

Consortium for Energy Efficiency

2023 State of the Energy Efficiency Program Industry



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November 2024

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Acknowledgements

This report was made possible by the continued partnerships with the American Gas Association (AGA) and Efficiency Canada, who shared the results of their utility surveys with CEE. CEE extends a special thank you to Morgan Hoy and Lauren Scott from AGA and James Gaede and Alyssa Nippard from Efficiency Canada for their ongoing generous collaboration. This report was created by Thomas Olson of the CEE Evaluation and Research Team, with data collection, data analysis, and database programming by Naseem Dillman-Hasso.

The preferred citation the Annual Industry Report is as follows:

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Purpose and Limitations

The purpose of this report is to provide a point in time report of US and Canadian program industry energy efficiency and demand response expenditures, and savings and an annual time series analysis. While this effort constitutes a large and comprehensive survey of program administrators, and while extensive ongoing attention is devoted to data standardization, CEE cautions against making representations and comparisons beyond those provided in this report.

The report documents annual electric and natural gas DSM program industry expenditures, and impacts at the national level and, where appropriate, by Census region, across the United States and Canada based on data collected through a collection of vast and comprehensive surveys of DSM program administrators. CEE believes that using these data in conjunction with past survey efforts portrays an accurate representation of energy efficiency program industry trends over time. The limitations of the data are disclosed below.

There are many limitations to budget, expenditures, and savings data in the DSM industry. The accuracy of the data is ultimately dependent upon each individual respondent's interpretation of the survey questions, ability to retrieve the relevant information, and verification of the data provided. Furthermore, variation in state policies and reporting requirements and timelines along with what we suspect is inconsistent use of terminology likely adds to variation.

Additional factors that affect the viability of comparisons or analytical inferences include differences in regulatory structures, weather effects, customer demographic differences, electric and gas rates, the duration of program experience, and underlying drivers that shape a program administrator's portfolio.

Given the wide variation in the circumstances surrounding individual data points, we do not believe these data are suitable for comparisons at any level other than the levels represented within this report. CEE encourages reviewers to inquire as to the sufficiency of the method or quality of supplemental data for the specified purpose when using this information beyond the stated limits.

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Executive Summary

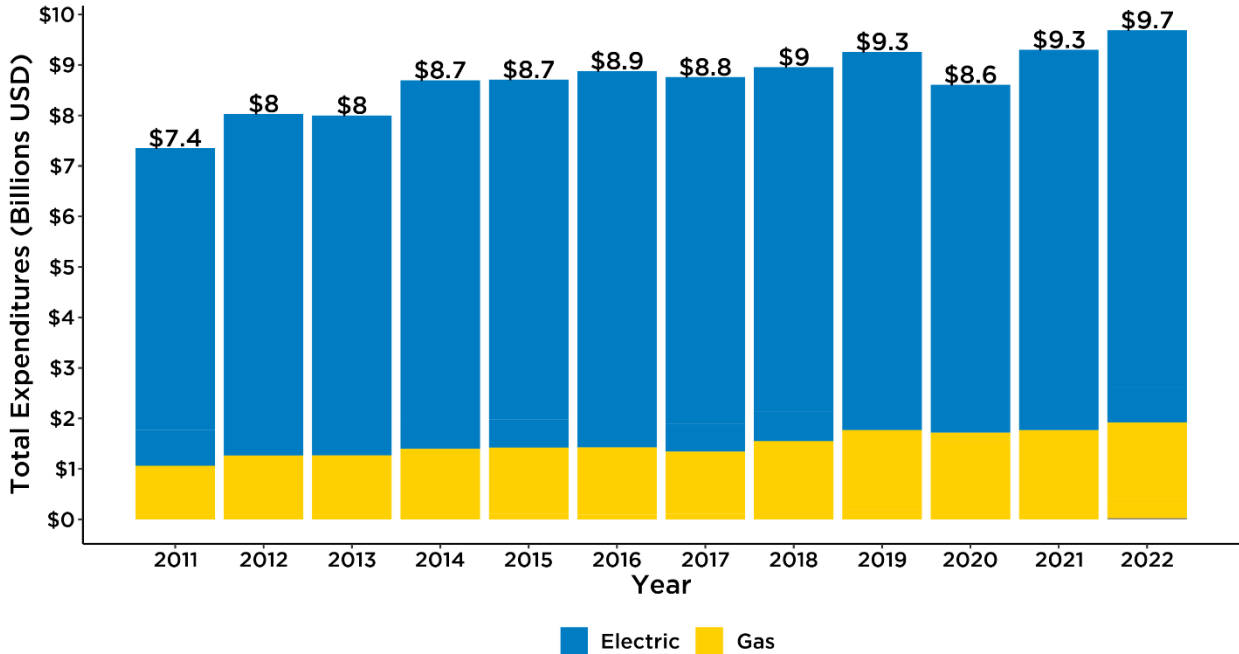
For the eighteenth consecutive year, CEE has investigated the size and scope of the demand side management (DSM) industry in the United States and Canada, for both gas and electric programs. The purpose of this report is to capture the total expenditures and energy saved by DSM programs, and track these high-level industry trends over time.

In 2023, the *State of the Energy Efficiency Program Industry Report* continues to illustrate growth of and investment in the industry. Analysis of the reported data continues to support the trend of binational commitment to energy efficiency.

North American Program Expenditures Continue Rebound from 2020 Decline

In 2022, combined spending on gas and electric DSM programs across the United States and Canada totaled \$9.7 billion USD, approximately a four percent increase from 2021 spending.

