

# Nebraska

Nebraska can leverage its extensive biomass resources and existing bioenergy infrastructure to become a leader in the production of advanced biofuels. The Bioenergy Technologies Office (BETO) enables the development of novel technologies that can benefit Nebraska.

In 2012, Nebraskans consumed 34.5 million barrels of petroleum for transportation—11 times the state's production. Investing in biofuel production can create new jobs, improve energy security, and reduce harmful emissions.



## Economy

Nebraska spent **\$5.4 billion** on petroleum fuels for transportation in 2013. The state's **24 active ethanol plants** are creating jobs and stimulating economic growth in local communities. Investing in advanced biofuels can create more jobs and produce high-value products.



## Energy

Nebraska is the second-largest producer of **ethanol** in the nation, producing **43.4 million barrels** in 2012. Nebraska can retain its national leadership by upgrading local infrastructure to accept **cellulosic biomass** and produce **drop-in biofuels**. Nebraska biofuels help narrow the gap between U.S. energy consumption and production.



## Environment

In 2011, petroleum use in Nebraska's transportation sector released **13 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 the environmental impacts of the transportation sector.



## Feedstocks

**Existing infrastructure** at Nebraska's first-generation biofuel plants can be upgraded to convert **cellulosic agricultural residues** into advanced biofuels and high-value byproducts. **Algae, energy crops, and urban wastes** are among the other sustainable biomass resources available in Nebraska.

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

Nebraska is a member of the **Governors' Biofuels Coalition**, an organization committed to lowering the nation's dependence on imported energy resources, improving the environment, and stimulating the economy through the development of biofuels.

In May 2013, the Department of Defense selected **Natures BioReserve LLC** in South Sioux City to supply at least 10 million gallons per year of military-grade aviation and marine biodiesel.

The U.S. Department of Energy (DOE) has awarded more than **\$9 million** to university and industrial partners in Nebraska to research, develop, and deploy sustainable bio-based fuels and products since 2005.

Institutions such as the **University of Nebraska–Lincoln (UNL)** are essential to leading innovative research initiatives.

### Industrial Agricultural Products Center at UNL

Biofuels research at the Industrial Agricultural Products Center has focused on cleaner transportation fuels, implementation of biofuels in the transportation infrastructure, and alternative processing options for the production of biofuels and co-products.

**BETO-supported intergovernmental efforts** strive to develop sustainable transportation options for the nation. The **Farm to Fly 2.0** initiative aims to develop a commercially viable **aviation biofuel industry** for the United States.

## Why Nebraska?



Some of the richest farmland in the nation can provide 9.5 million metric tonnes of locally sourced cellulosic feedstocks.



Excess crop waste can be recycled into fuel to improve sustainability and boost Nebraska farm revenue.



Developing in-state resources reduces U.S. dependence on imported petroleum products.



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



\* Nebraska ranks 2<sup>nd</sup> (1.82 billion gallons/year) among 25 ethanol producing states in the U.S.

DOE (often in partnership with the U.S. Department of Agriculture) has supported **basic research and development at Nebraska 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

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|-------------------------|--|--|
| <b>Participant:</b>     | University of Nebraska–Lincoln   |  |
| <b>Research area:</b>   | Switchgrass biofuel research: carbon sequestration and life-cycle analysis | Characterization of nitrogen use efficiency in sweet sorghum |
| <b>Stage:</b>           | Research and development (R&D)   | R&D  |
| <b>Primary product:</b> | N/A  | Improved nitrogen use  |
| <b>Feedstock:</b>       | Switchgrass  | Sweet sorghum  |



For more information on the economic benefits of biofuels for Nebraska, visit:  
[eia.gov/state/analysis.cfm?sid=NE](http://eia.gov/state/analysis.cfm?sid=NE)  
[energy.gov/eere/bioenergy/about-bioenergy-technologies-office-growing-americas-energy-future-replacing-whole](http://energy.gov/eere/bioenergy/about-bioenergy-technologies-office-growing-americas-energy-future-replacing-whole)  
[eia.gov/state/data.cfm?sid=NE#ConsumptionExpenditure](http://eia.gov/state/data.cfm?sid=NE#ConsumptionExpenditure)  
 For more information on biomass resources and the environmental benefits of biofuels, visit:  
[epa.gov/otaq/fuels/renewablefuels/documents/420f12078.pdf](http://epa.gov/otaq/fuels/renewablefuels/documents/420f12078.pdf)  
[eia.gov/environment/emissions/state/state\\_emissions.cfm](http://eia.gov/environment/emissions/state/state_emissions.cfm)  
[eere.energy.gov/bioenergy/pdfs/billion\\_ton\\_update.pdf](http://eere.energy.gov/bioenergy/pdfs/billion_ton_update.pdf), [maps.nrel.gov/biofuels-atlas](http://maps.nrel.gov/biofuels-atlas)

For more information on Nebraska clean energy initiatives, research, and partnerships, visit:  
[governorsbiofuelscoalition.org/?page\\_id=16](http://governorsbiofuelscoalition.org/?page_id=16)  
[biomassmagazine.com/articles/9041/first-grant-recipients-named-under-dod-advanced-biofuels-program](http://biomassmagazine.com/articles/9041/first-grant-recipients-named-under-dod-advanced-biofuels-program)  
[agproducts.unl.edu/biofuels-research](http://agproducts.unl.edu/biofuels-research)  
[energy.gov/eere/bioenergy/financial-opportunities](http://energy.gov/eere/bioenergy/financial-opportunities)  
[energy.gov/eere/bioenergy/articles/farm-fly-20-energy-department-joins-initiative-bring-biofuels-skies](http://energy.gov/eere/bioenergy/articles/farm-fly-20-energy-department-joins-initiative-bring-biofuels-skies)  
 U.S. ethanol production: [eia.gov/state/seds/sep\\_prod/pdf/P4.pdf](http://eia.gov/state/seds/sep_prod/pdf/P4.pdf)  
[eia.gov/petroleum/ethanolcapacity/](http://eia.gov/petroleum/ethanolcapacity/)