

Biorefinery Business Models and USDA Rural Development Funding

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Renewable Energy Biomass Field Days

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President Obama's Commitment to Renewable Energy

“To put people back to work today, reduce our dependence on foreign oil, together we will double our renewable energy production.”



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Biofuels Interagency Working Group

On May 5, 2009, President Obama signed a directive to establish a working group to be chaired by the *Secretaries of Energy and Agriculture and the Administrator of the EPA*.

The group will work with the National Biomass Research and Development Board on:

- Creating a *biofuel market development program* to boost next-generation biofuels, increase use of flex-fuel vehicles, and assist retail market development
- Coordinating infrastructure policies



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Growing America's Fuel

On February 2, 2010, President Obama expressed his support for the existing biofuels industry and his desire to accelerate the commercial and sustainable establishment of the advanced biofuels industry.

- Established Lead Agency responsibilities for each supply chain segment including:
 - Full-scale and Widespread Deployment of Commercial Facilities USDA Rural Development, and Forest Service, and Department of Energy.
 - Provide financing for innovative first time commercial technologies
 - And the development of first-of-a-kind, scaled-up commercial and multiple-commercial deployed 2nd and 3rd generation conversion facilities
 - The continuation of 1st generation facilities



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“USDA is working to expand energy opportunities by producing alternative forms of energy and fuel, and to ensure that we are doing the research necessary to allow agriculture to transition away from its rather significant dependence on fossil fuels.”

Tom Vilsack
Agriculture Secretary



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- Increasing economic opportunity in rural America
- Improving the quality of life of all rural Americans



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American Recovery and Reinvestment Act of 2009

MINIMUM COST

\$820 billion

JOB'S CREATED OR SAVED

4 million

SPENDING TIMELINE

18 months
(at least 75 percent
of funds spent)

ENERGY



- » Double renewable-energy generating capacity over three years by an amount sufficient to power 6 million homes.
- » Build more than 3,000 miles of new or modernized electric transmission lines and install 40 million "smart meters" in homes.
- » Weatherize at least 2 million homes and 75 percent of federal buildings.

HEALTH CARE



- » Guarantee health coverage for 8.5 million Americans who lose their jobs and risk losing their health insurance.
- » Increase federal assistance to protect 20 million people at risk of losing their Medicaid eligibility.
- » Computerize all Americans' health records within five years.

EDUCATION



- » Renovate 10,000 public schools.
- » Create a \$2,500 "American Opportunity Tax Credit" to make college more affordable.
- » Double the size of the Early Head Start program, providing an additional 350,000 children with access to pre-kindergarten services.

INFRASTRUCTURE



- » Enhance security at 90 major ports.
- » Launch 1,300 wastewater projects, 380 drinking-water projects, and 1,000 rural water and sewer system projects.
- » Repair and modernize thousands of miles of roadways.

TAXES, BENEFITS



- » Cut taxes by \$1,000 for 95 percent of workers and their families.
- » Extend the child tax credit to parents of 6 million more children and increase it for parents of an additional 10 million.
- » Increase food stamp benefits for more than 30 million people.



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ARRA and USDA Rural Development

\$150 million budget authority for:

- Business & Industry Loans and Grants
 - Leverages \$1.7 billion in loan guarantees
- Rural Business Enterprise Grants
 - \$15 million in grants



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Rural Development Programs

- USDA Rural Development supports and administers over 40 programs and manages a portfolio of \$114 billion
- RD Programs invest in:
 - Advanced and Traditional Biofuels;
 - Renewable Energy Systems,
 - Energy Efficiency Improvements,
 - Energy Audits and Renewable Energy Development Assistance,
 - Feasibility Studies, and
 - Business & Industry Green Technologies



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2008 Farm Bill – Title IX

Renewable energy programs administered by
USDA Rural Development



- **Biorefinery Assistance Program**
- **Repowering Assistance Program**
- **Bioenergy Program for Advanced Biofuels**
- **Rural Energy for America Program (REAP)**



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Section 9003 - Biorefinery Assistance Program

- Provides grants for demonstration scale and loan guarantees for commercial scale biorefineries that produce advanced biofuels
- Guaranteed Loan Limitations:
 - Up to \$250 Million for Biorefineries
- Grant Limitations: Pilot/Demonstration Scale –
 - Up to 50% of project costs (If funds appropriated)
- **Mandatory Funding:**
 - FY 2009 - \$75 Million
 - FY 2010 - \$245 Million available until expended



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Section 9003 Biorefinery Assistance Program

Investments to date

“First of its kind” scale up to commercial size applications:

- **Range Fuels Inc.**, Soperton, Georgia for \$80 million, 2/10/10
- **Sapphire Energy**, Columbus, New Mexico, \$54.5 million, 12/4/09



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Range Fuels, Soperton, GA

First commercial-scale cellulosic biorefinery



- 20 MGY (USDA/DOE-funded Project; expected ~ 100 MGY)
- Thermo-chemical process -- combines pressure, heat, steam, and biomass to produce synthesis gas, or syngas, a mixture of hydrogen and oxygen that can be converted to a wide range of products
- Jobs -- 250 at peak construction; 70 plant employees at full capacity

