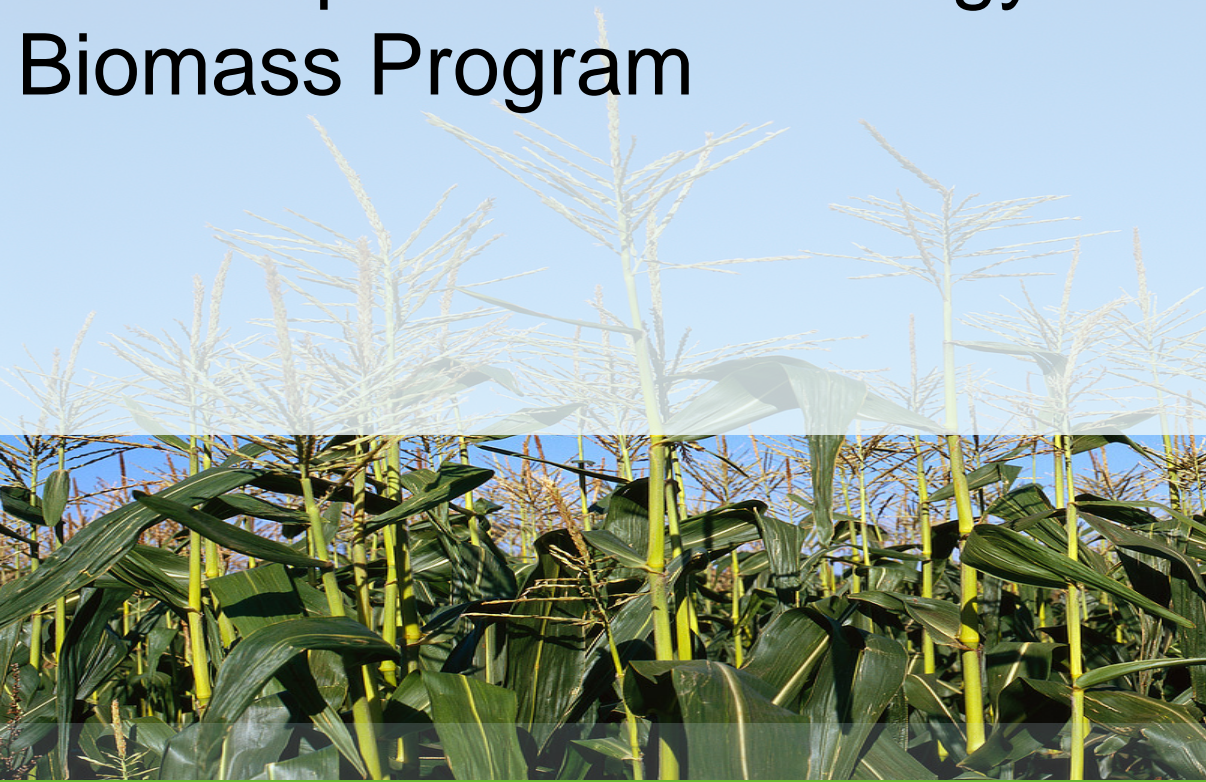




U.S. Department of Energy Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy
is clean, abundant, reliable, and affordable

