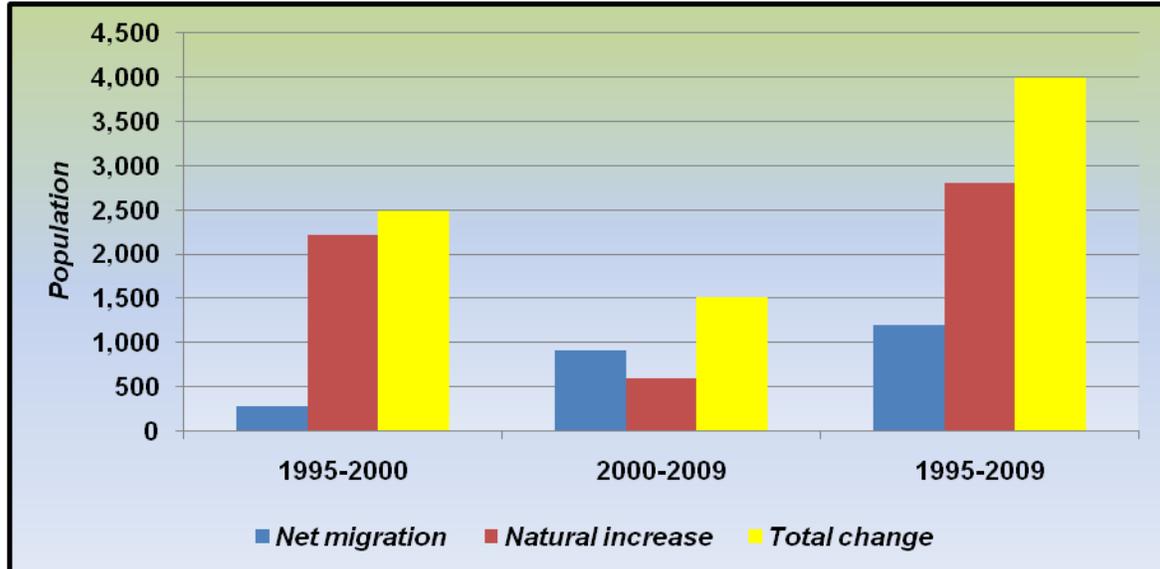
During the most recent decade, population growth for the NEK was 4.2 percent, which is about one third of the growth rate of the United States (12.1 percent) over the same period. Vermont and Southern Vermont faced much slower population growth between 2000-2010, with the state experiencing a 3.1 percent growth rate and Southern Vermont a negligible 0.6 percent growth rate.

Components of Population Change

Why does regional population growth vary over time? In the case of the Northeast Kingdom, why has population growth been relatively weak at times while relatively strong at other times? An area's population can change in two ways. There is the natural increase (or decrease)—the number of births minus the number of deaths; and net migration—the balance of persons moving into and out of an area. The latter is largely driven by perceived employment opportunities and tends to fluctuate in response to economic conditions. Figure 4 shows the contribution of natural increase and net migration to total population change in the Northeast Kingdom between 1995 and 2009.

During the latter half of the 1990s, much of the population growth was due to natural increase. For most rural areas, natural increase plays a much more important role in population change; but even this component is declining over time. In contrast, gains from net migration were modest during this 1995-2000 period.

Figure 4. Components of Population Change in the Northeast Kingdom, 1995-2009



Source: US Census Bureau

Prepared by Economic & Policy Resources, Inc.

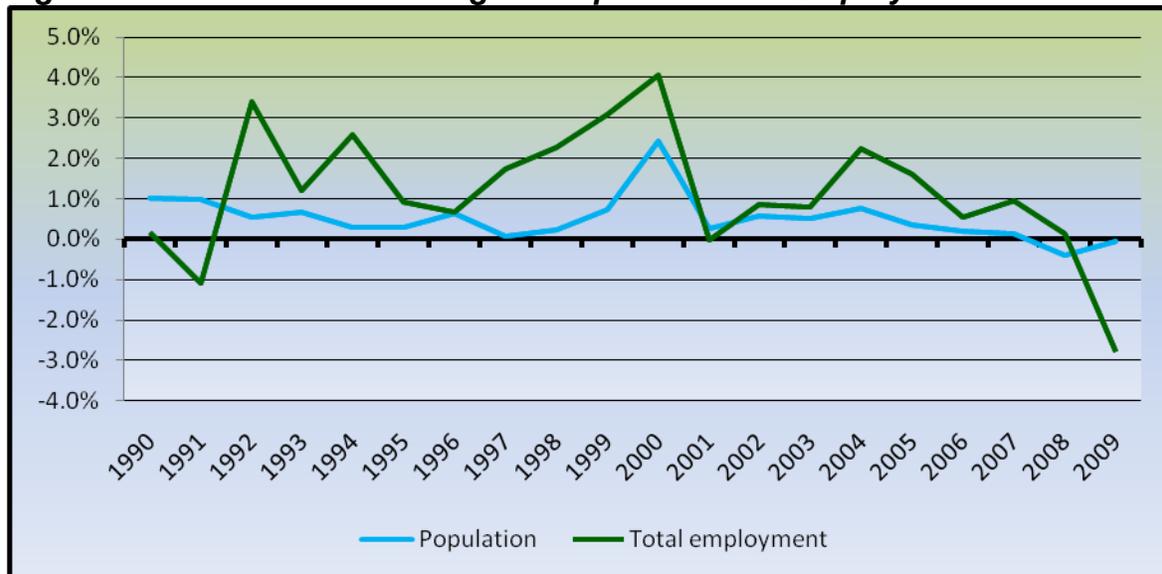
Net migration played a significant role in regional population gains in the Northeast Kingdom between 2000 and 2009. Although overall growth was relatively modest during this most recent decade, net migration was a dominant component in population growth for the Northeast Kingdom. Statewide, much of the population growth over the decade was due to natural increase; and in the comparative region of Southern Vermont, there was out-migration, meaning more people moved out than moved into these two counties of Bennington and Windham.

In general, the migratory component reacts more quickly to economic change than does natural increase. For instance, as job prospects increase within an area, people will migrate to that area from elsewhere, attracted by the likelihood of employment. These migrants, however, tend to arrive well after economic expansion; thus, an area's population growth will tend to lag behind its employment growth. With some exceptions, population change has tended to follow employment change in the Northeast Kingdom (Figure 5).

Population migration has many impacts. It affects the migrants themselves, who generally move to find better economic opportunity. If they find opportunity, they are likely to settle down as residents. [If not, they may well move again.] On a more aggregate level, migration affects both the areas of origin and destination. Receiving areas are likely to enjoy strengthened economic activity as the demand for goods and services, including housing increases. Economic multiplier effects further enhance the economic benefits of in-migration. By contrast, those areas with outmigration are likely to suffer weakened economic activity and shrunken tax bases.

This view, however, does not consider the population gains from (1) those immigrants no longer in the labor force (i.e., retirees); and (2) spillover population effects from adjacent counties. In recent years, the Northeast Kingdom—particularly Orleans County—have attracted a disproportionately large number of retirees, making it one of two rural counties⁹ in Vermont designated as retirement destinations (Johnson and Beale, 2005).

Figure 5. Annual Percent Change in Population and Employment



Sources: US Census Bureau
Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Population forecasts

The US Census Bureau makes population projections for the State of Vermont. However, neither the Census Bureau nor the Vermont State Data Center provides population forecasts for sub-state jurisdictions—counties, metropolitan regions, or municipalities. Given the significant differences in population growth patterns and demographic compositions between the State of Vermont and the Northeast Kingdom, no population forecasts are provided for the region.¹⁰

Demographic composition of the Northeast Kingdom

In the near-term, the age makeup of the regional population is somewhat favorable for continued economic development. The 2010 median age of the Northeast Kingdom’s population was 43.2 years, which was higher than both the state and nation, but lower than its peer region of Southern Vermont (Table 2). In 2000, the median age of the Northeast Kingdom was 38.9 years, compared with the state’s median age of 37.7 years.

⁹ The other retirement destination county is Bennington, one of the two counties in the comparative region of Southern Vermont.

¹⁰ The lack of an “official” forecast for sub-state regions poses challenges for such local development groups as the Northeastern Vermont Development Association.

Table 2. Age Composition in Selected Counties, 2010

| County/Region | Median | Percentage of population in each age bracket | | | | | |
|--------------------------|-------------|--|-------------|-------------|--------------|--------------|--------------|
| | Age | Under 15 | 15-19 | 20-24 | 25-44 | 45-64 | 65+ |
| Northeast Kingdom | 43.2 | 17.1% | 6.9% | 5.6% | 22.4% | 31.2% | 16.7% |
| Caledonia County | 42.1 | 17.5% | 7.7% | 6.3% | 22.1% | 31.1% | 15.3% |
| Essex County | 47.4 | 14.9% | 6.0% | 4.4% | 20.8% | 34.5% | 19.3% |
| Orleans County | 43.7 | 17.3% | 6.2% | 5.1% | 23.1% | 30.7% | 17.7% |
| Southern Vermont | 45.0 | 16.1% | 6.8% | 5.7% | 21.4% | 32.7% | 17.3% |
| Bennington County | 45.1 | 16.2% | 7.2% | 5.7% | 20.7% | 31.3% | 18.8% |
| Windham County | 44.9 | 16.0% | 6.4% | 5.6% | 22.1% | 33.8% | 16.1% |
| State of Vermont | 41.5 | 16.7% | 7.4% | 7.0% | 23.6% | 30.8% | 14.6% |
| United States | 37.2 | 19.8% | 7.1% | 7.0% | 26.6% | 26.4% | 13.0% |

Sources: US Census Bureau

Prepared by Economic & Policy Resources, Inc.

For the purposes of assessing local labor force prospects, population trends can be further analyzed by grouping the data into six broad age categories. These age categories are:

- Under 15 years old: Infants and adolescents a decade or two removed from entering the labor force.
- 15-19 years: Prospective new entrants into the labor force, excluding college students.
- 20-24 years: New entrants into the labor force.
- 25-44 years: Workers in their prime years of productivity.
- 45-64 years: Mature workers with years of accumulated skill and experience.
- 65 years and over: Retirees.

Recent population trends indicate a shrinking labor pool in the Northeast region. In 2000, only two out of every ten persons in the Northeast Kingdom were aged 14 years and under. While this ratio is slightly above both the state and its peer region of Southern Vermont, it remains well below the national average. This share is projected to slightly decline in the ensuing decades, given the recent below trend birth rates in the Northeast Kingdom.

The 15-19 age group in the Northeast Kingdom has been relatively stable between 2000 and 2010. During the 2000-2010 period, the 20-24 age group increased; but mixed shares are projected for the coming decades.

The 25-44 age group had the second largest 2010 share among all age cohorts within the region. This pattern in the Northeast Kingdom is consistent with both the state and the nation. Statewide, this age group is projected to be relatively stable in the coming years; by 2030, about 24 percent of the state's population will be within this age group.

Like other areas, Northeast Kingdom's population will mature in the coming decades. The size of Northeast Kingdom's 45-64 age cohort already has the largest share among all age groups; by 2030. On a statewide basis, however, this share is projected to shrink to less than a quarter of all residents.

The share size of the 65 years and older group is projected to increase during the coming decades. These gains will be due to both natural aging and net migration of retirees. As the general population continues to age, the elderly will constitute an increasing share of region's population base in the coming years. This "graying" of the Northeast Kingdom has significant development implications for the regional economy.

Population and Labor Force by Race and Gender

The racial composition of the Northeast Kingdom is similar to that of the State of Vermont and Southern Vermont. White, non-Hispanic is the overwhelming majority race in all of Vermont as well as its sub-state regions of the Northeast Kingdom and Southern Vermont. Less than two-thirds of all Americans are white, non-Hispanic; in the Northeast Kingdom, Southern Vermont, and the State of Vermont, white, non-Hispanics represent 96.0%, 94.8 percent, and 94.3 percent of their respective total populations. When compared to the national average, all of the other races (non-Hispanic and Hispanic) are significantly under-represented in the State of Vermont and its sub-state regions.

Table 3. Racial and Ethnic Distribution in Selected Counties, 2010

| County/Region | Total | Non Hispanic | | | | | | Hispanic |
|--------------------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------|
| | Non Hispanic | White | Black | Indian | API | Other | Two or more | Total |
| Northeast Kingdom | 98.9% | 96.0% | 0.5% | 0.4% | 0.6% | 0.1% | 1.4% | 1.1% |
| Caledonia County | 98.9% | 95.8% | 0.5% | 0.4% | 0.8% | 0.1% | 1.3% | 1.1% |
| Essex County | 99.1% | 96.6% | 0.3% | 0.6% | 0.3% | 0.0% | 1.2% | 0.9% |
| Orleans County | 98.9% | 96.0% | 0.6% | 0.4% | 0.4% | 0.1% | 1.5% | 1.1% |
| Southern Vermont | 98.4% | 94.8% | 0.8% | 0.2% | 0.9% | 0.1% | 1.4% | 1.6% |
| Bennington County | 98.6% | 95.7% | 0.8% | 0.2% | 0.7% | 0.1% | 1.1% | 1.4% |
| Windham County | 98.2% | 94.1% | 0.9% | 0.2% | 1.1% | 0.1% | 1.7% | 1.8% |
| State of Vermont | 98.5% | 94.3% | 0.9% | 0.3% | 1.3% | 0.1% | 1.6% | 1.5% |
| United States | 83.7% | 63.7% | 12.2% | 0.7% | 4.8% | 0.2% | 1.9% | 16.3% |

Note: API is Asian and Pacific Islanders

Sources: US Census Bureau

Prepared by Economic & Policy Resources, Inc.

Like its population, the racial composition of Northeast Kingdom's labor force is predominantly white, which has not changed appreciably since 1990. According to the Bureau of the Census, Northeast Kingdom's regional 2000 labor force was over 98 percent white, non-Hispanic.

Women are an increasing part of Northeast Kingdom regional labor force. According to the Bureau of the Census, women constituted 45.1 percent of the 1990 work force; by 2000, women share of the labor force had increased to 47.3 percent. Growth in female participation was dramatic during the earlier periods. The 2000 Census showed the Northeast Kingdom regional labor force with 16,647 males and 14,928 females, up from 1990s 15,636 and 12,857 respectively.

Educational Performance

The educational level of the local populace is increasingly important in determining local economic development prospects. For the most part, people in the Northeast Kingdom have an average to below average educational attainment. Only 79.9% of the population over 25 graduated from high school, which is almost equivalent to the United States share, but is well below that of the State of Vermont (86.4%) and that of Southern Vermont (86.2%). Beyond that, the portion of the over 25 population that has attained a bachelor's degree or higher is only 18.5%, the national proportion is 24.4%; 29.4% of Vermont's over 25 population has attained a bachelor's degree or higher (Table 4).

Table 4. Educational Attainment for Selected Counties, 2000

| County/Region | Persons 25 years and older | | |
|-----------------------------|----------------------------|----------------------------------|--------------------------------|
| | Total | Percent with High school diploma | Percent with Bachelor's degree |
| Northeast Kingdom | 41,794 | 79.9% | 18.5% |
| Caledonia County | 19,596 | 82.6% | 22.5% |
| Essex County | 4,384 | 75.0% | 10.8% |
| Orleans County | 17,814 | 78.2% | 16.1% |
| Southern Vermont | 55,853 | 86.2% | 29.0% |
| Bennington County | 25,311 | 84.9% | 27.1% |
| Windham County | 30,542 | 87.3% | 30.5% |
| State of Vermont | 404,223 | 86.4% | 29.4% |
| United States (000s) | 182,211.6 | 80.4% | 24.4% |

Source: US Census Bureau

Prepared by Economic & Policy Resources, Inc.

All residents in the Northeast Kingdom interested in seeking a Bachelor's degree or higher must either attend Lyndon State College, the only public 4-year college in the NEK, or the private 4-year Sterling College (Craftsbury) or leave the area for the desired educational attainment. With the advent of internet and the use of online courses, it would be possible to earn an online degree from an online university from within the Northeast Kingdom. If a resident is seeking an Associate's degree the Community College of Vermont offers classes in two locations within the Northeast Kingdom; there is a campus in Newport and a campus in St. Johnsbury.

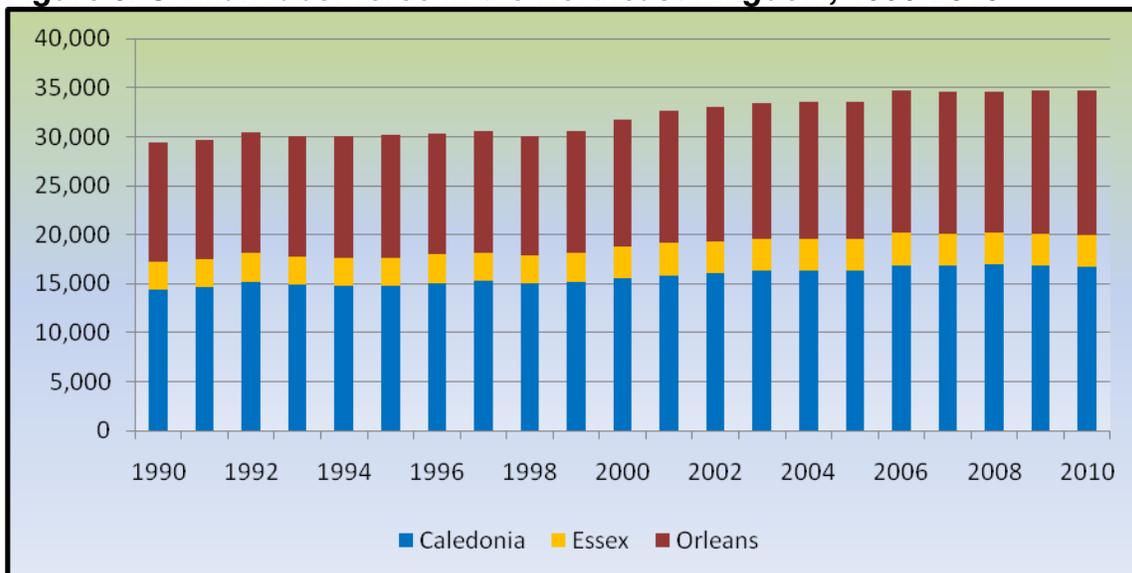
The educational level of residents, especially those within the local work force, is critical in determining labor market success and wage levels. Studies indicate, for example, that the average college graduate earns twice the income of a high school graduate and suffers half the unemployment. Many dislocated workers often do not have post-high school training. An increasing number of workers, including many new workers, are in low-wage jobs with little prospect of moving up the pay scale without additional education. High-skilled workers continue to do well, while less educated workers have significantly lower wages.

III. Labor Market and Employment Trends in the Northeast Kingdom

Labor Force Trends

The Northeast Kingdom's labor market is changing in fundamental ways. Between 1990 and 2010, the Northeast Kingdom's civilian labor force grew slightly better than that of Vermont's labor force. Over the 20-year period, the region's labor force expanded by 18.2 percent versus 16.6 percent for the state. Growth rates varied among the three counties; both Caledonia and Essex Counties' labor forces averaged 0.8 percent annual growth, while annual growth rates in Orleans County averaged 1.1 percent annually (Figure 6).. Annual growth rates for Vermont and Southern Vermont averaged 0.8 percent and 0.6 percent, respectively.

Figure 6. Civilian labor force in the Northeast Kingdom, 1990-2010



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

After a brief uptick between 1990 and 1992, the regional labor force stagnated for the remainder of the 1990s. 1999 marked the beginning of a steady growth period in the regional labor force which abruptly ended in 2006. Since 2006, Northeast Kingdom's regional labor force has remained at around 34,700, about one-tenth of the total state labor force.

Employment Trends

Over the last two decades, regional employment growth and change in the Northeast Kingdom has been strikingly similar to that of the national business cycle. Following a brief stall in the early 1990s, regional employment growth was robust (with an average annual growth rate of 2.2 percent) for the remainder of the decade. Consistent with the national recession, Northeast Kingdom employment declined briefly between 2000 and 2002, only to rebound with steady employment growth late 2008, when employment declined by 2.8 percent.

Currently, the Northeast Kingdom economy is recovering from the “great recession” of late-2007 to mid-2009, but has yet to reach its pre-recession peak total employment of 37,500.¹¹

This growth and change was not spread evenly among all sectors of the regional economy. For the 2001-2009 period, regional trade and services sectors (particularly, financial services, education and health services, professional and business services) experienced modest employment growth. Government (all levels—Federal, state and local) employment had consistent employment growth throughout the decade. By contrast, most goods-producing sectors in the Northeast Kingdom shed significant numbers of jobs. For instance, manufacturing employment in the region had shrunk to two-thirds of its 2001 size.

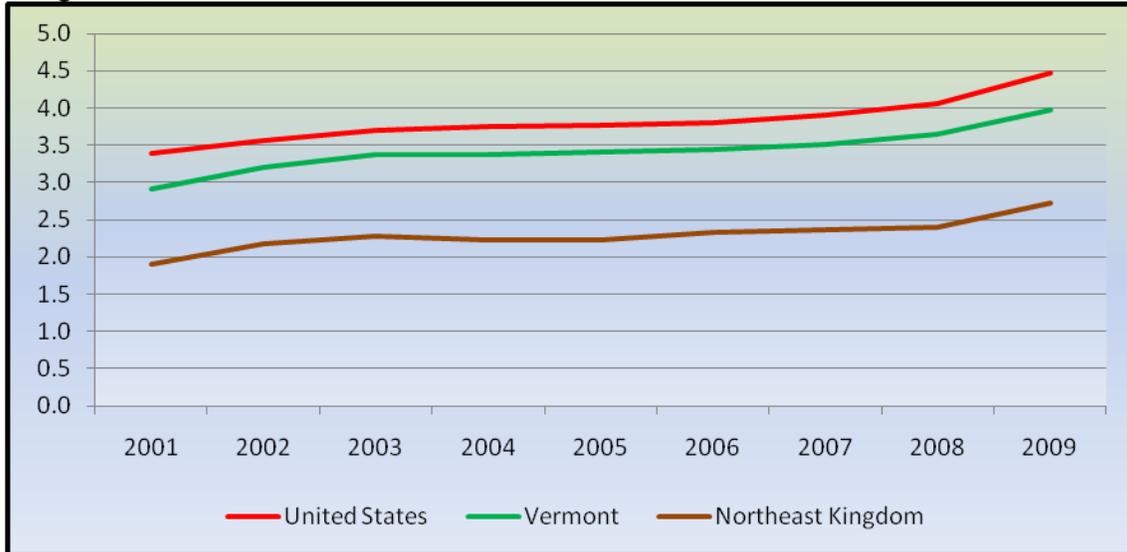
Widespread attention has been given to the shift in the national economy from goods production toward services in recent years. Although this is certainly not a new trend, Vermont has been shifting rapidly from a goods-producing to a service-producing economy in recent years (Figure 7). The Northeast Kingdom exhibits a similar pace to its trend, but remains more dependent upon goods-producing industries than the state and the nation. The goods-producing industries consist of the natural resources sectors of agriculture, forestry, and mining in addition to construction and manufacturing. Services-providing industries include transportation and warehousing, utilities and information; finance and insurance; real estate and rental; educational services; health care and social assistance; professional and technical services; management of companies; administrative and waste services; arts, entertainment, and recreation; accommodation and food services; wholesale and retail trade; and government.

In 2001, Vermont’s ratio was a full point higher than the Northeast Kingdom; 2.9 versus 1.9 services-providing jobs for each goods-producing job. By 2009, Northeast Kingdom region’s ratio had increased to 2.7 services-providing jobs per goods-producing job, whereas statewide the ratio had increased to 4.0.¹² Proportionately, far more people are working in services-providing jobs statewide and nationwide than in the Northeast Kingdom.

¹¹ According to the US Bureau of Economic Analysis, which includes both wage & salaried workers and proprietors, peak employment was in 2008. Looking solely at wage & salaried workers (or covered employment), peak employment was in reached in 2006.

¹² Over this same time period (2001-2009), the ratio of services-providing jobs to goods-producing jobs increased from 3.4 to 4.5.

Figure 7. Ratio of Service-providing to Goods-producing Jobs, Northeast Kingdom, Vermont and United States:2001-2009



Source: Vermont Department of Labor

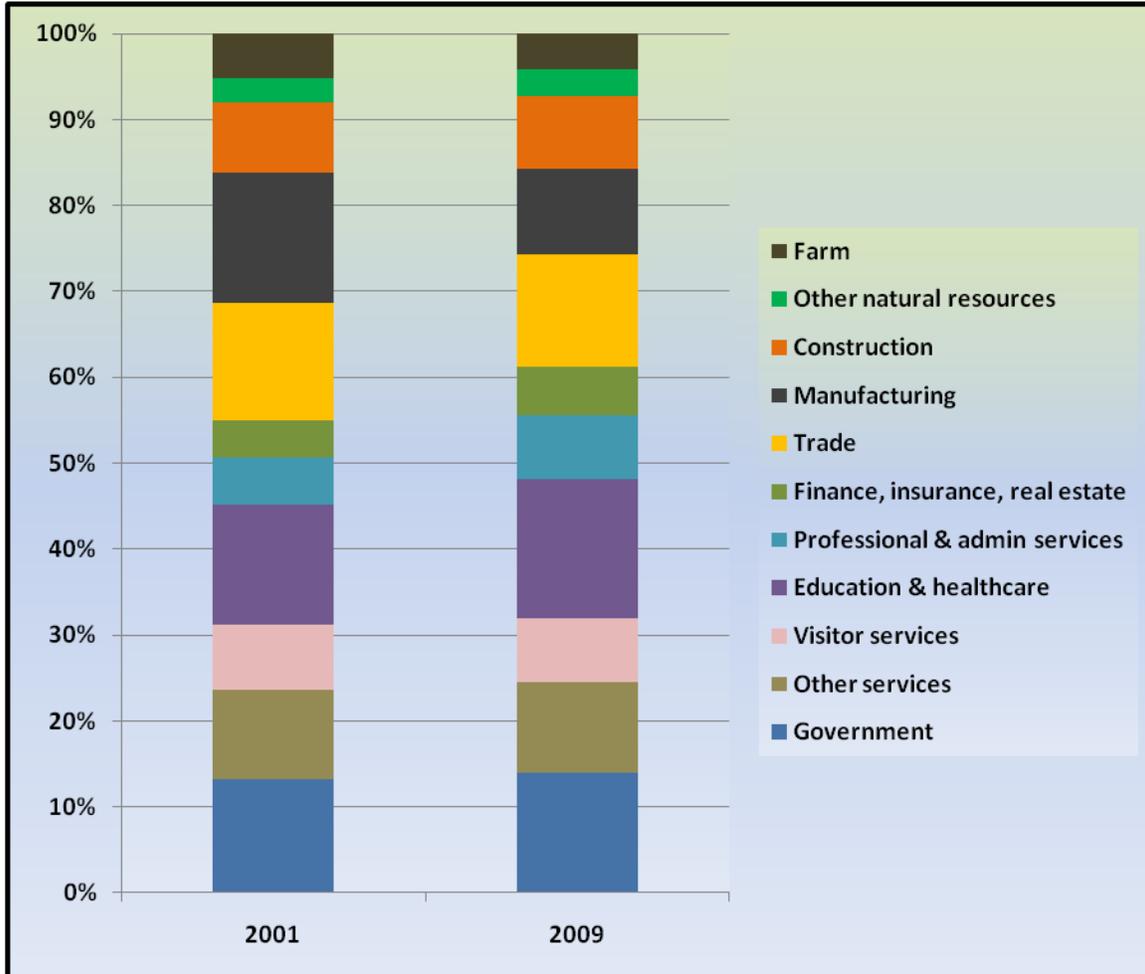
Prepared by Economic & Policy Resources, Inc.

As Figure 7 indicates, significant structural change has occurred within the Northeast Kingdom regional economy over the 2001-2009 period. Employment shares in the natural resources sectors (farming, forestry, mining) continue to fall; manufacturing has downsized, mostly due to sizeable layoffs or plant closures; and construction has moderated. Instead of one in every four workers employed in natural resources and manufacturing in 2001; now only one in six workers are employed in these sectors. Services, trade, transportation, health care and education, and finance combined now employ one in every two workers in the region (Figure 8).

Commuting Workforce

As is the case with much of Vermont, the workforce in the Northeast Kingdom tends to live within short distance of their workplace. In 2008, the latest year commuter data is available, 69.5% of the workers employed in the Northeast Kingdom lived in the Northeast Kingdom and 15.2% of the workers who live in the Northeast Kingdom are employed in the surrounding counties. In terms the distance workers who live in the NEK travel to work, 45.2% travel less than 10 miles, 24.5% travel between 10 and 24 miles to work, which means that 69.7% of the workers living in the NEK travel less than 24 miles to work from their home; the remaining 30.3% travels over 25 miles from home to work, with 14.5% traveling 25 to 50 miles from their home in the NEK to their place of work and 15.8% traveling more than 50 miles from their home to place of work.

Figure 8. Northeast Kingdom Regional Employment by Major Sector, 2001 and 2009



Source: US Bureau of Economic Analysis Prepared by Economic & Policy Resources, Inc.

Occupational Structure

The 2009 annual occupation based employment data provides an alternative view on the employment structure in an economy. Table 5 shows the composition of the total employment by occupation for Vermont, Northern Vermont, and Southern Vermont.¹³ The three regions have very similar employment structures, in terms of the each occupation's percent share of the total. Office and administrative support occupations had the largest share of the total all occupations employment in 2009, with a 15.5% share in Vermont, a 15.9% a share in Northern Vermont, and a 15.5% share in Southern Vermont. Education, training, and library occupations also represent a significant share of the occupations in all three of the regions with an 8.8% share in Vermont, a

¹³ Northern Vermont, as defined by The Vermont Department of Labor, consists of the entire counties of Caledonia, Essex, and Orleans; and portions of Grand Isle, Franklin, Lamoille, Washington, and Orange counties. Southern Vermont, as defined by The Vermont Department of Labor consists of the entire counties of Rutland, Windsor, Bennington, and Windham; and portions of Orange, Washington, and Addison counties.

