U.S. Ethanol Policy and Trade

Office of Industries
Industries Analysis Seminar Series

May 11, 2011

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Road Map

• Global and U.S. market overview

• Global policy overview

• U.S. policy

• Current issues

• Prospects
Global and U.S. Market Overview
Global ethanol production, by type, 1999-2010

Source: LMC International.
Global fuel ethanol production, by major sources, 2003-2010

Source: LMC International.
Global ethanol exports, 2003-2010

Source: LMC International.
Global ethanol imports, 2003-2010

Source: LMC International.
Ethanol trade relative to domestic markets, 2010

Source: LMC International.
U.S. fuel ethanol production and consumption, 1981-2010

Million gallons

U.S. ethanol capacity, 1999-2011

- RFS--corn
- Capacity
- Capacity under construction/expansion

Source: Renewable Fuels Association.
Note: Data are as of January 1 of the given year.
Number of U.S. ethanol plants and average plant size, 1999-2011

Source: Renewable Fuels Association.

Note: Data are as of January 1 of the given year.
Source: Renewable Fuels Association.

Note: Does not include cellulosic ethanol plants.
U.S. imports of nonbeverage ethanol, by type, 2000-2010

Source: Estimated by the USITC based on official statistics of the U.S. Department of Commerce.
U.S. fuel ethanol imports, by principal sources, 2000-2010

Source: Estimated by the USITC based on official statistics of the U.S. Department of Commerce.
U.S. exports of nonbeverage ethanol, by principal markets, 2000-2010

Source: Compiled from official statistics of the U.S. Department of Commerce.
Global Policy Overview
United States

- Renewable Fuel Standard (2005; revised effective 2008)
  - Consumption mandate
  - Feedstock requirements
  - Greenhouse gas reduction requirements
- California Low Carbon Fuel Standard (effective 2011)
  - Carbon intensity reduction requirements
- Tax credits
  - VEETC (blenders)
  - Small producers
  - Cellulosic producers
- R&D grants and loans (biomass; processing)
  - BCAP
  - BRDI
- Tariffs (WTO—1.9%, 2.5%; ODC—54 cents/gal. applicable to fuel use)
- CBI dehydration origin quota (7% of U.S. consumption)
- Duty drawbacks (became more restrictive in 2008)
European Union

- **Renewable Energy Directive (June 2009)**
  - National Action Plans
  - Target of 10% renewable energy in transport sector by 2020 (energy basis)
  - Greenhouse gas emission reduction (35% in 2012; 50% in 2017; 60% in 2018 for new plants (>Jan. 1, 2017); grandfathering for old plants (<Jan. 23, 2008) until April 1, 2013
  - Sustainability criteria, certification requirements (biodiversity, carbon stocks of concern; forests, grasslands, peatlands)
  - Indirect land use change effects still under consideration

- **Fuel Quality Directive (April 2009)**
  - Low carbon fuel standard—reduce carbon intensity 6% by 2020
  - E10 phase-in
  - Coordinates with RED

- **R&D funding (FP-7, CORDIS, SET-Plan, EIBI)**

- **Tariffs**
  - Ethanol: undenatured—19.2 euros/hl; denatured—10.2 euros/hl
  - Fuel mixtures (HS ch. 38)—6.5% ad val.
  - ETBE—5.5% ad val.
Brazil

- Mandated blend in gasoline (18-25%)
- Mandated ethanol sales outlets (neat hydrous)
- National Petroleum Agency (ANP) regulation of ethanol market (Medida Provisoria 532)
- Sales tax incentive for flex-fuel vehicles (14% vs 16%)
- Preferential tax treatment vs gasoline (CIDE, PIS/COFINS)
- Project financing (BNDES; FINEM; BNDESPAR; FINAME)
- Intercrop inventory financing
- Irrigation financing (MODERINFRA)
- R&D funding (CNPAE; EMBRAPA; FINEP; FUNTEC; BNDES; MCT)
- Tariff—20% ad valorem (currently suspended)
Canada

- Renewable Fuels Standard--5% blend federal mandate

- Provincial mandates (Manitoba—8.5%; Saskatchewan—7.5%)

- Tax exemptions, credits (many discontinued)

