



State of Oklahoma

Incentive Evaluation Commission

Draft Energy Efficient Residential Construction Tax Credit Evaluation

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Key Findings and Recommendations



Overview

In 2006, the State of Oklahoma began offering the Energy Efficient Residential Construction tax credit to promote the construction of energy efficient residential property. Contractors constructing residential property of 2,000 square feet or less could qualify for a tax credit equal to qualified expenditures of up to \$4,000, depending on the efficiency rating of the property.

During the 2016 Oklahoma legislative session, SB1603 was enacted, which provided a sunset of this tax credit effective July 1, 2016. While it could be argued that the evaluation of the incentive is no longer necessary, examining the impact is useful from a public policy perspective. It is also possible that the State may wish to revisit this incentive in the future.

Recommendation: Based on the analysis of available information, the project team concurs with the repeal of the program.

Key Findings Related to Established Criteria for Evaluation

- **The number of energy efficient residential properties in the State has declined over time.** The total number of Energy Star certified homes built in Oklahoma peaked in 2009 at more than 3,500 but has since declined – totaling just over 200 in 2017. This equates to a compound annual growth rate (CAGR) of -14.2 percent between 2006 and 2017.
- **Similar declines in the number of energy efficient residential properties built have occurred in half of the states surrounding Oklahoma, while the other half have experienced increases.** Among the six states immediately surrounding Oklahoma, three (Arkansas, New Mexico and Texas) experienced declines between 2006 and 2017 (-18.1 percent, -12.1 percent and -9.2 percent, respectively). However, the other three states experienced growth in the number of Energy Star certified homes built: Colorado grew by 6.3 percent annually, Kansas by 5.0 percent and Missouri by 14.7 percent. The U.S. as a whole declined by -6.3 percent annually between 2006 and 2017.
- **Since 2008, use of the credit has remained relatively stable.** During this time frame, the annual tax credit use has averaged \$5.0 million. However, this total does not include credits transferred to insurance companies to reduce insurance premiums tax liabilities. These amounts totaled nearly \$4.0 million in 2016 and \$2.6 million in 2017.
- **There are savings associated with each energy efficient home built.** According to the Environmental Protection Agency (EPA), the savings generated by the 206 Energy Star certified homes built in Oklahoma in 2017 is equal to annual electric savings of nearly 280,000 kWh; annual gas savings of more than 19,000 therms; total annual utility bill savings of nearly \$55,000; and a CO₂ emission reduction of 298 metric tons.¹
- **The Energy Efficient Residential Construction Tax Credit program results in increased statewide economic activity, but the net impact is negative.** Between 2014 and 2016, the Energy Efficient Residential Construction Tax Credit, through direct, indirect and induced economic effects, generated approximately \$1.3 million in State tax revenue. Over this same period, however, the State provided \$27.6 million in tax credits, resulting in a net impact over the three year period of -\$26.3 million, as shown in the following table.

¹ A therm is a unit of heat equivalent to 100,000 Btu or 1.055 x 10⁸ joules.



Table 1: Annual Tax Revenue Generated

	Credits Established During Tax Year	Estimated Oklahoma Tax Revenue	Net Impact
2014	\$11,021,922	\$532,879	(\$10,489,043)
2015	\$8,266,952	\$423,317	(\$7,843,635)
2016	\$8,360,604	\$389,713	(\$7,970,891)
Total	\$27,649,478	\$1,345,909	(\$26,303,569)

Other Findings

- **Other states with similar incentives have sunset their programs.** Illinois and Indiana both repealed their programs in 2016, and Oregon ended its incentive program in 2017. New Mexico’s program has been extended several times and is currently scheduled to sunset in 2021. The federal programs have also been prolonged; the Residential Energy Efficient Property Credit is scheduled to be repealed in 2021, while the other two federal programs were sunset effective in 2017. Only New Jersey does not appear to have a sunset date.
- **Other state (and federal) evaluations suggest that similar programs are ineffective and/or inequitable.** A review of Indiana’s home insulation tax deduction found that the majority of qualifying projects did not claim the deduction, and the deduction was ineffective in influencing behavior. One analysis of a similar federal program concluded that energy tax credits are inequitable, due to the fact that energy efficient tax credits are used by residents with tax liabilities and are exclusively for home owners, not renters (both suggesting use by higher-income individuals). Another analysis of the federal programs found that while the purpose of residential energy efficiency tax credits is to motivate additional energy efficiency investment, the amount of the investment resulting from these credits is unclear.
- **The State is not currently at risk of significant increases in tax expenditures associated with the program.** One of the statutory requirements of the Incentive Evaluation Act is that each evaluation should determine “whether adequate protections are in place to ensure the fiscal impact of the incentive does not increase substantially beyond the State’s expectations in future years.” Given the sunset of the program effective July 1, 2016, the State is not at risk of significant increases in expenditures related to this incentive.
- **There are concerns about tax data and reporting, but improvements are being made.** There exists a lack of high quality data, which makes it difficult for the State to accurately report on the impact of the incentive. Since 2014, the data collected and reported is more detailed. Additionally, the enactment of HB2335, which directs the Oklahoma Tax Commission (OTC) to make tax credit data available on its website no later than January 1, 2020, will likely improve data availability and reporting.²

² In May 2018, Governor Fallin signed into law HB3225. The information available on the website must be available free of charge, downloadable and offer users the ability to systematically sort and search the data. The bill also sets the minimum standards for what type of information must be disclosed about each tax credit, including a brief explanation of the credit and specific information for tax year 2013 and each tax year thereafter.



Changes to Improve Future Evaluations (if the Program were Re-enacted)

- **Continue to improve the data collection process.** Should the State seek to reinstate this (or a similar) tax credit in the future, it should require additional data from those who qualify for the tax credit in order to ensure a full cost-benefit analysis can be completed. Important components would include which eligible expenditures are being claimed and what level of energy reduction (i.e. between 20 and 30 percent or greater than 40 percent) is being achieved.
- **Consider making credits refundable instead of transferable.** Critics of transferrable tax credits question whether it is good public policy for tax breaks to be sold to companies in industries the tax credits were not meant to incent. Additionally, selling the credits generally deflates their value, as they are typically sold at 85 to 90 cents on the dollar. Instead of making credits transferrable, it would be more impactful to make them refundable. Refundable credits provide a larger benefit to the original recipient at the same cost to the State, as these taxpayers would not sell them for less than full value.
- **Alternatively, consider replacing tax credits with grants or rebates.** In its analysis of two federal energy efficiency credits, the Congressional Research Service notes that replacing tax credits with a grant or rebate program would make the benefit more widely available and not limited to those taxpayers with tax liabilities. Illinois' Energy Efficient Affordable Housing Construction Program operates this way, providing grants for the installation of eligible efficient technologies in low-income residences at or below 80 percent of area median income.



Introduction



Incentive Evaluation Commission Overview

In 2015, HB2182 established the Oklahoma Incentive Evaluation Commission (the Commission). It requires the Commission to conduct evaluations of all qualified state incentives over a four-year timeframe. The law also provides that criteria specific to each incentive be used for the evaluation. The first set of 11 evaluations were conducted in 2016, and an additional 12 were conducted in 2017.

The Energy Efficient Residential Construction Tax Credit is one of 11 incentives scheduled for review by the Commission in 2018. Based on this evaluation and their collective judgment, the Commission will make recommendations to the Governor and the State Legislature related to this incentive.

