



Wisconsin's Energy Efficiency Programs: Continuing to Bring Savings and Create Jobs

Executive Summary

Since at least 1983, energy efficiency has been a part of Wisconsin's state energy policy. In 2001, the statewide Focus on Energy ("Focus") program was created with funding from a public benefits fee and mandatory utility contributions. Today, 107 investor-owned, municipally-owned, and cooperative electric utilities and 9 natural gas utilities participate in the Focus programs, bringing the benefits of energy efficiency to their customers across the state. In the ten years since Focus was created —

- Wisconsin's utility consumers – residential, commercial, and industrial – have cumulatively saved 6.8 billion kWh of electricity.
- Wisconsin's utility consumers have cumulatively saved 278 million therms of natural gas.
- An estimated 5,400 jobs in 2011 have resulted from Wisconsin's ongoing energy efficiency investment.

The ongoing benefits of Wisconsin's energy efficiency policies in the coming years include—

- Additional cumulative savings of 7.7 billion kWh and 391 million therms of energy savings over the continuing life span of measures already installed.
- Savings from existing and new measures that could reach 4.1 billion kWh and 151 million therms annually by 2021 under the current funding scheme.
- Job growth equaling 6,300 – 10,300 energy efficiency-derived jobs in 2021 (an increase of 900 to 4,900 jobs from current levels).

If Focus' funding is expanded as proposed by the Public Service Commission in 2010, then Wisconsin could see —

- An increase annual energy savings to almost 6 billion kWh of electricity and 217 million therms of natural gas by 2021.
- Expanded job growth to 11,700 – 14,600 energy efficiency-derived jobs in 2021 (an increase of 6,300 to 9,200 jobs from current levels).

Energy efficiency savings have given Wisconsin residents more money in their pockets, allowing them to purchase additional goods and services in their local communities. Wisconsin's businesses have also benefitted from the Focus programs, as reduced energy consumption has lowered their operating costs, thereby making them more competitive in regional, national, and global markets. Wisconsin communities have also benefitted from the addition of new, local jobs from the manufacturing of energy efficient products, the installation of these products in homes and businesses, and from consumers spending their energy bill savings in their communities.

Introduction

Historical Context

Energy efficiency has been part of Wisconsin's statewide energy policy since at least 1983, when 1983 Act 27¹ ("Act 27") created Section 196.374² of the Wisconsin Statutes, which required utilities to spend 0.5% of annual operating revenues on energy conservation programs. The Public Service Commission of Wisconsin ("Commission" or PSCW) was given the authority to raise or lower that amount on a per-utility basis if it found the change to be "in the public interest." This spending under Act 27 was recoverable in the rates that utilities were allowed to charge their customers.

Energy efficiency in Wisconsin was expanded with the passage of 1999 Act 9 ("Act 9"),³ which amended 196.374 and created a statewide Utility Public Benefits Fund (PBF). Utilities were required to pay into the PBF to fund low-income programs, energy conservation and efficiency, and renewable resource programs. The Department of Administration, under this legislative authority, rolled out the statewide energy efficiency program, Focus on Energy ("Focus"), in 2001. Funding for Focus on Energy under Act 9 came from two sources: a public benefits fee charged directly to customers and mandatory utility contributions which were recoverable in rates. This generated about \$63 million in annual funding (about three-quarters of which came from the utility contributions). The Focus funds were not protected, however, and from 2002-2006 approximately \$108 million, or approximately one-third of the Focus funds, was transferred out of the PBF by the governor and legislature to the state's general fund.⁴

With the passage of 2005 Act 141 ("Act 141"), the legislature restructured Focus. Act 141 replaced the Department of Administration's energy programs with utility-contracted private program administration. Under Act 141, the utilities were able to create a Statewide Energy Efficiency and Renewable Administration (SEERA) which contracts with a third-party administrator to manage the Focus programs. This direct contracting protected Focus's funding—now set by statute at 1.2% of the preceding 3-year average of each utility's gross operating revenue—from future raiding by the state.⁵ Today, 107 investor-owned, municipally-owned, and cooperative electric utilities and 9 natural gas utilities participate in the Focus on Energy programs, thereby bringing the benefits of these programs to their customers across the state.

Recent Action

Under Act 141, the Commission was given the authority to require utilities to spend a larger percentage than the specified 1.2% of revenue based on its consideration of a variety of criteria including potential studies, rate impacts, cost-effectiveness of programs, impact on transmission, societal impacts, displaced construction of generation and transmission infrastructure, and cost of fossil fuel imports. As part of its periodic Quadrennial Review process, the Commission did just that, ordering in November 2010⁶ a change from the PBF model under which utilities were required to spend cost-effectively but had no hard goals for achieving energy savings, to an Energy Efficiency Resource Standard (EERS) model under which Focus would have a goal of ramping up electricity savings to a net of 1.5% and natural gas savings to a net of 1.0% of annual customer use by 2014 and continuing at that level thereafter. Along with these goals was a concurrent increase in funding for Focus from the \$120 million budgeted in 2011 to reach \$256 million by 2014. This Order was subject to review by the Joint Committee on Finance (JCF) of the Wisconsin State Legislature. In December 2010, the JCF adopted the Commission's proposed Focus budget by a vote of 11 to 4.⁷

However, in January 2011 after the 2011-2012 legislature was convened, the State Legislature approved along party lines a 2011 Budget bill⁸, which rolled back the December 2010 action, reducing Focus funding for 2012 and thereafter to the previous 1.2% level, budgeted \$100 million for Focus in

2012 (a reduction from the 2011 budget of \$120 million), and removed the statutory authority of the Commission to increase utility funding requirements beyond the legislated value.

