Environmental and Energy Study Institute

EESI

Briefing Notice

Carbon Accounting and Vehicle Fuels: A Research Update

Thursday September 18, 2014
3:00 PM – 4:30 PM
2237 Rayburn House Office Building
Please RSVP to expedite check-in: www.eesi.org/091814biofuels#rsvp

The **Environmental and Energy Study Institute** (EESI) invites you to a briefing examining recent research regarding the carbon dioxide (CO2) intensity of transportation fuels, such as crude oil and ethanol. The panel will also consider the economic costs and benefits of renewable fuels as a CO2 reduction strategy. There is a growing body of research concerning the carbon intensity of both petroleum-derived and renewable fuels. Carbon intensity refers to the amount of greenhouse gases (including CO2, nitrous oxide, and methane) that are released per unit of fuel. "Wells to wheels" assessments are calculated by adding the emissions at each production step. For biofuels, this includes emissions and/or carbon sequestration as well as impacts to land use associated with growing biofuel feedstocks. Speakers for this forum are:

- **Dr. Michael Wang**, Senior Scientist, Energy Systems, Argonne National Laboratory
- **Dr. Steffen Mueller**, Principal Economist, Energy Resources Center, University of Illinois at Chicago
- **Dean Drake**, President, Defour Group, LLC

Currently, the U.S. transportation fuel supply contains approximately 10 percent ethanol, a renewable fuel intended to lower greenhouse gas (GHG) emissions and reduce dependence on petroleum. The primary feedstock for renewable ethanol is cornstarch, but other advanced feedstocks, such as agricultural and municipal solid waste, are now reaching commercial production levels. The Renewable Fuel Standard (RFS) mandates that corn ethanol must achieve greenhouse gas (GHG) reductions of 20 percent relative to petroleum-derived gasoline, while advanced biofuels and cellulosic biofuels must attain 50 to 60 percent GHG reductions, respectively. However, new research suggests that improvements in technology may achieve even higher reductions in GHG for ethanol and advanced biofuels.

Models such as the "Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model" (GREET) by Argonne National Laboratory, have demonstrated that the carbon intensity for ethanol has been steadily falling in the past decade. Recent GREET analyses have estimated that corn ethanol has a carbon intensity between 19 and 48 percent lower than conventional gasoline. Research conducted at the University of Illinois at Chicago has also shown that the corn ethanol industry's energy use has declined 30 percent in a seven-year time period. Between 2008 and 2012, the yield of ethanol per bushel of corn has remained the same, whereas the thermal energy obtained per bushel has increased substantially.

In the ongoing search for a fuel blend that will meet increasing vehicle efficiency standards without significantly affecting consumer prices, ethanol provides many significant advantages in addition to its low carbon intensity. In particular, ethanol is home grown (decreasing our dependence on foreign countries), and its production results in many valuable byproducts, such as dry distiller's grains (animal feed), corn oil, and fiber. Ethanol is also high in octane, which will become an increasingly important fuel characteristic as car manufacturers deploy increasingly efficient engine technologies. While ethanol has a lower overall energy content than gasoline, the decoupling of gasoline and ethanol prices means that fuels with high ethanol content, such as E85, are now at or close to price parity with gasoline on an energy content basis. This briefing is the first in a series this fall, set to examine renewable fuels.

This event is free and open to the public.
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