

*Indiana Conference on
Energy Management
"Renewable Energy"*

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Who Am I:



- ***Attorney with more than 14 years experience:***

Government Affairs/Public Policy

Federal/State/Local

Procurement and Contracts

Regulatory Compliance

Trade Association Management

Business Development

Grant Writing

Consultant Expertise:

- Alternative Fuels & Renewable Energy
- Bioenergy
- Energy Efficiency and Conservation
- Emission Reductions
- Environmental
- Defense and Transportation
- Hybrid Propulsion and Fuel Cells

Renewable Energy

- How Did We Get Here?
- What is Renewal Energy?
 - Why Does It Matter?
 - Trends?
- Business Case
- Success Stories
- Next Steps

How Did We Get Here

- President's Energy Vision
- 2005 National Energy Policy Act
- 2007 Federal Legislative Initiatives
- 2007 Indiana Legislative Initiatives
- Indiana Energy Environment
- DOE: World Energy Use to Increase 57% by 2030

President's Energy Vision:

- Since 2001, the Administration has spent nearly \$10 billion to develop cleaner, cheaper, and more reliable alternative energy sources.

- Advanced Energy Initiative: Provides for a 22% increase in funding for clean-energy technology research at the Department of Energy:

Changing the way we fuel our vehicles: Use technologies that reduce oil by improving efficiency, expansion of alternative fuels from homegrown biomass, and development of fuel cells that use hydrogen from domestic feed stocks.

Changing the way we power our homes and businesses: Generating more electricity from clean coal, advanced nuclear power, and renewable resources such as solar and wind.

2005 National Energy Policy Act:

- Vehicle Fuel Economy: Increased CAFE standards - Light trucks and SUVs from 20.7 mpg to 22.2 mpg for the current model year 2007 vehicles.
- Tax Incentives for Efficient Vehicles: Up to \$3,400 per vehicle - Encourage purchase of highly efficient hybrid and clean diesel vehicles.
- Clean Diesel Regulations: Emissions from both highway and non-road diesel engines and fuels - Reducing emissions of sulfur and nitrogen oxides by more than 90%.
- Renewable Ethanol and Biodiesel: Renewable Fuels Standard - Require the use of 7.5 billion gallons of ethanol and biodiesel by 2012, and extended tax benefits enabling both fuels to compete in today's market.
- Alternative Fuel Facilities: 30% Tax Credit - Installation of alternative fuel stations, up to a maximum of \$30,000 per year. Approximately 600 public "E85" (85% ethanol) fueling stations exist in the U.S.
- Hydrogen Vehicles: \$1.2 billion Hydrogen Fuel Initiative - Technology for commercially viable hydrogen-powered fuel cells to power cars, trucks, homes, and businesses with no pollution or greenhouse gases.

2007 Federal Legislative Initiatives

- American Fuels Act (Lugar)
- National Fuels Initiative (Lugar)
- SAFE Energy Act
- American Automobile Industry Promotion Act
- Biofuels Energy Independence Act
- Future Fuels Act

2007 Federal Legislative Initiatives

- Energy Savings Act
- Renewable Fuels, Consumer Protection, and Energy Efficiency Act
- DRIVE Act
- Small Energy Efficient Business Act
- CLEAN Energy Act
- Etc. etc. etc. and More to Come

2007 Indiana Legislative Initiatives

- Bioproducts Initiative (HEA 1281)
- Flexible Fuel Vehicle Incentives (SEA 270)
- Home Energy Assistance Sales Tax Exemption (HEA 1037)

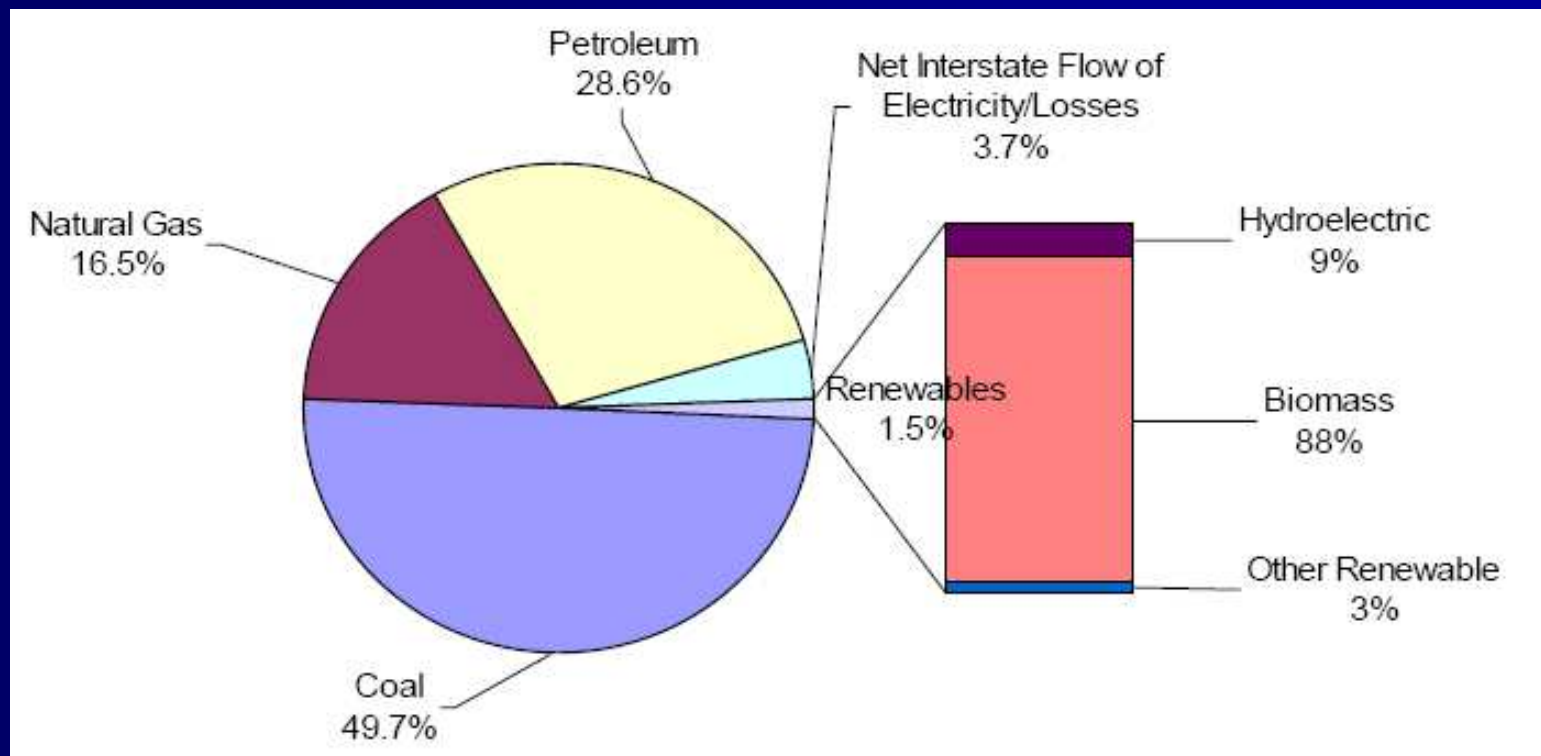
2007 Indiana Legislative Initiatives – Not Passed

