

**The Economic Impact
of
the VY Station**

**Prepared for the
IBEW Local 300
South Burlington, Vermont**

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Executive Summary

This study estimated the impact of the Entergy Nuclear Vermont Yankee, LLC Power Station (the “VY Station”) on the economy of Windham County and the state of Vermont in 2009. The study was conducted at the request of the IBEW Local 300 and was conducted independently of Entergy Nuclear Vermont Yankee.

In 2009 there were about 670 employees, including contract employees, at the VY Station with a payroll of about approximately \$68 million. The economic impact that year from this employment and payroll was very large.

- The total number of jobs created in Windham County in 2009 due to the presence of the VY Station equaled 1,064. Elsewhere in Vermont an additional 224 jobs existed in 2009 to the existence of the VY Station. Therefore, the total number of jobs created in the state of Vermont by the VY Station equals 1,288.
- The total payroll created at all Windham County employers by the presence of the VY Station equals \$84.2 million in 2009. Payrolls at employers in the rest of Vermont were \$9.1 million higher than otherwise due to the presence of the VY Station. In total, the VY Station led to a payroll increase throughout Vermont that totaled approximately \$93.3 million in 2009.
- In 2009 the disposable income of Windham County residents was \$64.5 million higher due to the presence of the VY Station than it would be otherwise. Elsewhere in the state, disposable income was \$14.0 million higher due to the VY Station. In total, disposable income of all Vermont residents was \$78.5 million higher in 2009 than otherwise due to the presence of the VY Station.
- It is clear that the operation of the VY Station in Vernon had a large and positive economic impact on Vermont in 2009, creating 1,288 jobs, a payroll of \$93.3 million, and raising disposable incomes by \$78.5 million.
- Throughout the difficult period of the current recession, when jobs were declining throughout the state, the VY Station has held its employment steady. And the employment the VY Station created through the multiplier process also remained steady. Not only is the VY Station a large employer in the state with significant impacts that spill over to other firms, it is also a very stable employer, a characteristic that this recession shows is extremely valuable to the state’s economy.

- The VY Station and the economic activity which it generated throughout the state paid \$7.67 million in General Fund taxes in 2009, out of the total of \$1,102 million received by the State.
- The VY Station and the economic activity which it generated throughout the state paid \$4.94 million in Education Fund taxes in 2009, out of the total of \$1,320.6 million received by the State. The \$4.94 million in revenues received from the VY Station were enough to cover the entire cost of educating 352 Vermont students in 2009.
- Finally, the VY Station has sold electricity to Vermont distribution firms at prices below what they would have had to pay otherwise. From 2002 to 2009 these savings have exceeded \$300 million. We estimate that for every \$10 million in savings from lower electricity costs to Vermont households, there were 64 more jobs created throughout Vermont with a payroll of \$2.4 million in 2009.

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I. Introduction

Entergy Nuclear Vermont Yankee, LLC operates a nuclear powered electrical energy generation plant in Vernon, Vermont. The IBEW Local 300 asked Northern Economic Consulting, Inc. to estimate the economic impact of the operation of this power station (the “VY Station”) on the Vermont and Windham County economies. This report presents the findings from that analysis.

We first present a basic description of the operations of the VY Station in section II. In section III we present our estimate of the economic impact of the VY Station on the state and Windham County in 2009. It is necessary to have an understanding of the state’s and county’s economy to order to grasp the importance of this economic impact to the local residents. In sections IV and V we discuss the importance of the VY Station’s employment and payroll to Vermont and Windham County residents.

The VY Station and the economic activity it created generated considerable tax revenues for the General Fund and Education Fund of the State of Vermont. In section VI we present estimates of the revenues generated for these funds by the VY Station in FY09.

Lastly, the pricing of electricity produced by the VY Station has been below market rates for Vermont’s electric utilities and, hence, their customers. The economic impact of this favorable pricing is discussed in section VII.

This analysis gives a comprehensive overview of the impact of the VY Station on the economy of Vermont as a whole and Windham County in particular.

II. The VY Station in 2009

Entergy Nuclear Vermont Yankee, LLC operates nuclear powered electrical energy generation plant in Vernon, Vermont along the Connecticut River. The plant, referred to in this report as the VY Station, began operations in November 1972 and has a license to operate until March 2012. Entergy purchased the plant from its Vermont owners in 2002. Prior to 2002, VY was owned by Vermont Yankee Nuclear Power Corporation (VYNPC), a single asset entity owned in turn by eight New England utilities (of which Vermont utilities owned 55%).