- Federal and provincial R&D grants, construction loans, production incentives

- Tariff ($0.05/liter; NAFTA—free)
U.S. Policy
Drivers

• Rural development

• Energy security

• Environmental concerns
Domestic Policy

• Major policy vehicles
  • Clean Air Act
  • American Jobs Creation Act of 2004
  • Energy Policy Act of 2005
  • Energy Independence and Security Act of 2007 (EISA)
  • Food, Conservation, and Energy Act of 2008 (Farm Bill)
  • Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010

• Major policy elements
  • Renewable Fuel Standard (RFS)
  • Volumetric Ethanol Excise Tax Credit (VEETC)
  • Small Ethanol Producer Tax Credit
  • Cellulosic Biofuel Producer Tax Credit
  • California Low Carbon Fuel Standard
  • Other incentives and mandates (Federal and State R&D grants and loan guarantees, infrastructure grants, State mandates and tax credits, small producer tax credits)
Renewable Fuel Standard

• Volume mandates (36 billion gallons by 2022)

• Renewable biomass requirement (land use restrictions)

• Advanced biofuels focus (21 billion gallons by 2022)

• Nested categories with feedstock restrictions (non corn starch; cellulosic)

• Greenhouse gas reduction requirements based on carbon lifecycle analysis (well-to-wheel; indirect land use effects)

• Complex Renewable Identification Number accounting system (RIN)
  http://www.epa.gov/otaq/fuels/renewablefuels/compliancehelp/rfsdata.htm

• Registration of facilities is required
  http://www.epa.gov/oms/regs/fuels/producers.htm
Renewable Fuel Standard, 2006-2022

Source: Energy Policy Act; EISA

Note: Data for 2006 and 2007 represent the Renewable Fuel Program. Areas represent original volume requirements.
## The Renewable Fuel Standard

<table>
<thead>
<tr>
<th>Year</th>
<th>Unspecified renewable fuel</th>
<th>Advanced biofuel</th>
<th>Total renewable fuel</th>
<th>Share of gasoline/diesel (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Biomass-based diesel</td>
<td>Cellulosic</td>
<td>Unspecified</td>
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<tr>
<td></td>
<td></td>
<td>Billions of gallons</td>
<td></td>
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<tr>
<td>2006</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>2007</td>
<td>4.7</td>
<td>0</td>
<td>0</td>
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<td>2008</td>
<td>9</td>
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<td>0</td>
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<td>2009</td>
<td>10.5</td>
<td>0.5</td>
<td>0</td>
<td>0.1</td>
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<tr>
<td>2010</td>
<td>12</td>
<td>0.65</td>
<td>0.0065</td>
<td>0.2935</td>
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<td>2011</td>
<td>12.6</td>
<td>0.8</td>
<td>0.0066</td>
<td>0.5434</td>
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<td>2012</td>
<td>13.2</td>
<td>1</td>
<td>0.5</td>
<td>0.5</td>
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<td>2013</td>
<td>13.8</td>
<td>1</td>
<td>1</td>
<td>0.75</td>
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<td>2014</td>
<td>14.4</td>
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<td>1.75</td>
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<td>15</td>
<td>1</td>
<td>3</td>
<td>1.5</td>
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<td>2016</td>
<td>15</td>
<td>1</td>
<td>4.25</td>
<td>2</td>
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<td>2017</td>
<td>15</td>
<td>1</td>
<td>5.5</td>
<td>2.5</td>
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<tr>
<td>2018</td>
<td>15</td>
<td>1</td>
<td>7</td>
<td>3</td>
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<td>2019</td>
<td>15</td>
<td>1</td>
<td>8.5</td>
<td>3.5</td>
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<tr>
<td>2020</td>
<td>15</td>
<td>1</td>
<td>10.5</td>
<td>3.5</td>
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<tr>
<td>2021</td>
<td>15</td>
<td>1</td>
<td>13.5</td>
<td>3.5</td>
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<tr>
<td>2022</td>
<td>15</td>
<td>1</td>
<td>16</td>
<td>4</td>
</tr>
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<td>GHG reduction</td>
<td></td>
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<td></td>
<td>Percent</td>
<td>20</td>
<td>50</td>
<td>60</td>
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</tbody>
</table>


