



# Minnesota Energy Data Dashboard

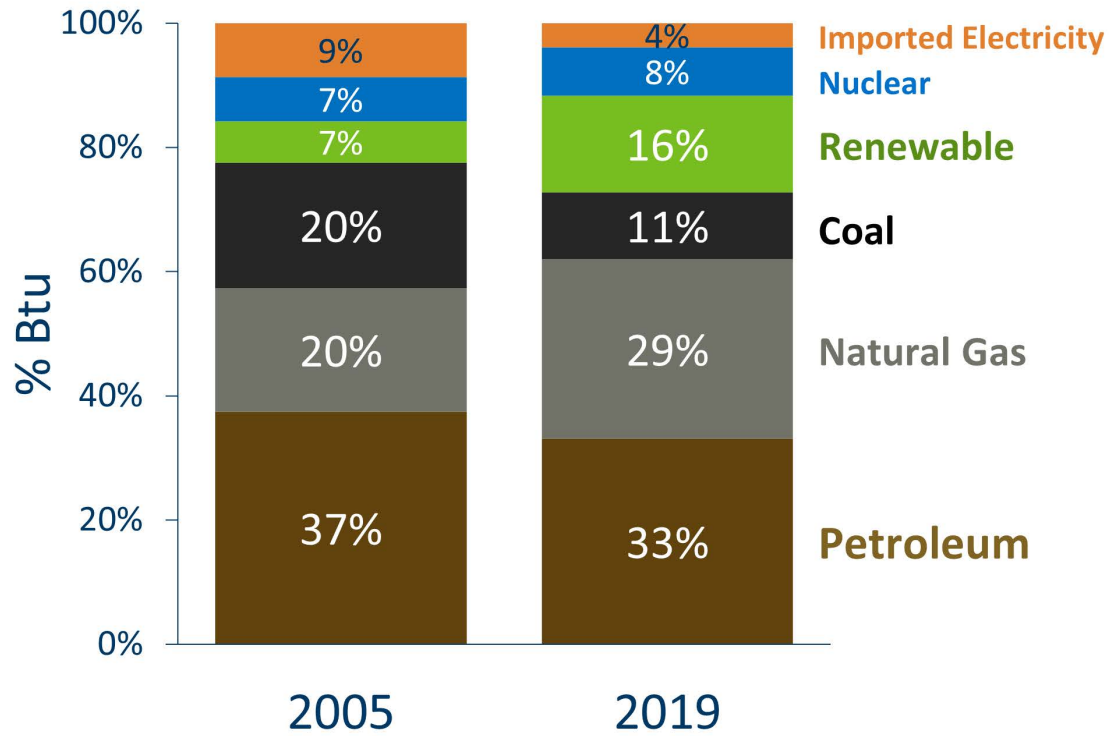
# Total Energy Use

- Minnesota has no indigenous fossil fuel reserves to supply its energy needs. Most of the energy consumed within Minnesota comes from other states and Canada. Over 73% of all energy consumed in Minnesota comes from fossil fuels used for heating, industrial processes, transportation, and electricity generation. More than half of imported electricity is generated with fossil fuels.
- Minnesota has an abundant supply of wind, solar, and bio-based energy. Renewable resources continue to make up an increasing share of the state's energy supply. In 2019, 16% of the total energy consumed in Minnesota for heating, industrial processes, transportation, and electricity generation came from renewable sources, compared with a United States average of 11% renewable consumption

# Total Energy Use

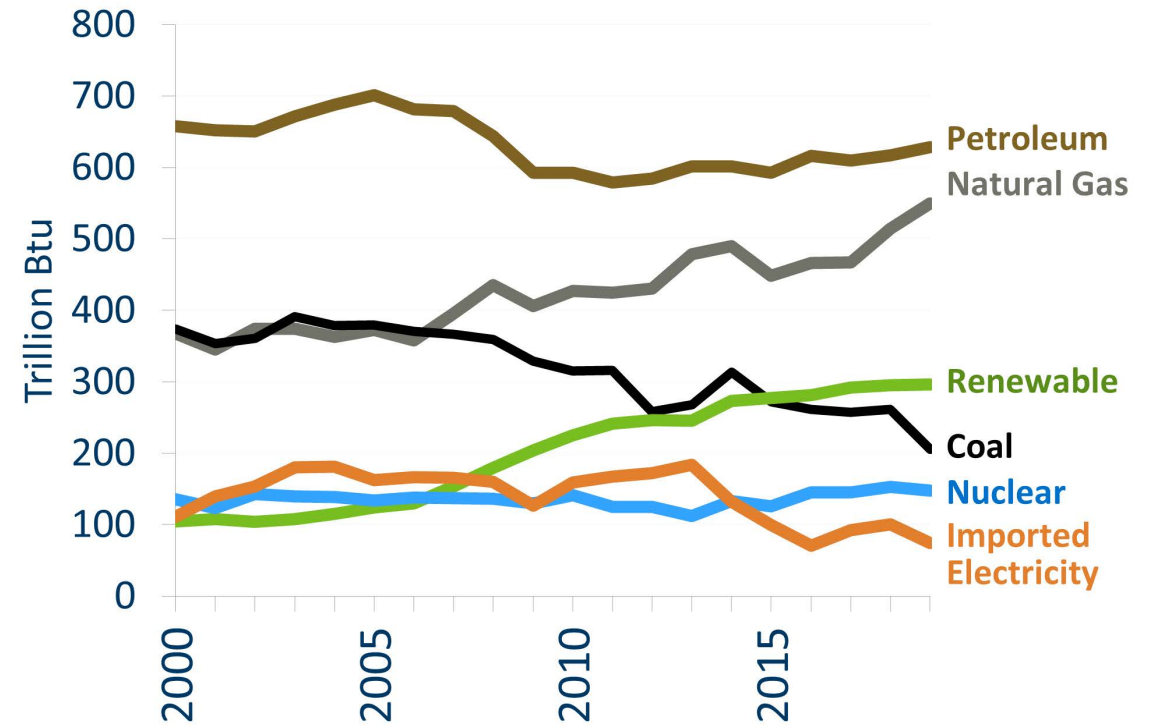
## Minnesota Total Energy Consumption by Source