- HB 1065 - Special fuel tax exemption for certain biofuels.
- HB 1121 - Corn checkoffs.
- HB 1276 - New generation tax credits.
- HB 1370 – Clean fuel vehicle deduction
- HB 1496 - Renewable energy resources.
- HB 1548 - Various energy incentives.
- HB 1591 - Renewable energy investment tax credit.
- HB 1629 - Biofuel pump grants.
- HB 1646 - Renewable fuels grants and tax credits.
- HB 1658 - Sustainable building property tax deduction
- HB 1812 – Energy efficient buildings
- SB 106 – Grants and loans for alternative fuel technology
- SB 155 - Alcohol blended fuel underground storage tanks.
- SB 158 – Corn checkoffs
- SB 348 – Renewable energy sources
- SB 395 - Renewable energy production incentives.
- SB 467 - Fuel standards.
- SB 496 – Waste to energy tax credit
- SB 525 - Various energy incentives.
- SB 564 – Taxation of diesel and biodiesel

Indiana's Energy Facts:

- 75% of Indiana's energy expenditures leave the state in exchange for out of state coal, natural gas and oil products
- Petroleum has increased in price by 50% in the past two years while natural gas prices have increased 50% in just one year
- Indiana power plants rank 12th in the nation for total retail sales
- Indiana consumers pay the 4th lowest electric rates in the nation
- Indiana mines 35(+) Million tons of coal a year
 - that is roughly equivalent to 3.5% of the total U.S. Production
- Primary Sources of Energy in Indiana, coal (53%), petroleum (29%), natural gas (17%) and renewables (1%)
- Indiana relies almost entirely on petroleum as a source of fuel for the transportation sector; however there is a continual increase in the usage of biofuels such as ethanol and soybiodiesel

Indiana Energy Sources



SOURCE:

Purdue University 2006 Indiana Renewable Energy Resources Study / Office of Energy Efficiency and Renewable Energy (Department of Energy)

(http://www.purdue.edu/dp/energy/pdf/Renewables_Report_2006.pdf)

Hoosier Homegrown Energy:

- Commits Indiana to use new and emerging technologies to convert Indiana coal, corn, soy and other renewable sources to energy.

Biodiesel:

- Domestic renewable fuel for diesel engines derived from natural oils like soybean oil.
 - Used in any concentration with petroleum based diesel fuel in existing diesel engines with little or no modification.
 - Not the same thing as raw vegetable oil. It is produced by a chemical process which removes the glycerin from the oil.

Ethanol: (ethyl alcohol or grain alcohol)

