Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

fact sheet

The 2007 Renewable Fuel Standard

A key first step to reducing global warming pollution from our fuels

The Renewable Fuel Standard (RFS) included in the 2007 energy bill is a key first step toward reducing global warming pollution from our nation's transportation fuels. **By setting standards for renewable fuels, the RFS has the potential to lower global warming pollution from cars and light trucks as much as 6 percent in 2022, while displacing about 15 percent of projected U.S. gasoline consumption**. However, because the RFS does not regulate global warming pollution from existing biofuel production, gasoline, or other fuels in the transportation fuel market, it is only a first step. To protect the benefits of the RFS and build on them, we need a more comprehensive approach that covers all transportation fuels, such as a low-carbon fuel standard.

The 2005 RFS got renewable fuels going by mandating significant increases in the use of corn ethanol, but it did not include standards for carbon dioxide or other pollutants that cause global warming. The 2007 RFS breaks new ground because it counts carbon and makes carbon count:

- To qualify as "renewable" under the 2007 RFS, fuels from new facilities[1] must reduce global warming pollution at least 20 percent over their full life cycle. This accounts for all of the direct and indirect emissions associated with growing, producing, distributing, and using these fuels.
- The 2007 RFS begins a transition to second-generation renewable fuels that use energy and land more efficiently and reduce global warming pollution more effectively. The RFS mandates 36 billion gallons of renewable fuels in 2015, no more than 15 billion of which can be corn ethanol. The remainder will take the form of cellulosic ethanol (16 billion gallons), advanced ethanol (4 billion), and biodiesel (1 billion). Compared with the gasoline it replaces, cellulosic ethanol must reduce global warming pollution by 60 percent; advanced ethanol and biodiesel by 50 percent.

If everything goes according to plan, the global warming pollution avoided by the RFS will amount to roughly 100 million metric tons of carbon dioxide per year by 2022.

The Impact of Land Use on Global Warming Pollution

Recent publications have called attention to the importance of properly accounting for changes in land use caused by biofuel production. For example, if forests are cleared in order to grow biofuel crops, the global warming pollution generated by clearing the forest can negate the pollution avoided by using the resulting biofuels instead of gasoline. The same thing can happen indirectly when corn is used to make ethanol instead of for food or animal feed. Increased demand for corn raises prices, and farmers all around the world respond by clearing land to increase production. Some of the cleared land comes from rain forest and other land types that have enormous amounts of stored carbon in the trees and soil, so the global warming pollution caused by this land conversion can be very large. For more

[1] Renewable fuels from existing facilities or facilities under construction before passage of the 2007 energy bill remain eligible but are not required to reduce their carbon emissions. Such facilities could account for more than 80 percent of the corn ethanol allowed under the RFS.

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information, see our fact sheet on land use changes and biofuels (online at *http://www.ucsusa.org/clean_vehicles/technologies_and_fuels/biofuels/addressing-the-global-warming.html*).

The good news is that the RFS explicitly requires that fuels be judged according to the global warming pollution produced over their full life cycle, including direct and indirect land-use changes. The next step is to make sure this law is backed up with good regulations. The Environmental Protection Agency must implement the RFS in a way that ensures its life cycle accounting methods capture all significant direct and indirect effects (including land-use changes). Establishing a flexible framework that can be updated as life cycle analysis methods improve will be important as well.

The 36 billion gallons of renewable fuels mandated by the RFS is enough to offset 15 percent of U.S. gasoline consumption. But because a loophole exempts most corn ethanol, only 10 percent of the fuels used in our cars and trucks will be subject to the standard's global warming pollution limits. If the indirect land-use impacts of corn ethanol are as high as one recent estimate, this loophole would erode the potential benefits of the RFS. In 2022, for example, the RFS is supposed to reduce U.S. global warming pollution from our cars and trucks by 6 percent, but indirect land-use changes from unregulated corn ethanol could *increase* pollution by 5 percent—wiping out most of the benefits of the regulated fuels. Moreover, since the RFS does not require large volumes of low-carbon fuels until its later years and relies on corn ethanol early on, the cumulative emissions from the exempt corn ethanol could be 2.5 times greater than the avoided emissions from low-carbon fuels between now and 2022.

Counting the Carbon in All Fuels

Outside the RFS, the global warming pollution generated by the rest of the fuel market remains unregulated. The market is already migrating to dirtier fuels such as tar sands, and "liquid coal" is on the horizon—with the potential to create almost twice as much pollution as gasoline on a life-cycle basis. Between the corn ethanol loophole in the RFS and the dirty fossil fuels not covered by the RFS, global warming pollution from this sector could actually increase.

To ensure the success of low-carbon renewable fuels in reducing global warming pollution, the entire fuel market should be regulated under a low-carbon fuel standard. This would require fuel providers to reduce their fuels' global warming pollution on an average and energy-equivalent basis, but would leave it to the market to decide how to achieve these reductions most efficiently. Because the standard would be based on the full life cycle of a fuel, it provides an incentive for reductions at every link of the fuel supply chain, whether from reduced fertilizer use, efficient land use, or use of renewable fuels to power the conversion process. By setting a specific goal and allowing fuel providers to trade pollution credits, a low-carbon fuel standard would encourage innovation and efficiency, without picking winners or favoring particular technologies.

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