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**The
Economic Impact
of
the VY Station
on
Windham County and Vermont**

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July 12, 2012**

Executive Summary

This study estimated the impact of the Vermont Yankee Nuclear Power Station (or “VY Station”) on the economy of Windham County and the state of Vermont under three scenarios. The three scenarios are referred to as “2032 Prompt Decommissioning”, “2032 Deferred Decommissioning”, and “2013 SAFSTOR”. Details of these three scenarios are presented in reports prepared by TLG Services.

At the end of 2011 there were 623 employees at the VY Station with a payroll of about \$65.7 million. Under the 2032 Prompt Decommissioning and 2032 Deferred Decommissioning scenarios, the plant keeps operating until March 2032. Under the 2013 SAFSTOR scenario operations at the plant cease in 2013. The differing economic impacts from either of the two “2032” scenarios compared to the 2013 SAFSTOR scenario are very large, mostly because of the lack of operations from 2013 to 2032 with the 2013 SAFSTOR scenario.

Comparison of the 2032 Prompt Decommissioning scenario versus the 2013 SAFSTOR scenario

- Over the period 2013 through 2031, there would be an average of 1,085 more employees in Windham County with the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario. In the rest of Vermont there would be an average of 257 more employees with the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario.
- Over the period 2012 through 2031, all Windham County employers, including the VY Station, would have a payroll that totaled \$2,082 million (in constant 2011 dollars) more under the 2032 Prompt Decommissioning scenario than the 2013 SAFSTOR scenario. In that same period, employers elsewhere in Vermont would have a payroll that totaled \$296 million more with the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario.

- Over the period 2012 to 2093, Windham County residents would have a disposable income that totaled \$1,596 million more with the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario. Elsewhere in Vermont, residents would have a disposable income that totaled \$446 million more with the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario.
- During the period 2012 to 2031, Windham County would see a population of about 400 more residents under the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario.
- The State of Vermont would gain a total of \$226 million more in general tax revenues over the period 2012 through 2093 with the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario.
- Local governments in Vermont would see total property tax revenue \$64 million larger from 2012 through 2093 under the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario.

Comparison of the 2032 Deferred Decommissioning scenario versus the 2013 SAFSTOR scenario

- Over the period 2013 through 2031, there would be an average of 1,085 more employees in Windham County with the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario. In the rest of Vermont there would be an average of 257 more employees with the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario.
- Over the period 2012 through 2093, all Windham County employers, including the VY Station, would have a payroll that totaled \$2,091 million (in constant 2011 dollars) more under the 2032 Deferred Decommissioning scenario than the 2013 SAFSTOR scenario. In that same period, employers elsewhere in Vermont would have a payroll that totaled \$277 million more with the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario.
- Over the period 2012 to 2093, Windham County residents would have a disposable income that totaled \$1,514 million more with the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario. Elsewhere in Vermont residents would have a disposable income that totaled \$427 million more with the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario.

- During the period 2012 to 2031, Windham County would see a population of about 400 more residents under the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario.
- The State of Vermont would gain a total of \$231 million more in general tax revenues over the period 2012 through 2093 with the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario.
- Local governments in Vermont would see total property tax revenue \$62 million larger from 2012 through 2093 under the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario.

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I. Introduction

In April of 2012 Entergy Nuclear Vermont Yankee, LLC (“Entergy VY”) asked Northern Economic Consulting, Inc. to estimate the economic impact of the operation and eventual decommissioning of its power station in Vermont (“VY Station”) under three scenarios. I will refer to the three scenarios as “2032 Prompt Decommissioning”, “2032 Deferred Decommissioning”, and “2013 SAFSTOR”. Details of these three scenarios are presented in reports prepared by TLG Services.¹

We provide an analysis of the economic impact from these scenarios in the following six sections of this report. In section II we review the current condition of the Windham County and state of Vermont economy. It is necessary to have an understanding of the local economy to grasp the magnitude of the economic impacts from the VY Station. In section III we briefly discuss the importance today (in 2011) of the VY Station’s employment and payroll to the local and state economy. An understanding of the impact today of VY Station makes it easier to understand the implications of decommissioning the plant at any future date.

In section IV we present our estimate of the impact of the VY Station on economic activity in the county and state with the 2032 Prompt Decommissioning scenario. We do the same in section V and VI with the 2032 Deferred Decommissioning and 2013 SAFSTOR scenarios, respectively. In each case we measure the impact against the economy continuing to operate in the future as it is today. This makes it easier to understand the timing of the impacts from any of the scenarios.

Then in section VII we present the economic impact of the VY Station under the 2032 Prompt Decommissioning versus 2013 SAFSTOR scenarios by comparing employment, payroll, disposable income, population and tax revenues in the county and state. In the following section VIII we present the economic impact of the VY Station under the 2032 Deferred Decommissioning versus 2013 SAFSTOR scenarios. A knowledgeable reader could skip directly to sections VII and VIII.

The reader of this report should keep in mind that these are estimates of the likely future economic impact of the VY Station. We use the best estimation techniques available along with the current estimates of the future costs of the three scenarios to obtain our estimates. However, they remain estimates and should be interpreted with appropriate care.

¹ See “Decommissioning Cost Analysis for the Vermont Yankee Nuclear Power Station” of February 2012 and “Post Shutdown Decommissioning Activities Report Pursuant to Docket No. 6045 Sale Order” of June 2012, both prepared by TLG Services, Inc. Specific references to the materials used from these reports is given later in this report.

II. The Vermont and Windham County Economies

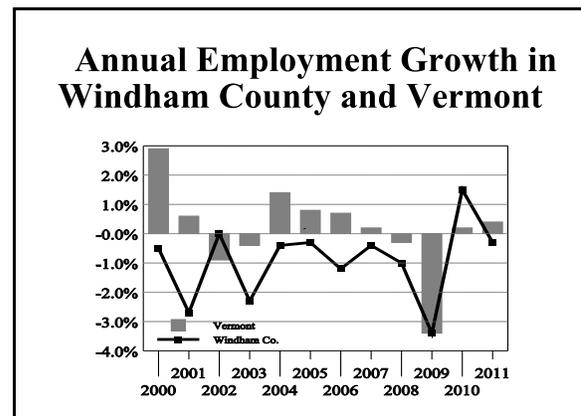
In order to fully understand the economic impact of the VY Station on the state and local economy, it is necessary to review the recent history of the economy's performance. In this section we briefly present and examine the state's and Windham County's employment and income growth since 2000. In addition, we review the major demographic changes affecting the state and local economy in this period. Lastly we present a basic sketch of the Windham County economy.

It is clear that economic activity in Windham County has significantly lagged that of the rest of Vermont. 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 could be felt more acutely in Windham County than elsewhere in Vermont.

A. Measures of Economic Activity in Vermont and Windham County

1. Employment and Unemployment

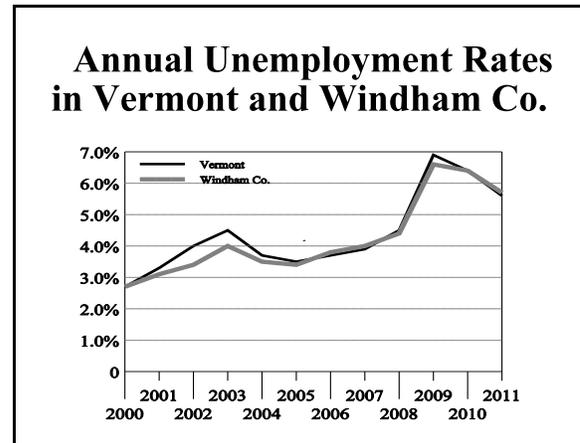
The Vermont Department of Labor (VDOL) publishes an annual count of the number of payroll jobs at Vermont businesses. This includes about 80% of the state's employment, excluding the self-employed. The graph to the right shows the annual job growth from 2000 through 2011.² Job growth in Windham County has lagged that of the state as a whole in nine of the last eleven years. In only one of those years did Windham County post a positive job gain.



From 2000 to 2010, employers in the state of Vermont cut 3,400 jobs, a cumulative loss of 1.1%. However, in Windham County alone the number of jobs declined by 2,200, a cumulative decline of -9.0%. While total wages paid at all employers in the state grew by 35%, in Windham County total wages only grew 22%.

