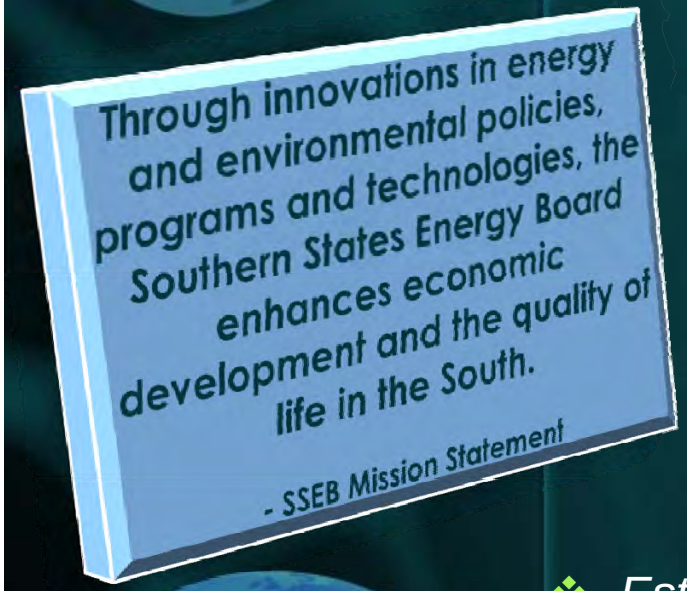
Southern States Energy Board

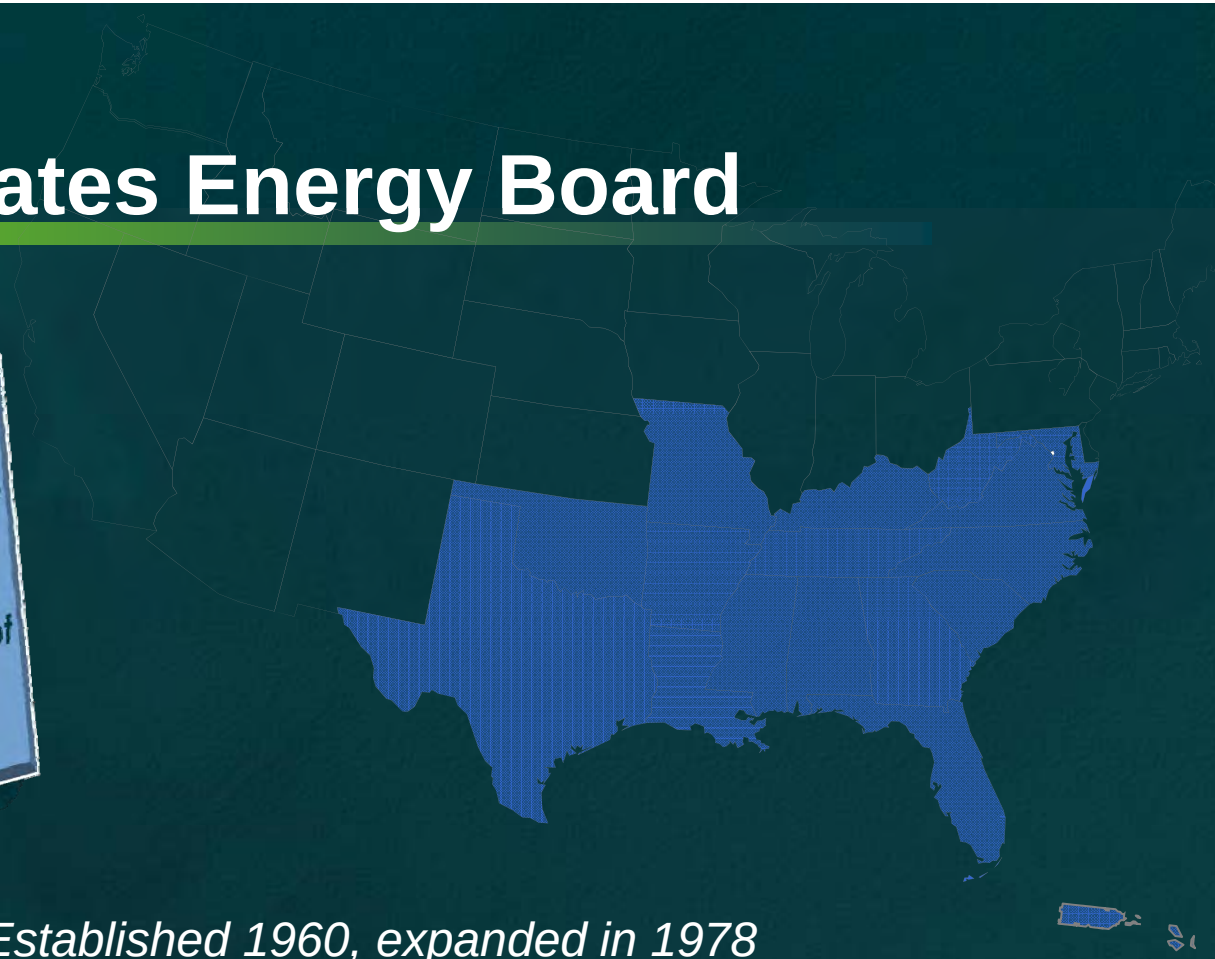
"Energy Security For America's Future"

Presented at:
West Virginia Energy Summit
December 9, 2008

Presented by:
Kenneth J. Nemeth
Secretary & Executive Director
Southern States Energy Board

Southern States Energy Board





- *Established 1960, expanded in 1978*
- *16 U.S. States and Two Territories*
- *Each jurisdiction represented by the governor, a legislator from the House and Senate and a governor's alternate*
- *Federal Representative Appointed by U.S. President*

The American Energy Security Study: A Leadership Initiative - 2006

- Establish an ambitious goal for the Nation
- Frame a plan for success
- Model the benefits of achievement v. the greater costs of inaction
- Formulate legislative recommendations to support the plan

AES Study's Focus

- Oil market analysis and forecasts
- U.S. resource assessment of biomass, coal, oil shale and CO_2 enhanced oil recovery (EOR)
- Technology assessments and cost estimates for biomass, coal and oil shale-to-liquid fuel production plants and CO_2 EOR
- Forecasts and analysis of the U.S. economy
- Environmental challenges and benefits
- Policy recommendations to stimulate growth of the alternative liquid fuels

Impacts on Variables of Interest

- GDP, inflation and interest rates
- Oil imports
- Price and price volatility of liquid fuels
- Federal, state and local government revenues
- Federal budget deficit
- U.S. trade deficit ($720 Billion in 2008)
- Industry sales and profits
- Employment created (industries and occupations)
- Capital formation and requirements
- Export opportunities
- Personal income

