



Economic Scenario™

a PINPOINT Service

Connect Northern New England *Economic Scenario Model™*

User Guide (Version 2.2)

December 2009



Welcome

ECONOMIC MODEL USERS' GROUP

Maine

William Armitage
Biddeford-Saco Area Economic
Development Corporation
John Butera
Central Maine Growth Council
Robert Clark
Northern Maine Development Council
Charles Webb
Eastern Maine Development Corporation

New Hampshire

Jennifer Boulanger
Belknap County Economic Development
Council
Stephen Heavener
Capital Regional Development Council
Mary Ann Kristiansen
The Hannah Grimes Center
Bill Norton
Norton Asset Management, Inc.

Vermont

Frank Cioffi
Greater Burlington Industrial Corporation
Jon Freeman
Northern Community Investment
Corporation
Jeff Lewis
Brattleboro Development Credit
Corporation
Steve Patterson
Northeastern Vermont Development
Association

December, 2009

FairPoint Updates Economic Development Model

FairPoint Communications is pleased to bring you the 2009 update of the Connect Northern New England *Economic Scenario Model™*, a regional economic modeling tool for calculating the GDP (Gross Domestic Product) of Northern New England counties or economic regions under various sets of assumptions.

FairPoint commissioned ViTAL Economy, a nationally-known Community and Economic Development consulting firm, to develop this model as part of FairPoint's initiative to assist economic development efforts in Maine, New Hampshire and Vermont. The modeling tool will provide economic development officials with a mechanism to help them benchmark the region's current economic status and forecast the impact of future economic and community development strategies. Effectively used, the Connect Northern New England *Economic Scenario Model™* will provide a significant competitive advantage for the entire region as it includes benchmark and forecasting opportunities for Maine, New Hampshire and Vermont.

Robert Clark, executive director of the Northern Maine Development Corporation and one of 12 members of the Connect Northern New England *Economic Scenario Model™* User Group, sums it up this way:

“The Connect Northern New England’s *Economic Scenario Model™* is a powerful economic development tool that will allow us to determine which industry sectors and clusters will contribute the greatest economic impact to our region. We can then focus our scarce resources on developing identified clusters that will have the best chance for sustainability and economic benefit to the region.”

For example, the model's forecasting tool will allow users to project the impact on jobs, earnings, output and GDP by changing a region's economic focus from traditional and mature industrial sectors to emerging knowledge-based sectors.

It will also allow officials to compare and contrast the economic impact of competing or alternative economic strategies. A capital investment impact tool is also included, enabling officials to calculate the impact of capital investment projects on jobs, earnings, GDP and output. The model is a macroeconomic modeling tool using publicly available information.

The Connect Northern New England *Economic Scenario Model*TM is one resource that FairPoint Communications is making available to economic officials of Northern New England and is a concrete example of the value of regional collaboration. This modeling tool is the result of the input and collaborative investment of many citizens and organizations across the region.

FairPoint Communications and ViTAL Economy would like to thank the Connect Northern New England *Economic Scenario Model*TM User Group for their input to the model's development. Their contributions helped to ensure that the model takes into account the special characteristics of the Northern New England region, and is therefore relevant to you, the user.

We congratulate all of Northern New England on this collaborative investment and encourage the region's leaders to make effective strategic use of this valuable and market-leading tool. The Connect Northern New England *Economic Scenario Model*TM holds the promise of delivering a brighter future of economic transformation and growth for our region.

Sincerely,

Peter Nixon, President
FairPoint Communications

Frank Knott, President
ViTAL Economy, Inc.

Please note: FairPoint is not warranting the economic development tool's usefulness or applicability for a specific business purpose such as justification for an individual business case and any and all results should be considered with all other available relevant information.

What is the *Economic Scenario Model*TM?

The Connect Northern New England *Economic Scenario Model*TM (the model) is an Excel-based software tool that was created to provide information on existing economic conditions and quantify potential order-of-magnitude impacts of new developments and job creation scenarios in the Northern New England (NNE) region. The *Economic Scenario Model*TM includes benchmark and quantification tools to allow the user to estimate the impact on jobs, earnings, output and GDP resulting from changing a region's economic focus from traditional and mature industrial sectors to emerging knowledge-based sectors. It also allows regional leaders to compare and contrast the economic impact of competing or alternative economic strategies. While this model is very effective for estimating order-of-magnitude economic impacts, it is not intended to serve as a substitute for more comprehensive economic impact analyses for specific industries.

The model is based on economic multipliers and labor employment data. The multipliers used reflect the direct, and indirect and induced impacts on earnings and jobs resulting from changes in output, jobs or direct earnings in a specific geographic region for various industry categories. Therefore, areas with more significant economic production will have larger multipliers. Generally, regions with similar economic attributes are grouped together so that the model will accurately reflect activity in the regions. The multipliers used to drive this model are obtained from the U.S. Bureau of Economic Analysis (BEA). The BEA creates these multipliers using its Regional Input-Output Modeling System (RIMS) II. RIMS II also allows the user to uniquely define the regions to be examined. This model is intended to provide order-of-magnitude analysis for economic modeling in regional planning exercises and to assist with comparing the potential impact of competing opportunities.

The model consists of 5 separate reports, each of which can provide data at the county, state and Northern New England (NNE) level. The model was developed with input from a regional user group to ensure that the model captured the nuances of each region and caters to the needs of community and economic development (CED) professionals in the region. The User Group was comprised of four CED representatives from each state – two from the state-level and two from the regional-level economic development organizations.

Caveats

This model has been developed to assist in assessing hypothetical scenarios. The output of this model is based on multiplier analysis and actual results may be significantly different than model projections. These worksheets are suitable for economic analysis, but are not suitable alone for developing financial projections for a business plan. Additionally, the capital projections are based on common projects. Many capital projects will have a greater or lesser impact than a typical project.

Source data on employment by industry used to create the model is collected by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA), which is based on reporting from industry.

Updates

Updates from the previous version of the model include:

1. Labor data is now based on 2007 BLS statistics;
2. The inflation adjustment used to reflect 2008 dollars was increased to more closely reflect Gross Output inflation figures.

Notes

The *Economic Scenario Model*TM is designed to be relatively easy for a user to manipulate. The following notes advise how best to use the model:

- All user input areas are shaded gray. All model outputs are shaded blue. Data cannot be entered into blue shaded areas.
- In the report worksheets, the user can toggle between counties, states, and the entire NNE region by clicking on the gray state/county/region cell and using the pull-down arrow.
- The worksheets are best viewed at 85%.
- BEA 2007 employment data have been used to drive the model.
- Earnings, GDP and Output numbers displayed in the model are calculated and shown in 2008 constant dollars.
- Only jobs numbers are actual data figures. Other economic impacts are generated by multiplier analysis.
- The regional multipliers used in this model were developed by the BEA using: (1) 1997 National Input/Output Tables, and; (2) annual state and local area personal income data. The state and local area personal income data is prepared annually by the BEA, based on estimates of personal income for counties, metropolitan areas and the BEA-defined economic areas. These annual estimates are used to update the multipliers to reflect the more recent economic environment (i.e., in this case 2005), and to “regionalize” the relevant national economic variables necessary to develop the final multipliers. The 2005 multipliers are then adjusted for inflation to reflect 2008 dollar values. The BEA is currently working towards developing new regional multipliers based on 2002 National Input/Output Tables, and have indicated that these should be available by the beginning of 2010.

- Commuter impacts data is taken from the U.S. Census Bureau and is based on the 2000 Census. No more recent data is currently available. Data can be considered accurate for that year, but note that commuting patterns may have shifted since this data was collected.
- Notes on individual tables are provided at the bottom of each table.
- GDP ratios were derived at the industry level.
- Version 2.2 of the model was released in December 2009. Model updates will be provided by FairPoint Communications. The model will be updated annually with available data.