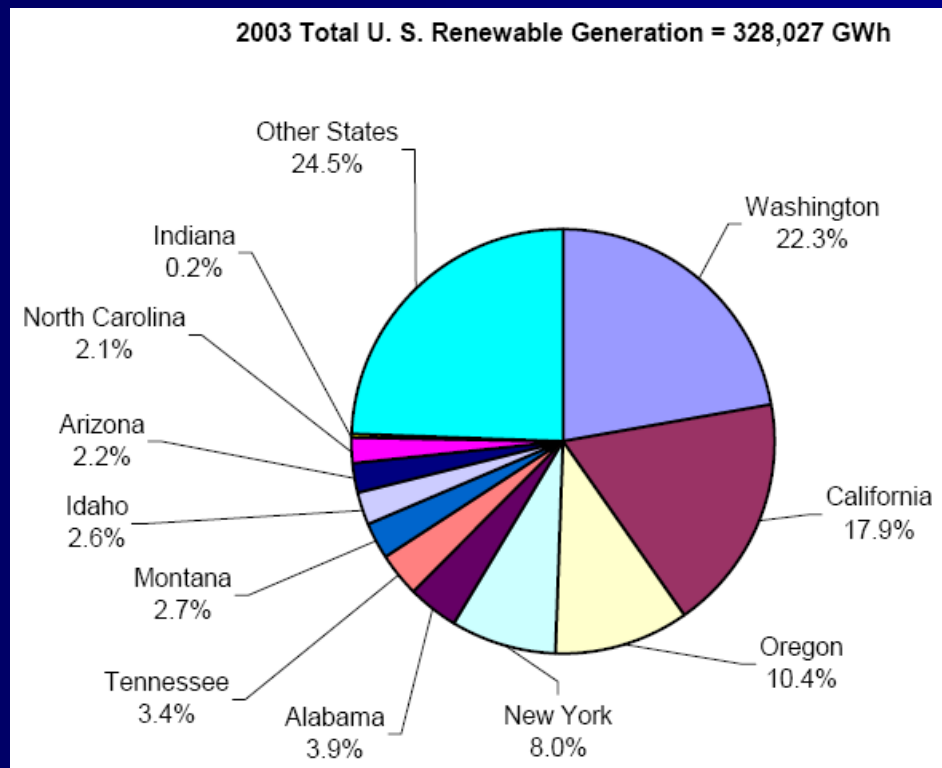
- From starch or sugar-based feedstocks
- Flammable, tasteless, colorless, mildly toxic chemical compound with a distinctive odor
- Alcohol found in alcoholic beverages.

Production adds 25-50 cents to the value of a bushel of corn, or as much as \$5.5 billion over the entire corn crop.

Production is the third largest use of U.S. corn, utilizing a record 1.43 billion bushels of corn in 2005.

Bushel of Corn = 2.5 gallons of ethanol

Indiana's Share of Renewable Generation



SOURCE:

Purdue University 2006 Indiana Renewable Energy Resources Study / Office of Energy Efficiency and Renewable Energy (Department of Energy)

(http://www.purdue.edu/dp/energy/pdf/Renewables_Report_2006.pdf)

What is Renewable Energy?

- “Energy Sources that are Replaced by Natural Process at a Rate Comparable to Their Use”
- Categories
 - Biofuels & Fuel Cells (mostly, mobile use)
 - All Others (mostly, stationary use)
- Should we add Reduced Usage? (Negawatts)