Serious Oil Risks to America

- Excessive dependence on imported oil from OPEC and others.
- World oil supply is not keeping up with demand…..“peak oil?”
- Increased global competition from China, India and others.
- Supply disruptions by natural disasters or terrorism.
- Environmental consequences.
- U.S. energy and economic security is increasingly at risk
- Military preparedness and homeland defense requires
  secure fuel sources
- Replace aging energy workforce

American's Oil Consumption 22 Million Barrels a Day

Use by Sector	Percent of Total*
Transportation fuels	67 %
Industrial	25 %
Residential	4 %
Commercial	2 %
Electricity generation	2 %

America's Vulnerability to Imported Oil (60%)

2004 Bin Laden – "Bleed Until Bankruptcy" Plan
Oil - Military target for the first time
2005 Saudi Arabia
- Critical Target - 25% of Proven World Oil
- 10 Million BBLs/ day
- 1.5 Million bbs/ day Excess Capacity
- September - al-Dammam seaport hub attack
2006 February
- Abqaiq Refinery – Attack
- 2/3 of Saudi Oil Processed
- Aramco vehicles and uniforms used
- If successful – world oil panic
2008 Saudi's Pledge extra 200,000 BBLs/day in July
Movement for the Emancipation of the Niger Delta (MEND)
- Attacks on Shell & Chevron facilities
-Nigeria's oil output – cut by 400,000 BBLs/ day

America's Vulnerability to Imported Oil

Gal Luft Congressional Testimony:

- **With oil at $200 BBL, OPEC can:**
  - buy Bank of America in one month's production
  - buy Apple Computer in a week
  - buy General Motors in 3 days
  - buy 20% of every S&P 500 Company in 18 months
- **"Sovereign Wealth Funds"**
  - controlled by despots hostile to America
  - $$$ for oil
  - finance terrorism
  - build nuclear weapons

al U.S. Imports of Petroleum (Top 15 Countries)

(Thousand Barrels Per Day as of April 2005)

	Apr-05	Percent
CANADA	2,190	18.55%
MEXICO	1,632	13.82%
VENEZUELA*	1,567	13.27%
SAUDI ARABIA*	1,494	12.65%
NIGERIA*	1,243	10.53%
RUSSIA	645	5.46%
IRAQ*	542	4.59%
ALGERIA*	467	3.95%
UNITED KINGDOM	394	3.34%
ANGOLA	365	3.09%
VIRGIN ISLANDS	358	3.03%
ECUADOR	261	2.21%
NORWAY	250	2.12%
COLOMBIA	237	2.01%
KUWAIT*	164	1.39%
	11,809	100.00%

S. Dependence on Imported Oil – The Burden

- Military expenditures tied to defending Persian Gulf oil ($135 billion annually)
- Lost employment/investment from diversion of financial resources ($170 billion annually)
- Cost of periodic “oil shocks” (>$300 billion / year)
- Erosion of U.S. industrial base (2.7 million jobs lost since 1991)
- 2008 U.S. Trade Deficit ($720 billion)

AES Response to Serious Oil Risks

- AES plan provides national security through consistent, domestic supplies
- AES plan allows us to make our own fuels and control our own destiny (stable fuel prices)
- AES plan employs existing and rapidly emerging technologies, creating fuels that have a long shelf life, compared to gasoline, and are environmentally sound

Bold American Leadership Required

Policy Recommendations From American Energy Security Study I

ed Policies

end the $.50 per gallon
rnative Liquid Fuels Excise Tax
dit

vide explicit DOE authority and
ropriations for loan guarantees

d the DoD Alternative Fuels
ing and Development Program

Policy Recommendations for Congressional Consideration

- Provide accelerated cost recovery to alternative fuel plant owners
- Incentivize refining of alternative liquid fuels
- Authorize and fund military purchases of alternative fuels under long-term contract

AES Policy Recommendations *(continued)*

- Eliminate the $10 million cap for tax exempt Industrial Development Bonds
- Provide regulatory streamlining for the production of alternative liquid fuels and for mine permitting
- Establish a self-sustaining government corporation to provide market risk insurance
- Expand the Strategic Petroleum Reserve (SPR) program to include alternative liquid fuels products
- Provide incentives for existing ethanol plants to convert to coal
- Provide incentives for enhanced oil recovery (EOR), enhanced gas recovery (EGR) and enhanced coalbed methane recovery using CO_2 captured from alternative fuel plants

American Energy Security Study II

Initiated in August 2008 by West Virginia Governor Joe Manchin, Chair of the Southern States Energy Board

Strategic Action Plan – Energy Supply Blueprint

Focus on 4 areas impacting American economy:

- ***Energy Resources***
- ***Electricity***
- ***Climate***
- ***Transportation Fuels***

ENERGY RESOURCES:
U.S. Resources

COAL - *500 Billion Tons (750,000 Billion BBLS/OIL)*

BIOMASS *- 1.3 Billion Tons (4.5 Million BBLS/OIL/Day)*

OIL SHALE *- 1+Trilion BBLS/OIL SHALE LIQUID FUELS*

NATURAL GAS - *1600+ Trillion cubic feet*

WIND - *860 TWh - 300 GW of wind capacity (20% by 2030 goal)*

SOLAR *-600 TWh - 165 GW by 2025 (example California 3 GW Solar Million Homes Program)*

ENERGY EFFICIENCY - *980 Twh (by 2025)*

ENERGY RESOURCES:

pal Energy Forms Face Limits in Supply & Price

All Energy Forms Needed for Diversity of Supply

ENERGY EFFICIENCY/DEMAND-SIDE MANAGEMENT / CONSERVATION: An important resource but insufficient to power the future

