VERMONT ECONOMIC OUTLOOK
October 15, 2015

The Forecast in Brief

- This revised NEEP[1] forecast for the Vermont economy over the next four years calls for a continuation of the current economic upturn through calendar year 2018. While rent volatility in U.S. and global equity markets and the economic slowdown in China and the developing world are cause for concern, the current forecast is for Vermont expansion to continue uninterrupted through that uncertainty.
    - None of the current headwinds for the U/.S. economy are significant enough to threaten the current U.S. economic expansion-recovery.
- Seasonally adjusted payroll job data from the Vermont Department of Labor through July 2015[2] indicate that the State has added a total of 5,200 payroll jobs since the previous July (including 4,900 private sector jobs)—a 1.7% rate of increase.
    - Throughout calendar year 2015, month-to-month seasonally adjusted data continue to show the uneven character of month-to-month job changes.
    - It seems as though labor market conditions are never as good as they appear to be on the upside and are never as bad as they appear to be on the downside of this pattern.
- The data also show that Vermont was the second state in New England to complete its full labor market recovery from the "Great Recession." This recovery was completed around mid-year, and occurred despite labor market uncertainty surrounding the State's largest manufacturing employer which was acquired by Global Foundries on July 1, 2015.
    - Sporadic layoffs continue in Vermont's manufacturing sector, in part off-set by good forward progress in the State's overall food manufacturing sector and the strong forward momentum in the state's craft brewing sub-sector.
- State economic activity though calendar year 2018 forecast period will be supported by the on-going forward progress in the U.S. economy's on-going economic expansion.
    - The Moody's Analytics national forecast calls for the economic expansion will continue through calendar year 2018, with more typical rates of growth expected beyond the current near-term period of some volatility and uncertainty.
    - The Moody's Analytics national outlook for U.S. labor markets predicts an annual average increase in payroll jobs of 2.2% in calendar year 2015, with an average annual increase of 2.1% over the 2015 through 2018 forecast period. For the 2015-18 time frame as a whole, U.S. GDP growth is expected to average approximately 2.8% per year.

[1] NEEP refers to the New England Economic Partnership.
[2] July 2015 data was the most recent data available at the time of the NEEP forecast update.

- The U.S. unemployment rate, which is expected to average 5.3% in calendar year 2015, is expected to improve significantly over the forecast period. By calendar year 2018, the U.S. unemployment rate is expected to be 4.6%.

- For Vermont, forward progress will be found across all but two of the State's broad employment categories—the exceptions being the Information Sector and the Government Sector.

  - Job gains in the goods-producing sector will be paced by the construction sector and food manufacturing sector. The forecast also expects that job growth in the trade, transportation, and utilities sector will be slowed by the closure of the Vermont Yankee nuclear power plant located in Vernon.

  - Repairs and restoration activity related to the aftermath of Tropical Storm Irene continue to assist in providing some forward momentum continue through calendar year 2015—as storm recovery activity continues, but tails off through the initial stages of the current forecast update period.

- Because the macro indicators for the Vermont economy show that Vermont's economy was not as adversely impacted by the "Great Recession" as many other states across the U.S., Vermont's macro statistics are expected to have a somewhat more subdued performance through 2018.

  - For calendar year 2015, Vermont is forecast to see inflation-adjusted output continue to rebound at a level somewhat below the U.S. average. Personal income growth in Vermont is expected to be generally higher than that of the U.S. as a whole over the calendar year 2015-2017 period and forecasted to be lower in 2018.

  - The unemployment rate in Vermont is expected to remain well below the U.S. average, even though the expected decline in the State's unemployment rate is slower than that for the U.S. economy as a whole.

  - The same is true for housing prices as measured by the FHFA home price index. Because Vermont did not experience nearly the decline in housing prices than virtually all other states did during the sharp housing price declines of the late 2000s and early 2010s, the rate of housing price increase over the 2015-18 forecast period is not expected to be as fast as many other states in and outside the New England region and for the U.S. economy as a whole.

- Turning to the conference theme, the State of Vermont has been very active in the area of infrastructure recovery and enhancement. The State's rapid recovery from the destruction associated with Tropical Storm Irene led to considerable federal and state investment to repair, rehabilitate and enhance the State's transportation and other infrastructure.

  - In addition, the State's public and private sectors are aggressively pursuing renewable energy, has made and continues to make significant investments in its telecommunications infrastructure, and is making additional investments in a natural gas pipeline and electrical transmission, water, waste water and storm water management, for the clean-up of Lake Champlain, and in its aviation system.

  - All of these investments will have significant impacts on the performance and positioning of the Vermont economy to compete in the global marketplace in the future.

The U.S. Situation and Outlook. Through September 2015, the U.S. economy has continued on its now more than six year expansionary path, despite recent stock market volatility and growing problems in China and the developing world. U.S. job growth has averaged 235,000 in recent months (May through July 2015), and is on track for adding three million new payroll jobs in calendar year 2015. Even with that level of job growth, labor market analysts still point to significant slack in the labor force (equivalent to roughly 1.0% of the labor force), considering the long-term unemployed, part-time workers that desire to work full-time, and discouraged workers who have left the labor force. As the labor market slack is absorbed over the next year, it is expected that hourly earnings growth will increase significantly and begin to more empirically address the often cited income inequality issue. Wage gains should be particularly notable in calendar year 2016.

