

Kansas

Kansas is a national leader in the development of advanced biofuels. The U.S. Department of Energy (DOE)-supported Abengoa biorefinery in Hugoton leverages the state's extensive biomass resources and existing bioenergy infrastructure to produce advanced biofuels.

Advanced biofuels produced from excess post-harvest waste help maintain soil health, create another income stream for rural communities, and improve energy security for Kansas.



Economy

Kansas spent **\$7.5 billion** on petroleum-based transportation fuels in 2013. Additional production of domestic biofuels could keep more of those dollars within the state to stimulate economic growth and add to the **25,000+** jobs in green goods and services in Kansas.



Energy

Kansas consumed **78.2 million barrels** of petroleum in 2012. Kansas is one of the **top 10 ethanol-producing** states, with an annual capacity of more than **500 million** gallons. The use of abundant cellulosic feedstocks can improve Kansas' energy security and resilience.



Environment

In 2011, petroleum use in the Kansas transportation sector released **17 million metric tonnes of carbon dioxide**. On a life-cycle basis, advanced biofuels can reduce greenhouse gas (GHG) emissions by **≥ 50%** compared to petroleum—helping to reduce environmental impacts.



Feedstocks

Kansas' first-generation biofuel facilities can be upgraded to convert **cellulosic agricultural residues** into advanced biofuels and high-value products. This advanced technology is being demonstrated in **Hugoton, Kansas**, at the "first of a kind" commercial-scale Abengoa integrated biorefinery.

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

The **Kansas Bioscience Authority (KBA)** recognizes the social, economic, and environmental benefits of producing bio-based fuels, chemicals, and products.

Support from the KBA helped **Green Dot Holdings** to successfully develop biodegradable and compostable biopolymer plastic resins that can replace petroleum-based plastics.

The DOE has awarded more than **\$124 million** to university and industrial partners in Kansas to research, develop, and deploy sustainable bio-based fuels and products since 2005. This total includes \$97 million for the Abengoa biorefinery process engineering and design. Abengoa also received a **\$132 million** loan guarantee from DOE to support construction of the facility.

Kansas' Integrated Biorefinery

- Location** — Hugoton, Kansas
- Process /feedstock** — Innovative enzymatic process that converts agricultural residue to ethanol
- Job creation** — 65 permanent, 1,200 temporary
- Primary products** — Cellulosic ethanol, renewable electricity
- Annual capacity** — Up to 25 million gallons of ethanol and 21 megawatts of electricity
- Environmental benefit** — 60% GHG reduction vs. gasoline

Why Kansas?



Robust agricultural industry can provide 6.4 million metric tonnes of locally sourced, cellulosic feedstocks annually.

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

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

Central location facilitates distribution of products to new markets in the U.S.

* Kansas ranks 9th (449 million gallons/year) among 25 ethanol producing states in the U.S.

For more information on the economic benefits of biofuels for Kansas, visit: eia.gov/state/analysis.cfm?sid=KS, energy.gov/eere/bioenergy/about-bioenergy-technologies-office-growing-americas-energy-future-replacing-whole-acre.org/files/pdfs/states/Kansas.pdf (based on 2011 survey by the Bureau of Labor Statistics). For more information on Kansas biomass resources and environmental benefits, 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 Kansas clean energy initiatives and DOE partnerships, visit: afdc.energy.gov/laws/all?state=KS, kansasbioauthority.org/for-entrepreneurs, kansasbioauthority.org/portfolio/green-dot-holdings-llc, energy.gov/eere/bioenergy/financial-opportunities, energy.gov/eere/bioenergy/abengoa, U.S. ethanol production: eia.gov/state/seds/sep_prod/pdf/P4.pdf, eia.gov/petroleum/ethanolcapacity/