

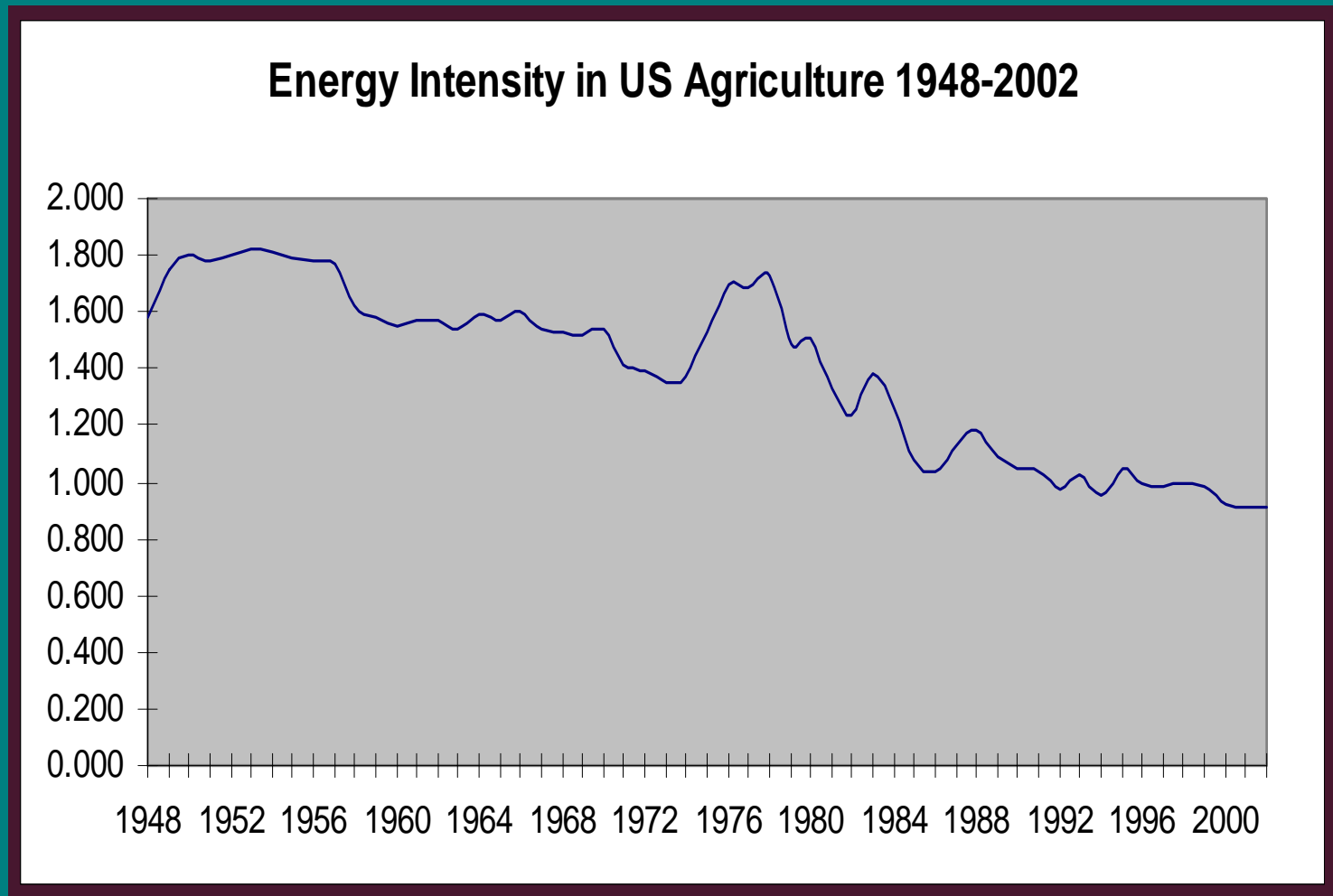
# USDA Activities to Reduce GHG Emissions

## Through Renewable Energy and Energy Efficiency

Ross Davidson

11<sup>th</sup> Conference of Parties  
November 30, 2005

# U.S. Agriculture has Produced Long Run Energy Efficiency Gains



# Despite these gains, farm expenditures for energy-related inputs have recently increased

- From 5 percent of total farm cash expenses in 1910 to over 17 percent by the early 80s
- From the early 80s to '99, efficiency gains and generally stable prices caused the percentage to fall to 11 percent.
- The share of energy-related expenses started rising again after the energy price spikes of 2000-2001.
- USDA's Nov. 3, 2005 farm income forecast, placed 2005 energy-related expenses at 14 percent of total farm cash expenses.

