Xcel Energy's Sherco Solar project began delivering carbon-free electricity in 2024 from its site near Becker. | Image courtesy of Xcel Energy

2025 ENERGY FACTSHEET

Tracking MN's clean energy trends

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Three types of electric vehicles available from Ziegler Truck Group in Rogers.

- For the fifth year in a row, zero-carbon sources supplied the majority of Minnesota's electricity. In 2024, 53% of the state's power came from renewable and nuclear energy, outpacing the national average of 42%.
- Minnesota's power sector hit a new record low in carbon emissions, cutting another 4% between 2023 and 2024. Emissions are now 52% below 2005 levels, well beyond the national reduction of 38%.
- The state continues to boost its energy independence. Imported electricity made up just 11% of consumption in 2024, down from 13% the year before. Minnesota used 65 terawatt-hours of electricity and only imported 7.1.
- Renewable energy held steady, generating one-third of Minnesota's electricity in 2024. In the past decade, coal's share has dropped from 43% to 20%, while renewables and zero-carbon sources have risen.
- Minnesota ranked No. 10 in the nation for overall energy efficiency, according to the 16th edition of the American Council for an Energy-Efficient Economy's State Scorecard. It remains the top-ranked state in the Midwest.
- Since 2001, Minnesota's energy productivity has jumped 37%, including a 9% increase in the past five years.
- Minnesota businesses and residents saved more than $307 million in energy costs from the Energy Conservation Optimization (ECO) Act in 2021 and 2022, the most recent years for which data is available.
- Minnesota is home to more electric vehicles than ever before, with 65,679 EVs on the road as of November 2024. However, new EV registrations fell 44% in 2024 from record levels in 2023, totaling 9,669. Nationally, EV sales growth also slowed but still rose 6.5% in 2024.
- Preliminary data shows Minnesota added 388 megawatts of solar capacity in 2024, a 35% increase over the previous year. In the past five years, renewables accounted for 99% of all new capacity.
- Minnesota is positioning itself at the forefront of next-generation energy technologies, including the production of clean hydrogen and sustainable aviation fuel (SAF).

Center for Energy and Environment (CEE) staff working to improve energy efficiency in a multifamily apartment building in St. Paul | Image courtesy of CEE

2025 MINNESOTA ENERGY FACTSHEET

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Minnesota continued to invest in the clean energy transition in 2024. With milestones including the first phase of the 710 megawatt (MW) Sherco Solar project generating electricity and the state launching a new $3 million program to expand union construction apprenticeship opportunities for clean economy jobs, Minnesota showcased its commitment to clean energy advancement through its economic growth and forward-thinking policy.

The deployment of new clean energy projects took shape through different approaches in 2024. Notably, the Minnesota Legislature passed the Minnesota Energy Infrastructure Permitting Act, which streamlines the permitting process for large-scale energy projects at the Minnesota Public Utilities Commission (PUC). This legislation strives to reduce bureaucratic redundancies and improve efficiencies, facilitating the timely development of wind, solar, and battery storage projects.

In addition, new innovative financing tools reduced investment barriers for clean energy projects in 2024. The Minnesota Climate Innovation Finance Authority (MnCIFA) had its first operational year, hiring its inaugural executive director and distributing loans to multiple projects. Similarly, the state updated the Commercial Property Assessed Clean Energy (C-PACE) financing program to align with national standards, offering significant incentives to commercial property owners looking to invest in clean energy improvements.

In regards to energy infrastructure, the Midcontinent Independent System Operator (MISO) approved the Tranche 2.1 transmission portfolio, building on the investments made in 2022 to further enhance the Midwest electricity grid. This unprecedented approval includes a $21.8 billion investment over 3,631 miles in the Midwest. In Minnesota, MISO anticipates making an investment of $4.3 billion, which would provide at least 8,684 local jobs and generate an economic output of up to $4.8 billion.

