Outlook for Light-Duty-Vehicle Fuel Demand

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History: World Distillate Demand
Growing Faster than Gasoline

• World distillate demand has been growing faster than gasoline for many years.

• Yet, until recently, gasoline prices were higher than distillate.

Note: MMB/D – Million Barrels Per Day
Source: BP Statistical Review 2007
Distillate Price Discounts From Gasoline May “Be History”

Spot Heating Oil Price - Gasoline Price Differences

Source: Bloomberg New York Harbor Conventional Gasoline, No. 2 Heating Oil; NW Europe 0.2% Heating Oil and Premium Gasoline
Projected Gasoline Demand Increases, But Petroleum-Based Gasoline Declines Due to Efficiency, Increased Biofuels, and Switch to Diesel

Gasoline Demand 2007 and 2022

Source: AEO 2008 Reference Case
Renewable Fuels Requirement Mainly Met with Ethanol, Including E85

Source: AEO 2008 Reference Case
New Light-Duty Fuel Efficiency is 36 MPG in 2022 Versus 28.4 in Case without EISA

Light-Duty Vehicle Fuel Efficiency Projections

- New Cars
- New Light Trucks
- LDV Stock

Source: AEO 2008 Reference Case
Shifting Vehicle Mix Needed to Meet Both Increased Efficiency & Ethanol Use

Light-Duty Vehicle Sales

<table>
<thead>
<tr>
<th>Year</th>
<th>Cars</th>
<th>Trucks</th>
<th>Cars</th>
<th>Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>7.2</td>
<td>6.3</td>
<td>6.0</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Note: ICE – Internal Combustion Engine
Source: AEO 2008 Reference Case
Non-Gasoline Vehicle Sales Penetration Increases from 11% in 2007 to 41% in 2022

Source: AEO 2008 Reference Case
## Petroleum-Based* Gasoline and Distillate Fuel Needs Shift

<table>
<thead>
<tr>
<th>Million Barrels Per Day</th>
<th>2007</th>
<th>2022</th>
<th>Growth to 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Gasoline</td>
<td>8.85</td>
<td>8.24</td>
<td>-0.61</td>
</tr>
<tr>
<td>Petroleum Distillate</td>
<td>4.22</td>
<td>4.71</td>
<td>+0.49</td>
</tr>
</tbody>
</table>

* Petroleum-Based excludes ethanol, biodiesel, and distillate from coal-to-liquids and biomass-to-liquids. 
Source: AEO 2008 Reference Case
Issues Associated with Shifting U.S. Demand Mix and Import Availability

- The shifting demand mix of products towards more distillate and less gasoline may be a challenge for refiners.

- Supply uncertainties:
  - U.S. Refiners Distillate Response – More throughput versus higher yields
  - U.S. Refiners Gasoline Availability – Function of distillate response
  - World Availability of Export Gasoline – Europe, Asia and Middle East increasing
  - Needs of other countries for “imported” gasoline

- The demand trends imply downward pressure on gasoline prices and upward pressure on distillate.
Questions?