

The Economic Impacts and Macroeconomic Benefits of Energy Efficiency Programs in Washington

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ECONorthwest
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EXECUTIVE SUMMARY

This report, sponsored by member companies of the Northwest Energy Efficiency Council (NEEC) and written by ECONorthwest, describes the economic effects of energy conservation work done in Washington. NEEC members provide products and services that improve energy efficiency.

Traditionally, economic impact reports on energy efficiency programs have narrow focuses. They all consider the impacts of spending on energy efficiency products and services (investment impacts). Those are impacts limited to one year and within one state. Some reports go further. Since utility customers enjoy lower utility bills in the years following the implementation of energy efficiency measures and practices, they have more money to spend each year and this causes economic impacts.

Rarely addressed, however, are the long-run macroeconomic effects arising from productivity growth. Our economy produces goods and services by using “factor inputs.” These inputs include labor, capital, raw materials, and energy. Becoming more productive means society produces more output with the same amount of factor inputs. Making our state more energy efficient increases productivity growth.

Productivity growth is the cornerstone of long-run economic health. It also affects a region’s competitive position. The more productive Washington is, the better it competes in national and world markets. In short, productivity growth is the source of a higher standard of living.

ECONorthwest starts the report with the standard view that other states consider when looking at the impacts of energy efficiency investments. NEEC asked that our analysis of investment impacts consider an average year, and provided data for 2008 through 2012 (the most recent data available). That is, five years of spending by utilities and utility customers on energy efficiency products and services. We refer to this as the “average year” of investment spending. We use a traditional economic impact analysis, which tells us what effects an average year of investment in Washington on energy efficiency products and services has on the state’s economy.

Then, the report addresses the macroeconomic effects with a logical discussion of the macroeconomic benefits of improving energy efficiency in Washington. The report goes into more detail about the long-term effects of consumers saving money on their utility bills. ECONorthwest uses a macroeconomic model to produce economic outcomes of three levels of energy efficiency

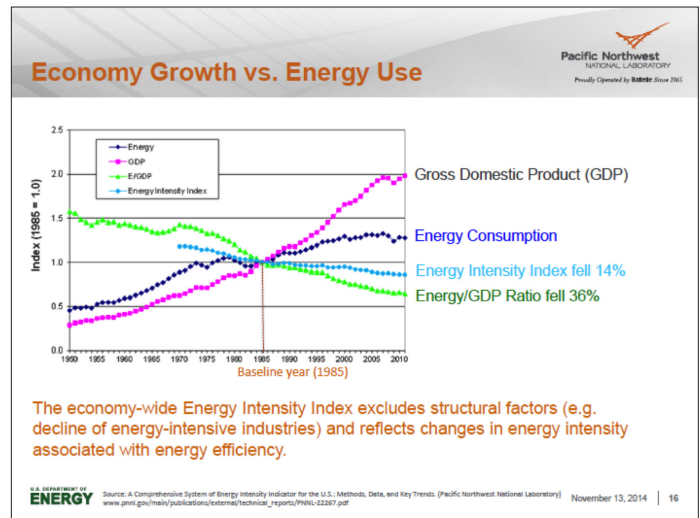
bill savings, over seven years, 2015 to 2021. This analysis is based on energy savings data from the “average year,” and a set of specific assumptions to project future savings developed by NEEC and ECONorthwest.

MACROECONOMIC EFFECTS

Making businesses and households more energy efficient causes macroeconomic effects. Unlike economic impacts, which focus on spending passed along the supply chain, macroeconomic effects are more broadly felt. Better efficiency means that Washington’s economy can produce more goods and services with less energy and at lower costs.

Over time, the cumulative investments in energy efficiency can raise the overall productivity of the economy. This improves economic welfare and elevates the standard of living of Washington residents. Higher incomes, more jobs, and better quality of life are among the potential results.




Figure 1.



Historically, energy use kept pace with the economy, until the mid-1970s. An analysis by the U.S. Department of Energy, illustrated in Figure 1, shows the tight connection between the nation’s gross domestic product (“GDP”) and energy consumption. The GDP is the value of the domestic production of goods and services. That relationship between energy use and GDP was close from 1950 to the mid-1970s.

Then, sharply higher oil prices drove conservation and energy use and GDP began to diverge. But since then, the adoption of improved energy efficiency technologies, leading to productivity gains, have caused macroeconomic effects leading to higher GDP growth.