source: U.S. EIA



## Minnesota Total Energy Consumption by Source

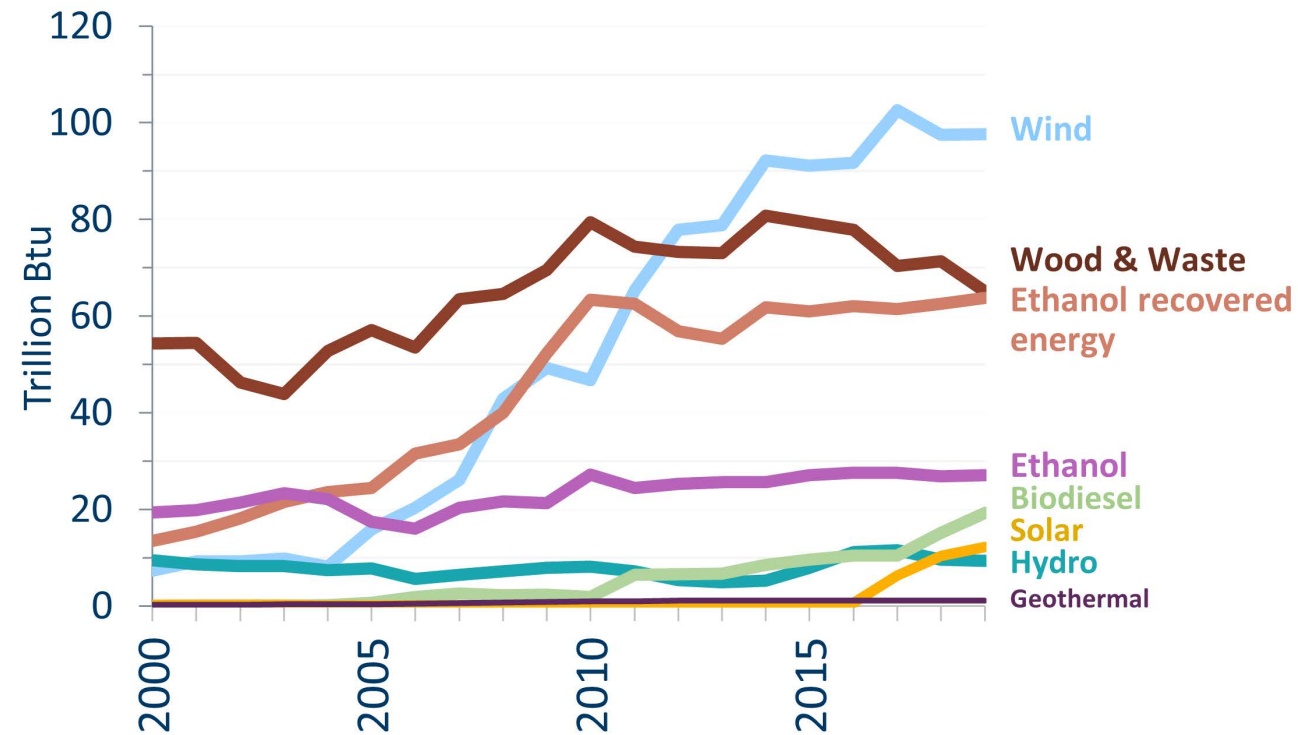
source: U.S. EIA



# Total Energy Use

## Minnesota Total Renewable Energy Consumption by Source

source: U.S. EIA

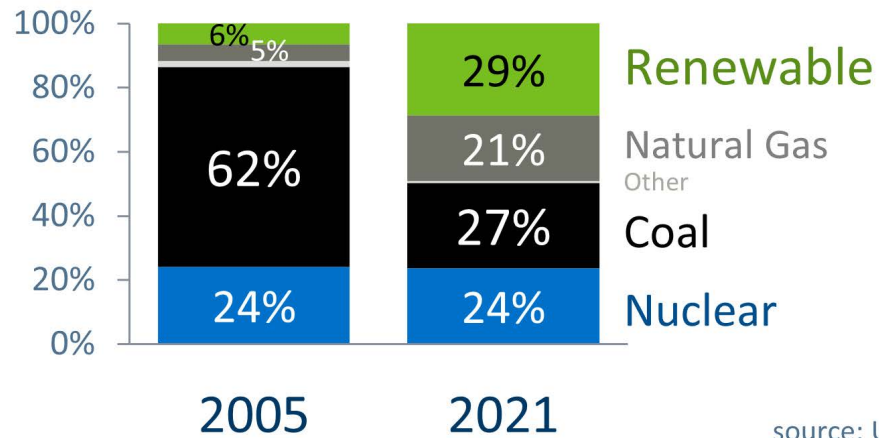


# Power Generation Transition

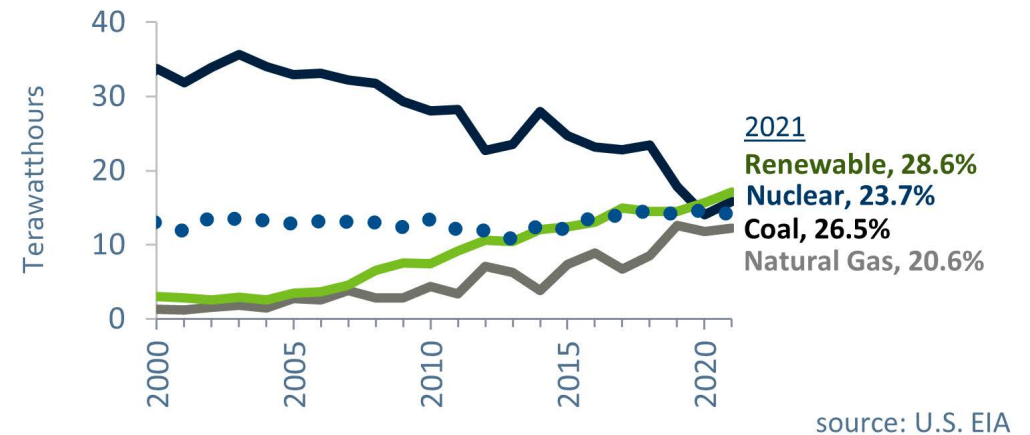
- Since 2005, Minnesota has made significant progress to increase the proportion of renewable energy in electricity generation. In 2020 Minnesota reached a pivot point where renewable energy became the primary source of electricity generated within the state.
- The percentage of electricity generated within state borders from renewable sources is an indicator of progress on the state's renewable electricity standard, but it is not a direct measure. Minnesota imports about one-fifth of annual electricity use from other states and Canada via the regional electric grid. Emissions from imported electricity are higher on a kilowatt-hour basis, as neighboring states haven't reduced their emissions as much as Minnesota.

