

# New Federal Biomass Policy: Opportunities for Every State

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## EESI: *Advancing Innovative Solutions!*



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



## Broad Biomass Policy Objectives



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

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## Overview

- Legislative Updates
  - Energy Independence and Security Act of 2007 (P.L. 110-140), Renewable Fuel Standard: 'renewable biomass' definition
  - Comprehensive American Energy Security and Consumer Protection Act, H.R. 6899
  - Food, Conservation and Energy Act of 2008 (P.L. 110-246): Some Biomass Provisions
  - Energy Tax Extenders bill, H.R. 6049
- Low Carbon Biofuel State Policy Options

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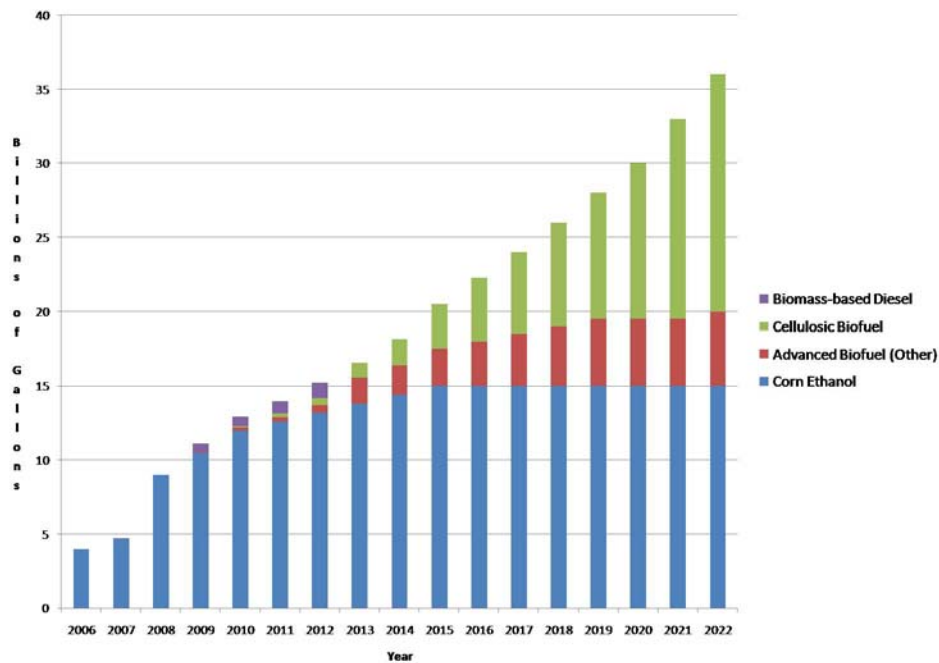
# Renewable Fuel Standard (RFS)

New target of 36 billion gallons by 2022 (9 billion in 2008)

- 15 billion gallons of conventional biofuel (ethanol from corn starch) – Lifecycle GHG emissions from new fuel production must be 20% less than 2005 baseline
- 21 billion gallons from advanced biofuels: 50% less GHG than baseline
  - Biomass-based diesel
    - 50% less GHG than baseline
  - Cellulosic biofuel
    - 60% less GHG than baseline



Federal Renewable Fuel Mandate by Fuel Type and Year (2006-2022)





## RFS: Lifecycle Greenhouse Gas Emissions

- Aggregate quantity of greenhouse gas emissions related to the full fuel lifecycle, including:
  - All stages of fuel and feedstock production and distribution
  - Feedstock generation or extraction through the distribution
  - Delivery and use of the finished fuel to the ultimate consumer
- **Including direct emissions and significant indirect emissions such as significant emissions from land use changes.**



## RFS: Modification of Greenhouse Gas Reduction Percentages

- Adjustment may be made to reduce the required percentage of GHG by not more than 10 percent for each fuel
  - (E.g. from 20 to 10, from 50 to 40 and from 60 to 50 percent)
- Reductions may be made for each category based on commercial feasible fuels made using a variety of feedstocks, technologies, and processes to meet the applicable reduction



