U.S. DEPARTMENT OF Energy Efficiency & Renewable Energy Energy Efficiency &

National and Local Benefits of Domestic Biofuels

Ouick Facts on BIOFUELS

Economic

Growth

Energy

Security

Feedstock

Diversity

Environmental

Footprint

The Bioenergy Technologies Office (BETO) is working to sustainably transform U.S. renewable energy crops, residues, wastes, and algae into high-performance biofuels, bioproducts, and biopower. The U.S. bioindustry can be developed in a manner that simultaneously protects land, food, and water resources; strengthens America's competitive advantages; maintains a strong economy; and creates jobs while helping the environment. Recognizing that no single energy source can reliably meet all of America's growing energy needs, the Administration has adopted an "All-of-the-Above" energy strategy that includes responsible oil and gas development, increased vehicle fuel economy, and investment in renewable domestic energy.

Even with increased U.S. petroleum production from shale, 7.4 million barrels/day of foreign oil were imported in 2014. Investments in the bioeconomy create jobs and keep U.S. dollars at home.

High-guality fuels grown in America reduce our dependence on foreign oil. Locally sourced biomass supply chains support U.S. energy security and economic health while maintaining our future competitive advantage.

Geographically diverse feedstock options enable the sustainable use of local resources. Advanced conversion pathways can flexibly produce a range of desired fuels and products.

In 2013, U.S. greenhouse gas emissions from transportation sector accounted for about 27% of total emissions, the second largest contributor. On a life cycle basis, advanced biofuels reduce emissions by > 50% vs. petroleum.



U.S. trade deficit in petroleum products (2014)-dollars that could be kept within our economy.

Early Years: Corn Ethanol

The U.S. Department of Energy (DOE) did not need to make an investment in corn ethanol, which uses a mature technology. The existing infrastructure can be leveraged to utilize abundant cellulosic agricultural residues to produce advanced biofuels.



Barrels of foreign oil imported daily in 2014. Domestic biofuels can help reduce this dependence.

Share of U.S. petroleum use in 2014 that domestic biofuels could displace by 2030.

30%

Metric Tonnes of Carbon Dioxide (equivalent) emissions that could be avoided annually with biofuels by 2030.

Recent: Cellulosic Biofuels

In 2014, BETO-supported efforts culminated in two of the first commercialscale U.S. biorefineries to produce cellulosic ethanol from non-food feedstock sources. The INEOS plant, commenced in 2013, was also supported by BETO.

The cellulosic biorefineries demonstrate the sustainable production of fuels from plant residues and wood waste, create green jobs, and support U.S. competitive advantage.

2G Hugoton Project Hugoton, Kansas Abengoa Bioenergy, opened October 2014: 25 million gallons of cellulosic ethanol capacity and 21 megawatts of renewable electricity produced annually when fully operational.

Project Liberty Emmetsburg, Iowa POET-DSM, opened September 2014: 25 million gallons of cellulosic ethanol capacity annually when fully operational.

For more information on the diversity of biomass feedstocks and products, visit: energy.gov/sites/prod/files/2014/04/f14/replacing_barrel_overview.pdf eere.energy.gov/bioenergy/pdfs/billion_ton_update.pdf maps.nrel.gov/biofuels-atlas

1,686 jobs created to construct, operate, or indirectly support the plants.

\$37+ million paid to local farmers annually for feedstocks.

220,000 metric tonnes of carbon dioxide emissions avoided annually (= 47,000 cars) when at capacity.

For more information on petroleum imports and emissions, visit: eia.gov/dnav/pet/pet_move_impcus_a2_nus_epc0_im0_mbbl_a.htm census.gov/foreign-trade/Press-Release/current_press_release/ft900.pdf epa.gov/climatechange/ghgemissions/sources/transportation.html

Current: "Drop-in" Biofuels

400 million

BETO conducts research and development (R&D) on advanced biofuels that are compatible with the existing U.S. infrastructure and military needs (replacing petroleumbased diesel, jet fuel, and gasoline).

Food AND Fuel

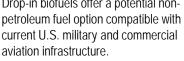


Sustainably producing food, feed, AND fuel (the latter from both agricultural residues and bioenergy crops) will increase local revenues.

Bio-Based Jet Fuel



Drop-in biofuels offer a potential non-



For more information on DOE initiatives and partnerships, visit: energy.gov/eere/bioenergy/integrated-biorefineries energy.gov/eere/bioenergy/articles/farm-fly-20-energydepartment-joins-initiative-bring-biofuels-skies

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For more information, visit: bioenergy.energy.gov DOE/EERE-1184 • September 2015