During the 2016 legislative session, SB1603 was enacted, which provided a sunset of this tax credit effective July 1, 2016. While it could be argued that the evaluation of the incentive is no longer necessary, examining the impact is useful from a public policy perspective. It is also possible that the State may wish to revisit this incentive in the future.

Incentive Background

Advances in energy efficiency have allowed per capita residential energy use to remain relatively constant since the 1970s, even as demand for energy-using technologies has increased. Experts believe that there is unrealized potential for further residential energy efficiency – and tax credits are one policy option to encourage consumers to invest in energy efficient technologies.³

In 2006, the State began offering the Energy Efficient Residential Construction tax credit to promote the construction of energy efficient residential property. Contractors constructing residential property of 2,000 square feet or less could qualify for a tax credit equal to qualified expenditures of up to \$4,000, depending on the efficiency rating of the property.

Criteria for Evaluation

A key factor in evaluating the effectiveness of incentive programs is to determine whether they are meeting the stated goals as established in state statute or legislation. For this program, the goal is to promote the construction of energy efficient residential property. To assist in a determination of program effectiveness, the Commission has adopted the following criteria:

- Change in number of energy efficient residential properties;
- Change in program utilization;
- Comparison of number of qualified properties versus surrounding states;
- Energy savings/environmental impact from qualified properties; and
- State return on investment.

In some respects, this credit falls outside the typical incentive evaluation criteria. It is notable that the statutory language for determining an incentive subject to review by the Commission identifies it as “a tax credit, tax exemption, tax deduction, tax expenditure, rebate, grant or loan that is intended to encourage businesses to locate, expand, invest or remain in Oklahoma, or to hire or retain employees in Oklahoma.” In this instance, the criteria do not focus on the business per se, but on other outcomes associated with use of the credit.

³ Congressional Research Service – Residential Energy Tax Credits: Overview and Analysis. April 9, 2018. Accessed electronically at <https://fas.org/sgp/crs/misc/R42089.pdf>



Ultimately, incentive programs have to weigh both the benefits (outcomes related to achieving policy goals and objectives) and the cost, and that is also a criterion for evaluation (State return on investment). These will be discussed throughout the balance of the evaluation.



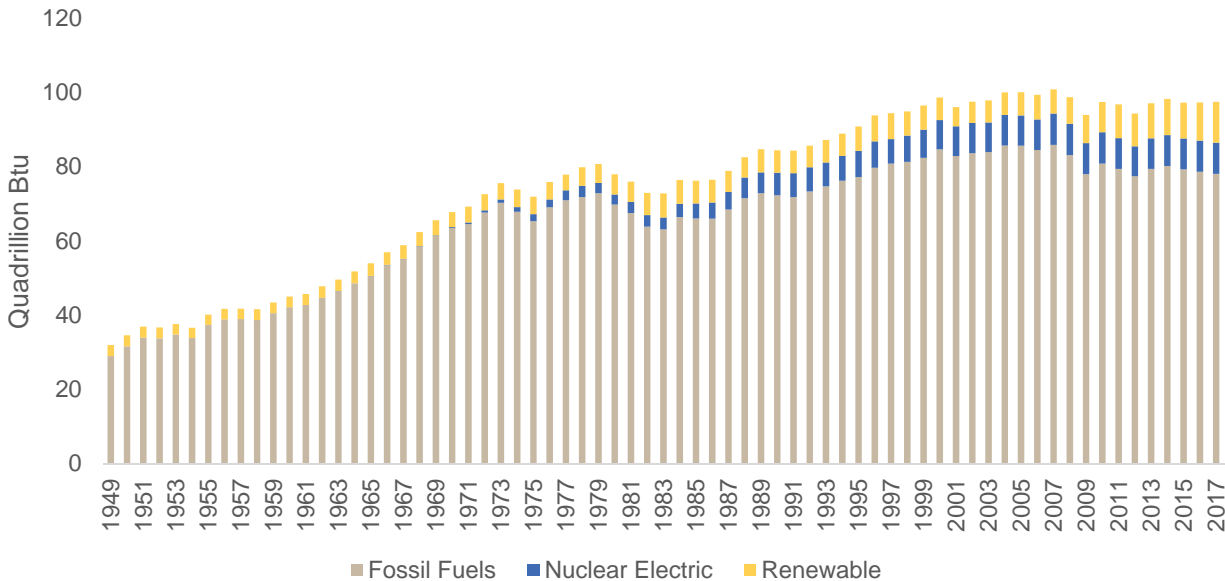
Residential Energy Efficiency Background



Energy Efficiency Background

Since the middle of the twentieth century, total energy consumption in the U.S. has tripled, increasing from 32 quadrillion British thermal units (Btu) in 1949 to 98 quadrillion Btu in 2017 – a CAGR of 1.7 percent. Fossil fuels, which accounted for more than 90 percent of all consumption in 1949, now comprise about 80 percent of total consumption, as use of nuclear and renewable energy has increased.

Figure 1: Total U.S. Energy Consumption by Source, 1949-2017⁴



Source: U.S. EIA June 2018 Monthly Energy Review

Today, residential and commercial buildings account for nearly 40 percent of total U.S. energy consumption, and while total energy use in buildings has increased since 1970, it has done so at a rate slower than the growth of Gross Domestic Product (GDP). In residential buildings, a large share of this increased energy use is due to the growing use of home electronics as well as an increase in both total floor space in buildings and average square footage per home. However, the development and adoption of appliance efficiency standards has helped alleviate the impact. For instance, energy consumption per unit of floor space has declined by 11 percent for residential buildings and 21 percent for commercial buildings since 1980. While the numbers are not adjusted for structural changes, many studies credit increased energy efficiency in part for this reduction.⁵

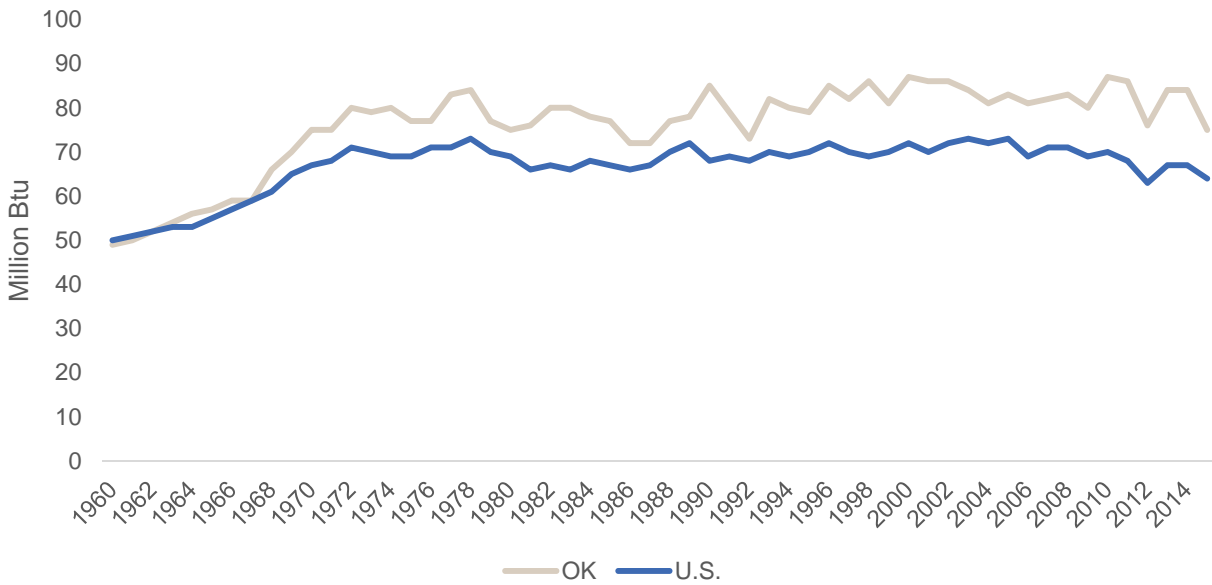
On a per capita basis, residential energy use has remained relatively constant since the 1970s, even as demand for technologies reliant on energy has increased. In fact, per capita residential energy consumption nationwide decreased by a total of 4.5 percent between 1970 and 2015, and by 11.1 percent between 2000 and 2015. This suggests that the most significant decreases have occurred in recent years. Per capita residential energy use in Oklahoma has been consistently higher than the national average, as shown in the following figure.

