

Overview of the Bioenergy Policy Landscape: Current Status, Future Trends

Ned Stowe

Environmental and Energy Study Institute

www.eesi.org

Biomass/Waste-to-Energy Conversion Workshop

January 19, 2011

Wooster, Ohio



EESI: *Advancing Innovative Solutions!*



- Independent non-profit, founded in 1984, by a bipartisan Congressional Caucus
- Provides timely information and analysis on environmental and energy science, technology and policy
- Conducts 30+ Congressional briefings a year
- Program areas:
 - Climate and Energy
 - Transportation and Energy
 - High Performance Buildings
 - Sustainable Biomass and Energy
- **Become an EESI Associate today! We are supported by people like you.**



Sustainable Biomass Energy

- Sustainably-produced biomass can play a critical role in addressing the nation's urgent climate, energy, economic, and environmental challenges.
- Renewable biomass comes in many forms: biogenic waste streams, agricultural and forestry residues, dedicated energy crops, algae.
- Biomass has a variety of uses: Bio-based chemicals and products; Biofuels; Biopower; Bioheat; Biomass CHP.

2/8/2011 Environmental and Energy Study Institute 3



This presentation will

- Review recent bioenergy policy developments in Washington
- Assess the U.S. bioenergy policy landscape moving ahead
- Take a brief look at what other governments are doing around the world

2/8/2011 Environmental and Energy Study Institute 4



Recent bioenergy policy developments in Washington

2/8/2011 Environmental and Energy Study Institute 5



Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010 (P.L. 111-312)

- Treasury tax grant – extends through 2011 Section 1603 Treasury cash grants in lieu of production tax credits for construction of new renewable energy facilities
- Provides 30% for closed-loop and open-loop biomass, landfill gas, waste to energy facilities.
- Provides 10% for biomass CHP systems.
- Construction must start in 2011 for all projects.
- Most projects must be completed by the end of 2013
- Biomass CHP systems must be completed by the end of 2016.

2/8/2011 Environmental and Energy Study Institute 6



Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010 (P.L. 111-312) (cont.)

- Biodiesel and renewable diesel - extended through 2010 and 2011 \$1.00/gallon production tax credits and \$0.10/gallon small agri-biodiesel producer tax credit
- Alternative fuels – extended through 2011 \$0.50/gallon tax credit (excludes “black liquor” fuel from pulp and paper industry)
- Ethanol blender tax credit – extended through 2011 \$0.45/gallon tax credit for fuel blenders
- Tariff on imported ethanol – extended through 2011 \$0.54/gallon tariff

2/8/2011

Environmental and Energy Study Institute

7



DOE Biomass Program and USDA Farm Bill Energy Program Budgets

- Continuing resolution passed in December to provide continuing appropriations until March.
- New DOE biomass Biopower RDD&D initiative on hold pending new appropriations in March.
- Attempts were made to cut USDA Farm Bill energy programs – including the Biomass Crop Assistance Program
- Future funding uncertain

2/8/2011

Environmental and Energy Study Institute

8



USDA Biorefinery Assistance Program

(Farm Bill, Sect. 9003)

- USDA has been pushing grants and loan guarantees for new advanced biorefineries out the door while funding lasts.
- Advanced, integrated biorefineries provide a promising model for the future.
- Could produce biomass CHP, high-value biochemicals, advanced biofuels, biobased products, feed and food supplements, biobased fertilizer.

2/8/2011

Environmental and Energy Study Institute

9



EPA Waiver to Allow Higher Percentage of Ethanol to Be Blended with Gasoline (E-15)

- In November, EPA approved a waiver to allow 2007 and newer vehicles to use E-15 ethanol blends – up from the previous limit of E-10.
- In January, EPA is expected to approve a waiver for E-15 to be used in vehicles made 2001-2006.
- Issues concerning what signals this process sends to the market about ethanol
- Suits have been filed to block EPA implementation.

2/8/2011

Environmental and Energy Study Institute

10



EPA Regulation of Greenhouse Gas Emissions from Bioenergy and other Biogenic Sources

(“Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule”)(75 CFR 31514)

- EPA in its final tailoring rule had proposed to regulate major GHG emitters in the bioenergy industry the same as major emitters that use fossil fuels.
- In January, EPA announced it would defer a final decision on bioenergy for three years pending further scientific review.
- In the meantime, EPA will issue guidance to states that using biomass for energy may be considered the “best available control technology” for controlling GHG emissions.

