



# Economic Impacts of the Proposed Maine Power Reliability Program

*A report from the*  
*University of Southern Maine*  
Maine Center for Business & Economic Research

*by Charles S. Colgan*

February 2009



UNIVERSITY OF  
**SOUTHERN MAINE**

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## Introduction and Summary

Central Maine Power Company (CMP) proposes to invest in a significant upgrade to much of its high voltage transmission system in central and southern Maine in order to increase reliability in the future and to meet Federal standards for the nation's electricity grid. The project, known as the Maine Power Reliability Program (MPRP) is expected to cost an estimated \$1.5 billion and to be implemented over the four year period from 2009 to 2012.

This is a major construction project which will be one of the largest construction projects in Maine in the past thirty years. If implemented as currently projected, the MPRP, is estimated to result in an average of over 2,100 direct and indirect jobs in Maine over the four year period. The majority of jobs will be in construction with additional jobs in professional and technical services such as engineering. These will average 1,550 direct jobs over the four years. Indirect and induced effects (the "multiplier" effect) will average 580 jobs.

The project will result in \$242 million in wages and salaries, and will increase the Gross Domestic Product (GDP) in Maine by nearly \$289 million over the four years. Annually, the project will increase wages and salaries over \$60 million and GDP by over \$72 million. Tax revenues to state government from sales and personal income tax are estimated \$18 million, with peak revenues of \$6.9 million.

Activity associated with the program, including construction, design, procurement, and other management activities will be spread across most of Maine's regions, with the Kennebec Valley (Kennebec and Somerset Counties) seeing the largest employment impacts (an average of 650 jobs over the four years). Peak employment in 2010 will be in York County (1,180) and the Kennebec Valley (1,380), while peak activity in 2011 will be in Western Maine (Androscoggin-Franklin-Oxford counties) and the Midcoast (Waldo-Knox-Lincoln-Sagadahoc counties). Western Maine will see about 1,380 employees in 2011, and the Midcoast about 1,100.

Large construction projects such as MPRP typically have a different type of impact on the economy than, for example, a new manufacturing plant. Construction and related jobs are by their nature temporary, with construction workers moving from project to project. The short term nature of construction projects means most of the indirect jobs estimated through economic impact analysis represent current

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jobs that are supported by the direct construction activity rather than new jobs. However, if implemented as planned, the activity associated with MPRP will be taking place a time of substantial slack in the economy, particularly in the construction industry. Thus, a larger, but unknown, portion of the jobs associated with the MPRP will be “new” in the sense that they would not otherwise exist but for the project.

### **Economic Impact Estimation Process**

The estimation of economic impacts from the MPRP was done using the models of seven regions within Maine developed by Regional Economic Models Inc. (REMI) of Amherst, MA and maintained by the Maine Center for Business and Economic Research at USM. These economic models are widely used to estimate economic impacts from similar developments. Economic impacts are estimated by comparing a baseline forecast of each regional economy to an alternative forecast that includes the economic activity to be examined. The differences between the forecasts are the economic impacts.

For this analysis, Central Maine Power provided detailed information on the expenditures associated with the MPRP for each of the years and counties affected. Information was provided for the following categories:

- Construction Costs:
  - Installed equipment
  - Subcontracts to suppliers within Maine
  - Costs of labor supplied by Maine residents
  - Costs of labor supplied by non-Maine residents
  - Construction management
  
- Professional and Technical Services
  - Engineering
  - Professional services associated with permitting

Estimates of total direct expenditures on these goods and services are shown in Table 1 and Figure 1.

	2009	2010	2011	2012	TOTAL
Construction	\$95.902	\$427.103	\$365.444	\$124.675	\$1,013.124
Prof & Tech Services	\$23.811	\$89.133	\$87.312	\$31.648	\$231.903
Total	\$119.713	\$516.236	\$452.756	\$156.323	\$1,245.028

Table 1 - Expenditures by Type and Year (\$ Millions)

