

USDA's Expanded Role In Energy

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EESI: Advancing Innovative Solutions!



- **Dedicated to promoting sustainable societies through innovative policies on energy, climate, transportation, agriculture, and smart growth**
- **Founded in 1984, by a bipartisan Congressional Caucus**
- **Provides timely information regarding science, policy, and technologies**
- **Organizes ~20 Congressional briefings a year**
- **Builds coalitions and networks**
- **Publishes 3 electronic newsletters**
 - **BCO – Bioenergy, Climate Protection & Oil Reduction**
 - **Climate Change News**
 - **National Clean Bus update**
- **EESI Associates Program allows companies and individuals to participate**

Broad Goals

- Climate Change
- Environmental Stewardship
- National Energy and Security
- Public Health
- International Competitiveness
- Bridge Between Urban and Rural Communities
- Diversify and Grow the Domestic Agriculture Portfolio while Decreasing Dependence on Export Markets
 - Economic Development
 - Local Ownership



What is a farm bill?

- Renewed about every 5 years
- Omnibus legislation (several freestanding authorizing bills) covering a wide range of programs:
 - Commodity price and income support
 - Farm credit
 - Agriculture conservation
 - Research
 - Rural development
 - Foreign and domestic food programs
 - Energy



Spending

Mandatory: which means that eligibility is determined by authorizing statute and any person or business that meets eligibility is entitled to the benefits authorized

- Food Stamps
- Commodity Programs
- Conservation

Discretionary: authorizations which are ultimately determined in annual appropriations bills

- Rural development
- Research
- Energy

2002 Farm Bill Actual Spending (FY02-07) and the March 2007 CBO Baseline (FY08-13)

	Commodity Support	Conservation	Exports	Food Stamps	Total
(outlays in \$millions)					
Baseline (FY08-13)	42,446	26,496	2,005	225,845	296,792
Actual (FY02-07)	72,923	18,323	1,648	178,158	271,063
Baseline vs. Actual	-30,488	+8,173	+357	+47,687	+25,729

Source: CRS. "What is a 'Farm Bill'?" December 19, 2007.

1. High commodity prices mean lower baseline.
2. Nearly 2/3 of the spending is on Food Stamps!

CBO Estimated Costs for the House and Senate 2007 Farm Bills (FY08-12)

PAY GO rules require any new spending to be offset!

	Total Spending
(outlays in Billions \$)	
House Est. Spending	286.2
House offsets/revenue	6.0
Senate Est. Spending	285.8
Senate offsets/revenue	5.6
March 2007 Baseline	280.3
Both bills budget-neutral	

Source: CRS. "Farm Bill Budget and Costs: 2002 vs 2007" November 7, 2007.

2002 Farm Bill

- **Behind the Scenes:**
- Senators Harkin (D-IA) and Lugar (R-IN), Agriculture Committee Chairman and Ranking Member, respectively, pushed for an energy title
- *The 2002 Farm Bill: Revitalizing the Farm Economy Through Renewable Energy Development.* EESI. September 2001.
- First Ever Energy Title (Title IX)
- \$405 million in mandatory funding over five year

2002 Farm Bill (P.L. 107-171): Energy Title

- Sec. 9002 Procurement of Biobased Products (\$1 mil/yr)
- Sec. 9003 Biorefinery Development Grants
- Sec. 9004 Biodiesel Fuel Education Program (\$1 mil/yr)
- Sec. 9005 Energy Audit and Renewable Energy Development Program
- Sec. 9006 RE/EE Improvements (\$23 mil/yr)
- Sec. 9007 Hydrogen and Fuel Cell Technologies
- Sec. 9008 Biomass R&D Act of 2000 (\$63 mil/yr)
- Sec. 9009 Carbon Sequestration Research
- Sec. 9010 CCC Bioenergy Program (\$150 mil/yr)

Biomass Research & Development Initiative (BRDI)

- Executive Order 13134: DEVELOPING AND PROMOTING BIOBASED PRODUCTS AND BIOENERGY, issued in August of 1999
- Multi-agency effort to coordinate and accelerate all Federal biobased products and bioenergy research and development
- USDA/DOE Joint Solicitation since FY03
- *2007 Roadmap for Bioenergy and Biobased Products in the United States*