The business of the VY Station is to produce and sell electrical power to wholesale customers. The VY Station is Vermont's single largest energy supply source. In 2003, the VY Station supplied almost 35% of Vermont's energy requirements and almost 28% of its peak load.

The VY Station is a nominal 540 MW capacity Boiling Water Reactor. The plant has a maximum dependable capacity of 605 MW. Through 2003, VY generated an annual average of over 3.4 billion kWh, achieving a cumulative output approaching 80% of its maximum potential. In 2003, a year without a refueling outage, it operated at a capacity factor of 99.5%. In 2001 and 2002 (years with refueling outages) it operated at an average capacity factor of 91%.

The VY Station's operations are located entirely in Windham County in southern Vermont. The VY power station is in the town of Vernon and there is a small training center in Brattleboro. In addition, Entergy VY contracts out for some maintenance and food services with local firms which, from an economic perspective, adds to its total employment. Lastly, the nuclear power plant routinely shuts down for refueling bringing in a large number of outside employees who are specialized in this process.

The total economic impact of the VY Station on Vermont and Windham County depends several factors: the employment and wages paid at the VY Station and to its contractors, the spending of its contractors during outages, and the price savings which Vermont residents and businesses enjoy. This report will mainly focus on the single most important factor — the employment and wages paid at the VY Station and to its contractors. The impact of the spending of contractors during outages, while very important to local innkeepers and restaurateurs, has a very minor impact compared to the impact of the wages and employment at the VY Station and, therefore, is not addressed in this report.

Finally, the VY Station has sold electricity to Vermont distribution firms (Green Mountain Power, Central Vermont Public Service, and the Vermont Electric Cooperative) at prices below that which they would have had to pay otherwise. From 2002 to 2009 these savings have exceeded \$300 million according to the Vermont Energy Partnership. In the recession year of 2009 the savings were lower as the price of wholesale electricity declined. From an ongoing evaluation of the economic benefits of the VY Station, future energy prices from the plant and on

the market are hard to determine. Including any benefits from favorable prices in 2009 would make it difficult to determine the benefits from the employment and wages of the VY Station alone, which is the major source of the economic benefit of the plant. Therefore, no price savings were used in the central analysis of this report. The economic impact of the favorable pricing is addressed at the conclusion of this report.

The total employment and wages of the VY Station in 2009 was the sum the following two activities:

- **The VY Station Employment** - In 2009 the VY Station had 642 employees working at the power station and training center combined. In that year VY Station employees were paid approximately \$67 million in wages and bonuses. This implies an average wage and bonus earnings of VY Station employees of just under \$104,000 in 2009. Total earnings can vary year to year based on the performance of the plant (number and length of outages, etc.) and the use of contractors versus in-house labor. Earnings information since 2004 show that 2009 was a fairly “normal” year for earnings.

(Note: readers of past economic analyses of the VY Station will notice that the plant has changed its usage of contractors, accounting for significant changes in earnings reported for VY Station employees versus its contractors. Care should be taken with comparisons from other reports on the VY Station to account for these changes, although total employment and earnings (plant plus contractors) has been reasonably steady.)

- **Contracted Employment** - By the end of 2009 the VY Station was operating with 25 to 30 contractors on site for food services and ordinary construction purposes. Special conditions can cause this to rise substantially for brief periods of time, but this is expected to be the norm for the foreseeable future.

In total, the VY Station had 667 to 672 employees in 2009. For purposes of this report, we will use 669 employees.

The economic importance of the VY Station on the state’s and Windham County’s economy is readily apparent from the employment and wages paid directly at the plant. However, in 2009 the full economic impact of VY Station was magnified through the economic multiplier process, the subject of the next section of this report.

III. The Total Economic Impact of the VY Station

Based on the information in section II we estimated the total impact of the VY Station on Vermont's and Windham County's economy. The impact of the VY Station on the state and county economy is much greater than that due solely to its own payroll and that of its on-site contractors. That is because much of the nearly \$68 million in payroll is spent at other businesses, thereby creating additional jobs and additional payroll at other firms throughout the state. This is known as the multiplier process in economics.

By use of the REDYN model, a dynamic input-output model, we estimate the following impact of the VY Station on the state and county economy.¹

Total Economic Impact of the VY Station in 2009			
	Jobs Created	Increased Wages (in millions of 2009 \$)	Increased Disposable Income (in millions of 2009 \$)
Windham County	1,064	\$84.2	\$64.5
Rest of Vermont	224	\$9.1	\$14.0
Total Vermont	1,288	\$93.3	\$78.5

The Job Impact

- The total number of jobs created in Windham County in 2009 due to the presence of the VY Station equaled 1,064. The employment at VY Station was 669. Thus, through the multiplier process, an additional 395 jobs were created in Windham County in 2009 due to the presence of the VT Station in Vernon.

