MEEA
Midwest Energy Efficiency Alliance

The Source on Energy Efficiency

Potential Long-Term Savings from Electric and Natural Gas Energy Efficiency Resource Standards in Missouri

Midwest Energy Efficiency Alliance
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Introduction

Approximately $3.7 billion drains out of Missouri's economy each year to pay for imported coal and natural gas. Energy efficiency can help Missouri win back that lost economic opportunity, advancing the state's energy independence and security, lowering electric and natural gas bills for residential and business customers, creating jobs, and reducing carbon emissions.

Energy efficiency is not new for Missouri. Missouri's investor-owned, municipal, and cooperative utilities have been growing their energy efficiency investment for several years. Missouri is in a position now to move energy efficiency forward statewide. This analysis will discuss energy and dollar savings that Missouri can achieve under three different scenarios for increasing those energy efficiency investments. The analysis highlights cumulative long-term savings and potential job creation, and also addresses carbon dioxide savings.

Missouri imported all of the 272,405 million cubic feet (MMCF)[i] of natural gas that it consumed in 2007, because it has no in-state production.[ii] This represents over $2.7 billion of lost opportunity for growing Missouri's state economy every year.[iii] By reducing natural gas consumption, Missouri could keep a portion of this annual loss within its own economy, providing enhanced energy security and independence for the state as well as fueling sustainable long-term economic growth.

Imported coal, a major energy source for Missouri, drains another $1 billion from the state's economy each year. Coal-fired electric power generation accounts for 97% of Missouri's coal use[iv] and generates 82.6% of Missouri's electricity.[v] In 2007, Missouri used 44,094 thousand short tons of coal for electric power generation[vi] while producing only 236 thousand short tons at in-state mines[vii] and exporting 166 thousand short tons of that production to other states.[viii] Imports make up the difference between Missouri's coal use and its retained in-state production, costing Missouri's economy approximately $1 billion in lost opportunity annually.[ix] As with natural gas, reducing electricity consumption can create a path toward retaining these funds within the state economy and enhance Missouri's energy independence.

As with any forecast, this analysis looks forward into an uncertain future to predict the potential outcome. Rather than being a precise indication of the future, it will provide insight into achievable savings and serve as a guide to decision-making and policy adoption.

Energy Efficiency Resource Standards

An *Energy Efficiency Resource Standard* (EERS) requires energy utilities to meet a portion of their annual energy needs through efficiency savings rather than supplied energy. EERS often are expressed as a percentage of the previous year's total energy needs, but are sometimes enacted in terms of several years' weighted average or predicted energy needs. For the sake of simplicity and consistency, all scenarios evaluated here are based on the previous year's total energy needs.

This report estimates the long-term savings from energy efficiency that electric and natural gas utilities in Missouri could achieve from three EERS scenarios. These scenarios are drawn from proposed Missouri legislation, Midwest regional policy initiatives, and standards in place in other Midwestern states. They show a variety of different efficiency goals and timeframes for reaching those goals. This analysis compares these scenarios to a reference case, which estimates electric

and natural gas usage without an EERS policy, and then summarizes the bill savings, job opportunities, and carbon savings created by the EERS scenarios.

Energy Efficiency Resource Standard for Electricity in Missouri

Electricity Reference Case

The *reference case* is a "business as usual" baseline prediction of electric or natural gas use if the state has not implemented any EERS. The U.S. Department of Energy's Energy Information Administration's (EIA) *Annual Energy Outlook 2010* [x] (AEO 2010) predicts energy consumption reference cases in the United States by census region through 2030. The Annual Energy Outlook reference case for the West North Central census region provided the basis for the Missouri reference case in this analysis.

Figure 1 shows the reference case consumption for electricity through 2025. The initial decrease in 2010 is due to the effects of the economy over the past several years and the predicted effects of the efficiency spending from the American Recovery and Reinvestment Act of 2009 (ARRA), but is overcome by growth in demand, reaching back to 2009 levels again by 2013 and climbing beyond. The AEO 2010.reference case shows an increase in total electricity consumption in Missouri of 9.9% from 2009 levels by 2025.

Figure 1: Annual Energy Outlook Reference Case for Electricity in Missouri

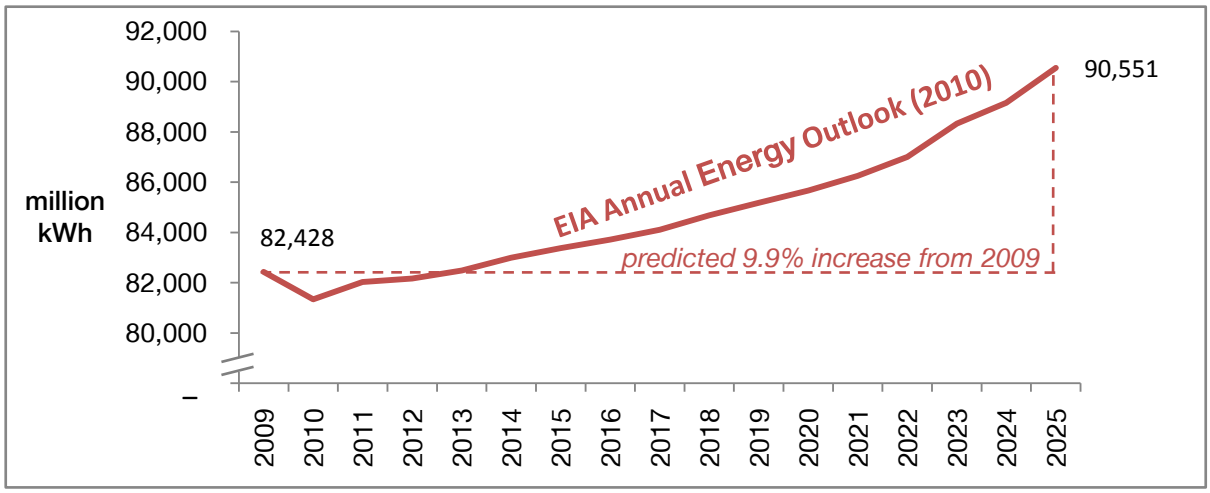
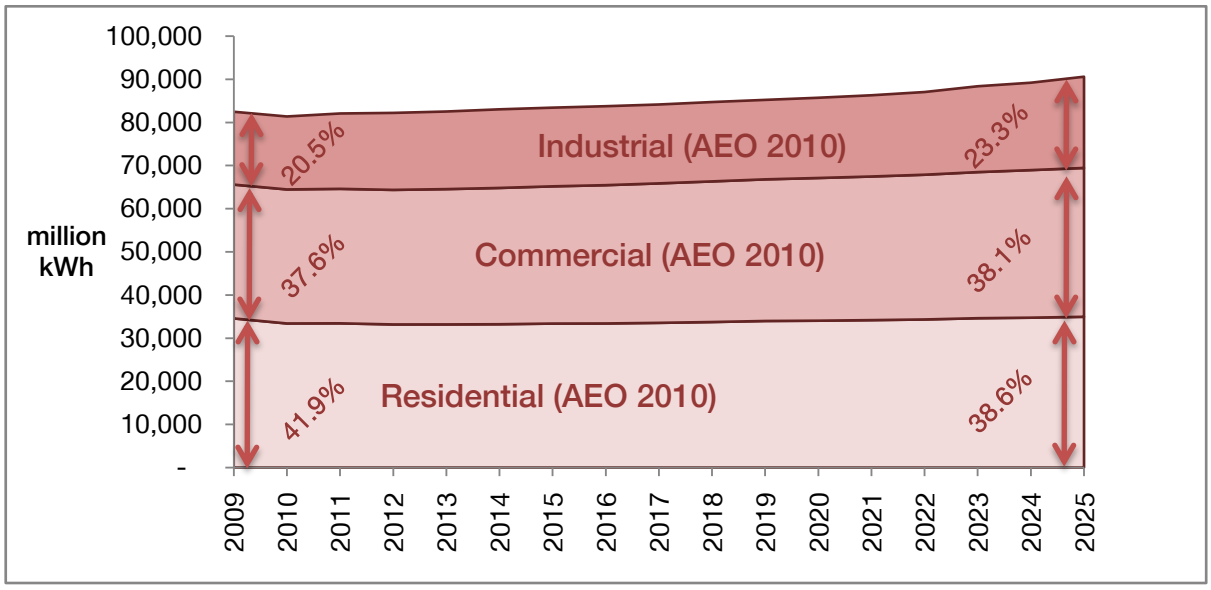


Figure 2 shows the sector-level changes in electricity consumption that AEO 2010 predicts in the reference case. Electric consumption in the residential sector will decrease in the reference case from 41.9% of total electricity consumption in Missouri to 38.6%. The consumption of electricity in the commercial and industrial sectors, on the other hand, will increase in proportion to residential consumption.

