

The Impact of Peak Oil on Low Income Communities: Preparing Poor America for Harder Times Ahead

NYSERTA LIFE Conference
May 22, 2012

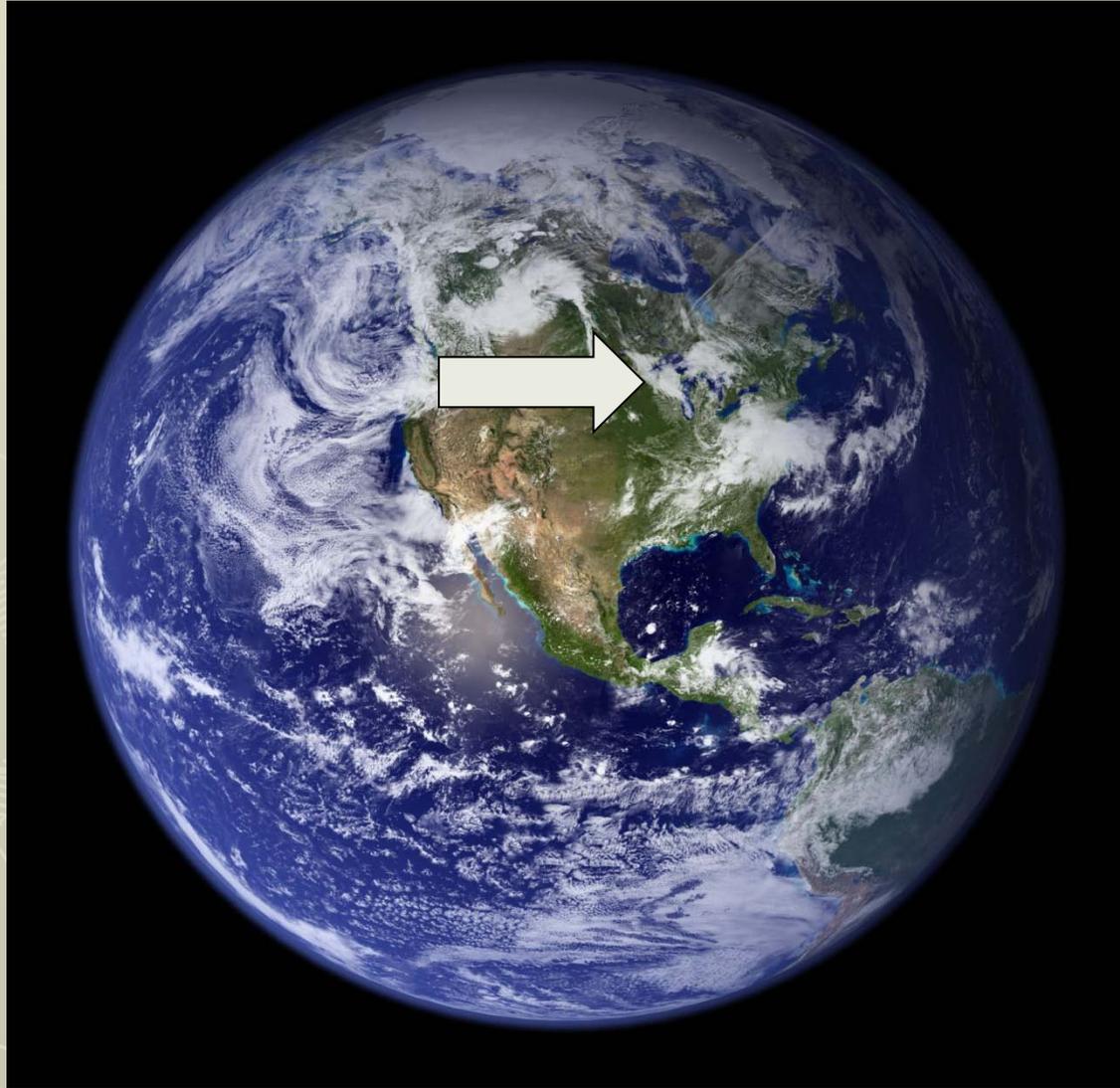
Peter Kilde
presenter

I'm from here



Or for you Global Thinkers...

I'm from
here

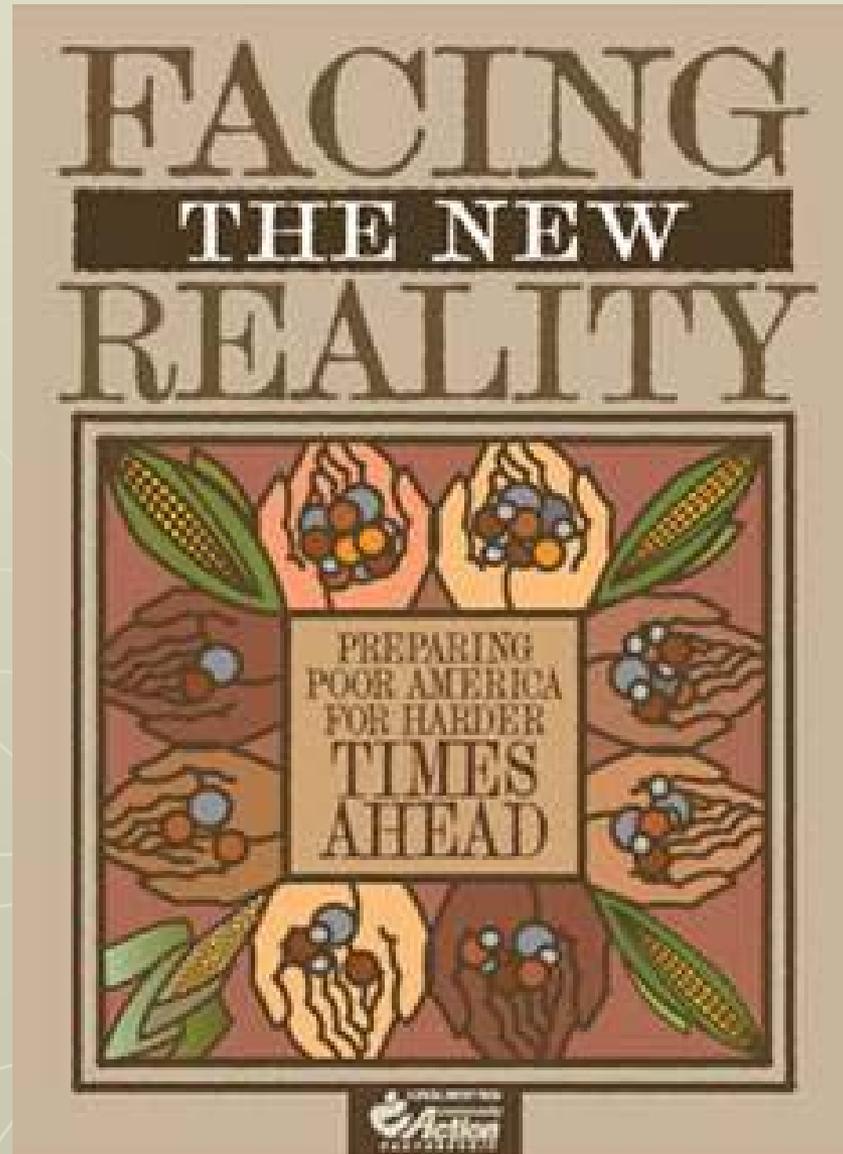


And for the Re-localizers...

I'm from
here



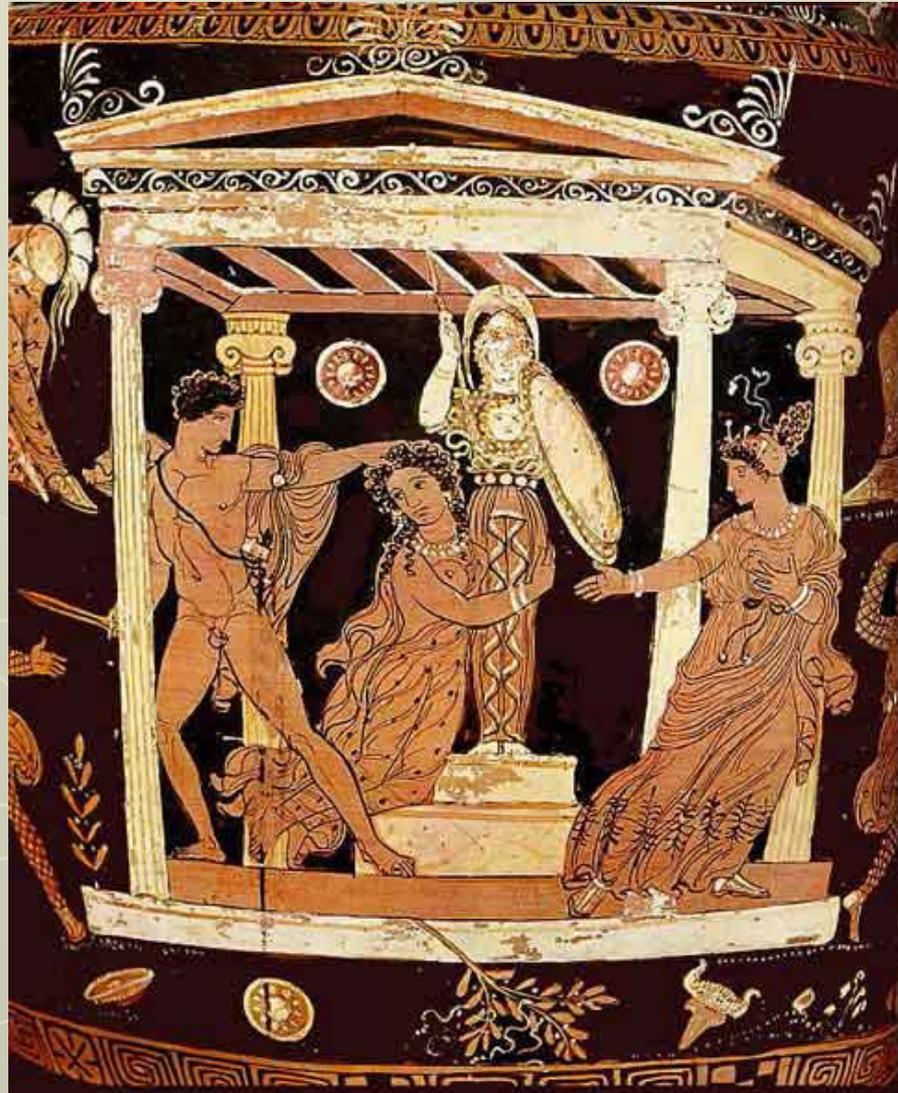
I am primarily responsible for this..



Three Intertwined Mega-Trends

1. Resource Depletion – *Especially Fossil Fuels*
2. Environmental Degradation – *Especially Climate Change*
3. Economic Turmoil – *Especially Debt Driven*