These jobs include 55 in construction, 53 in retail trade, 42 in accommodations and food services, 43 in health care and social assistance, and 42 in professional services with the remainder in other sectors of the economy.

¹ The model is described in the Appendix to this report.

- Elsewhere in Vermont an additional 224 jobs existed in 2009 to the existence of the VY Station. These jobs included 36 in retail trade, 29 in health care and social assistance, 24 in accommodations and food services, 22 in construction, and 22 in professional services with the remainder in other sectors of the economy.
- Therefore, the total number of jobs created in the state of Vermont by the VY Station's 669 jobs equaled 1,288. This implies an employment multiplier of 1.93. This relatively large multiplier is due to the high wages at the power station itself which generates the large multiple impact. (Note: 173 additional jobs were created in Cheshire County, New Hampshire and Franklin County, Massachusetts, but are not counted in this figure.)

The Payroll Impact

- The total payroll created by the presence of the VY Station at all Windham County employers equaled \$84.2 million in 2009. The payroll at the VY Station (including contractors) was approximately \$68 million. Therefore, an additional payroll of about \$16.2 million was created in Windham County outside of the VY Station through the multiplier process.
- Payrolls at employers in the rest of Vermont were \$9.1 million higher than otherwise due to the presence of the VY Station.
- In total, the VY Station led to a payroll increase at all firms throughout Vermont that totaled approximately \$93.3 million in 2009.

The Disposable Income Impact

The VY Station is located on the Connecticut River in Vernon, Vermont. Most employees of the plant live near by, which includes towns in New Hampshire and Massachusetts as well as Vermont. In 2009 just over 40% of the employees at the VY Station lived in Vermont. Therefore, not all of the payroll of the VY Station translates into income gains of Vermont residents. This can be demonstrated by examining the impact of the VY Station on the disposable income (essentially after-tax) of Vermont residents.

- In 2009 the disposable income of Windham County residents was \$64.5 million higher due to the presence of the VY Station than it would have been otherwise.
- Elsewhere in the state, disposable income was \$14.0 million higher due to the VY Station.

- Finally, disposable income of all Vermont residents was \$78.5 million higher than otherwise due to the presence of the VY Station.
- The disposable income of residents of Cheshire County, NH and Franklin County, MA was \$18.3 million higher due to the presence of the VY Station.

The Total Impact

It is clear that the operation of the VY Station in Vernon had a large and positive economic impact throughout Vermont in 2009, creating 1,288 jobs, a payroll of \$93.3 million, and raising disposable incomes by \$78.5 million. The importance of these jobs and earnings to the state and Windham county is the subject of the next two sections of this report.

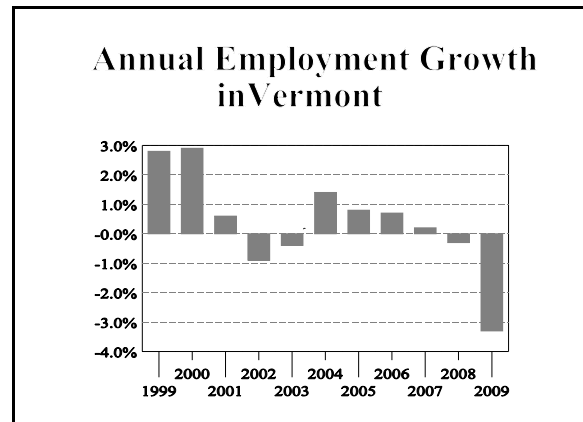
IV. The Importance of the VY Station to the Vermont Economy

In order to fully understand the importance of the VY Station to the Vermont economy, it is necessary to review the recent history of the economy's performance. In this section we briefly present and examine the state's employment and income growth over the last ten years. We then review the near term economic forecast for the state

A. Recent Economic Activity in Vermont and the VY Station

1. Employment and Unemployment

The Vermont Department of Labor publishes an annual count of the number of payroll jobs at Vermont businesses. This includes about 80% of the state's employment, excluding the self-employed. The graph to the right shows the annual job growth in Vermont from 1999 through 2009.²



During this ten year period the state's economy experienced two recessions. The recession in the early part of this decade was relatively brief and not as severe as preceding economic downturns. However, the current recession has been a very severe recession and is not yet over. Many economists believe it will prove to be the harshest recession in Vermont since the Great Depression.