² The estimate for 2011 is based on the change from the 3rd quarter of 2010 to the 3rd quarter of 2011.

VDOL also publishes an annual estimate of the unemployment rate for the state and Windham County. 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 Windham County from 2000 to 2011. Based on the low job growth, it is initially somewhat surprising that Windham County’s unemployment rate has remained below or equal to the state’s rate during most of the period under review. However, it appears that this has been the case only because Windham County’s residents have been able to find employment in neighboring Cheshire County, New Hampshire and Franklin County, New York.



2. Wages and Income

The third measure of economic activity we examine is wages and/or incomes. The VDOL publishes an annual average wage per job for the state and Windham County. This is shown below.

Average Wage per Job			
	2000	2010	Change
All Vermont	\$28,925	\$39,425	36%
Windham County	\$27,851	\$37,335	34%

In 2010, the average wage per job in Vermont was \$39,425, up 36% from 2000. In Windham County the average wage increased slightly less, 34%, to \$37,335.

The above figure is the average wage from all 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.³ 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 for 2000 to 2010.

³ 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.

Median Family Income			
	2000	2010	Change
All Vermont	\$46,113	\$57,665	25%
Windham County	\$42,045	\$49,744	18%

In 2010, the median family income in Vermont was \$57,665, up 25% since 2000. In Windham County, the median family income was \$49,744 in 2010, up only 18% in the decade. It was about \$8,000 (14%) less than the statewide median. The median family income in Windsor County was the fourth lowest of the fourteen counties in Vermont, only above the three Northeast Kingdom counties.

Finally, the U.S. Bureau of Economic Analysis prepares annual estimates of personal income for states and counties. Per capita personal income in Vermont was \$40,134 in 2010. In Windham County it was \$39,475, only 2% less than the statewide average. This is accounted for by the relatively higher amount of dividends and interest earnings plus transfer payments received by Windham County residents (suggesting a large number of retiree residents).

B. A Closer Look at the Windham County Economy

In this section we briefly describe the Windham County economy and present measures of the importance of the VY Station to that economy. The Bureau of Economic Analysis (BEA) publishes estimates of employment (full and part time combined, including the self-employed) for counties. We show the BEA nonfarm employment totals below (only 1% of Windham County employees work on farms).⁴

⁴ All data are from the BEA except that for utilities, which is not publicly available. The utility figures are our estimates based on information from Entergy VY and estimates for the small power producer and four owners of transmission lines in the county.

Employment and Compensation by Industry - Windham County 2010					
Industry	Employment	Percent	Compensation in 000s	Percent	Compensation per employee
All	33,011	100%	\$1,093,699	100%	\$33,131
<i>Utilities</i>	<i>500-999</i>	<i>~2%</i>	<i>~\$65,000</i>	<i>~5%</i>	<i>~\$100,000</i>
Construction	2,558	8%	\$68,295	6%	\$26,699
Manufacturing	2,103	6%	\$121,492	11%	\$57,771
Wholesale trade	1,281	4%	\$63,605	6%	\$49,653
Retail trade	3,265	10%	\$78,679	7%	\$24,098
Real estate and rental and leasing	1,312	4%	\$11,440	1%	\$8,720
Private educational services	2,748	8%	\$82,546	8%	\$30,039
Health care & social assistance	3,883	12%	\$139,062	13%	\$35,813
Arts, entertainment, and recreation	1,044	3%	\$5,206	0%	\$4,987
Accommodation and food services	3,441	10%	\$75,709	7%	\$22,002
Other services, except public administration	1,944	6%	\$31,390	3%	\$16,147
Government - federal	494	1%	\$28,195	3%	\$57,075
Government - state	322	1%	\$18,520	2%	\$57,516
Government - local	2,494	8%	\$113,329	10%	\$45,441

Based on employment, the Windham County employment is well balanced, without any heavy concentration in any one sector. There are eight industries with at least five percent of the county's employment. Compensation is not nearly as balanced, with an obvious reliance on manufacturing, health care, and local government for earnings and benefits.

According to 2000 U.S. Census data, Windham County employers drew 75% of their employees from Windham County itself.⁵ Another 13% made the trip across the river from neighboring Cheshire County in New Hampshire. A small percentage come from the other three counties that

⁵ This information was not collected in the 2010 Census.

border Windham County: Bennington and Windsor Counties of Vermont and Franklin County of Massachusetts.⁶

County of Residence of Employees of Windham County Businesses		
County of residence	Number	Percent
Windham County, VT	18,833	74.9%
Cheshire County, NH	3,196	12.7%
Windsor County, VT	759	3.0%
Franklin County, MA	668	2.7%
Bennington County, VT	521	2.1%
Other	1,154	4.6%
Total	25,131	100.0%

Finally, as demonstrated in the chart below, 82% of Windham County residents work in Windham County itself. Only 5% make the trip across the river to businesses in neighboring Cheshire County.

County of Work of Windham County Residents		
County of residence	Number	Percent
Windham County, VT	18,833	82.3%
Cheshire County, NH	1,078	4.7%
Windsor County, VT	740	3.2%
Franklin County, MA	485	2.1%
Bennington County, VT	475	2.1%
Other	1,284	5.6%
Total	22,895	100.0%

⁶ Data on commuting patterns comes from the 2000 US Census and is based on a sample of all those surveyed. Data on employment is from the Bureau of Economic Analysis which comes from state reports. Therefore, the number of commuters in the Census data does not equal the number of workers in the BEA data.

C. 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. We review the demographic changes in Windham County for the years 2000 to 2010 below.

1. Total Population

From July 1, 2000 to July 1, 2010, the total resident population of Vermont increased from 609,618 to 625,960. This was a gain of 16,342 people or just 2.7% over the ten-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 increased from 44,112 to 44,510. The increase equaled 436 or 1.0% in the ten years from 2000 to 2010. Windham County's population growth was less than half of that of the state as a whole and had basically stagnated after 2006.

2. Working-Age Population

For purposes of this report, we define the working-age population to include residents aged 20 to 64 years old. During the period 2000 to 2010, the Census Bureau estimates that the working-age population of Vermont increased from 365,493 to 384,578, a gain of 5%. All of this occurred from a gain 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 during this period.

The same trend occurred in Windham County, where the working-age population increased from 26,463 to 27,275, a gain of 3.2%. As with the state, the gain in the county was only from increased numbers of older workers aged 45 to 64. The number of younger workers aged 25 to 44 declined in Windham County.

3. Over 65 Population

Finally, the number of Vermonters aged 65 and older increased from 77,945 to 91,238, a gain of 17% from 2000 to 2010. In Windham County, the number increased from 6,199 to 7,214, a gain of 16%. 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 2010 the median age was 41.5 years, up from 37.8 years in 2000. In 2010 Vermont was the second oldest state in the nation. In Windham County, the median age is significantly higher — 44.9 years in 2010.

4. Demographic Summary

Vermont is a slow growing state in terms of population, with very little growth expected for the coming years. The population is aging. 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. Windham County population growth has essentially ended for the foreseeable future. Its workforce will soon begin to decline as well.

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.

III. Importance of the VY Station Today

This analysis will measure the impact of the VY Station's operation on the Windham County and Vermont economies in the future, while the plant operates and is eventually decommissioned. The impact is significant. We briefly show why that is the case by presenting the VY Station's direct and indirect impact on the economy today (in 2011). This sets the stage for understanding the future impacts of the VY Station.

A. The VY Station's Employment and Total Wages Today

The VY Station's operations are located entirely in Windham County in southern Vermont. Entergy VY operates its nuclear power station in Vernon and a small training center in Brattleboro. In addition, Entergy VY contracts out for a limited amount of construction work on the site which, from an economic perspective, adds to its total employment. Lastly, the nuclear power plant routinely shuts down for refueling. This occurs about every 18 months and brings in a large number of outside employees who are specialized in this process. The total employment and wages of the VY Station are the sums of the company's employment and wages, the on-site contracted employment and wages, and the periodic outage employment and wages. Because the potential impact from the outages is relatively small compared to the impact from the other employment, we exclude it from this analysis.⁷ The number and size of the payroll for the other two activities follows.