OIL: Consistently above $50/barrel; declining reserves; risky sources

NUCLEAR: Valuable but constrained due to safety and waste disposal concerns

HYDRO: No growth in supply

WIND: Limited availability; grid disruptions; erratic supply

ETHANOL: Clean but energy inefficient; cellulosic key

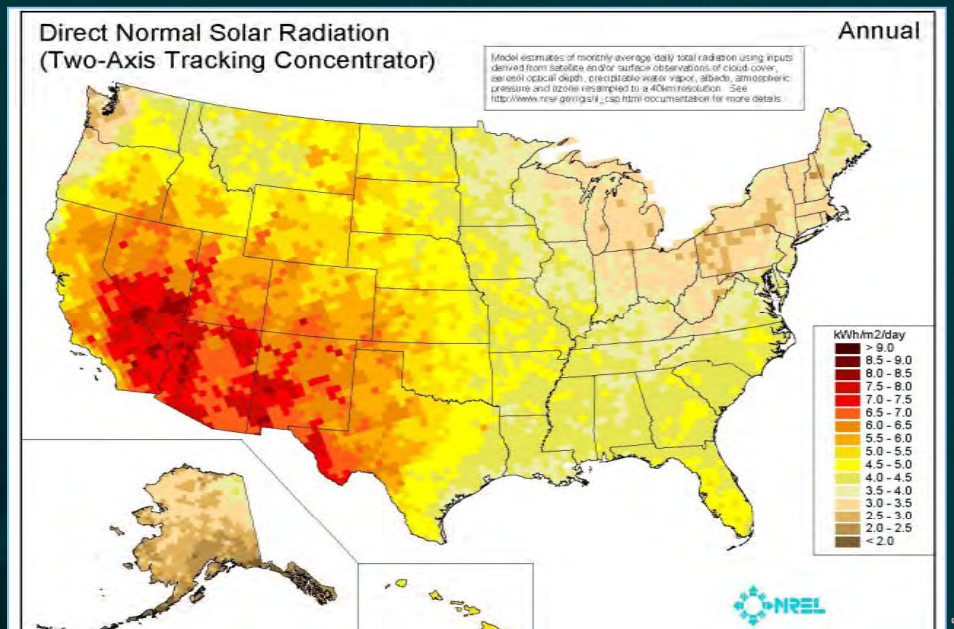
NATURAL GAS: Consistently above $6/mcf; declining reserves; risky sources

COAL: Faces GHG, climate change, regulators, environmental organizations challenges

SOLAR: Cost of materials; regional effectiveness; intermittent

Solar

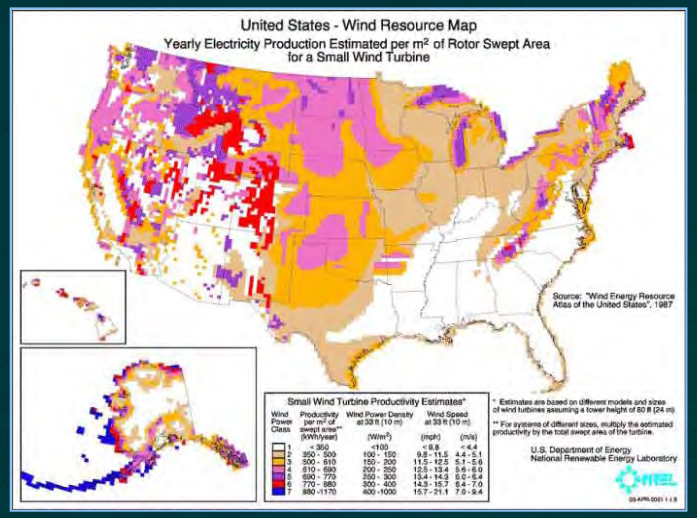
- Map shows potential for solar energy
- Cloud Cover and Darkness key
- Examples in Southwest
- Southeast – solar rooftop systems
- FP&L discussing a 200-300 MW plant
- Duke Energy – Delays Solar Thermal



SSEB

Wind

- Map shows potential for wind generation
- Wind Speed is Key
- 10,000 MW in US
- Turbines typically run 25-35% of the time
- Transmission issues
- Southeast examples
- Georgia Tech and Southern Company Study:
  - Need more data
  - Rulemaking in 2008
  - Hurricanes
  - Potential of 50-160 MW



ELECTRICITY:

tricity Will Be Increasingly Important in the 21st Century

Examples of electricity's potential this century to address:

- Energy challenges, electricity use and energy conservation
- Environmental, sustainability and climate change issues
- Economic development
- Transportation issues
- Improving people's standard of living
- Health, medicine and bio-tech
- Continuing developments in communications IT, etc.
  - The productivity challenge, electricity use and productivity growth
  - Others: Emerging electro-technologies, new industries, nanotechnology, robotics, superconductivity, space exploration, etc…

SSEB

ELECTRICITY:

Electricity Demand is Outpacing Generation Growth

S. baseload generation capacity reserve argins have greatly declined

- 30-40% in early 1990s
- 16% in 2008
- Margins to fall below 13% reference minimum in next 3-5 years in Southeast

eneration capacity to grow 5.2% in the next years while demand grows 16.6%

Source: NERC 2008 Long Term Reliability Assessment.

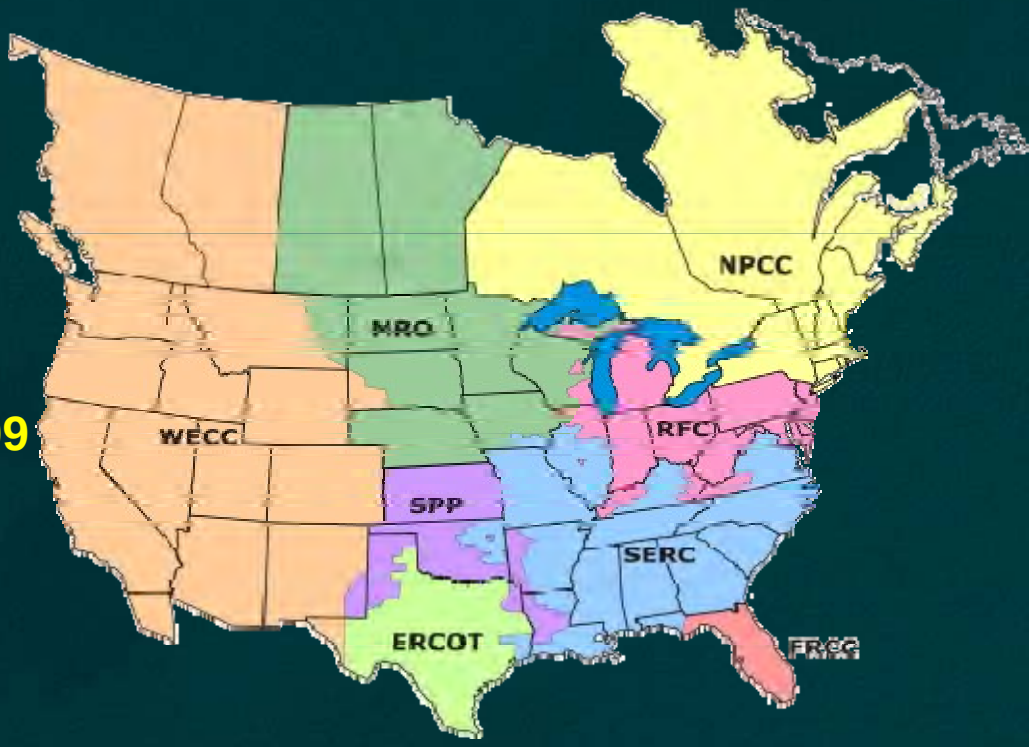
SSEB

ELECTRICITY:

Situation More Critical in Certain Regions

ply margins become critical in:

- RC (Southeastern): **2010**
- P: **2013**
- ECC (Rocky Mountain): **2009**
- RCOT (Texas): **2013**
- lifornia: **2014**
- PCC (New England): **2013**
- zona, New Mexico, Nevada: **2009**
- RO (Midwest): **2010**



Source: NERC 2007 Long-Term Reliability Assessment, October 2007

SSEB

ELECTRICITY:

Projected Electricity Needs in the U.S.

