

Tennessee

Tennessee is the leading ethanol-producing state in the Southeast. The Bioenergy Technologies Office (BETO) enables the development of novel technologies that Tennessee can use to leverage its existing bioenergy infrastructure and biomass resources to become a leader in advanced biofuels.

In 2012, Tennessee consumed 340 times more petroleum than it produced. Biofuels produced from local biomass can create jobs and reduce dependence on petroleum.



Economy

Tennessee's transportation-related petroleum expenditures totaled **\$16 billion** in 2013. Expanding the state's production of advanced biofuels could **keep more of these dollars within Tennessee** to stimulate economic activity and add to the state's **71,000+ jobs** in green goods and services.



Energy

In 2012, Tennessee produced over **5.2 million** barrels of ethanol for fuel. **Upgrading this infrastructure** with commercially available technology could establish Tennessee as a leader in **advanced biofuels** production, and—if petroleum supplies were to become disrupted—**increase the state's resiliency**.



Environment

In 2011, petroleum use in the Tennessee transportation sector released **41 million metric tonnes of carbon dioxide**. On a life-cycle basis, advanced biofuels can **reduce greenhouse gas emissions by ≥ 50%** compared to petroleum—helping to reduce environmental impacts.



Feedstocks

Tennessee's first-generation biomass feedstocks contribute significantly to the production of **biofuels and coproducts**, such as **animal feed**. Using cellulosic biomass resources from **agricultural residues and energy crops** (e.g., **switchgrass**) could increase the **productivity and value** of existing bioenergy operations.

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

Run by the Tennessee Department of Transportation, the **Biofuel Green Island Corridor Network** aims to increase access to convenient retail biofuel stations.


The **Clean Tennessee Energy Grant Program** selects and funds projects that help to reduce emissions and pollutants.

The U.S. Department of Energy (DOE) has awarded more than **\$231 million** to university, national laboratory, and industrial partners in Tennessee to research, develop, and deploy sustainable bio-based fuels and products since 2005.


Tennessee's **Oak Ridge National Laboratory (ORNL)** plays a key role in reducing fossil fuel use and greenhouse gas emissions.

- Bioenergy Science Center** — Performs valuable research on feedstocks, logistics, biorefineries, delivery systems, and sustainability to improve the yields of biofuels.
- Center for Bioenergy Sustainability** — Defining sustainability for bioenergy, determining indicators for use at the national scale, and assessing implementation and sustainability indicators for bioenergy decisions.
- National Transportation Research Center** — This user facility provides key resources to advance research in fuels, engines, emissions, and more.
- Transportation Solutions using Carbon Fiber** — ORNL is researching the capabilities of lignin, a compound derived from wood, as a renewable material for production of carbon fiber.

Why Tennessee?

Robust agricultural industry can provide 0.833 million metric tonnes of locally sourced cellulosic feedstocks. 

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

Developing in-state resources, such as the 3.4 million metric tonnes of feedstocks available annually via the wood products industry, reduces dependence on imported petroleum products. 

Improved land use efficiency improves sustainability and boosts Tennessee farm revenue and value. 

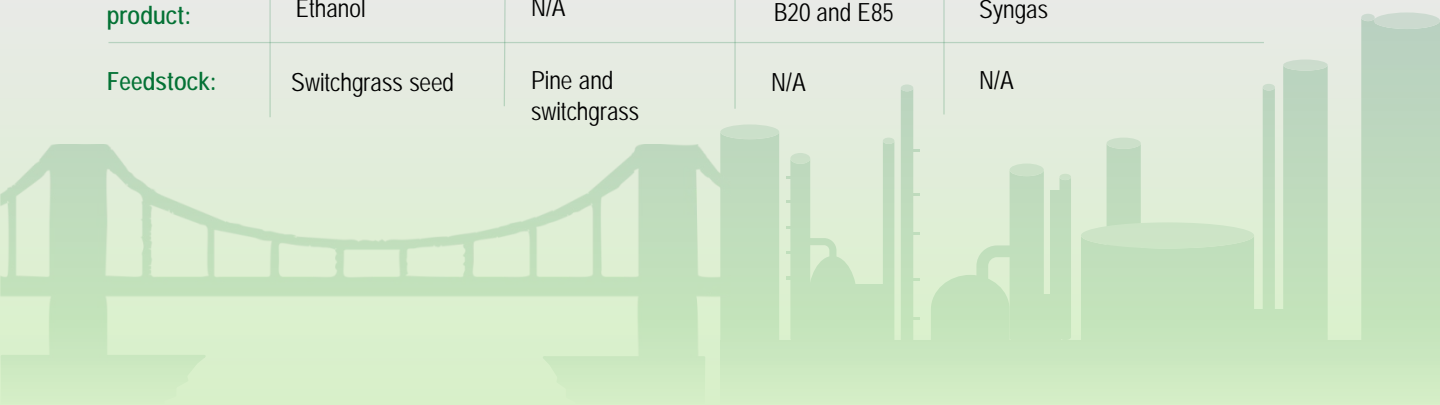
* Tennessee ranks 13th (230 million gallons/year) among 25 ethanol producing states in the U.S.



DOE has supported **basic research and development (R&D) at Tennessee universities**. This basic research improves the productivity of bioenergy feedstocks and maximizes the benefits of biofuels and bioproducts while minimizing negative impacts. DOE seeks to promote promising biofuel and biotechnologies research with the greatest chance of impact on commercial biofuel and bioproducts production.

BETO Projects with Universities

Participant:	University of Tennessee			University of Memphis
Research area:	Production of a dedicated energy crop incorporating multiple varieties of switchgrass seed	Blending feedstocks to increase the amount available within a given delivery radius	Increase the availability of E85 and B20 along Interstate 75	Biofuel microrefineries for local sustainability
Stage:	R&D, demonstration	R&D, demonstration	Commercial installations	Bench-scale
Primary product:	Ethanol	N/A	B20 and E85	Syngas
Feedstock:	Switchgrass seed	Pine and switchgrass	N/A	N/A



For more information on Tennessee biomass resources and the economic and environmental benefits of biofuels, visit: ers.usda.gov/topics/farm-economy/bioenergy/biofuel-feedstock-coproduct-market-data.aspx#Coproducts acore.org/files/pdfs/states/Tennessee.pdf (based on 2011 survey by the Bureau of Labor Statistics) energy.gov/eere/bioenergy/about-bioenergy-technologies-office-growing-americas-energy-future-replacing-whole epa.gov/otaq/fuels/renewablefuels/documents/420f12078.pdf eia.gov/environment/emissions/state/state_emissions.cfm card.iastate.edu/publications/dbs/pdffiles/14sr109.pdf eere.energy.gov/bioenergy/pdfs/billion_ton_update.pdf, maps.nrel.gov/biofuels-atlas

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