



## US Energy Policy

- **June 6, 1967**-Several oil producing countries limited exports in response to Six Day War.
- **October 15, 1973**-OPEC proclaimed embargo.
  - US importing 35% of energy needs
  - Governments, corporations unprepared for what would happen next
- **March 18, 1974**-OPEC lifted embargo.

## The Brazilian Experience

- In 1956 President Juscelino Kubitschek decided to move Atlantic coastal capital inland and settle the vast interior.
- In response to the 1974 oil embargo, General Ernesto Geisel, facing economic shock decreed that Brazil could and would become energy independent.
- Using research started in 1920 and during World War II.

## List of United States Energy Acts

1920	Federal Water Power Act	Created Federal Power Commission to coordinate federal hydroelectric projects
1935	Federal Power Act	Put electricity sale/transportation regulation under Federal Power Commission
1935	Public Utility Holding Company Act	Regulated that size of electric utilities, limiting each to a specific geographic area
1936	<b>Rural Electrification Act</b>	Funded electric cooperatives to bring electricity to underserved rural areas
1938	Natural Gas Act	Gas pipelines regulated under Federal Power Commission

List of United States Energy Acts con't.		
1946	Atomic Energy Act	Put development of nuclear weapons/power under civilian control (instead of military)
1954	Atomic Energy Act	Opened way for civilian nuclear power program
1975	<b>Energy Policy and Conservation Act</b>	Created Strategic Petroleum Reserve, established first automobile fuel economy standards
1977	<b>Department of Energy Organization Act</b>	Created Federal Department of Energy
1978	National Energy Act	Encouraged conservation efforts in homes, schools and other public buildings. Restricted new power plants using oil or natural gas. Repealed in 1987. <b>Opened electric markets to alternative power producers</b>

List of United States Energy Acts con't.		
1980	<b>Energy Security Act</b> -US Synthetic Fuels Corporation Act -Biomass Energy and Industrial Fuels Act -Renewable Energy Resources Act -Solar Energy and Energy Conservation Act -Geothermal Energy Act -Ocean Thermal Energy Conservation Act	Created Synthetic Fuels Corporation to market fossil fuels alternatives. Provided loan guarantees for biomass and alcohol fuels projects
1982	<b>Nuclear Waste Policy Act</b>	First Comprehensive nuclear waste legislation
1992	<b>Energy Policy Act</b>	<b>Required alternative fuel vehicles use in some private/government fleets</b>
2005	<b>Energy Policy Act</b>	<b>Provided tax incentives for conservation and use alternative fuels</b>
2007	<b>Energy Independence and Security Act</b> <b>America Competes Act</b> <b>[1]</b>	Increased fuel economy requirements, phased out incandescent light bulbs, encouraged bio fuel development

## List of United States Energy Acts con't.

2008	The Energy and Tax Extenders Act of 2008 [2] Food Conservation and Energy Act of 2008 [3] Strategic Petroleum Reserve Fill Suspension and Consumer Protection Act America Competes Act Energy Improvement and Extension Act	none
2009	The American Recovery and Reinvestment Act	Funding for an electric smart grid, Renewable energy tax cut, Weatherizing modest-income homes, <b>7.2 Billion High speed internet, 17 Billion Renewable fuels</b>

## Energy Policy Act of 2007

- Signed into law December 19, 2007
- Mandates 36 billion gallons of ethanol by 2022 with 21 billion gallons coming from cellulosic feedstocks. (2005 Energy Policy Act established target for 2012 at 7.5 billion gallons).
- The 36 billion gallons is expected to account for 22% of the country's vehicle fuel mix in 2022.

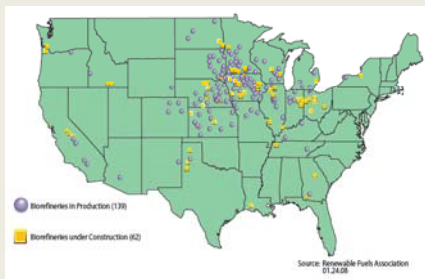
**Current U.S.  
annual  
liquid fuel  
consumption ~  
200 Billion gallons  
about ½ of our  
total oil use**



Approximately 150 billion gallons of the US annual liquid fuel consumption is gasoline.