10.5% share in Northern Vermont, and a 9.6% share in Southern Vermont; sales and related occupations also hold a significant share of the occupational based employment. All together, the three previously listed occupations comprise 33.8% of the total occupational based employment in Vermont, 35.5% of the total occupational based employment in Northern Vermont, and 34.9% of the total occupational based employment in Southern Vermont. This analysis is concurrent with service-providing industries being the major source of employment in the State of Vermont and in general the entire United States. Life, physical, and social science occupations; Legal occupations; and Farming, fishing, and forestry occupations are responsible for the least percentages of the total occupation-based employment in all three of the regions.

Table 5. Employment Structure by Major Occupational Groupings, 2009

| Employment by Occupation: 2009 | | | | | | | |
|--------------------------------|--|------------|----------------------------|------------------|----------------------------|------------------|----------------------------|
| Code | Occupation | Vermont | | Northern Vermont | | Southern Vermont | |
| | | Employment | % of Total-All Occupations | Employment | % of Total-All Occupations | Employment | % of Total-All Occupations |
| 00-0000 | All Occupations | 294,120 | 100.0% | 72,970 | 100.0% | 105,260 | 100.0% |
| 11-0000 | Management occupations | 12,560 | 4.3% | 3,000 | 4.1% | 4,290 | 4.1% |
| 13-0000 | Business and financial operations occupations | 11,510 | 3.9% | 3,360 | 4.6% | 2,810 | 2.7% |
| 15-0000 | Computer and mathematical science occupations | 5,990 | 2.0% | 1,190 | 1.6% | 1,330 | 1.3% |
| 17-0000 | Architecture and engineering occupations | 5,870 | 2.0% | 840 | 1.2% | 1,380 | 1.3% |
| 19-0000 | Life, physical, and social science occupations | 3,700 | 1.3% | 830 | 1.1% | 1,100 | 1.0% |
| 21-0000 | Community and social services occupations | 7,060 | 2.4% | 2,000 | 2.7% | 2,560 | 2.4% |
| 23-0000 | Legal occupations | 2,070 | 0.7% | 580 | 0.8% | 620 | 0.6% |
| 25-0000 | Education, training, and library occupations | 25,740 | 8.8% | 7,680 | 10.5% | 10,080 | 9.6% |
| 27-0000 | Arts, design, entertainment, sports, and media occupations | 5,160 | 1.8% | 1,020 | 1.4% | 1,860 | 1.8% |
| 29-0000 | Healthcare practitioner and technical occupations | 16,780 | 5.7% | 3,650 | 5.0% | 6,230 | 5.9% |
| 31-0000 | Healthcare support occupations | 6,910 | 2.3% | 1,710 | 2.3% | 2,680 | 2.5% |
| 33-0000 | Protective service occupations | 4,660 | 1.6% | 1,100 | 1.5% | 1,770 | 1.7% |
| 35-0000 | Food preparation and serving related occupations | 24,510 | 8.3% | 5,930 | 8.1% | 9,320 | 8.9% |
| 37-0000 | Building and grounds cleaning and maintenance occupations | 10,450 | 3.6% | 2,860 | 3.9% | 4,210 | 4.0% |
| 39-0000 | Personal care and service occupations | 12,580 | 4.3% | 1,840 | 2.5% | 3,190 | 3.0% |
| 41-0000 | Sales and related occupations | 28,180 | 9.6% | 6,660 | 9.1% | 10,340 | 9.8% |
| 43-0000 | Office and administrative support occupations | 45,560 | 15.5% | 11,590 | 15.9% | 16,340 | 15.5% |
| 45-0000 | Farming, fishing, and forestry occupations | 930 | 0.3% | 320 | 0.4% | 340 | 0.3% |
| 47-0000 | Construction and extraction occupations | 13,980 | 4.8% | 3,900 | 5.3% | 5,610 | 5.3% |
| 49-0000 | Installation, maintenance, and repair occupations | 12,090 | 4.1% | 3,020 | 4.1% | 4,350 | 4.1% |
| 51-0000 | Production occupations | 21,530 | 7.3% | 5,570 | 7.6% | 8,600 | 8.2% |
| 53-0000 | Transportation and material moving occupations | 16,290 | 5.5% | 4,320 | 5.9% | 6,240 | 5.9% |

Note: Details may not sum to due rounding and federal and state nondisclosure rules.
Source: Vermont Department of Labor
Prepared by Economic & Policy Resources, Inc.

Unemployment

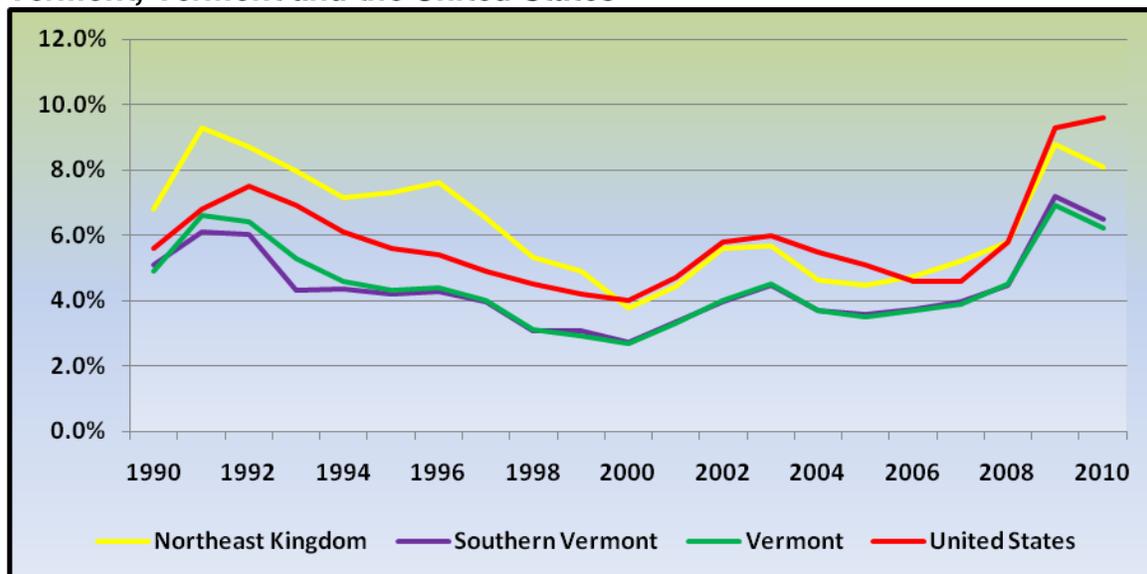
Unemployment is a significant indicator of the vitality of a region's economy. As noted earlier, the labor force consists of two groups: those who are working; and those who are seeking work. Those who are not working but are actively looking for work constitute the unemployed.¹⁴

In recent years unemployment rates across the United States have spiked due to the economic woes of the Great Recession and in some of the peer-regions reached 20-year annual average unemployment rate highs (Figure 9). Vermont and the Northeast Kingdom reached 20-year annual average unemployment rate highs in 2009 with annual unemployment rates of 6.9 percent and 7.2 percent, respectively. Southern Vermont's annual unemployment rate reached a 20-year high at 6.8 percent in 2009. The United States annual average unemployment rate in 2009 was 9.3 percent, which surpassed all preceding levels, but the 2010 annual average unemployment rate rose to 9.6 percent, a 20-year high, demonstrating the lingering effects of the recent economic downturn. Vermont, NEK, and Southern

¹⁴ Discouraged workers, defined as those no longer active in looking for work, are not included in the official labor force numbers.

Vermont all faced a decline in their unemployment levels in 2010, experiencing annual unemployment rates of 6.1 percent, 7.8 percent, and 6.4 percent, respectively, which is indicative of the slow and fragile recovery the area is experiencing after the recent recessionary period.

Figure 9. Unemployment Rates for the Northeast Kingdom, Southern Vermont, Vermont and the United States



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Microenterprises: Self-employed individuals and non-employers¹⁵

One of the most dramatic developments in recent years is the increase in self-employment. In 2009, there were over 15.3 million self-employed workers in the United States; about 10.9 percent of the total workforce. Two-thirds of the self-employed work in their own unincorporated businesses (e.g., sole proprietors); with the remaining one-third were incorporated businesses (Hipple, 2010).¹⁶ Many of the self-employed work in “home-based businesses” and of those self-

¹⁵ A brief word on nomenclature: microenterprises is a colloquial and interchangeable term which includes individuals that are either classified as sole proprietors (i.e., self-employed and their general partners); self-employed; or non-employers. The essence of each of these “microenterprise” terms are self-employment and without paid employees. Sole proprietors is utilized by the U.S. Bureau of Economic Analysis and is reported on both a farm and nonfarm basis for states and counties; self-employed individuals is utilized by the U.S. Bureau of Labor Statistics and is annually reported only on a national basis; and non-employers are self-employed individuals operating very small businesses which may or may not be the owner’s principal source of income and is utilized by the U.S. Census Bureau and reported annually for states and counties. These data sets originate from administrative records of the Internal Revenue Service, derived from sole proprietor businesses filing Form 1040, Schedule C and filers of partnership and corporate tax returns that report no paid employees.

¹⁶ Some contend that these estimates of self-employed worker estimates are substantially undercounted. A variety of reasons are offered including that many are engaged in the cash (or underground) economy for both lawful and illicit activities (see Hipple, 2010).

employed that work outside the home, most of these businesses are located within their place of residence.

Self-employment holds great attraction for many people. Compared to working for someone else, it seems to promise higher earnings, enhanced professional standing, and independence. Practical considerations, such as the desire to work at home or adjust a work schedule to meet family needs, can also motivate people to start their own enterprise. Retired people often become self-employed to supplement their pensions and to have something to do. Finally, others wish to work for themselves because of job dissatisfaction and simply want a change.

On a national basis, the self-employed differ markedly from wage and salary workers in their personal and social characteristics. Compared with wage and salary workers, the self-employed are older and more likely to be men and may have less--but not substantially less--formal education. Relative to their numbers in the labor force, minority groups (excluding Asians) are significantly underrepresented in self-employment. Although the proportion of self-employed women remains substantially lower than that of self-employed men, women have been a major contributor to the recent growth in self-employment.

Table 6. Non-employers in the Northeast Kingdom and Vermont, 2008

| NAICS | Description | Northeast Kingdom | | State of Vermont | |
|-------|---------------------------------------|-------------------|------------------|------------------|--------------------|
| | | Nonemployers | Receipts (\$000) | Nonemployers | Receipts (\$000) |
| 11 | Agriculture, forestry, fish & hunt | 628 | \$34,266 | 2,093 | \$96,442 |
| 21 | Mining, | 12 | \$456 | 65 | \$3,363 |
| 22 | Utilities | 9 | \$258 | 69 | \$4,781 |
| 23 | Construction | 1,262 | \$59,592 | 10,549 | \$554,642 |
| 31-33 | Manufacturing | 208 | \$4,898 | 1,714 | \$55,054 |
| 42 | Wholesale trade | 92 | \$5,973 | 892 | \$78,444 |
| 44-45 | Retail trade | 546 | \$23,089 | 4,678 | \$202,395 |
| 48-49 | Transportation & warehousing | 231 | \$23,126 | 1,318 | \$90,292 |
| 51 | Information | 59 | \$821 | 882 | \$26,235 |
| 52 | Finance and insurance | 72 | \$2,176 | 1,079 | \$64,176 |
| 53 | Real estate & rental/leasing | 359 | \$16,849 | 4,906 | \$360,949 |
| 54 | Professional, scientific & tech. srvs | 563 | \$17,466 | 8,610 | \$298,286 |
| 56 | Admin. & support and waste mgmt. | 469 | \$9,200 | 4,489 | \$96,838 |
| 61 | Educational services | 130 | \$1,343 | 2,046 | \$24,844 |
| 62 | Health care and social assistance | 607 | \$12,448 | 5,190 | \$140,390 |
| 71 | Arts, entertainment & recreation | 270 | \$3,590 | 3,987 | \$77,357 |
| 72 | Accommodation & food services | 115 | \$3,230 | 1,049 | \$43,478 |
| 81 | Other services (ex. public admin) | 759 | \$23,980 | 6,847 | \$189,162 |
| | Total | 6,391 | \$242,760 | 60,463 | \$2,407,128 |

Source: US Census Bureau

Prepared by Economic & Policy Resources, Inc.

In Vermont, there were an estimated 60,500 self-employed workers in 2008, representing about 14.1 percent of the state's total work force (U.S. Census Bureau). Information on self-employed workers, at both the state and sub-state level, varies, based on the data source.¹⁷ Table 6 indicates that one in every six workers in the Northeast Kingdom were self-employed in 2008. More than half of these 3,831 non-employers in the region were engaged in construction; retail trade; professional and technical services; forestry, fishing, and agricultural support services; healthcare and social services; and other services. Compared with the state and other counties, self-employed workers in the Northeast Kingdom region compose a significant share of total employment (17.1 percent).

Proprietors. Information on proprietors (i.e., self-employed, partners, and those employed in tax-exempt cooperatives) confirms the growing importance of the self-employed. While the vast majority of people employed in the Northeast Kingdom are wage and salaried workers, proprietors have grown, both in absolute and relative terms (Figure 10). In 1990, only 26.7 percent (or 7,717 proprietors) of the total employment in the Northeast Kingdom were classified as proprietors; by 2009, its share had increased to 33.1 percent and the number of proprietors (12,021) had increased by a more than a half.

Figure 10. Proprietors and Wage & Salary Employment in the Northeast Kingdom, 1990-2009



Source: US Bureau of Economic Analysis

Prepared by Economic & Policy Resources, Inc.

¹⁷ The U.S. Bureau of Labor Statistics, through its Current Population Survey, collects information on self-employed individuals. The U.S. Census Bureau reports tax return information from the Internal Revenue Service on non-employer businesses, that is one that has no paid employees, has annual business receipts of \$1,000 or more, and is subject to federal income taxes. Finally, the U.S. Bureau of Economic Analysis published a data series on proprietors is ownership-based, and includes both sole proprietorships and business partners. Each of these data sources will give varying estimates!

Proprietors represent a significant share of total employment in Essex County; 39 percent of 2009 total employment in the county is self-employed. In Caledonia and Orleans Counties, proprietors represented 34.1 percent and 30.6 percent share of total 2009 employment, respectively. Statewide, proprietors represented about 25.7 percent share of total 2009 employment in Vermont.

Employment Structure or Economic Base of the Northeast Kingdom

In economic terms, the Northeast Kingdom's employment base is defined as employment among firms whose product or service is sold to customers outside the region, thereby capturing new income for the area. Those customers may be in other parts of the state, in other states, or in foreign countries. Regional economic theory holds that selling to a non-local customer brings income into a county, and qualifies that firm as part of the local economic base. Businesses that sell to local customers, such as other businesses or households, are called non-basic businesses. Services provided to markets outside the region and services provided to visitors coming in from outside the region also qualify as basic industries in capturing streams of new revenue. Other sources of new money are construction activity, non-local government activity, and retirees.

Basic employment is that share of a regional industry's employment that corresponds to the industry's output sold outside the county. Estimates of basic employment among Northeast Kingdom regional industries was based on an indirect measure of specialization called location quotient analysis (Figure 11).

Location quotients are simply measures of economic specialization; here comparing the share of total employment in a particular industrial grouping in the Northeast Kingdom region with the share it represents in the nation.¹⁸ The quotient for any industry or sector is determined by dividing its share of Northeast Kingdom employment by its share of national employment. The idea behind this measure is that a region that is highly specialized in a given sector is exporting a portion of that good or service. In contrast, a less developed industry sector implies that the region is importing goods and services to meet local demand in that sector.

A location quotient is formally computed in the following manner:

$$LQ_i = \frac{E_{ic} / E_c}{E_{is} / E_s}$$

where:

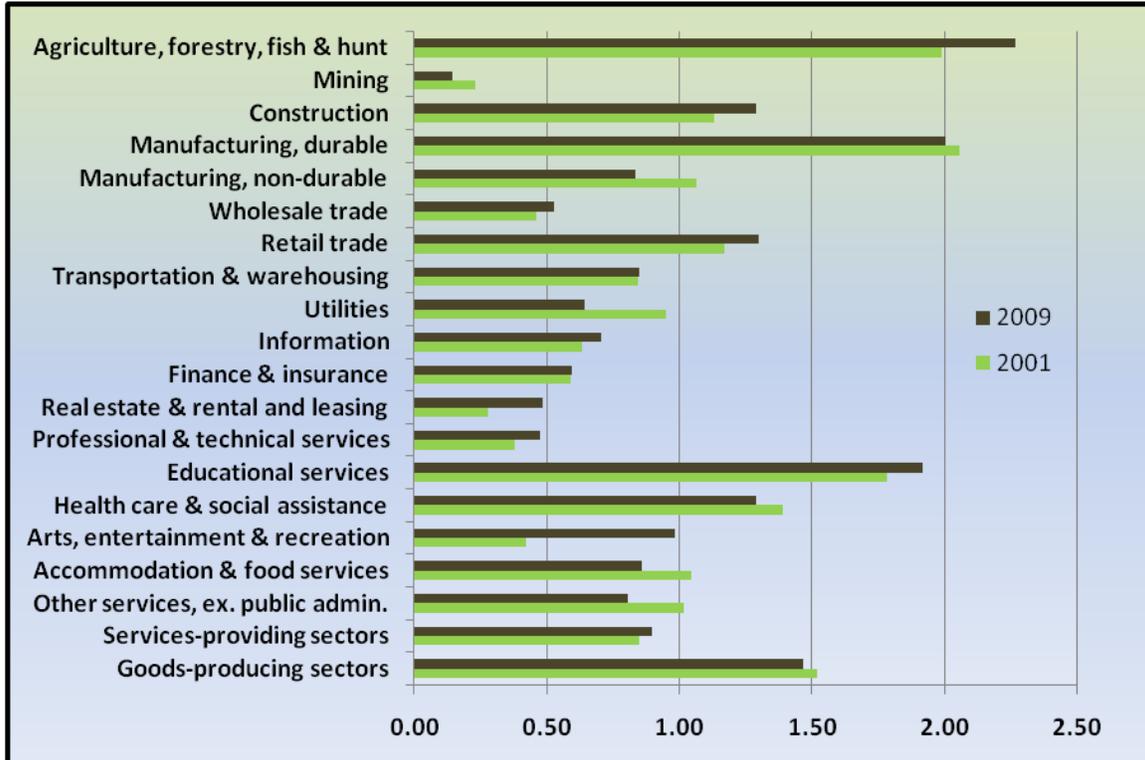
LQ_i is the location quotient for sector i ;

E_{ic} / E_c is the percent of regional employment in sector i ; and

E_{is} / E_s is the percent of state employment in sector i .

¹⁸ Often times, the frame of reference is the nation; however, for a sub-state region in which export activities include sales to customers in other parts of the state, using the state as the frame of reference is just as appropriate.

Figure 11. Economic Specialization in the Northeast Kingdom, 2001 and 2009



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Essentially, location quotients indicate an industry sector’s self-sufficiency and export orientation. Three important location quotient values derive from this self-sufficiency and export orientation notion. A quotient of 1.0 means that the region has the same proportion of its employment in sector *i* as the nation. In other words, the region just meets local consumption requirements through local production of the specified good or service. If the location quotient is less than 1.0, the region is not producing enough to meet local needs, meaning that local residents and businesses need to import some goods or services to meet production or consumption requirements. This analysis can become a key indicator for an import substitution strategy for local economic developers. If the location quotient is greater than 1.0, the county has a larger proportion of its employment in sector *i* than does the nation. This excess proportion is assumed to be for export purposes.

The location quotient is often used as a proxy for the extent to which an area's production is being consumed locally or sold to non-local markets. Such an approach helps to identify a region's export sectors. Implicitly, this notion contends that a regional economy depends upon the vigor of its export industries. Other economic sectors in the region in turn support these export-oriented industries by providing needed supplies and services. As these export industries grow, then linked local sectors will in turn expand.

More recently, this technique has been utilized to help identify local industry clusters. Any exporting industry, identified through location quotient analysis, might be a strong candidate for further development and can serve as the core of an industry cluster for the region.

Results shown in Figures 11 and 12 indicate that goods-producing sectors, (particularly agriculture, forestry, fishing & hunting; durable goods manufacturing; and construction) as well as the services-providing sectors of education, health care and social assistance, and retail trade represent the major export-oriented sectors for the Northeast Kingdom. For instance, agriculture, forestry, fishing and hunting's location quotient of 2.3, indicates that well over half of this sector's employment is devoted to export production. Like much of Vermont, natural resources are leading export sectors. Figure 11 also indicates on an aggregate basis that the Northeast Kingdom does not appear to specialize in the major industry groups of information; professional and technical services; utilities; finance and insurance; real estate and renting/leasing; transportation and warehousing; and wholesale trade.. Location quotients for other regional sectors, principally arts, entertainment and recreation; accommodation and food services; and other services are approximately 1.0 (either 2001 or 2009); thus indicating a high degree of self-sufficiency and undoubtedly some export orientation.

A more detailed location quotient analysis of Northeast Kingdom confirms that the area's economy is highly specialized in the production of a wide-range of value-added commodities and services (Table 7). The regional economy is highly specialized in animal agriculture; wood product manufacturing; forestry and logging; gasoline stations (a proxy for tourism and visitor industry); and machinery manufacturing. Other notable sectors with high location quotients in the Northeast Kingdom region include other information services; apparel manufacturing; nonstore retailers; and educational services.

Two economic “snapshots” of the Northeast Kingdom region are provided in Figure 11.¹⁹ Selecting two summary years of 2001 and 2009 provides a simple comparative analysis for the region over a full business cycle. For instance, an increase in an industry sector's location quotient from 2001 to 2009 indicates that the industry has become more important to the regional economy compared to the nation. A high (i.e., 1.25) and increasing location quotient implies that the Northeast Kingdom region has a competitive advantage in maintaining and attracting employment within that industry. Regional examples of increased competitiveness are found in the aggregated industries of agriculture, forestry, fishing & hunting (e.g., animal agriculture, forestry and logging); educational services; construction (e.g. heavy & civil engineering construction); and retail trade (e.g., gasoline stores, nonstore retailers, food & beverage stores, and

¹⁹ In Table 7, three “snapshots” are taken of the Northeast Kingdom economy—2001, 2006 and 2009. Besides the trough (2001) to trough (2009) years of the business cycle, the peak year of 2006 was selected.

building material and garden supply stores). In contrast, a high but declining location quotient may indicate a recent eroding of a regional industry's competitive advantage vis-à-vis the nation. Regional examples of recent declining competitiveness include industries in manufacturing (e.g., fabricated metals); and healthcare and social assistance (e.g., nursing and residential care facilities).

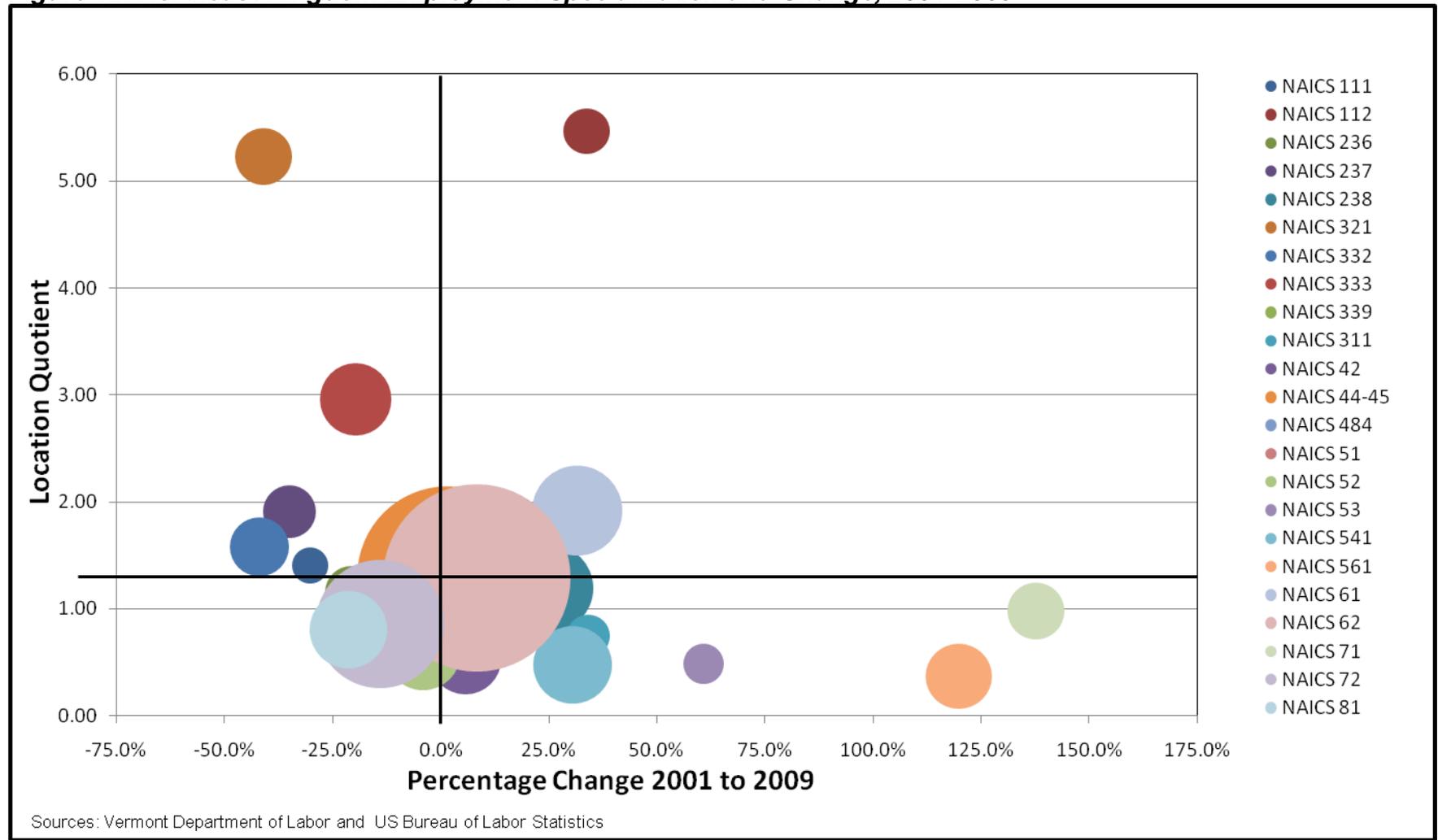
Table 7. Economic Specialization in the Northeast Kingdom, 2001, 2006 and 2009

| NAICS | Description | Specialization ratio | | |
|-------|---|----------------------|------|------|
| | | 2001 | 2006 | 2009 |
| 112 | Animal production | 4.35 | 4.99 | 5.47 |
| 321 | Wood product manufacturing | 5.31 | 4.52 | 5.23 |
| 113 | Forestry & logging | 3.91 | 3.60 | 4.54 |
| 447 | Gasoline stations | 2.32 | 2.86 | 3.62 |
| 333 | Machinery manufacturing | 2.63 | 2.90 | 2.96 |
| 519 | Other information services | 3.29 | 4.35 | 2.53 |
| 315 | Apparel manufacturing | 3.02 | 3.75 | 2.40 |
| 454 | Nonstore retailers | 2.18 | 2.52 | 2.32 |
| 611 | Educational services | 1.78 | 1.84 | 1.92 |
| 237 | Heavy & civil eng. construction | 2.51 | 1.74 | 1.91 |
| 445 | Food & beverage stores | 1.49 | 1.74 | 1.86 |
| 339 | Miscellaneous manufacturing | 1.08 | 1.48 | 1.85 |
| 444 | Building material & garden supply | 1.76 | 1.59 | 1.81 |
| 721 | Accommodation | 1.99 | 1.87 | 1.77 |
| 441 | Motor vehicle & parts dealers | 1.31 | 1.42 | 1.64 |
| 332 | Fabricated metal product mfg | 2.03 | 2.59 | 1.58 |
| 111 | Crop production | 1.81 | 0.72 | 1.40 |
| 484 | Truck transportation | 1.22 | 1.34 | 1.39 |
| 621 | Ambulatory health care services | 1.74 | 1.57 | 1.37 |
| 446 | Health and personal care stores | 1.09 | 1.45 | 1.37 |
| 623 | Nursing and residential care facilities | 1.55 | 1.52 | 1.29 |
| 238 | Specialty trade contractors | 0.80 | 0.97 | 1.19 |
| 236 | Construction of buildings | 1.18 | 1.29 | 1.16 |
| 811 | Repair and maintenance | 1.12 | 1.22 | 1.14 |
| 115 | Support activities for ag & forestry | 0.42 | 0.66 | 1.12 |
| 453 | Miscellaneous store retailers | 0.98 | 1.21 | 1.07 |
| 713 | Amusements, gambling & recreation | 0.36 | 0.94 | 1.02 |
| 327 | Nonmetallic mineral product mfg | 1.51 | 0.71 | 0.89 |
| 814 | Private households | 2.34 | 0.70 | 0.69 |

Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Figure 12. Northeast Kingdom Employment Specialization and Change, 2001-2009



Notes: Bubble size is graduated based on 2009 employment size.

