

USDA Activities to Reduce GHG Emissions

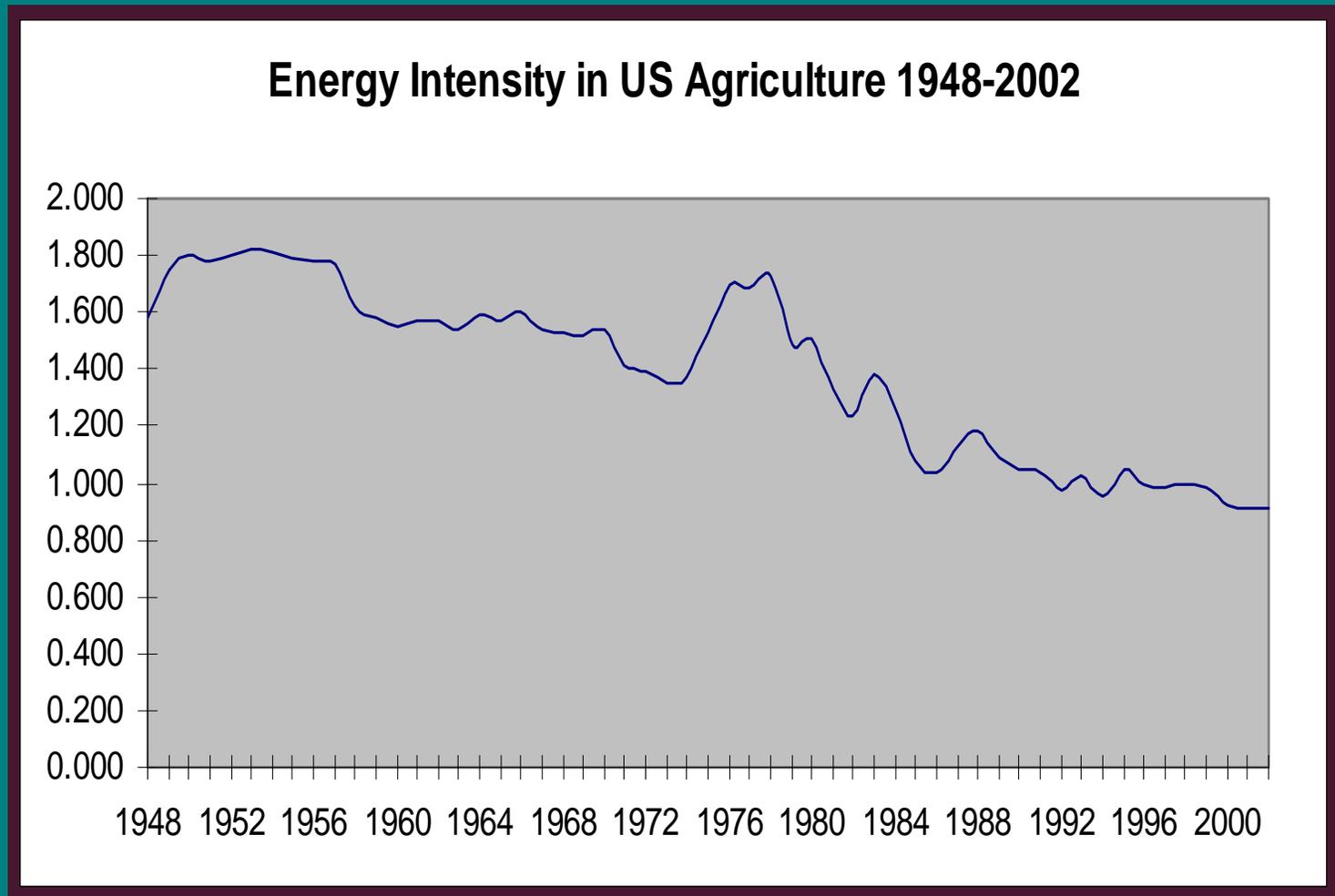
Through Renewable Energy and Energy Efficiency

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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)

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

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/

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