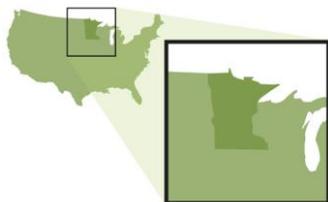




Partner region profile – Minnesota

Energy Transition Platform | May 2016

Socio-economic facts



Minnesota, United States

Population: 5,489,594 (2015) | **Area:** 225,181 km²

Landscape: prairies, boreal and broadleaf forests, and lakes

GDP: US\$312 billion (2014) | **GDP/capita:** US\$56,834

Economic sectors: mainly services | industry: forestry, iron mining, high-tech, biomedical and automobile industry | 2% agriculture

Jurisdictional power: highly decentralized

Key departments: Minnesota Department of Commerce

Over the course of the 20th century, the economy of Minnesota transformed from one based on primary natural resources and raw materials (iron ore, timber, soils) to one based on service-related industries.

The economic expansion of Minnesota after World War II is mainly attributed to a heightened demand for agricultural products, the development of advanced technologies such as computers and electronics, as well as investments in the extraction of low-grade taconite. In fact, high-grade iron ore deposits were quickly depleted and the state decided to stimulate the production of lower-grade taconite instead¹. Taconite mining is still in operation today, together with granite and limestone.

The economy continued to diversify in the 1990s, with the development of the financial, insurance, healthcare and tourism sectors². The service sector is currently employing 75% of the working population.

¹ <http://www.britannica.com/place/Minnesota#toc281302>

² <http://www.encyclopedia.com/topic/Minnesota.aspx>



Minnesota is also the fifth largest agriculture producer in the country - although the sector only represents 1% of the working population – with major products including dairy, corn, soybeans and wheat. The forestry industry is still an important sector, due to the growth of wood pulp and waferboard manufacturing.

The majority of the population lives in metropolitan areas with the Twin Cities region being home to the two largest cities of Minneapolis and Saint Paul, the state capital.

Energy system and energy policy

There are no inland fossil fuel resources in Minnesota, but the state imports crude oil from Canada that is subsequently processed in oil refineries located in the Twin Cities area. Natural gas is also imported through pipelines from Canada and other parts of the Midwest. 44% of the electricity is generated from coal-fired power plants, while two nuclear power plants produce 21% of the state’s electricity.

However, Minnesota is also known for its production of ethanol from corn plants, and has the greatest number of refueling stations using 85% of ethanol in gasoline nationwide. Wind power also provides 16% of the state’s electricity, which ranks Minnesota amongst the top US states for wind power generation.

Energy resources (in ground & production)	Renewable energy (wind), biofuels (ethanol fuel) and nuclear energy No inland fossil fuel resources ³
Energy mix: consumption by sources and sectors	Sources: natural gas, gasoline, coal, electricity, biomass, nuclear Sectors: industry (35%); transport (26%); residential (21%); commercial (18%)
Renewable energy consumption	Generates 21% of electricity from renewables Mainly wind power, and small amount of hydropower, biomass and solar power
Imports/exports	Imports all fossil fuels
Energy market structure (privatized/monopolized)	No unbundling of the supply and distribution ownership; vertically integrated utilities are responsible for generation, transmission and distribution of power to customers ⁴

Renewable Portfolio Standard (Act 216B.1691)

The legislation passed in 2007 repealed the 2001 voluntary renewable energy objective by creating a mandatory renewable portfolio standard (RPS). The Act requires a 25% share of electricity consumption to be generated from eligible renewable sources by 2025. Public utilities that own a nuclear power plant must provide 30% of renewable energy by 2020.

³ <http://www.instituteeforenergyresearch.org/media/state-regs/pdf/Minnesota.pdf>

⁴ https://www.energystar.gov/ia/partners/downloads/mou/state_resources/State_Profiles_Minnesota_508.pdf



The requirement applies to all public utilities, electricity generation and transmission cooperatives, municipal power agencies and power districts. To be eligible to meet the RPS requirements, the renewable sources must also meet one of the following criteria:

- Electricity generated by solar, wind or hydroelectric facilities less than 100 MW;
- Hydrogen generated by any eligible renewable energy;
- Biomass including landfill gas, municipal solid waste, anaerobic digestion, organic components of wastewater effluent and sludge from plants.

To foster the generation of renewable energy from solar sources, the legislation was amended in 2013 to add another requirement; that all public utilities should have 1.5% of retail electricity sales generated from solar energy by 2020 – and 10% by 2030.