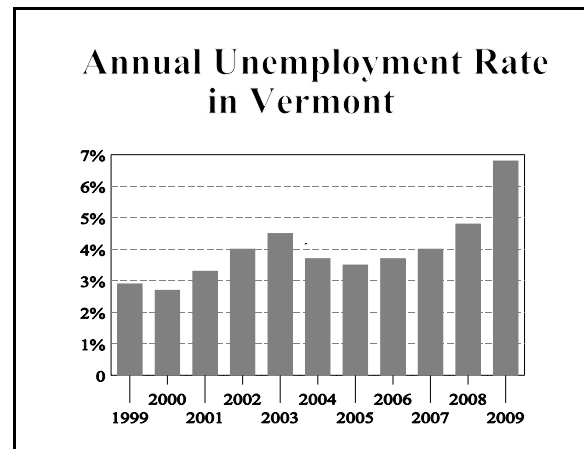
Employment in the Vermont began falling in mid 2008, then fell rapidly through 2009. As of the close of 2009, employment in Vermont has fallen by approximately 11,000 jobs, a decline of 3.6%. In 2009 this was punctuated by workforce reductions at Ethan Allen Furniture (110), Plasan Carbon Composites (92), Lydall, Inc. (190), IBM (between 250 to 500). Ten of the state's 97 automobile dealerships closed as did several major retailers (Circuit City and Linens n' Things).

² The employment totals for 2009 are estimates based on QCEW job counts for the first two quarters of the year and monthly CES job estimates for the state from July through December.

Throughout this period, the VY Station held its employment steady, near the current number of 669 employees plus contractors. The 619 additional jobs created throughout the state (for a total of 1,288 jobs) through the multiplier process also remained generally constant. In good economic times, the VY Station is a major employer in the state. In these difficult economic times, the importance of the VY Station to the Vermont economy is even greater. The steady nature of its employment over the business cycle is a clear benefit to Vermonters.

The *Vermont Business Magazine* lists the VY Station as the 31st largest employer in the state in 2009, with 500 employees in 2009/2010. Using the correct number (669), the VY Station is actually the 21st largest employer in Vermont.

The Vermont Department of Labor publishes an annual estimate of the unemployment rate for Vermont. This is the most frequently used measure of economic hardship in the regional labor market. The graph to the right shows the annual unemployment rate in the state from 1999 to 2009.



Unemployment increased during the recession in the early part of this decade, then declined to just 3.5% in 2005. It remained fairly steady until the current recession. For all of 2009 Vermont’s unemployment rate is currently estimated to be 6.9%.³ In the last two years, the number of unemployed Vermonters has increased from 14,000 to 24,900.

Again it is important to note that throughout this difficult period, the VY Station held its employment, and the employment it creates through the multiplier process, steady. Even as the demand for electrical energy declined nationwide during the recession, the low cost of electricity produced by the VT Station allowed it to sell all it produced and to continue to operate without any reduction in employment.

2. Wages and Income

Another important measure of economic activity is wages and incomes. The Vermont Department of Labor publishes an annual average wage per job for the state. In 1999 the

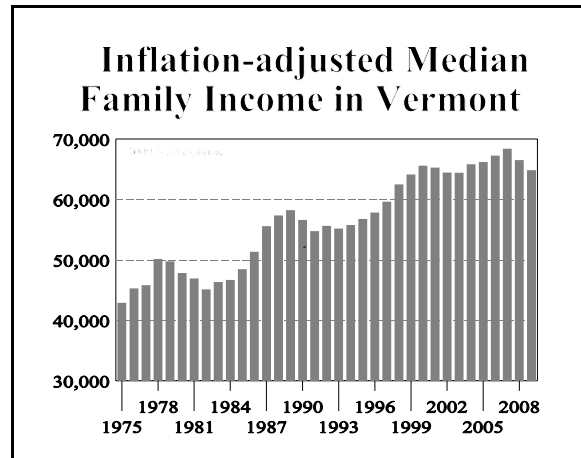
³ Revised employment and unemployment estimates for Vermont will be released by the Vermont Department of Labor in late February 2010

average was \$27,589. By 2009 we estimate this will equal \$38,134, an increase of 38% in ten years.⁴ For comparison purposes, from 1999 to 2009 the Consumer Price Index increased 28%.

The average wage at the VY Station in 2009 was \$104,000 (see section II of this report). This high wage is a reflection of the job skills needed to operate a nuclear power plant. The jobs at Vermont Yankee are the very type of high-paying jobs that Vermont policymakers so frequently call for.

