

MINUTES OF THE HOUSE UTILITIES COMMITTEE

The meeting was called to order by Chairman Carl Holmes at 9:00 A.M. on January 19, 2006 in Room 231-N of the Capitol.

All members were present except:

Carl Krehbiel- excused

Committee staff present:

Mary Galligan, Kansas Legislative Research

Mary Torrence, Revisor's Office

Renae Hansen, Committee Secretary

Conferees appearing before the committee:

Representative Carl Holmes

Others attending:

See attached list.

Chairman Holmes passed out two articles (Attachments 1 & 2) pertaining to recent developments internationally in the energy/ utilities arena.

Chairman Holmes presented a power point presentation on Global Energy Trends entitled, "We are at the End of the Era of Cheap Energy" (Attachment 3) outlining current trends in energy consumption, availability, and production domestically and globally.

Questions were asked by Representatives: Vaughn Flora, Melody Miller, Judy Morrison, Melody Miller, Tom Sloan, Josh Svaty, Don Myers, and Forrest Knox.

The next meeting is scheduled for January 20, 2006.

Meeting Adjourned.

# HOUSE UTILITIES COMMITTEE GUEST LIST

DATE: January 19, 2006

NAME	REPRESENTING
Nelson Krueger	Everest
Lindsey Douglas	Hein Law Firm
Tom Day	KCC
Marsha McDade	Antoni - Rep. Miller
Jim Gaskner	AT&T
Lon Stanton	Northern Natural Gas
Steve Johnson	Kansas Gas Service / ONEOK
Mark Schreiber	Westar Energy
Brad Burke	-ABC
Phil Wilkes	KDOR
Jackson ARMBRESTER	ABC
<del>HOLL JOHNSON</del>	ABC
<del>David R. C</del>	

The Times January 17, 2006

## **Shell pulls out staff after attacks leave oilfields facing paralysis**

By Jonathan Clayton

### **Poor Nigerians angry at the exploitation of their land are resorting to violence**

SEPARATIST rebels in Nigeria were close to achieving their aim of paralysing oil production in the Niger delta after Shell made a partial evacuation of 326 oil workers yesterday following attacks on its facilities by heavily armed militants.

Shell acted after a speedboat attack on Sunday on one of its pumping stations off the port of Warri left an unknown number of people dead.

Its response to the fourth attack in five days alarmed international oil markets, already jittery over the West's nuclear stand-off with Iran.

Last Wednesday four of Shell's sub-contractors, including a Briton, were abducted from a support vessel by unidentified gunmen.

Two days later a bomb wrecked a Shell pipeline carrying 106,000 barrels a day, about 10 per cent of the company's daily output.

The withdrawal, combined with threats by Iran, the world's fourth-largest oil exporter, to force up prices in response to threatened sanctions, pushed oil prices up 93 cents to \$63.18 a barrel in early morning trade on the London markets. The price of the benchmark Brent North Sea crude for February delivery jumped 71 cents to \$62.97 a barrel.

Nigeria, the world's eighth-largest oil exporter, produces 2.4 million barrels of oil a day. Most of its sweet, low-sulphur crude, which can be quickly refined and marketed, goes to the United States.

Nigerian soldiers fought pitched battles with dozens of bandana-wearing youths, armed with AK47s, who poured off three speedboats and fought their way on to the Benisede flow station off the coast of Bayelsa, one of nine states in the impoverished Delta region..

Shell, by far the largest oil producer in Nigeria, confirmed that one employee, a cook, had died and another ten staff had been taken to hospital. It said: "The company thought it prudent to minimise the risk to personnel by evacuating staff from the station and neighbouring fields."

*HOUSE UTILITIES*

DATE: 1/19/06

ATTACHMENT 1

It said it had no plans to quit the delta but refused to rule out further evacuations. "Following the growing insecurity in the area, SPDC (Shell Petroleum Development Corporation) commenced evacuation of some personnel from Benisede and neighbouring flow stations (Opukushi, Ogbotobo and Tunu)," it said in a statement from its London headquarters.

It added that all four flow stations had already been closed because of the attack on the Trans Ramos pipeline, and withdrawing staff would have no new impact on production.

MEND, which is demanding the immediate release of Mujahid Dokubo-Asari, an Ijaw warlord due to appear in court today on treason charges, said after last week's kidnapping that all oil workers should leave the area. "It must be clear that the Nigerian Government cannot protect your workers or assets. Leave our land now while you can or die in it," the group said in an e-mail statement. ***"Our aim is to totally destroy the capacity of the Nigerian Government to export oil."***

The Delta produces most of Nigeria's estimated output of 2.4 million barrels a day, but is one of the most impoverished regions in the country.

The Ijaw and Ogoni people who live in the delta say they have seen little benefit from years of oil exploitation, which has destroyed fishing and caused environmental damage. According to the Government's statistics, £220 billion has gone missing — most from oil revenues — because of corruption over the past 40 years.

Behind the violence lies growing political unease over the desire of President Obasanjo to remain in power beyond 2007, when he was originally expected to step down. The President, who has received backing from Tony Blair, faces growing opposition to a crackdown on corrupt politicians.

#### OIL RICHES IN A LAND OF POVERTY

# Eight-largest exporter of crude oil — 2.4 million barrels produced per day

# Fifth-biggest oil supplier to United States

# 95 per cent of foreign exchange earnings are oil-based

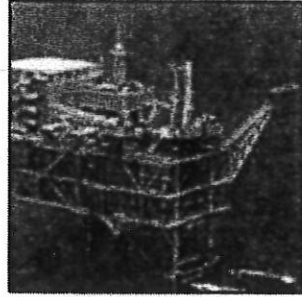
# Third-largest Opec producer after Saudi Arabia and Iran

# Despite Niger delta's oil reserves of 35 billion barrels, about 20 million people still live in poverty

## China National Offshore Oil Corp.

### Company Description

China National Offshore Oil Corporation (CNOOC) is a state-owned company incorporated on February 15, 1982. CNOOC is authorized under the Regulations of the People's Republic of China on Exploitation of Offshore Petroleum Resources in Cooperation with Foreign Enterprises, to assume exclusive rights and overall responsibilities for the exploitation of oil and natural gas resources offshore China in cooperation with foreign partners. Headquartered in Beijing, CNOOC registered with a capital of 50 billion RMB and has 21,000 employees. CNOOC is a state-authorized investment institution delegated to exercise rights on its fully-owned, majority-held and shareholding subsidiaries, including adding value to state-owned assets, making major decisions and recommending and nominating management teams. It operates, manages and oversees the delegated state-owned assets and bears corresponding value increment responsibilities. CNOOC has realized fast and quality growth over the past twenty years. Its annual production soared from 90,000 tons of oil equivalent to 23.29 million tons, with sales increasing from 400 million RMB to 37.6 billion RMB and net profit from 40 million RMB to 11 billion RMB. Its total assets increased dramatically from 2.8 billion RMB to 88.8 billion RMB and net assets from 2.2 billion RMB to 50.1 billion RMB. CNOOC has paid cumulative taxes of 11.8 billion RMB to the government. It has been one of the top key state-owned enterprises (SOEs) in China in terms of operating results over the past three consecutive years.



### Product Description

*By July 31, 1999, CNOOC has signed with 68 oil companies from 18 countries.*

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<b>Business Type :</b>	Manufacturer
<b>Address :</b>	P.O.Box 4705, No.6, Dongzhimenwai Xiaojie Beijing
<b>City &amp; Country :</b>	China
<b>Tel No. :</b>	010-84521044
<b>Fax no. :</b>	010-84521044
<b>Website :</b>	<a href="http://www.cnooc.com.cn">http://www.cnooc.com.cn</a> <a href="http://www.7621.tradebig.com">http://www.7621.tradebig.com</a>
<b>e-Mail :</b>	<a href="#">Click here to contact us</a>

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HOUSE UTILITIES

DATE: 1/19/04

ATTACHMENT 2

# We are at the "END OF THE ERA OF CHEAP ENERGY"

Rep. Carl Holmes  
August 2005

## *Global Energy Trends*

- ☞ Global Energy Production
- ☞ Global Energy Consumption
- ☞ Domestic Energy Production
- ☞ Domestic Energy Consumption

*HOUSE UTILITIES*

DATE:

1/19/06

ATTACHMENT

3

# *Sustainability of Energy and Water through the 21st Century*

*Proceedings of the Arbor Day Farm Conference  
October 8-11, 2000*

"The conference brought together a select small group of scientists to debate and develop rationale as to how to address the issues of energy and water sustainability."

"These facts do not obviate the necessity for global solutions to availability of resources. Wars are fought over resources. Creative solutions to the problems of resource supply can bring much greater peace to the world." Lee Gerhard

"Of all the Conferences I have ever attended, this was the most far reaching, eye opening Conference I have ever participated in. To have the opportunity to discuss the energy problems for the next 100 years with the top scientists in the US as the only elected official helped me realize we are on the wrong track." Rep. Carl D. Holmes

## *Energy Supply Issues*

Transportation Fuels

Stationary Fuel Sources

## *Transportation Fuels*

Gasoline  
Diesel  
Jet Fuel  
Natural Gas  
Propane  
  
Ethanol  
Electric  
Hydrogen

## *Stationary Fuels*

*Electricity*  
*Space Heating*  
*Industrial Processes*

Coal  
Natural Gas  
Nuclear  
Heating Oil  
Hydropower  
Wind  
Solar  
Biomass  
Gas Hydrates  
Helium 3



