Living up to Standards

Transportation Emissions and the Renewable Fuel Standards

BY HEIDI GARRETT-PELTIER

Is reducing U.S. greenhouse gas emissions and independence on imported oil just a pipe dream? Without transforming the U.S transportation sector, which accounts for 34% of U.S. carbon dioxide emissions, it surely is.

The United States needs alternative forms of transportation: more public transit; more walking and biking; more carpooling; in short, just about any alternative to one person per vehicle. But the United States also needs to change its transportation energy, away from oil and toward biofuels and other alternatives. Currently petroleum accounts for 97.4% of U.S. transportation energy, and about half of it is imported.

The Renewable Fuel Standard was established under the Energy Independence and Security Act of 2007 and revised in 2010 by the Environmental Protection Agency to help make the shift toward petroleum alternatives. This revised standard, known as RFS2, could offer some hope. It mandates large increases in biofuels, which are required to have emissions of greenhouse gases 20% to 60% below that of gasoline, depending on their type.

But how much authentic progress has been made since 2007 and what is the promise that the RFS2 will bring about a genuine reduction in U.S. emissions of greenhouse gases and dependence on imported oil?

The key to the potential of the RFS2 to reduce greenhouse gas emissions lies in its promotion of the development and use of "advanced" biofuels. The biofuel that is most widely used in the U.S. today is corn-based ethanol, which is derived from the starch of the corn kernel. But the environmental benefits of corn ethanol are limited at best, and some studies have even found that the lifecycle greenhouse gas emissions from corn ethanol can be greater than from gasoline per unit of energy. The National Academy of Sciences has reviewed and conducted a number of studies on the sustainability of biofuels and has found that corn ethanol should be considered only a transitional biofuel, to be used until advanced biofuels are fully commercialized.

Advanced biofuels consist largely of cellulosic biofuels, which are fuels that are produced from non-food parts of plants. The materials used to produce these fuels include agricultural residues (such as corn stalks), dedicated energy crops such as grasses and fast-growing trees, forest resources, and municipal solid waste. Cellulosic fuels largely do not compete with food supplies and the National Academy of Sciences has estimated that by 2030, up to 40 billion gallons of cellulosic fuels could be produced annually in a sustainable manner.

Could "advanced" biofuels help move U.S. transportation energy beyond petroleum?

There are other advanced biofuels, such as those made from algae, which also have the potential to dramatically reduce greenhouse gas emissions in comparison to petroleum. The trouble is, cellulosic and other advanced biofuels have not yet reached commercialization. If the United States is to reduce its greenhouse gas emissions in any meaningful way, advanced biofuels must reach commercial scale, and must do so quickly. Biofuels can be produced domestically, which means fewer oil imports. This, in turn, implies reduced military conflicts over oil, greater energy security, and less spending leaking out of the economy. Domestic production means domestic employment.

Whether we reach the point of producing billions of gallons per year of sustainably harvested cellulosic fuels depends on a number of factors, including how competitive the prices of biofuels are with gasoline, whether sufficient infrastructure is developed for the distribution of billions of gallons of biofuels annually, and whether there is continued public support to develop and commercialize these fuels. While the RFS2 could be one step in this direction, so far it has been insufficient. It mandates the volumes and emission reduction targets of biofuels, but in no way ensures price-competitiveness with gasoline. Advanced biofuels will continue to require subsidies as the industry gets off the ground, and the policy uncertainty that comes with on-again-off-again price subsidies can discourage some investors from building commercial-scale biofuel refineries.

The oil industry has benefited from public support in the form of subsidies and tax preferences for many decades. Advanced biofuels, mere infants in comparison, need the same kind of financial support to be able to compete. Given the potential for emissions reductions, as well as the economic benefits to the domestic economy, there are multiple reasons for supporting the growth of this industry. The RFS2 should be enforced, but we must pursue additional strategies to make cellulosic and other advanced biofuels viable options for transportation. D&S

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