- EIA has forecast need for 135,000 MW of new generation over next 10 years
- Most of this new generation required is base-load capacity
- Base-load capacity = nuclear, coal or gas
- Base-load capacity does not = renewable
- Base-load capacity can only slightly be offset with energy efficiency programs

ELECTRICITY:

Prospects for Base-Load

- Where will 135,000 MW of new base-load capacity over next 10 years come from?
- Won't be nuclear - next round of nuclear plants not likely to come on-line until 2017 or later
- May not be coal - if environmental litigation and CO_2 debates continue to stymie development
- Can't completely come from natural gas - not enough U.S. production to fuel all base-load needs; not enough LNG imports to fill void
- Can't be renewables-intermittent, not base-load
- Can't conserve our way out of all incremental needs

CLIMATE:

Climate Change Responses

- **Kyoto Protocol**
  - Threat of CO_2 in the atmosphere
  - Global solution
- **Copenhagen "Summit"**
- **Independent U.S. Responses**
  - Regional Emissions Trading initiatives
  - Carbon Markets- Emissions Auctions (RGGI 9/25/08, e.g.)
  - Chicago Climate Exchange
  - Southern Governors Initiative
  - Mayors' Climate Protection Agreement
  - EPA Proposed rule on GHG Under Clean Air Act
  - Federal Cap and Trade legislation

CLIMATE:

oncerns Facing Climate Change Actions

- Challenges to IPCC Report
- Greenspan warns against Cap and Trade
  - "No effective way to meaningfully reduce emissions without negatively impacting a large part of an economy .... Permits will become expensive and large numbers of companies will experience cost increases that make them less competitive. Jobs will be lost and real incomes of workers constrained."
- Regional electricity reliability concerns increase as legislation approaches

CLIMATE :

Responsible Climate Change Legislation

- **Senators Offer 'Responsible Plan'**
  - Prevent economic harm
  - Promote new technologies
  - Treat states equitably
  - Tax revenue accountability
- **Alternatives to Lieberman-Warner**
  - Develop Carbon Capture & Storage (CCS) technology
    - Create national funding mechanism for RD&D
  - Accelerate new nuclear deployment
  - Accelerate renewable energy storage R&D
  - Capture cost-effective energy efficiency & renewable options

CLIMATE

tential Climate Change Agenda in New Administration

dent-elect Obama

- Engaging as World Leader
- Cap & Trade- 80% Reductions of CO_2 by 2050
- nvestments in R&D - $15 Billion/year
- Key Principles
  - Reduce Foreign Oil
  - Clean Energy Future
  - Transform to Green jobs

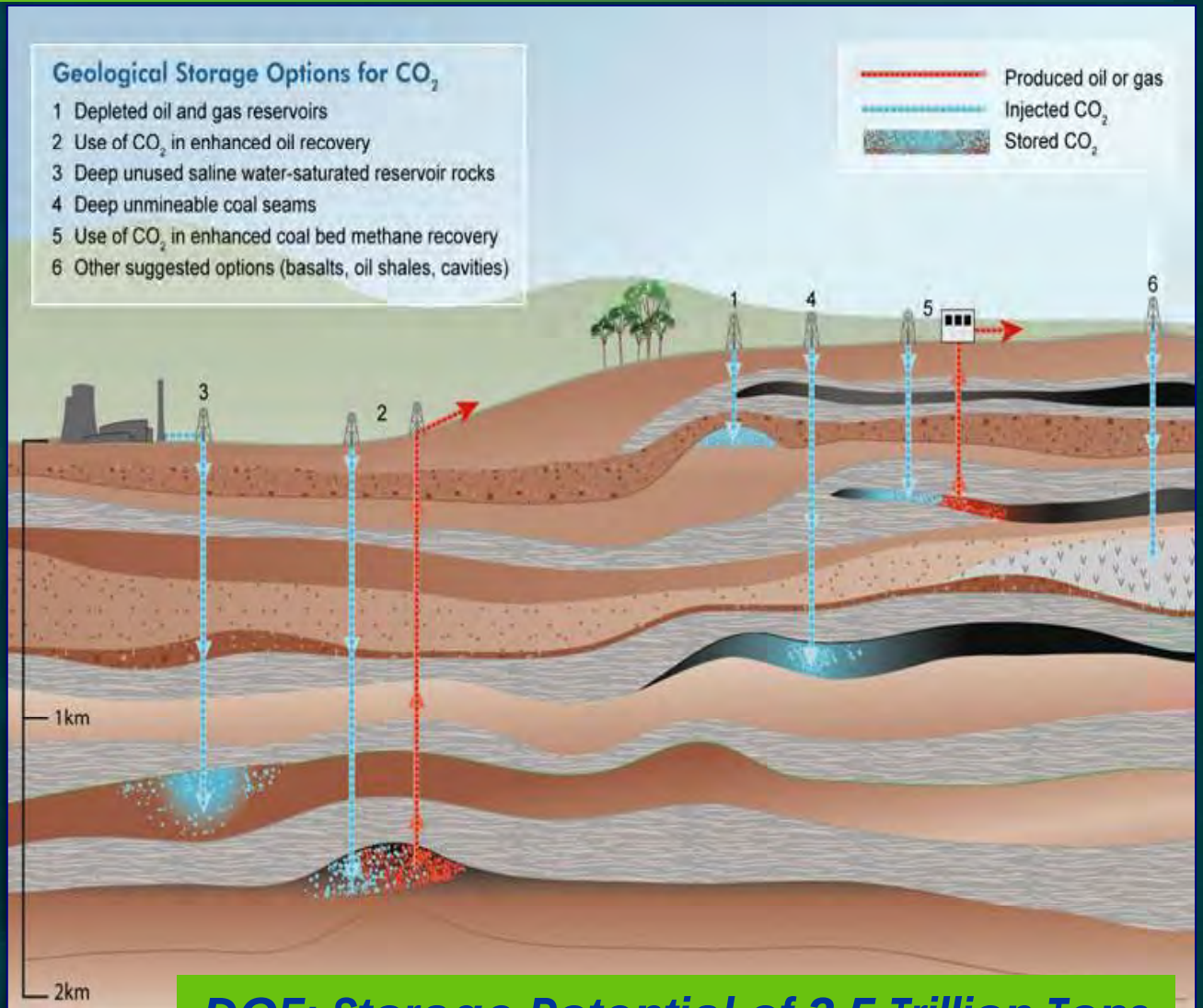
Congress

- **Senate**
  - Lieberman-McCain plan
  - Boxer Cap & Trade bill with funding for renewables
    - ***"We need to make it clear. We can't turn our back on[coal]."***

