Chapter 6 RECOMMENDATIONS

Abstract

The NPC study participants developed recommendations in the following five strategic areas. Study participants believe that implementing these five strategies will enable industry and government to more adequately prepare for the hard energy truths facing the United States and the world.

The NPC makes the following policy recommendations by strategy.

- Moderate demand by increasing energy efficiency
- Expand and diversify U.S. energy supply
- Strengthen global and U.S. energy security
- Reinforce capabilities to meet new challenges
- Address carbon constraints

Moderate Demand by Increasing Energy Efficiency

Improve Vehicle Fuel Economy

The NPC makes the following recommendations to increase vehicle fuel economy:

- Improve car and light-truck fuel economy standards at the maximum rate possible by applying economic, available technology.
  - Update the standards on a regular basis.
  - Avoid further erosion of fuel economy standards resulting from increased sales of light trucks, or, alternatively, adjust light-truck standards to reflect changes in relative light-truck and car market shares.

Potential Effect: 3-5 million barrels of oil per day in the United States from the increased base in 2030.

Reduce Energy Consumption in the Residential and Commercial Sectors

Building Energy Codes Appliance and Equipment Standards

The NPC makes the following recommendations to improve efficiency in the residential and commercial sectors:

- Encourage states to implement and enforce more aggressive energy efficiency building codes, updated on a regular basis.
- Establish appliance standards for new products.
- Update federal appliance standards on a regular basis.

Potential Effect: 7-9 quadrillion Btu per year by 2030 in the United States, including 2-3 quadrillion Btu per year of natural gas (5-8 billion cubic feet per day),

4-5 quadrillion Btu per year of coal, and ~1 quadrillion Btu per year (0.5 million barrels per day) of oil.

Increase Industrial Sector Efficiency

The NPC makes the following recommendations to improve efficiency in the industrial sector:

- The Department of Energy should conduct and promote research, development, demonstration, and deployment of industrial energy efficiency technologies and best practices.
- The research and development tax credit should be permanently extended to spur private research and development investments.

Potential Effect: 4-7 quadrillion Btu per year by 2030 in the United States, about equal parts coal, gas, and oil.

Expand and Diversify U.S. Energy Supply

Understanding the Range of Production Forecasts

Recommendations for improved understanding of forecasts and data are discussed specifically in the section "Improve the Quality of Energy Data and Information" later in this chapter.

Reduce Declines in U.S. Conventional Oil and Natural Gas Production

The NPC makes the following recommendations to promote enhanced oil recovery (EOR) from existing reservoirs:

- Support regulatory streamlining and research and development programs for marginal wells.
- Expedite permitting of EOR projects, pipelines, and associated infrastructure.

Potential Effect: An additional 90 to 200 billion barrels of recoverable oil in the United States alone, which could help slow the current decline in production

Increase Access for New Energy Development

The NPC makes the following recommendations to expand access to the most favorable U.S. oil and natural gas basins:

- Conduct national and regional basin-oriented resource and market assessments to identify opportunities for increasing oil and natural gas supply.
- Use technology and operational advancements to allow environmentally responsible development of high potential onshore and offshore areas currently restricted by moratoria or access limitations.

Potential Effect: Material increases to current production within 5 to 10 years from currently inaccessible areas could approach 40 billion barrels of oil and 250 trillion cubic feet of natural gas with current technology.

The NPC makes the following recommendations to increase unconventional oil and natural gas production:

- Accelerate U.S. oil shale and oil sands research and development and leasing.
- Accelerate U.S. unconventional natural gas leasing and development.

Potential Effect: Double U.S. unconventional natural gas production to more than 10 billion cubic feet per day, increasing total U.S. natural gas production by about 10 percent.

Diversify Long-Term Energy Production

Accelerate the Development of Energy from Biomass

The NPC makes the following recommendations to accelerate development of biomass energy sources at large commercial scale:

- Support research into second-generation biofuel crops that have lower input requirements or are suited to more marginal lands.
- Promote agricultural policies that enhance global production of both food crops and biomass for fuel.
- Support policies that promote the development of the infrastructure for harvesting, storing, and transporting energy crops, and facilitate the integration of biofuels into the national transportation fuel supply.

Potential Effect: Increase U.S. production by up to 4 million barrels per day of oil-equivalent liquids[1]

Enable the Long-Term Environmental Viability of Coal for Power, Fuel, and Feedstock

Recommendations for maintaining coal's long-term viability are discussed specifically in the section "Address Carbon Constraints" later in this chapter.

Expand Domestic Nuclear Capability

The NPC makes the following recommendations to expand the domestic technical and industrial capabilities of the nuclear energy/power industry:

- Implement the recommendation by the National Commission on Energy Policy[2] to provide $2 billion over ten years from federal energy research, development, demonstration, and deployment budgets for demonstration of one to two new advanced nuclear facilities.
- Fulfill existing federal commitments on nuclear waste management.

Potential Effect: Reestablish U.S. leadership capability. Maintaining a viable nuclear energy option will increase policy choices in future carbon-constrained circumstances.

