

Ending the Energy Stalemate

A Bipartisan Strategy to Meet America's Energy Challenges

Recommendations of the National Commission on
Energy Policy

Hank Habicht, Commissioner and
CEO, Global Environment & Technology Foundation

NARUC

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The National Commission on Energy Policy

- Launched in 2002, Commission met a dozen times; sponsored over 35 independent research analyses
- \$10 million effort over 3 years
- Privately funded, principally by the William and Flora Hewlett Foundation along with its funding partners



The Commissioners

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Teresa and John Heinz Professor of Environmental Policy, Harvard University

William K. Reilly (co-chair)

Founding Partner, Aqua International Partners; former Administrator of the U.S. Environmental Protection Agency

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Senior Advisor, Lexecon, Inc; former U.S. representative, IN



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Vice President, Booz Allen Hamilton; former Director of Central Intelligence

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Clinical Professor of Business, Ross School of Business, the University of Michigan; Group Vice President, Corporate Affairs, Ford Motor Company (2001-2004)

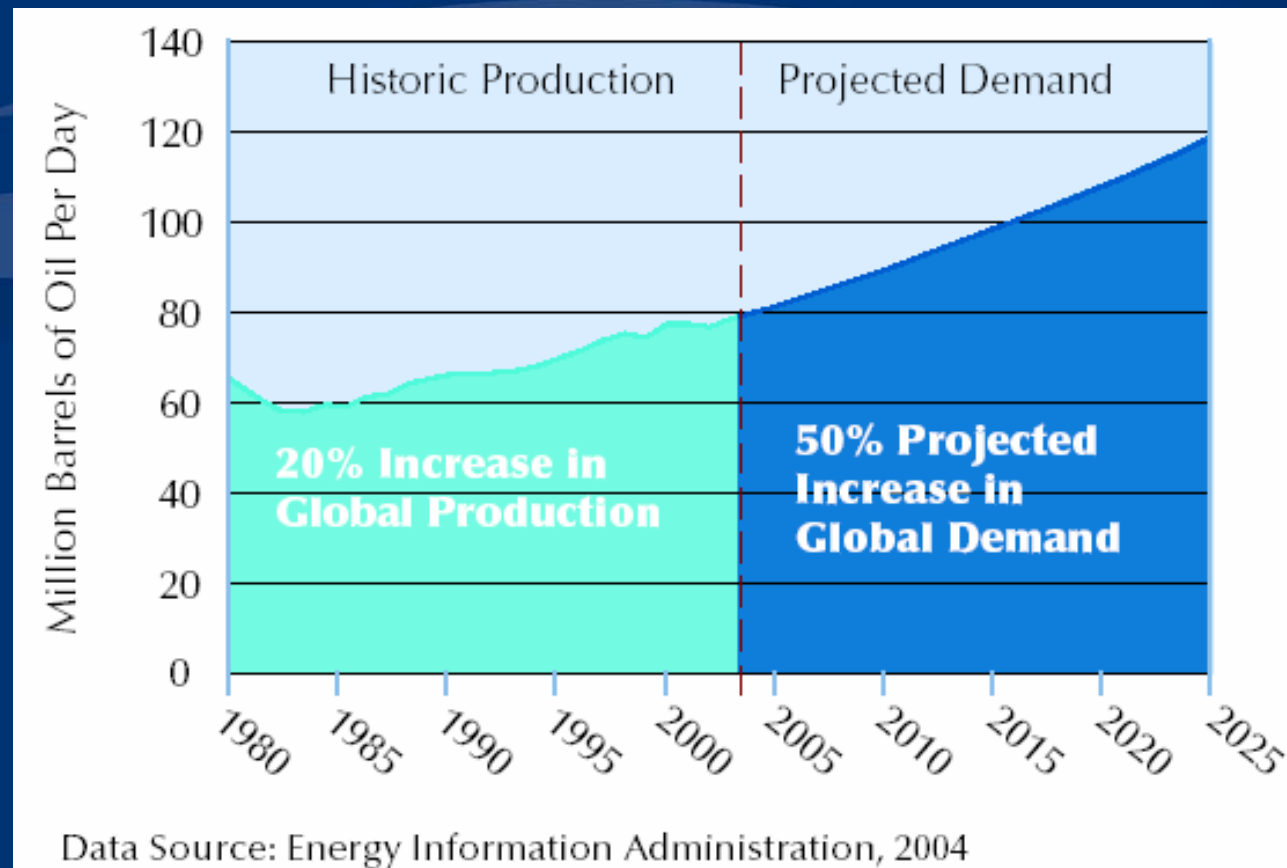


Why the Current “Stalemate”?

- Complex issues, difficult trade-offs.
- Persistent “myths” – on left and right – contribute to paralysis.
- Divisions about energy have always been as much regional as partisan.
- Energy sector characterized by large investments, long-lived infrastructure – not easy to change.
- Economic and environmental stakes are enormous.

Stalemate: Stakes are Enormous

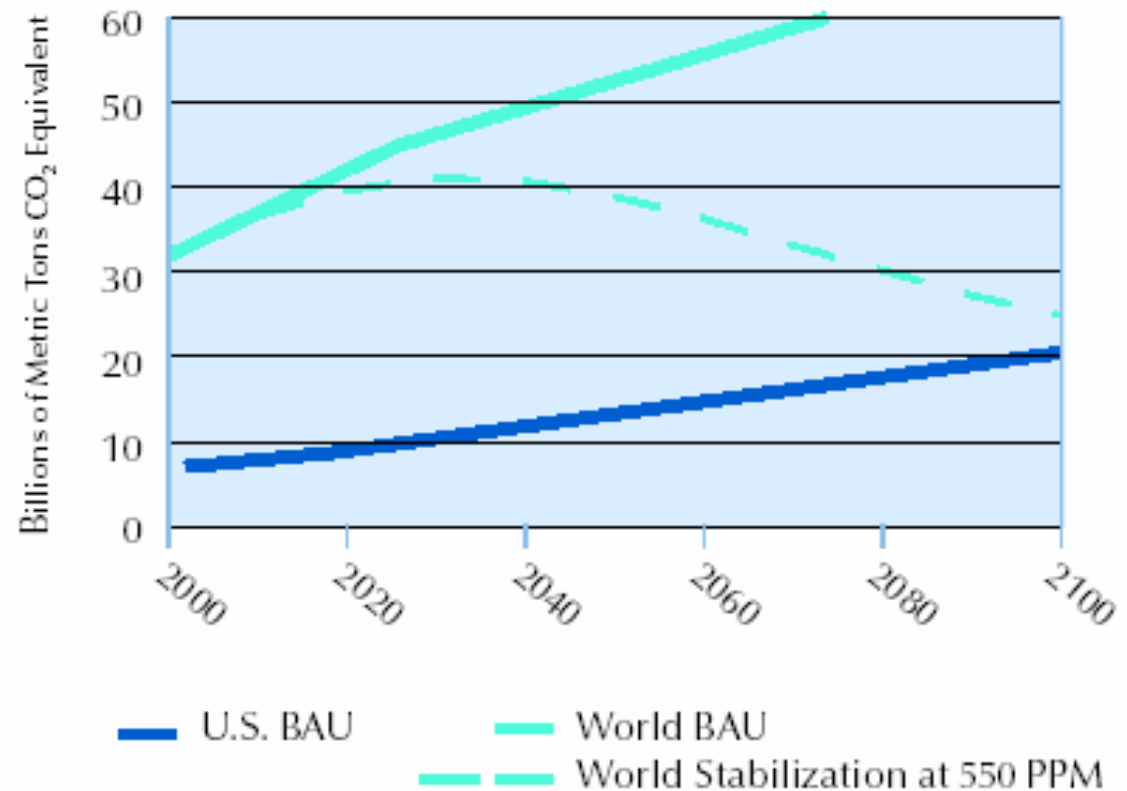
- By 2025, U.S. oil consumption will increase 43%.
- Global oil consumption will grow by over 50%.



Stalemate: Stakes are Enormous

- By 2025, U.S. greenhouse gas emissions could increase over 40%.
- Globally, emissions could increase 55%.