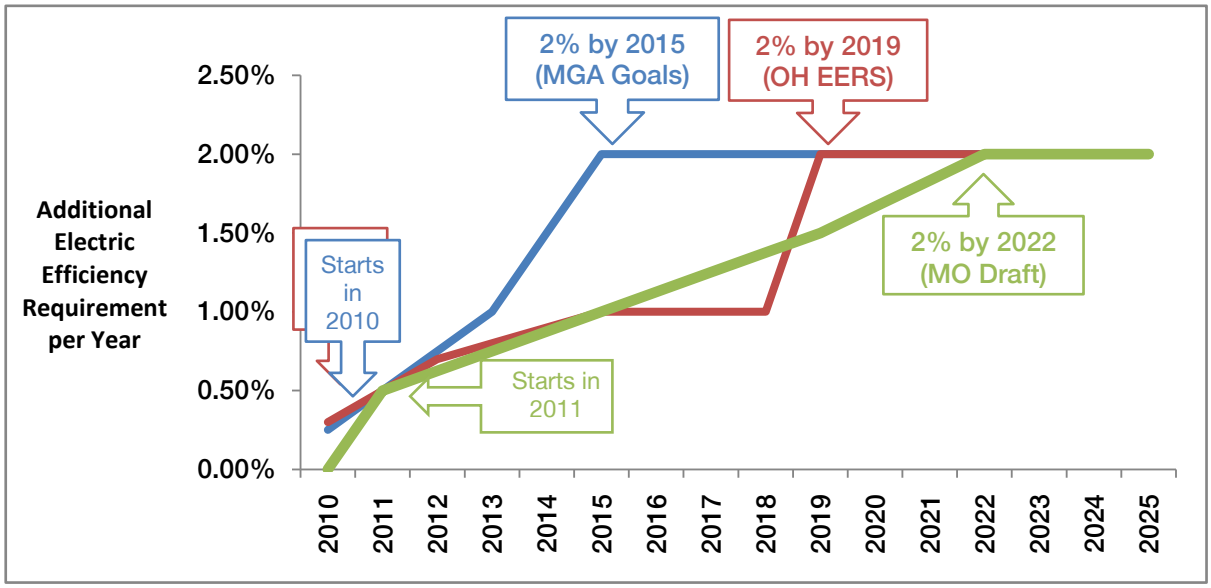
Figure 2: Changes in Sector-Level Electric Consumption
in the Reference Case



Electricity EERS Scenarios

This analysis examines scenarios for energy efficiency savings in the electric sector from proposed Missouri legislation, regional energy standards endorsed by the Midwestern Governors Association, and EERS adopted by other Midwestern states. Figure 3 shows the incremental energy efficiency requirements for the electric EERS scenarios modeled for this report.

Figure 3: Annual Efficiency Requirements (Ramp Up)
for Electric EERS Scenarios



The proposed Missouri legislation, a draft bill circulated by Renew Missouri called the *Missouri Energy Efficiency Performance Standard*[xi], calls for a standard that begins in 2011 with an annual savings requirement of 0.5%, increasing to 1.0% by 2015, 1.5% by 2019, and 2.0% by 2022. It does not specify the exact schedule for the years between the given target dates. For this

analysis, we assumed an annual increase to create a straight-line increase in efficiency between the target dates.

The Midwestern Governors Association's (MGA) *Midwest Energy Security and Climate Stewardship Roadmap: Advisory Group Recommendations* [xii] calls for electric efficiency to reach an annual savings level of 2.0% by 2015 in each state in the region. Illinois has already adopted an EERS that meets the MGA goal for electrical energy efficiency; begun in 2008, it will achieve 2% annual savings in 2015.[xiii] To mirror the MGA and Illinois standards, but allow for a later start date, the 2% by 2015 scenario in this analysis starts in 2010 with a requirement of 0.25% annual savings and increases that requirement by 0.25% through 2013, then 0.5% in for 2014 and 2015 to reach the 2.0% annual savings goal.

Ohio's electric EERS,[xiv] which requires 2.0% of annual electricity needs to be met through efficiency in 2019 and continues to require a 2.0% annual savings level thereafter, serves as the basis for the third electric EERS scenario. The 2.0% by 2019 scenario in this report is a slightly compressed version of Ohio's standard, since that standard began in 2009. This scenario starts at 0.3% annual savings in 2010, ramps up to 1.0% for each of the years 2015-2018, and then jumps a whole percent to the 2019 goal.

Electric EERS Savings

All-Sectors

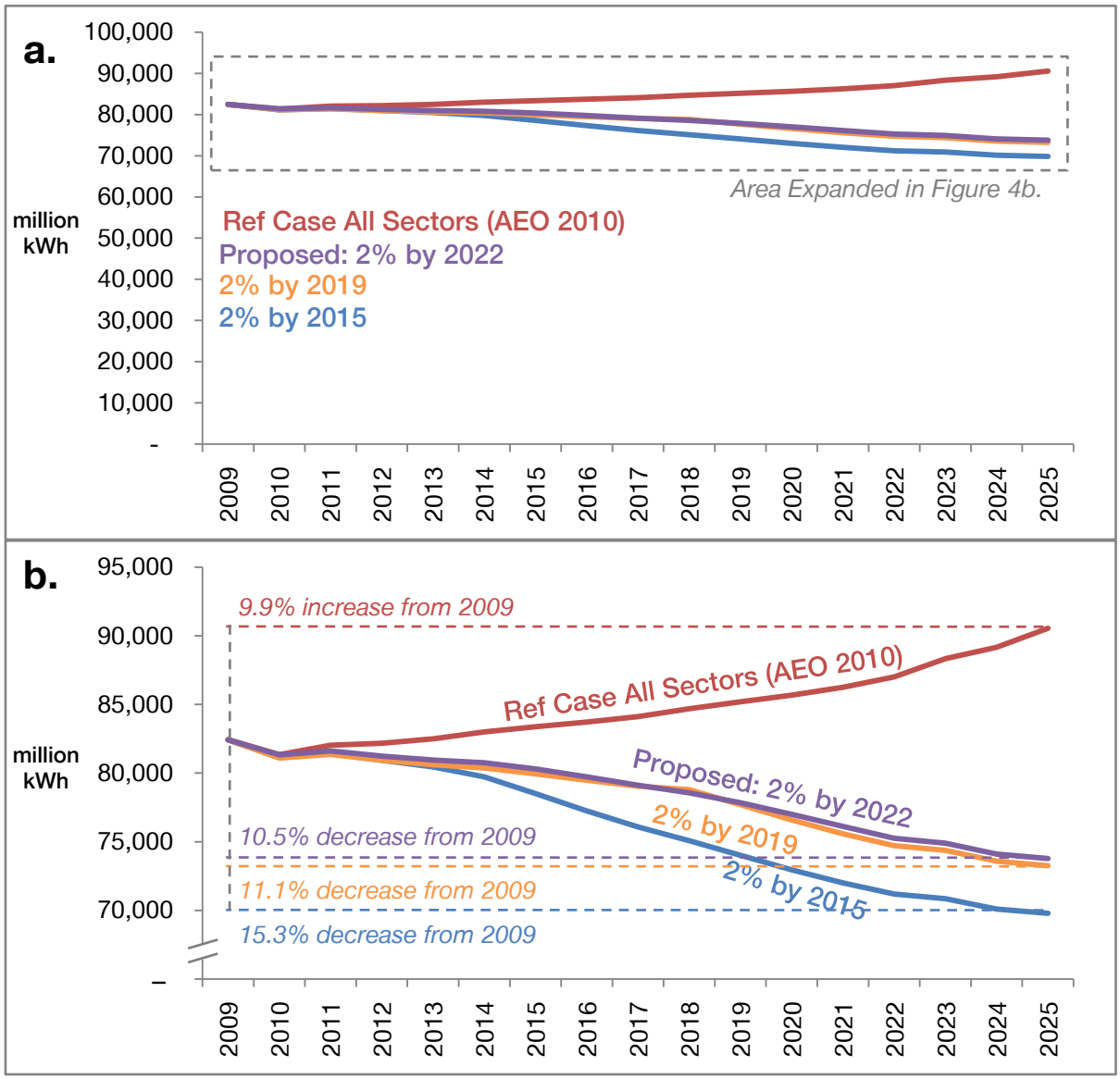
In the reference case, Missouri would expect to see a 9.9% increase in electricity use across all customer sectors between 2009 and 2025 (Figure 4a and b). The proposed 2.0% by 2022 electric efficiency standard in the draft legislation can reduce customer bills by $4.3 billion cumulatively over that time.[1] This standard would decrease electricity use by 10.5% from 2009 levels by 2025, with annual savings in 2025 of 16.8 billion kWh. Cumulatively, electricity savings could reach 106.8 billion kWh by 2025.

Alternately, Missouri can increase its savings by setting a standard that reaches 2.0% annual savings a little faster. A standard that reaches 2.0% by 2019, similar to Ohio's standard, can reduce customer bills by $4.5 billion cumulatively through 2025, and decrease electricity use by 11.1% from 2009 levels. Annual savings in 2025 could reach 17.3 billion kWh, and cumulative electricity savings could reach 111.7 billion kWh.

If Missouri can meet the electric efficiency goals of the Midwestern Governors Association, 2% by 2015, electric bills for Missouri's utility customers can decrease by $5.9 billion cumulatively through 2025. Electricity use would be reduced by 15.3% from 2009 levels. Annual savings in 2025 could reach 20.8 billion kWh, and cumulative savings could add up to 147.6 billion kWh.

[1] This and similar figures for customer bill savings are presented as *net* savings to the customer. We address the cost to achieve these savings in the "Bill Savings for Customers" section of this report.

