

The port voted to allocate as much as \$2.39 million to assess costs, durability and other operational issues associated with the system. A final vote is expected later this month.

The testing, which could take up to a year, would be conducted at the port's bulk cargo terminal. Metro Ports, the operator of the bulk terminal, is a proponent of the technology and would share a portion of the costs of testing the system, but most of the expense would be shouldered by the port.

#### 43. EPA Proposes Renewable Fuel Standard

The US Environmental Protection Agency released its expected Notice of Proposed Rulemaking (NPRM) detailing the implementation of changes to the existing Renewable Fuel Standard (RFS1) as required by the Energy Independence and Security Act of 2007 (EISA). The proposed rulemaking for RFS2 establishes new specific volume standards for cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel that must be used in transportation fuel each year.

The revised statutory requirements for RFS2 also include new definitions and criteria for both renewable fuels and the feedstocks used to produce them, including new greenhouse gas emission (GHG) thresholds for renewable fuels and the incorporation of indirect land use change effects.

EPA will include the use of satellite data to project future the type of land use changes; the land conversion GHG emissions factors estimates used for different types of land use; estimates of GHG emissions from foreign crop production; methods to account for the variable timing of GHG emissions; and how the several models EPA relied upon are used together to provide overall lifecycle GHG estimates.

EISA made three primary changes to the volume requirements of the older RFS program:

- It substantially increases the required volumes and extends the timeframe over which the volumes ramp up through at least 2022.
- It divides the total renewable fuel requirement into four separate categories, each with its own volume requirement.
- It requires that each of these mandated volumes of renewable fuels achieve certain minimum thresholds of GHG emission performance, including the effects of indirect land use change.

The four categories are:

- Cellulosic biofuel. Cellulosic biofuel is renewable fuel, not necessarily ethanol, derived from any cellulose, hemicellulose, or lignin each of which must originate from renewable biomass. It must also achieve a lifecycle GHG emission reduction of at least 60%, compared to the gasoline or diesel fuel it displaces.
- Biomass-based diesel. Under the proposed rule, this includes both biodiesel (mono-alkyl esters) and non-ester renewable diesel (including cellulosic diesel). The definition is the same very broad definition of "biodiesel" that was in EISA and in RFS1, with three exceptions. First, EISA requires that such fuel be made from renewable biomass. Second, its lifecycle GHG emissions must be at least 50% less than the gasoline or

diesel fuel it displaces. Third, the statutory definition of “Biomass-based diesel” excludes renewable fuel derived from co-processing biomass with a petroleum feedstock.

- **Advanced Biofuel.** This is a renewable fuel other than ethanol derived from corn starch and which must also achieve a lifecycle GHG emission displacement of 50%, compared to the gasoline or diesel fuel it displaces. As
- **Renewable fuels.** Defined as fuel produced from renewable biomass that is used to replace or reduce the quantity of fossil fuel present in a transportation fuel, this ends up being the category into which corn ethanol requirements fall. In other words, although the entire standard is defined as a Renewable Fuels Standard, the carve-outs for cellulosic, biomass and advanced biofuels leave a remainder—15 billion gallons by 2015—that is filled by corn ethanol.

Although EPA is establishing a 20% greenhouse gas reduction threshold, only renewable fuel produced from new facilities which commenced construction after 19 December 2007 must meet that threshold. Facilities that commenced construction on or before 19 December 2007 are grandfathered in from the 20% requirement. In addition, EISA provides a further exemption from the 20% threshold requirement for ethanol plants that commenced construction in 2008 or 2009 and are fired with natural gas, biomass, or any combination thereof. The renewable fuel from such facilities is deemed to be in compliance with the 20% threshold, and would thus also be grandfathered.

**Renewable Fuel Volume Requirements for RFS2 (billion gallons)**

| Year              | Cellulosic biofuel requirement | Biomass-based diesel requirement | Advanced biofuel requirement | Total renewable fuel requirement |
|-------------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|
| 2008              | n/a                            | n/a                              | n/a                          | 9.0                              |
| 2009              | n/a                            | 0.5                              | 0.6                          | 11.1                             |
| 2010              | 0.1                            | 0.65                             | 0.95                         | 12.95                            |
| 2011              | 0.25                           | 0.80                             | 1.35                         | 13.95                            |
| 2012              | 0.5                            | 1.0                              | 2.0                          | 15.2                             |
| 2013              | 1.0                            | a                                | 2.75                         | 16.55                            |
| 2014              | 1.75                           | a                                | 3.75                         | 18.15                            |
| 2015              | 3.0                            | a                                | 5.5                          | 20.5                             |
| 2016              | 4.25                           | a                                | 7.25                         | 22.25                            |
| 2017              | 5.5                            | a                                | 9.0                          | 24.0                             |
| 2018              | 7.0                            | a                                | 11.0                         | 26.0                             |
| 2019              | 8.5                            | a                                | 13.0                         | 28.0                             |
| 2020              | 10.5                           | a                                | 15.0                         | 30.0                             |
| 2021              | 13.5                           | a                                | 18.0                         | 33.0                             |
| 2022              | 16.0                           | a                                | 21.0                         | <b>36.0</b>                      |
| 2023 <sup>+</sup> | b                              | b                                | b                            | b                                |

<sup>a</sup> To be determined by EPA through a future rulemaking, but no less than 1.0 billion gallons.

<sup>b</sup> To be determined by EPA through a future rulemaking.