Cassandra and her Evil Triplets

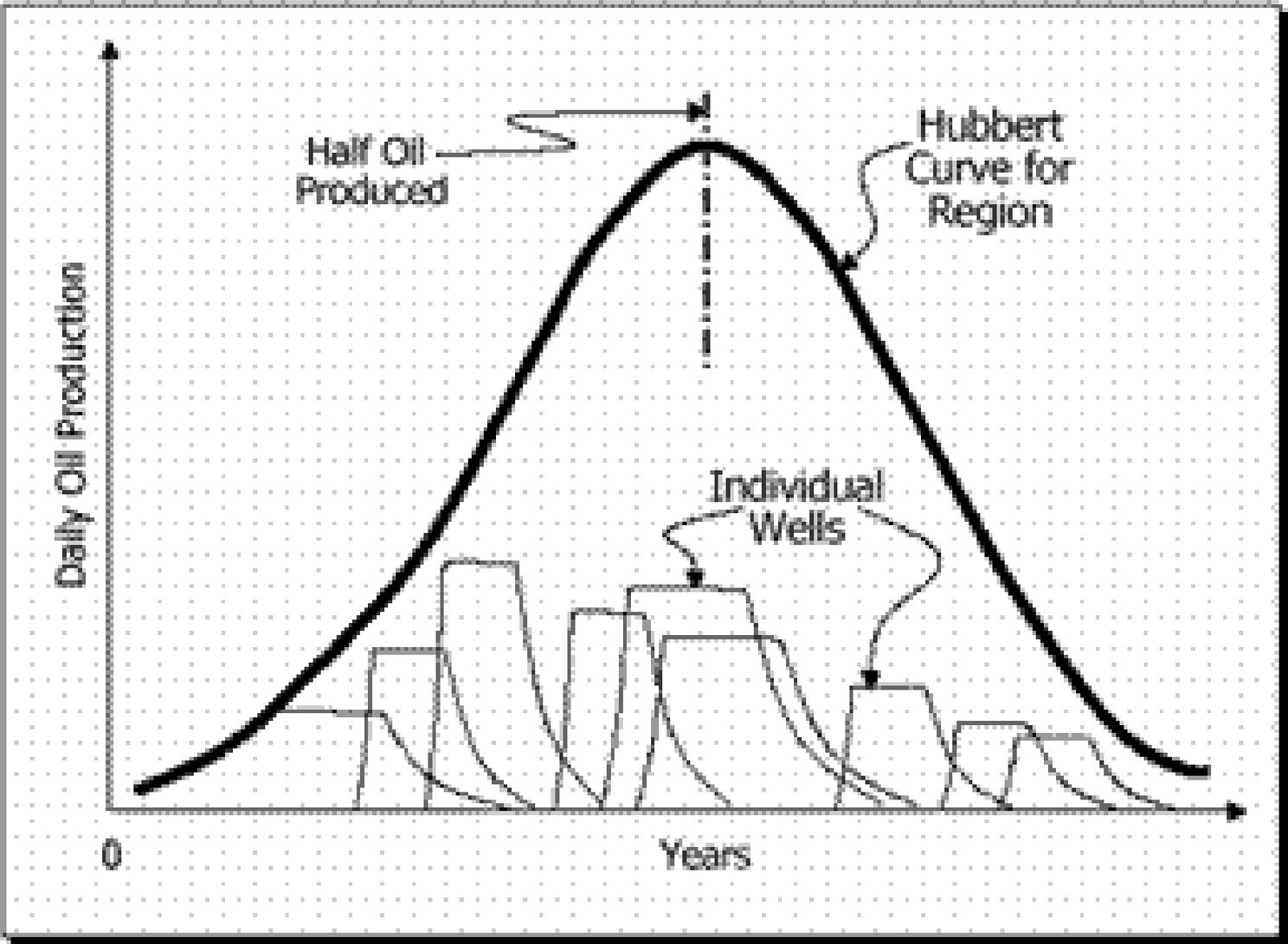


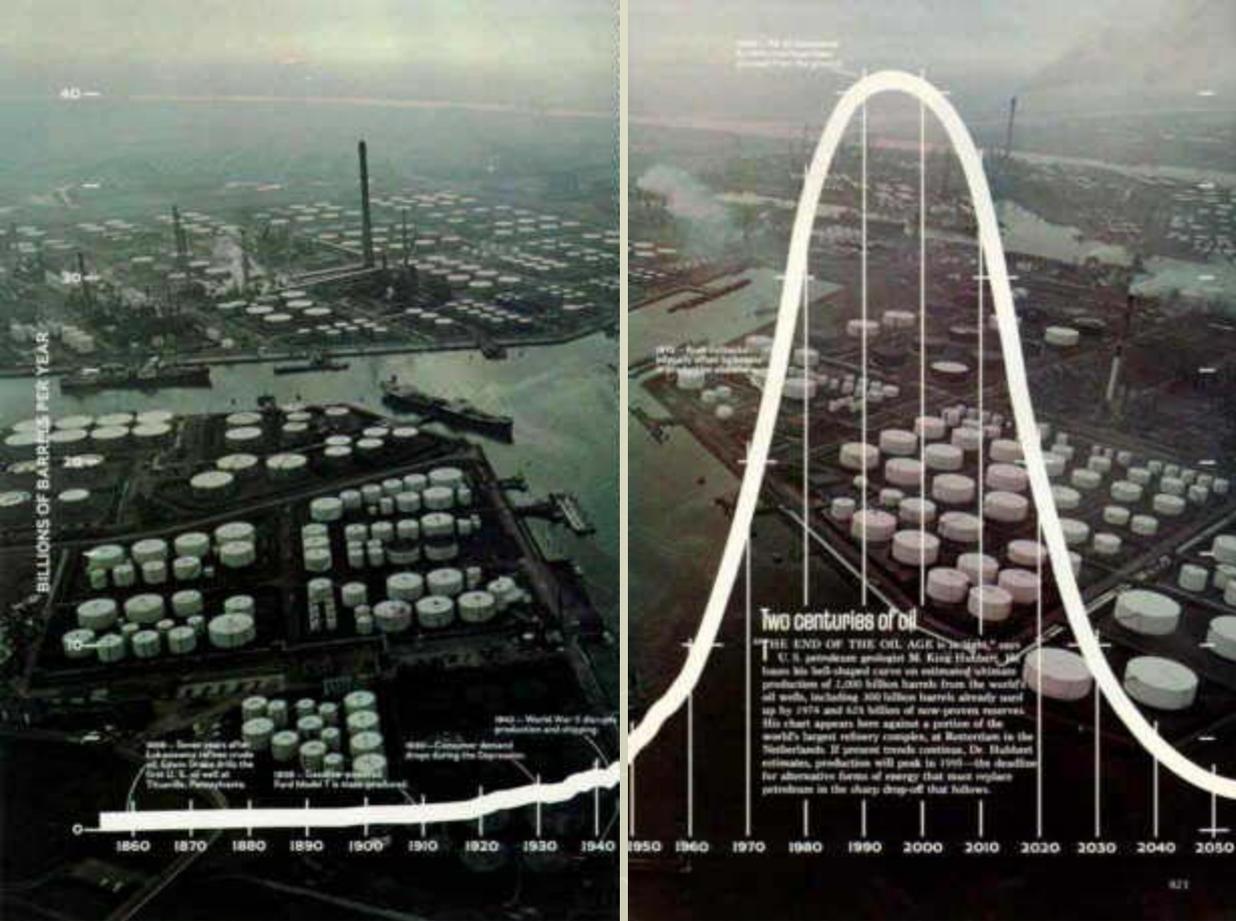
Peak Oil Suspect #1 - M. King Hubbard



HUBBERT CURVE

Regional Vs. Individual Wells

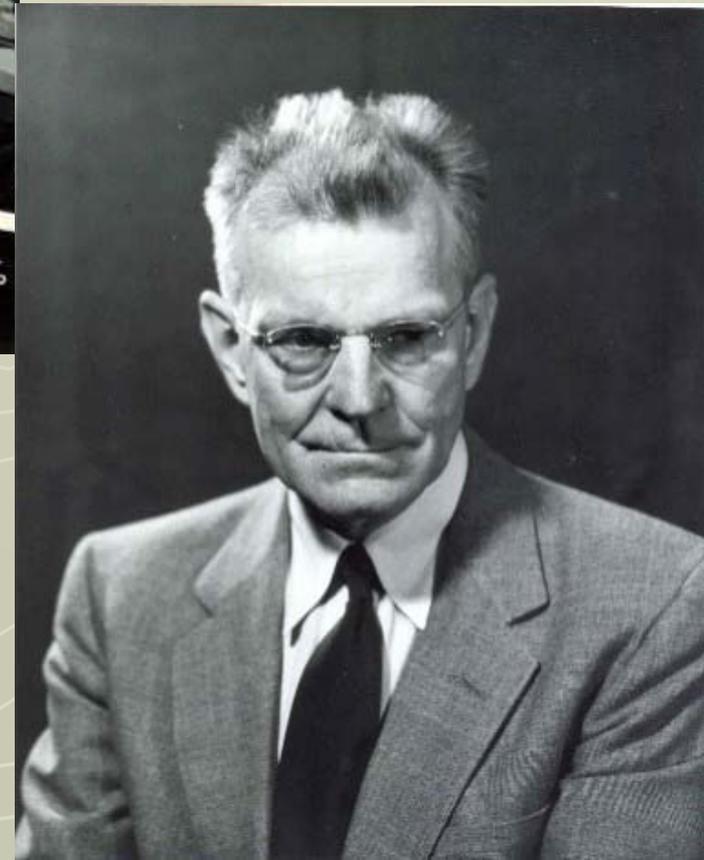




"Oil, the Dwindling Treasure"

by Noel Grove

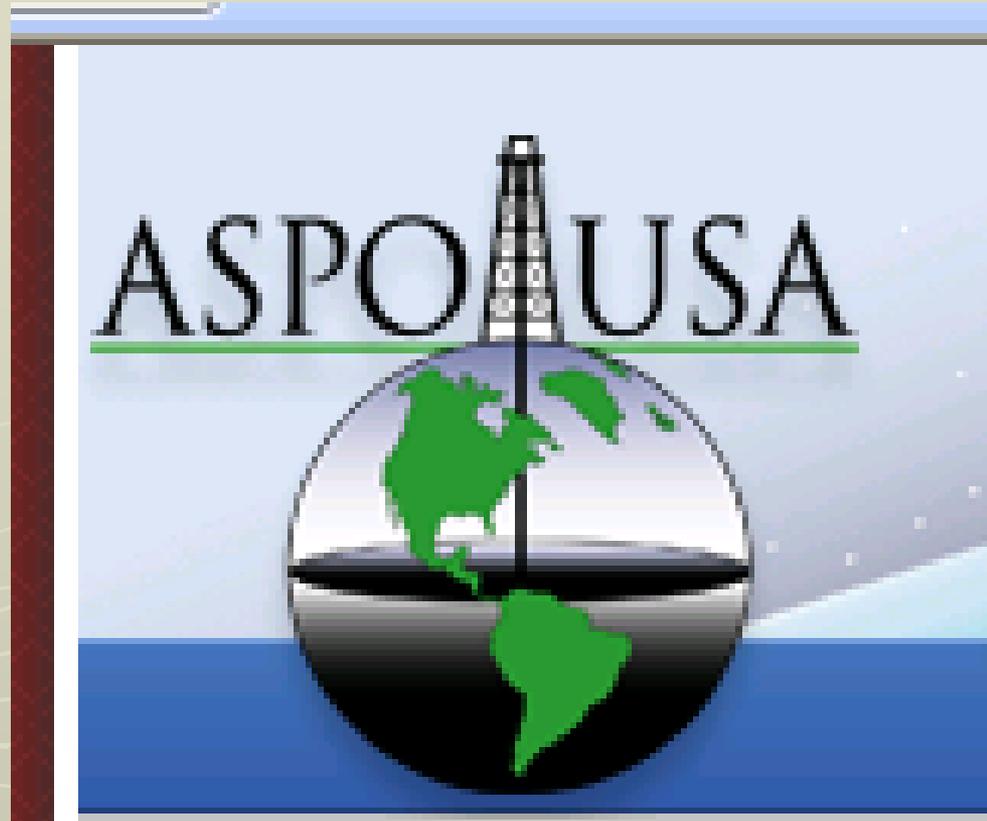
Photographs by Emory Kristof
National Geographic, June,
 1974



Caption: "THE END OF THE OIL AGE is in sight," says U.S. petroleum geologist M. King Hubbert.... If present trends continue, Dr. Hubbert estimates, production will peak in 1995 -- the deadline for alternative forms of energy that must replace petroleum in the sharp drop-off that follows."