Figure 1. US and Canadian Gas and Electric DSM Program Expenditures, 2011-2022

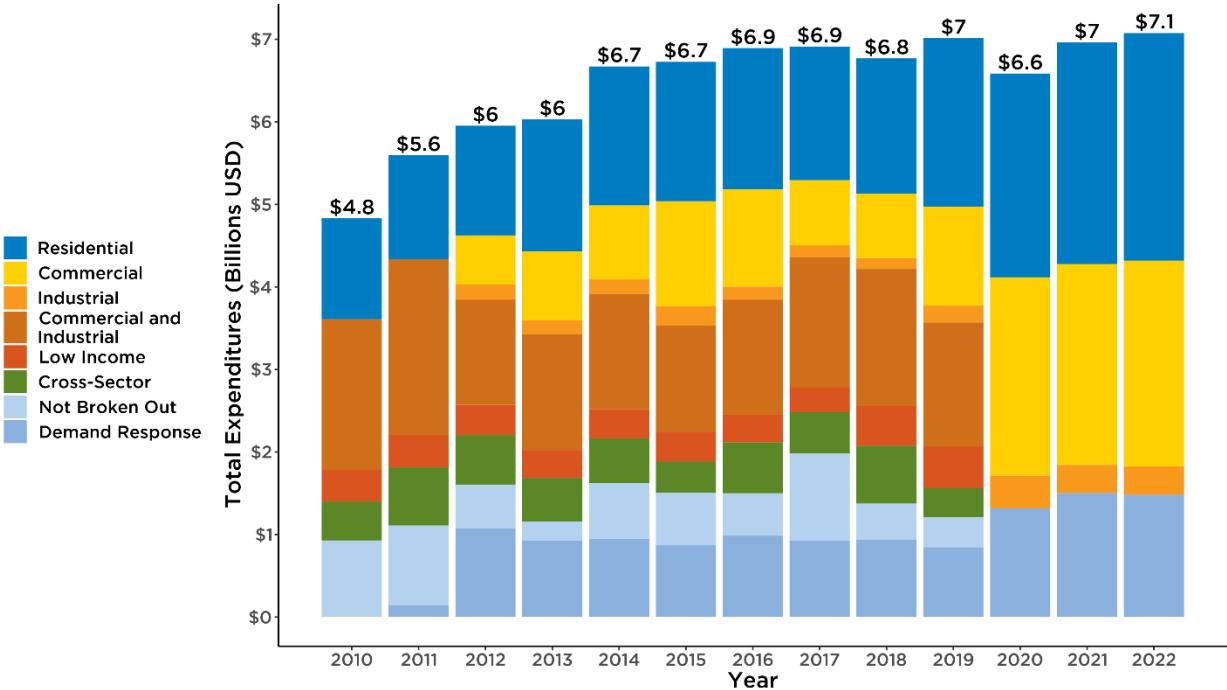


These expenditures suggest a continued rebound from decreases in spending during the years impacted by the COVID-19 pandemic. As the binational focus on decarbonization continues to grow, and as funds from the Inflation Reduction Act become available in the United States, we expect expenditures on energy efficiency to continue to this current trend.

Electric Expenditures and Savings¹ Remain Steady

In North America, electric DSM program expenditures amounted to approximately \$7.8 billion USD. Spending on electric efficiency programs in the United States remain steady, seeing a slight increase in spending to \$7.1 billion USD in 2022.

Figure 2. US Electric DSM Expenditure by Sector, 2010-2022



Canadian electric spending amounted to approximately \$690 million USD in 2022². North American electric DSM programs saved approximately 28,400 GWh (25,700 GWh in the US and 2,710 GWh in Canada), which is a slight decrease in savings from almost 30,000 GWh (26,900 in the US and 2,960 in Canada) saved across North America in 2021. For a more comprehensive view of Canadian expenditures over time, please visit the full Efficiency Canada report.³

¹ In all tables, CEE intended to only aggregate gross savings figures, but because program administrators do not always report gross savings values in the survey, CEE uses net savings where gross savings were not available.

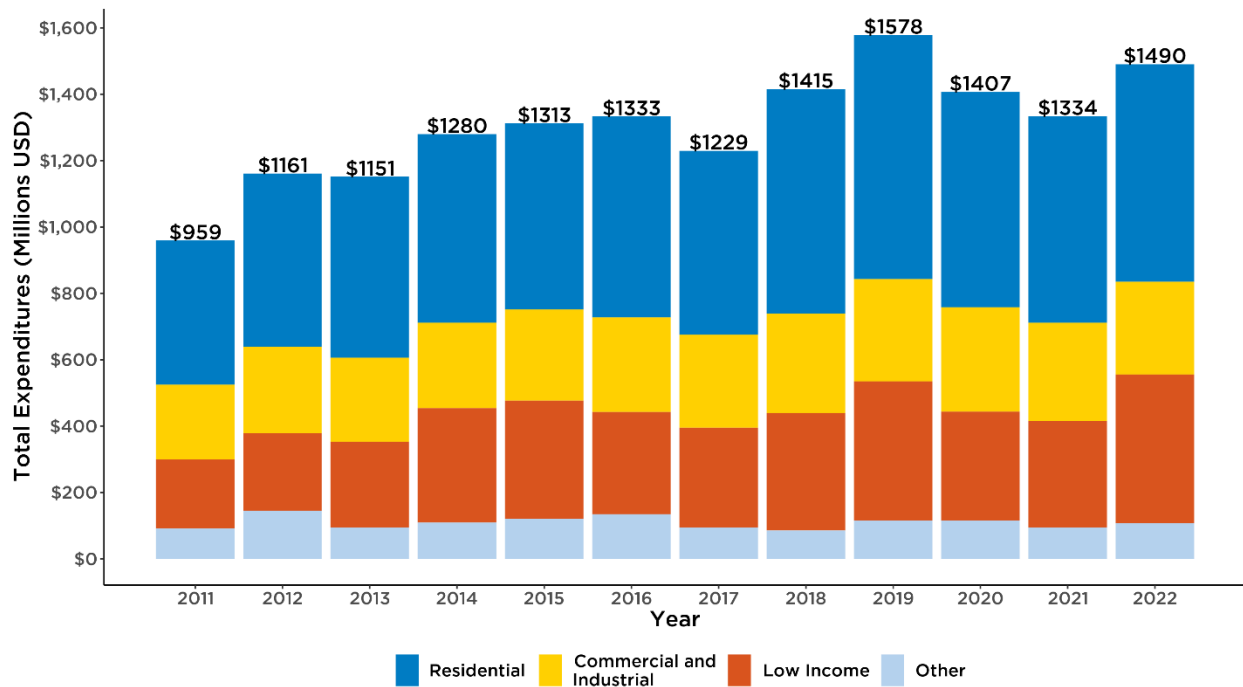
² This estimate captures a portion of Canadian spending on undifferentiated fuels. Because of jurisdictional reporting, the Efficiency Canada Report describes a large portion of spending as “multi-fuel” where distinguishing between energy type is not straightforward. This report opts to allocate multi-fuel spending was between both fuel types, which may slightly inflate total North American numbers. We urge readers to consult Efficiency Canada’s report for more information on Canadian trends over time.