2/12/2008



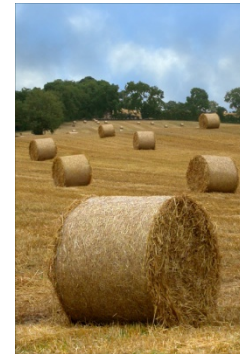
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BRDI Now

- \$14 Million in awards to be announced
- Over 700 Pre-applications, with 150 invited back for full applications
- ~30 Projects will be selected
 - Feedstocks: 300 different varieties
 - Technologies: Biological Fermentation, thermochemical, pyrolysis, anaerobic digestion, black liquor gasification, etc.
 - Co-product utilization: DDGs, hydrogen, pharmaceuticals, nutraceuticals etc.
- **\$2 billion of private sector matching funds ‘left on the table’**



Federal Procurement of Biobased Products

- Requires Federal agencies to purchase biobased products that meet price, availability, and performance standards
- Provides for a voluntary labelling program of certified “biobased products”
- Provides financial assistance for testing of biobased products by manufacturers
- Labelling program slow to be implemented
- Round 4 of rulemaking to designate products
- For a full list of products visit:
<http://www.usda.gov/procurement/programs/biopreferred.htm>

Renewable Energy Systems & Energy Efficiency Improvements Program

- Purchase of renewable energy systems and energy efficiency improvements for agriculture producers and rural small businesses
- During the first 4 years USDA spent \$87 mil in grants and \$24 mil in loan guarantees for more than 800 projects
 - 170 mil/yr of ethanol and biodiesel
 - 330+ megawatts of wind power
 - 1.3 million tons of CO2 Reductions
- FY07 Awards
 - 345 Proposals selected
 - 37 different states
 - \$4.8 million in guaranteed loans
 - \$13.4 million for grants



USDA Research, Education, and Economics (REE)

The REE Mission Area is dedicated to the creation of a safe, sustainable, competitive U.S. food and fiber system and strong, healthy communities, families, and youth through integrated research, analysis and education.

- Includes 4 agencies:
 - Agricultural Research Service (including the National Agriculture Library)
 - Economic Research Service
 - National Agricultural Statistics Service
 - Cooperative State Research, Education, and Extension Service.

USDA REE Energy Science, Education, and Extension Strategic Plan

Role: “Lead the production and efficient use of agriculture-based energy ... for the benefit of rural communities and the Nation”

Energy Science and Education Workshop was held in September, 2007

- Over 100 science and administrative leaders from the REE mission area agencies (ARS, CSREES, ERS, NASS), non-REE USDA agencies, other Federal Agencies (e.g. DOE, EPA) and external partners
- Plan was released in December 2007
- Last day to submit comments was January 5, 2007
- Expected to have the document released soon

USDA REE Energy Science, Education, and Extension Strategic Plan

Overview

- Whole Life Cycle Analysis
- Systems Approach
- Results oriented
- Strategic Players
 - Interagency planning
 - Public-private oriented

5 Year Goals

- Sustainable agriculture-based energy production
- Sustainable bioeconomies for rural communities
- Efficient use of energy
- Workforce development