<http://www.hubbertain.com/hubbertain/natgeog.htm>

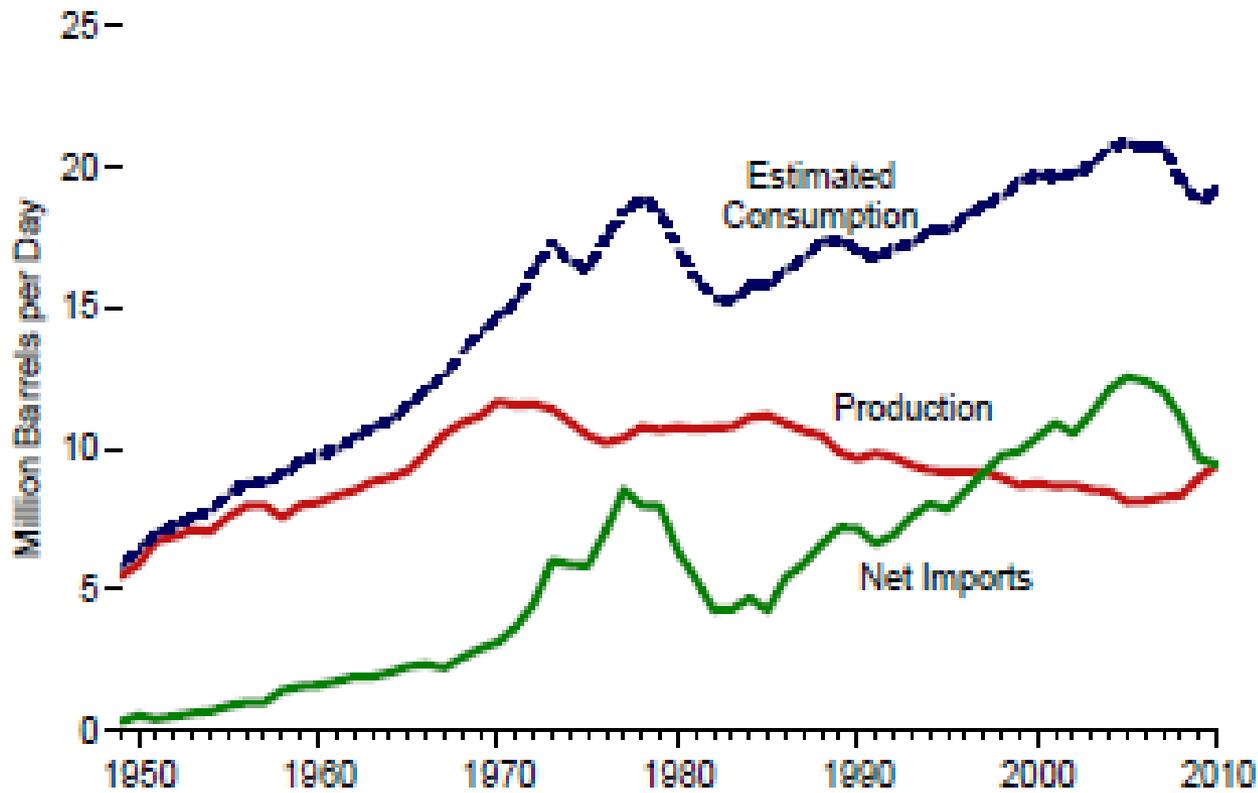
Then ASPO was formed in Sweden in 1995



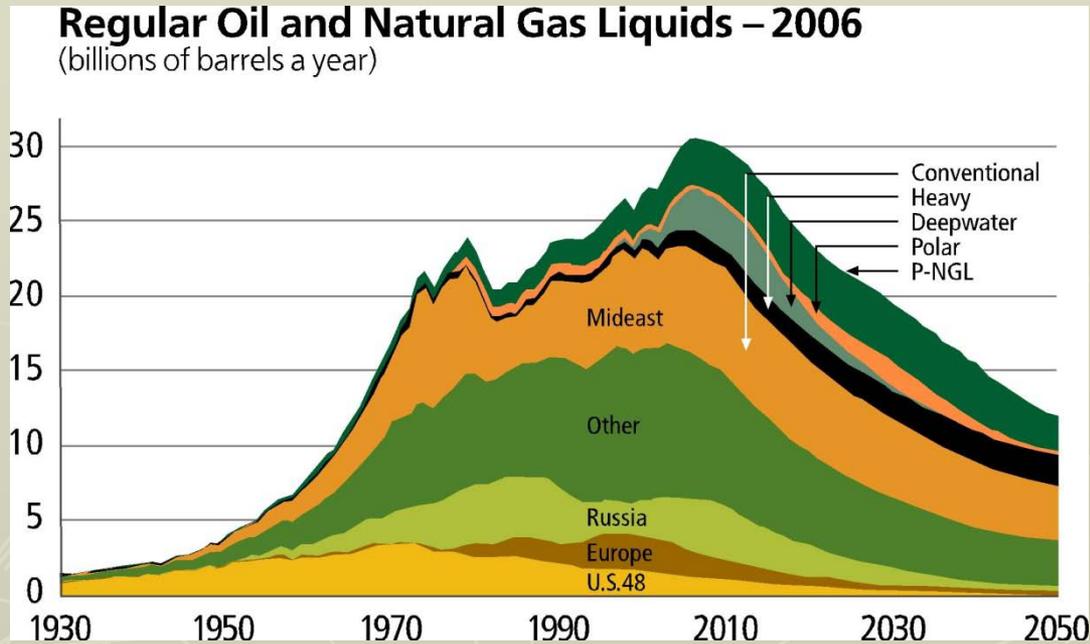
USA: Oil Production & Consumption

Figure 5.1a Petroleum and Other Liquids Overview

Overview, 1949-2010



Resource Depletion – Peak Oil



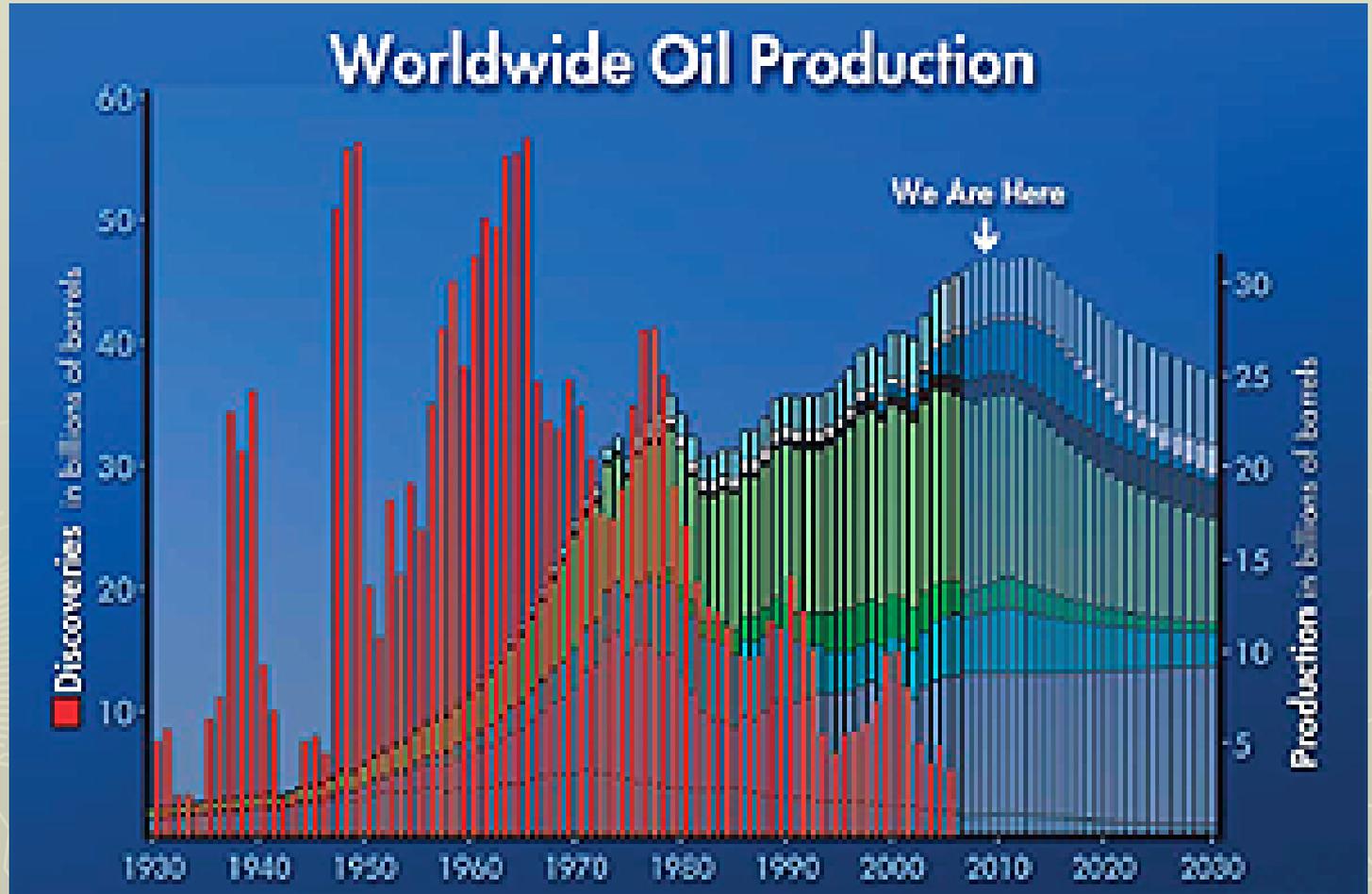
- ▶ **The point at which an area's oil production reaches its maximum and declines until exhaustion**
- ▶ **Demand begins to exceed supply**
- ▶ **Global peak occurs when production from new fields/unconventional sources can't replace loss from existing fields/conventional sources**

World Oil Production (All Liquids)

"General Depletion Picture"



<http://www.aspo-usa.com/index.php>

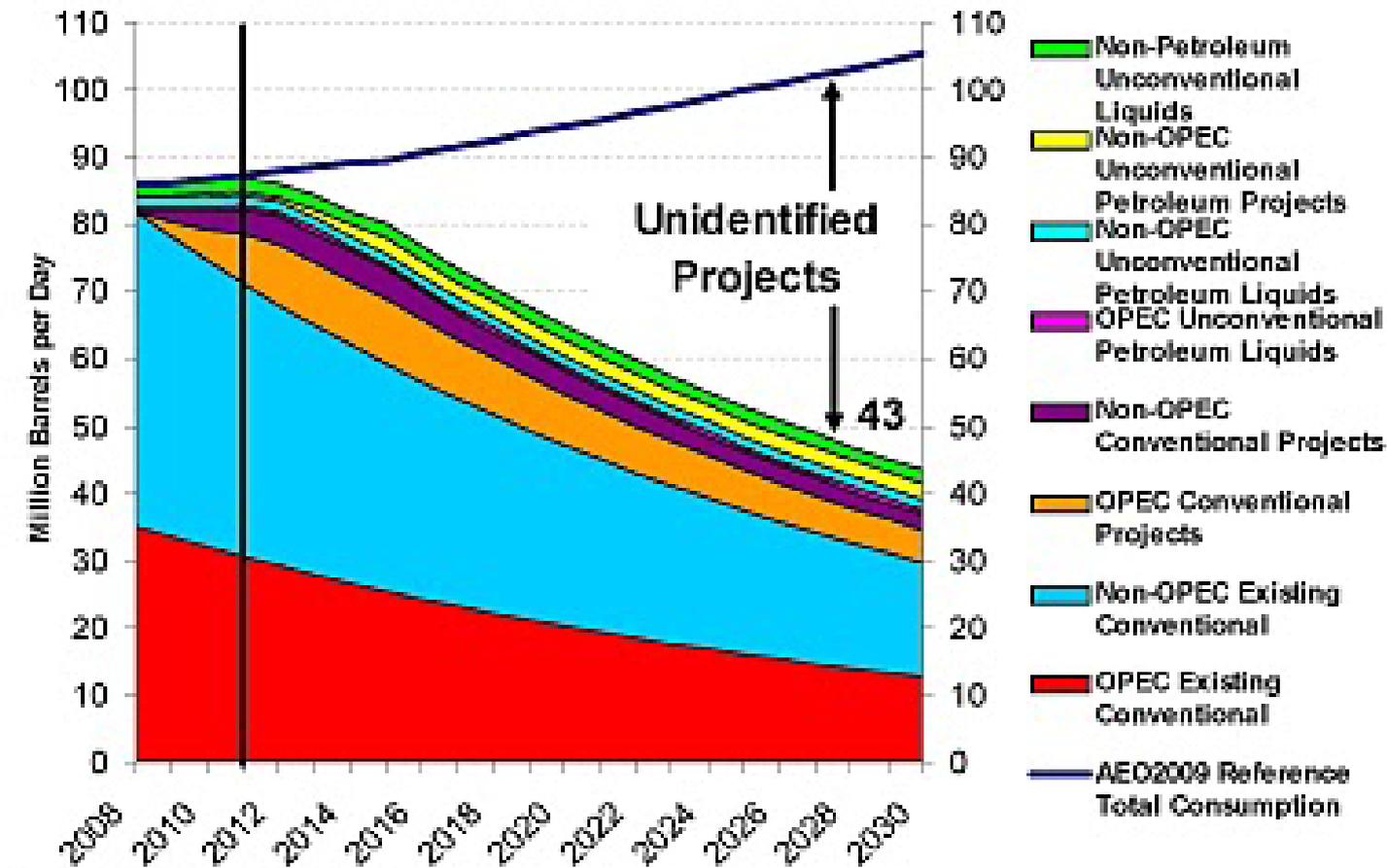


Discovery / Consumption Gap



World Oil Production Problem #1

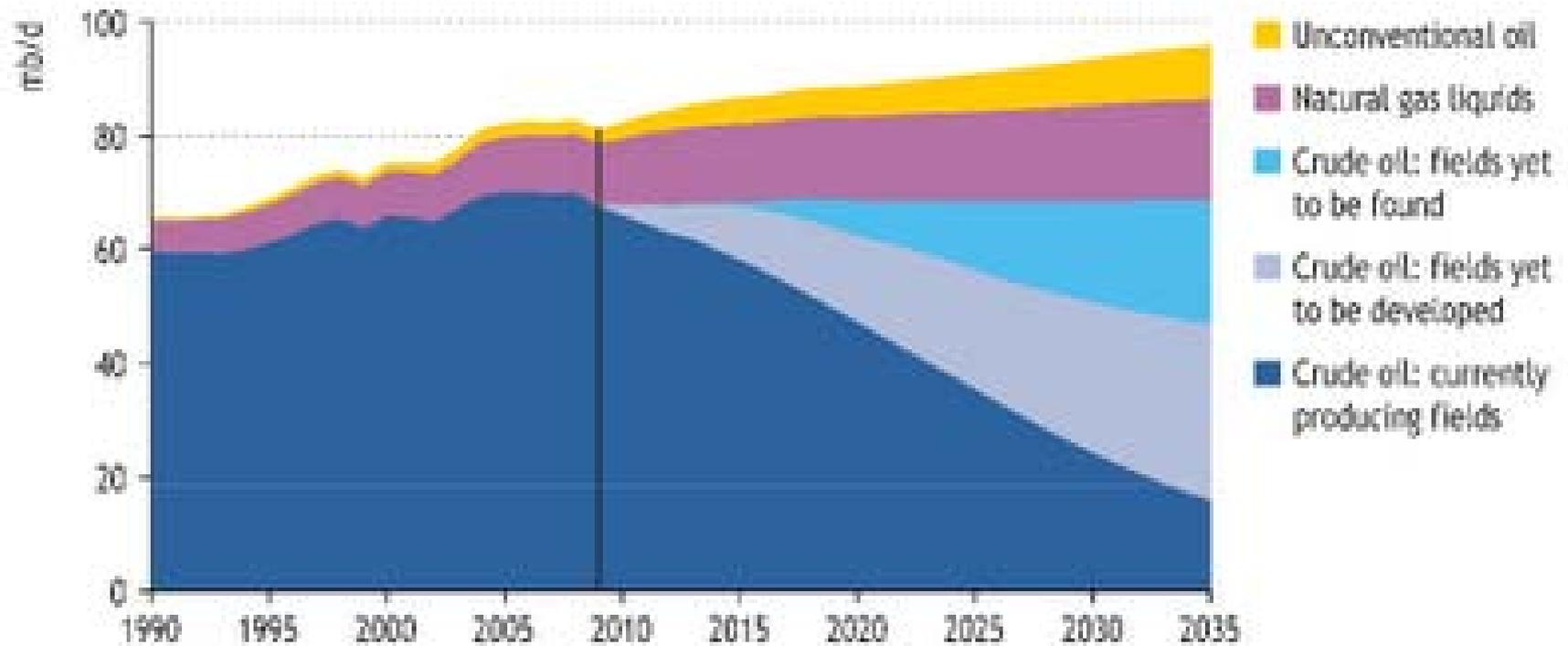
World's Liquid Fuels Supply



Source: EIA, AEO2009

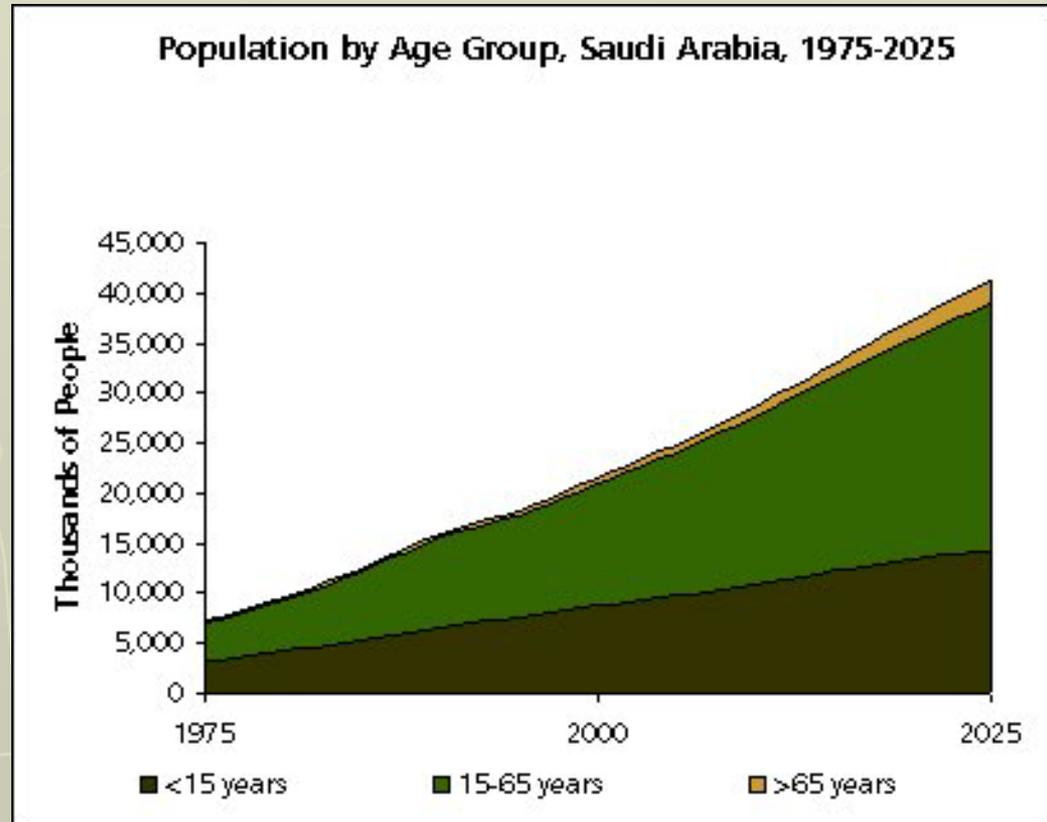
World Oil Production Problem #1b

World oil production by type in the New Policies Scenario



World Oil Production Problem #2: Net Available Imports

- ▶ The world uses 85 + mbd of oil. (32 Billion/yr)
- ▶ The US uses 19 mbd., approx. 22% of World
- ▶ US produces 5.9 mbd. Crude + 4.2 mbd. NGL & bio
- ▶ US imports 8.9 mbd (45%)
- ▶ Net Available Imports (34 exporters feed 155 importers) in 2006 (excluding China and India) was 40 mbd.
- ▶ In 2011 it was 35 mbd.
- ▶ In 2020 it will be 20 mbd.
- ▶ In 2030 it will be 0 mbd