The combination of favorable market conditions, effective financing tools, and streamlined policies provided the essential scaffolding for the business community to implement energy projects across Minnesota, showcasing a dedicated effort to achieving the state's commitment to its 100% carbon-free electricity standard required by 2040.

The Minnesota Energy Factsheet is an annual publication from Clean Energy Economy MN (CEEM) and the Business Council for Sustainable Energy (BCSE) that offers a data-driven snapshot of Minnesota's energy sector. It highlights key metrics and emerging trends, with data contributions from BloombergNEF and the Minnesota Department of Commerce. The Factsheet serves as a companion to BCSE's *2025 Sustainable Energy in America Factbook*.

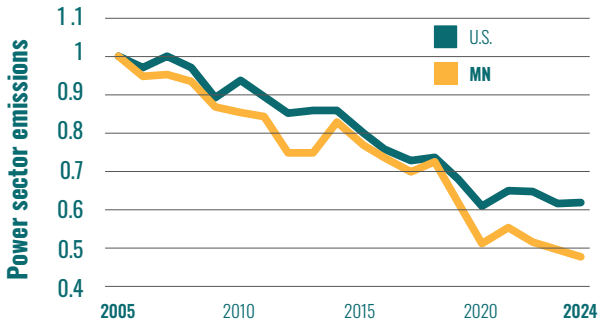
This report provides a fact-based overview of Minnesota's energy sector, presenting key metrics and highlighting recent trends.

Overview of Minnesota's Electric Sector

For the fifth consecutive year, zero-carbon power accounted for the majority of Minnesota's electricity generation. Fifty-three percent came from renewable and nuclear sources, significantly outpacing the national share of 42 percent. Minnesota's clean energy industry employs more than 62,000 individuals, growing five times faster than the overall economy at 4 percent in 2023.

Signed into law during the 2023 Minnesota Legislative Session, Minnesota requires that all electricity generated or procured for use in Minnesota be from carbon-free resources by 2040, with the specific definition of carbon-free currently being debated at the state's PUC.

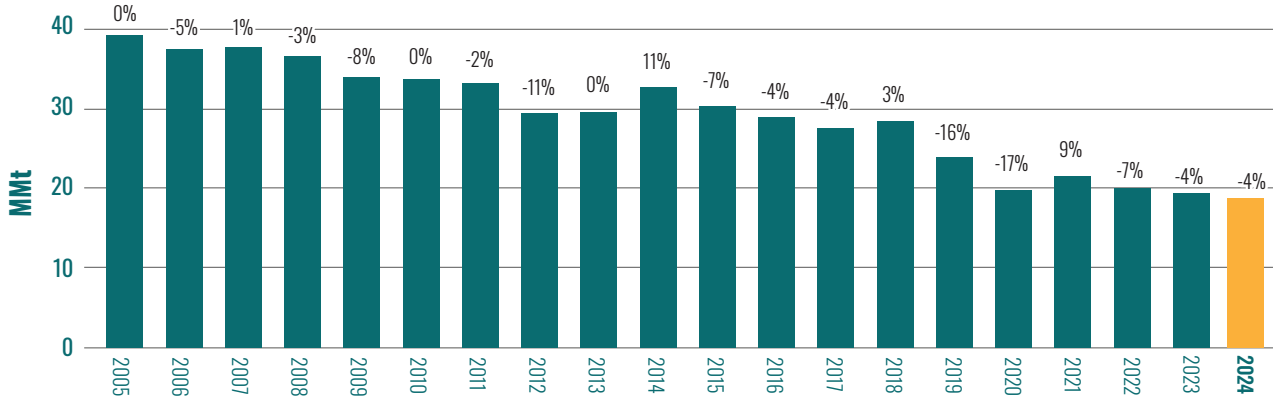
Figure 1: Minnesota power sector carbon (CO^2) emissions vs U.S. emissions



Source: BloombergNEF, EIA. *Indexed to 2005 levels*

Minnesota outpaces the nation in power sector greenhouse gas (GHG) reductions. As of 2024, Minnesota has reduced its emissions by 52 percent compared to 2005, exceeding the nation's overall 38 percent reduction (Figure 1). Most notably, Minnesota's power sector emissions declined to an all-time low, shaving another 4 percent off its emissions year-on-year from 2023 to 2024 (Figure 2).