This establishes a 10% oxygenate “blend wall” of 15 billion gallons for ethanol. Marketing ethanol beyond the blend wall capacity will be more difficult.

## U.S. Corn Ethanol Production



- Current Production Capacity
  - 10.58 billion gal/yr
- Plants under construction capacity
  - 2.40 billion gal/yr
- Total Capacity
  - 12.98 billion gal/yr

Source: <http://www.ethanolrfa.org>

## Energy Independence and Security Act of 2007(cont.)

- Other important energy mandates:
  - CAFÉ standards to 35 mpg by 2020
  - Establishes grant programs for fuel infrastructure corridors
  - Provides funding for advanced biofuels research and development, including;
    - \$50 M dedicated to MSU as part of Great Lakes Bioenergy Research Center
- Addresses dependence on fossil fuels, global warming, and energy security.

**Despite attempts to amend the renewable fuel production mandates, Congress has held firm. So far....**



**2008**



# **Farm Bill**

**Historic new investments in  
food, farm, conservation, and  
energy programs.**



**2008**



# **Farm Bill**

**Renewable Energy  
Provisions**

***Section 9002:  
Biobased Market Program***

- Provides provisions for a federal procurement program and a **voluntary labeling program for biobased products**. The bill provides \$1 million in mandatory Fiscal Year (FY) 2008 funding and \$2 million per year from FY 2009 through 2012.
- Additionally, the bill authorizes additional funds in the amount of \$2 million per year, from FY 2009 to 2012.

***Section 9003:  
Biorefinery Assistance Program***

- Provides **loan guarantees** for the development, construction and retrofitting of commercial-scale biorefineries, and **grants** to help pay for the **development and construction costs of demonstration-scale biorefineries**. Provides \$75 million in FY 2009 and \$245 million in FY 2010 for **commercial-scale biorefinery loan guarantees**. It also authorizes funding of \$150 million per year starting in FY 2009 and continuing through FY 2012 for both demonstration- and commercial scale biorefineries.

***Section 9004:  
Repowering Assistance***

- Provides for payments to biorefineries (that were in existence at the time the 2008 Farm Bill was passed) to replace fossil fuels used to produce heat or power to operate the **biorefineries with renewable biomass**. The bill provides \$35 million for FY 2009 that will remain available until the funds are exhausted. The bill also authorizes additional funding of \$15 million per year, from FY 2009 through 2012.

***Section 9005:  
Bioenergy Program for Advanced Biofuels***

- Provides for payments to be made to eligible **agricultural producers to support and ensure an expanding production of advanced biofuels**. The bill provides \$55 million in FYs 2009 and 2010, \$85 million in FY 2011, and \$105 million in FY 2012. Additionally, the bill authorizes additional funds in the amount of \$25 million per year, from FY 2009 to 2012.

***Section 9006:  
Biodiesel Fuel Education Program***

- Provides competitive grants to eligible entities to educate government and private entities that operate vehicle fleets and the public about the benefits of biodiesel fuel use. The bill provides \$1 million in funds per year, from FY 2008 to 2012.

***Section 9007:  
Rural Energy for America Program***

- Expands and renames the program formerly called the Renewable Energy Systems and Energy Efficiency Improvements Program. Under the expansion, hydroelectric source technologies will be added as eligible; **energy audits will be included as eligible costs, and; loan limits will be increased.** The bill provides \$55 million for FY 2009, \$60 million for FY 2010, and \$70 million for FYs 2011 and 2012. It also authorizes additional funds of \$25 million per year, from FY 2009 through 2012.