Note: The cellulosic volume was lowered substantially in 2010 and 2011; the biomass-based diesel standard was combined for 2009 and 2010.
Volumetric Ethanol Excise Tax Credit (VEETC)

- Credit against federal excise tax on gasoline sales
- Provided to registered refiners and blenders
- Currently 45 cents/gallon (4.5 cents/gallon for E10)
- Amended to exclude imported ethanol used in exports of gasoline/ethanol blends
- Exports of ethanol/gasoline blends using domestic ethanol still receive VEETC; issue with EU
- Expires at the end of 2011
Small Ethanol Producer Tax Credit

- Credit against income tax on production up to 15 mg
- Cellulosic producers not subject to 15 mg limit
- Currently 10 cents/gallon
- Capped at $1.5 million/yr
- Provided to producers with a capacity of less than 60 mgy
- Expires at the end of 2012
Cellulosic Biofuel Producer Tax Credit

- Credit against federal income tax
- Currently $1.01/gallon
- VEETC subtracted for ethanol
  $1.01-$0.45=$0.56/gallon
- In addition to Small Ethanol Producers Tax Credit
- Expires at the end of 2012
California Low Carbon Fuel Standard (CA LCFS)

• California Assembly Bill AB-32; Executive Order S-01-07

• Reduce carbon intensity of transportation fuels by at least 10 percent by 2020

• Applies to refiners, blenders, producers, and importers

• Compliance schedule begins in 2010; first year is for reporting only

• Resulted in increasing ethanol blend from 5.7% to 10%

• Carbon lifecycle analysis based on pathway (feedstock, production method, transportation, combustion)
  http://www.arb.ca.gov/fuels/lcfs/workgroups/workgroups.htm#pathways

• Registered production facilities
  http://www.arb.ca.gov/fuels/lcfs/reportingtool/registeredfacilityinfo.htm
## CA LCFS Draft Compliance Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Gasoline and gasoline blends</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Carbon intensity (gCO₂e/MJ)</td>
</tr>
<tr>
<td>Base</td>
<td>95.85</td>
</tr>
<tr>
<td>2011</td>
<td>95.61</td>
</tr>
<tr>
<td>2012</td>
<td>95.34</td>
</tr>
<tr>
<td>2013</td>
<td>94.89</td>
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<tr>
<td>2014</td>
<td>94.41</td>
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<td>2015</td>
<td>93.45</td>
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<tr>
<td>2016</td>
<td>92.50</td>
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<td>2017</td>
<td>91.06</td>
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<td>2018</td>
<td>89.62</td>
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<tr>
<td>2019</td>
<td>88.18</td>
</tr>
<tr>
<td>2020+</td>
<td>86.27</td>
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<table>
<thead>
<tr>
<th>Fuel</th>
<th>Pathway</th>
<th>Carbon Intensity Values (gCO$_2$e/MJ)</th>
<th>Direct Emissions</th>
<th>Land Use or Other Effects</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>CARBOB</td>
<td>95.86</td>
<td></td>
<td></td>
<td>95.86</td>
</tr>
<tr>
<td>Corn ethanol (undenatured)</td>
<td>Midwest, average</td>
<td>69.40</td>
<td>30</td>
<td></td>
<td>99.40</td>
</tr>
<tr>
<td></td>
<td>California, weighted average</td>
<td>65.66</td>
<td>30</td>
<td></td>
<td>95.66</td>
</tr>
<tr>
<td>Sugarcane ethanol (undenatured)</td>
<td>Brazil, average</td>
<td>27.40</td>
<td>46</td>
<td></td>
<td>73.40</td>
</tr>
<tr>
<td></td>
<td>Brazil, cogen</td>
<td>20.40</td>
<td>46</td>
<td></td>
<td>66.40</td>
</tr>
<tr>
<td></td>
<td>Brazil, cogen, mech</td>
<td>12.40</td>
<td>46</td>
<td></td>
<td>58.40</td>
</tr>
<tr>
<td>Cellulosic ethanol (preliminary analysis only; includes denaturant)</td>
<td>Farmed trees</td>
<td>2.40</td>
<td>18</td>
<td></td>
<td>20.40</td>
</tr>
<tr>
<td></td>
<td>Forest waste</td>
<td>22.20</td>
<td></td>
<td></td>
<td>22.20</td>
</tr>
</tbody>
</table>

Note: As of December, 2009.