World Oil Production Problem

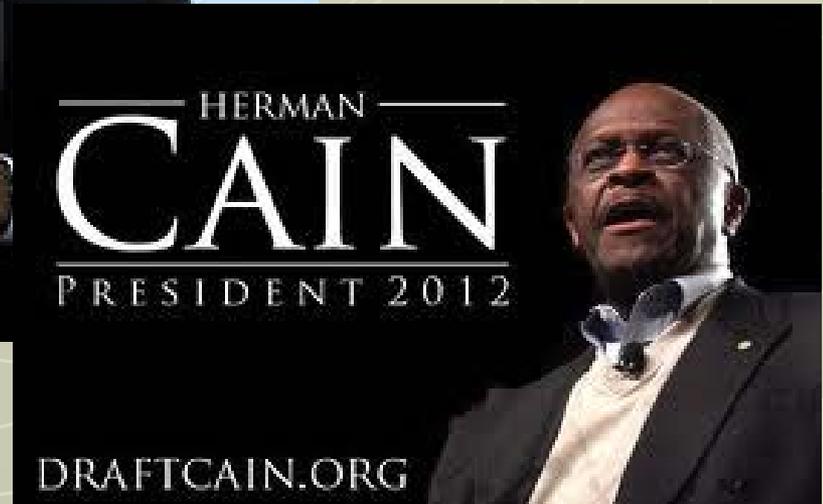
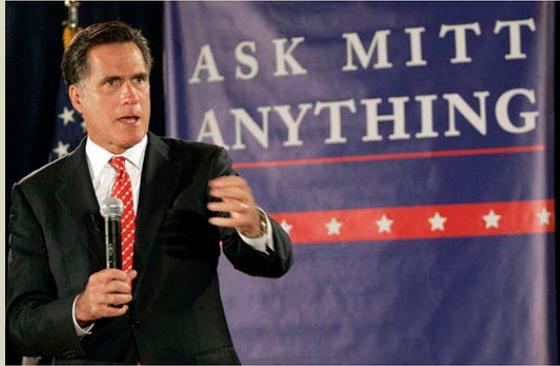
#3: Deepwater and Unconventional Oil



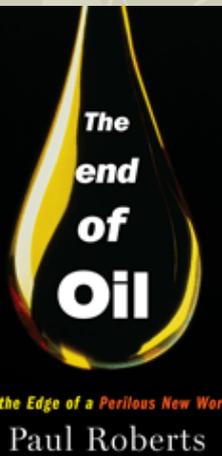
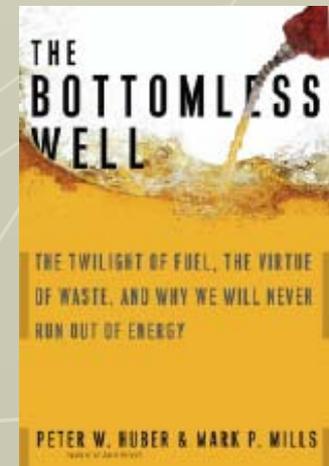
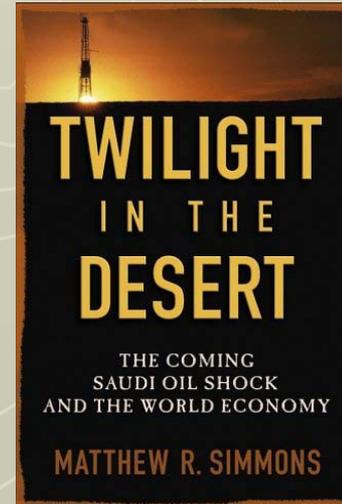
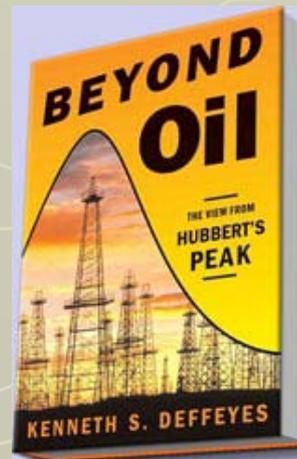
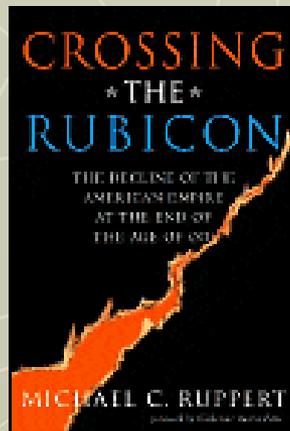
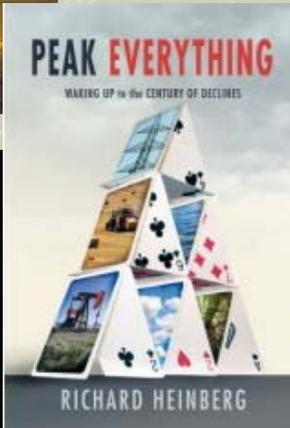
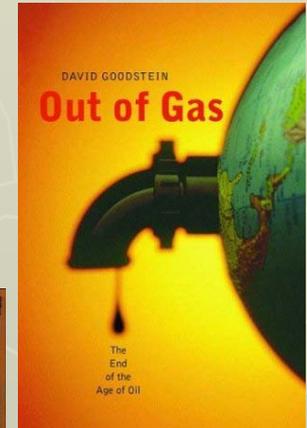
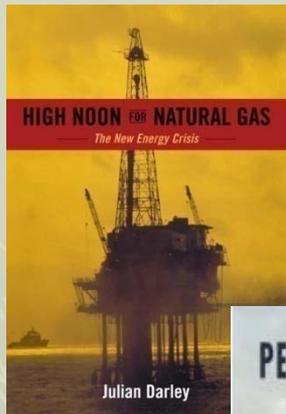
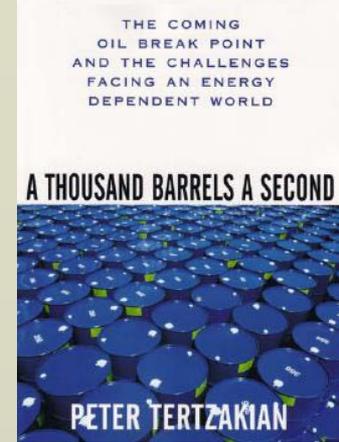
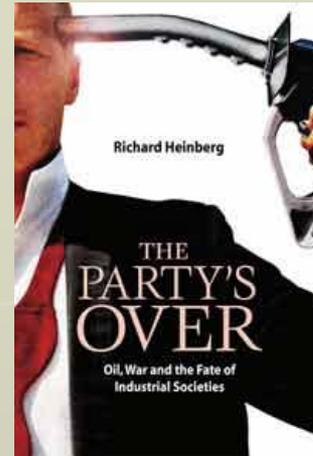
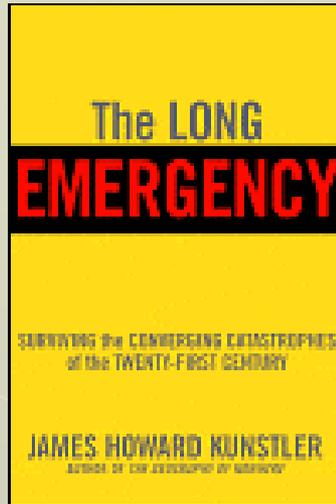
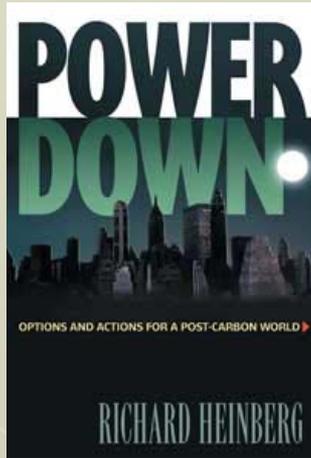
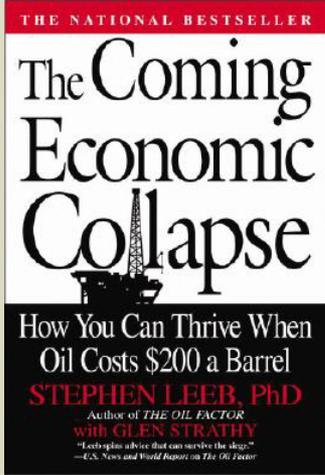
World Oil Production Problem #4: Climate Change



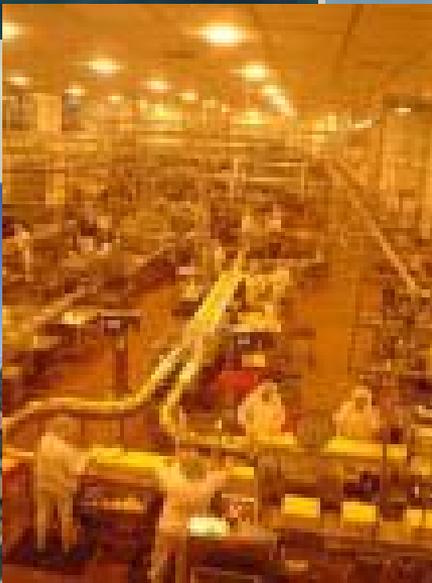
World Oil Production Problem #6: Electile Dysfunction



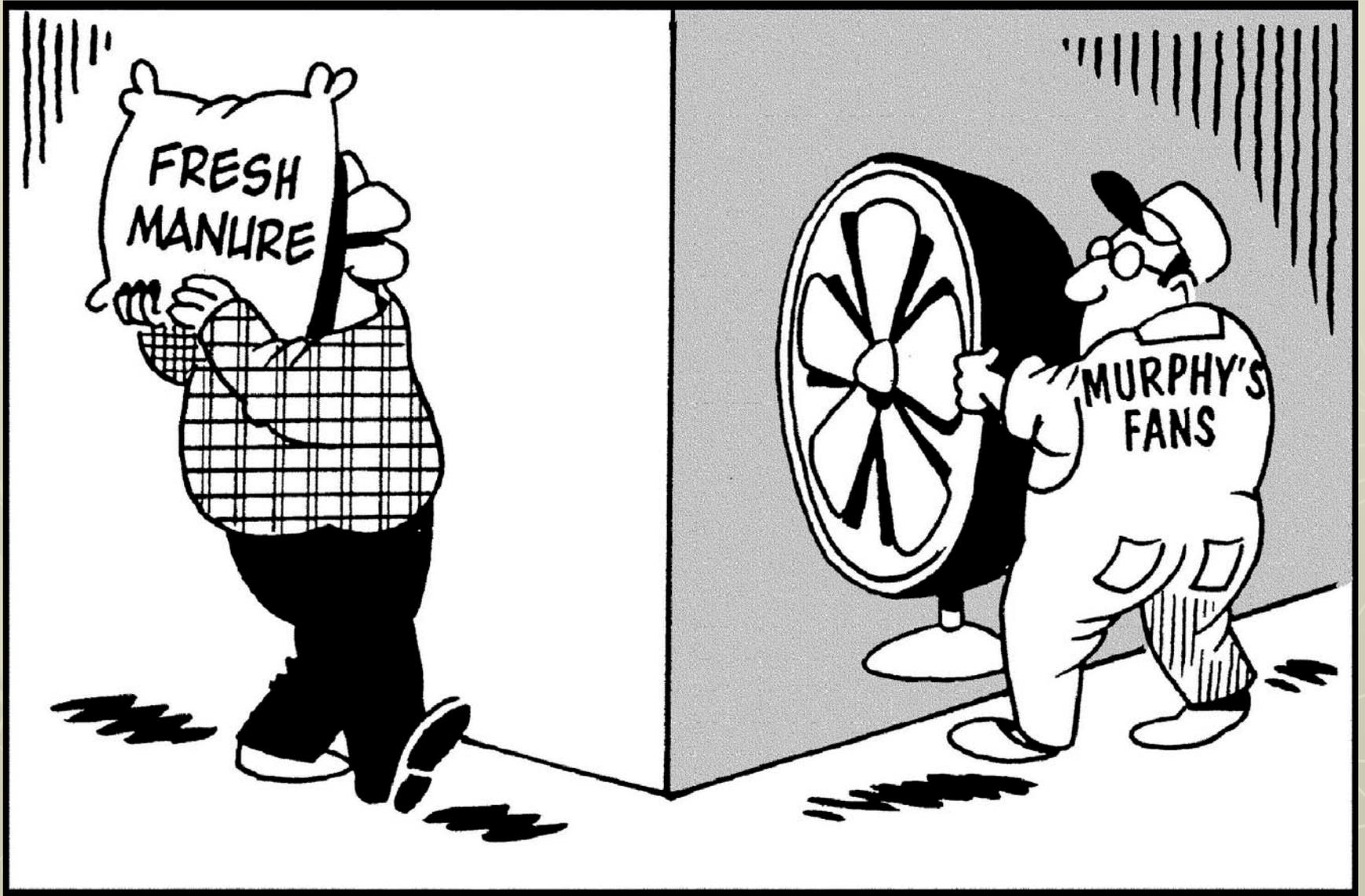
Lots of Documentation & Prognostications.....