Definitions

The terms used in the *Economic Scenario Model*TM are standard economic terms. Definitions for key terms used in the model are provided below:

Earnings: Sum of wage and salary disbursements, supplements to wages and salaries, and proprietors' income.

GDP: The total market value of all final goods and services produced in the region.

Output: The total economic output of a firm, industry, or economy without deducting intermediate inputs. For a firm or industry, this is larger than its value added which is net of its intermediate inputs. Intermediate inputs are goods or services consumed by industries in the production of other final goods or services.

Direct Employment/Impact: Employment that can be directly attributed to a particular business, activity or industry.

Indirect Employment/Impact: Employment in down-stream industries that results from the presence of a particular business, activity or industry. Indirect impact is generally generated in industries that supply or provide services to the direct business, activity or industry.

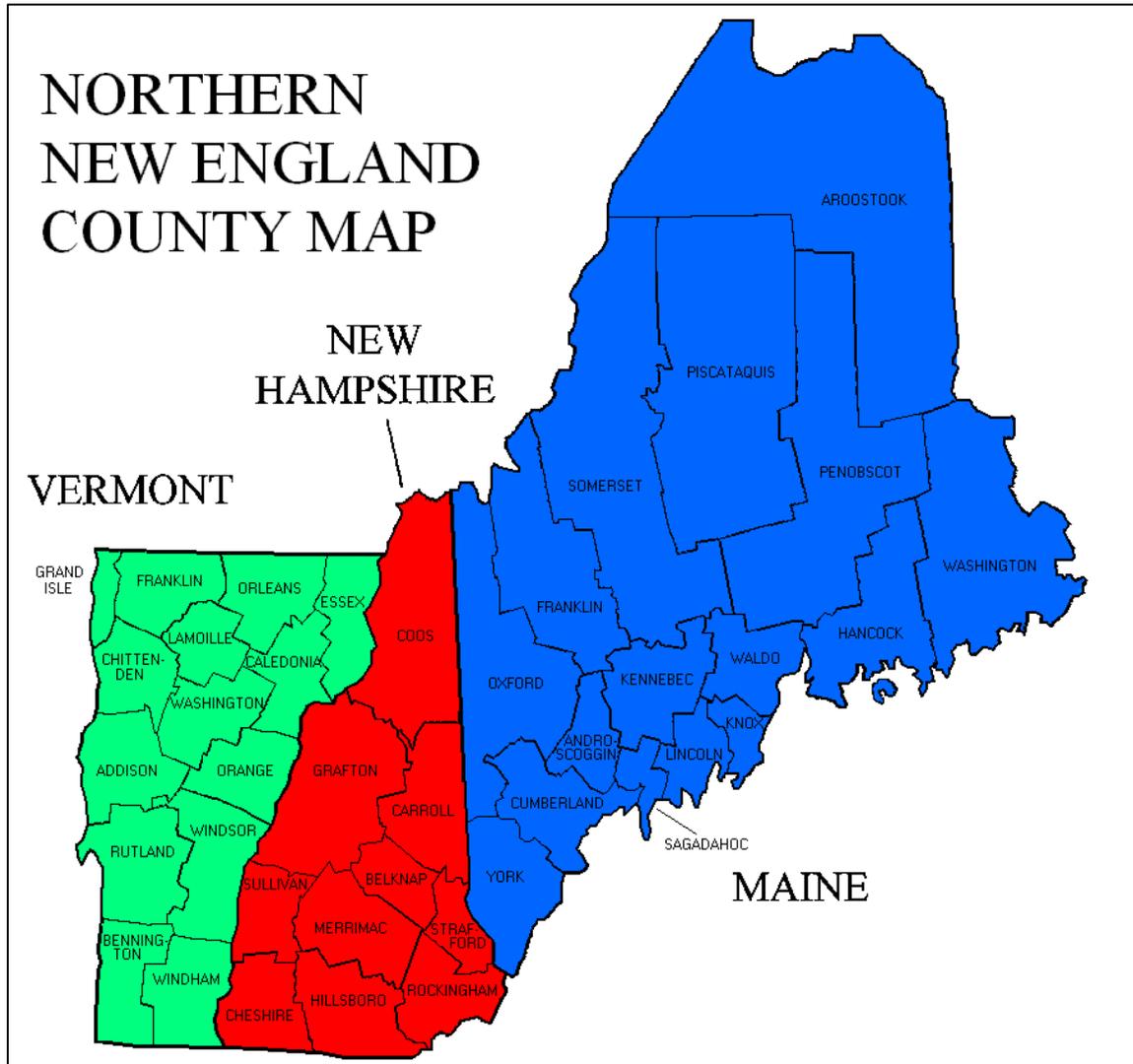
Induced Employment: Employment generated because of expenditures made by individuals employed directly or indirectly by the particular business, activity or industry.

RIMS II Multipliers: Regional Input-Output Modeling System (RIMS) produced by the BEA for regional economic analysis and is based on 2005 regional data. It is RIMS II because this is the second version.

The Region

The model describes the 3 northernmost states of Northern New England, encompassing 40 counties in total. **Figure 1** below shows the state and county boundaries and names.

Figure 1: Northern New England County Map

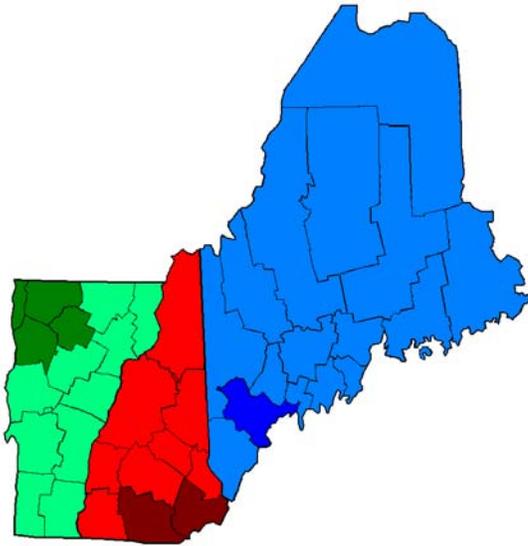


Multiplier regions

To increase accuracy in regional multiplier-based calculations, Northern New England has been divided into 6 regions with separate sets of multipliers for each region. Multiplier regions must be geographically contiguous and have been selected on the basis of similarity in key economic variables, including household income, unemployment rate, and GDP per capita.

The map in **Figure 2** below illustrates the 6 regions: Maine-Cumberland, Maine Outside Cumberland, Northern and Central New Hampshire, Southern New Hampshire, Northwest Vermont, and Southern and Eastern Vermont.

Figure 2: Multiplier Regions



Worksheet Instructions

Snapshot Report:

The Snapshot Report allows the user to view a current snapshot of a county, state or regional (NNE as a whole) economy. By clicking on the gray county/region cell, the user can select the county/region of interest. Up to 3 areas can be chosen for comparison or to create an economic region. The blue “Baseline Measures” table then populates with 2008 employment, earnings, and GDP estimates. In the example in **Figure 3**, Windham County can compare its performance against neighboring counties or evaluate the performance of a 3-county region using the “Total” column on the right.

As a second step, the user can estimate the potential change in base economic measures if jobs or earnings are increased (or decreased) by a specific percentage. To do this, the user enters a positive or negative percentage change in jobs or earnings in either the gray cell beside “% Change in Jobs” or “% Change in Earnings”, or both, and projected impacts are shown in “Estimated Impacts”, the second set of blue cells. Boxes and arrows on the diagram below show where the user can enter data into the model.

