



State Policy Series: Impacting Industrial Energy Efficiency

State Energy Efficiency Tax Incentives for Industry

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EXECUTIVE SUMMARY

Offering tax incentives is one of the ways states utilize policy and regulation to encourage the industrial sector to improve its energy efficiency. There are also instances where renewable-energy tax incentives and economicdevelopment tax incentives can be used for energy efficiency projects. However, the most effective way to directly impact industrial energy efficiency through tax incentives is with an energy efficiency targeted incentive. Despite the existence of a few federal-level energy efficiency tax incentives, state-level energy efficiency tax incentives can also be of value to industry. States are likely to have a greater understanding of the local needs of industry and can utilize energy efficiency tax incentives to keep and attract new industry for economic purposes.

At the time this report was published, only 11 states were found to have a total of 15 energy efficiency tax incentives available to industry. Oregon was the established leader, offering four of the 15 incentives. Following is a list of the states that offered energy efficiency tax incentives:

• Kansas

Montana

• Kentucky

Massachusetts

- New Mexico
- South Carolina

• Maryland

- New York
- Oregon

- Virginia
- Washington
- In terms of industrial energy consumption, only two of the top 15 states -- Kentucky and South Carolina--offer state-level energy efficiency tax incentives for industry.¹ This indicates that many of the states with the largest potential to realize savings from improvements in industrial energy efficiency are not offering tax incentives specifically targeted for this purpose. In addition, despite the two states offering these incentives being from the South, there are still six other Southern states in the top 15 that do not have any energy efficiency tax incentives for industry. This is significant, as the South's industrial sector has been identified as a region with enormous potential for energy and financial savings through the implementation of energy efficiency.²

Because the industrial sector accounts for approximately one-third of the total energy used in the United States, it is an important opportunity for making energy efficiency impacts.³ Improving industrial energy efficiency through measures like tax incentives can have beneficial environmental and economic impacts on the states that offer them. Reduced energy consumption within industry translates to energy cost savings that can make manufacturers more competitive, lead to economic development and job creation, and ensure continued location of industry within the state.

Energy efficiency improvements of 10%–20% are likely to be available within most existing industrial facilities.⁴ It is often financial considerations, including the rate of payback on investment, that constrain manufacturers in their decisions to implement energy efficiency projects. Offering industrial energy efficiency tax incentives is one way for states to assist industry in reducing the payback period and lowering the cost of implementation to capture the energy, environmental, and economic benefits resulting from those improvements.

OVERVIEW OF INDUSTRIAL TAX INCENTIVES

There are three primary types of tax incentives available to industry that can be used for energy-related projects. The first two—renewable-energy tax incentives and energy efficiency tax incentives—specifically focus on energy. The third is an economic-development tax incentive. These tax incentives are most commonly seen in the form of sales tax exemptions or tax credits. A sales tax exemption will allow the purchaser of a product, such as an energy-efficient motor, to be exempt from paying tax on that purchase. A tax credit, on the other hand, allows a company to deduct the tax credit amount from their annual taxes. Tax credits are typically offered as a fixed amount or as a percentage of a purchase price up to a maximum amount.

Currently, renewable-energy tax incentives are more widely available than energy efficiency tax incentives for industry, as well as other sectors in the economy. However, the number of available energy efficiency tax incentives is growing. Although these renewable tax incentives encourage the production of renewable energy, most do not specifically address reducing overall energy use. Despite not necessarily reducing consumption, these renewable-energy tax incentives help insulate the manufacturer from peak hour energy pricing if the renewable generation is located onsite and can assist the utility provider with load management.

Energy efficiency tax incentives for industry are often underutilized by state governments as a means for meeting environmental- and energy-related goals. Most available state-level energy efficiency tax incentives are focused on residential or commercial energy, even though the industrial sector consumes more energy.⁵



States looking to reduce carbon emissions and improve overall energy efficiency could have greater success in achieving these goals by refining their efforts to include more industrial energy efficiency tax incentives. Improving industrial energy efficiency is an excellent way for states to reign in their energy consumption in order to bolster the competitiveness of local industry and spur economic development and job creation. Although industrial energy consumption accounts for one-third of the national total, only 11 states currently have energy efficiency tax incentives available to the industrial sector.⁶

An industrial plant looking to improve its energy efficiency also has a third option in terms of tax incentives. It can use a flexible, non-energy-efficiency tax incentive to make energy efficiency improvements, including

- · Investment tax credits
- Production incentives
- · Accelerated depreciation
- Property tax abatement
- Tax exempt interest financing.

