BALANCING NATURAL GAS POLICY

Fueling the Demands of a Growing Economy

**Presentation to Summer Meeting
National Association of Regulatory
Utility Commissioners**

July 2004

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National Petroleum Council

- Federally chartered, privately funded advisory committee
- Sole purpose is to advise and make recommendations to the Secretary of Energy
- Operates under Federal Advisory Committee Act
- Council comprised of ~175 members
- Study effort comprised >300 Canada and US participants representing producers, consumers, and infrastructure

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Relevance of Study: Headlines from Last Week

East, West Utilities Prepare Residential Customers for Higher Gas Bills [Natural Gas Intelligence, July 6, 2004]

Interim natural gas price hike backed [Palm Beach Post, July 7, 2004]

Higher cost of oil, natural gas affects prices of other goods
[AP, July 6, 2004]

Natural gas demands drive winter heating bills, utility costs nine percent higher than last year
[The Daily Ardmoreite, July 7, 2004]

Critics want to ensure LNG terminals are built where needed
[Portland Maine Press Herald, July 5, 2004]

Relevance of Study: Economic Effects

- "... the rise in the long term supply price of natural gas appears related primarily to supply and demand in North America ..."
- " ... high prices are one of the major obstacles to the growth of the U.S. economy ..."
- "The recent shift in expectations … has been substantial enough and persistent enough to influence business investment decisions, especially for facilities that require large quantities of natural gas ..."
- "Canada, which has recently supplied a sixth of our consumption, has little capacity to significantly expand its exports …"
- “Without the flexibility such [LNG] facilities impart, imbalances in supply and demand must inevitably engender price volatility ... a major expansion of U.S. import capability appears to be under way … bod[ing] well for widespread natural gas availability in North America in the next decade and beyond. The near term, however, is apt to continue to be challenging ..."

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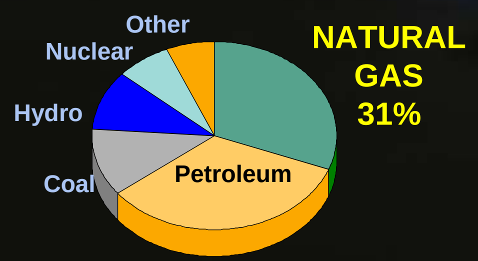
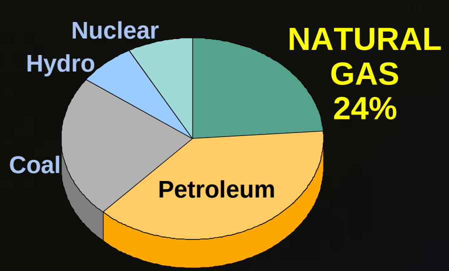
Natural Gas in North America's Economy