In 2009, total wages at the VY Station equaled about \$68 million. In Section III, we estimated that through the multiplier process the total wages created by the VY Station in Vermont equaled \$93.3 million. This is \$8 out of every \$1,000 in wages paid by all employers in the State of Vermont in 2009.

It is also illustrative to look at the resulting incomes of Vermont residents. Income data can best be obtained from the Vermont Department of Taxes, based on data from the state’s personal income tax. We present the inflation-adjusted income for the median family in Vermont from 1975 through 2009 in the accompanying graph.



Inflation-adjusted median family income has grown from about \$40,000 in 1975 to \$65,000 in 2009. Growth occurs during good economic times but turns negative in recessions. The current recession is no different. Inflation-adjusted median family income fell 2.7% in 2008. We estimate it fell another 2.5% in 2009.

The importance of the VY Station to the income of Vermont families is evident in two ways. First, the average wage of a VY Station worker is higher than the median family income in Vermont. The jobs at the VY Station are very good-paying jobs. Second, because of the steady demand for the electricity produced by the VY Station, the earnings of workers at the VY Station have increased, even in the recession years helping Vermont households maintain their standard of living in these difficult economic times.

⁴ The 2009 average wage is estimated from the VDOL reports for the first two quarters of 2009.

B. The Economic Outlook for Vermont and the VY Station

The New England Economic Partnership (NEEP) prepares biannual forecasts of the economic outlook for the New England state economies. The following forecast of NEEP was released last November.

In brief, NEEP expects the Vermont economy to have bottomed out in the fourth quarter of 2009. However, the recovery afterwards will be slow. The state's labor market will not begin growing again until the middle of 2010. By then the state's employers will have cut approximately 18,000 jobs. NEEP expects job growth will turn positive in 2011, posting a 1.1% gain that year and 2.7% in 2012. By the end of 2012 the state's job total will still be below the pre-recession peak set in 2007. Unemployment in Vermont is expected to continue to rise through the middle of 2010, hitting a peak of 8.1%.

NEEP forecasts that inflation-adjusted per capita personal income in Vermont will fall 3.4% in 2010 and 1.8% in 2011 before growing slightly in 2012.

In sum, the state's economy is just now starting to begin a long, slow recovery from the recession. Employment growth will not resume until later in 2010 and unemployment will rise. Given the continued demand for the relatively low-priced electricity produced by the VY Station into the foreseeable future, the number of jobs at the VY Station will remain steady and the annual earnings of its workers will grow. The VY Station will continue to be a very important part of the state's economy through 2011 and, if relicensed, for many years in the future.

V. The Importance of the VY Station to Windham County

In this section we briefly present and examine Windham County's employment and income growth over the last ten years. In addition, we review the major demographic changes affecting the local economy in this period.

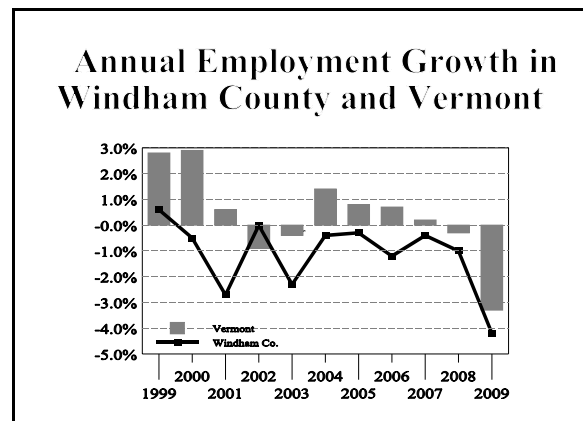
It is clear that economic activity in Windham County has significantly lagged that of the rest of Vermont in recent years. In addition, even as Vermont is a slow growing state from a demographic perspective, Windham County is even a slower growing area. This suggests that any major, negative economic impacts will be felt more acutely in Windham County than elsewhere in Vermont.

A. Recent Economic Activity in Windham County and the VY Station

1. Employment and Unemployment

The graph to the right shows the annual job growth in Windham County (the line) versus that of the State of Vermont (the bars) from 1999 through 2009.⁵ Job growth in Windham County has lagged that of the state in nine of the last ten years. Only in 1999 did Windham County post a job gain. Windham County has lost jobs every year since 1999.

From 1999 to 2009 employment in the state grew by 5.3%, a gain of 15,236 jobs. During that ten year period jobs decreased in Windham County by 1,636, a 6.8% decline. Then, when the recession hit in 2008 and 2009, Windham County employers continued to shed jobs, and at a faster rate than employers across the state. We estimate employment fell by another 1,200 jobs in Windham County during the last two years to stand at 21,400 for 2009.

