

## The Long Emergency

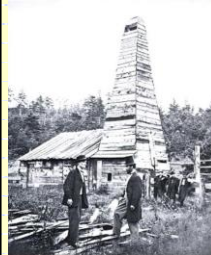
James Howard Kunstler  
Rolling Stone Magazine 2005

Prof. Ed Krumpke  
CSS 235



## CRUDE OIL it all started in 1859

Edwin L. Drake, Titusville, PA



## The "problem" with oil

- ◆ "Reliable supplies of cheap oil & natural gas underlie everything we identify as necessities of modern life."
- ◆ People don't understand that we don't have to run out to start having severe problems...just reaching the point of decline in production has grave ramifications.
- ◆ The last half is more difficult to extract, poorer quality, more costly, & located in places where people hate us!

3

### WTI Crude Oil

\$102.07 ▼0.76 0.74%

11:57 AM EDT - 2012.04.16



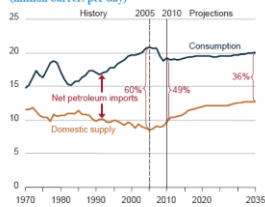
Average price per gallon:  
11/12/2012

**Gasoline \$3.75**  
**Diesel \$4.10**

4

## Are we really running out?

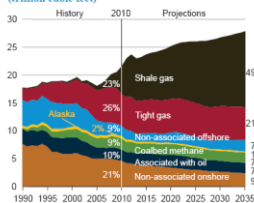
Figure 1. U.S. liquid fuels supply, 1970-2035 (million barrels per day)



U.S. Energy Information Administration | Annual Energy Outlook 2012 Early Release Overview

5

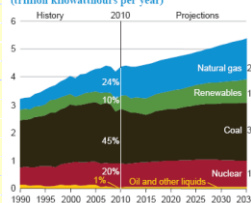
Figure 2. U.S. natural gas production, 1990-2035 (trillion cubic feet)



## Maybe not, but . . .

### Electricity Generation

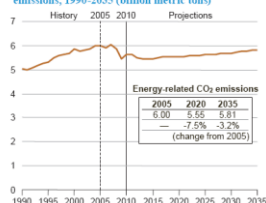
Figure 3. Electricity generation by fuel, 1990-2035 (trillion kilowatt-hours per year)



U.S. Energy Information Administration | Annual Energy Outlook 2012 Early Release Overview

### Carbon Dioxide Emissions

Figure 4. U.S. energy-related carbon dioxide emissions, 1990-2035 (billion metric tons)



6

## Are we really running out of petroleum?

- ◆ We have made choices not to explore certain areas:
  - 80% of US coastline is off-limits
  - Arctic National Wildlife Refuge off-limits
- ◆ Growth in demand from China and India came faster than oil producers could build new capacity
- ◆ Deep wells in the Gulf are capped

7

## Will natural gas save us?

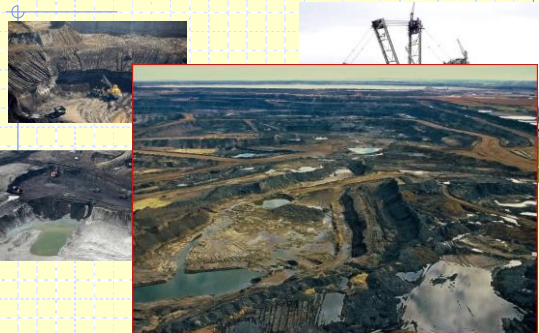


- ◆ American natural gas production was declining at 5% per year
- ◆ New super fields of natural gas require fracking and produce ground water pollution & geo-impacts
- ◆ Our vast pipeline network is decrepit



## Canadian Tar Sands

A question of scale . . .

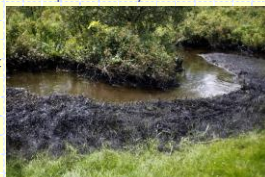


## Concerns surface about underground pipelines: Leaks, explosion highlight dangers nationwide

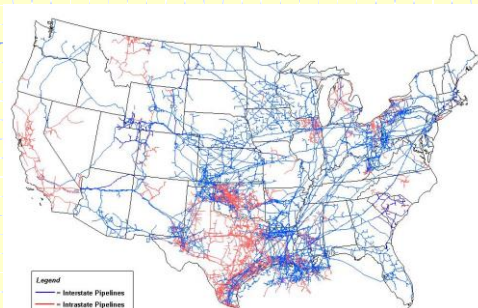
**CHICAGO** — Crews worked Monday to replace pipe at the site of an oil leak outside Chicago that led to a spike in gasoline prices across the Midwest, two days before a congressional hearing on another leak in the same company's pipeline that spilled an estimated 1 million gallons of crude oil into the Kalamazoo River.