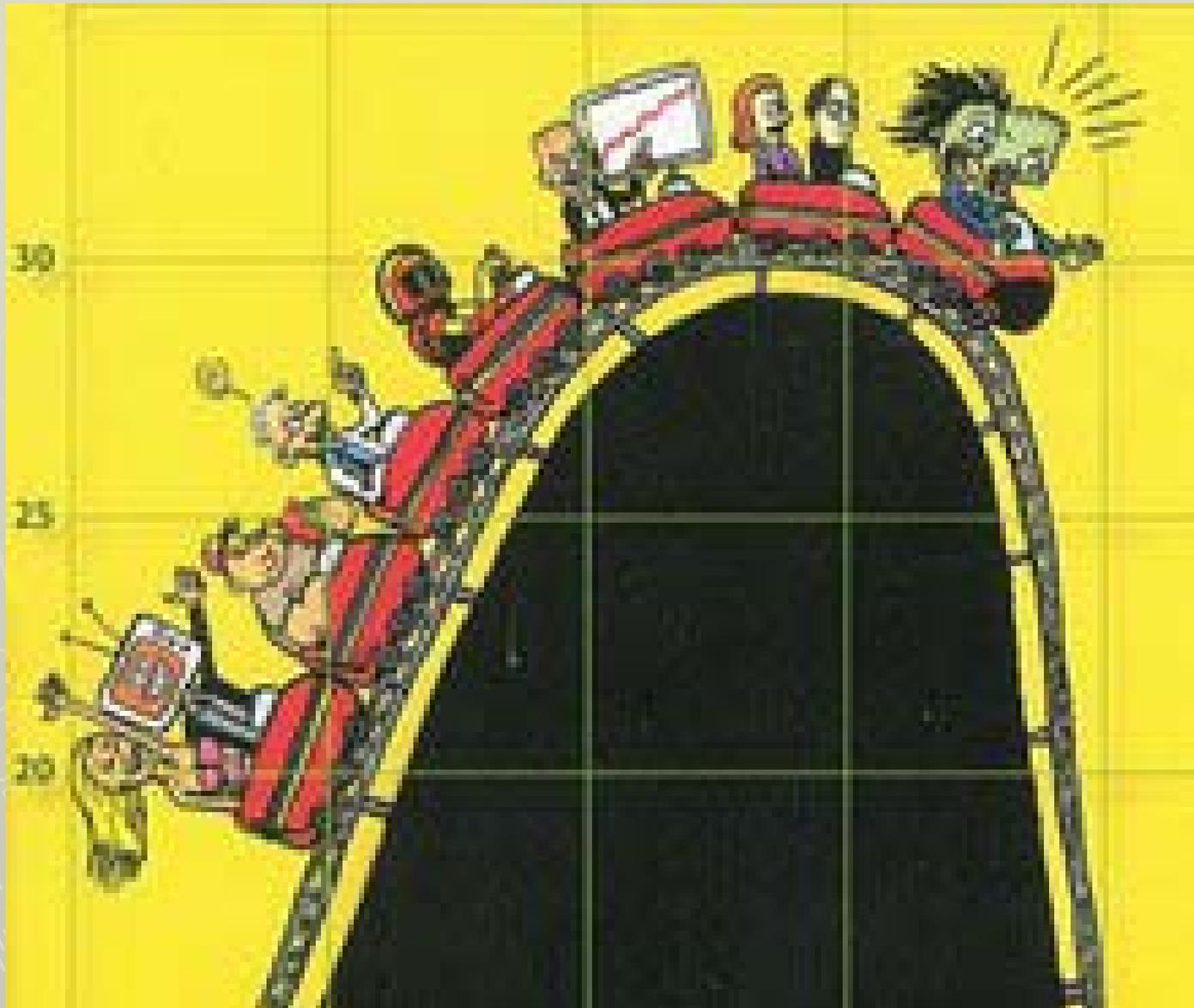
Who Cares? “The American way of life”



Or for the graphically inclined....

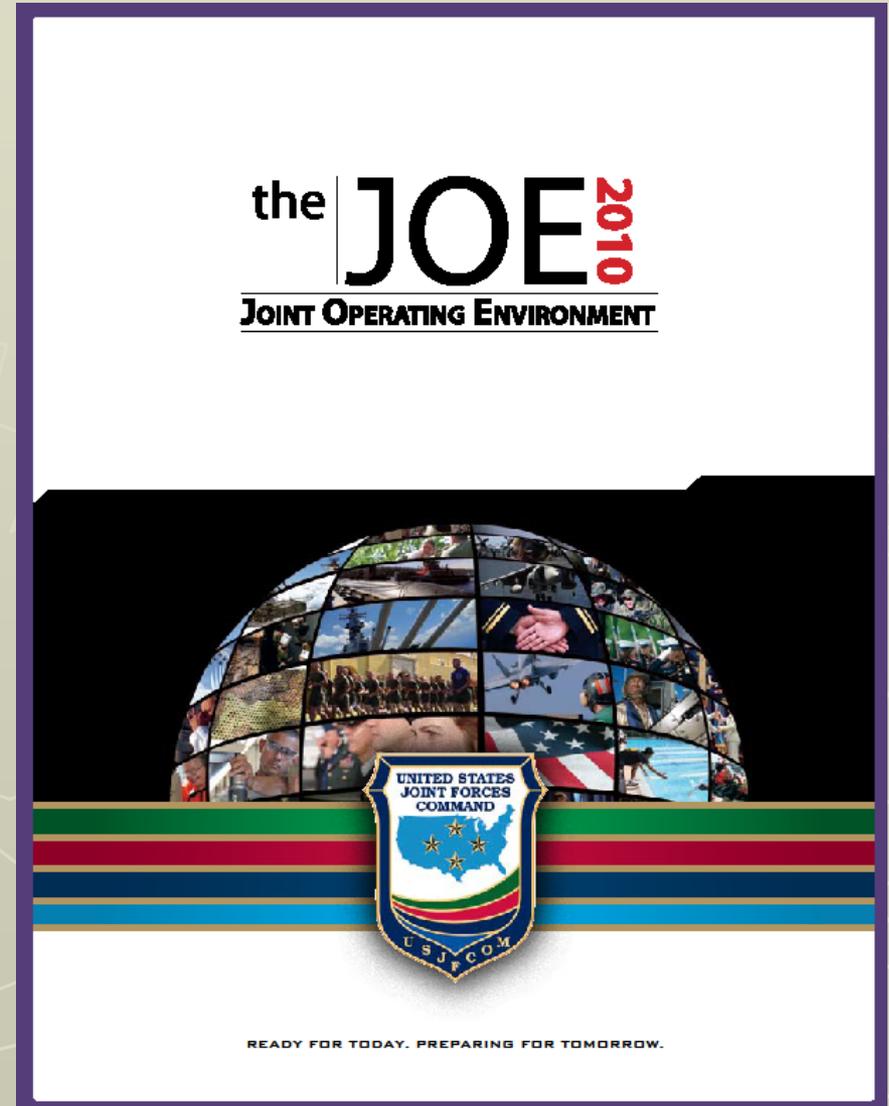


Or again, for the graphically inclined....

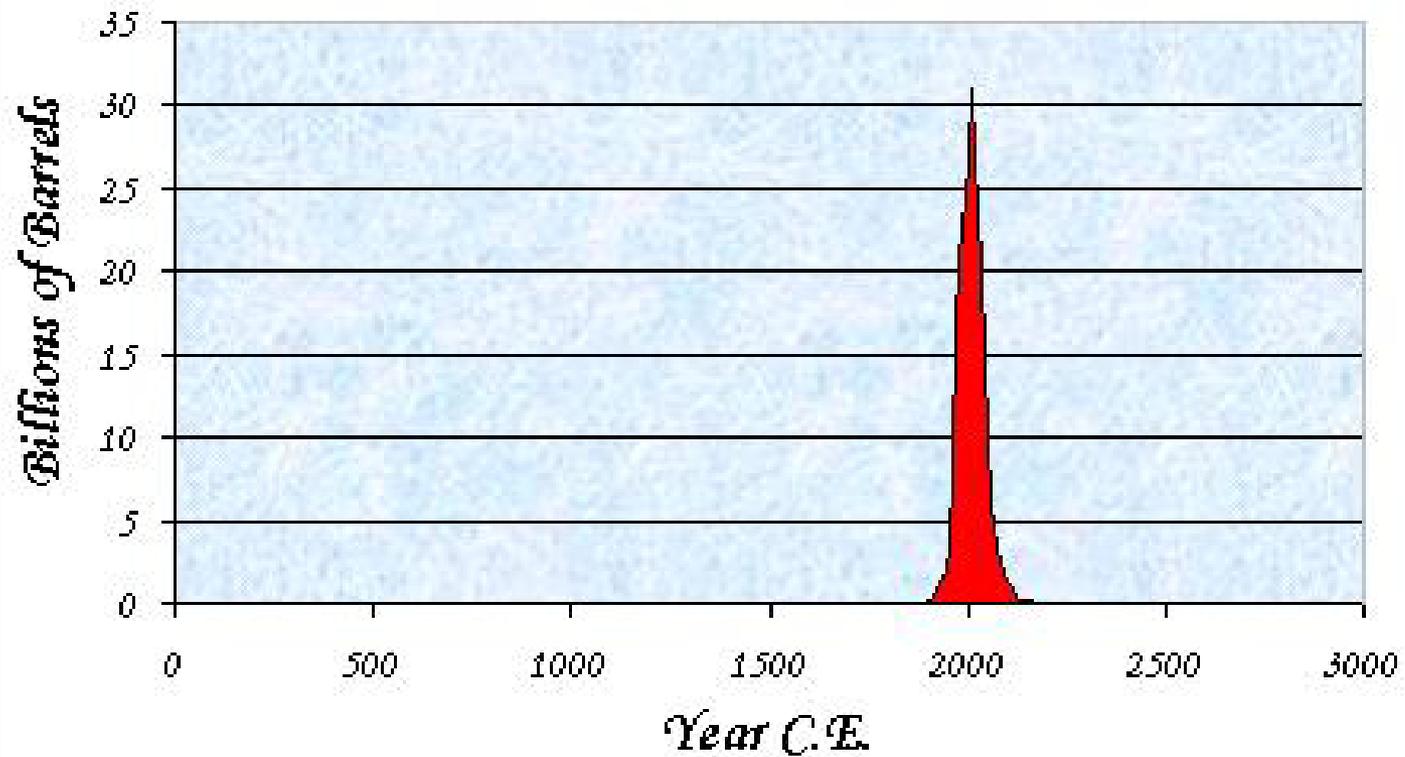


But don't take my word for it ..

- ▶ World petroleum demand will exceed supply by 2012
- ▶ World petroleum demand will exceed supply by 10 mbd by 2015



The Age of Oil



But Won't **Technology** and **Market Forces** Meet the Demand?





Problems of scale, time, and physics, and more.....

Solar? – It would take the equivalent area of half the surface of the state of California (212,000 sq. km) of solar cells to replace the energy we now get form oil. Total solar panel production worldwide to date is about 100 square kilometers.

Nuclear? – We would have to build 10,000 new large nuclear plants to replace oil energy. And world uranium would run out in 10 – 20 years.

Hydrogen? – It currently takes the energy of 3 – 6 gallons of gas to make enough hydrogen to propel a car as far as one gallon of gas.





Problems of scale, time, and physics, and more.....

Bio –fuels? – If we converted the entire world’s production of corn, wheat, rice, sugar cane, and sugar beets into ethanol, and the entire world’s production of soybeans, canola, palm and sunflower seeds into bio-diesel, we could replace only 8% of the world’s petroleum demand. Not to mention the mass starvation.

Wind? – Currently supplies about one percent of world energy. Problems of reliability and scale.

Shale gas? – Not all its fracked up to be. US Geological Survey just reduced Marcellus Shale gas recovery by 80%!!

Hybrid cars (about 2 million in 2011) – Converting all 1, Billion cars tomorrow would buy five years – Lithium shortage in 2015

Peak Everything Else...

- Coal
- Uranium
- Lithium
- Rock Phosphorous
- Fresh Water Aquifers
- Gold
- Global Fisheries
- Farmland
- *Every non-renewable Resource*



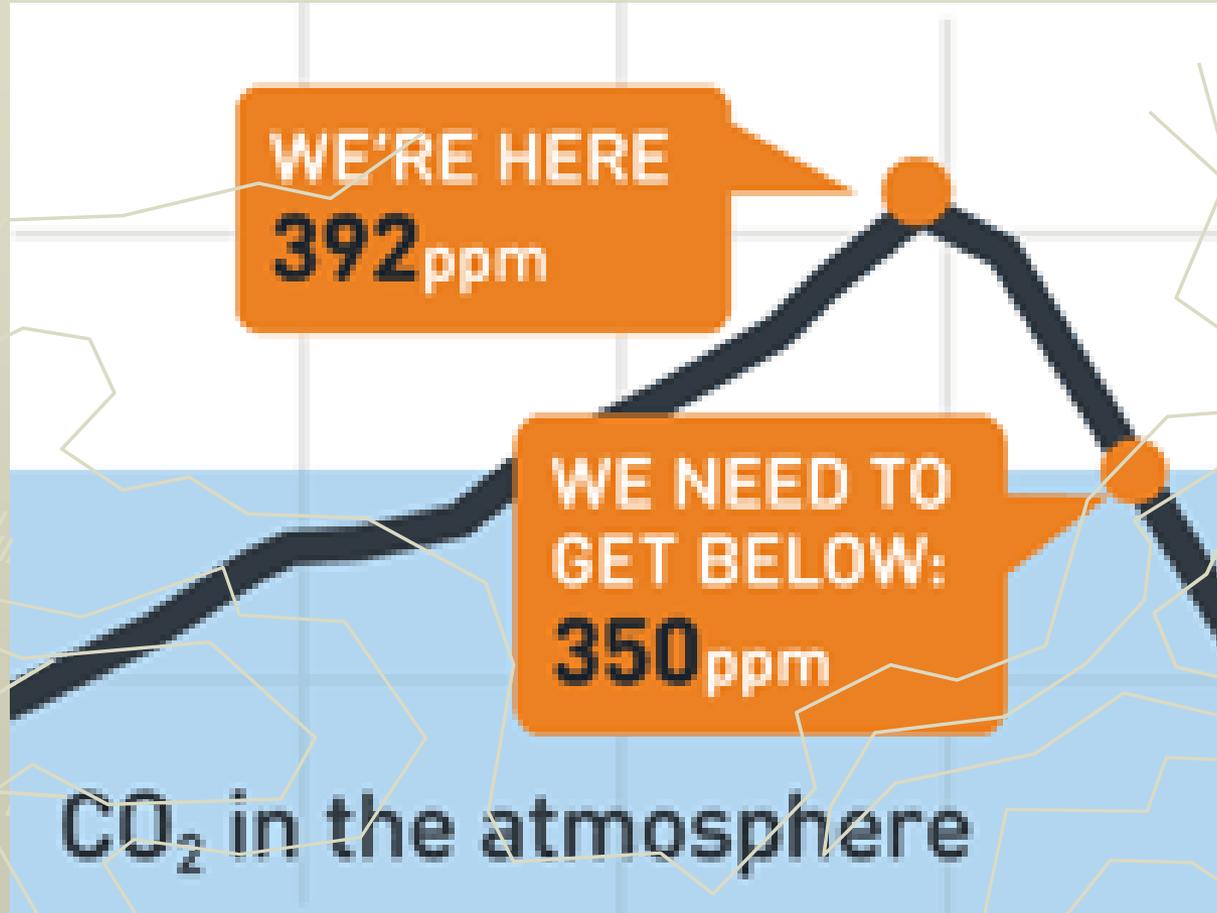
2010: a year of records

- The Warmest Year on Record
- The Wettest Year on Record (2011 tied this record)
- The Highest Level of Catastrophic Weather Events on Record (2011 beat this record – 2012 ahead of 2011)
- The Year we Emitted the Highest Volume of Greenhouse Gasses on Record – up 5.9% in one year!!!!