Projected Global and U.S. Greenhouse Gas Emissions Trajectories



Wigley, Richels, and Edmonds, 1996; NCEP projection

A Formula for Overcoming Stalemate

- Adopt a bipartisan, revenue-neutral approach.
- Address both supply and demand in an integrated fashion.
- Don't try to solve the problem at once, but begin to change the trajectory.
- Recognize there are no silver bullets and dispense with myths.
- Wherever possible, rely upon markets – appropriately regulated – to produce the most efficient solutions
- Invest in technology.

The Commission's Overarching Objective

Ensuring ample, clean, reliable, and affordable energy for the 21st Century while responding to growing concerns about the nation's energy security and the risks of global climate change.



Structure of the Commission's Report

- Improving Oil Security
- Reducing Risks from Climate Change
- Improving Energy Efficiency
- Expanding Energy Supplies
- Strengthening Energy Supply Infrastructure
- Developing Energy Technologies for the Future

Enhancing Oil Security

- Increase and diversify world production and strengthen global network of strategic reserves.
- Significantly strengthen federal fuel economy standards for cars and light trucks while also reforming CAFE program.
- Provide manufacturer and consumer incentives to promote domestic production and increased use of highly efficient advanced diesel and hybrid-electric vehicles.
- Pursue efficiency opportunities in heavy-duty truck fleet and existing passenger vehicle fleet.
- Develop non-petroleum transportation fuel alternatives, especially cellulosic ethanol and diesel from biomass and wastes.

Context for the Commission's Oil Security Recommendations

- By 2025, global oil demand is expected to grow 40% to 50% relative to 2002 level of 78 million barrels/day (MBD).
- Meanwhile, U.S. demand is expected to grow nearly 50%, from 20 MBD to 29 MBD.
- In the past, new discoveries and better technology have kept pace with demand, but today's global supply system is under considerable strain with very little spare capacity.
- U.S. accounts for 25% of global consumption, but only 3% of world's proved reserves. Domestic oil production peaked in the 1970s and has been flat or declining since.
- Reducing vulnerability to supply disruptions and high prices is more realistic goal than energy "independence".

Reducing Risks from Climate Change

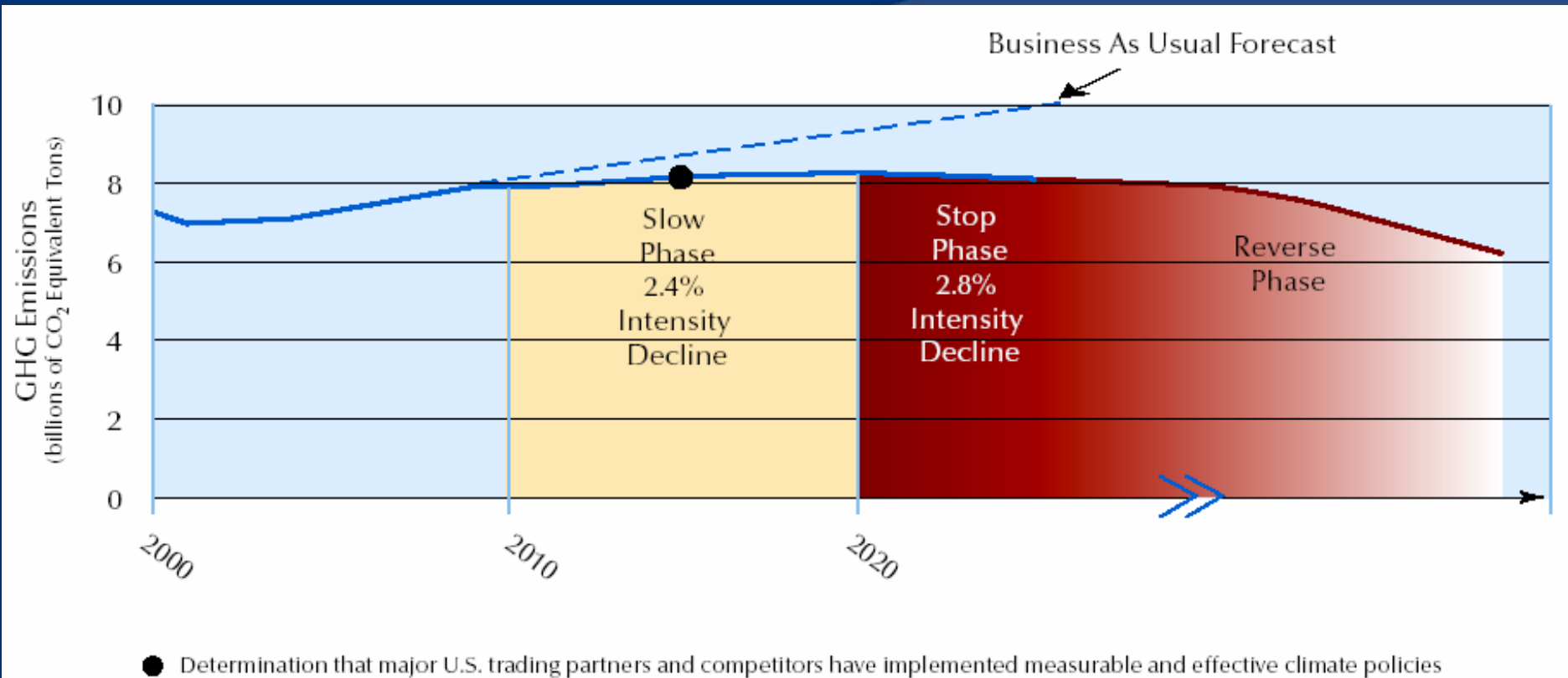
- Initiate in 2010 a mandatory, economy-wide, tradable-permits system to limit greenhouse gas emissions.
- Cap initial costs to the U.S. economy at \$7 per metric ton of CO₂-equivalent via a “safety valve” mechanism.
- Link subsequent U.S. action with comparable efforts by other developed and developing nations via a program review in 2015 and every five years thereafter.
- Allocate 95% of permits for free to emitting sources; remaining 5% would be auctioned.

Reducing Risks from Climate Change

- Proposed emissions targets reflect a 2.4% annual decline in the emissions intensity of the U.S. economy for the period 2010-2019. In 2020, propose accelerating target intensity decline to 2.8% per year.
- Gradually strengthen market signal by increasing safety valve price 5% per year in nominal terms. Also gradually increase (starting in 2013) the quantity of permits auctioned each year up to a limit of 10% of the total permit pool.

Reducing Risks from Climate Change

The Commission's recommendation is to slow, stop, and eventually reverse U.S. greenhouse gas emissions.



Context for the Commission's Greenhouse Gas Recommendations

Comparison of Commission GHG Proposal to Other Domestic Climate Change Policies^a

		Commission Proposal	Bush Climate Initiative	McCain Lieberman Bill ^b	Kyoto Protocol ^c
Mandatory / Voluntary		mandatory	voluntary	mandatory	mandatory
Target type		emission intensity	emission intensity	absolute emissions	absolute emissions
Cost limit		yes	N/A	no	no
2010	Expected domestic emission reductions	200 million tons	300 million tons (goal)	550 million tons	1.2 billion tons
	Permit price (\$/ton CO ₂ equivalent)	\$5 ^d	N/A	\$9–\$16	\$51
	Estimated Cost in 2010	\$500 million	N/A	\$2.5–\$4.3 billion	\$31 billion
2020	Expected domestic emission reductions	0.5-1 billion tons ^e	850 million tons (extrapolated goal)	1.5 billion tons	1.7 billion tons
	Permit price (\$/ton CO ₂)	\$7	N/A	\$15–\$36	\$44
	Estimated Cost in 2020	\$2-4 billion	N/A	\$11–\$27 billion	\$37 billion

Improving Energy Efficiency

- Update and expand efficiency standards for new appliances, equipment, and buildings to capture additional cost-effective energy-saving opportunities.
- Integrate improvements in efficiency standards with targeted technology incentives, R&D, consumer information, and programs sponsored by electric and gas utilities.
- Pursue cost-effective efficiency improvements in the industrial sector.