- The VY Station Employment - In 2011 the VY Station had 623 employees working at the power station and training center combined. In that year Entergy VY paid \$65.7 million in wages and bonuses. The 2010 employees and payroll were nearly identical.
- Contracted Employment - In 2011 the contracted employment at the VY Station equaled just four people.

The importance of the VY Station in the county's economy is demonstrated by the fact this one firm directly accounts for about 2% of the employment and about 5% of the compensation earned in Windham County. The VY Station's compensation per employee is higher than that of any industry in Windham County. In addition, the Vermont Department of Labor reports that the VY Station is one of the top five employers in Windham County.

⁷ It should be noted, however, that the influx of outage workers for several weeks every 18 months does result in tangible short-term benefits for many local businesses, particularly in the restaurant and accommodations industries.

B. The VY Station's Impact on Windham County's Economy Today

Based on the above information we estimate the impact of the VY Station on Windham County's and Vermont's economy. We exclude the expenditure impact from the temporary employees associated with the refueling outages.

The impact of the VY Station on the county and state 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 \$65.7 million in payroll is spent locally and elsewhere in Vermont at other businesses, thereby creating additional jobs and additional payroll. This is known as the multiplier process in economics. By use of a dynamic input-output model (REDYN) we estimate the following impact of the VY Station on the state and county economy.⁸

Total Economic Impact of the VY Station in 2011			
	Jobs Created	Wages (millions of 2011 \$)	Disposable Income (in millions of 2011 \$)
Windham County	1,049	\$84.5	\$38.9
Rest of Vermont	244	\$10.6	\$15.5
Total Vermont	1,293	\$95.1	\$54.4

- The total number of jobs created in Windham County in 2011 due to the operation of the VY Station equals 1,049 (of which 623 are Entergy VY employees and 4 are VY contract employees). These jobs include 45 in retail trade, 75 in construction, 40 in accommodations and food services, 28 in health care and social assistance, and 59 in professional services among other jobs. Through the multiplier process, the VY Station accounted for nearly 5% of all the jobs in Windham County in 2011.

⁸ The REDYN model is described in the Appendix to this report.

- Elsewhere in Vermont an additional 244 jobs exist today due to the operation of VY Station in Windham County. These jobs include 35 in retail trade, 27 in construction, 24 in accommodations and food services, 28 in health care and social assistance, and 29 in professional services among other jobs.
- The total number of jobs created in the state of Vermont by the VY Station's 623 jobs (at the plant and through contractors) equals 1,293. This implies an employment multiplier of 2.07. This relatively large multiplier is due to the high wages at the power station itself which generates the large multiple impact. (Note: additional jobs are created across the New Hampshire and Massachusetts borders, but are not counted in this figure.)
- The total payroll at all Vermont employers due to the operation of the VY Station equals \$95.0 million (in 2011\$). The total payroll at all Windham County employers equals \$84.5 million. Payrolls at employers in the rest of Vermont equals an additional \$9.7 million due to the VY Station. Through the multiplier process, the VY Station accounted for nearly 11% of all the payrolls at employers in Windham County in 2011.
- Finally, disposable income of all Vermont residents is \$54.4 million higher than otherwise due to the operation of the VY Station. Disposable income of Windham County residents is \$38.9 million higher. Elsewhere in the state, disposable income is \$15.5 million higher due to the VY Station.⁹

In summation, the operation of the VY Station in Vernon has a large and positive economic impact on Windham County and the rest of Vermont in 2011.

⁹ In 2011 about 40% of the employees of the VY Station resided in Vermont with the remainder in New Hampshire (mostly Cheshire County) and Massachusetts (mostly Franklin County). Therefore, the payrolls from firms located in Vermont will be higher than the disposable income earned by households in Vermont because the former is by place of work and the latter by place of residence.

IV. Economic Activity with the 2032 Prompt Decommissioning Scenario

In this section, it is assumed that the VY Station continues operating as it is today through the year 2031.¹⁰ The plant then begins the decommissioning process. At the end of 2083 site restoration is complete and no activity or structures associated with the VY Station remain.

The economic activity during the operation of the VY Station through 2031 is estimated by assuming the current level of employment and wages (adjusted for real wage growth) at the VY Station continues into the future at the 2011 levels. That is, employment at the power station continues at 623 with a payroll of \$65.7 million (in 2011 dollars). Contract employment remains at just four employees. Then from 2032 through 2083 the economic activity is measured by use of the annual expenditures presented by TLG Services, Inc.¹¹

This scenario covers the period from 2012 through 2083, a period of 71 years. Because another scenario, the 2032 Deferred Decommissioning scenario, continues through 2093 we estimate the economic impact of the 2032 Prompt Decommissioning scenario also through 2093. The REDYN model allows estimation from 2012 to 2055. The activity at the VY Station during the period 2056 through 2083 is little changed from 2041 to 2055, so our estimate for that period is simply an extrapolation from the earlier period.

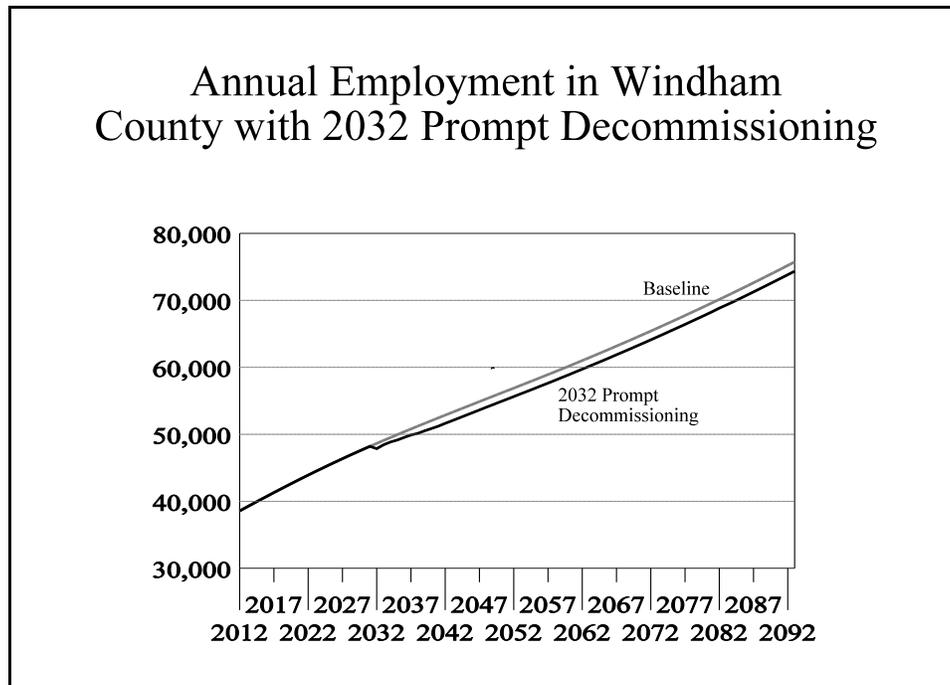
The estimated future employment and wages of Windham County under this scenario are presented in the following graphs.

¹⁰ The REDYN model which is used to estimate economic impacts is based on calendar year periods. Therefore, although a twenty year extension of the VY Station's license would allow it to operate until March 2032, for the purposes of this analysis it is best to assume it operates from 2012 to 2031 and ceases operations after 2031.

¹¹ See the report "Decommissioning Cost Analysis..." prepared by TLG Services, Inc., dated February 2012. This section uses the estimate in Table 3.4.

A. Windham County Employment 2032 Prompt Decommissioning

The level of employment in Windham County over the period 2012 to 2093 is presented in the graphic below.



