



Lecture 11: Renewable and Alternative Fuels

Energy Law and Policy

Fall 2013

November

- 11/4 Oil and Gas Policy/Ken Alfred
- 11/6 Shale Revolution
- 11/11 Fuel Cells/Pat Valente
- 11/13 Transportation Policy/Jim Halloran
- **11/18 Alternative Fuels/Joe Degenfelder**
- 11/20 Nuclear Power/Electricity Storage
- 11/25 Economic Development/I. Lendel
- 11/27 Individual Meetings on Research –
 - Please Schedule in advance

Alternative Fuel Types

- Biofuels – about 3% of world transportation fuels
 - Bioalcohols – corn ethanol
 - biodiesel
- Gas to Liquid technologies
 - Fischer Tropes
 - Methanol to gasoline (MTG) (natural gas derived)
 - Syngas to gasoline (natural gas derived)

GTL Globally

- World's Largest GTL plant
 - Shell Oil Company in Qatar
 - Converts 1.6 bcf/d to 140 kbbl/d of liquids
 - Cost \$24 billion – viable at \$40 bbl oil w free gas
- Products:
 - Gasoil – alternative to diesel
 - Paraffin and waxes
 - Kerosene, base oils
 - Naphtha (ethylene/propylene and plastics)

Liquid Fuel Controversies

- Subsidies for biofuels
 - Windfall for farmers?
 - Renewable Fuels Portfolio
 - Attack from incumbent industries as “picking winners”
 - Attack from biofuel industry as tepid
- Costs for natural gas to liquid technologies
 - Natural gas prices will need to be low compared to oil for long time to be commercially successful
 - Long pay back period for industries

Joseph Degenfelder

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 - BS Cornell University
- CEO Atlantic Greenfuels
- Chairman for Alternative Fuels Working Group
 - Ohio Aerospace Institute

CSU Energy Policy Center



Thank you!