## RFS: Waivers to Reduce the Volumes of Renewable Fuel

- Volumes of cellulosic biofuel or biomass-based diesel may be reduced by EPA given certain circumstances
  - **Cellulosic biofuel** may be reduced if the projected volume of cellulosic biofuel production is less than the minimum applicable volume
  - **Biomass-based diesel** may be reduced if it is determined that there is “significant renewable feedstock disruption or other market circumstances that would make the price of biomass-based diesel fuel increase significantly”
  - **Renewable fuel and Advanced biofuels** may also be reduced to adjust for any reductions that were made above



## Other Sustainability Provisions

- Study of Impact of Renewable Fuel Standard
  - Industry oriented: feed grains, livestock, food etc.
- Environmental and Resource Conservation
  - Future impacts of the RFS, dealing with: environment, resource conservation, and invasives
  - May not supersede Clean Air Act
- Anti-Backsliding Language
  - Study on the impact of renewable fuels on air quality



# Forest Sustainability

What is sustainable?







In comparison to what?





## Federal Land Exclusion

- All materials harvested on national forests and public lands are excluded
  - With the exception of materials removed from the “*immediate vicinity*” of buildings & infrastructure at risk from wildfire
    - Exceptionally vague: How will EPA interpreted this?
    - Nominal portion of the acres that could benefit from hazardous fuels reduction
  - No biomass from restoration or stewardship activity, including habitat improvements, recreation management, or timber stand improvement.



## Private Land Provision

- Allows: “*planted trees and tree residue from actively managed tree plantations on non-federal land cleared at any time prior to enactment...*” and “*slash and pre-commercial thinning that are from non-federal forestlands...*”
- Excludes: Commercial-size trees from naturally-regenerated forests
- Problem: Arbitrary distinction between trees that are planted and trees that grew from seed



## Renewable Biomass Definition

- **Ineligible Feedstocks:**
  - All thinning materials and woody residues from federal forests
  - Some woody feedstocks from private forests
  - A wide array of feedstocks from municipal solid waste.

**DEFINITION WAS NOT FIXED IN THE FARM BILL**



## Legislative Proposals

- Rep. Herseth-Sandlin (D-SD) – H.R.5236
  - Same definition as the 2008 Farm Bill
  - Includes all biomass from private lands and preventative treatments and ecosystem restoration on public lands
- Sen. John Thune (D-SD) – S.2558
  - Include biomass from public lands and by products from some industry
- Sen. Ron Wyden (D-OR) - Amendment to Climate Bill
  - Almost the same text as Herseth-Sandlin bill



## Congressional Hearings

- House Committee on Energy and Commerce
  - May 6, 2008
- Senate Committee on Energy and Natural Resources
  - June 12, 2008
- House Committee on Agriculture
  - June 24, 2008
- Senate Committee on Agriculture (2)
  - August 18, 2008



## 5 Group Letters Supporting a Change in Renewable Biomass Definition

- The Society of American Foresters
- The National Association of State Foresters
- The Western Governors Association
- 25 x '25 Coalition
- Four academics and well-respected members of the forest science research community

*“At a time when considerable legislative and agency efforts are being made to address global climate change, wildfire severity, and renewable energy production, it is regrettable that a definition would be promulgated that would equally obstruct all of these goals.” -SAF*



