

21% of Minnesota's electricity came from renewables in 2015

Wind energy generated 17% of state's electricity

Minnesota's commitment to renewable energy continues.

Minnesota generated 21% of its electricity from renewable energy sources in 2015, according to figures compiled by the Minnesota Department of Commerce and the U.S. Energy Information Administration (EIA).

With 3,985 megawatts (MW) of electric power coming from renewables, Minnesota is well on pace to meet or exceed its Renewable Electricity Standard of 25% of electric power coming from renewable sources by 2025, as set by the state's Next Generation Energy Act of 2007.

Minnesota renewable energy generation in 2015 was as follows:

- 3,260 MW wind¹, contributing 17% of energy generated in Minnesota²
- 35 MW solar PV¹, contributing 0.006% of energy generated in Minnesota² (but growing quickly with over 500 MW of expected development in 2016)
- 487 MW biomass electricity production³, contributing 3% of energy generated in Minnesota²
- 203 MW hydroelectric³, contributing 1% of energy generated in Minnesota²

Sources: ¹ Minnesota State Energy Office (12/31/2015 data), ²[Energy Information Administration \(12/31/2015\)](#), ³[Midwest Renewable Energy Tracking System \(12/31/2015 data\)](#)

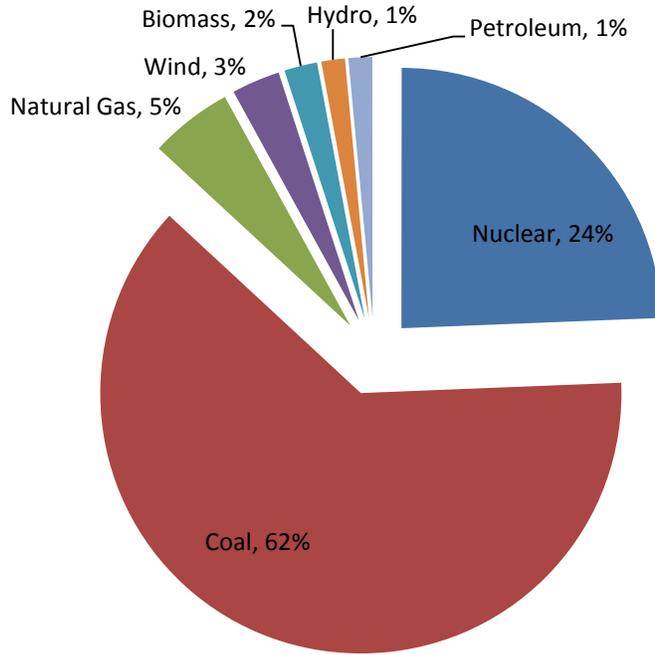
According to figures through 2015 from the U.S. Energy Information Administration (EIA), clean energy sources are taking center stage in Minnesota. For instance, wind energy generated just 3% of the state's electricity in 2005 and jumped to 17% in 2015, while electricity from coal dropped from 62% in 2005 to 45% in 2015. Biomass increased from 2% to 3% during the same time span.

Overall, renewable energy generated 6% of the state's electricity in 2005 compared to 21% in 2015, nearly a three-fold increase in the last decade. (See charts for 2005 and 2015 below to gauge renewable energy growth; EIA data is through December 2015.)

While solar energy's contribution to the state's electric power doesn't register on the charts, solar capacity continues to build traction and is expected to explode in the next several years. Solar capacity increased from less than 1 MW in 2009 to 35 MW in 2015, and present capacity will increase 15-fold, according to projections of more than 500 MW of new capacity in 2016. Minnesota in 2013 established the [Solar Energy Standard](#) (pdf) that calls for Minnesota's investor-owned electric utilities to generate 1.5% of their electric power from solar by 2020. With other solar-friendly policies in the state, extended federal tax credits, and incentive programs (such as the [Made in Minnesota Solar Incentive Program](#)) in place, solar is expected to exceed that standard.