Figure 12 presents a graphical analysis of economic specialization of twenty-three (23) industries in the Northeast Kingdom with their most recent growth and change patterns (2001-2009). The chart is divided into four quadrants, based on location quotient of 1.25 and a positive percentage change in employment between 2001 and 2009. For instance, **quadrant 1** (upper right) represents the most economically attractive area in the chart—industry sectors located in this area have been labeled stars, with a location quotient of 1.25 or higher and a positive growth rate in employment over the 2001-2009 period. There are five Northeast Kingdom stars within this quadrant:

- animal production (NAICS 112, with a 2009 employment base of 202 employees; a 2009 LQ of 5.47; and a 33.8 percent growth in employment);
- educational services (NAICS 61, with a 2009 employment base of 759 employees; a 2009 LQ of 1.92; and a 31.5 percent growth rate);
- healthcare and social services (NAICS 62, with a 2009 employment base of 3,350 employees, a 2009 LQ of 1.29; and a 8.3 percent growth rate in employment);
- miscellaneous manufacturing (NAICS 339, with a 2009 employment base of 176 employees, a 2009 LQ of 1.85; and a 33.3 percent growth rate in employment); and
- retail trade (NAICS 44-45, with a 2009 employment base of 3,094 employees, a 2009 LQ of 1.30; and a slight 1.5 percent growth rate in employment).

Going clockwise, **quadrant 2** represents that area where industry sectors have a positive growth rate in employment yet fall under the 1.25 location quotient threshold. Seven Northeast Kingdom industry sectors, called opportunities, are within this quadrant:

- specialty trade contractors (NAICS 238, with a 2009 employment base of 307 employees; a 2009 LQ of 1.19; and a 25 percent growth rate in employment);
- arts, entertainment and recreation (NAICS 71, with a 2009 employment base of 309 employees; a 2009 LQ of 0.98; and a 137.7 percent growth rate in employment);
- food manufacturing (NAICS 311, with a 2009 employment base of 177 employees; a 2009 LQ of 0.75; and a 34.1 percent growth rate in employment);
- wholesale trade (NAICS 42, with a 2009 employment base of 481 employees; a 2009 LQ of 0.53; and a modest 5.7 percent growth rate in employment);
- real estate and rental and leasing (NAICS 53, with a 2009 employment base of 156 employees; a 2009 LQ of 0.48; and a 60.8 percent growth rate in employment);
- professional, scientific and technical services (NAICS 541, with a 2009 employment base of 582 employees; a 2009 LQ of 0.48; and a 30.5 percent growth rate in employment); and

- administrative and support services (NAICS 561, with a 2009 employment base of 411 employees; a 2009 LQ of 0.37; and a 119.8 percent growth rate in employment).

Quadrant 3—the least economically attractive area in the chart—represent those industry sectors (or labeled *challenges*) with a location quotient that falls below the 1.25 threshold and have had an eroding employment base since 2001. Within the Northeast Kingdom’s industry portfolio, there are five *challenges*:

- construction of buildings (NAICS 236, with a 2009 employment base of 253 employees; a 2009 LQ of 1.16; and a -20.7 percent growth rate in employment);
- accommodation and food services (NAICS 72, with a 2009 employment base of 1,559 employees; a 2009 LQ of 0.86; and a -14.1 percent growth rate in employment);
- other services, except public administration (NAICS 81, with a 2009 employment base of 576 employees; a 2009 LQ of 0.81; and a -21.4 percent growth rate in employment);
- information (NAICS 51, with a 2009 employment base of 324 employees; a 2009 LQ of 0.71; and a -16.9 percent growth rate in employment); and
- finance and insurance (NAICS 52, with a 2009 employment base of 547 employees; a 2009 LQ of 0.60; and a -4.2 percent growth rate in employment).

Quadrant 4 represents another mixed area—here industry sectors (with the label *mature*) have a significant economic specialization (i.e., a location quotient greater than 1.25) but have had an eroding employment base since 2001. Within the Northeast Kingdom, there are at least six *mature* industry sectors²⁰:

- wood product manufacturing (NAICS 321, with a 2009 employment base of 307 employees; a 2009 LQ of 5.23; and a -41.0 percent growth rate in employment);
- machinery manufacturing (NAICS 333, with a 2009 employment base of 494 employees; a 2009 LQ of 2.96; and a -19.6 percent growth rate in employment);
- heavy & civil engineering construction (NAICS 237, with a 2009 employment base of 266 employees; a 2009 LQ of 1.91; and a -35.1 percent growth rate in employment);
- fabricated metal products manufacturing (NAICS 332, with a 2009 employment base of 337 employees; a 2009 LQ of 1.58; and a -42.0 percent growth rate in employment);

²⁰ One of the missing industries historically important to the Northeast Kingdom economy (as well as the entire State of Vermont) is furniture and related product manufacturing (NAICS 337). Given the presence of a couple of dominant furniture manufacturers in the Northeast Kingdom, the Vermont Department of Labor does not disclose employment and wages in this sector. It is estimated that this industry sector has a location quotient of 9.73 with a 2009 employment base of 610 employees and a -54.8 percent growth rate in employment (in other words, its 2009 employment is less than half of its 2001 base).

- crop production (NAICS 111, with a 2009 employment base of 122 employees; a 2009 LQ of 1.40; and a -30.3 percent growth rate in employment); and
- truck transportation (NAICS 484, with a 2009 employment base of 286 employees; a 2009 LQ of 1.39; and a -1.0 percent growth rate in employment).

A Shift-Share Analysis of the Northeast Kingdom

Table 8 illustrates the economic churning between 2001 and 2009 within the Northeast Kingdom. Similar to both the state and the nation, the Northeast Kingdom region experienced broad-based economic anemia during the 2001-2009 period. As measured by employment, healthy gains were found in regional mining, construction, administrative and waste services, health care and social assistance, and local government. Similar to the nation and state, manufacturing in the Northeast Kingdom continued to lose ground in terms of employment.

Table 8. Employment Change in the Northeast Kingdom, 2001, 2006 & 2009

| NAICS | Title | Northeast Kingdom | | | | Vermont | US |
|-------|------------------------------------|-------------------|--------------|--------------|----------------|----------------|---------------|
| | | Employment | | | Percent change | Percent change | |
| | | 2001 | 2006 | 2009 | | | |
| -- | TOTAL--all ownerships | 22,900 | 23,330 | 22,136 | -3.3% | -1.9% | -0.8% |
| -- | Private ownership | 18,771 | 18,757 | 17,499 | -6.8% | -4.1% | -2.2% |
| -- | Goods Producing | 6,485 | 5,635 | 4,694 | -27.6% | -24.7% | -21.4% |
| 11 | Agriculture, forestry, fish & hunt | 400 | 321 | 424 | 6.0% | 11.3% | -2.4% |
| 111 | Crop production | 175 | 65 | 122 | -30.3% | -6.0% | -5.8% |
| 112 | Animal production | 151 | 179 | 202 | 33.8% | 24.0% | 11.6% |
| 21 | Mining | 21 | 19 | 15 | -28.6% | -30.3% | 19.8% |
| 23 | Construction | 1,316 | 1,447 | 1,253 | -4.8% | -9.7% | -12.2% |
| 31-33 | Manufacturing | 4,748 | 3,847 | 3,003 | -36.8% | -31.4% | -27.9% |
| -- | Durable Goods | 3,636 | 2,986 | 2,380 | -34.5% | -33.5% | -29.5% |
| 321 | Wood product mfg | 520 | 418 | 307 | -41.0% | -37.2% | -37.1% |
| 327 | Nonmetallic mineral | 141 | 60 | 57 | -59.6% | -23.9% | -28.2% |
| 332 | Fabricated metal | 581 | 666 | 337 | -42.0% | -25.9% | -36.2% |
| 333 | Machinery mfg | 615 | 569 | 494 | -19.7% | -30.6% | -21.7% |
| 339 | Miscellaneous mfg | 132 | 159 | 176 | 33.3% | 8.6% | -40.4% |
| -- | Non-Durable Goods | 1,112 | 861 | 623 | -44.0% | -25.6% | -18.7% |
| 311 | Food manufacturing | 132 | 211 | 177 | 34.1% | -3.8% | -25.3% |

Table 8. Employment Change in the Northeast Kingdom, 2001, 2006 & 2009 (continued)

| NAICS | Title | Northeast Kingdom | | | | Vermont | US |
|-------|----------------------------------|-------------------|---------------|---------------|----------------|----------------|-------------|
| | | Employment | | | Percent change | Percent change | |
| | | 2001 | 2006 | 2009 | | | |
| -- | Service Providing | 12,286 | 13,122 | 12,805 | 4.2% | 2.9% | 3.5% |
| 42 | Wholesale trade | 455 | 586 | 481 | 5.7% | -3.8% | -2.9% |
| 44-45 | Retail trade | 3,049 | 3,137 | 3,094 | 1.5% | -4.4% | -4.2% |
| 48-49 | Transportation & warehousing | 599 | 616 | 554 | -7.5% | -4.4% | -3.7% |
| 22 | Utilities | 98 | 65 | 59 | -39.8% | 6.2% | -6.5% |
| 51 | Information | 390 | 402 | 324 | -16.9% | -17.8% | -21.8% |
| 52-53 | Financial Activities | 669 | 768 | 703 | 5.1% | -6.1% | -1.2% |
| 52 | Finance and insurance | 571 | 600 | 547 | -4.2% | -7.9% | -0.4% |
| 53 | Real estate & rental/leasing | 97 | 167 | 156 | 60.8% | -0.4% | -3.2% |
| 54-56 | Professional & business services | 680 | 904 | 1,036 | 52.4% | 5.5% | 1.0% |
| 61-62 | Education & Health Services | 3,669 | 3,955 | 4,110 | 12.0% | 26.1% | 23.4% |
| 61 | Educational services | 577 | 675 | 759 | 31.5% | 6.4% | 28.4% |
| 62 | Health care & social assist. | 3,093 | 3,280 | 3,350 | 8.3% | 30.9% | 22.6% |
| 71-72 | Leisure and Hospitality | 1,944 | 2,024 | 1,869 | -3.9% | -3.8% | 9.4% |
| 71 | Arts, entertain & recreation | 130 | 300 | 309 | 137.7% | 10.6% | 7.7% |
| 72 | Accommodation & food | 1,814 | 1,714 | 1,559 | -14.1% | -5.5% | 9.7% |
| 81 | Other services (ex. pub admin) | 733 | 655 | 576 | -21.4% | -16.3% | 3.9% |
| --- | Government, total | 4,129 | 4,573 | 4,636 | 12.3% | 9.5% | 6.5% |
| | Federal government | 368 | 447 | 493 | 34.0% | 13.4% | 2.7% |
| | State government | 939 | 1,118 | 1,084 | 15.4% | 6.5% | 4.2% |
| | Local government | 2,822 | 3,008 | 3,059 | 8.4% | 10.3% | 8.1% |

Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

In general, regional employment changes are more or less concentrated in certain industries compared to the state and the nation. Most often, these differences can be traced to the region's industrial structure. In the Northeast Kingdom, an overall healthy rate of employment gain is attributed to a number of growing industries. Likewise, the Northeast Kingdom has its share of declining industries with significant job losses. Furthermore, some businesses in the region enjoy a competitive advantage and growth within that industry (e.g., mining, machinery manufacturing) spurs growth in the entire regional economy. Other regional industry growth (e.g., healthcare and social assistance, transportation & warehousing) simply mirrors national trends. Merely observing that employment change has occurred in the regional economy is not sufficient for understanding the various causes behind regional economic change.

Shift-share analysis is used to separate local growth factors from national growth factors within regional industrial change. This analytical tool is used to account for the competitiveness of a region's industries and to analyze the local economic base. Shift-share analysis is primarily used to decompose employment changes within the regional economy over a specific period of time into three contributing factors:

- growth that is attributable to growth in the national economy;
- growth that is attributable to the regional mix of faster or slower than average growing industries; and
- growth that is attributable to the competitive nature of regional industries.

The technique facilitates comparisons between the local economy of interest—as in here, Northeast Kingdom—with the larger (national) economy. Specifically, shift-share provides insight into whether the Northeast Kingdom has experienced a faster or slower growth rate in employment than the nation. Shift-share also helps explain whether the observed growth rates are due to differences in the regional employment mix relative to the nation or due to competitive advantages/disadvantages.²¹

The national growth share refers to regional job growth that is attributed to national economic growth. If the nation is experiencing overall employment growth, it is reasonable to expect that such growth will positively influence the local economy, such as the Northeast Kingdom. This component describes the change that would be expected due to the fact that the Northeast Kingdom is part of the dynamic national economy. In other words, what is the job gain/loss in the Northeast Kingdom if total employment in the region had changed at the same rate as overall national employment? To calculate the national growth component, the base year employment—that is, 2001—in each regional industry sector is multiplied by the national average rate of growth for all sectors (i.e., 3.2

²¹ The formula for shift-share analysis is as follows:

$$e_i^{t+n} - e_i^t = \text{national growth share} + \text{industry mix share} + \text{local competitiveness share}$$

$$e_i^{t+n} - e_i^t = e_i^t \left[\frac{E^{t+n}}{E^t} - 1 \right] + e_i^t \left[\frac{E_i^{t+n}}{E_i^t} - \frac{E^{t+n}}{E^t} \right] + e_i^t \left[\frac{e_i^{t+n}}{e_i^t} - \frac{E_i^{t+n}}{E_i^t} \right]$$

where: e is total employment in the region and the i^{th} activity is e_i

E is total employment in the nation and the i^{th} activity is E_i

E^{t+n} and e^{t+n} are total national employment for year $t+n$ or 2009 and regional employment for year $t+n$ or 2009

E^t and e^t are total national employment for year t or 2001 and regional employment for year t or 2001

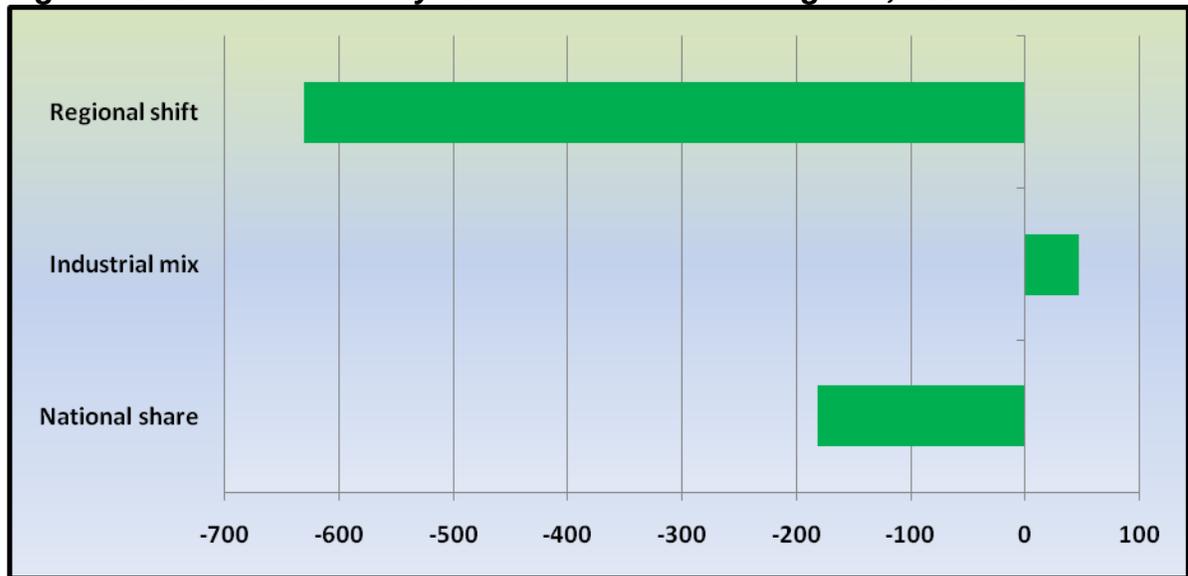
percent between 2001 and 2009). The resulting values are summed to obtain the total jobs attributable to the national growth component.

Other industries add jobs more rapidly than others; still others lose jobs. The industrial mix share component reflects differences in industry mix between the regional and national levels. This mix factor examines how national growth or decline of a particular industry translates into like growth or decline in the regional counterpart industry. In the national economy, for instance, some sectors are growing faster than others. If regional employment were highly concentrated in these relatively fast-growing industries, the rate of regional employment growth should exceed the average rate for the nation's economy as a whole. Conversely, if regional employment were concentrated in a set of slow-growing or declining industries, the regional employment growth rate should be lower than the national economy-wide average.

To calculate the industrial mix share, base year employment (2001) in each Northeast Kingdom industrial sector is multiplied by a marginal rate of growth. Here, the marginal rate is the difference between the national average rate for that sector and the overall national rate (-0.8 percent) for all industries. A positive industry mix component means that the region has a high concentration of employment in sectors growing more rapidly than the national economy as a whole. A negative industry mix share suggests that the region has employment concentrated in sectors growing more slowly than the overall national economy.

Even during periods of national prosperity, growth is uneven—some regions and industries grow faster than others. This is usually attributed to some local comparative advantages such as natural resources, linked industries, or favorable local labor situations. The local competitive share describes the extent to which unique local factors related to regional industrial growth or decline. This local competitive component aids in identifying a region's economic strengths and represents how a region's competitive position can contribute to regional job growth. To calculate the local competitive share component, base year employment (2001) in each local industrial sector is multiplied by the margin between the local sector growth rate and the national average growth rate for that same sector. A positive local competitive share component suggests that the region has increased its share of employment in that industry; whereas a negative competitive share implies that the region's share of employment eroded during the time period.

Figure 13. Shift-Share Analysis for the Northeast Kingdom, 2001-2009



Sources: Vermont Department of Labor
US Bureau of Labor Statistics

Prepared by Economic & Policy Resources, Inc.

The overall result of the shift-share analysis for the Northeast Kingdom is shown in Figure 13, indicating the three components of national growth (region underperformed the nation); industrial mix (regional economy grew faster than national average, independent of national influence); and local competitiveness (regional economy itself created a lesser share of employment growth than the nation did on average).

Further detailed results of the shift-share analysis for the Northeast Kingdom are shown in Table 9. The national growth component shows that the Northeast Kingdom outperformed the national economy between 2001 and 2009. Several sectors added more jobs than expected if they had performed at the national average. These include health care and social assistance; construction; administrative and waste services; retail trade; real estate and rental and leasing; professional and technical services; and mining. Other industry sectors—agriculture, forestry, fishing and hunting; accommodations and food services; manufacturing; finance and insurance; and other services—added less than expected at national averages.

Table 9. Shift-Share Analysis of the Northeast Kingdom, 2001-2009

| NAICS | Title | National Share | Industry Mix | Regional Shift | Total Change |
|-------|------------------------------------|----------------|--------------|----------------|--------------|
| -- | TOTAL--all ownerships | -182 | 47 | -630 | -765 |
| -- | Private ownership | -149 | -256 | -867 | -1,272 |
| -- | Goods Producing | -51 | -1,337 | -403 | -1,791 |
| 11 | Agriculture, forestry, fish & hunt | -3 | -7 | 34 | 24 |
| 111 | Crop production | -1 | -9 | -43 | -53 |
| 112 | Animal production | -1 | 19 | 33 | 51 |
| 21 | Mining | 0 | 4 | -10 | -6 |
| 23 | Construction | -10 | -150 | 97 | -63 |
| 31-33 | Manufacturing | -38 | -1,288 | -419 | -1,745 |
| -- | Durable Goods | -29 | -1,043 | -184 | -1,256 |
| 321 | Wood product mfg | -4 | -189 | -20 | -213 |
| 327 | Nonmetallic mineral | -1 | -39 | -44 | -84 |
| 332 | Fabricated metal | -5 | -206 | -34 | -244 |
| 333 | Machinery mfg | -5 | -129 | 13 | -121 |
| 339 | Miscellaneous mfg | -1 | -52 | 97 | 44 |
| -- | Non-Durable Goods | -9 | -199 | -281 | -489 |
| 311 | Food manufacturing | -1 | -32 | 78 | 45 |
| -- | Service Providing | -97 | 529 | 88 | 519 |
| 42 | Wholesale trade | -4 | -10 | 39 | 26 |
| 44-45 | Retail trade | -24 | -103 | 173 | 45 |
| 48-49 | Transportation & warehousing | -5 | -17 | -23 | -45 |
| 22 | Utilities | -1 | -6 | -33 | -39 |
| 51 | Information | -3 | -82 | 19 | -66 |
| 52-53 | Financial Activities | -5 | -2 | 42 | 34 |
| 52 | Finance and insurance | -5 | 2 | -22 | -24 |
| 53 | Real estate & rental/leasing | -1 | -2 | 62 | 59 |
| 54-56 | Professional & business services | -5 | 12 | 349 | 356 |
| 61-62 | Education & Health Services | -29 | 887 | -417 | 441 |
| 61 | Educational services | -5 | 169 | 18 | 182 |
| 62 | Health care & social assist. | -25 | 725 | -443 | 257 |
| 71-72 | Leisure and Hospitality | -15 | 198 | -258 | -75 |
| 71 | Arts, entertain & recreation | -1 | 11 | 169 | 179 |
| 72 | Accommodation & food | -14 | 190 | -431 | -255 |
| 81 | Other services (ex. pub admin) | -6 | 34 | -185 | -157 |

Table 9. Shift-Share Analysis of the Northeast Kingdom, 2001-2009 (continued)

| NAICS | Title | National Share | Industry Mix | Regional Shift | Total Change |
|-------|--------------------|----------------|--------------|----------------|--------------|
| -- | Government total | -33 | 303 | 237 | 507 |
| -- | Federal Government | -3 | 13 | 115 | 125 |
| -- | State government | -7 | 47 | 105 | 145 |
| -- | Local government | -22 | 252 | 7 | 237 |

Sources: Vermont Department of Labor
US Bureau of Labor Statistics

Prepared by Economic & Policy Resources, Inc.

Clearly, employment changes (gains or losses) that have occurred in the Northeast Kingdom do not exactly follow the overall national trend. Some industries add jobs more rapidly than others and still others lose jobs. The industry mix component provides further insight into the local economic structure. Overall, the industry mix share of -156 jobs means that the Northeast Kingdom has nearly 160 jobs less than it would have if its industrial structure (or mix) were identical to the nation. While many sectors (e.g., health care and social assistance, accommodations and food services; construction; and mining) are growing faster than the nation; other sectors are growing slower. The aggregated manufacturing sector in the region was particularly battered with major closures in wood products and primary metals during the 2001-2006 period. The overall negative industry mix share means that the regional economy grew slower than the national average, independent of the national influence.

Finally, a significant share of the job gains in the Northeast Kingdom is due to the local competitiveness component. Even during periods of general prosperity within the nation, some regions and still some industries grow faster than others due to a region's competitive advantage. This is usually attributed to some region competitive advantage (such as natural resources, linked industries, transport infrastructure, or favorable local labor situations). This "local" component aids in identifying a region's economic strengths and underscores how a region's competitive advantage can contribute to regional job growth. Thus, shift-share analysis in general, and the local competitiveness share in particular can point to industries that enjoy local comparative advantage. The analytical technique cannot, however, identify what are the actual comparative advantages. In the Northeast Kingdom such industries with comparative advantage are mining, construction, wholesale and retail trade, administrative and waste services, and healthcare and social assistance.

Results from this shift-share component combined with location quotient analysis will identify whether the above gainers or losers are "export-oriented" industries within the region. Mining, administrative and waste services, and healthcare and social assistance are prominent within the region as export industries—pulling in

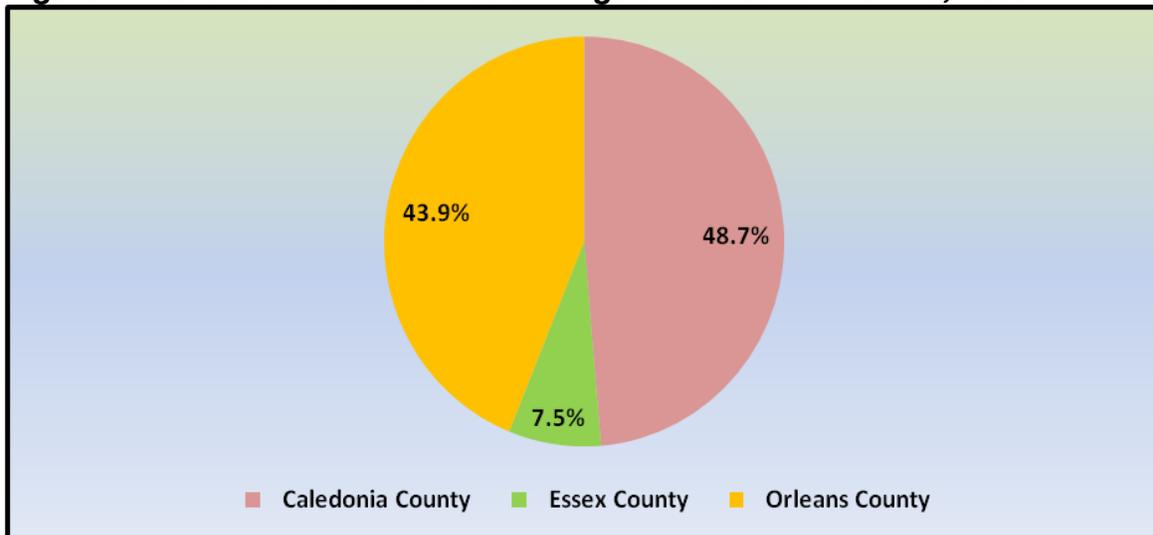
dollars from outside the region and thus having a larger economic multiplier effect.

IV. Personal Income Growth and Change in the Northeast Kingdom

Employment measures only tell part of the economic story of a region. Personal income in the Northeast Kingdom, the most broad-based measure of general purchasing power available at the local level, amounted to nearly \$2.033 billion in 2009. When measured in current dollars, Northeast Kingdom's total personal income increased more than tripled between 1990 and 2009. However, when measured in constant 2009 dollars to adjust for inflation, the entire increase over the 19-year period amounted to 62 percent.²² As a share of the total Vermont personal income, Northeast Kingdom's portion has remained at around 8.3 percent over this period.

Caledonia County had the largest share (nearly half) of the total Northeast Kingdom regional personal income in 2009. Orleans County has the other substantial share of regional personal income in the Northeast Kingdom at 44 percent. Essex County—with about 7.5 percent—has the smallest share of total personal income in the region (Figure 14). All of the counties that comprise the Northeast Kingdom have hovered around the same share of the three-county region's total real personal income between 1990 and 2008; a small downward trend in the shares of Caledonia County and Essex County is discernable, as Orleans County seems to have gained ground in its overall share of the total real personal income of the Northeast Kingdom.

Figure 14. Share of Total Northeast Kingdom Personal Income, 2009



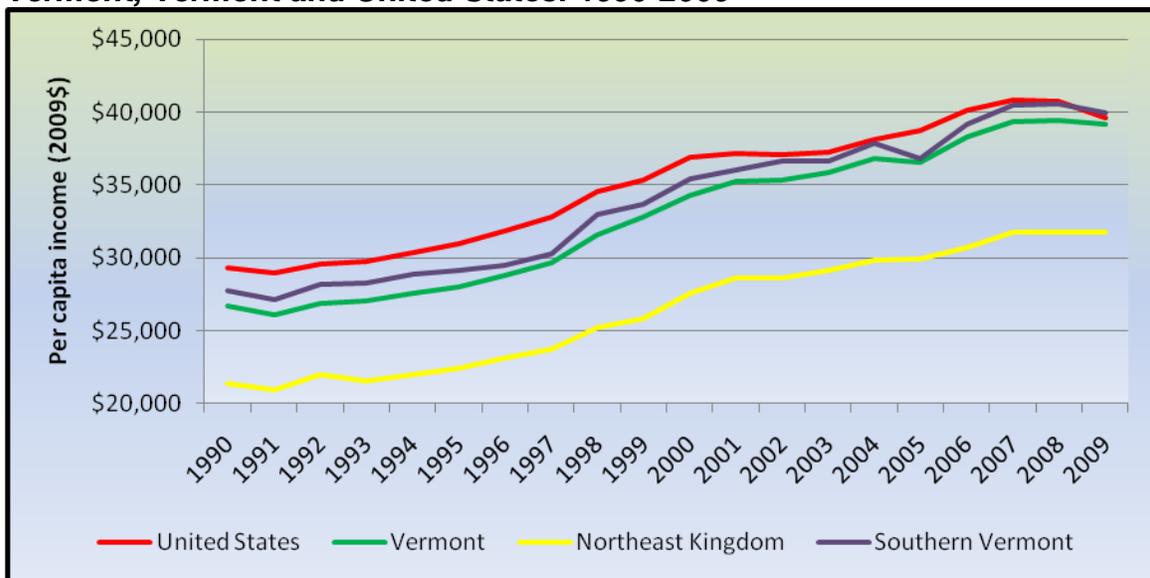
²² The U.S. Bureau of Economic Analysis reports personal income data in current dollars--the basis of the value or purchasing power of the dollar during the year in which the incomes are received. To remove the effects of inflation and allow for direct comparison of personal income in terms of an approximation of real purchasing power over time, constant dollar or real estimates of personal income are computed using the Implicit Price Deflator for personal consumption expenditures (2009 = 1.00).

Source: US Bureau of Economic Analysis Prepared by Economic & Policy Resources, Inc.
 Personal income grew at virtually the same rate in both the Northeast Kingdom and the State of Vermont over the 19-year period. In real terms, the average annual growth rate in personal income was 2.62 percent in Northeast Kingdom compared with 2.58 percent for Vermont.

