

**INTERNATIONAL PALM OIL
LIFE CYCLE ASSESSMENT
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US Biofuel Policy and Outlooks

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Government investment in biofuels



- Cost of biofuels subsidies projected to total \$420 billion, or about \$28 billion a year from 2009 to 2022.
- DOE to invest \$800 million from the ARRA (stimulus bill) in grants and loans for biomass R&D, testing and deployment, including biofuels.
- Major existing programs are the DOE Loan Guarantee (\$200 million max award) and the Integrated Biorefinery program (awards capped at \$15 and \$50 million).

Tax subsidies in the U.S.

Tax Credit Name	Where Applicable	Value
Volumetric Ethanol Excise Tax Credit	To companies that blend ethanol into gasoline, including imported ethanol.	\$0.45 per gallon
Volumetric Biodiesel Tax Credit	To companies that blend biodiesel into diesel fuel, excluding imported biodiesel.	\$1.00 per gallon , except fuels co-processed at petroleum refineries
Renewable Biodiesel Tax Credit	A parallel tax credit to the Volumetric Biodiesel Tax Credit if the excise tax credit could not be claimed	\$1.00 per gallon , except fuels co-processed at petroleum refineries
Small Producer Tax Credit	To any biofuel producer (ethanol or biodiesel)	\$0.10 per gallon on the first 15 million gallons per year produced at facilities smaller than 60 million gallons per year
Production Tax Credit for Cellulosic Ethanol	To producers of cellulosic ethanol only.	\$1.01 per gallon total support, but Volumetric Ethanol Excise Tax Credit payments must be netted first

Why Government Focus on Biofuels?



- Transportation leads all U.S. sectors in CO₂ emissions.
- 1/3 of all GHG in U.S. are from transportation.
- From 1990-2007 transportation emissions grew by 431.8 million metric tons – 44% of the growth in total emissions.
- Petroleum combustion is the largest source of carbon dioxide emissions in the transportation sector.

Public, Policymakers, Climate Change



- Increased public awareness of climate change.
- Policy environment in US is more focused on addressing climate change.
- International arena is moving forward – puts pressure on U.S. lawmakers to act.
- Don't discount the power of the U.S. agricultural lobby.

Public is concerned – wants action



- Gallup poll (3/09): 60% of Americans are “highly concerned” about global warming.
- Pew poll (3/09): 59% of Americans favor cap on carbon emissions.
- George Mason/Yale Poll (4/09): 69% of Americans say US should sign treaty requiring U.S. to cut CO2 emissions 90% by 2050.
- Zogby (8/09): 71% favor ACES; 67% say Congress is either doing the right amount (22%) or should be doing more (45%) re: global warming.

