



PRESS RELEASE

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New Report Shows that Solar, Wind, and Storage Can Competitively Power a Majority of Minnesota's Electric Needs

Minnesota can produce 10 percent of its electricity from solar by 2025 and 70 percent from solar and wind by 2050 at generation costs comparable to natural gas.

Building additional solar and wind capacity coupled with energy curtailment is less expensive than building long-term or seasonal storage.

Thursday, November 15, 2018, Saint Paul, MN: Minnesota has been ambitious in meeting its renewable energy goals: the state hit its 25 percent renewable energy by 2025 goal early this year using wind, solar, biomass, and hydro power.

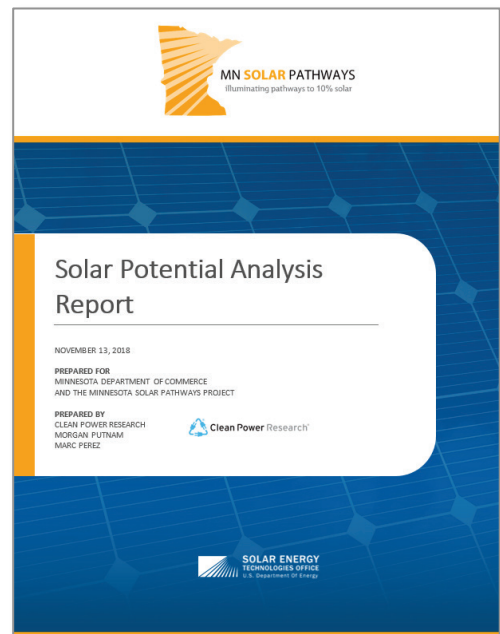
A report released today finds that Minnesota could achieve 10 percent solar by 2025 at costs comparable to natural gas generation. Further, the report finds that expected cost decreases in solar, wind, and storage will enable Minnesota to achieve 70 percent solar and wind by 2050 at costs comparable to natural gas generation.

The Solar Potential Analysis Report, prepared by Clean Power Research for the MN Solar Pathways Initiative, includes several scenarios that model future renewable energy generation costs.

“This report shows that a renewable energy future is not only possible in Minnesota, but that the generation cost of solar, wind, and storage is competitive with natural gas generation,” said Brian Ross with the Great Plains Institute. “We also learned that coupling additional solar and wind capacity with energy curtailment when production is not needed eliminates the need for costly seasonal energy storage,” added Josh Quinnell with Center for Energy and Environment.

Download the executive summary and full report at <http://mnsolarpathways.org/spa>

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Key findings from the report:

1. **Solar and wind can serve 70 percent of Minnesota’s electrical load in 2050.** Solar and wind can serve 70 percent of Minnesota’s load at generation costs that are comparable to the levelized generation cost of new natural gas generation.
2. **Additional capacity coupled with energy curtailment is considerably less expensive than, and a viable alternative to, long-term or seasonal storage in a high renewables future.** Declining costs of solar and wind generation (<\$20/MWh) will enable solar and wind to be economically curtailed during periods of high production and low load.
3. **Using other flexible generation resources in limited amounts support a high renewables future.** The strategic use of other generation resources during brief periods of low-solar and low-wind production will significantly reduce the storage, solar, and wind capacities needed to serve Minnesota’s hourly load, reducing the generation cost for 70 percent solar and wind by nearly half.
4. **Storage is an important part of a high renewables future; it expands the dispatch capabilities of wind and solar assets.** Sufficient quantities of storage smooth out the intra-hour variability of solar and wind.
5. **Shifting of key flexible loads may further decrease generation costs.** Load shifting of new electric vehicle and residential domestic hot water loads demonstrated a potential 10-20 percent decrease in generation costs by moving the consumption to different times in an hour, day, or week.

“The MN Solar Pathways Solar Potential Analysis Report demonstrates that it’s possible to find an economical pathway to higher renewable generation,” said Jeff Ressler, CEO of Clean Power Research. “Critical to this project was the use of time-correlated solar, wind and load generation datasets in advanced software tools to more precisely see the effects of different scenarios, such as varying amounts of solar, wind and storage capacities.”

Mark Ahlstrom with Energy Systems Integration Group and a Technical Committee member who contributed to the development of the report said, “The MN Solar Pathways Solar Potential Analysis approach is conservative but relevant, and there is a growing body of good work that shows that penetrations in the 70-80 percent renewable range are quite feasible and not unduly expensive. Best of all, we have the key technologies today to get to 70 percent renewable energy and to accommodate massive electrification of other energy sectors.”

About MN Solar Pathways: The initiative, sponsored by the U.S. Department of Energy Solar Energy Technologies Office, is a three-year project designed to explore least-risk, best-value strategies for meeting the State of Minnesota’s solar goals. As part of this aim, the Pathways Team is modeling renewable generation costs, examining ways to streamline interconnection, and evaluating technologies that can increase solar hosting capacity on the distribution grid.

MN Solar Pathways is led by the Minnesota Department of Commerce, Great Plains Institute, Center for Energy and Environment, Clean Energy Resource Teams, and Clean Power Research. 20 other organizations, from utilities to advocacy groups and from corporations to local governments, have contributed their time and expertise in the review and creation of reports for the initiative. For more details about the MN Solar Pathways project, including published reports and a list of project partners, please visit

<http://mnsolarpathways.org>.

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About Clean Power Research: Clean Power Research® has delivered award-winning cloud software solutions to utilities and industry for more than 20 years. Our PowerClerk®, WattPlan® and SolarAnywhere® product families allow our customers to make sense of and thrive amid the energy transformation. Clean Power Research has offices in Napa, Calif., and Kirkland, Wash.

About the Great Plains Institute: A nonpartisan, nonprofit organization, the Great Plains Institute (GPI) is transforming the energy system to benefit the economy and environment. GPI combines a unique consensus-building approach, expert knowledge, research and analysis, and local action to find and implement lasting energy solutions.

About Center for Energy and Environment: Center for Energy and Environment is a clean energy nonprofit with special expertise in energy efficiency that stretches back nearly 40 years. CEE provides a range of practical and cost-effective energy solutions for homes, businesses, and communities to strengthen the economy while improving the environment.

About Clean Energy Resource Teams: A statewide university, nonprofit, and governmental partnership with a shared mission to connect individuals and their communities to the resources they need to identify and implement community-based clean energy projects.

About Minnesota Department of Commerce: The Commerce Department's Division of Energy Resources administers the state's energy programs and policies. The Commerce Department's mission is to protect consumers and ensure a strong, competitive, and fair marketplace.

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