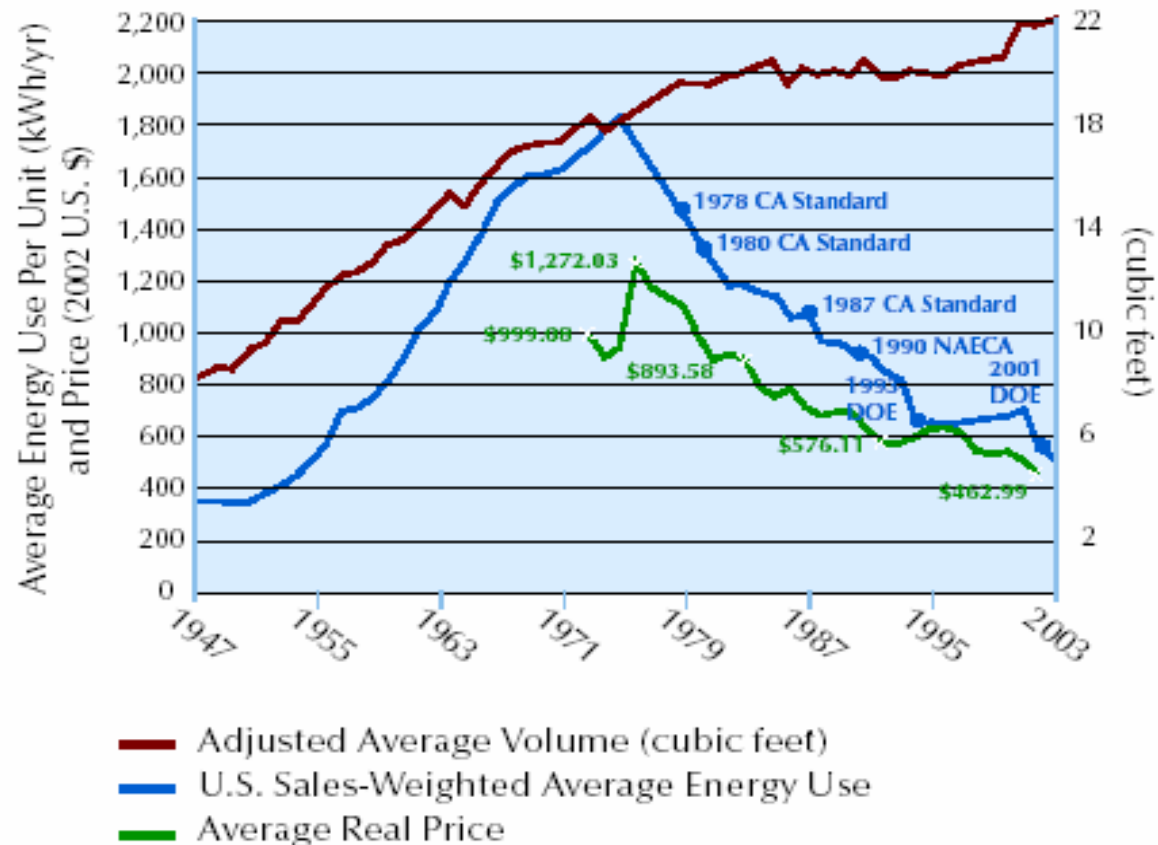
* These recommendations are in addition to Commission proposals for improving passenger vehicle and heavy-duty truck efficiency.

Improving Energy Efficiency

Consider the Refrigerator

Since the mid-1970s, a concerted government and industry effort has led to significant energy savings without sacrificing size or price.

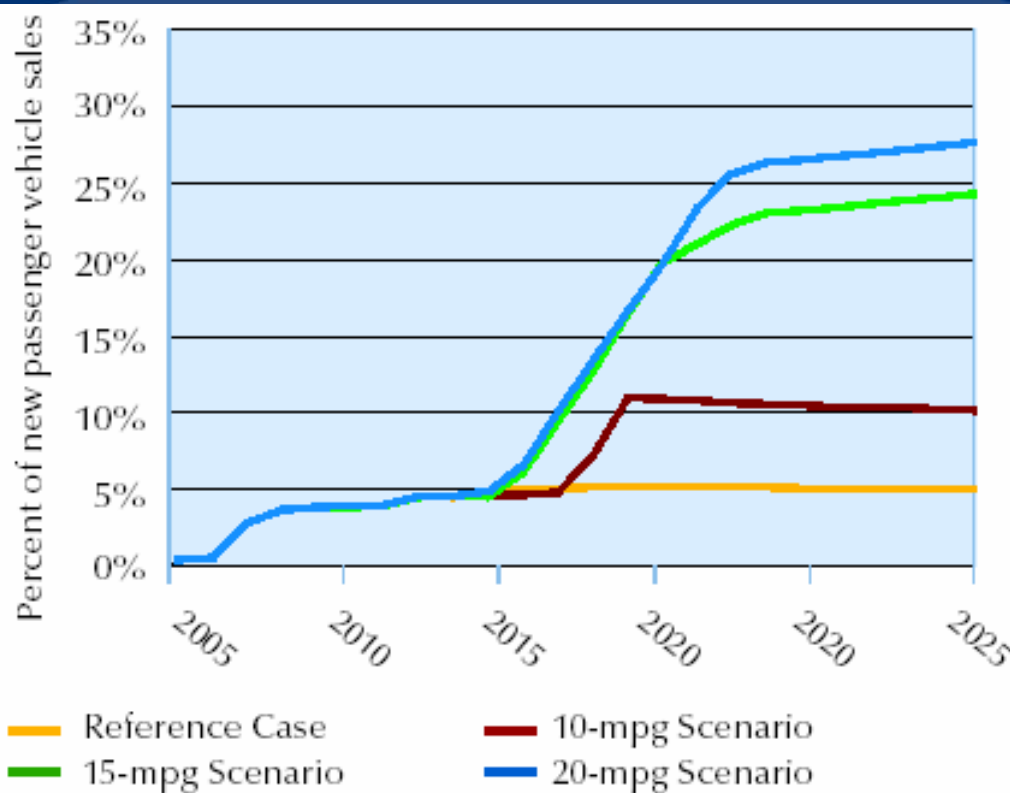
U.S. Refrigerator Energy Use Over Time



Potential Implications of Commission's Fuel Economy Recommendations

Sales of hybrid vehicles are expected to grow dramatically if CAFE standards are increased.

Market Share of Gasoline-Electric Hybrid Vehicles



Data Source: NCEP NEMS Modeling

Expanding Energy Supplies

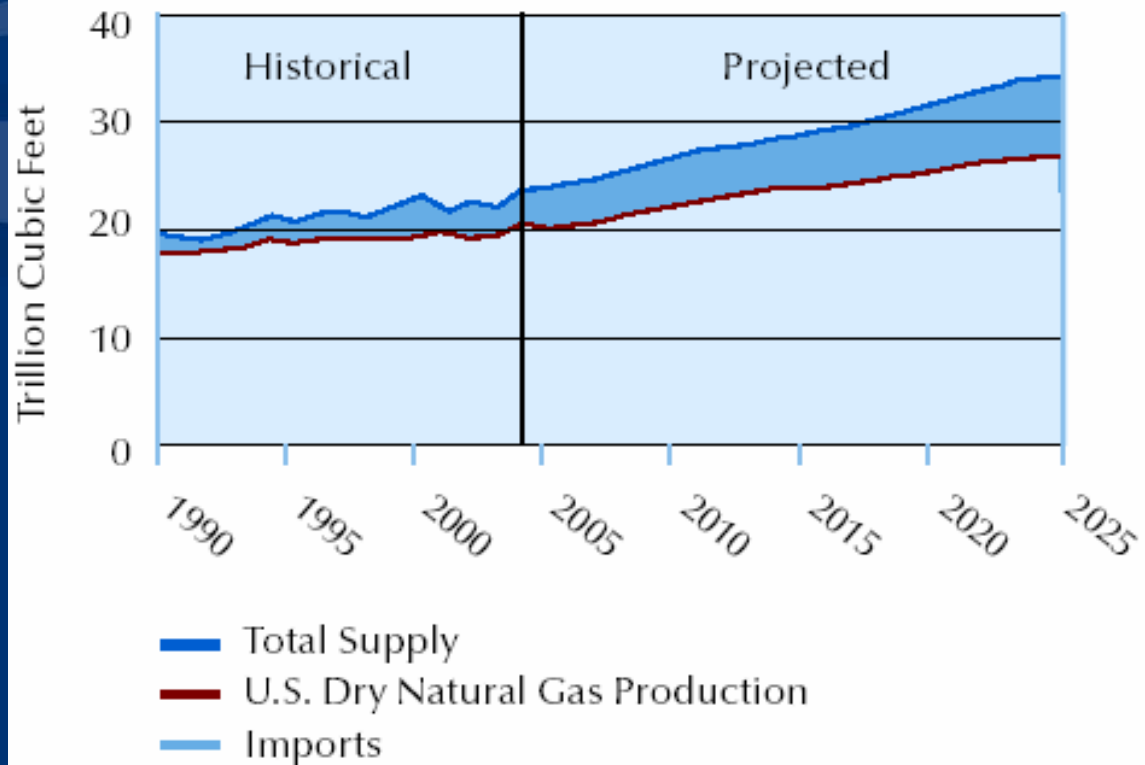
- Natural Gas
- Advanced Coal Technologies
- Nuclear Energy
- Renewable Electricity Technologies
- Non-Petroleum Transportation Fuels

Expanding Energy Supplies

Natural Gas

Even with construction of an Alaska gas pipeline, current projections show a need for increased imports in years to come.