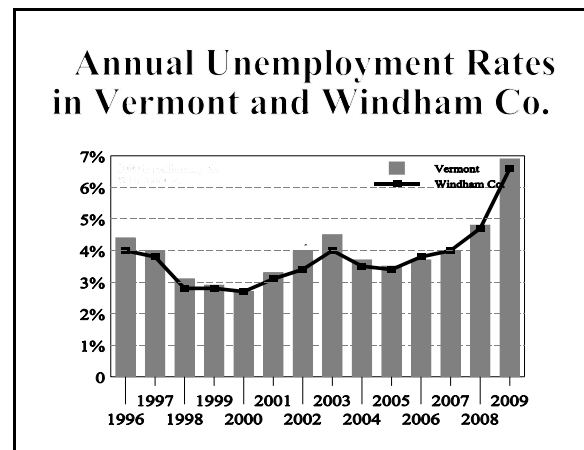


⁵ The employment totals for 2009 are estimates based on actual job counts for the first two quarters of the year and monthly job changes for the state from July through December.

As presented in sections II and III of this report, the VY Station had 669 employees in 2009. This is 3.1% of the total payroll employment in the county. And as presented in section III, through the multiplier process, the VY Station created a total of 1,064 jobs in the county, fully 5.0% of the county’s jobs. Put another way, one out of every twenty jobs in Windham County exists due to the presence of the VY Station.

The *Vermont Business Magazine* lists the VY Station as the second largest employer in Windham County in 2009, with 500 employees. C&S Wholesalers is the largest with 1,200. The third largest is Brattleboro Memorial Hospital with 480 employees. Using the correct number (669), the VY Station is still the second largest employer in Windham County.

The unemployment rate for the state and Windham County from 1999 through 2009 is presented in the accompanying graph. Based on the low job growth in Windham County, it is initially somewhat surprising that Windham County’s unemployment rate has remained below or equal to the state’s rate during the period under review. In the review of the county’s demographic’s below, we will see this is not an indicator of economic vitality in the county, but rather a reflection of the population decline in the county.



2. Wages and Income

The Vermont Department of Labor publishes an annual average wage per job for the state and Windham County. This is shown below.

Average Wage per Job			
	1999	2008	Change
All Vermont	\$27,589	\$38,134	38%
Windham County	\$26,782	\$36,033	35%

In 2009, we estimate the average wage per job in Vermont was \$38,134, up 38% from 1999.⁶ In Windham County the average wage increased slightly less, 35%, to \$36,033. The average wage

⁶ We estimate the 2009 wage based on wage changes in the first two quarters.

paid at the VY Station (\$104,000) shows the critical importance of the wages paid at the VY Station to the earnings of households in Windham County).

In addition, the total wages paid by the VY Station in 2009 equaled \$68 million. This is 8.4% of the total wages paid in the county. Further, through the multiplier process, we estimated in section II that the VY Station led to the payment of \$84.2 in wages in Windham County. That's 10.4% of the total or one out of every ten dollars in wages paid in Windham County.

The above figures are wages from jobs in Windham County. Because many county residents work outside the county, it is also illustrative to look at the resulting incomes of county residents.⁷ This can be obtained from the Vermont Department of Taxes, based on data from the state's personal income tax. We examine the income for the median family in Vermont and Windham County, which is available only for 2000 to 2008.

Median Family Income			
	2000	2008	Change
All Vermont	\$46,113	\$58,069	26%
Windham County	\$42,045	\$51,425	22%

In 2008, the median family income in Vermont was \$58,069, up 26% since 2000. In Windham County, the median family income was \$51,425, up 22% since 2000. This income is \$6,644 less than the statewide median. The Windham median family income was the 4th lowest of the fourteen counties in Vermont, only above the three Northeast Kingdom counties.

In summation, the VY Station is the second largest employer in Windham County, accounting for one out of every twenty jobs in the county. It is ultimately the source of \$1 out of every \$10 dollars paid by employers in the county. Given the lack of job growth in the county and the stability of the employment and earnings at the VY Station, it is hard to understate the importance of the VY Station to the residents of Windham County.

⁷ According to the 2000 U.S. Census, about 4,000 of the 23,000 working Windham County residents worked outside the county. Over 1,000 crossed the river into New Hampshire's Cheshire County.