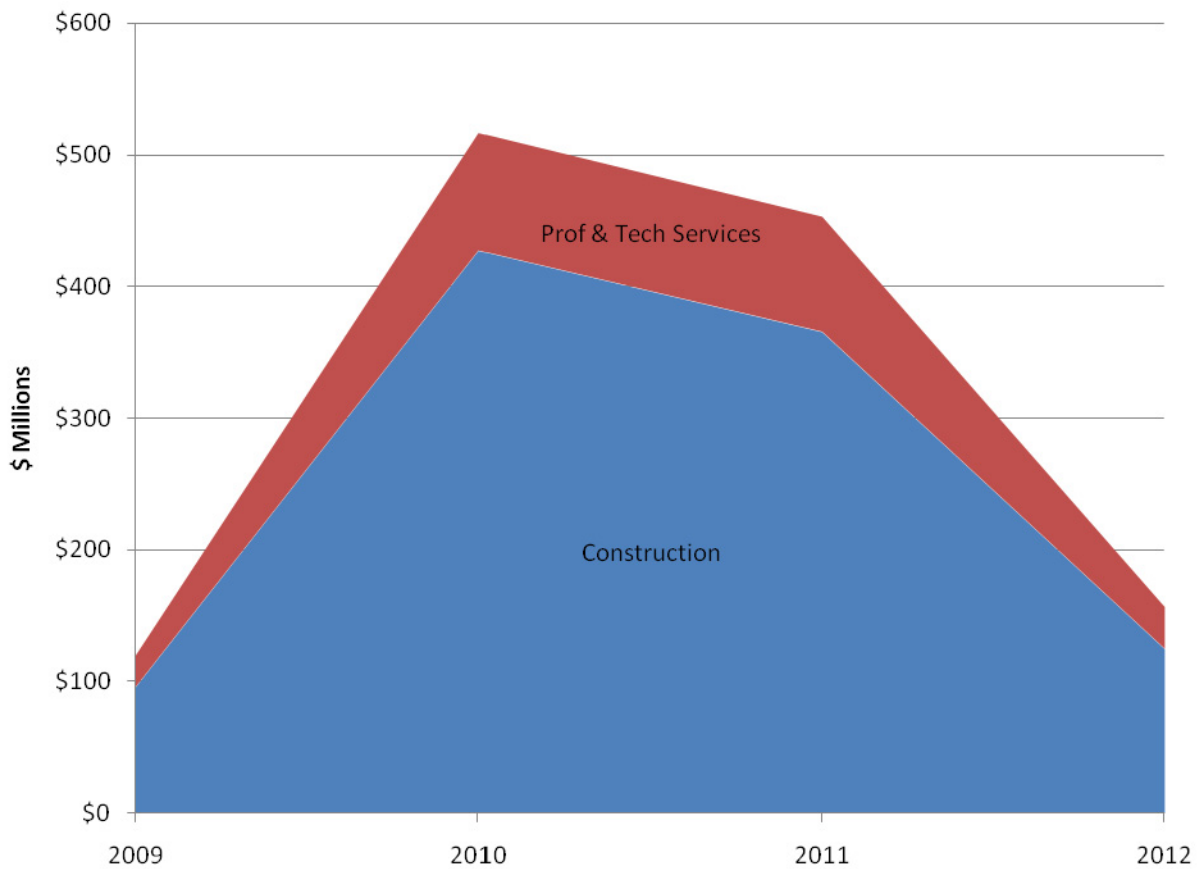


Figure 1 - Program Expenditures by Type and Year

Expenditures on materials and services purchased out of state totaling \$147 million (9.5% of total costs) were excluded from the analysis as these would have little or no direct impact on the Maine economy. The project is expected to spend about \$151 million (9.7% of costs) on specialized labor from outside of Maine. Employees in this category will spend varying portions of their time in Maine while they work on

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the project, but most of the income earned will be spent in the employee's home region. The exact extent of spending by non-resident employees is not known. For estimating purposes a figure of 5% of earnings for this group was included as part of the construction expenditures.

Project expenditures will be made in thirteen of Maine's sixteen counties. For purposes of analysis, the counties were grouped into six of the regions for which economic models are available in the REMI modeling system. Table 2 and Figure 2 show expenditures by region.

- Cumberland
- York
- Western Maine
  - Androscoggin
  - Franklin
  - Oxford
- Eastern Maine<sup>1</sup>
  - Penobscot
  - Piscataquis
  - Hancock
  - Washington
- Kennebec Valley
  - Kennebec
  - Somerset
- Midcoast
  - Waldo
  - Knox
  - Lincoln
  - Sagadahoc

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<sup>1</sup> No MPRP expenditures are planned for Piscataquis or Washington counties.

