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.”
Complimentary Efforts

- Biomass R&D Initiative Board
- Biofuels Interagency Workgroup
- Growing America’s Fuels
- Farm Bill Title IX Renewable Energy
- America Recovery and Reinvestment Act
- Memorandum of Understanding: Department of Navy
- Copenhagen Memorandum of Understanding
- Farm to Fly Initiative
“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
Our country needs a strong, vibrant rural economy. Unfortunately, over the past several decades there have been times when it was neither strong nor vibrant. Persistent high unemployment and poverty encouraged many to leave their rural communities. A majority of rural counties lost population, and with it came a loss of political representation.

President Obama refuses to accept the notion that Rural America’s past predicts its future. He recognizes that the source of America’s innovative spirit and our enduring values remain rooted in our rural areas.

The President’s vision for a revitalized rural economy that creates real opportunity for growth and prosperity centers on our ability to add innovative technologies, open new markets for crops, and better utilize our natural resources. The President ordered USDA to make that vision a reality.
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
2008 Farm Bill Title IX and USDA PROGRAMS

- **Section 9003: Biorefinery Assistance Program** – Provides **loan guarantees** of up to $250 million for the development, construction and retrofitting of commercial-scale bio-refineries.

- **Section 9004: Repowering Assistance** – Provides **payments** to existing bio-refineries to replace fossil fuels used to produce heat or power to operate the bio-refineries with renewable biomass.

- **Section 9005: Bioenergy Program for Advanced Biofuels** – Provides **payments** to eligible agricultural producers to support and ensure an expanding production of advanced bio-fuels.

- **Section 9007: Rural Energy for America (REAP)** – Provides grants and loan guarantees to support energy efficiency improvements and develop renewable energy systems.

- **Section 9008: Biomass Research and Development Initiative** – Provides grants to support R&D and Demonstration efforts for feedstock, biofuel, bioproducts; and analysis for sustainable strategic guidance.

- **Section 9011: Biomass Crop Assistance Program (BCAP)** – Provides support to establish and produce crops for conversion to bioenergy and help with the collection, harvest, storage, and transportation of material to biomass conversion facility.
7 Strategies

• Regional Collaboration
• Regional Food Systems
• Community Building
• Renewable Energy Opportunity
• Broadband & Business Creation
• Strategic Partners & Cooperatives
• Capital Markets
USDA RD

- National Office DC
- 47 State Offices
  - Renewable Energy Coordinator
  - Business & Coop Director / Specialists
  - Engineer
  - Architect
  - Environmental Coordinator

~ 500 Local & Satellite Offices
Renewable Energy System/Energy Efficiency Improvement Grants and Loans
Specific Technology Categories

- Biomass, digesters
- Biomass, bioenergy
- Geothermal, electric
- Geothermal, direct use
- Hydrogen
- Hydrokinetic
- Solar, small
- Solar, large
- Wind, small
- Wind, large
- Energy Efficiency Improvements
Business, Cooperative, & Renewable Energy Programs

- Business & Industry Loan Guarantee
- Renewable Energy Loans Guarantee: 9007-REAP
- Renewable Energy Grants: 9007
- Energy Efficiency Grants: 9007
- Intermediary Relending Program
- Biomass Research & Development & Demonstration Initiative Grant: 9008
- Value Added Producer Grant
- Biorefinery Assistance: 9003
- Bioenergy Program for Advanced Biofuels: 9005
Renewable Opportunity

• All inclusive
• National Security
• Rural Economic Development: Jobs, technological advancement, business retention & expansion, local $ retention, multiplier effect
• Alleviate Poverty
• Lower energy costs
• Hedge against fossil fuel price increases
• Protect the environment
Solution

- Conservation
- Energy efficiency
- Develop Renewable Energy Supply
Approach

- 9008 Research Development & Demonstration
- 9003 Biorefinery Assistance - Scale up to commercial
- 9004 Repowering Assistance
- 9005 Bioenergy Program for Advanced Biofuels
- 9009 Renewable Energy Self Sufficiency Initiative
- 9011 Biomass Crop Assistance Program
- B&I Business and Industry

USDA Rural Development

Value Added Producer Grant
Algae
Algae
Pyrolysis
Biochar
Gasification

- Biomass
- Drying Zone
- Pyrolysis Zone
- Combustion Zone
- Reduction Zone
- The Grate
- Ash Removal

Air
Gas
Feedstock Diversification
Feedstock Diversification
Feedstock Diversification
Feedstock Densification
Concentrated
Consolidator
Consolidator
Thermal Photovoltaic
Renewable Energy Hybrids
Energy Efficiency

- Greenhouses
Advanced Aviation Biofuels
Advanced Aviation Biofuels
Advanced Aviation Biofuels
Cellulosic

- Ethanol
- Alcohols
- Butanol
- Methanol
Cellulosic
Hydrogen from Renewables
Hydrokinetic
Micro Hydro
Geothermal Direct
Geothermal
Community
Anaerobic Digesters

• On farm: Dairy, Swine, Poultry
• Mixed substrates
• Business
• Community
Anaerobic Digesters
Energy Efficiency

• Structures
• Materials
• Processes
• Machinery
• Equipment
Energy Efficiency
Annual average solar resource data are shown for a tilt-latitude collector. The data for Hawaii and the 48 contiguous states are a 10 km satellite modeled dataset (SUNY/NREL, 2007) representing data from 1998-2005.

The data for Alaska are a 40 km dataset produced by the Climatological Solar Radiation Model (NREL, 2003).

This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy.
U.S. Wind Resource (50m)

The annual wind resource data shown are a composite of available high resolution wind power resource produced by NREL, AWS TrueWind Solutions, states, and other organizations. For states that did not have high resolution data available, low resolution wind power resource data produced by the 1987 “Wind Energy Atlas of the United States” is shown. For more info, visit Wind Powering America:


Committed to the future of rural communities.

This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy.
U.S. Biomass Resource

This study estimates the annual technical biomass resources currently available in the United States by county. It includes the following feedstock categories:

- Agricultural residues (crops and animal manure);
- Wood residues (forest, primary mill, secondary mill, and urban wood);
- Municipal discsards (methane emissions from landfills and domestic wastewater treatment);
- Dedicated energy crops and switchgrass on Conservation Reserve Program lands.

Thousand Tonnes/Year

- Above 500
- 250 - 500
- 150 - 250
- 100 - 150
- 50 - 100
- Less than 50

This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy. See additional documentation for more information at http://www.nrel.gov/docs/fy08osti/39181.pdf

Author: Billy Roberts - October 20, 2008
**Section 9003 - Biorefinery Assistance Program**

- Provides loan guarantees for commercial scale biorefineries that produce advanced biofuels

- Guaranteed Loan Limitations:
  - Up to $250 Million for Biorefineries

- FY 2010 funding with 2009 carryover $503 million
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, 1/16/09
- Sapphire Energy, Columbus, New Mexico, $54.5 million, 12/4/09
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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