⁴ The fossil fuels category includes coal, natural gas and petroleum. The renewable category includes hydroelectric power, geothermal, solar, wind and biomass.

⁵ Alliance Commission on National Energy Efficiency Policy. The History of Energy Efficiency (January 2013). Accessed electronically at http://www.ase.org/sites/ase.org/files/resources/Media%20browser/ee_commission_history_report_2-1-13.pdf



Figure 2: U.S. and Oklahoma per Capita Energy Consumption in the Residential Sector, 1960-2015



Source: U.S. Energy Information Administration State Energy Data System 1960-2015

Appliance Standards

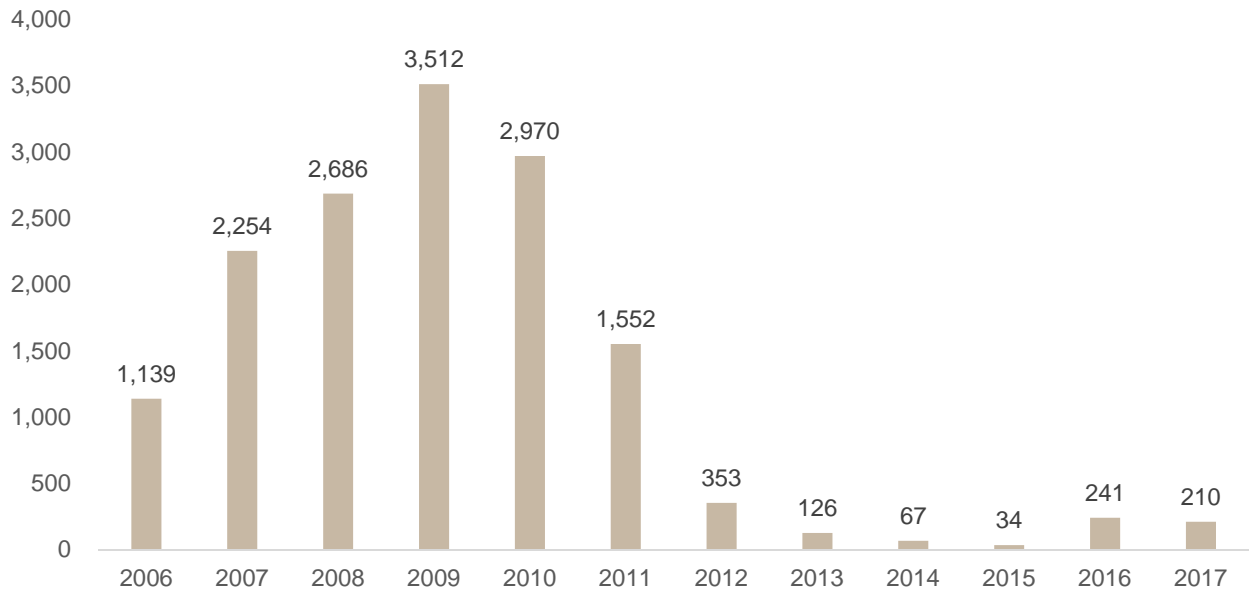
In 1974, California became the first state to establish appliance standards, and it was soon followed by New York, Florida and Massachusetts. Federal standards were first proposed in 1978 under the National Energy Conservation Policy Act (NECPA), which gave the U.S. Department of Energy the authority to set mandatory standards for thirteen household appliances. In 1987, with the enactment of the National Appliance Energy Conservation Act (NAECA), efficiency standards became mandatory at the national level. Manufacturers agreed to these standards as an alternative to state standards, which would have varied from state to state. Existing appliance standards have reduced U.S. energy consumption by an estimated 3.6 percent, which is greater than the total annual energy consumption of the State of Louisiana.

Energy Efficient Home Trends

One method for evaluating the change in energy efficient homes over time is to analyze the change in these types of homes built in the state and across the country. For this analysis, Energy Star certified homes are used as a proxy. The total number of Energy Star certified homes built in Oklahoma peaked in 2009 at more than 3,500 but has since declined significantly, as shown in the following figure.



Figure 3: Energy Star Certified Homes Built in Oklahoma, 2006-2017



Source: Energy Star

With a CAGR of -14.2 percent between 2006 and 2017, the decline in Energy Star certified homes built in Oklahoma is significant. Among the six states immediately surrounding Oklahoma, three (Arkansas, New Mexico and Texas) experienced declines between 2006 and 2017 (-18.1 percent, -12.1 percent and -9.2 percent, respectively). However, the other three states experienced growth in the number of Energy Star certified homes built: Colorado grew by 6.3 percent annually, Kansas by 5.0 percent and Missouri by 14.7 percent. The U.S. as a whole declined by -6.3 percent annually between 2006 and 2017.

According to Energy Star representatives, the number of Energy Star certified homes built over the time span is influenced by several factors, including the housing crisis, changes to the requirements of its certification program and the availability of related federal tax credits. In an effort to differentiate themselves in the peak housing market prior to the housing bubble (2006-2009), more builders began constructing Energy Star certified homes. A decline then occurred in alignment with the Great Recession and housing market crash (2009-2012).

Also contributing to the decline in certified homes built was the 2010 release of new EPA guidelines for the Energy Star program. Under the new guidelines, homes were required to be at least 20 percent more energy efficient than homes built to the 2009 International Energy Conservation Code (IECC) in order to be Energy Star certified.⁶ The specifications have since been modified, and an increase in the number of certified homes built has occurred in recent years. Finally, the availability of different federal tax credits in recent years has impacted annual certifications.

Nationwide, more than 80,000 Energy Star homes were built in 2017, resulting in a nationwide Energy Star market share of nearly 10 percent.⁷ In Oklahoma, 206 of 9,317 single family homes built in that year were

⁶ For more information, visit the Energy Star Version 3 Overview at https://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_benefits_utilities_1a

⁷ 'Market share' is calculated as total Energy Star Homes divided by total home completions. Energy Star homes based on single-family Energy Star certified homes as reported to EPA by Partners. Does not include manufactured homes or multifamily homes. Total home completions based on one unit housing permit data, adjusting for housing starts and housing completions, as provided by the U.S. Census Bureau.



Energy Star certified – resulting in a market share of 2.2 percent. This is comparable to several surrounding states, as shown in the following table. It is notable that at nearly 20 percent, Texas’ market share of Energy Star certified homes is the fourth highest amongst U.S. states.