# *Energy Availability*

Crude Oil

Natural Gas

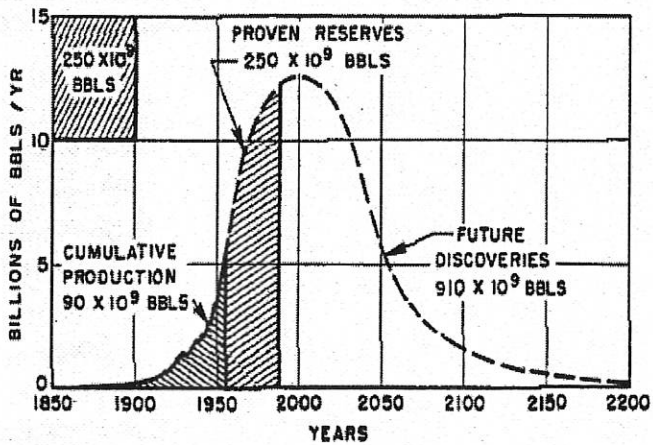
Coal

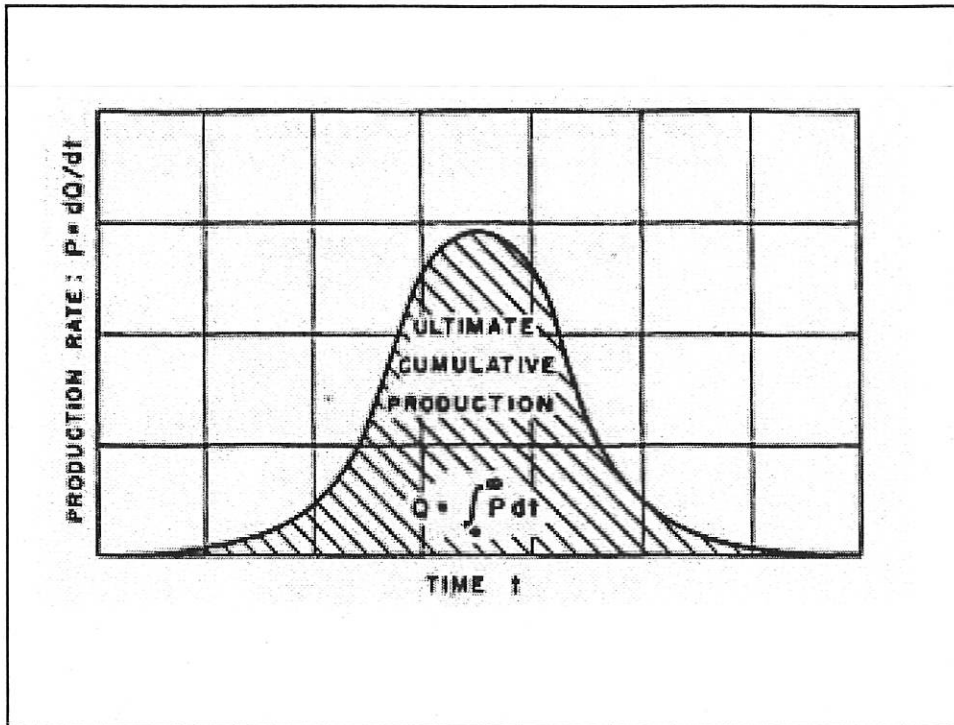
Uranium

Hydropower

## *Hubbert's Peak*

*1956 Projection USA Oil Production*





## *The Bell Curve* Dr. Hubbert

Lower 48 states: 1970 December

*10.5 million barrels per day*

Today:

*Current Onshore US Production*

*3 million barrels per day*

*Current Offshore US Production*

*2.43 million barrels per day*

*Kansas Production*

*88,000 barrels per day*

*Kansas 8th largest oil producing state*

## *USA Energy Consumption*

4.6% Worlds Population

25% Worlds Natural Gas

25% Worlds Crude Petroleum

23% Worlds Hard Coal

43% Worlds Gasoline

26% Worlds Electricity

## *China is the Giant Energy User*

- \$200 Billion Trade Deficient with US
- 18 GW Three Rivers Hydropower
- 40 GW new wind by 2010 (=400 Montezuma wind farms)
- 31 Nuclear power plants by 2025
- 1 MBD new pipeline from Russia-Oil
- 8 Coal Gasification Plants-Fertilizer
- \$37 Billion Electric Transmission Grid Construction next 5 years
- 34% Worlds Coal Usage

## **China Crude Oil Imports**

*Barrels per day Source EIA*

✧ 1990	2,300,000
✧ 2001	4,920,000
✧ 2002	5,160,000
✧ 2003	5,550,000
✧ 2004	6,520,000
✧ 2005 est.	6,940,000

## **China**

### Sources

*(Increase crude oil usage)*

### Middle East

*(Over 50% of its imports)*

### Indonesia

*(Unocal)*

### Venezuela

### Russia

### Canada

### Nigeria

## *New China Developments*

- ✧ CNOOC buys 45% of substantial offshore oil field in Nigeria
  
- ✧ India & China sign an agreement to jointly acquire energy worldwide
  
- ✧ India & China energy demand to double by 2025

## *Crude Oil Situation*

- The price of crude oil is determined by the forces of supply and demand worldwide
- Demand is surging
- Supply is struggling to keep pace
- Under these conditions, small changes have a big impact
- Oil is a global commodity; events anywhere impact prices for all

American Petroleum Institute

## *Crude Oil*

### *Supply & Demand*

Europe  
US  
North America  
South America  
Africa  
Middle East  
Russia  
China & India

### *Additional Energy Sources*

North America  
South America  
Russia  
Middle East?  
Coastal Waters

## *Actively Producing Oil Wells*

▪ US	520,000
▪ China	72,000
▪ Russia	41,200
▪ Saudi Arabia	1,560
(Horizontal Drilling)	

## *US Petroleum Usage*

*Barrels per day Source EIA*

Total Usage	20,731,000
Domestic Crude Oil	5,430,000
Imported Crude Oil	12,899,000
Imported Finished Product	2,402,000

## *US Petroleum Imports Per Day*

*Source EIA 2004 Barrels*

Canada	2,118,000
Mexico	1,642,000
Saudi Arabia	1,556,000
Venezuela	1,521,000
Nigeria	1,119,000
Iraq	652,000
Algeria	452,000
United Kingdom	369,000
Norway	238,000
Columbia	168,000

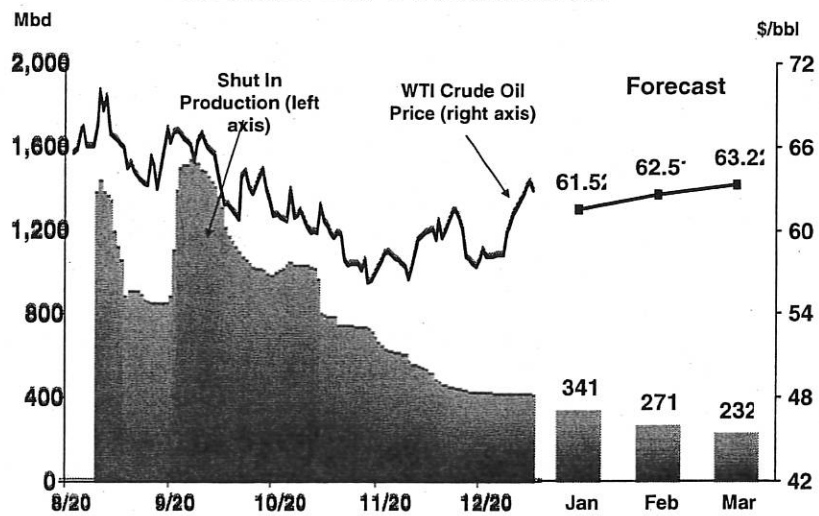
## *Katrina & Rita was Oil & Gas 9/11*

- Katrina shut down off-shore capacity
- Rita shut down balance off-shore production
- Gulf Coast import facilities shut down
- Production platforms destroyed



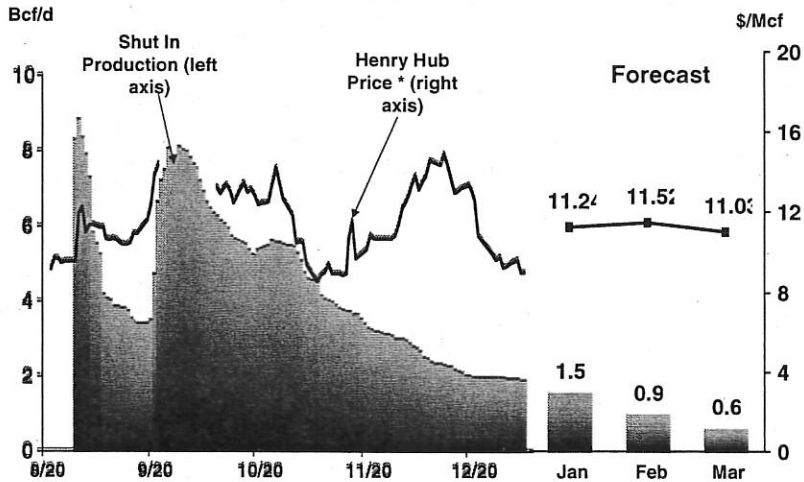
- Refineries were damaged
- SPR opened for withdrawal
- Electric grid was damaged
- Pipeline pump stations were damaged
- Lost production replaced by European imports (gasoline)

### *Shut-In Federal Offshore Gulf Crude Oil Production*



Mbd = Thousand barrels per day, \$/bbl = Dollars per barrel

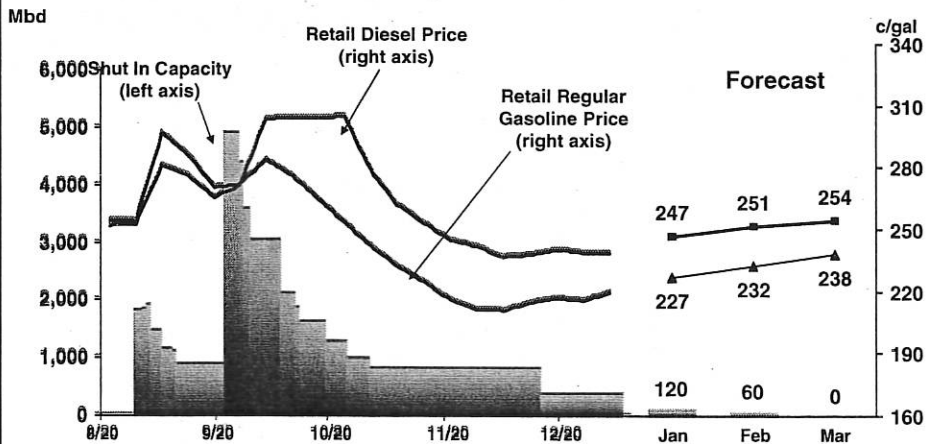
### Shut-In Federal Offshore Gulf Natural Gas Production