# CA LCFS Adjusted Fuel Carbon Intensity Values From Applications

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Pathway</th>
<th>Carbon Intensity Values (gCO$_2$e/MJ)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Direct Emissions</td>
<td>Land Use or Other Effects</td>
<td>Total</td>
</tr>
<tr>
<td>Gasoline</td>
<td>CARBOB</td>
<td>95.86</td>
<td>0</td>
<td>0</td>
<td>95.86</td>
</tr>
<tr>
<td>Corn ethanol (undenatured)</td>
<td>Lowest</td>
<td>43.20</td>
<td>30</td>
<td>73.20</td>
<td>73.20</td>
</tr>
<tr>
<td></td>
<td>Highest</td>
<td>62.40</td>
<td>30</td>
<td>92.40</td>
<td>92.40</td>
</tr>
<tr>
<td>Sugarcane ethanol</td>
<td>Lowest</td>
<td>17.94</td>
<td>46</td>
<td>63.94</td>
<td>63.94</td>
</tr>
<tr>
<td></td>
<td>Highest</td>
<td>32.94</td>
<td>46</td>
<td>78.94</td>
<td>78.94</td>
</tr>
</tbody>
</table>

Note: As of January 6, 2011. Only includes values from facilities that filed applications.

Carbon Intensities of Midwest Corn Ethanol
(Lookup Table and 2A-2B Applications)

Gasoline CI = 95.85 g/MJ

Source: California Air Resources Board. Contact: John Courtis, jcourtis@arb.ca.gov.
Northeast and Mid Atlantic Low Carbon Fuel Framework

- CT, DE, ME, MD, MA, NH, NJ, NY, PA RI, VT
- Studying CA LCFS
- MOU on December 30, 2009 to develop own LCFS
- [http://www.nescaum.org/topics/low-carbon-fuels](http://www.nescaum.org/topics/low-carbon-fuels)
- Washington, Oregon also considering LCFS
R&D

• Biomass Research and Development Initiative (BRDI)
  – Interagency Working Groups (feedstocks, logistics, conversion, support; OSTP, EPA, NSF, DOE, USDA, DOI, DOT, DOD)

• Biomass Crop Assistance Program (BCAP)
  – 2008 Farm Bill
  – Farm Service Agency, USDA
  – Support for production, collection, storage, and transport of energy crops
  – Direct payments; matching payments
Trade Policy

• Major policy vehicles
  • Tariff Act of 1930
  • Omnibus Trade and Competitiveness Act of 1988
  • Steel Trade Liberalization Program Implementation Act of 1989
  • Various FTAs and PTAs

• Major policy elements
  • Tariffs and Other Duties and Charges (ODC)
  • CBI dehydration quota
  • Duty drawback
# U.S. Fuel Ethanol Tariffs and ODC

<table>
<thead>
<tr>
<th>HTS subheading</th>
<th>Tariff/ODC</th>
<th>Preference programs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Column 1</td>
<td>Preferential</td>
</tr>
<tr>
<td><strong>2207.10.6010 (undenatured)</strong></td>
<td>2.5 % ad valorem</td>
<td>Free</td>
</tr>
<tr>
<td><strong>2207.20.0010 (denatured)</strong></td>
<td>1.9 % ad valorem</td>
<td>Free</td>
</tr>
<tr>
<td><strong>9901.00.5000 (fuel use)</strong></td>
<td>14.27 cents per liter (54 cents per gallon)</td>
<td>Free</td>
</tr>
</tbody>
</table>

In addition to ch. 22 duties. EXPIRES AT THE END OF 2011.