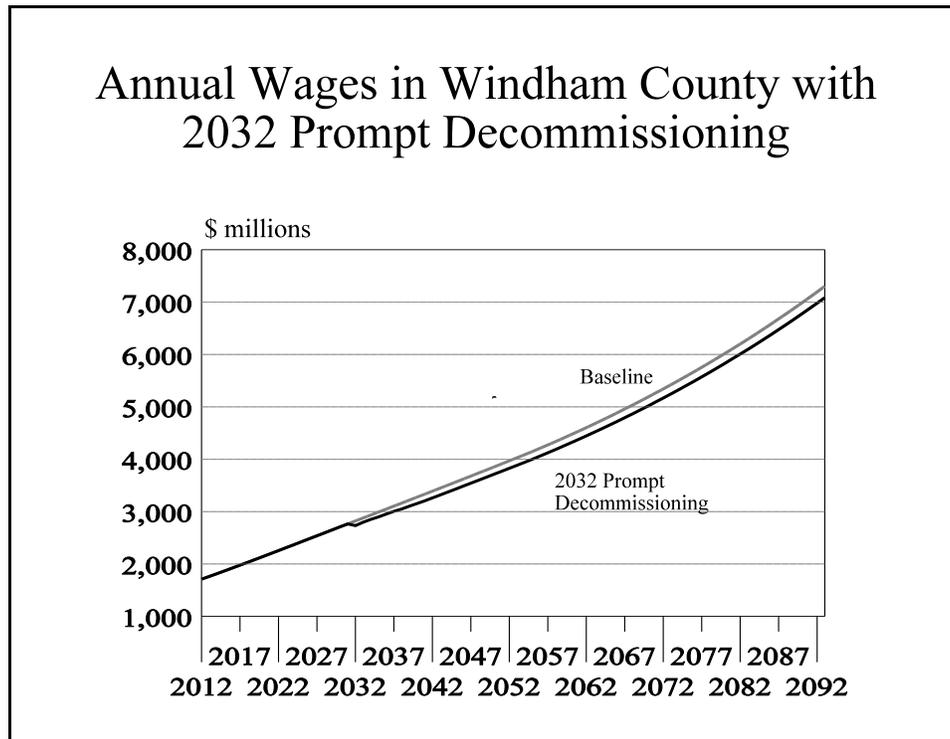
The baseline estimate for employment in Windham County is shown by the dashed line. It is based on the assumption that the VY Station would continue to operate indefinitely. Generally, employment is forecasted to slowly increase over the entire period.¹²

After 2031, the VY Station ceases operating as a power plant in the 2032 Prompt Decommissioning scenario. The employment associated with this operation is lost to Windham County and we see an immediate, large decrease in employment. This decrease is somewhat moderated by the expenditures at that time estimated by TLG Services but not by enough to prevent a significant decline. From 2032 to 2037 when large expenditures would be occurring with the 2032 Prompt Decommissioning scenario, the employment decline is in the range of 650 to 900. The process continues through 2040, with a declining need for employees in the later years. Therefore, the employment loss in Windham County will be in the range of 1,200 to 1,350 per year.

¹² The baseline is the forecast for the county as prepared by the REDYN model. It is a more optimistic forecast than we would prepare. That, however, does not matter to this analysis as we are concerned about the difference in the impacts to the regional economy under two scenarios. The difference in the impacts would be virtually identical if a less optimistic forecast was prepared as the baseline.

B. Windham County Total Wages with 2032 Prompt Decommissioning

The total wages paid by employers in Windham County over the period 2012 to 2093 is presented in the graphic below. Total wages follow the same path described above for employment.



Total wages paid in Windham County increase steadily through 2032, then fall with the shutdown of the plant. The immediate decrease in wages from the end of operation of the plant is offset somewhat by the wages paid for the decommissioning process of the plant. From 2032 to 2037 the decline in annual wages is approximately \$90 million (in 2011 dollars). By 2040 the full impact of the absence of VT Station is apparent. The annual decline in wages is over \$100 million (in 2011 dollars) from 2041 forward and grows with general real wage inflation.

V. Economic Activity with the 2032 Deferred Decommissioning Scenario

In this section, it is assumed that the VY Station continues operating as it is today through the year 2031. The plant then enters the SAFSTOR process as described in the TLG reports. At the close of 2093 site restoration is complete and no activity or structures associated with the VY Station remain.

The economic activity during the operation of the VY Station through 2031 is estimated by the same method as in the previous section. From 2032 through 2093 the economic activity is measured by use of the annual expenditures presented by TLG Services, Inc.¹³

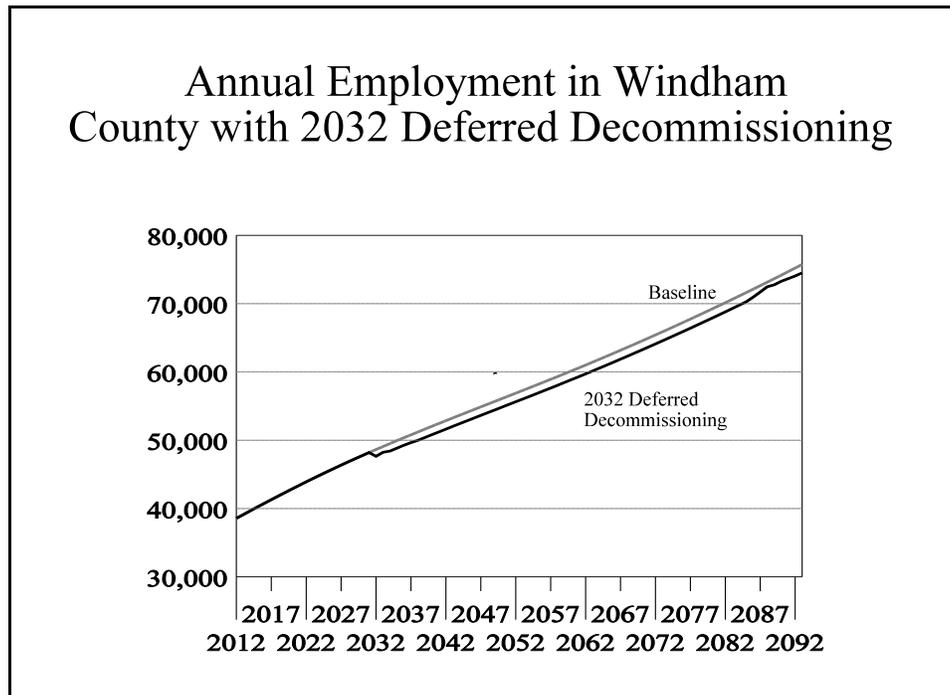
This scenario covers the period from 2012 through 2093, a period of 81 years. The economic activity at the VY Station during the period 2032 through 2093 is compressed into the period 2032 to 2055 then extrapolated back out to the full period.

The estimated future employment and wages of Windham County under this scenario are presented in the following graphs.

¹³ See the report “Decommissioning Cost Analysis...” prepared by TLG Services, Inc., dated February 2012. This section uses the estimate in Table 3.5.

A. Windham County Employment with 2032 Deferred Decommissioning

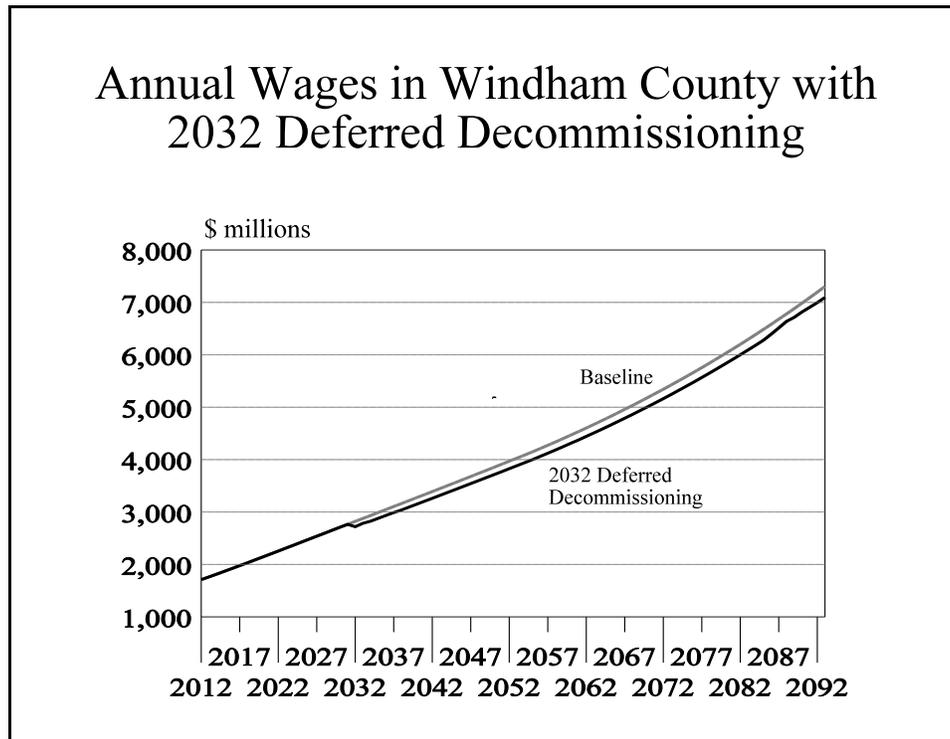
The level of employment in Windham County over the period 2012 to 2093 with the 2032 Deferred Decommissioning scenario is presented in the graphic below.