So far, recent developments in financial and international markets, such as the decline in the Chinese stock market and on-going volatility in many other stock markets in the developed and developing world, have not had a significant negative effect on the forward progress of the U.S. economy. U.S. vehicle sales remain upbeat (with truck sales getting support from contractors associated with the improving housing market and lower gas prices), construction spending remains strong (as the housing market "normalizes"), and nonfarm productivity was revised up to 3.3% (up from an initial estimate of only 1.3%) for the April to June quarter of 2015.[3] Most recently, the Congress was recently able to avert another harmful government shutdown—albeit only temporarily. Hopefully, the time will be used to craft a longer term government spending plan that will enable the economy to avoid another round of budget brinkman's-ship this coming December when the current short-term Continuing Resolution runs out.

Looking forward, the U.S. economic outlook will in fact need to contend with several headwinds. First, there is concern regarding the economic implications of the current slowdown in China and its impacts on China's principal trading partners in the developing world. Unease has increased particularly because of the implications on global trade. China, as the world's second largest economy, will likely not be able to continue to achieve strong levels of economic output over the short-term time horizon. This will likely cause a drop in import demand from many vulnerable commodity-exporting countries in the developing world (e.g. Brazil and many countries in Africa and Asia) and from Russia.

Secondly, there remains considerable concern about the impact of lower oil prices. While cheaper energy costs have benefited consumers and businesses through cheaper prices at the pump and more modest energy-related business costs, the savings from lower fossil fuel prices have not resulted in the type of stimulative effects for the economy that were initially expected. Many households and businesses do not appear to be spending their cost savings. This lack of an off-setting business and consumer expenditure effect from energy cost savings means that there has been little of the countervailing activity needed to overcome reductions in employment and expenditures from reduced exploration activities in the U.S. oil and natural gas industry's production areas. While energy cost savings over the long run will likely prove to be positive for the U.S. economy overall, recent experience indicates that the positive effects of lower energy prices is going to take a while longer to actually play out. There will likely continue to be some

[3] Which bodes well for tame rates of future inflation.

demand crimping effects affecting the U.S. economy until the slowdown in the oil and natural gas producing areas fully runs its course.

The third major concern weighing on the economic outlook is the possibility of the first increase in short-term interest rates by the Federal Reserve since the financial crisis. Many financial analysts expect the Federal Reserve to begin to increase short-term interest rates sometime in late calendar year 2015 or in early calendar year 2016. This step is thought to be the beginning of a process to "normalize" the Federal Reserve's interest rate policy following the extraordinary period of low short-term interest rates from the financial crisis, through the "Great Recession," and to-date through the subsequent sluggish economic recovery-expansion.

Despite the above concerns, the majority of U.S. economic data still point to the continued expansion for the U.S. economy through calendar year 2018. Many of the economy's current headwinds appear to be either transitory in nature or not of a scale that would be sufficient to derail the current expansion. Moreover, because of the fact that the current U.S. economic recovery-expansion has been more gradual than normal, the benefit of the economy's slower than average pace is that they type of business cycle excesses that typically appear by now signaling the end of an economic expansion are presently nowhere to be found. The economic data clearly show the U.S. economy is not in danger of overspending or over-hiring. The economy similarly is not experiencing wage excesses,[4] and it is not yet experiencing over-heating in the housing or commercial real estate markets.[5] The near total absence of the type of imbalances that typically lead to the end of business cycle expansions means that there are no economic "show stoppers" evident over the near-term time horizon. The current majority view is that the U.S. economy will continue on its upward trajectory through at least calendar year 2018. This view is reflected in both the Moody's Analytics short-term outlook for the U.S. economy and the majority view of other prominent U.S. economic forecasters.

The Vermont Situation: Turning to the Vermont economy, recent developments regarding the Vermont economy continue to exhibit an "up and down" character. Seasonally adjusted payroll job changes in the State over the first half of calendar year 2015 continued to experience the now well-established "saw-toothed pattern." Month-to-month seasonally adjusted job changes overall have made forward progress despite the monthly volatility. This persistent "up and down" trend strongly suggests that labor market conditions are not as "good" as they appear during the "up" months and likewise not as "bad" as they appear during the "down" months.

As of the Summer of 2015, the State has completed its full labor market recovery, the second New England state to do so (following the Commonwealth of Massachusetts). Over the past year, State payroll job data for July 2015 indicate that Vermont's year-over-year job change performance ranked 3rd in New England and 28th among the 50 states as Vermont gained payroll jobs at the rate of 1.7% (on a year-over-year basis). The State's 1.9% year-over-year gain in private sector payroll jobs ranked Vermont 29th nationally in year-over-year job change. Vermont's ranking was also 4th in the New England region for the year-over-year total private sector payroll job change.

[4] Many policymakers are in fact hoping for a re-balancing in this dynamic as labor market tightens further.
[5] In fact, a normalizing in housing markets is expected to make a positive contribution to economic growth in calendar years 2016 and 2017.

Using the July job statistics on a year-over-year basis since July 2014, Vermont has had positive job addition experience over the past year in the Leisure and Hospitality sector (an increase of 6.3%) and in the Education and Health Services (an increase of 4.8%). The Education and Health Services sector job increase includes a 9.9% increase in Private Educational Services and a 3.4% increase in Health Care and Social Assistance employment. The Construction sector was flat, year-over-year, reflecting the winding down of infrastructure repairs activity in the aftermath of Tropical Storm Irene. Small year-over-year jobs gains were made in the Retail Trade Sector (an increase of 1.3%) and Professional and Technical Services (an increase of 2.2%). Over the past year, Government employment in Vermont has experienced a decline of 0.7% for the 12-month period ended July 2015. Relative to the other New England states by major sector, Vermont's highest ranked performances are found in the Leisure and Hospitality sector (1st in New England and 3rd nationally), the Information sector (2nd in New England and 11th nationally), and the Construction sector (3rd in New England and 23rd nationally). The State's lowest ranked performers are the Manufacturing sector (6th in New England and 44th nationally), the Financial Activities sector (6th in New England and 48th nationally), the Trade, Transportation, and Utility sector (6th in New England and 41st nationally) and the Government sector (6th in New England and 48th nationally). Vermont also ranks 46th nationally and 6th in New England in the year-over-year job change in the Professional and Business Services sector.

