***Energy Efficiency Question 7:*** *What are related costs and benefits (re: affordability, reliability, and the environment) of a range of possible energy efficiency standards (including maintaining our current standard, and increasing it to various levels)?*

## *Executive Summary*


1. States have adopted a range of energy efficiency standards. The standards require utilities to reduce consumption of electricity and/or natural gas by a certain amount, stated as a percentage of the utility's annual sales, or set amount of units (e.g., megawatt-hours of electricity or million cubic feet of natural gas) over a specific time frame (e.g., annually or over five-year period). While relatively high standards have been set in some states, there is not a track record to demonstrate the standards are consistently achievable. Michigan's standard requires utilities to meet annual energy savings targets and is subject to a cost, or spending, cap for meeting the standard. Specifically, PA 295 requires annual energy savings of 1.0% of retail sales for electric providers and 0.75% of retail sales for gas providers. The cost cap in the law is 2% of the utility's annual revenue.

2. Based on trends in Michigan and nationally, it will be more costly to achieve a given level of energy savings in the future. For example, achieving 1.0% electric savings in 2015 will be more expensive than achieving that same level of savings in 2012. In fact, the cost in 2015 is projected to exceed the existing cost caps in PA 295.

3. The standard and related cost caps should be designed in concert with one another and be informed by studies on the energy efficiency potential. The standard should fit under an acceptable cost cap to limit short-term impacts on rates. Cost caps are important and help balance short and long-term benefits and costs associated with energy efficiency programs.

4. Costs and benefits of achieving different standards can vary among utilities based on their size, type, service area, capacity needs, and other factors. Therefore, statutory standards should build in flexibility with common sense oversight by the Michigan Public Service Commission (MPSC).


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**1. States have adopted a range of energy efficiency standards. Michigan's standard requires utilities to meet annual energy savings targets and is subject to a cost, or spending, cap for meeting the standard.**

Many states have standards that require utilities to reduce their customers' consumption of electricity and/or natural gas by a certain amount, stated as a percentage of the utility's sales, or set amount of units (e.g., megawatt-hours of electricity or million cubic feet of natural gas) over a specific time frame. The standards are met by the utility expending funds on programs designed to encourage customers to make their homes or businesses more energy efficient. The programs typically include rebates or incentives to reduce the upfront cost of energy efficiency upgrades such as furnaces, lighting, motors, and insulation, as well as marketing and outreach to make customers aware and motivated to act. The overarching policy objectives of these programs include, but may not be limited to, delaying the need for electricity generation, reducing pollution, encouraging local job creation, and lowering customer's utility bills.

The utility's customers pay a monthly surcharge (or otherwise pay through utility rates) to reimburse the utility for its outlay of funds to comply with the energy efficiency standard. Michigan uses a surcharge, which is included as an itemized amount on the customer's bill. Some states, including Michigan, cap the monthly surcharge and/or overall dollar amount (or percentage of utility's annual revenues) that utilities can spend on these programs. Customers can realize a reduction in their monthly bill (in excess of the surcharge) if they use energy efficiency measures covered by the

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utility's programs. Customers who do not participate would see an increase in their rates in the near term but could benefit over the long term through the utility avoiding certain costs, such as fuel or deferred capital investments, as discussed below.

PA 295 requires annual energy savings of 1.0% of retail sales for electric providers and 0.75% of retail sales for gas providers. This "energy optimization" or EO standard remains in place at this level in perpetuity unless superseded by future legislation or suspended by the MPSC according to the terms of PA 295. In 2015, the MPSC must file a report with the legislature addressing the programs and any recommendations for adjustments to the standard. There is a statutory cap on the monthly surcharge in Michigan as well as an overall spending or cost cap of 2% of the provider's revenues. This same 2% cap applies to both electric and natural gas providers. See Energy Efficiency Question 1 for additional detail on Michigan's standard and savings to date.