After 2031, the VY Station ceases operating as a power plant in the 2032 Deferred Decommissioning scenario. The employment associated with this operation is lost to Windham County and we see an immediate, large decrease in employment. This decrease is somewhat moderated by the expenditures at that time estimated by TLG Services but not by enough to prevent a significant decline. From 2032 to 2037 when large expenditures would be occurring with the 2032 Deferred Decommissioning scenario, the employment decline is in the range of 850 to 1,150. The employment loss in Windham County after 2037 will be in the range of 1,250 to 1,350 per year until 2086 when large expenditures associated with the 2032 Deferred Decommissioning scenario begin. From 2086 to 2093 the employment loss ranges from 650 to 1,200.

B. Windham County Total Wages with 2032 Deferred Decommissioning

The total wages paid by employers in Windham County over the period 2012 to 2093 with the 2032 Deferred Decommissioning scenario are presented in the graphic below. It follows the same path as the employment described above.



The wages associated with the VY station are lost to Windham County in 2032 and we see an immediate, large decrease in wages paid by all Windham County employers. This decrease is somewhat moderated by the expenditures at that time estimated by TLG Services but not by enough to prevent a significant decline. From 2032 to 2037 when large expenditures would be occurring with the 2032 Deferred Decommissioning scenario, the wage decline is in the range of \$93 million to \$116 million. The wage loss in Windham County after 2037 rises to \$125 million and grows with general wage inflation until 2086. From 2086 to 2093 the wage loss decreases by \$5 million to \$60 million from the trend.

VI. Economic Activity with the 2013 SAFSTOR Scenario

In this section, it is assumed that the VY Station ceases producing power at the end of 2012. The facility is placed and maintained in SAFSTOR and the entire decommissioning process continues through 2074. At the close of 2074 site restoration is completed and no activity or structures associated with the VY Station remain. The economic activity in this scenario is measured by use of the annual expenditures presented by TLG Services, Inc.¹⁴

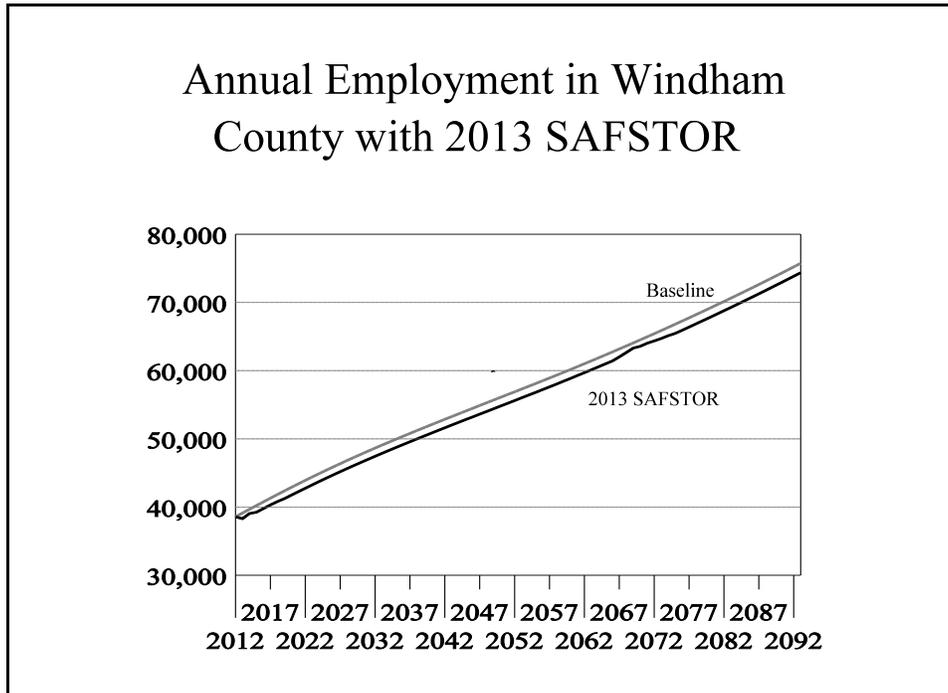
This scenario covers the period from 2012 through 2074, a period of 62 years. The economic activity at the VY Station during the period 2032 through 2074 is compressed into the period 2032 to 2055 then extrapolated back out to the full period. In order to compare this to other scenarios, the estimation is carried out through 2093.

The estimated future employment and wages of Windham County under this scenario are presented in the following graphs.

¹⁴ See the report “Post Shutdown Decommissioning Activities Report...” prepared by TLG Services, Inc., dated June 13, 2012. This section uses the estimate in the table on page 15-16.

A. Windham County Employment with 2013 SAFSTOR

The level of employment in Windham County over the period 2012 to 2093 with the 2013 SAFSTOR scenario is presented in the graphic below.



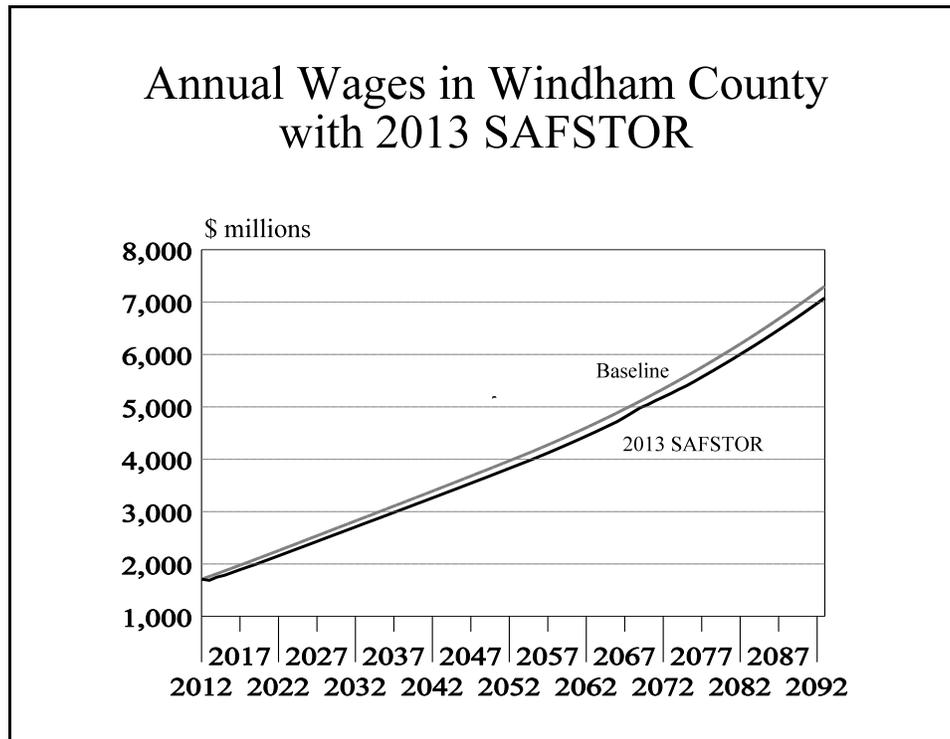
In 2013 there is a loss of jobs in Windham County when the VY Station ceases producing power. The job decline is somewhat offset by the jobs needed at the power station to put it into SAFSTOR mode. From 2013 to 2018, employment in Windham County is 625 to 1,050 less than the baseline depending on the level of spending with the 2013 SAFSTOR scenario.

The from 2019 through 2066, when the VY Station is in SAFSTOR mode, the loss of jobs is from 1,150 to 1,300 below the baseline estimate.

