

## EPA Issues Direct Final Rule for Additional Qualifying Renewable Fuel Pathways Under the RFS2 Program

The U.S. Environmental Protection Agency (EPA) is taking direct final action to identify additional fuel pathways that the Agency has determined meet the lifecycle greenhouse gas (GHG) reduction requirements for biomass-based diesel, advanced biofuel, and cellulosic biofuel under the National Renewable Fuel Standard (RFS2) program. This direct final rule describes EPA's evaluation of biofuels produced from camelina oil, which qualify as biomass-based diesel or advanced biofuel, as well as biofuels from energy cane, giant reed, and napier-grass, all which qualify as cellulosic biofuel.

It also qualifies renewable gasoline and renewable gasoline blendstock made from certain qualifying feedstocks as cellulosic biofuel, and biodiesel produced through esterification as biomass-based diesel or advanced biofuel.

By qualifying these new fuel pathways, this rule provides opportunities to increase the volume of advanced, low-GHG renewable fuels—such as cellulosic biofuels—under the RFS program. EPA's comprehensive analyses show significant lifecycle GHG emission reductions from these fuel types, as compared to the baseline gasoline or diesel fuel that they replace.

Lastly, the rule clarifies the definition of renewable diesel to explicitly include jet fuel. This clarification offers additional market certainty and opportunity for renewable diesel producers.

## Background

In the final Renewable Fuel Standard (RFS2) rule, published in March 2010, EPA assessed the lifecycle GHG emissions of multiple renewable fuel pathways (defined as feedstock, fuel type, and fuel production process). Assessment of lifecycle GHG emissions is necessary to determine which fuel pathways meet the GHG reduction thresholds for the four required renewable fuel categories specified in the Energy Independence and Security Act of 2007 (EISA), which made revisions to the RFS program. EISA requires a 20% reduction in lifecycle GHG emissions for renewable fuel produced at new facilities (those constructed after enactment), a 50% reduction for biomass-based diesel or advanced biofuel, and a 60% reduction for cellulosic biofuel.

Assessing whether a fuel pathway meets these thresholds requires a comprehensive evaluation of the lifecycle GHG emissions of the renewable fuel as compared to the lifecycle GHG emissions of the gasoline or diesel fuel that it replaces. EISA defines lifecycle GHG emissions as follows:

The term ‘lifecycle greenhouse gas emissions’ means the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), as determined by the Administrator, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential<sup>1</sup>.

Although EPA included lifecycle GHG assessments for a number of fuel pathways in the final RFS2 rule, EPA recognized during the rulemaking that there would be new pathways requiring assessment in the future. Therefore, we provided §80.1416 in the RFS2 regulations, “Petition process for evaluation of new renewable fuels pathways.” This mechanism allows parties to request that EPA conduct a lifecycle GHG assessment for a new fuel pathway and provide a determination of the RFS2 fuel category for which the new pathway may be eligible. In response to requests we received through the petition process, this direct final rule adds determinations for new feedstock and process technology pathways to the regulations.

## Our Analysis

In order to calculate lifecycle GHG emissions for this direct final rule, EPA utilized models developed for the 2010 RFS2 final rule. These models take into account energy and emissions inputs for fuel and feedstock production, distribution, and use, as well as economic models that predict changes in agricultural markets. In developing these models, the Agency employed a collaborative, transparent, and science-based approach. Through technical outreach, the peer review process, and the public comment period, EPA received and reviewed a significant amount of data, studies, and information on our proposed approach, and in the 2010 RFS2 final rule, we incorporated a number of new, updated, and peer-reviewed data sources into our methodology.

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<sup>1</sup> Clean Air Act Section 211(o)(1)

EPA plans to periodically review and revise the methodology and assumptions associated with calculating GHG emissions from all renewable fuel pathways.

## Rulemaking Process

EPA is publishing this rule without a prior proposed rule because we view this as a noncontroversial action. The pathway determinations in this rule rely on comparisons to the lifecycle GHG analysis work that was done as part of the RFS2 final rule, and did not require new agricultural sector modeling. If EPA receives relevant adverse comment on certain provisions in this rule, we will withdraw those provisions and take action on them as part of the proposed rule that is being published concurrently with the direct final rule.

## Pathway Determinations

This direct final rule describes EPA's analysis and determinations for the following new fuel pathways:

### Camelina oil (new feedstock)

- Biodiesel and renewable diesel (including jet fuel and heating oil)— *qualifying as biomass-based diesel and advanced biofuel*
- Naphtha and liquefied petroleum gas (LPG)— *qualifying as advanced biofuel*

### Energy cane, giant reed, and napiergrass cellulosic biomass (new feedstocks)

- Ethanol, renewable diesel (including renewable jet fuel and heating oil), and naphtha— *qualifying as cellulosic biofuel*

### Renewable gasoline and renewable gasoline blendstock (new fuel types)

- Produced from crop residue, slash, pre-commercial thinnings, tree residue, annual cover crops, and cellulosic components of separated yard waste, separated food waste, and separated municipal solid waste (MSW)
- Using the following processes— all utilizing natural gas, biogas, and/or biomass as the only process energy sources— *qualifying as cellulosic biofuel*:
  - Thermochemical gasification
  - Biochemical direct fermentation
  - Biochemical fermentation with catalytic upgrading
  - Any other process that uses biogas and/or biomass as the only process energy sources

### Esterification (new production process)

- Process used to produce biodiesel from soy bean oil, oil from annual covercrops, algal oil, biogenic waste oils/fats/greases, non-food grade corn oil, Canola/rapeseed oil, and camelina oil – *qualifying as biomass-based diesel and advanced biofuel*

## **For More Information**

For more information, please visit the RFS website at:

<http://www.epa.gov/otaq/fuels/renewablefuels/index.htm>

To submit a question on the RFS program, and to view Frequently Asked Questions, please visit:

<http://www.epa.gov/otaq/fuels/renewablefuels/compliancehelp/index.htm>