# USDA Has a Strategic Interest in Renewable Energy and Energy Efficiency

- Promote domestic energy security/self sufficiency
- Encourage rural economic development
- Enhance and protect the environment by:
  - Improving air and water quality
  - Reducing greenhouse gas emissions

# USDA Promotes Renewable Energy and Energy Efficiency Through...

- Funding/incentives for new technologies
- Commercialization, market development
- Basic and applied research
- Outreach, education and extension activities
- Leading by example

# **USDA Agencies with major roles in energy efficiency and renewable energy**

**Natural Resources Conservation Service**

**Cooperative State Research, Education, and Extension Service**

**Agricultural Research Service**

**Rural Development Agency**

# Incentives offered through USDA Conservation Programs

## USDA Programs

- Conservation Technical Assistance
- Environmental Quality Incentives Program
- Agricultural Management Assistance Program
- Conservation Security Program

## Conservation practices

- Irrigation Water Management
- Nutrient Management
- Energy Audits
- Bio-fuel Purchases
- Reduced Soil Tillage
- Renewable Energy Generation

# USDA/DOE Biomass Research and Development Initiative

- Provides grants for research, development, and demonstration of biomass technologies
- Jointly administered by USDA and DOE
- \$44.7 Million Awarded from 2002 Through 2005



# **Rural Development Renewable Energy Activity (FYs 01 - 04)**

<b><u>Number and Dollar Amounts Awarded:</u></b>	<b><u>Number</u></b>	<b><u>\$ Millions</u></b>
<b>Business and Industry Loan Guaranteed</b>	<b>11</b>	<b>89.7</b>
<b>Rural Business Enterprise Grant</b>	<b>18</b>	<b>1.1</b>
<b>Rural Business Opportunity Grant</b>	<b>4</b>	<b>0.2</b>
<b>Rural Economic Development Loan and Grant</b>	<b>5</b>	<b>2.3</b>
<b>Value Added Producer Grants</b>	<b>77</b>	<b>15.9</b>
<b>Section 9006 Renewable Energy</b>	<b><u>209</u></b>	<b><u>42.7</u></b>
<b>Totals</b>	<b>324</b>	<b>151.9</b>

# USDA Rural Development

## Section 9006 Funding Activity FYs 03 - 05

### Renewable Energy

\$ Millions

	<u>No.</u>	<u>Amounts</u>	<u>Leveraged Funds</u>
Biomass	119	29.8	197.1
Wind	121	27.8	446.4
Solar	17	1.4	3.6
Geothermal	4	.4	1.1
Hybrid	<u>9</u>	<u>2.4</u>	<u>185.5</u>
Totals	270	61.8	833.7

Energy Efficiency Improvements: 165 - \$4.9MM

Guaranteed Biomass Loans: 2 - \$10.1MM (Leveraged Funds \$13.1MM)

# USDA Research

## Recent Findings That Improve Energy Efficiency

- USDA research projects that result in improved energy efficiency through reduced inputs, lower costs, and improved output:
  - **Processing/conversion:** low energy fruit blanching methods.
  - **Irrigation:** efficient water application methods.
  - **Molecular biology:** improved plant varieties that require less tillage, use of fewer pesticides, and produce greater yields
  - **Precision agriculture:** Use of navigational and spatial data to reduce equipment, fertilizer, pesticide, seed, and fuel use.
  - **Crop production practices:** Efficient tillage practices reduce soil erosion, improve soil quality and greatly reduce fuel requirements. Improved fertilizer application practices reduce fertilizer, and energy inputs.
  - **Biofuels development:** More energy efficient ways to produce biofuels reduce the energy intensity and improve the cost and acceptance of alternative fuels

# Examples of USDA Sponsored Research on Bio-based Products

- Expand and improve uses of vegetable oils (biodiesel) for non-food and food applications, reducing dependence on foreign oil.
- Develop new agricultural oil-based plastics, increasing the value of crops as raw materials for manufacturing and conserving renewable petroleum resources.
- Develop/use waste streams co-products from biofuel production to produce value added non-food products.
- Research ways to use renewable resources, specifically plant biomass sugars, to produce chemicals and fuels.

# National Energy Star®/Extension Education Program

- USDA works with the EPA to reach rural communities
- Promotes energy efficiency by providing energy workshops, presentations and programs.
  - 1,122,154 consumers reached.
  - 467,333 consumers adopted energy conservation practices
  - 205,804 households purchased Energy Star® products
  - 427 energy workshops, presentations, and programs held
  - \$672,510 reported saved in household energy costs
- <http://www.energyextension.com>

# Building America Program

- A private/public partnership sponsored by DOE that researches energy-efficient solutions for new and existing housing.
- USDA cooperates with the National Association of State University and Land-Grant Colleges (NASULGC) and the DOE to reach homebuilders.
- [http://www.eere.energy.gov/buildings/building\\_america/](http://www.eere.energy.gov/buildings/building_america/)

# USDA is Implementing the Federal Biobased Products Preferred Procurement Program

USDA has published guidelines and is designating eligible product categories.

This will:

- Create a preferred market for biobased products with federal procurement
- Provide large scale demonstration of biobased products performance in use
- Spur development of new biobased products
- Create new demand for agricultural commodities
- Encourage rural communities to develop processing and manufacturing

# Energy Policy Act of 2005

## Renewable Fuels Standard

- New energy legislation creates renewable fuel obligations for refiners, blenders, and importers beginning in 2006.
- Renewable motor fuel use will increase to 7.5 billion gallons/year by 2012 (from 3.5 billion gallons/year in 2004).
- EPA, in consultation with USDA and DOE will develop standards for implementing the program by August, 2006.



# Summary

- As a consumer and producer of energy, U.S. Agriculture has a significant stake in and commitment to:
  - energy efficiency
  - renewable energy
- Benefits include:
  - improve environmental conditions (greenhouse gases)
  - help maintain rural economies
  - reduce dependence on fossil fuels