In developments among the state's larger employers, UVMC, the State's largest private employer, is part of a network of four partner hospitals (which now also includes Central Vermont Medical Center, Champlain Valley Physicians Hospital, and Elizabethtown Community Hospital) that serve the residents of Vermont and northern New York. UVMC has a longstanding strategic alliance with the University of Vermont's College of Medicine and the College of Nursing and Health Sciences, bringing world-class research, education and care to the region. In July 2015, the Green Mountain Care Board[6] approved a new 180,000 square foot, 128-room inpatient facility designed to improve quality of care and to meet the medical center's long-term bed needs. The $187 million facility will replace out-of-date double occupancy inpatient rooms, which will help prevent the spread of infections, offer patients privacy, afford space to accommodate diagnostic equipment, and accommodate patients' families and visitors. Construction of the project is underway, and it is anticipated that the new inpatient facility will be open by the end of calendar year 2018.

On July 1, 2015, Global Foundries announced that it had completed its acquisition of IBM's Microelectronics Division. The acquisition included IBM's semiconductor fabrication facilities in East Fishkill, New York and Essex Junction, Vermont. The acquisition also included IBM's technologists, intellectual property and technologies related to the IBM Microelectronics Division. As part of the acquisition agreement, Global Foundries will become IBM's exclusive server processor semiconductor technology provider for 22 nanometer (nm), 14 nm and 10 nm semiconductors for a 10-year period. In anticipation of further collaboration following the acquisition, IBM has indicated that it plans to maintain roughly 200 of its own employees at the Global Foundry campus in Essex Junction. Following the acquisition, Global Foundries has

[6] The Green Mountain Care Board was created by the Vermont Legislature in 2011 and is an independent group of five Vermonters who are charged with ensuring that changes in the health system improve quality while stabilizing costs. See "MAJOR GOVERNMENTAL PROGRAMS AND SERVICES – State Health Care Reform – *Green Mountain Care Board*" herein.

indicated that it rehired nearly all IBM employees associated with the Essex Junction fabrication facility, and that it plans to maintain the workforce and continue operations in Vermont for the foreseeable future. Even so, on September 10, 2015, Global Foundries announced a voluntary buyout program at its three U.S. locations, including the Essex Junction plant, and its plants in East Fishkill, New York and Malta, New York. The company indicated that the program was not targeted at any group, and was needed to improve the company's cost competitiveness in response to slowing global demand—a development that participants have come to hear all too often in this intensely competitive global industry.

In other developments, Keurig Green Mountain, currently the State's third largest private employer, continues to expand and plans to introduce a new cold beverage system (called "Keurig Kold") developed as part of a long term collaborative effort with The Coca-Cola Company in Fall 2015. The new Keurig Kold™ at-home beverage system incorporates synergistic collaboration with The Coca-Cola Company and is designed to complement Keurig's existing strong brand position that it has achieved in single serving hot beverage systems. On August 7, 2015, following a subpar quarterly earnings report, the company announced a cost cutting effort that involved the layoff of approximately 270 employees (200 of which were located at its hot beverage facility in Waterbury, Vermont). In the announcement, the company indicated that the laid off Vermont employees would be given expedited consideration for its 75 open positions within the State. Despite the layoffs, the company still maintains roughly one-third of its total company-wide workforce within Vermont, including a new state of the art "Early Production Center" facility for its new cold beverage technology in Williston, Vermont that employs more than 100 local workers.

The Moody's Analytics National Economic Forecast Assumptions: The economic outlook for Vermont for the calendar year 2015–18 period is based on a comprehensive national economic outlook assembled by Moody's Analytics, a respected national economic forecasting firm. The statistics in the consensus economic forecast in Table 5 (below) reflect this underlying Moody's Analytics national economic forecast. This forecast includes the expectation that the economic expansion will continue through calendar year 2018, with more typical rates of growth expected beyond the current near-term period of some volatility and uncertainty. In addition, the Moody's Analytics' national forecast expects national economic growth will solidify following a first quarter of calendar year 2015 "hiccup." Calendar year 2015 GDP growth in total is expected to post a moderate 2.6% rate of increase, followed by a more robust but still historically restrained pace of output growth for the U.S. economy of 3.2% in calendar year 2016, 3.0% in calendar year 2017 and 2.5% in calendar year 2018. For the 2015-18 time frame as a whole, U.S. GDP growth is expected to average approximately 2.8% per year.

The Moody's Analytics national outlook for U.S. labor markets predicts an annual average increase in payroll jobs of 2.2% in calendar year 2015, with an average annual increase of 2.1% over the 2015 through 2018 forecast period. The U.S. unemployment rate, which is expected to average 5.3% in calendar year 2015, is expected to improve significantly over the forecast period. By calendar year 2018, the U.S. unemployment rate is expected to be 4.6%, representing a 0.7 percentage point decline in the U.S. unemployment rate over the forecast period to a level last experienced prior to calendar year 2008.

The Moody's Analytics forecast for monetary policy over the calendar year 2015 through 2018 period expects a "gradual normalizing" of short-term interest rate policy beginning in late calendar year 2015 or early calendar year 2016 and continuing through the rest of the forecast period. Accordingly, an increase in interest rates is expected to commence late in calendar year 2015 as the U.S. unemployment rate slips further below 6.0%. The forecast also includes some downside forecast risks, ranging from an escalation of the current economic uncertainty and volatility in global stock markets and the developing world to the on-going geopolitical instability in the Middle East and Eastern Europe. In each case, these downsides risks are not expected to seriously threaten the current economic expansion, and the current U.S. economic upswing is expected to continue through calendar year 2018.