³ Nippard, A., Gaede, J. 2023. The 2023 Energy Efficiency Programs Update: Provinces and Territories. Efficiency Canada, Carleton University, Ottawa, ON.

Rebound in Gas Expenditures, Decreased Savings

In North America, natural gas DSM program expenditures amounted to approximately \$1.9 billion USD. In 2022, North American natural gas savings amounted to approximately 414 million therms which is a decrease from the 528 million therms saved in 2021. In the United States, expenditures further rebounded from \$1.33 billion USD to approximately \$1.5 billion USD. This communicates a national commitment to natural gas’ role in energy efficiency and decarbonization.

Figure 3. US Natural Gas Program Expenditures by Sector, 2011-2022



Canadian natural gas spending amounted to approximately \$400 million USD in 2022⁴. For a more comprehensive view of Canadian expenditures and savings over time, please visit the full Efficiency Canada report.⁵

⁴ This estimate captures a portion of Canadian spending on undifferentiated fuels. Because of jurisdictional reporting, the Efficiency Canada Report describes a large portion of spending as “multi-fuel” where distinguishing between energy type is not straightforward. This report opts to allocate multi-fuel spending was between both fuel types, which may slightly inflate total North American numbers. We urge readers to consult Efficiency Canada’s report for more information on Canadian trends over time.

⁵ Nippard, A., Gaede, J. 2023. The 2023 Energy Efficiency Programs Update: Provinces and Territories. Efficiency Canada, Carleton University, Ottawa, ON.

1 Introduction

Data Collection Methodology

CEE modified our data collection approach in 2022 to reduce the burden on program administrators and avoid duplicating compilation efforts of peer organizations. Instead of directly surveying program administrators, we report data collected by three other organizations: American Gas Association (AGA)⁶, Efficiency Canada⁷, and the US Energy Information Administration (EIA)⁸. While CEE has collected all electric program data for this report in the past, CEE currently relies on data from the EIA to account for US electric data. Collaboration with AGA has continued to streamline data collection on natural gas programs in the US.

For data on Canadian natural gas and electric programs, we rely on Efficiency Canada. This recent transition in data sourcing has led to the current streamlined version of our Annual Industry Report. Because of the updated methodology, we caution against making comparisons beyond those provided in this year's report. As previously indicated in the Purpose and Limitations and in the Terms of Use, limitations in the comparability and consistency of the data reduce their analytical usefulness below the state or sometimes the regional level.

Consistent with previous iterations of this report, CEE carries over information from the previous year for program administrators who did not respond to the AGA survey⁹. That missing data estimation allowed for an overall estimate of North American program activity rather than assume totals for nonresponsive program administrators dripped completely to zero. Values for 2021 have been retroactively updated this year to account for additional data being collected from US gas utilities.

⁶To find out more, please visit [American Gas Association \(aga.org\)](https://www.aga.org)

⁷To find out more, please visit [Efficiency Canada - The National Voice for an Energy Efficient Economy](https://www.efficiencycanada.ca)

⁸To find out more, please visit [U.S. Energy Information Administration \(EIA\)](https://www.eia.gov)

⁹If a program administrator has not responded in one year, we carry over 100% of their most recent reported budgets and savings. For each program administrator where data is carried over from the previous year, savings and expenditures are adjusted by the average rate of change in received responses to conservatively interpolate findings for nonrespondents.