2/8/2011

Environmental and Energy Study Institute

11



EPA Regulation of Hazardous Air Pollutants from Boilers, Process Heaters, and Solid Waste Incinerators

- EPA in its draft rules has proposed maximum achievable control technology (MACT) standards for biomass boilers which many in the bioenergy industry said were unachievable.
- The EPA was under a court order to issue final rules by January 15.
- EPA consulted with industry representatives, and requested a 15-month time extension for issuing the final rule.
- The court gave EPA an extension of five days.
- The final rule is due out at the end of this week (1/21/11).

2/8/2011

Environmental and Energy Study Institute

12



Summary: Recent bioenergy policy developments in Washington

- This is just a sampling from the past two months.
- Many other bioenergy policies in play, as well.
- The ongoing implementation of the Renewable Fuel Standard is perhaps the most significant.
- Does all of this add up to a coherent and determined national bioenergy policy? Hardly.
- Where is federal bioenergy policy headed? Uncertain.

2/8/2011

Environmental and Energy Study Institute

13



The U.S. bioenergy policy landscape Looking ahead

2/8/2011

Environmental and Energy Study Institute

14



- U.S. bioenergy policy is primarily a biofuels policy – and not a very coherent one at that.
- Little policy priority is given to biopower at the federal level
- Even less policy priority is given to biomass thermal energy in the U.S.

2/8/2011

Environmental and Energy Study Institute

15



Biofuels Roadmap – How Are We Going to Get to 36 Billion Gallons by 2022?

- The Renewable Fuel Standard (RFS) mandates the blending of 21 billion gallons per year of advanced biofuels by 2022.
- There are no commercial-scale advanced biofuel plants operating today.
- USDA estimates that 527 advanced biorefineries will need to be built in the next 11 years at a cost of about \$168 billion.
- Where is all that investment going to come from?
- Much uncertainty about future biofuels markets, technologies, supply chains, and the policy and regulatory environment

2/8/2011

Environmental and Energy Study Institute

16



Biofuels Roadmap – How Are We Going to Get to 36 Billion Gallons by 2022? (cont.)

Some barriers include

- ethanol market almost saturated (the blend wall)
- too few flex fuel vehicles on the road
- too few E-85 fuel pumps installed
- ethanol is expensive to transport
- undeveloped feedstock supply chains
- uncertain conversion technologies and costs at commercial scale

2/8/2011

Environmental and Energy Study Institute

17



Biofuels Roadmap – How Are We Going to Get to 36 Billion Gallons by 2022? (cont.)

- All of these challenges are surmountable – with sufficient political will, leadership and national determination.
- But it remains to be seen if Congress and the nation have that resolve.
- The signals from Washington on bioenergy have been quite mixed recently.

2/8/2011

Environmental and Energy Study Institute

18



Current Federal Incentives for Biopower

- Section 1603 Treasury cash grants in lieu of production tax credits for construction of new renewable energy facilities (see above) expires 2011
- Section 45 (tax code) production tax credit (PTC)
 - Placed in service dates before 12/31/13
 - \$0.011 per kilowatt hour PTC
 - Includes open- and closed- loop biomass power
 - PTC extends for ten years from date placed in service
 - Note: PTC for open-loop biomass power plants placed in service prior to 2005 expired 12/31/09

2/8/2011

Environmental and Energy Study Institute

19



States have taken the lead encouraging biopower

- 36 states have either renewable portfolio standards (29) or set other renewable energy goals (7).
- Many include biopower as a qualified renewable energy source.
- Biomass power today generates a significant portion of the total renewable electricity generated in many states.

2/8/2011

Environmental and Energy Study Institute

20



Biopower is being challenged at the state level, too.

- Massachusetts is in the final stages of deciding whether to effectively remove biopower as a qualifying renewable energy resource in meeting its RPS.
- On track to set efficiency and emissions standards that are unachievable with current technology.
- Opponents claim that biopower endangers the climate, harms air quality, and threatens environmental sustainability.
- Other states may reconsider biopower in their RPS's.