	2009	2010	2011	2012	TOTAL
Cumberland	\$59.1	\$77.6	\$2.6	\$0.0	\$139.3
York	\$11.5	\$108.8	\$0.0	\$0.0	\$120.3
Western Maine	\$24.2	\$15.2	\$178.4	\$32.5	\$250.2
Mid Coast	\$9.0	\$42.7	\$126.4	\$59.0	\$237.1
Kennebec Valley	\$9.9	\$239.1	\$129.5	\$63.2	\$441.7
Eastern Maine	\$6.1	\$32.8	\$15.9	\$1.6	\$56.4
<b>Total</b>	<b>\$119.7</b>	<b>\$516.2</b>	<b>\$452.8</b>	<b>\$156.3</b>	<b>\$1,245.0</b>

Table 2 - Program Expenditures by Region (\$millions)

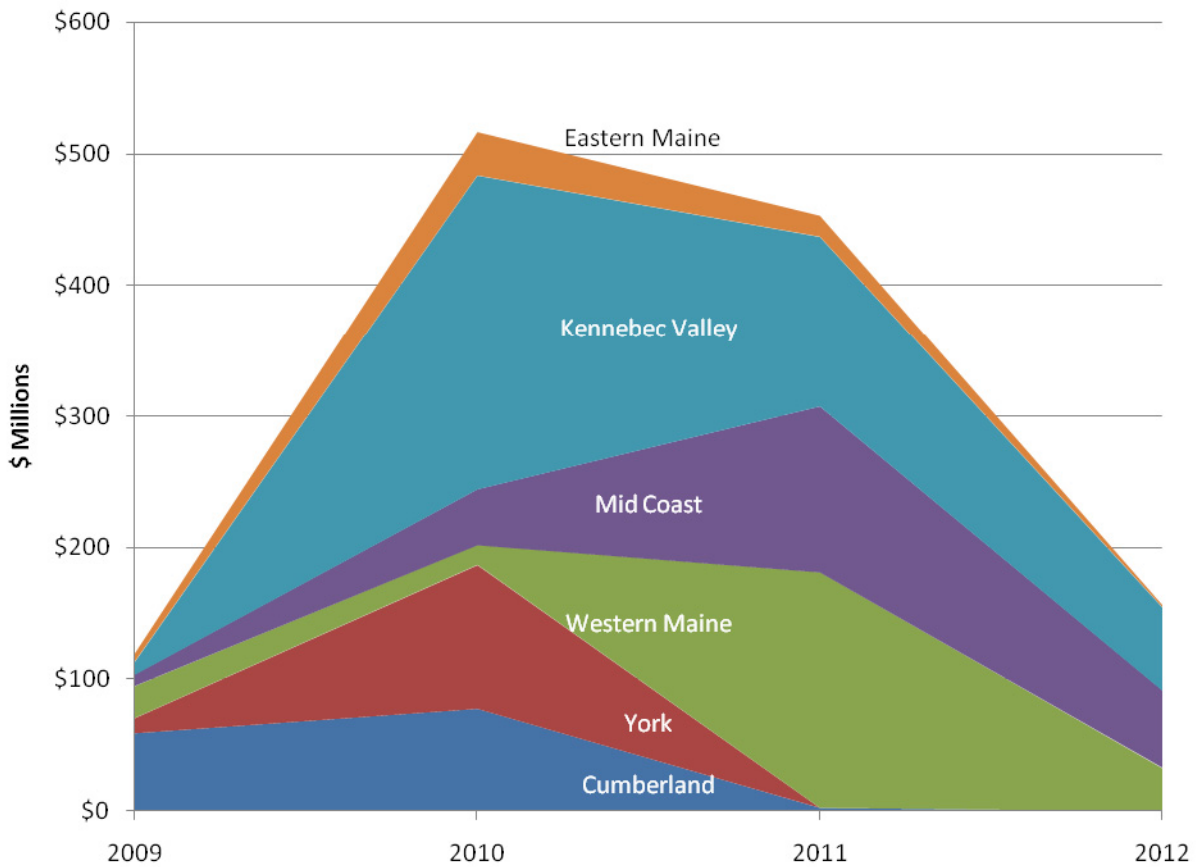


Figure 2 - Expenditures by Region and Year

## Economic Impacts

Table 3 shows the summary of economic impacts from the Maine Power Reliability Program on Maine over the four year period. Employment<sup>2</sup> impacts will average 2,131 per year over the period, with peak employment impacts over 3,300 in 2010. The total value of goods and services produced in Maine over 2009-2012 will be larger by \$350.1 million, an average annual increase of \$87.5 million. Wages and salaries in Maine will increase by a total of \$241.6 million or an average of \$60.9 million per year. 2010 will be the peak year of economic impacts. (All dollar figures are expressed in nominal dollars unadjusted for inflation.)