The current administrative rules for the statewide energy efficiency programs are found in WI Administrative Code Chapter PSC 137.⁹

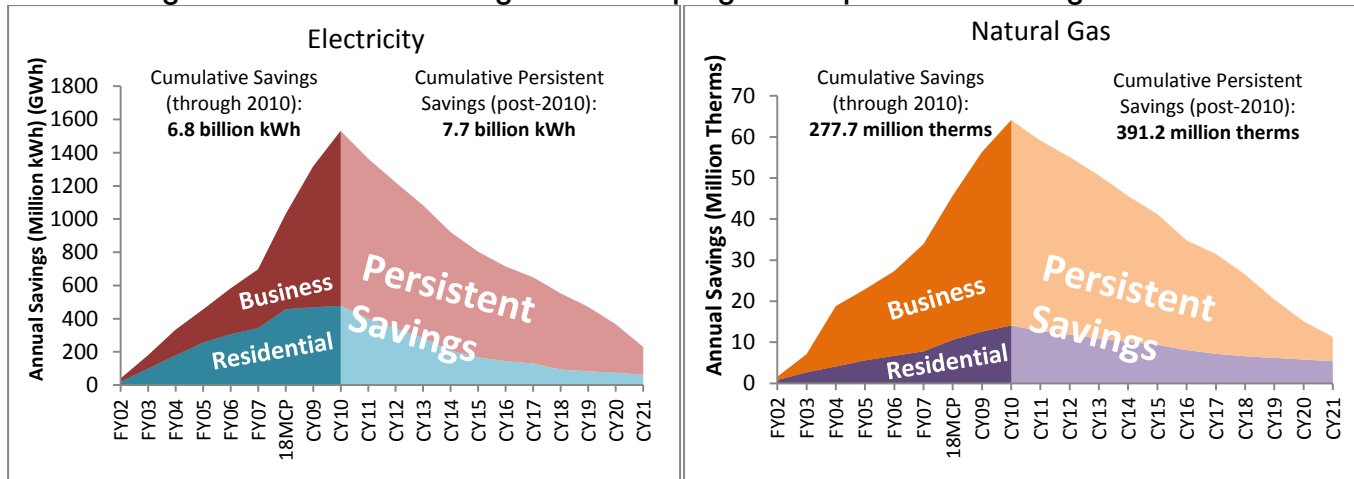
Analysis

Our study attempts to project the Focus on Energy program into the future, to estimate future savings based on current trends and budgets. It is not a full potential study that details the technical, economic, and achievable energy efficiency potential for the state. For an in-depth look beyond the Focus program at the total energy efficiency that would be possible in Wisconsin, the Energy Center of Wisconsin's 2009 study *Energy-Efficiency and Customer-Sited Renewable Resource Potential in Wisconsin* provides a detailed potential analysis. That study shows, among other considerations, that in order to achieve the full achievable energy efficiency potential in Wisconsin that the 2009 budget would have to be \$340 million, over triple the actual Focus budget and exceeding even the expanded future funding scenario recommended by the Commission.¹⁰ The ECW study also accounts for future possible costs associated with carbon dioxide emissions, which we did not address here.

Historical Savings & Benefits

Over its decade of activity, Focus on Energy has already saved a large amount of energy for Wisconsin's electricity and natural gas customers, and the energy efficiency implemented over that time will continue to provide future savings. Any energy efficiency measure has what is known as a *measure life*, or an estimated average duration over which the measure continues to provide savings. These measure life values, which vary from a few years to several decades depending on the measure, are typically standardized by a state's commission or a stakeholder collaborative to be used in evaluation of a state's energy efficiency programs. For example, in Wisconsin replacing a refrigerator has a measure life of 8 years for a residential project¹¹ or 9 years for a commercial refrigeration project¹², whereas a residential insulation project has a measure life of 25 years.¹³

Figure 1: Cumulative savings for Focus programs implemented through CY 2010



Source: Focus on Energy, Annual Report 2010

Focus on Energy divides its programs and evaluation into Residential and Business programs. The Business category includes commercial, industrial, and agricultural customers that participate in Focus programs. Figure 1 shows the savings that have been achieved from Focus programs implemented through calendar year 2010 and the persistent savings that will continue to be provided

