

RAND Corporation Study Finds Energy Efficiency Boosts Massachusetts' Gross State Product by Five percent over 20 Years

A recent RAND Corporation study entitled *The Public Benefit of Energy Efficiency to the Commonwealth of Massachusetts* explored the effect on the state's economy of government policies such as support for ratepayer-funded energy efficiency programs and implementation of the state's building energy code. To do so, the study analyzed changes in Gross State Product (GSP) per capita over a 20 year period (1977-1997) associated with decreases in the energy intensity of the economy (energy use per dollar of GSP) while controlling for exogenous factors such as fluctuations in the price of energy, changes in the relative size and internal composition of the residential, commercial and industrial sectors, and climatic variations. The study found that when controlling for these factors, if there had been no improvement in energy intensity (decrease in energy use/\$GSP), the Massachusetts economy would have been nearly five percent smaller than it was in 1997. RAND's macroeconomic analysis calculated that the benefit in 1997 to the state economy from improvements in industrial and commercial energy intensity since 1977 – a period of considerable government policy support for energy efficiency - ranges from \$1,664 to \$2,562 per capita.

ACEEE Analysis of Mid-Atlantic Economy Shows Significant Employment Gains and Wage & Salary Compensation Increases from High-Efficiency Scenario

A February 1997 study entitled *Energy Efficiency and Economic Development in New York, New Jersey and Pennsylvania* describes a macroeconomic modeling exercise undertaken to estimate how different economic policy options might affect economic output (GSP), wage and salary compensation and employment in that tri-state economy in the wake of the restructuring of their electric and gas utility industries. It found that the diversion of spending on energy bills away from relatively low labor-intensive energy-supply sectors (oil refining and electric and gas utilities) and toward more labor-intensive sectors such as metal durables, construction, services, finance and retail trade, would produce significant positive increases in all three states' and the region's combined GSP, and employment and wage and salary compensation, and a decrease in the unemployment rate.

To reach this conclusion, the study examined energy consumption patterns and expenditures within each of the states and the regional economy and projected what business-as-usual or baseline energy use patterns and totals might look like through the year 2010. The study then developed two high-efficiency scenarios (one for total energy consumption and one for electricity consumption only) based upon detailed analysis of energy efficiency potential of buildings in the residential, commercial and industrial sectors as well as efficiency improvements in light duty vehicles. The high efficiency scenario for electricity-only found that cost-effective investments in energy-efficient technologies could reduce electricity use by 33 percent from the baseline forecast – producing an absolute decline in electricity use of nearly 20 percent rather than projected growth of approximately that amount. Using an econometric model containing accepted employment multipliers for the various economic sectors in the region (i.e., coal mining, electric utilities, metal durable manufacturing, construction, services, etc.), it estimated the direct, indirect and, implicitly, the induced effects of the investments needed to achieve that level of energy savings.

**World Wildlife Fund Climate Protection Scenario Analysis Forecasts Positive
Macroeconomic Impacts on Jobs, Household Incomes and GDP**

Tellus Institute and MRG Associates performed a similar analysis entitled *Clean Energy: Jobs for America's Future*, which they released in October 2001. They found strongly positive net economic impacts from a pro-efficiency policy package. Noting that over the 30 years since the oil embargoes and price spikes of the early 1970s, a host of energy polices has reduced the nation's energy intensity (energy use per dollar of Gross Domestic Product [GDP]) by about one-third even as the economy has grown by 160 percent, the study analyzed the employment and macroeconomic effects of a suite of policies, dubbed the *Climate Protection Scenario*, that would reduce the nation's dependence on fossil fuels and decrease emissions of greenhouse gases. Prominent among the policies in the *Climate Protection Scenario* were greater implementation of more stringent building codes and enactment of stronger appliance and equipment standards. This study took a longer time horizon than the ACEEE mid-Atlantic analysis, looking out to 2020 and comparing with a base-case derived from the U.S. Energy Information Administration's *Annual Energy Outlook* for 2001. Tracking the investments required to implement the climate protection policies and the energy savings that result, and accounting for the additional income and jobs created when consumers spend those savings, the study found that implementation of the *Climate Protection Scenario* could produce a net annual employment increase of about 1.3 million jobs by 2020, an increase of \$400 per household in annual wage and salary earnings, and an increase in GDP of nearly \$44 billion (0.4 percent of the \$11.8 trillion, 1998 dollars) in the projected GDP for that year.