Table 2: Energy Star Homes and Market Share in Oklahoma and Surrounding States, 2017

Location	Total Energy Star Homes (Single Family)	Total Home Completions	Market Share
Texas	22,359	115,496	19.4%
Colorado	4,346	24,073	18.1%
New Mexico	129	4,069	3.2%
Oklahoma	206	9,317	2.2%
Missouri	92	11,977	0.8%
Kansas	34	5,980	0.6%
Arkansas	19	7,296	0.3%
United States	80,856	811,059	10.0%

Source: Energy Star

According to the EPA, the savings from Oklahoma’s 206 Energy Star certified homes is equal to annual electric savings of nearly 280,000 kWh; annual gas savings of more than 19,000 therms; total annual utility bill savings of nearly \$55,000; and a CO₂ emission reduction of 298 metric tons.

Tax Incentives as a Policy Tool

Despite the increases in energy efficiency, many experts believe there is still potential for additional increased efficiency. One reason investment might not be at optimal levels is that energy prices may be too low to warrant investment in the technology. As shown in the following figure, monthly crude oil prices have decreased significantly since peaking at \$133.88 per barrel in June 2008. In August 2018, the crude oil spot price was \$68.06, nearly half of the June 2008 price.



Figure 4: Cushing, Oklahoma West Texas Intermediate Crude Oil Monthly Spot Prices, January 1986-August 2018⁸



Source: U.S. Energy Information Administration

Tax credits, such as Oklahoma’s Energy Efficient Residential Construction Tax Credit, are one policy option to potentially encourage consumers to invest in energy efficient technologies.⁹ However, in deciding whether to purchase these technologies, many consumers will evaluate the potential cost savings and factor in the cost of the technology. If energy is relatively inexpensive, consumers will not have as strong an incentive to purchase a technology that will lower their energy costs.

⁸ West Texas Intermediate (WTI) is a grade of crude oil used as a benchmark in oil pricing. Cushing, Oklahoma is a major trading hub for crude oil and has been the delivery point for crude contracts and therefore the price settlement point for West Texas Intermediate in the New York Mercantile Exchange for over three decades.

⁹ Alliance Commission on National Energy Efficiency Policy. The History of Energy Efficiency (January 2013). Accessed electronically at http://www.ase.org/sites/ase.org/files/resources/Media%20browser/ee_commission_history_report_2-1-13.pdf



Incentive Usage and Administration



Incentive Characteristics

In 2006, Oklahoma established the Energy Efficient Residential Construction Tax Credit to promote the construction of energy efficient residential property. Contractors constructing residential property of 2,000 square feet or less were eligible to receive a tax credit equal to qualified expenditures, depending on the efficiency rating of the property. Eligible expenditures include:

- Energy efficient heating or cooling, insulation material or system which is specifically and primarily designed to reduce the heat gain or loss of a residential property when installed in or on such property;
- Exterior windows, including skylights;
- Exterior doors; and
- Any metal roof installed on a residential property, but only if such roof has appropriate pigmented coatings which are specifically and primarily designed to reduce the heat gain of such dwelling unit and which meet Energy Star program requirements.

For property with an annual heating and cooling energy consumption between 20 and 39 percent below the annual level of heating and cooling energy consumption of a comparable residential property constructed in accordance with the International Energy Conservation Code (IECC), the credit was up to \$2,000.¹⁰ For a property 40 percent or more below this level, the credit was up to \$4,000. Energy consumption must be certified by an accredited Residential Energy Services Network (RESNET) provider using the Home Energy Rating System (HERS).¹¹

During the 2016 legislative session, SB1603 was enacted, which sunsetted this tax credit effective July 1, 2016. Subsequent activity is due to a provision that allows credits, which are also transferrable, to be carried forward for four years.

Historic Use of the Credit

Since 2008, tax credit use has remained relatively stable, averaging just under \$5.0 million annually. Between 2010 and 2012, there was a moratorium on the credit as part of a two-year budget balancing deal, during which no credit could be claimed for eligible expenditures (though credit holders could still use the credits they received from prior projects during that time). As a result, total credits used declined during these three years.

Table 3: Energy Efficient Residential Construction Tax Credits, 2008-2016

Tax Year	Number of Returns	Total Amount Claimed ¹²	Amount Used to Reduce Tax Liability ¹³
2008	207	\$5,693,426	\$3,712,236
2009	336	\$10,502,137	\$6,662,445
2010	302	\$9,500,330	\$3,856,445
2011	147	\$4,948,946	\$2,469,780
2012	174	\$6,599,220	\$3,714,414

¹⁰ The International Energy Conservation Code (IECC) is a building code created by the International Code Council in 2000. It is in use or adopted in 47 states, the District of Columbia, the U.S. Virgin Islands, New York City and Puerto Rico. For more information, visit <https://www.iccsafe.org/codes-tech-support/codes/2018-i-codes/iecc/>

¹¹ The Home Energy Rating System (HERS) Index is the industry standard by which a home's energy efficiency is measured. It is also the nationally recognized system for inspecting and calculating a home's energy performance. For more information, visit <https://www.resnet.us/hers-index>

¹² Prior to 2014, "Total Credits Earned" was the amount of the credit (including any carry forward credit) claimed on a tax return eligible to be used to offset any tax liability.

¹³ Based upon a taxpayer's final liability as calculated, the "Total Credits Used" is the amount used to offset any tax liability.



Tax Year	Number of Returns	Total Amount Claimed ¹²	Amount Used to Reduce Tax Liability ¹³
2013	242	\$12,073,564	\$5,897,919
2014	288	\$15,125,999	\$7,602,970
2015	288	\$15,068,476	\$5,859,934
2016*	275	\$15,726,303	\$5,943,826

Source: OTC Form 511CR data

* Preliminary

Beginning in 2014, the OTC began collecting and reporting more detailed data on use of the credit, including unused credits carried over the prior year(s) and credit established during the current tax year. This data is most useful for analyzing the current state of the program, as well as what the program's run out period may look like. As of 2016, a total of \$15.0 million in credits was carried over or established, and \$5.9 million in credits was used to reduce tax liability, indicating that a maximum of \$9.1 million was available to be claimed during the program's four year runout period.

Table 4: Energy Efficient Residential Construction Tax Credit Detail, 2014-2016

Tax Year	# of Returns	Unused Credit Carried Over from Prior Year(s)	Credit Established During Current Tax Year	Total Amount Claimed	Amount Used to Reduce Tax Liability
2014	288	\$3,730,151	\$11,021,922	\$15,125,999	\$7,602,970
2015	288	\$6,211,524	\$8,266,952	\$15,068,476	\$5,859,934
2016*	275	\$6,648,839	\$8,360,604	\$15,726,303	\$5,943,826

Source: OTC Form 511CR data

* Preliminary

Transferability

Per Oklahoma Statute, unused credits are transferrable. Generally, these "leftover" credits are sold to insurance companies to reduce insurance premiums tax liabilities. The following table displays the number of transfer requests approved, as well as the value of the credits transferred and value of the tax credits used to reduce insurance premiums tax liabilities in 2016 and 2017. Transfer activity decreased significantly in 2017, which is likely a result of the program sunset.

Table 5: Energy Efficient Residential Construction Tax Credits Transferred, 2016-2017

	2016	2017
Number of Transfer Requests Approved	105	21
Value of Transferred Credits	\$9,924,246	\$2,624,780
Value of Credits Used to Reduce Insurance Premiums Tax Liabilities	\$3,968,246	\$2,624,780

Source: Oklahoma Tax Commission

Critics of transferrable tax credits question whether it is good public policy for tax breaks to be sold to companies in industries the tax credits were not meant to incent. Additionally, selling the credits generally deflates their value, as they are typically sold at 85 to 90 cents on the dollar. Instead of making credits transferrable, it would be more impactful to make them refundable. Refundable credits provide a larger benefit to the original recipient at the same cost to the State, as these taxpayers would not sell them for less than full value.



