

# Proposed Changes to the Renewable Fuel Standard Program (RFS2)

June 29, 2009  
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# Agenda

- Background and statutory requirements
- Lifecycle impacts and GHG thresholds
- Other Key Issues
- Next Steps on RFS2
- Ethanol Blend Wall
- E15 Petition

# Primary Changes Required by EISA

- **Energy Independence and Security Act - EISA (December 2007) required changes to the RFS program**
  - Significantly increased volumes of renewable fuel
  - Separation of the volume requirements into four separate categories of renewable fuel: cellulosic biofuel, biomass-based diesel, advanced biofuel, total renewable fuel
  - Changes to the definition of renewable fuels to include minimum lifecycle GHG reduction thresholds and grandfathering of some volume
  - Restrictions on the types of feedstocks that can be used to make renewable fuel, and the types of land that can be used to grow feedstocks
  - Inclusion of specific types of waivers
- **The changes required by EISA also precipitated a number of other changes that we are proposing and/or taking comment on in RFS2**

# Setting the Stage

- **On May 5, Administrator Jackson signed the Renewable Fuel Standard (RFS2) proposal**
  - Proposal interprets revisions to the original EPA Act RFS program, as included in the Energy Independence and Security Act (passed in December 2007)
  - Lays out these proposed changes, including alternative options, for public comment
  
- **RFS2 Program Will Result in a Number of Important and Precedent-Setting Changes**
  - Large market forcing growth in the renewable fuels market - to 36 Bgal
    - Primary increase is in advanced biofuels and cellulosic biofuels
  - Preserves 15 bill gal for conventional biofuels
    - Grandfathered from the GHG thresholds
  - Significant benefits for
    - Greenhouse gases – Significant benefits from Advanced Biofuels
    - Energy security
    - Agriculture

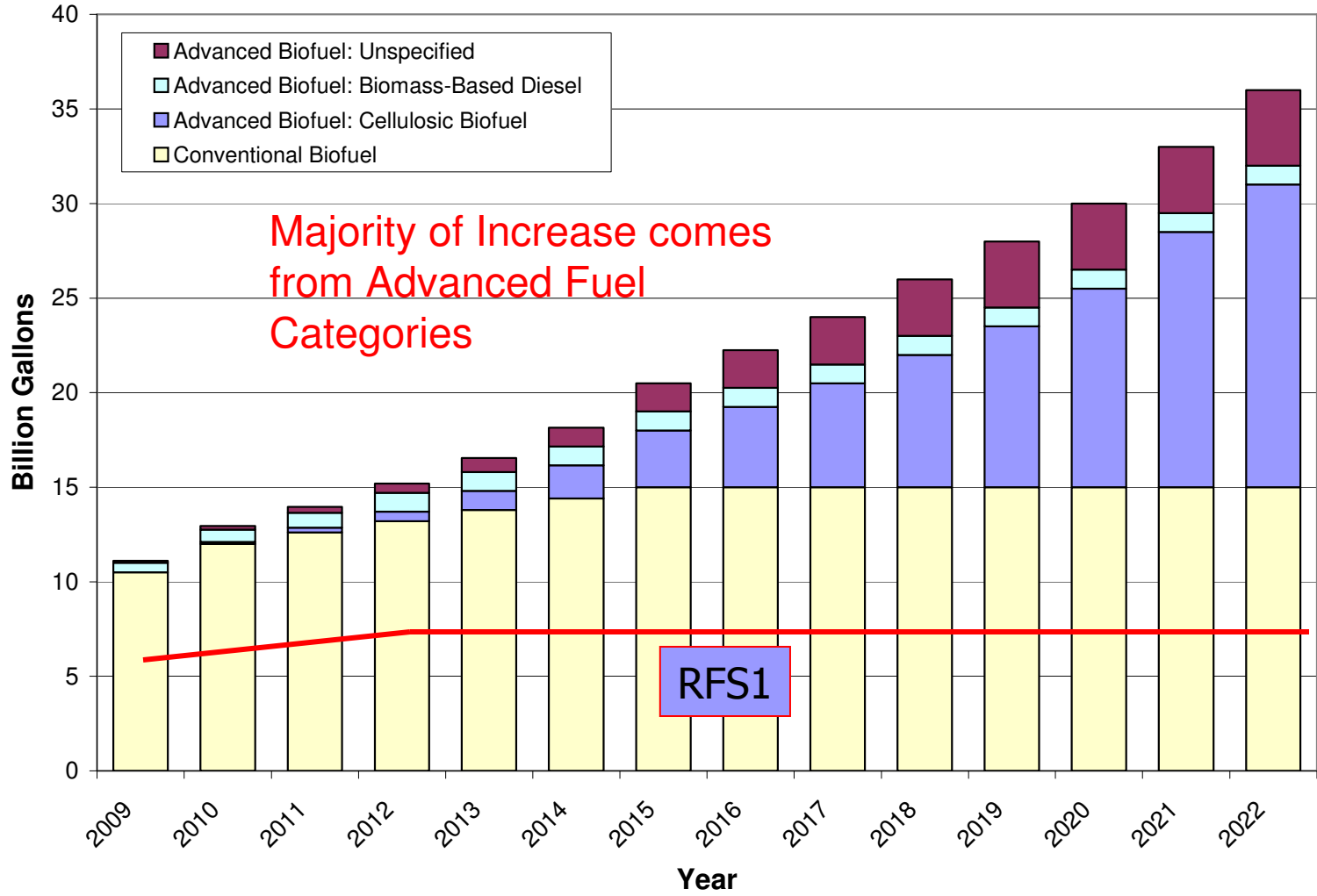
# What are the New Standards?