\* Trading on Henry Hub suspended from 9/23 – 10/6

Bcf/d = Billion cubic feet per day, \$/Mcf = Dollars per thousand cubic feet

### Shut-In Gulf Crude Oil Refinery Capacity



Mbd = Thousand barrels per day, c/ gal = cents per gallon

Note: This chart does not include refineries classified as restarting but not operating at normal capacity

## *2005 is a Wake-up call for US*

"Just in time inventory" may be a problem

1,865,000 barrels per day off-shore Gulf broke the system

## *Twilight in the Desert*

*Matthew R. Simmons*

### Saudi Arabia

5 oilfields make up 90% of oil output

Oilfields are between 40 and 60 years old

All are reaching point of decline

Last 35 years of exploration found 1 new large oil field

Hurricanes brought last 2,000,000 barrels into production

Peak world oil production when Saudi Arabia output peaks

Peaking may now be "past tense"

## *World Oil Demand*

*EIA Energy Outlook 2005*

2002                    78 MBD

2015                    103 MBD

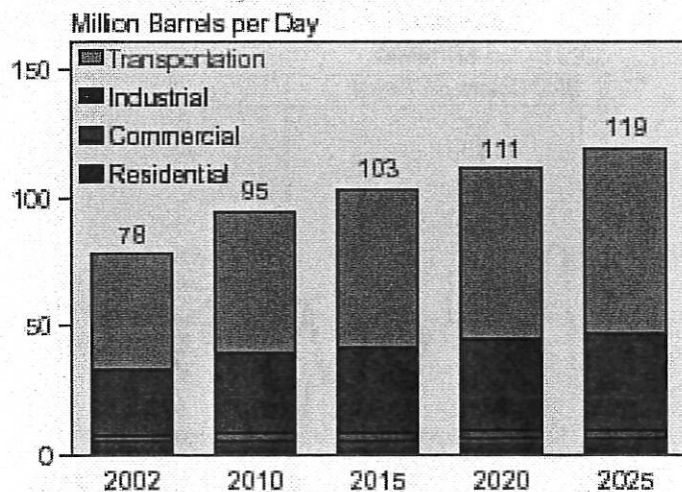
2025                    119 MBD

45% of increase in Asia

61% in transportation sector

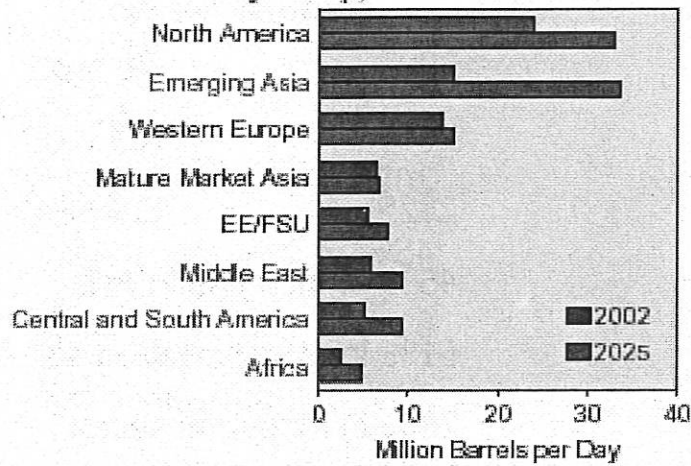
28% in industrial sector

Figure 28. World Oil Consumption by End-Use Sector, 2002-2025



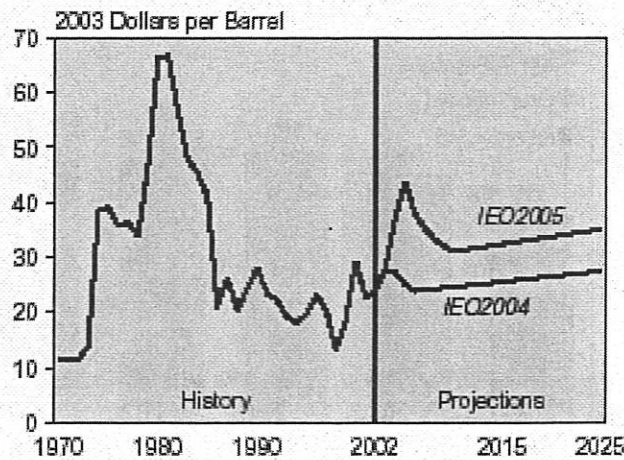
Sources: History: Energy Information Administration (EIA).

Figure 29. World Oil Consumption by Region and Country Group, 2002 and 2025



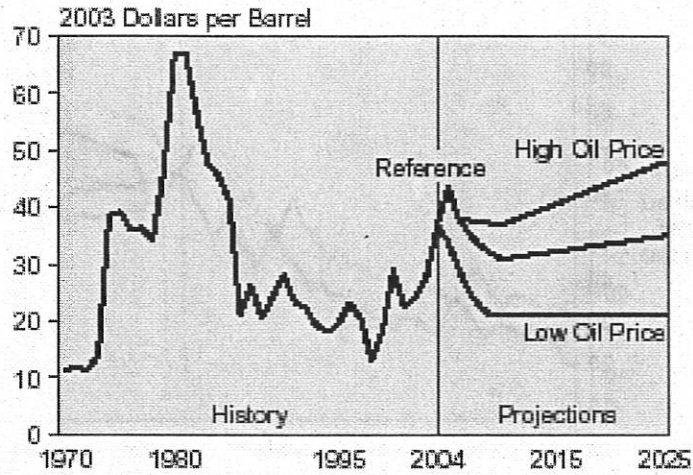
Sources: 2002: Energy Information Administration (EIA),

Figure 11. Comparison of IEO2004 and IEO2005 Projections for the U.S. Refiner Acquisition Cost of Imported Crude Oil, 1970-2025



Sources: History: Energy Information Administration (EIA),

Figure 30. World Oil Prices in Three Cases, 1970-2025



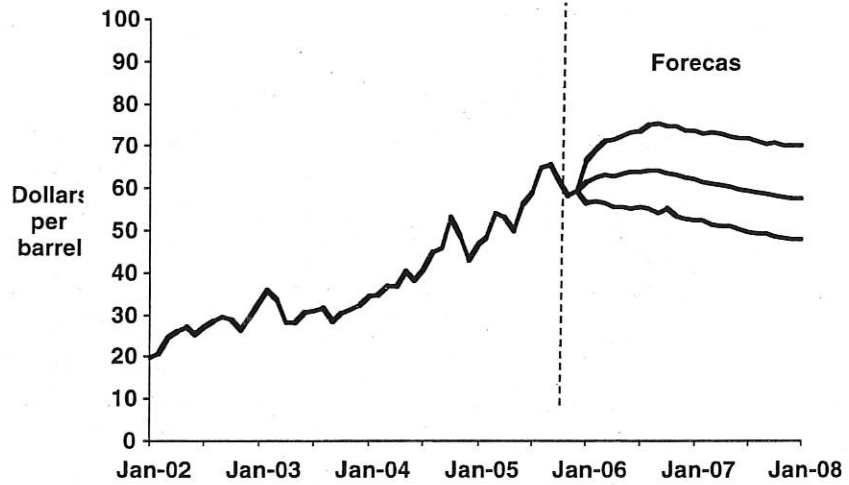
Sources: History: Energy Information Administration (EIA).

## World Crude Oil Prices

2005 to 2025  
December 2005

	Low	High
EIA	\$21	\$48
Economist Federal Reserve Bank of Chicago	\$30	\$40
Economist Federal Reserve Bank of Chicago	\$40	\$50
Economist Former Council of Economic Advisor to President	\$55	\$65

*West Texas Intermediate Crude Oil Price  
(Base Case and 95% Confidence Interval\*)*



*Saudi Arabia Capacity*

*Promise to DOE (2005)*

- Today 11 MBD
- 2009 12.5 MBD
- Future? 15.0 MBD?

## *Non-Conventional Oil*

- Non OPEC crude oil quality is declining
- Heavy Oil - will require refinery modifications
- Tar Sands - Alberta in Canada & Orinoco River in Venezuela
- Oil shale in Rocky Mountain area