Per Capita Income

Per capita income²³ in the Northeast Kingdom was \$31,795 in 2009. This was \$7,840 below that of the nation and \$7,410 below the statewide average. Per capita income in Southern Vermont (Northeast Kingdom’s peer region) is among the highest in the state at \$39,960. Northeast Kingdom regional real (i.e., constant \$2009) per capita incomes grew modestly over the time period, averaging only 2.14 percent each year. In comparison, national, state and Southern Vermont per capita income grew on average 1.62 percent, 2.06 percent, and 2.00 percent, respectively each year.

Figure 15. Real per capita incomes in Northeast Kingdom, Southern Vermont, Vermont and United States: 1990-2009



Source: US Bureau of Economic Analysis Prepared by Economic & Policy Resources, Inc.

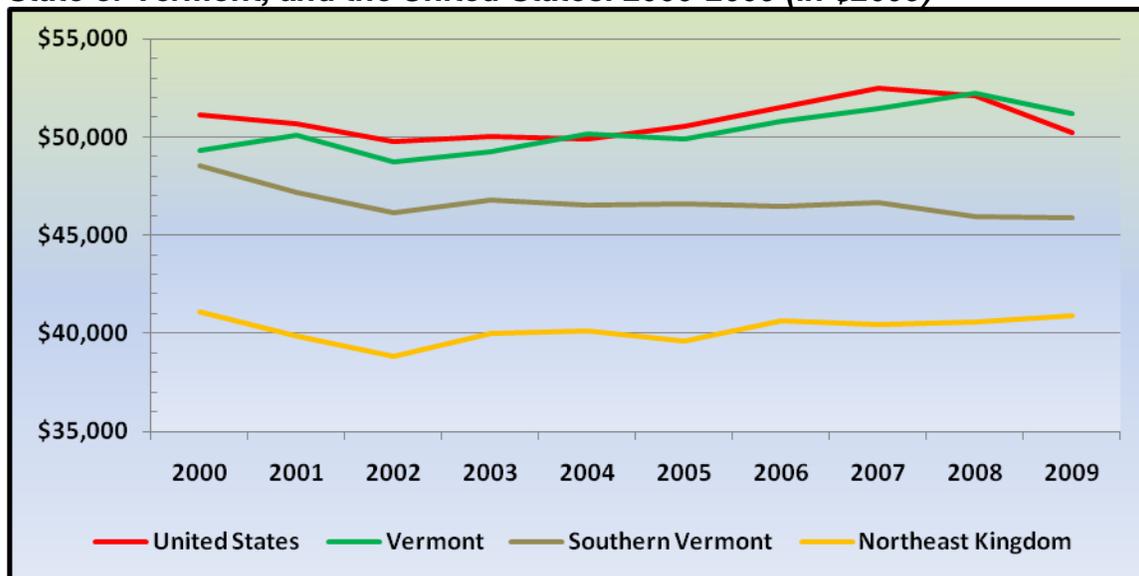
²³ County per capita income is the total personal income of county residents for a specific year divided by the county resident population as of July 1. The per capita income measure should be used with caution. Since personal income is measured as a flow throughout the year, and population is measured at midyear, per capita income may be distorted should a significant change in population occur during the year. In any given year, per capita income may be exceptionally high or low as a result of unusual local conditions such as a bumper crop, catastrophe, or major construction project. Also, the presence of a large institutional population--such as residents of a state prison--can significantly lower per capita income estimates of an area. Such results may not reflect the economic well-being of the non-institutional population, and thus may lead to misleading interpretations. Since per capita income is only a simple average, it does not account for the concentration or distribution of personal income among county residents or households.

While Vermont's per capita income remained slightly below the national average between 1990 and 2009, Northeast Kingdom's per capita income remained well below the state, national and peer region (Southern Vermont) averages (Figure 15). Since 1990, the gap between Northeast Kingdom's per capita income and the national average grew slightly smaller; narrowing from 72 percent of the national average to 80 percent. Although a cause for concern, this trend is not unique to the Northeast Kingdom; per capita incomes for many rural regions throughout the country have remained well below their respective statewide and national averages.

Median Income and Residents in Poverty

The most recent (2009) income statistics from the U.S. Census Bureau indicate that residents in the Northeast Kingdom are substantially less affluent than residents of the state as a whole. For households in Caledonia, Essex, and Orleans Counties, the 2009 median income²⁴ was substantially below (between \$8,000 to \$16,800) that of the statewide median of \$51,219 (Figure 16).

Figure 16. Median income in the Northeast Kingdom, Southern Vermont, State of Vermont, and the United States: 2000-2009 (in \$2009)



Sources: US Bureau of Census

Prepared by Economic & Policy Resources, Inc.

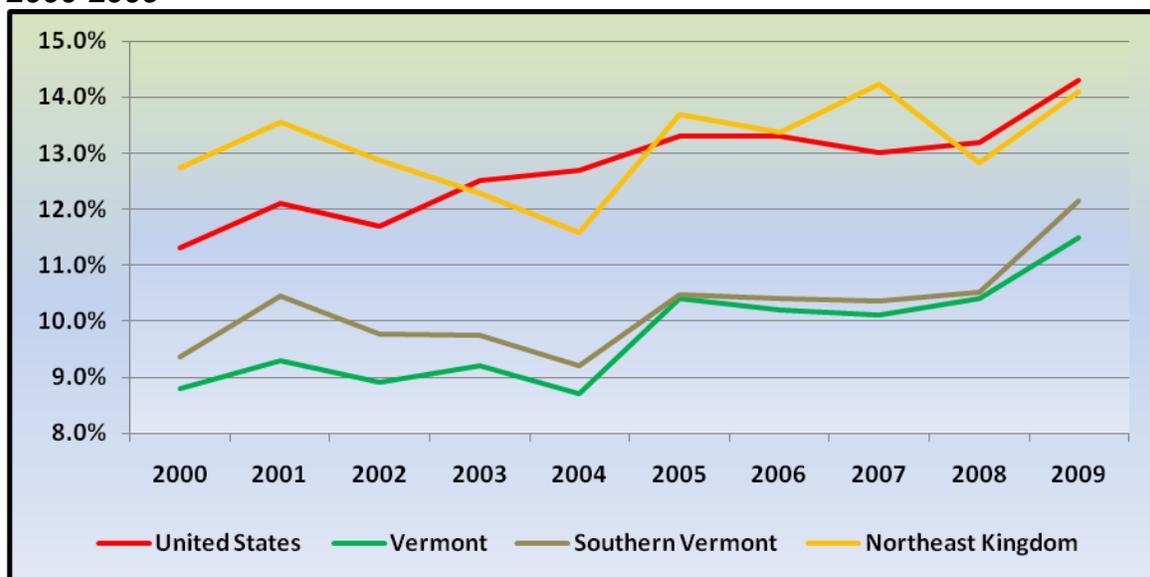
As in per capita income, median incomes in the Northeast Kingdom have been relatively stagnant since 2000. There are a number of reasons for the failure of household incomes in the Northeast Kingdom to keep pace with their counterparts in the nation and state. First, the growth and change in real income is interlinked with its greater reliance on sources of income other than industrial

²⁴ The median divides the income distribution into two equal parts, half having incomes above the median and the other half with incomes below the median.

earnings (wages and salaries and proprietors' incomes). Related, as the population of Northeast Kingdom grows older, persons are less likely to be in the labor force. They no longer increase their incomes by working longer, and/or seeking higher paid employment. Instead incomes are determined more by past investments, pensions, and payments from government programs such as social security and medicare/medicaid.

Second, changes in the industrial structure of the Northeast Kingdom have meant that job growth is concentrated in industries with lower wage scales. Finally, changing family structures may also play a role. The rise in earnings from public assistance is probably linked to the increasing number of children in single-family families. Single mothers, especially those in rural areas and with small children, often find it difficult to find a job that will cover routine expenses as well as child-care. As these mothers enter the labor force, payments from public assistance are reduced, so their incomes often remain quite low.

Figure 17. Number of Persons in Poverty, as a percent of Total Population, 2000-2009



Sources: US Bureau of Census

Prepared by Economic & Policy Resources, Inc.

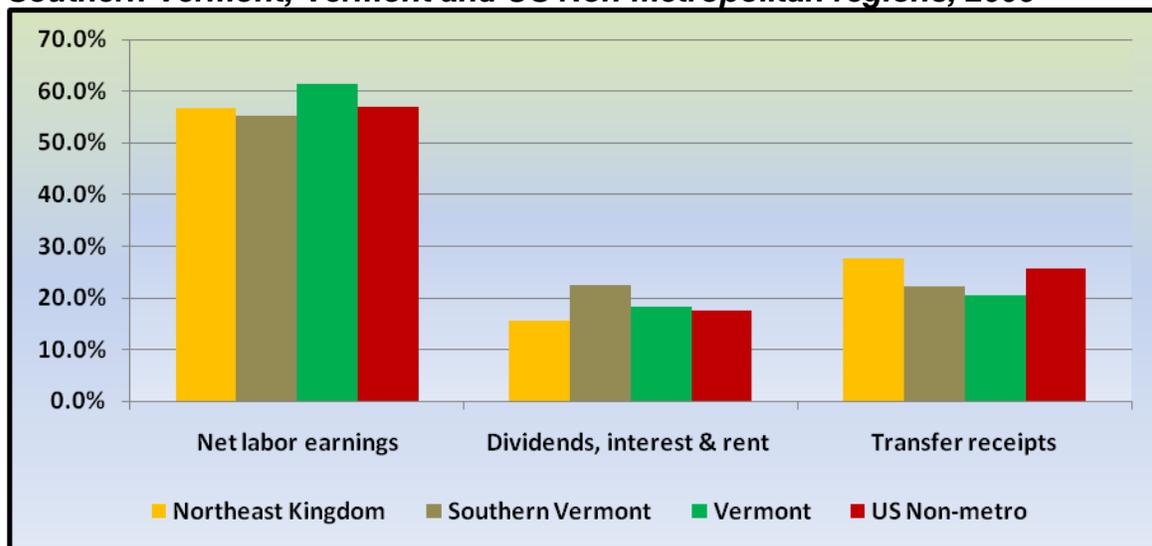
The number of persons below the poverty line has increased significantly in the last decade (Figure 17). Since 2002 for the United States and 2004 for the other peer-regions the number of persons below the poverty line has been steadily increasing, for all of the Vermont regions 2004 was the low of the decade, but has since escalated to the highest poverty levels in the decade. The high poverty levels seen in recent years are due to the recent recession, during which no geographic region or industries were spared. The United States and the Northeast Kingdom have experienced higher levels of poverty over the past decade than Vermont and Southern Vermont. As of 2009 14.3% of the people in the United States were below the poverty line, which is an increase of 3.0 percentage points since 2000. The Northeast Kingdom had 14.1% of its

population living below the poverty level, which was an increase of 1.4 percentage points since 2000. Vermont and Southern Vermont did not reach the same levels of poverty that were experienced by the United States and the Northeast Kingdom, but still had elevated levels, with 11.5% and 12.2% of their respective populations living in poverty in 2009.

Given the lag in income growth and the persistent income gap in the Northeast Kingdom, it is not surprising to see poverty rates remain persistently high during the 2000-2009 time period.²⁵ With the exception of Orleans County, where rates slightly decreased from 13.9 percent in 2000 to 13.5 percent in 2009; the Northeast Kingdom experienced an uptick in poverty rates over the 9-year period.

The increasing number of Northeast Kingdom residents who are poor puts a burden on social assistance programs that help alleviate the problems associated with poverty. Food banks, school breakfast and lunch programs, housing assistance, energy (utilities) assistance, and other programs have all had an expanding clientele to serve over the fifteen years.²⁶

Figure 18. Major Sources of Personal Income in the Northeast Kingdom, Southern Vermont, Vermont and US Non-metropolitan regions, 2009



Source: US Bureau of Economic Analysis Prepared by Economic & Policy Resources, Inc.

²⁵ Reported poverty data represent the population “for whom the poverty status is determined” (U.S. Bureau of the Census). The concept of poverty applies only to the civilian, non-institutional population. Institutionalized persons, such as those in prisons, are excluded. Thus, these numbers will be smaller than the total population and the total number of children under age 18.

²⁶ Although information is unavailable, the cost of living within the Northeast Kingdom is comparatively low, especially compared to its adjacent metropolitan county. Thus, the higher rates of residents living below the Federal poverty line are somewhat mitigated by the relatively lower cost of living in the Northeast Kingdom.

Major Sources of Personal Income in the Northeast Kingdom

Personal income consists of three major components: net earnings for labor services, property incomes, and transfer payments. Net earnings (\$1,151 million), which accounted for 56.6 percent of Northeast Kingdom's total personal income in 2009, can be considered payment for current labor services (Figure 18).

Net earnings include wage and salary disbursements, proprietors' income, and other labor income which are mostly employer contributions to private pension and welfare funds. The contributions that individuals make to social insurance programs (e.g., Social Security taxes) are excluded from net earnings.

The remaining non-labor portion (\$882 million or 43.4 percent) of the Northeast Kingdom's personal income was split between dividends, interest, and rent (which is also called property income) and transfer receipts. While wages and proprietor income are the return to productive labor, dividends, interest and rent are the return to fixed assets like stocks, bonds, and rental property. Property incomes (\$318 million) account for 15.7 percent of regional income; below the Vermont average (18.2 percent). Transfer receipts, the other portion of non-labor income, accounts for 27.7 percent of Northeast Kingdom's total personal income (\$564 million); significantly above the state's share (20.5 percent).

Table 10. Current Transfer Receipts in the Northeast Kingdom: 1990, 2000, and 2009 (in millions of \$2009)

| Component of current transfer receipts | 1990 | | 2000 | | 2009 | | Growth & change | |
|--|----------------|-------------|----------------|-------------|----------------|-------------|-----------------|-------------|
| | \$MM | Share | \$MM | Share | \$MM | Share | \$MM | Annual % |
| <i>Total current transfer receipts</i> | \$222.7 | 100% | \$334.4 | 100% | \$563.9 | 100% | \$341.2 | 5.1% |
| <i>Transfer receipts of individuals from govts</i> | \$212.3 | 95% | \$319.5 | 96% | \$552.3 | 98% | \$340.0 | 5.2% |
| Retirement & disability insurance benefits | \$97.7 | 44% | \$129.7 | 39% | \$183.9 | 33% | \$86.2 | 3.4% |
| Medical benefits | \$54.0 | 24% | \$122.0 | 36% | \$230.6 | 41% | \$176.6 | 8.0% |
| Income maintenance benefits | \$32.1 | 14% | \$39.4 | 12% | \$69.7 | 12% | \$37.6 | 4.3% |
| Unemployment insurance compensation | \$13.7 | 6% | \$10.6 | 3% | \$32.6 | 6% | \$18.9 | 9.5% |
| Veterans benefits | \$8.4 | 4% | \$9.6 | 3% | \$16.0 | 3% | \$7.6 | 9.0% |
| Education & training assistance | \$6.4 | 3% | \$8.1 | 2% | \$12.3 | 2% | \$5.9 | 3.7% |
| Other receipts of individuals from govts | \$0.0 | 0% | \$0.1 | 0% | \$7.1 | 1% | \$7.1 | ---* |
| <i>Transfer receipts of nonprofits</i> | \$4.2 | 2% | \$6.3 | 2% | \$6.9 | 1% | \$2.7 | 2.8% |
| <i>Transfer receipts of individuals from bus</i> | \$6.2 | 3% | \$8.6 | 3% | \$4.8 | 1% | -\$1.4 | 9.3% |

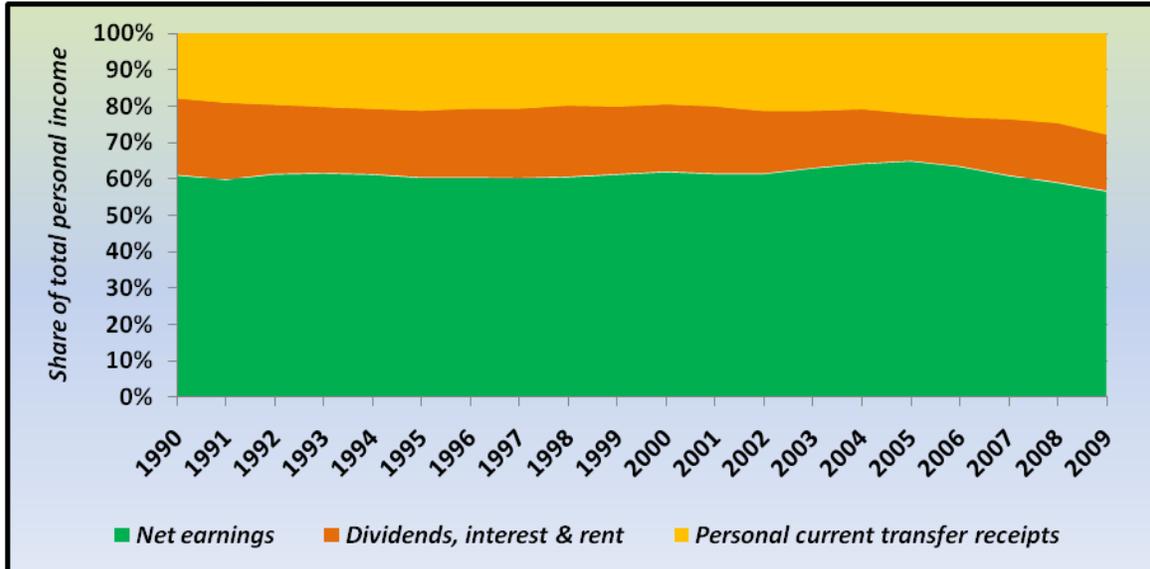
Notes: Under Growth & change, \$MM refers to the real difference in millions of \$2009 between 2009 and 1990; Annual % is the average annual change for the time series. *Annual percent change for other receipts of individuals from governments is not meaningful, given the largesse associated with the Economic Stimulus Act of 2008 and the American Recovery and Reinvestment Act of 2009

Transfer receipts are commonly referred to as "unearned income," receipts from the government to people (and non-profit institutions) for reasons other than labor services. Transfer receipts share of total personal income in the Northeast Kingdom are among the highest in Vermont. (In fact, the Northeast Kingdom Counties of Essex (34.9 percent), Orleans (30.4 percent), and Caledonia (24.2 percent) are ranked first, third, and fourth, respectively among all Vermont counties). Some people might think "welfare payments" when hearing transfer receipts. However, the above table (Table 10) shows that "welfare" (or income maintenance benefits) only accounts for 12.4 percent of transfer receipts in 2009, with unemployment insurance benefits adding another 5.8 percent. Transfers receipts include retirement benefits, medical benefits, veterans benefit payments, federal assistance for education and training programs for individuals, but also include government payments to nonprofit institutions as well as business payments to individuals.

Retirement benefits and medical benefits combined amount to nearly three-quarters of transfer payments for the Northeast Kingdom. Together with the 16 percent of personal income coming from dividends, rent and interest, non-labor income comes to 43.6 percent of the regional economy; and this is mostly controlled by the region's senior citizens. Put another way, if one focused only on jobs and the money they bring in, over two-fifths of the economy would be ignored.

Between 1990 and 2009, there was a gradual decline in the share of personal income which stems from net earnings in the Northeast Economy (Figure 19). In 1990, net earnings represented nearly three-fifths of the county's total person income; by 2009, net earnings' share of total income had fallen by about 5 percentage points. Although property income decreased its share over the same period by 5 percentage points, transfer payments' share of total personal income increased by 10 percentage points.

Figure 19. Changing Shares of Major Components of Northeast Kingdom Personal Income, 1990-2009



Source: US Bureau of Economic Analysis Prepared by Economic & Policy Resources, Inc.

Growth in personal income—both total and major components—has slowed considerably over the 2000-2009 period. While total personal income in the Northeast Kingdom grew 3.28 percent on an average annual basis during the 1990s, total personal income growth slowed on average to 1.88 percent annually during the 2000s (Table 11). The personal income slowdown occurred virtually everywhere else—in the nation, State of Vermont, and the peer region of Southern Vermont. Particularly telling was the significant decline in net earnings growth during the last decade. Much of the growth in personal income during the 2000s was found in the major component of personal current transfer receipts (particularly medical benefits).

Table 11. Personal Income Change in the Northeast Kingdom, Southern Vermont, Vermont, and the United States: 1990-2009

| Personal income & components | United States | | Vermont | | Northeast Kingdom | | Southern Vermont | |
|------------------------------|----------------------|-----------|----------------------|-----------|----------------------|-----------|----------------------|-----------|
| | Ave. Ann. Change (%) | | Ave. Ann. Change (%) | | Ave. Ann. Change (%) | | Ave. Ann. Change (%) | |
| | 1990-2000 | 2000-2009 | 1990-2000 | 2000-2009 | 1990-2000 | 2000-2009 | 1990-2000 | 2000-2009 |
| <i>Total personal income</i> | 3.60% | 1.76% | 3.34% | 1.73% | 3.28% | 1.88% | 2.99% | 1.20% |
| Net earnings | 3.81% | 1.02% | 3.36% | 0.93% | 3.46% | 0.91% | 3.16% | 0.01% |
| Dividends, interest & rent | 2.77% | 1.66% | 2.62% | 1.03% | 2.05% | 0.28% | 1.96% | 1.15% |
| Current transfer receipts | 3.90% | 5.54% | 4.54% | 6.04% | 4.17% | 6.03% | 4.35% | 5.90% |

Source: US Bureau of Economic Analysis Prepared by Economic & Policy Resources, Inc.

Industry Sources of Personal Income

Industry earnings, defined as earnings received by persons for direct participation in the production of goods and services, are among the best available measures to track changes in the level of economic activity within

counties. Industry earnings have three major components: (1) wage and salary disbursements, defined as the monetary remuneration of private and public sector employees, including compensation of corporate officers; commissions, tips, and bonuses; and pay-in-kind that represents income to recipients; (2) other labor income, consisting of employer contributions to private pension and insurance funds, including privately insured workers' compensation funds and government-funded social insurance (e.g., unemployment insurance); and (3) proprietors' income is treated as income received by individuals and is composed of income from proprietorships, partnerships, and tax-exempt cooperatives.

The bulk of industry earnings in the Northeast Kingdom are from wages and salaries; of the total earnings of \$1,182 million in 2009, nearly 65 percent (or \$765 million) was composed of wages and salaries. This is less than both Vermont (71.4 percent) and the nation's (71.1 percent) shares from wages and salaries. The remaining portions consist of other labor income (\$203.1 million) and proprietors' income (\$213.6 million). The share of other labor income amounted to 17.2 percent of total earnings in Northeast Kingdom; roughly equivalent to its share for Vermont (17.8 percent) and the nation (17.3 percent). The share of Northeast Kingdom's proprietors' income was 18.1 percent, substantially higher than both the state (10.9 percent) and nation (11.6 percent).²⁷

Several characteristics relating to the composition, growth and changing structure of industry earnings in the Northeast Kingdom are shown in Table 12. In terms of shares, Northeast Kingdom's earnings by industry have changed rather dramatically. With the slight exception of mining, goods-producing sectors' contribution of Northeast Kingdom's total industry earnings was significantly smaller in 2009 compared with 2001; declining from 36 percent to 24 percent of total earnings. In particular, manufacturing in the region experienced a substantial decline in total earnings' shares. In contrast, a number of services-producing sectors in the region increased their total earnings' shares, particularly health care and social services; professional, scientific, and technical services; and educational services. Combined services and government now account for over 70 percent of total earnings, up from 61 percent back in 2001.

²⁷ The peer region of Southern Vermont about 70 percent of \$2,119 million of total earnings were wages and salaries. The remaining part consisted of other labor income (17.5 percent or \$370 million) and proprietors' income (12.5 percent or \$266 million).

Table 12. Industry Earnings in the Northeast Kingdom, 2001, 2003, 2006 & 2009 (Millions of \$2009)

| Title | 2001 | 2003 | 2006 | 2009 | Ave. Annual % Change |
|-----------------------------------|---------|---------|---------|---------|----------------------|
| Total personal income | 1,793.6 | 1,843.9 | 1,971.2 | 2,033.2 | 1.6% |
| Earnings by place of work | 1,123.6 | 1,176.0 | 1,281.3 | 1,181.7 | 0.7% |
| Wage & salary disbursements | 699.0 | 727.2 | 783.4 | 765.0 | 1.2% |
| Supplements to wages and salaries | 159.1 | 183.2 | 201.5 | 203.1 | 3.2% |
| Proprietors' income | 265.6 | 265.6 | 296.5 | 213.6 | -2.4% |
| Farm earnings | 30.2 | 25.6 | 19.0 | 16.0 | 5.4% |
| Nonfarm earnings | 1,093.4 | 1,150.4 | 1,262.4 | 1,165.8 | 0.8% |
| Private earnings | 911.7 | 942.6 | 1,028.9 | 922.6 | 0.2% |
| Forestry, fishing & related | 27.5 | 22.6 | 20.3 | 18.1 | -5.0% |
| Mining | 0.7 | 0.6 | 1.3 | 1.0 | 7.1% |
| Utilities | 6.2 | 6.2 | 5.7 | 7.1 | 1.9% |
| Construction | 129.7 | 117.1 | 130.5 | 94.9 | -3.6% |
| Manufacturing | 215.6 | 191.7 | 199.3 | 155.6 | -3.8% |
| Wholesale trade | 29.5 | 30.8 | 37.6 | 31.2 | 1.0% |
| Retail trade | 98.9 | 108.7 | 116.7 | 100.8 | 0.3% |
| Transportation & warehousing | 43.3 | 48.7 | 53.4 | 44.3 | 0.5% |
| Information | 15.4 | 17.2 | 18.2 | 17.3 | 1.6% |
| Finance and insurance | 34.8 | 35.7 | 38.2 | 36.6 | 0.7% |
| Real estate & rental and leasing | 13.9 | 12.6 | 12.1 | 9.2 | -4.9% |
| Professional, scientific, & tech. | 39.2 | 40.6 | 58.5 | 65.5 | 6.8% |
| Administrative & waste services | 16.6 | 18.4 | 19.1 | 20.6 | 3.1% |
| Educational services | 21.7 | 29.2 | 32.4 | 39.2 | 7.9% |
| Health care & social assistance | 131.7 | 164.9 | 175.2 | 185.4 | 4.5% |
| Arts, entertainment & recreation | 4.5 | 4.9 | 9.8 | 9.5 | 11.2% |
| Accommodation & food services | 34.2 | 37.0 | 34.7 | 31.6 | -0.8% |
| Other services, ex. public admin | 48.2 | 55.7 | 66.0 | 54.8 | 1.9% |
| Government | 181.8 | 207.8 | 233.5 | 243.2 | 3.7% |
| Federal, civilian | 27.5 | 34.4 | 40.5 | 42.8 | 5.8% |
| State and local | 145.7 | 157.6 | 177.3 | 180.1 | 2.7% |

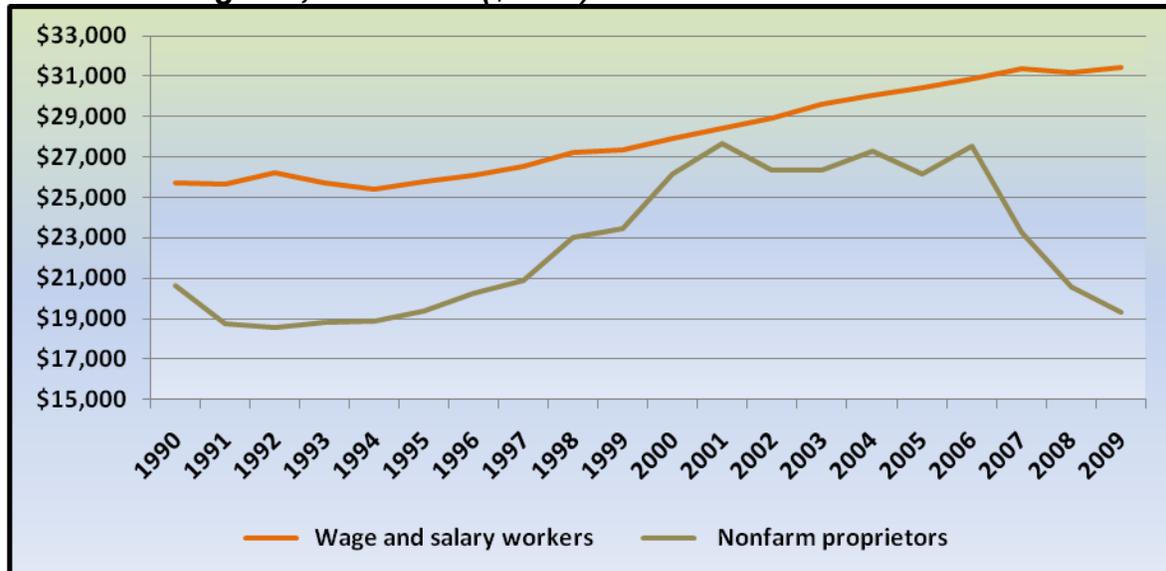
Source: US Bureau of Economic Analysis

Prepared by Economic & Policy Resources, Inc.

Average Earnings per Job. Employment and earnings by broad industry groupings can be used to further compute the average earnings per job; for both wage & salary workers and self-employed. Changes in average wages and salary have steadily grown in real terms for the Northeast Kingdom over the 1990-2009 time period (Figure 20). Real average earnings for nonfarm proprietors peaked in 2001 at \$27,640 and have precipitously eroded to a low of

\$19,310 in 2009. In the meantime, average wage & salary workers' earnings increased from \$25,710 in 1990 to a peak of \$31,470 in 2009.

Figure 20. Average Wage & Salary and Nonfarm Proprietor Income for the Northeast Kingdom, 1990-2009 (\$2009)



Source: US Bureau of Economic Analysis Prepared by Economic & Policy Resources, Inc.