Incentive Administration

The OTC is responsible for the administration of the credit. There are two key components to overall program administration: determining eligibility and reporting.

1. **Determining eligibility.** To qualify, properties must be 2,000 square feet or less. Eligible taxpayers fill out a line designated for the credit on Form 511CR (Other Credits), identifying unused credit carried over from prior years, credit established during current tax year, and total available credit. Taxpayers must also enclose proof of the energy rating for each home, such as a copy of the Energy Star Certification sticker or the Energy Star Certificate. Additionally, taxpayers must be able to document the type and amount of expenses upon which the credit was based at the request of the OTC. The OTC reviews the information provided by taxpayers and verifies the accuracy of the credit being claimed.
2. **Reporting.** Once the tax year is complete and timely returns have been filed and processed, the OTC is the source for data associated with the use of the tax credit. Estimated tax expenditures and number of returns related to these and other tax credits are found in the OTC's biennial Tax Expenditures reports.

Additionally, in May 2018, Governor Fallin signed into law HB3225, which directs the OTC to make tax credit data available on its website no later than January 1, 2020. The information must be available free of charge, downloadable and offer users the ability to systematically sort and search the data. The bill also sets the minimum standards for what type of information must be disclosed about each tax credit, including a brief explanation of the credit and the following information for tax year 2013 and each tax year thereafter:

- a. The amount of credits claimed;
- b. The amount of credits used to reduce tax liability or refunded to taxpayers;
- c. The amount of credits carried over to a future tax year, if available;
- d. The number of taxpayers claiming the credit; and
- e. The annual growth rate in the number and amount of credits claimed.

Because complying with this new law will require the development and maintenance of a new website or webpage, it is reasonable to expect that the system will have some associated administrative effort and cost.

Administrative Challenges

The lack of high quality data makes it difficult to accurately report on the impact of the incentive. States should collect high-quality data related to incentive usage in order to anticipate long-term fiscal impacts and, if necessary, give policymakers time to prepare to change the design of their incentives.

Iowa, for example, has developed a consistent approach for forecasting the costs of its incentives. The State's Department of Revenue uses data from business tax returns to project the costs of each tax credit five years into the future, updating the estimates three times per year. These estimates are incorporated directly into the revenue forecasts used in development of the State's budget.

For Oklahoma, improved data collection would entail collecting information related to which eligible expenditures are being claimed, and what level of energy reduction (i.e. between 20 and 30 percent or greater than 40 percent) is being achieved.



Economic and Fiscal Impact



Economic Impact Methodology

Economists use a number of statistics to describe regional economic activity. Four common measures are **Output**, which describes total economic activity and is generally equivalent to a firm's gross sales; **Value Added**, which equals gross output of an industry or a sector less its intermediate inputs; **Labor Income**, which corresponds to wages and benefits; and **Employment**, which refers to jobs that have been created in the local economy.

In an input-output analysis of new economic activity, it is useful to distinguish three types of effects: **direct, indirect, and induced.**

Direct effects are production changes associated with the immediate effects or final demand changes. The payment made by an out-of-town visitor to a hotel operator or the taxi fare paid for transportation while in town are examples of direct effects.

Indirect effects are production changes in backward-linked industries caused by the changing input needs of directly affected industries – typically, additional purchases to produce additional output. Satisfying the demand for an overnight stay will require the hotel operator to purchase additional cleaning supplies and services. The taxi driver will have to replace the gasoline consumed during the trip from the airport. These downstream purchases affect the economic output of other local merchants.

Induced effects are the changes in regional household spending patterns caused by changes in household income generated from the direct and indirect effects. Both the hotel operator and taxi driver experience increased income from the visitor's stay, as do the cleaning supplies outlet and the gas station proprietor. Induced effects capture the way in which increased income is spent in the local economy.

A multiplier reflects the interaction between different sectors of the economy. An output multiplier of 1.4, for example, means that for every \$1,000 injected into the economy, all other sectors produce an additional \$400 in output. The larger the multiplier, the greater the impact will be in the regional economy.

Figure 5: The Flow of Economic Impacts



Fiscal Impact

The Energy Efficient Residential Construction tax credit was intended to promote the construction of energy efficient residential properties. Programs of this type are typically designed to incentivize homeowners and builders to spend additional upfront money on relatively more expensive energy-saving construction materials, fixtures and equipment that generate long-term savings (i.e. on utility bills).

The Energy Efficient Residential Construction Tax Credit provided residential property owners and builders two types of economic benefits: 1) the tax credit to offset energy efficient improvements and 2) long-term utility savings. Offsetting these benefits is the upfront (or short-term) higher costs of construction. For this analysis, the simplifying assumption is that homeowners spent more money in the construction sector building the residential unit. The increase in construction spending was equal to the value of the tax credit. This translated into additional economic activity, assuming the credit was not available. It was not possible to calculate the long-term savings associated with increased household income due to lower property utility bills. It was also



not possible to determine which homeowners or builders would have made these investments without the tax credit.

Starting in 2014, the OTC began collecting and reporting more detailed data regarding the use of the credit. Unlike other incentive evaluations that cover five years, the information available on the Energy Efficient Residential Construction tax credit only allows for an evaluation for tax years 2014, 2015 and 2016. For these three years, the annual economic impact of increased construction activity was calculated using IMPLAN Sector 59 Construction – Single-Family Structures. The following tables depict the statewide annual impact on the construction sector.

Table 6: Impact of Energy Efficient Residential Construction Tax Credits

		Output	Value Added	Labor Income	Employment	Estimated Oklahoma Tax Revenue
2014	Direct Effect	\$11,021,922	\$5,913,430	\$4,368,305	90	
	Indirect Effect	\$4,318,542	\$2,154,674	\$1,605,498	30	
	Induced Effect	\$4,665,526	\$2,527,929	\$1,412,779	35	
	Total Effect	\$20,005,990	\$10,596,033	\$7,386,582	156	\$532,879
2015	Direct Effect	\$8,266,952	\$4,374,902	\$3,231,780	66	
	Indirect Effect	\$3,070,726	\$1,594,082	\$1,187,787	22	
	Induced Effect	\$3,416,976	\$1,870,224	\$1,045,209	26	
	Total Effect	\$14,754,654	\$7,839,208	\$5,464,776	114	\$423,317
2016	Direct Effect	\$8,360,604	\$4,438,584	\$3,278,823	66	
	Indirect Effect	\$3,098,792	\$1,617,286	\$1,205,077	22	
	Induced Effect	\$3,442,731	\$1,897,448	\$1,060,423	26	
	Total Effect	\$14,902,127	\$7,953,318	\$5,544,323	114	\$389,713

Source: TXP, Inc. IMPLAN analysis output, August 2018

Table 7: Annual Tax Revenue Generated

	Credits Established During Tax Year	Estimated Oklahoma Tax Revenue	Net Impact
2014	\$11,021,922	\$532,879	(\$10,489,043)
2015	\$8,266,952	\$423,317	(\$7,843,635)
2016	\$8,360,604	\$389,713	(\$7,970,891)
Total	\$27,649,478	\$1,345,909	(\$26,303,569)

Source: TXP, Inc. IMPLAN analysis output, August 2018

As depicted in the preceding tables, the Energy Efficient Residential Construction tax credit program did result in increased statewide economic activity. The level of economic activity varied each year and was directly linked to the amount of the tax credit earned in that year – not what was necessarily claimed or carried over. Multiplying the total value added figure produced by the IMPLAN model by the corresponding annual tax ratio provides an estimate for total annual State of Oklahoma tax revenue. Between 2014 and 2016, the Energy Efficient Residential Construction tax credit, via direct, indirect and induced economic effects, generated approximately \$1.3 million in state tax revenue. Over this same period, the State provided \$27.6 million in tax credits, resulting in a net impact of -\$26.3 million.