For a list of state non-energy-efficiency tax incentives that could potentially be used for reducing costs associated with energy efficiency projects, see the <u>Appendix</u>.

Federal Energy Efficiency Tax Incentives

There are currently four federal tax incentives that are specifically aimed at improving energy efficiency in the industrial sector:

- Combined Heat and Power (CHP) Investment Tax Credit
- Energy Efficiency Product Manufacturers Tax Credit
- Business Tax Incentive for Commercial Buildings
- Advanced Energy Manufacturing Tax Credit (48C).

The CHP tax incentive is a 10% investment tax credit for the costs of the first 15 megawatts (MW) of an eligible CHP property, and the American Recovery and Reinvestment Act (ARRA) has updated the incentive to allow eligible taxpayers to receive a grant from the U.S. Department of Treasury instead of the investment tax credit.⁷ The Energy Efficiency Product Manufacturers Tax Credit, which includes items such as refrigerators and washers, is capped at \$75 million, and, although, the credit is only available to manufacturers, the savings should be reflected in the consumer's price.⁸ The Business Tax incentive for Commercial Buildings allows a tax deduction amount per square foot and up to 35%–50% of the energy savings.⁹ The Advanced Energy Manufacturing Tax Credit, or 48C, was established by the ARRA and authorized \$2.3 billion for advanced energy projects.¹⁰

Federal tax incentives are important because they have the potential to impact energy efficiency across industrial sectors and locations; however, this should not overshadow the added benefits that state energy efficiency tax incentives can offer. States better understand the needs of their industrial sectors and can utilize tax policy as a tool for reducing carbon emissions to meet state environmental goals and promote local economic growth and sustainability.

State Energy Efficiency Tax Incentives

At the time of this report's publication, 11 states were offering industry a total of 15 state-level energy efficiency tax incentives. This means that less than 25% of the 50 states offer tax incentives specifically aimed at improving industrial energy efficiency. Oregon is currently the leader, offering four separate energy efficiency tax incentives. Below, Exhibit 1 displays the states that offer the industrial energy efficiency tax incentive and the type of incentive each state offers.

Additionally, three industrial energy efficiency tax incentives are offered at the sub-state, local level, which are not included in the state-level table in Exhibit 1. Two are offered by different counties in Maryland, and one is offered by the City of Cincinnati in Ohio. Exhibit 2 lists the states according to their industrial energy consumption rank, where only two of the top 15 states—Kentucky and South Carolina—offer an industrial energy efficiency tax incentive.²⁶ Those states offering industrial energy efficiency tax incentives are also identified in Exhibit 2.

Interestingly, those states with the lowest industrial energy consumption do not offer industrial energy efficiency tax incentives. However, this is likely due to the smaller concentration of industry within those states compared to the rest of the country. Seven of the eight lowest-consuming states in Exhibit 2 are also among the 15 states with the smallest amount of industry in terms of value of shipment.²⁷ This means their lower industrial energy consumption does not imply an existing level of greater energy efficiency, but most likely reflects the existence of a smaller industrial sector. These states, therefore, could still realize gains through programs such as industrial energy efficiency tax incentives.

The majority of states offering industrial energy efficiency tax incentives are found in the middle 50% in terms of industrial energy consumption. This indicates a considerable opportunity to achieve significant savings among the states with the largest industrial energy consumption. This can be understood by considering the impact of a 10% increase in energy efficiency across the industrial sector in Texas compared to another state. If Texas improved its industrial energy efficiency by

Exhibit 1: *State Energy Efficiency Tax Incentives for Industry*

| 0, | |
|----------------|---|
| Kansas | Waste Heat Utilization System ¹¹ |
| Kentucky | Kentucky Environmental Stewardship Act ¹² |
| Maryland | Property Tax Exemption for High Performance Buildings ¹³ |
| Massachusetts | Alternative Energy and Energy Conservation Patent Deduction ¹⁴ |
| Montana | Energy Conservation Investment ¹⁵ |
| New Mexico | Sustainable Building Tax Credit ¹⁶ |
| New York | Green Building Tax Credit ¹⁷ |
| Oregon | Energy Efficiency Tax Credit ¹⁸ |
| Oregon | New Construction Tax Credit Program ¹⁹ |
| Oregon | High Efficiency Combined Heat and Power Tax Incentive ²⁰ |
| Oregon | Sustainable Building Tax Credit ²¹ |
| South Carolina | Commercial Tax Incentives ²² |
| South Carolina | Credit for Energy Conservation and Renewable Energy ²³ |
| Virginia | Energy Efficient Buildings Tax Exemption ²⁴ |
| Washington | Energy Efficient Commercial Equipment Tax Credit ²⁵ |
| | |