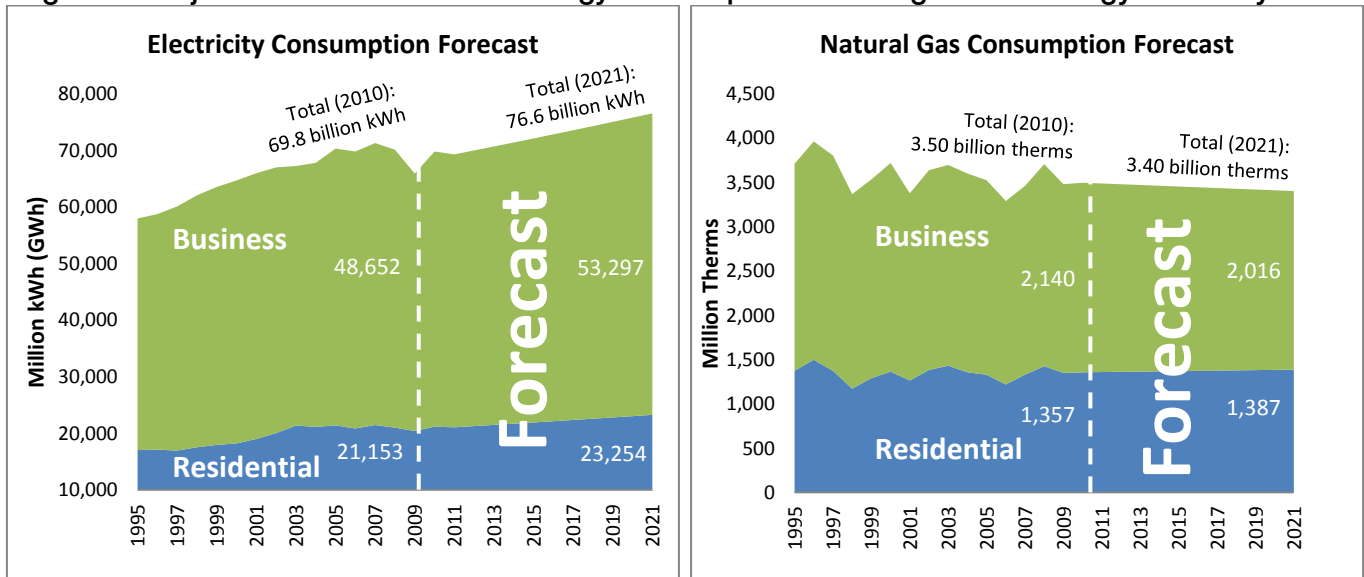
by the energy efficiency measures that were installed through these programs. This figure does *not* show the impact of any future Focus programs or funding, just the continuing impact of what has already been implemented. Energy efficiency measures already implemented through Focus on Energy have saved 6.8 billion kWh of electricity and 277.7 million therms of natural gas, and even if no new energy efficiency were added these existing measures will provide an additional 7.7 billion kWh and 391.2 million therms of energy savings over their continuing lifespan.

Future Savings & Benefits

Reference Case Forecast

To estimate future energy savings, we first estimated the amount of energy that will be used. This is known as the *reference case*. Our reference case is derived from Wisconsin’s historical consumption data¹⁴. For electricity, consumption was projected using a 1.0% annual growth rate, as specified by the PSCW in its Quadrennial Planning process.¹⁵ This 1.0% growth rate was calculated by the PSCW staff, and incorporates the energy efficiency that would occur under the status quo Focus on Energy funding.¹⁶ It does not reflect any additional savings that could have been achieved under the Commission’s recommended expansion of the funding level. Natural gas consumption was projected linearly from the current trend, and can also be assumed to include already-occurring energy efficiency since those savings are reflected in the historical consumption levels. Our reference case shows a small increase in residential electricity consumption from 2010 levels, and a larger increase in the business sector. Natural gas use, on the other hand, is projected to decrease slightly in the business sector, while increasing in the residential sector. Overall, the reference case shows a 6800 GWh (6.8 billion kWh) increase in electricity consumption between 2010 and 2021, while natural gas consumption will decrease by 0.1 billion therms.

Figure 2: Projected future Wisconsin energy consumption including current energy efficiency levels



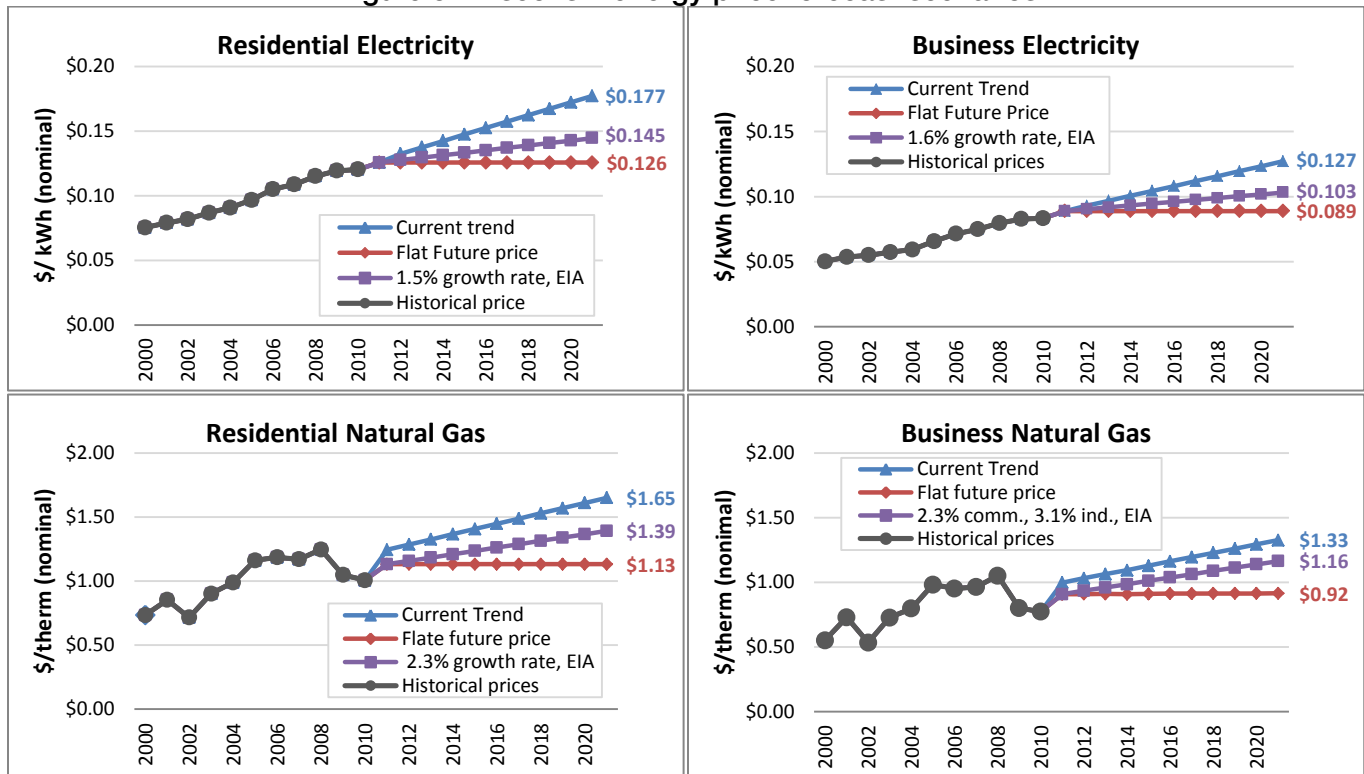
Sources: WI Strategic Energy Assessment (PSC); 2010 Wisconsin Energy Statistics (Office of Energy Independence)