## *Natural Gas is Next Big Problem*

Middle East & Africa has expansion available

USA, Canada, Russia, Netherlands, Indonesia may have passed peak supply

Hugoton Gas Field

Northern Natural Gas pulling out of Hugoton Field

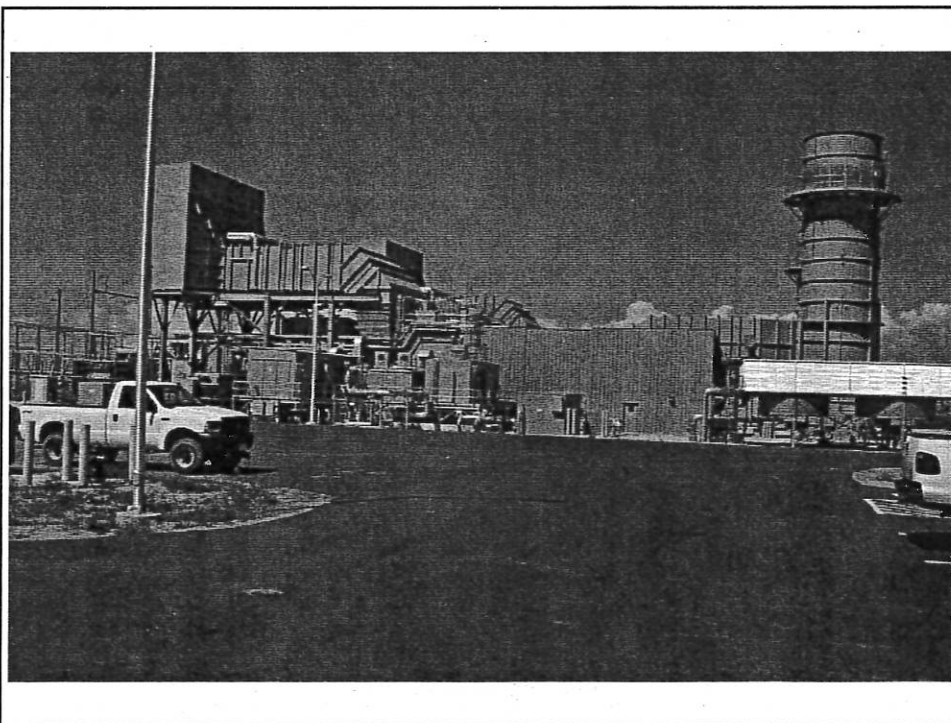
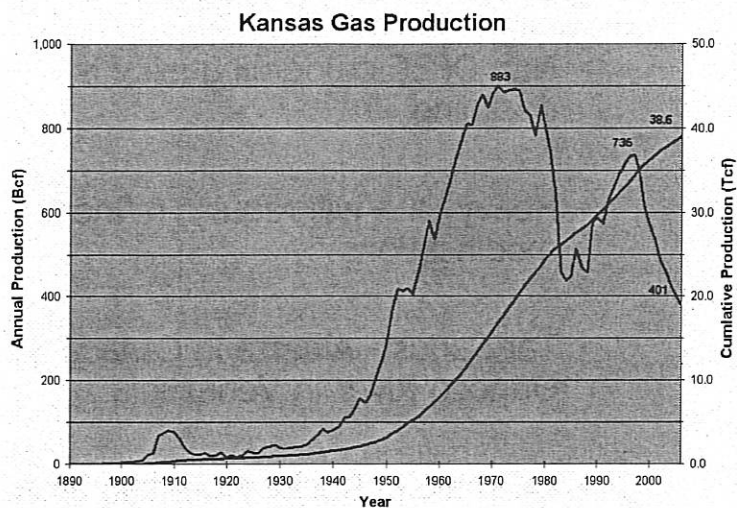
New US Production & Current Consumption Equal

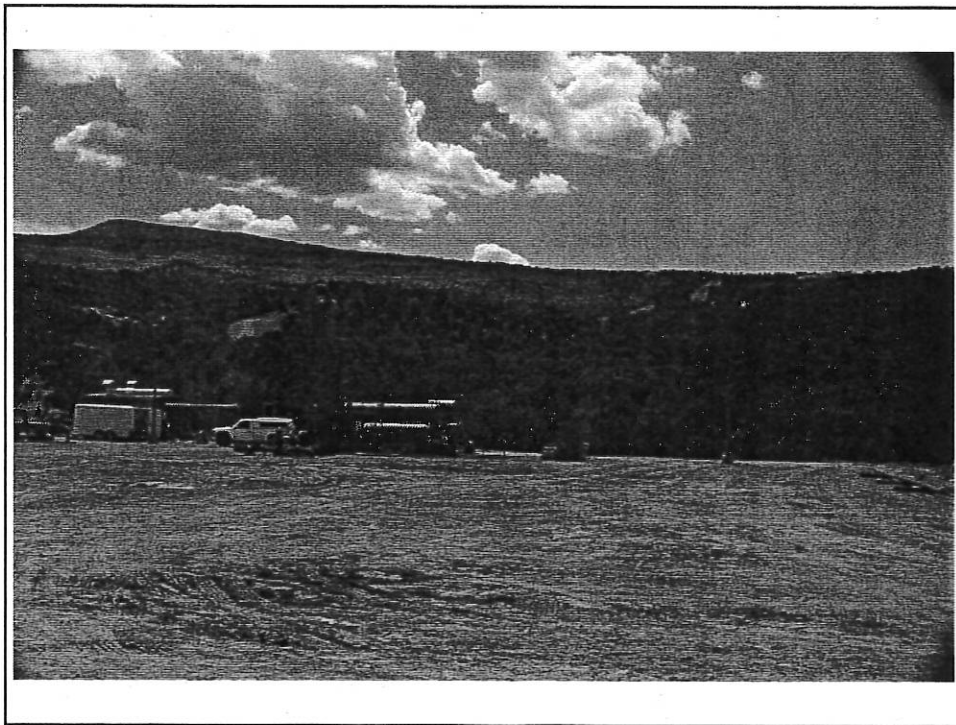
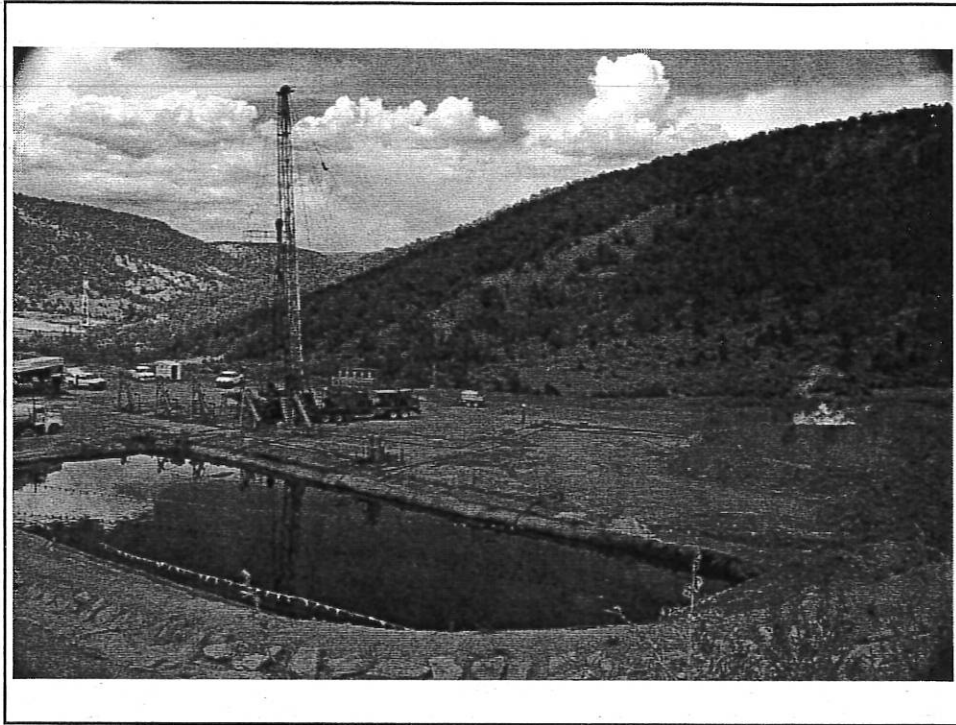
Since 2000, 95% of all new electric generation is natural gas fired

New Colorado production rate



# Kansas Historical Gas Production





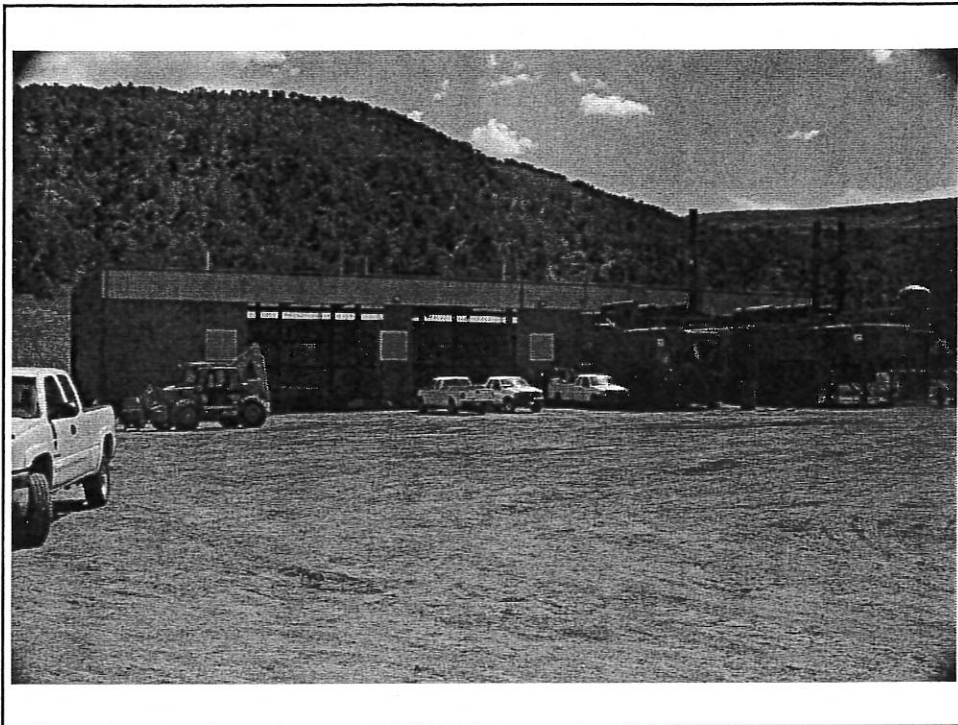
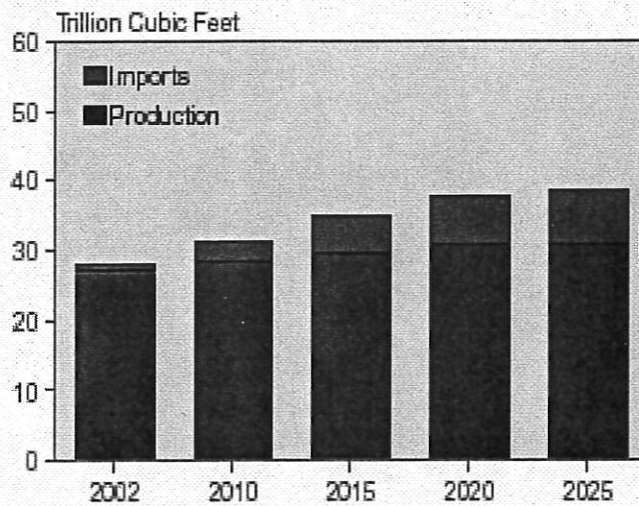


Figure 43. Natural Gas Supply in North America by Source, 2002-2025



Sources: 2002: Energy Information Administration (EIA),

## *Western Kansas Irrigation*

Western Kansas will not run out of water! Energy Cost will restrict water usage

Carl Holmes 1974 US Senate testimony

Western Kansas can not afford the energy cost to continue to extract the water at current levels

\$10 natural gas and \$2 corn =  
bankruptcy

## *Home Heating*

Winter 2005 - 2006

✧ Home Heating Oil    \$1454

✧ Natural Gas            \$1024

✧ Electric                \$ 763

DOE 2005

# *Nuclear Energy*

Global Warming?

