clean energy economy mn

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CLEAN ENERGY: AN ECONOMIC ENGINE FOR MINNESOTA

CLEAN ENERGY AND MINNESOTA

Clean energy is diversifying and transforming Minnesota's economy. Billions of public and private sector dollars have been invested in innovative technologies and services that provide reliable, affordable, and resilient energy to consumers. Minnesota's clean energy resources include: energy efficiency; renewable energy; smart grid; high-efficiency combined heat and power; energy storage; electric vehicles; and demand response. Strong policies and declining costs are helping Minnesota's businesses and entrepreneurs deliver these products and services to the market - creating thousands of jobs and bolstering local economies.

Clean energy companies employed 57,391 Minnesotans at the end of 2021. The renewables sector specifically has fully rebounded from the pandemic, posting nearly 5% job growth with subsector standouts like solar growing 10% last year. Today, 69 percent of all clean energy jobs reside in small businesses that employ fewer than 20 people. Twice as many Minnesotans work in clean energy as compared to the number of lawyers, accountants and auditors, web developers, and real estate agents combined.

Minnesota can expand on its clean energy potential through smart, forward-looking policies which will inject billions of dollars in investments, create thousands of jobs, and provide every Minnesotan with access to cost-competitive clean energy. Clean Energy Economy Minnesota (CEEM) along with our 40+ member companies, stand ready to serve as a resource to help Minnesota unleash innovative solutions that will improve our energy security and independence while driving economic development with clean energy.

WHO WE ARE

Clean Energy Economy Minnesota (CEEM) is an industry-led, nonpartisan, not for-profit organization representing the business case for clean energy in Minnesota. CEEM provides a unified voice for clean energy businesses across the state. Our mission is to provide educational leadership, collaboration, and policy analysis that accelerates clean energy market growth and smart energy policies.

CLEAN ENERGY IS STRENGTHENING OUR ECONOMY

Across the U.S., the clean energy industry now supports 3.1 million jobs representing 41% of all energy sector jobs.[1] Total U.S. revenue from the wide range of advanced energy goods and services exceeded $240 billion in 2020, close to that of food and beverage stores. Clean energy

[1] DOE Report Finds Energy Jobs Grew Faster Than Overall U.S. Employment in 2021, https://www.energy.gov/articles/doe-report-finds-energy-jobs-grew-faster-overall-us-employment-2021

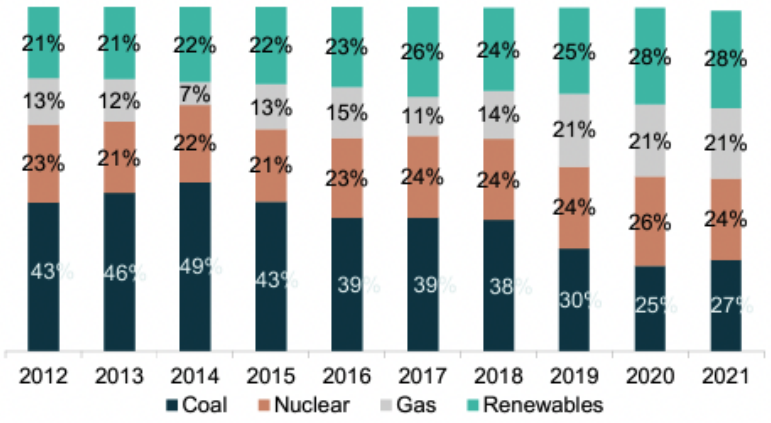
is a more than $1.4 trillion global industry, larger in revenue than pharmaceutical manufacturing, and twice the size of coal mining worldwide.[2]

In Minnesota, clean energy is increasing our energy independence, reducing consumer costs, and enhancing grid reliability. New policy and regulatory models are being implemented to proactively design the energy system of the future. Minnesota's strong clean energy policies and leadership have reduced our reliance on imported fossil fuels for electricity generation to its lowest level in two decades.

