US Biofuel Policy Instruments

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EESI: *Advancing Innovative Solutions!*

- Dedicated to promoting sustainable societies through innovative policies on energy, climate, transportation, agriculture, and smart growth
- Founded in 1984, by a bipartisan Congressional Caucus
- Provides timely information regarding science, policy, and technologies
- Organizes ~20 Congressional briefings a year
- Builds coalitions and networks
- Publishes 3 electronic newsletters
  - BCO – Bioenergy, Climate Protection & Oil Reduction
  - Climate Change News
  - National Clean Bus update
- EESI Associates Program allows companies and individuals to participate

Overview

- Biofuel policy development in the US
  - Different policy fields and instruments
- Current US federal biofuel policy
- Biofuel policy in the works
  - Major areas of conflict among the different policies
- Biofuels: One part of a larger strategy

Biomass Incentives Project

- Identifying effective state incentive mechanisms to foster biofuels, biopower, and bio-based products development
- Evaluating opportunities to adapt or package state incentives to complement federal and local incentives
- Three-year USDA-sponsored project
- Project team members:
  - North Carolina Solar Center – NC State University
  - Environmental and Energy Study Institute
  - New Uses Council

Contributing Organizations

- American Coalition for Ethanol
- American Corn Growers Association
- American Farmland Trust
- American Soybean Association
- BioCycle
- Biogas Energy Systems
- Biomass Investment Group, Inc
- Cargill
- Center for Rural Affairs
- Climate Solutions
- Coalition of Northeastern Governors
- Council of Great Lakes Governors
- Dairyland Power
- DuPont
- Earthshell Corporation
- Federation of Southern Cooperatives
- GEMTEK Products
- Governors Ethanol Coalition: Nebraska
- Great Plains Institute
- Institute for Agriculture and Trade Policy
- IOGEN
- Michigan State University
- Mid-Atlantic Biofuels
- Minnesota Lung Association
- Minnesota Project
- National Association of Conservation Districts
- National Association of State Energy Officials
- National Biodiesel Board
- National Center for Appropriate Technology
- National Corn Growers Association
- National Farmers Union
- National Rural Electric Cooperative Association
- New England Wood Pellet, Inc
- New York State Energy Research and Development Authority (NYSERDA)
- North Dakota State Energy Office
- Oak Ridge National Lab
- Pennsylvania Department of Agriculture
- Piedmont Biofuels
- Renewable Fuels Association
- Renewable Lubricants
- State of Florida
- State of Kansas
- State of Minnesota
- State of New Mexico
- SUNY: State University of New York
- University of Idaho
- University of Tennessee
- US Department of Agriculture
- US Department Of Energy
- US Environmental Protection Agency
- Yale University

Identification and Data Collection of Externalities associated with Biomass Technologies

- Creation of jobs
- Wildlife habitat enhancements
- Wildfire risk reduction
- Public health benefits
- Promotion of “Green Buildings”
- Improved national security
- Increased energy independence
- Promotion of advancements in science and technology
- Prevention of urban sprawl and property development oversensitive lands
- Improvements in animal waste handling technologies.
- Water quality improvement
- Reduction of trade deficit
- Improvement of air quality
- Reduction of carbon dioxide emissions
- Reduction of methane emissions
- Retention of small family farms
- Protection of biodiversity
- Reduction of fuel costs and price volatility
- Waste reduction
- Soil improvements

Biomass Incentives

- Loans
- Grants
- Leases
- Matching Funds
- Personal Tax Credits
- Tax Exemptions
  - Sales, excise, property, corporate & user
- Production Incentives Public Benefit Funds
- Trusts
- Development Funds
- Renewable Energy Portfolio Standards
- Set-asides
- Renewable Fuel Standards
- Interconnection Standards
- Net Metering
- Green Power Purchasing
- Rebates

Complementary Incentives

(examples)

Economic

- Enterprise Zones
- Entrepreneurship Centers
- Small Business
- Kansas Bioscience Authority Act