	2009	2010	2011	2012
<b>Employment</b>	690	3,327	3,287	1,219
<b>GDP (\$M)</b>	\$28.21	\$133.88	\$133.21	\$54.85
<b>Wages &amp; Salaries (\$M)</b>	\$18.69	\$90.20	\$91.55	\$41.15

**Table 3 - Summary of Economic Impacts on Maine**

The employment impacts are comprised of two components: the direct employment in the construction and professional & technical services industries and the indirect and induced employment. The indirect and induced employment (sometimes called the “multiplier effect”) is employment associated with purchases of goods and services from within the Maine economy by the direct economic activity (the “indirect” employment and the employment associated with spending by both direct and indirect employment. These are shown in Table 4.

	2009	2010	2011	2012
<b>Construction</b>	314	1,611	1,583	578
<b>Professional &amp; Technical Services</b>	187	820	816	287
<b>Total Direct</b>	501	2,431	2,399	865
<b>Indirect &amp; Induced</b>	190	896	888	354
<b>Total</b>	690	3,327	3,287	1,219

**Table 4 - Direct and Multiplier Effect Employment- Maine**

<sup>2</sup> Measured as “total employment” including self employment.



The size of the multiplier effect in this case is somewhat uncertain, and these estimates may be low. The principal source of uncertainty is where wood for the transmission line towers will be sourced. If some or all of the tower wood is sourced from within Maine, the output of the lumber and wood products industry would be increased which would increase employment in that and related industries. The assumption in this analysis is that the wood is sourced from outside of Maine because Douglas Fir lumber from the Pacific Northwest is the type of wood typically used in this application. However, final sources for wood will not be known until actual bids are requested during the construction period.

		2009	2010	2011	2012
Cumberland	Employment	152	159	0	0
	GDP	\$9.03	\$11.07	\$0.00	\$1.64
	Wages & Salaries	\$5.69	\$6.53	\$0.00	\$0.62
York	Employment	136	1,183	0	0
	GDP	\$4.43	\$39.08	\$0.15	\$0.00
	Wages & Salaries	\$3.00	\$26.80	\$1.18	\$0.75
Kennebec Valley	Employment	56	1,380	754	395
	GDP	\$2.46	\$60.33	\$36.70	\$20.76
	Wages & Salaries	\$1.64	\$41.48	\$25.66	\$15.24
Western Maine	Employment	214	60	1,379	274
	GDP	\$7.77	\$3.36	\$53.92	\$11.85
	Wages & Salaries	\$5.34	\$2.16	\$36.97	\$9.56
Midcoast	Employment	88	363	1,134	550
	GDP	\$2.86	\$12.59	\$39.43	\$20.15
	Wages & Salaries	\$1.92	\$8.41	\$26.78	\$14.69
Eastern Maine	Employment	45	186	69	0
	GDP	\$1.68	\$6.34	\$2.68	\$0.37
	Wages & Salaries	\$1.11	\$4.90	\$2.14	\$0.31

**Table 5 - Economic Impacts by Region (GDP and Wages & Salaries in millions of current dollars)**

Table 5 shows the estimated economic impacts by region. Across all four years, the Kennebec Valley region will have the largest impacts, although the Western Maine counties and the Kennebec Valley

counties have essentially the same employment impacts at their peak, which in the Kennebec Valley counties is 2010 and in Western Maine in 2011.

Tax revenues to state government can be estimated for sales and income taxes by applying average rates to the estimates of personal income generated by the construction project. These are shown in Table 6. Other state taxes, such as cigarette and gasoline taxes are not estimated but will yield revenues in addition to those estimated in Table 6.

	2009	2010	2011	2012	TOTAL
Sales Tax	\$478.18	\$2,368.03	\$2,530.05	\$1,268.56	\$6,644.82
Personal Income Tax <sup>3</sup>	\$886.27	\$3,857.99	\$4,410.00	\$2,273.01	\$11,427.27
Total	\$1,364.45	\$6,226.02	\$6,940.06	\$3,541.57	\$18,072.09

Table 6 - Maine Sales and Personal Income Tax Estimates (Thousands of nominal dollars)