RENEWABLES MEETING GROWING DEMAND

Minnesota has made great progress in using cost-competitive renewable energy to meet its electricity demand. In 2021, renewables were the largest source of Minnesota's electricity generation providing 28 percent. Zero-carbon sources, including renewables and nuclear energy, provided 52 percent of Minnesota's electricity, driving a 40 percent reduction in greenhouse gas emissions over the past decade. Meanwhile, coal fell to just over a quarter of Minnesota's electricity generation mix in 2021, a slide from about half in 2014.[3]

Figure 3: MN electricity generation mix by technology

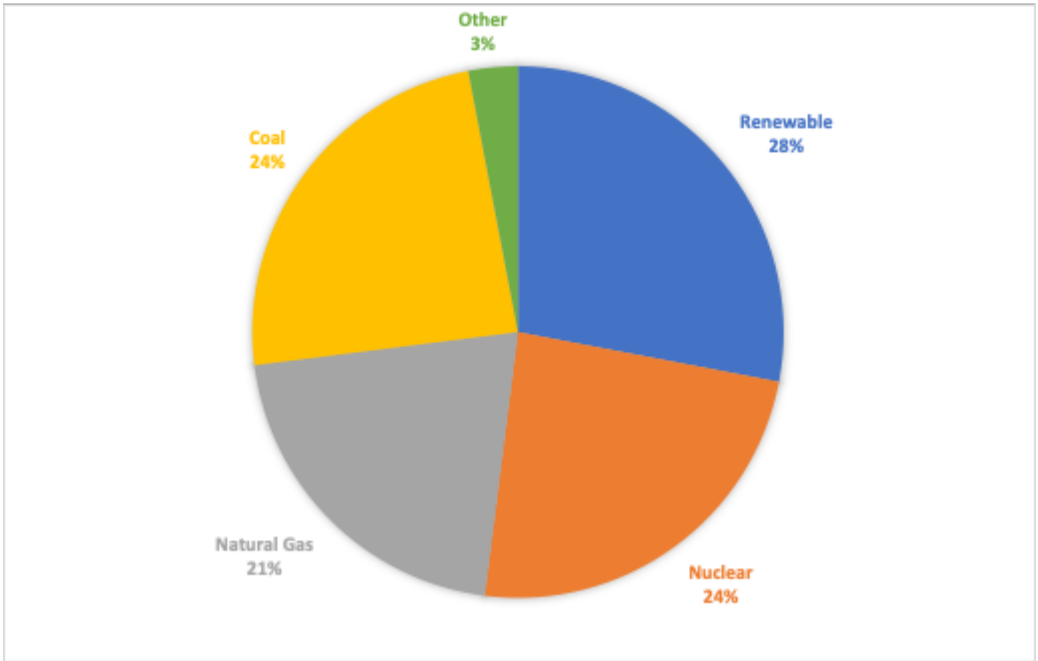


Source: BloombergNEF, EIA.

[2] Advanced Energy Now 2021 Market Report: https://info.aee.net/hubfs/AEN%202021%20Market%20Report/AEN%202021%20Highlights.pdf ; Full Report here: https://info.aee.net/aen-2021-market-report

[3] CEEM Clean Energy Factsheet, BloombergNEF, EIA: https://www.cleanenergyeconomymn.org/wp-content/uploads/2022/04/CEEM-2022-Factsheet-Final-25Apr2022.pdf

Minnesota's Electricity Generation Mix - 2021[4]



Total Generation = 60 TWh
*Other includes non-biogenic municipal solid waste, fossil fuel waste, batteries, hydrogen, purchased steam, pitch, chemicals, tire-derived fuels, waste heat and miscellaneous technologies.

In 2020, renewable energy surpassed coal as the largest source of electricity generation in Minnesota. Today, wind power is the largest source of renewable power at 22 percent of all power generated. Thanks to the wind-rich prairies of southwestern Minnesota, the state ranked 9th nationally as of 2020 in wind power production.[5]

Minnesota's solar industry is on the rise as well. Large, utility-scale and community solar projects are being built almost as quickly as thousands of smaller commercial and residential rooftop solar projects. The state's community solar program is recognized as a nation-leading model for expanding customer access to solar, growing to 837 megawatts of operational capacity as of June 2022 while providing savings to customers.[6]

The 10-year extension of tax credits including the Investment Tax Credit (ITC) and the Production Tax Credit (PTC) as well as policy incentives to develop renewable projects included in the Inflation Reduction Act (IRA) will help bring much-needed certainty to the industry, allowing businesses to make long-term plans for projects and hiring, which will further help spur the growth in renewable energy.