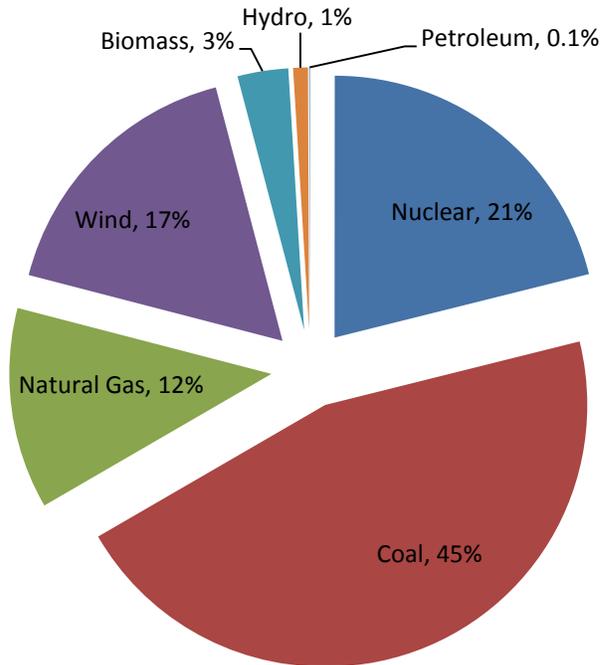
Similarly, with newly extended federal tax incentives for wind projects, the near future for wind also looks promising.