EPA leads Administration Efforts



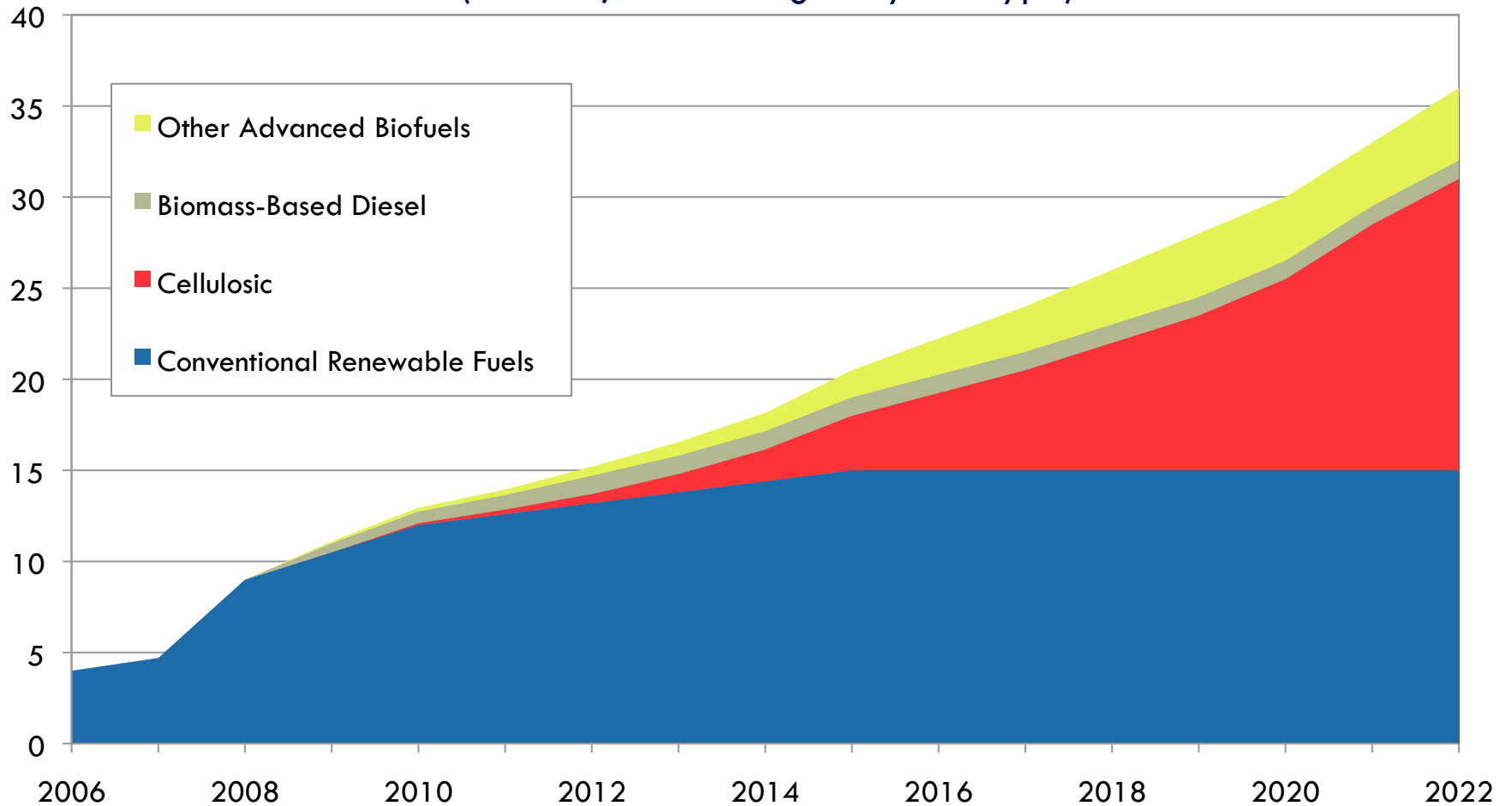
- Environmental Protection Agency (EPA) is leading climate regulation for the White House.
- EPA/DOT proposed standards to improve fuel economy and reduce GHG from vehicles in 2012.
- EPA has authority under Clean Air Act to regulate carbon – *Massachusetts v. EPA Decision*.
- Currently in rule making process for the Renewable Fuel Standard 2.
- Not as public of a process as Congress.