1 The "Billion Ton Study" – *Biomass as a Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply*, USDA and USDOE, April 2005, available at http://www.osti.gov/bridge

2 See www.energycommission.org/files/contentFiles/report_non-interactive_44566feaabc5d.pdf, page IV

Strengthen Global and U.S. Energy Security

The NPC makes the following recommendations to promote global and U.S. energy security:

- Integrate energy policy into trade, economic, environmental, security, and foreign policies by having the Department of Energy share an equal role with the Departments of Defense, State, Treasury, and Commerce on policy issues relating to energy and energy security.
- Continue to develop the international energy marketplace by expanding the energy dialogue with major consuming and producing nations, including China, India, Canada, Mexico, Russia, and Saudi Arabia.
- Promote an effective global energy marketplace by sustaining and intensifying efforts to encourage global adoption of transparent, market-based approaches to energy through multilateral and international institutions—including the World Trade Organization, G8, Asia-Pacific Economic Cooperation (APEC), IEA, International Energy Forum, and the Joint Oil Data Initiative (JODI).
- Assist and encourage global adoption of energy efficiency technologies through technology transfer programs and lend-lease arrangements.

Potential Effect: Restricted resource access and curtailed production could put potential 2030 global liquid (25-35+ million barrels per day) and gas (150-200+ billion cubic feet per day) incremental growth at risk.

Reinforce Capabilities to Meet New Challenges

Develop a Comprehensive Forecast of U.S. Infrastructure Requirements

The NPC makes the following recommendations to improve understanding of infrastructure needs to meet future U.S. energy system growth:

- The Department of Energy (DOE) should develop an integrated study of the energy infrastructure needs to 2030.
- The EIA should incorporate infrastructure-related data into its energy information collection system.

Rebuild U.S. Science and Engineering Capabilities

The NPC makes the following recommendation to enhance U.S. science and technical education programs:

- Provide support to those seeking engineering and other technical degrees, both undergraduate and graduate, by increasing scholarships and research funding at universities and support for technical schools.

The NPC makes the following recommendation to make it easier for retirees to continue working as consultants, teachers, and coaches:

- Modify the U.S. tax code and retirement plan regulations to allow part-time work after retirement without penalty.

The NPC makes the following recommendation to increase the supply of trained energy professionals in the United States:

- Increase student and immigration quotas for trained professionals in energy and technical fields.

Create Research and Development Opportunities

The NPC makes the following recommendations to expand research and development opportunities to support long-term study goals:

- Review the current DOE research and development portfolio to refocus spending on innovative, applied research in areas such as EOR, unconventional oil and natural gas, biofuels, nuclear energy, coal-to-fuels, and CCS.
- Maintain a fundamental research budget in the DOE Office of Science to support novel technologies.
- Focus and enhance research in the U.S. universities and National Laboratories.
- Encourage DOE, Department of Defense, and industry cooperation in innovative areas of development, such as advanced materials and metocean information and analyses.

Improve the Quality of Energy Data and Information

The NPC makes the following recommendations to enhance the quality of energy data and information:

- Expand data collected by EIA and IEA to provide additional sources of production and consumption data for inclusion in annually prepared public domain energy outlooks.
- Expand funding for data collection and analysis of energy transportation systems to enable informed infrastructure decisions.

The NPC makes the following recommendations to update publicly available global endowment and resource estimates:

- The USGS should conduct a comprehensive geological assessment of U.S. and global oil and natural gas endowment and recoverable resources.
  - Incorporate wider participation of industry and international experts and current data.
- The USGS should conduct a new, comprehensive survey of U.S. and global recoverable coal resources and reserves using common analysis and reporting methodologies.
- The U.S. Departments of Energy and Agriculture should conduct a global biomass resource assessment.

Potential Effect: Timely and better informed policy decisions based on shared understanding of critical resource data

Address Carbon Constraints

Enable Carbon Capture and Sequestration

The NPC makes the following recommendations to enable long-term environmental viability of coal for both power and fuel:

- Establish a legal and regulatory framework that is conducive to CCS.
  - Provide regulatory clarity for land use and liability policies.
  - Provide access to federal lands for storage.

- Enable full scale CCS and clean coal technology demonstration.
  - Organize efforts between the power and oil/natural gas industries.
- Undertake a national CO_2 sequestration capacity assessment.
  - Build on the existing efforts being undertaken by the DOE Regional Partnerships.
  - Encourage global application.
- Continue federal research and development support for advanced coal-to-fuel technologies.

Potential Effect: Maintaining coal's projected 30 percent contribution (54 quadrillion Btu per year in 2005) to the future U.S. energy mix, including potential coal-to-liquids production, even in carbon-constrained circumstances.

As policymakers consider actions to reduce CO_2 emissions, the NPC recommends including:

- An effective global framework for carbon management incorporating all major emitters of CO_2 and focusing particularly on opportunities for U.S.–China cooperation.
- A U.S. mechanism for setting an effective cost for emitting CO_2 that is:
  - Economy-wide, market-based, visible, transparent, applicable to all fuels.
  - Predictable over the long term for a stable investment climate.
- A credit for CO_2 used in enhanced oil and natural gas recovery.