      {Barbara Boxer-Platts Inside Energy, November 20, 2008 }
  - Attendance at Poznan, Poland UN Climate Change Conference
- **House**
  - Waxman & the Energy Committee
  - Select Committee on Energy Independence & Global Warming to continue in 111th

CLIMATE:

. Has Ample Room for Carbon Sequestration



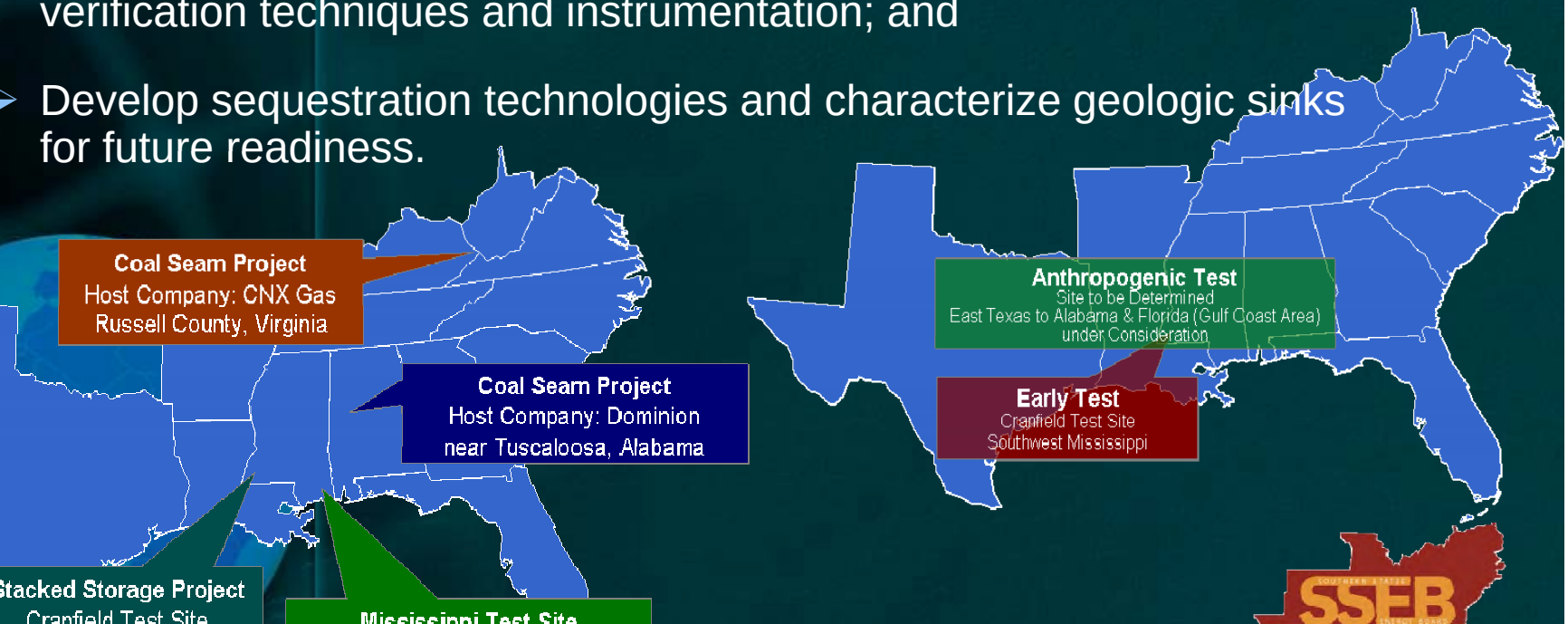
DOE: Storage Potential of 3.5 Trillion Tons

Courtesy: Energy Information Administration

CLIMATE:

SECARB Partnership Objectives

- Characterize the potential carbon sequestration sinks in the Southeast;
- Conduct field verification studies in the most promising geologic formations in the region;
- Advance the state of the art in monitoring, measurement and verification techniques and instrumentation; and
- Develop sequestration technologies and characterize geologic sinks for future readiness.



CLIMATE :

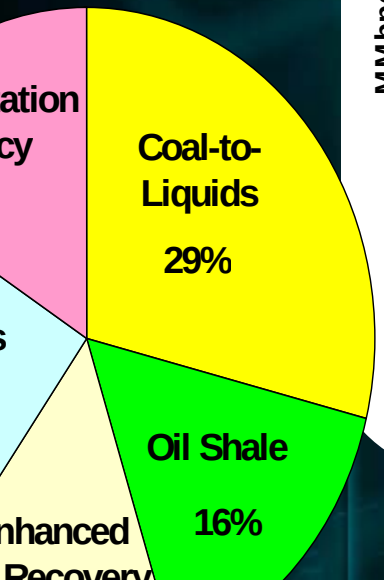
sitive Signs for Coal with Carbon Capture and Storage