Retirement-related Transfer Payments. Transfer payments are an increasing important part of total personal income in the Northeast Kingdom and elsewhere. Transfer payments, which are commonly referred to as “unearned income,” are payments from the government for reasons other than labor services. They include payments by government and businesses to individuals and nonprofit institutions and are generally classified into six broad categories:

- Retirement-related transfer payments, including Social Security; those for specific retirement programs covering railroad workers, federal civilian employees, military personnel, and state and local government employees; and for workers’ compensation and other government disability, insurance, and retirement programs.²⁸
- Medical payments for such programs as Medicare, Medicaid, and TriCare Management Program (formerly CHAMPUS) for the medical care of dependents of active duty military personnel and of retired military personnel;

²⁸ This retirement-related category of transfer payments does not include private pension incomes which are reported as a part of industry earnings under the “other labor income” category. Private pension benefits, as well as property income and wage and salary earnings from part-time employment, account for substantial portions of the income of retirees and are not reflected in the retirement and related transfer payments category.

- Unemployment insurance programs;
- Income maintenance payments for such programs as Aid to Families with Dependent Children (AFDC), food stamps, and Supplemental Security Income (SSI) payments;
- Veterans' benefit payments including pensions and other compensations, educational assistance, and life insurance benefit payments; and
- Other transfer payments covering payments for education and training assistance, business payments to individuals for such things as cash prizes, unrecovered thefts and consumer bad debts, and government and business payments to nonprofit institutions.

About one third of all 2009 transfer payments in the nation were within the retirement-related category. In Vermont and the Northeast Kingdom, retirement-related transfers were the leading category, both accounting for about 32-33 percent of all transfer payments. Adding Medicare benefits to the retirement-related category, would increase the share of total current personal transfer receipts to over half.

The changing composition of the major sources of personal income in part reflects two important demographic and economic trends: the aging of the American population; and the vast improvements in the economic well-being and financial security of senior adults. Nationally, people aged 65 years and over are increasing as a share of total population. This aging trend is expected to continue, with the number of senior citizens expected to more than double during the next 30 years. Not only is the proportion of retired Americans rising, but since the 1970s there has been a continuing net migration of people 65 and older from metropolitan to non-metropolitan areas.

In contrast with the reasons for younger people, the migration pattern of the senior population is not strongly tied to employment opportunities. Among the factors underlying the urban to rural migration pattern of retirees are the amenities associated with living in a more natural environment, greater outdoor recreational opportunities, and lower housing and living costs. Other important quality-of-life factors for retirees that do not necessarily favor rural areas are climate, cultural amenities, and the availability of health care, personal, and social services. Rural areas within Vermont have emerged as destinations for retirees notably Orleans County in the Northeast Kingdom.²⁹ These areas are drawing retirees from principally the Northeastern United States, though retirees are coming from other states across the nation. New York, for instance, by virtue

²⁹ The other counties in Vermont classified as retirement-destinations are Bennington County (in Southern Vermont region) and Grand Isle County located in northwestern Vermont.

of its proximity, size, escalating urban congestion, and rising cost of living, is becoming a principal state of origin for the retired Americans who are attracted to the state.

The "graying of America" refers not only to the growing number of senior adults, but to their rising income levels and increased purchasing power. As a group, the elderly have benefited most from the rapid rise in transfer payments and property income in recent years. Social security and government pension incomes of retirees comprise a major part of transfer payments and are among the leading sources of total personal income growth (Smith and Chase, 1991).

Since the mid-1980s, retirement-related transfer payments has become the leading source of personal income in the Northeast Kingdom, exceeding healthcare and social services; government (all levels); and manufacturing earnings. In contrast to earnings income, retirement-related transfer payments can be viewed as "footloose," meaning that the spending and saving of income from these incomes are not necessarily tied to the particular location where the investments were made or the past labor services were performed. Retirement-related transfer payments also displayed a pattern of stable, noncyclical growth that served to dampen the cyclical swings in local personal income.

For the Northeast Kingdom, retirees are now a significant source of basic income. Increases in retirement-related transfer payments are often viewed as a consequence, rather than as a cause of regional economic growth and development. Although such assumptions may have been appropriate in years past, they are less applicable today. Retirement-related transfer payments and retirees--the "silver-haired economic base"--present definite opportunities for local economic development.

Part II. Industry Cluster Analysis of the Northeast Kingdom

Industry clusters have become the *sine qua non* of economic development policy in many regions throughout the world. It is a universally-accepted fact that successful regional economies are--to varying degrees--specialized. Even the most diversified regions are home to industries that are more concentrated than other areas. Imbedded within the notion of regional competitive advantage are the particular competitive advantages of its resident industries. No region, however, can be outstanding at producing everything. Successful regions develop strengths and focus innovative capacities on certain types of industries or clusters. Clustering provides firms with access to more suppliers and specialized support services, experienced and skilled workers, and inevitable knowledge transfer when people meet to talk about business.

Conceptually, clusters function in similar fashion as basic industries within the region. Underlying all regional economic development strategies is the notion of developing business activity that will bring a flow of spending into the region, which in turn can generate income and associated jobs. Economic base theory classifies all economic activity within an area as either “basic” or “non-basic” (Berry and Garrison, 1958). A basic sector is composed of local businesses and firms that produce goods or services for “export” to customers located outside the local area, which thus generates the flow of spending into the region. Products based on natural resources (e.g., mining, logging and milling, and tourism), learning-based resources (e.g., major educational institutions or cultural attractions), and manufacturing centers are considered to be basic industries because they usually export most of their products/services to outside customers in response to national and international demands. What then of the non-basic sector? The non-basic portion of economic activity is composed of firms that operate and produce primarily for local consumption. Most local retail trade and personal services are considered as part of the non-basic sector.

Using this regional basic-non-basic economic development paradigm, it follows that strengthening and growing the local economy is to develop and enhance the basic sector. Put another way, the basic sector can be viewed as the “engine” of the local economy. Thus, developing firms that serve outside markets provides the basis for enhancing overall business investment and economic activity. Exports further fuel the economic growth of an area through economic multiplier effects. Revenues from exports percolate through the local economy as payments to local factors of production—land, labor, and capital. In turn, these payments generate an economic multiplier in the form of a chain-reaction effect. Local industries buy inputs from local suppliers, which then pay local employees and buy further inputs from local suppliers, etc. Local suppliers pay wages and salaries to their employees, who then buy local products and services, further stimulating local businesses, who in turn pay their own employees, and so on.

Such multiplier effects are extremely important for stimulating economic growth, especially when the local economy is not developed enough to generate a strong local demand.

I. Why industry clusters?

Industry clusters are defined as groups of inter-related industries. Clusters have two key elements. First, firms within the cluster must be linked; and second, groups of inter-linked companies locate in close proximity to each other. Clusters are geographically close groups of interconnected companies and associated institutions in a particular industry linked by common technologies and skills (Porter et. al., 2001). Industry clusters are common in both rural and urban areas; yet, each cluster is unique because of differences in firm sizes, core industries, and inter-firm relationships. A cluster may consist of firms engaged in producing similar products, such as log homes in Montana or houseboats in Kentucky. Companies in these clusters benefit from the availability of a pool of skilled and specialized labor. Clusters may comprise firms in value or supply chains (e.g., auto assembly and suppliers in Michigan/Indiana/Ohio) or those defined by their reliance on similar specialized services (e.g., research and development facilities or education and training services). Still other clusters result from firms locating in close proximity to a shared resource/raw material or market.

Clusters are often—but not necessarily—defined around a specific industry sector, supplier-buyer network or industry supply chain. Some clusters, such as aerospace in Connecticut, or wood products in the Northern New England, fit neatly within NAICS-based industry definitions. Other clusters are based on process technologies, such as firms that produce metal products for making products in such end markets as transportation equipment, medical devices, and machine tools. Still other interconnections that define clusters include supply chains, core technologies, proximity to natural resources, markets or distribution channels. For instance, the visitor/tourism cluster in Vermont is oriented around natural resources and proximity to the vast Northeast US and Eastern Canada markets.

Cluster typologies. Industry clusters can be categorized into differing general types. Markusen (1996) classifies clusters according to their industry structure. Marshallian, hub-and-spoke, satellite platforms, and state-anchored clusters (Table 13). Marshallian clusters are composed primarily of locally-owned, small- and medium-sized businesses in the more information and technology-intensive industries. Hub-and-spoke clusters are dominated by one or several large firms surrounded by related input suppliers and service providers. Satellite platforms consist primarily of the branches of large multi-plant companies. These branch plants tend to be relatively large and independent. State-anchored industry clusters are regions where the local economy is dominated by a large public activity, such as a university, military base, or government office. Surrounding

the dominant public activity would be supplier and service sector companies. Each of these cluster types offer different inter-firm connections, prospects for local growth, and require different policy focus for improving the competitiveness of the cluster.

Table 13. Typology of Industry Clusters

| <i>Cluster type growth</i> | <i>Characteristics of member firms</i> | <i>Intra-cluster interdependencies</i> | <i>Prospects for employment</i> | <i>Vermont State examples</i> |
|----------------------------|--|---|---|--|
| Marshallian | Small & medium sized locally owned firms | Substantial inter-firm trade & collaboration, strong institutional support | Dependent on synergies & economies provided by clusters | Tourism/visitor Forest products Artisanal cheese |
| Hub-and-spoke | One or several large firms with numerous smaller suppliers & service firms | Cooperation between large firms and smaller suppliers on terms of the large firms | Dependent on growth prospects of large (hub) firms | Value-added agriculture |
| Satellite platforms | Medium & large-sized branch plants | Minimum inter-firm trade and networking | Dependent on ability to recruit and retain branch plants | |
| State-anchored | Large public or non-profit entity and related supplying and service firms | Restricted to purchase-sale relationships between public entity and suppliers | Dependent on region's ability to expand political support for public facility | |

Source: Markusen, 1996.

A more recent cluster typology merges industry clusters with various theories of economic growth paths (EDR Group et. al., 2007). This research consortium portrays industry clusters as core industries, suppliers of capital goods, direct inputs, and specialized services, as well as private sector economic activities induced by the presence of core industries. Cluster analysis also includes associations or supporting institutions specific to the cluster, skill and education providers such as universities and community and technical colleges that contribute to the region's human capital stock, and knowledge providers such as research institutions, technology transfer organizations, and other providers of research and technology. This blending of industry clusters with economic growth paths results in five major classes (Table 14).

As organizing themes, these typologies have some applicability to the Northeast Kingdom. The regional forest products sector, for instance, appears Marshallian in its composition of small and medium-sized businesses with a significant level of inter-firm trade and collaboration. Other regional industries (e.g., insurance;

transportation services) possess characteristics of hub-and-spoke and satellite cluster types.

As the largest cities in the Northeast Kingdom, St. Johnsbury (2010 population: 7,608) and Newport (2010 population: 4,434) act as the regional trade centers. As such, St. Johnsbury and Newport provides consumer, business and financial goods and services to the broader Northeast Kingdom economy.

Other economic growth paths that appear applicable to the Northeast Kingdom are supply-chain and natural amenity or cultural assets. The Northeast Kingdom exhibits features from both of these growth paths: supply-chain elements exist in the forest products cluster; and visitor services cluster is largely based on natural amenities.

Table 14. Major Industry Cluster Classes with Economic Growth Paths

| Economic Growth Path | Description |
|---|--|
| Trade Center | Growth pattern emanating from a small urban cluster that provides goods and services to the exurban communities and rural hinterlands. |
| Agglomeration | Growth resulting from geographic concentration of interconnected businesses and institutions that enhance the productivity of the core industries. |
| Supply-Chain | Remote location is chosen over the central metropolitan area to host a node of economic activity (distribution or assembly) that is part of a larger geographic production chain. |
| Natural amenity or Cultural assets | Growth as a result of either quality-of-place attracting new households or efforts to actively develop and promote cultural, recreation, eco-tourism venues and their supporting visitor services. A possible extension would be natural resource assets that are tied to extractive activities such as mining or logging. |
| Knowledge (learning) assets | Growth opportunities leveraged from the collective knowledge embodied in the region, including social capital, technical applications or commercialization, institutional assets (educational and financial), and entrepreneurial start-ups. |

Sources: Economic Development Research Group, Inc., Regional Technology Strategies, Inc., and MIT Department of Urban Studies and Planning, 2006.

II. Cluster Identification and Analysis: A Suggested Framework

One of the biggest challenges facing the local economic development practitioner is simply identifying the industry clusters for targeting in the local region. Some researchers view clusters in terms of product chains where the principal form of interdependence between firms is the buyer-supplier connection. Here, clusters are revealed as those with significant value chain linkages between companies

or sectors via input-output analysis. Others see clusters as companies and other organizations linked together primarily by flows of tacit information (Rosenfeld, 1995). Still others utilize a set of quantitative measures of interrelationships between industries with indicators of size and growth (Bergman and Feser, 1999; Barkley and Henry, 2005).

The process of identifying Northeast Kingdom's industry clusters begins with an iterative analysis of detailed sector data, including employment concentration, wage performance and stability, growth and change, and supply chain interrelationships. Before moving on to detailed results for the region, some key terms are essential for understanding how clusters are selected. Similar to the detailed analysis of major sectors, clusters can be typecast as mature, challenge, opportunity, or star.

- **Mature Cluster**: These clusters are composed of traditional mainstay companies operating in a region having a large number of employees, a high level of concentration (as measured by employment specialization ratio³⁰), but in recent years their collective performance is one of stagnation or decline
- **Challenge Cluster**: These clusters, while potentially large, may lack key industries or be dominated by a small number of firms. Collectively, this cluster has two characteristics that evoke the moniker of "challenging;" namely, a lower level of concentration and an eroding base of employment.
- **Opportunity Cluster**. These clusters, also called potential or emerging, show strong growth in both firms and employment in a number of segments, but overall lack the critical mass or collective concentration. For instance, if a cluster is composed of about 10 interrelated industries, an opportunity or emerging cluster would show firms and employment in only about half to two-thirds of these industries.
- **Star Cluster**: These clusters are identified as stars given both their high level of concentration and their solid recent performance. Given the recent "great recession" in the United States, there are few star clusters that have retained their economic luster in any particular geographic region.

III. Northeast Kingdom Industry Clusters: Overview

Seven primary industry clusters were selected based on the analysis of various screening criteria of growth and expansion, competitiveness, linkage strength, and overall position (and subsequent label). Each of these primary clusters has

³⁰ Also called location quotients or employment concentration ratios, the measure essentially compares the sectoral share of the region's employment with that of the state or nation. An employment specialization ratio greater than 1.25 indicates a strong market position or specialization for the region, allowing the region to export a portion of the industry's/cluster's output. In contrast, a ratio below 1.0 suggests that a region does not meet local demand for a certain good/service.

a significant economic presence in the region and enjoys various competitive advantages. Highlights of each of these clusters are provided below in narrative, tabular, and graphical (Table 15, Figure 21) formats, with detailed analysis provided later in the report.

Agribusiness, Food Processing & Technology Cluster

- Labeled as one of the “*stars*,” the agribusiness, food processing & technology 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 merchant wholesalers.
- In 2009, the cluster’s critical mass was 75 establishments, employing 654 workers with average annual wages of \$33,270 (about 4 percent higher than the regional average of \$31,970).
- Unlike most sectors in the region, agribusiness, food processing and technology cluster increased employment during the 2001-2009 period. Employment increased by 5.8 percent, while the number of establishments grew by 17.1 percent during this period.
- In 2009, animal production, food manufacturing, and crop production comprised the majority of employment in this cluster and have been growing as a majority since 2001.
- The location quotient of 1.284 in 2009 shows an increasing export orientation for the agribusiness, food processing, and technology cluster since 2001.
- Overall, the Northeast Kingdom agribusiness cluster has outperformed its national counterpart during the study period. Much of that growth was concentrated in the segments of animal agriculture, food manufacturing, and agriculture support activities.
- Growth and development of Northeast Kingdom’s agribusiness, food processing and technology cluster has been cited in national studies (Muro and Katz, 2010; Rosenfeld, 2010) and popular press (*New York Times* and Hewitt, 2009).
- A convergence and intersection with other clusters—creative arts, visitor and tourism is increasingly commonplace with the agribusiness and food processing cluster in the Northeast Kingdom.

Biomedical/Biotechnical (Life Sciences) Cluster

- The biomedical/biotechnical (life sciences) cluster is made up of pharmaceutical and medicine manufacturing; optical instrument and lens manufacturing; electro medical apparatus manufacturing; analytical laboratory instrument manufacturing; irradiation apparatus manufacturing;

- medical equipment and supplies manufacturing; medical equipment merchant wholesalers; health and personal care stores; scientific research and development services; hazardous waste collection; hazardous waste treatment and disposal; and ambulatory health care services.
- In the biomedical/biotechnical (life sciences) cluster employment grew by 2.1 percent in the Northeast Kingdom from 2001 to 2009. Employment in health & personal care stores grew by 25.7 percent while employment in ambulatory health care services declined by 2.6 percent; ambulatory health care services grew by 13 establishments during 2001 to 2009.
 - The majority of employment in this cluster comes from the subsectors of health & personal care stores and ambulatory health care services, comprising 95.1 percent of all employment in the cluster.
 - Even with the slight, yet unsteady, growth in this cluster, there was some erosion in specialization. Specialization in the biomedical/biotechnical (life sciences) cluster has decreased sharply since 2004. The average annual wage, however, increased by 43.9 percent from 2001 to 2009 at \$31,945. The average annual wage for this cluster in the Northeast Kingdom still remained about 44 percent less than the national average annual wage in this same cluster.

Education and Knowledge Creation Cluster

- The education and knowledge creation cluster is made up of education services; newspaper publishers; periodical publishers; book publishers; and other information services. This cluster focuses on human capital and the intellectual knowledge that can be created.
- Employment in the education and knowledge creation cluster increased by 20.0 percent from 2001 to 2009. The increase in employment was primarily in the subsectors education services and other information services. The employment increase in education services was 31.5 percent and in other information services it was 111.5 percent. Newspaper publishers had a decrease in employment from 2001 to 2009 by 41.9 percent.
- From 2001 to 2009 there was an increase of specialization of employment due to the changes in education services, other information services, and newspaper publishers. The average annual wage increased by 36.8 percent from 2001 to 2009 in the education and knowledge creation cluster with the average annual wage at \$32,971.

Fabricated Metals & Machinery Manufacturing Cluster

- A *mature* cluster, fabricated metals and machinery manufacturing is much more diversified than readily acknowledged. This cluster is made up of cutlery and hand tool manufacturers; architectural and structural metals; machine shops; coating, engraving and heat treating metal; and other fabricated metal products. The machinery manufacturing part of the cluster is made up of industrial machinery; heating, ventilation, air conditioning (HVAC) and commercial refrigeration equipment;

- metalworking machinery (including special tools, dies, jigs and fixtures); and other general purpose machinery.
- In the fabricated metals & machinery manufacturing cluster in the Northeast Kingdom, employment has dropped substantially in both fabricated metals and machinery manufacturing between 2001 and 2009. Employment in fabricated metals dropped by 41.9 percent while employment in machinery manufacturing dropped by 19.6 percent.
 - Average annual wages increased from 2001 to 2009. The increase was 8.5 percent in fabricated metals and 10.2 percent in machinery manufacturing.
 - The location quotient in fabricated metal shows decreasing specialization, but increasing specialization in machinery manufacturing. The decrease in specialization in fabricated metal took place in 2008 but held specialization in machinery manufacturing constant at a higher rate.

Forest and Wood Products Cluster

- The forest and wood products cluster is made up of forestry and logging; support activities for forestry; framing contractors; siding contractors; flooring contractors; finish carpentry contractors; roofing contractors; wood product manufacturing; paper manufacturing; books printing; gum and wood chemical manufacturing; paint, coating, and adhesive manufacturing; abrasive product manufacturing; saw blade and handsaw manufacturing; sawmill and woodworking machinery; paper industry machinery manufacturing; power-driven hand tool manufacturing; furniture and related-product manufacturing; musical instrument manufacturing; burial casket manufacturing; furniture and furnishing merchant wholesalers; and lumber and construction supply merchant wholesalers.
- With an estimated 2009 employment base of 1,450 workers with an average wage of \$33,750, 92 forest & wood products firms represents one of the Northeast Kingdom's core industries. There are an additional 1,350 non-employers and/or self-employed workers within this forest & wood products cluster. Combined, total forest and wood products accounts for 2,800 workers in the Northeast Kingdom.

Visitor and Tourism Cluster

- The arts, entertainment, recreation & visitor cluster consists of sporting and athletic goods manufacturing; doll, toy, and game manufacturing; sporting goods merchant wholesalers; scenic and sightseeing transportation; motion picture and sound recording industries; broadcasting, except internet; travel arrangement and reservation services; performing arts and spectator sports; museums, historical sites, zoos and parks; amusement, gambling and recreation; traveler accommodation; RV parks and recreational camps.
- Despite some shakeout in the accommodations segment, overall growth in visitor and tourism cluster has been solid. Known for its ski resorts, the

- region's assets and attractions are extending the traditional tourism/visitor season to a year-round industry.
- Though employment growth has been steady over the period, average wages in this industry cluster are relatively low—compared to average wages across all industries and compared to statewide and national averages in the visitor and tourism industry.
 - Northeast Kingdom has enjoyed significant investments within the tourism and visitor cluster in recent years; with a particular focus on Jay Peak and Burke Mountain—both traditional ski resorts with more year-round offerings such as golfing, water park (indoor), and mountain biking.
 - Growth has elicited additional challenges and opportunities for the visitor and tourism industry, including increasing communication and coordination among cluster participants; need for workforce and entrepreneurial development; cultivating the Canadian market; and further marketing of the world-class scenic amenities of the Northeast Kingdom.

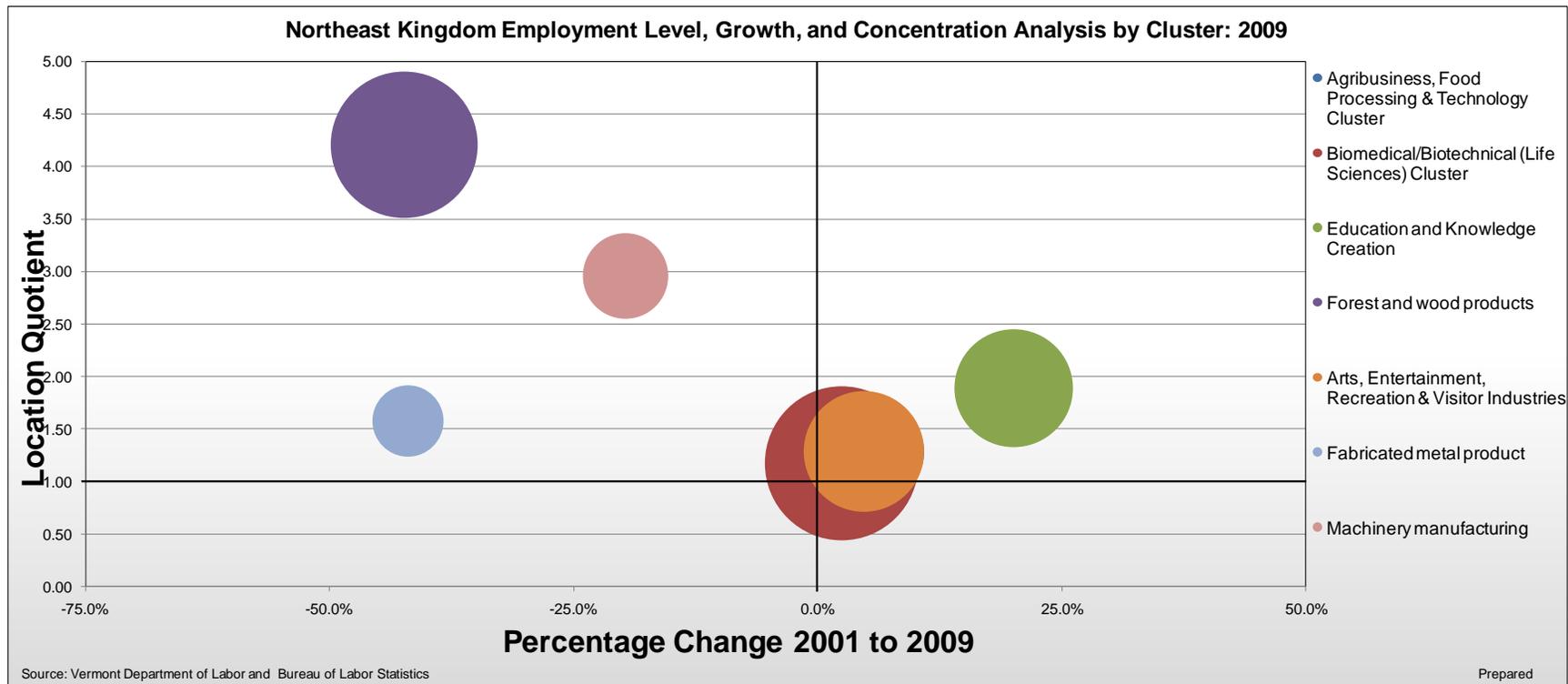
Table 15. Summary Screening Criteria of Northeast Kingdom Industry Clusters

| NAICS | Industry | 2009 Critical Mass | | Industrial Growth | | Export | | Regional Shift |
|-------|---|--------------------|--------------|-------------------|---------------|-------------|-------------|----------------|
| | | NEK | | 2001-2009 | | Orientation | | |
| | | Units | Jobs | NEK | US | 2001 | 2009 | |
| | Agribusiness & Food Processing | 75 | 654 | 5.8% | -5.0% | 1.07 | 1.28 | 43 |
| 111 | Crop production | 10 | 122 | -30.3% | -5.8% | 1.76 | 1.33 | -43 |
| 112 | Animal production | 24 | 202 | 33.8% | 11.6% | 4.23 | 5.20 | 33 |
| 115 | Support activities for ag | 5 | 42 | 600.0% | 2.7% | 0.11 | 0.79 | 36 |
| 311 | Food & beverage mfg | 20 | 184 | 37.3% | -7.1% | 0.43 | 0.65 | 60 |
| | Wholesalers | 16 | 104 | -31.6% | -3.8% | 2.96 | 2.16 | -42 |
| | Biomedical/Biotechnical | 103 | 1,599 | 2.4% | 21.5% | 1.33 | 1.17 | -297 |
| | Manufacturing, various | 4 | 78 | 52.9% | 0.7% | 0.54 | 0.87 | 26 |
| 446 | Health & personal care stores | 16 | 220 | 25.7% | 4.8% | 1.06 | 1.30 | 37 |
| 621 | Ambulatory health care | 82 | 1,297 | -2.6% | 29.8% | 1.69 | 1.30 | -432 |
| | Education & Knowledge | 48 | 934 | 20.1% | 17.2% | 1.75 | 1.88 | 22 |
| 611 | Education services | 33 | 759 | 31.5% | 28.4% | 1.02 | 1.82 | 18 |
| 511 | Publishers | 8 | 120 | -31.4% | -27.1% | 0.89 | 1.46 | -8 |
| 519 | Other information services | 7 | 55 | 111.5% | 188.6% | 1.88 | 2.41 | -20 |
| | Metals & Machinery | 19 | 831 | -30.5% | -23.2% | 2.24 | 2.08 | -85 |
| 332 | Fabricated metals | 10 | 337 | -42.0% | -21.7% | 2.03 | 1.58 | -118 |
| 333 | Machinery manufacturing | 9 | 494 | -19.7% | -25.0% | 2.63 | 2.96 | 33 |
| | Forestry & Wood Products | 92 | 1,451 | -42.2% | -29.1% | 4.93 | 4.79 | -175 |
| 113 | Forestry & logging | 18 | 41 | -21.2% | -28.7% | 3.80 | 4.31 | 4 |
| 1153 | Support activities for forestry | 3 | 17 | 0.0% | -12.4% | 5.90 | 6.92 | 2 |
| | Contractors, various | 32 | 136 | 9.7% | -17.5% | 1.28 | 1.75 | 34 |
| 321 | Wood products mfg | 19 | 307 | -41.0% | -37.1% | 5.16 | 4.97 | -20 |
| 322 | Paper manufacturing | 2 | 223 | -60.4% | -29.9% | 9.63 | 4.36 | -172 |
| 337 | Furniture manufacturing | 11 | 689 | -41.9% | -40.4% | 10.44 | 10.45 | -18 |
| | Wholesalers | 7 | 38 | -20.1% | -10.1% | 11.87 | 10.07 | -5 |
| | Visitors & Tourism | 78 | 976 | 4.7% | -2.6% | 1.14 | 1.29 | 46 |
| 3399 | Sporting goods and game mfg | 5 | 124 | 37.8% | -39.6% | 5.51 | 12.91 | 70 |
| 711 | Performing arts & sports | 7 | 50 | 19.0% | 5.1% | 0.63 | 0.73 | 6 |
| 713 | Amusements, gambling & rec. | 25 | 233 | 191.3% | 8.2% | 0.35 | 0.97 | 146 |
| 72 | Accommodations | 32 | 503 | -19.0% | -4.4% | 1.94 | 1.68 | -91 |
| | Other visitor & tourism | 9 | 66 | -33.3% | -11.1% | 0.37 | 0.23 | -22 |

Notes: 2009 Critical Mass units and jobs refer to the number of establishments and wage & salary employment level; industrial growth refers to total employment change between 2001 and 2009 for NEK and US; export orientation provides employment specialization indices (called, location quotients) for NEK regional industries; Regional shift or local competitive comes from the shift-share analysis of the NEK region between 2001 and 2009.

Sources: US Bureau of Labor Statistics; Vermont Department of Labor; Economic & Policy Resources, Inc.