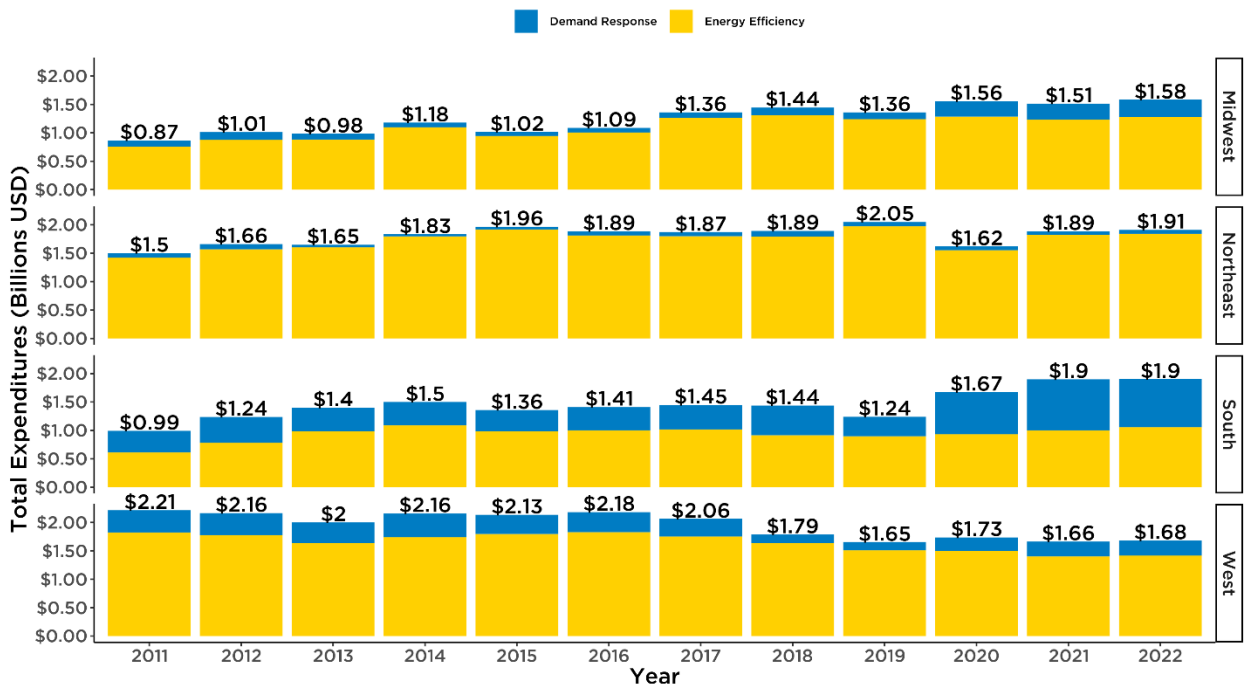
2 North American Expenditures

In 2022, combined spending on gas and electric DSM programs across the US and Canada reached \$9.7 billion USD, approximately a four percent increase from 2021 expenditures.

2.1 Spending on Electric Programs in 2022

In 2022, US electric energy spending increased by approximately one and a half percent from 2021 levels, from \$7.1 billion to \$7.1 billion (Figure 2). The years 2020 onward utilize a different data source (EIA Form 861) than the previous data points (CEE’s Annual Industry Report survey). As a result, the sector breakdowns for 2020-2022 and previous years are not identical as EIA captures fewer categories than the previous survey. Compared to last year’s EIA data, residential spending increased by approximately two and a half percent and combined commercial and industrial spending increased by approximately two and a half percentage points. Demand response (DR) spending remained steady as well, decreasing one and a half percentage points. Observing the \$7.1 billion in electric DSM expenditures across the various regions of the US, the proportional growth of DR to energy efficiency spending has remained stable from 2021 to 2022 (see Figure 4). The increase in DR spending in the south, relative to its efficiency spending, has continued in 2022 and is expected to continue into 2023 as well. Despite the past decline in both EE and DR spending in the west, spending appears to have reached a steady state. Among other regions, we see consistent spending to last year.

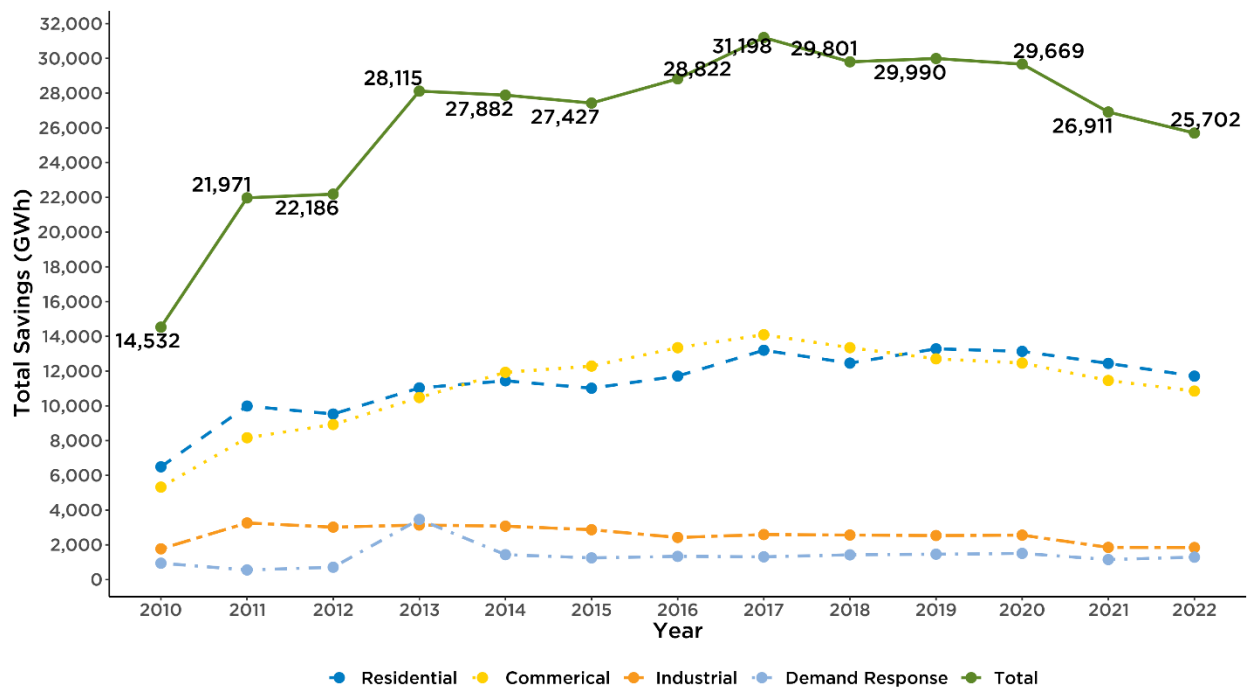
Figure 4. US Electric DSM Expenditures by Region and Type, 2011-2022