U.S. Natural Gas Supply

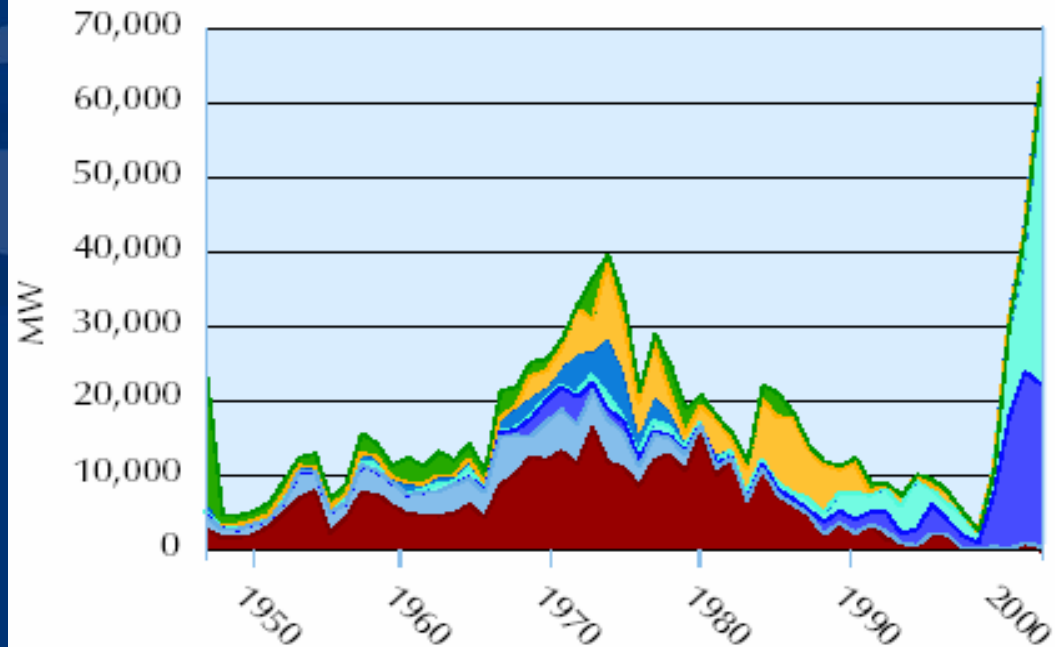


Data Source: Energy Information Administration, 2004

Context for the Commission's Natural Gas Recommendations

Investments in Electric Sector Generating Capacity

Unprecedented investment in natural gas-fired electric capacity in recent years will drive future natural gas demand.



Energy and Environmental Analysis, Inc., 2004

Expanding Energy Supplies

Natural Gas

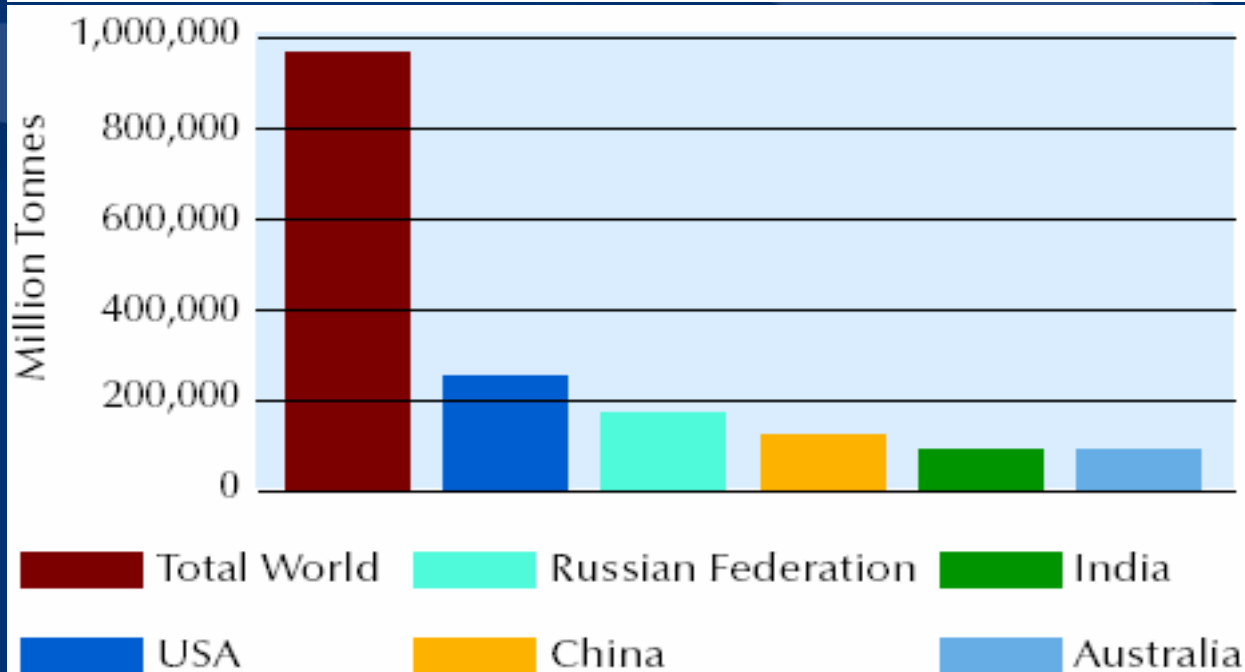
- Adopt effective public incentives for the construction of an Alaska natural gas pipeline.
- Address obstacles to the siting and construction of infrastructure to support increased imports of liquefied natural gas (LNG).
- Improve ability of key land management agencies like the Bureau of Land Management (BLM) to evaluate and manage access to natural gas resources on public land.
- Pursue R&D to develop technologies for tapping unconventional natural gas supplies, like methane hydrates.

Expanding Energy Supplies

Coal

- U.S. has world's largest proved coal reserves.
- At current production levels, domestic supplies would last over 250 years.