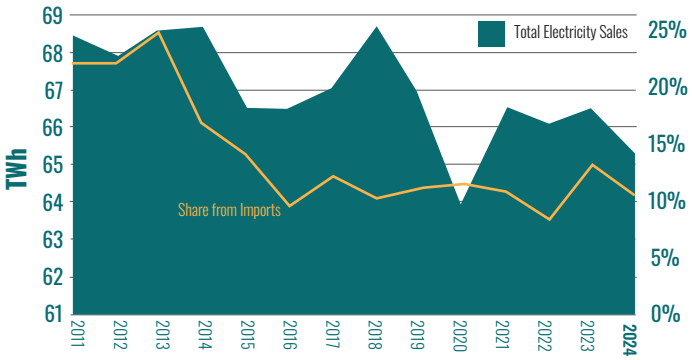
Figure 2: Minnesota power sector carbon emissions with year-over-year percent changes



Source: BloombergNEF, MN Power Emissions. MMt = million metric tons

Minnesota consumed 65 terawatt-hours (TWh) of electricity and imported 7.1TWh in 2024 (Figure 3). The state boosted its energy independence as imported electricity accounted for 11 percent of consumption in 2024, down from 13 percent in 2023 and 14 percent in 2015, respectively. Total electricity consumption in Minnesota declined over 1TWh in 2024 after a slight increase in 2023 (Figure 3).

Figure 3: Minnesota electricity sales and generation



*Green line corresponds with the left axis, yellow line corresponds with the right axis

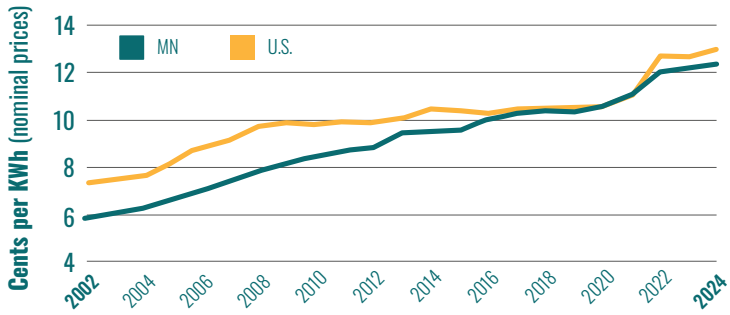
Source: BloombergNEF, EIA.

Note: Excludes generation from fuel oil

In addition to MISO's transmission investments, Minnesota's utility companies have committed to improving their infrastructure and expanding energy production. For example, Xcel Energy announced in October 2024 its plan to invest more than $45 billion over the next five years in new generation, transmission, and other infrastructure projects. This investment includes installing a second high-voltage circuit on two segments of the existing Brookings County-Hampton transmission line, which the PUC approved in 2024. Utility companies' strategic investments are expected to decrease congestion on transmission lines and ultimately maintain energy affordability for Minnesota residents and businesses.

Over the last decade, consumer electricity prices in Minnesota, measured on a cents-per-kilowatt-hour (cts/kWh) basis, have continued to rise for residential, commercial, and industrial clients (Figure 4). These increases are due to a number of factors, including higher natural gas prices in 2024 and utility infrastructure investments. In 2024, Minnesota consumer electric rates averaged 12.36cts/kWh, up 1.2 percent from 12.21cts/kWh in 2023 and up 30 percent since 2015 in nominal terms. Minnesota's average electricity prices today are below the U.S. average of 12.99cts/kWh (Figure 4), up 2.4 percent from 2023 in nominal terms.