Other states have adopted a range of energy efficiency standards and approaches, as discussed in detail under Energy Efficiency Question 6. Highlights include:

- Six states have standards that are 2.0% of electric sales or higher and nine (including Michigan) have standards between 1.0% and 1.9%.
- Five of nine states have natural gas standards above 1.0% and three of nine (including Michigan) have standards between 0.5% and 0.9%.

While a handful of states have higher standards than Michigan, there is not a track record to demonstrate that such standards are consistently achievable. Appendix 1 shows savings achieved in 2010 compared to 2012 targets for various states. Many states are still ramping up to meet standards. The average electric energy savings in 2010 was 0.80% of electric sales across 24 states. Michigan approached that average in 2010 with 0.75% during its first full year of EO programs and exceeded it in 2011 (0.87%). There have been challenges in some states achieving the standard, or doing so under the applicable cost cap as discussed below and further under Energy Efficiency Questions 6 and 22. Moreover, comparing the standards across states can be challenging because of the nuances in the way the standards are defined and how savings are credited. The standards also build in assumptions about load growth, economic activity, weather, demographics, and other factors and, therefore, caution should be used when comparing the percentage targets.

2. **Based on trends in Michigan and nationally, it will be more costly to achieve a given level of energy savings in the future**. **For example, achieving 1.0% electric savings in 2015 will be more expensive than achieving that same level of savings in 2012. In fact, the cost in 2015 is projected to exceed the existing cost caps in PA 295.**

   Data in Michigan and nationally show that the costs to produce energy savings through energy efficiency programs are rising. As detailed in Appendix 2, the cost per MWh saved over the last five years increased at an average rate of 13 percent per year. DTE Energy's average increase in the cost per MWh saved since 2009 is 8.6% – lower than the national average but still increasing. There are numerous reasons for this trend, one of which is increasing minimum standards on lighting, equipment, and appliances, which makes it harder for utility programs to show savings because they have to go above the minimum standard to get credit for savings. Some of the "low hanging fruit" has also been tapped in the first few years of the EO programs. While there is still the potential for additional savings, it is more costly to achieve. As a result, it will take ever larger annual outlays to achieve the same amount of savings going forward. Based on available data on energy efficiency spending and savings nationally and experience in Michigan, maintaining Michigan's EO standard in

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future years would exceed the spending cap (2% of annual revenue).[1] For example, DTE Energy estimates it will cost 2.9% of its electric revenue by 2015 and 4.3% by 2020 for each 1% of savings.

Researchers at Lawrence Berkeley National Laboratory highlighted this challenge, which is not limited to Michigan:

> The short-term rate impacts associated with attaining very aggressive levels of savings (or even relatively modest levels in of savings in states that are higher than has historically occurred) could pose a political challenge for state regulators, particularly in states that have seen significant rate hikes in recent years or whose rates are well above national averages. Across all states, these challenges are further heightened during periods of economic hardship.…Meeting aggressive EERS [energy efficiency resource standard] targets in some states will likely require exceeding those caps or otherwise justifying rate increases, which may be feasible only in a robust, growing economy.[2]

**3. The standard and related cost caps should be designed in concert with one another and be informed by studies on the energy efficiency potential. The standard should fit under an acceptable cost cap to limit short-term impacts on rates. Cost caps are important and help balance short- and long-term benefits and costs associated with energy efficiency programs.**

Standards are important to motivate utilities and states to pursue energy efficiency, but savings need to be attainable. Key policy considerations, trends, and data needs should be considered when evaluating a range of possible energy efficiency standards going forward, including maintaining, reducing, increasing, or otherwise modifying the current standard under PA 295.