# Power Generation Transition

## Electricity Generated in Minnesota

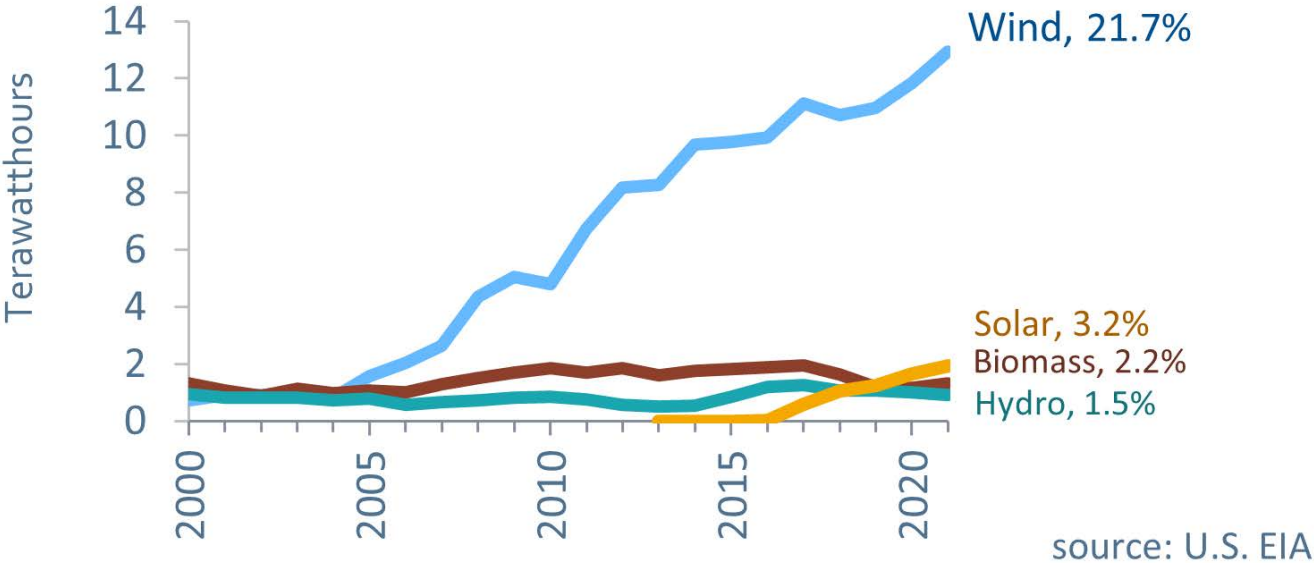


## Electricity Generated in Minnesota



# Power Generation Transition

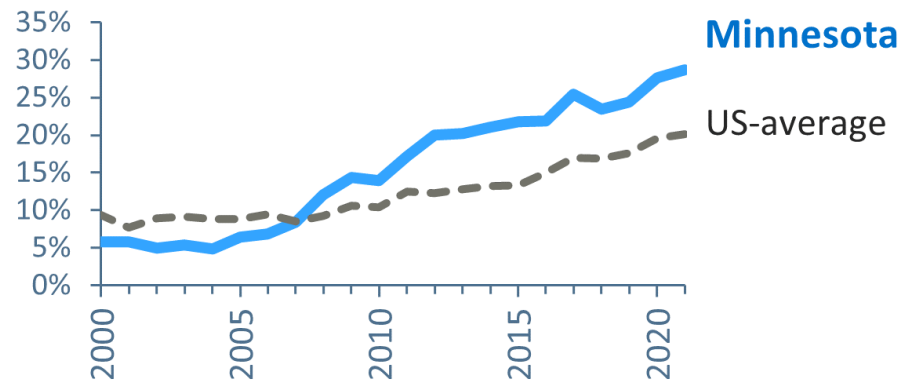
## MN Renewable Electricity Generation



# Power Generation Transition

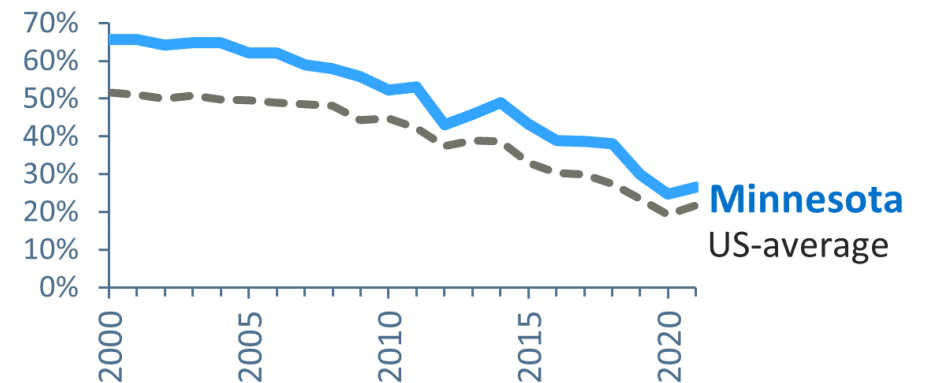
## Percent Renewable Electricity

% Megawatt-hours, source: U.S.EIA



## Percent Coal Electricity

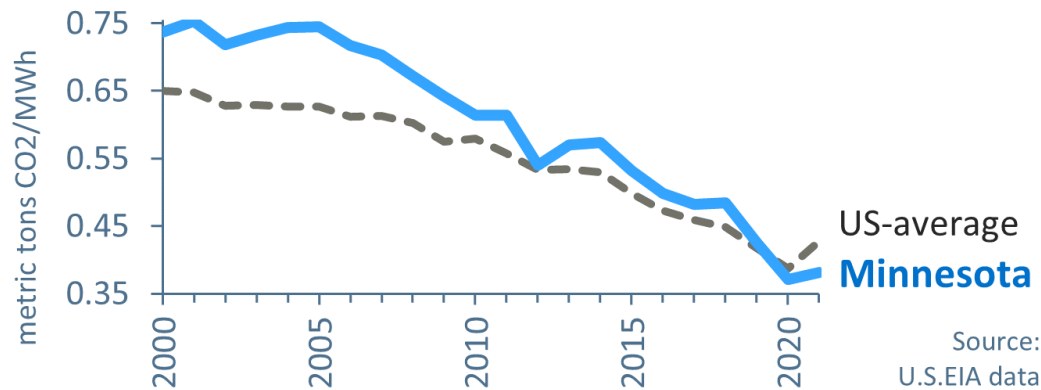
% Megawatt-hours, source: U.S. EIA



# Power Generation Transition

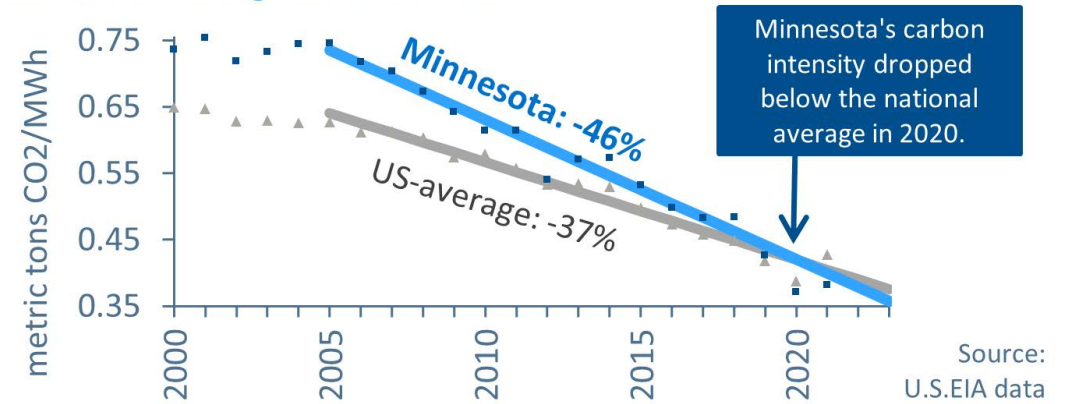