Figure 3: Snapshot Report Example

VITAL Economy

Connect Northern New England
Economic Scenario Model™
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Northern New England - Snapshot Report

The Earnings, GDP and Output impacts are presented in 2008 constant dollars.

| Base | Orange VT | Lamoille VT | Washington VT | TOTAL |
|--------------------------------------|------------------|------------------|------------------|-------------------|
| State/County/Region | | | | |
| Baseline Measures | | | | |
| Employment (Jobs) | 14,680 | 16,590 | 45,120 | 76,390 |
| Earnings | \$ 511,408,000 | \$ 525,576,000 | \$ 1,630,474,000 | \$ 2,667,458,000 |
| GDP | \$ 1,069,928,000 | \$ 1,086,198,000 | \$ 3,482,943,000 | \$ 5,639,069,000 |
| Output | \$ 1,939,010,000 | \$ 1,954,939,000 | \$ 6,153,179,000 | \$ 10,047,128,000 |
| Increase in Baseline Measures | | | | |
| % Change in Jobs | -2% | 1% | 5% | |
| % Change in Earnings | -2% | 1% | 4% | |
| Estimated Impacts | | | | |
| Employment (Jobs) | 14,390 | 16,670 | 47,380 | 78,440 |
| Earnings | \$ 490,809,000 | \$ 531,026,000 | \$ 1,782,273,000 | \$ 2,803,908,000 |
| GDP | \$ 1,026,412,000 | \$ 1,097,450,000 | \$ 3,810,812,000 | \$ 5,934,674,000 |
| Output | \$ 1,860,420,000 | \$ 1,975,083,000 | \$ 6,728,983,000 | \$ 10,564,486,000 |

* Select a state/county/region from the drop-down list

Enter the % change in jobs
 Enter the % change in earnings

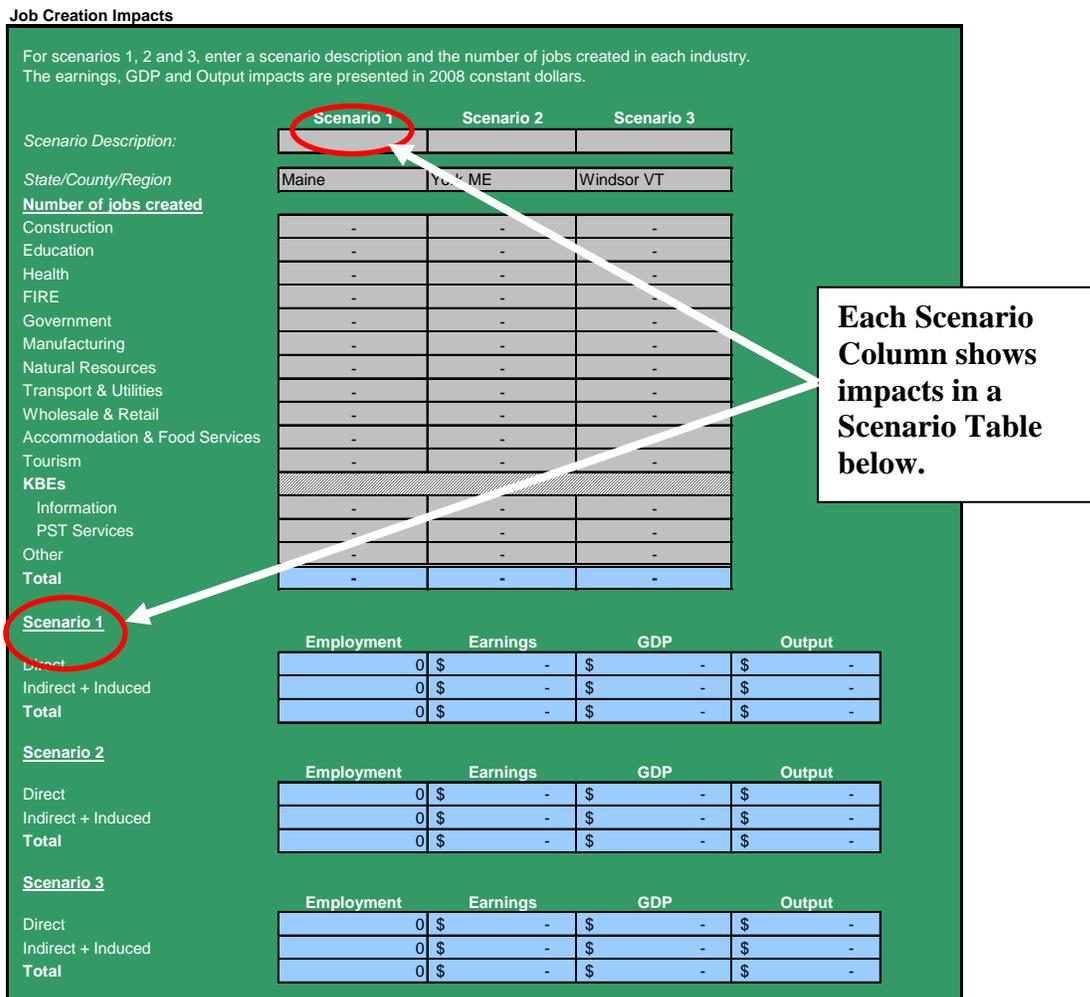
Click and Modify Grey Cells

Blue cells are output and cannot be modified

Scenario Report and Capital Investment Projections:

The Scenario Report provides a Job Creation Impacts Model and a Capital Investment Model. The Job Creation Impacts Model allows the user to include various combinations of employment by industry and view the resulting economic impacts associated with each. Fourteen specific industry groups have been identified and are used throughout the model where applicable. Once the user enters the number of new jobs (or job losses) for each of the employment scenarios, the resulting economic impacts are displayed including: employment, earnings, GDP, and economic output. Users can enter estimated job losses by inputting a negative number, (e.g., -50.). For each of these impacts, the direct, indirect and induced, and total impacts are presented. The industry definitions are primarily taken from the Bureau of Labor Statistics' industry super sectors. Tourism has been added as a separate line for consideration. Professional, Scientific & Technical (PST) and Information employment are included under the KBE heading.

Figure 4: Job Creation and Capital Investment Impact Example



In addition to developing scenarios by industry groups, the user can also examine the economic impacts associated with a specific construction (capital investment) project. The impacts of a capital investment can be calculated in a separate table at the bottom of the Capital Impacts worksheet as shown in **Figure 5**. The total capital investment amount related to the construction of new infrastructure (e.g. manufacturing plant, shopping mall, etc.) is entered in the gray cell adjacent to “Total Investment Amount”. The blue rows below will be populated with the direct and indirect impacts to employment, earnings, GDP and output. Please note: real estate purchase costs, transaction costs and equipment purchases should not be included in the investment calculation.

Figure 5: Capital Investment Impact Example

Capital Investment Impacts

Enter the total capital investment amount below.
The earnings and GDP impacts are presented in 2008 constant dollars.

Capital Investment
Total Investment Amount

State/Region

| Projected Impact | Employment | Earnings | GDP | Output |
|-------------------------|-------------------|---------------------|---------------------|---------------------|
| Direct | 16 | \$ 615,113 | \$ 872,342 | \$ 1,677,580 |
| Indirect + Induced | 14 | \$ 391,435 | \$ 738,135 | \$ 1,410,000 |
| Total | 30 | \$ 1,006,548 | \$ 1,610,477 | \$ 3,086,748 |

Five-Year Projections:

The Five-Year Projections worksheet allows the user to analyze how employment in a region may change over a five-year period. Different regions can be selected by clicking on the gray dialogue box and using the pull-down arrow. The first column then displays the number of jobs by sector, in the “Base Jobs” column as shown in **Figure 6**. In the next column, the user may enter the target earnings for each sector. This has been added to allow for earnings increases over base amounts. The impact of an anticipated decline in earnings can be calculated by entering a negative number. If a new earnings number is not entered, the model will use the existing earnings numbers. For a five-year period, the user can then add new jobs by industry sector in each year. The last two columns in the table display the cumulative new incremental jobs and the total new jobs in each sector. The economic impacts of the new jobs are shown in tables below. The economic impact of the new jobs created is displayed for each year.