B. Demographic Changes in Vermont and Windham County

Population data for the state and Windham County is published by the U.S. Bureau of the Census. The last population count was the decennial census in 2000. Population estimates for the years after 2000 have been published through 2008 for the counties. Therefore, we review demographic estimates for the years 2000 to 2008.

1. Total Population

From July 1, 2000 to July 1, 2008, the total resident population of Vermont increased from 609,909 to 621,049. This was a gain of 11,146 or just 1.8% over the eight-year period. Vermont is one of the slowest growing states in the nation and during this period the annual growth rate steadily declined to just barely 0.1% or less per year.

During the same period, the population of Windham County declined from 44,157 to 43,176. The decline equaled 981 or a negative 2.2% in the eight years from 2000 to 2008. Windham County was one of only four counties in Vermont to lose population over the period. (The other three were Bennington, Rutland, and Windsor Counties.)

2. Working-Age Population

For purposes of this report, we define the working-age population to include residents aged 25 to 64 years old. During the period 2000 to 2008, the Census Bureau estimates that the working-age population of Vermont increased from 327,736 to 344,012, a gain of 5%. All of this occurred from a 24% gain (36,866 people) in the number of older workers aged 45 to 64 — the Baby Boom generation. The number of younger workers — aged 25 to 44 — actually declined 12% (20,590 people) during this period.

The same general trend can be seen in Windham County from 2000 to 2008, where the working-age population increased from 24,445 to 24,731, a gain of just 1.2%. As with the state, the gain in the county was only from increased numbers of older workers aged 45 to 64, which grew 20%. The number of younger workers aged 25 to 44 declined 17% in Windham County from 12,364 to 10,277.

3. Over 65 Population

Finally, the number of Vermonters aged 65 and older increased from 77,746 to 86,649, a gain of 12% from 2000 to 2008. In Windham County, the number increased from 6,176 to 6,265, a gain of just 3%. This population age cohort will grow rapidly in the coming years with the aging of the Baby Boom generation.

Vermont is one of the oldest states in the nation, measured by the median age of its population. In 2008 the median age was 42.3 years, up from 38.7 years in 2000. In 2008 Vermont was the second oldest state in the nation. In Windham County, the median age is significantly higher — up from 40.1 years old in 2000 to 44.0 years old in 2008.

4. Demographic Summary

Windham County is losing population and will continue to do so for the foreseeable future. The remaining population is aging and aging faster than the state as a whole. While the working-age population is still increasing, that will soon slow and then begin declining (by 2012 is the forecast) as the Baby Boomers retire.

From an economic perspective, a declining population generally means a declining demand from the regional market for goods and services. A declining labor force means that it will be increasingly difficult for employers, particularly for those serving the broader U.S. or global market, to find the labor needed to operate efficiently in Windham County.

A large part of the lack of economic dynamism in Windham County can be explained by its demographics. This will present a significant challenge to growing the economy of the county for the foreseeable future. As a consequence, it is crucial to Windham County to hold its existing employers, particularly those like the VY Station, that have a stable demand for their products and pay high wages to their employees.

VI. The Impact of the VY Station on State Government

In 2009, the VY Station itself, the employees of the VY Station, and the employees elsewhere in the state created by the multiplier process all paid taxes into Vermont’s General Fund and Education Fund. These taxes were a substantial part of the total revenues of the state. In this section we present an estimate of the major tax revenues which the state received because of the presence of the VY Station in Vermont.

A. Impact on General Fund Revenues

In section III we estimated that the presence of the VY Station in Vermont led to the creation of payrolls in the state totaling \$93.3 million. In 2009 we estimate that the General Fund of Vermont received \$3.00 million in personal income tax payments from these earnings.

In a similar manner the State treasury received \$0.82 million from the retail sales and use tax, \$0.44 million from the meals and rooms tax, and \$0.61 million from all other General Fund taxes.

In addition, there is a special Electrical Energy Tax paid into the General Fund which is levied on the VY Station which totaled \$2.8 million in 2009.

In total, VY Station and the economic activity which it generated throughout the state paid \$7.67 million in General Fund taxes in 2009, out of the total of \$1,102 million received by the State.

General Fund Revenues Received Because of the VY Station in 2009	
<u>Tax source</u>	<u>Revenue</u>
Individual income	\$3.00
Retail sales & use	\$0.82
Meals & rooms	\$0.44
Electrical generation	\$2.80
All other GF taxes	\$0.61
	====
Total =	\$7.67 million

B. Impact on Education Fund Revenues

In 2009 we estimate that the Education Fund of Vermont received \$4.94 million because of the presence of the VY Station in Vermont.