Figure 4a and b: All-sector Electric Consumption under Missouri Energy Efficiency Scenarios



a. Overview[2]; b. Expanded view

Residential

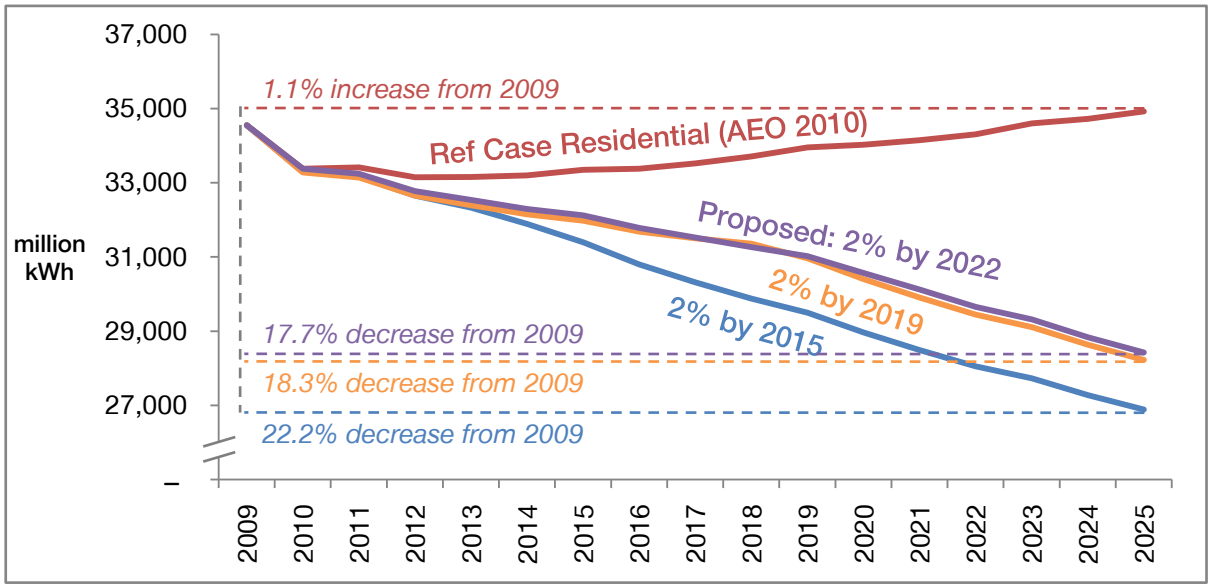
In the reference case, Missouri would expect only a 1.1% increase in electricity use in the residential sectors between 2009 and 2025 (Figure 5). In contrast, the proposed 2.0% by 2022 electric efficiency standard can reduce customer bills by $1.79 billion cumulatively over that time. This standard would decrease residential electricity use by 17.7% from 2009 levels by 2025, with annual savings in 2025 of 6.5 billion kWh. Cumulatively, residential electricity savings could reach 42.0 billion kWh by 2025.

Alternately, setting a standard that reaches 2.0% by 2019, Missouri can reduce residential customer bills by $1.88 billion cumulatively through 2025, and decrease use by 18.3% from 2009

[2] The overview graphs that start at the zero baseline on the vertical axis are included only for the "All Sectors" for electricity and natural gas. The sector-level graphs show only the detailed view, zoomed in on the area of interest with the vertical axis starting at a higher value.

levels. Annual residential electricity savings in 2025 could reach 6.7 billion kWh, and cumulative electricity savings could reach 44.1 billion kWh.

Figure 5: Missouri Residential Electricity Consumption under State EERS Scenarios



If Missouri were to meet the electric efficiency goals of the MGA, 2.0% by 2015, residential customer bills can be reduced by $2.48 billion cumulatively through 2025. Electricity use would be reduced by 22.2% from 2009 levels, and annual savings in 2025 could reach 8.0 billion kWh; cumulative, 58.4 billion kWh.

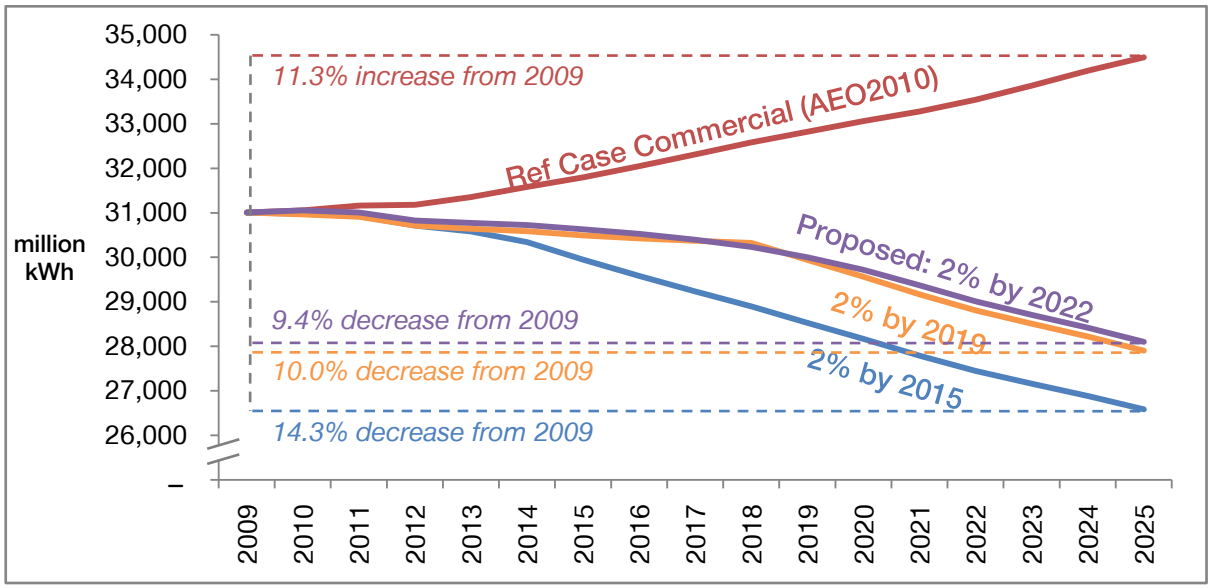
Commercial

In the reference case, Missouri would see an 11.3% increase in electricity use in the commercial sectors between 2009 and 2025 (Figure 6). Adopting the proposed 2.0% by 2022 electric efficiency standard can reduce customer bills by $1.31 billion cumulatively over that time. This standard would decrease commercial electricity use by 9.4% from 2009 levels by 2025, with annual savings in 2025 of 6.4 billion kWh. Cumulatively, commercial sector electricity savings could reach 40.8 billion kWh by 2025.

Alternately, setting a standard that reaches 2.0% by 2019, Missouri can reduce commercial customer bills by $1.37 billion cumulatively through 2025, and decrease use by 10.0% from 2009 levels. Annual commercial electricity savings in 2025 could reach 6.6 billion kWh, and cumulative electricity savings could reach 42.8 billion kWh.

If Missouri meets the electric efficiency goals of the MGA, 2.0% by 2015, commercial customer bills can decrease by $1.82 billion cumulatively through 2025. Electricity use would be reduced by 14.3% from 2009 levels, and annual savings in 2025 could reach 7.9 billion kWh; cumulative, 56.6 billion kWh.

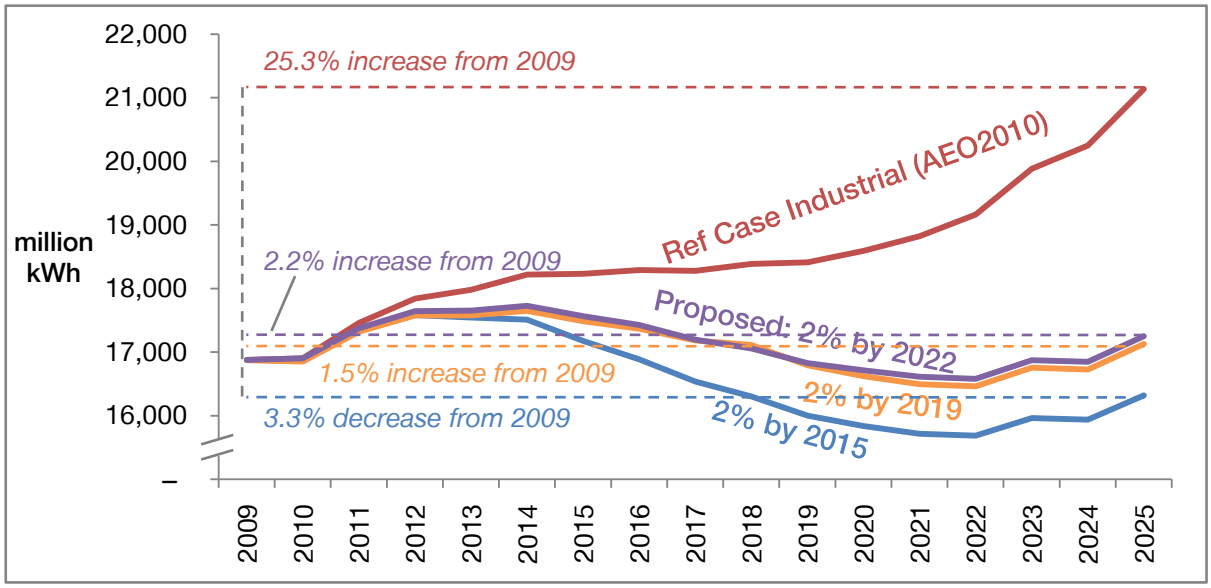
Figure 6: Missouri Commercial Electricity Consumption under State EERS Scenarios



Industrial

In the reference case, Missouri would see a 25.3% increase in electricity use in the industrial sectors between 2009 and 2025 (Figure 7). The proposed 2.0% by 2022 electric efficiency standard can reduce customer bills by $1.18 billion cumulatively over that time. This standard would reduce the growth industrial electricity use, with only a 2.2% increase from 2009 levels by 2025, with annual savings in 2025 of 3.9 billion kWh. Cumulatively, energy savings could reach 23.6 billion kWh by 2025.