Waste issue--

Yucca Mountain

Reprocessing spent fuel

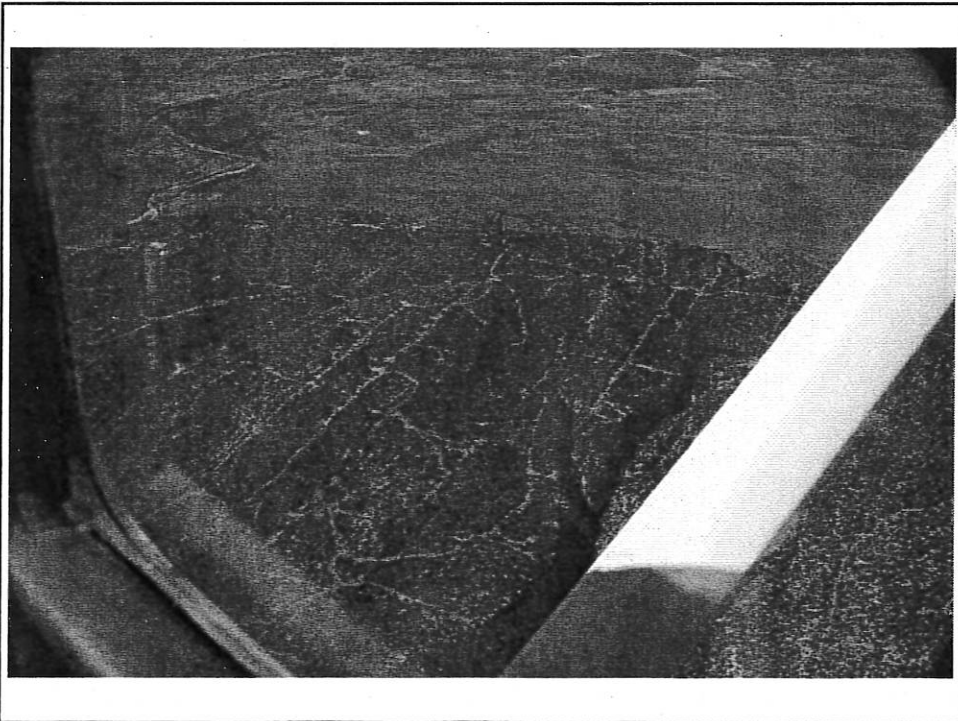
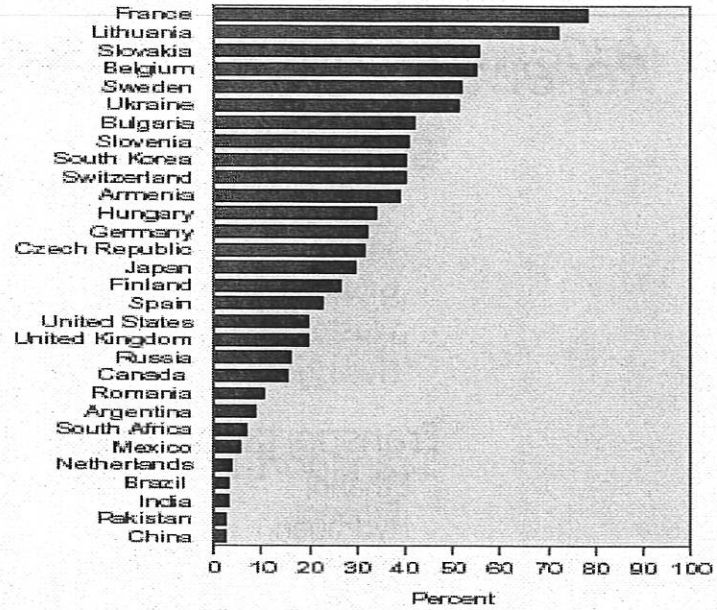
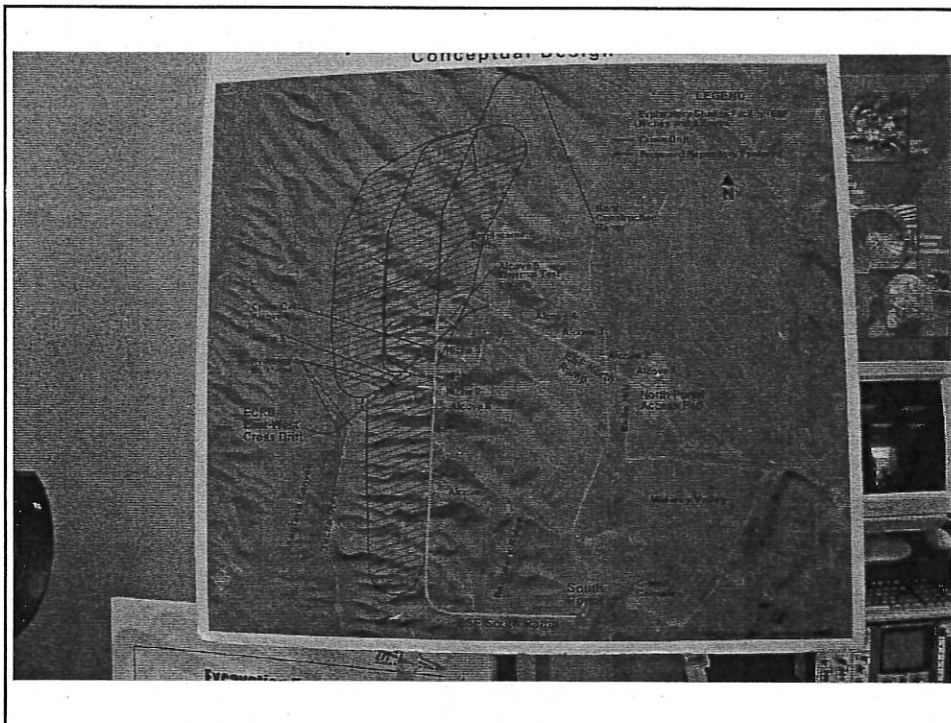