From 2067 to 2074, the loss of jobs falls to 750 to 1,200 as the work at the VY Station with the 2013 SAFSTOR scenario is completed. Then in 2075 the loss returns to about 1,350 from the baseline.

B. Windham County Total Wages with 2013 SAFSTOR

The total wages paid by employers in Windham County over the period 2012 to 2093 with the 2013 SAFSTOR scenario is presented in the graphic below. It follows the same path as the employment described above.



In 2013 the total wages at Windham County employers drop off from the baseline estimate. This is because the VY Station has ceased producing power and the payroll from that activity ceases. The payroll is partially offset by the payroll associated with preparing the plant for SAFSTOR mode, but not enough to prevent a decline. The decline from 2013 to 2018 averages \$81 million per year.

From 2018 through 2066 payrolls at Windham County firms ranges from \$96 million to \$168 million less per year compared to the baseline as only a minimal amount of spending occurs with SAFSTOR during this period.

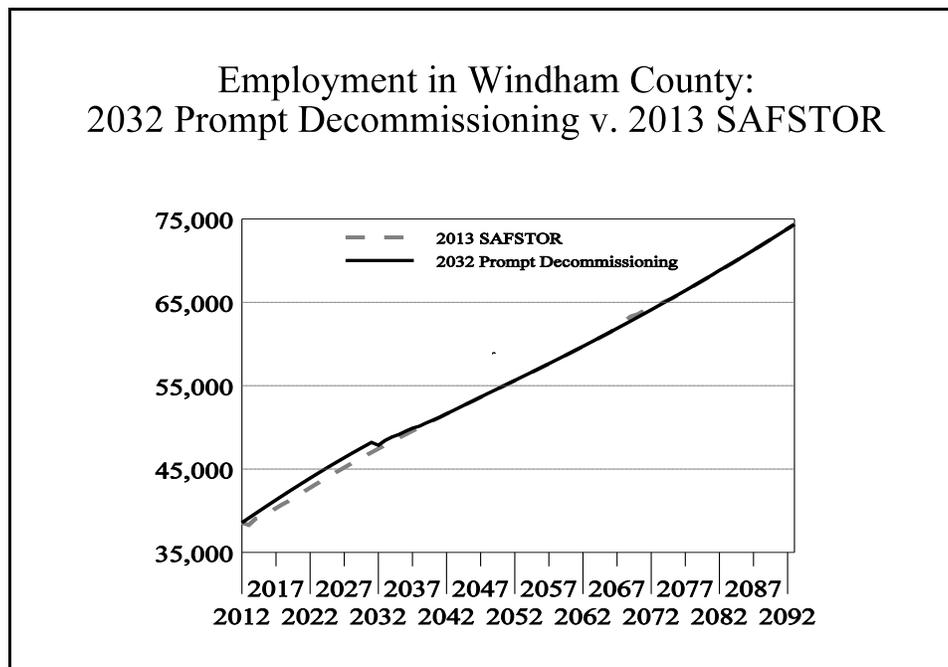
The payroll difference narrows somewhat (falling to as little as \$125 million) from 2066 through 2073 when significant expenditures occur with the end of the 2013 SAFSTOR scenario. Beginning in 2075 the payroll loss returns to about \$186 million when all work associated with the 2013 SAFSTOR scenario has ended.

VII. Economic Impact of the 2032 Prompt Decommissioning Versus 2013 SAFSTOR Scenarios

The economic impact of the 2032 Prompt Decommissioning scenario versus the 2013 SAFSTOR scenario is measured by comparing the estimated employment, wages, disposable income, and other economic indicators under these scenarios.

A. Employment Impact in Windham County

The differing employment impacts in the two scenarios from 2012 through 2093 can be seen in the diagram below. The major difference occurs from 2013 to 2031. On average, from 2013 to 2031 Windham County would have 1,085 more employees under the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario. This difference is less from 2013 to 2017 when there are considerable expenditures with the 2013 SAFSTOR scenario and more from 2018 to 2031 when there are relatively minimal expenditures associated with the 2013 SAFSTOR scenario.



From 2067 to 2074 there are slightly more jobs with the 2013 SAFSTOR scenario than with the 2032 Prompt Decommissioning scenario (somewhat hard to see as the average difference is only 279 employees). There are significant expenditures with the 2013 SAFSTOR scenario in those years.

B. Total Wage Impact in Windham County

The total wages paid by Windham County employers will be significantly less in the 2013 SAFSTOR scenario than with the 2032 Prompt Decommissioning scenario. Almost all the difference occurs during the 2013 to 2031 period.

In the 2032 Prompt Decommissioning scenario, the simple sum of the total wages (in constant 2011 dollars) paid by Windham County employers equals \$331,840 million from 2012 to 2093. In present value terms, this totals \$115,560 million.¹⁵

In the 2013 SAFSTOR scenario, the simple sum of the total wages paid by Windham County employers equals \$329,758 million from 2012 to 2093. In present value terms this equals \$114,013 million.

<u>Scenario</u>	<u>Simple Sum</u>	<u>Present Value</u>
2032 Pr. Dec.	\$331,840	\$115,560
2013 SAFSTOR	\$329,758	\$114,013
Difference	\$2,082	\$1,547

The difference in the wages paid between these two scenarios equals \$2,082 million over the period 2012 to 2093. In present value terms this equals \$1,547 million.¹⁶

C Income Impact on Windham County Residents

Wages paid at area businesses do not necessarily equate to income earned by area residents. A number of workers of Windham County businesses live out of the county (and out of state as well). In addition, income is derived from a variety of sources in addition to wages. Therefore, we are concerned not only with the payrolls of local businesses but also with the disposable (after tax) income of local residents.

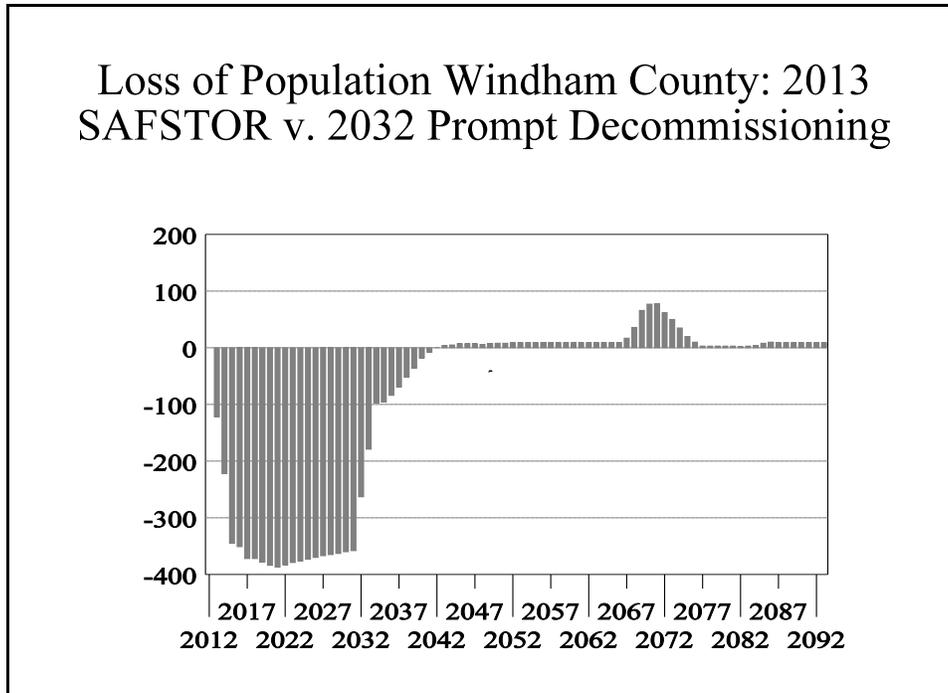
Over the period 2012 to 2093, the disposable income (in 2011 dollars) earned by Windham County residents totals \$1,596 million more in the 2032 Prompt Decommissioning scenario than in the 2013 SAFSTOR scenario. In present value terms this equals \$1,186 million.

¹⁵ We use a real interest rate of 2.5% for this discounting. The nominal interest rate we estimate to be 5% with inflation of nearly 2.5%.

¹⁶ If a real discount rate of 3.5% were used instead of 2.5%, the present value of the difference would equal \$1,392 million. If a 1.5% real rate was used, the present value would equal \$1,730 million.