Exhibit 2: Industrial Energy Efficiency Tax Incentives and Estimated 2007 Industrial Energy Consumption by State

Source: Exhibit 1: State Energy Efficiency Tax Incentives for Industry. Energy Information Administration, Table S6. Industrial Sector Energy Consumption Estimates, 2007, http://www.eia.doe.gov/emeu/states/sep_sum/html/sum_btu_ind.html.

10% they would save approximately 595.1 trillion British thermal units (Btu). This would be enough energy to power all of Oklahoma's industry—the 16th largest in the United States in terms of energy usage—for an entire year (at current consumption levels).²⁸ This scenario indicates that states with industrial sectors that have high levels of energy usage will be more likely to have a larger potential for energy savings through energy efficiency measures, which could have marked impacts.

It is important to further underscore the energy efficiency potential of the top-consuming states in Exhibit 2. Eight of the top 15 states are located in the Southern region of the United States—as defined by the U.S. Census Bureau—and only two of these eight Southern states offer energy efficiency tax incentives for industry.²⁹ This is significant, as the South has been identified as the region with the largest potential for energy efficiency improvement among the four U.S. Census regions.³⁰ A report released by the U.S. Department of Energy's (DOE) Industrial Technologies Program (ITP) in December 2009 estimated that if the South could lower their industrial energy intensity down to the national average within the five sectors where they are furthest behind, an approximate 1,763 trillion Btu and \$19.4 billion could be saved.³¹ Therefore, the energy and financial savings of the top-consuming states would be even larger if they were all to pursue measures that encouraged becoming energy efficiency leaders, such as offering tax incentives to manufacturers wishing to make efficiency investments.

Spotlight on Oregon

Oregon offers industry the largest number of tax incentives specifically aimed at improving energy efficiency. The four tax incentives include

- A tax credit for businesses for energy efficiency projects, offering a credit of 35%–50% of the cost of cost of the system or equipment that is beyond standard practice³²
- A tax credit for energy efficiency equipment installed during construction, up to 35% of the costs associated with ensuring the project exceeds industry standards³³
- A combined heat and power tax incentive for 50% of the cost of the project³⁴
- A Sustainable Building Tax Credit offered to businesses with buildings that meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards.³⁵

Offering energy efficiency tax incentives is one of many ways in which the Oregon Department of Energy's Conservation Division has worked to improve the energy efficiency of its industrial sector. The results are tellingeven as the gross state product of Oregon's industry has continued to grow from 1997 to 2007 at an average rate of 8.4%, its energy consumption per dollar of gross product has decreased.³⁶ This shows that it is taking Oregon less energy each year to produce the same amount of gross domestic product (GDP), meaning their efficiency has been increasing at a significant rate. Exhibit 3 displays this improvement alongside the top three states in terms of industrial energy consumption. Oregon shows a steady and significant improvement over the past 10 years, and, by 2004, Oregon has surpassed the both Texas and California in its ability to use energy efficiently to produce industrial goods.





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ENERGY USE IN U.S. INDUSTRY

Although industrial energy consumption as a percentage of the total national energy consumption has declined since the middle of the 20th century, it still accounts for over 30% of the national total. ITP's 2007 Impacts report states that, "In recent years, the industrial sector has... produced about 1,670 million metric tons (MMT) of CO2 per year, contributed 12% to the overall U.S. gross domestic product (GDP), and provided nearly 12 million manufacturing jobs."³⁷ The report goes on to point out that 79% of all industrial energy use stems from energy-intensive industries, including forest products, chemicals, petroleum refining, nonmetallic minerals, and primary metals.³⁸

Impact of Tax Incentives and Energy Efficiency for Industry

Improving energy efficiency has a number of benefits for the industrial customer. Only 43% of all energy used in the industrial sector is actually used in production, with the rest wasted or lost.³⁹ In addition, the American Council for an Energy-Efficient Economy (ACEEE) has reported that energy efficiency savings of 10%-20% can be achieved at any point within existing industrial facilities by using current technologies.40 Manufacturers implementing the recommendations of a DOE Industrial Assessment Center achieve on average \$55,000 in annual waste and productivity savings, and energy savings.⁴¹ Improving energy efficiency is an effective way for industry to capture energy savings, which results in maximizing profits. Improving energy efficiency, therefore, will also increase the competitiveness of a manufacturer and raises overall state revenue, leading to economic growth and the creation of jobs within that state.