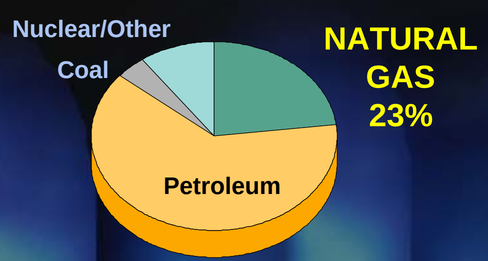
Canada

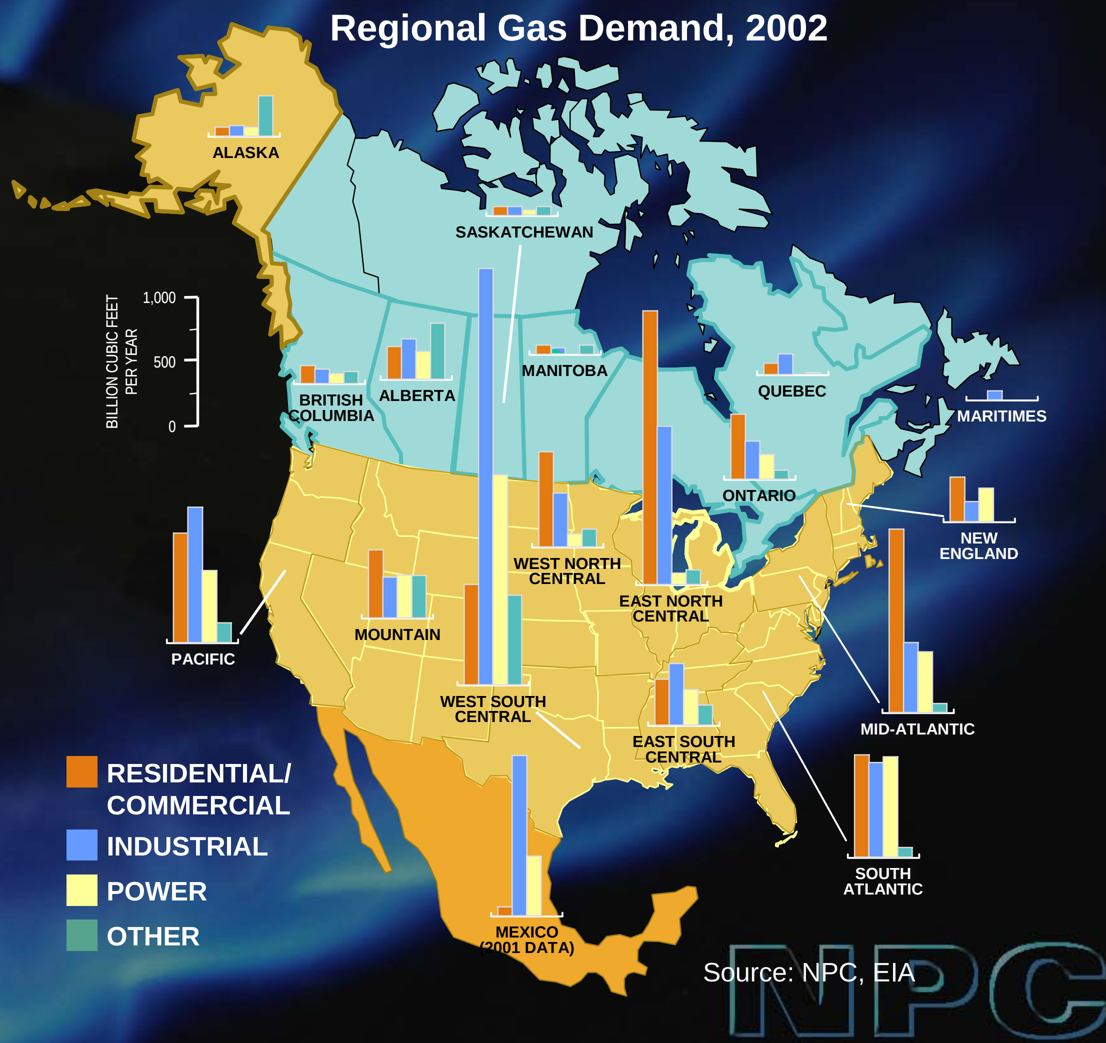


United States

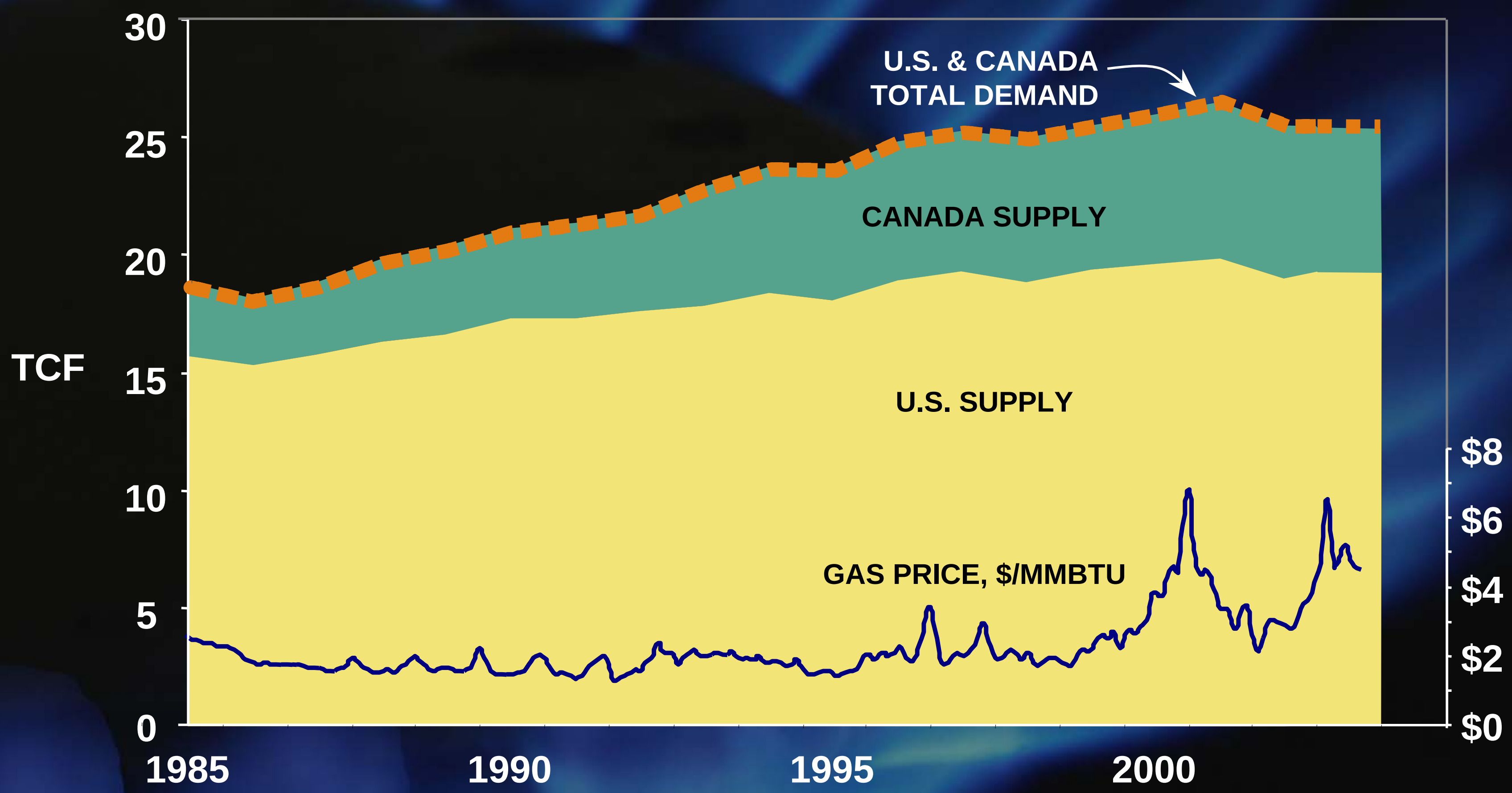


Mexico





Higher Prices Reflect a Fundamental Shift in Supply & Demand



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The NPC Considered Two Paths Beyond the Status Quo

Reactive Path	**Public policies remain in conflict, encouraging consumption while inhibiting supply … resulting in higher prices and volatility**
Balanced Future	**Public policies aligned: alternate fuels and new natural gas supply sources compete to ensure lowest consumer cost**