Health

- National Pollution Elimination Discharge System

Air Quality

- Congestion Mitigation and Air Quality (CMAQ) Improvement Program

Natural Resources

- Environmental Quality Incentives Program

Broad Policy Objectives

- Climate Change
- Environmental Stewardship
- National Energy and Security
- Public Health
- International Competitiveness
- Economic Development through local ownership
- Diversify and Sustainability Grow the Domestic Agriculture Portfolio while Decreasing Dependence on Export Markets

Existing US Biofuel Policy

- 1990 Clean Air Act Amendments
- 2002 Farm Bill: Energy Title
- American Jobs Creation Act of 2004
- Energy Policy Act of 2005
- America COMPETES Act of 2007

1990 Clean Air Act Amendments

- The Act requires that cleaner-burning reformulated gasoline (RFG) be sold in the nine areas with the worst ozone pollution. The requirement became effective on January 1, 1995.
- Ethanol as well as MTBE could be used to meet the reformulated gasoline requirement.

2002 Farm Bill (P.L. 107-171): Energy Title

- Sec. 9002 Procurement of Biobased Products ($1 mil/yr)
- Sec. 9003 Biorefinery Development Grants
- Sec. 9004 Biodiesel Fuel Education Program ($1 mil/yr)
- Sec. 9005 Energy Audit and Renewable Energy Development Program
- Sec. 9006 RE/EE Improvements ($23 mil/yr)
- Sec. 9007 Hydrogen and Fuel Cell Technologies
- Sec. 9008 Biomass R&D Act of 2000 ($63 mil/yr)
- Sec. 9009 Carbon Sequestration Research
- Sec. 9010 CCC Bioenergy Program ($150 mil/yr)

Renewable Energy Systems & Energy Efficiency Improvements Program

- Purchase of renewable energy systems and energy efficiency improvements for agriculture producers and rural small businesses
- During the first 4 years USDA spent $87 mil in grants and $24 mil in loan guarantees for more than 800 projects
  - 170 mil/yr of ethanol and biodiesel
  - 330+ megawatts of wind power
  - 1.3 million tons of CO2 Reductions
- FY07 Awards
  - 345 recipients of renewable energy and energy efficiency
  - Of the total $18.2 million, $4.8 million has been awarded for guaranteed loans and $13.4 million for grants.
  - Recipients represent 37 different states

American Jobs Creation Act of 2004

- Primarily passed to end the trade dispute with the EU over export programs ruled illegal by the WTO
- Extended the Volumetric Ethanol Excise Tax Credit (VEETC) until 2010
  - Eliminated any impact of the ethanol program on the Highway Trust Fund
- Modified the Small Ethanol Producer Tax Credit, which allows cooperatives to fully participate in the program.
- Created Tax Credit for biodiesel

Energy Policy Act of 2005 (P.L. 109-58)
Some Wins

- Renewable Fuel Standard
- Amends Biomass Research & Development Act of 2000
- Elimination of the Federal (reformulated gasoline) RFG Oxygenate Standard (effectively increasing demand for ethanol as MTBE was phased out voluntarily by petroleum companies)
- Integrated Biorefinery Demonstration Projects
- Biofuel Tax Credits
- Loan Guarantee Program

Biomass Research & Development Act

- Executive Order 13134: DEVELOPING AND PROMOTING BIOBASED PRODUCTS AND BIOENERGY, issued in August of 1999
- Multi-agency effort to coordinate and accelerate all Federal biobased products and bioenergy research and development
- USDA/DOE Joint Solicitation since FY03
- *Vision: For Bioenergy and Biobased Products in the United States,* 2006

Renewable Fuels Standard (Sec. 1501)

- 7.5 billion gallons of renewable fuels to be sold or dispensed in 2012
- One gallon of cellulosic ethanol or waste-derived ethanol will be counted as 2.5 gallons
- After 2012, the 2.5-to-one ratio no longer applies, but the RFS will require annual minimum of 250 million gallons of cellulosic biomass fuels