Energy Prices

In evaluating the economic impact of energy efficiency, it is necessary to assign an energy price. Since future energy prices are uncertain, we used three possible pricing scenarios (Figure 3) to create a range of price forecasts for electricity and natural gas in Wisconsin. For the high price case, we used a linear projection of the historical price trends. The middle case was developed using the long-term (2009-2035) energy price growth rates for non-renewable energy estimated by the Energy Information

Administration (EIA) in its *Annual Energy Outlook 2011*.¹⁷ Finally, for a low-price scenario we assumed that prices would stay flat at the 2011 level. We evaluated the estimated future budget of Focus and the economic impact of future Focus activities based on these three price scenarios. While, in general, annual electricity prices show a gradual upward trend, they can vary quite a bit within a year due to seasonal demand changes. Natural gas prices, however, are highly volatile and even if it follows a general trend over the long term of increasing, predicting the price from year to year is difficult. We can make educated guesses and present a range of scenarios, but ultimately it is the market that will determine what the future price of energy is and it could fall within these ranges we suggest or it could be higher or lower than projected.

Figure 3: Wisconsin energy price forecast scenarios



Sources: Energy Information Administration; MEEA

Estimated Budget

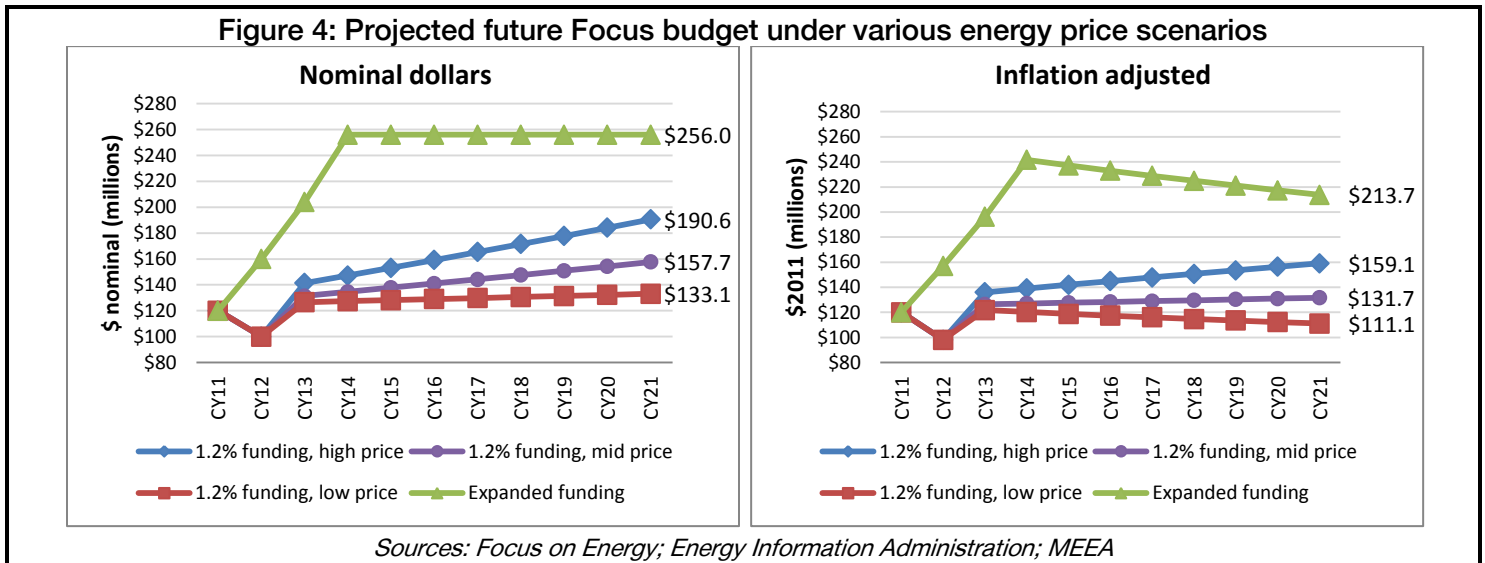
Current Program

To estimate the future budget of Focus, under the current funding level of 1.2% of utility revenue and a 2012 budget of \$100 million, we combined the energy load forecasts (Figure 2) and the price forecast scenarios (Figure 3) to determine a range of future funding for Focus between \$133 - \$190 million in nominal dollars in 2021, or \$111 - \$159 million in inflation-adjusted 2011 dollars. Estimated future Focus funding is shown in Figure 4, with the three price scenario-based funding estimates shown by the red, blue, and purple lines.

Expanded Program

Under the PSC's proposed expansion of Focus to \$256 million in annual funding by 2014, we assumed funding would stay flat at that specified level through 2021 and would not be affected by energy price since the funding level would no longer be tied to a percentage of revenue. Under that expanded funding scenario, funding for Focus would be \$256 million in 2021 in nominal dollars, or

\$213.7 in inflation-adjusted 2011 dollars. Estimated future Focus funding is shown in Figure 4, with the green line representing the expanded funding scenario.

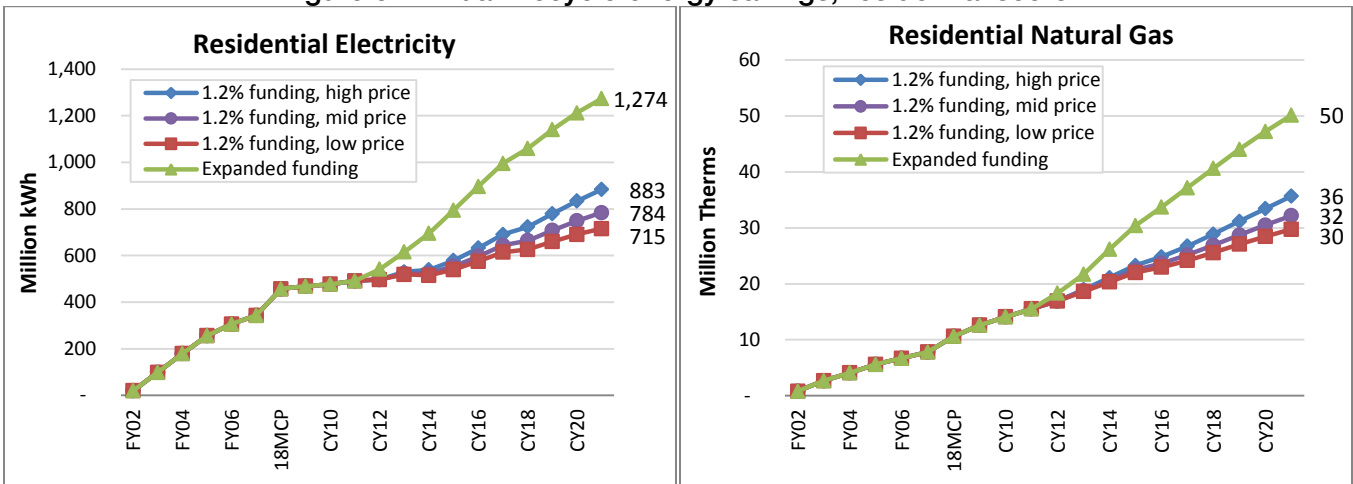


Estimated Energy Savings

As previously discussed, Focus has already saved a considerable amount of energy in Wisconsin. Future savings from Focus will be dependent on program funding. Since funding levels are based on utility revenue under the current Focus funding mandate, the savings that are achievable will depend also on the future price of energy supply. Under the Expanded funding scenario, where Focus funding would be based on an energy savings goal rather than a specified revenue-based funding level, that scenario is not directly dependent on the future energy price. Energy price will affect, of course, the cost-effectiveness of future energy efficiency measures, but that was not included in the scope of this analysis. Price will also affect the value of these energy savings, regardless of scenario, and will be discussed later.