As shown in the table, the volume requirements are not exclusive, and generally result in nested requirements. Any renewable fuel that meets the requirement for cellulosic biofuel or biomass-based diesel is also valid for meeting the advanced biofuel requirement. Likewise, any renewable fuel that meets the requirement for advanced biofuel is also valid for meeting the total renewable fuel requirement.

Once RFS2 is implemented, EPA will conduct an annual notice-and-comment rulemaking process each year in order to determine the appropriate standards applicable in the following year. EPA included the proposed 2010 standards in the NPRM, and will issue a final rule by November 30, 2009 setting the applicable standards for 2010.

**Greenhouse Gases.** EISA sets the first US mandatory lifecycle GHG reduction thresholds for renewable fuel categories, as compared to those of average petroleum fuels used in 2005. EISA required a 20% reduction in lifecycle GHG emissions for any renewable fuel produced at new facilities (those constructed after enactment), a 50% reduction in order to be classified as biomass-based diesel or advanced biofuel, and a 60% reduction in order to be classified as cellulosic biofuel. EISA provides some limited flexibility for EPA to adjust these GHG percentage thresholds downward by up to 10% under certain circumstances.

EPA analyzed the lifecycle GHG impacts of the range of biofuels currently expected to contribute significantly to meeting the volume mandates of EISA through 2022, including those from domestic and international sources. The models and system boundaries are detailed in section VI of the NPRM.

EPA said that it worked closely with the California Air Resources Board (CARB) regarding their development of transportation fuels lifecycle GHG impacts and the Low Carbon Fuel Standard (LCFS). EPA said it will continue to coordinate with California on this rulemaking and the biofuels lifecycle GHG analysis work.

The EPA GHG lifecycle analysis combines a suite of peer-reviewed process models and peer-reviewed economic models of the domestic and international agricultural sectors to determine direct and significant indirect emissions, respectively (GREET, FASOM, FAPRI, Winrock, GTAP, CENTURY, DAYCENT, ASPEN-based models, MOVES and NEMS).

As required by EISA, the broad system boundaries of the analysis encompass all significant secondary agricultural sector GHG impacts, not only impacts from land use change. The analysis uses economic models to determine the area and location of land converted into cropland in each country as a result of the RFS program. Satellite data are used to predict the types of land that would be converted into cropland (e.g. forest, grassland).

EPA's draft results suggest that biofuel-induced land use change can produce significant near-term GHG emissions; however, displacement of petroleum by biofuels over subsequent years can "pay back" earlier land conversion impacts. Therefore, the time horizon over which emissions are analyzed and the application of a discount rate to value near-term versus longer-term emissions are critical factors.

In the NPRM, EPA highlights two options:

- One option assumes a 30 year time period for assessing future GHG emissions impacts and values equally all emission impacts, regardless of time of emission impact (i.e., 0% discount rate).

- The second option assesses emissions impacts over a 100 year time period and discounts future emissions at 2% annually.

Because of the varying degrees of uncertainty in the different aspects of the analysis, EPA conducted a number of sensitivity analyses which focus on key parameters and demonstrate how the assessments might change under alternative assumptions. In addition to the sensitivity analysis approach, EPA will also explore options for more formal uncertainty analyses for the final rule to the extent possible.

**The 2010 standard.** EPA believes that there are sufficient plans underway to build plants capable of producing 0.1 billion gallons of cellulosic biofuel in 2010, the minimum volume of cellulosic biofuel required by EISA for 2010, and is incorporating cellulosic biofuel into the 2010 requirements. Acknowledging the potential impact of the economy, EPA said that it is seeking additional and updated information that would be available prior to 30 November 30, 2009 which could result in a change in this.

EISA expanded the RFS application beyond gasoline to generally cover all transportation fuel, including gasoline and diesel fuel intended for use in highway vehicles and engines, and nonroad, locomotive and marine engines. As in RFS1, EPA is proposing that these provisions apply to refiners, blenders, and importers of transportation fuel (with limited flexibilities for small refiners), and that their percentage standards apply to the total amount of gasoline and diesel they produce for such use.

EPA is also proposing to use the current definition of motor vehicle, nonroad, locomotive, and marine diesel fuel (MVNRLM) to determine the obligated volumes of non-gasoline transportation fuel for this rule.

#### **44. San Joaquin Air District Wants Smoky Diesels off the Road**

The San Joaquin Valley Air Pollution Control District has announced a new program, intended to remove old, high polluting diesel trucks from Valley roads. A total of more than \$15 million dollars is available through the new Voucher Incentive Program, which will purchase and destroy old diesel trucks if owners will replace them with vehicles that meet 2007 emission standards.

Between \$30,000 and \$35,000 will be available per grant, depending on the age of the truck. Eligible trucks must have a 1993 or older engine, spend 75 percent of their time in California, and be registered with the Department of Motor Vehicles with a declared combined weight greater than 60,000 pounds. Additionally, the truck must have been registered in California for each of the past two years, during which time the vehicle traveled more than 30,000 miles per year or consumed 4,700 gallons of diesel fuel.

Additionally, truck fleets eligible for the program cannot contain more than three heavy-duty diesel trucks. Should an owner desire to participate in the program but his or her vehicles did not meet the mileage requirements, two trucks can be traded for one replacement payment.

Vouchers are approved on a first come, first-served basis. All approvals will be made within five business days of applying.

The Voucher Incentive Program is a component of the State of California's diesel emission reduction plan, which began in 2000. Recently, the state adopted new clean bus and truck