Source: HTSUSA.
## U.S. Fuel Ethanol Blend Tariffs and ODC

<table>
<thead>
<tr>
<th>HTS subheading</th>
<th>Tariff/ODC</th>
<th>Preference programs</th>
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</thead>
<tbody>
<tr>
<td><strong>Column 1</strong></td>
<td><strong>Preferential</strong></td>
<td></td>
</tr>
<tr>
<td>2710.11.1500 (at least 70 percent petroleum, by weight)</td>
<td>52.5 cents/bbl</td>
<td>Free</td>
</tr>
<tr>
<td>3824.90.9290 (between 70% petroleum, by weight, and undenatured fuel ethanol)</td>
<td>5% ad valorem</td>
<td>Free</td>
</tr>
<tr>
<td><strong>DIVIDING LINE BETWEEN CHAPTER 22 UNCLEAR</strong></td>
<td></td>
<td><strong>GSP+ (least-developed), ATPA, Australia, Bahrain, NAFTA, CBERA, ATPA, Israel, Jordan, Morocco, DR-CAFTA, Singapore, Chile, Peru</strong></td>
</tr>
<tr>
<td>9901.00.5000 (fuel use) In addition to ch. 22 duties. EXPIRES AT THE END OF 2011.</td>
<td>14.27 cents per liter (54 cents per gallon)</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>GSP+ (least-developed), ATPA, NAFTA, Israel, CBERA, DR-CAFTA, U.S. insular possessions PERU FTA? PENDING PRESIDENTIAL PROCLAMATION</strong></td>
</tr>
</tbody>
</table>

**Source:** HTSUSA.
U.S. ad valorem equivalent fuel ethanol import duty rates, 2004-2010

Source: USITC.
CBI Dehydration Quota

• Confers origin for ethanol dehydrated from imported hydrous feedstocks
  • 7% of U.S. consumption=>No local feedstock required
  • Additional 35 million gallons=>30% local feedstock blend required
  • Unlimited amount=>50% local feedstock blend

• Applies to CBERA, DR/CAFTA, U.S. Insular Possessions

• First-come, first-served

• DR/CAFTA reservations for El Salvador (>25 mgy) and Costa Rica (31 mgy)—Does not increase the quota; unfilled amount not reassigned
<table>
<thead>
<tr>
<th>Country</th>
<th>Capacity (mgy)</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costa Rica</td>
<td>60</td>
<td>LAICA</td>
</tr>
<tr>
<td>El Salvador</td>
<td>170</td>
<td>Gasohol de El Salvador</td>
</tr>
<tr>
<td></td>
<td></td>
<td>American Renewable Fuel Suppliers</td>
</tr>
<tr>
<td>Jamaica</td>
<td>215</td>
<td>Petrojam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jamaica Broilers JEPL</td>
</tr>
<tr>
<td>Trinidad &amp; Tobago</td>
<td>200</td>
<td>TBTL Ethylchem</td>
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<tr>
<td>USVI (St. Croix)</td>
<td>100</td>
<td>GeoNet</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>745</strong></td>
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<tr>
<td>East of Panama Canal</td>
<td>515 (69%)</td>
<td></td>
</tr>
<tr>
<td>West of Panama Canal</td>
<td>230 (31%)</td>
<td></td>
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<tr>
<td><strong>2011 Quota:</strong></td>
<td><strong>875.4 mg</strong></td>
<td></td>
</tr>
</tbody>
</table>

Possible future production locations:
Haiti, Guyana, Guatemala, Dominican Republic, Aruba, Barbados

Source: Caribbean Basin Ethanol Group; telephone conversations with industry officials.
Note: Data represent nameplate capacity on a hydrous input basis.
Source: Estimated by the USITC based on official statistics of the U.S. Department of Commerce; CBP.
Duty Drawback

• Jet fuel drawbacks
  – Sales of jet fuel used for overseas flights = deemed exports
  – Jet fuel and gasoline/ethanol blends share an 8-digit HTS subheading (2710.11.15)
  – Ethanol is NOT used to make jet fuel but is used to make gasoline/ethanol blends
  – Ethanol substitutes for gasoline
  – Thus, relevant jet fuel sales can be used to claim ethanol substitution drawbacks
  – Jet fuel drawbacks contributed to direct imports of anhydrous ethanol from Brazil during 2004-2008

• Drawback provisions were amended to require ethanol in exported product after Oct. 1, 2008, affecting direct imports from Brazil

• Imports must occur before drawbacks are generated by exports.
Major Policy Issues
Domestic policy issues