## Carbon Intensity of Electricity

generation within state borders



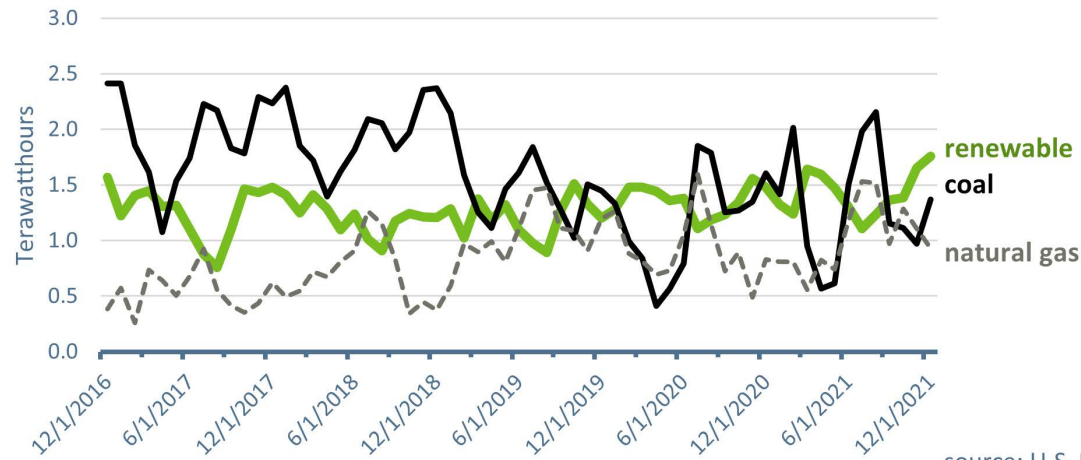
## Carbon Intensity of Electricity

Emissions change 2005 to 2021



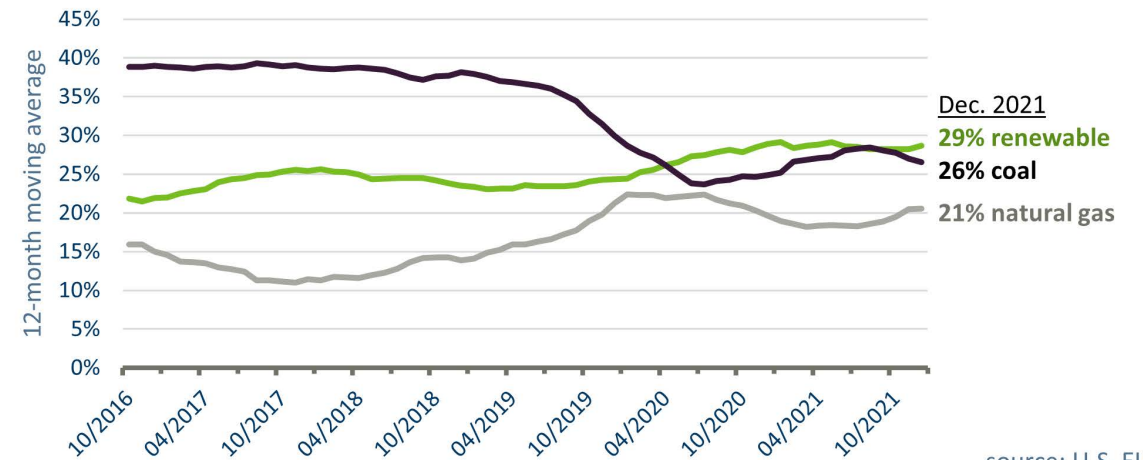
# Power Generation Transition

## Monthly electricity generation in Minnesota



source: U.S. EIA

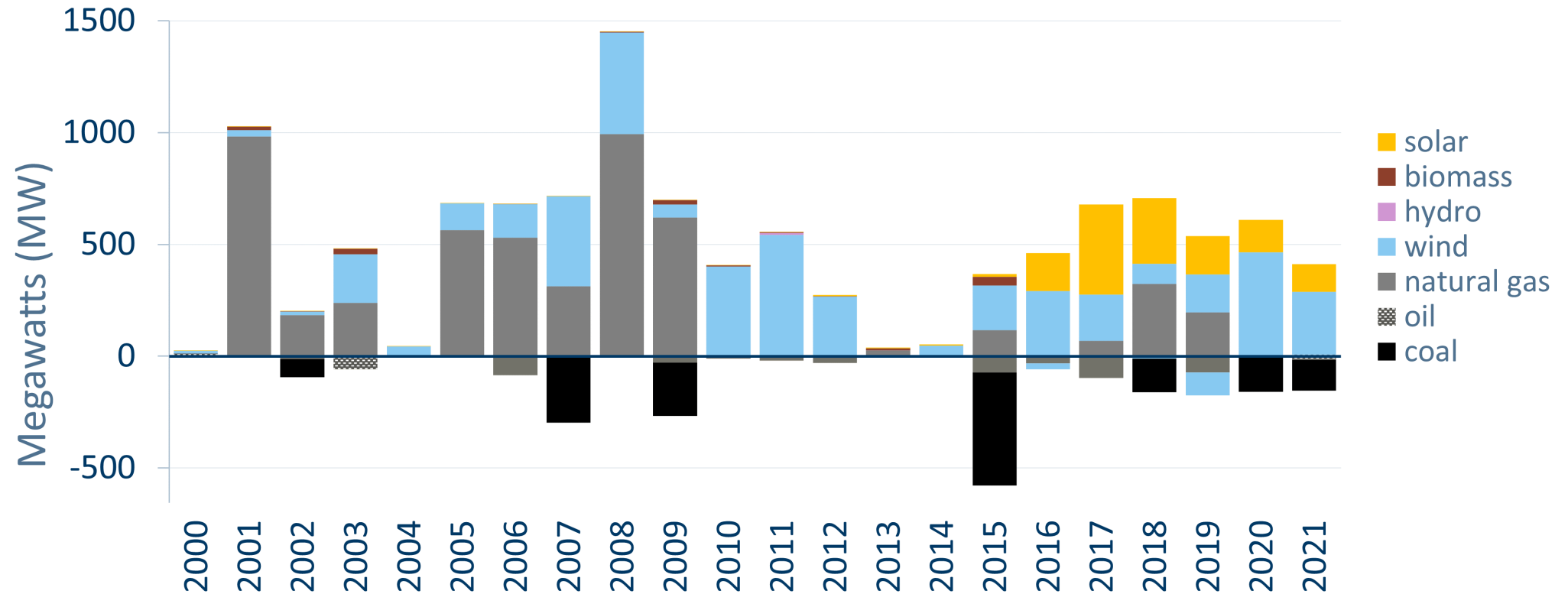
## Monthly electricity generation in Minnesota



source: U.S. EIA

# Power Generation Transition

## Minnesota's Electric Generation Capacity Annual Additions and Retirements by Fuel Type



source: Minnesota Department of Commerce