- The standard should be informed by objective, up-to-date studies documenting the potential to achieve additional cost effective energy savings in Michigan. A new study, commissioned by the MPSC with support from utilities, is expected to be available in the fall of 2013.
- The standard and related cost caps should balance short-term and long-term impacts on rates and utility customers. In the short term, energy efficiency can put upward pressure on utility rates because: (1) energy efficiency reduces sales, meaning less revenue to cover the utility's fixed costs, which can drive up the rate ($/KWh or $/Mcf), and (2) all customers pay a surcharge to fund the energy efficiency programs. Notwithstanding short-term pressure, energy efficiency programs can result in avoided costs for the utility (e.g., fuel, delayed power plant construction), particularly over the medium and long term.
- Standards should be designed to fit under an acceptable cost cap. Cost caps (presently, 2% of revenue) are important because they can help mitigate the short-term impacts on rates.

[1] See Appendix 2 for detail. National data are based on *The State Energy Efficiency Scorecard*, Ben Foster, et al., American Council for an Energy-Efficient Economy, October 2012; *The State Energy Efficiency Scorecard*, Michael Sciortino, et al., American Council for an Energy-Efficient Economy, October 2011. Michigan data are based on DTE Energy EO actual and projected expenditures and savings are based on EO plans and reports filed with the MPSC.

[2] Lawrence Berkeley National Laboratory, Galen L. Barbose, et al., *The Future of Utility Customer-Funded Energy Efficiency Programs in the United States: Projected Spending and Savings to 2025*, January 2013, p. 28.

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4. **Costs and benefits of achieving different standards can vary among utilities based on their size, type, service area, capacity needs, and other factors. Therefore, statutory standards should build in flexibility with common sense oversight by the MPSC.**

   In addition to ensuring that standards are designed to fit under an acceptable cost cap, standards should also reflect that there can be differences among utilities in terms of the costs and benefits of achieving different savings levels based on the utility's size, type, service area, capacity needs, and other factors. Therefore, state energy policy should provide flexibility in meeting the standard with common sense regulatory oversight by the MPSC.

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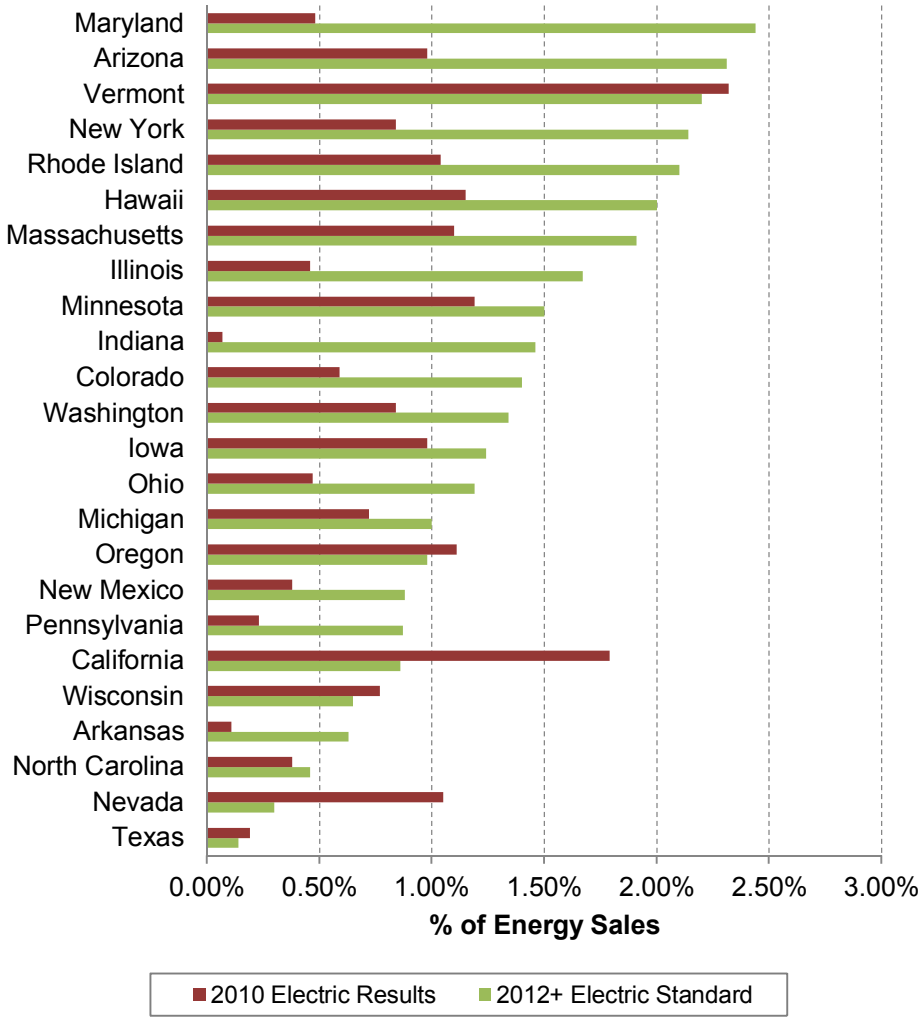
# Appendix 1:
# Standards vs. 2010 Savings