Figure 64. Nuclear Shares of National Electricity Generation, 2004



Source: International Atomic Energy Agency, Reference



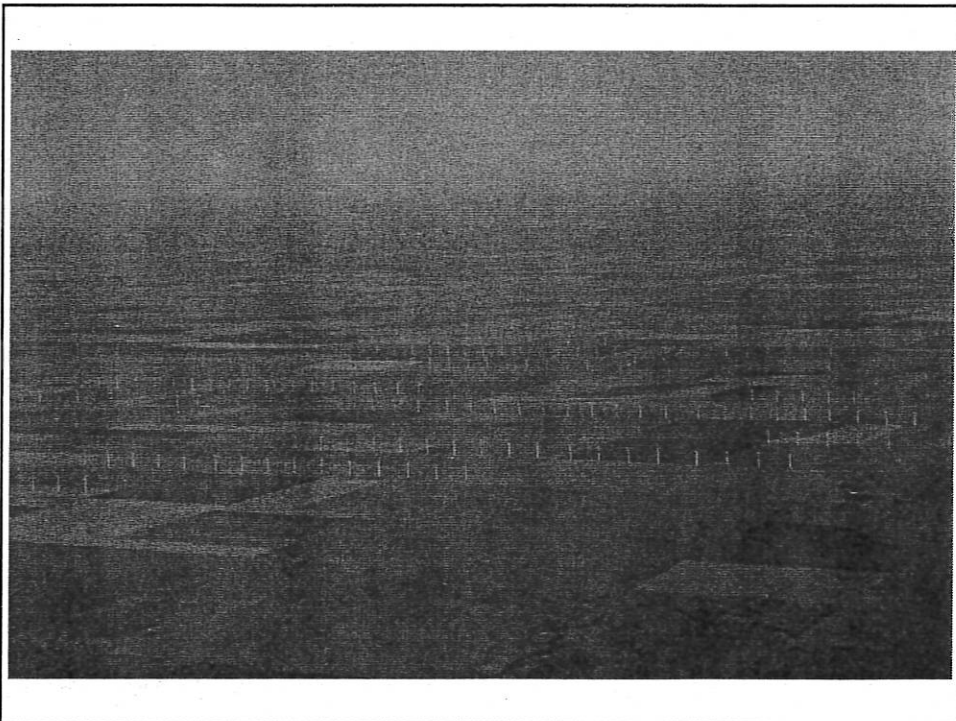
## *Renewable Era to replace oil?*

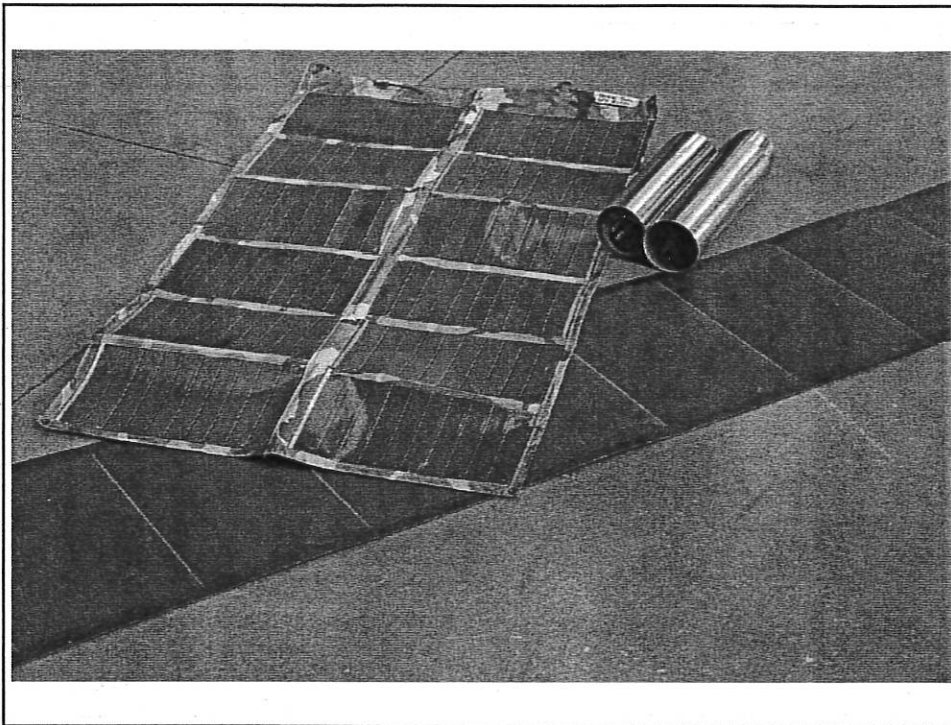
### Stationary Uses

- Wind
- Solar
- Geothermal
- Waste (Bio)
- Hydrogen

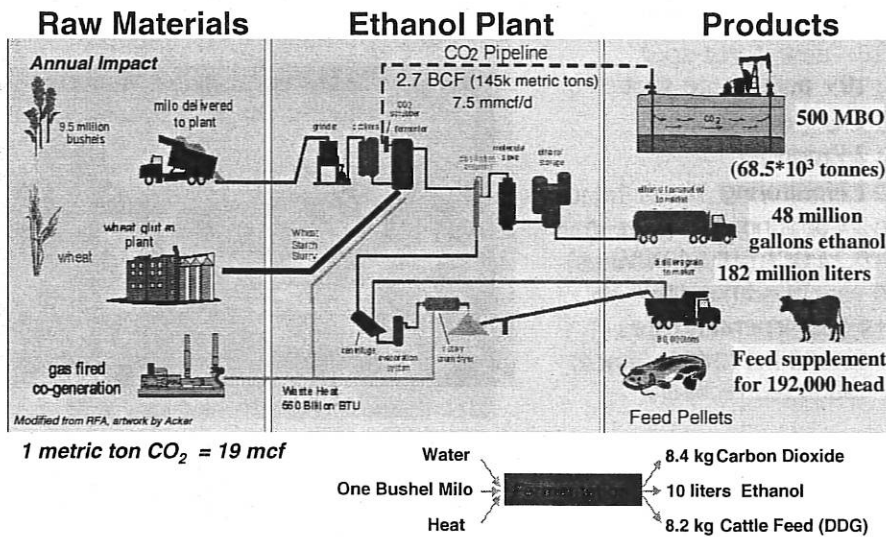
### Transportation Uses

- Ethanol
- Hydrogen
- Other?





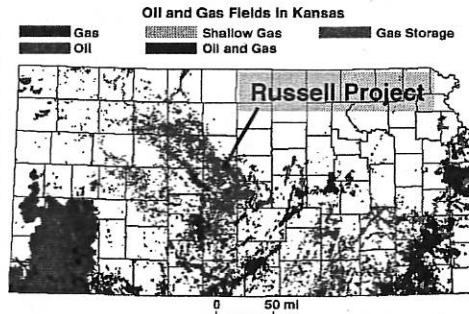
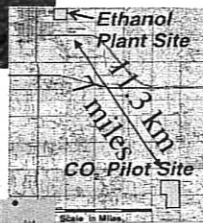
## Integrated Energy Systems





# Russell, Kansas Project

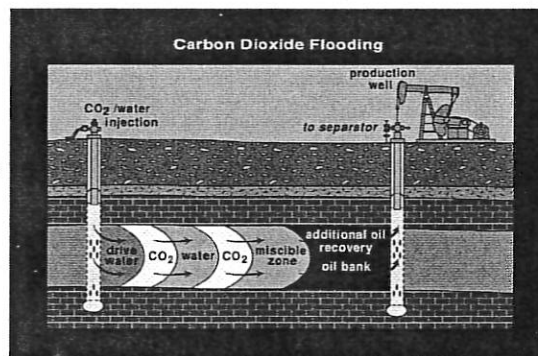
First Sequestration  
of Agricultural CO<sub>2</sub>



Russell is centered in oil,  
grain and cattle region

## CO<sub>2</sub> Miscible Flood Demonstration

- ✧ 10+ acre, three-spot
- ✧ 1 CO<sub>2</sub> injector
- ✧ 2 Producers
- ✧ 1 Monitoring
- ✧ 2 Containment Water Injectors
- ✧ 0.29 BCF (15,263 tonnes)  
CO<sub>2</sub> Injected-WAG
- ✧ 6 year operating life
- ✧ 18,000 BO (2466 tonnes)  
estimated recovery



[www.kgs.ku.edu/ERC/CO2Pilot](http://www.kgs.ku.edu/ERC/CO2Pilot)

## *Hydrogen*

### Sources

Natural Gas

Electrolysis

IG

Must be kept super clean for  
fuel cell usage

## *Hydrogen Cars*

Honda FCX                      \$1,500,000

51 MPG

Gallon Hydrogen                      \$5.60

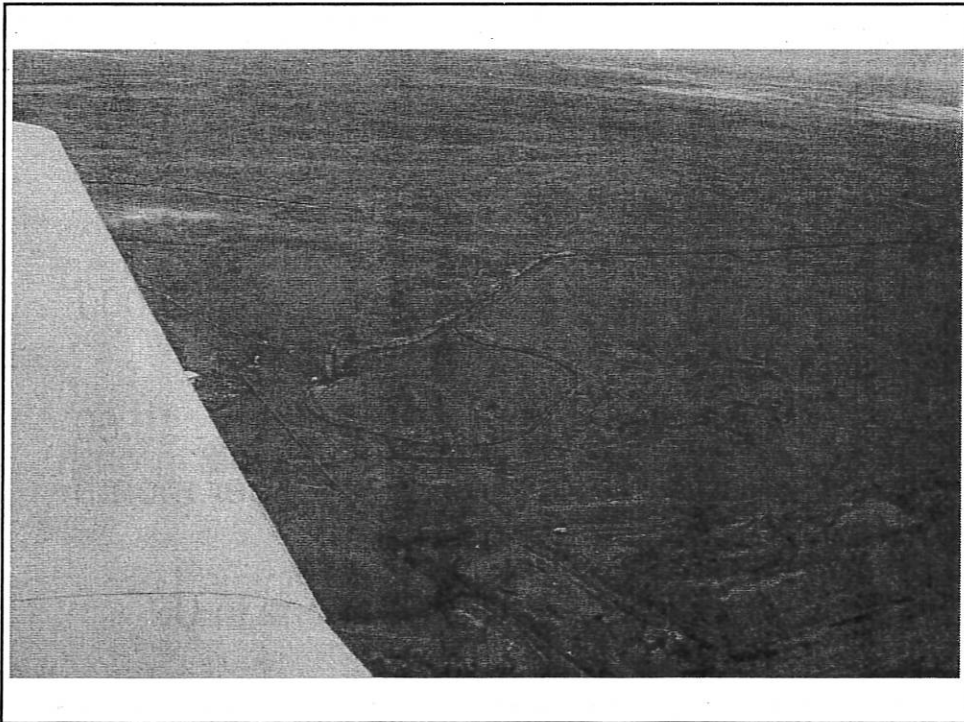
Manufacturing rate              1 per month

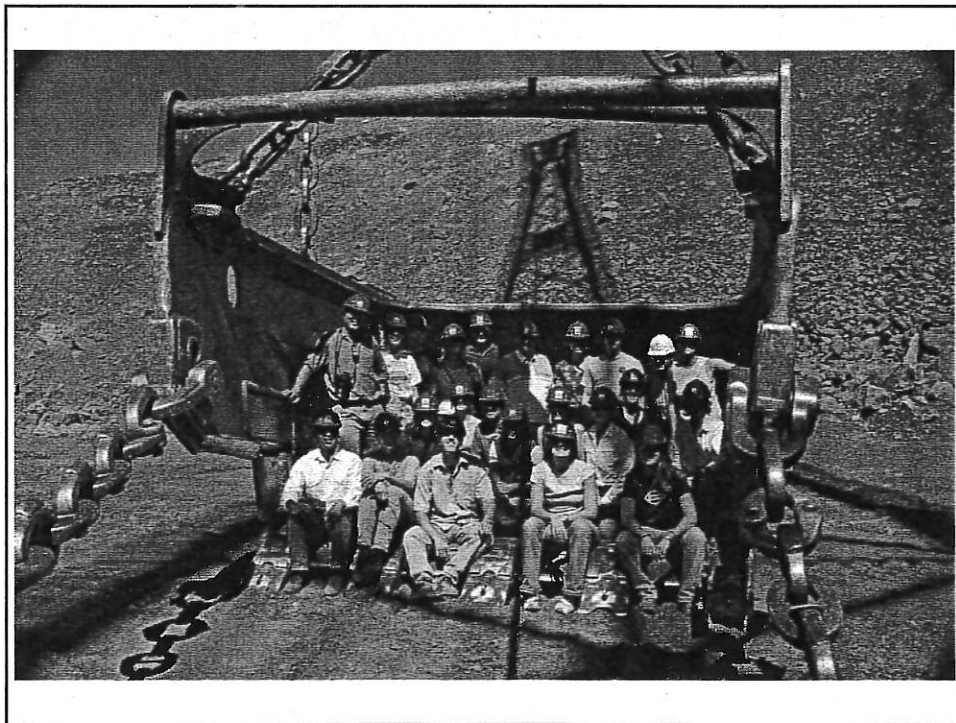
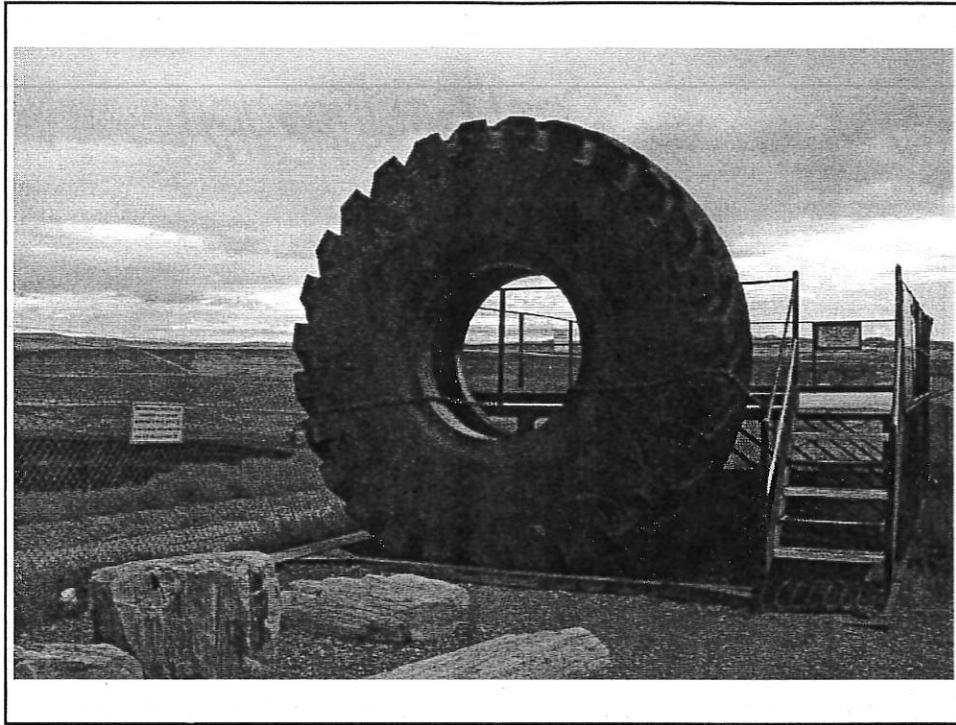
26 manufactured to date