[4] CEEM 2022 Factsheet, https://www.cleanenergyeconomymn.org/wp-content/uploads/2022/04/CEEM-2022-Factsheet-Final-25Apr2022.pdf

[5] Electric Power Annual: https://www.eia.gov/electricity/annual/html/epa_03_18.html

[6] ILSR Community Solar Tracking, https://ilsr.org/minnesotas-community-solar-program/

ENERGY SYSTEM RELIABILITY AND RESILIENCE

As extreme weather events become more common in Minnesota and nationally, concerns over the reliability and resilience of our electricity grid have increased. Improving the stability of today's electricity grid while ushering in the increased integration of clean energy technologies will require careful planning by stakeholders across the value chain as we modernize the energy system.

As energy markets across the U.S. and in Minnesota move towards a decarbonized electricity grid, a host of clean energy resources will continue to play a crucial role in providing homes and businesses with affordable, flexible, and reliable energy. Energy efficiency and clean energy resources help to ensure the optimization and resiliency of the electricity grid. In addition to wind and solar, technologies like energy storage and microgrids are able to store and deliver energy when needed most. Importantly, by improving, modernizing, and securing the electricity grid with sustainable clean energy solutions, the risks posed by severe weather events, natural disasters, hackers and cybersecurity threats, power outages, and hostile actors will be mitigated.

CLEAN ENERGY MEANS JOBS

With almost 58,000 jobs, clean energy workers are an integral part of Minnesota's overall economy.

Energy efficiency is the largest sector of Minnesota's clean energy jobs, employing over 73 percent of clean energy workers. Efficiency and conservation encompass a broad range of jobs, including construction workers, electricians, engineers, software developers, finance, and marketing professionals.

Minnesota's second-largest sector of clean energy jobs is renewable energy, which employs more than 8,200 workers. These jobs have historically been some of the fastest-growing; in fact, solar installer is one of the fastest-growing jobs in Minnesota according to Bureau of Labor Statistics data. The long-term certainty provided by recent federal legislation should only serve to spur further job-growth among renewables.

Minnesota 2022: Estimated Clean Energy Jobs[7]

Industry	Estimated Total Jobs
Energy Efficiency	42,218
Renewable Energy	8,270
Advanced Transportation	3,994
Grid & Storage	2,764
Clean Fuels	684

The recently passed Inflation Reduction Act (IRA) has incentives designed to drive sourcing of critical materials from the United States and its allies. There are also incentives in the law to

[7] Clean Jobs Midwest Report, https://www.cleanjobsmidwest.com/state/minnesota

manufacture key components of the energy transition in the United States. While a major factor in these policies are national security concerns, reshoring will mean good-paying manufacturing and other blue-collar jobs for Minnesota and the United States as a whole.

POLICIES HELP DRIVE CLEAN ENERGY INVESTMENTS

Establishing strong targets for clean energy helped make Minnesota a national leader in clean energy development. Providing incentives and removing red-tape barriers to continue the transition towards clean energy will keep rates affordable, create market predictability, and drive economic growth.

Minnesota's existing Renewable Energy Standard (RES) and Energy Efficiency Resource Standard (EERS) have already brought significant economic benefits to the state with little or no change in electricity costs for consumers. The RES requires all of the state's investor-owned utilities to generate or procure at least 25 percent of retail electricity sales from eligible renewable sources by 2025 – a goal achieved seven years early in 2018. The RES also requires all investor-owned utilities secure 1.5 percent of electricity from solar energy by 2020, and to move to 10 percent from solar by 2030.[8]

Continuing to build on saving Minnesotans real dollars through energy efficient programs, the bipartisan Energy Conservation and Optimization Act of 2021 (ECO Act) was recently passed that modernized Minnesota's most successful energy efficiency policy – the Conservation Improvement Program (CIP). ECO provides additional opportunities for Minnesota families and businesses to save energy, lower energy costs, and reduce greenhouse gas emissions, all while boosting jobs.