U.S. Department of Energy Biomass Program



Neil P. Rossmeissl
Technology Development
Manager

Department of Commerce Biofuels Meeting
June 19, 2007

U.S. Presidential Commitment to Ambitious Biofuels Goals

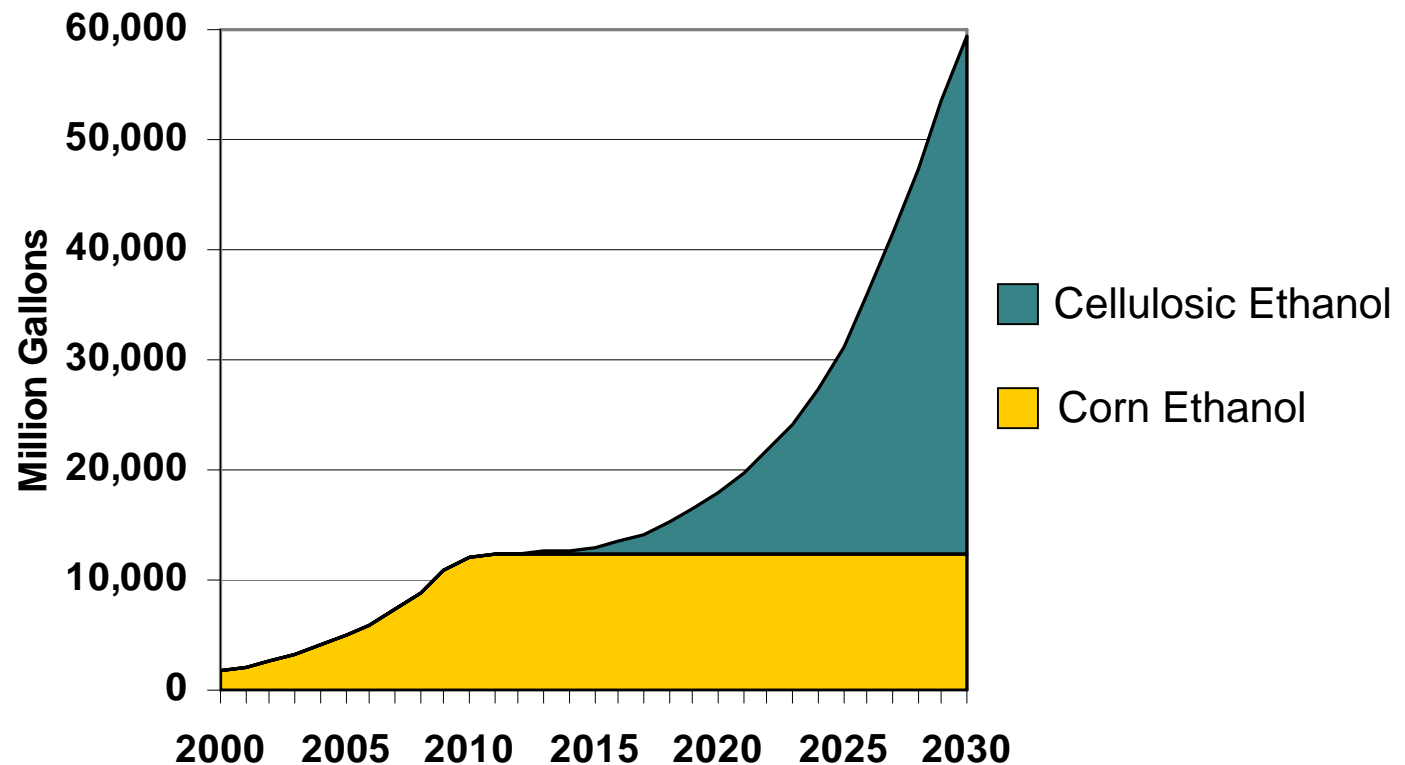
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- Cost-competitive cellulosic ethanol” by 2012
- **“20 in 10”**
 - Reduce U.S. gasoline* use by **20%** by 2017 through...
 - o **15%** reduction from new Alternative Fuels Standard at **35 billion** gallons/year
 - o **5%** reduction from enhanced efficiency standards (CAFÉ)
- **“30 in 30”**
 - Longer-term DOE biofuels goal
 - Ramp up the production of biofuels to **60 billion** gallons
 - Displace **30%** of U.S. gasoline consumption* by 2030

The goal is to produce cost-competitive cellulosic ethanol by 2012, and replace 30% of gasoline demand with biofuels by 2030.

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The 2030 goals translates into about 60 billion gallons of cellulosic ethanol.

Collaborative research, development, and demonstration is focused on removing barriers to large-scale production of cellulosic biofuels.

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Collaborative Fundamental R&D

- **Feedstocks:** integration of feedstocks with conversion processes
- **Conversion Technologies:** biochemical and thermochemical
- **Integrated Biorefineries:** systems integration, demonstrations, infrastructure development

Integrated Biorefineries

- **Systems Integration:** feedstocks, conversion, biopower, infrastructure
- **Demonstration:** pilot scale, commercial scale



OBP efforts are paving the way for a strong, domestic bioenergy industry—
with commercial success possible in the next six years.

Future efforts will address obstacles to both biochemical and thermochemical routes to biofuels, support demonstrations, and resolve infrastructure issues.