Proved Coal Reserves



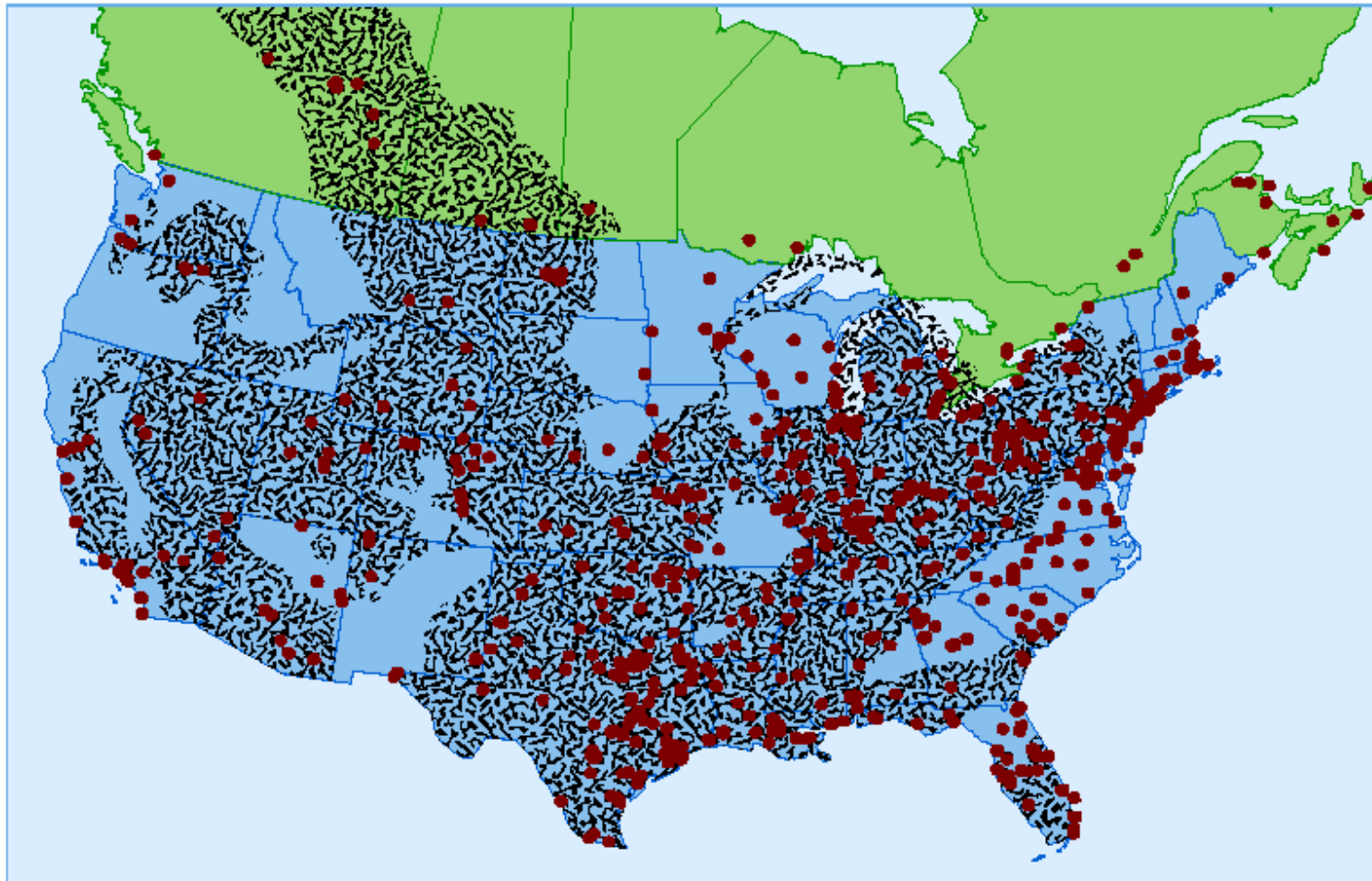
Expanding Energy Supplies

Coal

- Provide \$4 billion over ten years in early deployment incentives for integrated gasification combined cycle (IGCC) coal technology.
- Provide \$3 billion over ten years in public incentives to demonstrate commercial-scale carbon capture and geologic sequestration at a variety of sites.

Context for the Commission's Carbon Sequestration Recommendations

Potential Sites for Geologic Carbon Sequestration



● Fossil Power Plants



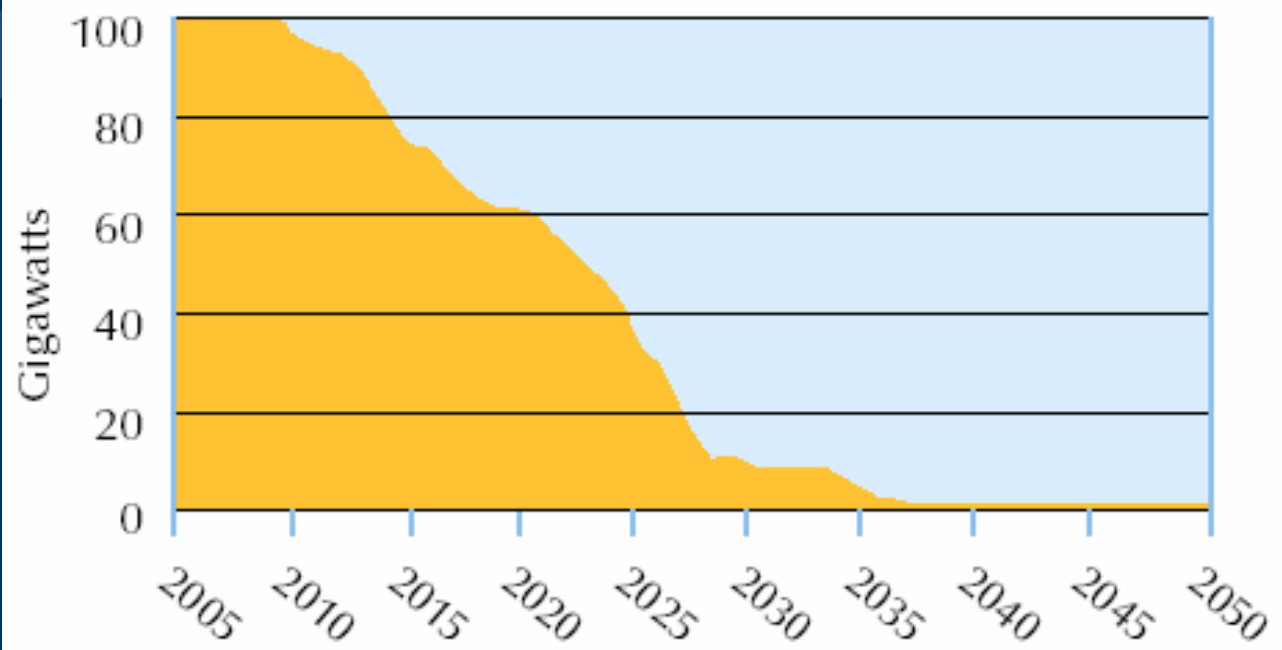
Potential Sequestration Areas

Expanding Energy Supplies

Nuclear Power

Today's nuclear power plants will gradually be retired over the next 50 years (if current licenses expire) – depriving the nation of one of its key non-carbon energy sources.

Total U.S. Nuclear Power Plant Capacity (by License Expiration Date)



Data Source: Energy Information Administration, 2003

Expanding Energy Supplies

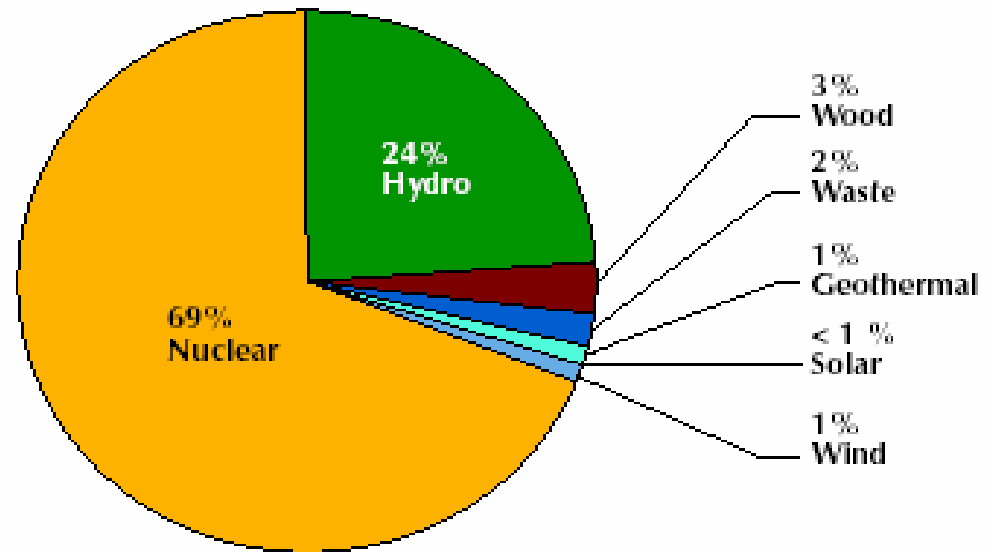
Nuclear Power

- Fulfill existing federal commitments on nuclear waste management.
- Provide \$2 billion over ten years from federal RDD&D budgets for the demonstration of one to two new advanced nuclear power plants.
- Significantly strengthen the international proliferation regime.

Context for the Commission's Nuclear Recommendations

Percentage of Non-Carbon Electricity Generation Energy by Source (2003)

In 2003, nuclear power accounted for roughly 70% of the nation's non-carbon electricity generation.



Data Source: Energy Information Administration, 2004

Expanding Energy Supplies

Renewable Energy

- Increase federal funding for renewable technology R&D by \$360 million annually. Federal efforts should be targeted at overcoming key hurdles in cost competitiveness and early deployment.
- Extend the federal renewable energy production tax credit for a further four years (i.e., from 2006 through 2009) and expand eligibility to all non-carbon sources (including solar, geothermal, new hydro, next generation nuclear, and advanced fossil with carbon sequestration).