The Vermont Economic Outlook: The Vermont near-term economic outlook, which is based on the Moody's Analytics' national forecast as described above (and reflected in Table 1 below), includes a Vermont economy that will follow a similar path to the U.S. economy's progression throughout the calendar year 2015-18 period. Looking at the major macro variables, the updated forecast calls for the current State economic upturn to continue for real output (as measured by Gross State Product or GSP), for inflation-adjusted or real personal income, and for the labor market. It is also expected that the pace of recovery-expansion will continue to be moderate, due to the less than average decline in output, income and jobs that the State experienced during the Great Recession compared to the U.S. and New England.

In terms of Vermont's key economic variables, the forecast for Vermont expects an annualized 2.4% increase in output for all of calendar year 2015. Calendar year 2016's output is then expected to increase at an annual rate of 3.0%, with a 2.6% rate of increase for Vermont output growth for calendar year 2017 and a 2.1% rate of increase for Vermont output growth for calendar year 2018. The rate of payroll job growth for the forecast period is expected to be 1.7% in calendar year 2015, followed by increases of 1.9% in calendar year 2016, 1.8% in calendar year 2017 and 1.3% in calendar year 2018. Nominal dollar personal income is expected to post a performance similar to GSP and employment growth, posting the strongest rates of growth during the initial years of the forecast horizon, then tapering off to a more restrained level of growth. For calendar year 2015 through calendar year 2018, nominal dollar personal income is expected to increase between 4.8% per year and 5.2% per year. The State's unemployment rate is expected to continue to perform consistently superior to the U.S. unemployment rate throughout the calendar year 2015–18 forecast period, averaging roughly 1.9 percentage points or more below the forecasted U.S. rate of unemployment during the period. The Federal Housing Finance Agency (FHFA) Housing Price Index for Vermont is also expected to post modest rates of increase over this forecast timeline, reflecting the lack of significant price declines experienced in the Vermont economy during the mid-2000s housing crisis. For calendar year 2015, the FHFA price index is expected to increase by 2.3%, followed by increases of 2.8% in calendar year 2016, 3.4% in calendar year 2017 and 4.1% in calendar year 2018. While the Vermont housing price performance over the past decade has generally been superior to the U.S. and New England averages, the more restrained housing price growth in Vermont over the calendar year 2015 through 2018 time frame is expected. This is due to the fact that Vermont housing prices, as measured by the FHFA index, did not experience nearly the rate of housing price decline during the "Great Recession" that was experienced in many other states and relative to the U.S. average.

Although the State's economic performance is expected to be moderate over the calendar year 2015-18 period, the forecast for Vermont also expects that labor market conditions will remain "tight." The State's annual average unemployment rate is expected to fall through the forecast period from a 4.1% annual average rate in calendar year 2014 to 3.6% in calendar year 2015, 3.2% in calendar year 2016, 2.9% in calendar year 2017 and 2.8% in calendar year 2018. This forecast, if achieved, would result in a Vermont unemployment rate at the end of calendar year 2018 that is 1.9 percentage points below the forecasted U.S. unemployment rate for that year.

Economic Forecast – Summary Data

The following table sets forth comparative statistics and assumptions corresponding to the current short term economic outlook for the Vermont and national economies. The U.S. data correspond to the assumed macroeconomic environment for the Vermont economy as provided by Moody's Analytics for the upcoming three calendar year period as it was developed in Summer late Summer of 2015. The Vermont statistics present the specific detail for the Vermont economic forecast, and incorporate the estimated impacts of the on-going moderate improvement in State labor market conditions and other macroeconomic variables.

Table 1
Calendar Year Forecast Comparison: United States and Vermont

Forecast Comparison: United States and Vermont (November 2015 NEEP Forecast) [1]

	Actual					Forecast			
	2010	2011	2012	2013 [1]	2014 [1]	2015	2016	2017	2018
Real Output ($2009-% Change)									
U.S. Gross Domestic Product	**2.5**	**1.6**	**2.3**	**2.2**	**2.4**	**2.6**	**3.2**	**3.0**	**2.5**
VT Gross Domestic Product	**4.4**	**2.2**	**1.1**	**1.9**	**1.2**	**2.4**	**3.0**	**2.6**	**2.1**
Non-Farm Payroll Jobs (% Change)									
U.S.	**-0.7**	**1.2**	**1.7**	**1.7**	**1.9**	**2.2**	**2.2**	**2.3**	**1.6**
Vermont	**0.3**	**0.8**	**1.3**	**0.8**	**1.0**	**1.7**	**1.9**	**1.8**	**1.3**
Personal Income %Change (Nominal Dollars)									
U.S.	**1.5**	**3.7**	**3.0**	**-0.3**	**3.0**	**4.4**	**4.7**	**4.1**	**3.2**
Vermont	**1.6**	**7.2**	**3.4**	**2.5**	**4.2**	**3.5**	**5.0**	**4.6**	**4.1**
Unemployment (Percent)									
U.S.	**9.6**	**8.9**	**8.1**	**7.4**	**6.1**	**5.3**	**4.9**	**4.7**	**4.7**
Vermont	**6.1**	**5.5**	**5.0**	**4.4**	**4.1**	**3.6**	**3.3**	**3.1**	**2.9**
FHFA Housing Price Index [2]									
U.S.	**-4.0**	**-3.6**	**-0.1**	**4.1**	**5.7**	**4.7**	**5.1**	**5.5**	**6.1**
Vermont	**-1.2**	**-0.7**	**0.4**	**0.2**	**0.7**	**2.3**	**2.8**	**3.4**	**4.1**

[1] 2013 and 2014 variables are subject to further revision, and 2015 through 2018 values in this table reflect projected data as of September 2015.