25 hydrogen filling stations in US

## *Coal Problems*

- Global Warming (Carbon Tax?)
- Railroad Problems
- "Tire" availability
- Low stockpiles
- Floods
- More costly to mine





# Coal Gasification

## Old Technology

"Coal Gas Plants"

Germany

South Africa

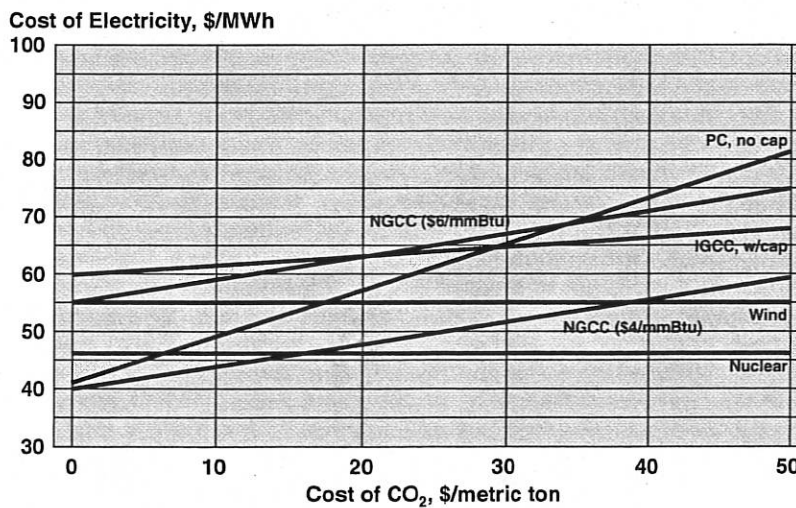
IGCT\*

IGCC

Future Gen

IGNF\*

## Comparative Costs of Generating Options, 2010



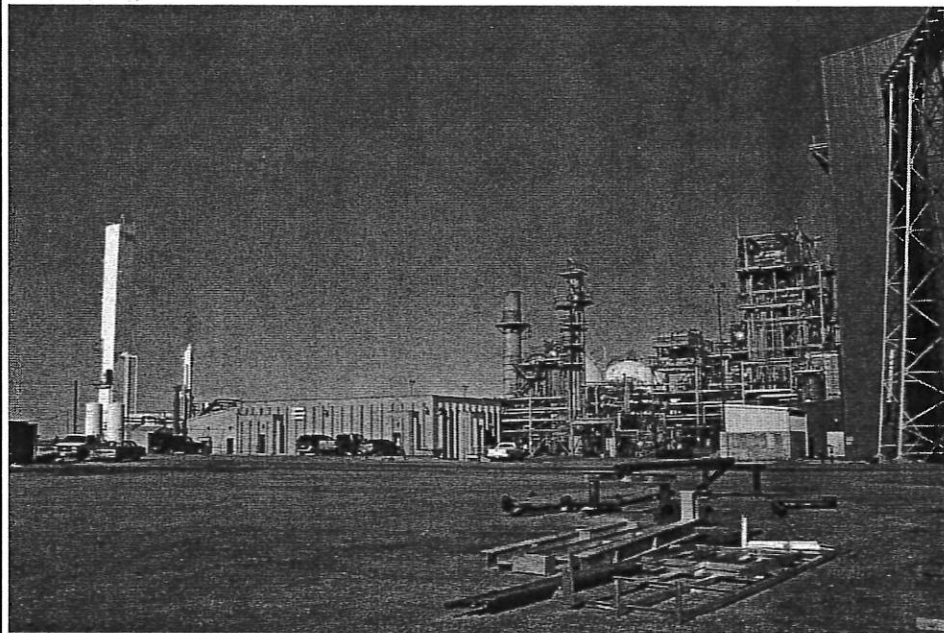
## *Coal-Coke Gasification in US*

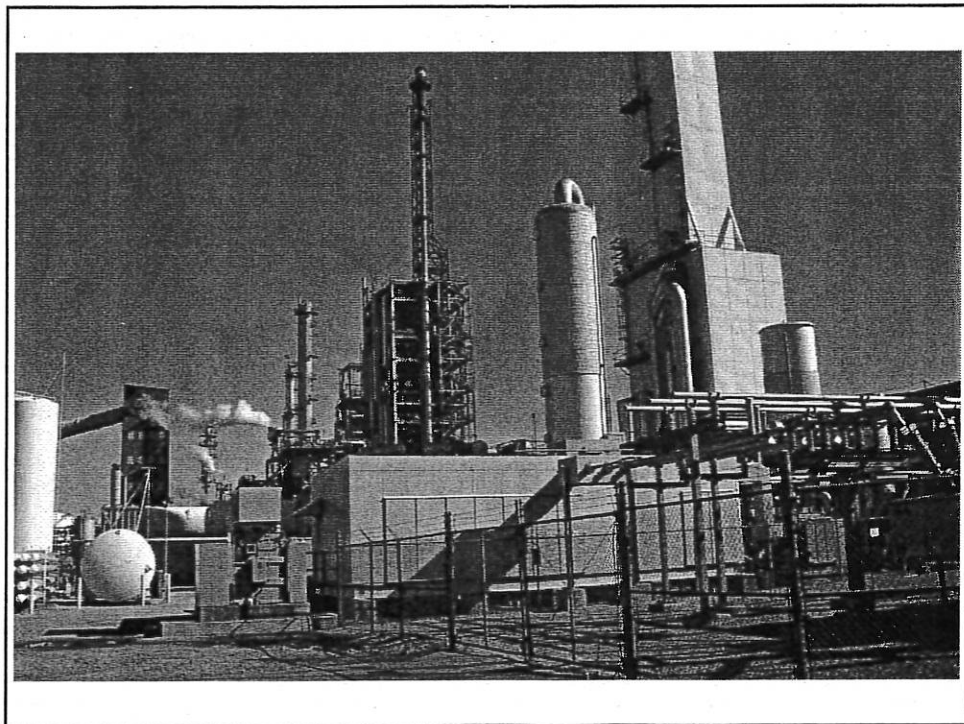
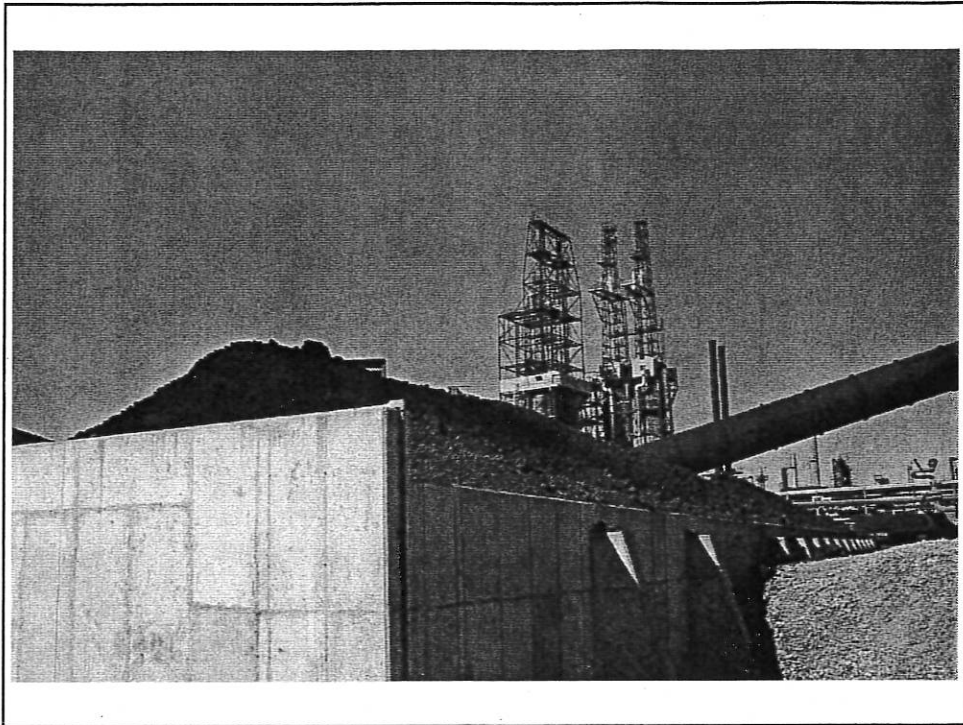
### **Production of Electricity**