Figure 7: Missouri Industrial Electricity Consumption under State EERS Scenarios



Alternately, setting a standard that reaches 2.0% by 2019, Missouri can reduce industrial customer bills by $1.37 billion cumulatively through 2025, and reduce the growth of electricity to

only a 1.5% increase 2009 levels. Annual industrial electricity savings in 2025 could reach 4.0 billion kWh, and cumulative electricity savings could reach 24.7 billion kWh.

If Missouri meets the electric efficiency goals of the MGA, 2.0% by 2015, industrial customer bills can decrease by $1.64 billion cumulatively through 2025. Electricity use would be reduced by 3.3% from 2009 levels, and annual savings in 2025 could reach 4.8 billion kWh; cumulative, 32.7 billion kWh.

Energy Efficiency Resource Standard for Natural Gas in Missouri

Natural Gas Reference Case

The Annual Energy Outlook 2010 reference case projection for natural gas in Missouri is shown in Figure 8. Natural gas consumption in the state is projected to increase by about 3.3% from 2009 to 2025. As with electricity, the effects of the economy and the ARRA contribute to the initial decrease in natural gas consumption from 2009-2010, but those savings are overcome by increased growth by mid-decade.

Figure 8: Annual Energy Outlook Reference Case for Natural Gas in Missouri

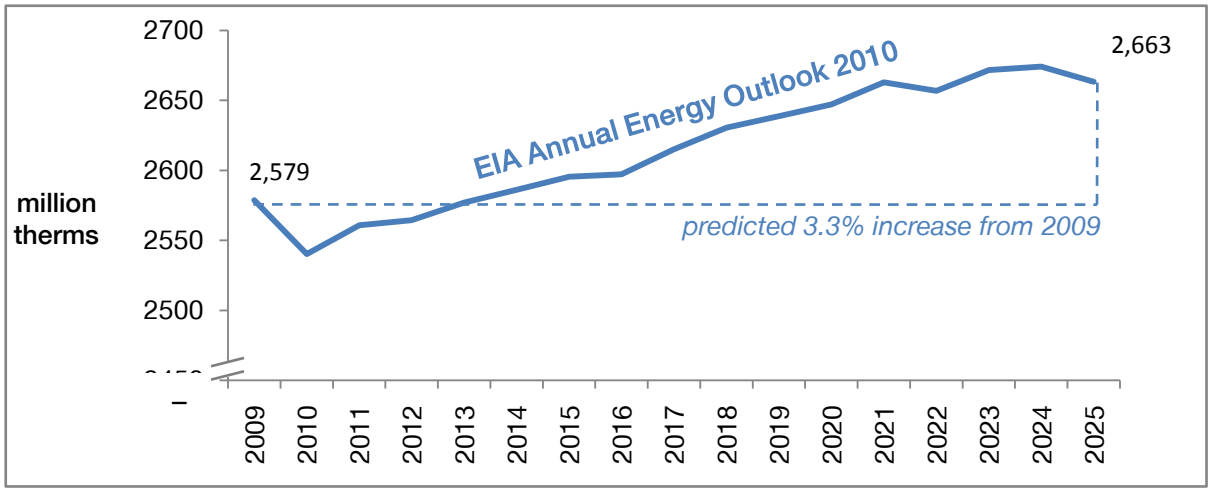
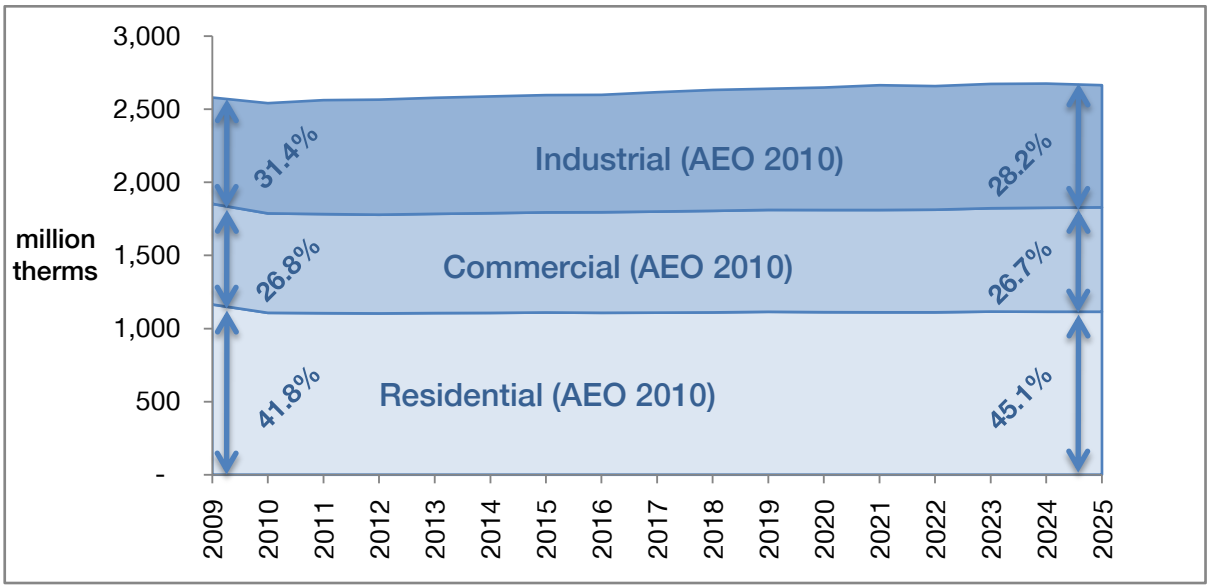


Figure 9 shows the sector-level changes in natural gas consumption that are predicted under the reference case. Natural gas consumption in the residential sector will increase in the reference case from 41.8% of total natural gas consumption in Missouri to 45.1%. The consumption of natural gas in the commercial sector will stay at about the same proportion, and industrial consumption will decrease in proportion to residential consumption.

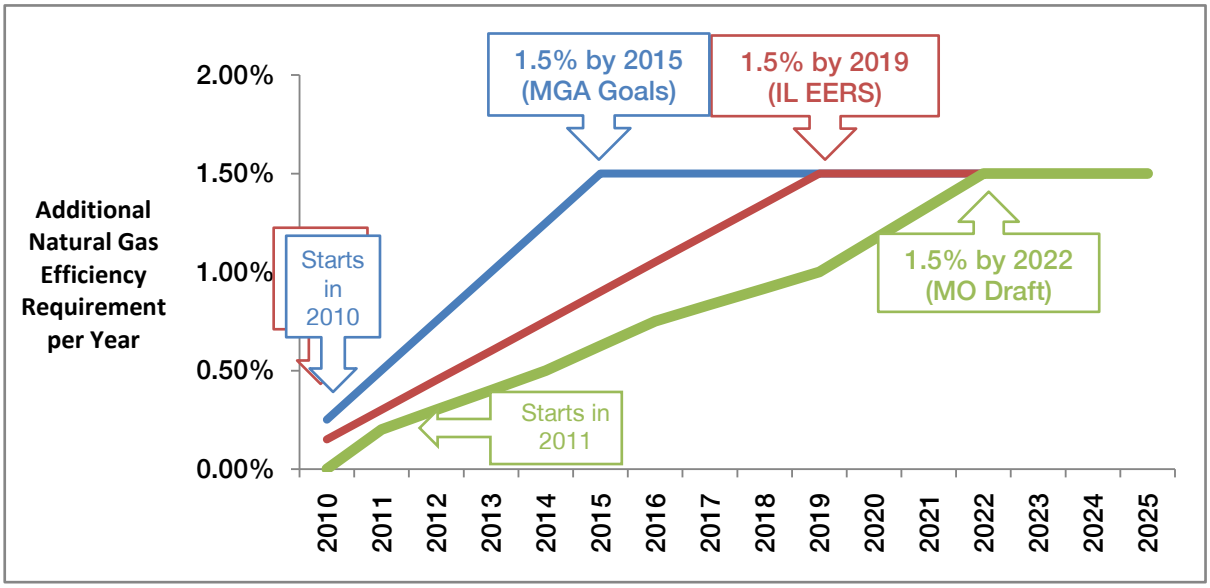
Figure 9: Changes in Sector-Level Natural Gas Consumption
in the Reference Case



Natural Gas EERS Scenarios

Missouri can benefit greatly through natural gas efficiency, due to a large percentage of homes heated with natural gas and a small amount of in-state natural gas production. A number of states in the Midwest have established EERS for natural gas, including Minnesota with a current goal of 1.5% annually;[xv] Illinois, with a goal of 1.5% by 2019;[xvi] and Michigan, with a goal of 0.75% by 2012.[xvii] Figure 10 shows the annual natural gas savings requirements for the three natural gas scenarios used in this analysis.

Figure 10: Annual Efficiency Requirements (Ramp-Up)
for Natural Gas EERS Scenarios



The natural gas EERS proposed in the draft legislation for Missouri reaches a standard of 1.5%, by 2022. It starts with a 0.2% annual savings requirement in 2011 and increases to 0.5% in 2014, 0.75% in 2016, 1.0% in 2019,and reaching 1.5% in 2022. It does not specify the exact

schedule for the years between the given target dates. For this analysis, we assumed an annual increase to create a straight-line increase in efficiency between the target dates.