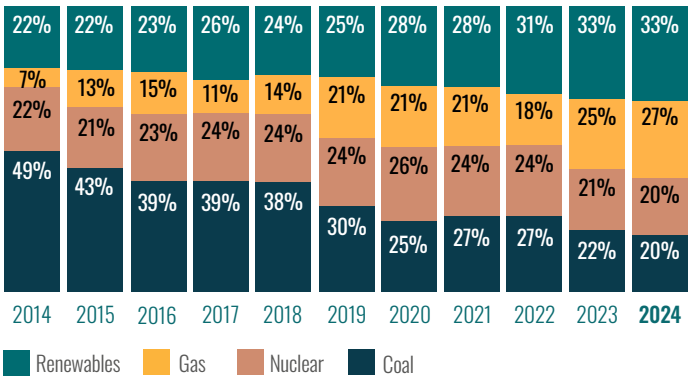
Figure 4: Minnesota average retail electricity prices relative to U.S. average



Source: Minnesota Department of Commerce, EIA.

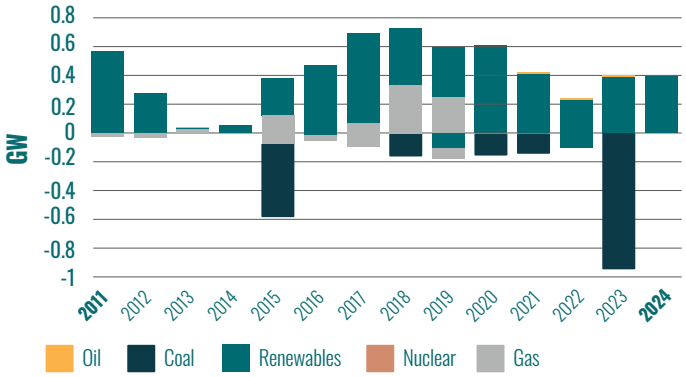
Minnesota's electricity generation mix continues to trend toward renewables and natural gas and away from coal-fired generation (Figure 5). In the last ten years, renewables accounted for 84 percent of all new capacity, and in the past five years, renewables accounted for 99 percent of all new capacity, with all other additions being natural gas and oil plants. In 2024, preliminary data shows Minnesota built exclusively renewable power plants, including 388MW of new solar generation (Figure 6).

Figure 5: Minnesota electricity generation mix by technology



Source: BloombergNEF, EIA.

Figure 6: Minnesota capacity build and retirements



Source: Minnesota Department of Commerce, EIA.

In 2024, 19.23TWh of electricity generated in Minnesota came from renewable sources; 11.42TWh of electricity generated in Minnesota came from coal. All coal-fired power plants located in Minnesota plan to be retired by 2035, with 1.2GW already retired over the last five years. For context, 2GW of electricity can power roughly 1.5 million American homes. Minnesota's commitment to its 100% carbon-free electricity standard required by 2040, combined with implementing Minnesota's Climate Action Framework and innovative financing tools, lend optimism for this trend to continue.

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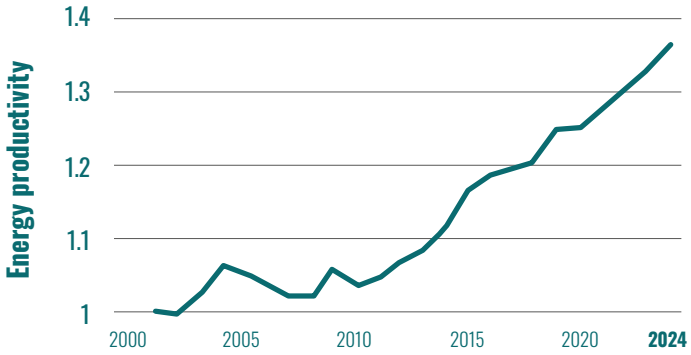
Sustainable Energy Deployment

Energy Efficiency

In the latest edition of the State Energy Efficiency Scorecard, the American Council for an Energy-Efficient Economy (ACEEE) ranked Minnesota tenth for its overall energy efficiency programs, making it the highest-ranking state in the Midwest. Minnesota also trends positively in its energy productivity, which measures the economic benefit gained from each unit of energy used. The state has seen a 37 percent boost in energy productivity since 2001 and a 9 percent increase in the last five years (Figure 7). Minnesota continues modernizing its policies and making economic decisions supporting its energy efficiency leadership.