Figure 21. Northeast Kingdom Employment, Level and Concentration Analysis by Cluster, 2009



Agribusiness, Food Processing & Technology Cluster

Vermont is viewed as a leader in the “local foods” movement. Hardwick has received national press as the “town that food saved.” Employment (based on QCEW) in 2009 was about 650 workers, with production agriculture and food processing being the dominant segments. Agriculture has a significant self-employment (non-covered employment) component. In 2009, there were about 1,200 farm proprietors in the Northeast Kingdom (Figure 22). The number of proprietors is similar to the total number of farms in the region (Table 16). Combined with these 650 workers, value-added agriculture represents one of the leading industries in the NEK, with an estimated total employment of 1,900 workers.

Figure 22. Farm Employment in the Northeast Kingdom, 1990-2009



Source: US Bureau of Economic Analysis

Prepared by Economic & Policy Resources, Inc.

The farm economy in the Northeast Kingdom sold agricultural products worth \$95 million in 2009 (Figure 23). Nearly 90 percent of the total agricultural value was in livestock, poultry and other (beef cattle, milk and other dairy products). Leading crops grown in the region include forage (hay) and vegetables and potatoes. The Northeast Kingdom is one of the leading dairy producing regions in Vermont.

According to the most recent Census of Agriculture (2007), there were 1,260 farms with 240,000 acres in farm land operating in the Northeast Kingdom. Although the average farm size is 189 acres, a significant share of farms have less than 50 acres (Table 16).

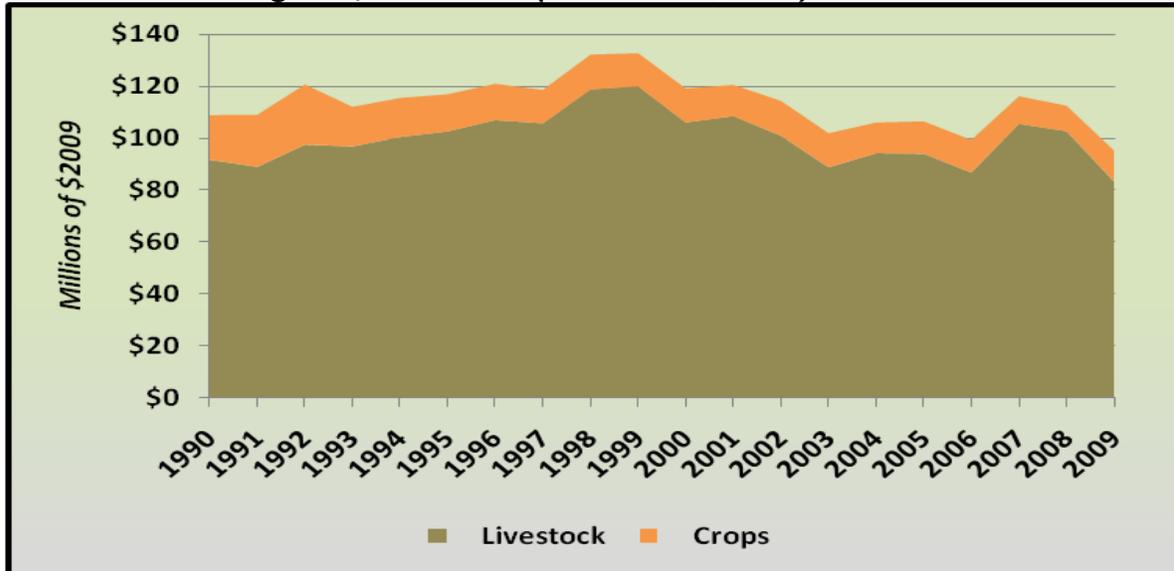
Table 16. Agricultural Economy of the Northeast Kingdom, 2007

| Agricultural indicator | Caledonia County | Essex County | Orleans County | NEK Region | Vermont State |
|--|---------------------|-----------------|-------------------|---------------|------------------|
| Number of farms | 531 | 94 | 635 | 1,260 | 6,984 |
| Land in farms (acres) | 81,946 | 26,732 | 130,308 | 238,986 | 1,233,313 |
| Average size of farm (acres) | 154 | 284 | 205 | 643 | 177 |
| Farms by size--1-9 acres | 33 | 5 | 39 | 77 | 635 |
| Farms by size--10-49 acres | 153 | 8 | 155 | 316 | 1,862 |
| Farms by size--50-179 acres | 190 | 31 | 223 | 444 | 2,396 |
| Farms by size--180-499 acres | 126 | 26 | 156 | 308 | 1,557 |
| Farms by size--500-999 acres | 26 | 22 | 50 | 98 | 390 |
| Farms by size--1,000 acres or more | 3 | 2 | 12 | 17 | 144 |
| Total cropland (acres) | 30,776 | 11,557 | 55,211 | 97,544 | 516,924 |
| Market value of ag products sold (\$000) | \$31,542 | \$12,147 | \$82,348 | \$126,037 | \$673,713 |
| Market value--average per farm | \$59,401 | \$129,222 | \$129,682 | \$100,029 | \$96,465 |
| Mkt. value of ag products sold (\$000)-- crops | \$3,733 | \$1,014 | \$4,620 | \$9,367 | \$99,262 |
| Mkt value of ag products sold (\$000)-- livestock | \$27,809 | \$11,133 | \$77,728 | \$116,670 | \$574,451 |
| Farms by value of sales--less than \$2,500 | 202 | 31 | 183 | 416 | 2,581 |
| Farms by value of sales--\$2,500-\$4,999 | 70 | 8 | 71 | 149 | 695 |
| Farms by value of sales--\$5,000-\$9,999 | 64 | 17 | 69 | 150 | 841 |
| Farms by sales--\$10,000-\$24,999 | 71 | 7 | 105 | 183 | 902 |
| Farms by sales--\$25,000-\$49,999 | 25 | 3 | 45 | 73 | 497 |
| Farms by sales--\$50,000-\$99,999 | 30 | 4 | 37 | 71 | 390 |
| Farms by sales--more than \$100,000 | 69 | 24 | 125 | 218 | 1,078 |
| Government payments (farms) | 86 | 27 | 142 | 255 | 1,351 |
| Government payments (\$000) | \$328 | \$111 | \$603 | \$1,042 | \$6,773 |
| Total farm income, gross before taxes (\$000) | \$1,355 | \$327 | \$1,567 | \$3,249 | \$28,764 |
| Total farm production expenses (\$000) | \$27,000 | \$10,139 | \$64,319 | \$101,458 | \$549,904 |
| Net cash farm income (\$000) | \$6,225 | \$2,445 | \$20,199 | \$28,869 | \$159,346 |
| Principal operator by primary occ--farm | 257 | 52 | 349 | 658 | 3,461 |
| Principal operator by primary occ--other | 274 | 42 | 286 | 602 | 3,523 |

Source: US Department of Agriculture

Prepared by Economic & Policy Resources, Inc.

Figure 23. Cash receipts from marketing of livestock products and crops in the Northeast Kingdom, 1990-2009 (Millions of \$2009)



Source: US Bureau of Economic Analysis

Prepared by Economic & Policy Resources, Inc.

An Aside on Value-Added Agriculture

In recent years, attention has focused on increasing the value of the farmgate for the farmer. Value added agriculture essentially means increasing income from farm enterprises by innovative ways, including: growing a commodity for a special market; changing the form of a commodity before it is marketed; changing the way a commodity is packaged for market; changing the way a commodity is marketed; and adding a new enterprise. Often, the value added alternatives can be combined to yield an even higher income to the farm enterprise or rural community.

1. **Changing the Way a Commodity is Marketed.** Value is added when a raw agricultural product is marketed in a nontraditional way to command a higher price. Direct marketing of agricultural products at a farm stand or to special processors or final users, or direct selling to schools or restaurants or through farmers' markets or other outlets are examples. Commodities that require special production methods or harvesting techniques, that reach specialty markets or that fill another market niche can be grown under contract for a much higher net return. Producers often need to seek out these market alternatives, or in some cases "sell the purchaser" on the concept that a higher value product is being offered because of the production/harvesting techniques or product uniqueness.
2. **Changing the Form of a Commodity Before it is Marketed.** Adding value occurs when raw agricultural products are transformed through processing. Although costs are incurred during processing, the "processing margin" covers the cost plus a margin that yields a higher

profit. This provides the opportunity of marketing the product differently, such as slaughtered and packaged beef sold directly to consumers or whole hog sausage sold directly to restaurants and other food service outlets. Other value added products include selling flour instead of wheat; selling flour directly to the bakery or consumer; or selling the final product—bread—directly to the consumer. Selling vegetables and fruits directly to the consumer rather than to wholesalers or processors requires cleaning, packaging and displaying the commodity. The gains to the producer represent capturing 100 percent of the consumer dollar (compared to about 20 percent for the typical agricultural producer).

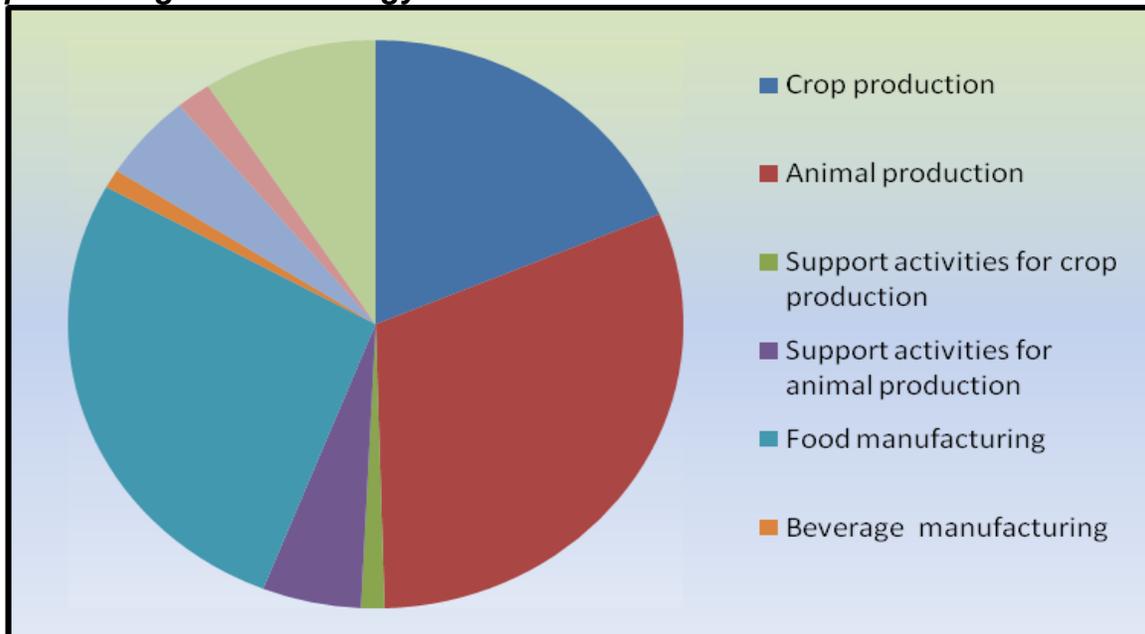
3. **Changing a Way a Commodity is Packaged for Market.** Value added marketing through packaging provides a great opportunity to increase profit for the agricultural enterprise. Package design is the first thing the consumer sees and it is the basis for almost all first-time purchases. Unique, attractive, special occasion, or gift-ready packages provide a competitive edge. A special basket full of apples with a bow or a fall arrangement attached will tend to sell faster and for a higher price. Other examples include honey with attractive labeling, a jam/jelly box, or special sauces. In today's world of "ready-to-go," the seller does the thinking about how to add value to a basket of apples, a bunch of grapes, or those jams or jellies. The consumer is ready to pay for that added service. Also, farmers have a special marketing opportunity in that many consumers want to connect to the land. In such a context, value added products complement tourism activities by giving consumers a tangible "piece" of place to take home and share with others.
4. **Growing a Commodity for a Special Market.** Ethnic or cultural-oriented consumers represent the fastest growing value-added markets today. The growth in diversity through immigration has opened up substantial ethnic markets in many areas of the country. These special markets include not only foods accustomed to ethnic groups, but also organic, pasture-fed production because it meets diverse tastes and dietary needs.
5. **Adding a New Enterprise.** A new enterprise is defined as any change in product or service. This includes growing a commodity for a special or niche market. A change in the production process might involve switching to organic production practices; or changing crop varieties to produce a special crop for a special industry such as cosmetics, industrial oils or textured vegetable protein. A new enterprise or activity might include adding herb farming, goat production or range-fed chickens. A new enterprise might be "ag-tourism" oriented such as bed-and-breakfast operations for hunting and fishing, nature walks, or farm/ranch stays. The most common new enterprise market is the organic consumer. Almost every farmers' market has several organic growers marketing various

products. Uniqueness is a vital part of selecting value-added enterprises and its orientation is market-driven.

Agribusiness, food processing and technology cluster

The agribusiness, food processing & technology 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 merchant wholesalers (Figure 24).

Figure 24. 2009 Composition of the Northeast Kingdom Agribusiness, food processing and technology cluster



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Agriculture—crops. In 2007, Caledonia county and Orleans county produced the most crops in the commodity group including forage (hay) and maple syrup. Essex County's leading crop was in the cut Christmas trees and short-rotation woody crops commodity group.

Agriculture—livestock and products. Milk and other dairy products from cows produced by the northeastern region of Vermont made up 21.2 percent of Vermont's revenue of total sales generated from that commodity in 2007. Milk and other dairy products from cows created more total sales (\$104.9 million) than ten times the commodity generating the next highest total sales (cattle and calves; \$10.0 million).

Support activities for agriculture. The US farm support services industry is highly fragmented, which means that no major companies control or dominate the industry. The average annual revenue per worker is \$140,000, which means the industry is labor-intensive. The Northeast Kingdom produces and exports extensive amounts of support activities for animal production to other counties.

Food & beverage manufacturing. A significant and vibrant portion of the Northeast Kingdom cluster is in the food and beverage manufacturing segment. The conversion of agricultural products of livestock into intermediate or final products for sale, particularly dairy is a growing part of the regional cluster.

Agricultural, food product & food supplies—wholesalers. Agricultural food product wholesalers and supplies wholesalers includes farm & garden equipment wholesalers, farm product raw material wholesalers, and farm supplies wholesalers.

Farm & garden equipment wholesalers. The farm and garden equipment merchant wholesalers industry primarily engages in merchant wholesale allocation of specialized machinery, equipment, and related parts normally used in agricultural, farm, and lawn and garden activities. This industry is essential to the Northeast Kingdom due to its exports to other counties.

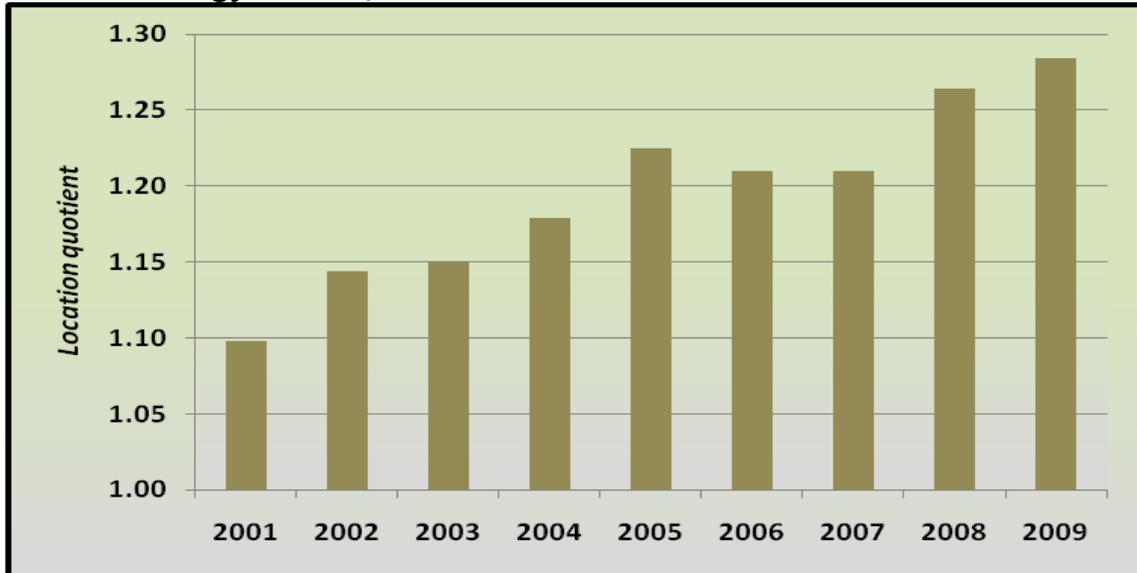
Farm product raw material wholesalers. The farm product raw material merchant wholesalers industry is mainly engaged in the merchant wholesale allocation of agricultural products such as grains, field beans, livestock, and other farm product raw materials. This segment essentially services the various farm producers in the region.

Farm supplies wholesalers. The farm supplies merchant wholesalers industry mainly engaged in the merchant wholesale allocation of farm supplies, such as animal feeds, fertilizers, agricultural chemicals, pesticides, plant seeds, and plant bulbs. This industry is very essential to the northeastern kingdom due to its production and exports to other counties outside the region.

As a measure of export orientation, this agribusiness, food processing cluster in the Northeast Kingdom continues to grow and develop (Figure 25). Significant growth segments are in animal agriculture and food manufacturing. Whereas animal agriculture, particularly dairy farms are distributed across the Northeast Kingdom, food manufacturing is centered in the Hardwick, Newport, and St. Johnsbury/Lyndon areas.³¹

³¹ The Center for an Agricultural Economy (Hardwick, Vermont) is preparing a Food Systems Development Strategic Plan for the Northeast Kingdom, as part of the Northeastern Vermont Development Association's Regional Innovation Grant from the U.S. Department of Labor.

Figure 25. Measure of Specialization of the Agribusiness, Food Processing and Technology Cluster, 2001-2009



Source: Vermont Department of Labor

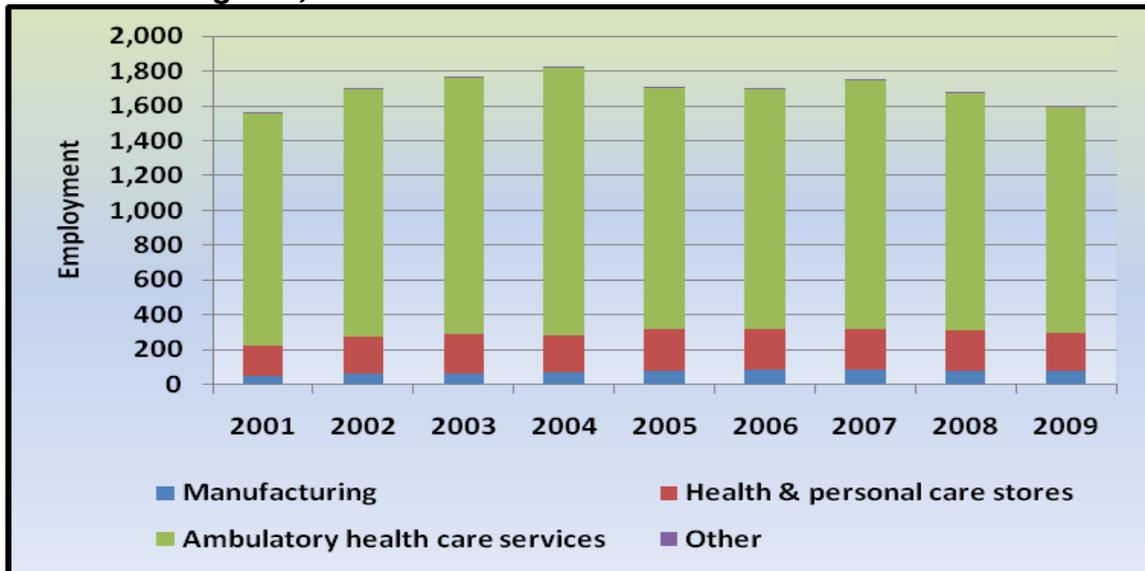
Prepared by Economic & Policy Resources, Inc.

Biomedical/Biotechnical (Life Sciences) Cluster

Biomedical/biotechnical cluster is composed of eight industry segments that include pharmaceutical and medicine manufacturers; electromedical (e.g., pacemakers, MRI equipment, ultrasound equipment, hearing aids) and irradiation apparatus manufactures; medical equipment and supplies manufacturing; medical equipment and supplies wholesalers; health and personal care stores; scientific research and development services; and ambulatory health care services.

Although there is a nascent level of activity in biomedical/biotechnical manufacturing in the Northeast Kingdom, much of the critical mass of this cluster is in the ambulatory health care and health and personal care segments (Figure 26).

Figure 26. Biomedical and biotechnical industry cluster employment in the Northeast Kingdom, 2001-2009

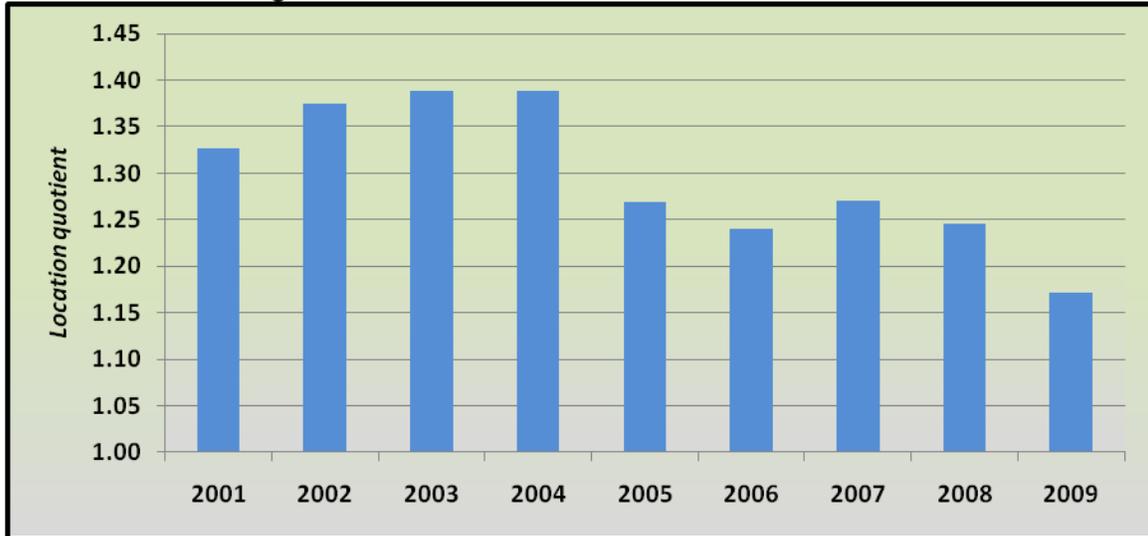


Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

With a 2009 employment base of 1,600 workers, this industry cluster clearly represents an important part of the Northeast Kingdom economy. An additional 600 workers, classified as either non-employers or self-employed, are engaged in the broader industry. Combined, the 2009 employment base of the biomedical and biotechnical industry cluster is 2,200 workers. With respect to its export orientation, the regional biomedical/biotechnical cluster services markets beyond the Northeast Kingdom (Figure 27).

Figure 27. Measure of specialization in the biomedical/biomedical cluster in the Northeast Kingdom, 2001-2009



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Composition of the biomedical/biotechnical cluster needs further review and analysis. Although there are exciting developments within this regional industry complex, the overall healthcare and social assistance sector³² is not completely included in the current composition. Healthcare has become an economic growth engine in many rural areas; particularly with the growing importance of medical transfer receipts (representing more than one-fourth of all transfer receipts).

³² There are data disclosure issues surrounding inclusion of portions of the healthcare and social assistance sector, particularly hospitals.

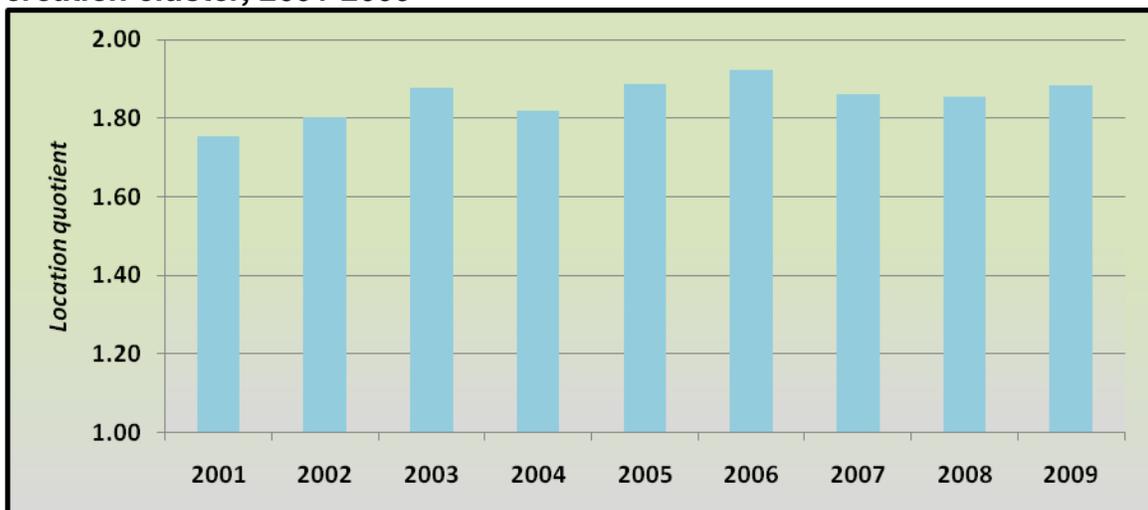
Education and Knowledge Creation Cluster

The Northeast Kingdom's education and knowledge creation cluster is composed of is made up of education services; newspaper publishers; periodical publishers; book publishers; and other information services. This cluster focuses on human capital and the intellectual knowledge that can be created.

Overall, employment in the education and knowledge creation cluster increased 20.0 percent from 2001 to 2009. As in many industry complexes, particularly during the business cycle, there is a churning of activity, with businesses expanding and contracting (and starting and closing). The increase in employment was primarily in the subsectors of education services and other information services. The employment increase in education services was 31.5 percent and in other information services it was 111.5 percent. Education services here are concerned with private sector side of instruction and training provided by specialized establishments such as schools, colleges, and training centers. Thus, such notable schools as the St. Johnsbury Academy, the Burke Mountain Academy, and Sterling College are key institutions in this education and knowledge creation cluster. Newspaper publishers had a decrease in employment from 2001 to 2009 by 41.9 percent.

From 2001 to 2009 there was an increase of specialization of employment due to the changes in education services, other information services, and newspaper publishers. The average annual wage increased by 36.8 percent from 2001 to 2009 in the education and knowledge creation cluster with the average annual wage at \$32,971 (Figure 28).

Figure 28. Measure of specialization in the education and knowledge creation cluster, 2001-2009



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Fabricated Metals and Machinery Manufacturing Cluster

Overview of the Fabricated Metals Industry

Nationally, the fabricated metal products industry includes about 55,000 companies with about \$340 billion in annual revenues. The major segments of the fabricated metals industry include architectural and structural products; forging and stamping; machining; cutlery, tools, and kitchenware; boilers, tanks, and containers; hardware; springs and wires; coating, plating, and polishing; and valve and pipe manufacturing. Leading product categories by revenue include machine shops and fabricated structural metals (each accounting for 10 percent) as well as sheet metal work, precision turned products, metal windows and doors, metal cans, and metal coating and engraving (each about 5 percent). Other major products and services include industrial valves and metal stamping.

Companies manufacture mainly simple metal parts used by industrial customers, such as those making autos and airplanes, machinery, appliances, and computers. Some companies make simple finished products like metal cans, tools, plumbing fixtures, and structural steel members. Most companies operate a single manufacturing facility.

Basic raw materials are ferrous and nonferrous metals, such as carbon, alloy and stainless steels, aluminum, titanium, brass, copper and various alloys. Raw materials are brought in semi-finished form (slabs and billets) and finished form (plates, coils, sheets, wire, bars, rails, beams) either directly from primary metal processors or more often from large metals distributors.

Generally, there are three major metal processing operations: fabrication; preparation; and finishing. Fabrication includes processes such as punching, cutting, bending, welding, coil processing, roll forming, laser cutting, and stamping. Machining, a fabrication method, uses a wide variety of machine tools to cut or form material to precise specifications. Preparation includes cleaning and surfacing metal with chemicals. Finally, finishing includes plating, polishing, coloring and coating.

Many companies have highly automated production lines. Typical equipment include presses, screw machines, rotary transfer machines, computer controlled (CNC) single and multiple spindle lathes, and turning and machining centers. Some companies use computer-aided drafting (CAD) and computer-aided manufacturing (CAM) equipment.

Engineering skills are needed to design products and production processes; whereas, most production jobs in fabricated metals are semiskilled; with average hourly industry pay slightly lower than the national average.

Many companies supply only a handful of products to a few large customers. To a certain extent, such companies function as manufacturing subsidiaries of their customers. A combination of marketing channels is used, often including a company sales force and manufacturers' representatives. Most work is awarded via purchase orders or contracts that detail product specifications, volumes and delivery schedules. Sales often depend on a company having the design, engineering, and manufacturing capabilities to make the product to specification and on time. Price is often a secondary consideration and raw material price changes can often be passed on to the customer.

Several challenges face the fabricated metals industry including such critical issues as (1) demand for fabricated metals is heavily driven by overall U.S. manufacturing levels, especially for equipment and machinery; (2) import competition keeps prices low for fabricated metal products; (3) fluctuating raw material costs, particularly with higher trending costs for metals; (4) customer concentration is common for many producers; (5) increased orientation toward specialization, due to the engineer-intensive nature and concentration on niche products; and (6) focus on alternative materials, such as plastics and ceramics which are replacing metals.