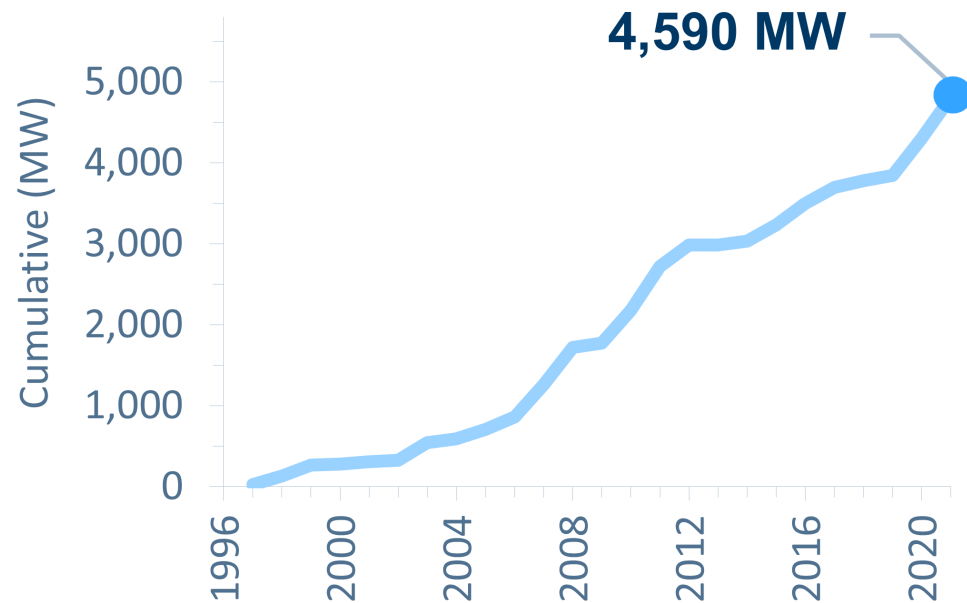
## Wind

Minnesota has the advantage of winds moving unobstructed across broad southern prairies. Additionally, the Buffalo Ridge geologic formation causes strong and steady winds in the southwestern portion of the state. In 2021, wind supplied 22% of the electricity generated within Minnesota, according to preliminary data from EIA. Minnesota is in the top 10 states nationwide for installed generating capacity and net generation from wind.