A table showing the cumulative impacts is provided below the annual totals. The worksheet can be used to estimate the impacts of clusters over a five-year period by estimating job growth in related industries.

Figure 6: Five-Year Projection Example

Northern New England - Five-Year Projections

For each of the five years, enter the number of jobs created in each industry. The earnings, GDP and Output impacts are presented in 2008 constant dollars.

State/County/Region: Rutland VT

| Number of jobs created | Base Jobs | Target Avg Annual Wage Growth (%) | Annual Increase | | | | | |
|-------------------------------|---------------|-----------------------------------|-----------------|------------|------------|------------|------------|------------|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | |
| Construction | 3,214 | 5% | 100 | | | | | |
| Education | 961 | | | 100 | | | | |
| Health | 5,171 | | | | 100 | | | |
| FIRE | 2,148 | | | | | 100 | | |
| Government | 4,829 | | | | | | 100 | |
| Manufacturing | 4,045 | | | | | | | 100 |
| Natural Resources | 1,324 | | | | | | | |
| Transport & Utilities | 1,020 | | | | | | | |
| Wholesale & Retail | 6,561 | | | | | | | |
| Accommodation & Food Services | 2,923 | | | | | | | |
| Tourism | 1,489 | | | | | | | |
| KBEs | | | | | | | | |
| Information | 462 | | | | | | | |
| PST Services | 2,313 | | | | | | | |
| Other | 3,923 | | | | | | | |
| Total | 40,383 | 5% | 100 | 100 | 100 | 100 | 100 | 100 |

Annual Impacts

Year 1

| | Employment | Earnings | GDP | Output |
|--------------------|------------|---------------------|---------------------|----------------------|
| Direct | 100 | \$ 3,658,001 | \$ 5,379,631 | \$ 10,284,076 |
| Indirect + Induced | 71 | \$ 2,318,075 | \$ 4,611,958 | \$ 8,816,538 |
| Total | 171 | \$ 5,976,076 | \$ 9,991,589 | \$ 19,100,613 |

Year 2

| | Employment | Earnings | GDP | Output |
|--------------------|------------|---------------------|----------------------|----------------------|
| Direct | 200 | \$ 6,252,323 | \$ 9,358,293 | \$ 16,759,625 |
| Indirect + Induced | 111 | \$ 3,592,036 | \$ 7,754,391 | \$ 13,932,786 |
| Total | 311 | \$ 9,844,359 | \$ 17,112,684 | \$ 30,692,412 |

Year 3

| | Employment | Earnings | GDP | Output |
|--------------------|------------|----------------------|----------------------|----------------------|
| Direct | 300 | \$ 9,149,895 | \$ 13,262,853 | \$ 23,821,820 |
| Indirect + Induced | 165 | \$ 4,970,665 | \$ 10,726,580 | \$ 19,309,486 |
| Total | 465 | \$ 14,120,560 | \$ 23,989,434 | \$ 43,131,306 |

Year 4

| | Employment | Earnings | GDP | Output |
|--------------------|------------|----------------------|----------------------|----------------------|
| Direct | 400 | \$ 12,758,274 | \$ 26,056,323 | \$ 42,143,822 |
| Indirect + Induced | 257 | \$ 8,269,078 | \$ 18,662,091 | \$ 30,684,276 |
| Total | 657 | \$ 21,027,352 | \$ 44,718,414 | \$ 72,828,098 |

Year 5

| | Employment | Earnings | GDP | Output |
|--------------------|------------|----------------------|----------------------|-----------------------|
| Direct | 500 | \$ 18,128,999 | \$ 39,754,555 | \$ 64,800,067 |
| Indirect + Induced | 346 | \$ 11,768,635 | \$ 26,164,594 | \$ 43,100,127 |
| Total | 846 | \$ 29,897,635 | \$ 65,919,150 | \$ 107,900,194 |

Cumulative

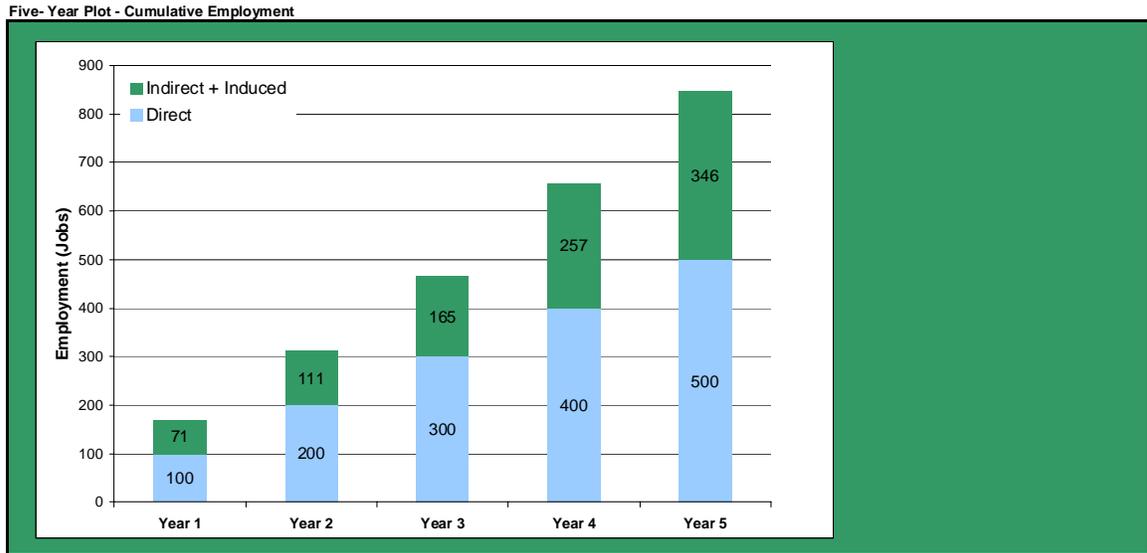
| | Employment | Earnings | GDP | Output |
|--------------------|------------|----------------------|----------------------|-----------------------|
| Direct | 500 | \$ 18,128,999 | \$ 39,754,555 | \$ 64,800,067 |
| Indirect + Induced | 346 | \$ 11,768,635 | \$ 26,164,594 | \$ 43,100,127 |
| Total | 846 | \$ 29,897,635 | \$ 65,919,150 | \$ 107,900,194 |

Target earnings for a sector can be increased above current earnings

Each year column shows impacts in a table below.

The cumulative impacts of the job creation and earnings are also shown year by year in two bar charts at the bottom of the worksheet. The scenario in **Figure 7** shows what the bar chart looks like when the job creation data is added from the table above it. Each bar shows the cumulative direct, indirect and induced jobs up to, and including that year.

Figure 7: Five-Year Cumulative Employment Example



Regional Report:

The existing jobs and economic impacts for each county/region are shown in the “Current” table, separated by industry group as shown in **Figure 8**. A county/region is selected by clicking on the gray county/region dialogue box and using the pull-down arrow. The potential economic profile of the selected county/region can be projected by choosing a target type (employment, earnings, GDP or output) and clicking on the target type button. The user then enters projected changes (use a minus sign for job losses) beside the selected industry group. Please note: for GDP, Earnings and Output the anticipated percentage change should be entered; for Jobs, the actual number of anticipated jobs should be entered. The blue “Future Impact” table at the bottom of the worksheet (**Figure 9**, below) will show the projected impact of the targeted changes on the county/regional economy.