Sapphire Energy, Columbus, NM

First 3rd generation biorefinery

Will produce 1 MMGY

USDA/DOE-funded Project

Fix approximately 56 metric tons of CO₂ per day

Demonstrates that algal oil can be refined to produce gasoline, diesel, and jet fuel

Completed with Boeing, the first 2-engine 737-800 2-hour test flight using synthetic algal based jet fuel

Jobs –

750 direct and indirect jobs by 2011 and more than 16,000 by 2030;

30 green collar jobs to develop and operate facility



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Section 9004 - Repowering Assistance Program

- Provides payments to biorefineries (in existence when Farm Bill was passed) to replace fossil fuels used to produce heat or power in biorefineries with renewable biomass
- Provides \$35 million for FY 2009 that will remain available until the funds are exhausted
- Authorizes additional funding of \$15 million per year, from FY 2009 through 2012



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Section 9005 -- Bioenergy Program for Advanced Biofuels

- Payments to eligible producers to support and ensure expanded production of advanced biofuels
- Existing production vs. new production
- **Mandatory Funding:**
 - \$55,000,000 in FY 2009
 - \$60,000,000 in FY 2010
 - \$85,000,000 in FY 2011
 - \$105,000,000 in FY 2012
- Discretionary Funding of up to \$25 million each FY 2009-2012



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Section 9007 -- Rural Energy for America Program (REAP)

- Formerly Section 9006 – Renewable Energy Systems and Energy Efficiency Improvements Program
- Establishes a grant and loan guarantee program to assist agriculture producers and rural small businesses in purchasing renewable energy systems and making energy efficiency improvements
- Establishes a grant program for energy audits, technical assistance and feasibility studies



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Section 9007 -- Rural Energy for America Program (REAP)

Continued

- Grant Limits:
 - \$500,000 for Renewable Energy Systems (or 25% of TPC)
 - \$250,000 for Energy Efficiency Improvements
- Loan Guarantee Limits:
 - \$25 Million Cap
 - Cap Federal share at 75% of project costs
- **Mandatory Funding:**
 - FY 09 - \$55 Million + \$5 million discretionary
 - FY 10 - \$60 Million + \$39 million discretionary
 - FY 11 - \$70 Million
 - FY 12 - \$70 Million
- Discretionary funding of up to \$25 million each fiscal year, 2009 -12



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Renewable Energy/Energy Efficiency Investments, 2003 – 10

Sections 9006 and 9007 funding activity

Energy Type	Biomass Type	Number of Projects	Grant and Loan Guarantee Investments	Amount Leveraged
	ANEROBIC DIGESTER	147	\$ 74,691,457	\$ 205,067,555
	BIODIESEL PRODUCTION	53	\$ 54,462,100	\$ 107,349,716
	ETHANOL PRODUCTION	8	\$ 22,095,000	\$ 68,987,803
	SOLID FUEL PRODUCTION	31	\$ 18,154,808	\$ 36,260,157
	THERMAL CONVERSION	137	\$ 30,693,593	\$ 71,647,897
BIOMASS		376	\$ 200,096,959	\$ 489,313,127
ENERGY EFFICIENCY		4,258	\$ 154,720,413	\$ 282,761,894
GEOTHERMAL		139	\$ 4,697,287	\$ 18,222,896
HYBRID		27	\$ 3,035,912	\$ 186,683,216
HYDROPOWER		8	\$ 1,754,281	\$ 13,367,351
SOLAR		577	\$ 36,457,291	\$ 77,560,158
WIND		507	\$ 105,723,541	\$ 529,569,708
Technologies Total		5,892	\$ 506,485,683	\$ 1,597,478,350



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*EA/REDA – Energy Audits/Renewable Energy
Development Assistance*



Rural Development biofuels investments, 2003-09

Program	Technology	Number of Projects	Grants/Loan Guarantee Amounts	Amount Leveraged
			<i>Dollars</i>	<i>Dollars</i>
Sections 9006 & 9007 Renewable Energy Systems				
	Biodiesel	39	39,748,760	83,912,355
	Ethanol	7	21,595,000	64,733,803
Business and Industry				
	Biodiesel	9	79,025,400	128,618,422
	Ethanol	9	79,860,923	107,922,203
	Total	64	220,230,083	385,186,783

Food, Conservation, and Energy Act '08

Energy Title Programs with Mandatory Funding

\$1.1 billion to leverage renewable energy industry investments in new technologies and feedstocks

- *Rural Energy for America Program (REAP) -- \$255 M*
- *Biorefinery Assistance -- \$75 M ('09), \$245 M ('10)*
- *Biomass Crop Assistance Program (BCAP) – (\$70) M*
- *Repowering Assistance -- \$35 M*
- *Bioenergy Program for Advanced Biofuels -- \$300 M*
- *Biomass Research and Development -- \$118 M*
- *Biobased Markets Program -- \$9 M*
- *Biodiesel Fuel Education Program -- \$5 M*
- *Biofuels Infrastructure Study -- \$1 M*



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Wealth creation

Multiplier effect --

USDA leveraged investments create a multitude of secondary and tertiary employment opportunities and business startups in rural areas and serve as an incubator to new green technologies.



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Thank you!

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