Residential Savings

Figure 5: Annual lifecycle energy savings, residential sector

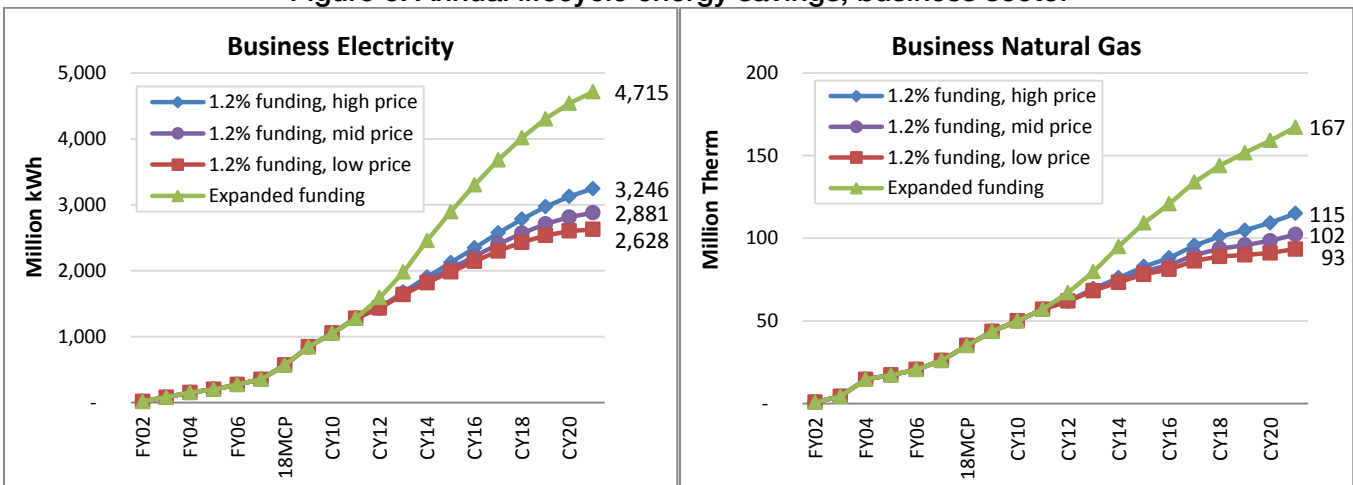


Sources: Focus on Energy; MEEA

Under the current Focus funding at 1.2% of utility revenue, residential customers could see annual savings in 2021 of 715 to 883 million kWh of electricity, and 30 to 36 million therms of natural gas. Under the expanded funding scenario, residential electricity savings would increase 44% from the highest 1.2% funding scenario, to 1,274 million kWh annual savings. Natural gas savings under the expanded funding scenario would increase 39% from the highest 1.2% funding scenario, to 50 million therms saved annually. These are lifecycle savings, which as previously discussed include not only the first-year savings from the measures, but also the persistent savings that continue to accumulate over the lifetime of the energy efficiency measure.

Business Savings

Figure 6: Annual lifecycle energy savings, business sector



Sources: Focus on Energy; MEEA

Business sector savings of electricity would range from 2,628 to 3,246 million kWh in 2021 under the 1.2% funding scenarios, and savings of natural gas would range from 93 to 115 million therms. Expanded Focus funding would increase electricity savings in 2021 by 45% (from the