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Barriers

- High cost of cellulosic ethanol
- Inadequate technology for ethanol from lignocellulosics
- Technical constraints on thermochemical conversion processes
- Demonstration/deployment of technology in integrated biorefineries
- Inadequate distribution infrastructure for expanding markets



Solutions

- Continue R&D to reduce enzyme costs
- Fund R&D on advanced fermentation micro-organisms (ethanologens)
- Re-establish thermochemical conversion (gasification, pyrolysis) as a second path to success
- Fund loan guarantees, biorefinery demonstrations, and 10% scale validation projects
- Use interagency team to coordinate activities; form Regional Feedstock Partnerships

The expertise of the national laboratories and cutting-edge industrial partners is helping to solve major challenges to domestic biofuels.

EERE and OBP have implemented several programs in response to the Energy Policy Act of 2005.

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Section 932: Commercial Integrated Biorefinery

\$385 million over four years for cost-shared integrated biorefineries in six states

Abengoa Bioenergy Biomass of Kansas

Capacity to produce 11.4 million gallons of ethanol annually

ALICO, Inc.

Capacity to produce 13.9 million gallons of ethanol annually

BlueFire Ethanol, Inc.

Capacity to produce 19 million gallons of ethanol annually

Broin Companies

Capacity to produce 125 million gallons of ethanol annually

logen Biorefinery Partners, LLC

Capacity to produce 18 million gallons of ethanol annually

Range Fuels (formerly Kergy Inc.)

Capacity to produce 40 million gallons of ethanol annually

EPACT 2005 Funding cont.

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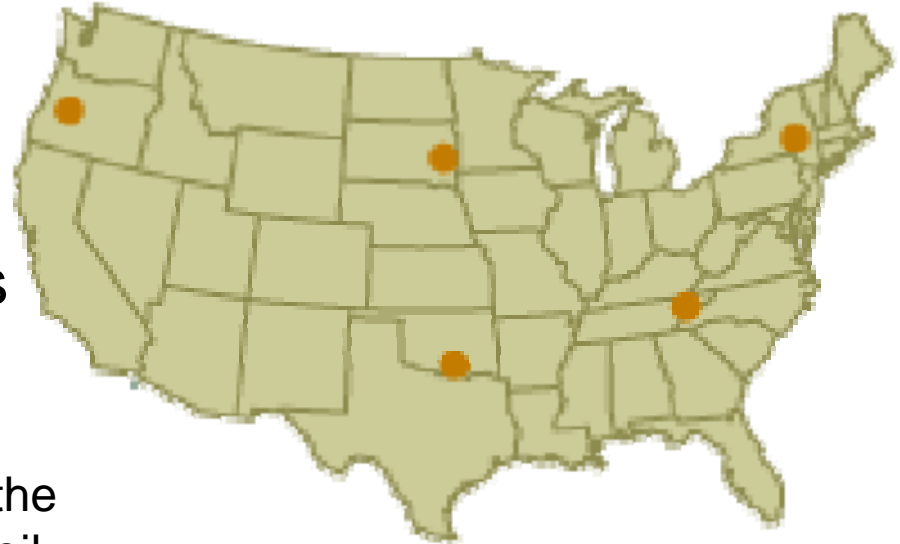


- Sections 1510, 1511, and Title XVII: **Loan Guarantees**
 - DOE issued guidelines for the first LG under Title XVII in August 2006
 - Loans for conversion of MSW and cellulosic biomass to fuel ethanol and other commercial byproducts also considered under this offering
 - Over 200 applications submitted for evaluation
- Section 942: **Cellulosic Ethanol Reverse Auction**
 - RFI and Options papers completed
 - \$5 million requested for FY 2008 program initiation
- 10% Validation
 - Solicitation released
 - Proposals due mid August
 - 5 to 10 awards
 - Up to \$200 million

Regional Partnerships

- Organize Western, South Central and North East Regional Partnership
- Initiate and leverage R&D activities with Partners that contribute to DOE milestones and objectives
 - Long-term impacts of consistently removing the majority, if not all, of the biomass from a parcel of land on soil carbon, soil quality, water quality, nutrient cycling, and erosion
 - Long-term management systems (including perennial and woody crops) that allow for significant biomass production and removal without degrading the environment or soil resource.

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- Best management practices for biomass and residue harvest – how much must be left to sustain the resource?

R&D Solicitations

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- Ethanologen
 - Develop robust biocatalyst
 - C5 sugar conversion
 - Available for license
 - Six awards
- Thermochemical Conversion
 - Overcome barriers for tar formation
 - Improve efficiency of process
 - Develop new hardware
 - Solicitation imminent

The future of biofuels will also depend on the creation of new partnerships among several industries