Incentive Benchmarking



Introduction

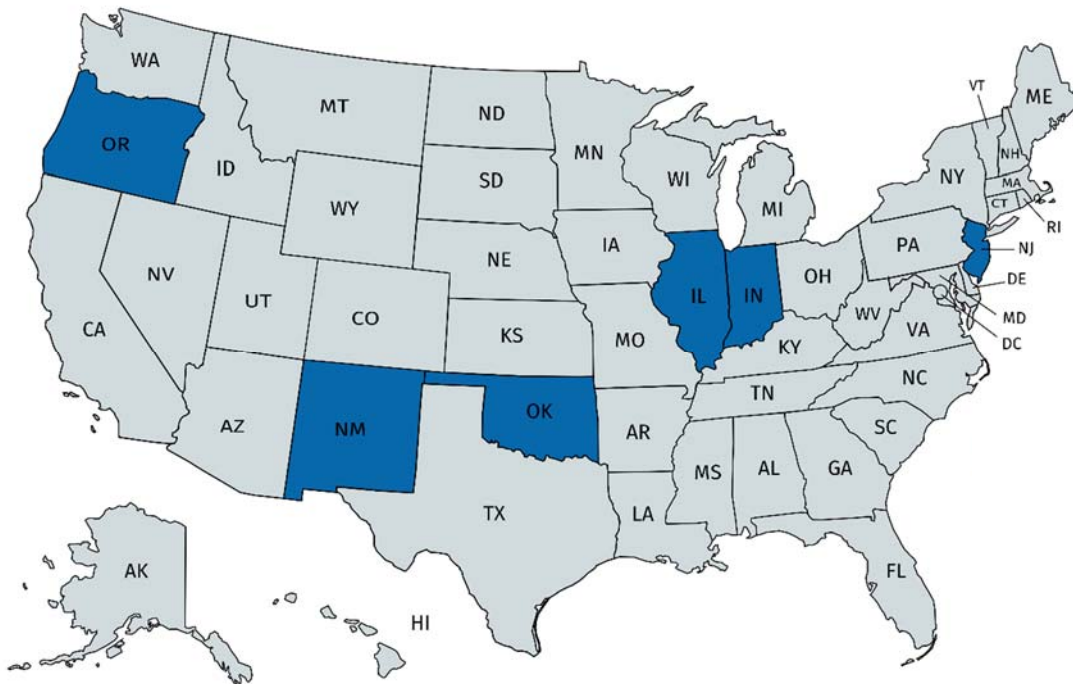
A detailed description of comparable state programs can be found in **Appendix A**.

For evaluation purposes, benchmarking provides information related to how peer states use and evaluate similar incentives. At the outset, it should be understood that no states are ‘perfect peers’ – there will be multiple differences in economic, demographic and political factors that will have to be considered in any analysis; likewise, it is exceedingly rare that any two state incentive programs will be exactly the same.¹⁴ These benchmarking realities must be taken into consideration when making comparisons – and, for the sake of brevity, the report will not continually re-make this point throughout the discussion.

The process of creating a comparison group for incentives typically begins with bordering states. This is generally the starting point, because proximity often leads states to compete for the same regional businesses or business/industry investments. Additionally, neighboring states often (but not always) have similar economic, demographic or political structures that lend themselves to comparison. However, the comparison group for certain incentives will be broader than just the neighboring states. In the case of this program, the behavior the credit seeks to impact (i.e. increased investment in energy efficiency property) is not tied to a specific region of the U.S.

Six states (Oklahoma, Illinois, Indiana, New Jersey, New Mexico and Oregon) and the federal government have incentive programs geared toward investment in energy efficient construction.¹⁵ The following discusses some of the key characteristics of these programs.

Figure 6: States Offering Energy Efficient Construction Tax Incentives



¹⁴ The primary instances of exactly alike state incentive programs occur when states choose to ‘piggyback’ onto federal programs.

¹⁵ It is notable that several states, including South Carolina and New York, have programs related to solar energy equipment. Because Oklahoma’s credit does not include solar energy equipment, those states are not included in this benchmarking analysis.



Other State Program Background

Indiana provides a Home Insulation Deduction of up to \$1,000 for the cost of materials and installation. Home insulation is defined as “any material commonly used by the building industry which is installed for the sole purpose of retarding the passage of heat energy into or out of a building.” Structural improvements (carpeting, drapes, siding, etc.) do not qualify even if they produce an insulating effect.

Illinois’ Energy Efficient Affordable Housing Construction Program provides grants for the installation of eligible efficient technologies, including clothes washers, dishwashers, refrigerators, freezers, ceiling fans, water heaters, lighting, furnaces, boilers, heat pumps, air conditioners, caulking/weather-stripping, duct/air sealing, building insulation, windows and LED Lighting. The program is specifically designed for low income residences (at or below an 80 percent of average median income threshold).¹⁶

New Jersey’s Clean Energy Program provides rebates for energy efficient appliance and lighting upgrades and also offers incentives in conjunction with the Energy Star program for energy efficient upgrades. Residential rebates are available for energy efficient heating and cooling equipment and span from \$250 to \$700.

New Mexico’s Sustainable Building Tax Credit is available for the construction of a sustainable building, the renovation of an existing building into a sustainable building, or the permanent installation of manufactured housing that is a sustainable building. While the program is also available for commercial properties, credits for residential properties range from \$3.00 to \$6.50 per square foot, depending on the sustainable building rating achieved.

Oregon’s Residential Energy Tax Credit provides personal income tax credits for the purchase of energy efficient devices and renewable energy systems for homes. Tax credits are based on the first year energy savings or production, but limited to 50 percent of the device cost or \$1,500 to \$6,000, depending on the device. Credits over \$1,500 must be claimed over multiple years, with no more than \$1,500 claimed per year per device.

The **federal government** offers three comparable tax credits: the Energy Efficient New Homes Tax Credit, the Nonbusiness Energy Property Credit (commonly referred to as the “Section 25C” credit) and the Residential Energy Efficient Property Credit (“Section 25D” credit):

- The Energy Efficient New Homes Tax Credit provides a corporate tax credit of between \$1,000 and \$2,000. Eligibility requirements for the full \$2,000 tax credit include a 50 percent energy savings for heating and cooling according to IECC guidelines and at least 20 percent of savings coming from the building envelope (external walls, windows, roof and/or flooring) improvements. To be eligible for a \$1,000 tax credit, requirement levels are reduced to 30 percent energy savings, with one third of savings coming from building envelope improvements.¹⁷
- The Nonbusiness Energy Property Tax Credit allows residents to claim up to 10 percent of cost up to \$500 (or a specific amount from \$50-\$300). The claim must be made for an existing home that is the claimant’s principal residence. Qualifying expenditures include heating and cooling systems, insulation, roofs, windows, doors and skylights. Installation costs are not eligible.¹⁸
- The Residential Energy Efficient Property Credit is a tax credit that also applies to efficiency improvements in the building envelope of existing homes.