2011: all time records fell like leaves...



Or to make it easy to understand..

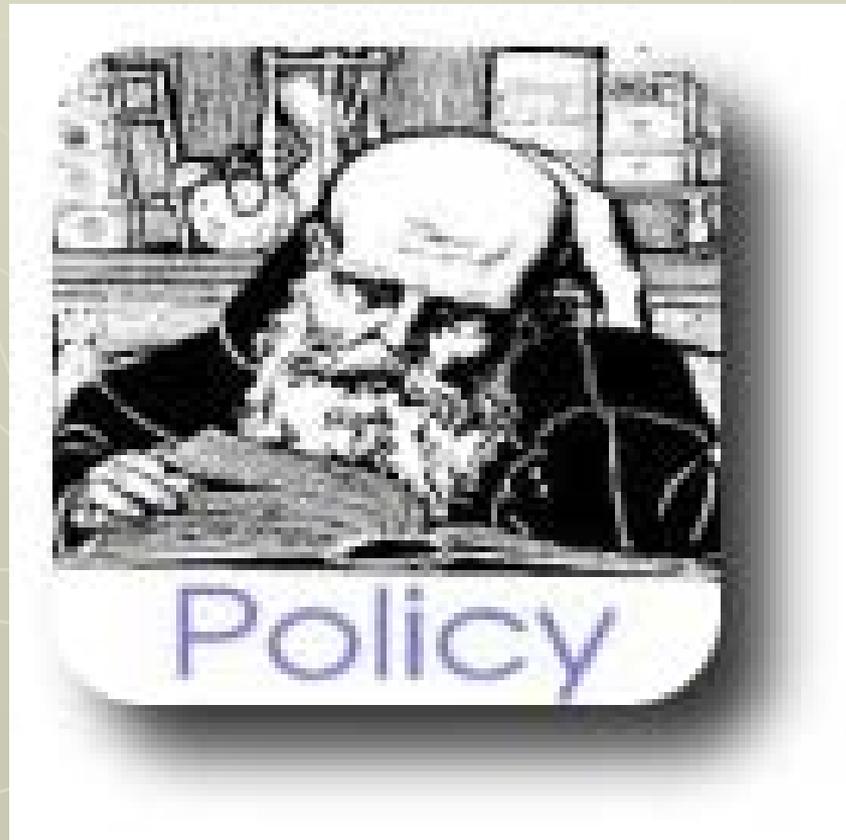


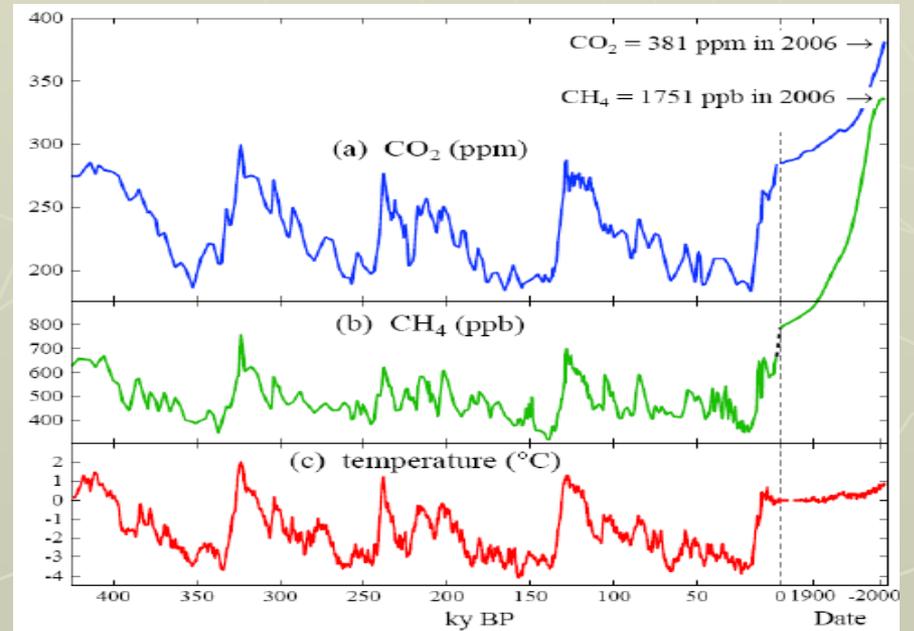
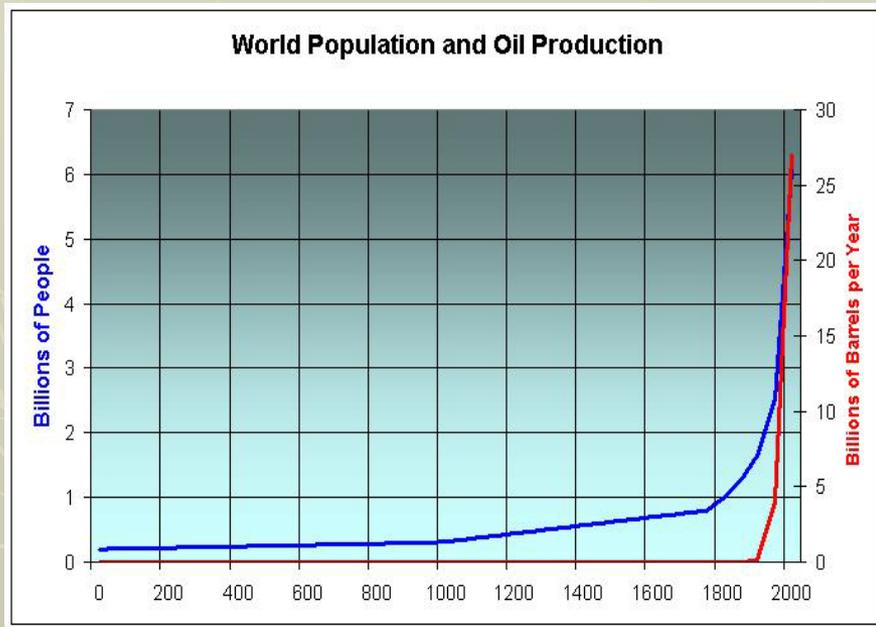
CO₂ in the atmosphere

Tar Sands and Climate Change



All inter-related, and all resulting from
an Unsustainably Large, Growing and
"Modernizing" Population





OK. Back to Economic Turmoil..

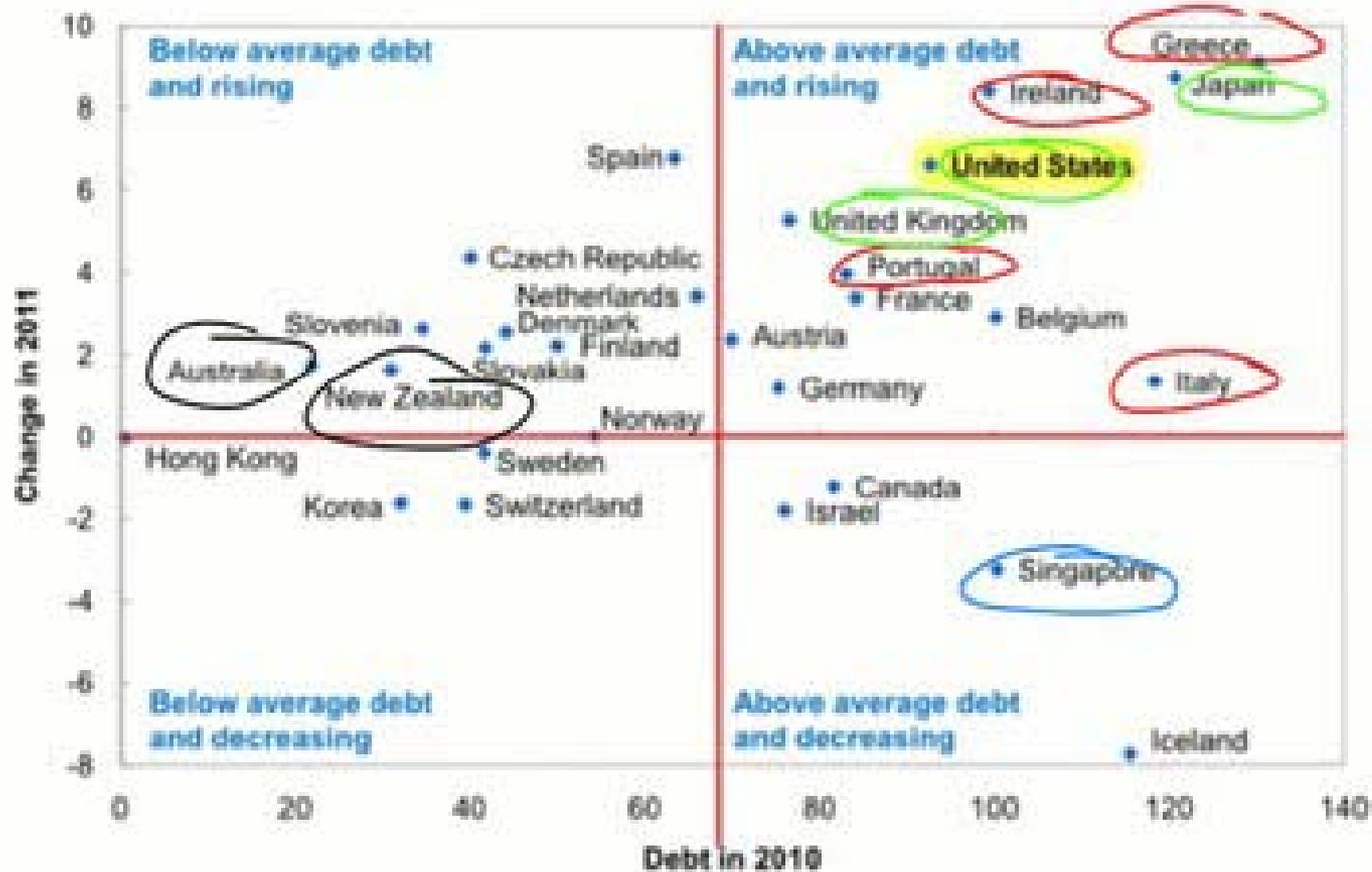


Heard of the PIIGS?



Heard of the PIIGS?

General government debt of advanced economies, % of GDP



Greece 2011



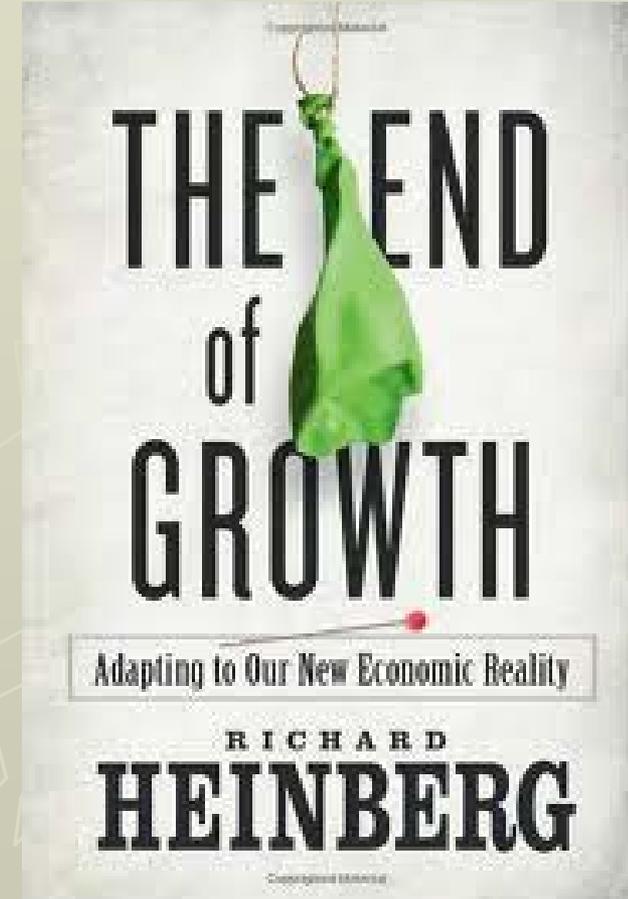
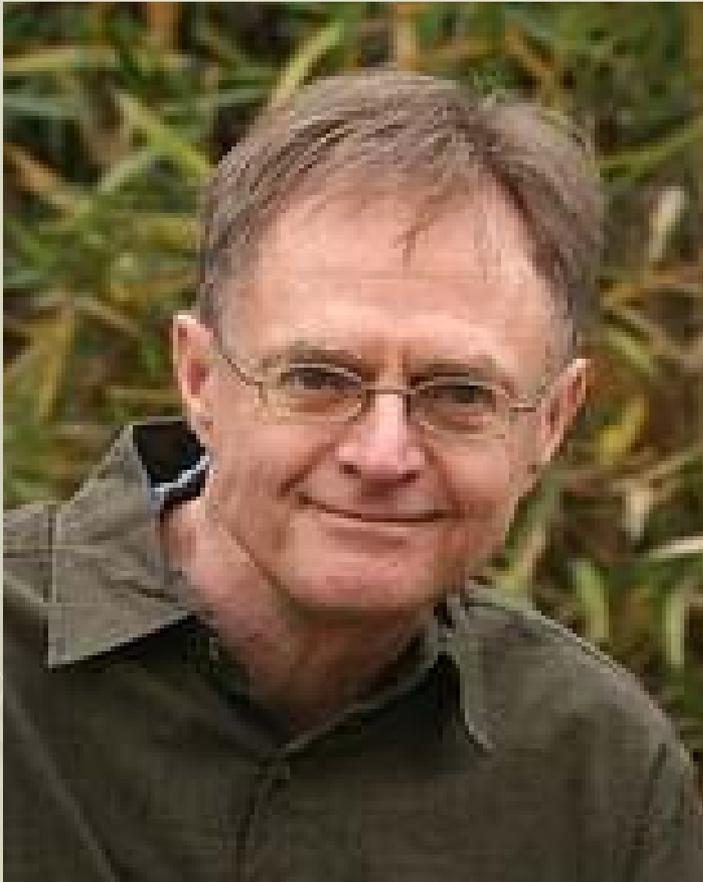
"If things get out of hand in the euro area," declared Citigroup chief economist Willem Buiter yesterday (10/18/2011) during testimony to the British parliament, "no bank in the financial integrated world will stand."