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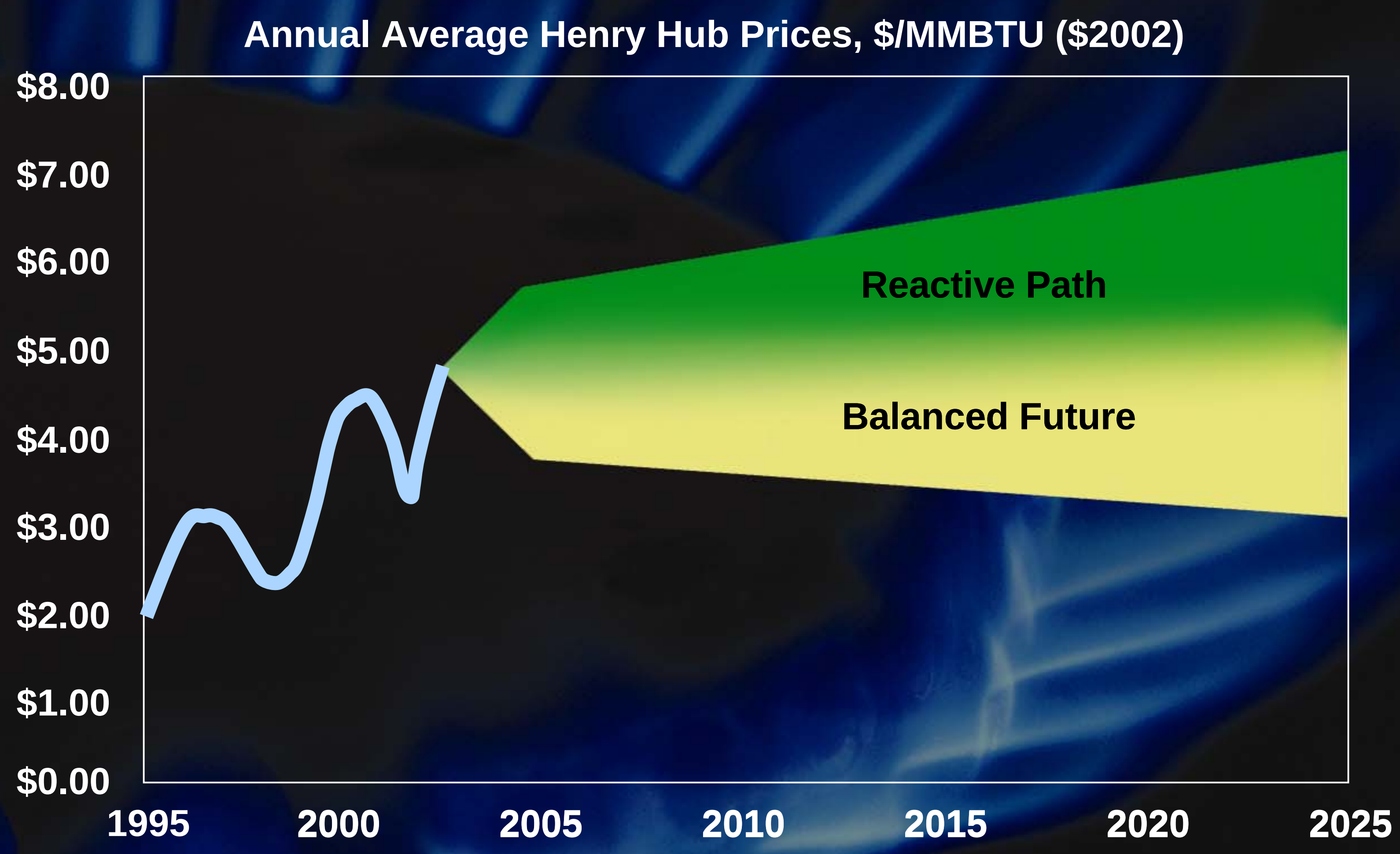
Potential Price Range



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Findings on Natural Gas Demand

Greater energy efficiency and conservation are vital near-term and long-term mechanisms for moderating price levels and reducing volatility

Power generators and industrial consumers are more dependent on gas-fired equipment and less able to respond to higher gas prices by utilizing alternate sources of energy

Gas consumption will grow, but such growth will be moderated as the most price-sensitive industries become less competitive, causing some industries and associated jobs to relocate outside North America

Recommendations on Natural Gas Demand

Conservation and Energy Efficiency	Encourage Increased Efficiency and Conservation through Market-Oriented Initiatives and Consumer Education
Alternate Fuel Capability	Increase Industrial and Power Generation Capability to Utilize Alternate Fuels

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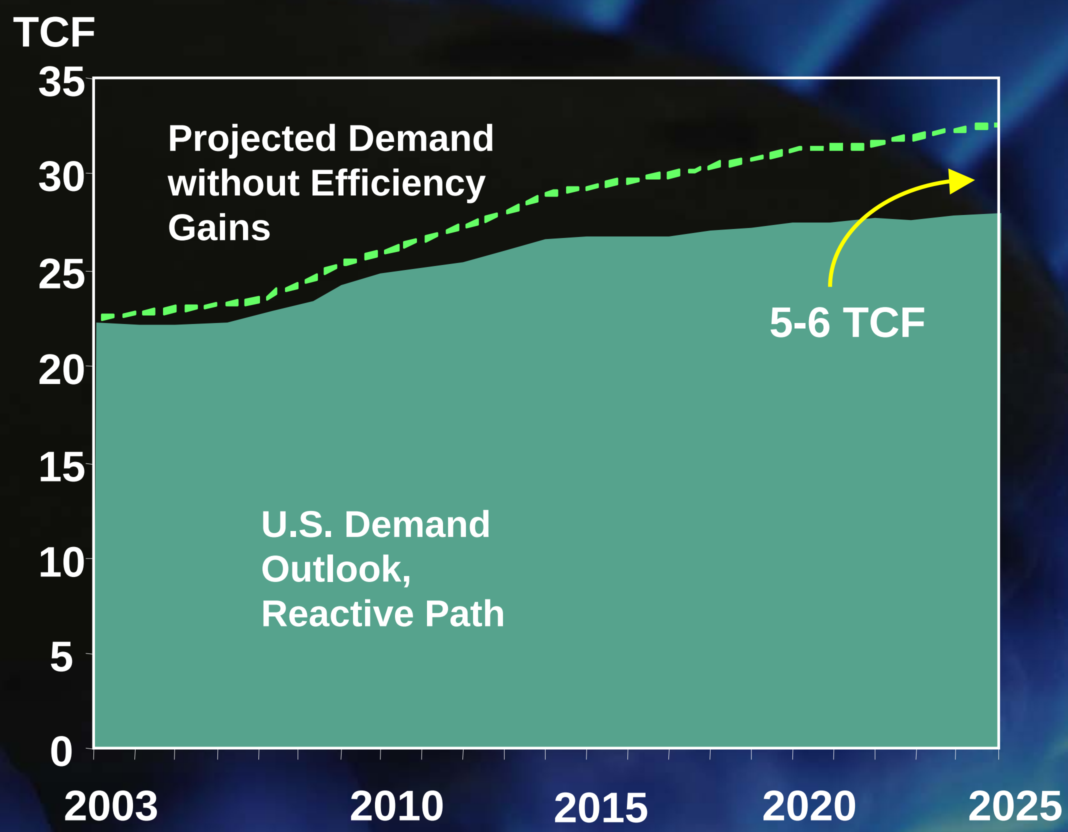
Continued Energy Efficiency is Critical: Innovation, Technology, Markets