## Comprehensive American Energy Security and Consumer Protection Act (H.R. 6899)

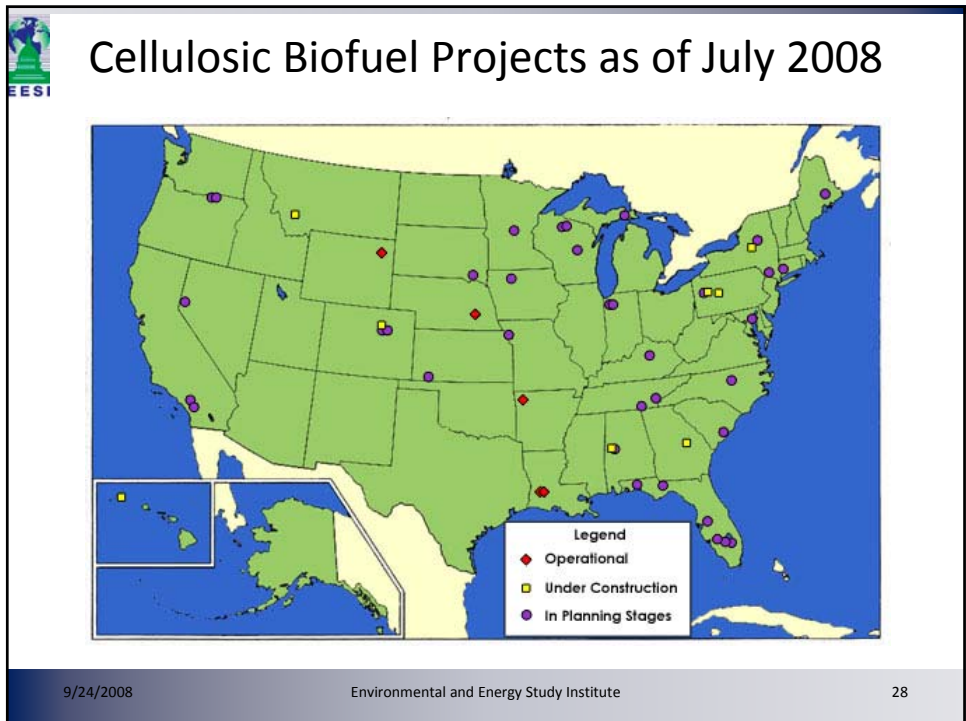
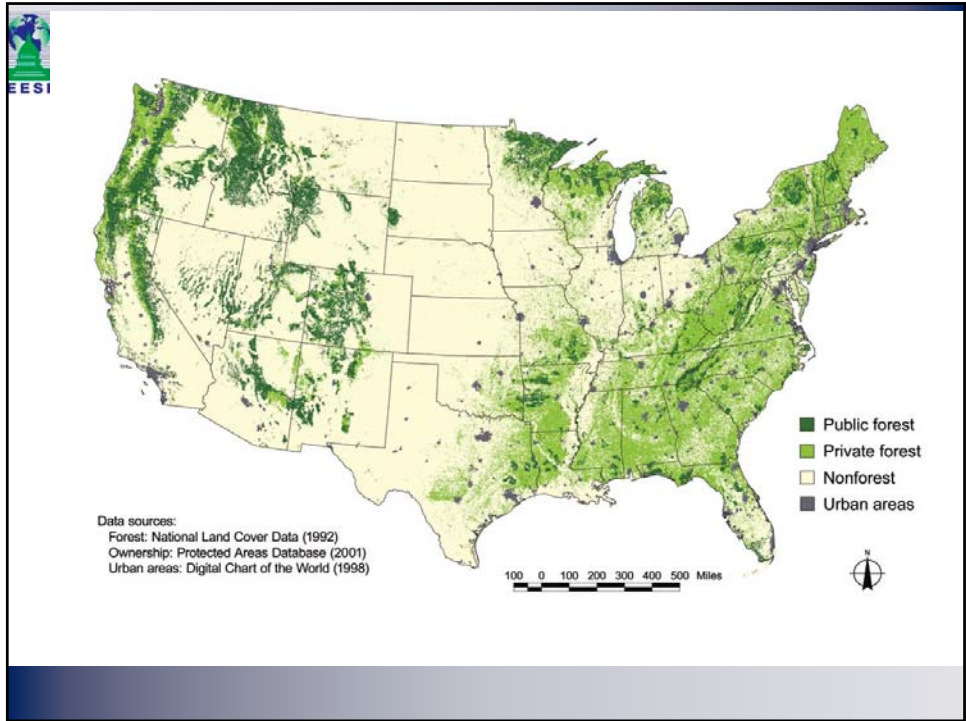
### A small step forward...

- Sense of Congress Regarding Renewable Biomass (Sec. 703)...
  - that the renewable biomass definition in the RFS “could be improved”
  - “cellulosic biofuels can and should be produced from a highly diverse array of feedstocks, allowing every region of the country to be a potential producer of this fuel.”