Expanding Energy Supplies

Renewable Energy

- Support ongoing efforts by FERC to promote market-based approaches to integrating intermittent resources into the interstate grid system, while ensuring appropriate cost allocation and eliminating arbitrary penalties for over- and under-production.
- Establish \$1.5 billion program over ten years to increase domestic production of advanced non-petroleum transportation fuels from biomass (including waste).

Context for the Commission's Non-Petroleum Transportation Fuel Recommendations

Estimated Land Requirements for Producing Bio-fuels Sufficient to Fuel Half the Current U.S. Passenger Fleet

Cumulative Impacts ↓

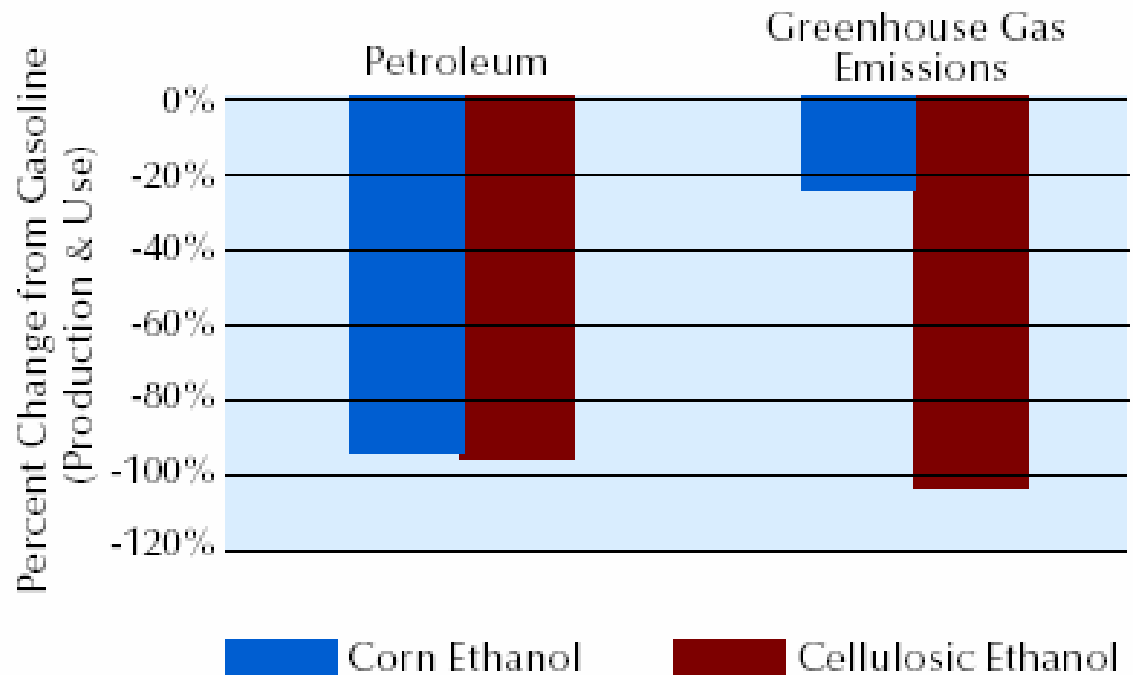
Scenario	Biomass Production	Improved Conversion Efficiencies	Fleet MPG	Additional Land Required
1. Status quo	5 tons per acre	NO	20 mpg	180 million acres
2. Increase Yield of Energy Crops	10 tons per acre	NO	20 mpg	90 million acres
3. Improved Conversion Efficiency	10 tons per acre	YES	20 mpg	60 million acres
4. Higher Vehicle Fuel Economy	10 tons per acre	YES	40 mpg	30 million acres

Data Sources: Lynd, Greene, and Sheehan, 2004; Mann, 2004

Context for the Commission's Non-Petroleum Transportation Fuel Recommendations

The Attributes of Corn Ethanol and Cellulosic Ethanol

While both corn and cellulosic ethanol are effective at offsetting petroleum consumption, cellulosic ethanol has the added benefit of substantially reduced greenhouse gas emissions.

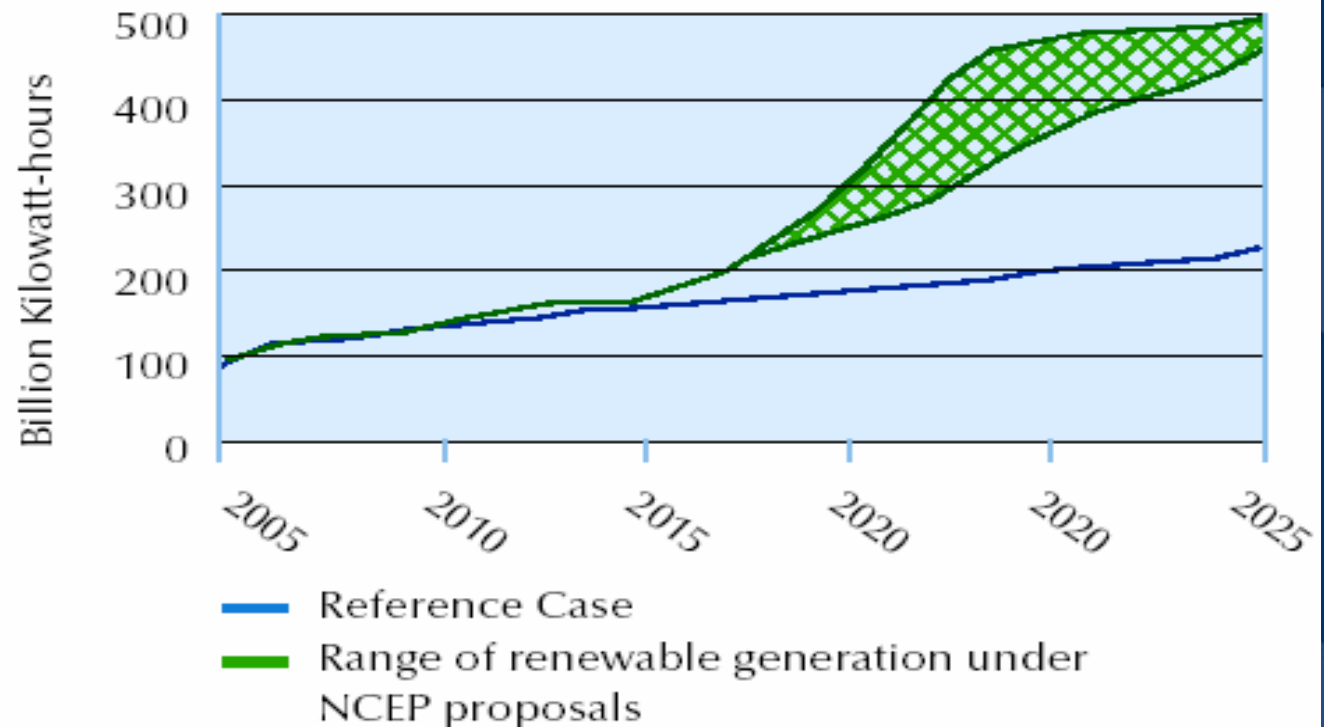


Expanding Energy Supplies

Impact of Commission Proposal – Renewables

Non-hydro renewable electricity generation is expected to more than double as a result of Commission recommendations.