A renewable energy credit program also enables utilities generating more renewable energy than required by the RPS to sell their extra credits to those that haven't generated enough renewable energy to meet the threshold.

Act 239.7911 on biofuels

The Petroleum Replacement Promotion Act sets out a target for the composition of the state's gasoline. By 2025, 30% of the gasoline should come from biofuels. The Act also created a task force to support manufactures, refiners, and the fuel industry to meet the goal.

Next Generation Energy Act 2007

In addition to setting targets for greenhouse gas (GHG) emissions reductions, the Act aims to increase energy efficiency and expand community-based energy development. In fact, it requires electric and gas utilities to reduce their energy sales and invest a part of their revenues on activities to improve energy efficiency, management of demand and certain types of renewable energy⁵.

For instance, the Act requires that these activities should result in a reduction of 1.5% of energy sales annually, and that electric utilities should invest 1.5% of their gross revenue on energy conservation improvements.

The Act also allows a US\$3.6 million grant to be awarded to research & development projects focusing on energy conservation technologies and strategies.

Energy transition experience

Minnesota has positioned itself as a clean energy leader since its renewable energy supply tripled following the introduction of a Renewable Portfolio Standard in 2007. In 2015, 21% of the state's electricity was generated from renewable energy sources – a figure far higher than the national 13% share.⁶ At the same time, there was a decrease in the share of electricity generated from coal, from 59% to 46%. This shows that the energy mix of Minnesota is more diversified today.

Most of the state's renewable energy comes from wind power, but solar power is also expected to increase exponentially by the end of the year⁷. Civil society is supporting the energy transition, and initiatives such as the creation of an Energy Transition Lab by the University of Minnesota contribute to developing the best pathways for the transition of the energy system.

In fact, one of the main drivers of the energy transition is the state's energy dependence. Minnesota imports coal, gas and petroleum products, worth US\$18 billion a year⁸.

Climate targets:

Reduce GHG emissions by 30% by 2025; 80% by 2050 (based on 2005 levels)

Generate 25% of electricity from renewable sources by 2025; 40% by 2030

Climate and energy plan:

[Renewable Portfolio Standard](#)

[Next Generation Energy Act 2007](#)

⁵ <http://programs.dsireusa.org/system/program/detail/4541>

⁶ <http://fortune.com/2016/03/13/minnesota-renewable-energy-2015/>

⁷ Ibid

⁸ <http://www.startribune.com/how-minnesota-can-keep-the-lights-on/278081831/>



In addition to increased energy security, the energy transition would also foster the state's economic transition. A 40% target of renewable energy by 2030 would drive US\$6.2 billion in new investments, and US\$14 million in tax payments to local governments⁹.

However, as with all US states, Minnesota faces challenges. Electricity prices in the state rose by 12.5% between 2007 and 2014, and generating renewable energy can be more expensive for utilities required to purchase renewable energy generation credits under the RPS when they do not actually need extra power generation¹⁰.

With robust energy efficiency and renewable energy utility standards, and a willingness to increase the state's energy security, Minnesota has the ability to drive a successful energy transition.

Climate policy and instruments

Minnesota continues to be a leader in renewable energy generation, biofuels and energy efficiency. The state's legislative actions have also helped to reduce GHG emissions – between 2005 and 2010, statewide GHG emissions declined by 3%, with significant reductions from electric power utilities and transportation.

Green Solutions Act 2008

This legislation established the Legislative Greenhouse Gas Advisory Group, mandated to undertake studies on the economic, environmental and public health costs and benefits of a cap-and-trade system, as well as on the governance structure to be applied to such a system.

Next Generation Energy Act 2007

The Act establishes targets for GHG emissions reductions of 30% by 2025 and 80% by 2050, based on 2005 levels.

To meet these targets, a Climate Change Action Plan should be developed to issue guidelines for reducing GHG emissions and developing emissions capture and sequestration.

Such recommendations should include a methodology to estimate emissions reductions expected from current policies, the choice of a reporting system for emissions and an assessment of the feasibility of a cap-and-trade system.

Contact

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Sources:

<http://www.eia.gov/state/?sid=MN>

<https://mn.gov/commerce/industries/energy/>

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⁹ <http://www.ucsusa.org/clean-energy/increase-renewable-energy/advancing-minnesotas-clean-energy-economy#.VzRV21Imj4I>

¹⁰ <http://www.startribune.com/why-we-need-to-fix-minnesota-s-renewable-energy-policy/303825511/>