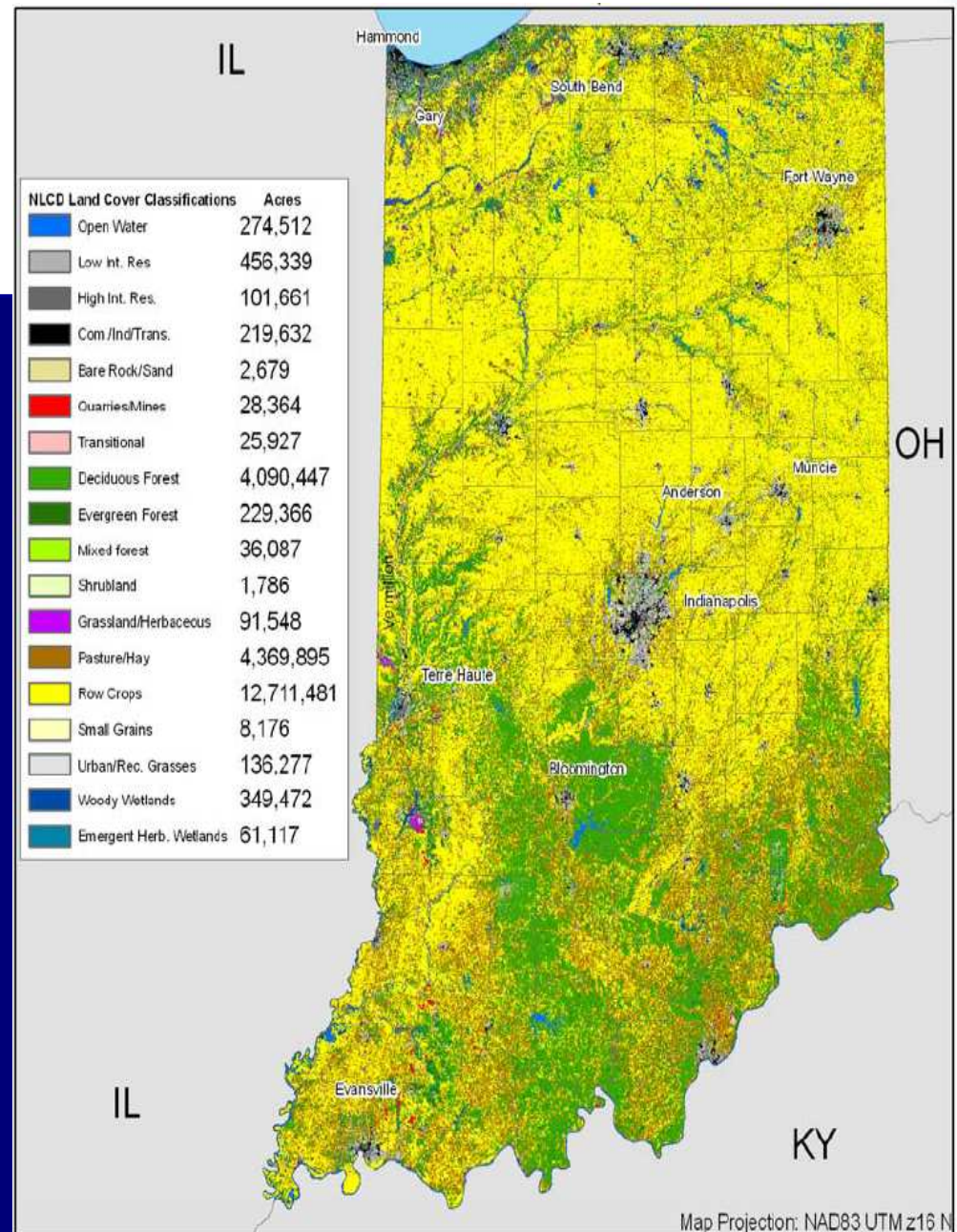
BioFuels

- Derived from “any plant derived organic matter available on a renewable basis”
- Biodiesel (and blended fuels)
- Ethanol Blends
- Biomass

BioFuels



SOURCE:
Indiana Energy Report 2007
(Indiana Office of Energy and
Defense Development)



Biodiesel

- Common Blend is B20
- Higher Octane than Petroleum Diesel
- Similar Mileage and Power
- Biodegradable and Nontoxic
- Reduces Emissions
- Highest Fuel “Energy Balance” of 3.2

SOURCES:

Indiana Office of Energy and Defense Development (www.in.gov/energy/research/factsheets.html)

Indiana Soybean Board (www.indianasoybeanboard.com)

Ethanol Blends



- E85 Blend for Flexible Fuel Vehicles
- E10 Blend is Approved for all Vehicles
- Higher Performance
- Cleaner Burning
- In producing, can utilize Combined Heat and Power generation

SOURCES:

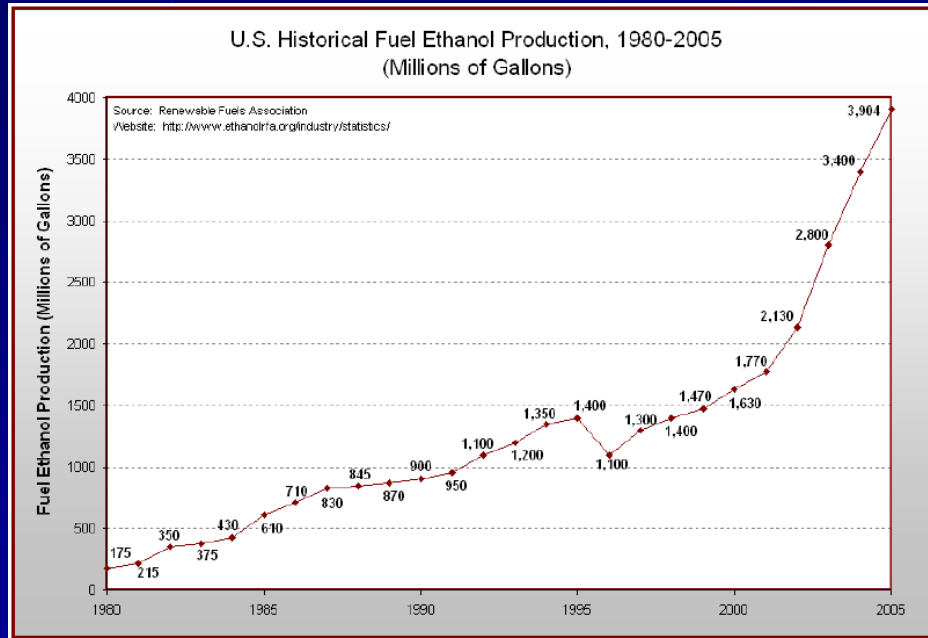
Indiana Soybean Board (www.indianasoybeanboard.com)

US Environmental Protection Agency

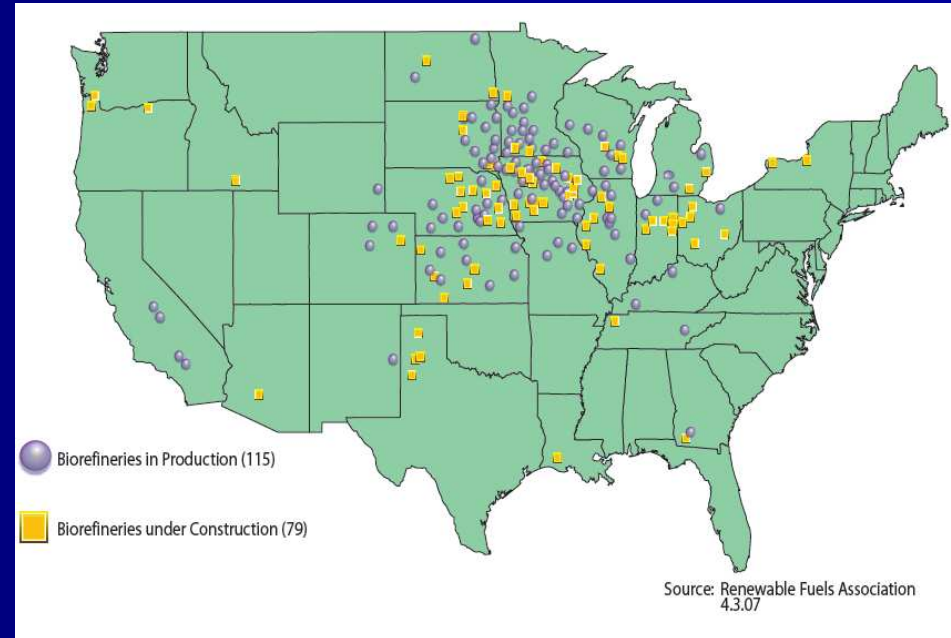


Ethanol Industry

Production Trend



Production Locations



SOURCES:

Indiana Energy Report 2007 (Indiana Office of Energy and Defense Development)

Renewable Fuels Association (www.ethanolrfa.org/industry/statistics/)

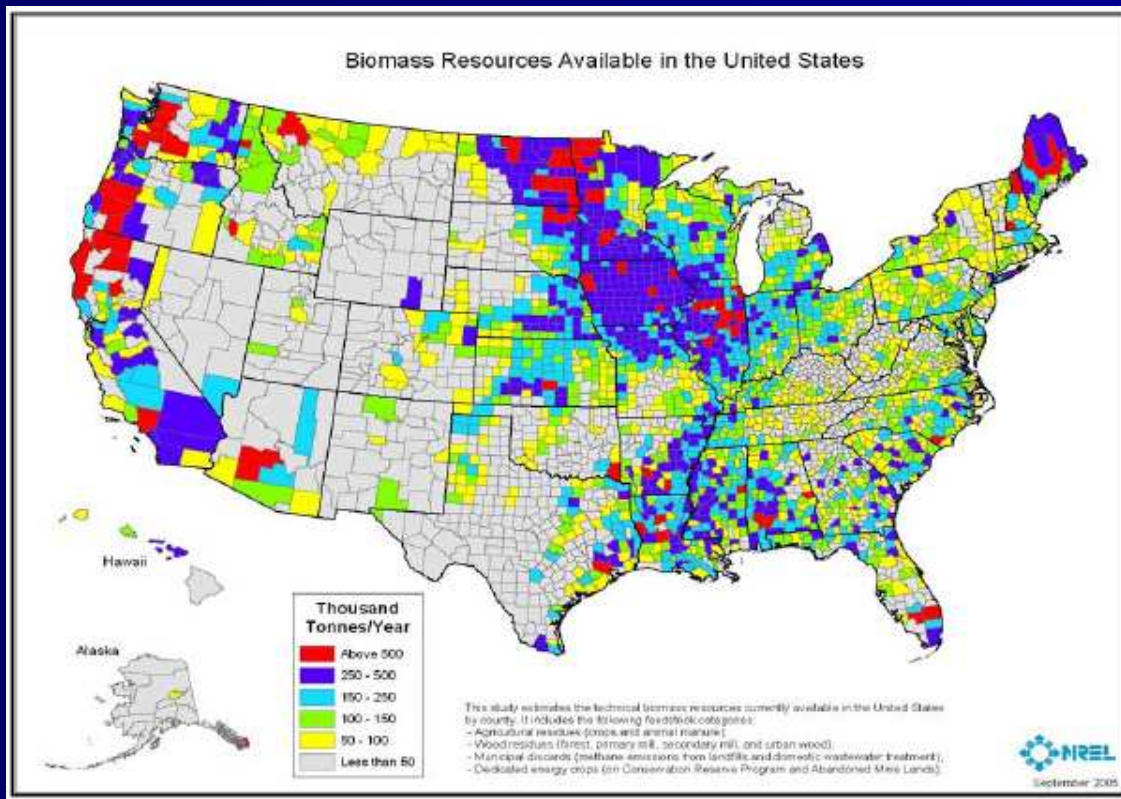
Indiana Fuels Tax Credits

- Clean Energy Tax Credit Program
- Biodiesel Production Credit
- Blended Biodiesel Production Credit
- Blended Biodiesel Distributors
- Ethanol Production Credit

SOURCE:

Indiana Economic Development Corporation
(www.in.gov/iedc/incentives/celanEnergy.html)

Biomass



SOURCE:

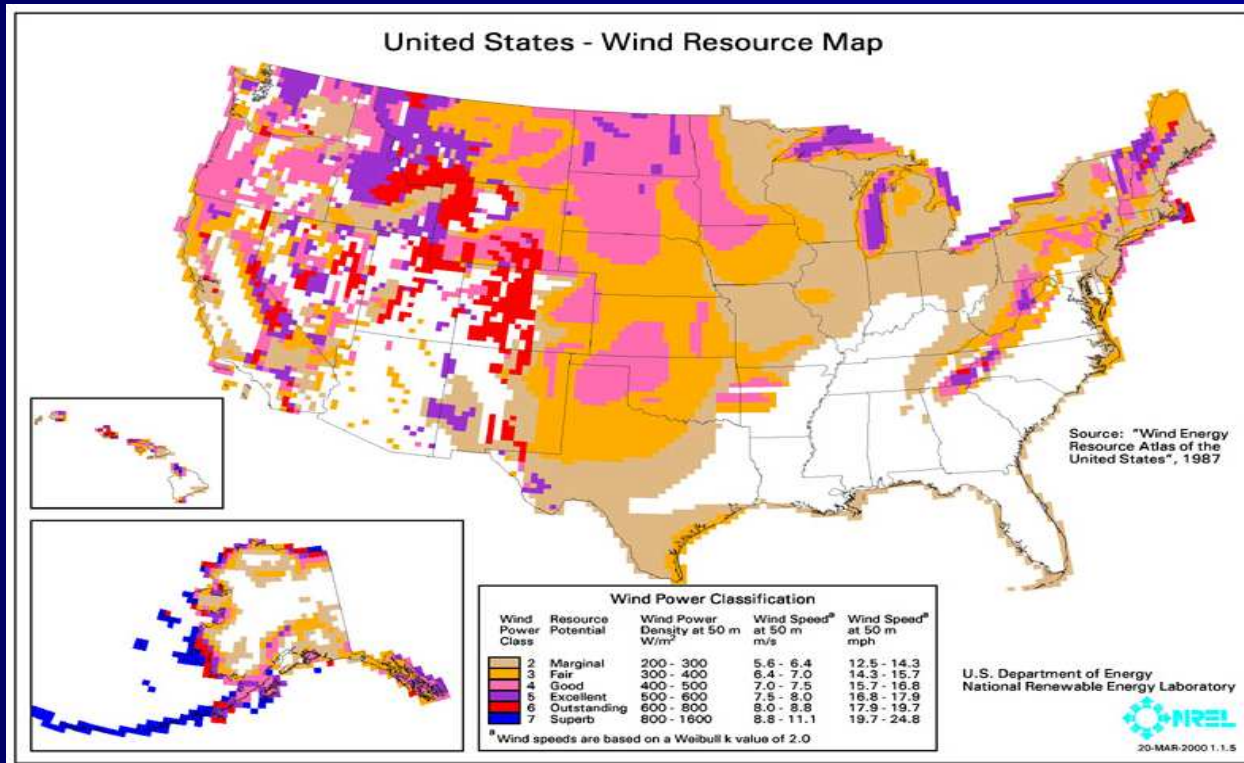
Purdue University 2006 Indiana Renewable Energy Resources Study / Office of Energy Efficiency and Renewable Energy (Department of Energy)

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Other Renewable Energy

- Wind
- Hydroelectric
- Solar
- Geothermal

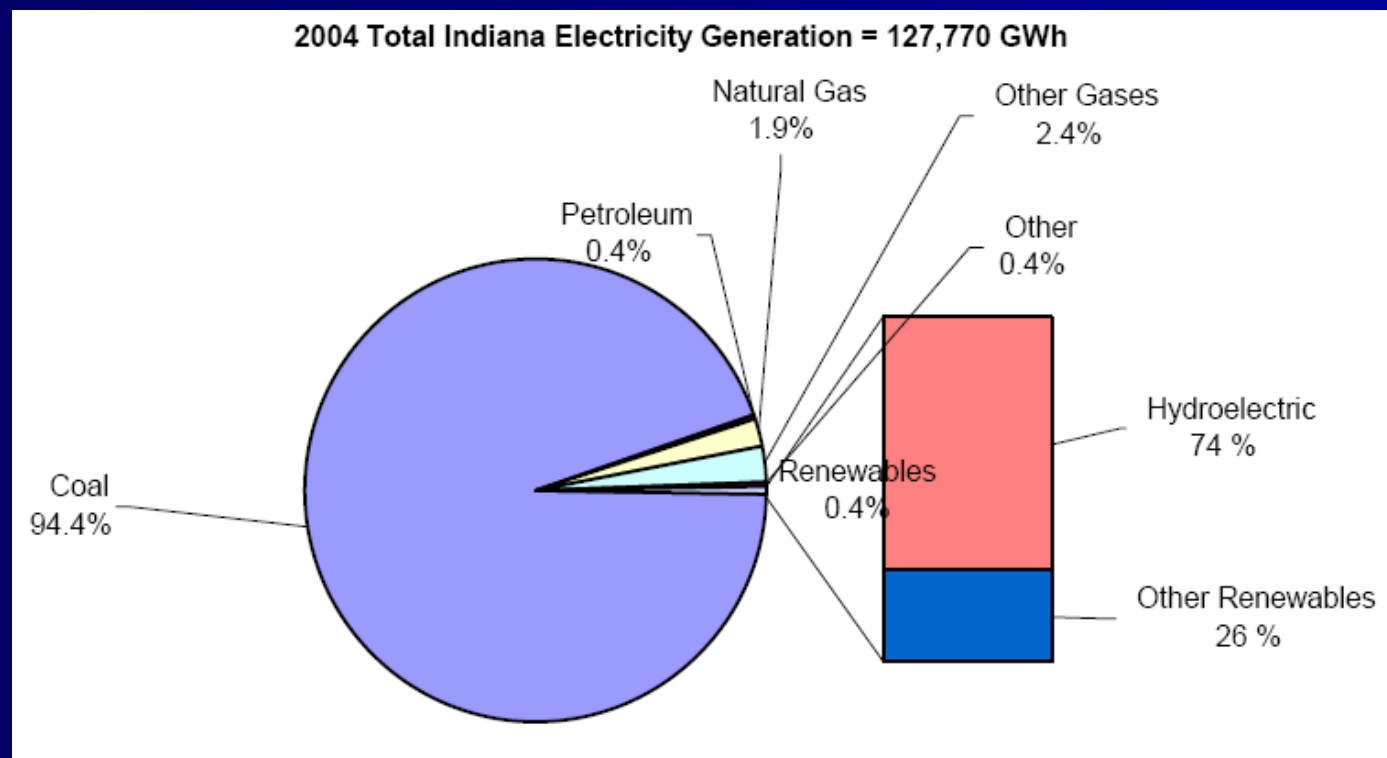
Wind (National)



SOURCE:

Purdue University 2006 Indiana Renewable Energy Resources Study
(http://www.purdue.edu/dp/energy/pdf/Renewables_Report_2006.pdf)

Hydroelectric (Indiana)



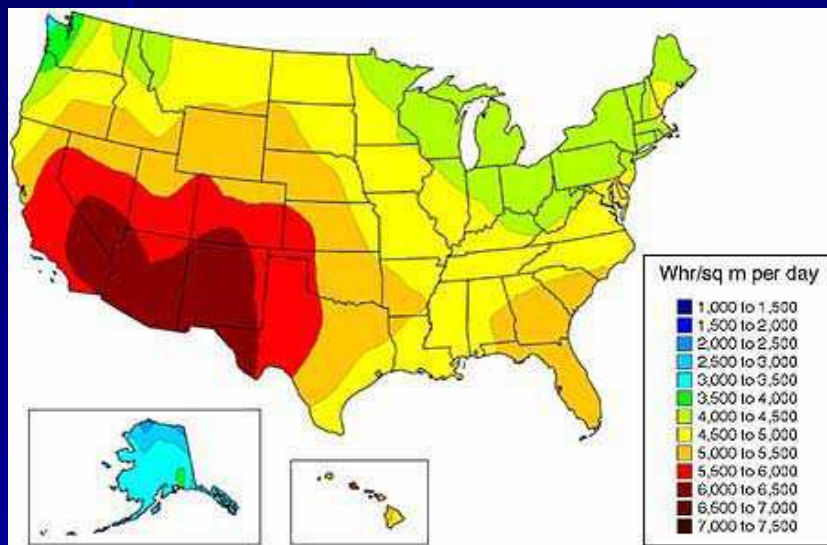
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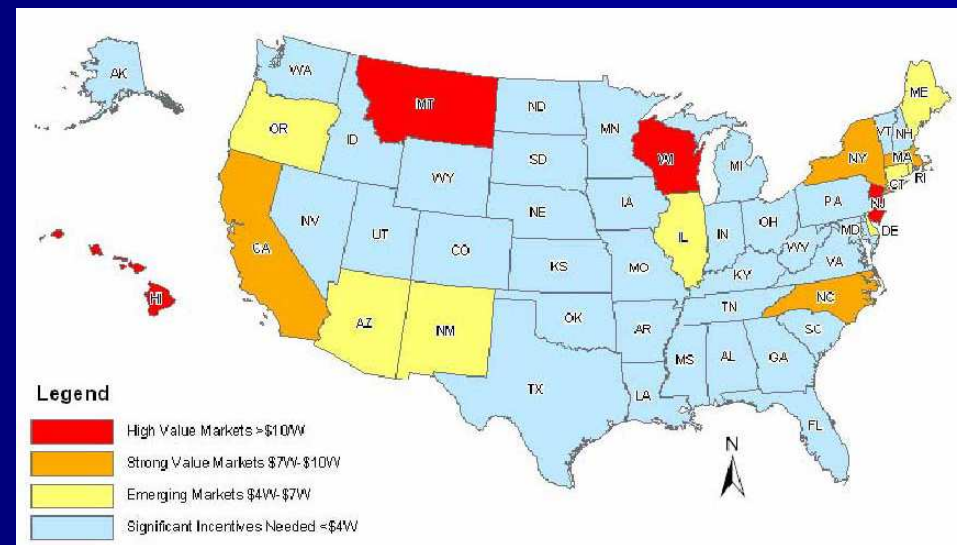
(http://www.purdue.edu/dp/energy/pdf/Renewables_Report_2006.pdf)

Solar (National)

Average Solar Energy Received



Breakeven Costs for Commercial Solar Energy



SOURCE:

Purdue University 2006 Indiana Renewable Energy Resources Study / Office of Energy Efficiency and Renewable Energy (Department of Energy)

(http://www.purdue.edu/dp/energy/pdf/Renewables_Report_2006.pdf)

Solar Credits/Incentives

- Business investment tax credit
- Million Solar Roofs Initiative
- Renewable Electricity Production Credit
- Renewable Energy Systems Exemption
- Alternative Power and Energy Grant Program
- Green Pricing Program
- Net Energy Credit
- Net metering rule

SOURCE:

Purdue University 2006 Indiana Renewable Energy Resources Study
(http://www.purdue.edu/dp/energy/pdf/Renewables_Report_2006.pdf)