Tampa Electric  
Indiana  
El Dorado KS

### **Production of Fertilizer**

Coffeyville KS (Only plant is US)



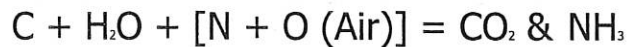


## *Coal Gasification Technology*

Methane



Fertilizer



## *Tar Sands & Heavy Oil*

Canada  
Venezuela

- Must be heated to extract oil
- Must be mixed with light oil or partly refine extracted oil for pipelines
- Major user of natural gas
- May use nuclear power for heat and electricity in the future



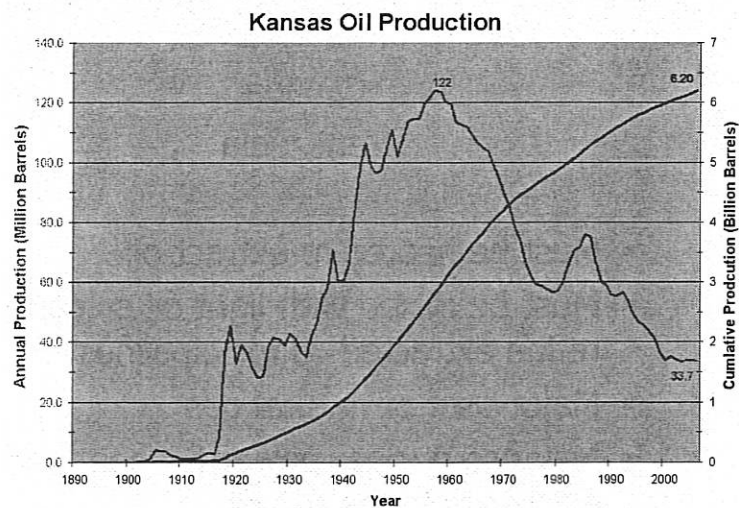
## *Oil Shale*

1 Ton of good shale = 1 barrel of oil

1970's & 80's Colorado boom/bust

No commercially viable method of extraction

## ***Kansas Historical Oil Production***



## *Yagey*

- Congressional Staff
- Refinery Owners
- Yagey Owner
- KDHE

QuickTime™ and a  
TIFF (LZW) decompressor  
are needed to see this picture.

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TIFF (LZW) decompressor  
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## *Kansas Refinery Information*

- 17 Refineries in 1980 -- 3 Refineries 2005
- Kansas Refineries consume 310,000 Barrels Oil Per Day
- Kansas Produces 88,000 Barrels Oil Per Day
- Imported oil to Kansas from surrounding states, off shore Gulf Coast, Canada (including tar sand oil), foreign countries
- As more "heavy oil" is imported into Kansas, refineries will need retrofitting

# *Dangers of Petroleum Dependence*

*by George Shultz and James Woolsey*

- ✓ The current transportation infrastructure is committed to oil and oil-compatible products
- ✓ The Greater Middle East will continue to be the low-cost and dominant petroleum producer for the future 2/3 of proven conventional oil reserves in Middle East
- ✓ Petroleum infrastructure is highly vulnerable to terrorist and other attacks
- ✓ The possibility exists of embargoes or other disruptions of supply

- ✓ Wealth transfers from oil have been used, and continue to be used, to fund terrorism
- ✓ The current trade deficits for a number of countries create risks ranging from major world economic disruption to deepening poverty, and could be substantially reduced by reducing oil imports
- ✓ Global-warming, gas emissions from man-made sources create at least the risk of climate change

## *Hybrid Cars*

### *Oil & Security*

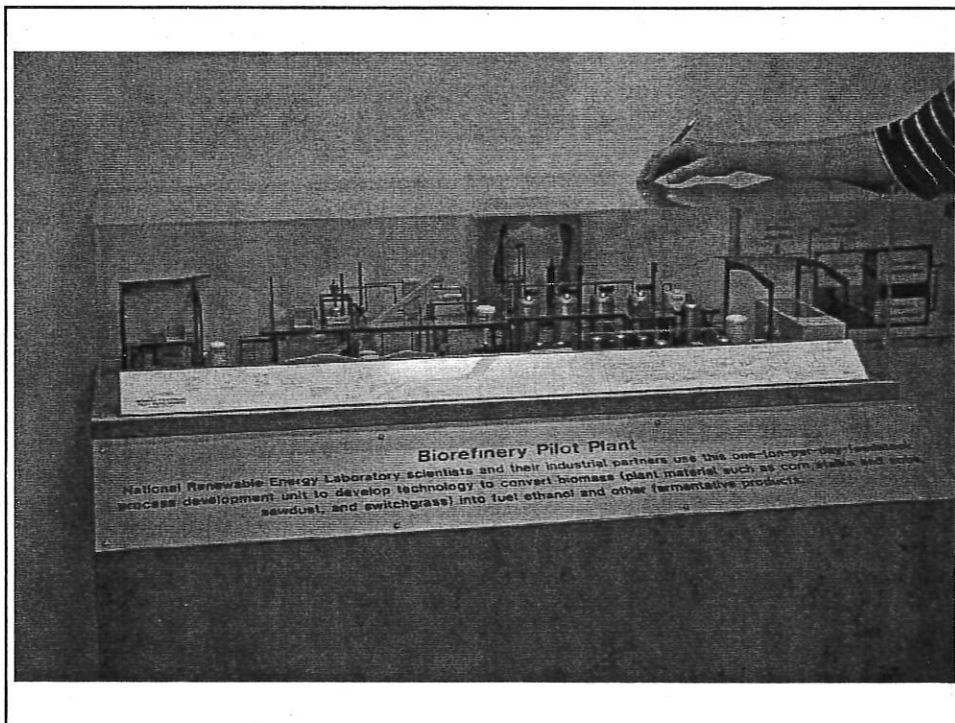
*by George Shultz & James Woolsey*

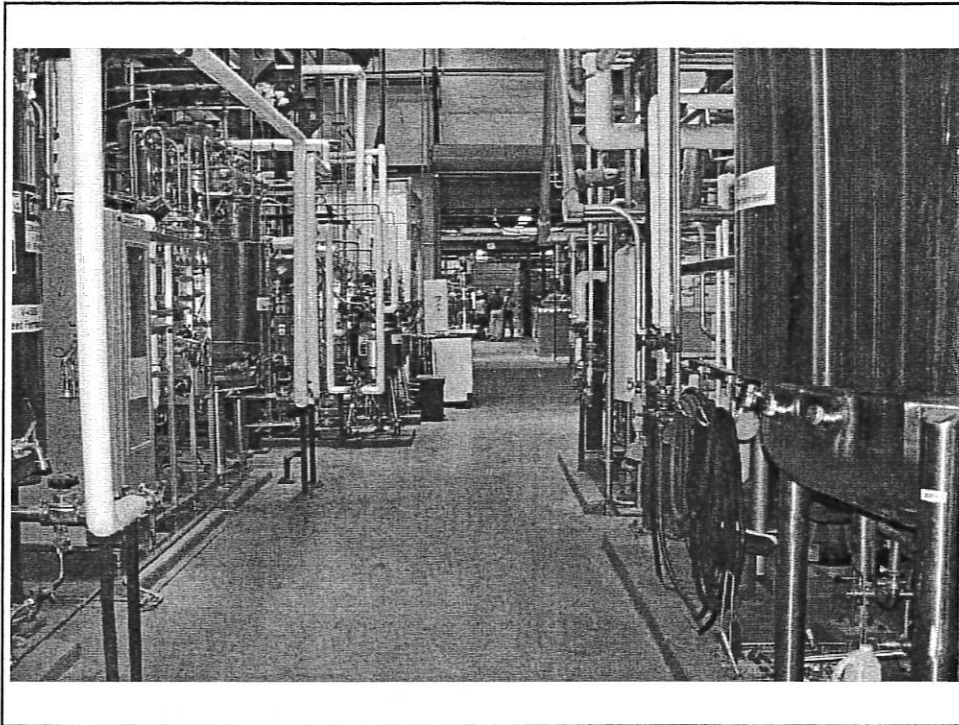
- ❑ Encourage improved vehicle mileage, using technology now in production
  - Diesel Europe 42 mpg US 24 mpg
  - Hybrid gasoline-electric
  - Lightweight Carbon Composite Construction

- ❑ Encourage the commercialization of alternative transportation fuels that are compatible with existing infrastructure and derived from waste
  - Biomass (cellulosic) ethanol
  - Bio diesel and Renewable Diesel

□ Plug-in Hybrids and battery improvements

- Most driving is short distance for cars
- Residential electricity cost about 40% of cost of gasoline per mile





## *Diesel Availability 2050?*

- Ocean Shipping
- Waterway Shipping
- Railroads
- Freight Trucks
- Mining Trucks
- Jet Aircraft
- Farm Machinery

*We are in an Energy Crisis  
Where do we go from here?*

**That's why we are here today**

The longer we wait the more difficult the solution will be

Transportation energy use needs to be more efficient

Natural gas needs to be saved for chemical processes and "space heating"

*Closing Thoughts*

- Global per capita oil production peaked in 1979
- World oil consumption is 25 Billion barrels per year --- ANWR has estimated total production of 5 Billion barrels
- ANWR production will supply total US consumption needs for only 250 days



QuickTime™ and a  
TIFF (LZW) decompressor  
are needed to see this picture.

**EA**

Economic Affordability is the  
ability of an individual to afford  
the cost of energy in today's  
society

Carl Holmes

## ***Where to From Here***

Possible legislation

Controversial

Conserve energy

Expand Production

Open up new sources

Switch fuel uses

## **Time to Act**

- We have the opportunity to act before the energy shortfalls become a real crisis
- An energy crisis occurs from either not being affordable to the "average" citizen or a shortfall of energy not being available
- It is harder to act, but better than reacting after the crisis

- The background information presented here has come from many sources.
- The responses will come from the discussion and debate on the direction this state should take relating to energy issues.
- The list is not complete-we must fill in the blank spaces.