Figure 7: Minnesota energy productivity

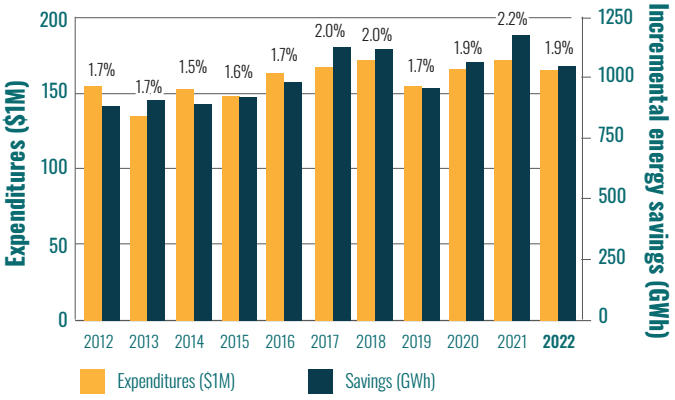


Source: BloombergNEF.

To strengthen the state's Conservation Improvement Program (CIP), Gov. Tim Walz signed the Energy Conservation and Optimization (ECO) Act into law in 2021. ECO is a utility-administered program with regulatory oversight provided by the Minnesota Department of Commerce. Utility ECO portfolios promote energy-efficient technologies and practices by offering utility customers rebates, as well as marketing and technical assistance.

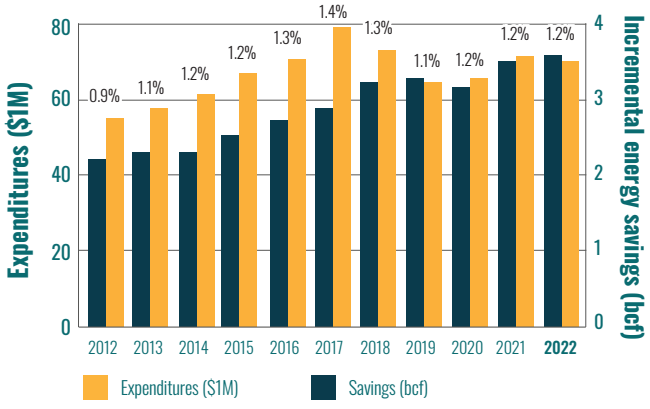
ECO programs help Minnesota households and businesses lower energy costs by using electricity and natural gas more efficiently. According to the Minnesota Department of Commerce, through 2022 (the most recent statewide ECO data available), Minnesota's electric utilities have generally met or exceeded 1.5 percent annual energy savings each year (Figure 8). Additionally, the state's natural gas utilities have generally met or exceeded 1 percent energy savings each year (Figure 9). According to the most recent ECO report to the legislature, Minnesota businesses and residents saved more than $307 million in energy costs from ECO for 2021 and 2022 (most recent data available). In the same report, it's estimated that roughly 14.6 trillion-Btus of energy has been saved, which equates to the necessary energy to heat, cool and power more than 148,000 Minnesota homes for a year.

Figure 8: ECO electric utilities results



Source: Minnesota Department of Commerce.

Figure 9: ECO natural gas utilities results



Source: Minnesota Department of Commerce.

Hydrogen and Sustainable Aviation Fuel (SAF)

Despite only receiving final guidance on the federal 45V tax credits in January 2025, hydrogen plans expanded in 2024. Nationally, total announced capacity grew 27 percent year-on-year from 2023 to 2024. This represents approximately 16.4 million metric tons of planned hydrogen capacity. More specifically, developers added 79MW of operational electrolyzers to produce green hydrogen in the United States in 2024. It is important to note that the cost of producing green hydrogen in the United States currently exceeds the cost to produce blue hydrogen, which is produced from natural gas with carbon capture. Looking ahead to 2025, electrolyzer manufacturers and green hydrogen developers now have the necessary clarity that they were waiting for since the original federal incentives passed in August 2022, pending any changes from the new federal administration's priorities, to proceed with anticipated hydrogen projects.