D. Demographic Impact on Windham County

With the estimated loss of jobs in Windham County under either the 2032 Prompt Decommissioning scenario or the 2013 SAFSTOR scenarios, some population decline will occur. The graph below depicts the estimated net loss of population in Windham County during the period 2012 through 2093. This is the difference in the county’s population under the 2013 SAFSTOR scenario versus the 2032 Prompt Decommissioning scenario.



The 2013 SAFSTOR scenario compared to the 2032 Prompt Decommissioning scenario leads to a loss of nearly 400 more county residents from 2015 to 2031.¹⁷ The loss decreases until there is basically no net population impact between the two scenarios by 2042. Then there is a comparative net gain, especially from 2067 to 2074, as the 2013 SAFSTOR scenario entails significant expenditure during this time period.

¹⁷ This is the net loss for any year. The loss is not cumulative.

E. Employment Impact in the Rest of Vermont

Most of the impact of the VY Station occurs within Windham County. However, some impact spills over into Bennington, Windsor, and other counties in the state (as well as into New Hampshire and Massachusetts). As measured in section III of this report, the VY Station led to the creation of an additional 244 jobs and an additional payroll of \$10.6 million elsewhere in Vermont in 2011. A similar spillover into the rest of Vermont will be felt in the future with the VY Station under the three scenarios being considered in this report.

Employment in the rest of Vermont under the 2032 Prompt Decommissioning scenario compared the 2013 SAFSTOR scenario follows the same pattern as the other economic indicators reviewed in this section of the report. From 2013 to 2031 employment in the rest of Vermont averages about 257 jobs more with the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario. This is reduced in the early years (2013 to 2017) when the VY Station is being readied for SAFSTOR.

The job difference is only positive for the 2013 SAFSTOR scenario versus the 2032 Prompt Decommissioning scenario during the period 2067 to 2074 when considerable expenditures occur with 2013 SAFSTOR scenario. During that period the job total averages 97 more with the 2013 SAFSTOR scenario than with the 2032 Prompt Decommissioning scenario.

F. Total Wages and Disposable Income Impact in the Rest of Vermont

In the rest of Vermont the total wages paid by employers is higher with the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario. The difference in the total wages equals \$296 million over the period 2012 to 2093. In present value terms this equals \$229 million.

Disposable income earned by residents in the rest of Vermont is also higher in the 2032 Prompt Decommissioning scenario than with the 2013 SAFSTOR scenario. The difference in disposable income earned by residents of the rest of Vermont equals \$446 million over the period 2012 to 2093. In present value terms this equals \$324 million.

G. Tax Revenue Impacts on State Government

When economic activity slows, state government tax revenues slow as well. This is true for individual income taxes, general sales taxes, and most other taxes. By use of the REDYN model we estimate the net reduction in state taxes due to the difference between those revenues received under the 2032 Prompt Decommissioning scenario versus the 2013 SAFSTOR scenario.

These taxes received are the consequence of either the operation of the VY Station or from the economic activity created through the multiplier process. For example, the income taxes are paid by both the VY Station employees and by employees of other businesses in the state that exist because of the operation of the VY Station in Vermont.

Over the period 2012 through 2093 the sum of all taxes paid to the State of Vermont is \$225.9 million less under the 2013 SAFSTOR scenario than under the 2032 Prompt Decommissioning scenario. In present value terms this difference equals \$164.0 million.

The four largest tax sources are individual income taxes, property taxes, selective sales taxes, and general sales taxes.¹⁸ The net loss to the state treasury in present value terms from these tax sources equals \$44.1 million, \$41.7 million, \$38.4 million, and \$23.2 million, respectively.

Net Loss in State Tax Revenues 2012 to 2093 (in millions of 2011 dollars)		
<u>Source</u>	<u>Simple Sum</u>	<u>Present Value</u>
All state taxes	\$225.9	\$164.0
Individual income	\$60.7	\$44.1
Property	\$57.3	\$41.7
Selective sales	\$52.8	\$38.4
General sales	\$32.0	\$23.2

¹⁸ Selective sales taxes includes a wide variety of specific taxes levied on sales, including motor fuel, tobacco, alcoholic beverages, etc.

H. Revenue Impacts on Local Governments

Just as the state will see a fall in tax revenues from the reduction of economic activity, so will the many local governments in Vermont where residents and businesses created due to the operation of the VY Station reside. The single largest tax source to local governments in Vermont is the property tax and that accounts for 97% of the tax reduction. The net loss of local property tax revenues is difference between the local tax payments under the 2032 Prompt Decommissioning scenario versus the 2013 SAFSTOR scenario.

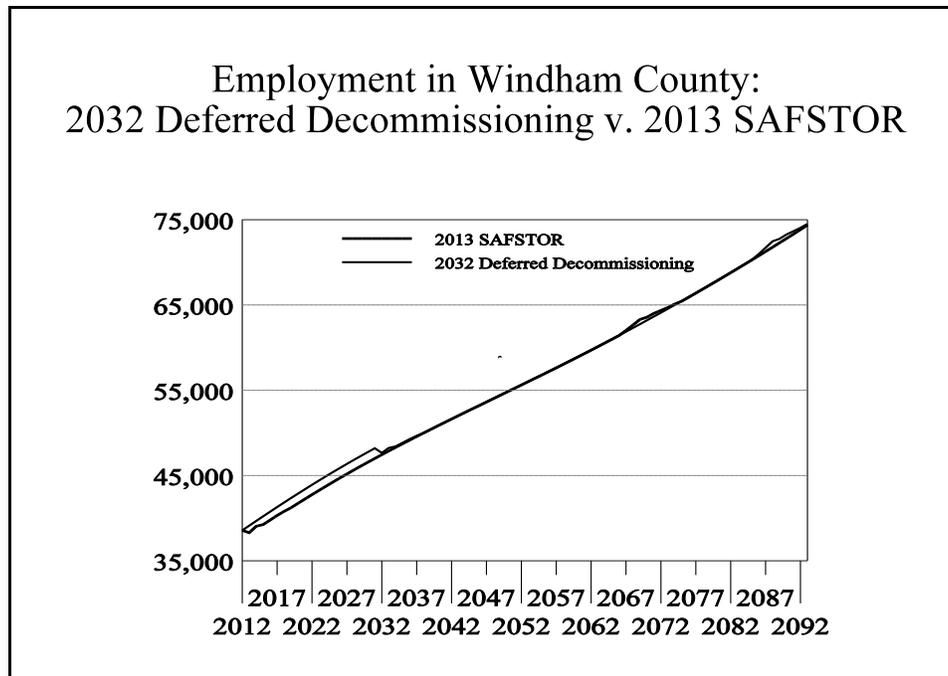
The net loss in local property taxes over the period 2012 to 2093 equals \$64.3 million (in 2011 dollars). In present value terms this equals \$46.7 million.

VIII. Economic Impact of the 2032 Deferred Decommissioning Versus 2013 SAFSTOR Scenarios

The economic impact of the 2032 Deferred Decommissioning scenario versus the 2013 SAFSTOR scenario is measured by comparing the estimated employment, wages, disposable income, and other economic indicators under these scenarios.

A. Employment Impact in Windham County

The differing employment impacts in the two scenarios from 2012 through 2093 can be seen in the diagram below. The major difference occurs from 2013 to 2031. On average, from 2013 to 2031 Windham County would have 1,085 more employees under the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario. This difference is less from 2013 to 2017 when there are considerable expenditures with the 2013 SAFSTOR scenario and more from 2018 to 2031 when there are relatively minimal expenditures associated with the 2013 SAFSTOR scenario.



From 2067 to 2074 there are slightly more jobs with the 2013 SAFSTOR scenario than with the 2032 Deferred Decommissioning scenario (somewhat hard to see as the average difference is only 285 employees). There are significant expenditures with the 2013 SAFSTOR scenario in those years. The opposite happens from 2087 to 2093 when the average difference is 464 employees more with the 2032 Deferred Decommissioning scenario.

B. Total Wage Impact in Windham County

The total wages paid by Windham County employers will be significantly less in the 2013 SAFSTOR scenario than with the 2032 Deferred Decommissioning scenario. Almost all the difference occurs during the 2013 to 2031 period.