All of the 24 states that have energy efficiency standards had active energy savings programs in their states in 2010. Exhibit 1A compares the electric energy efficiency standards for 2012 (or beyond) to actual state-level savings achieved for 2010. Many states are still ramping up to these standards. Only 5 of 24 states (Vermont, Oregon, California, Wisconsin, and Nevada) exceeded their 2012 standards in 2010.

EXHIBIT 1A. 2012+ Electric EE Standards vs. 2010 Actual Savings




SOURCE: *The State Energy Efficiency Scorecard*, Ben Foster, et al., American Council for an Energy-Efficient Economy, October 2012

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The average electric energy savings in 2010 was 0.80% of electric sales across these 24 states. Comparing the average from 2010 results to the 2012 standards, states need to produce an additional 165% of electric energy efficiency in order to begin meeting the 2012 requirements.

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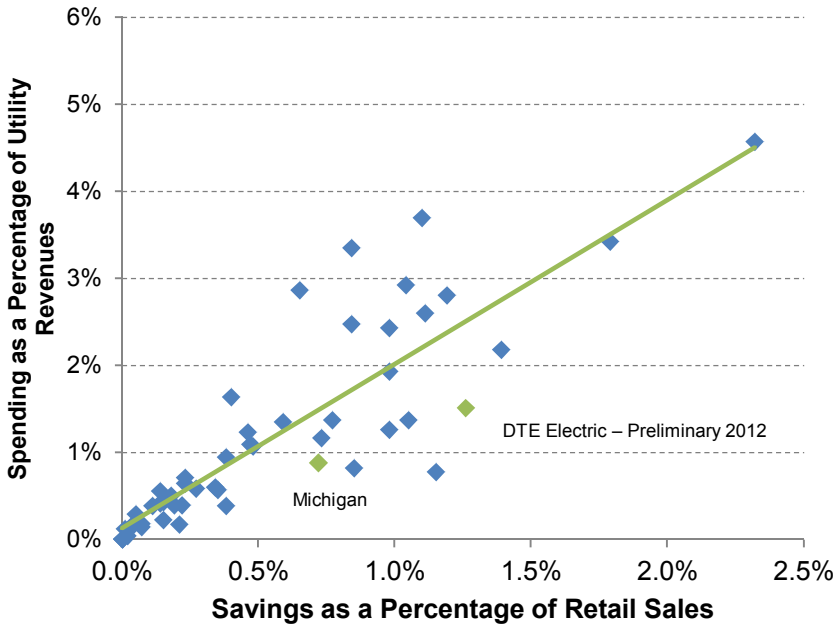
# Appendix 2:
# Energy Savings vs. Utility Spending

In 2010, nearly every state spent money on and produced some level of electric energy efficiency. Exhibit 2A shows the results of such spending, with the vertical axis representing spending as a percentage of retail utility revenues and the horizontal axis representing the energy savings stated as a percentage of electric energy sales.