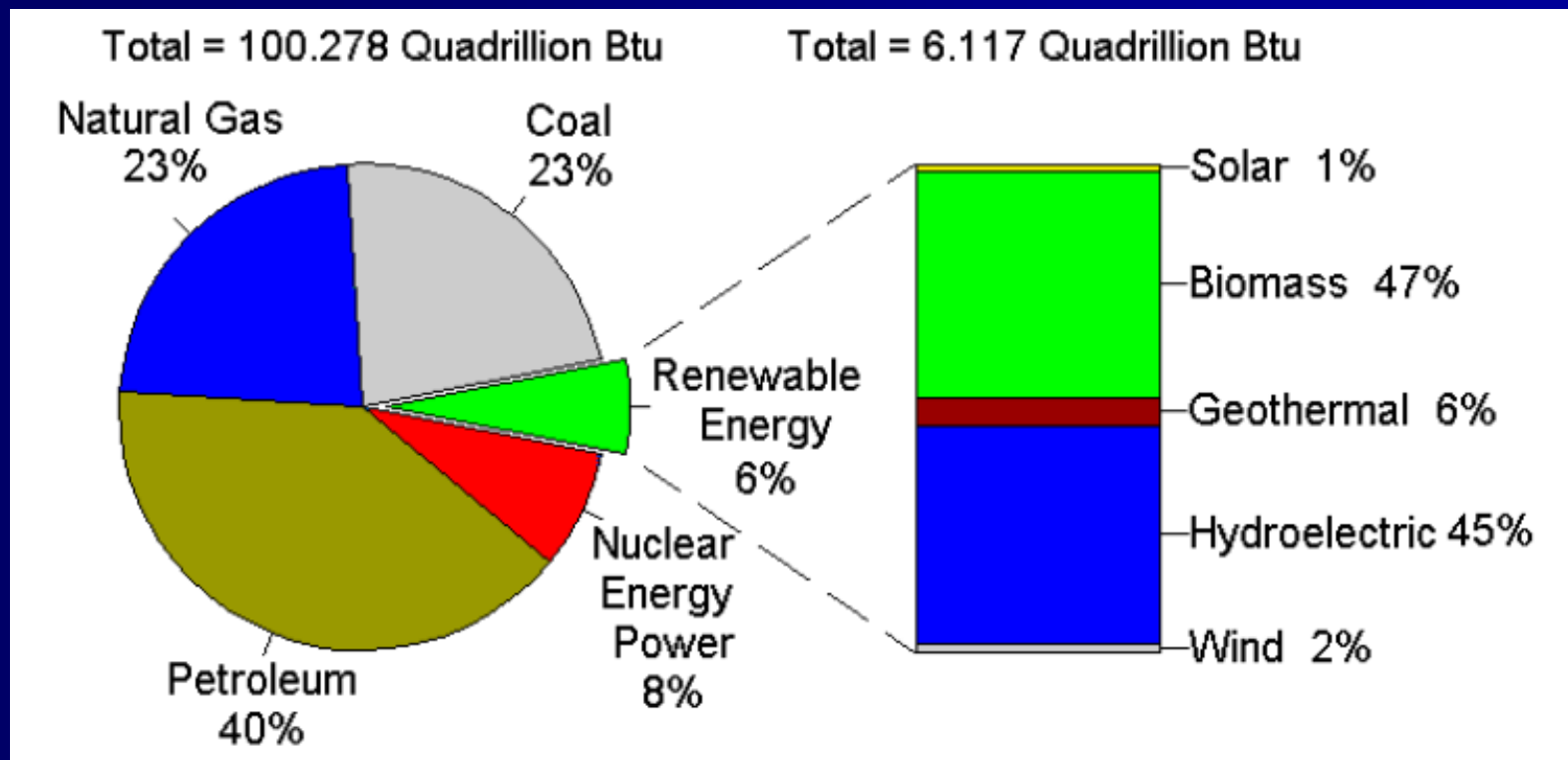
Solar Credits/Incentives

- Emissions Credits
- Solar and Geothermal Business
- Energy Tax Credit
- Renewable Energy Systems and Energy Efficiency Improvements Program
- Tax Exempt Financing for Green Buildings
- Conservation Security Program
- Modified Accelerated Cost-Recovery System

SOURCE:

Purdue University 2006 Indiana Renewable Energy Resources Study
(http://www.purdue.edu/dp/energy/pdf/Renewables_Report_2006.pdf)

Geothermal (National)



SOURCE:

Purdue University 2006 Indiana Renewable Energy Resources Study / Office of Energy Efficiency and Renewable Energy (Department of Energy)

(http://www.purdue.edu/dp/energy/pdf/Renewables_Report_2006.pdf)

"Business" Case

- Our Place in the Environment
- Our Children, Grandchildren, Great-grandchildren,
- Diminishing Natural Resources
- Increasing Competition for Energy
- \$\$\$\$\$ (of course)

Business Case

- Indiana Fuels Tax Credits
- Solar Credits/Incentives
- Risk of Future Increased Taxes and/or Regulation
- Increasing Cost of Energy
- Competitive Advantage
- “An Indiana economic comeback depends heavily on the successful development of our energy potential.”

Success Stories

- Purdue University Discovery Park Energy Center



- Flagship Energy Systems Center



Purdue University Discovery Park Energy Center

- West Lafayette Campus Area
- Discovery Park was First designated certified technology park in Indiana
- Bioenergy
- Hydrogen
- Power Electronics
- Wind Energy
- Also: Clean Coal, Nuclear and Electrochemical

Flagship Energy Systems Center (FESC)

- FESC launched in February 2006
- Initiative of the Flagship Enterprise Center, the second designated certified technology park in the State of Indiana
- Leverage Alternative Energy Experience
- Attracts and Assists Start-up Companies

Flagship Energy Systems Center (FESC)

- Indiana–Nexus of Alternative Energy: Coal + Corn + Electricity
- Promotes the development and commercialization of new energy efficient and energy security technologies in commercial and military applications associated with:

Flagship Energy Systems Center (FESC)

- Power Electronics
- Distributed Power
- Power Generation, Conversion And Storage Systems
- Alternative Fuels
- Emerging/Advanced Manufacturing, Distribution And Logistic Initiatives In The Energy, Defense And Transportation Industry Markets

Next Steps

- Know Your Energy Footprint
- Customer Demand
- Market / Regulatory / Compliance
- Product / Service
- Tax and Other Incentives to Start Sooner Rather Than Later

Summary

- How Did We Get Here?
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Helpful Links

eGlobal Consulting, Inc. website:

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Thank You!