Figure 8: Regional Report Example

Northern New England - Regional Report

Select the state or region to analyze. The first table below presents the current distribution of jobs, earnings, GDP and output. Select whether you want to set targets for employment, earnings, GDP or economic output. Enter the target number of jobs created in each industry or the target percentage increase in earnings, GDP or output. The final table presents the distribution of jobs, earnings, GDP and output resulting from obtaining the targets. The earnings, GDP and Output impacts are presented in 2008 constant dollars.

State/County/Region: * Select a state/county/region from the drop-down list

Current

| | 2008 Jobs | | Earnings | | | GDP | | Economic Output | |
|-------------------------------|---------------|-------------|------------------------|-------------|-----------------|--------------------|-------------|--------------------|-------------|
| | Number | % | \$ Total | % | Average Wage | \$ Thousands | % | \$ Thousands | % |
| Construction | 5,549 | 8% | \$198,989,000 | 9% | \$35,900 | \$285,000 | 7% | \$544,800 | 7% |
| Education | 1,851 | 3% | \$47,376,000 | 2% | \$25,600 | \$63,400 | 1% | \$102,800 | 1% |
| Health | 10,695 | 16% | \$339,724,000 | 15% | \$31,800 | \$421,700 | 10% | \$761,800 | 9% |
| FIRE | 4,617 | 7% | \$17,824,000 | 8% | \$41,800 | \$623,700 | 14% | \$935,800 | 12% |
| Government | 6,045 | 9% | \$321,149,000 | 14% | \$53,100 | \$822,700 | 19% | \$1,359,400 | 17% |
| Manufacturing | 6,557 | 10% | \$333,006,700 | 14% | \$50,800 | \$513,700 | 12% | \$1,559,700 | 19% |
| Natural Resources | 1,108 | 2% | \$18,037,000 | 1% | \$16,300 | \$37,400 | 1% | \$83,600 | 1% |
| Transport & Utilities | 2,795 | 4% | \$115,986,000 | 5% | \$41,500 | \$250,900 | 6% | \$467,800 | 6% |
| Wholesale & Retail | 10,218 | 16% | \$280,583,000 | 12% | \$27,500 | \$562,700 | 13% | \$860,100 | 11% |
| Accommodation & Food Services | 3,001 | 5% | \$56,225,000 | 2% | \$18,700 | \$88,900 | 2% | \$182,800 | 2% |
| Tourism | 1,528 | 2% | \$22,745,000 | 1% | \$14,900 | \$63,900 | 1% | \$97,500 | 1% |
| KBEs | | | | | | | | | |
| Information | 1,044 | 2% | \$41,631,000 | 2% | \$39,900 | \$89,300 | 2% | \$183,500 | 2% |
| PST Services | 3,525 | 5% | \$160,623,000 | 7% | \$45,600 | \$244,600 | 6% | \$391,500 | 5% |
| Other | 6,779 | 10% | \$172,446,000 | 7% | \$25,400 | \$314,300 | 7% | \$567,700 | 7% |
| Total | 65,312 | 100% | \$2,301,246,000 | 100% | \$35,200 | \$4,382,200 | 100% | \$8,098,800 | 100% |

Average earnings is the total earnings divided by the number of jobs.

Target Type: * Select whether you want to set targets for employment, earnings, GDP or economic output.

Enter the total number of jobs created in each industry in the table below

| | Number of Jobs | Jobs |
|-------------------------------|----------------|-------------|
| Construction | | Jobs |
| Education | | Jobs |
| Health | | Jobs |
| FIRE | | Jobs |
| Government | | Jobs |
| Manufacturing | | Jobs |
| Natural Resources | | Jobs |
| Transport & Utilities | | Jobs |
| Wholesale & Retail | | Jobs |
| Accommodation & Food Services | | Jobs |
| Tourism | | Jobs |
| KBEs | | |
| Information | | Jobs |
| PST Services | | Jobs |
| Other | | Jobs |
| Total | 0.0 | Jobs |

Click and modify these gray cells.

Enter target numbers – use actual number for Jobs; percentage for GDP, Earnings and Output.

Figure 9: Regional Report Example – Results Displayed

Northern New England - Regional Report

Select the state or region to analyze. The first table below presents the current distribution of jobs, earnings, GDP and output.
 Select whether you want to set targets for employment, earnings, GDP or economic output.
 Enter the target number of jobs created in each industry or the target percentage increase in earnings, GDP or output.
 The final table presents the distribution of jobs, earnings, GDP and output resulting from obtaining the targets.
 The earnings, GDP and Output impacts are presented in 2008 constant dollars.

State/County/Region * Select a state/county/region from the drop-down list

| Current | 2008 | | Earnings | | | GDP | | Economic Output | |
|-------------------------------|---------------|-------------|------------------------|-------------|-----------------|--------------------|-------------|--------------------|-------------|
| | Number | % | \$ Total | % | Average Wage | \$ Thousands | % | \$ Thousands | % |
| Construction | 5,549 | 8% | \$198,989,000 | 9% | \$35,900 | \$285,000 | 7% | \$544,800 | 7% |
| Education | 1,851 | 3% | \$47,376,000 | 2% | \$25,600 | \$63,400 | 1% | \$102,800 | 1% |
| Health | 10,695 | 16% | \$339,724,000 | 15% | \$31,800 | \$421,700 | 10% | \$761,800 | 9% |
| FIRE | 4,617 | 7% | \$192,824,000 | 8% | \$41,800 | \$623,700 | 14% | \$935,800 | 12% |
| Government | 6,045 | 9% | \$321,049,000 | 14% | \$53,100 | \$822,700 | 19% | \$1,359,400 | 17% |
| Manufacturing | 6,557 | 10% | \$333,008,000 | 14% | \$50,800 | \$513,700 | 12% | \$1,559,700 | 19% |
| Natural Resources | 1,108 | 2% | \$18,037,000 | 1% | \$16,300 | \$37,400 | 1% | \$83,600 | 1% |
| Transport & Utilities | 2,795 | 4% | \$115,986,000 | 5% | \$41,500 | \$250,900 | 6% | \$467,800 | 6% |
| Wholesale & Retail | 10,218 | 16% | \$280,583,000 | 12% | \$27,500 | \$562,700 | 13% | \$860,100 | 11% |
| Accommodation & Food Services | 3,001 | 5% | \$56,225,000 | 2% | \$18,700 | \$88,900 | 2% | \$182,800 | 2% |
| Tourism | 1,528 | 2% | \$22,745,000 | 1% | \$14,900 | \$63,900 | 1% | \$97,500 | 1% |
| KBEs | | | | | | | | | |
| Information | 1,044 | 2% | \$41,631,000 | 2% | \$39,900 | \$89,300 | 2% | \$183,500 | 2% |
| PST Services | 3,525 | 5% | \$160,623,000 | 7% | \$45,600 | \$244,600 | 6% | \$391,500 | 5% |
| Other | 6,779 | 10% | \$172,446,000 | 7% | \$25,400 | \$314,300 | 7% | \$567,700 | 7% |
| Total | 65,312 | 100% | \$2,301,246,000 | 100% | \$35,200 | \$4,382,200 | 100% | \$8,098,800 | 100% |

Average earnings is the total earnings divided by the number of jobs.