A second scenario for natural gas would reach the same 1.5% annual savings goal as the MGA scenario, but spread the increase in savings over an entire decade, starting at 0.15% in 2010 and ramping up by an additional 0.15% per year through 2019. Illinois has implemented an EERS for natural gas that meets the goal of 1.5% by 2019.[xviii]

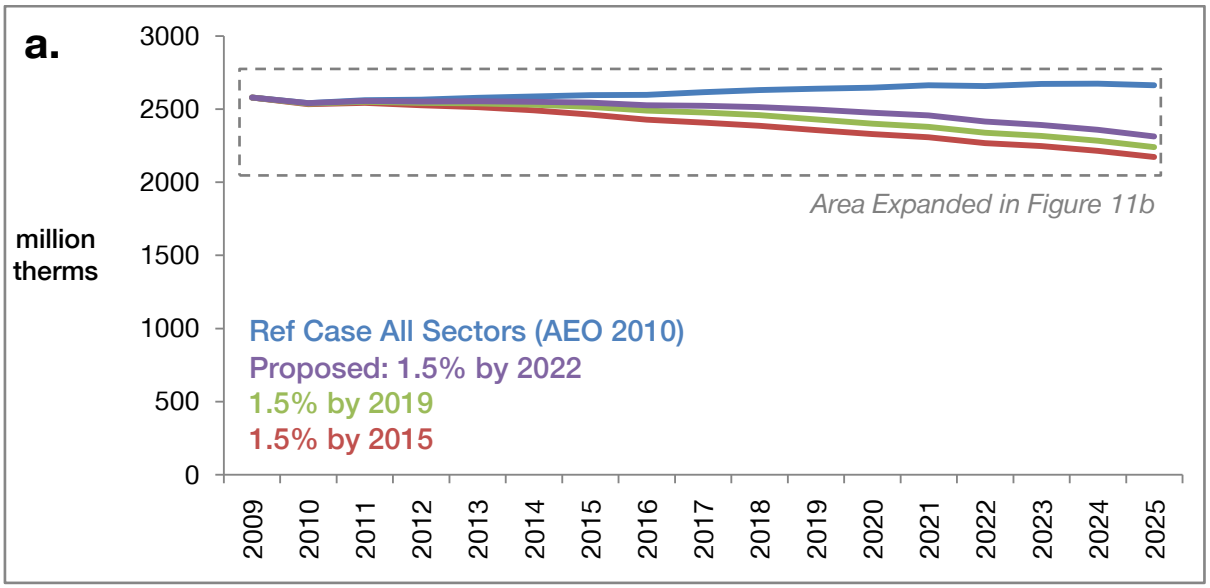
The Midwest Governors Association annual savings goal for natural gas efficiency is 1.5% by 2015. The ramp-up schedule used for this scenario starts at 0.25% in 2010 and increases by 0.25% additional annual savings requirement each year through 2015.

Natural Gas EERS Savings

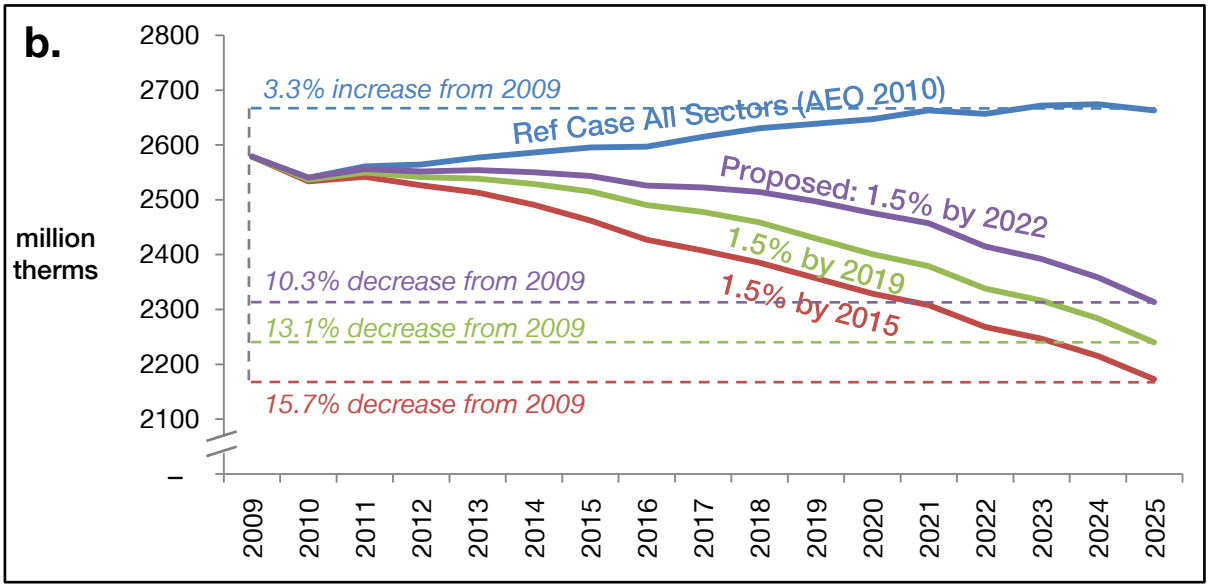
All-Sectors

In the reference case, Missouri would expect a 3.3% increase in natural gas use across all customer sectors between 2009 and 2025 (Figure 11a and b). The proposed 1.5% by 2022 natural gas efficiency standard in the draft legislation can reduce customer bills by $1.8 billion cumulatively over that time.[3] This standard would decrease natural gas use by 10.3% from 2009 levels by 2025, with annual savings in 2025 of 350 million therms. Cumulatively, natural gas savings could reach 2.1 billion therms by 2025.

Figure 11a and b: All-sector Natural Gas Consumption under Missouri Energy Efficiency Scenarios



[3] This and similar figures for customer bill savings are presented as *net* savings to the customer. We address the cost to achieve these savings in the "Bill Savings for Customers" section of this report.



a. Overview; b. Expanded view

Alternately, Missouri can increase its savings by setting a standard that reaches 1.5% annual savings more quickly. A standard that reaches 1.5% by 2019, similar to Ohio's EERS, can reduce customer bills by $2.3 billion cumulatively through 2025, and decrease natural gas use by 13.1% from 2009 levels. Annual savings in 2025 could reach 423 million therms, and cumulative natural gas savings could reach 2.9 billion therms.

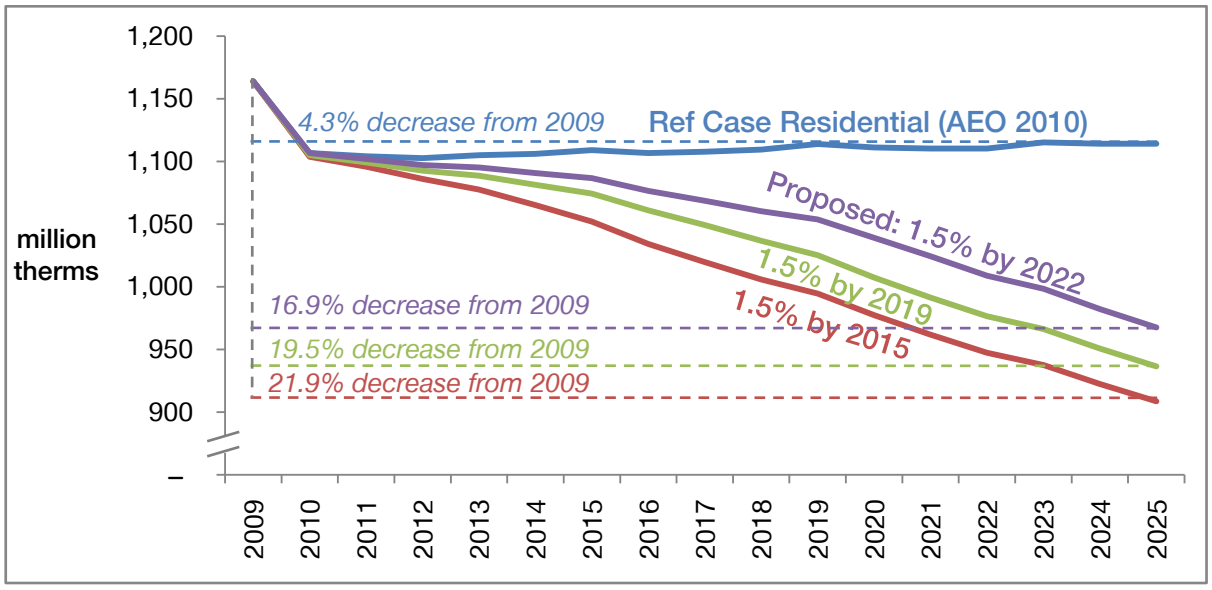
If Missouri were to meet the natural gas efficiency goals of the Midwestern Governors Association, 1.5% by 2015, customer bills can be reduced by $3.1 billion cumulatively through 2025. Natural gas use would decrease by 15.7% from 2009 levels; annual savings in 2025 could reach 490 million therms; cumulative, 3.7 billion therms.

Residential

In the reference case, Missouri's residential customers would see a 4.3% decrease in natural gas use in the residential sectors between 2009 and 2025 (Figure 12). In contrast, the proposed 1.5% by 2022 natural gas efficiency standard can reduce customer bills by $826 million cumulatively over that time. This standard would decrease residential natural gas use by 16.9% from 2009 levels by 2025, with annual savings in 2025 of 147 million therms. Cumulatively, natural gas savings would reach 889 million therms by 2025.

Alternately, setting a standard that reaches 1.5% by 2019, Missouri can reduce residential customer natural gas bills by $1.12 billion cumulatively through 2025, and decrease use by 19.5% from 2009 levels. Annual residential natural gas savings in 2025 could reach 178 million therms, and cumulative natural gas savings could reach 1.2 billion therms.