Minnesota's energy efficiency industry was significantly impacted by job losses during the COVID-19 pandemic but is bouncing back strongly. With the implementation of the ECO Act, these policy changes will bolster Minnesota's status as a national leader in energy efficiency — already ranked #9 in the U.S. and first in the Midwest, according to the American Council for an Energy-Efficient Economy.[9] The strong bipartisan policy leadership demonstrated in passing the ECO Act provides a template for how to get clean energy initiatives passed in the future.

MINNESOTA'S OPPORTUNITY: EMBRACE INNOVATION

Smart state policy has been incredibly important in keeping Minnesota's clean energy economy strong and growing. Already a leader in clean energy production and grid modernization, Minnesota can expand on this progress. Stronger clean energy policies can further expand market access, diversify the state's overall energy portfolio, and accelerate adoption of advanced energy technologies. Most importantly, updated clean energy policies will drive further economic growth and prosperity to the benefit of all Minnesotans.

[8] DSIRE, 2015: http://programs.dsireusa.org/system/program/detail/2401

[9] ACEEE, 2020: https://www.aceee.org/state-policy/scorecard

100% CLEAN ENERGY

A more aggressive proposal to achieve 100% clean energy in our state's electricity sector by 2040 is currently under consideration. Under such a standard, utilities could help design a schedule to meet carbon reduction goals by the 2040 date. Utilities, including Xcel Energy, have already made public commitments to achieve 100% clean energy by 2050, the first utility in the country to take such a bold stance. If passed, Minnesota would join 10 other states in passing legislation to achieve 100% carbon-free electricity.

Policies spurring public and private sector action from the Inflation Reduction Act (IRA) are projected to decrease U.S. carbon emissions by about 40% from 2005 levels in 2030.[10] This federal action will assist Minnesota in reaching our clean energy goals and should be leveraged with smart state policies to further spur market adoption of clean energy technologies.

BUILDING CODES

Updating Minnesota's building codes is another sector ripe for dramatic energy and cost savings along with carbon reduction. As more cities and states take steps to lower their energy usage, evidence suggests that policies on building energy usage are helping nudge energy consumption lower. A recent report from the Minnesota Department of Labor and Industry and the Minnesota Department of Commerce contained recommendations for reducing energy use in new commercial and large multifamily buildings. In 2021, a bill was introduced to allow cities to adopt a more efficient building standard to achieve net-zero energy for new commercial buildings by 2036.

ENERGY STORAGE

Energy storage deployment legislation will help to provide greater market certainty and reliability. Some state utilities and co-ops have already begun investing in storage technologies as a tool to stretch clean energy investments, and the addition of storage has the added benefit of supplying greater flexibility and bolstering the reliability of the electricity grid.

As consumers demand more clean energy, thoughtful energy storage policy will yield significant benefits for Minnesota's energy sector, including greater reliability and reduced deployment costs. Legislation introduced in 2022 created an incentive program for residential and small commercial battery storage similar to the popular Solar*Rewards program.[11] Incentivizing energy storage at the local level as well as investments by utilities in utility-scale energy storage will be key to enhancing the flexibility and resilience of our energy system as we move further towards a clean energy future.

Federal legislation has expanded tax credits and other incentives for standalone energy storage technology for both residential customers and utilities. This should help to drive down costs for Minnesota consumers and increase reliability and resiliency.

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[10] US DOE, 2022: https://www.energy.gov/sites/default/files/2022-08/8.18%20InflationReductionAct_Factsheet_Final.pdf

[11] Office of the Revisor of Statutes 2021-2022, HF4402/SF4119: https://www.revisor.mn.gov/bills/bill.php?f=HF4402&y=2022&ssn=0&b=house

DECARBONIZING TRANSPORTATION

The rising demand for electric vehicles (EV) across Minnesota has left automakers scrambling to keep up and consumers on waitlists for their next vehicle. Avoiding rising gas prices and comparatively low maintenance costs along with the availability of more affordable EV models will continue to spur the broad adoption of EVs. Combining these consumer-led market factors with transportation being our largest source of greenhouse gas emissions, policymakers should invest now in providing the necessary infrastructure for the consumer-driven and widespread adoption of EVs.

In fact, the federally-passed Infrastructure Investment and Jobs Act (IIJA) passed in late 2021 will make millions of dollars available for Minnesota to build out its EV charging infrastructure. Particularly in Greater Minnesota, this infrastructure is critical to a greater adoption of EVs. The tax credits in recently passed federal legislation should serve to further accelerate the adoption of electric vehicles.