Meanwhile, an ominous theme has emerged from the deadly explosion of a natural gas pipeline in California: There are thousands of pipes just like it nationwide and, though utilities have been under pressure for years to better inspect and replace aging gas pipes, the effort has fallen short. Critics say the regulatory system is ripe for problems because the government largely leaves it up to the companies to do inspections, and utilities are reluctant to spend the money necessary to properly fix and replace decrepit pipelines.

Kalamazoo Gazette, Sept. 14, 2010

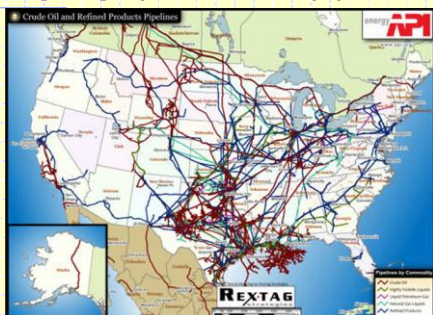


## Natural Gas Pipelines



Source: Energy Information Administration, Office of Oil &amp; Gas, Natural Gas Division, Gas Transportation Information System

## An ageing system of oil pipelines



13

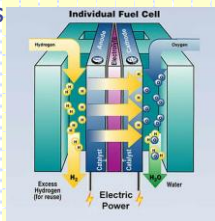
## Can natural gas save us?

- ◆ Using NG domestically will yield many benefits
- ◆ Importing/Exporting liquefied natural gas (LNG) is prohibitively expensive
- ◆ Building a new LNG port is almost impossible -- NIMBY !
- ◆ Vulnerable to terrorism on high seas, AND at the ports

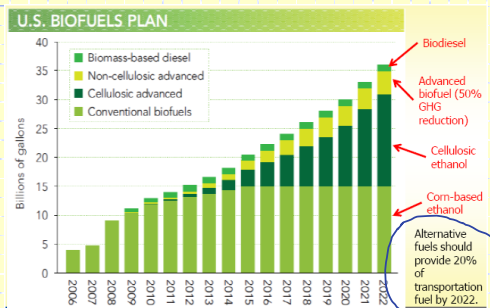
14

## What about Alternative Fuels?

- ◆ "Hydrogen economy" & fuel cells & automobiles
- ◆ Requires huge amounts of electricity
- ◆ All new distribution & dispensing
- ◆ Controlled by the largest corporations



## Biofuels as an alternative



16

## What about Alternative Fuels?

- ◆ "Biomass" – only a fraction of demand
- ◆ Displaces & increases cost of food production
- ◆ Totally dependant on huge subsidies
- ◆ Requires huge amounts of oil & gas inputs for fertilizers, herbicides, tillage, transportation, etc.

17

## The cost of biofuels

- ◆ Demand for biofuel feedstock will promote conversion of non-agricultural land to agricultural use. (CRP not permanent)
- ◆ Drives up price of food grains
- ◆ Potential massive scale conversion to corn & soybeans causing rainforest destruction in Brazil and Indonesia

Closer to home:  
Black oil sunflower seeds > \$24/50lb to \$36/40lb in 2 years

18

## What about Alternative Fuels?

- ◆ Nuclear?
- ◆ Need dozens of "next generation plants"
- ◆ Siting – NIMBY
- ◆ Safety, safety, safety
- ◆ Nuclear waste disposal?????
- ◆ Most uranium comes from unstable 3<sup>rd</sup> world nations



19

## What about Alternative Fuels?

*"Great Hope, or Great Hoax?"*

- ◆ Wind?
- ◆ Solar?
- ◆ Wave?
- ◆ Geothermal?
- ◆ "We trust that persistent research will lead to the next great breakthrough."

20

## Worldwide Competition for Fuels

- ◆ 2/3rds of oil supply in Middle East but "unknown" life span
- ◆ China's & India's surging industrial growth will exceed US consumption
- ◆ Russia & Eastern European demand growing
- ◆ War, police state actions . . .

21

## American Society & Lifestyle?

- ◆ "Suburbia will come to be regarded as the greatest misallocation of resources in the history of the world."
- ◆ Consumer society
- ◆ Loss of railroads
- ◆ Slow to change . . .
- ◆ Collapse????



## How will America change?

- ◆ What was Kuntsler's prognosis?
- ◆ Towns & smaller cities surrounded by agriculture
- ◆ Pacific NW, New England & Upper Midwest will fare better
- ◆ Compact cities w/o suburbs
- ◆ Return to rail transportation
- ◆ "Cultivate a religion of hope"

23