- Industrial boilers
- Process technology
- Power generation
- Cogeneration
- Demand response
- Individual consumers

Policy influential

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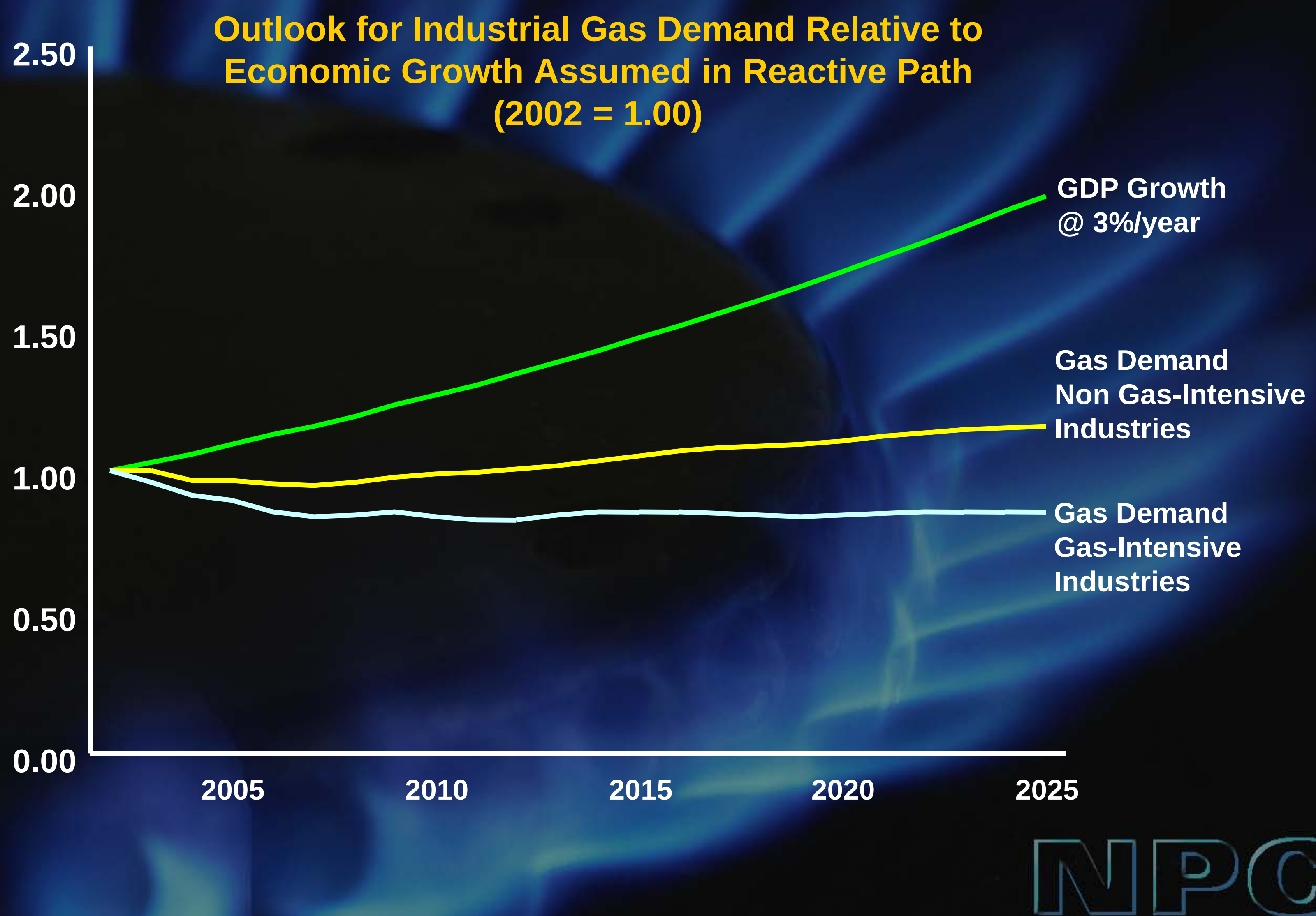
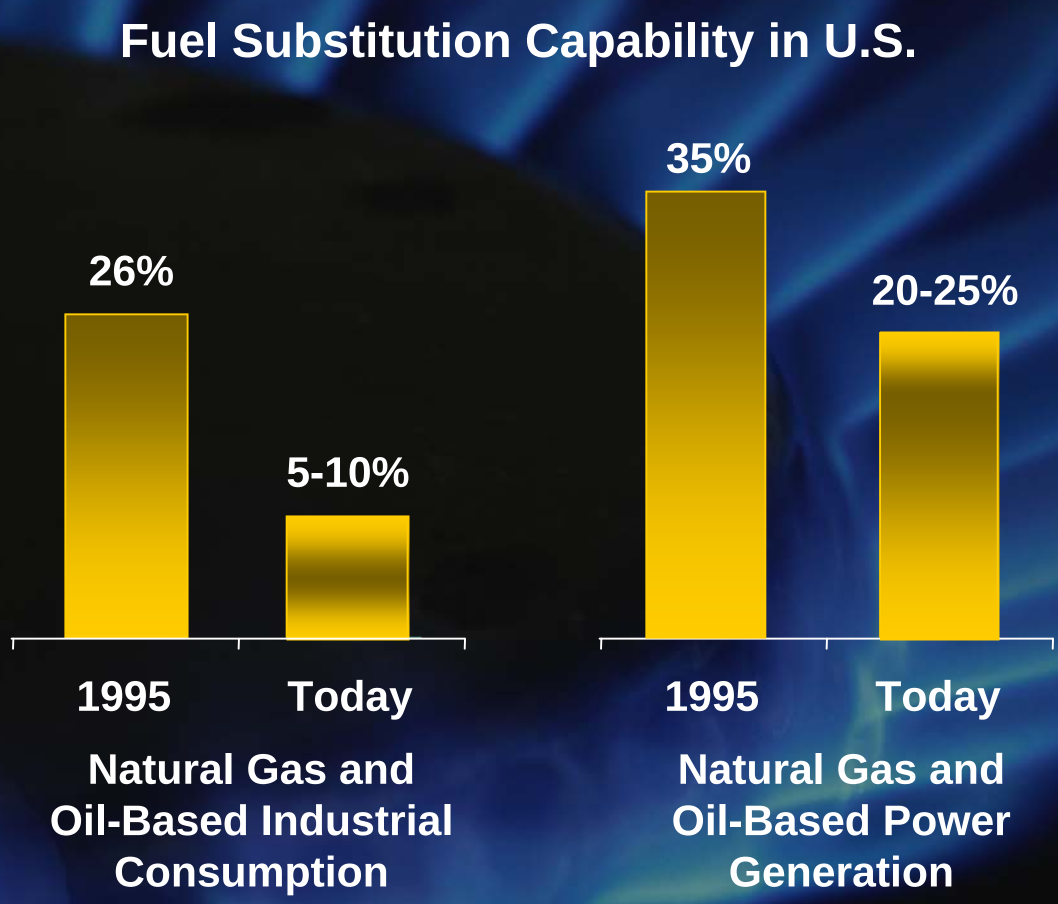
Higher Prices Will Impact Industrial Demand