As more hydrogen projects are developed utilizing federal incentives, Minnesota businesses and industries stand to benefit. Opportunities include boosting manufacturing, decarbonizing sectors that are difficult to electrify – such as aviation or industrial processes — and producing sustainable aviation fuel (SAF), green iron, and green ammonia, as is being explored by numerous entities throughout the state.

In 2023, the GREATER MSP Partnership, a nonprofit based in the Twin Cities, established the Minnesota SAF Hub through a coalition of organizations, including industry leaders Airbus and Delta, amongst many more. The initiative aims to create a supply chain that can produce SAF on a large scale, including for use at the Minneapolis–Saint Paul International Airport. If successful, the Hub would position Minnesota as a global leader in decarbonizing air travel.

Minnesota made major strides toward realizing that vision in 2024. The Minnesota SAF Tax Credit, administered by the Minnesota Department of Agriculture, offers $1.50 per gallon for SAF produced and sold in the state between July 1, 2024, and June 30, 2030. In August, the Federal Aviation Administration announced a $16.8 million grant to convert Gevo's Luverne facility into Minnesota's first fully integrated alcohol-to-jet SAF plant. This complements a $1.46 billion conditional loan guarantee from the U.S. Department of Energy for Gevo's Lake Preston, South Dakota site, which will operate in tandem with Luverne to build a regional SAF network. Minnesota's momentum continued in October 2024 as DG Fuels announced plans to build a $5 billion SAF plant in Moorhead, which is set to produce 193 million gallons annually and generate $50 billion in economic impact.

National demand is surging. U.S. SAF demand has jumped from 5 billion to 134 billion gallons from 2020 to 2023 and is projected to reach 1.6 trillion gallons by 2030. A Demand Consortium in Minnesota that includes Bank of America, Deloitte, Delta, and Ecolab has committed to purchasing the first several million gallons of SAF annually in late 2025 to support early market development. These commitments aim to scale production, reduce costs, and provide stable long-term demand.

Looking ahead, Minnesota's SAF Hub is also exploring future pathways to expand production beyond 100 million gallons annually by 2035. These efforts include improving existing fuel pathways, exploring new feedstocks like winter oil seeds and woody biomass, and advancing emerging technologies like power-to-liquid fuels.

Gevo's development facility in Luverne. | Image courtesy of Gevo, Inc.

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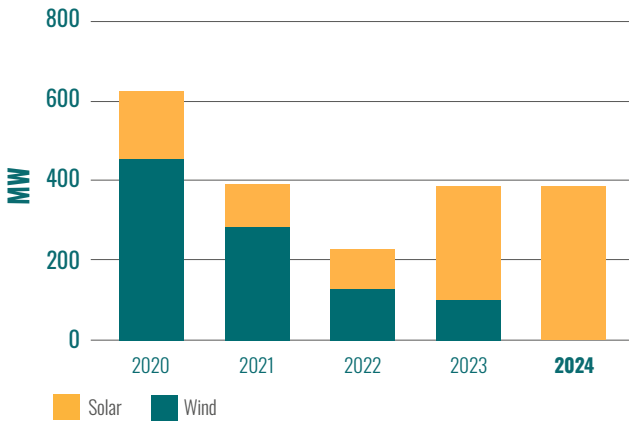
Renewables

Innovative financing tools and favorable state policies continue to drive renewable electricity investment in Minnesota. Minnesota's standard of 100% carbon-free electricity by 2040 provides targets for electric utilities, including investor-owned, municipal, and rural electric cooperatives, to transition away from carbon-producing sources and toward clean energy, such as wind and solar. The Minnesota Energy Infrastructure Permitting Act streamlines the permitting process for clean energy projects, shortening implementation timelines. In particular, the act excludes wind and solar from needing a certificate of need from the PUC, an often lengthy step in the approval process. This significant legislation is key to speeding up clean energy deployment in Minnesota, as siting and permitting reform efforts remain stalled at the federal level.