highest saving 1.2% funding scenario) to 4,715 million kWh, and would increase natural gas savings also by about 45% to 167 million therms annually. As with the residential sector, these are lifecycle savings, which

include the persistent savings that continue to accumulate over the lifetime of the energy efficiency measure.

Combined savings across the customer sectors could reach 4,129 million kWh under the current 1.2% funding scheme, assuming the high price/high savings scenario. Combined natural gas savings could reach 151 million therms. Expanding Focus' funding to the levels proposed by the Commission in 2010 would increase those electricity savings to 5,989 million kWh annually in 2021. Combined natural gas savings, with expanded funding for efficiency programs, could reach 217 million therms.

Estimated Economic Impact

Estimated Value of Energy Savings

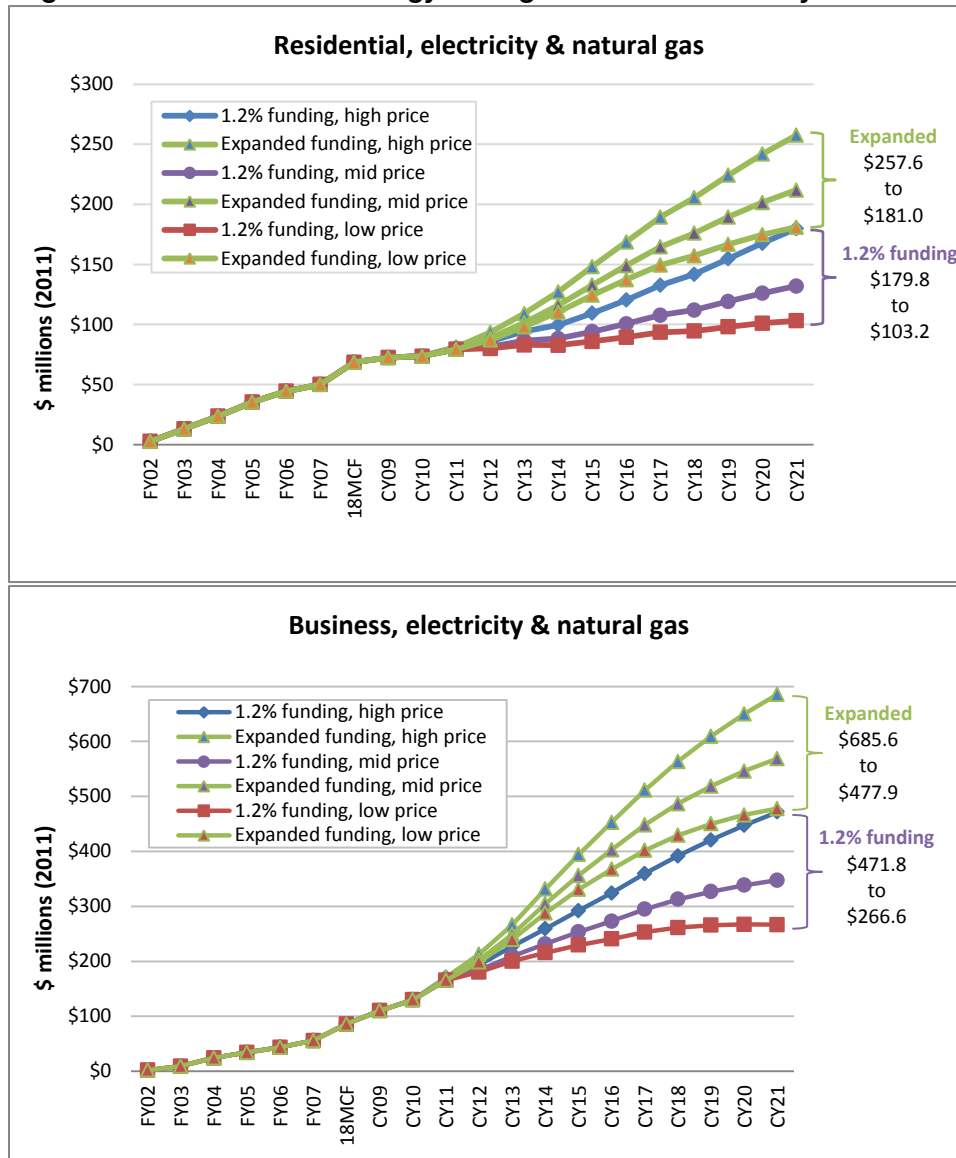
The value of the energy efficiency savings from Focus programs to Wisconsin's utility customers comes in the form of energy bill savings. Whether we are looking at a Focus budget at 1.2% of utility revenue or at the expanded funding proposed by the Commission, the future price of energy will determine the value of the bill savings for each kWh or therm saved by utility customers.