## Comprehensive American Energy Security and Consumer Protection Act (H.R. 6899) cont.

- Federal Renewable Electricity Standard (RES)
  - Different definition for ‘biomass’
  - Improvement over RFS definition
  - Vague on private forests
    - Bill does not explicitly say ‘tree’
  - Public lands definition more flexible, allows:
    - Ecological forest restoration; pre-commercial; thinnings; brush; mill residues; and slash.
    - Excludes environmentally sensitive federal lands
- Political assessment of definition change





## EISA: Biomass Related Provisions

- Biomass-based diesel (or biodiesel) Labeling (Sec.205)
  - Less than 5% blend needs NO label
  - Greater than 5% must be labeled
- Credits for Renewable Electricity in Electric Vehicles (Sec.206)
  - Report on feasibility of issuing credits under the RFS
- Grants for Production of Advanced Biofuels that reduce GHG by more than 80% (Sec.207) - \$500 M over FY08-15
- **Grants for Biofuel Production R&D for Certain States (Sec.223) - \$75 M over FY08-10**
  - **Only for states with low rates of ethanol or cellulosic ethanol production**



## Biomass Related Provisions (cont.)

- Biorefinery Energy Efficiency: 2 new DOE R&D programs (Sec. 224)
  - Increase energy efficiency and reduce energy consumption in biorefineries
  - Retrofit technologies for the development of Ethanol from Cellulosic materials, only for corn-based ethanol facilities
- Study of the Optimization of Flexible Fueled Vehicles to Use E85 (Sec.225)
- Biofuels & Biorefinery Information Center (Sec.229)
- Cellulosic Ethanol and Biofuel Research (Sec.230) for 10 Institutions



## Biomass Related Provisions (cont.)

- Environmental Research and Development (New goals for DOE Systems Biology Program) (Sec.232)
  - Cellulosic and other feedstocks that are less resource and land intensive and that promote sustainable use of resources, including soil, water, energy, forests, and land, and ensure protection of air, water, and soil quality
  - Sustainable production systems that reduce greenhouse gas emissions
- Biomass Research and Development Initiative (to include in technical areas) (Sec.232)
  - Analytical tools to facilitate the analysis of life-cycle energy and greenhouse gas emissions, including emissions related to direct and indirect land use changes
  - Systematic evaluation of the impact of expanded biofuel production on the environment, including forest lands, and on the food supply for humans and animals



## Biomass Related Provisions (cont.)

- Establishes 7 Bioenergy Research Centers (Sec.233)
- Prohibition on Franchise Agreement Restrictions Related to Renewable Fuel Infrastructure (Sec.241)
- Ethanol Pipeline Feasibility Study (Sec.243)
- Renewable Fuel Infrastructure Grant (Sec.244)
  - Infrastructure Development Grants to retailers and others for storage and dispensing equipment
  - Competitive grant pilot program for up to 10 state and local authorities to create Refueling Infrastructure Corridors
  - \$200 M per FY08-14



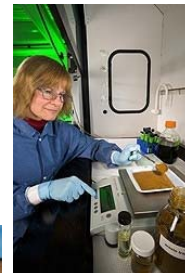
## RFS – A Step Forward, But More is Needed

- From feedstock production to end-use consumption, infrastructure is needed to make renewable fuels work
- There are authorizations for a number of R&D programs and studies – but much more is needed
- Regional/state-by-state biomass assessments not addressed
- RFS mandates fuel production, but EISA does not provide adequately for fuel infrastructure and vehicles



## What is a farm bill?

- Renewed about every 5 years
- Omnibus legislation (several freestanding authorizing bills) covering a wide range of programs:
  - Commodity price and income support
  - Farm credit
  - Agriculture conservation
  - Research
  - Rural development
  - Foreign and domestic food programs
  - Energy





