Assumptions for Annual Energy Outlook 2014: Liquid Fuels Markets Working Group

AEO2014 Liquid Fuels Markets Working Group Meeting
Office of Petroleum, Natural Gas & Biofuels Analysis
July 24, 2013  |  Washington, DC

WORKING GROUP PRESENTATION FOR DISCUSSION PURPOSES
DO NOT QUOTE OR CITE AS RESULTS ARE SUBJECT TO CHANGE
Discussion topics

• Imports and exports of petroleum liquids
• Transport network
• Process unit capacity expansion
• Technology assessments of alternative fuels
• Biofuels supply curves
• E15 market penetration options
• E85 pricing and availability assumptions
• RFS and LCFS
Imports and exports of petroleum liquids

• Petroleum product imports and exports will be endogenously determined
  – Initial import/export supply/demand curves will be supplied to LFMM by the International Energy Module (IEM)
  – Only 1 international supply region is represented. This may be expanded in the future.

• Crude export representation will be added
  – Dynamic functionality will be activated only for a side case
  – Exogenous assumptions will be made to reflect current reality
Transport network

• Crude and product transport between supply, refining, and consumption regions

• Ongoing effort to improve the transport network for crude and products (anticipated but not guaranteed for AEO2014)
  – Crude
    • Bakken
    • Canadian
  – Updating transport network data to include recent and upcoming projects
    • Pipelines
    • Marine vessels
    • Rail
Process unit capacity expansion

• Apply technological optimism and learn-by-doing to a wider set of new technologies
  – New: coal to liquids, gas to liquids
  – Continued: cellulosic ethanol, biomass to liquids, pyrolysis oils

• Better represent capacity expansion for technologies starting with low or no capacity
  – Allow initial growth potential to continue until a specified number of units are built
Technology assessment of alternative fuels

Technology updates

- Using Fischer-Tropsch data
  - Gas-to-liquids (GTL)
  - Coal-to-liquids (CTL)
  - Biomass-to-liquids (BTL)
- Using data from demonstration facility
  - Biomass pyrolysis

<table>
<thead>
<tr>
<th>Financial Parameters</th>
<th>Technology Parameters</th>
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<tbody>
<tr>
<td>Cost of capital</td>
<td>Technology dependent – Expert opinion</td>
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<tr>
<td>Economic life of plant</td>
<td>Plant Capacity</td>
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<td>Debt to capital ratio</td>
<td>Technology dependent – Expert opinion</td>
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<tr>
<th>Parameters</th>
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<tr>
<td>13.5%</td>
<td>Plant Capacity</td>
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<td>15 years</td>
<td>Technology dependent – Expert opinion</td>
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<td>40%</td>
<td>Plant location for base unit</td>
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<td>Gulf coast (LFMM region 4)</td>
<td>Engineering design approach and historical data</td>
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<td>Successful completion of the demonstration plant</td>
<td>Development stage for inclusion in Tech assessment</td>
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Biofuels supply curves

• Update Brazilian sugarcane ethanol supply curves

• Update domestic feedstock supply curves
  – Updated to USDA 2013 baseline
    • soy bean oil
    • corn
  – Updated based on historical data compiled by USDA Marketing Service
    • Yellow grease, white grease
E15 market penetration options

• At a minimum, establish a less optimistic projection
  – Allow a maximum penetration of 50% of motor gasoline pool by 2030 (versus by 2020 in AEO2013)

• Consider zero E15 over the projection period
  – based on current automobile warranty issues
E85 pricing and availability assumptions

- Relationship between E85 pricing and consumer demand must be robust under various scenarios
- Consumer choice function will be updated to represent latest findings (in Transportation module)
- Growth in E85 provides the opportunity for growth in advanced and cellulosic ethanol
- Seeking input on year-on-year maximum growth in the number of E85 stations (driven by consumer demand) under different market conditions
RFS and LCFS

• LFMM results for the national RFS and the California LCFS will likely not meet original targets

• E85 demand, biofuels technology assessments, and biofuels feedstock supply will drive the ability to meet RFS and LCFS. AEO2014 will likely have more biofuels than AEO2013.

• EIA is in the process of updating RFS-related and LCFS-related parameters without specific statutory guidance

• Current challenges are:
  – modeling EPA decisions which are given flexibility in the RFS statute
    • yearly waivers for Cellulosic, Advanced, and Total volume targets
    • multi-year re-set of target volumes
  – modeling expected flexibility in the California LCFS
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Next Working Group Meeting

Planned for October 17, 2013.
Will present preliminary AEO2014 results.
For more information


Short-Term Energy Outlook | www.eia.gov/steo

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

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