# Power Generation Transition

## Minnesota's Wind Capacity

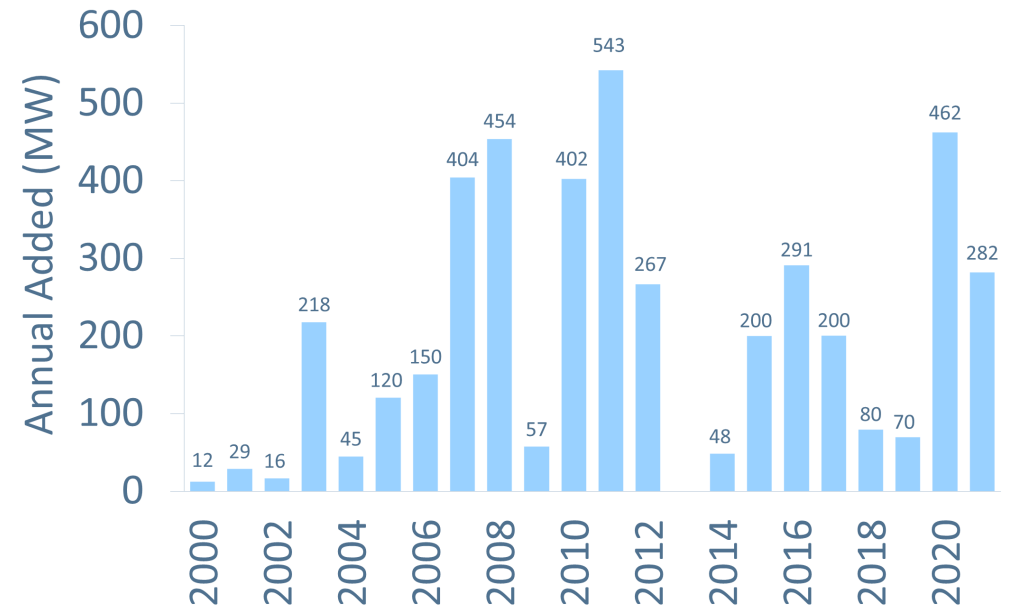
as of December 2021



Source: Minnesota Department of Commerce

## Minnesota's Annual Wind Installations

as of December 2021



Source: Minnesota Department of Commerce

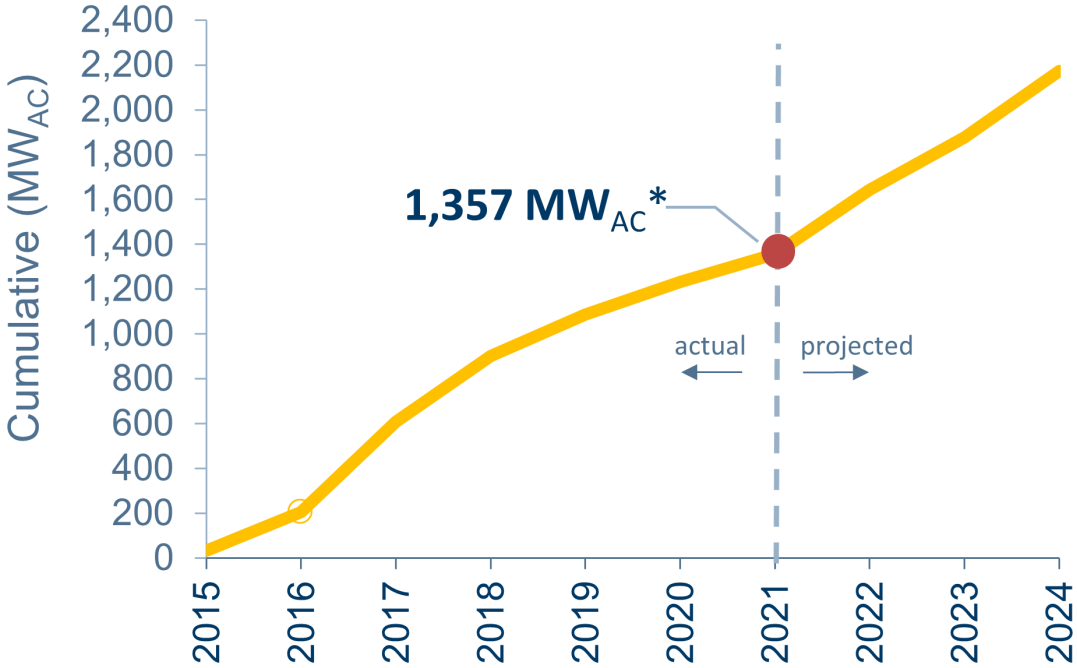
## Solar

Power generated from solar energy in the state has increased