On the Canadian side, program administrators spent approximately \$690 million USD in 2022¹⁰ on electric programs. According to Efficiency Canada’s report, Canada saw an increase in electric spending overall, they also saw an increase in spending on low-income programs of approximately 14.8%¹¹.

2.2 Where and How Much Energy was Saved in 2022

Figure 5. US Energy Saved (GWh) from DSM Programs by Sector, 2010-2022¹²



North American electric DSM programs saved approximately 28,400 GWh (25,700 GWh in the US and 2,710 GWh in Canada), which is a slight decrease in savings from almost 30,000 GWh (26,900 in the US and 2,960 in Canada) saved across North America in 2021. US Energy savings decreased by approximately four and a half percent between 2021 and 2022, signaling a decelerating rate of decay in the electric savings observed last year (a nine percent decrease between 2020 and 2021). Canadian program administrators also reported a decrease in net

¹⁰ This estimate captures a portion of Canadian spending on undifferentiated fuels. Because of jurisdictional reporting, the Efficiency Canada Report describes a large portion of spending as “multi-fuel” where distinguishing between energy type is not straightforward. This report opts to allocate multi-fuel spending was between both fuel types, which may slightly inflate total North American numbers. We urge readers to consult Efficiency Canada’s report for more information on Canadian trends over time.

¹¹ Nippard, A., Gaede, J. 2023. The 2023 Energy Efficiency Programs Update: Provinces and Territories. Efficiency Canada, Carleton University, Ottawa, ON.

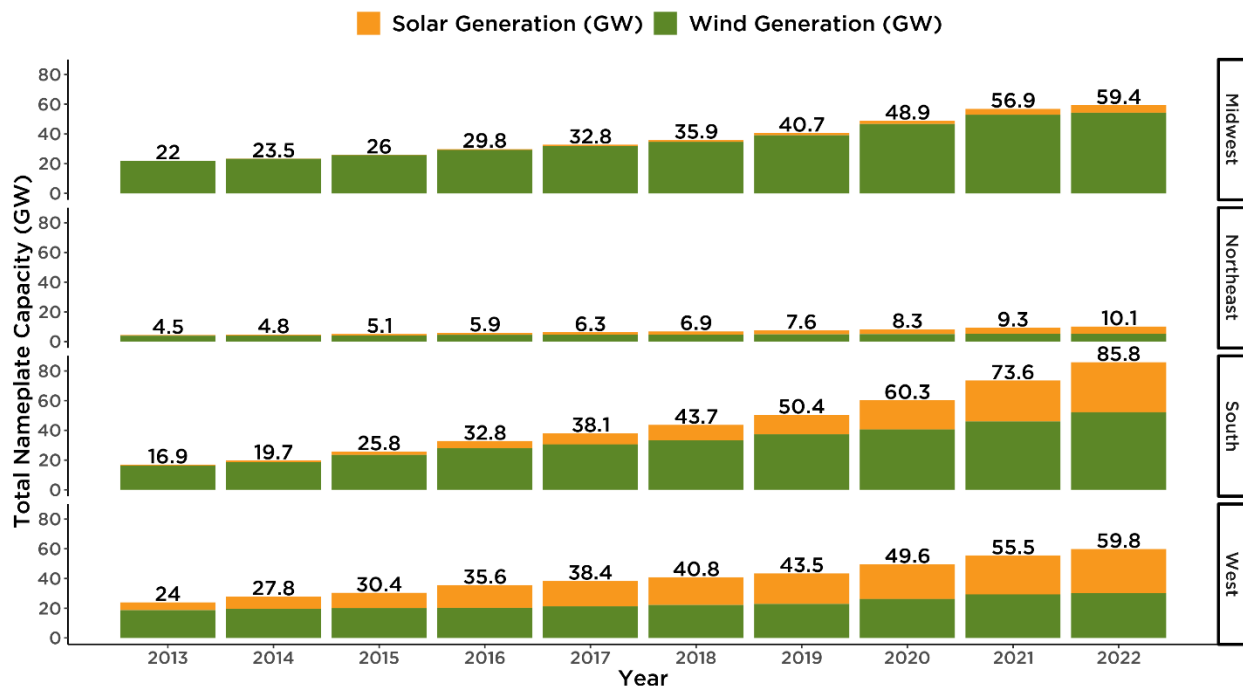
¹² Based on data from EIA.

incremental electric savings from energy efficiency programs with a total of 2,710 GWh. While increased expenditures are typically correlated with increased savings from programs, there are many possibilities why we don't observe that here. For instance, as codes and standards shift, energy savings may be more expensive and hard-to-reach, requiring more expensive programs.