US Debt Picture

- Fed. Gvt. Debt per Citizen = \$49,991
- (Greek Gvt. Debt per Citizen = \$42,300)
- Fed. Gvt. Debt per Taxpayer = \$138,156
- Total Debt per Family = \$691,494
- Total Savings per Family = \$6,060
- Total Foreclosures in 2011 = 2.7 million
- Fed. Debt of \$15.7T goes to \$23T by 2020
- *At what point are we bankrupt?*

source: usdebtclock.org

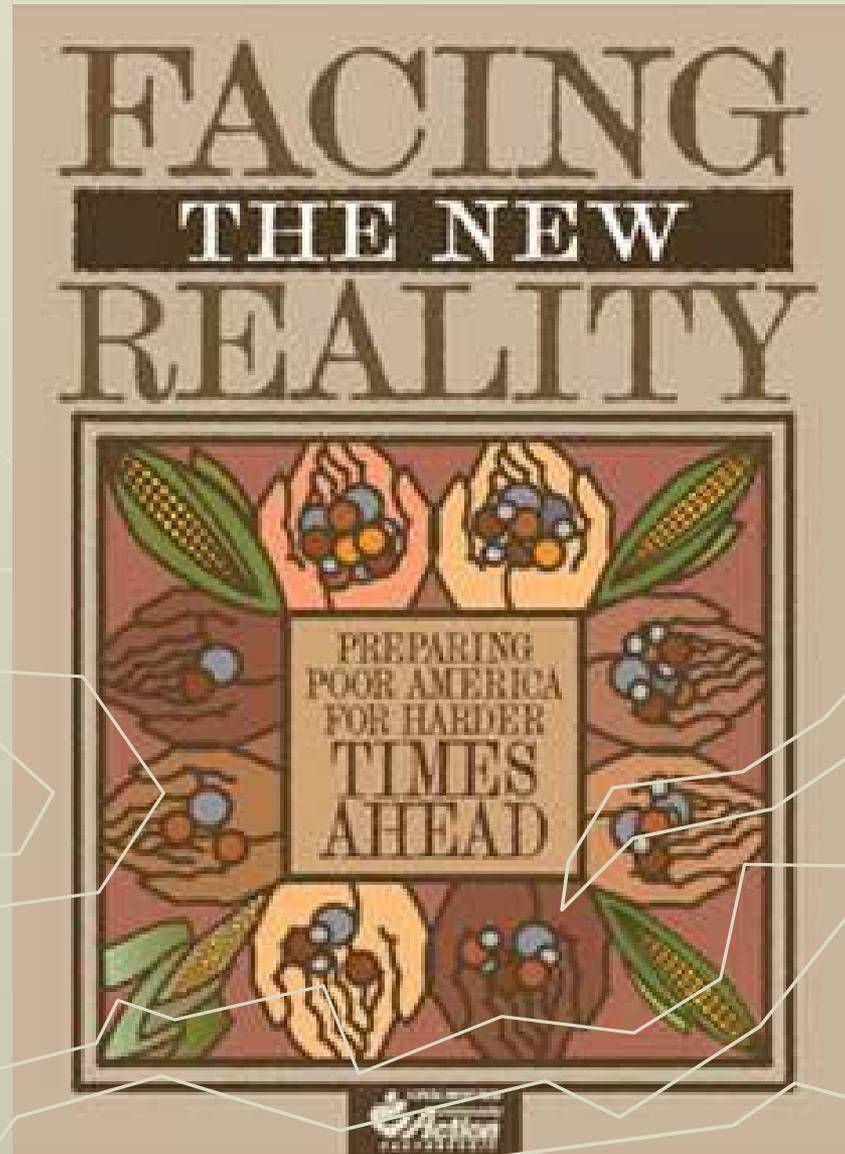
US Debt means...



What does this mean for us?

1. An overall shift from *Abundance* toward *Scarcity*
2. *Fewer resources* from a debt strapped government.
3. *BUT, there may be new opportunities* when cheap fossil fuel and cheap foreign labor become scarce and *local is not just a trendy option*

Back to this..



Three Intertwined Mega-Trends

1. Resource Depletion – *Especially Fossil Fuels*
2. Environmental Degradation – *Especially Climate Change*
3. Economic Turmoil – *Especially Debt Driven*

An Attempt to Link Peak Oil and Poverty



\$

Breaking down the New Reality

- Overview
- The Economy
- Employment
- Food Systems
- Health Care
- Housing
- Education
- Community
- An Idea: Community Economic Laboratories

Overview: John Michael Greer

“The work of social service agencies in the years ahead will have to shift from seeking a fairer distribution of abundance to the much harder task of managing scarcity.”

The Economy: Nate Hagens

“In a world that will have ‘less each year’ instead of the ‘more each year’ we have grown accustomed to, prior debts will not be able to be paid back, more jobs will be lost and standards of living will drop.”

Employment: Dmitry Orlav

“There may not be jobs, but there is always work.”



Food Systems: Ken Meter

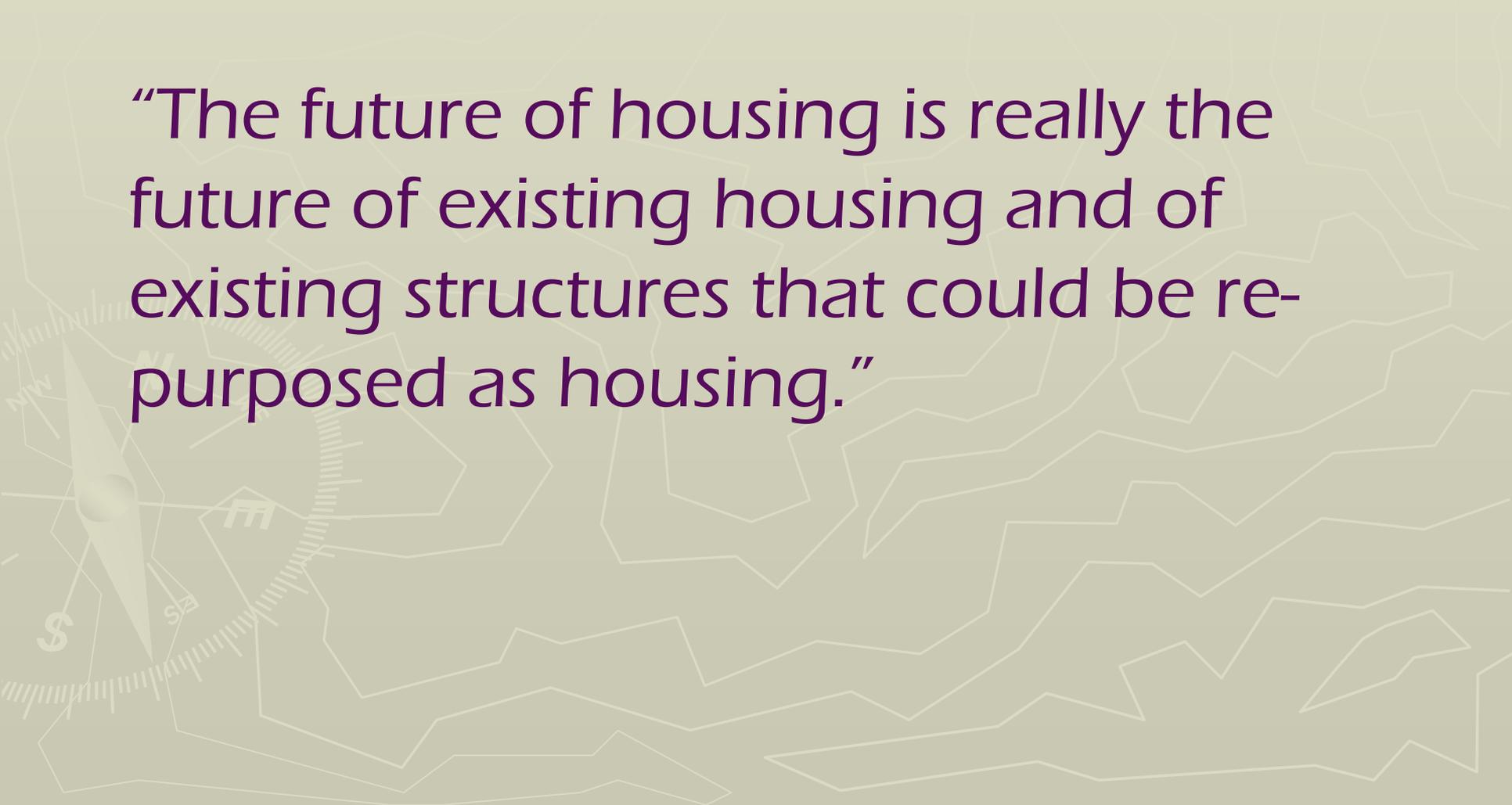
“Ultimately, a complex local food infrastructure needs to be built that includes community kitchens, root cellars, warehousing/freezer/cooling space, local food distribution channels and solid knowledge bases that make each local community the best data source for its own food supply and needs.”

Health Care: Sharon Astyk

“People living in Cuba, Kerala, and American Amish communities – who, compared with most Americans, use vastly less health care but have comparable infant mortality rates and adult life expectancies, - benefit from health care practices that the United States could draw on.”

Housing: Peter Kilde

“The future of housing is really the future of existing housing and of existing structures that could be repurposed as housing.”



Security: Dmitry Orlav

“Both communities that have long been poor and communities that were once prosperous are now awash with unemployed or underemployed men and women, including discharged veterans. These residents...can be given a meaningful role to play, looking out for and protecting those around them.”

Education: Kelly Cain

“If education survives in any form, it will also move from a global to a place-based sense of context and relevance.”

“The first educational priority will be to convey sustainability-based skills.”

Transportation: David Reid and Peter Kilde

“The transportation available will be very energy efficient, relatively low-tech, reliable, easy to repair and will favor renewable energy resources.”

“The democratization of transportation produced by the personal automobile will recede, necessitating management of transportation inequality.”

Community: Megan Quinn Bachmann

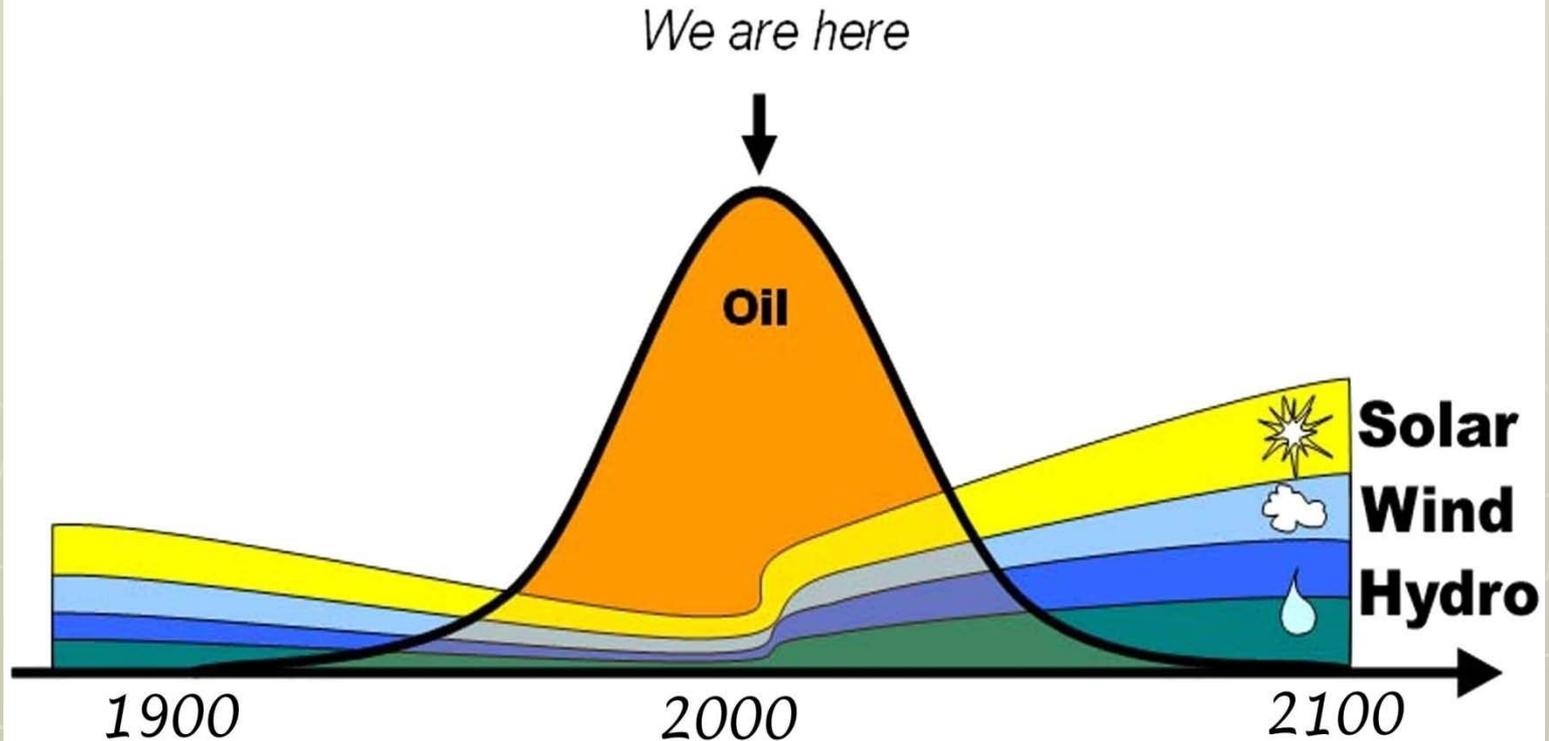
“The values of community that are transmitted through interdependent living – cooperation, moderation, frugality, charity, mutual aid, confidence, trust, courtesy, integrity and loyalty, - will prove essential in helping us respond to the coming challenges.”

An Idea; Community Economic Laboratories: Richard Heinberg

“If education survives in any form, it will also move from a global to a place-based sense of context and relevance.”

“The first educational priority will be to convey sustainability-based skills.”

Get ready



for a low energy world

www.oilcrisis.com

So, how do we fight
poverty in the New
Reality?





We must help our low-income households and our communities do three things:

1. Dramatically reduce our consumption of fossil fuels and non-renewable resources.
2. Build the capacity of our local and regional economies to meet their own needs using their own resource base.
3. Foster local community development based on mutual assistance and cooperation.