MN Electricity Generation, 2005



source: EIA

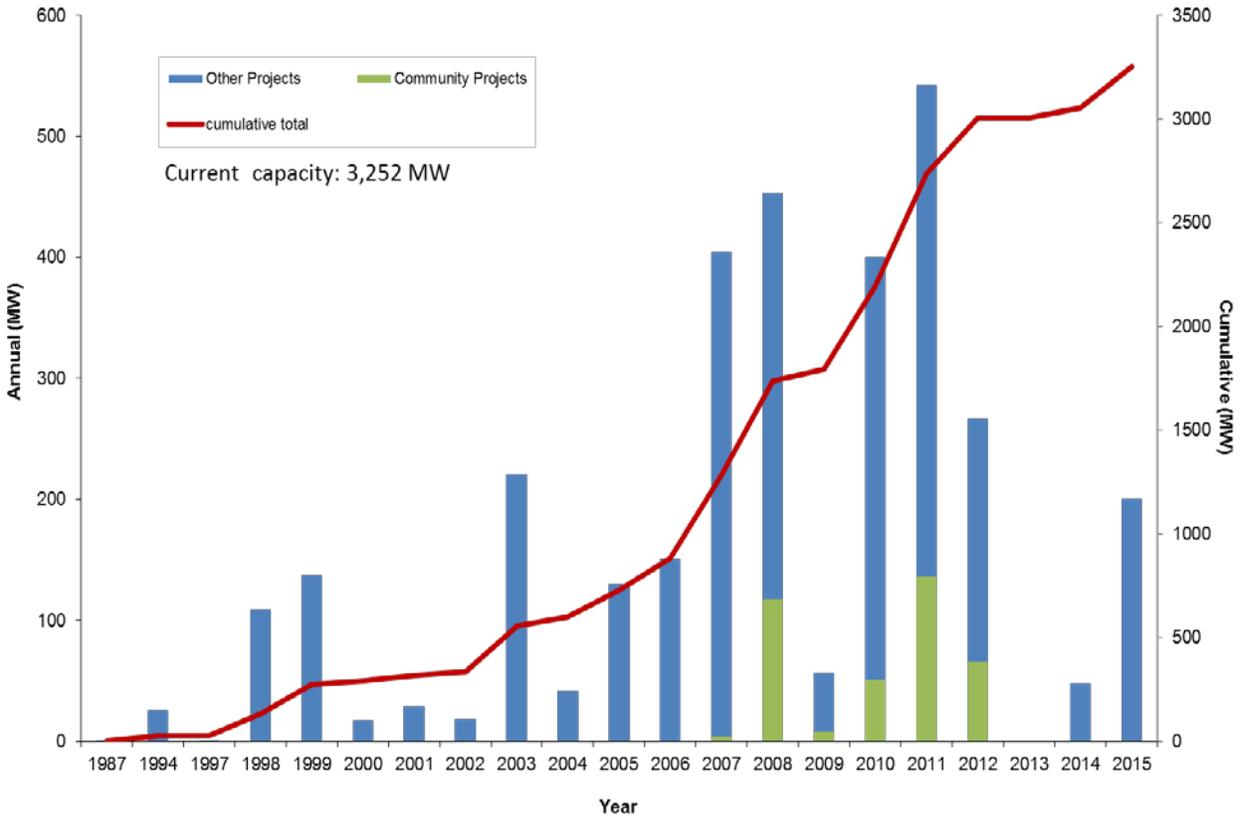
MN Electricity Generation, 2015



source: EIA

Minnesota's Wind Capacity and Annual Installations

as of January 22, 2016



Wind energy update

At the end of 2015, Minnesota had 3,260 MW of installed wind capacity. In 2015, 17.0% of electricity generated in Minnesota came from wind power. Minnesota currently has 3,252 MW of installed capacity from large wind turbines (>100kW) and 7.6 MW of installed capacity from small wind turbines ≤100kW. Between 2013-2015, many utilities had begun to meet or exceed their Renewable Energy Standard milestones, and overall energy consumption leveled off as energy efficiency and conservation strategies became more widely adopted. As a result, overall development in wind slowed from 2013-2015. However, wind is now competitive with conventional generation, and with no fuel costs, ongoing wind development is expected as older coal plants are retired and new generation is needed.

2015 wind additions

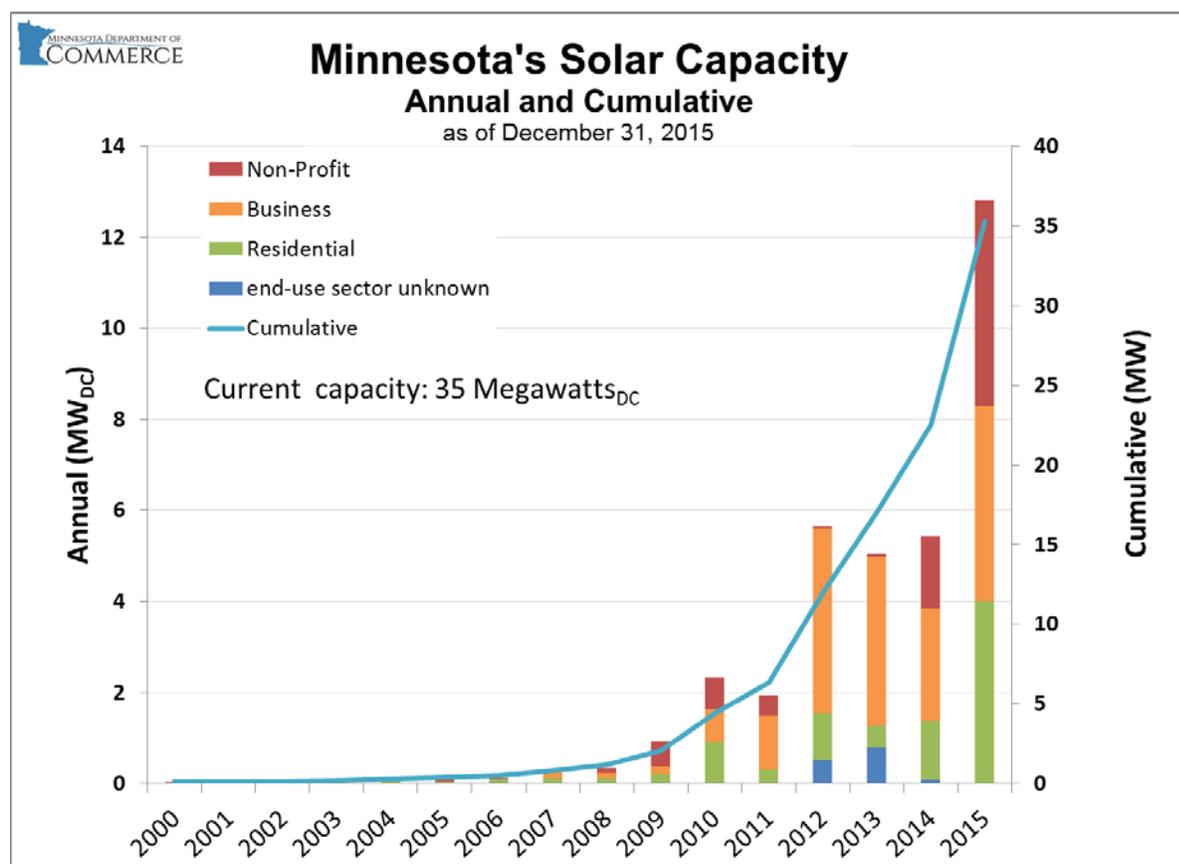
Pleasant Valley Wind, 200 MW (200,000 kW) in Mower and Dodge Counties, achieved commercial operation in November 2015. Developed by RES Americas, Inc. and owned by Xcel Energy.