Figure 12: Missouri Residential Natural Gas Consumption under State EERS Scenarios



If Missouri were to meet the natural gas efficiency goals of the MGA, 1.5% by 2015, residential customer bills can decrease by $1.45 billion cumulatively through 2025. Natural gas use would be reduced by 21.9% from 2009 levels, and annual savings in 2025 could reach 206 million therms; cumulative, 1.6 billion therms.

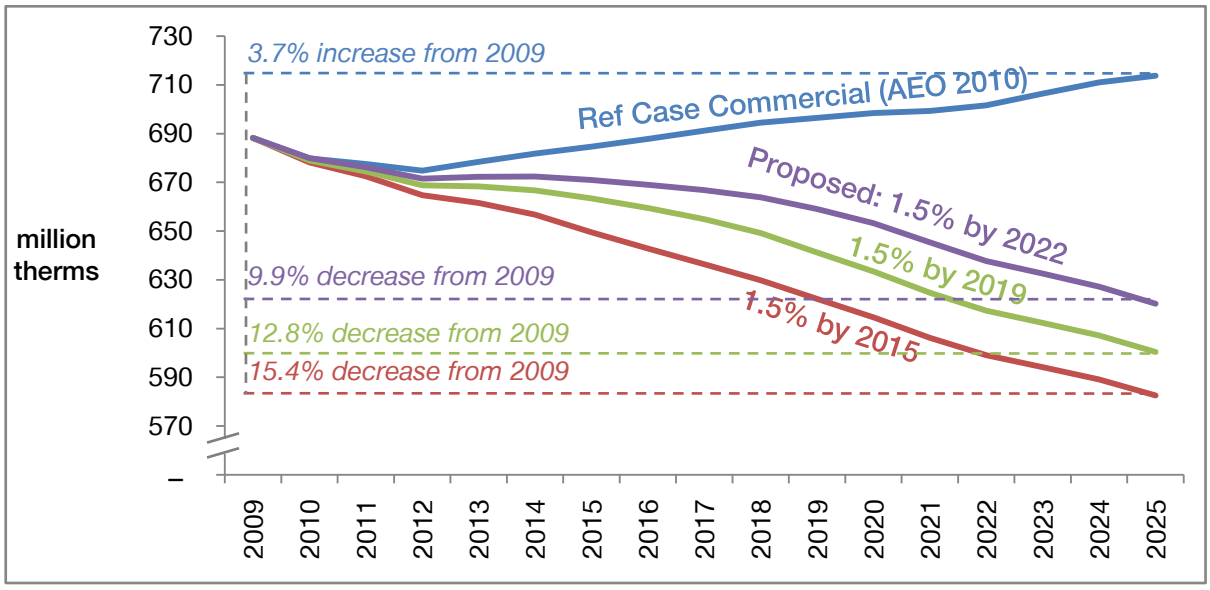
Commercial

In the reference case, the commercial sector in Missouri would see a 3.7% increase in natural gas use between 2009 and 2025 (Figure 13). On the other hand, the proposed 1.5% by 2022 natural gas efficiency standard can reduce customer bills by $455 million cumulatively over that time. This standard would decrease commercial natural gas use by 9.9% from 2009 levels by 2025, with annual savings in 2025 of 93.5 million therms. Cumulatively, energy savings could reach 560 million therms by 2025.

Alternately, setting a standard that reaches 1.5% by 2019, Missouri can reduce commercial customer bills by $615.8 million cumulatively through 2025, and decrease use by 12.8% from 2009 levels. Annual commercial sector natural gas savings in 2025 could reach 113 million therms, and cumulative natural gas savings could reach 757 million therms.

If Missouri were to meet the natural gas efficiency goals of the MGA, 1.5% by 2015, it can reduce commercial customer bills by $796 million cumulatively through 2025. Natural gas use would be reduced by 15.4% from 2009 levels, and annual savings in 2025 could reach 131 million therms; cumulative, 978 million therms.

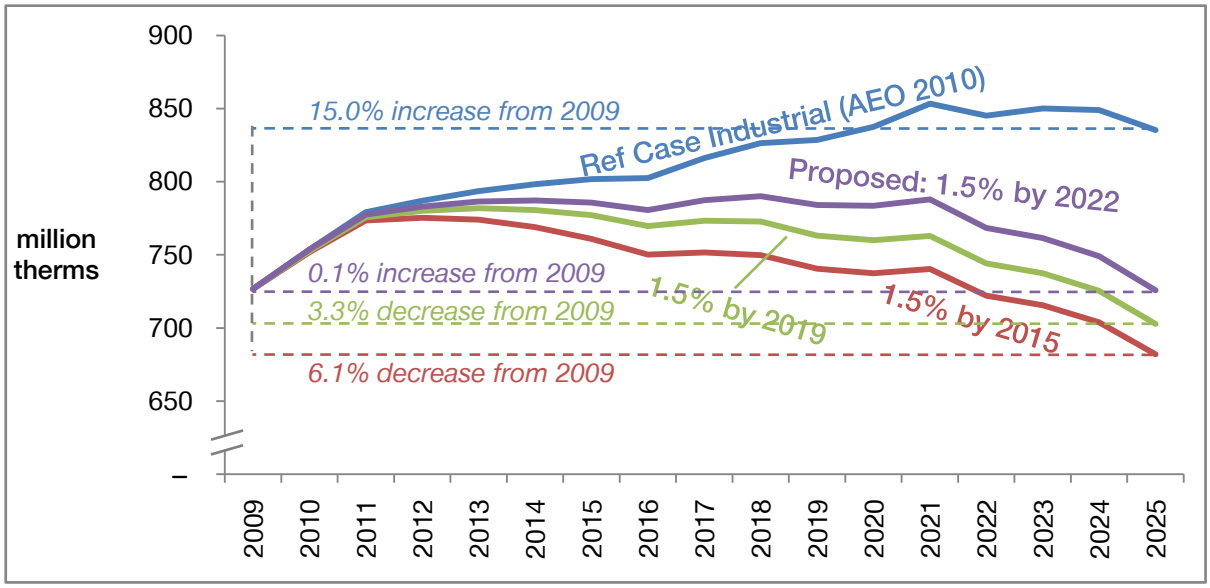
Figure 13: Missouri Commercial Natural Gas Consumption under State EERS Scenarios



Industrial

In the reference case, Missouri's industrial natural gas users would see a 15.0% increase in natural gas use in the industrial sectors between 2009 and 2025 (Figure 14). The proposed 1.5% by 2022 natural gas efficiency standard can reduce customer bills by $79 million cumulatively over that time. This standard would lower the growth of industrial natural gas needs to only a 0.1% increase from 2009 levels by 2025, with annual savings in 2025 of 109 million therms. Cumulatively, energy savings could reach 665 million therms by 2025.

Figure 14: Missouri Industrial Natural Gas Consumption under State EERS Scenarios



Alternately, setting a standard that reaches 1.5% by 2019, Missouri can reduce industrial customer bills by $649 million cumulatively through 2025, and decrease use by 3.3% from 2009

levels. Annual industrial natural gas savings in 2025 could reach 132.5 million therms, and cumulative natural gas savings could reach 897.5 million therms.

Missouri can decrease industrial sector customer bills by $1.27 million cumulatively through 2025 if it meets the natural gas efficiency goals of the MGA, 1.5% by 2015. Natural gas use would be reduced by 6.1% from 2009 levels, and annual savings in 2025 could reach 153 million therms. Cumulative, natural gas savings could reach 1.16 billion therms.