Machinery manufacturing Overview

Nationally, the machinery manufacturing industry includes about 20,000 companies with annual revenues of about \$350 billion. Like the fabricated metals industry, the machinery manufacturing is fragmented overall with concentration in numerous segments. Demand for machinery depends on overall industrial activity and on the health of such sectors as agriculture, construction, and power generation. The most recent recession hollowed out this historically cyclical industry.

The profitability of individual companies depends on both engineering expertise and efficient production. Large companies have economies of scale in purchasing; whereas small companies compete effectively by specializing in various niche markets. Generally, the industry is highly capital intensive, with average annual revenues per worker around \$300,000.

Major products are farm and construction machinery, manufacturing machinery, metal-working machinery, commercial machinery, and general machinery such as engines and pumps. Some products are finished; others are components used in further production, and still others are custom-designed for a particular manufacturing process.

Manufacture involves producing and assembling components. Companies either make or buy components with various types of mechanical, hydraulic, and electrical control systems. Manufacturing often involves forging, machining, and welding activities requiring skilled labor. Products often have a high engineering

content. Product design usually involves computer-aided design (CAD) systems and often tied directly to computer-aided manufacturing (CAM) process.

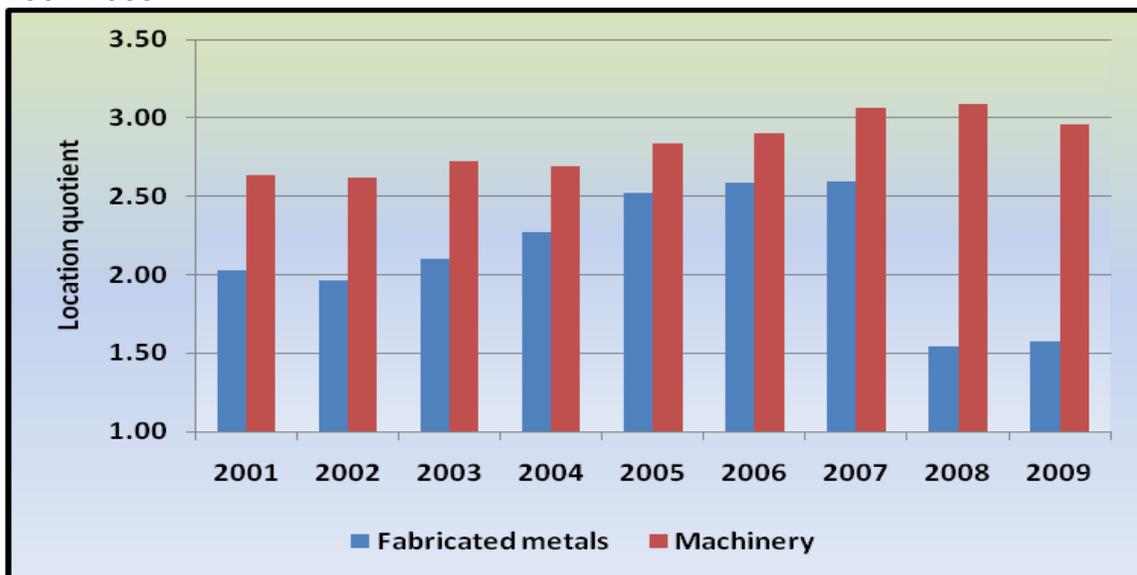
Typical customers are industrial companies or commercial users. Sales are generally handled by an in-house sales force complemented with manufacturers' representatives and independent dealers. Sales people often must have extensive engineering knowledge. Technical innovation is critical in many industry segments. Research and development costs are often high and patents are generally used to protect unique designs and features.

Business challenges for the machinery manufacturing sector include such critical issues as (1) dependence upon US and global economics; and (2) growing competition from foreign manufacturers. Other business challenges include (1) highly fluctuating raw material (particularly metal) prices; (2) export difficulties; (3) rapid technological improvements, making it difficult for smaller producers to compete; and (4) environmental risks.

Fabricated Metals and Machinery Manufacturing in the Northeast Kingdom

“A forgotten manufacturing industry?” A traditional manufacturing base that is slowly eroding within the Northeast Kingdom is the combined fabricated metals and machinery manufacturing. Now at 830 workers, these combined industries employed a workforce of 1,200 in 2001; the employment loss during the study period represents a sizeable erosion of an important part of the Northeast Kingdom's economic base. As indicated in Figure 29, both fabricated metals and machinery manufacturing remain strongly oriented toward national and international markets.

Figure 29. Measure of specialization in fabricated metals and machinery, 2001-2009



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

The composition of Northeast Kingdom fabricated metals and machinery industries include branches of international-owned large companies and independent “job shops.” In 2009, the fabricated metal products industry had 10 establishments. Manufacturers are found in the following segments:

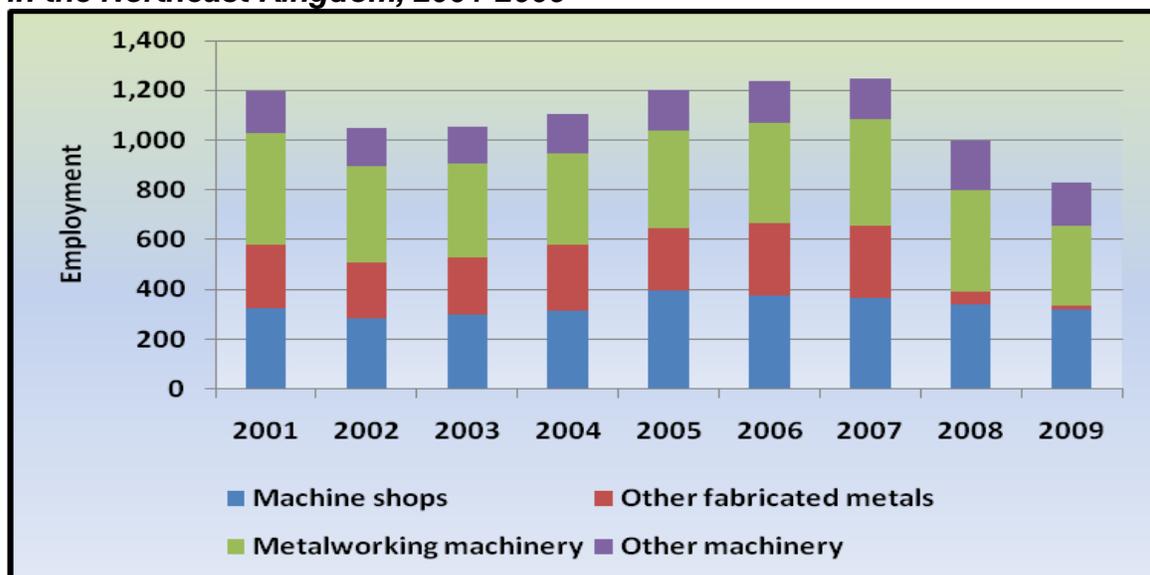
- Cutlery and hand tool manufacturing (2 establishments);
- Ornamental and architectural metal product (1 establishment);
- Machine shops (5 establishments);
- Small arms manufacturing (1 establishments); and
- Miscellaneous fabricated metal products (1 establishment).

For the machinery manufacturing industry, there are 9 establishments. These machinery manufacturers are in the following segments:

- Plastics and rubber industry machinery (1 establishment);
- HVAC and commercial refrigeration equipment manufacturing (2 establishments);
- Metalworking machinery manufacturing (4 establishments); and
- All other general purpose machinery, including scales and balances (2 establishments).

From an employment perspective, the combined national fabricated metals and machinery manufacturing industries lost a quarter of its employment base over the 2001-2009 business cycle. [In 2001, there were 3.03 million workers in the national fabricated metals and machinery manufacturing; by 2009, employment had declined to 2.33 million workers]. Fabricated metals and machinery in the Northeast Kingdom lost about 30 percent of its employment base over the same time period—1,200 workers in 2001 to 830 workers in 2009.

Figure30. Composition of Fabricated Metals and Machinery Manufacturing in the Northeast Kingdom, 2001-2009



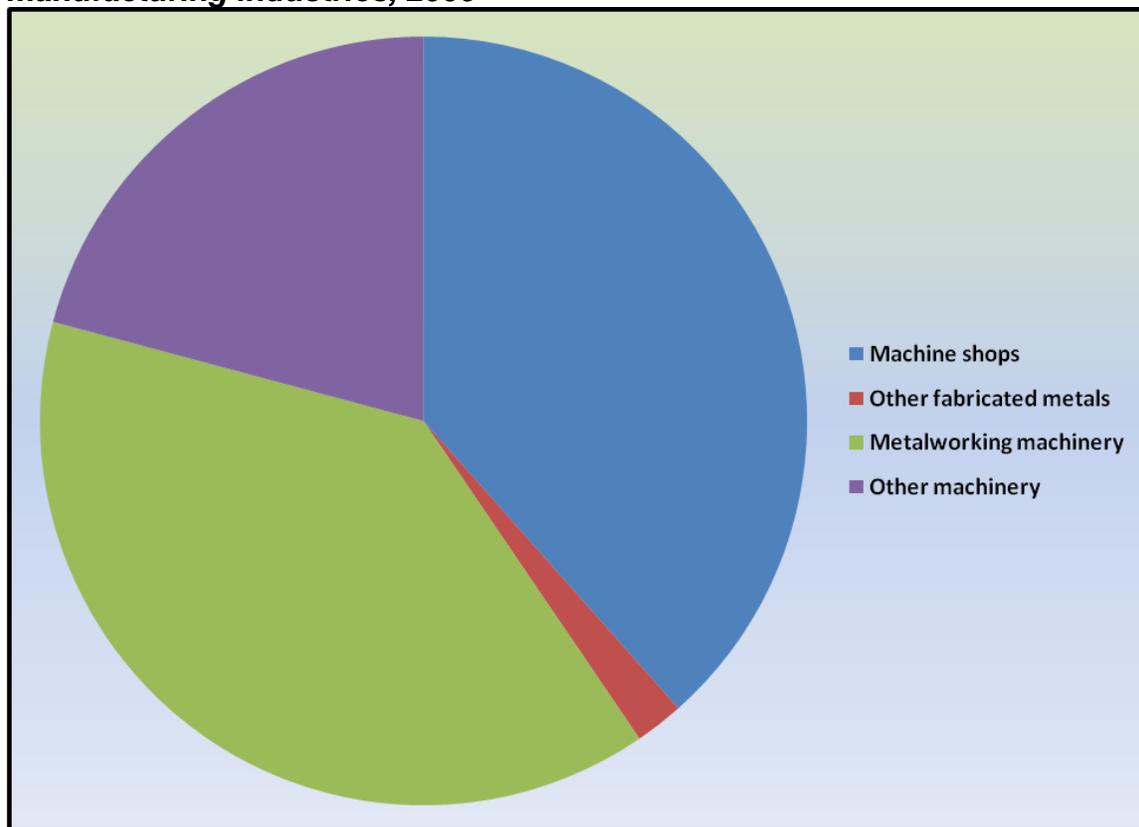
Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Although machine shops—the leading fabricated metals segment—weathered the severe economic winds of the national recession, other fabricated metals (composed of cutlery and hand tools; ornamental and architectural metals; small arms manufacturing; and miscellaneous fabricated metals) did not fare well. In 2009, the employment base of other fabricated metals was less than one-tenth of its 2001 size.

Employment decline in the machinery manufacturing industry was less severe; metalworking machinery companies lost a quarter of its employment base, but other machinery (e.g., HVAC and commercial refrigeration equipment; other general purpose machinery) have remained relatively stable.

Figure 31. Composition of the fabricated metals and machinery manufacturing industries, 2009

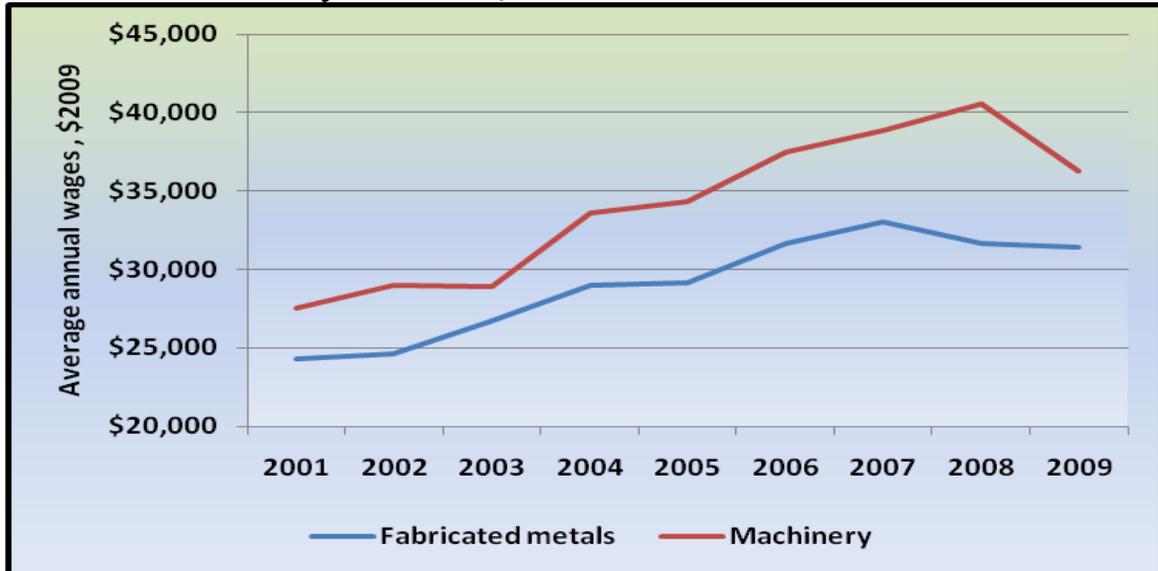


Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Workers in both fabricated metals and machinery manufacturing are among the highest paid within the Northeast Kingdom economy. Wages—in real terms—have steadily grown over the 2001-2009 time period, with the exception of the last one or two years. Workers would rather work for less wages and hours and remain employed.

Figure32 . Average annual wages per worker (\$2009) in the fabricated metals and machinery industries, 2001-2009



Challenges and Opportunities in the Northeast Kingdom Fabricated Metals/Machinery Cluster

A classic cyclical industry undergoing substantial structural change, the fabricated metals and machinery industry in the Northeast Kingdom finds itself at a cross-roads. Some companies which closed or downsized during the severe recession may not return. Other companies that have weathered the economic storm are experiencing a market rebound and associated demand; consequently they are calling back prior laid-off workers or hiring new workers.

As in the national industry, customers and markets for fabricated metals and machinery companies in the Northeast Kingdom are located in the US and beyond. Some markets are defense-oriented. Few (if any) shops do contract work for each other.

One of the critical features in sustaining the competitive position of the regional fabricated metals and machinery manufacturing industry is to ensure an adequate trained/skilled workforce. Statewide, shortages exist for a number of skilled production occupations affecting machinery manufacturing as well as other manufacturing sectors. For manufacturing companies, there is a need for customized training programs to improve the skill sets of existing workers as well as enlarge the set of available workers. Delivery of such training programs for manufacturers, however, is often unavailable in rural areas like the Northeast Kingdom. Workforce development is at the forefront of concerns for companies in the regional industries. Average age of the workforce is in the early 50s for

many of the skilled experienced workers. Attracting entrants into these companies is a significant challenge.

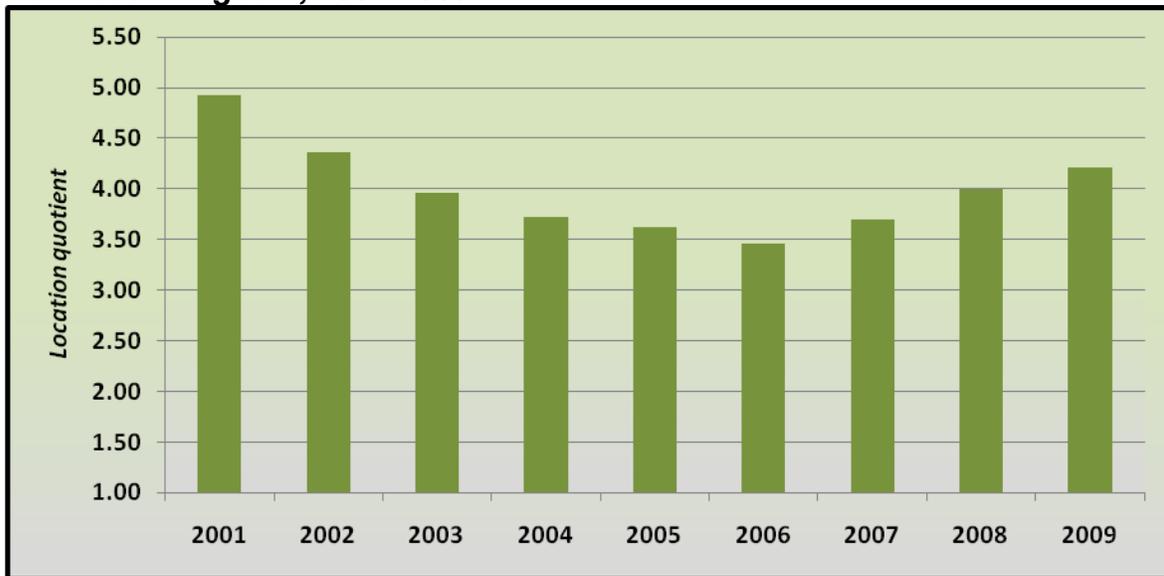
For a number of companies, transportation issues are one of significant cost items. Transport companies charge fabricated metals and machinery companies a premium given location and few opportunities for back-hauls.

Forestry and Wood Products Cluster

The Green Mountain State is home to approximately 4.46 million acres of forestlands—about 75 percent of Vermont’s land area. The majority of timberland³³ in Vermont is privately-owned (4.0 million acres or 81 percent) by family forest owners or small business concerns. Local, state and federal government owns the remaining 19 percent of Vermont’s forests. The northern hardwood forest is the most common forest type (70 percent) in Vermont, followed by the white/red pine; spruce/fir; and aspen/birch types.

Much of the Northeast Kingdom is covered by forests, with the majority privately-owned. A significant part of the region’s economic base is related to forests, whether directly forest-based manufacturing or associated forest-related products (such as Christmas trees and wreaths and maple products³⁴) or indirectly forest-related recreation and tourism.

Figure 33. Employment specialization of forestry & wood products in the Northeast Kingdom, 2001-2009



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Some Concepts

Besides ownership, there are several distinctive aspects of forestry. Like other natural resources—a forest is essentially immobile. The fixity of location differs little from other commodities, except that timber is sold as it stands in the forest

³³ Timberland is classified as land that is fertile and accessible to produce wood as a crop and is not withdrawn from timber harvesting by statute or regulation; in other words, most of the forestland is “managed” or “working” forests. According to the USDA Forest Service, approximately 4.35 million acres of the 4.46 million acres of forestland are classified as timberland.

³⁴ These products are actually classified by US Department of Agriculture (USDA) as part of agriculture.

(termed "stumpage" or the value landowners receive for their trees when sold in a timber sale).

As a renewable resource, the production of timber requires far longer time periods than most productive processes. Given the mix of tree species—hardwood and softwood, Vermont tree harvests occur within every 40 to 60 years. Given such an extensive long-term planning schedule, forest management is a critical component.

One of forestry's most important characteristics is that demand for various forest products is derived from the demand for other goods. Thus, the derived demand for timber is heavily dependent upon the markets for forest product commodities like lumber, plywood and veneer, pulp and paper, Christmas trees, fuelwood, and other special forest products (e.g., mushrooms, nuts and berries, cones, ornamental plants). Additionally, much recreational activity and tourism may not take place if there are no forests; particularly with fall foliage viewing in Vermont.

Who's Who in the Forest and Wood Products Industry Cluster?

The forest products cluster is composed of timber growing and harvesting activities; support activities for forestry; primary wood processing; secondary wood products, including furniture; pulp and paper manufacturing; and some specialty construction activities.

1. Timber Growing and Harvesting. This industry report uses industry definitions and concepts that underlie the North American Industrial Classification System (NAICS). In the NAICS system, timber growing and harvesting (i.e., logging) are major industries. This forestry and logging subsector (NAICS 113) includes timber tract operations, forest nurseries and gathering of forest products, and logging.

- Timber tracts (NAICS 1131)—those engaged in the operation of timber tracts and tree farms for the purpose of selling standing timber;
- Forest nurseries and gathering of forest products (NAICS 1132)—those engaged in growing trees for the purpose of reforestation or in gathering of forest products, including gums, barks, seeds, berries, ginseng, mushrooms, ferns, and plants; and
- Logging (NAICS 1133)—those engaged in cutting timber, transporting logs, and producing wood chips.

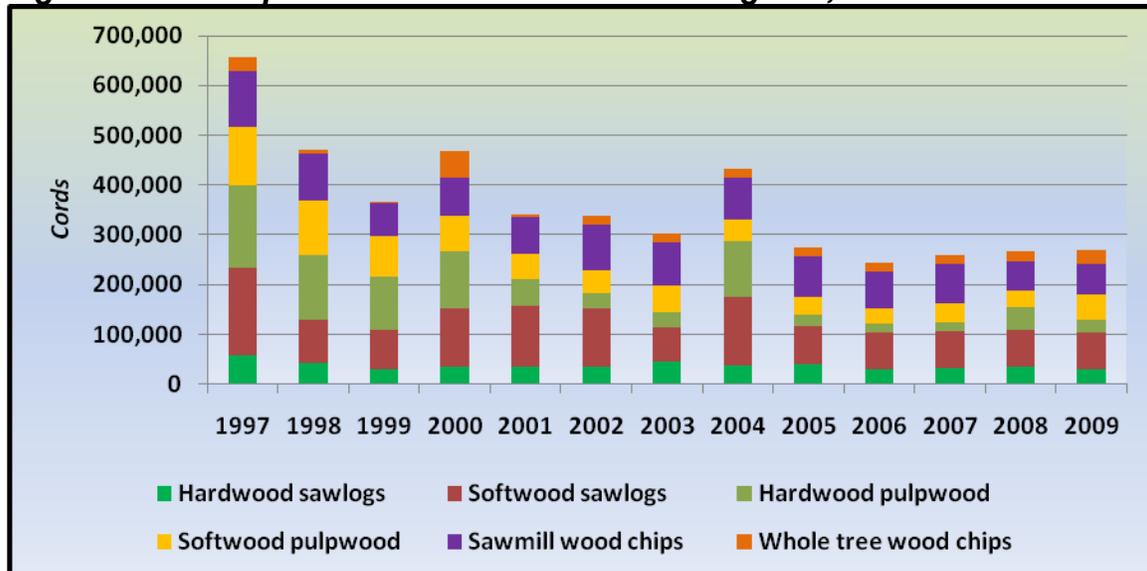
In 2009, 89.2 million board feet³⁵ of hardwood sawlogs and 103.4 million board feet of softwood sawlogs were harvested from the forests of Vermont. In that same year, 64,669 cords³⁶ of hardwood pulpwood and 96,545 cords of softwood

³⁵ One board foot equals a solid piece of wood 1 inch thick by 12 inches wide by 12 inches long.

³⁶ A cord approximately equals 500 board feet; two cords equals about one thousand board feet.

pulpwood were harvested in the state. Over 365,767 green tons³⁷ of whole tree chips were harvested in the state. The estimated value of these harvested volumes to landowners in stumpage value equals \$31 million.

Figure 34. Wood production in the Northeast Kingdom, 1997-2009



Note: All volumes converted into cords; sawmill wood chips

Source: Vermont Dept. of Forestry, Parks and Recreation

Prepared by Economic & Policy Resources, Inc.

The Northeast Kingdom is the leading wood production area in Vermont, representing about 36 percent of the state's 2009 total sawlog, pulpwood, and wood chip production of 751,735 cords. Over the last thirteen years, wood production in the Northeast Kingdom has trended downward. The most recent (2009) wood production of 268,571 cords is about three-fifths less than its level back in 1997 (Figure 21). There are numerous reasons for the decline, including changes in forest management, deterioration in primary wood markets, and increased competition.

2. Support Activities for Forestry. This industry (NAICS 11531) provide support activities for forestry, such as estimating timber, forest firefighting, forest pest control, and consulting services on wood attributes and reforestation. Employment levels in this sector vary both seasonally and annually, depending upon forest conditions.

3. Wood Product Manufacturing (NAICS 321). Following industrial classification procedures, the wood products manufacturing sector is composed of 13 sub-industrial categories. These can be organized into the following three industry groups:

³⁷ A cord is equivalent to about 2.5 green tons. A green ton (1 ton = 2,000 pounds) of pulpwood or sawmill residue or wood chips harvested from live trees contains substantial amounts of water, hence "green."

- Sawmills and wood preservation (NAICS 3211): engaged primarily in transforming logs or bolts into boards, dimension lumber, beams, timbers, poles, ties, shakes and shingles, siding and wood chips. Also included in this group are establishments that treat wood products to prevent rotting by impregnation with creosote or other chemical compounds.
- Veneer, plywood and engineered wood products (NAICS 3212): engaged in producing one or more of the following: manufacturing hardwood and softwood veneer and/or plywood; manufacturing engineered wood members including I-joists, laminated veneer lumber, and parallel strand lumber; truss manufacturing; and manufacturing reconstituted wood products, including particleboard, medium density fiberboard (MDF), waferboard, and oriented strandboard (OSB).
- Other wood product manufacturing (NAICS 3219): establishments involved in
 - millwork (including doors and windows, moldings, trellises, and railings; manufactured wood cabinets; and producing laminated and fabricated trusses, and other structural members;
 - making wood boxes, pallets and skids, and various other wood containers;
 - wood buildings, such as producing prefabricated wood buildings and components and other manufactured housing; and
 - all other miscellaneous wood products, including cork products, kiln drying lumber, wood dowels, wood kitchenware, clothes racks, rollers, stepladders, yardsticks; toilet seats; and toothpicks.

In recent years, increasing interest has been directed toward the development potential of secondary wood manufacturers (also called value-added manufacturers or wood remanufacturers) in forest products-dependent regions like the Northeast Kingdom. These manufacturers are composed of various value-added segments, including millwork, kitchen cabinets, wood containers, prefabricated buildings, wood preserving, and structural wood members. Secondary wood manufacturers produce a wide variety of products including moldings, doors, window and door frames, trellis, cabinets, laminated trusses, treated lumber, wood containers, pallets and skids, prefabricated floors and sections, and innumerable miscellaneous products.

Primary wood manufacturers still dominate wood products manufacturing in Vermont and the Northeast Kingdom, accounting for well over half of the industry's establishments and employment. Primary wood products of logging, lumber and plywood have been relative decline; whereas secondary wood products have gained only modest employment.

4. Paper Manufacturing (NAICS 322). This sector is strongly integrated with other manufacturing sectors of the forest products industry because it depends on wood residues for its raw material inputs. There are no pulp mills in Vermont and the Northeast Kingdom; most activity in this segment is within paper

manufacturing, of which there are three sizable employers in the Northeast Kingdom.

5. Furniture (NAICS 337). Furniture and related products can be made out of any material, but the most common one in Vermont is wood-based furniture. Furniture manufactured from hardwood such as alder, maple, and oak is especially appreciated for its beautiful appearance. In 2009, there were 83 furniture and related product manufacturers in Vermont, employing nearly 1,600 workers. Given the dominance of Vermont's leading furniture manufacturer (Ethan Allen) within the Northeast Kingdom, employment and wages information has not been disclosed for this industry segment. That said, furniture and related products is a significant part of the forest and wood products cluster in the Northeast Kingdom, with an estimated 690 employees and a wage base of \$21.4 million in 2009.

6. Construction contractors (NAICS 238).

This segment is composed of selected construction contractors, namely framing contractors, siding contractors, flooring contractors, finish carpentry contractors, and roofing contractors. Overall, this segment has indirect ties to the core industries of the forest and wood products cluster.

Like elsewhere, home builders and contractors in Vermont and the Northeast Kingdom have fallen on hard times with the recent (and on-going) housing crisis and recent recession. Historically, home construction is a cyclical industry, meaning that it closely follows the national business cycle of gains during expansion times and losses during times of contraction. While this segment had net additional employment during the study period of 2001-2009, Northeast Kingdom construction contractors exhibited these cyclical tendencies. In 2009, this segment had combined 32 establishments with 136 workers and payroll of \$4.2 million. [Establishment counts were the same in 2001 and about 12 net workers had been added to the employment rolls of these construction contractors.]