USDA Energy Matrix

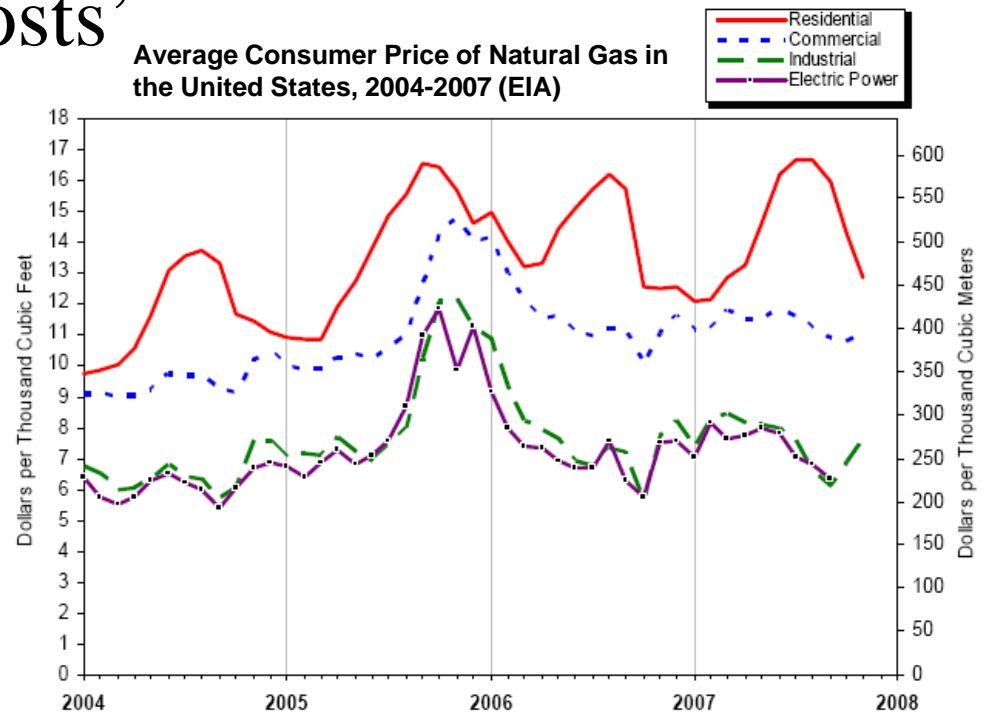
- Lists all of its energy-related activities including:
 - Programs, research efforts, funding opportunities and technical assistance
- Wide range of technologies:
 - Anaerobic Digester, Biodiesel Production, Ethanol Production, Solid Fuel Production, Thermal Conversion, Wind, Solar, and Geothermal.

<http://www.usda.gov/rus/index2/0208/EnergyPrograms.htm>

USDA's Energy Estimator

- Natural Resources Conservation Service (NRCS)
- Developed 4 tools to ‘increase energy awareness’ and ‘reduce energy costs’

- Animal housing
- Irrigation systems
- Fertilizer type
- Tillage systems.



<http://energytools.sc.egov.usda.gov/>

Farm Bill Complications

- Tight budget year (PAYGO)
- Lower budget baseline
- Changes in the current commodity program
- Trade negotiations and WTO
- Increased number of interest groups: energy, forestry, specialty crops, etc.
- Implications for local ownership due to consolidation of the industry
- Running out of time before the FY09 baseline

Farm Bill Reauthorization

Energy Options

- Research
- Feedstocks
- Project demonstration
- Safety-net
- Rural development



US Farm Policy in the Works

Farm Bills

- Farm, Nutrition, and Bioenergy Act of 2007 (House)
- Food and Energy Security Act of 2007 (Senate)



House Energy Title Programs (\$3.2 B)

- **Federal procurement of biobased products.**
- **Loan guarantees for biorefineries and biofuel production plants.**
- **Energy audit and renewable energy development program.**
- **Renewable energy systems and energy efficiency improvements.**
- **Biomass Research and Development Act of 2000.**
- **Adjustments to the bioenergy program.**
- **Research, extension, and educational programs on biobased energy (Sun Grants).**
- **Energy Council of the Department of Agriculture.**
- **Farm energy production pilot program.**
- **Rural energy self-sufficiency initiative.**
- **Agricultural biofuels from biomass internship pilot program.**
- **Feedstock flexibility program for bioenergy producers (sugar).**
- **Biomass inventory report.**
- **Future farmsteads program.**
- **Sense of Congress on renewable energy.**
- **Biodiesel Education Program.**
- **Biomass Energy Reserve.**
- **Forest Biomass for Energy.**
- **Supplementing Corn as an Ethanol Feedstock (sorghum provision).**
- **Community Wood Energy Program.**

Senate Energy Title Programs (\$1.1 B)

- **Biobased Markets Program**
- **Biodiesel Fuel Education**
- **Biomass Crop Transition Assistance Program**
- **Biorefinery and Repowering Assistance**
- **Bioenergy Program**
- **Rural Energy for America Program**
- **Biomass Research and Development Act**
- **Sun Grant Program**
- **Regional Biomass Crop Experiments**
- **New Century Farm Project**
- **Biochar Research, Development and Demonstration**
- **Renewable Woody Biomass for Energy**
- **Community Wood Energy Program**
- **Rural Energy Systems Renewal**
- **Voluntary Renewable Biomass Certification Program**
- **Biofuels Infrastructure Study**
- **Rural Nitrogen Fertilizer Study**
- **Study of Life Cycle Analysis of Biofuels**
- **E-85 Fuel Program**
- **Research and Development of Renewable Energy**
- **Northeast Dairy Nutrient Management and Energy Development**
- **Report on the Growth Potential for Cellulosic Materials**
- **Future Farmsteads Program**