• Renewable Fuel Standard
• California Low Carbon Fuel Standard
• Indirect land use change
• Tax credits
• Blend wall
• Food vs. fuel

Trade policy issues

• ODC
• CBI quota
• Exports
• Indirect land use change
• Food vs. fuel
• WTO
Renewable Fuel Standard

- Cellulosic and biodiesel volume shortfalls in near to medium term

- Sustainability criteria=>WTO issues (greenhouse gas reduction requirements; feedstock restrictions)

- Reliance on Brazil for advanced category—shortage of exportable hydrous feedstocks and direct anhydrous stocks in 2009 and 2010.

- Impact of blend wall
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<tbody>
<tr>
<td>Midwest Wet Mill (60%NG/40%coal)</td>
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<td>Midwest Dry Mill-Dry DGS (NG)</td>
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<tr>
<td>Midwest Dry Mill-Dry DGS (80%NG/20%biomass)</td>
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<td>Midwest Dry Mill-Wet DGS</td>
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<tr>
<td>Midwest Dry Mill-Wet DGS (80%NG/20%biomass)</td>
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Note: Red indicates noncompliance; green indicates compliance. Based on initial carbon intensity values.
Source: CARB.
California: E85 blends will fare better under the LCFS

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Note: Red indicates noncompliance; green indicates compliance. Based on initial carbon intensity values.
Source: CARB.
Indirect Land Use Change

• Criticism of modeling
  • Lack of current, relevant data
  • Use of off-the-shelf techniques (GTAP; GREET)
  • Assumptions crucial, variable
  • Difficult to assign share of effect to biofuels
  • Wide variation in results

• Recent Purdue study improves iLUC profile of U.S. corn ethanol (from CARB default 30g to 13.9g)

• CARB updating lifecycle analysis for U.S. corn ethanol, sugarcane ethanol, and soy biodiesel

• Implications for investment, trade
  • Market price differentials based on carbon
  • Capital drawn to lower carbon
  • Ability to meet carbon standards in export markets

• WTO concerns—nontariff measures
Tax Credits

• Temporary

• Debate over necessity given mandates, current budget situation, ethanol exports

• Producer tax credits could pose WTO issues

• VEETC export issue (EU)

• May be reduced or eliminated and supplemented or replaced by infrastructure subsidies
Blend wall

• E10 is legal limit under Clean Air Act

• EPA approved E15 waiver for 2007+ model light engines in October 2010; 2002+ engines in January 2011
  http://www.epa.gov/otaq/regs/fuels/additive/e15

• API, food and farm interests file law suit in November 2010

• E15 waiver concerns—older, smaller engines

• Potential constraint in 2012 and beyond

• Slow commercialization of cellulosic and uncertain availability of sugarcane ethanol may delay impact of blend wall

• E85 vehicles and infrastructure lagging
Food vs. Fuel

• Concern that increasing use of food/feed feedstocks for biofuels contribute to rising commodity and food prices

• Wide range of estimates of impact (5%-75% in US)

• Other factors include weather, increasing demand (Asia), oil prices, speculation

• Productivity increases, DDGS mitigate effect

• Drive toward “2nd Generation” biofuels using non-food feedstocks and “3rd Generation” “drop-in” fuels
U.S. corn use, marketing years 1990/91-2020/21

Million bushels

Marketing year

Ethanol for fuel

Other, including exports

USDA 2011 acreage projections

U.S. corn yield, 1930-2010

U.S. corn and soybean prices, 2000-2011

Note: 2011 through April.

Source: USDA, NASS. Available at http://quickstats.nass.usda.gov/.
U.S. consumer price index for selected food items, 2000-2011

Note: 2011 through March.

