



What is BETO?

The Bioenergy Technologies Office within the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy supports the research, development, and demonstration of technologies aimed at mobilizing domestic renewable carbon resources for the reduction of greenhouse gas emissions across the U.S. economy.

Bioenergy can help ensure an economically sound and secure future while reducing environmental impacts by:

- Developing affordable domestic fuels and coproducts.
- Advancing clean energy sources.
- Generating domestic jobs to support the growth of the U.S. bioeconomy.

Get involved! For more information about the BRIDGES program or to access BRIDGES materials, visit energy.gov/BRIDGES, or email Bioenergy_Bridges@ee.doe.gov. ■



For more information, visit: energy.gov/bridges

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U.S. DEPARTMENT OF
ENERGY

Office of **ENERGY EFFICIENCY
& RENEWABLE ENERGY**



Bioenergy Research and Education BRIDGES Program Prepares a National Bioenergy Workforce

What is BRIDGES?

The U.S. Department of Energy (DOE) Bioenergy Technologies Office (BETO) Bioenergy Research and Education Bridge (BRIDGES) is an educational development program designed to assist educators in teaching bioenergy topics to help prepare the future bioenergy workforce.

The bioenergy-themed case studies are based upon foundational bioenergy research at DOE national laboratories. Specific goals for the BRIDGES program include:

- Translating DOE scientific research for the classroom setting
- Creating awareness of bioenergy topics and careers
- Accelerating the transition from academics to industry
- Providing equitable access to high-quality bioenergy learning materials.

Who is BRIDGES for?

- The BRIDGES curriculum can be used as part of a biology, environmental science, or chemistry course in a high school, community/technical college, or university setting.
- To support diversity, equity, and inclusion, the BRIDGES program allows for place-based learning and culturally responsive teaching.
- The case studies draw inspiration from BETO's science and technology research for long-term adaptation, resiliency, and sustainable practices and policies that support historically marginalized U.S. communities.

Tell me more!

- BRIDGES case studies provide comprehensive student and instructor guides, making it simple for instructors with no prior bioenergy experience to lead students through the learning experience.
- Students first learn about bioenergy topics by engaging with provided resources, then apply this knowledge in an authentic scenario designed by education professionals with the input of scientific and industry advisors.
- National laboratory scientists provide the research and subject matter expertise for each BRIDGES case study. National laboratory education and workforce development professionals lead the educational bioenergy case study design and development.



Photo from Argonne National Laboratory.

Interested in BRIDGES but don't have a background in bioenergy? We can help!

What is biomass?

Biomass is an energy resource derived from plant- and algal-based materials or organic waste streams. It includes a range of resources, from corn stover left in the field after agricultural harvesting to algae to municipal solid waste. Some types of biomass and certain kinds of waste hold valuable carbon resources that can be converted into fuels, chemicals, or power sources.

Why is bioenergy important?

Bioenergy is a critical part of a holistic approach to achieving a clean energy future in the United States. Enhancing bioenergy can strengthen the economy across multiple industries from agriculture to commercial aviation. DOE partnerships are driving research and development efforts on a variety of technologies and manufacturing improvements that will enable bioenergy to meet the needs of people and businesses.

A robust bioenergy industry will generate U.S. jobs across several sectors, including agricultural production, transportation, microbiology research, and chemical engineering, among others. Bioenergy and bioproduct production have the potential to create domestic jobs and economic opportunities for U.S. communities. The BRIDGES program prepares students for these bioenergy jobs.

BRIDGES Case Studies

Explore case study topics below to learn more about each topic and how it is implemented in a classroom.

- **Farm to Flight: Are Sustainable Aviation Fuels Good for the Environment?**
Life cycle analysis of greenhouse gas emissions for biofuels versus petroleum fuel.
- **Upcycling: Could My Plastic Bag Someday Be the Sustainable Alternative?**
Investigate how chemists find new ways to upcycle plastics for a circular economy.
- **Regional Feedstocks: Are They the Answer to Achieving a Net-Zero Future?**
Evaluate regional biomass and waste resources for conversion to transportation biofuels.
- **Municipal Solid Waste-to-Energy: Traditional Ecology and Environmental Justice**
Explore how the Shoshone-Bannock Tribes could transform their solid waste stream into biofuels and other products.