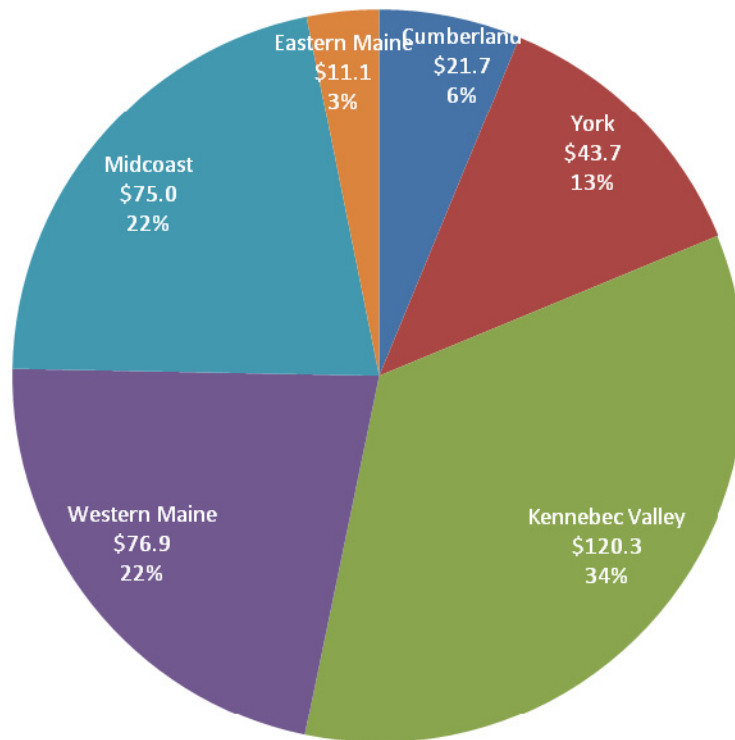


Figure 3 - GDP (\$Millions) by Region

<sup>3</sup> Includes taxes paid by non Maine residents for incomes earned in Maine.

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Figure 3 shows the total GDP impacts by region across all four years (in millions of nominal dollars). Three quarters of the economic impacts will be in the central Maine counties from Western Maine to the Midcoast. The proportionate distribution of wages & salaries and of employment is the same as shown in this figure.

### **Special Considerations in Economic Impact Estimation**

A special note should be made about the economic impacts of this project. Normally, large construction projects have positive but at best short lived impacts on the economy. Construction employment is constantly shifting from project to project on a short term basis as work is undertaken and then finished. A construction worker may work on many different projects in a given year, so each project may comprise only a small portion of the work year. Economic data and models take this into account by measuring “jobs”, not employees. In a typical economic situation, a project like MPRP would be one more construction activity during the year, with employees coming in from other work and then moving on once their part in the project was complete.

In such cases, employment impacts for construction jobs cannot be accurately described as creating entirely new jobs. This is particularly the case with the “multiplier effect” jobs; the short term nature of the construction activity is rarely large enough for firms in such industries as retail trade to hire entirely new workers. Thus in normal economic circumstances we would say that the employment estimated in economic impact analysis is employment that is “supported” by the project rather than new jobs “created” by the project.

However, if the MPRP proceeds as scheduled, it will be taking place at a time of substantial slack in the Maine economy, particularly in the construction and retail industries. National economic conditions have created circumstances in which employment in these industries is likely to fall over this period due to falling demand in the consumption and investment sectors. The large additional demand for labor in this project will counter these overall economic trends to some extent and so many of the jobs that will be created by this project would not exist otherwise in the Maine economy and may be considered “new jobs”, at least for the time period of the activity with greater impact on the Maine economy than the typical construction job.

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Another consideration is the economic impact of the costs of the project on the Maine economy. It is very important in economic impact analysis to make sure that the impacts of the costs of a project are shown as well as the positive effects on employment, etc. If the MPRP is granted a Certificate of Public Convenience and Necessity by the Public Utilities Commission, CMP will be permitted to recover a portion of the costs of the project from the company's customers over some period in the future. This will have the effect of raising that portion of electric costs related to transmission and distribution of electricity for CMP customers.

Normally this higher cost for an input would slightly raise the cost of producing goods and services in Maine for commercial and industrial customers and would slightly lower the disposable income for households. Both of these effects would in turn slightly reduce employment and output in the years after the project is completed. However, there are a number of reasons that this effect cannot be analyzed at this point:

- The exact distribution of costs among ratepayers and over time cannot be known until the PUC makes final decisions regarding the project.
- The need to increase power reliability is a national requirement; any increase in commercial and industrial rates in Maine may be matched by similar increases in the rates of other states reducing or eliminating any competitive disadvantages for Maine firms.
- The transmission and distribution components of electric power rates are only a small portion of the total delivered cost of electricity to households and firms. Changes in the energy cost component of electric rates may offset in both absolute and relative terms any increases in rates due to the reliability project. These effects will vary from year to year in unpredictable ways.
- The assumption must be made that if approved by the PUC the project's economic benefits will exceed its economic costs on a present value basis. The economic benefits will primarily consist of the avoided costs of outages and degraded service resulting from the MPRP investment. Thus the negative economic impacts of higher costs in some years will be offset by the positive impacts of continued reliable electric service in other years.

For these reasons no attempt is made to estimate economic impacts beyond the construction period.

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