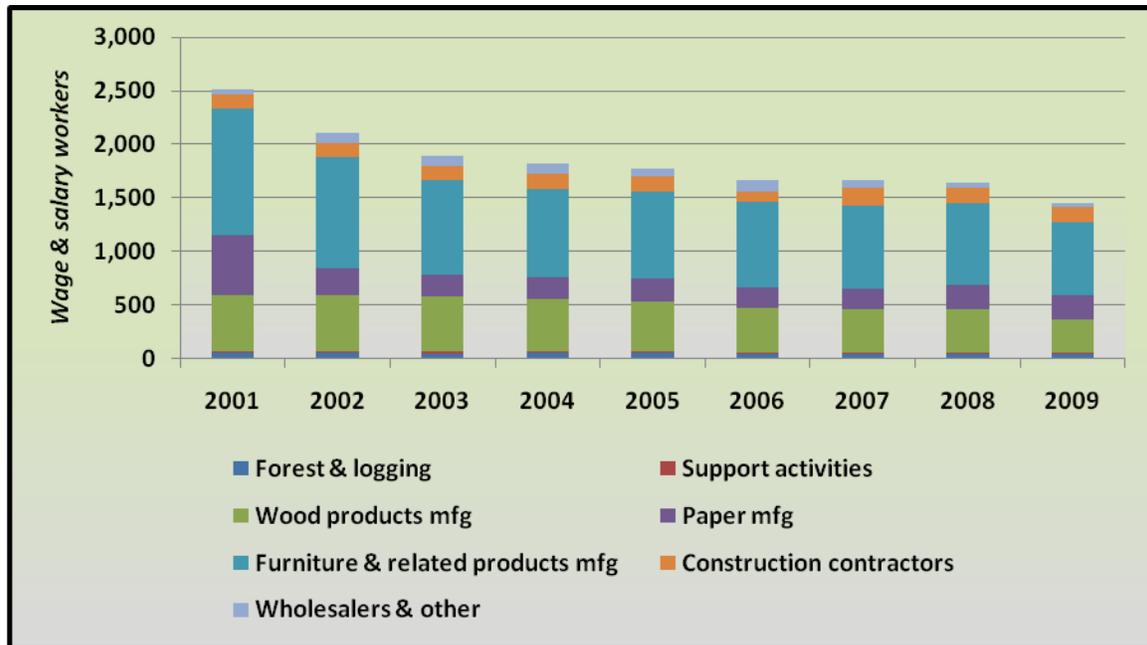
7. Furniture and furnishing wholesalers and lumber and construction supply wholesalers (NAICS 4232 and 4233).

Like construction contractors, these wholesaling groups have indirect ties to the core industries of the forest and wood products cluster. In similar fashion to the construction contractors, this segment exhibits cyclical tendencies. For instance, these wholesalers expanded to 100 workers during the cyclical peak of 2006, only to decline to 38 workers at the economic nadir of 2009.

Forest products industry has been a major part of the Northeast Kingdom's economic base since statehood. In 2009, these industries—from forestry and logging to wood products and paper manufacturing and furniture-making and construction contractors and wholesalers—employed an estimated 1,450 workers in the Northeast Kingdom (Figure 22). An additional 1,350 workers,

classified as either non-employers or self-employed, are engaged in all forest and wood products activities. A third of these non-employers and self-employed workers are working within the industry segments of forestry and logging and support activities for forestry; and nearly three-fifths are in the construction industry. Combined, the 2009 total private employment in the Northeast Kingdom forest and wood products cluster is estimated at 2,800 workers.

Figure 35. Forest & wood products employment in the Northeast Kingdom, 2001-2009



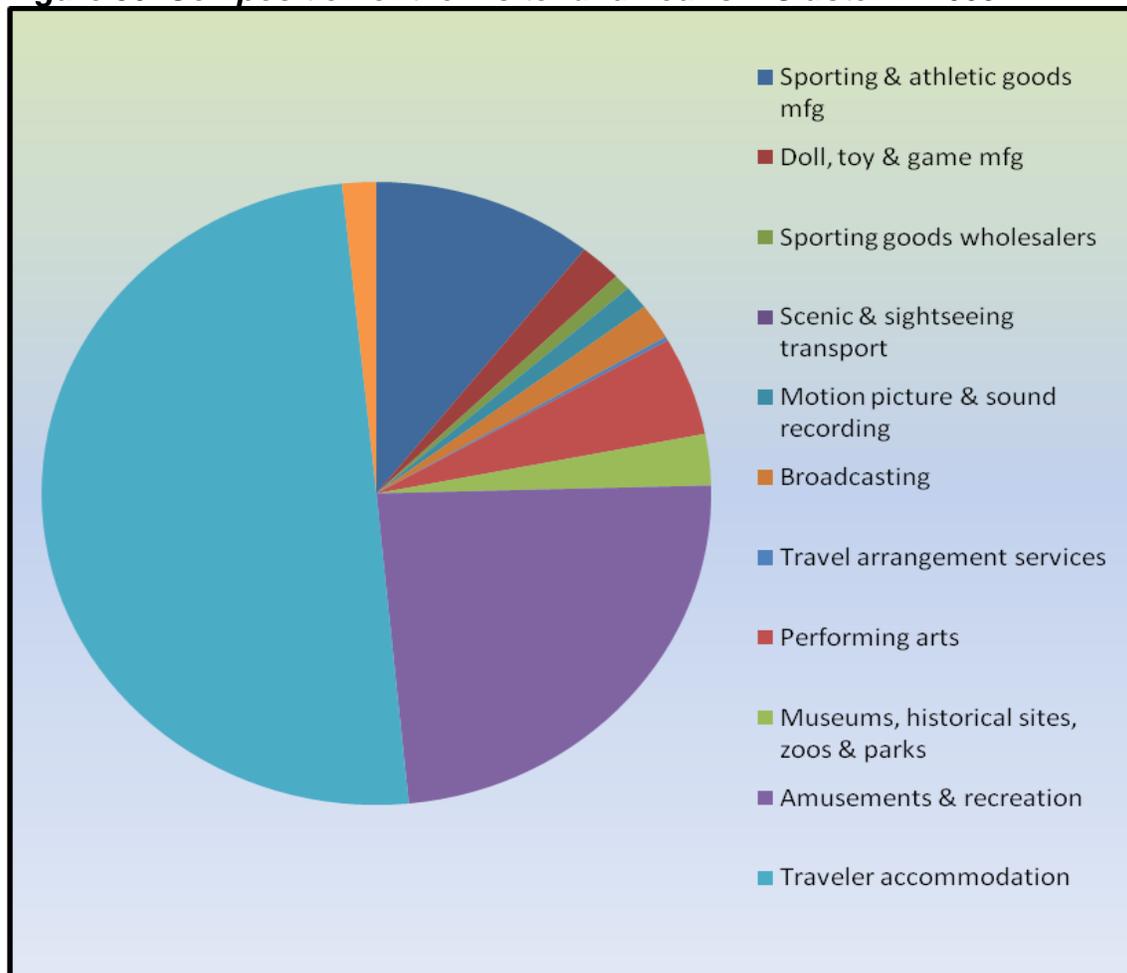
Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Visitor and Tourism Industry Cluster in the Northeast Kingdom

The composition of the visitor and tourism industry cluster includes: arts, entertainment and recreation (NAICS 71); traveler accommodations (NAICS 721); and mix of other related industry segments, including sporting & athletic goods manufacturing (NAICS 33992); toy, doll, and game manufacturing (NAICS 33992); sporting goods wholesalers (NAICS 42391); scenic & sightseeing transportation (NAICS 487); travel arrangement & reservation services (NAICS 5615); and motion picture and sound recording industries (NAICS 512); and broadcasting (NAICS 515). Although strongly linked to the hospitality sector (including both accommodations and eating & drinking establishments), the core of this cluster includes only traveler accommodations. Although not specifically analyzed, arts & creativity activity are mostly “under the radar” but have a growing role in regional economy.

Figure 36. Composition of the Visitor and Tourism Cluster in 2009



Source: Vermont Department of Labor

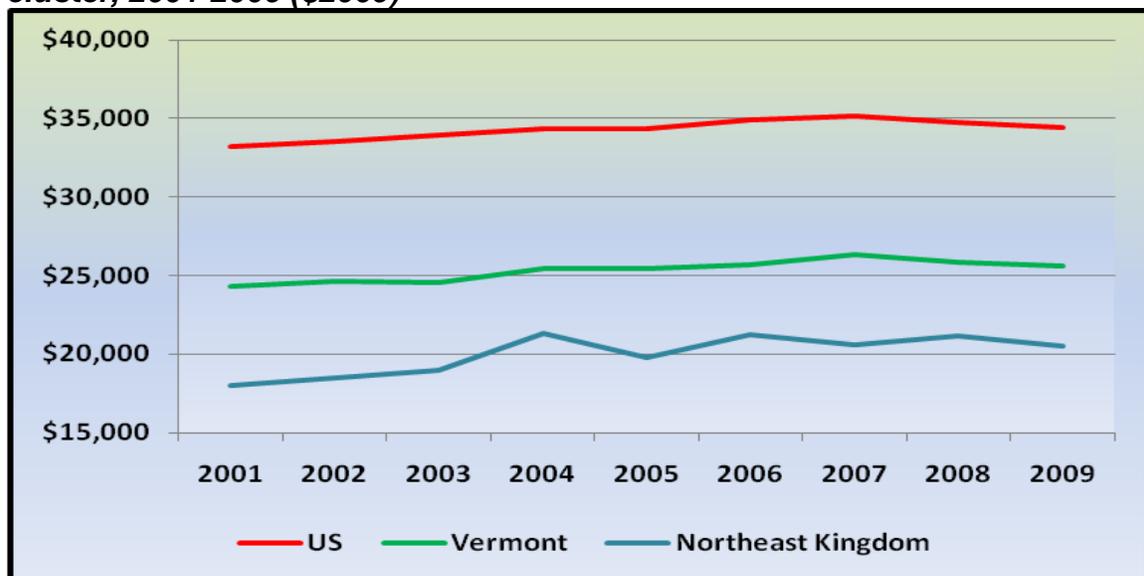
Prepared by Economic & Policy Resources, Inc.

Growing tourism/visitor-related four-season industry. So-called “shoulder seasons” are tapered with increased infrastructure to accommodate and extend the traditional tourism/visitor seasons to year-round industry.

Measure of specialization: Employment ratio is 1.29, implying that orientation of tourism/visitor cluster is outside of region.

Employment and wages: Estimated 2009 employment in the tourism/visitor industry cluster is over 1,100 workers (including non-employers and self-employed) with estimated wages & salaries of \$22.9 million. Whereas cluster employment represents about 5 percent of the total employment in the Northeast Kingdom, labor income from this cluster is only a 3 percent share. Average wages in this group are around \$20,400 per worker—low compared with statewide and national averages in the industry. Part-time and seasonal workers still remain significant components of this industry.

Figure 37. Average annual wages per worker in the visitor and tourism cluster, 2001-2009 (\$2009)



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

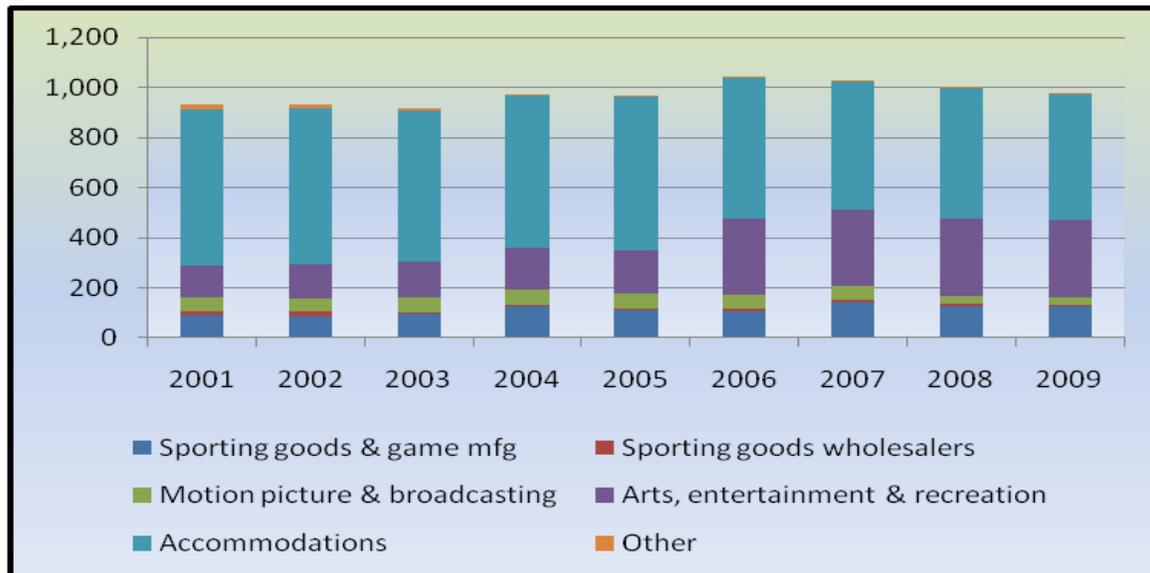
Strong links with other industries within the region. Enhanced retirement community within the last twenty years within the Northeast Kingdom as well as second-home ownership and proximity to Canadian market.

Growth and change in the Northeast Kingdom tourism/visitor cluster

Although there has been the inevitable ebb and flow over the course of the business cycle, the tourism/visitor cluster has expanded in activity between 2001

and 2009. Mix of that activity has changed rather dramatically during time frame—from dominant orientation of traveler accommodations (nearly two-thirds of employment) to increased shares of amusements and recreation; performing arts; and sporting/athletic goods.

Figure 38. Changing Composition of the Visitor and Tourism Cluster, 2001-2009



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Significant investment growth within the tourism/visitor cluster in recent years, with particular focus at Jay Peak and Burke Mountain—both traditional ski season offerings and year-round activities. Jay Peak with its hotel and condo/townhouse development, golf course and waterpark; Burke Mountain with its condo/townhouse development (and possible hotel) and mountain biking activity.

Growth segments of the NEK visitor/tourism cluster are in sporting goods & game manufacturing and arts, entertainment and recreation. Related, Northeast Kingdom visitor/tourism industry has a significant (and growing) asset base. Many of these assets are within a context of unspoiled natural beauty and high degree of scenic amenities of the Northeast Kingdom. Feature example: mountain biking activity in the greater Burke area has exploded over the last two years.

Challenges and Opportunities in the Northeast Kingdom tourism/visitor cluster

Planning and accommodating for growth. Landscape of growth and change within the visitor/tourism cluster across the Northeast Kingdom is immensely varied. Focal growth areas are in Jay Peak and Burke Mountain, already notable

destination ski resorts, both areas are enhancing their winter season activities and incorporating recreational activities to extend into other seasons. Jay Peak is providing facilities and amenities to become a year-round destination resort. Burke Mountain is becoming a destination mountain biking area. Accommodation offerings are expanding at both areas—condo/townhouse development and hotels.

Uncovering and enhancing the creative enterprises within the Northeast Kingdom. An emerging group of activities building upon prior foundations of metal and wood products manufacturing and developing new digital arts, media and craft industries. Initial mapping indicate a diverse set of creative enterprises in the Northeast Kingdom (count: 2001—73 establishments; 2009—64 establishments from QCEW data; numerous individuals who are self-employed or secondary employment or “off-the-books” employed).

Lack of communication and coordination among cluster participants. A general lack of coordinated destination marketing is evident for the numerous small businesses within the visitor/tourism cluster. Example: An area-wide on-line reservation system for lodging and recreation in the Northeast Kingdom.

Workforce development. Lack of a qualified trained workforce for both entry and manager positions is an oft-mentioned theme with industry participants. Lyndon State College travel and recreation curriculum is helping; but directing non-college bound students into the career center remains a challenge. The lowest level of the worker supply pyramid is particularly challenging due to poor education and training and work habits. Growth of industry rests on extending the seasonality of the workforce.

Business financing. A challenge for a number of small enterprises, especially for second-stage growth opportunities.

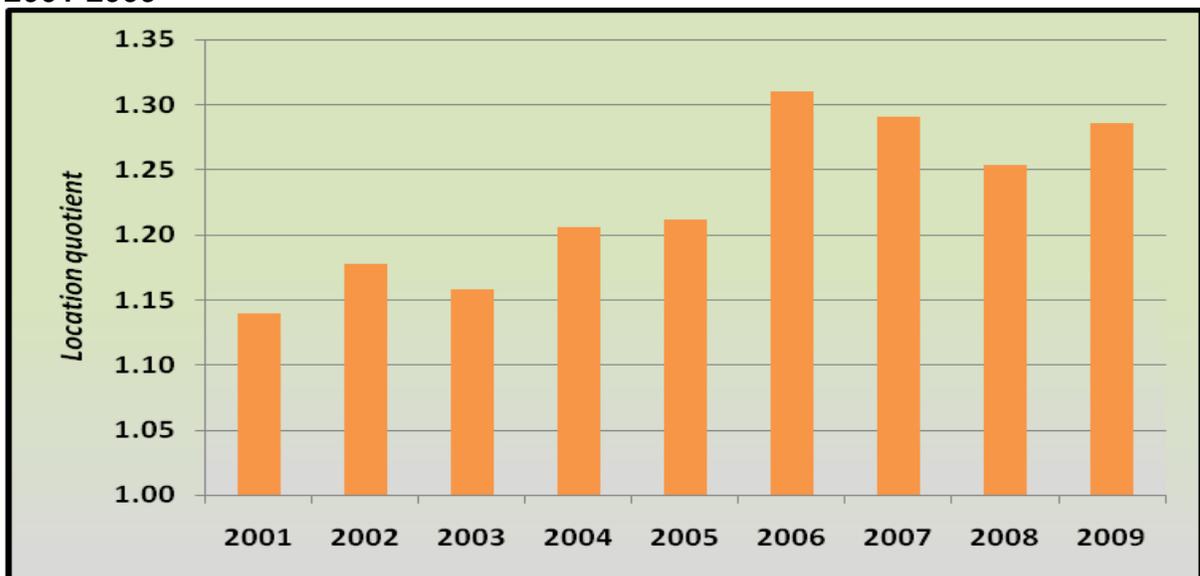
Recognition of links with other important industries—education (Burke Mountain Academy); farm-to-plate “local food” value added agriculture.

Appropriate government concern, oversight and assistance. Lack of state support for local tourism related organization and marketing. Need for greater partnership between local select boards and industry anchors. Government needs to be aware of unintended consequences of initiatives and regulations. State of Vermont’s high property tax is a concern for marketing of high-end second home developments at Jay Peak and Burke Mountain.

Cultivating the Canadian market. A huge market of over 5+ million people resides within two hours of the Northeast Kingdom—across the US-Canada border and predominantly French-speaking Quebecois.

Marketing the “world-class” scenic amenities of the Northeast Kingdom [e.g., National Geographic Society named the Northeast Kingdom as the most desirable place to visit in the US (and ninth most in the world) back in 2006; NEK is one of the top places listed in the best-selling travel guide *1,000 Places to See Before You Die*). Branding and packaging of the Northeast Kingdom’s scenic assets is needed to build upon the recognition from these independent and noteworthy travel guides.

Figure 39. Measure of Specialization of the visitor and tourism cluster, 2001-2009



Source: Vermont Department of Labor

Prepared by Economic & Policy Resources, Inc.

Recommended Policies and Action - General

The economic analysis and the 15 interviews held in the Spring of 2011 with managers/principals of businesses in the three industry clusters: Fabricated metals and machinery manufacturing, Agribusiness and food processing, and Visitor and tourism resulted in recommendations for action and new policies for the Northeastern Vermont Development Association (NVDA), State of Vermont and the cities and towns that include businesses within their borders.

Communication, Coordination, and Regional Marketing Support—Role of NVDA

In general, the NVDA received positive marks from businesses that have experienced recent contact, joint effort on a project or direct service. There were comments expressing frustration that the State had “forgotten” the manufacturing sector and to an extent that reflects negatively on the NVDA in their “eyes and ears” role. Also, there was frustration in all three sectors with the lack of awareness and support from local government. The region’s municipalities are the member base of the NVDA so this concern, broadly expressed by key businesses, again demonstrates an opportunity for improvement in communication and coordination by the NVDA. Municipal government in rural Vermont has not traditionally been viewed as having an obligation to provide services specifically for a local business. NVDA can play a role of convener and if needed mediator to solve problems.

Workforce/Entrepreneurial Development

Frustration and concern with finding suitable employees from among the population of the Northeast Kingdom was expressed by all fifteen business leaders interviewed. For some it was recruiting executives and specialized and technical employees such as engineers. For others it was finding production workers and “front of the house” employees. For all it seemed there is a problem with the basic skills and attitude toward work of younger workers entering the workforce and the lowest skilled, lowest paid (“bottom of the pyramid”) workers. This seemed to be true even in businesses that stressed a positive workplace atmosphere, offered an opportunity for advancement and provided benefits. A common theme of interview comments is that the high schools and post high school training programs in the area over the years have not worked. However as an exception, Lyndon State College’s Management training programs were cited as effective. Another common theme was the aging of the workforce. Over and over, business executives praised the ability and loyalty of their long term employees or the value of newly hired older workers. The vaunted reputation of Vermont’s workforce was earned by these workers and their predecessors all over the State. In the opinion of these 15 employers, the recruitment of new younger employees to enable expansion of their businesses and replacement of departing senior employees through attrition is a worrying issue. Most

businesses are doing the best they can with in house training and dealing with turnover but all expressed willingness to consider new ideas, collaborate with their peers and dedicate resources to solve the problem.

Another training issue arising from the economic analysis rather than the interviews, is education in business skills for entrepreneurs. In the Northeast Kingdom, one in three workers is a proprietor. Statewide, it is one in four and it is one in five nationally. For two of the three sectors studied in depth for this project, value added agriculture and travel and tourism, small entrepreneurial businesses are in the vast majority. The Small Business Development Center housed at NVDA and Lyndon State College need continued support from state and federal government and need to reach out to their constituents and design their offerings to meet the needs of people in and considering a business.

Cluster Support and Development

Although the issues of cell phone and high speed internet service and health insurance reform are already prominent, timely and receiving a lot of attention, this study would be incomplete without mentioning them. All businesses interviewed, with the exception of those in the Interstate 91 corridor, stated that cell phone and high speed internet were problems for the business and its employees. All were hopeful that current efforts underway would finally bring these services to all rural Northeast Kingdom locations. Concern about health insurance reform was also very common. The smaller businesses were looking for an affordable way for their employees to obtain the coverage that they as employers could not afford to provide. The larger manufacturing companies were concerned that the coverage they have in place for employees will be replaced by something mandated that will be more costly and of lower quality.

Cluster-Specific Recommended Policies and Action

Fabricated metals and machinery manufacturing cluster

The most critical need of this sector is for an effective training program that will produce workers with the math skills, dexterity and commitment to the work experience in manufacturing. All the companies taking part in the interviews were very bullish on their future business activity, potential for expansion and need for more qualified employees. Unfortunately, they all have limited confidence in the ability of state, non-profit agency or college programs they have seen to help them find workers to enable their growth. They all have coped individually thus far with in-house training as well as occasionally “poaching” employees from their peers.

Under the leadership of NVDA and Lyndon State College, businesses in this sector, the region’s high schools and appropriate non-profits should convene and

design a process that would produce a “pipeline” of recruits with the basic technical and workplace skills needed and ready for specialized training provided by the individual companies. The process could begin with workplace tours and presentations for high school freshmen by the businesses and their employees. A similar process could be designed for post high school young people who are ready for a career or a career change. Although this idea may seem like déjà vu for veterans in this struggle, clearly with the workforce aging, business growth in the offing and not much past success, it is worth a dedicated effort and a fresh start.

The opinion that manufacturing is the “forgotten sector” in the Northeast Kingdom was heard several times in the interviews. In one case, the reported fallout from lack of contact from state agencies for purposes other than regulation and collection of taxes was consideration of an overture from New Hampshire to try and solve expansion issues. With all interviewed companies planning increased production and hiring workers to meet demand and some including capital expansion in their planning, it is essential that NVDA undertake a collaborative effort with Northern Community Investment Corporation (NCIC) and the Vermont Agency of Commerce and Community Development to conduct working visits the region’s manufacturers. After the tour and follow up meetings, there should be a system established for sharing information and progress where a need for action or assistance has been determined.

As the Vermont blueprint for health insurance reform is prepared over the coming months and years, the NVDA should make sure the region’s manufacturers are informed of opportunities to participate in the deliberations of the Green Mountain Care Board who will be designing the reform system and to keep the CEOs abreast of any decisions made by the board regarding the status of self-insured coverage and private insurance plans for larger companies. The interviews revealed that the CEOs in the region are largely not well informed and hence, very concerned on their cost of doing business in the state.

Agribusiness and food processing cluster

The report prepared by Erica Campbell and others at the Center for an Agricultural Economy (Hardwick, Vermont) for the NVDA under a grant from the U.S. Department of Labor concurrent with this Key Industries Analysis contains a number of worthwhile recommendations for action. This section of this report will focus on recommendations for action by the NVDA specifically and reflect comments and discussion with leaders of the five businesses from the sector who were interviewed for the Key Industries Analysis. It is not intended to duplicate the CAE report, rather to complement it.

The need for qualified employees in the field of value added agriculture is not much different from the other sectors. Although the aging of an experienced

workforce is not such an issue in this sector, the interviewed CEOs expressed frustration with the work readiness and commitment of younger production workers and difficulty recruiting management, technical and sales employees to the rural Northeast Kingdom. Again a joint effort by NVDA, Lyndon State College and area high schools working with the businesses in this sector may be able to design a program to help supply young people who want careers in value added agriculture. With most of the companies young and growing, the opportunity for rapid advancement in a career or eventually becoming a food entrepreneur is greater than in other industries.

The emergence of value added agriculture and the “sustainable local food industry” has been sudden and very different from what Vermont agriculture has looked like in the past. The entrepreneurs interviewed expressed some frustration that state regulations and services are often “out of sync” with the needs of the businesses in this emerging sector. One prominent business owner said he would like the state to understand his business and then get out of the way. The NVDA, with its focus through this study and the Center for an Agricultural Economy study, referred to previously, has made great strides to document the importance of this sector, its problems and its opportunities. Now the task will be to work with the Center and its members to carry the lessons learned and recommendations made to the state and make sure the businesses in the sector are understood by State government and its actions are “in sync” with the industry.

A more significant and challenging problem seems to come from the governments of the rural towns where some of the most dynamic businesses in this sector reside. Again, the emergence of thriving businesses in towns that have seen little such activity in decades, if ever, has perhaps come as a surprise to the select boards and planning commissions serving those towns. Lines of communication with the new young entrepreneurs have not been easily established. Opinions were expressed in the interviews that the employment and tax revenues provided by the businesses is not appreciated and that services such as road maintenance and snow removal have not been adequate. This is an opportunity for NVDA to work with its member municipalities and the businesses of this sector (and all businesses) to open up cordial and productive communication. If the trend of new businesses in the value added agriculture sector to locate food processing, packaging and shipping “on the farm” continues, the need for understanding and support from local government will continue to be important.

As with any emerging business sector, financing for capital improvements and for working capital is essential. The entrepreneurs interviewed have been successful in raising capital for their physical plant and machinery. Some have raised working capital successfully from investors. Others expressed frustration with their inability to find a bank that would establish a line of credit. In addition, as the sector grows, there will be a need for facilities to serve multiple

businesses in the region. Two such facilities are a distribution center for food industry products and produce and a slaughterhouse to serve the growing meat businesses. The NVDA can work with the region's entrepreneurs to determine the feasibility and timing, find or create business entities to establish these new businesses and then if feasible, work with private capital sources, banks, NCIC, USDA, VEDA and other funding providers to make it happen.

Visitors and tourism cluster

If it is going to do more than maintain its current level of economic activity and employment, the travel and tourism sector will need to become better organized, more technologically savvy and more of a destination for the entire northeastern North America. Jay Peak Resort will lead the way in terms of investment in facilities, regional advertising and employment and will prosper whether or not the rest of the travel and tourism sector does anything different in the next few years. However, the large number of summer and shoulder season visitors Jay Peak and to a lesser extent the Kingdom Trails mountain bike center will bring to the region, especially from Canada, will present an opportunity for the rest of the sector. Perhaps that opportunity will be the impetus for investing in a regional destination marketing system that will package lodging, dining and recreation for visitors planning to come to the Northeast Kingdom. The director of the Northeast Kingdom Travel and Tourism Association (NEKTTA) shared a brief assessment of the problems and opportunities of the sector and the outline of a plan to establish a destination development and marketing organization. It would greatly expand on what the NEKTTA is currently charged to do: destination marketing. It would develop the system of packaging the whole travel and tourism experience. It would work with educational institutions and chambers of commerce to train travel and tourism entrepreneurs to use the system. It would lead the secondary and post secondary schools and job training organizations to develop specific hospitality workforce training. The principle challenge facing such a new initiative is funding. The NVDA should take the lead although the chambers of commerce could still be the principal sponsor. It will take multiple funding sources and high profile leadership to make it work.

The state Department of Tourism and Marketing will need to take a major role. At present there is no money from the state funding the NEKTTA. If the NVDA and the NEKTTA can develop a business plan for a new destination development and marketing organization, bring in the chambers of commerce, the major travel and recreation businesses, the educational institutions and a critical mass of smaller entrepreneurs with partial funding and a promise to participate, perhaps the Department and the Agency of Commerce could put the project in next year's budget.

Whether or not formation of a destination development and marketing entity is successful, the business leaders interviewed expressed a need for specific

hospitality workforce training. A critical problem for the sector is need for workers in many positions who are required to interact with guests and visitors. Because the pay is modest, the local people who are available for these jobs often lack experience and self confidence in communication and may also lack basic workplace skills and an understanding of the career opportunities available in the sector. NVDA should lead an effort to bring together travel and tourism businesses and educational institutions to design an effective program.

NVDA should encourage Lyndon State College to continue their recreation management program which was praised in several of the interviews and to participate in planning efforts to enhance the sector through the development and marketing entity.

One of the region's travel and tourism success stories is the Kingdom Trails mountain biking center and its partnership with Burke Mountain and other contiguous landowners. In 2010 it had 50,000 mountain biking visitors and with its annual growth continuing, 2011 should bring nearly 10,000 more. The village of East Burke where the center is located does not have enough room to accommodate the traffic and parking brought on by this successful activity without disrupting life for residents and making the experience less than ideal for the visitors. NVDA should initiate a planning effort with the town and Kingdom Trails to develop a short and long term solution.

Both Kingdom Trails and Burke Mountain ski area expressed the need for more lodging in the immediate area. NVDA should undertake or encourage a feasibility study to see if there is a market for a hotel or lodge that could serve what is becoming a four season recreation attraction.

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