***Section 9008:  
Biomass Research  
and Development Initiative***

- Provides competitive **grants**, contracts and financial assistance to eligible entities to carry out **research on and development and demonstration of biofuels and biobased products, and the methods, practices and technologies for their production**. The bill provides \$20 million in funds in FY 2009; \$28 million in FY 2010; \$30 million in FY 2011 and \$40 million in FY 2012. In addition, there is a funding authorization of \$35 million per year, from FY 2009 through 2012.

***Section 9009:  
Rural Energy Self-Sufficiency Initiative***

- Provides **grants** for the purpose of enabling eligible **rural communities to substantially increase their energy self-sufficiency**. The bill authorizes funds of \$5 million per year, beginning in FY 2009 and continuing through FY 2012. (Bio Towns)

***Section 9010:  
Feedstock Flexibility Program for  
Bioenergy Producers***

- Subsidizes the use of **sugar** for ethanol production through federal purchases of surplus sugar for sale to ethanol producers. Funds will be provided in sufficient amounts to carry out this program.

***Section 9011:  
Biomass Crop Assistance Program***

- **Provides support to establish and produce crops for conversion to bioenergy in project areas**, and to help with collection,
- harvest, storage and transportation of eligible material for use in a biomass conversion facility. The program will be
- implemented by the Farm Service Agency with support from other federal and local agencies.

***Section 9012:******Forest Biomass for Energy***

- The bill authorizes the Forest Service to conduct a comprehensive research and development program to use forest biomass for energy. The Forest Service, other federal agencies, state and local governments, Indian tribes, land-grant colleges and universities, and private entities are eligible to compete for program funds. Priority research projects include:
  - The **use of low-value forest biomass for energy** from forest health and hazardous fuels reduction treatment.
  - The integrated production of energy from forest biomass into biorefineries or other existing manufacturing.
  - The development of **new transportation fuels from forest biomass**.
  - The improved growth and yield of trees for renewable energy production.

***Section 9013:******Community Wood Energy Program***

- Provides **grants** to state and local governments to develop **community wood energy plans** and to acquire or upgrade wood energy systems. The bill authorizes funds in the amount of \$5 million per year from FY 2009 through FY 2012.

## Michigan Energy Legislation 2008

### Clean , Renewable, and Efficient Energy Act of 2008

#### Clean, Renewable , and Efficient Energy Act of 2008

- **SB 213 (PA 295)**
  - RPS, Energy Optimization Plans, State government Efficiency and Conservation, Wind Resource Zones, Net Metering
- **SB 1048 (PA 287)**
  - Tax credits for various home improvements and RPS costs
- **HB 5524 (PA 286)**
  - Amendment to 2000 PA 141: Michigan Customer Choice and Electricity Reliability Act

## Executive Summary

- SB 213 (PA 295) Basic Idea: RPS of 10% by 2015
- Applies to all Michigan electricity providers. Large utilities can own only 50% of new renewable facilities.
- What qualifies towards RPS
- Michigan Incentive i.e Michigan made equipment

## Executive Summary Continued

- RPS Cost Recovery
  - Charges: Not more than \$3/ month for residential; \$16.58/month for commercial; \$187.50/month for industrial
- Energy Optimization Plans and energy efficiency and conservation programs for all customer classes. High standards for state government efficiency and conservation

## Executive Summary Continued

- Wind Resource Zones including: expedite transmission planning, siting and construction
- **Net Metering** for <20kW renewable generators,
  - **Program size is 1% for in-state peak load**
- Michigan income tax credits for some home energy improvements
- Limits Michigan's electric customers choice to 10% of load

## National and State Funding Opportunities



### Incentives and Tax Credits

**Database of State Incentives for Renewable Energy (DSIRE)**

This site includes a Michigan Incentives for Renewable Energy page, a page highlighting many Federal Incentives for Renewable Energy, and a Financial Incentives summary table for all states and the federal government.

<http://www.dsireusa.org/>

**Federal Tax Credits for Energy Efficiency**

These credits are available for consumers, homebuilders, appliance manufacturers, and commercial buildings.