Biorefineries

- Integrated Biorefinery Demonstration Projects (Sec. 932(d), EPAct '05) - capital to build biorefineries
- February 2007, DOE announced $385 million for 6 cellulosic ethanol biorefineries
  - More than 130 million gallons of cellulosic ethanol annually
  - Biobased products, including: power, methanol, hydrogen, and ammonia.
  - Each biorefinery will use more than 700 tons of feedstocks per day including: agriculture residues such as corn stover, wheat and rice straw; wood residues, wood based energy crops; and landfill organic wastes
- May 2007, DOE announced it will provide up to $200 million, from FY07 to FY11, to support the development of small-scale, (at ten percent of commercial scale), cellulosic biorefineries in the United States

Tax Credits*

Volumetric Ethanol Excise Tax Credit (VEETC)

- This Blender's Credit is the 51 cents per gallon tax credit that goes to the petroleum industry as an incentive to blend ethanol into their gasoline

Agri-Biodiesel Excise Tax Credit

- $1.00 per gallon for biodiesel made from virgin oils derived from agricultural commodities and animal fats.

Biodiesel Excise Tax Credit

- 50¢ per gallon for biodiesel made from agricultural products and animal fats

Renewable Diesel Excise Tax Credit

- $1.00 per gallon for Renewable diesel derived from biomass using a thermal depolymerization process

Tax Credits (cont.)*

Small Ethanol and Agri-Biodiesel Producer Tax Credits

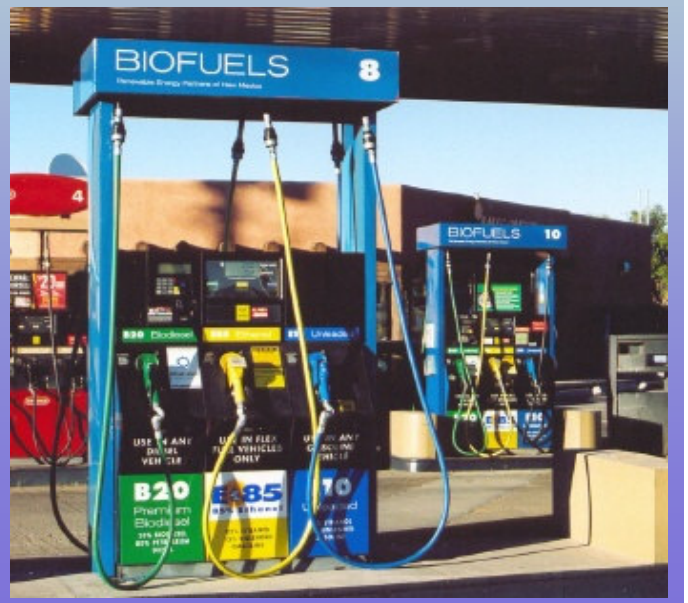
- Production income tax credit of 10 cents per gallon on up to 15 million gallons of ethanol per year
- For facilities that produce up to 60 million gallons annually

Secondary Offset Tariff

- To offset the 51 cent per gallon Blender's Credit a 54 cent per gallon tariff is in place.
- This helps to ensure that taxpayer dollars are not invested in foreign ethanol production.

Fueling Stations for Alternatives

- Gives gas station owners a tax credit of 30%, up to $30,000, of the cost of installing an E85 pump or converting an existing pump for E85



*Not all of these tax credits were in EPAct 05

Loan Guarantees

Loan Guarantees (Title XVII & XV, EPAct '05)

- Risk mitigation for new technology
  - avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases
- $9 billion in loan authority being considered for FY08
- In Oct. DOE announced the Final Rule for the program
- 16 projects invited to submit pre-applications
  - 6 of the 16 projects are for biomass
- Competition for funds: Senators Bingaman (D-NM) and Domenici (R-NM) interested in coal-to-liquids and nuclear power

America COMPETES Act of 2007

- Helps America regain its technical edge and leadership in the physical sciences
  - $43.3 billion in federal spending in FY 2008-2010
- Protecting America's Competitive Edge Through Energy Act (PACE-Energy Act), Title V
  - Creates a Science, Engineering, and Mathematics Education Fund
  - Establishes a summer internship program for students to provide experiential-based learning opportunities at the National Energy Laboratories
- Establishes the Advanced Research Projects Agency-Energy (ARPA-E) to overcome long-term and high-risk technological barriers in the development of energy technologies