FAO food price indices, 2000-2011

Note: 2011 through April.
Tariffs

- ODC is temporary—expires at end of 2011
- ODC is not subject to WTO negotiation
- ODC is not tied to VEETC
- ODC is bound at 54 cents/gallon
- ODC is greater than VEETC
- Pressure to eliminate ODC or equalize with VEETC
- ODC provides protection for CBI dehydrators and nascent U.S. cellulosic industry
<table>
<thead>
<tr>
<th>Year</th>
<th>NTR duties Undenatured/denatured (% ad val)</th>
<th>ODC (cents/gal)</th>
<th>Tax credit (cents/gal)</th>
<th>Year</th>
<th>NTR duties Undenatured/denatured (% ad val)</th>
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<td>2011</td>
<td>2.5/1.9</td>
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</table>

Source: TSUSA, HTSUS, CRS, EIA, EISA, FCEA.
Difference Between VEETC and ODC, 1981-2011

Source: EIA, CRS, TSUSA, HTS.
CBI Quota

- Has never been filled—highest fill rate 75 percent, less than 1% in 2010
- Pathway meets EPA GHG reduction requirements.
- ODC (duty) protects CBI dehydrators
- Price spread of about 45 cents/gallon between Brazilian hydrous and U.S. anhydrous is necessary to be profitable.
- Usually profitable during peak summer gasoline demand months in United States
- Shuttered since late 2009 owing to high feedstock costs, market price differentials
U.S. fuel ethanol imports under the CBI quota, 1990-2010

Source: Estimated by the USITC based on official statistics of the U.S. Department of Commerce; CBP.
Source: Estimated by the USITC based on official statistics of the U.S. Department of Commerce; CPB.
Projected CBI Ethanol Dehydration Quota, 2009-2022

Billion gallons

Source: USITC, calculated from RFS, industry estimates.
Rising Brazilian hydrous feedstock prices shut down CBI dehydrators in 2009.

Note: Brazil: ex-mill, Sao Paulo; US: East Coast spot.
Source: LMC International; industry sources.
WTO

• ODC
  – Brazil periodically refers to possible DSB case against the U.S. ODC (54 cents/gallon).
  – U.S. government notified the ODC under the GATT; Brazilian government acknowledged.

• Technical Barriers to Trade (TBT)
  – Sustainability criteria under the RFS2, LCFS
  – Feedstock restrictions, iLUC

• Subsidies
  – U.S. notifies the Alcohol Tax Credit (VEETC) and the Biodiesel Tax Credit to the WTO. These represent foregone revenues rather than direct outlays.
### U.S. biofuel notifications to the WTO Committee on Subsidies and Countervailing Measures

<table>
<thead>
<tr>
<th>Item</th>
<th>FY2005</th>
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<th>FY2007</th>
<th>FY2008</th>
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<td>Alcohol fuel credit</td>
<td>1,540</td>
<td>2,620</td>
<td>3,360</td>
<td>4,460</td>
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<td>Biodiesel and renewable diesel credit</td>
<td>30</td>
<td>90</td>
<td>750</td>
<td>1,218</td>
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<td><strong>Total</strong></td>
<td><strong>1,570</strong></td>
<td><strong>2,710</strong></td>
<td><strong>4,110</strong></td>
<td><strong>5,678</strong></td>
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Note: Data represent foregone tax revenues rather than direct outlays.

Exports

- U.S. exports of ethanol to EU increased dramatically during 2009-2010.

- Reports of U.S. E90 exports benefiting from VEETC.

- Data inconsistencies. U.S. exporters believed to be mixing on the water and/or classifying E90 in Schedule B subheading 2207.20.

- Customs classification issue; product specification issue. When does denatured ethanol in chapter 22 become a chemical product in chapter 38? What is E85 (Sweden PCC)? DG Tax is investigating.

- Possible EU AD/CVD case on ethanol.

- VEETC and Biodiesel Tax Credit amended as of October 1 2008 to prohibit tax credits for imported biofuel in exports of biofuel blends; tax credits still apply to exports of fuel blends containing domestically-produced biofuels.