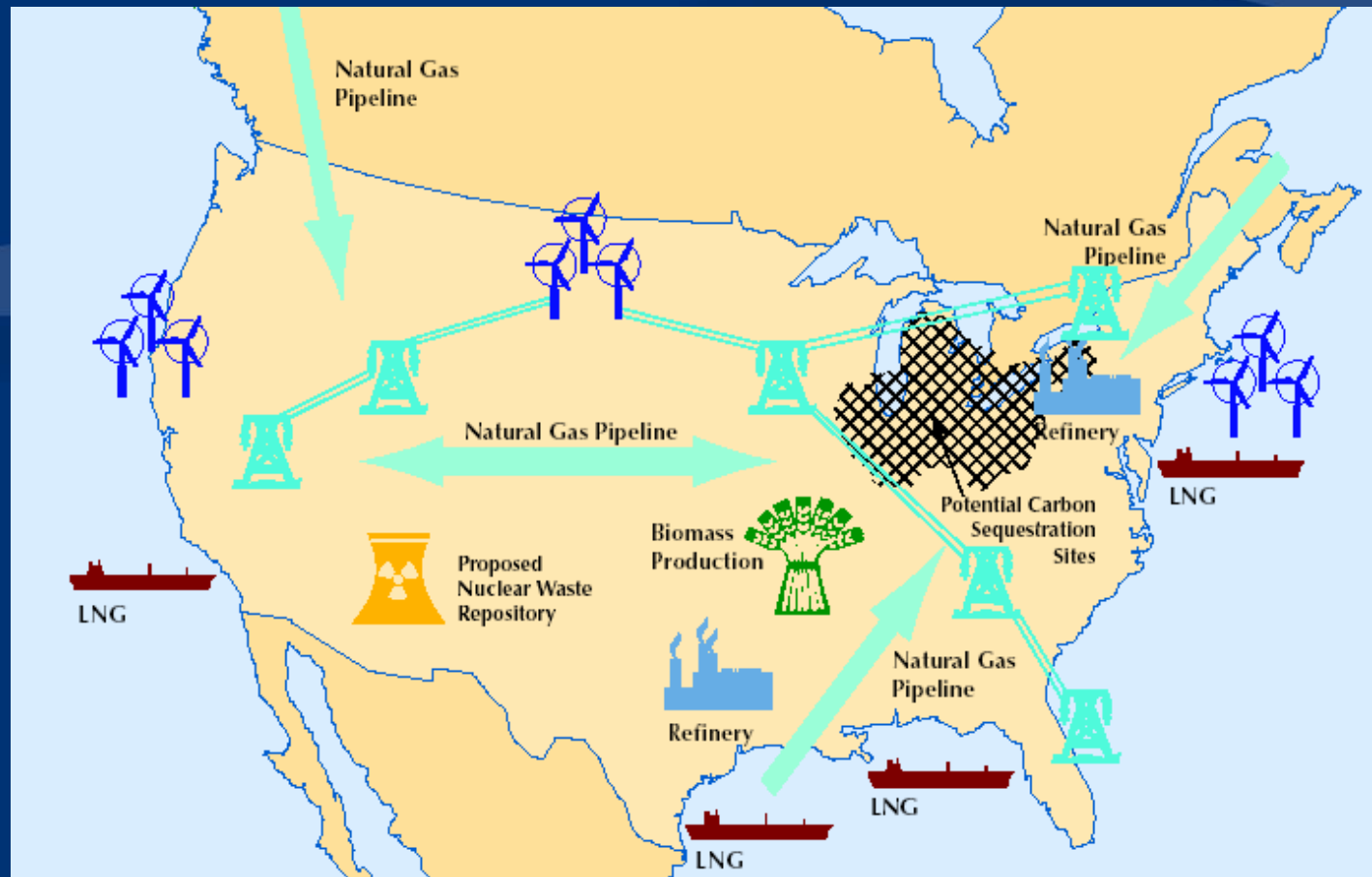
Projected Renewable Electricity Generation



Data Source: NCEP NEMS Modeling

Strengthening Energy-Supply Infrastructure

Need for new energy infrastructure affects nearly all regions.



Strengthening Energy-Supply Infrastructure

- Reduce barriers to the siting of critical energy infrastructure.
- Protect critical infrastructure from accidental failure and terrorist threats.
- Support a variety of generation resources – including both large-scale power plants and small-scale “distributed” and/or renewable generation – and demand reduction (for both electricity and natural gas), to ensure affordable and reliable energy service for consumers.

Strengthening Energy-Supply Infrastructure

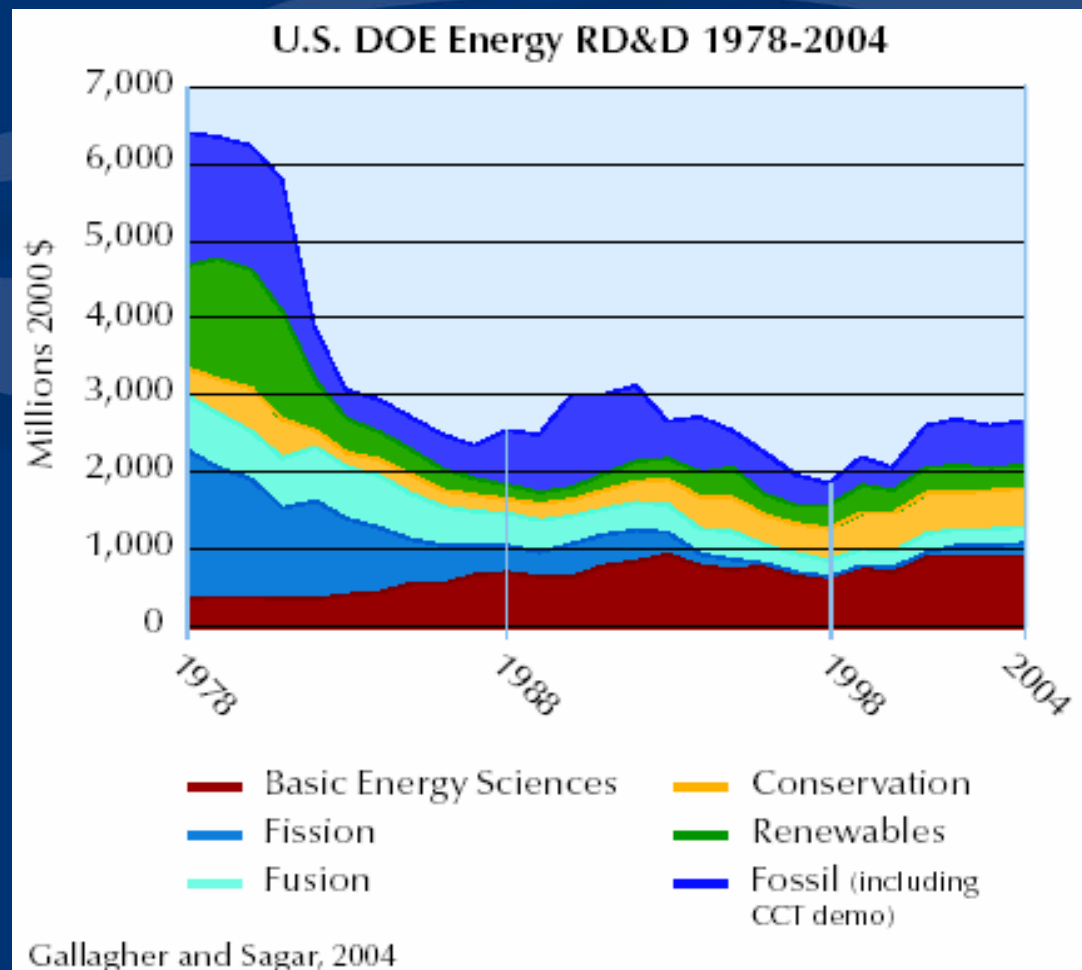
- Encourage increased transmission investment and deployment of new technologies to enhance the availability and reliability of the grid, in part by clarifying rules for cost-recovery.
- Enhance consumer protections in the electricity sector and establish an integrated, multi-pollutant program to reduce power plant emissions.

Technology Development

To address the nation's, and the world's, energy challenges, we will need new and better energy technologies. Technology innovation is therefore a major, recurring theme in the Commission's report...