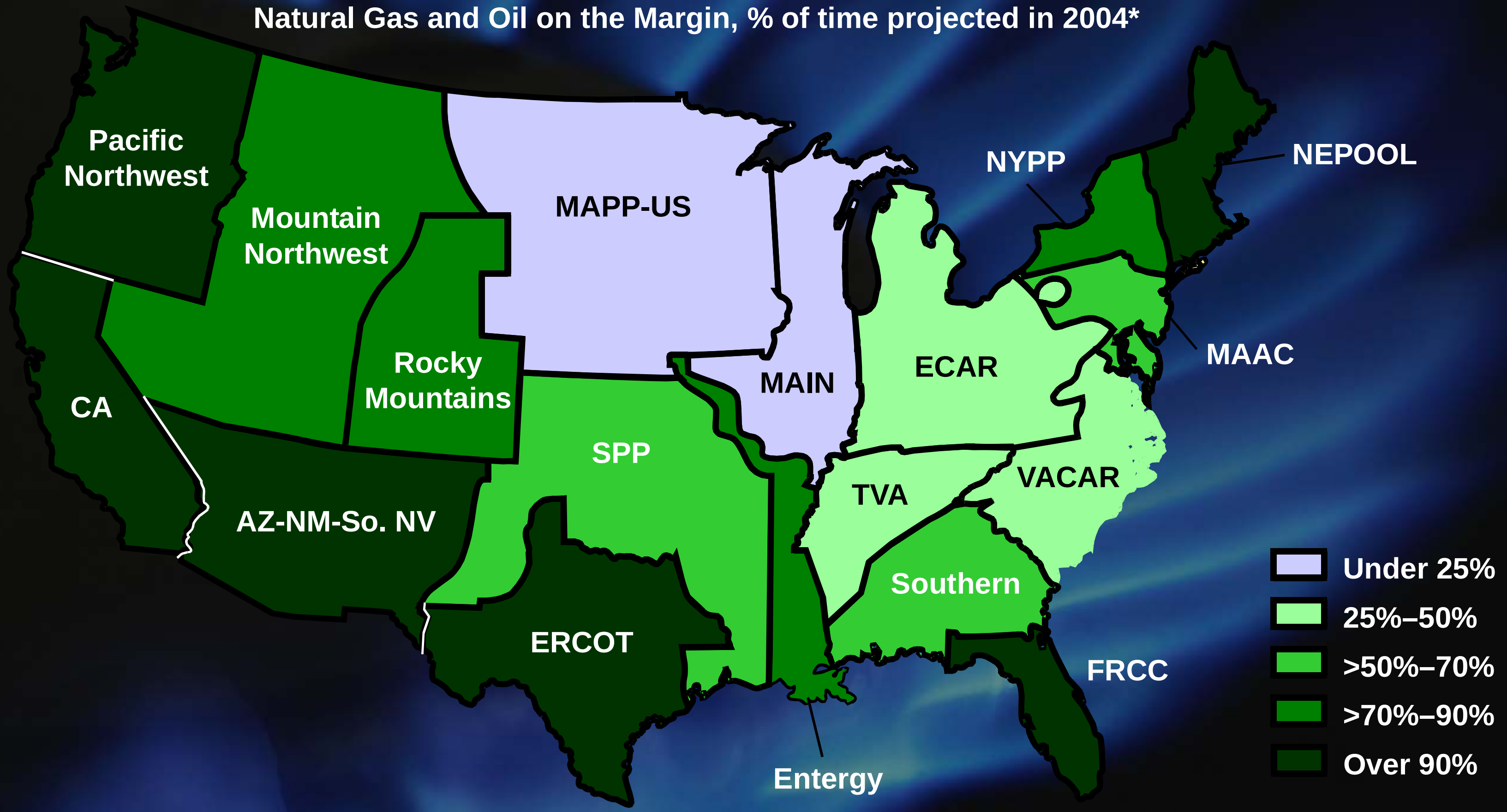


As Demand Has Grown, Flexibility Has Eroded



Natural Gas Has Increasingly Become The Marginal Source of Power Generation

Natural Gas and Oil on the Margin, % of time projected in 2004*



*Source: Cambridge Energy Research Associates

