



# LSU Center for Energy Studies

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Energy Independence...

Myth or Reality?

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Coal-to-Liquids

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Baton Rouge, LA  
October 22, 2008

Does Energy Independence  
assure National Security

or...

Do we enable National Security  
for All Nations via Global Energy  
Interdependence?

Energy Independence “Cons”

- Resource waste through sub-optimized solutions
- “Protectionism” leading to barriers to technology/intellectual collaboration
- Rush to “grab” resources leading to flash points for global conflict
- Risk that environmental stewardship takes a back seat to drive for energy independence

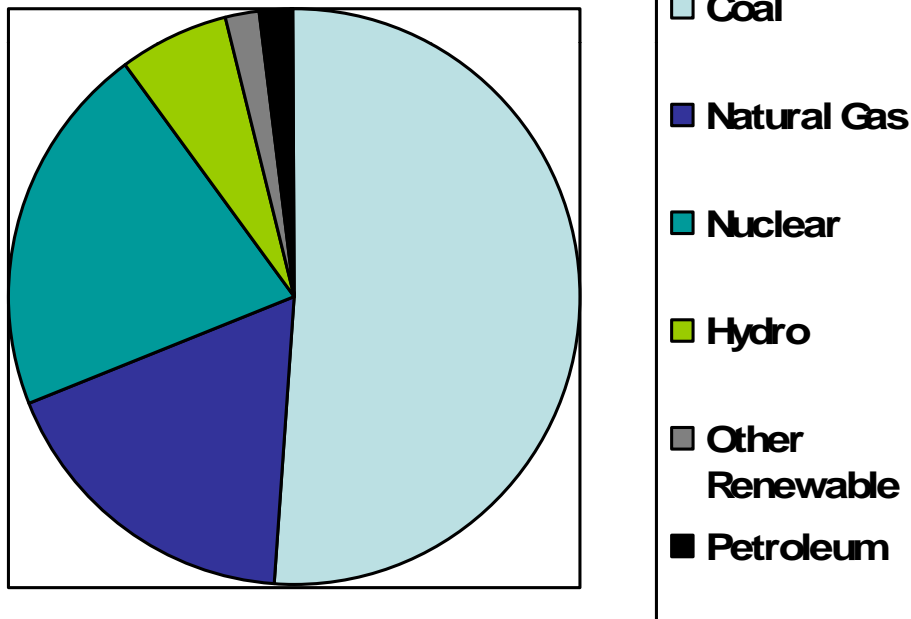
Energy Interdependence “Pros”

- Efficiency in exploitation of natural resources
- Cross-border collaboration speeds technology breakthroughs...innovation essential to addressing challenges
- Opportunity for all nations to participate...reducing risk of global tension
- Development of global partnerships to address environmental sustainability issues

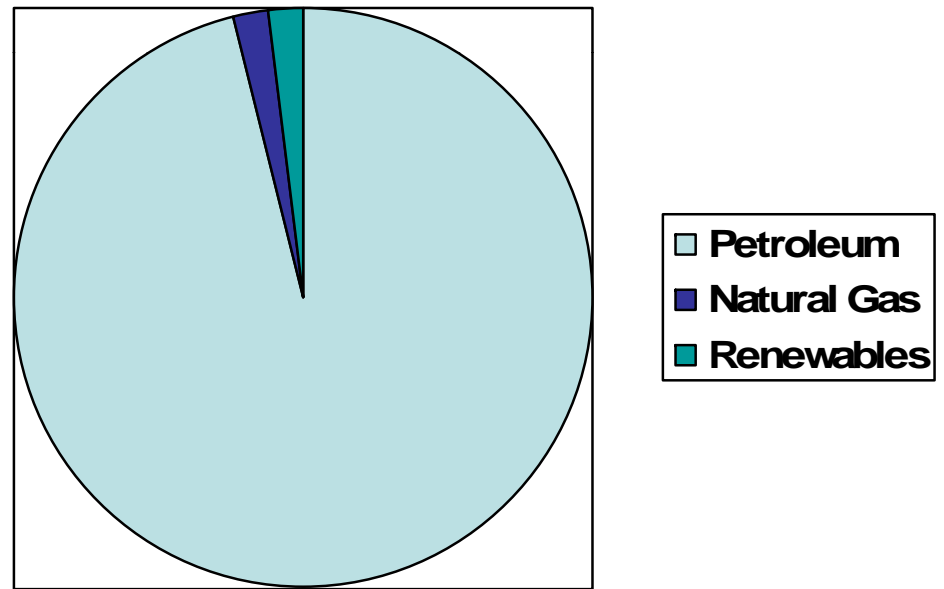
Global Interdependence Allows US to Develop Competitive Advantages...Export US Technology and Goods Overseas