[2] FHFA means Federal Housing Finance Agency.

Sources: Moody's Analytics (U.S.) August 2015 U.S. Forecast; October 2015 Vermont NEEP Forecast Update (as of September 25, 2015).

The data portrayed in Table 1 is consistent with the labor market and personal income growth experience of the State during the early 2000s, where the Vermont economy underwent a generally milder economic downturn during the period relative to the U.S. as a whole. The State's rate of job recovery and income recovery/growth performance following the 2001 downturn was slightly below the U.S. average, which continued during the mid-2000s and into

the later stages of the economic upturn during that period. However, despite peaking earlier in its labor markets than the U.S. economy leading into what has been called the "Great Recession," the State's non-farm payroll jobs fell at a slower pace and declined less deeply than the U.S. on average during the most recent deep and prolonged period of economic recession. For calendar year 2015, Vermont is forecasted to see inflation-adjusted output continue to rebound at a level somewhat below the U.S. average. Personal income growth in Vermont is expected to be generally higher than that of the U.S. as a whole over the calendar year 2015-2017 period and forecasted to be lower in 2018.

Conference Theme: Transportation, Infrastructure and the Future of the New England Economy

Depending upon the way it is financed, there is an impressive amount of literature that points to the short-term and long-term benefits of investments in an economy's infrastructure.[7] Over the short-term, infrastructure investments can help to increase employment associated with construction activity. Over the longer-term, infrastructure investment can help boost living standards and economic growth by making tangible contributions to increased productivity. Infrastructure investment can also contribute to increased land values. These impacts are intuitively logical as the ability to move people and things efficiently across the ground is the lifeblood of any regional or state economy. Infrastructure investments in aviation, water and waste water, and for affordable renewable energy also can be major facilitators of economic progress.

In Vermont, it is virtually impossible to speak about the condition of the State's infrastructure without recognizing the impact of Tropical Storm Irene has had on the condition of and investment levels in the Vermont's system of roads and bridges, its rail system, housing stock, and water/waste water system. Tropical Storm Irene struck Vermont on August 28, 2011 producing record-breaking rainfall of more than 7 inches of rain (and in some places locally up to 11 inches of rainfall) during the storm. Extreme flooding occurred in ten of the State's seventeen river basins. The storm caused significant damage in 225 municipalities, destroying approximately 30 bridges, as many as 1,000 culverts, and impacting 500 miles of roads and 200 miles of rail. Dozens of water and waste water systems were overwhelmed, and several dams in flooded areas were outflanked. It was arguably the worst flooding since the "Great Flood of 1927," and warranted a federal disaster declaration for virtually the entire State.

By January 1st of 2012, all of the State bridges and all of the closed miles of State road were re-opened. However, the recovery effort is still on-going. Repairs and restoration were completed as part of an unprecedented cooperative effort between multiple agencies of the State, recovery crews from National Guard units from multiple neighboring states and from large crews from neighboring state agencies of transportation. The majority of emergency repairs to State roads, highways and bridges were funded 100% by the FHWA, but all permanent repairs require a 20% State match. VTrans estimates that when complete, the total State road, bridge and culvert repair bill could total in excess of $250 million.

[7] Bevins, Josh; The Short-Term and Long-Term Impact of Infrastructure Investments on Employment and Economic Activity in the U.S. Economy, Economic Policy Institute, July 1, 2014

Highways, Roads, and Bridges. Vermont's highway system includes 320 miles of interstate routes, over 2,387 miles of toll-free State highways, and approximately 11,415 miles of supporting roads with several major road construction projects in progress. Vermont's highway system also includes 2,729 long structure bridges—bridges spanning more than 20 feet in length and located on public roads. Since 2008 and with the help of Tropical Storm Irene recovery efforts, the State has made significant progress in improving system performance, including reducing the number of structurally deficient bridges in the State's system from 494 to 193. In 2009, more than 34% of the State's roads were in "very poor condition;" by 2015, that percentage had dropped to 13%.[8] In addition, the State paved a total of 303 two-lane miles of roadway in 2014, which was approximately 100 miles more than the 201 two-lane miles paved in 2013 and the 205 two-lane miles paved in 2012. In January 2012, the State implemented the Accelerated Bridge Program ("ABP"). The primary goal of the ABP is to improve the condition of Vermont's bridges while reducing project costs through expedited project development, delivery and construction. In 2014, a total of 40 bridge replacement or rehabilitation projects were undertaken, five of which were replaced in record time using accelerated bridge construction methods and short-term road closures.

Rail. The State owns 453 of the 749 rail corridor miles within the State and 305.1 of the 578.3 active rail line miles within the State.[9] The State-owned rail miles are operated by Vermont Rail Systems, Inc. At present, the Vermont Rail System services freight customers through its subsidiaries—Vermont Railway, Green Mountain Railroad, Washington County Railroad and the Clarendon & Pittsford Railroad. Other private rail operators that provide freight service in Vermont are New England Central Railroad and the Central Maine & Quebec Railway, both of which provide service in northern Vermont. The Central Maine & Quebec Railway was created in 2014 from the rail lines formerly owned by the Montreal, Maine & Atlantic Railroad, which declared bankruptcy following the Lac Megantic train derailment in Quebec in July 2013. The Pan American Railroad also provides service through the southwestern portion of the State.