## Farm Bill Reauthorization

- 2002 Farm Bill: *Farm Security and Rural Development Act of 2002 (P.L.107-171)*
  - First Ever Energy Title (Title IX): \$405 million in mandatory funding over five year
- 2008 Farm Bill: *Food, Conservation, and Energy Act of 2008 (P.L. 110-246)*
  - Nutrition - close to 2/3 of the bill
  - Energy Title - \$1 billion in mandatory funding over 5 year
    - Renewable energy programs
    - New feedstock production for bioenergy



## Farm Bill Definitions

- **Advanced Biofuel:** fuel derived from renewable biomass other than the corn kernel
- **Biomass Conversion Facility:** includes heat, power, biobased products and advanced fuels
- **Renewable Biomass:** materials from federal forest lands, if they harvested as preventative treatments; renewable plant material (including trees); waste material (including wood waste/residue, animal/food/yard waste)



## Studies and Research

- Comprehensive Study on Biofuels (Sec. 15322)
- Requires USDA to support research on making a farm or ranch energy-neutral (Sec. 7207)
  - Supports on-farm energy conservation and renewable energy production
- Study on infrastructure needs associated with biofuel expansion (Sec. 9002)
- **Research on Biochar included as a high-priority area for research title (Sec. 7204)**



## Studies and Research (cont.)

- Agriculture Bioenergy Feedstocks and Energy Efficiency Research and Extension Initiative (Sec. 7207)
  - Provides grants for 50% of the cost of projects which improve biomass, production, or conversion in biorefineries
  - Establishes a best practices database on biomass crops
  - \$50 mil/yr discretionary for FY08-12
- Reauthorizes Sun Grant Program (Sec. 7526)
  - \$75 mil discretionary over FY08-12



## Studies and Research (cont.)

- **Rural Nitrogen Fertilizer Study (Sec. 9003)**
  - Must identify challenges to commercialization, production, process and technologies and potential impacts of renewable fertilizers on fossil fuel use and the environment
  - \$1 mil discretionary for FY09
- **Study on Bioenergy Operations (Sec. 11014)**
  - Report on potential economic issues associated with animal manure used in normal agricultural operations and as a bioenergy feedstock



## Biomass Research & Development Act (BRDI)

- Reauthorization \$118 mil (\$20 mil FY09, \$28 mil FY10, \$30 mil FY11, and \$40 mil FY12)
- Coordination between USDA, DOE and other agencies
- Competitive Grants, contracts and financial assistance
  - Research and Demonstration
    - Biofuels, biobased products and feedstock development





## Federal Procurement of Biobased Products

(Sec. 9002)

- Renames program Biobased Markets Program
- Refines federal procurement rules for biobased products
- Requires federal agencies to maximize procurement of products and submit reports to Congress
- Continues Voluntary Labeling
- Establishes Testing Centers and education grants
- \$1 mil for FY12, \$2 mil/yr FY09-12
- For a full list of products visit:  
<http://www.usda.gov/procurement/programs/bioprferred.htm>



## Forest Biomass Programs

- **Forest Biomass for Energy (Sec. 9012)**
  - \$5 mil/yr discretionary FY09-12
  - USFS competitive research and development program for forest biomass for energy
  - Projects must **utilize low-value forest byproducts**, integrate the production of energy from forests biomass with existing manufacturing streams, develop new transportation fuels and improve growth and yield of trees intended for energy feedstocks



## Forest Biomass (cont.)

- **Community Wood Energy Program (Sec. 9013)**
  - Provides grants up to \$50,000 or up to 50% of the cost
  - Helps communities develop wood energy plans and purchase systems for public buildings
  - \$5 mil/yr discretionary FY09-12



## Grants for Production of Advanced Biofuels

- **Biorefinery Assistance (Sec. 9003)**
  - \$320 mil until expended (\$75 mil FY09, \$245 mil FY10)
  - **Competitive grants and loan guarantees for construction and retrofitting of biorefineries which produce Advance Biofuels**
- **Repowering Assistance (Sec. 9004)**
  - \$35 mil FY09, until expended
  - Assistance to biorefineries in existence at enactment to reduce or eliminate use of fossil fuels



## Bioenergy Program for Advanced Biofuels

(Sec. 9005)