- China antidumping case on U.S. exports of DDGS. China discourages use of domestic corn for biofuel production, substantially increased imports of U.S. corn in 2010 (likely for starch/ethanol owing to GMO issue), increased own production of DDGS.
U.S. ethanol export issue

- HS heading 2207 provides for “ethyl alcohol, and other spirits, denatured, of any strength.”
- HS subheading 2710.11 specifically provides for fuel mixtures containing at least 70 percent petroleum oils, by weight.
- HS subheading 3824.90.9290 could provide for ethanol fuel mixtures between E30 and E93?
- HSC (WCO) meeting—no consensus. Some informal consensus that less than 93% ethanol is the dividing line between chapter 22 and chapter 38.
- EU ethanol association (ePURE) position is that any denatured ethanol is classified in chapter 22 until petroleum weight reaches 70%.
- ASTM specifies maximum of 2.5% denaturant, minimum of about 92% ethanol for denatured fuel ethanol standard (D4806).
- IRS VEETC denaturant level limit to about 2% (up to 2.5% for rounding).
- IRS proposed regulation requires additional 0.1% gasoline to qualify for VEETC
- EPA allows 2% (2.44% for rounding) denaturant to count toward RFS mandate
- EU Binding Tariff Informations (BTIs)—Chapter 38 classification for mixtures as low as E93. UK, Netherland, Sweden, Finland.
- EU specifications—differ by member state, end use.
U.S. exports of nonbeverage ethanol to the EU, by market, 2005-2010, Jan.-March 2010 and Jan.-March 2011

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Schedule B subheadings 2207.1060 and 2207.20
EU imports of non-beverage ethanol, by source, 2006-2010

Source: GTIS, Global Trade Atlas.
Note: Includes HS subheadings 2207.10 and 2207.20.
Data discrepancy in U.S.-EU trade in nonbeverage ethanol, 2006-2010

Note: Includes HS subheadings 2207.10 and 2207.20.
Situation in Brazil

• Infrastructure/financing issues have slowed expansion.

• Higher cost producer than US.

• Exchange rates—strong real vis-a-vis dollar and euro.

• Continued consolidation.

• Focus on domestic market, continued growth in flex-fuel fleet.

• Sugar exports still more profitable.

• Exports diminished; will continue to import this year.

• Unlikely to have surplus stocks in near term.

• Regulation of ethanol market by the National Petroleum Agency (ANP).
Nonbeverage ethanol prices, by market, January 2007-February 2011

Note: EU: fob Rotterdam, T2; Brazil: ex-mill, Sao Paulo; US: East Coast spot.

Source: LMC International.
Brazilian exchange rates, 2000-2011

Brazilian new car sales, by engine type, 2005-2010

Source: ANFAVEA.
World sugar prices, by type, January 2007-February 2011


Source: USDA, ERS.
Brazilian sugar exports, by type, 2005-2010

Source: GTIS, Global Trade Atlas.
Brazilian exports of ethanol, by market, 2005-2010

Note: Includes all ethanol (beverage, industrial, and fuel).

Source: LMC International.
Summary of U.S. policy issues

- Fragmentation of U.S. policies: RFS, LCFS, VEETC, ODC, CBI
- Key U.S. policy elements are temporary and subject to frequent challenge, change, or elimination
- Vigorous debate in Congress on the future of U.S. ethanol policy
- Slow progress commercializing 2\textsuperscript{nd} generation (cellulosic)
- Blend wall remains a concern
- Policy uncertainty affects the perception of risk for investors
- Carbon concerns likely will join tariff and subsidy issues in future global market access considerations
Summary of current global market issues

- Carbon is driving policies worldwide
- Questions about attainability of goals within current timeframes
- Continued need for government involvement
- Domestic and trade policies affect investment and trade
- Controversy remains as food and energy markets become more integrated, impact on land use difficult to measure, weather volatility increases uncertainty
Prospects

• RFS2 may need to be restructured to account for cellulosic/biodiesel shortfalls in the near to mid term
• E15 will take time—law suits, infrastructure cost
• Blend wall will continue to be a concern in near to mid term
• VEETC and ODC may be phased down/out
• CBI dehydration industry uncertainty
• Increasing consolidation and integration by refiners in US and Brazil
• EU environmental requirements likely will affect future U.S. and Brazilian exports
• Market growth in Asia, especially China, could put increasing pressure on feedstocks (corn, wheat) and ethanol supplies
• Increasing number of countries with ethanol markets
• Markets will reward low carbon intensity (California, EU)
• Leapfrog from 2nd generation to 3rd generation biofuels?
Challenges

• Policy coordination both within and among markets

• Technological constraints

• Increasing complexity and expense of regulatory compliance

• Public perception/political impact
Thank You!