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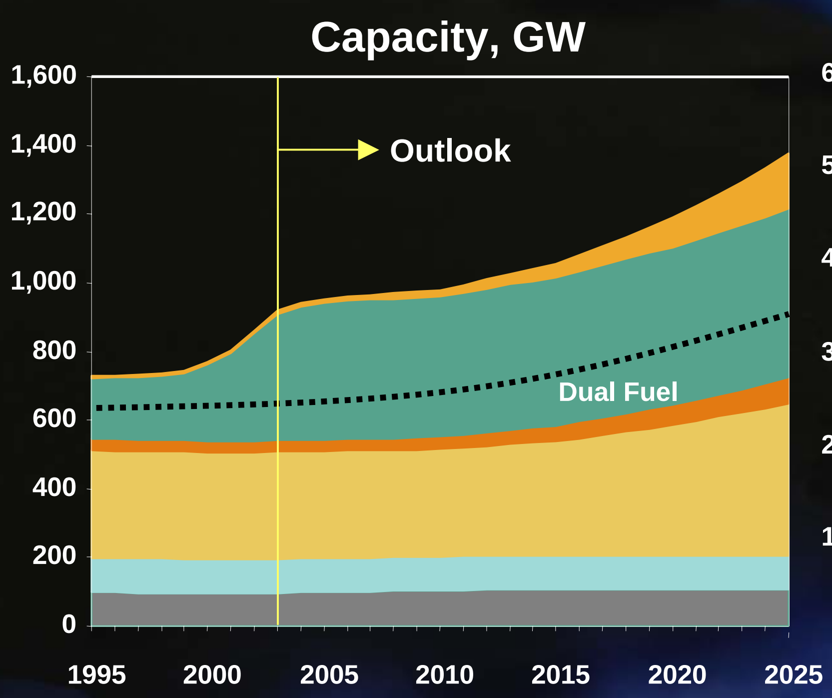
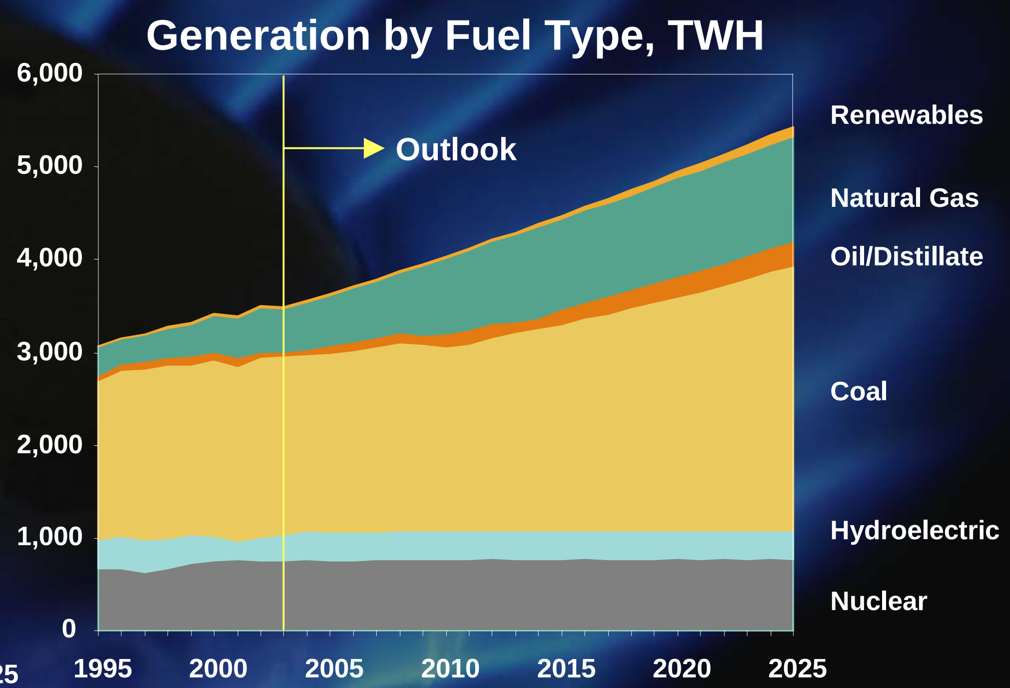
The Gas-Fired Generation Buildup Has Reshaped Demand





U.S. Figures Only

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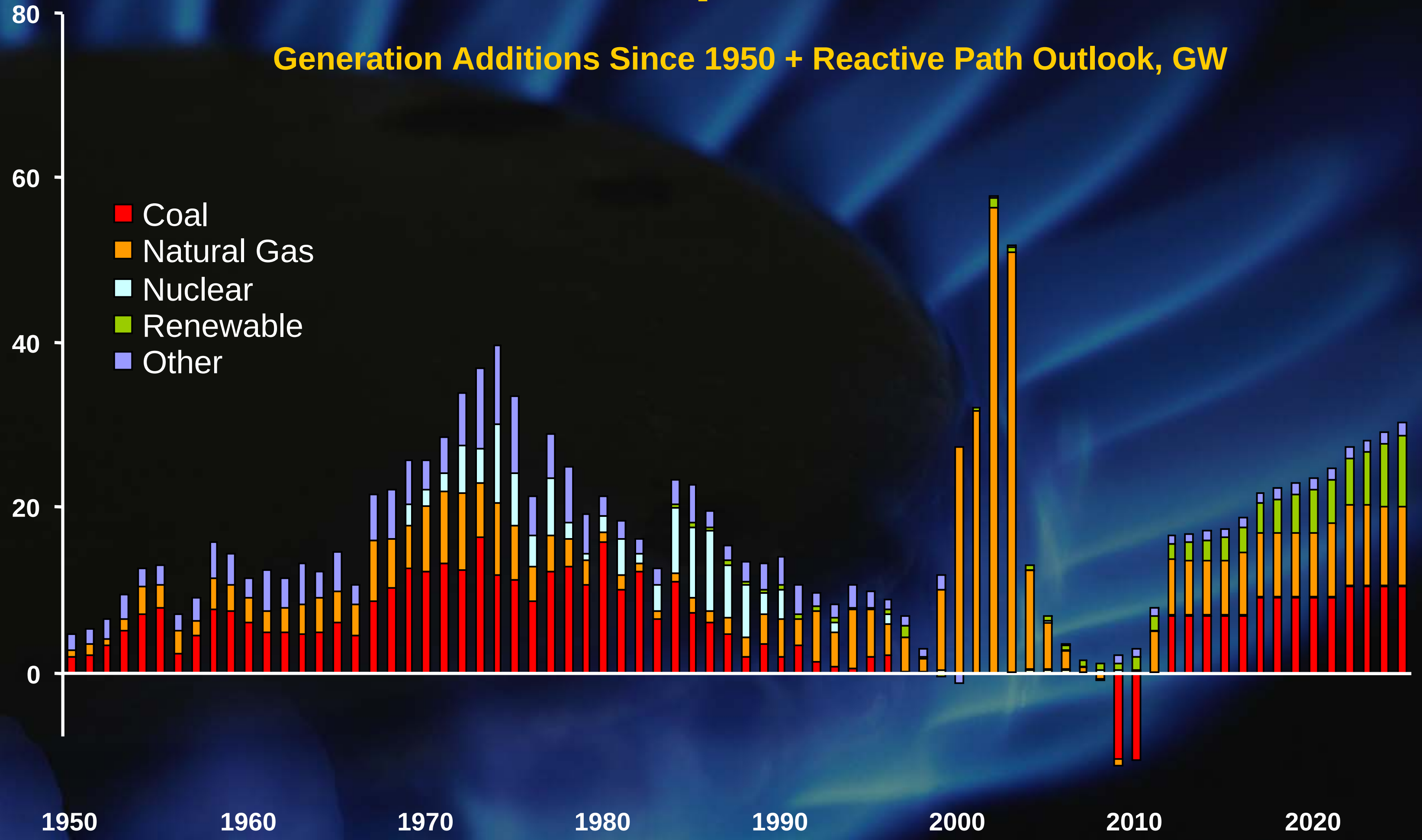
Gas-Fired Generation Buildup Has Reshaped Demand