Figure 2. Short-run Economic Impacts of Energy Efficiency Improvements

	Gross Impacts		Minus the Alternative*		Equals the Net Impact:
 job growth by 2021*	7,577	-	3,770	=	3,807
 labor compensation	\$470.2M	-	\$195.4M	=	\$274.8M
 gross regional product*	\$613.6M	-	\$390.6M	=	\$223M

*The "Alternative" refers to what happens if the money that went toward energy efficiency was spent elsewhere.

The divergence widened considerably after 2000, as GDP grew while energy consumption did not. A review of the U.S. experience in the 1970s and 1980s suggests that increased energy efficiency leads to increased productivity growth and a significant rise in economic well-being.

Predicting the degree of future macroeconomic improvements is a matter of great uncertainty. As with any long-term forecast, the range of possible outcomes is wide. However, this report attempts to shed some light on the magnitude that energy efficiency could have in the long run.

SHORT-RUN ECONOMIC IMPACTS OF ENERGY EFFICIENCY INVESTMENTS

In the average year, \$515.9 million is invested in energy efficiency products and services in Washington State. The gross impact of that spending reverberates throughout the economy, affecting jobs, income, and output. About \$613.6 million of Washington's gross regional product ("GRP") is linked to energy efficiency investments. Importantly, so too were 7,577 jobs in the state. Those jobs generated \$470.2 million in labor income.

But how much extra GRP and how many more jobs were there in Washington because of the investments? For that, the analysis subtracts the alternative case. That is what would have happened had people and businesses not spent the half billion dollars on energy efficiency. Had no money been spent on efficiency measures, some of that money would have been spent elsewhere in Washington on other goods and services, and that spending would have had economic impacts.

Subtracting the alternative from the gross impacts gives us net impacts. That is the net difference energy efficiency spending had on Washington in the average year. Figure 2 illustrates the calculation of net economic impacts for a single year of energy efficiency investment in 2015 dollars.

LONG-RUN MACROECONOMIC EFFECTS OF ENERGY BILL SAVINGS

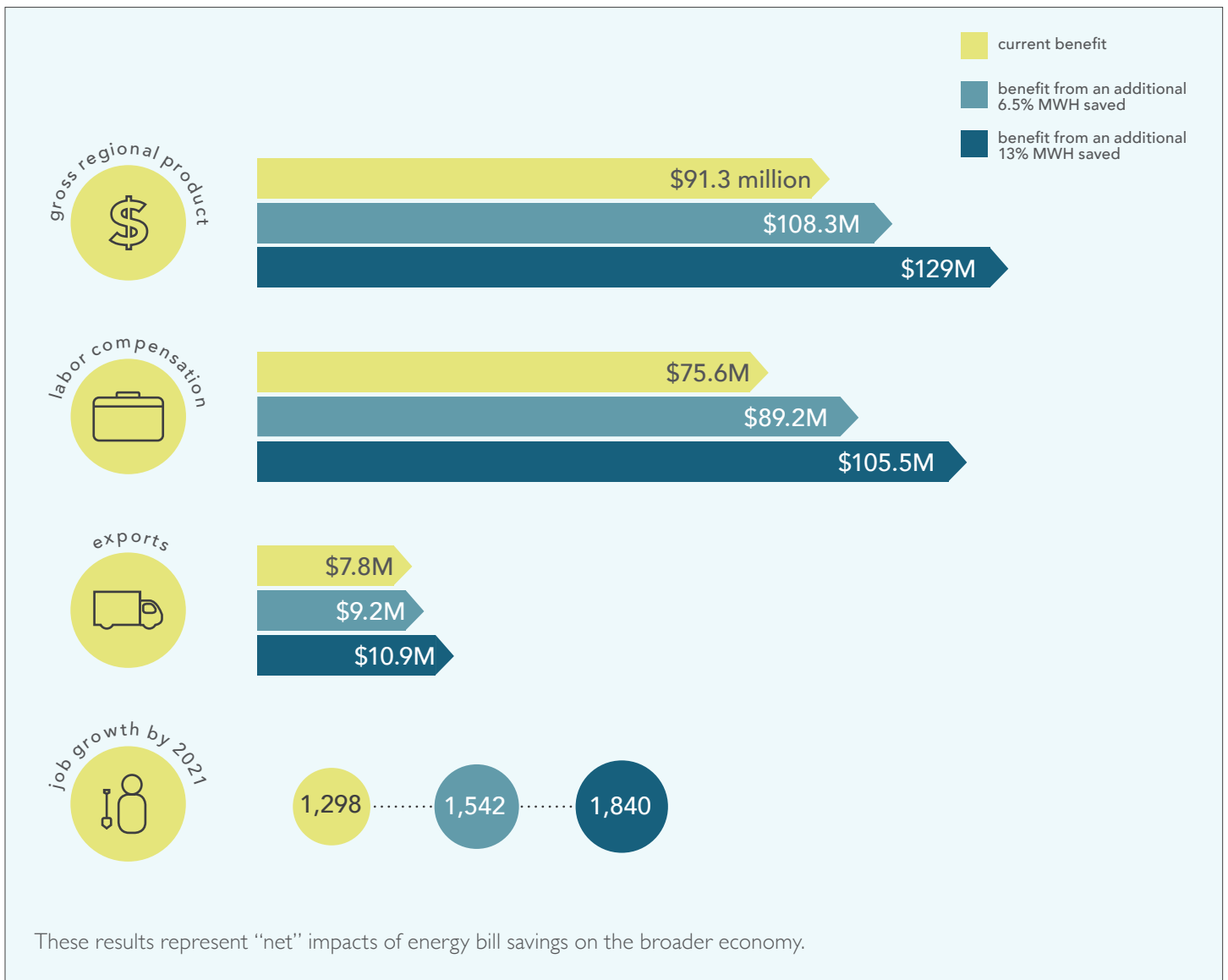
The second analysis measures the cumulative effects of energy efficiency on the broader economy between 2015-2021. Utility bills are lower when homes, farms, and businesses are more energy efficient. In turn, this frees up money, which businesses and households can then spend elsewhere.