[http://www.energystar.gov/index.cfm?c=products.pr\\_tax\\_credits#s8](http://www.energystar.gov/index.cfm?c=products.pr_tax_credits#s8)

**Biofuel Infrastructure Grant Incentive Program**

The Clean Energy Coalition's Biofuel Infrastructure Grant Incentive Program provides funds to Michigan public service stations to install or convert fuel delivery systems to sell high blend ethanol E85.

<http://www.cec-mi.org/programs/big.htm>

**Department of Energy EERE Federal Incentives and Laws  
(Alternative Fuels & Advanced Vehicles Data Center)**

This database provides a comprehensive listing of state and federal laws & incentives related to alternative fuels, vehicles, air quality, fuel efficiency, and other transportation-related topics.

[http://www.eere.energy.gov/afdc/incentives\\_laws.html](http://www.eere.energy.gov/afdc/incentives_laws.html)

## **Other Grants and Funding Opportunities**

### **Michigan Economic Development Corporation**

List of numerous financial incentives available in MI, includes 21st Century Jobs Fund, MNEA, renewable energy renaissance zones, etc.

<http://www.michigan.org/medc/ttc/Alternative.Energy/Financial.Incentives/>

### **Department of Energy EERE Financial Opportunities**

The Office of Energy Efficiency and Renewable Energy (EERE) works with business, industry, universities, and others to increase the use of renewable energy and energy efficiency technologies. One way EERE encourages the growth of these technologies is by offering financial assistance opportunities for their development and demonstration.

<http://www1.eere.energy.gov/financing/>

### **Department of Energy EERE Project Management Center**

This site contains a listing of excellent resources for locating energy efficiency and renewable energy business opportunities.

<https://www.eere-pmc.energy.gov/Business.aspx>

**Federal Grants**

To find and apply for numerous grant programs offered by the federal government

[www.grants.gov](http://www.grants.gov)

**Renewable Fuels Foundation**

The RFF seeks to provide funding to universities and non profit organizations, such as research consortiums, in the United States. Funded projects will focus directly on research, development and public policy with national implications.

<http://www.renewablefuelsfoundation.org/grants/>

**Michigan Department of Environmental - Quality Pollution Prevention Loans**

The Small Business P2 Loan Program provides funding for projects that: eliminate or reduce waste at the business location (source reduction), result in environmentally sound reuse and recycling for the loan applicant's generated wastes, conserve energy or water on-site, or are a qualified agricultural energy production system.

[www.michigan.gov/deqp2loan](http://www.michigan.gov/deqp2loan)

**Michigan Public Service Commission – Low Income and Energy Efficiency Fund**

The fund supports the implementation of energy-efficiency projects and renewable-energy projects in the state. Businesses, non-profit organizations, government agencies and/or schools are eligible to apply.

<http://www.michigan.gov/lieefund>

## **Biomass Research and Development Initiative**

The Biomass Research and Development Initiative (BRDI) is a multi-agency effort to coordinate and accelerate all Federal biobased products and bioenergy research and development.

<http://www.brdisolutions.com>

## **In summary....**

**U.S. Energy Policy-** Hydrogen, Conservation, Nuclear, Hydro, Wind, Geothermal and Solar!

**2008 Farm Bill Funding Opportunities.**

### **The Brazilian Experience**

- In 1980 Brazil imported 80% and the USA imported 35% of its oil.
- Today, the USA imports 60% of its oil, while Brazil is a net oil exporter, and also exports ethanol.

**With competent, decisive policy, energy independence is possible.**

“I believe that the great creator has put over and oils on this earth to give us a breathing spell. ...As we exhaust them, we must be prepared to fall back on our farms, which is God’s true storehouse and can never be exhausted. For we can learn to synthesize materials for every human need from things that grow.”

- George Washington Carver

# Thank You!

Michigan Agri-Energy Conference  
2009