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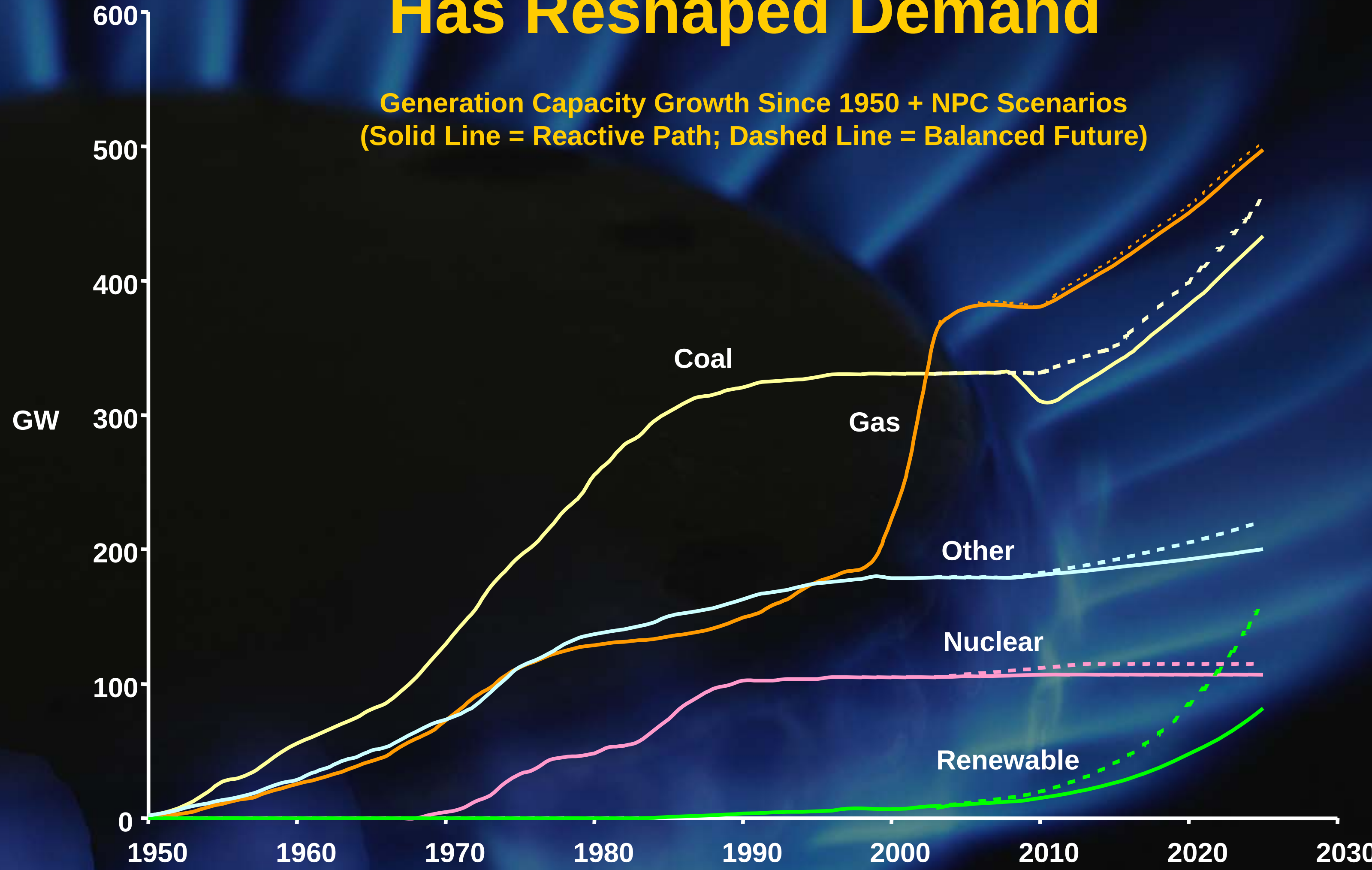
U.S. Figures Only