Renewable Energy for America (or 9006)

House

- Raises loan guarantee level from \$10 M to \$25 M
- Combined Grants and Loans is increased to 75%
- Allows for feasibility studies to be eligible
- \$500 M mandatory funding (FY08-12)

Senate

- Optional production incentive instead of grant
- Loan guarantee up to 75%
- Carve-out for manure-to-energy
- Streamline review for small-scale projects
- Extends Energy Star Program
- \$230 M in mandatory for FY08 till expended, with not less than 15% for manure

Bioenergy Program

House

- Ethanol from corn starch excluded
- Expands incentive to heat and power using biomass at biofuel plants and for gasification
- \$1.4 B mandatory CCC during FY08-12

Senate

- Bases payment on (helps cellulosic biofuels & biodiesel)
 - Advanced biofuel
 - Feedstock prices
 - Net non-renewable content
- Not available for individuals claiming a biofuel PTC or for facilities with greater capacity than 150 MGY
- \$245 M mandatory FY08-12

Rural Energy Initiatives

House: Rural Energy Self-Sufficiency

- Cost-share grants for rural communities not to exceed 75% of costs
- Report to Congress on “best practices”
- ≤ 5 grants a year
- \$ 5 M for FY08, such sums FY09-12

Senate: Rural Energy Systems Renewal

- Cost-share grants of 50% for assessment of energy systems and the formulation of strategies for improvement
- \$5 M for each FY08-12

Biomass Feedstock Production

House: Biomass Energy Reserve (BER)

- Financial and technical assistance dedicated energy crops (including 5-year contracts) for cellulosic production
- Incentives for harvesting, storing and transporting biomass
- 50-mile radius of a facility
- Mandatory Funding

Senate: Biomass Crop Transition Assistance

- Stimulate the production of annual and perennial biomass crops
- Financial and technical assistance for establishment costs
- Fixed assistance payment to producers for harvesting, storage and transportation
- \$160 M in mandatory funding during FY08-12

Forest Programs

House

- Forest Biomass for Energy
 - Competitive R&D
 - \$15 M mandatory for each FY08-12
- Community Wood Energy Program
 - Matching grants for State and local govt to carryout feasibility studies and to install wood energy systems
 - Discretionary funding

Senate

- Forest Biomass for Energy
 - Same as House
 - \$5 M discretionary for each FY08-12
- Community Wood Energy Program
 - Same as House
 - \$5 M discretionary for each FY08-12

Some House Specific Programs

- Agriculture Biofuels from Biomass Internship
 - Provides undergraduates or graduates from universities in states with farm-based economies with an internships in the US govt and nongovernmental organizations
 - Requires state matching funds
- Biomass Inventory Program
 - National inventory of biomass resources by county-by-county basis

Some House Specific Programs

- **Farm Energy Production Pilot Program**
 - Provides grants for farmers which demonstrate the feasibility of making a farm energy neutral using existing technologies (\$5 M FY08-12)
- **Biomass Inventory Program**
 - National inventory of biomass resources by county-by-county basis
- **Supplementing Corn as an Ethanol Feedstock**
 - Grants to demonstrate using sweet sorghum and switchgrass as a feedstock for ethanol
 - \$1 M each for > 20 universities for 3-years demonstrations
 - \$ 20 M in CCC funding

Some Senate Specific Programs

- Regional Biomass Crop Experiments
 - Provides 10 competitive grants to geographically diverse land-grant colleges and universities for regional bioenergy crop research experiments
 - Calls for coordination with other bioenergy entities
 - Establishes a “best practices” database (\$40 M during FY08-10)
- New Century Farm Project
 - Supports the development and operation of an integrated and sustainable biomass, feedstock, and biofuels production system to serve as a model (\$15 M during FY08-12)