2.3 Grid and Renewable Infrastructure Trends

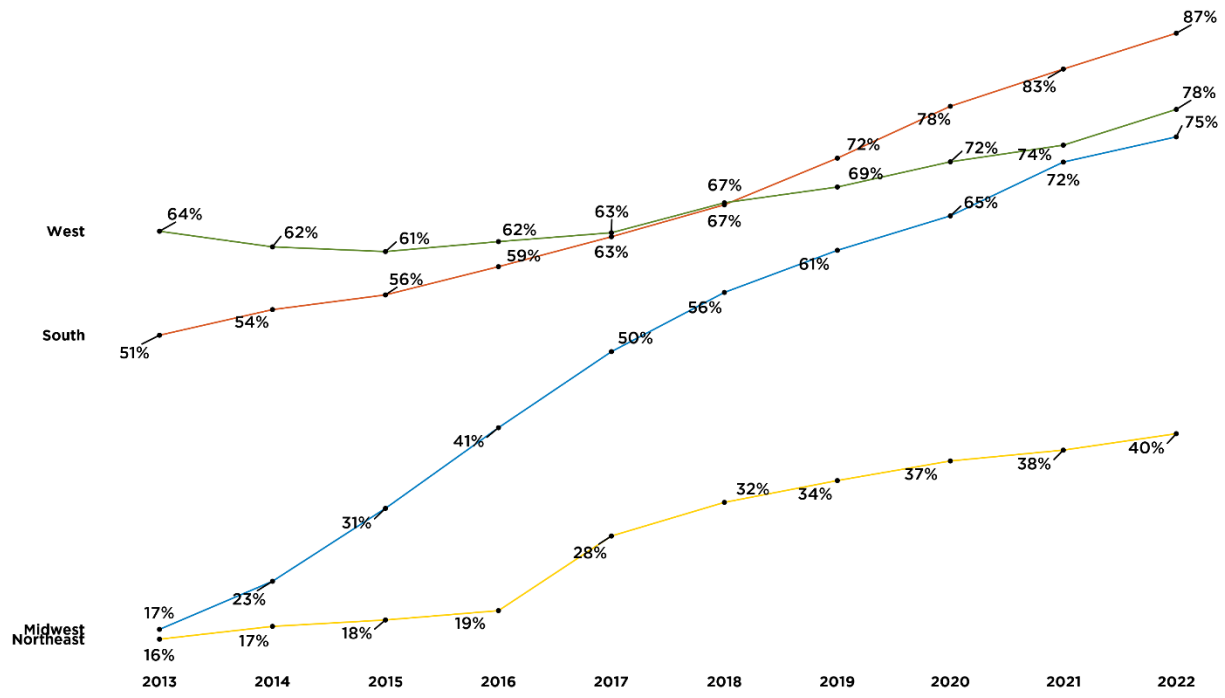
Infrastructure and supply-side resources are included in this report on account of the fact they're undeniably related to program administrators' ability to decarbonize and support demand flexibility. As shown in Figure 8 and Figure 9, wind and solar generation are both increasing on a steady trajectory. We see the largest increase in solar generation and wind generation in the southern region of the United States¹³. Figure 9 highlights the fact that the prevalence of advanced meters also continued its steady trend of growth. These highlight the increasing importance of understanding the value of energy saved at specific times and locations.

Figure 6. Total Intermittent Renewable Nameplate Generation in the United States by Region and Technology, 2013-2022



¹³ This data is from the EIA, comparable Canadian data wasn't available.

Figure 7. Proportion of all Electric Meters that are Advanced by Region, 2013-2022

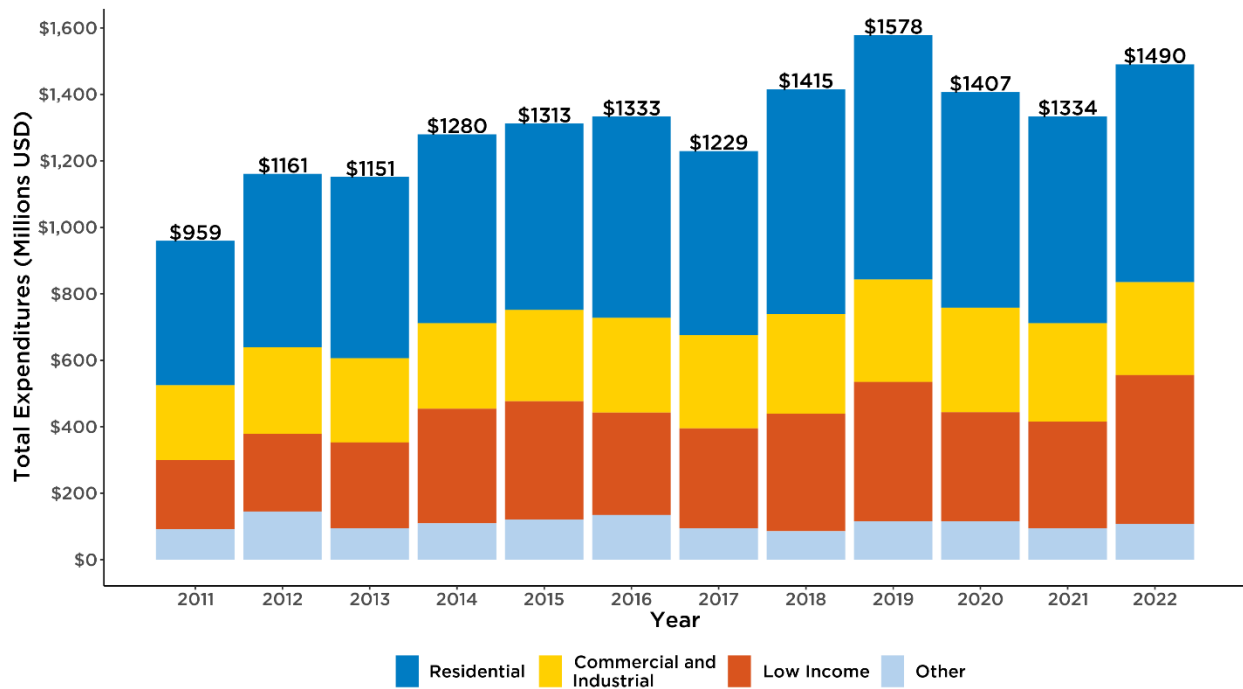


3 Changes in Natural Gas Savings and Expenditures

AGA collects data from US program administrators on spending, savings, and budgets for natural gas programs. As noted in the methodology section, 2021 data has been updated to account for a re-survey of non-responsive respondents last year. Canadian data comes from Efficiency Canada.