¹⁶ Illinois Efficient Housing Construction Grant. Accessed electronically at <http://programs.dsireusa.org/system/program/detail/1187>

¹⁷ U.S. Department of Energy – Energy-Efficient New Homes Tax Credit for Home Builders. Accessed electronically at <https://www.energy.gov/savings/energy-efficient-new-homes-tax-credit-home-builders>

¹⁸ Energy Star – 2017 Non-Business Energy Property Tax Credits. Accessed electronically at https://www.energystar.gov/about/federal_tax_credits/2017_non_business_energy_property_tax_credits



Incentive Program Structure

New Mexico, Oregon and the federal government offer incentives in the form of tax credits. Indiana’s program is structured as a tax deduction, as opposed to a tax credit. Illinois provides grants for rehab and/or new construction, while New Jersey provides rebates that vary depending on home type and energy efficiency.

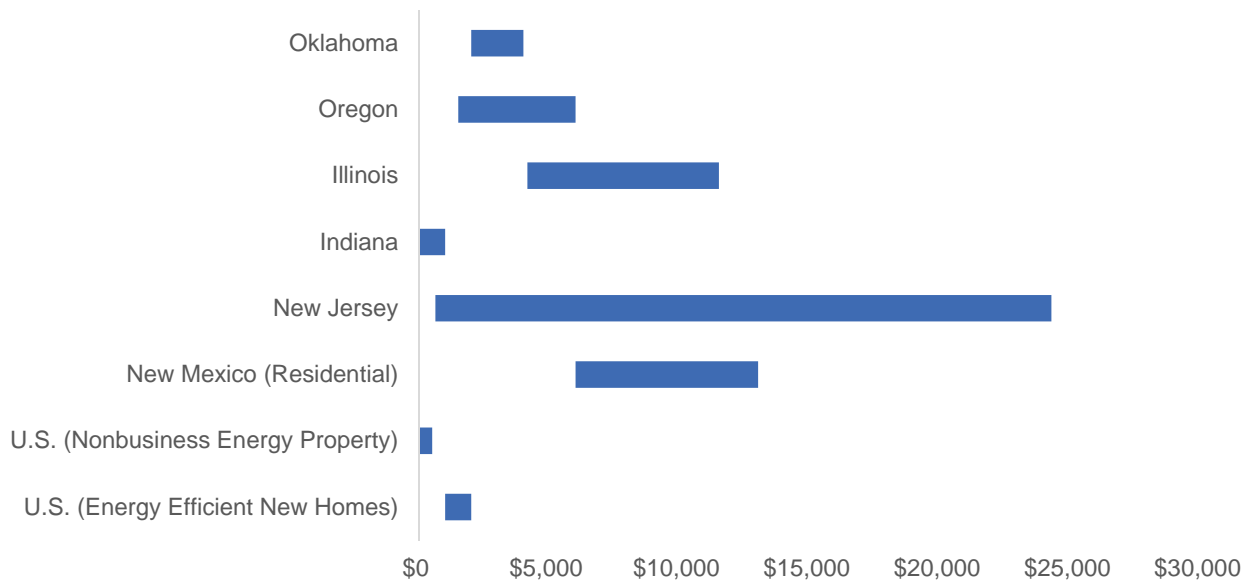
Eligible Tax Credit Recipients

While Oklahoma focuses on residential buildings, New Mexico’s credit is available to both residential and commercial buildings. New Mexico is also flexible in that it offers its tax credit to both homeowners and contractors (and can be applied to either the personal income tax or corporate income tax). Oklahoma’s tax credit is provided to contractors, though data indicates the credit is passed down to the homeowner in many instances. The Oregon program is made available to homeowners or renters, and each of the three federal incentives is directly available to homeowners, as opposed to contractors.

Incentive Ranges

Oklahoma ranks in the middle of state incentive value. Oklahoma provides credits of up to \$2,000 for properties between 20 and 39 percent below the annual level of heating and cooling energy consumption of a comparable residential property and up to \$4,000 for properties 40 percent or more below the threshold. In Oregon, the value of the tax credit provided ranges from \$1,500 to \$6,000 and is dependent upon the cost of the energy efficient device or system. Illinois’ benefits are based on average median income and whether the project is rehabilitation or new construction; maximum grant amounts range from \$4,150 to \$11,500. Indiana provides a deduction between \$0 and \$1,000. New Jersey has the widest range, spanning from \$625 to nearly \$25,000. New Mexico’s residential credits range from \$6,000 to \$13,000 for a 2,000 square foot property. Finally, the two federal programs with specific incentive ranges are between \$0 and \$500 (Nonbusiness Energy Property) and between \$1,000 and \$2,000 (Energy Efficient New Homes).

Figure 7: Incentive Dollar Value Ranges





State Program Costs

In tax years 2015 and 2016, the amount of the credit used to reduce tax liability totaled \$5.9 million in Oklahoma, comparable to New Mexico's tax credit (\$5.0 million). Among comparable states, the New Jersey and Oregon programs are the costliest, as New Jersey was budgeted to issue \$19.0 million in rebates in 2017 and Oregon issued \$18.3 million in tax credits in 2016. Illinois' and Indiana's programs have the smallest financial impact at \$40,000 and \$0.9 million, respectively.

Program Sunsets

Several of the incentives have been repealed or are scheduled to be sunset in the coming years. Like Oklahoma, Illinois and Indiana both repealed their programs in 2016. Oregon's program sunset at the end of 2017. New Mexico's program has been extended several times and is currently scheduled to sunset in 2021. The federal programs have also been prolonged; the Residential Energy Efficient Property Credit is scheduled to be repealed in 2021 while the other two federal programs were sunset effective in 2017. The New Jersey program does not appear to have a sunset date.

Benchmarking Program Evaluations

Indiana

A 2014 review of Indiana's home insulation tax deduction found that the majority of qualifying projects did not claim the deduction, and the deduction was ineffective in influencing behavior. It reported that "the link between the deduction and taxpayers' expenditures on qualified home insulation projects is questionable and appears to be very weak, if at all present."¹⁹ Based on this analysis, the incentive was repealed effective January 1, 2016.

Federal Programs

A 2015 study from the Energy Institute at Haas largely concluded that federal energy tax credits are inequitable. The evaluation reported that energy efficient tax credits are used by residents with tax liability (i.e. higher-income individuals). Furthermore, these energy efficient tax credits are exclusively for home owners, not renters (again, suggesting individuals with higher incomes are the key beneficiaries) stating, "There are large potential social benefits from clean energy investments, but income tax credits are an inefficient instrument for realizing changes in behavior. Moreover, the distributional impacts are a real concern. Through several key features of the tax code, we have set up these credits in a way which excludes millions of Americans from participating, and higher-income households receive the lion's share of total credit dollars."²⁰

In 2017, the U.S. Department of Energy's Office of Energy Policy and Systems Analysis released its evaluation of the impact of tax incentives for residential energy efficient equipment.²¹ The study examined the possible impact of extending the Nonbusiness Energy Property Credit ("Section 25C") credit for five equipment types from 2017 to 2026 and provides insight into consumer purchasing decisions, potential tax credit value and household energy bill impacts – all by Census division. The study found that the impact on bill savings and potential credit value would be lowest in the west south central states (Oklahoma, Arkansas, Louisiana and Texas). This was also the case when adjusted for population.