US Biofuel Policy in the Works

- Farm Bills
  - Farm, Nutrition, and Bioenergy Act of 2007 (House)
  - Food and Energy Security Act of 2007 (Senate)
- Energy Bills
  - Creating Long-Term Energy Alternatives for the Nation Act of 2007' or the `CLEAN Energy Act of 2007‘
  - Renewable Fuels, Consumer Protection, and Energy Efficiency Act of 2007
  - Energy Independence and Security Act of 2007
- Climate Bills
  - America's Climate Security Act of 2007

Farm Bill

- Increased Human Capacity Infrastructure
  - Public-private partnerships, Management assistance, Strategic business and financial planning, Continuing education, Spur innovation
- Biorefineries: Grants and Loans
  - Need to get plants up and running to demonstrate technologies
- Risk mitigation program for farmers and foresters to transition to new energy crops
  - Appropriate feedstocks for all different regions of the country
  - Increased yields with low inputs
  - Sustainable harvesting and storage techniques

House Energy Title Programs

- **Federal procurement of biobased products.**
- **Loan guarantees for biorefineries and biofuel production plants.**
- **Energy audit and renewable energy development program.**
- **Renewable energy systems and energy efficiency improvements.**
- **Biomass Research and Development Act of 2000.**
- **Adjustments to the bioenergy program.**
- **Research, extension, and educational programs on biobased energy (Sun Grants).**
- **Energy Council of the Department of Agriculture.**
- **Farm energy production pilot program.**
- **Rural energy self-sufficiency initiative.**
- **Agricultural biofuels from biomass internship pilot program.**
- **Feedstock flexibility program for bioenergy producers (sugar).**
- **Biomass inventory report.**
- **Future farmsteads program.**
- **Sense of Congress on renewable energy.**
- **Biodiesel Education Program.**
- **Biomass Energy Reserve.**
- **Forest Biomass for Energy.**
- **Supplementing Corn as an Ethanol Feedstock (sorghum provision).**
- **Community Wood Energy Program.**

Senate Energy Title Programs

(before Senate floor action)

- Biobased Markets Program
- Biodiesel Fuel Education
- Biomass Crop Transition
- Biorefinery and Repowering Assistance
- Bioenergy Program
- Rural Energy for America Program
- Biomass Research and Development Act of 2000
- Sun Grant Program
- Regional Biomass Crop Experiments
- Biochar Research, Development and Demonstration
- Renewable Woody Biomass for Energy
- Community Wood Energy Program
- Rural Energy Systems Renewal
- Voluntary Renewable Biomass Certification Program
- Biofuels Infrastructure Study
- Rural Nitrogen Fertilizer Study
- Life Cycle Analysis of Biofuels

Energy Bills

- Biofuels
  - Modifications to the Renewable Fuel Standard
  - Biorefinery Grants and Loan Guarantees
  - Research
  - Tax Credits
- Infrastructure Development
  - Vehicles
  - Fueling Pumps
  - Research

Original House Energy Bill Included 11 Committees Legislation

- Energy and Commerce Committee, package of six bills
- Ways and Means Committee, the Renewable Energy and Energy Conservation Tax Act of 2007
- Agriculture Committee
- Appropriations Committee
- Foreign Affairs, The International Climate Cooperation Re-engagement Act
- Natural Resources Committee, Energy Policy Reform and Revitalization Act of 2007
- Education and Labor Committee, Green Jobs Act (H.R. 2847)
- Small Business Committee, The Small Energy Efficient Business Act (H.R. 2389)
- Oversight and Government Reform Committee, Carbon-Neutral Government Act (H.R. 2635)
- Science and Technology Committee (seven bills)
- Transportation and Infrastructure Committee, Transportation Energy Security and Climate Change Mitigation Act of 2007 (H.R. 2701)

Renewable Fuel Standard

Senate Energy Bill (H.R. 6)