State-supported Amtrak service includes two passenger trains: (1) the "Vermonter," with service from Washington, D.C. through New York City, New Haven, Connecticut and Springfield, Massachusetts to St. Albans, Vermont (covering 467 miles) and (2) the "Ethan Allen Express," with service from New York City through Albany, Schenectady and Saratoga Springs, New York to Rutland, Vermont (covering 241 miles). Both the Vermonter and Ethan Allen Express services are subsidized through cooperative agreements between Vermont and other states. The Vermonter is supported by Vermont, Massachusetts and Connecticut; the Ethan Allen Express is supported by Vermont and New York. The Vermont portion of the subsidies for the two passenger services is approximately $8.1 million per year, which Vermont pays to Amtrak for providing the services.

Recent improvements to the State's rail system include substantial improvements to the Vermonter rail lines in Vermont and New Hampshire. Between 2010 and 2012, $70 million in public and private sector funds—including $50 million in High Speed Intercity Passenger Rail (HSIPR) funds and $20 million from New England Central Railroad—were invested to replace most of the rail and to complete upgrades that restored speeds of up to 59 mph between St.

[8] According to the American Society of Civil Engineers Report Card for Infrastructure.
[9] According to the draft Vermont State Rail & Policy Plan (2015).

Albans and White River Junction, and 79 mph between White River Junction and Vernon. In 2014, the State began work on upgrading the rails between Rutland and Burlington along the Western Corridor to a higher grade, heavier weight rail that is continuously welded to remove all joints. This continuous welded track will allow higher train speeds and a more comfortable, quieter ride. The project is being funded with $10 million of Federal funds, $9 million from a grant received under the Transportation Investment Generating Economic Recovery (TIGER) IV program, and matching State funds. The project is expected to be complete as of the end of the 2015 construction season and is expected to result in the upgrade of approximately 19 miles of track in this important rail corridor.

As of the Summer of 2015, the State has articulated a number of additional goals for Vermont's rail system. These include: (1) expanding Amtrak service to Bennington and Montreal, (2) upgrading the State's track system to more consistently accommodate heavier loads to the 263,000 pound carload standard and (3) upgrading the State's rail bridges to the 286,000 pound carload standard. The State also has updated its capital plan for rail over the next 20 years. That plan includes a total of $665 million in improvements projected to maintain and enhance the state rail system. Of that total, $255.9 million (or 38%) of that total reflects resources that would be required to upgrade all of Vermont's passenger rail routes to the Federal Rail Administration's Track Class 4 (or 79 MPH) standard. Approximately $203.7 million is required to upgrade and maintain all State-owned bridges to the 286,000 pounds standard. Another $89.4 million is needed for track improvements to accommodate the 286,000 pound car standard. That step involves installing new rail (to 115 pounds per yard), replacing ties, surfacing, and improving crossings and turnouts. Finally, the State also requires even more funds to address issues such as vertical clearance for double stacking and a series of measures needed to address yard, interchange, and industrial access points for the State's rail system. Expected funding at current levels in the Updated Plan totals roughly $380 million (80% federal funding at $15 million per year for 20 years with a 20% State match at $4 million per year for 20 years[10]) leaving a $286 million (or 43%) funding gap that would need to be filled by alternative financing. Possible sources include private sector financing and/or financing from other federal sources such as the federal TIGER VII grant program,[11] and funds secured through the earmark process, and the federal TIGER grant program. Unfortunately, with ARRA and other past sources of funding essentially ended, the lack of a dedicated federal funding source for rail transportation in the U.S. will make meeting these needs very difficult to achieve.

Energy. In addition to the above transportation initiatives, the energy sector in Vermont has been an exceptionally active area of infrastructure development with far-reaching economic implications. Since 2011, the State has added more than 100 MW of nameplate generation capacity installed for both wind and solar PV electric. With the passage of Act 56 during the

[10] This is based on an average of just over $15.0 million in federal funding for rail capital projects per year since 2002. Although most State funding for rail is dedicated for operating expenses, the State has allocated approximately $4.0 million per year over the next 20 years for matching funds to complete rail capital projects in the State.

[11] On April 2, 2015, U.S. Transportation Secretary Anthony Foxx announced $500 million will be made available for transportation projects across the country under a seventh round of the highly successful U.S. Department of Transportation's TIGER competitive grant program. The TIGER grant program focuses on capital projects that generate economic development and improve access to reliable, safe and affordable transportation for disconnected communities both urban and rural, while emphasizing improved connection to employment, education, services and other opportunities, workforce development, or community revitalization.

2015 session of the Vermont General Assembly, the Renewable Energy Standard[12] will further encourage the development of renewables. That legislation codified the State's goal of meeting 90% of the State's electric energy needs by 2050 with renewable sources.[13] For power generation purposes, that 90% goal requires (among others) an estimated $33.3 billion in new investments in 329 MW of additional wind generation (at $0.3 billion), 2,248 MW of new Solar PV generation (at $6.0 billion), 132 MW of additional Bioenergy Electric Generation ($0.2 billion), an additional $10.7 billion in additional electric and thermal energy efficiency expenditures, and $7.0 billion in electric grid updates to handle the more distributed generation by 2050.[14] That level of energy plant investment indeed a significant part of the State's required infrastructure that could have transformative impacts on the State's future economic performance.

In addition of the above, the State has two large energy infrastructure projects, one currently underway, and a second on the near-term horizon. The large energy infrastructure project currently underway involves the expansion of the Vermont Gas pipeline from Chittenden and Franklin counties into Addison County (to the Town of Middlebury) which received a Certificate of Public Good from the Vermont Public Service Board in December of 2013. While reported project cost increases of up to 40 percent in 2014 caused the VPSB to consider remanding the CPG for the Addison County pipeline during the late Summer 2014, ultimately the VPSB ruled in early October 2014 not to reconsider the issuance of the CPG for this project. Subsequently, because the cost of the pipeline project increased yet again in December 2014 from $121.6 million to $154.0 million[15] (or approximately $86 million higher than the expected costs when the original CPG was issued),[16] the VPSB opened a second proceeding on the project to consider re-opening proceedings to reconsider the December 2013 CPG. Technical hearings on this question were held on June 22 and June 23, 2015 and legal briefs were filed by July 6, 2015. Although construction of the pipeline currently is on-going under the previously issued CPG, a final decision on whether to re-open the CPG proceedings for the pipeline project is expected in the Fall 2015. A re-opening of the original CPG could result in a halting of construction activity on the pipeline and would call into question whether the project would be completed in the future.