Leading by example, Xcel Energy began the retirement of its over 2GW Sherco coal plant in Becker in December 2023. The company retired one of three coal units and plans to retire Sherco's remaining coal-fired units in 2026 and 2030, marking the company's complete exit from coal. In October 2024, Xcel Energy connected the first 220MW phase of its $1.1 billion Sherco Solar project to the electrical grid. The construction process provided 400 union jobs. When all phases are completed, Sherco Solar will be one of the largest solar facilities in the Midwest, generating 710MW of electricity, enough to power more than 150,000 homes annually. Sherco Solar will fully replace the capacity of the coal-fired unit that retired in 2023. In addition, the company will build a 10MW, 100-hour battery storage facility as a pilot project at the Sherco site.

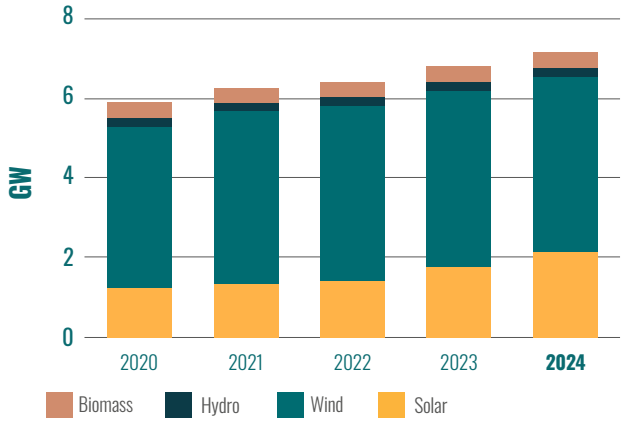
Over the last decade, Minnesota added primarily renewable energy to its generation mix, adding 4.1GW. These additions included 2.1GW of solar and 1.9GW of wind, plus 40MW of biomass. In the past five years, 2GW of new renewable capacity was added, including 1.1GW of solar and 963W of wind (Figure 10). In 2024, preliminary Minnesota Department of Commerce data shows that Minnesota added 388MW of solar, which would amount to a 35 percent increase year-on-year from 2023. Preliminary data show no other capacity additions or retirements in 2024 (Figure 10). The overall growth trend would lead Minnesota's total installed renewable capacity to rise to 7.2GW in 2024 (Figure 11). Wind accounts for nearly two-thirds of total renewable capacity, while solar is responsible for almost one-third. Final totals from the Minnesota Department of Commerce will likely be available by the end of 2025. Between forward-thinking policies, innovative financing tools, and favorable market factors, Minnesota continues to expand renewable capacity.

Figure 10: Minnesota wind and solar capacity additions



Source: Minnesota Department of Commerce.

Figure 11: Minnesota cumulative renewable capacity



Source: Minnesota Department of Commerce.