EXHIBIT 2A. 2010 Budgeted Spending vs. Electric Savings




SOURCE: *The State Energy Efficiency Scorecard*, Ben Foster, et al., American Council for an Energy-Efficient Economy, October 2012; *The State Energy Efficiency Scorecard*, Michael Sciortino, et al., American Council for an Energy-Efficient Economy, October 2011.
NOTE: Savings are based on incremental annual savings (also known as "first year savings") from programs in each program cycle, as opposed to cumulative energy savings accrued over the life of a particular program.

The line in Exhibit 2A represents the regression of two sets of data:

- Spending as a percentage of utility revenues
- Electric savings as a percentage of electric retail sales

The slope of this line is 1.9% and it intercepts very close to zero. This leads to the conclusion that in 2010, for each 1.0% of energy savings achieved, program costs averaged 1.9% of utility revenues. In Michigan, spending is capped at 2.0% of electric revenues with the energy efficiency standard set at 1.0% of sales, falling in line with the national experience. Michigan and DTE Energy are reflected as green dots

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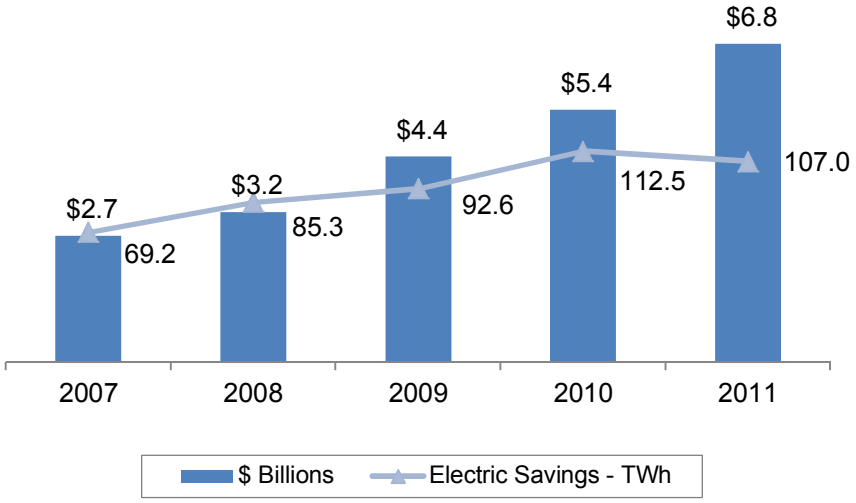
below the line in the exhibit, indicating a relative lower spend per MWh saved. However, 2010 was only the second year of Michigan's energy optimization programs and costs are increasing over time as the market matures both in Michigan and across the nation.

In the U.S., spending on energy efficiency is increasing at a faster rate than energy savings are being achieved. Exhibit 2B compares energy efficiency spending as it relates to achieved savings nationwide. Savings have increased on average 12% per year, while spending has increased an average of 26% per year over this five-year period. In 2011, savings were below 2010 levels while costs continued to rise. The average cost per MWh saved over the five years shows an increase of 13% per year. This comparison uses "first-year" savings (i.e., savings in the first year energy efficiency measures are implemented, not the cumulative savings over the lifecycle of the measures). Thus, even though they are not shown in Exhibit 2B, there are additional savings after the first year in which the savings are counted.

EXHIBIT 2B. U.S. Electric Savings and Spending Trends, 2007–2011




SOURCE: *Summary of Ratepayer-Funded Electric Efficiency Impacts, Budgets, and Expenditures*, Adam Cooper and Lisa Wood, Institute For Electric Efficiency, January 2012.

Given the cost pressures from increasing EISA standards and other natural market transformations within the energy efficiency industry, future costs to save energy through energy efficiency programs will likely increase. Recent historical electric energy efficiency cost inflation has averaged 13% per year nationally. Thus, the national cost ratio of electric revenue per first-year electric energy savings is likely to increase from what is shown in Exhibit 2A. Applying the more conservative annual increase estimated by DTE Energy of 8.6%, the projected cost for achieving 1% savings in 2015 is about 2.9% of electric revenue and grows to 4.3% of revenue by 2020 to achieve the same 1% savings level.