A second major potential energy infrastructure project that is potentially on the near-term horizon involves a proposal to the Vermont Public Service Board by TDI-New England to construct a 154 mile underwater-underground transmission line designed to deliver 1,000 MW of hydroelectricity from Canada to the Vermont and New England market. The transmission line, if approved and financing can be found, is to be constructed from the Canadian border to the Town of Benson, Vermont under 97 miles of Lake Champlain and underground for the final 57 miles to a new converter station located in the Town of Ludlow, Vermont. The underground portion of the line is expected to use a combination of town and State road right-of-ways and land owned

[12] Which replaced the Sustainably Priced Energy Enterprise Development (SPEED) program.
[13] Current estimates are that the State's electric power supply will be 55% renewable in 2017 (see page 33 of the Public Review Draft State Energy Plan, dated Summer of 2015).
[14] See Exhibit 6-1 Potential Scope of Financing Needed in Vermont by 2050, Public Review Draft State Energy Plan, dated Summer of 2015Page 56.
[15] VGS was subsequently fined $100,000 under Board Rule 5.409 for failing to report the Addison Natural Gas Pipeline project's cost increases in a timely way to the VPSB and all parties involved with the original CPG proceedings.
[16] In February 2015, Phases 2 and 3 of the pipeline project were cancelled after International Paper ("IP") cancelled its participation in the project. IP cancelled the agreement to pay for Phase 2 after its estimated costs escalated from $69 million to $135 million.

by TDI. The estimated cost of the transmission line is $1.2 billion, and would be developed using private sector financing. If approved, the project is expected to be in service by 2019. It is expected that TDI-New England will transmit only renewable power through the transmission lines from hydro Quebec according to an agreement reached with the Vermont Department of Public Service during the Summer of 2015. Action on the TDI application by the VPSB is expected later in the Fall of 2015. Whether or not the project is built depends on the ability of the TDI to deliver on this transmission project prior to other alternative transmission projects being considered in other possible transmission corridors in New England including the state of New Hampshire.

The above infrastructure development activity in energy comes at a time when the State recently experienced the closure of its only nuclear electric generating facility. The Vermont Yankee nuclear facility in Vernon permanently ceased electric power generation and was removed from the Independent System Operator in New England (ISO NE) grid on December 29, 2014. The permanent shutdown of the Vernon station reflected the August 27, 2013 announcement by Entergy Nuclear Vermont Yankee LLC ("Entergy") that, for economic reasons, it would be ceasing power production at the Vernon station permanently and moving to safe shutdown on or about December 31, 2014. The closure was announced even though the company had received a federal 20-year licensing extension from the Nuclear Regulatory Commission ("NRC") for operation of the Vernon station through 2032.

As of this Summer, workers have de-fueled the reactor, and the radiological decommissioning plan has begun. Staffing at the plant following de-fueling in January has declined to 312 employees, which is about 55% of what it was when the Vernon station was operating. It is expected that employee counts at the plant the plant will adjust further commensurate with the reduced fuel fire risk, and the reduced number of active plant systems required to maintain Spent Fuel Pool integrity. For example, when there are fewer active systems to maintain at the Vernon station, staffing levels at the facility will likely decline to 127 after April 2016. Once the spent fuel pool is shut down by 2021 (after all spent fuel is transferred to dry cask storage), only security personnel will be needed to monitor the spent fuel, and staffing is expected to decline to approximately 60. Activity will again increase onsite once plant demolition and site restoration commence to complete the decommissioning process. However, that is not realistically expected to occur until well out into the future when the decommissioning fund roughly doubles to reach the $1.2 billion level needed to undertake full decommissioning of the plant.

Telecommunications. No overview of infrastructure in Vermont would be complete without including the critical issue of telecommunication infrastructure. Telecom is the great leveler of the competitive playing field in today's economy for a rural state like Vermont—allowing small companies located in the State to effectively compete with other locations that may be closer to end markets for goods and services. Vermont currently has a robust and extensive telecommunications network. The State is served by well over a hundred companies that have been authorized by the Vermont Public Service Board to provide local telephone service (though many companies are not actively marketing service), and hundreds more are authorized to provide long distance service within the State. Changing technology is bringing further options in the form of wireless service and Voice over Internet Protocol (VoIP), which provides a voice communications service similar to telephone service via a broadband internet connection.

Vermont is also served by ten incumbent local exchange carriers ("ILECs"). ILECs are the

traditional carriers within their service territories and have a Provider of Last Resort (POLR) obligation to serve any reasonable request for service within their territory. The largest local phone company, FairPoint Communications ("Fairpoint"), which serves about 85% of the State, is subject to an "incentive regulation" plan that allows it to introduce and change the prices of new services, but limits its ability to increase prices of pre-existing services. FairPoint is also referred to as a Regional Bell Operating Company ("RBOC"), as it took over territory once owned by AT&T or "Ma Bell." The rates of Vermont's nine rural ILECs, or RLECs, which collectively serve about 15% of the State, continue to be set on the basis of these companies' overall cost of providing service.