Under the current 1.2% of revenue funding scheme, as shown in Figure 7, spending a 2021 energy efficiency program budget of \$111-159 million (Figure 4) would lead to a combined total of \$370 – \$652 million in annual electricity and natural gas customer bill savings across the customer sectors.

If Focus on Energy funding had been expanded as recommended by the Commission in 2010, the 2021 budget of \$214 million (Figure 4) would save a combined total of \$659 - \$943 million in annual bill savings (Figure 7) for Wisconsin's utility customers.

These bill savings would, instead of being spent by the utilities to pay for energy fuels imported from out of state, provide enhanced cash flow to the state's consumers and businesses to spend, save, and to invest in job growth and business expansion. It is a win for utilities because the cost of energy efficiency is much lower per kWh or therm than supplied energy, reducing their costs, and it is a win for customers because it keeps more money in their pockets, and it is a win for the state because it keeps more of those funds in the state economy.

Figure 7: Value of future energy savings to Wisconsin utility customers



Sources: Focus on Energy; MEEA

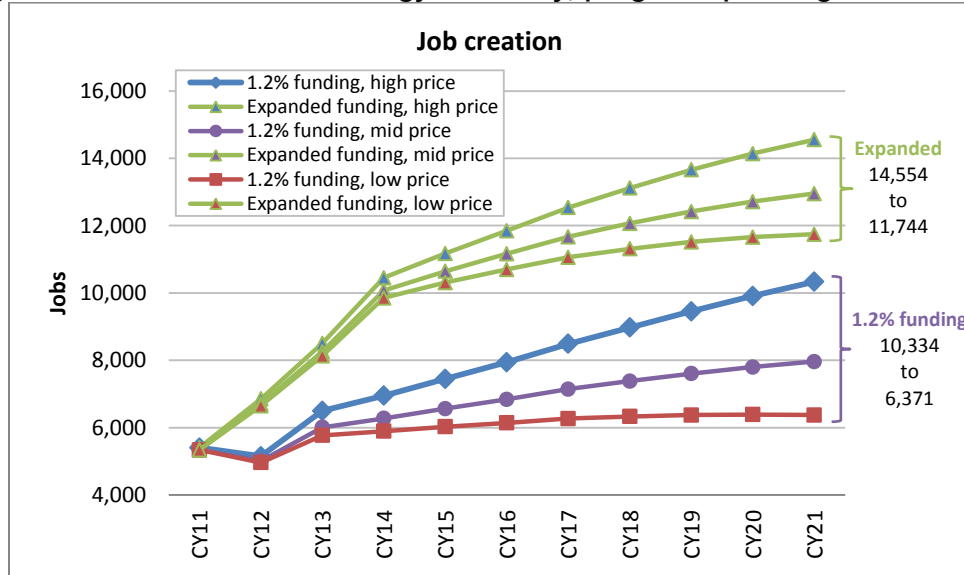
Estimated Future Job Creation

Jobs generated from energy efficiency policies and programs include direct, indirect, and induced jobs. *Direct jobs* are typically workers who install energy efficiency measures, manage and administer efficiency programs, and do other work that is billed directly to programs. *Indirect jobs* are workers who produce the materials, equipment, and services that are used by efficiency programs, such as manufacturing doors and windows or energy-efficient appliances, installation contractors and other technical jobs. *Induced jobs* are additional jobs that are created by customers' energy bill savings being spent elsewhere in the economy for products and services in their local communities.

