

Minnesota's electric cooperatives are leaders in the state's energy transition



Your Minnesota electric cooperatives are at the heart of a decades-long, nationwide campaign to decarbonize our energy production. The electricity sector is rapidly reducing carbon emissions and is the only sector of the economy exceeding its decarbonization goals.

Since 2017, electricity generation is no longer the No. 1 source of greenhouse gases in the U.S. As we pursue continued efforts to further reduce emissions from electricity production, the path to lower carbon emissions will actually use more electricity, not less. This concept is called beneficial electrification and will play a major role in America's next great decarbonization success story.

Beneficial electrification is the application of electricity to end-uses that have, traditionally, been powered by fossil fuels. More information can be found at beneficialelectrification.com.

▶ **Creating large-scale solar resources**

We're proud to have energized nearly 30 megawatts (MW) of solar installations through 2019 with more on the way. Minnesota's electric cooperatives will bring more than 15 times that total online by 2023.

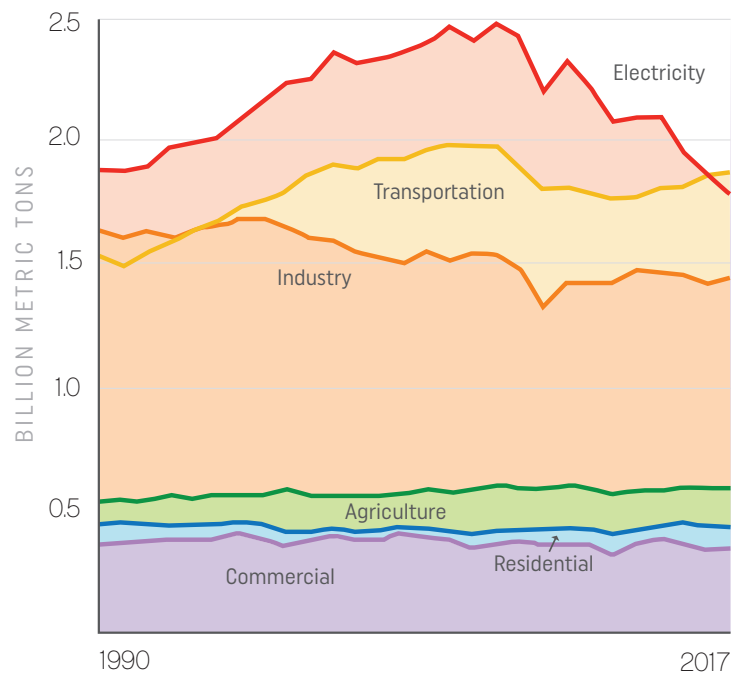
▶ **Developing significant wind energy resources**

One of the cooperatives serving Minnesota operates the largest cooperatively owned wind project in the United States, and added 342 megawatts of generation from wind energy in 2020 alone.

▶ **Leading on carbon capture technology**

Cooperatives serving Minnesota have long been leaders in developing carbon capture technology, including operation of the largest coal-based CO₂ sequestration project in the world for two decades. More recently, Minnesota cooperatives are partnering to develop the Integrated Test Center where researchers will test carbon capture utilization and sequestration technologies. In an effort referred to as "Project Tundra," a cooperative supplying electricity to Minnesota is evaluating new carbon capture technology at one of its largest power plants.

U.S. Carbon Emissions



Source: U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018, April 2020.

▶ **Transforming our generation mix for the future**

The biggest supplier of electricity to Minnesota's cooperatives recently announced power supply changes that will reduce its carbon emissions 95% by 2023. Cooperatives are shifting their power supply portfolio to take advantage of low-cost renewable energy and the MISO market.

▶ **Beating goals surpassing expectations**

All suppliers of electricity to Minnesota's cooperatives achieved the state's 25% renewable energy standard years ahead of requirements.

▶ **Pushing innovation**

A Minnesota cooperative owns the largest energy storage project in the Midwest and another is exploring critical grid-scale battery technology.

From 2005 to 2025, electric cooperatives operating in Minnesota will:



decrease carbon-producing generation by **1,875 megawatts**



increase carbon-free generation by **4,867 megawatts**

A better approach

Extreme decarbonization policies are a mistake, and completely eliminating generation options is costly to member-consumers. To keep electricity safe, reliable and affordable for member-consumers, we must develop a decarbonization path that is sustainable, optimizes efficiency and maintains system reliability.

Our approach uses lower-cost renewable sources and balances them with other resources, as needed. This ensures safe, reliable and affordable electricity, which is crucial to support electrification of other sectors of the economy, including electric vehicles.

How can you help us reduce carbon emissions in Minnesota?



Be cautious of setting arbitrary emission goals and benchmarks through policy.



Understand the exponential increase in costs to electric consumers with bringing carbon emissions to zero.



Encourage policies that avoid unnecessary regulations and support load control programs that save member-consumers money.



Support electrification of other sectors including electric vehicles.



To help you make more informed decisions regarding emission goals and renewable generation mix, contact MREA and we will connect you with a cooperative expert.

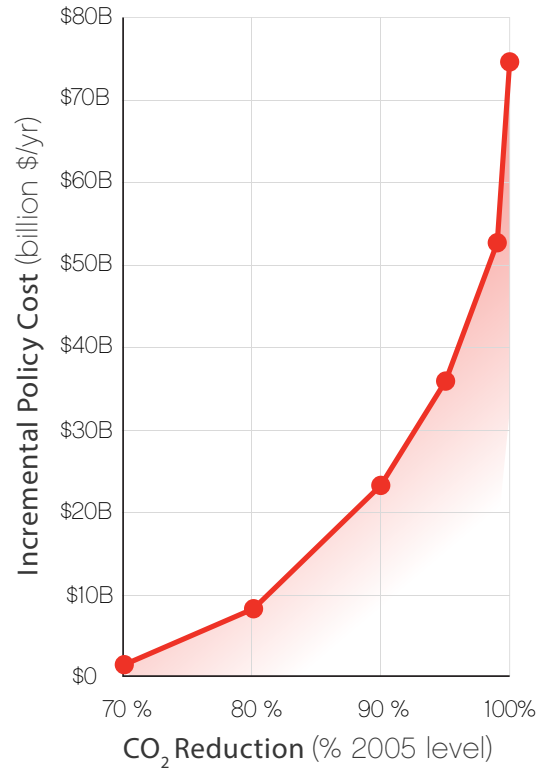


Minnesota Rural Electric Association

Who is MREA?

The Minnesota Rural Electric Association (MREA) is the statewide organization representing the electric cooperatives in the state of Minnesota. We foster unity among and provide service to all of Minnesota's 50 electric cooperatives. Our mission is serving our members through collaborative leadership and expertise.

Policy Costs



Source: EPRI presentation to Minnesota PUC, Aug. 2020

According to an EPRI analysis, achieving a 100% Clean Energy Standard (CES) in Minnesota by 2050 is prohibitively expensive. Data shows, for nearly half the year in 2050, approximately 2 gigawatts (GW) of load (or 2,000 MW) could not be served with existing and future technologies for less than \$50,000/MWh. Compared with current average retail electric rates of \$120/MWh, it is clear that a cost-effective transition to 100% renewables requires more research and technology development.

The cheapest carbon reductions are often the first. These should be evaluated and implemented across all sectors of the economy. In the meantime, beneficial electrification combined with more modest clean energy goals can help reduce carbon and the risk of undesirable California-style rolling blackouts.

Source: EPRI's Minnesota High Renewable Standards Project, Back Pocket Insight, April 2020