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Electric Vehicles

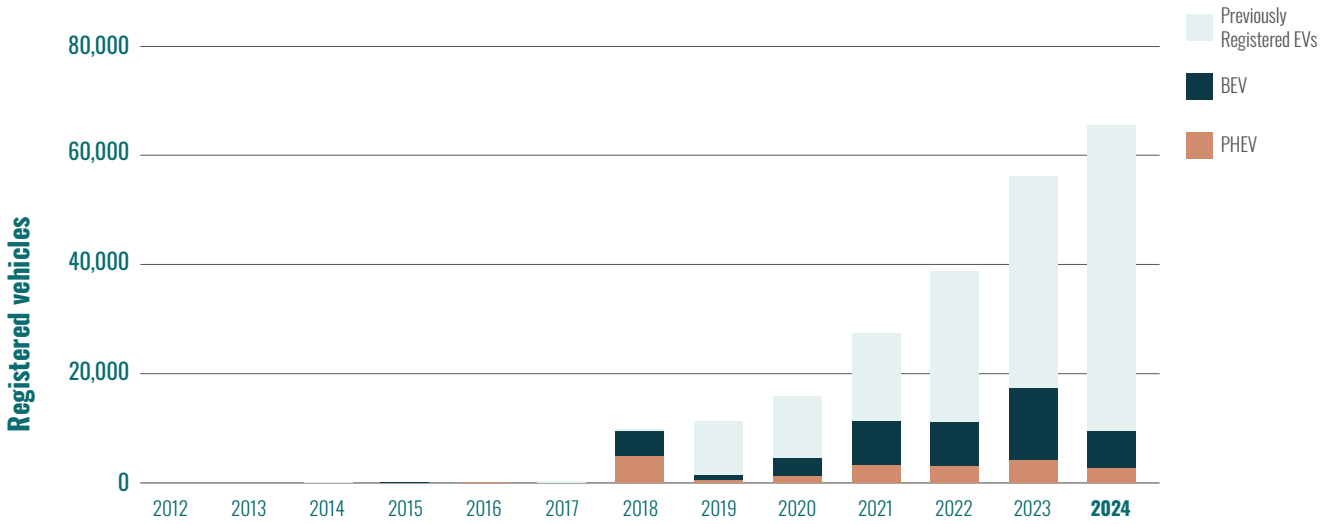
Supported by state and federal incentives, many Minnesotans chose electric vehicles (EVs) for their transportation needs in 2024. According to the Minnesota Department of Transportation (MnDOT), as of November 2024, the state had approximately 65,679 electric vehicles (EVs) on the road, equivalent to 11.53 EVs per 1,000 people. Nationally, passenger EV sales – including battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs), grew 6.5 percent year-on-year. An estimated 1.55 million electric cars were sold in the United States in 2024.

Despite the increase in total EVs on the road, Minnesota's annual EV registrations decreased by 44 percent between 2023 and 2024. There were 7,050 new BEV registrations in 2024 – nearly a 47 percent decrease from 2023, which saw 13,204 registrations (Figure 12). Similarly, new PHEV registrations fell 37 percent to 2,619 in 2024 from 4,179 in 2023. However, despite this decline, Minnesotans are still registering EVs more frequently than a decade ago, with only 67 total registrations in 2015.

The Minnesota Electric Vehicle Rebate Program, passed by the 2023 Minnesota Legislature and launched in February 2024, offered rebates of up to $2,500 for new EVs and $600 for used EVs on a first-come, first-served basis. Administered by the Minnesota Department of Commerce, this program was quickly exhausted, with Minnesotans receiving approximately $15.716 million in first-time rebates for purchasing electric vehicles. Through this initiative, Minnesota became the only second Midwestern state, after Illinois, to introduce an EV Rebate Program.

Recognizing that the transportation sector is Minnesota's largest contributor to GHG emissions, the Minnesota Legislature continued to finetune policies that encourage the sector's decarbonization. One provision in a 2024 omnibus bill directs Metro Transit to develop a plan to transition its bus fleet to zero-emission vehicles by 2035 in the seven-county metro area. Additionally, the Minnesota Legislature established a Critical Materials Recovery Advisory Task Force in a separate legislative package. This task force will advise the Minnesota Pollution Control Agency on strategies to increase the recovery of critical materials from end-of-life products, which are essential for clean energy technologies, including EVs.

Figure 12: Minnesota cumulative annual electric vehicle registrations



Source: Minnesota Department of Transportation. Note: PHEV is plug-in hybrid electric vehicles, BEV is battery electric vehicles.

The 2025 Minnesota Energy Factsheet is a project of CEEM and BCSE, with data contributions from BloombergNEF and the Minnesota Department of Commerce. We extend our thanks for the support and generous contributions of this year's sponsors: Marsh, Full Stack Saint Paul and the McKnight Foundation.

A high-voltage transmission line in Maple Grove, representing the critical infrastructure needed to deliver energy across Minnesota.

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