Some Senate Specific Programs

- Rural Nitrogen Fertilizer Study
 - Provides assistance for a feasibility analysis and recommendations to “promote the local production of nitrogen fertilizer from renewable energy sources in rural areas.” (\$1 Million FY08)
- Biochar Research, Development and Demonstration
 - Competitive grants for R&D production and use of biochar
 - \$3 M of discretionary funding each FY08-12

Senate Tax Package Energy Highlights

- Electricity Generation
 - Credit for Residential and Business Wind
 - Landowner incentive for transmission build-out
 - Exception to the reduction for renewable electricity credit
- Extends special depreciation for cellulosic ethanol
- Production credit for cellulosic ethanol of a total of \$1.25/gallon extended till 2015
- \$0.10 credit for production of fossil free alcohol fuel
- Reduces ethanol tax credit from \$0.51 to \$0.46/gallon beginning in the first calendar year which 7.5 BG of ethanol is produced
- Extends the ethanol tariff from Dec. 2008 through Dec. 2010

Initiatives that Need Attention

Level the Playing Field Among Energy Sources

- Repeal tax incentives for fossil fuels in EPAct of '05
- Clearly reflect the total cost of petroleum including the cost of war, environmental externalities and social implications in the price of petroleum products

“We cannot become what we need to be by remaining what we are.” –Max DePree, Chairman emeritus of Herman Miller, Inc.

E.g. Loan Guarantees

Loan Guarantees (Title XVII & XV, EPLA '05)

- Risk mitigation for new technology
 - avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases
- In Oct. DOE announced the Final Rule for the program
- 16 projects invited to submit pre-applications
 - 6 of the 16 projects are for biomass
- Fiscal Year 2008: \$38.5 billion
 - \$20.5 billion for nuclear energy
 - \$10 billion for renewable energy and energy efficiency
 - \$8 billion for clean coal technology

Initiatives that Need Attention

Stop Subsidizing Anti-competitive Behavior

- Fully enforce competition laws
- Equitably distribute federal payments by closing loopholes that make excessive federal payments to agri-businesses (enact payment limitations)
- Direct agriculture payments to producers not processors, including ethanol blenders credits

Initiatives that Need Attention

Education and Competitiveness Must be a Core Part of the Production of Biofuels/products

- Take land-grant universities “back to the future” by funding research on sustainable bioenergy
- Develop human capacity in our rural communities to spur innovation, entrepreneurship to support a growing biofuels/products industry
- Provide incentives to help bridge the gap between demonstration and commercialization so the US is the leader in biomass technologies
- Incentives and complimentary policies will need sustained support until environmentally and economically viable

Land Grant Universities

- What are the appropriate feedstocks for different regions of the country?
- Appropriate Technologies
- Research on sustainable and rural development
- Development of biobased co-products and markets for them
- Factors that need to be considered
 - Climate
 - Soil
 - Native Species
 - Natural Pests

Capacity Building

USDA Rural Development and Natural Resources Conservation Service offices and Extension Service overall should include technical assistance for renewable energy

- Public-Private Partnerships
- Management Assistance
- Strategic Business and Financial Planning
- Continuing Education
- Spur Innovation

Initiatives that Need Attention

Connect Sustainable Agriculture to Energy & Environment

- Carbon Regulation (e.g. Carbon Tax, Cap and Trade)
- Reduce encroachment by valuing environmental and energy services of sustainable agriculture products and practices
- Encourage collaboration among state agencies (energy, natural resources, agriculture and commerce) and between state and the federal government
- Education and outreach for our community and public re: sustainable agriculture/energy technologies

DOE Feedstock Production - Regional Biomass Energy Feedstock Partnerships

- Will develop sustainable biomass resources on a regional basis by conducting resource assessments by feedstock types and regions
- Includes participants from Sun Grant Initiative universities, National Biomass State & Regional Partnership organizations, DOE, DOE National Labs, USDA, other academia, industry, environmental organizations, farm groups, etc.
- Activities include Feedstock Development (crop trials) and Feedstock Resource Assessment (supply curves, GIS tool)