The VY Station directly paid \$2.00 million to the State Education Fund in 2009. An additional \$0.65 million and \$0.13 million was received in the Education Fund from the sales and use tax and the purchase and use tax from economic activity attributable to the VY Station. Lastly, the Education Fund received a \$292 million transfer from the General Fund, of which we estimate \$2.16 million was paid from economic activity created by the VY Station.

Education Fund Revenues Received Because of the VY Station in 2009	
<u>Tax source</u>	<u>Revenue</u>
VY Station	\$2.00
Retail sales & use	\$0.65
Purchase & use	\$0.13
Portion of General Fund Transfer	\$2.16
	=====
Total =	\$4.94 million

In total, VY Station and the economic activity which it generated throughout Vermont paid \$4.94 million in Education Fund taxes in 2009, out of the total of \$1,320.6 million received by the State.

In FY09, the Education Fund spent \$1,321.8 million on 95,676 students. That is a cost of \$14,046 per student. The \$4.94 million in revenues received from the VY Station were enough to cover the entire cost of educating 352 Vermont students in 2009.

VII. The Impact on Consumers of Favorable Electricity Prices

The VY Station has sold electricity to Vermont distribution firms (Green Mountain Power, Central Vermont Public Service, and the Vermont Electric Cooperative) at prices below what they would have had to pay otherwise. From 2002 to 2009 these savings have exceeded \$300 million according to the Vermont Energy Partnership. In the recession year of 2009, the savings were reduced as the price of wholesale electricity declined, however, not below the price the VY Station sold power to the Vermont utilities.

In this section we present an analysis of the impact of favorable electricity prices on Vermont households. We do not attempt to predict the precise impact. We do note that the savings to all Vermont electricity purchasers has averaged over \$40 million per year since 2002. To put this number in context, we estimate the number of jobs and the payroll created throughout the state from a \$10 million savings in electricity costs to Vermont households.⁸ This analysis was performed with the REDYN model.

- We estimate that for every \$10 million in savings to Vermont households in lower electricity costs, there were 71 more jobs created throughout Vermont with a payroll of \$2.7 million in 2009.

Residential sales of electricity in Vermont has averaged 37% of total electricity sales. With annual savings of \$40 million from 2002 to 2009, this implies Vermont households enjoyed annual savings of nearly \$15 million. Using the estimate bulleted above, this implies there were 106 jobs with a payroll of \$4.1 million in Vermont during this period due to the electricity prices savings to Vermont households.

This job and wage impact was not included in the analysis of this report prior to this section. The reader can conclude the impact of the VY Station in 2009 was larger than that discussed elsewhere in this report by some portion/multiple of the job and wage gains shown above.

⁸ No estimate was prepared for the impact from the electricity savings cost to Vermont businesses.

VIII. Appendix - Methodology of this Analysis

The economic, demographic and fiscal impact of the future operation and eventual decommissioning of the VY Station is measured by use of a dynamic, input-output model developed by Regional Dynamics Inc. (“The ReDyn Model”). This model allows the estimation of economic, fiscal and demographic impacts from 2008 through 2056.

Regional Dynamics is an economic modeling company. ReDyn offers an advanced economic model by web subscription or batch services to consultants, agencies, firms, planners, and analysts (users). ReDyn runs on the Internet. The model estimates the multi-regional impacts and year-by-year (dynamic) nonlinear effects on industries, consumers, and governments from changes in company sales, jobs, wages, or investments; changes in taxes or personal or government spending; or public policy changes such as energy, environment, school, health, or security measures. The results are called simulation forecasts, or simulations.

The model is a fundamental re-envisioning of economic theory applied to estimating multi-regional, dynamic effects. It reflects advances in New Economic Geography, especially gravity theory (regional attraction) and trade flow (regional imports/exports), based on a new distance impedance database from Oak Ridge National Laboratories that enables calculating trade flow by commodity by road, rail, water, air, and proxy transport. The breakthrough in design is the commodity production linkage between the trade flow process and an entity-based data structure for the economy. Entities include industries, workers, governments, investors, etc., and commodities are the goods they use and make.

ReDyn is more flexible, complete, and accessible than any other modeling process available today.

For this report we developed a four region ReDyn model. The regions are: Windham County, the remaining counties of Vermont (called “Rest of Vermont”), Cheshire County in New Hampshire, and Franklin County in Massachusetts. The economic impacts on the latter two counties are not of concern to this report. However, they were included in this analysis in order to fully measure the impact of the VY Station and increase our confidence in the reasonableness of the ReDyn model’s estimates.