3.1 Spending on Natural Gas Programs in 2022

Figure 3. US Natural Gas Program Expenditures by Sector, 2011-2022



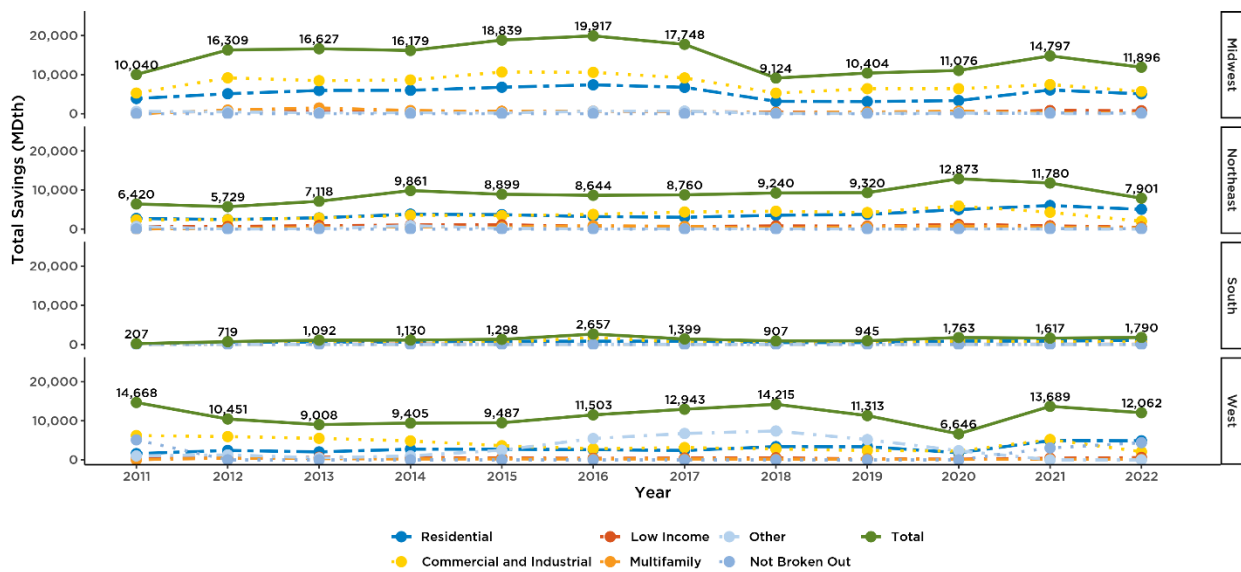
In the United States, expenditures further rebounded from \$1.33 billion USD, to approximately \$1.5 billion (see Figure 3). Such a strong rebound from the decreases in spending during Covid years signals a general commitment to the role of natural gas in energy efficiency, but also the effective decarbonization of the built environment. We can also observe a strong increase in program administrators spending on low-income programs in 2022 of almost 40% to approximately \$449 million USD. Canadian natural gas spending amounted to approximately

\$400 million USD in 2022¹⁴. For a more comprehensive view of Canadian expenditures and savings over time, please visit the full Efficiency Canada report.¹⁵

3.2 Where and How Much Natural Gas Was Saved in 2022

2022 North American natural gas savings amounted to approximately 414 million therms which is a decrease from the 528 million therms saved in 2021. In the United States, program administrators reported 336 million therms saved in 2022, approximately a 20% decrease from last year’s savings.

Figure 8. Total US Energy Saved (MDth) by Region and Year, 2011-2022



¹⁴ This estimate captures a portion of Canadian spending on undifferentiated fuels. Because of jurisdictional reporting, the Efficiency Canada Report describes a large portion of spending as “multi-fuel” where distinguishing between energy type is not straightforward. This report opts to allocate multi-fuel spending was between both fuel types, which may slightly inflate total North American numbers. We urge readers to consult Efficiency Canada’s report for more information on Canadian trends over time.

¹⁵ Nippard, A., Gaede, J. 2023. The 2023 Energy Efficiency Programs Update: Provinces and Territories. Efficiency Canada, Carleton University, Ottawa, ON.

Appendix A Historical Comparison of Data Collection Methodology

As noted in the Introduction, this year we again relied on EIA 861 and data collected by the AGA and Efficiency Canada data rather than conducting primary data collection with members. This change was designed to reduce duplication of efforts and reporting burden for program administrators. To quantify the effects of the data collection methodology change on historical trends, we recalculated historical expenditures for 2011-2019 using the new 2021 methodology for 2020 EIA data.¹⁶

Results, displayed below, suggest that energy efficiency spending data from EIA is consistent across the old and new methodologies, but that the new methodology captures more DR spending.