2/8/2011

Environmental and Energy Study Institute

21



Summary: The U.S. bioenergy policy landscape Looking ahead

- The bioenergy policy outlook in the U.S. is uncertain.
- The energy and economic security costs of petroleum dependence and the need to sustain and increase employment, however, are likely to continue to drive policy support for biofuels.
- The rising global price of oil will be a strong driver even in lieu of a coherent national policy.
- There is a significant opportunity for bio-chemicals to lead the way toward commercial scale advanced biorefineries.
- Urban and agricultural waste streams and residues likely will be the key biomass feedstocks.

2/8/2011

Environmental and Energy Study Institute

22



Is the bioenergy policy landscape the same elsewhere around the world?

Hardly.

Other governments seem much more determined.

2/8/2011 Environmental and Energy Study Institute 23



Brief look at what other governments are doing elsewhere

2/8/2011 Environmental and Energy Study Institute 24



In 2009, 85 countries around the world had some form of overall renewable energy goal.

The most popular policies are (ranked):

- Feed-in tariffs (50 countries)
- Renewable portfolio standards
- Subsidies and grants
- Investment tax credits
- Sales tax or VAT exemptions
- Green certificate trading
- Production tax credits or payments
- Net metering
- Direct public investment or financing
- Public competitive bidding

Source: REN21. *Renewables 2010 Global Status Report*



European Union

- Climate, energy, environmental, and economic security concerns driving policy.
- Having a price on fossil carbon is a key driver of shift to bioenergy – in all its forms.
- EU wide renewable energy goal: 20% of total energy by 2020
- Biofuel goal: 10% of all transport energy by 2020
- Biopower capacity installed to date: 16 GW
- Much more being built
- Germany had almost 4700 biogas plants installed by 2009, with capacity of 1.7 GW.

Source: REN21. *Renewables 2010 Global Status Report*



European Union (cont.)

- In Sweden, the use of biomass energy has surpassed its petroleum consumption.
- EU countries are leading the way in biomass heating technologies and small scale biomass CHP and district energy systems (Denmark, Sweden, Germany, Austria).

Key items to note:

- EU climate policy is driving development of aviation biofuels in the U.S.
- EU climate policy is driving biomass exports from the U.S. to meet growing EU demand.

Source: REN21. *Renewables 2010 Global Status Report*

2/8/2011

Environmental and Energy Study Institute

27



China

- Renewable energy goal – 15% of total energy by 2020
- Biofuel goal: 15 billion liters by 2020.
- 9 provinces have set biofuel mandates.
- 3.2 GW biopower capacity installed by 2009.
- Plans to install 30 GW biopower capacity by 2020.
- 25 million biogas systems in use. 3 million added in 2009.

Source: REN21. *Renewables 2010 Global Status Report*

2/8/2011

Environmental and Energy Study Institute

28



India

- Five-year plan: add 12.5 GW of renewable power (including biomass) by 2012
- 13 states/territories have set biofuel mandates
- 4 million biogas systems in use in 2009
- Small-scale biogas digesters and biomass gasifiers with engines key to fulfilling rural development plan

Source: REN21. *Renewables 2010 Global Status Report*



Brazil

- 30 years experience with renewable fuels mandates.
- Biofuel mandate: 20-25% minimum ethanol blend.
- Global oil companies investing heavily in biofuels industry here.
- 4.8 GW biomass cogeneration plants installed at sugar mills by 2009. Much new investment here.

Source: REN21. *Renewables 2010 Global Status Report*



Summary: Brief look at what other governments are doing elsewhere

- Strong climate, energy, environmental, and economic security concerns will continue to drive strong bioenergy policies and markets in the EU and across the developing world, especially in the rapidly growing economies of China, India, and Brazil.

2/8/2011

Environmental and Energy Study Institute

31



For More Information Contact

Ned Stowe, Policy Associate
Sustainable Biomass and Energy
(202) 662-1885
nstowe@eesi.org

Carol Werner, Executive Director
(202) 662-1881
cwerner@eesi.org



EESI: *Advancing Innovative Solutions!*
www.eesi.org

2/8/2011

Environmental and Energy Study Institute

32