## Where We Find Ourselves Today

Electricity



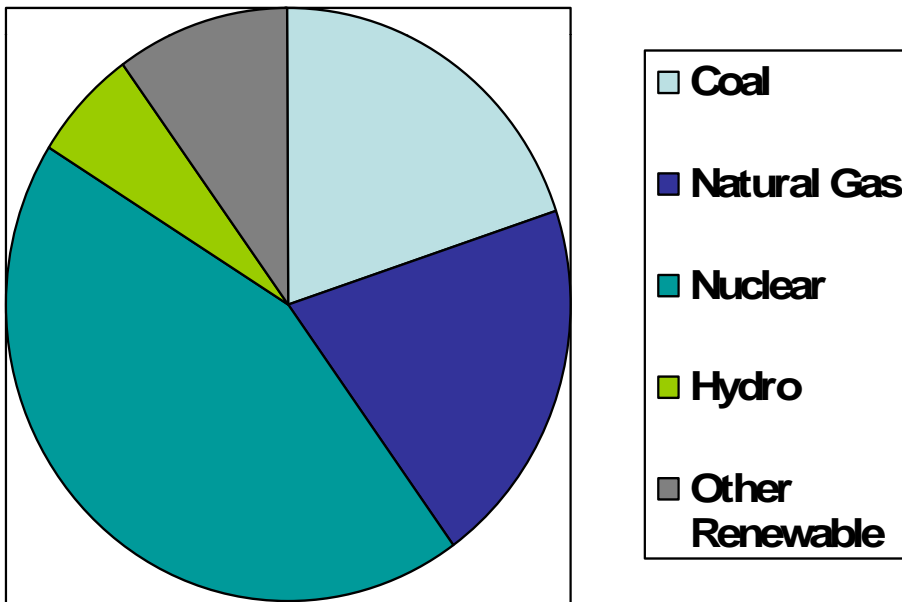
Transportation Fuels



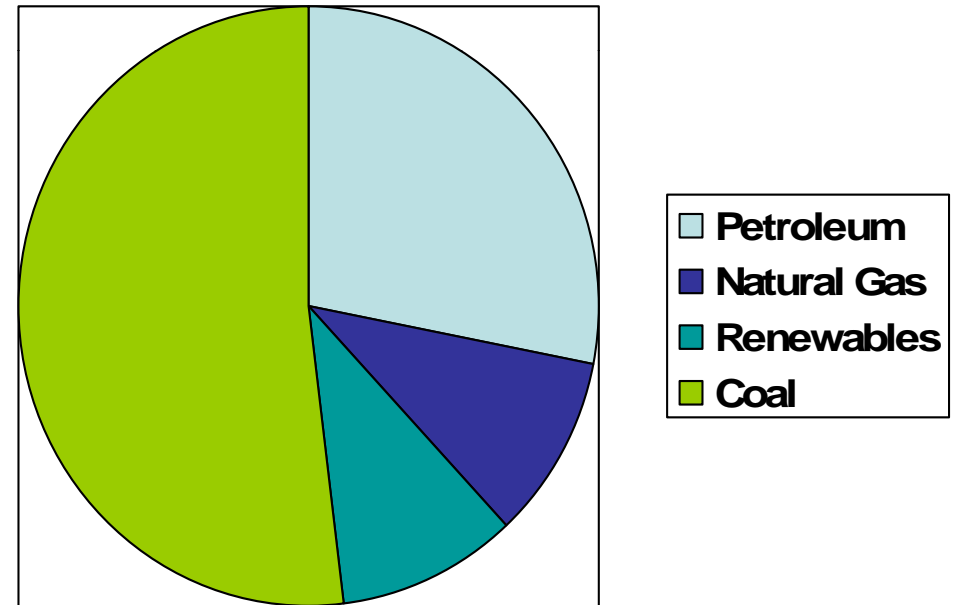
US Energy Security Vulnerability is not Electricity  
Generation...it is Transportation Fuels

## Imagine If We Were Here

Electricity



Transportation Fuels



Transitioning to Nuclear for the Grid Allows for Development of Clean Coal Technologies to Meet Transportation Fuel Demand

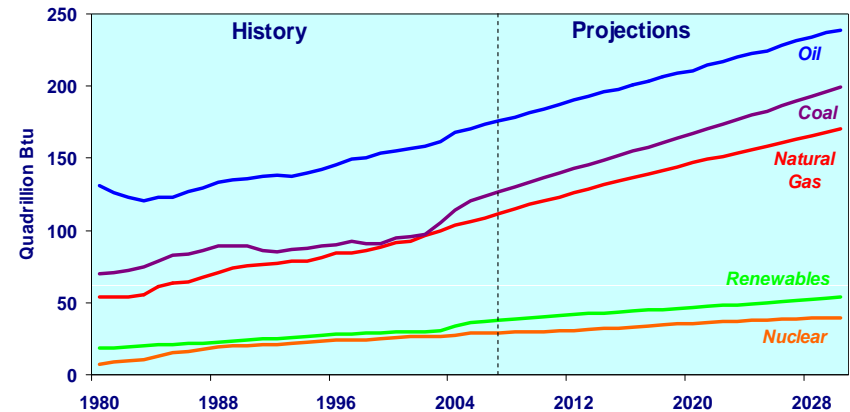
## But Why Coal-to-Liquids?