A previous analysis by ITP notes that if every manufacturer in the United States could operate at the current national energy intensity average for their sector, U.S. industry would experience 2,635 trillion Btu in energy savings and \$29.3 billion in energy cost savings.⁴² The most important aspect of this figure is that it only considers the savings if all manufacturers' energy intensities were brought down to the national average; it does not consider the savings possible through further implementation of energy efficiency programs in order for these manufacturers to become industry leaders in efficiency.

ITP has acknowledged this significant opportunity for energy efficiency gains, and began an effort in 2006 for a 25% reduction in industrial energy intensity in 10 years.⁴³ Through this effort, \$218 million in cost savings and 35 trillion Btu in energy savings have been achieved each year through the implementation of assessment recommendations by more than 1,500 industrial facilities.⁴⁴

Tax incentives are beneficial in supporting industrial energy efficiency programs, primarily through encouraging larger capital investments that might not have otherwise been pursued. These capital investments can become manifest through retrofitting projects or through the development of new technologies. Industrial improvements in energy efficiency must be approached differently than with the residential or commercial sectors. This is because manufacturers are typically less likely to implement energy efficiency projects outside the normal refit schedule, meaning retrofits often do not occur until a system or piece of equipment fails.⁴⁵ Manufacturers understand the sunk cost put into the existing equipment and try to take full advantage of using it in order to maximize profits. Replacing equipment that still works with more advanced, energy-efficient equipment requires a careful cost-benefit analysis of the gains from future energy savings against the immediate cost of purchasing and implementing the retrofit, as well as the lost sunk costs of discarding working equipment before it fails.

Tax incentives are beneficial in addressing this issue because they provide a type of financial incentive to the industrial sector. Although the dollar amount of the financial incentive needed to encourage manufacturers to undertake retrofits will vary from plant to plant, it could nonetheless persuade a company to perform a retrofit rather than a repair. An industrial energy efficiency tax incentive, therefore, would help quicken the rate at which retrofits are being undertaken compared to the rate of occurrence during the natural refit cycle.⁴⁶

INDUSTRIAL ENERGY EFFICIENCY IMPACTS FOR STATES

States looking to seriously address climate change and overall state energy efficiency can make significant progress by ensuring their efforts include a focus on that industry, which nationally consumes the most energy of any sector. As industrial energy consumption constitutes over 30% of the national total, improved energy efficiency within industry would account for significant savings for the manufacturer, translating into economic growth for the state.

Industrial energy efficiency programs can also be beneficial in assisting states in achieving greenhouse gas (GHG) emission reduction targets and in fulfilling any energy efficiency resource standard (EERS). As of September 2009, twenty-three states had established GHG emissions targets.⁴⁷ Because industry accounts for over 27% of the total U.S. energy-related carbon dioxide emissions, states should recognize the importance in addressing industrial energy efficiency when tackling overall GHG emissions.⁴⁸ In addition to GHG emissions targets, as of February 2010, 22 states had established an EERS in order to reduce overall energy consumption, and four states had a pending EERS.⁴⁹ As mentioned previously in this report, industry accounts for more than 30% of total energy consumption in the United States, signifying that industrial energy efficiency improvements would also play a significant role in assisting these states complete their EERS.

A final benefit stemming from improving industrial energy efficiency would be a reduction in the risks of energy price volatility and price spikes. Improving efficiency would reduce overall energy consumption, meaning fewer costs of a manufacturer are directly tied up in energy. As a smaller portion of the manufacturer's overall operating costs are affected by price spikes, the more stabile the company and industrial sector will become. Improvements in business stability can also lead to further economic growth.