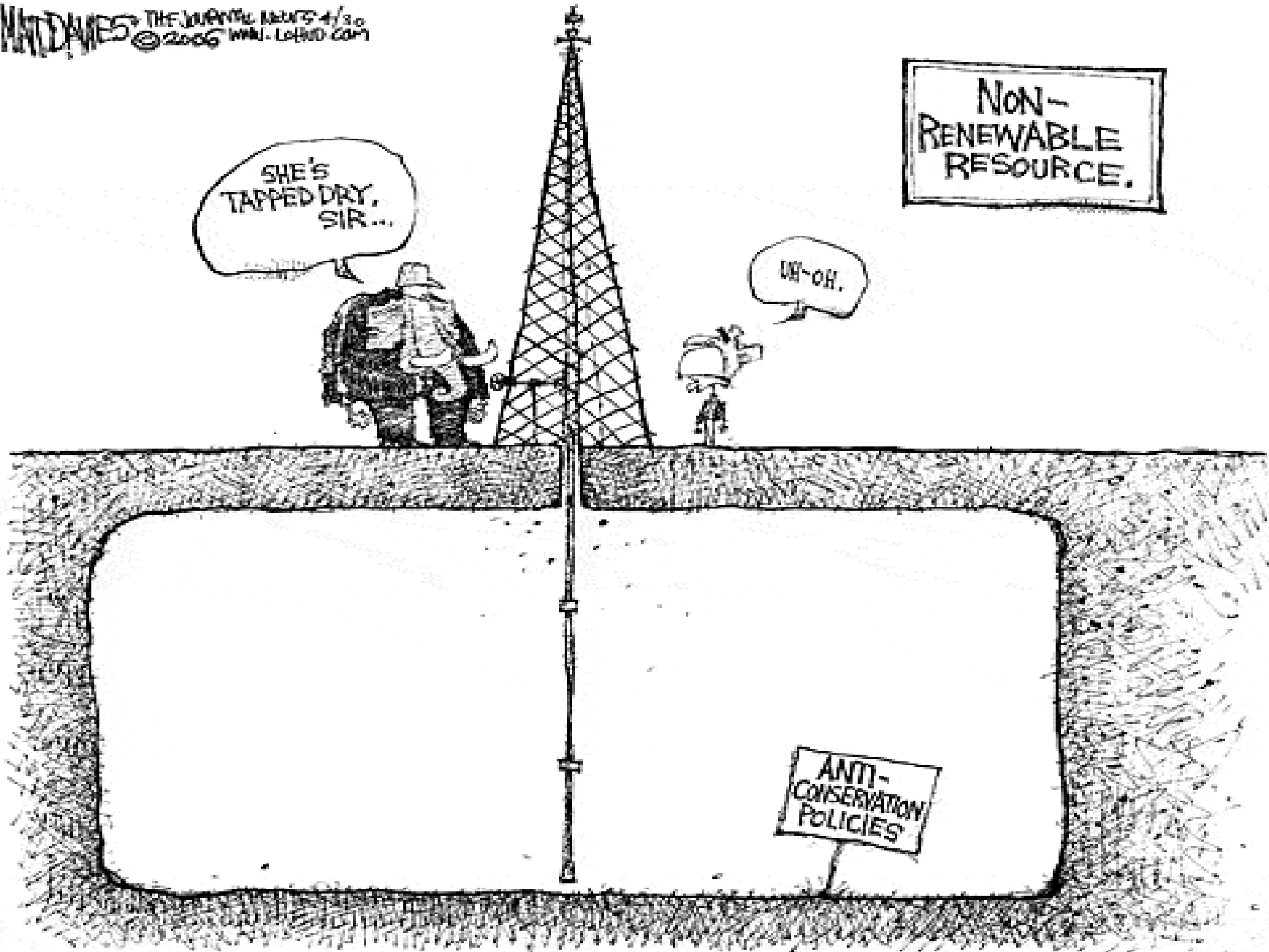
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Ag can be a part of the Clean Energy and Climate Solution

- **There is No Silver Bullet**
- New Policies
- New Technologies
- New Feedstocks (including wastes)
- Conservation & Efficiency Efforts
- Decreased Petroleum for Transportation Needs
 - Flex-Fuel Vehicles/Plug-In Hybrids
 - Biobased products and renewable energy can reduce fossil energy use/ greenhouse emissions



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