Existing estimates of job creation from Focus' energy efficiency programs comes from two areas, as discussed in the Focus on Energy Evaluation Reports¹⁸: the jobs created from the program spending (the *direct* and *indirect* jobs discussed above), and the jobs created from customers' spending of their bill savings (*induced* jobs). We used the estimates of the spending and savings-based job creation in Focus' reports to project forward the future jobs from these two economic impact areas. If Focus

funding remains at the 1.2% of revenue funding level, by 2021 the impact could be growth of 6300 to 10,300 jobs in Wisconsin. If Focus funding were expanded to the Commission-proposed level, that job growth could expand to 11,700 to 14,600 jobs, as shown in Figure 8. Many factors influence the overall job outlook for a state, and energy efficiency can play a strong positive role.

Figure 8: Job creation from energy efficiency, program spending & bill savings



Discussion

Policies that Improve Energy Efficiency

Stable funding seems to have been Wisconsin’s biggest challenge over the history its energy efficiency policy. Act 141 made important changes to help protect ratepayer-funded energy efficiency from budgetary raiding by creating a robust public-private partnership with contractual obligations to provide efficiency programs and to pay for them. What Wisconsin’s model does not do, however, is insulate that funding from the price of energy. As our analysis shows, under the current model in which energy efficiency funding is tied to utility revenues, price changes can lead to a broad range of possible funding. If funding is set to a specific level (e.g. the expanded funding scenario at \$256 million annually) or even better is tied to a percentage of utility load in an Energy Efficiency Resource Standard (EERS), then it can serve to dampen some of that price effect on the funding stream. This benefits the state’s already-strong energy efficiency economy by lessening the uncertainty that can come from the effect of changing prices on utility revenues.

In addition to making future budgets more predictable for the many businesses, contractors, and other organizations that bring energy efficiency programs from the drawing board into the state’s homes, businesses, and industries, a load-based EERS with specific energy savings goals instead of specified funding levels incentivizes utilities, whether working individually or in collaborations like Focus, to provide the most cost-effective means of reaching those goals.

Utilities’ traditional revenue stream depends on sales of energy. Successful energy efficiency programs reduce sales, creating an economic disincentive for the utility to engage in strong energy efficiency programs. Resolving this market barrier requires changes in traditional utility regulatory thinking.

Maintaining fair utility revenues by unlinking a portion of utility revenues from sales is a process known as decoupling. Decoupling (or “revenue decoupling”) is a rate adjustment mechanism that separates fixed cost recovery from the throughput of electricity.¹⁹ Unlike traditional utility regulation, which sets prices rather than revenue requirements and does so infrequently, decoupling can provide a “true up” mechanism that allows rate adjustment between rate cases to meet a determined target revenue level for the utility. Decoupling mechanisms can take several forms, all of which can be adjusted to meet the goal of removing the disincentive for utilities to implement strong energy efficiency programs.

In addition to decoupling, there are other alternative regulatory models that can enhance energy efficiency. These include alternative rate designs and performance incentives can further encourage utilities to adopt energy efficiency programs. Rate-of-return incentives that are based on achieving or exceeding efficiency goals and shared savings plans in which utilities share in part of the “avoided cost” bill savings of their customers can be compatible with and quite complimentary to decoupling in encouraging energy efficiency when implemented effectively.²⁰

Wisconsin is one of twelve states that have already implemented some sort of decoupling mechanism, with several more that have regulation pending. The Commission approved a “Revenue Stabilization Mechanism” four-year decoupling pilot for WPSC in 2008, with an annual true-up mechanism for over- or under-collection.²¹ In WPSC’s 2009 rate case, the Commission review of that pilot found it reasonable to continue the direction of that policy and to approve rate designs in which the increase in rates is proportionally higher in the energy charge rather than in the demand charge.²² Approval of decoupling on a utility-by-utility basis in rate cases is ongoing in Wisconsin and shows that the Commission has been giving strong consideration to how price signals affect the adoption of energy efficiency.

Wisconsin is also one of twenty-one states that have approved incentive mechanisms, also one of a growing number of states adopting these policies.²³ In 2008, Wisconsin approved a rate-of-return equal to that for capital expenditures for WPL (Alliant) for its investment in energy efficiency “shared savings” programs for commercial and industrial customers.²⁴ Utilities in Wisconsin are allowed to propose incentives as part of their rate cases.

Conclusion

In a time of concern about high unemployment, rising energy bills, regulatory uncertainty, risk-aversion from utility shareholders, and government fiscal responsibility, energy efficiency provides an attainable, cost-effective method to help meet Wisconsin’s growing electricity needs. It does this using “off the shelf” technologies and does not require the invention of new technologies to meet the savings targets. While primarily relying on existing technologies, it also provides plenty of room for innovation in new technologies and practices and improvements to existing ones. Energy efficiency encourages robust, sustainable economic development while meeting the rising energy needs of consumers and providing local long-term job growth and bill savings.

Wisconsin has one of the longest histories in the Midwest of successful implementation of energy efficiency and has made strong moves to keep that sector of the economy and the partnerships that it has created growing and saving energy and money for the state’s utility customers. The benefits of Wisconsin’s energy efficiency policies will continue be derived into the coming years, and continuing to strengthen those policies will increase the economic value of those benefits. Energy efficiency can be a strong win for policymakers, utilities, program providers, and the businesses and residents that are served by those stakeholders.

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