## ■ Four Separate Standards

- **Cellulosic Biofuel: 16 billion gallons by 2022**
  - Renewable fuel produced from cellulose, hemicellulose, or lignin
  - E.g., cellulosic ethanol, BTL diesel, green gasoline, etc.
  - Must meet a 60% lifecycle GHG threshold
  
- **Biomass-Based Diesel: 1 billion gallons by 2012 and beyond**
  - E.g., Biodiesel, “renewable diesel” if fats and oils not co-processed with petroleum
  - Must meet a 50% lifecycle GHG threshold
  
- **Advanced Biofuel: Minimum of 4 billion additional gallons by 2022**
  - Essentially anything but corn starch ethanol
  - Includes cellulosic biofuels and biomass-based diesel
  - Must meet a 50% lifecycle GHG threshold
  
- **Renewable Biofuel: Up to 15 billion gallons of Other Biofuels**
  - Ethanol derived from corn starch – or any other qualifying renewable fuel
  - Must meet 20% lifecycle GHG threshold - Only applies to fuel produced in new facilities

**NOTE: Existing biofuel facilities not required to meet conventional GHG threshold**

# Volume Changes Over Time



# Lifecycle GHG Emissions

- **Lifecycle GHG analysis is integral to the new RFS2 Standards**
  - Without a determination of whether a fuel does or does not comply with the GHG thresholds, the program cannot be implemented

**Definition in EISA:** “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.”

# Lifecycle GHG Thresholds

- **GHG thresholds are defined as the % reduction in lifecycle GHGs for a renewable fuel in comparison to the 2005 baseline gasoline or diesel that it displaces**
  - Lifecycle GHG estimates are only used to categorize renewable fuels into the four standards, not to value them
  
- **We have conducted lifecycle analysis for a variety of renewable fuel pathways**
  - Additional analysis for final rule is expected to expand the list of pathways and revise input assumptions based on new information
  - Also proposing a "default" mechanism that would allow some renewable fuels to temporarily generate RINs even if we did not explicitly analyze their lifecycle GHG impacts
  
- **While each renewable fuel pathway has a unique lifecycle GHG emissions impact in grams/mmBtu, for RFS2 regulatory purposes these lifecycle emissions are used only to compare each pathway to the applicable threshold and assign it to one of the four renewable fuel categories**

# Other Important Issues

- **Peer Review: Conducting a formal peer review (between proposal and final rule) of key elements of our lifecycle analysis:**
  - According to formal OMB and EPA peer review guidelines
  - Independent third-party contractor selecting reviewers
  - Four Key Aspects: Land use modeling (use of satellite data/ land conversion GHG emission factors): estimates of GHG emissions from foreign crop production; Methods to account for the variable timing of GHG emissions; How models are used together for LCA estimates
  - Making peer review results available to public
  