¹⁹ Indiana Legislative Services Agency Office of Fiscal and Management Analysis – Indiana Tax Incentive Review (November 2014). Accessed electronically at https://iga.in.gov/legislative/2017/publications/tax_incentive_review/#document-0b08377d

²⁰ Borenstein, Severin and Davis, Lucas. The Distributional Effects of U.S. Clean Energy tax Credits. Energy Institute at Haas (July 2015). Accessed electronically at <https://energyathaas.wordpress.com/2015/07/20/are-clean-energy-tax-credits-equitable/>

²¹ U.S. Department of Energy Office of Energy Policy and Systems Analysis – Recent Analysis on the Impact of Tax Incentives for Residential Energy Efficient Equipment (November 2017). Accessed electronically at https://www.ase.org/sites/ase.org/files/epsa_residential_equipment_incentive_analysis_2017_final.pdf



Finally, a 2018 report by the Congressional Research Service analyzed the effectiveness of two federal credits: the nonbusiness energy property (“Section 25C”) credit, which expired at the end of 2017, and the residential energy efficient property (“Section 25D”) credit, which is scheduled to expire at the end of 2021. The report found that while the purpose of residential energy efficiency tax credits is to motivate additional energy efficiency investment, the amount of the investment resulting from these credits is unclear. The study points out that purchasers investing in energy efficient property for other reasons – for example, concern about the environment – would have invested in the property absent tax incentives, and hence stand to receive a windfall gain from the tax benefit. Further, the fact that the incentive is delivered as a nonrefundable credit limits the provision’s ability to motivate investment for low- and middle-income taxpayers with limited tax liability.²²

Key Takeaways for Oklahoma

It is likely not possible to determine whether the tax credits were the cause of the investment in energy efficient property, or if they were instead added benefits for taxpayers that would have made those investments even in the absence of the credits.

Additionally, while Oklahoma’s credits were transferable, they were not refundable. Proponents of refundable credits argue that only by making credits refundable can the tax code effectively carry out desired social policy – and allowing credits only against income tax liability ignores the fact that most low-income families also incur income taxes. Opponents of refundable credits, however, offer several arguments, including that the tax system should collect taxes, not redistribute income; that everyone should pay some tax as a responsibility of citizenship; and that refundable credits increase administrative and compliance costs and encourage fraud.²³

The Congressional Research Service report also notes that there are various policy options available for Congress to consider regarding incentives for residential energy efficiency, including (among other alternatives) replacing the current tax credits with grants or rebates, which could be made more widely available and not be limited to taxpayers with tax liability. This is also an option Oklahoma could consider if the Legislature opted to reinstate the program in the future.

²² Congressional Research Service – Residential Energy Tax Credits: Overview and Analysis (April 9, 2018). Accessed electronically at <https://fas.org/sgp/crs/misc/R42089.pdf>

²³ The Tax Policy Center – Briefing Book: Key Elements of the U.S. Tax System. Accessed electronically at <https://www.taxpolicycenter.org/briefing-book>



Appendices



Appendix A: Comparable State Programs

Energy Efficient Residential Construction Tax Credit								
State	Program Name	Program Type	Incentive Recipient/ Eligible Property Types	Description of Program	Carry Forward/ Refundability/ Transferability	Annual Program Cost	Start	Sunset
Oklahoma	Energy Efficient Residential Construction Tax Credit	Tax Credit	Homebuilder/ Residential	<ul style="list-style-type: none"> - Properties must be 2,000 sq ft or less. - For property between 20 and 39 percent below the annual level of heating and cooling energy consumption of a comparable residential property constructed, the credit may equal up to \$2,000. - A property 40 percent or more below this level, the credit may equal up to \$4,000. 	Carry Forward: 4 years Refundable: No Transferable: Yes	\$5.9 million (2016)	2006	2016
Illinois	Energy Efficient Affordable Housing Construction Program	Grant	Homebuilder/ Residential	<ul style="list-style-type: none"> - Projects were targeted at households at or below 80 percent average median income. - Maximum grant amounts for rehab were \$4,650. - Maximum grants amounts for new construction ranged from \$4,150 to \$11,500, depending on building type. 	N/A	\$40,000 (2015; no appropriation in 2016)	1988	2016
Indiana	Home Insulation Deduction	Tax Deduction	Homebuilder/ Residential	<ul style="list-style-type: none"> - Deduction of up to \$1,000 of the material and professional insulation installation costs 	N/A	\$0.9 million (2012)	1978	2016
New Jersey	Clean Energy Residential New Construction Program	Rebate Program	Homebuilder/ Residential	<ul style="list-style-type: none"> - Provides incentive rebates depending on the energy efficiency of the homes. - Single family home incentives range from \$1,125 to \$24,250 - Multi-single home incentives range from \$1,125 to \$18,188 - Multi-family home incentives range from \$625 to \$12,125 	N/A	\$19.0 million (2017 Budget)	2016	None



Energy Efficient Residential Construction Tax Credit

State	Program Name	Program Type	Incentive Recipient/ Eligible Property Types	Description of Program	Carry Forward/ Refundability/ Transferability	Annual Program Cost	Start	Sunset
New Mexico	Sustainable Building Tax Credit	Tax Credit	Homebuilder, Homeowner/ Residential, Commercial	<ul style="list-style-type: none"> - Residential properties must be 2,000 sq ft or less (no cap on commercial). - Water conserving features are required. - Credit can be applied to either the Personal Income Tax (PIT) or the Corporate Income Tax (CIT). - Credit for commercial properties ranges from \$1.40 to \$6.25/sq ft for first 10,000 feet, depending on sustainable building rating achieved; lower credit amounts offered for square footage beyond 10,000 feet. - Credit for residential properties ranges from \$3 to \$6.50/sq ft depending on sustainable building rating achieved. 	Carry Forward: 7 years Refundable: No Transferable: Yes	\$5.0 million (2016)	2007, 2015	2026
Oregon	Residential Energy Tax Credit Program	Tax Credit	Homeowner/ Residential	Tax credits are based on the first year energy savings or production, but limited by 50 percent of the device cost or \$1,500 to \$6,000, depending on the device. Credits over \$1,500 must be claimed over multiple years, with no more than \$1,500 claimed per year per device.	Carry Forward: 5 years Refundable: No Transferable: Yes	\$18.3 million (2016)	1977	2017



Energy Efficient Residential Construction Tax Credit

State	Program Name	Program Type	Incentive Recipient/ Eligible Property Types	Description of Program	Carry Forward/ Refundability/ Transferability	Annual Program Cost	Start	Sunset
United States	Energy Efficient New Homes Tax Credit	Tax Credit	Homeowner	<ul style="list-style-type: none"> - Site built homes qualify for a \$2,000 credit if certified to reduce energy consumption by 50% and meet minimum efficiency standards. - Manufactured homes qualify for a \$2,000 credit if they conform to the Federal Manufactured Home Construction and Safety Standards and meet the energy savings requirements of site-built homes. - Manufactured homes qualify for a \$1,000 credit if they conform to Safety Standards and reduce energy consumption by 30%. 	Carry Forward: 20 years Refundable: Yes Transferable: No	Not comparable	2005	2017
	Nonbusiness Energy Property Tax Credit ("25C")	Tax Credit	Homeowner	- Provides homeowners with a tax credit for investment in certain high-efficiency heating, cooling and water-heating appliances, as well as tax credits for energy efficient windows and doors. For installations made during 2011-2017, the credit rate is 10% of eligible expenses, with a maximum credit of \$500.	Carry Forward: None Refundable: No Transferable: No	Not comparable	2005	2017
	Residential Energy Efficient Property Credit ("25D")	Tax Credit	Homeowner	<ul style="list-style-type: none"> - Provides a 30% tax credit for investments in properties that generate renewable energy - While scheduled to be in effect through the end of 2021, the percentage of expenditures a taxpayer can claim will be reduced from 30% to 26% in 2020, and to 22% in 2021. 	Carry Forward: Yes Refundable: No Transferable: No	Not comparable	2005	2021