Target Type * Select whether you want to set targets for employment, earnings, GDP or economic output

Enter the total number of jobs created in each industry in the table below

| | Number of Jobs | |
|-------------------------------|----------------|-------------|
| Construction | 100 | Jobs |
| Education | 50 | Jobs |
| Health | 150 | Jobs |
| FIRE | | Jobs |
| Government | | Jobs |
| Manufacturing | 150 | Jobs |
| Natural Resources | | Jobs |
| Transport & Utilities | | Jobs |
| Wholesale & Retail | 25 | Jobs |
| Accommodation & Food Services | | Jobs |
| Tourism | | Jobs |
| KBEs | | |
| Information | | Jobs |
| PST Services | | Jobs |
| Other | | Jobs |
| Total | 475.0 | Jobs |

| Future Impact | Jobs | | | Earnings | | | GDP | | | Economic Output | | | |
|-----------------------|--------|-------|-------|---------------|-------|-------|--------------|--------------|-------|-----------------|--------------|-------|-------|
| | Number | New % | Old % | \$ Total | New % | Old % | Average Wage | \$ Thousands | New % | Old % | \$ Thousands | New % | Old % |
| Construction | 5,649 | 9% | 8% | \$202,575,000 | 9% | 9% | \$35,900 | \$290,100 | 7% | 7% | \$554,600 | 7% | 7% |
| Education | 1,901 | 3% | 3% | \$48,655,000 | 2% | 2% | \$25,600 | \$65,100 | 1% | 1% | \$105,600 | 1% | 1% |
| Health | 10,845 | 16% | 16% | \$344,489,000 | 15% | 15% | \$31,800 | \$427,700 | 10% | 10% | \$772,500 | 9% | 9% |
| FIRE | 4,617 | 7% | 7% | \$192,824,000 | 8% | 8% | \$41,800 | \$623,700 | 14% | 14% | \$935,800 | 11% | 12% |
| Government | 6,045 | 9% | 9% | \$321,049,000 | 14% | 14% | \$53,100 | \$822,700 | 19% | 19% | \$1,359,400 | 17% | 17% |
| Manufacturing | 6,707 | 10% | 10% | \$340,626,000 | 15% | 14% | \$50,800 | \$525,500 | 12% | 12% | \$1,595,400 | 20% | 19% |
| Natural Resources | 1,108 | 2% | 2% | \$18,037,000 | 1% | 1% | \$16,300 | \$37,400 | 1% | 1% | \$83,600 | 1% | 1% |
| Transport & Utilities | 2,795 | 4% | 4% | \$115,986,000 | 5% | 5% | \$41,500 | \$250,900 | 6% | 6% | \$467,800 | 6% | 6% |
| Wholesale & Retail | 10,243 | 16% | 16% | \$281,258,000 | 12% | 12% | \$27,500 | \$564,100 | 13% | 13% | \$862,200 | 11% | 11% |

Commuter Impacts:

The Commuter Impacts tab allows the user to see the commuting patterns for a given county, including both inbound and outbound commuters. A single gray dropdown menu is used to select the county of interest. The blue tables below are populated with the data for this county.

The first table shows outbound commuters – those who reside in that county and commute elsewhere for work. The top 5 counties of destination (or other nations; some counties have significant transborder commuters) are shown, plus the totals for other counties, total commuters, non-commuters (those who work in the county they live in) and total workforce. These figures are also expressed as percentages of the total labor force residing in the county as shown in **Figure 10**.

The second table shows similar data for inbound commuters – those commuting from other counties into the county of interest. Again, totals are shown for the top 5 counties, other counties and the total of commuters and non-commuters. These figures are also expressed as percentages of the total labor force residing in the county.

The last table shows an overall comparison of total inbound and outbound commuters as well as the net inflow or outflow. A positive number represents a net inflow (more commuters coming in from elsewhere than leaving the county for work), and a negative number represents an outflow. These numbers are also shown as percentages of the labor force to illustrate the relative size of the inflow or outflow.

Figure 10: Commuter Impacts Example

Northern New England - Commuter Impacts

Select a county from the drop-down menu.

The first table below shows OUTBOUND commuting patterns, listing the top 5 counties (or other countries) of work for residents of that county.

The second table below shows INBOUND commuting patterns, listing the top 5 counties of residence for workers in that county.

The third table indicates the net total inflow or outflow for the selected county.

Non-commuters indicate residents working in their own county.

Note: Commuter and Labor Figures are from the 2000 Census.

County: * Select a county of residence from the drop-down list

Outbound commuters FROM selected county

| Rank | State-County/COUNTRY of work | Commuters | % of Labor Force |
|---|------------------------------|-----------|------------------|
| 1 | Chittenden Co. VT | 3,969 | 21.5% |
| 2 | Rutland Co. VT | 777 | 4.2% |
| 3 | Washington Co. VT | 204 | 1.1% |
| 4 | Windsor Co. VT | 124 | 0.7% |
| 5 | Essex Co. NY | 35 | 0.2% |
| Other | | 324 | 1.8% |
| Total Commuters | | 5,433 | 29.4% |
| Non-Commuters | | 13,070 | 70.6% |
| TOTAL Employees Residing in County | | 18,503 | 100.0% |

Inbound commuters TO selected county

| Rank | State-County/COUNTRY of Residence | Commuters | % of Labor Force |
|--|-----------------------------------|-----------|------------------|
| 1 | Chittenden Co. VT | 935 | 5.9% |
| 2 | Rutland Co. VT | 775 | 4.9% |
| 3 | Essex Co. NY | 548 | 3.5% |
| 4 | Windsor Co. VT | 133 | 0.8% |
| 5 | Washington Co. VT | 64 | 0.4% |
| Other | | 338 | 2.1% |
| Total Commuters | | 2,793 | 17.6% |
| Non-Commuters | | 13,070 | 82.4% |
| TOTAL Employees Working in county | | 15,863 | 100.0% |

NET inflow/outflow of workers

| | | |
|---|---------|---|
| TOTAL employees residing in county | 18,503 | |
| TOTAL employees working in county | 15,863 | |
| NET inflow/outflow of workers | (2,640) | Positive if net inflow, negative if net outflow |
| As % of of Employees Residing | (14.3) | % |
| As % of of Employees Working | (16.6) | % |

Using the Model

When working with the economic model, it is recommended that the user develop a scenario which can be used to drive the model. In other words, state what economic activity is being measured and then define what needs to be measured, e.g. expected GDP, jobs created, etc. A sample worksheet is provided on page 20.

The following section provides several illustrations of how the model can be used.

Economic Impact of New Business Development

The model can be used to quantify the potential economic impacts of a new business development. A regional example would be the creation of a warehouse/logistics center. All economic activity directly related to this can be measured. The multipliers will calculate the spin-off impacts on the regional economy. The background research for this example is illustrated in **Figure 11**.

Activity: Development of a 10,000 square foot warehouse by an independent trucking company. The capital investment (construction only) is \$1.5 million. The facility operates 12 hours per day for 350 days per year (it is assumed that it is closed for some holidays).

Description: Related annual jobs for warehouse facility. Only jobs directly related to the venture should be included. The model will calculate spin-off effects, including indirect employment.

Figure 11: Model Worksheet Example

| Service Provider | Jobs Involved | Annual Person Years¹ |
|---------------------------|----------------------|--|
| Managers (includes sales) | 2 | 2 |
| Supervisors | 4 | 4 |
| Administration | 1 | 1 |
| Workers ² | 16 | 10 |
| Trucking ³ | 50 | 10 |
| Total | 73 | 27 |

¹ A full person year is assumed to be 1,832 hours.

² The warehouse is assumed to have six part-time warehouse workers and 10 additional part-time employees. The total annual equivalents are 10.