Renewable Fuel Standard 2

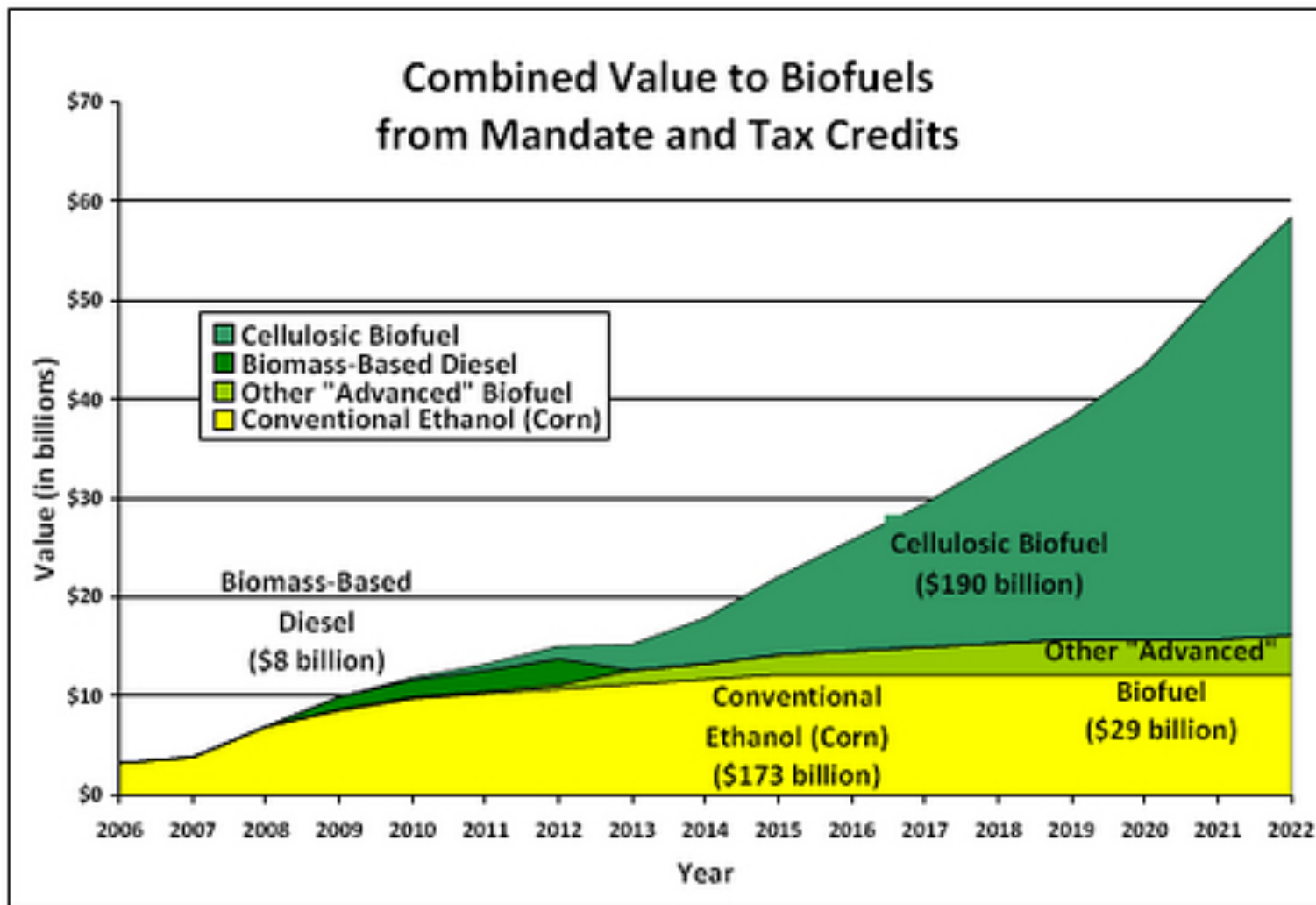
Goal of 36 billion by 2022 represents a 300% rise in consumption



(US DOE, interim targets by fuel type)



Large increase in subsidies for “next generation” biofuels projected



Source: Wall Street Journal, Reprinted from Friends of the Earth
<http://www.foe.org/biofuelssubsidies>

Congressional Action



- Reps. Waxman and Markey took the lead in the House of Representatives.
- Sweeping climate change bill – with cap and trade provisions – passed the House last month.
- Senate hearings and committee work underway.
- Sens. Kerry and Boxer have introduced a Senate version of the bill. No major changes except for silence on the ILUC question.
- Sen. Reid indicated that action may wait until 2010. Healthcare taking the spotlight.

How does this impact liquid fuels?



- Waxman-Markey puts petroleum producers and importers under the “cap” - they must account for the emissions. This will impact all liquid petroleum fuels.
- Petroleum rec’ ~2% of “free” allowances.
- As allowances for emissions are decreased through 2050, likely result in upward price pressure on petroleum based fuel.

International Regulation



- The UN is overseeing treaty talks aimed at updating the existing Kyoto Protocol. Kyoto obliges 37 developed nations to cut emissions by 5% below 1990 levels by 2008-12.
- Parties meet in Copenhagen in December, 2009.
- Congressional and Administration action tied to Copenhagen.
- Three major meetings this month slated for Washington, D.C.; New York; and Pittsburgh – the goal is to build momentum for December discussions.

Once Biofuels were the silver bullet...

- Biofuels have been considered a source of:
- economic growth
 - green jobs
 - energy independence
 - lower overall emissions.



...then they were the cause of all problems...



They've also been blamed for:

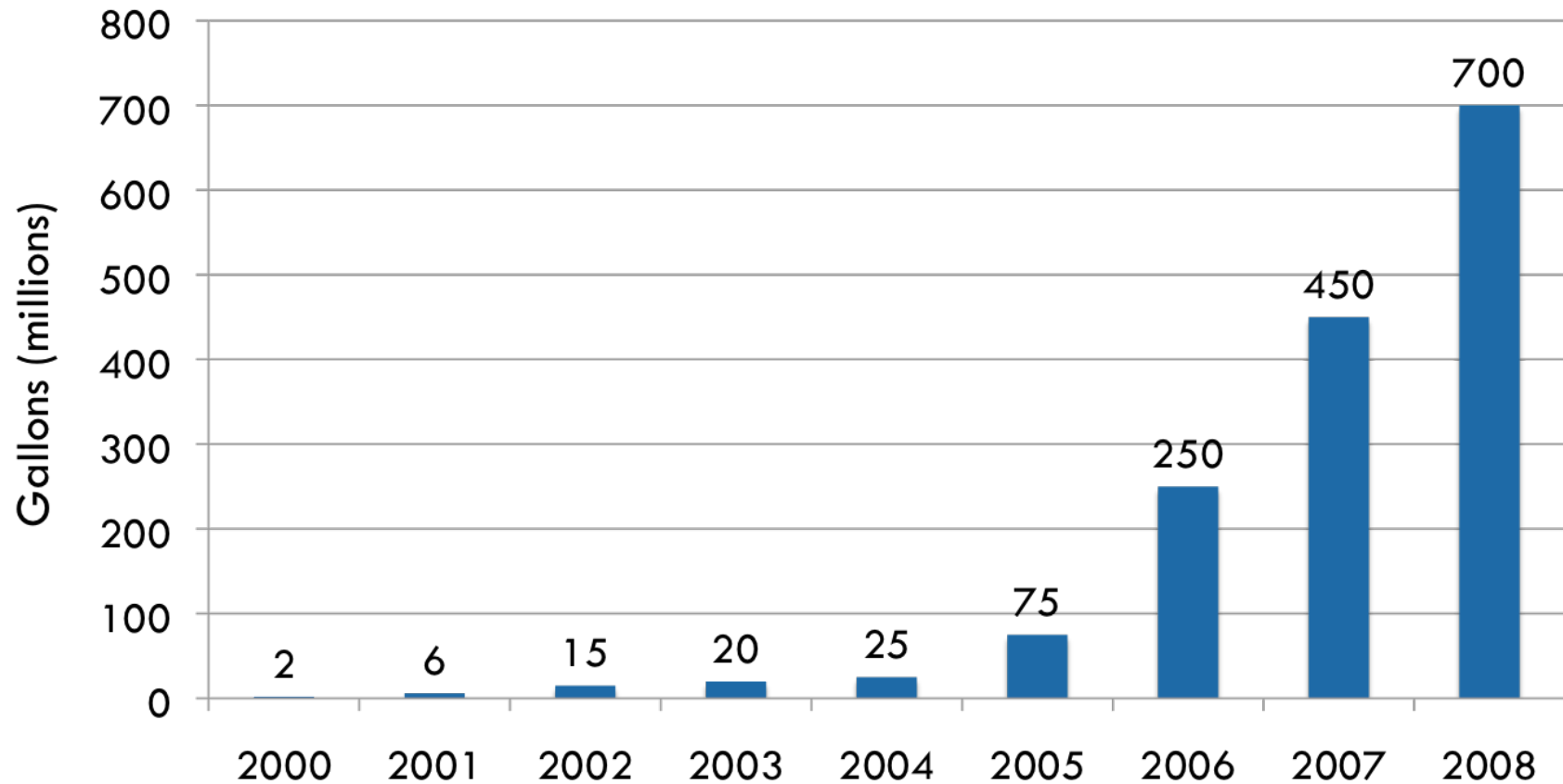
- Rising food prices
- Protests in the developing world
- Deforestation
- Worse GHG than petroleum fuels.

The real answer?



- It's complicated.

Biodiesel production in the U.S.



Fiscal year Oct. – Sept.

Source: National Biodiesel Board

GHG Lifecycle Assessments (LCA)



- 2007, Congress required all “advanced” biofuels to result in a 50% reduction in “lifecycle emissions.”
- “Conventional” biofuels must demonstrate a 20% reduction.
- How is this calculated? It’s an art and a science.
- Congress tasked EPA with developing a system for calculating LCA’s.

LCA's, continued...



- Required that EPA consider all significant emissions, both direct and indirect, from biofuels:
- ***Three key components:***
 - Processes required to produce feedstocks, convert them into fuel and deliver the fuel to the end-user;
 - Emissions from the vehicle itself;
 - Any direct or indirect changes in emissions not attributed to fuel production or use – including changes in land-use.

Conclusions and Q&A



- Political and public alignment make sweeping climate change regulation a real possibility – at both national and international levels.
- Biofuels are likely to receive continued public sector support, but with higher levels of scrutiny re: sustainability.
- The next 12-18 months are key.

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Thank You!

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