- Replaces the CCC Bioenergy Program (old Sec. 9010)
- Provides payments to producers to support and expand production of advanced biofuels
  - Payment goes to biorefinery not farmer
  - Payments will not go to a facility producing biopower
- \$300 mil (\$55 mil FY09, \$55 mil FY10, \$85 mil FY11, and \$105 mil FY12)



## Rural Energy for America Program

- Old Sec. 9006 now Sec. 9007
- Includes Energy Audit and Renewable Energy Development Program (old Sec. 9003)
  - Grants for state agencies, cooperatives, educational institutions and utilities
  - \$255 mil (\$55 mil FY09, \$60 mil FY10, \$70 mil FY11, and \$70 mil FY12)





## Rural Energy for America Program

- Financial Assistance for agriculture producers and rural small businesses
  - Grants, loan guarantees and incentive payments
    - Feasibility studies, renewable energy systems, energy efficiency improvements
    - Grants may not exceed 25% of the cost of the project
    - Loan Guarantees may not exceed \$25 mil
    - Combined Grants and Loan guarantees can not exceed 75% of total costs
  - Reserves 20% of funds for projects of \$20,000 or less



## Rural Energy Self-Sufficiency Initiative

(Sec. 9009)

- **Grants for community-wide rural energy systems that reduce conventional energy use and increase renewable energy sources**
  - Cost-share up to 50%
  - Assess energy use in rural community
  - Evaluate ideas for reducing energy use
  - Develop and install integrated renewable energy systems
- \$20 mil discretionary (\$5 mil/yr FY09-12)



## Biomass Crop Assistance Program (BCAP)

(Sec. 9011)

- Financial assistance for production of biomass energy crops
  - Includes establishment costs and annual payments for biomass production
  - Economically practicable distance from a facility
- Infrastructure for harvesting storage and transportation of biomass to local biorefineries
  - Matching payments of \$1/ton provided by the biomass conversion facility up to \$45/ton
- CCC such sums as are necessary for FY08-12



## Additional Energy Programs

- Biodiesel Fuel Education Program (Sec. 9006)
  - Extends program through FY12
  - Mandatory CCC funding of \$1 mil/yr FY08-12
- (Sugar) Feedstock Flexibility (Sec. 9010)
  - CCC such sums as necessary to purchase surplus sugar
  - Ensures sugar program operates at no-net-cost
  - Resale's sugar as a biomass feedstock for biofuels



## Tax Provisions of Farm Bill

- Establishes production credit for cellulosic biomass alcohol of a total of \$1.01/gallon through 2012 (Sec. 15321)
- Reduces Volumetric Ethanol Excise Tax Credit from \$0.51 to \$0.46/gallon beginning in the first calendar year which 7.5 BG of ethanol is produced
- Extends the ethanol tariff from Dec. 2008 through Dec. 2010



## Energy Tax Extenders Bill (H.R. 6049)

- Energy Improvement and Extension Act of 2008
- Production Tax Credit for Electricity is extended from 2008 through 2010
  - E.g., closed and open-loop biomass, landfill gas, and trash combustion facility, etc.
  - Wind is only reauthorized for **ONE** year
- Clean Renewable Energy Bonds (CREBs)
  - Authorizes \$800 million for electricity generated from closed-loop and open-loop biomass, etc.



## Advancing Commercial Scale

### Production of Low Carbon Biofuels

- Sneak peek at new EESI state level biofuel policy guidebook
- Goals of guidebook:
  - Determine what incentives best support the commercialization of low-carbon advanced biofuel technologies
  - Identify ways federal and state incentives can work together
  - Determine how states can position themselves to help meet federal biofuel mandate



## Methodology

- Establish diverse Advisory Committee
- Analyze effectiveness of current biomass incentives
  - Builds off of 3 year USDA Biomass Incentives Project (EESI, North Carolina Solar Center and New Uses Council)
- Identify Policy Objectives
- Develop Policy Options



## Policy Objectives

- Resource assessments
- Innovative and coordinated research
- Infrastructure
- Finances and economics
- Regulatory conditions
- Stakeholder perceptions and political priorities