Adding up the Savings

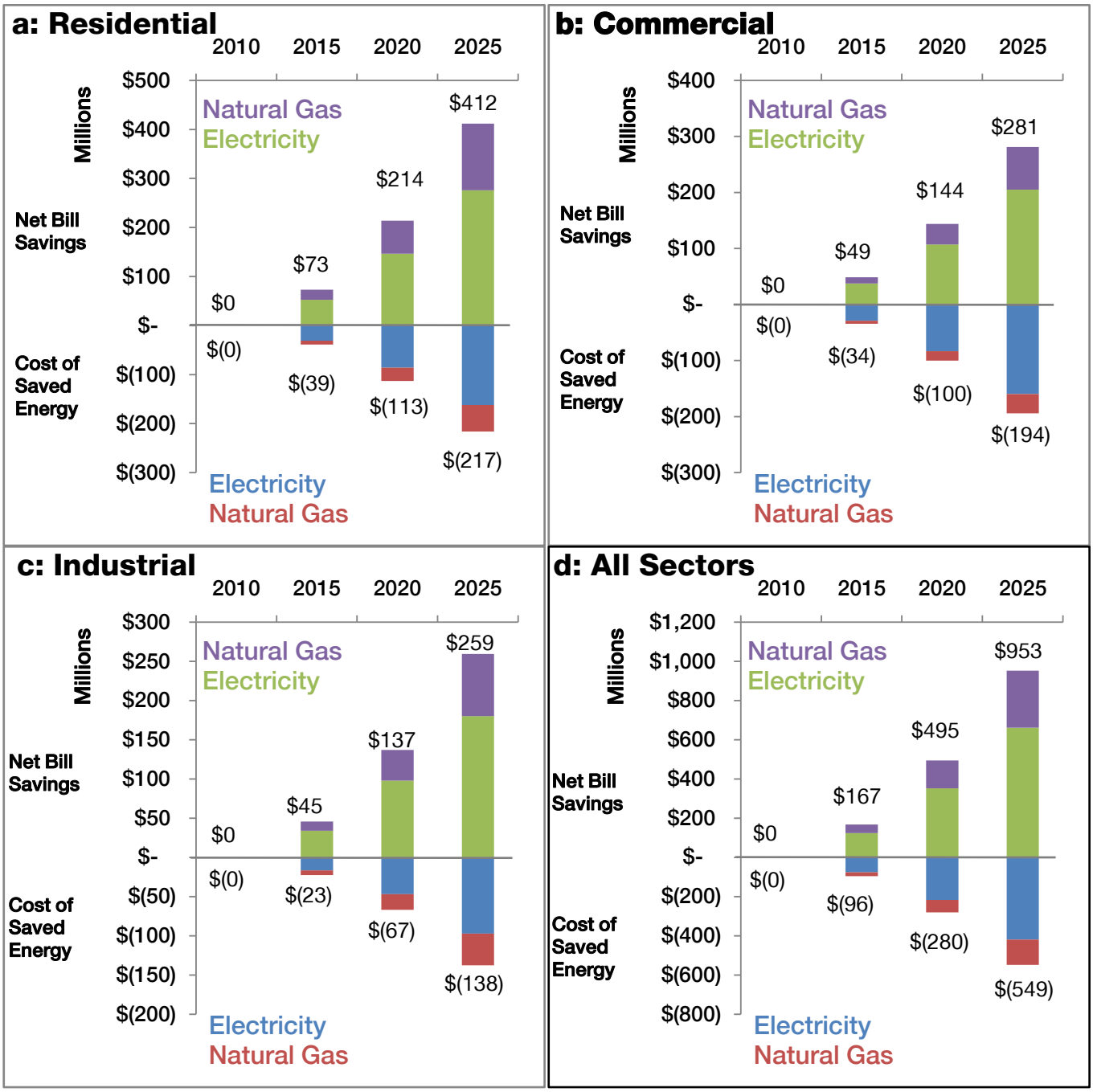
Bill Savings for Customers

Energy efficiency is the lowest-cost energy resource. A 2009 study of existing long-term state energy efficiency programs found that the average cost of saved energy in utility energy efficiency programs, or the amount that is invested to achieve energy savings, is 2.5 cents/kWh for electricity and 37 cents/therm for natural gas.[xix] These figures are significantly lower than the cost to ratepayers of Missouri's energy consumption.[4] While the cost of energy efficiency in Missouri may turn out to be slightly different from the national averages, the average cost of saved energy provides a useful benchmark to approximate the cost of saving energy through an EERS in Missouri.

Figure 15a-d shows the annual net energy bill savings and the total cost of saved energy (the level of energy efficiency investment to achieve the savings) for electricity and natural gas energy efficiency under the proposed EERS bill scenario, 2.0% of electricity and 1.5% of natural gas needs met with energy efficiency by 2022. Across the three customer sectors (Figure 15d), by 2025, customers would see net annual savings of $953 million on their energy bills. If the cost of providing electricity and natural gas increases and the rates that utilities charge their customers go up, the impact of energy efficiency on customer bill savings would also correspondingly increase.

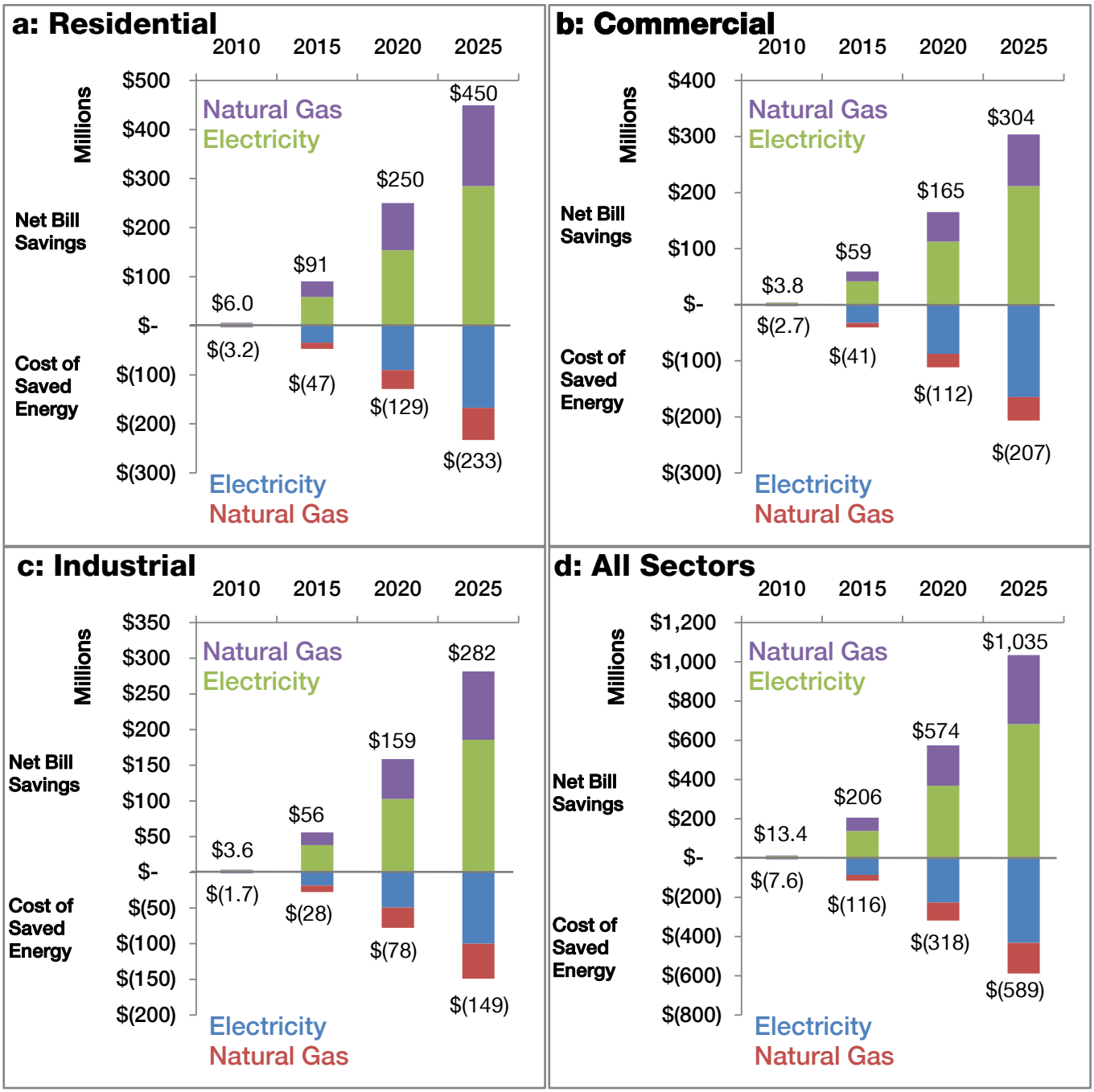
[4] The energy rates used were the latest available from the EIA at the time of calculation, in November 2009. Year-to-Date average rate for Missouri electricity 2009: $0.0675/kWh (Res), $0.0571 (Com), $0.0434 (Ind). Annual average rate for Missouri natural gas 2008: $1.30/therm (Res), $1.18 (Com), $1.09 (Ind). Rates were assumed to remain constant for the duration of the analysis.

Figure 15a-d: Annual Costs and Bill Savings from
2.0% Electric and 1.5% Natural Gas EERS by 2022



Achieving the energy efficiency goal of 2.0% annual savings for electricity and 1.5% annual savings for natural gas by 2019, Missouri could see more savings for its utility customers. Figure 16a-d shows the annual net energy bill savings and total cost of saved energy for electricity and natural gas energy efficiency under that scenario. Across the three customer sectors (Figure 16d), by 2025, customers would see net annual savings of $1.04 billion on their energy bills

Figure 16a-d: Annual Costs and Bill Savings from
2.0% Electric and 1.5% Natural Gas EERS by 2019



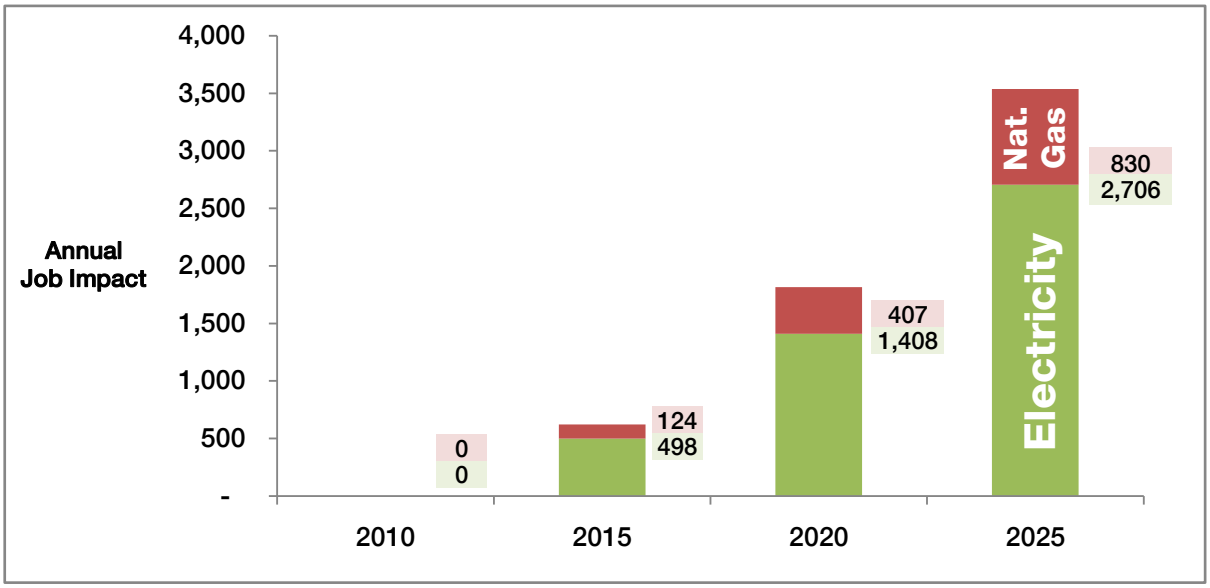
No matter which target date Missouri chooses for meeting its energy efficiency goals, increasing energy efficiency will reduce the $3.7 billion that Missouri currently spends to import coal and natural gas.