- Expanded (RFS) requires 8.5 billion gallons of renewable fuels in 2008 and increases to 36 billion gallon by 2022
- Biofuels will be required to emit 20 percent fewer lifecycle carbon emissions compared to gasoline
- Bill includes protections to ensure that increased use of biofuels will not harm air or water quality
- Beginning in 2016, an increasing portion of renewable fuels must be advanced biofuels, which is anything derived from non-corn starch feedstocks
- The required amount of advanced biofuels begins at 3 billion gallons in 2016 and increases to 21 billion gallons in 2022

S. 2191 America's Climate Security Act

- Senate and Environment and Public Works Committee reported S. 2191 on Dec. 6, 2007 by a vote of 11–8. 15 of 50 amendments were adopted.
- S. 2191 is a cap-and-trade bill that places a declining cap on US emissions of six primary greenhouse gases (GHG) in the electric power, transportation and industry sectors
- Limits the amount of (GHG) emissions to 70 percent of 2005 levels by 2050
- Flexibility mechanisms:
  - banking (no time limit)
  - 15% borrowing (@ 10% interest)
  - 15% domestic offsets
  - 15% international emission allowances

S. 2191 America's Climate Security Act (cont.)

- Establishes a Carbon Market Efficiency Board
  - Monitors the emissions trading market and periodically report to the President and Congress
  - Board may temporarily increase the amount that covered entities may borrow, lengthen the payback period of loans, and/or lower the interest rate on loans; and to loosen a given year's economy-wide emissions cap by as much as 5%.

- Alexander Amendment #3. Reauthorizes existing program at EPA/Dept. of Energy to study availability of biofuels to replace existing transportation fuels. Approved by voice vote.

- Alexander Amendment #42. Adds low carbon fuel standard (LCFS) to upstream cap to help reduce reliance on foreign oil. Approved by roll call of 13-6.

California Low-Carbon Fuel Standard (LCFS)

- In the January 2007 California Governor Schwarzenegger established a Low-Carbon Fuel Standard (LCFS) by Executive Order.
- The goal is to reduce the "life-cycle carbon intensity" of California's transportation fuels by at least 10 percent by 2020.
- This first-in-the-world greenhouse gas (GHG) standard for transportation fuels will spark research in alternatives to oil and reduce GHG emissions.

Low Carbon Fuel Standards

1. January 16: Senators Sanders (I-VT) and Boxer (D-CA) introduced legislation incorporating a Low Carbon Fuel Standard (S.309).
2. January 31: the European Commission proposed a European LCFS.
3. February 21: Senator McCain (R-AZ) endorsed a national LCFS.
4. March 30: Senators Collins (R-ME), Feinstein (D-CA) and Snowe (R-ME) introduced legislation to enact a National Low Carbon Fuel Standard (S. 1073).
5. May 3: Senators Boxer, Collins and Lieberman (I-CT) introduced legislation incorporating a Low Carbon Fuel Standard (S. 1297).
6. May 8: Rep. Inslee (D-WA) introduced a Federal Low Carbon Fuels Act (H.R. 2215).
7. May 8: Senators Obama (D-IL) and Harkin (D-IA) introduced legislation to enact a National Low Carbon Fuel Standard (S. 1324).

Biofuels **ONE** part of the Clean Energy and Climate Solution




- **There is No Silver Bullet**
- New Policies
- New Technologies
- New Feedstocks (including wastes)
- Conservation & Efficiency Efforts
- Decreased Petroleum for Transportation Needs
  - Flex-Fuel Vehicles/Plug-In Hybrids
  - Biobased products and renewable energy can reduce fossil energy use/ greenhouse emissions

Connecting Transportation & Electricity

National Plug-In Partner Campaign

- Most car trips are less than 20 miles – so with a Plug-In, the entire trip could be fueled by the electric battery.
- Owners can recharge their car at night when over 40% of the generating capacity in the U.S. sits idle.
- If the trip is longer than the battery range (about 40 miles), the car can switch to gasoline or a biofuel.
- At prevailing electric rates, **the cost of an "electric" gallon is 70-80¢** – compared to gas, which is averaging $2.50 a gallon
- More than 125 public power utilities, largely signed on through the American Public Power Association
- Surpassed **6,000 soft fleet orders**
- Includes 30 of the 50 largest cities in the US
- Provisions in House/Senate Energy Bills

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