## 10 Policy Options

- **Low Carbon Fuel Standard**
- **Innovative and Coordinated Research Initiatives**
- **Interagency Collaboratives**
- **Tax Incentives**
- **Grant and Loan Guarantee Programs**
- **Public Education and Outreach Programs**
- **Easement Programs**
- **Sustainable Agriculture Programs**
- **Sustainable Forestry Programs**
- **Municipal Waste Utilization Initiatives**



## Low Carbon Fuel Standard

- Requires average level of performance (i.e. carbon intensity) making it technology and feedstock neutral
- Can encourage investment along the whole supply and production chain
- Best implemented on regional scale
- E.g. California (2007), allows refiners, blenders, producers, and importers to trade and bank credits for carbon reductions



## Innovative & Coordinated Research Initiatives

- Helps industry move past the “chicken and egg” dilemma
- Involves many stakeholders (public-private partnerships)
- May address the entire supply chain
- E.g. University of Tennessee Biofuels Initiative (UTBI), covers feedstock production from farmers to conversion technologies, such as the DuPont Danisco Cellulosic Ethanol LLC



## Interagency Collaboratives

- Helps conduct assessments of potential biomass feedstocks, human resources, and existing infrastructure
- Creates a general roadmap for achieving commercial scale production
- Helps attract new projects by coordinating funding and streamlining the permitting and approval process for facilities, while building on the knowledge and resources of various agencies to identify opportunities, barriers and potentially conflicting objectives
- E.g. Washington “Bioenergy Team”



## Tax Incentives

- Reduce risk of investing in new technologies and systems
- Help account for the associated positive externalities and to help level the playing field with fossil fuels
- E.g.
  - Massachusetts' Clean Energy Biofuels Act of 2008
  - Oregon Tax Incentives: Production & collection of biomass; credit for 'neat ethanol or pure bio-oils' producer; and Business Energy Tax Credit (BETC)



## Grant or Loan Guarantee Programs

- Stimulate capital investment
- Moves technologies through the “valley of death” from demonstration to commercial scale production
- Helps achieve other political priorities and societal needs
- E.g. New York State (2007) grant program to achieve commercial scale cellulosic production to encourage energy independence and job creation



## Public Education and Outreach

- Helps build support for technologies that are unfamiliar
- Galvanize support by bringing stakeholders into the decision-making process
  - emphasize multiple benefits of technologies, oil reduction and climate change mitigation
- E.g. Los Angeles initiated a Solid Waste Integrated Resources Plan (SWIRP) in 2007



## Easement Programs

- What is an easement?
  - A voluntary, legally binding agreement in which a private landowner allows another entity to define the use of his land for a set period of time or in perpetuity, usually in return for a payment or tax break
- Protects open spaces for multiple uses
- Provides a low carbon biofuel feedstock
- Simple model that is well established
- E.g. Reinvest in Minnesota – Clean Energy Program (RIM-CE)



## Sustainable Agriculture Programs

- Helps agricultural feedstock producers lower their life-cycle carbon emissions through education, technology transfer, and/or financial incentives to use low carbon practices
- Achieves complementary objectives
- E.g. Maryland's Agricultural Water Quality Cost-Share Program pays landowners to plant winter cover crops (bioenergy crops) to reduce soil erosion and nutrient runoff



## Sustainable Forestry Programs

- Provides assistance in forest management through guidelines and plans
- Provides low-value material markets
- Focuses financial assistance for harvesting equipment
- E.g. Minnesota Forest Resources Council, guidelines for sustainably managed woody biomass and New York's Forest Utilization and Marketing Program



## Municipal Waste Utilization Initiatives

### **Waste Reduction Should Be First Priority...**

- Potential low carbon biofuel feedstock that is especially important in urban areas that have abundant and renewable sources of biomass
- Could Reduce the amount of waste going to landfills
- Could Reduce costs associated with shipping waste to more distant landfills
- E.g. Maryland, New Jersey, Hawaii include some kinds of waste materials in energy incentives



## Biomass can be a 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



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