

Ohio

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

In 2012, Ohio consumed 40 times more petroleum than it produced (with transportation accounting for nearly 80% of consumption). Locally produced biofuels can reduce this high dependence on imported petroleum.



Economy

Ohio's transportation sector spent almost **\$26 billion** on petroleum-based fuels in 2013. Expanding the state's production of biofuels could **keep more of these dollars in Ohio**, stimulating economic growth and adding to the state's **137,000+ jobs** in green goods and services.



Energy

Ohio has the **8th largest biofuels production capacity** in the nation. Upgrading this infrastructure to utilize readily available agricultural residues could establish Ohio as a leader in **advanced biofuels production** and help meet a larger portion of the state's growing energy needs.



Environment

In 2011, petroleum use in Ohio's transportation sector released **61.4 million metric tonnes of carbon dioxide**. On a life-cycle basis, advanced biofuels can **reduce greenhouse gas emissions by \geq 50%** compared to petroleum—helping to reduce environmental impacts.



Feedstocks

Ohio's first-generation biofuel facilities could be upgraded to increase productivity using **cellulosic agricultural residues**. Energy crops, such as native Ohio **switchgrass, flax, miscanthus, and camelina**, can help Ohio farms increase income diversity, sustainability, and productivity.

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

Ohio's **Alternative Fuel Transportation Program** and alternative fuel requirements for new state agency vehicles demonstrate the state's commitment to increasing the use of biofuels to improve air quality and reduce petroleum dependence.

The U.S. Department of Energy (DOE) has awarded more than **\$55 million** to university and industrial partners in Ohio to research, develop, and deploy sustainable bio-based fuels and products since 2005.

In 2015, the **Ohio State University in Columbus** was selected to receive up to **\$1.2 million** as part of a collaborative effort to develop a cellulosic biobutanol production process.

DOE has helped fund cutting-edge research at several **Ohio universities** to advance the bioeconomy.

Ohio State University (OSU) — Advanced bioenergy and bio-based products represent a core focus area of OSU's Agricultural Research and Development Center.

Ohio University (OU) — Ohio University is working to increase the fuel value of algae using multiple-stage reactors.

The University of Toledo (UT) — Department of Chemical and Environmental Engineering integrates nutrient and water recycling systems with sustainable algal biorefineries.

University of Akron (UA) — Research and development on supercritical methods for biorefinery of rubber-bearing guayule biomass.

Why Ohio?



* Ohio ranks 8th (483 million gallons/year) among 25 ethanol producing states in the U.S.

Ohio's robust agricultural industry can provide 3.6 million metric tonnes of locally sourced feedstocks annually to produce biofuels and products.



Increased land productivity via use of agricultural residues improves sustainability and boosts farm revenue and value.



Developing in-state resources, such as the 2.9 million metric tonnes of feedstocks available annually via the wood products industry, helps meet energy needs and reduces dependence on imported petroleum.



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



For more information on the economic benefits of biofuels for Ohio, visit: eia.gov/state/analysis.cfm?sid=oh
energy.gov/eere/bioenergy/about-bioenergy-technologies-office-growing-americas-energy-future-replacing-whole-acre.org/files/pdfs/states/Ohio.pdf (based on 2011 survey by the Bureau of Labor Statistics)
For more information on Ohio biomass resources, visit: eere.energy.gov/bioenergy/pdfs/billion_ton_update.pdf
maps.nrel.gov/biofuels-atlas, agri.ohio.gov/divs/bioproducs/bioproducs.aspx

For more information on the environmental benefits of biofuels for Ohio, visit: epa.gov/otaq/fuels/renewablefuels/documents/420f12078.pdf
eia.gov/environment/emissions/state/state_emissions.cfm

For more information on Ohio clean energy initiatives and DOE partnerships, visit: development.ohio.gov/bs/bs_allfueltrans.htm energy.gov/eere/bioenergy/financial-opportunities
energy.gov/eere/bioenergy/articles/energy-department-announces-10-million-develop-innovative-bioenergy
oarc.ohio-state.edu/, ohio.edu/engineering/index.cfm, utoledo.edu/nsm/sqce/#
U.S. ethanol production: eia.gov/state/seds/sep_prod/pdf/P4.pdf, eia.gov/petroleum/ethanolcapacity/