

Liquid Fuel Market Model: Project Overview, Status, and Summary of Stakeholder Inputs

Andy S. Kydes
Energy Information Administration

www.eia.doe.gov

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Outline of Presentation

- Why We Undertook the Effort
- Process We Are Using
- What We Have Done So Far
- Next Steps and Approximate Schedule
- Prioritization of Stakeholder Issues and Questions

Why We Undertook the Effort

- LFMM is another part of new “NEM” model development
- Replace the PMM, IEM, and other NEMS Satellite Models for Liquids Production (CTL, GTL, and BTL) with Integrated Module
- To Correct Deficiencies and Add Capabilities With Respect to the Current Model Structure.
 - Model that is easier to update, use, and maintain; facilitate timely delivery of the AEO and analytic reports.
 - Seamless integration of all of the domestic liquids production with the international liquids market
 - Improve ability to do technology assessment
 - Improve ability to analyze complex carbon or GHG emission and tax policies, including a Low Carbon Fuel Standard
 - Provide greater confidence in liquid product prices and margins
 - Improve ability to analyze changes to renewable fuel standards
 - Increase model transparency
 - Re-evaluate the level of technological and refinery detail and number of refinery types represented domestically and internationally.
 - Evaluate potential to consider uncertainty within this model as prelude to later considerations for NEMS.

Process We Are Using

- **Formalized project management process with project charter, task identification and tracking, and regular communication with Project Review Board composed of Office Director (Sponsor) and 4 Division Directors**
- **First major deliverable is a technical workshop, tentatively scheduled for summer, 2009. Focus on**
 - **Technical Aspects of New Model Based on Prioritized Questions and Issues to Be Addressed**
 - **Discuss: Model Complexity, Regionality, Mathematical Structure (Optimization [linear or non-linear?] or Simulation), Crude and Product Detail, Data Requirements, Computing Platform, etc.**

LFMM Design and Development Process

- **Develop Representative Stakeholder Contact List Inside and Outside of Government to Solicit Advice on “*Key Issues and Questions That New Model Should be Able to Address.*”**
 - **Initially Done in December 2008 but Later Augmented Through March**
- **Developed Short Paper to Outline Initial EIA Thoughts on Issues and Questions and Requirements for the New LFMM (“ANNEX”)**
- **Letter and “ANNEX” Sent to All Identified Stakeholders. Completed Initially January 1, 2009 but Augmented Through April, 2009.**
- **Formed a Core Team to Complete Phase 1 -- Organizing and Summarizing Recommendations from Technical Workshop (Susan Holte, Phillip Tseng, Randy Cook, Andy Kydes [team leader])**

LFMM Design and Development Process (2)

- **Summarized Stakeholder Inputs (over 70) to More Concise List.**
 - **Almost all stakeholders prioritizations labeled High or Critical priority; some recommendations conflicted**
- **Presented recommendations to Review Board**
- **LFMM Review Board Prioritized the Initial List (Resources not considered this round)**
- **Identified Potential Technical Experts to Invite to Participate in Technical Workshop (stakeholders and internal experts) – In Progress**
- **To Complete Shortly: Draft White Paper for Distribution to Workshop Invitees**
- **Workshop Held On September 30, 2009**
- **End of Phase 1**

Next Steps

- **Develop 2 Independent Component Design Report (CDR) Proposals Using EIA and Workshop Information (Completion expected 1/2010)**
- **EIA Reviews and Develops a Single CDR (1/2010)**
- **Independent Expert Review of EIA CDR (2/2010)**
- **Full Mathematical Model Specification (4/2010)**
- **Pilot Model Implemented and tested (8/2010)**
- **Presentation of Results to IER (9/2010)**
- **Full Model Implementation, Testing and Documentation (7/2011 – Ready for AEO2012)**

Categories of Stakeholder Interest

- **Prices and margins**
- **Technology assessment**
- **Petroleum and fuel specifications**
- **Alternative fuels**
- **Competition and market behavior**
- **International markets and trade**
- **Capacity expansion and investment**
- **Infrastructure**
- **Externalities**
- **Energy security**
- **Policy Analysis – mostly GHG related**
- **Model structure and general features**

Note: Uncertainty and risk were mentioned as part of some of these categories, like market behavior, international trade, and prices

Sample of Review Board Prioritization of Stakeholder Recommendations

Many suggestions were not the questions or issues but indicated “how” to address unstated question and issues.

- Provide fuel prices by market segment and margins disaggregated by product and region
- Analyze carbon dioxide taxes, cap-and-trade systems, energy taxes on a primary and delivered basis
- Consider developing a single more complex model vs. a simpler model combined with a more complex refinery model for detailed analysis [stakeholder positions are on both sides of this issue.]
- Include relevant non-petroleum sources of liquids, their economics and potential market;
- Represent market behavior and competition between fuels and technologies in liquids production, transmission, and distribution
- Analyze renewable portfolio standards, renewable fuel standards, and low carbon fuel standard, including competition for biomass, land, and water

Sample of Review Board Prioritization of Stakeholder Recommendations – Cont'd p. 2

- Evaluate the impact of the ethanol tariff
- Analyze impact of taxes, tax incentives, and other liquids constraints (consumption, production or environmental) on processes or technologies utilized for liquids production and investments (new conversion and transformation technologies), liquid product prices and resulting environmental emissions
- Distinguish between refinery gate prices, transportation charges, and distribution and dispensing charges by liquid product
- Analyze impacts of environmental regulations on product specification changes and processing requirements and costs.
- Include competition between feedstock used for biofuels versus power, heat, electricity, or hydrogen production.
- Include the flexibility to add non-petroleum feedstocks that can be converted to liquids as they are developed/evolve through R&D and or experience
- Represent imports by type of crude oil, products, and alternative liquids by region

Sample of Review Board Prioritization of Stakeholder Recommendations – Cont'd p. 3

- Incorporate alternative producer pricing behavior by region
- Evaluate the US market potential for cellulosic ethanol and other biofuels imports and the affects that domestic GHG and renewable fuel policies may have on their cost and availability to U.S. markets.
- Simulate new capacity expansion decisions that explicitly account for new investment and other associated costs and performance in either refineries or other industrial production of liquids like CTL, GTL, and BTL. Use expectations that simulate market behavior.
- Analyze cost and benefits of new technology penetration to producers and consumers; also cost and benefits of new regulations.
- Ability to analyze alternative and new fuel product specifications;
- Represent realistic market adoption for new technologies, incorporating costs, risks, infrastructure issues, and investor and consumer behavior in liquids production, transmission and distribution

End of Prepared Presentation

THANK YOU

akydes@eia.doe.gov

(202) 586-0883