significantly in recent years. In 2021, solar energy powered 3% of the electricity generated within Minnesota, according to preliminary data from EIA. Minnesota had more than 1,350 MWac of installed solar capacity as of December 2021, based on preliminary estimates.

# Solar Capacity

## Minnesota's Solar Capacity

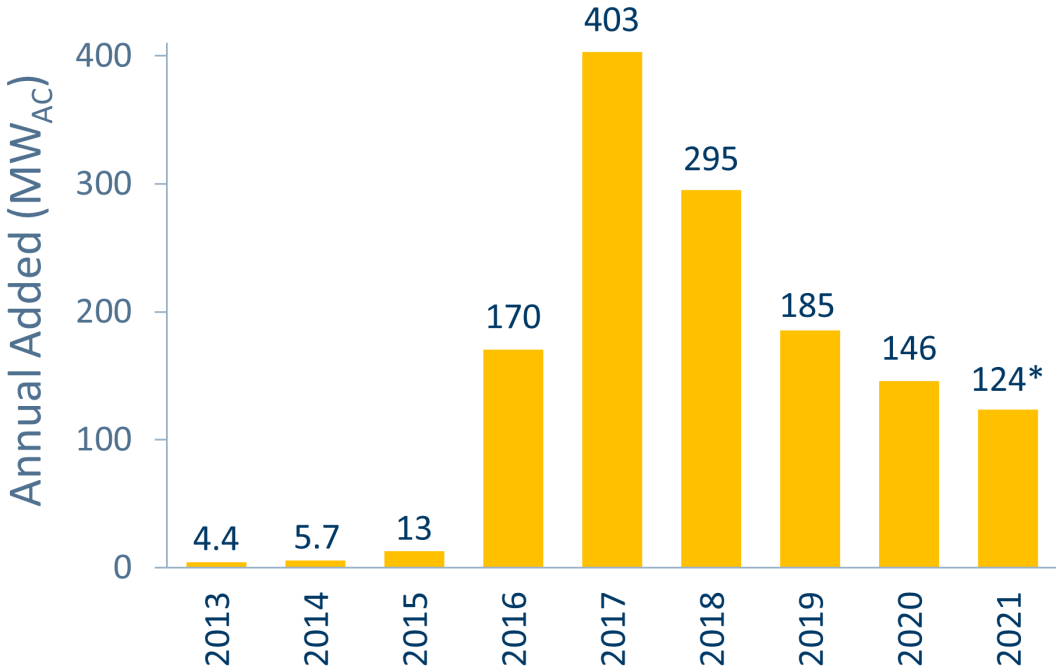
as of December 2021 (\*preliminary)