CONCLUSION

As previously identified in other ITP reports in this series, a vast opportunity exists to improve energy efficiency within the industrial sector through concerted state-level policy and regulatory efforts. This is especially true within many industrial sectors that inherently use large amounts of energy. This larger base of needed energy usually translates into greater possibilities for energy and financial savings through the improvement of energy efficiency. Certain regions and states have a larger potential for capturing savings for energy efficiency. Often, those areas with lower energy prices tend to be less efficient overall within their industry. This can occur because the cost of implementing energy efficiency projects is seen as greater than the cost of simply consuming the additional energy.

It is important for states to realize that they cannot leave industrial energy efficiency solely to utilities and the federal government to tackle. There are a number of ways a state can work with industry to improve its energy efficiency, including establishing favorable regulations or offering tax incentives.

Although few states currently offer energy efficiency tax incentives to industry, the concept is gaining in popularity, and will most likely continue to do so as the positive effects of energy efficiency programs, like Oregon's, are underscored.

APPENDIX

Economic Tax Incentives with Potential Use for Energy Efficiency⁵⁰

| State | Tax Incentive | Sponsor |
|-------------|--|---|
| California | Manufacturers' Investment Credit | State of California Franchise Tax Board |
| Connecticut | Industrial Site Reinvestment Tax Credit | Department of Economic and Community Development |
| Georgia | Georgia Job Tax Credit Program | Georgia Department of Community Affairs |
| Georgia | Investment Tax Credits | Georgia Department of Community Affairs |
| Georgia | R&D Tax Credit | Georgia Department of Community Affairs |
| Georgia | Sales and Use Tax Exemption | Georgia Department of Community Affairs |
| Georgia | Port Tax Credit Bonus for Investment Tax Credit | Georgia Department of Community Affairs |
| Georgia | Port Job Tax Credit Bonus for Job Tax Credits | Georgia Department of Community Affairs |
| Hawaii | High Technology Business Investment Tax Credit | Hawaii Department of Taxation |
| Indiana | Industrial Recovery Tax Credit | Indiana Economic Development Corporation |
| Kentucky | Kentucky Reinvestment Act (KRA) | Kentucky Cabinet for Economic Development Department of Financial Incentives |
| Louisiana | Research and Development Tax Credit | Louisiana Economic Development |
| Louisiana | The Industrial Tax Exemption | Louisiana Economic Development |
| Louisiana | Restoration Tax Abatement | Louisiana Economic Development |
| Michigan | Michigan Business Tax Incentive Programs | Michigan Economic Development Corporation |
| Mississippi | New or Expanded Business Industrial Tax Incentive | Mississippi State Tax Commission |
| Mississippi | Manufacturing Investment Tax Credit | Mississippi State Tax Commission |
| Mississippi | Sales /Use Tax Exemption for Construction or Expansion | Mississippi State Tax Commission |
| New Jersey | UEZ Energy Sales Tax Exemption Program | New Jersey Economic Development Authority |

continued >

APPENDIX - CONTINUED

Economic Tax Incentives with Potential Use for Energy Efficiency⁵⁰

| State | Tax Incentive | Sponsor |
|----------------|--|---|
| New York | Industrial Incentive Program | New York City Economic Development Corporation |
| New York | Industrial Incentive Program for Developers | New York City Economic Development Corporation |
| New York | Lower Manhattan Energy Program | New York City Economic Development Corporation |
| New York | Manufacturing Facilities Bond Program | New York City Economic Development Corporation |
| New York | Tax Benefits for Industrial Firms | New York City Economic Development Corporation |
| New York | The Industrial and Commercial Abatement Program (ICAP) | New York City Economic Development Corporation |
| North Carolina | Industrial Revenue Bonds | North Carolina Department of Commerce |
| Oklahoma | Manufacturer's Sales Tax Exemption | Oklahoma Department of Commerce |
| Tennessee | Emerging Industry Credit | Tennessee Department of Economic and Community Development |
| Tennessee | Industrial Machinery Credit | Tennessee Department of Economic and Community Development |
| Texas | Franchise Tax Credit for Economic Development | Texas Comptroller of Public Accounts |
| West Virginia | Manufacturing Investment Credit | West Virginia Development Office |
| West Virginia | Manufacturing Sales Tax Exemption | West Virginia Development Office |
| Wisconsin | Economic Development | Wisconsin Department of Revenue |
| Wisconsin | Wisconsin Manufacturing Investment Credit Program (MIC) | Wisconsin Department of Commerce |

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