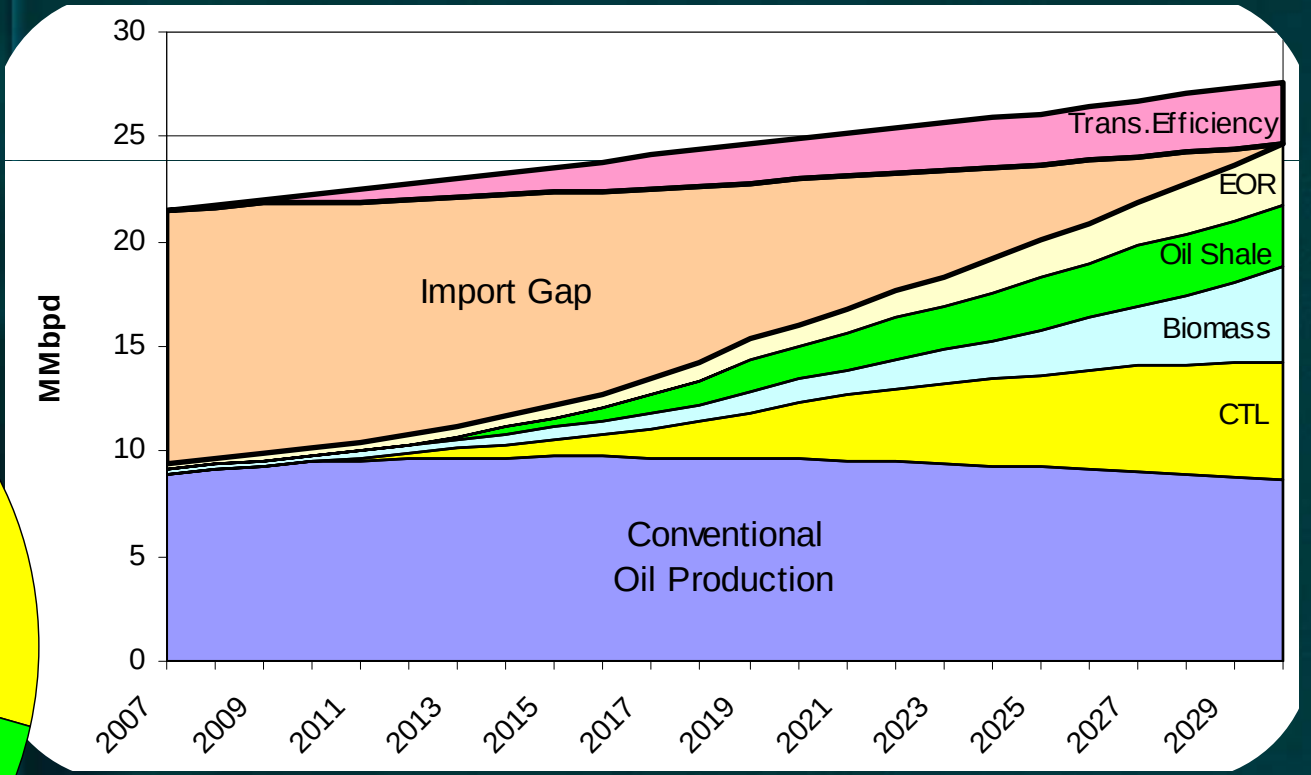
- CCS Regional Partnerships
- Making Methanol from CO_2 and Hydrogen
- Enhanced Oil Recovery
- Enhanced Coal Bed Methane Recovery
- CO_2 Feedback for biofuels algae
- Making CTL from coal
- Regulatory Legislation modeled in Wyoming, Colorado (IOGCC)
- State and regional infrastructure development (CCS, CTL, Methanol)

TRANSPORTATION:

Coal Continues as Key to U.S. Energy Security and Independence

Eliminating U.S. Oil Imports by 2030 - Southern States Energy Board, 2006

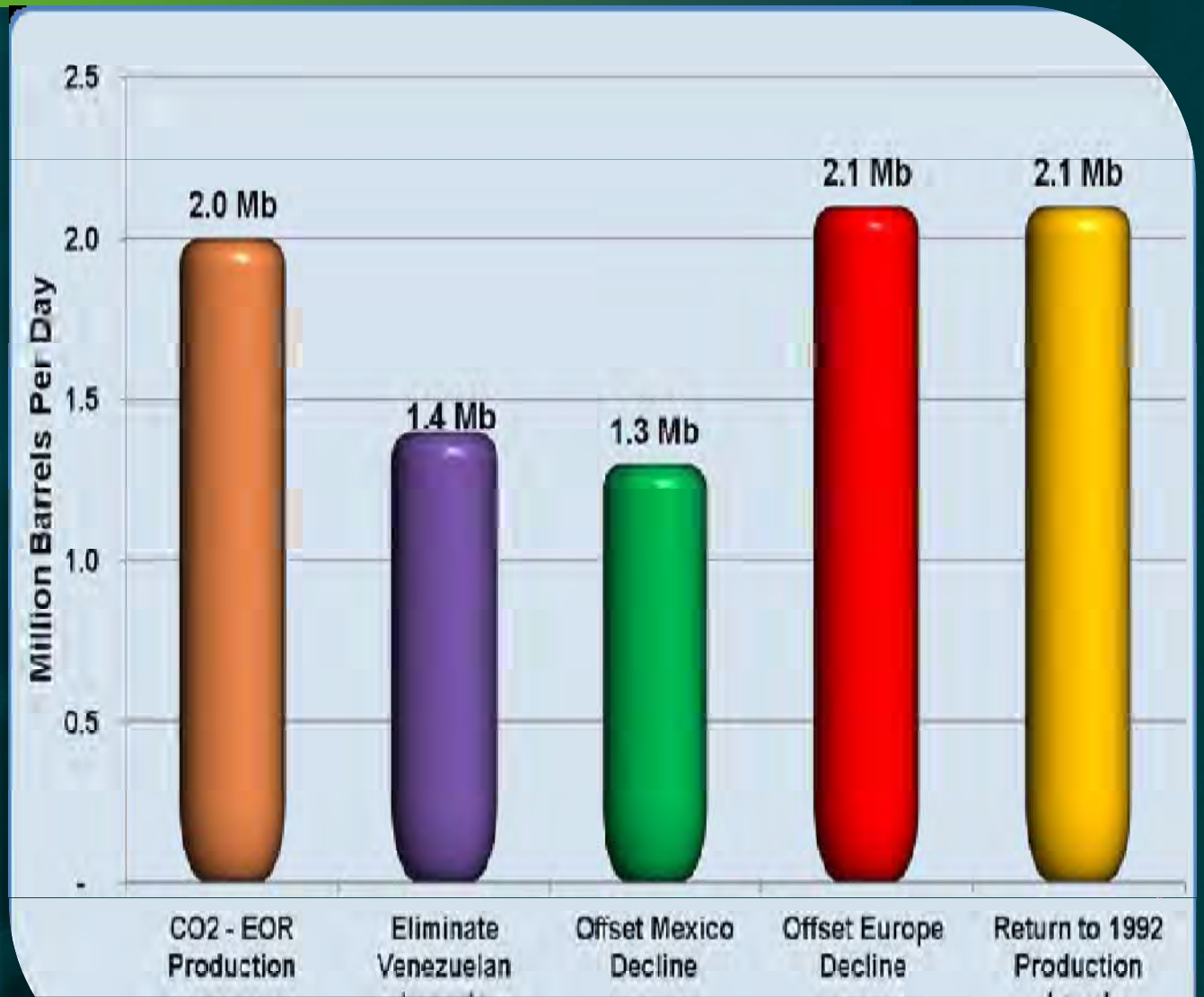




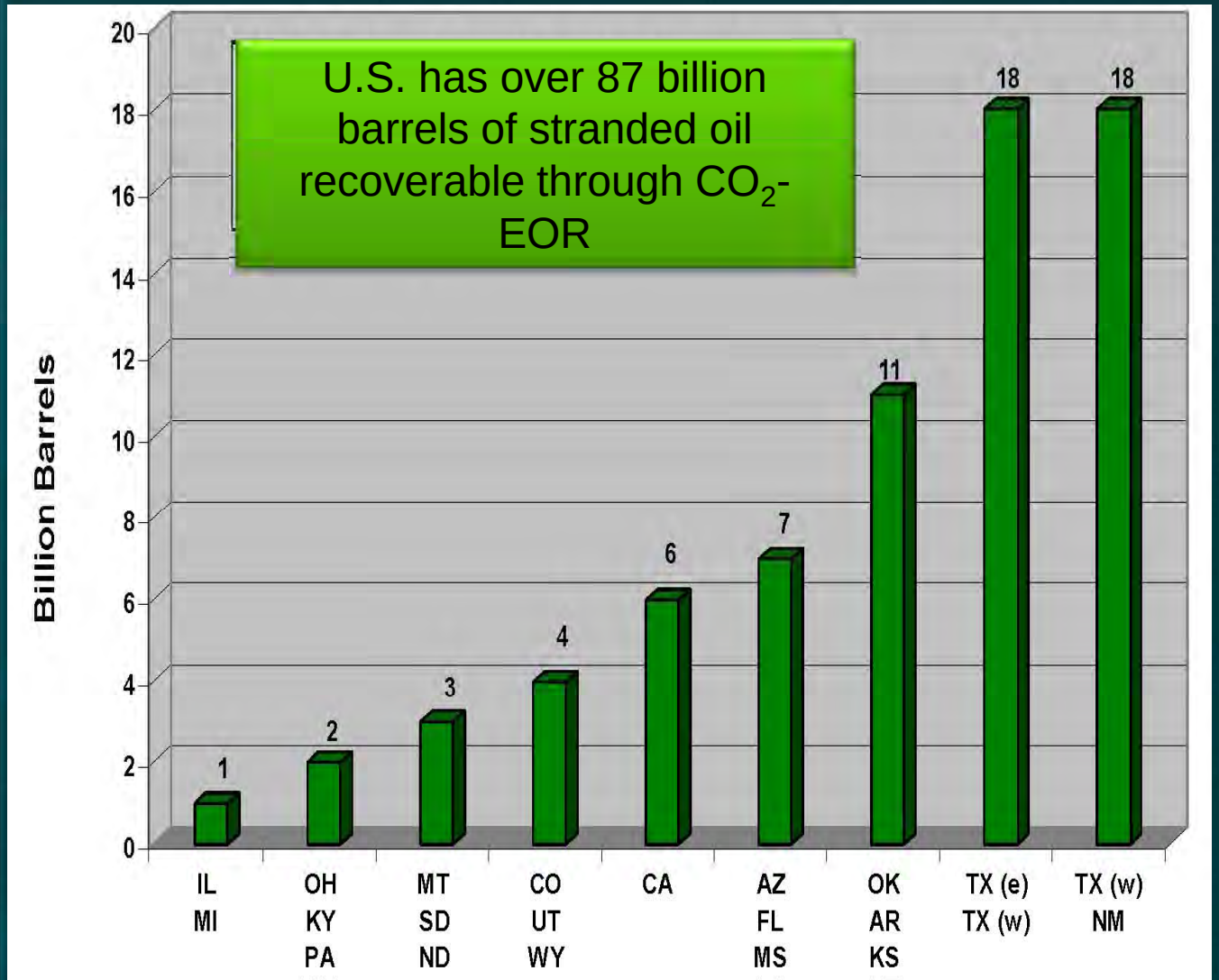
CO_2 – EOR

- The United States has over 87 billion barrels of "stranded oil" recoverable through CO_2-EOR (DOE, 2008)
- "Availability of CO_2 limits the industry's ability to expand CO_2-EOR" (Charles Fox, Vice President, Kinder Morgan, 2008)
- "…efficient capture and separation of by-product CO_2 from the next generation of low emission power plants could provide massive, long-term sources of "EOR-Ready CO_2" (DOE, 2006)
- In 1985, the United States produced 9 Mb/d of oil and imported 5 Mb/d. In 2005, we produced 5 Mb/d and imported almost 14 Mb/d.

