

Minnesota

Minnesota can leverage its extensive biomass resources and existing bioenergy infrastructure to produce advanced biofuels. The Bioenergy Technologies Office (BETO) enables the development of novel technologies that can establish Minnesota as a leader in the advanced bioeconomy.

Minnesota produces no crude oil, creating a substantial opportunity for local biofuels to displace transportation fuels imported from outside the state.



Economy

Minnesota spent **\$12.5 billion** on petroleum-based fuels for transportation in 2013. Investments in Minnesota biofuels could **keep those dollars in the state** to stimulate economic development and add to the state's **75,000+ jobs** in green goods and services.



Energy

Minnesota's transportation sector obtains **over 30%** of its **energy from biofuels**, yet the sector still consumed **over 86 million barrels** of petroleum in 2012. Minnesotan biofuels contribute to U.S. energy security by narrowing the gap between U.S. energy consumption and production.



Environment

In 2011, petroleum use by Minnesota's transportation sector released **30 million metric tonnes of CO₂**. On a life-cycle basis, advanced biofuels can **reduce greenhouse gas emissions by ≥50%** compared to petroleum—helping to reduce environmental impacts.



Feedstocks

First-generation biofuel plants in Minnesota produce **more than 1 billion gallons** of ethanol from local biomass annually. **Upgrading** existing facilities to use **cellulosic agricultural wastes** and resources from the **17 million acres of forest** can establish Minnesota as a leader in advanced biofuels.

Strategic policies and investments help *bridge the gap* between promising research and large-scale production of advanced biofuels.

As the first state to mandate the use of bio-based fuels in its fuel supply, Minnesota is a leader in biofuels production and consumption and can continue to be.

Minnesota recognizes long-term benefits of advanced biofuels by encouraging **cellulosic biofuels research and development** through grants and tax credits.

The U.S. Department of Energy (DOE) has awarded **more than \$8 million** since 2005 to university, tribal, and industrial partners in Minnesota to research, develop, and deploy sustainable bio-based fuels and products.

Institutions such as the **University of Minnesota (U of M)** are leading innovative research initiatives.

Institute on the Environment (IonE)

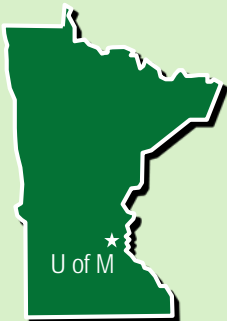
IonE supports strategic initiatives to address challenges related to energy, climate change, food supply, land use, and fresh water.

Sustainable agricultural practices

Biofuels can boost farm productivity and efficiency while reducing adverse environmental impacts.

In 2010, BETO selected the University of Minnesota to receive up to **\$790,000** for a project to analyze the biophysical and economic impacts of bioenergy feedstocks in the Mississippi River watershed.

Why Minnesota?



State policies recognize the social, economic, and environmental benefits of investments in biofuels.



Some of the richest farmland in the nation can provide more than 10.6 million metric tonnes of locally sourced, cellulosic feedstocks annually.



The strongest bio-fueling infrastructure in the nation indicates efficient biofuels distribution.



Existing non-cellulosic ethanol facilities can be upgraded to utilize non-food based feedstocks and contribute to advanced biofuels production.*



* Minnesota ranks 4th (1 billion gallons/year) among 25 ethanol producing states in the U.S.

For more information on Minnesota's energy portfolio and the economic benefits of biofuels, visit: eia.gov/state/analysis.cfm?sid=MN
acore.org/files/pdfs/states/Minnesota.pdf (based on 2011 survey by the Bureau of Labor Statistics)
eia.gov/state/seds/sep_prod/pdf/P5.pdf
For more information on Minnesota's biomass resources and environmental impacts, visit:
epa.gov/otaq/fuels/renewablefuels/documents/420f12078.pdf
eia.gov/environment/emissions/state/state_emissions.cfm
eere.energy.gov/bioenergy/pdfs/billion_ton_update.pdf, maps.nrel.gov/biofuels-atlas

For more information on Minnesota clean energy initiatives and U.S. Department of Energy partnerships, visit: mda.state.mn.us/renewable.aspx
energy.gov/eere/bioenergy/financial-opportunities
nifa.usda.gov/fo/biomassresearchanddevelopmentinitiative.cfm
environment.umn.edu/about
environment.umn.edu/event/7-things-we-learned-about-the-ag-transformation/#more-4520
energy.gov/eere/bioenergy/about-bioenergy-technologies-office-growing-americas-energy-future-replacing-whole
U.S. ethanol production: eia.gov/state/seds/sep_prod/pdf/P4.pdf