Advancement of the Clean Fuels Standard via bipartisan legislation like the Future Fuels Act[12] is another way we can drive down emissions in Minnesota's transportation sector. This market-driven approach will improve our energy security, stimulate rural economic development and jobs, boost innovation, and slash emissions from our state's transportation sector.[13]

MINNESOTA'S OPPORTUNITY: REMOVE BARRIERS & INVESTMENTS IN INFRASTRUCTURE

Minnesota has proven it's a great place to build renewables, but unnecessary red tape and bureaucracy is standing in the way of Minnesota fully maximizing its potential. Large-scale renewable projects have returned to looking at Minnesota after being scared away by our cumbersome, unpredictable, and time-consuming regulatory process. This includes siting and permitting issues for clean energy projects. With commonsense reforms to these processes, Minnesota can allow the private sector to lead the way towards our clean energy future.[14,15]

By making Minnesota an easier place to do business with less confusing and more timely processes, Minnesota's private sector companies, counties, townships, and landowners will be able to capitalize on the future of clean energy while all Minnesotans will benefit from decarbonizing our electric grid with inexpensive wind, solar, and storage replacing price-volatile gas and coal. In 2022 alone, renewable energy projects will provide local tax benefits as well as extra income to farmers, ranchers, and other private landowners in Minnesota with land-lease payments totaling $38.2 million.[16]

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[12] Office of the Revisor of Statutes 2021-2022, HF2083/SF2027: https://www.revisor.mn.gov/bills/bill.php?b=House&f=HF2083&ssn=0&y=2021

[13] Full CEEM Letter in Support of the Future Fuels Act: https://www.house.leg.state.mn.us/comm/docs/3zCJvuY3j0Cvz6giDC_Sew.pdf

[14] Office of the Revisor of Statutes 2021-2022, HF3299/SF3051: https://www.revisor.mn.gov/bills/bill.php?b=senate&f=SF3051&ssn=0&y=2022

[15] CEEM Letter Supporting SF3051: https://www.revisor.mn.gov/bills/bill.php?b=senate&f=SF3051&ssn=0&y=2022

[16] American Clean Power: https://cleanpower.org/wp-content/uploads/2022/06/Minnesota_clean_energy_factsheet.pdf

TRANSMISSION AND INTERCONNECTION

Two key infrastructure and regulatory areas that must be prioritized to maximize the potential for clean energy development and deployment in our state are transmission and interconnection. Transmission policy revolves around markets that ensure power reaches our homes and businesses, often crossing wide regions and state lines. A regionally-focused build out of transmission that includes distributed energy resources, (smaller scale solar or wind plus storage technologies), can best serve customers while enhancing reliability.

Recently, in July 2022, the Midcontinent Independent System Operator (MISO) Board of Directors unanimously approved a $10.3 billion investment portfolio of new transmission projects across the Midwest, including hundreds of miles of new transmission lines in Minnesota. Altogether, the new transmission will allow up to 53 GW of new generation capacity to connect to the transmission grid. While this is a hugely important announcement, many of the new lines will not be operational until 2029 and 2030.

Interconnection backlogs are hampering clean energy projects across the state, frustrating utilities, project developers, and consumers. From utility-scale projects to smaller residential installations, the backlog has created long delays and lost revenue. Finding a fair and equitable way to clear this backlog and setting predictable and efficient standards to ensure long delays and uncertainty do not hamper future project development provides a key policy opportunity.

LOOKING AHEAD

Forward-looking public policy can leverage market forces and increase the speed and scale of clean energy development. Minnesota's clean energy potential is enormous and has the ability to positively impact people across the state at all income levels. To ensure Minnesotans get the maximum value out of federal investments, the state legislature must act to leverage the competitive grants from the IIJA and the IRA. State agencies must also coordinate in order to ensure Minnesota takes full advantage of this historic investment in climate and energy.

Continued support across all parties will ensure that Minnesota's policies keep pace with rapidly evolving clean energy technologies and services. Strong public leadership on clean energy will create good-paying jobs, bolster our economy and strengthen Minnesota's competitive advantage as an attractive place to do business in the Midwest.