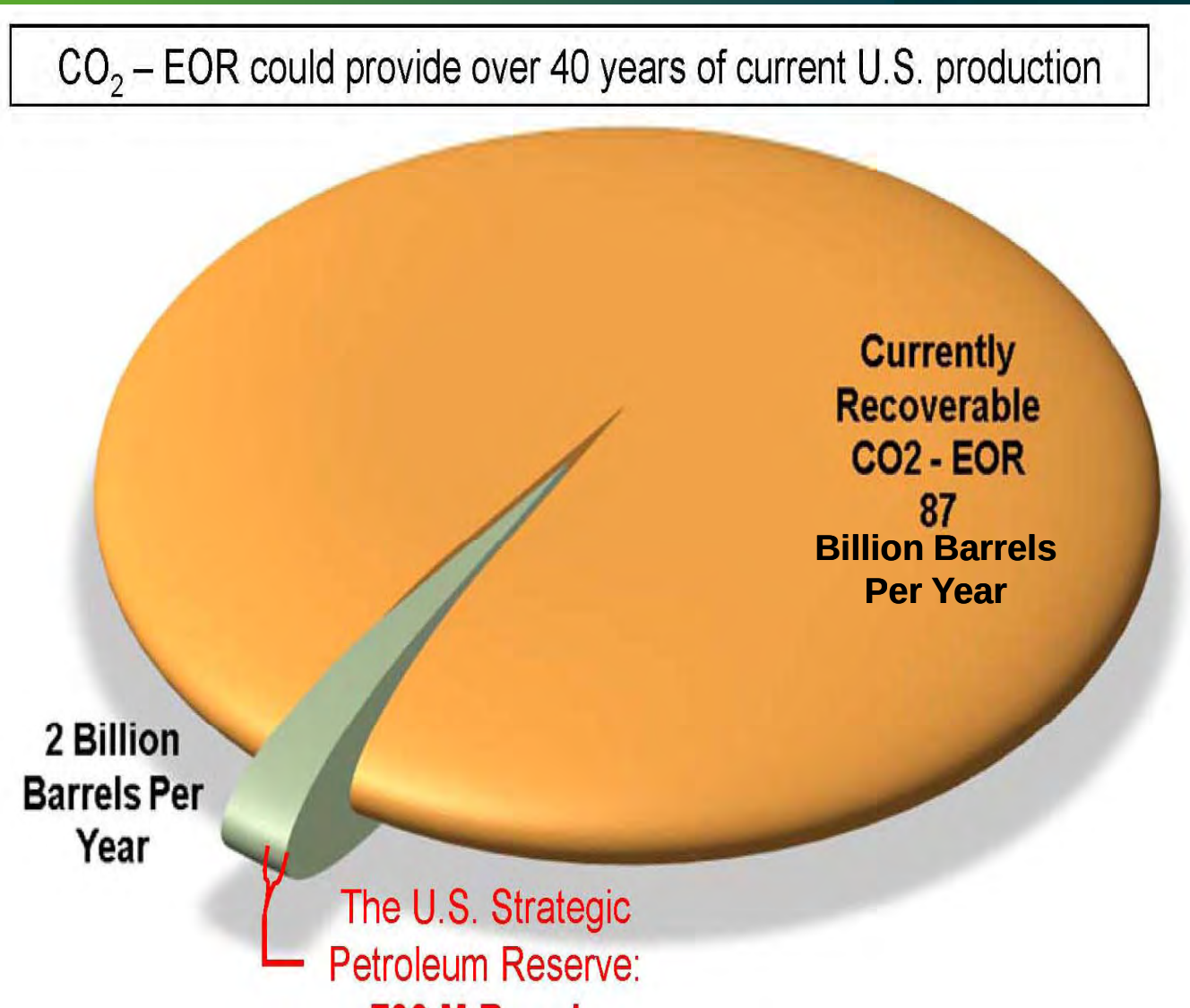
vo million barrels/day CO_2-EOR could…

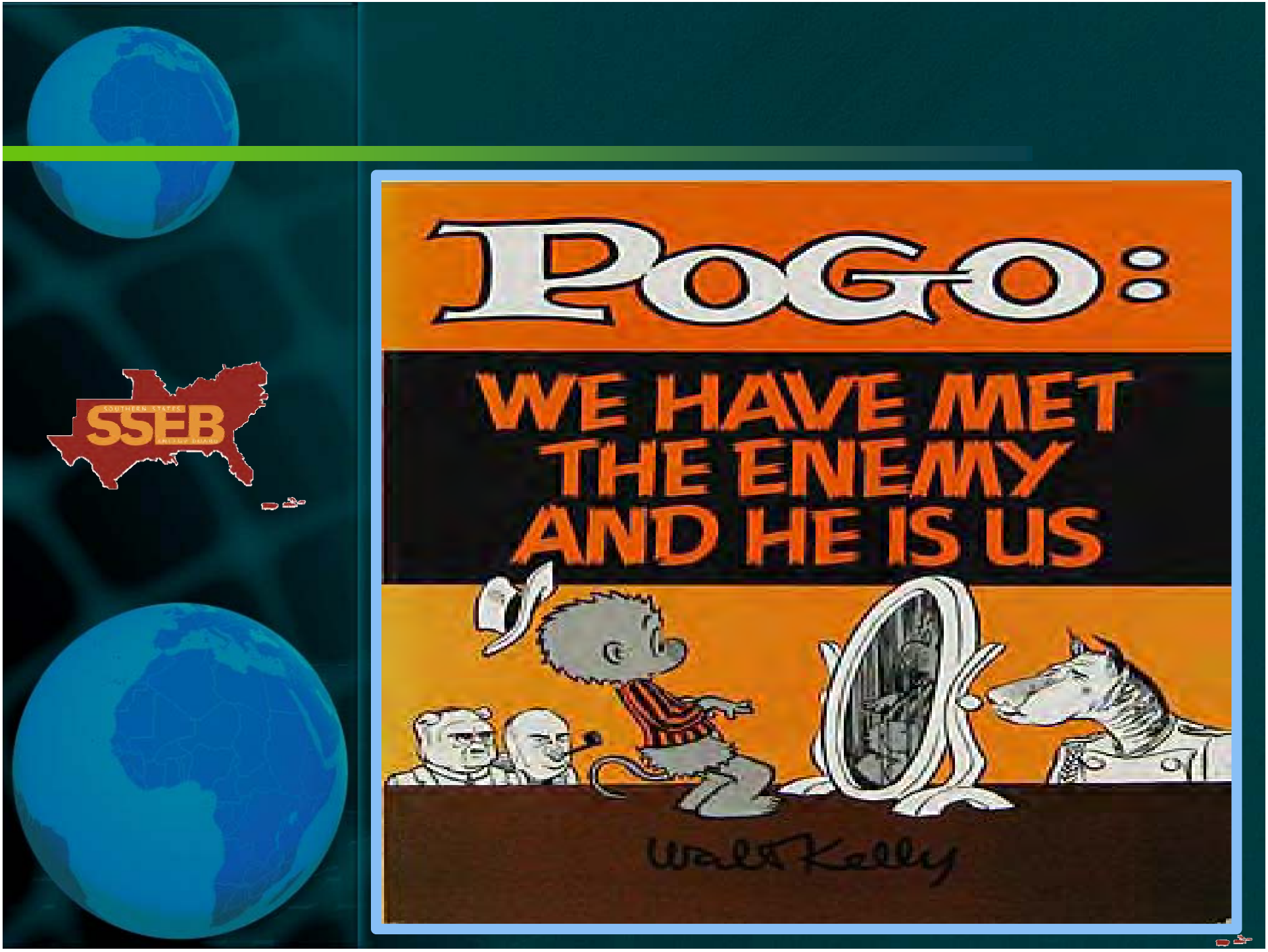


cation of Stranded Oil that is Recoverable through CO_2-EOR



Scale of CO_2 - EOR's Potential




POGO:
WE HAVE MET THE ENEMY AND HE IS US
Walt Kelly

A Path Forward for Indigenous Energy Resources

- Workforce – Kentucky Coal Academy
- Help fund R&D for clean coal & sequestration
- Advocate for renewable energy tax credit extension
- Consider funding renewables and other Carbon offset programs
- Nuclear Generation with spent fuel storage
- Involvement in policy decisions at federal & state levels
- Promote Advanced Technologies
- Financing/Investment & Regulatory certainty

- Coal generation with 90%+ CO_2 capture/storage
- Indigenous liquid transportation fuels (coal, biomass, oil shale) with carbon sequestration to eliminate dependence on imported oil
- Modernized infrastructure (pipelines, expanded refineries, transmission, roads, bridges, etc.)
- Energy Efficiency in existing energy infrastructure and in end-use, including CHP

SSEB

Mr. Kenneth J. Nemeth, Secretary

Southern States Energy Board
nemeth@sseb.org
(770) 242~7712

PLEASE VISIT:

www.sseb.org

www.americanenergysecurity.org

www.sercarbon.org