INNOVATION #1 Deep Retrofit: How Existing Housing Stock Can Achieve Net Zero Energy Use and Remain Affordable



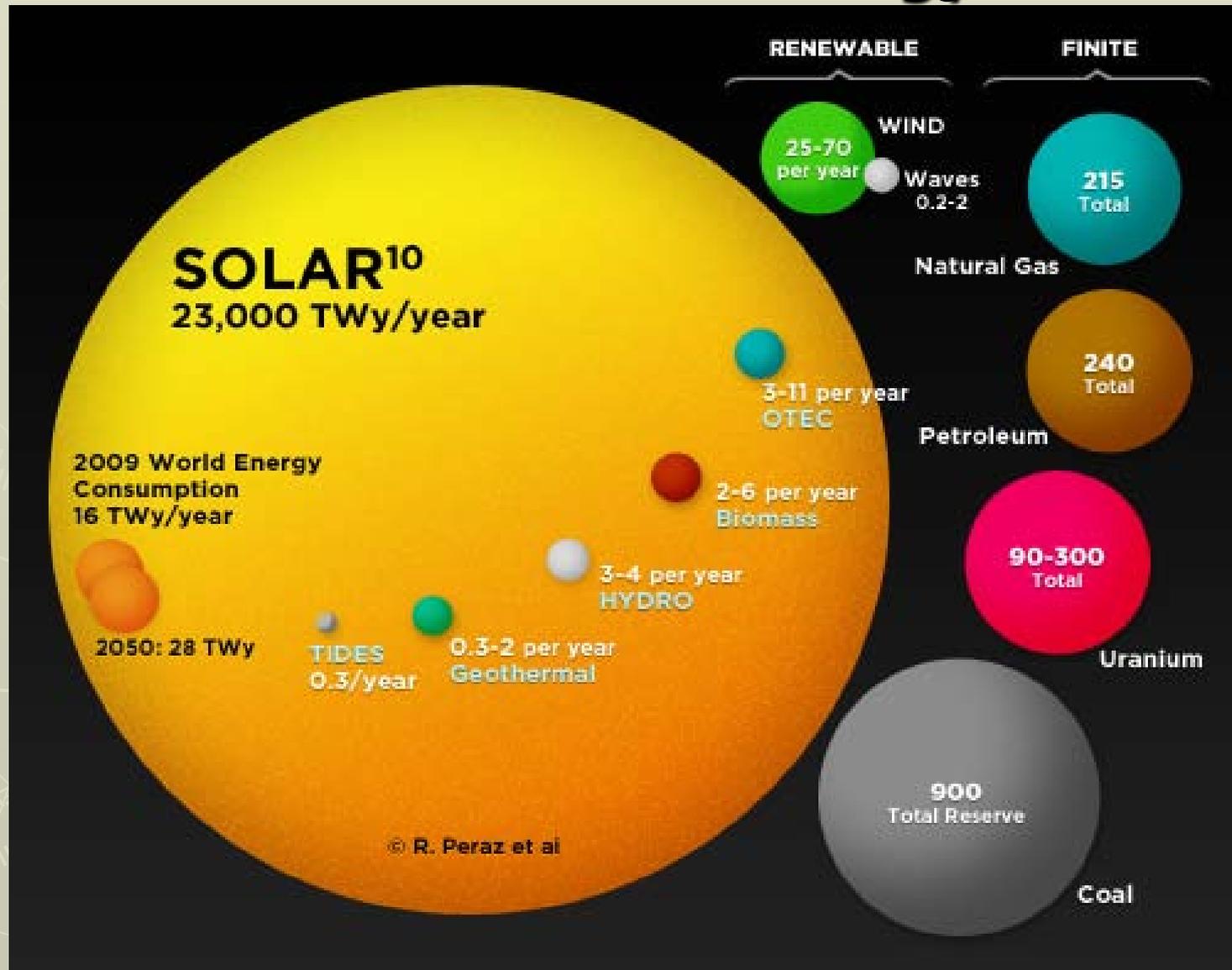
The program boils down to two basic strategies:

- ▶ **#1 Reduce Energy Load SIGNIFICANTLY.**
- ▶ **#2 Source as much of that energy load as possible from local, renewable, carbon neutral sources.**

So, where do we find this cheap, clean, local, renewable energy?

- ▶ Free BTUs from the ground
- ▶ Free BTUs from the air
- ▶ Free BTUs from sunlight
- ▶ Free BTUs from wind
- ▶ Free BTUs from the forest*
 - *What does it cost to grow a tree in your forest?

There is a lot of clean energy around..



First, conduct an Energy Audit on the home



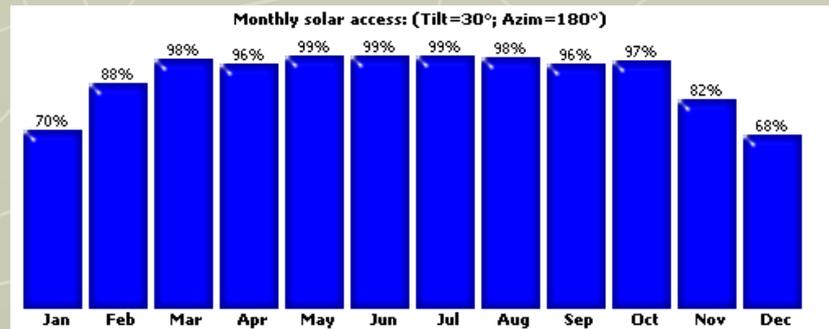
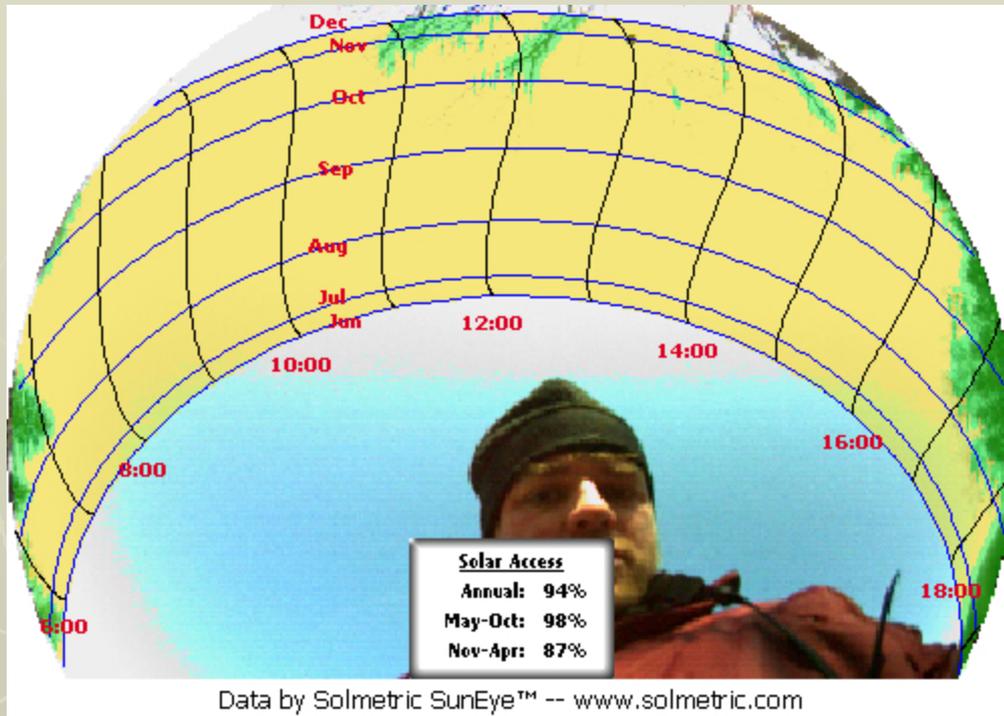
Greg Brooks, Walton EMC



Insulate to R40 walls, R60 ceilings



Solar Access



Data by Solmetric SunEye™ -- www.solmetric.com

Deep Energy Reduction Analysis: Menomonie Duplex

- ▶ **Heating/Cooling Load Before Insulation: 50 MMBtu/annually Per Unit**
- ▶ **Heating/Cooling Load After Insulation: 35.6 MMBtu/annually Per Unit**
 - Offset from the Earth: 20.6 MMBtu/annually**
 - Offset from the Sun: 15 MMBtu/annually**
- ▶ **Heat/Cooling: 80% of total BTUs in the geo-thermal system are free from the ground**
- ▶ **Water Heating: The Solar Hot Water System meets 71% of the water heating load annually**

SO

▶ Annual Solar Electric Net -Energy gain on bi-directional meter:

- Estimated Heating and cooling load for entire house: 9,610 kW/Hours annually
 - Estimated back-up Hot water load for entire house: 2,480 kW/Hours annually.
- ▶ **TOTAL: kW/Hours annually 12,090**
- ▶ An 10.9 kW PV system will produce 13,197 kW/Hours annually at this location = net gain of 1,107 kW/Hours.

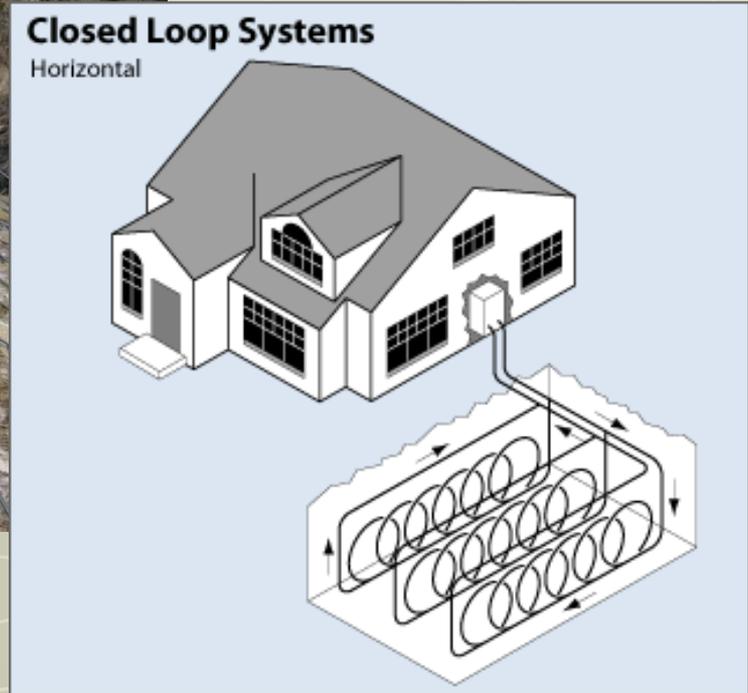
Install Solar Domestic Hot Water for Free, Clean BTUs from the Sun



Install Solar Electric PV for more Free, Clean BTUs from the Sun



Install Geothermal Heating and Cooling for free, clean BTUs from the ground



Net Mortgage

▶ Home purchase and Deep Retrofit: \$150,000

- 30 year, fixed rate mortgage at 4.5% would be a mortgage of \$760 per month

- Deduct \$200 of Energy Expense per month from budget (This deal only gets better over time)

- The "net mortgage" comes to \$560, an affordable monthly mortgage payment for a four bedroom, two bath home.

Does it work?



yes



Northern States Power Company

Please Return This Portion With Your Payment.

Your Account Number	Date Due	Please Pay	Amount Enclosed
52-9599807-1	09/23/2010	\$354.62 CR Thank You!	Do Not Return

AT 01 010265 59701E 36 A**3DGT



WEST CAP
PO BOX 308
GLENWOOD CITY WI 54013-0308

P.O. BOX 9477
MPLS, MN 55484-9477

520923104959980714*0000035462*0000035462

Detach and Retain This Portion For Your Records

Questions: Call 24 Hours 7 Days A Week

Please Call: (800) 895-4999 Fax: (800) 895-2895
Hearing Impaired: (800) 895-4949
Español: (800) 687-8778

or write to us at:
Northern States Power Company
PO BOX 8
EAU CLAIRE WI 54702-0008

Trade of writing checks? Sign up for PaySmart! Call Xcel Energy at 1-800-895-4999 or visit us at www.xcelenergy.com for more info.

Billing Summary

Residential	
Previous Balance 06/25	\$0.00
No Payment Through 09/02	\$0.00
Balance As Of 09/02	\$0.00
Total	\$354.62 CR

Averages for Billing Period	This Year	Last Year
Average Temperature	74*	67
Electric/kwh per Day	0.4	0.0
Cost per Day	\$5.21 CR	\$0.00

a few other free BTU harvesters



INNOVATION #2

West CAP Creates the Glenwood Project: A Low Income Woodlot Owners Pilot Program



West CAP now provides valuable services to low or moderate income woodlot owners,

**All without any
upfront cost to you!**

**The Glenwood Project:
A Low Income
Woodlot Owners Program**

West CAP may be able to help you:

- Reduce your property taxes
- Enroll your woodlot in a management plan designed to keep it healthy and productive for many years to come
- Make sure you get top dollar for your timber and other forest products
- Advocate for you, the woodlot owner, to arrange and manage the harvest and sale of your timber
- Help you get great discounts on quality wood heating equipment for your home and assist with other measures to cut your energy bills

To be eligible for this program, a woodlot owner's annual household income must be at or below the following levels:

Persons in Household	Income Limit
1	\$20,800
2	\$28,000
3	\$35,200
4	\$42,400
5	\$49,600
6	\$56,800
7	\$64,000
8	\$71,200
Each additional person	Add \$7,200

Sound like a good deal? *It is!*
For more information call:

Herb Schweitzer: 715-296-2790



West CAP's Glenwood Project:

- ▶ **West CAP's seven counties are 50% forest, approx. 20% owned by families below 200% of Poverty**
- ▶ **Turns this tax liability into a "green" economically productive asset by:**
 - **Offering no-interest loans to get sustainable forest management plans written for woodlots**
 - **Gets woodlot owners into the Managed Forest Law program to greatly reduce their property tax burden**
 - **Advocates for woodlot owners in navigating tricky and often corrupt logging and timber sales operations**
 - **Offers no-interest, energy-savings financing for wood-based home heating systems**
 - **Helps to develop local firewood and timber markets**
 - **Sustained by fees from tax savings and product sales**

West CAP's Glenwood Project also:

- ▶ **Helps to build a local economy based on local resources**
- ▶ **Replaces environmentally damaging fossil fuel use with carbon neutral, real time, local bio-mass energy**
- ▶ **Helps insulate low income households from global energy price shocks and supply disruptions**
- ▶ **Helps the region meet its own energy needs**
- ▶ **Creates and retains wealth in Rural America**

INNOVATION #3 - West CAP Creates:

The Family Table Cooking Club

Low-income women (mostly) coming together for shared meal preparation sessions

- Batch cooking saves time
- Saves money
- Provides meals for later use
- Builds nutrition & cooking skills
- Enhances Social Capital



West CAP's Family Table Cooking Club also:

- ▶ **Helps to build a local economy based on local resources by purchasing raw ingredients from local farmers and gardeners**
- ▶ **Makes use of under-utilized local assets – commercial kitchens in schools, churches and community centers**
- ▶ **Builds mutually supportive communities through volunteers, vendor relationships, non-profits providing facilities**
- ▶ **Is cheap and scalable**
- ▶ **Is fun**

Want a copy?