³ Many truckers would be involved in these operations but for many it would not be somewhere they often stop. It is recommended that for this type of estimate a calculation is made such as 10 truck visits per day requiring 2 hours each of trucker time to calculate. The majority of truckers would be owner/operators.

The “Annual Person Years” total would be entered into the Scenario Report’s “Job Creation Impacts” table. In this case, the Managers’ and Administration jobs would be entered under “PST” and the Workers, Trucking and Supervisors’ jobs would be entered under “Transport and Utilities”. The capital investment for the facility would be entered into the Scenario Report’s “Capital Investment Impacts” table to calculate economic impacts related to the facility’s development. It is recommended that the estimated annual person years be used in the model instead of the number of jobs for a more accurate estimate. This will ensure that the estimates are conservative. Ensuring plausibility with economic impact analysis is critical because these analyses are often regarded as being too optimistic.

Comparing Regional Economic Development Strategies

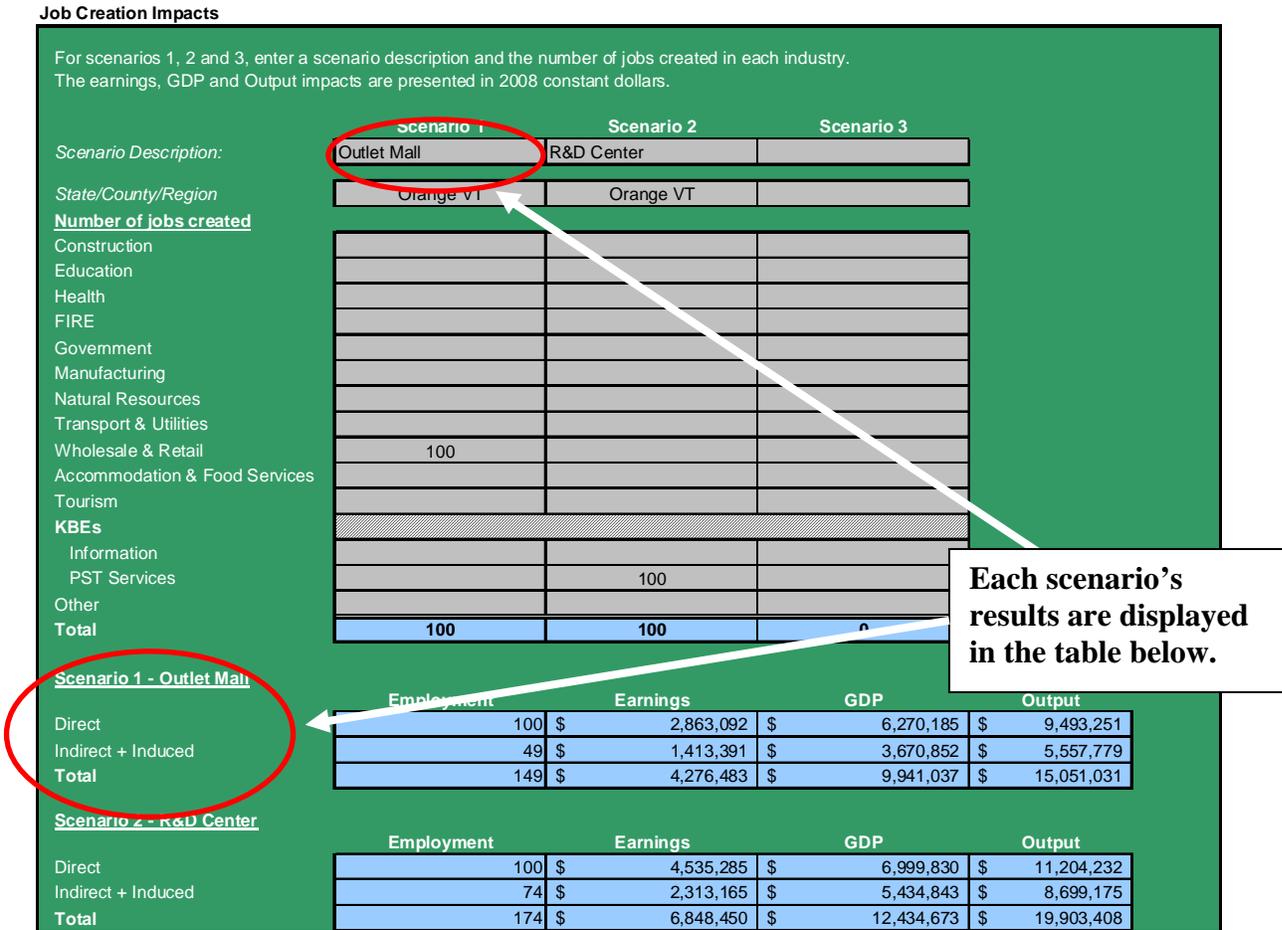
The model can be used for comparing the potential impact of different economic development strategies. The Scenario Report tab is designed for this type of analysis. In this type of example, an economic development officer wants to explain to the organization’s board how different strategies might benefit the community, e.g. developing an outlet shopping mall (Scenario 1) versus a research and development center (Scenario 2). Using the methods described in the section above, the potential economic impacts related to the different strategies can be analyzed.

In the top half of the Scenario Report tab, each column represents a different Scenario. As a very simple example, one could compare the impact of 100 wholesale and retail jobs for Scenario 1 described above with 100 Professional, Scientific and Technical (PST) jobs in Scenario 2¹. The user would choose the appropriate region at the top of the Scenario Report sheet. For the first scenario, the user would input 100 into “Wholesale & Retail” and input 100 into PST Services under Scenario 2.

The economic impact results for both scenarios would be displayed in the blue table as shown in **Figure 12**. This type of analysis will assist organizations to focus on which types of jobs and opportunities will give their region the highest impact.

¹ For a similar real-life scenario, it is recommended that annual person-years is calculated and used in the model for best results.