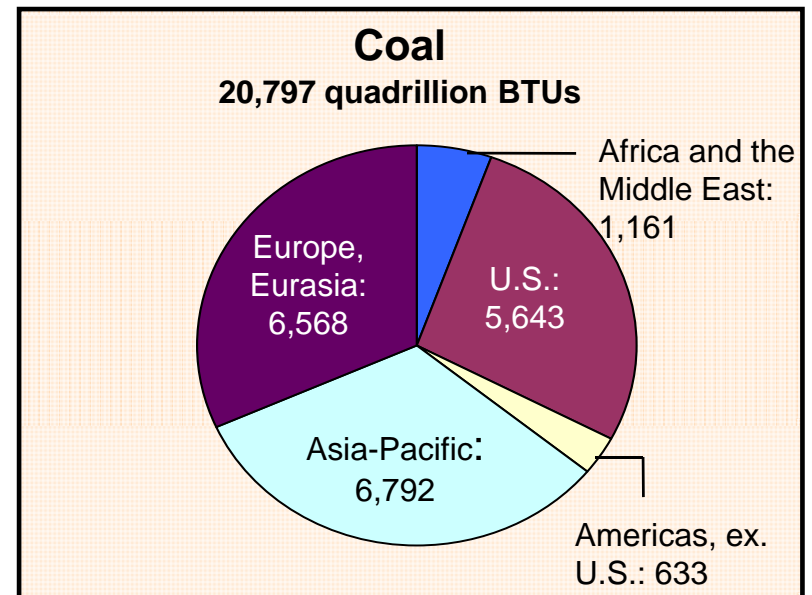
## The Case for Coal:

- Global fossil fuel use will continue to grow for the foreseeable future
- Known global coal reserves (in BTUs) 3X global oil reserves
- United States is the “Saudi Arabia of coal”
- Other major energy consumer regions (Europe, China, India) have major deposits of coal
- Prudent use of US coal resources reduces reliance on foreign-sourced oil
- Economic advantages of expanding supply sources

World Marketed Energy Use by Fuel Type, 1990-2030



SOURCE: Energy Information Administration





## Why CTL Makes Sense

Proven technology

WWII Germany...Apartheid S. Africa

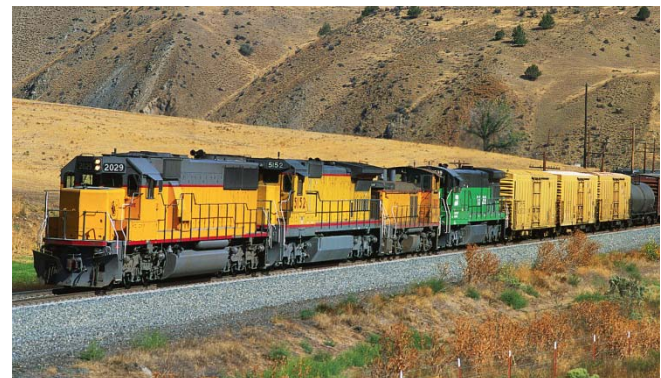
Interchangeable alternative to oil-based fuel

Stabilize transportation fuels market by decreasing control of oligopoly market

Would create new industrial jobs in US with exportable knowledge, technology and product

Decrease wealth transfers to oil-exporting nations

Clean fuel in engines...significantly reduced SO<sub>2</sub>, NO<sub>x</sub>, particulate, VOCs



## State of the Industry

Decades of experience with the technology in South Africa

New plants under development in China, India, Indonesia, Australia, New Zealand, Philippines, South Africa

Several plants in design phase in US

Air Force seen as major driver in US...will interest continue?

Impact of Section 526?

Potential of bio feedstock to reduce environmental impact

## How Do We Get Moving?

Need a market initiator...encourage commercial suppliers...drive “green” manufacturing techniques

- DoD? Single largest consumer of imported oil

Cultivate consumer partnerships

- Commercial/military collaboration
- Global interoperability

Provide necessary incentives

- Purchase quantity commitments
- Long term contracting authority
- Loan guarantees
- Expand R&D...especially CO2 mgmt

## Addressing the Carbon Problem

The answer...Total Carbon Management

First step...develop detailed life cycle inventory of CO2 emissions

Data allows for optimal decisions for investment in sustainability

CO2 management options

Reduction efforts

Biologic sequestration via forest/wetlands optimization/management

Geologic sequestration...but what are long term impacts?

CO2 recycling

Simultaneously Realize  
Energy and Environmental Security

Recycling CO<sub>2</sub>:

Maximizing energy source recovery

- Enhanced oil recovery
- Enhanced gas recovery
- Coal bed methane recovery

Capturing CO<sub>2</sub> in plant matter

- CO<sub>2</sub> to algae lipids to biofuels

Recycle directly back to carbon fuel

- CO<sub>2</sub> + H<sub>2</sub> thru reactor = F-T fuel



Change Global Mindsets...Zero Waste as Good Business  
Resource Efficiency...Reduced Environmental Impact

# Questions?

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