Technology Development

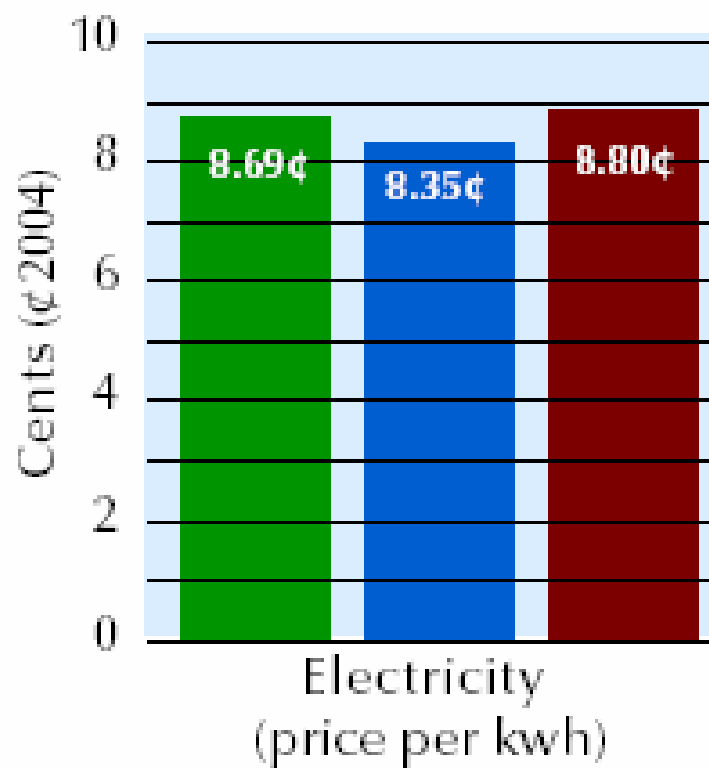
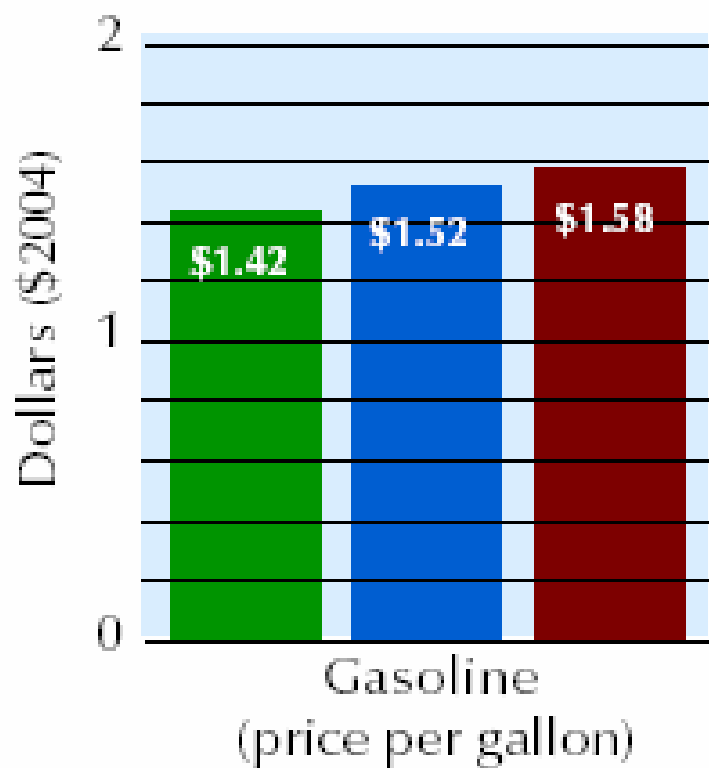
Federal energy R&D spending has declined over the past 25 years.



Technology Development

- Double federal funding for energy research and development while improving the management of these efforts and promoting effective public-private partnerships.
- Increase incentives for private sector energy research, development, demonstration and early deployment (ERD³).
- Expand investment in cooperative international initiatives and improve coordination among relevant federal agencies.
- As noted in foregoing slides, provide support for demonstration or early deployment of coal gasification with sequestration, domestically produced efficient vehicles and alternative transportation fuels, and advanced nuclear reactors.

Energy Price Impacts of Commission Proposal



2002

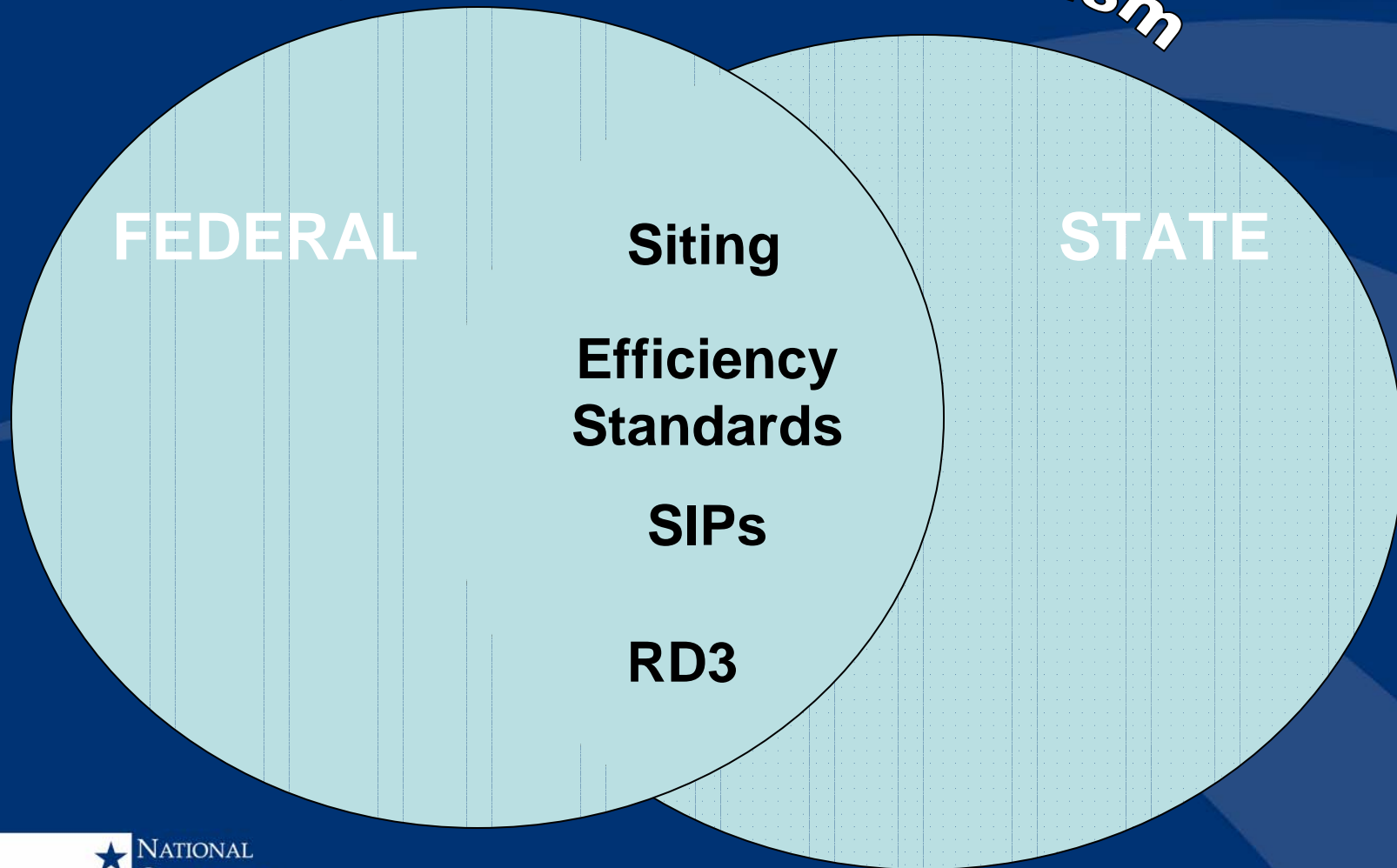
U.S. BAU 2020

NCEP 2020

Data Source: NCEP NEMS Modeling

Federal – State Policy Dynamic

Cooperative Federalism



Reaction So Far...

- Commission report has received substantial attention from media and political leaders.
- Criticism on the right has focused on the mandatory nature of our greenhouse gas proposal; environmental groups have objected that the same proposal is too weak and that support for nuclear is unwarranted.
- Support from unlikely quarters, such as the United Mineworkers, suggests that there is indeed hope for ending the stalemate.

Where does the Commission go from here?

- Will continue to educate and advocate for our recommendations.
- Will serve as a resource to Congress, the Administration, and others.
- Will reach out to key regions of the country and outside-the-Beltway constituencies.
- Will continue activity through 2005.

For More Information...

- Go to www.energycommission.org.
- In addition to final report, staff papers and independent research sponsored by Commission are collected in a 2,700 page technical appendix available on the website and CD-ROM.
- Economic analysis describing key assumptions and detailed modeling results for the Commission's greenhouse gas proposal is also available on the website and CD-ROM.
- Contact Commission staff directly at:
1616 H Street NW, 6th Floor
Washington, DC 20006
202-637-0400