Source: Minnesota Department of Commerce

## Minnesota's Annual Solar Installations

as of December 2021 (\*preliminary)



Source: Minnesota Department of Commerce

# Building Energy Use

In 2007, Minnesota established statutory energy saving goals of 1.5% of annual electricity and natural gas retail sales through conservation improvement programs and rate design, energy codes and appliance standards, and programs designed to transform the market or change consumer behavior and other efforts (per Minn. Stat. §216B.2401).

Utilities are meeting their energy savings goals, but overall emissions and energy use from buildings are increasing.

As a cold-climate state, energy efficiency is critical. Minnesota has some of the coldest winter weather in the nation, coupled with hot, humid summers. In 2017, Minnesota's buildings consumed 40.6% of the total energy use in the state, 19.5% of which was from commercial buildings, including large multifamily buildings.

Minnesota's growing population combined with long-term housing shortages are driving new building construction in the state. From 2016 to 2019, Minnesota's population and number of households increased by 2.7%. From 2018 to 2032, Minnesota's population is estimated to increase by 7%.

Between 2016 and 2018, between 11,000 and 14,000 homes were built each year. During the same timeframe, more than 5 million square feet of commercial building space was added each year in the Twin Cities area.

Minnesota's policies and programs work together to support cost-effective energy conservation and efficiency in new and existing buildings. A [2020 study](#) found that every \$1 spent on the Conservation Improvement Program generates \$3.75 in benefits to society. In addition, Minnesota is the only Midwestern state that consistently ranks in the top 10 states nationwide in the American Council for an Energy-Efficient Economy (ACEEE) State Energy Efficiency Scorecard. As a result of these efforts, Minnesota's per capita energy consumption is lower than nearly two-fifths of other states.

# Energy Burden

Energy burden is the average annual housing energy costs divided by the average annual household income. According to the American Council for an Energy Efficient Economy (ACEEE) energy burden above 6% is considered a high energy burden.

In Minnesota, the average energy burden is 2%, while low-income households average an energy burden of 8% and some Minnesotans face an energy burden exceeding 30%.

To help reduce the energy cost burden for Minnesota's low- and moderate-income residents, the Minnesota Department of Commerce manages the federally funded the Low-Income Energy Assistance Program (EAP) and Weatherization Assistance Program (WAP). Two-thirds of annual funding for EAP and WAP are spent in Greater Minnesota, with the remaining one-third provided to households in the Twin Cities area.

Between 2016 to 2019, Minnesota's Energy Assistance Program served an average of 126,000 households each year. On average, households receiving EAP benefits in program year 2018 saw nearly a 40% reduction in their energy costs.

The Weatherization Assistance Program supports home energy efficiency upgrades, lowering the energy burden of households with income at or below 200% of the federal poverty level. WAP serves an estimated 3,500 Minnesotans annually. Homes with children, elderly, or disabled occupants, or having a high energy burden or a high energy use, receive priority service. Households receiving weatherization assistance under the WAP program see long-term energy cost reductions averaging 30%.

Neither of these programs is able to assist every low-income household in Minnesota. Approximately 20% to 30% of low-income Minnesotans apply for EAP assistance, and due to funding limitations, WAP has been able to weatherize only 9% of the eligible households in Minnesota over the last 15 years.

# Terms & Definitions

- **Alternating Current (AC)** is the form of electricity supplied by the electric grid. The polarity of the current supplied by the grid cycles from positive to negative 60 times in one second (i.e., 60 Hertz).
- **Direct Current (DC)** is the form of electricity generated by solar photovoltaic cells where electrons flow in only one direction: from negative to positive. DC is also the type of electricity used to charge batteries and power semiconductor devices such as computers and LED lights. An inverter or power converter is used to convert electricity from DC to AC.
- **Capacity (also: Nameplate Capacity)** is the maximum electric power an electricity generator can produce under specific conditions defined by the manufacturer. The capacity of utility-scale generators is measured in megawatts (MW). See also: [What is the difference between electricity generation capacity and electricity generation?](#)
- **Energy** is the amount of electricity a generator produces over a specific period of time. For example, a generator running at 1 megawatt of power that operates constantly over one hour will produce 1 megawatthour (MWh). Minnesota households used an average of 9.2 MWh/year in 2016, according to the U.S. Energy Information Administration.

# Thank You!