In the 2032 Deferred Decommissioning scenario, the simple sum of the total wages (in constant 2011 dollars) paid by Windham County employers equals \$331,849 million from 2012 to 2093. In present value terms, this totals \$115,502 million.¹⁹

In the 2013 SAFSTOR scenario, the simple sum of the total wages paid by Windham County employers equals \$329,534 million from 2012 to 2093. In present value terms this equals \$113,932 million.

Total Wages Paid in Windham County 2012 to 2093 (in millions of 2011 dollars)		
<u>Scenario</u>	<u>Simple Sum</u>	<u>Present Value</u>
2032 Def. Dec.	\$331,849	\$115,502
2013 SAFSTOR	\$329,534	\$113,932
Difference	\$2,091	\$1,489

The difference in the wages paid between these two scenarios equals \$2,191 million over the period 2012 to 2093. In present value terms this equals \$1,489 million.

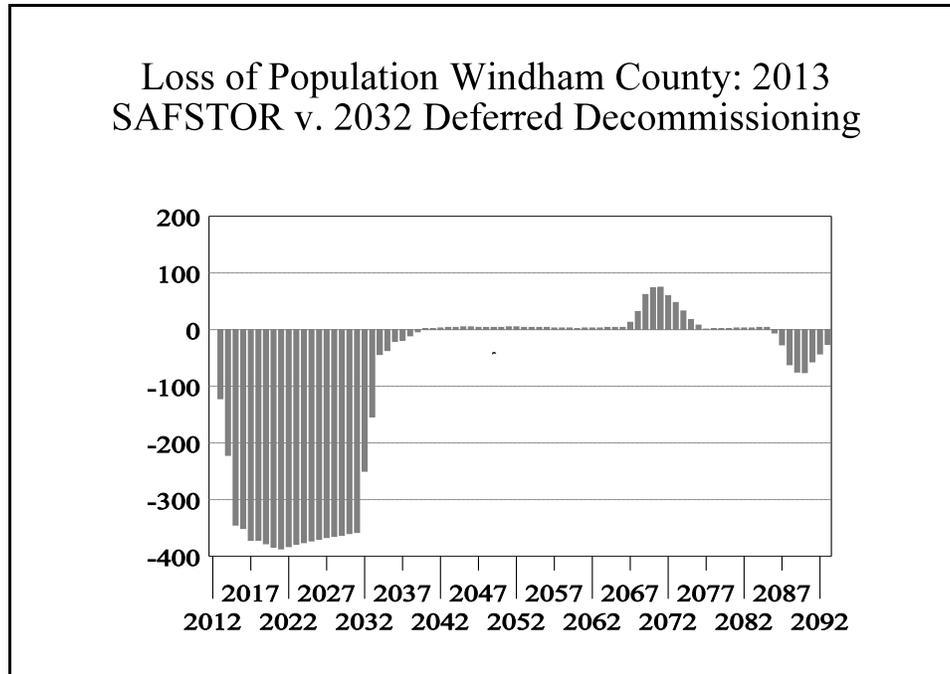
C Income Impact on Windham County Residents

Over the period 2012 to 2093, the disposable income (in 2011 dollars) earned by Windham County residents totals \$1,514 million more in the 2032 Deferred Decommissioning scenario than in the 2013 SAFSTOR scenario. In present value terms this equals \$1,139 million.

¹⁹ We use a real interest rate of 2.5% for this discounting. The nominal interest rate we estimate to be 5% with inflation of nearly 2.5%.

D. Demographic Impact on Windham County

With the estimated loss of jobs in Windham County under either the 2032 Deferred Decommissioning scenario or the 2013 SAFSTOR scenarios, some population decline will occur. The graph below depicts the estimated net loss of population in Windham County during the period 2012 through 2093. This is the difference in the county’s population under the 2013 SAFSTOR scenario versus the 2032 Deferred Decommissioning scenario.



The 2013 SAFSTOR scenario compared to the 2032 Prompt Decommissioning scenario leads to a loss of nearly 400 more county residents from 2015 to 2031.²⁰ The loss decreases until there is basically no net population impact between the two scenarios by 2042. Then there is a comparative net gain, especially from 2067 to 2074, as the 2013 SAFSTOR scenario entails significant expenditure during this time period. This reverses after then as the 2032 Deferred Decommissioning scenario entails significant expenditures from 2087 to 2093 and there are no expenditures with the 2013 SAFSTOR scenario.

²⁰ This is the net loss for any year. The loss is not cumulative.

E. Employment Impact in the Rest of Vermont

Employment in the rest of Vermont under the 2032 Deferred Decommissioning scenario compared the 2013 SAFSTOR scenario follows the same pattern as the other economic indicators reviewed in this section of the report. From 2013 to 2031 employment in the rest of Vermont averages about 257 jobs more with the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario. This is reduced in the early years (2013 to 2017) when the VY Station is being readied for SAFSTOR.

The job difference is only positive for the 2013 SAFSTOR scenario versus the 2032 Deferred Decommissioning scenario during the period 2068 to 2075 when considerable expenditures occur with 2013 SAFSTOR scenario. During that period the job total averages 94 more with the 2013 SAFSTOR scenario than with the 2032 Deferred Decommissioning scenario.

This reverses at the end of the period in review when there are no expenditures with the 2013 SAFSTOR scenario and considerable expenditures with the 2032 Deferred Decommissioning scenario. The average employment difference in the rest of Vermont is 111 jobs from 2086 through 2093.

F. Total Wages and Disposable Income Impact in the Rest of Vermont

In the rest of Vermont the total wages paid by employers is higher with the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario. The difference in the total wages equals \$277 million over the period 2012 to 2093. In present value terms this equals \$203 million.

Disposable income earned by residents in the rest of Vermont is also higher in the 2032 Deferred Decommissioning scenario than with the 2013 SAFSTOR scenario. The difference in disposable income earned by residents of the rest of Vermont equals \$427 million over the period 2012 to 2093. In present value terms this equals \$295 million.

G. Tax Revenue Impacts on State Government

When economic activity slows, state government tax revenues slow as well. This is true for individual income taxes, general sales taxes, and most other taxes. By use of the REDYN model we estimate the net reduction in state taxes due to the difference between those revenues received under the 2032 Deferred Decommissioning scenario versus the 2013 SAFSTOR scenario.

These taxes received are the consequence of either the operation of the VY Station or from the economic activity created through the multiplier process. For example, the income taxes are paid by both the VY Station employees and by employees of other businesses in the state that exist because of the operation of the VY Station in Vermont.

Over the period 2012 through 2093 the sum of all taxes paid to the State of Vermont is \$231.0 million less under the 2013 SAFSTOR scenario than under the 2032 Prompt Decommissioning scenario. In present value terms this difference equals \$156.8 million.

The four largest tax sources are individual income taxes, property taxes, selective sales taxes, and general sales taxes.²¹ The net loss to the state treasury in present value terms from these tax sources equals \$42.1 million, \$40.7 million, \$36.7 million, and \$22.2 million, respectively.

Net Loss in State Tax Revenues 2012 to 2093 (in millions of 2011 dollars)		
<u>Source</u>	<u>Simple Sum</u>	<u>Present Value</u>
All state taxes	\$231.0	\$156.8
Individual income	\$62.0	\$42.1
Property	\$60.0	\$40.7
Selective sales	\$54.0	\$36.7
General sales	\$32.6	\$22.2

²¹ Selective sales taxes includes a wide variety of specific taxes levied on sales, including motor fuel, tobacco, alcoholic beverages, etc.

H. Revenue Impacts on Local Governments

Just as the state will see a fall in tax revenues from the reduction of economic activity, so will the many local governments in Vermont where residents and businesses created due to the operation of the VY Station reside. The single largest tax source to local governments in Vermont is the property tax and that accounts for 97% of the tax reduction. The net loss of local property tax revenues is difference between the local tax payments under the 2032 Deferred Decommissioning scenario versus the 2013 SAFSTOR scenario.

The net loss in local property taxes over the period 2012 to 2093 equals \$62.3 million (in 2011 dollars). In present value terms this equals \$43.9 million.

IX. Appendix I - 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 2012 through 2055.

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.