Figure 12: Regional Economic Development Strategy Comparison



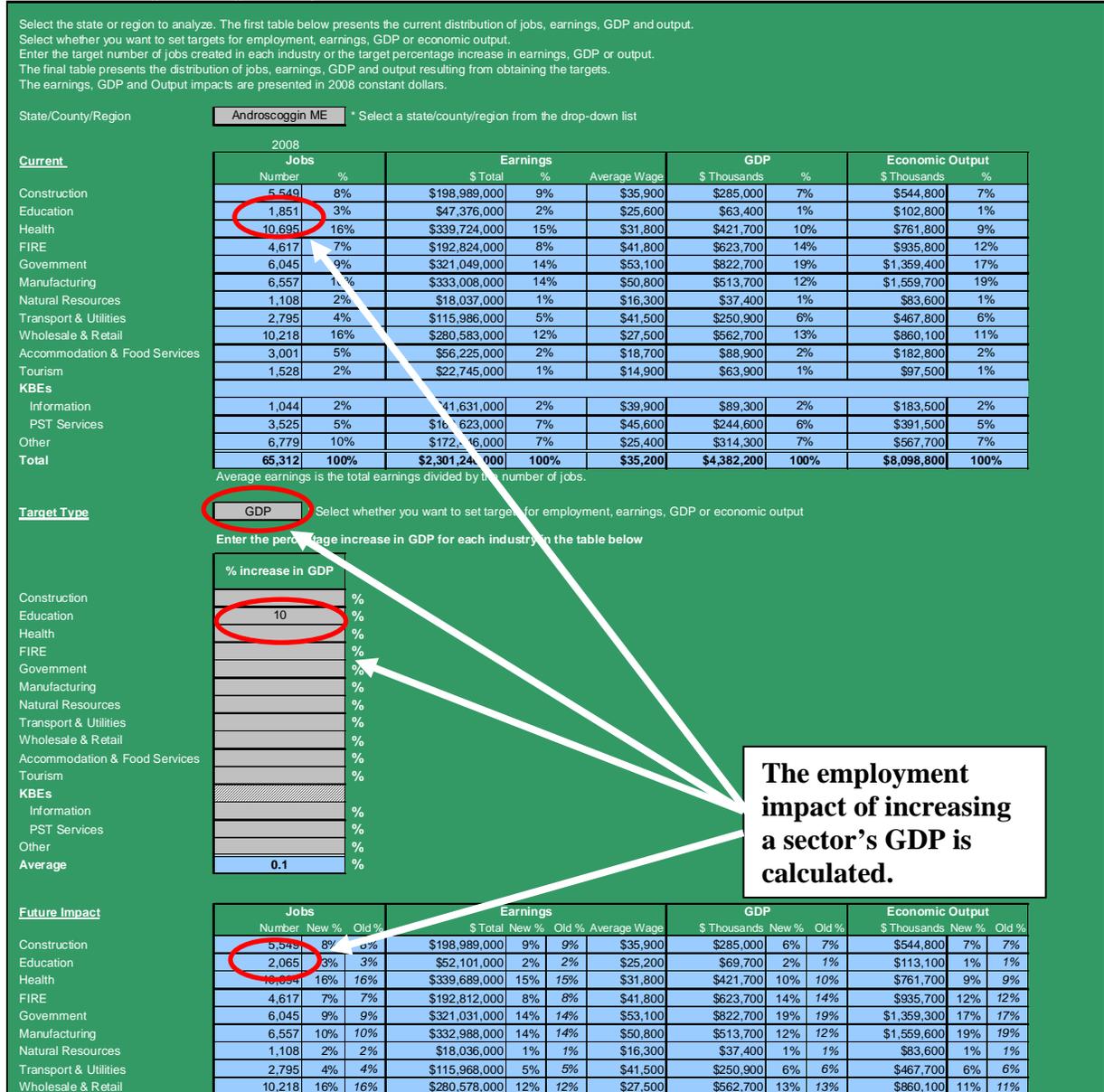
Workforce Projections

The model allows economic development users to consider order-of-magnitude workforce requirements in their region. The Regional Report tab is designed to allow the user to consider the current structure of the economy and to model what it might look like with changes in employment levels, GDP contributions, earnings and output. On this sheet, the current economic situation is shown in the first table. The user may then select an economic measure and enter the target percentage increase for the relevant industry sectors. The calculated results are displayed in the blue table below.

For example, if a region chooses to focus on education as an economic development strategy (e.g. build a new university, open several English-as-a-Second Language schools), the goal for the increase in Education GDP would be calculated, the user would select "GDP" under "Target Type" and enter the projected percentage impact for "Education". The results in the blue table below indicate the employment level required to support the GDP increase. As shown in **Figure 13**, a 10% increase in Education GDP would require approximately 214 additional education jobs (reminder: this is an order-of-

magnitude calculation). Please note that this does not suggest that 214 teachers would be required but rather that approximately 214 education professional annual person years will be required to achieve the Education sector's new GDP goal.

Figure 13: Workforce Projection Example
Northern New England - Regional Report



Public Policy Decisions

Lobbying governments to amend or introduce new policies is often more powerful if accompanied by economic impact data. For example, a region may require an amendment to existing legislation to allow development of offshore fish farms. The region's CED group may be aware of existing interest in fish farming and believes that more interest could be attracted if the required legislation were in place. Using the "Five-

Year Projection Report”, the CED agency can build a strong case for legislative change. The number of new jobs projected to be generated by this sector as a result of the legislation amendment would be entered for Years 1 through 5. The calculated results in the blue tables below would provide the economic impact and the growth in employment, earnings, GDP and output that the region could reap over the next five years as shown in **Figure 14**¹.

Figure 14: Public Policy Decision Example

Northern New England - Five-Year Projections

For each of the five years, enter the number of jobs created in each industry. The earnings, GDP and Output impacts are presented in 2008 constant dollars.

| State/County/Region | Annual Incremental Increase in Jobs | | | | | | |
|-------------------------------|-------------------------------------|-----------------------------------|-----------|-----------|------------|-----------|-----------|
| Hancock ME | Base Jobs | Target Avg Annual Wage Growth (%) | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| Number of jobs created | | | | | | | |
| Construction | 2,777 | | | | | | |
| Education | 633 | | | | | | |
| Health | 4,928 | | | | | | |
| FIRE | 2,532 | | | | | | |
| Government | 3,688 | | | | | | |
| Manufacturing | 2,654 | | | | | | |
| Natural Resources | 2,617 | | 50 | 80 | 300 | 50 | 50 |
| Transport & Utilities | 744 | | | | | | |
| Wholesale & Retail | 5,327 | | | | | | |
| Accommodation & Food Services | 3,040 | | | | | | |
| Tourism | 1,548 | | | | | | |
| KBEs | | | | | | | |
| Information | 453 | | | | | | |
| PST Services | 2,900 | | | | | | |
| Other | 3,772 | | | | | | |
| Total | 37,613 | - | 50 | 80 | 300 | 50 | 50 |

| Annual Impacts | Employment | Earnings | GDP | Output |
|--------------------|------------|----------------------|----------------------|-----------------------|
| Year 1 | | | | |
| Direct | 50 | \$ 1,249,318 | \$ 3,257,802 | \$ 6,481,758 |
| Indirect + Induced | 38 | \$ 952,393 | \$ 1,887,913 | \$ 3,756,211 |
| Total | 88 | \$ 2,201,711 | \$ 5,145,715 | \$ 10,237,969 |
| Year 2 | | | | |
| Direct | 130 | \$ 3,248,227 | \$ 8,470,286 | \$ 16,940,571 |
| Indirect + Induced | 99 | \$ 2,476,221 | \$ 4,908,573 | \$ 9,766,149 |
| Total | 229 | \$ 5,724,448 | \$ 13,378,859 | \$ 26,618,720 |
| Year 3 | | | | |
| Direct | 430 | \$ 10,744,135 | \$ 28,017,100 | \$ 55,743,120 |
| Indirect + Induced | 326 | \$ 8,190,576 | \$ 16,236,049 | \$ 32,303,417 |
| Total | 756 | \$ 18,934,712 | \$ 44,253,149 | \$ 88,046,537 |
| Year 4 | | | | |
| Direct | 480 | \$ 11,993,453 | \$ 31,274,902 | \$ 62,224,878 |
| Indirect + Induced | 364 | \$ 9,142,969 | \$ 18,123,962 | \$ 36,059,628 |
| Total | 844 | \$ 21,136,422 | \$ 49,398,864 | \$ 98,284,506 |
| Year 5 | | | | |
| Direct | 530 | \$ 13,242,771 | \$ 34,532,704 | \$ 68,706,636 |
| Indirect + Induced | 402 | \$ 10,095,362 | \$ 20,011,875 | \$ 39,815,839 |
| Total | 932 | \$ 23,338,133 | \$ 54,544,579 | \$ 108,522,476 |
| Cumulative | | | | |
| Direct | 530 | \$ 13,242,771 | \$ 34,532,704 | \$ 68,706,636 |
| Indirect + Induced | 402 | \$ 10,095,362 | \$ 20,011,875 | \$ 39,815,839 |
| Total | 932 | \$ 23,338,133 | \$ 54,544,579 | \$ 108,522,476 |

The economic impact of projected new jobs is calculated for each year.

¹ For a similar real-life scenario, it is recommended that annual person-years is calculated and used in the model for best results.