Ten years ago, only 75% of the State's locations had high speed internet access available, defined then as 768 kilobits per second (kbps) download and 200 kbps upload. In 2011, the State put forward a goal of ubiquitous availability of broadband at 768/200 kbps with service at 10 megabits per second (Mbps) available to most locations by the end of calendar year 2013. The State met this goal, due to significant system investments and hard work of Vermont service providers (such as VTel) and the Governor. Key investments from private partners, more than $165 million in federal stimulus investments (including both grants and loans), and State capital appropriations have resulted in the expansion of basic broadband service. According to the Vermont Department of Public Service, high speed service is available in over 99% of the State with the remaining less than 1% having a funded solution in place. A total of 75% of households have access to speeds of four Mbps download and one Mbps upload, or faster. The State's goal is to ensure that every address in Vermont has access to broadband with the minimum technical requirements of four Mbps download and one Mbps upload by year end 2020.

Other Infrastructure Developments. Beyond the considerable activity listed above, there are a number of other major infrastructure efforts that are on-going throughout Vermont. These activities involve major efforts to improve: (1) the state's aviation infrastructure (a major safety enhancement program at the Burlington International Airport involving the construction of another taxiway, and the expansion of the state airport at Newport in the Northeast Kingdom), and a new and significant effort to upgrade waste water treatment systems and better manage storm water runoff in order to assist with the clean-up of Lake Champlain. All of the above-mentioned projects and the many others not included in the above discussion are designed to both help the economy of the State perform better and/or are designed to tangibly improve the quality of like of state residents by reducing past and future impacts on the state's natural resources and environment.

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VT STATE MACRO SUMMARY	2010	2011	2012	2013	2014	2015	2016	2017	2018
Labor Force 000's	337.4	338.3	337.1	335.7	334.6	336.3	339.0	341.7	344.4
% Chg	-0.2	-0.3	-0.9	-1.0	-0.6	0.0	0.5	0.6	0.6
Unemployment Rate %	6.1	5.5	5.0	4.4	4.1	3.6	3.3	3.1	2.9
Change (Pct. Pts.)	-0.5	-0.6	-0.5	-0.6	-0.3	-0.5	-0.3	-0.2	-0.2
Personal Income (Bil. $)	25.1	26.9	27.8	28.5	29.7	30.7	32.3	33.7	35.1
% Chg	1.6	7.2	3.4	2.5	4.2	3.5	5.0	4.6	4.1
Gross State Product (Bil. 09$)	26.2	27.0	27.1	27.0	27.2	27.8	28.6	29.4	30.0
% Chg	3.7	2.8	0.4	-0.3	0.6	2.3	3.0	2.6	2.1
Total Housing Permits	1,960	1,610	1,778	1,910	1,956	2,057	2,152	2,241	2,298
% Chg	9.3	-17.9	10.4	7.4	2.4	5.2	4.6	4.2	2.6
Population (000's)	625.9	626.4	626.2	626.9	626.6	627.5	628.9	630.5	631.8
% Chg	0.2	0.1	0.0	0.1	0.0	0.1	0.2	0.3	0.2
NEEP Economic Forecast 10/15/15	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**

Vermont: History 2010-14
Outlook 2015-18

EMPLOYMENT SUMMARY:

Total Nonfarm employment (000's)	298.0	300.7	304.5	306.8	310.0	315.2	321.0	326.8	331.2
% Chg	0.3	0.9	1.3	0.8	1.0	1.7	1.8	1.8	1.3
Construction	15.6	13.8	13.5	14.0	14.2	14.2	14.7	15.1	15.5
% Chg	-2.2	3.7	1.8	-0.6	3.6	2.9	3.0	3.1	1.4
Manufacturing + Mining	31.4	31.9	32.7	32.6	32.0	31.8	32.2	32.6	32.7
% Chg	-1.9	1.5	2.6	-0.3	-1.6	-0.6	1.3	1.2	0.3
Total Service Providing	253.2	254.8	257.6	260.1	263.3	268.3	273.2	278.2	282.2
% Chg	0.7	0.7	1.1	1.0	1.2	1.9	1.8	1.8	1.4
Trade, Transportation, Utilities	55.9	55.9	55.5	55.5	55.8	56.3	56.8	57.4	57.9
% Chg	-0.3	-0.1	-0.7	0.0	0.5	1.0	0.8	1.1	0.8
Information	5.4	5.0	4.7	4.7	4.8	5.0	5.0	4.9	4.9
% Chg	-2.9	-7.2	-5.4	0.7	1.1	4.0	-0.3	-1.4	-0.5
Financial Activities	12.2	12.1	12.0	12.0	12.1	12.3	12.4	12.7	12.8
% Chg	-1.6	-0.6	-0.7	0.1	0.7	1.5	1.3	1.8	1.3
Professional & Business Services	23.4	24.9	26.1	26.4	26.6	26.9	28.4	29.9	31.0
% Chg	4.9	6.5	4.8	1.2	0.9	1.2	5.6	5.1	3.5
Education & Health Services	59.1	59.5	60.7	61.7	62.4	64.2	65.6	67.1	68.5
% Chg	-0.2	0.6	2.0	1.6	1.2	2.8	2.2	2.2	2.1
Leisure & Hospitality	32.5	32.7	33.4	34.3	35.4	36.9	38.0	39.0	39.7
% Chg	2.2	0.7	2.0	2.7	3.3	4.2	3.0	2.7	1.8
Other Services	9.9	10.0	10.1	10.1	10.2	10.5	10.7	10.9	11.0
% Chg	2.6	0.9	0.9	0.1	1.2	2.8	1.7	1.7	1.1
Government	54.9	54.8	55.1	55.4	56.0	56.1	56.2	56.3	56.4
% Chg	0.6	-0.1	0.6	0.6	0.9	0.3	0.2	0.1	0.2