Figure 9. Total Electric DSM Expenditures from CEE’s AIR and EIA Form 861 2011-2019

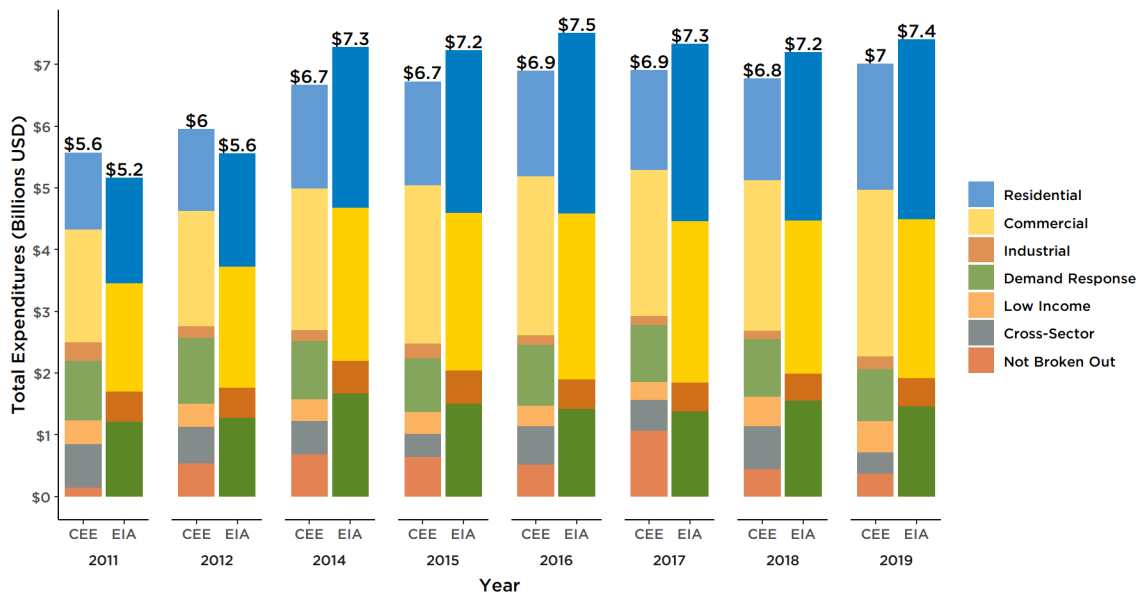


Figure 9 above plots the differences between CEE’s primary survey results (as presented in previous reports) and data from EIA form 861, consistent with the new methodology. Overall expenditures are generally consistent across both methodologies year over year. There are some consistent differences in sector attribution, and this comparison highlights spending captured in EIA data that may not have been included in CEE’s survey, specifically related to DR.

¹⁶ Data from the 2016 EIA Form 861 collection effort are available at “Electric power sales, revenue, and energy efficiency Form EIA-861 detailed data files,” US Energy Information Administration, <http://www.eia.gov/electricity/data/eia861/>.

Figure 10. Percent Difference Between EIA Expenditures and CEE’s AIR Total Expenditures 2011-2019

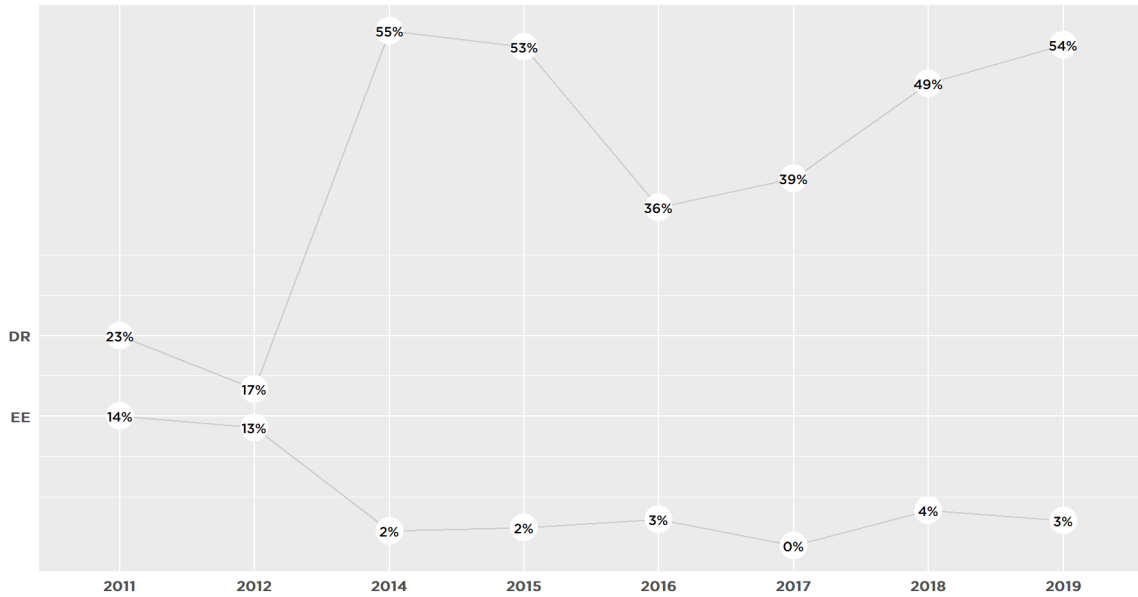


Figure 10 highlights the percent difference between EIA and Annual Industry Report expenditures over time, broken down by energy efficiency and DR. Starting from 2014, a year after EIA data separated DSM expenditures into energy efficiency (EE) and DR expenditures, there is less than five percent difference between data sources in tracking of EE expenditures, but the EIA accounted for more DR spending than CEE’s primary survey efforts. In transitioning data collection methodology, energy efficiency data can be compared across years, and the current year’s Annual Industry Report supports a more complete account of total DR expenditures.