- **Grandfathering: All biofuel facilities (domestic and international) that “commenced construction” prior to EISA are grandfathered:**
  - Not required to meet the minimum 20% GHG threshold in-order to comply
  - Does not apply to other higher / advanced category GHG thresholds
  - Proposing baseline volume would be grandfathered indefinitely - Seeking comments on a range of other applications and approaches
  - Expect at least 15 billion gallons will be grandfathered
    - Corn-ethanol production (~15 Bgal); Most biodiesel (~2 Bgal); Most sugarcane (~5 Bgal)
  
- **Renewable Biomass: EISA restricts types of renewable fuel feedstocks and land that feedstocks can come from:**
  - Ag land must have been cleared or cultivated prior to Dec 19, 2007 & actively managed, fallow, and non-forested
  - Woody biomass from federal land is not allowed, except from wildfire areas
  - Requires new tracking of feedstocks from point of production to renewable fuel producers
  - Proposing renewable fuel producers be required to maintain records to support decision to generate, or not to generate RINs for a given batch of renewable fuel
  - Seek comments on wide variety of other approaches

# RFS2 Impacts Summary

- **GHG Emissions from Transportation**
  - Annual average reduction of approximately 160 million tons CO<sub>2</sub> equivalent per year.
  - Reductions equivalent to taking about 24 million vehicles off the road.
  - Significant reductions from advanced and cellulosic volumes
- **Criteria and Air Toxics Pollutant Impacts**
  - Air quality analysis will be completed for Final Rule
- **Impacts on Overall Petroleum Consumption in 2022**
  - 36 billion gallons of renewable fuel will displace about 11% of gasoline and diesel consumption, with most reductions coming from reduced petroleum imports
- **Agricultural Sector**
  - Net U.S. farm income would increase by \$7.1 billion dollars (10.6%)

# Next Steps

- **Current 60-day public comment period scheduled to close July 27<sup>th</sup>**
  - Received requests from several parties, including congressional interests to extend comment period up to 120 extra days
- **Public hearing on proposal held June 9 in Washington, DC - Audio cast conducted**
- **Two-day lifecycle workshop (June 10-11 in Washington, DC) - Webcast**
  - The intent of this workshop was to help ensure a full understanding of our lifecycle analysis, the major issues identified, and the options discussed
- **Completion of peer reviews of lifecycle methodology**
  - The plan is for the peer reviews to be completed before end of the comment period.
- **Additional Implementation workshops and meetings**
- **Current schedule intends to finalize rule by end of 2009 and implement the program in 2010**

# The Ethanol "Blend Wall"

- Analyses were based on an assumption of 34 bill gal ethanol by 2022 used as E10 and E85 (small volumes)
- By 2013 at the latest, we expect that all gasoline in the U.S. will be E10
  - 14 - 14.5 bill gal of ethanol used in E10 form
- There are three pathways to meet the RFS2 mandated volumes:
  - Additional ethanol will need to be consumed as E85 in flex-fuel vehicles (FFVs); more FFVs in the market, more E85 stations, better E85 pricing
  - Non-ethanol biofuels - several promising technologies
  - Mid-level ethanol blends as a temporary measure – if testing supports whole or partial conditional waiver for higher blends
- The proposal discusses and analyzes the various legal, practical, and economic issues associated with all three pathways

# E15 Petition

- **In March, Growth Energy Petitioned EPA to increase the allowable concentration of ethanol in gasoline to up to 15 volume percent**
  - The current limit on the amount of ethanol that can be blended into a gallon of gasoline is at ten volume percent ethanol (E10) for conventional (non flex-fuel) vehicles.
  - Petition is essentially from all major ethanol producers
  - Request is for a waiver for all vehicles/engines, but they recognize EPA has authority to scale it back to a waiver focused on new vehicles.
  - No new data
    - Relies heavily on previous testing but with significant data gaps on emissions and component durability.
  - EPA/OTAQ is performing a careful review of the application and studies.
- **EPA published FR notices on April 21 asking for comment and on May 20 extending the comment period to 90 days which extended the comment period to July 20.**
- **The statute directs a decision in 270 days (Dec.1),**
  - Deadline is close to completion of DOE testing which will be available a few months later and would likely be key to making a determination

# Questions

RFS2: [www.epa.gov/otaq/renewablefuels/](http://www.epa.gov/otaq/renewablefuels/)

E15 Petition: [www.epa.gov/otaq/additive.htm](http://www.epa.gov/otaq/additive.htm)

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