2016 wind in development

More than 200 MW of new wind is in development this year, including the following:

Odell Wind, 200 MW (200,000 kW) in Cottonwood, Jackson, Martin, and Watonwan counties. Developed and owned by Algonquin Power Co. for Xcel Energy. In November 2014, Geronimo sold Odell to Algonquin Power Co., and Geronimo will provide ongoing assistance in project development. Construction started in April 2015 and project completion is expected in 2016.

Bergey Wind Project, 500 kW developed by Gone2Green for Xcel Energy and distributed between 50 sites across three counties in Xcel's service territory. (Project support from the Xcel Renewable Development Fund)



Solar energy update

Minnesota reached a milestone of more than 35 MW of known grid tied PV capacity in 2015, including over 24 MW of net metered installations <40kW. Based on utility filings and news reports, over 500 MW of large solar projects are expected to be completed in 2016, including rooftop solar, community solar, and utility-scale projects. In 2013, EIA started tracking solar electricity production in Minnesota. Most solar installations are on the load side of the meter, so the percent generation shows up at less than 1%. However, with new development in 2016 and thereafter, the percent of energy from solar will grow quickly.

2015 large solar additions

MSP Airport⁴, 3,000 kW_{DC} on Red and Blue Ramps (this includes 1,471 kW_{DC} on the Blue Ramp supported by the RDF).

Steele Waseca Community Solar, 122.5 kW_{DC}, Owatonna

School Sisters of Notre Dame, 849 kW_{DC} in Mankato installed by Best Power (RDF supported)

St. Paul Lowertown Ballpark, 103.5 kW_{DC} at CHS Field, home of the St. Paul Saints and Hamline University Pipers Baseball teams, in downtown St. Paul (RDF supported).

Hutchinson Landfill, 403 kW_{DC} in Hutchinson is the largest brownfield solar project in MN. (RDF supported)

2016 solar in development

Over 500 MW of solar projects are in development, including the following:

Xcel Community Solar Gardens—Xcel estimates at least 250 MW (250,000 kW) will be completed in 2016 across 35 counties installed by over 20 developers as a part of Xcel’s Solar*Rewards Community program.

Aurora Distributed Solar Project—100 MW (100,000 kW) developed by Geronimo Energy for Xcel Energy distributed between ~25 sites ranging in size from 2 MW to 10 MW across 16 counties in Xcel’s service territory. Construction started in January 2016.

North Star Solar—100 MW (100,000 kW) single-axis tracking PV in North Branch developed by Community Energy Resources LLC for Xcel Energy. Site permit application indicates expected project completion in 2016.

Marshall Solar—62 MW (62,000 kW) solar farm in Lyon County developed by NextEra Energy Resources for Xcel Energy. Site permit application indicates expected project completion in 2016.

MN Solar 1—25 MW (25,000 kW) solar farm near Tracy in Lyon County developed by Juwi, Inc. for Xcel Energy. Expected project completion in 2016.

Red Lake Nation—15 MW (15,000 kW) rooftop solar in Red Lake developed by Innovative Power Systems for the Red Lake Nation.

Camp Ripley—Minnesota Power received approval for a 10 MW (10,000 kW) solar project at Camp Ripley near Little Falls to meet the utility’s Solar Electricity Standard. The project will be the largest solar project on any National Guard base in the nation.

Dickenson Solar Project—2.25 MW (2,250 kW) in Buffalo to be developed by Great River Energy for wholesale supply to Wright Hennepin Coop.

MSP Airport⁴, 1,500 kW_{DC} at Terminal 2.

Blue Lake Solar—1,250 kW_{AC} installed by Oak Leaf Energy Partners and SunEdison at the Blue Lake Wastewater Treatment plant in Shakopee (RDF supported).

MN Renewable Energy Society Community Solar—1,000 kW_{DC} between two Community Solar Gardens, one in a rural setting and a second in an urban setting. (RDF supported).

Green Line Solar Corridor Project—967 kW installed by IPS Solar at four sites along the Energy Innovation Corridor in St. Paul. (RDF supported).

Target St. Paul Midway—350 kW_{AC} at the SuperTarget Midway store in the Saint Paul Midway area within the Energy Innovation Corridor (EIC) (RDF supported).

Wright-Hennepin Community Solar 3—270 kW in Rockford developed by Wright-Hennepin in its third round of Community Solar garden development.

⁴ Correction: the initial report misstated the amount of capacity installed and in development at the MSP airport, Terminal 1. The airport installation at Terminal 1 is complete, and the airport is planning an additional 1,500 kW_{DC} at *Terminal 2*, not Terminal 1.