Jobs in Energy Efficiency

Job growth from improving energy efficiency will be slow, as utilities ramp up efficiency programs to reach EERS savings goals. Figure 17 shows the number of jobs in the energy efficiency industry from the proposed EERS bill, with its annual savings standard of 2.0% electric

and 1.5% natural gas by 2022. Initially a few hundred jobs, Missouri's energy efficiency workforce could reach over 3,530 jobs by 2025.

Figure 17: The Size of Missouri's EE Industry from 2.0% Electric and 1.5% Natural Gas EERS by 2022



Ramping up more aggressively to efficiency goals of 2.0% for electric and 1.5% for natural gas by 2019 would mean not only more savings over the long term, but would also mean quicker growth in the energy efficiency workforce. Reaching the energy efficiency goals three years quicker could mean a difference of over 250 additional jobs, with a workforce that could reach almost 3,800 by 2025. If Missouri could meet the MGA goal of 2.0% electric and 1.5% natural gas by 2015, there could be as many as 4,500 jobs in energy efficiency by 2025.

Jobs from energy efficiency can include: *direct jobs,* workers who install energy efficiency measures, manage and administer efficiency programs, and do other work that is billed directly to the project; and *indirect jobs,* workers who produce the materials, equipment, and services that are used on the efficiency program, such as manufacturing doors and windows or energy-efficient appliances. Figure 17 is based on an estimate of the average number of jobs created across the economy from energy efficiency investment.[5] It includes both direct and indirect jobs that result from utility spending on energy efficiency programs.[xx]

Figure 17 estimates the expansion of energy efficiency as a segment of Missouri's economy over the next 15 years. In addition, energy efficiency can increase job retention and growth outside of the energy efficiency industry by retaining money that Missouri is currently sending out of state to buy imported coal and natural gas. Many factors influence the overall job outlook for a state, and energy efficiency can play a strong positive role.

Carbon Dioxide

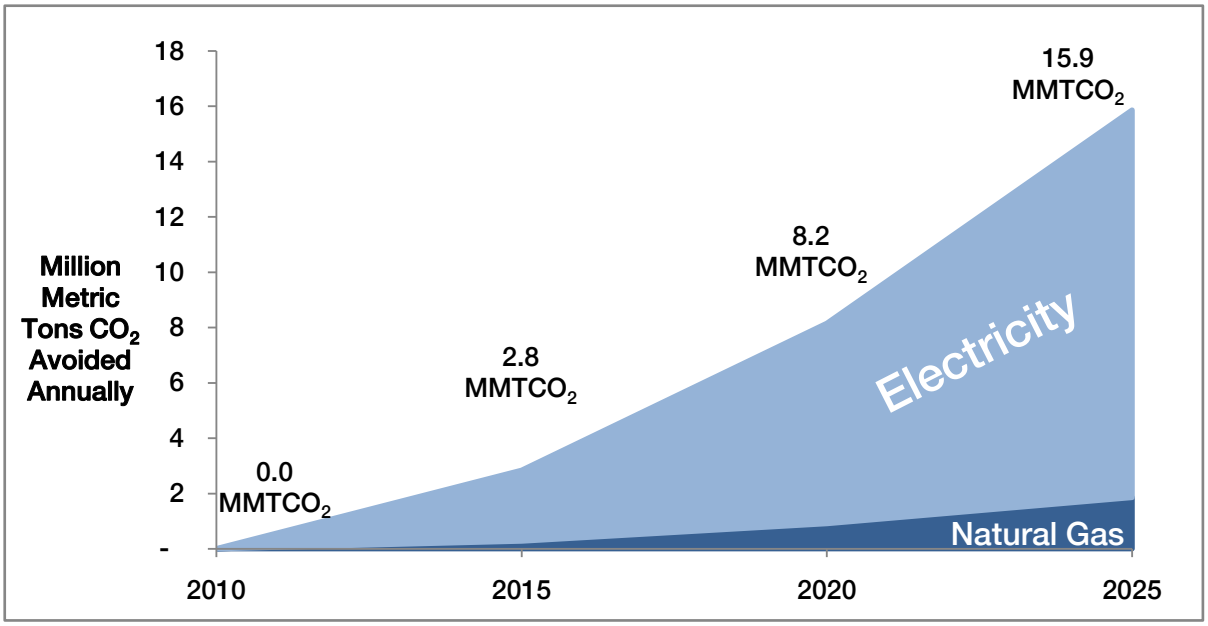
Energy efficiency reduces carbon dioxide emissions because it substitutes for a unit of energy that would be produced from a carbon-dioxide emitting fuel. If there is climate regulation in the near future, a likely outcome will be the cost of carbon dioxide emissions becoming a factor in utility rates. At an average cost of 2.5 cents per kWh saved,[xxi] energy efficiency is not only less

[5] Estimated jobs per $1 million in energy efficiency: Residential, 8.1; Commercial, 5.9; Industrial, 4.6.

expensive than simply using energy, it is also one of the lowest-cost methods of reducing emissions. Efficiency is significantly less expensive than the levelized cost of renewable sources like solar photovoltaic electric generation (9.6-15.4 cents/kWh), biomass (5.0-9.4 cents/kWh), or even wind power ($4.4-9.1 cents/kWh).[xxii] While renewable energy will be an important part of any response to climate change from the energy sector, prioritizing all cost-effective energy efficiency makes economic sense regardless of the climate.

If Missouri adopts the proposed energy efficiency standard of 2.0% by 2022 for electricity and 1.5% by 2022 for natural gas, cumulative carbon dioxide emissions that could be avoided through energy efficiency could total 15.9 million metric tons by 2025 (Figure 18). Most of those savings would come from the electricity sector[6,xxiii], which generates the most carbon dioxide emissions, but the natural gas sector would also see significant carbon dioxide savings.[7,xxiv]

Figure 18: Potential CO_2 Reduction from 2.0% Electric and 1.5% Natural Gas EERS by 2022



Regulatory Policies that Complement Energy Efficiency

Utilities' traditional revenue stream depends on sales of electricity or natural gas. Successful energy efficiency programs reduce sales, creating economic disincentive for the utility to engage in strong energy efficiency programs. Resolving this market barrier requires changes in traditional utility regulatory structures.

Unlinking energy sales from utility revenues 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 or natural gas.[xxv] Unlike traditional utility regulation, which sets prices rather than revenue requirements, decoupling is 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 by the Public Service Commission to meet the goal of removing the disincentive for utilities to implement strong

[6] Electricity generation in Missouri produces an average of 0.835 metric tons of CO2 per MWh generated.

[7] Natural gas use produces an average of 0.005 metric tons per therm consumed.

energy efficiency programs. The *Missouri Energy Efficiency Investment Act* of 2009[xxvi] allows the Missouri Public Service Commission to develop cost recovery methods, such as decoupling, to encourage investment in energy efficiency programs by utilities.

In addition to decoupling, performance incentives can encourage utilities that are reluctant to adopt energy efficiency. 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 are both compatible with and complimentary to decoupling when implemented effectively.[xxvii]

Conclusion

Missouri can strengthen its economy, increase its energy independence, and put its citizens to work by implementing a strong energy efficiency resource standard for its electric and natural gas utilities. Under annual savings goals for energy efficiency of 2.0% of electricity needs and 1.5% of natural gas needs by 2022, Missouri customers' net bill savings can total $953 million annually while concurrently reducing the state's dependence on expensive imported coal and natural gas. Cumulative bill savings could reach $6.1 billion over the next 15 years. Investing in energy efficiency could grow a workforce of 3,500 energy efficiency jobs in Missouri in 2025, and Missouri could reduce emission of climate-changing carbon dioxide by 15.9 million metric tons cumulatively through 2025.

Missouri will benefit from energy efficiency no matter how long it takes to implement, but taking 12 years to meet its efficiency goals would leave large money and energy savings untapped. As a state that has already started to build its energy efficiency infrastructure, Missouri can achieve these goals more quickly and achieve higher savings.

About MEEA – The Source on Energy Efficiency

The Midwest Energy Efficiency Alliance (MEEA) (www.mwalliance.org) is a collaborative network advancing energy efficiency in the Midwest to support sustainable economic development and environmental preservation.

MEEA promotes the market transformation of energy efficiency technologies, processes and best practices within a 13-state area, through policy advocacy, program design and facilitation and piloting of energy technologies. MEEA is bridging the gap between policy adoption and program implementation.

Energy efficiency is the critical first step in meeting our nation's myriad energy challenges, because of low entry costs, proven and emerging technologies, ease of implementation, fast return on investment and measurable results. Through our diverse network of members and regional allies, MEEA possesses the practical experience and informed vision to effect positive change today, while supporting the region's stakeholders in achieving their efficiency goals for the future.

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