We assume that some of that new business and household spending would occur in Washington, which triggers new economic impacts. These annual effects are

reported in Figure 3 below. Like the short-run analysis, these results represent net impacts. In this case, the net impacts represent savings on energy costs that are spent elsewhere in the broader economy.

Additionally, ECONorthwest estimates what the impact of two alternative scenarios would mean for Washington. While these scenarios are meant to be illustrative, they estimate what higher savings targets in electricity and natural gas could mean for the broader regional economy. The medium and high alternative scenarios are annual savings targets of 6.5 percent and 13 percent.

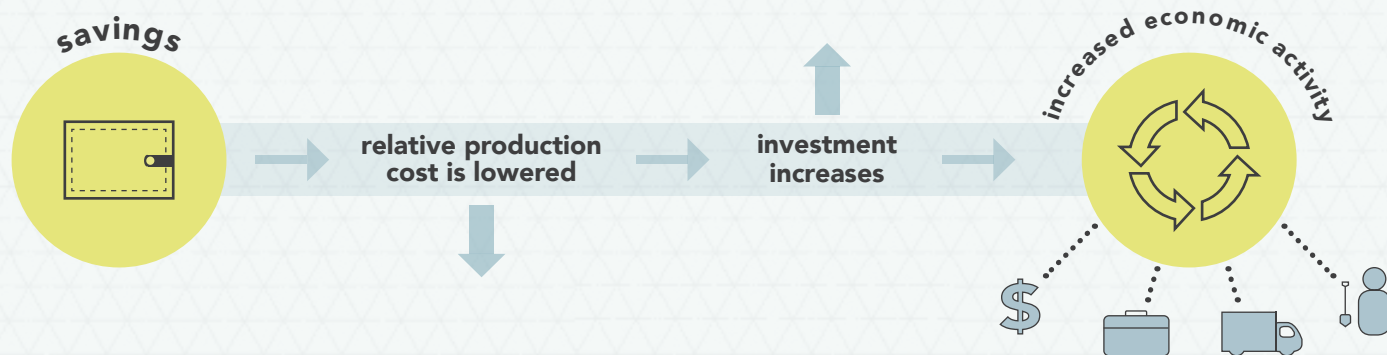
Figure 3. Long-run Macroeconomic Effects of Energy Bill Savings



Effects of Energy Efficiency in Washington

When companies use energy efficiently, it lowers the cost of doing business. And what companies save, they can invest—in innovation, expansion, and jobs.

Adopting energy efficiency technologies and practices helps lower the costs of production and can slow the rate of energy consumption, resulting in many co-benefits, including reduced carbon emissions and improved business productivity. Improving energy efficiency helps ensure that capital resources are efficiently allocated and can help boost economic output by making regional businesses more competitive.



ECONorthwest analyzed the cumulative effects of energy efficiency savings on the broader economy from 2015 to 2021. The current, economy-wide benefits of those investments are displayed in yellow. To estimate what the impact of additional annual savings would mean for the broader economy, ECONorthwest analyzed two alternative scenarios with higher savings targets—**6.5 percent** and **13 percent** additional annual savings in electricity and natural gas.