Gas-Fired Generation Buildup Has Reshaped Demand



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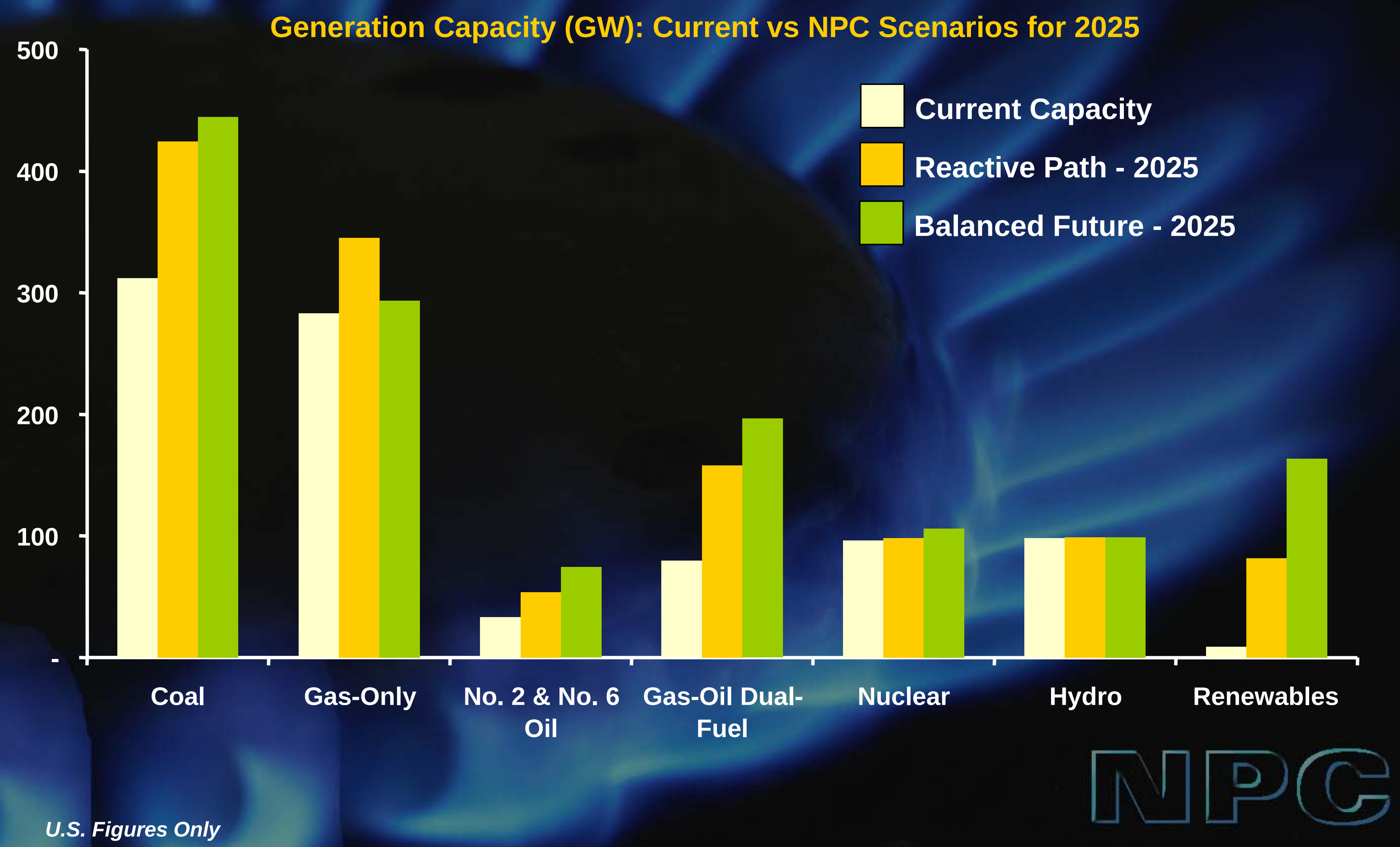
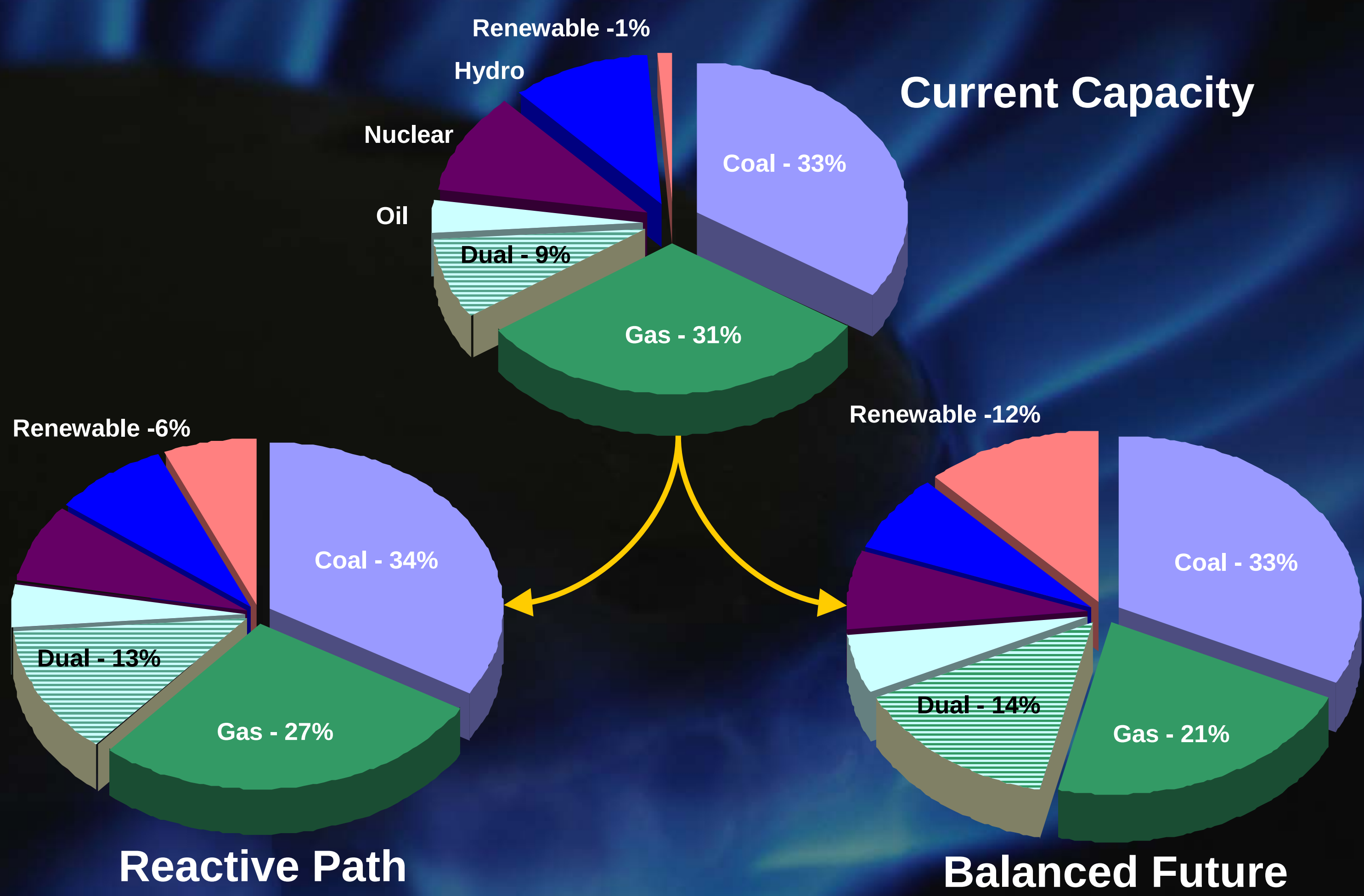
Natural Gas Policy Choices Will Shape Future Power Generation Choices



Gas Policy Will Drive Generation Choices



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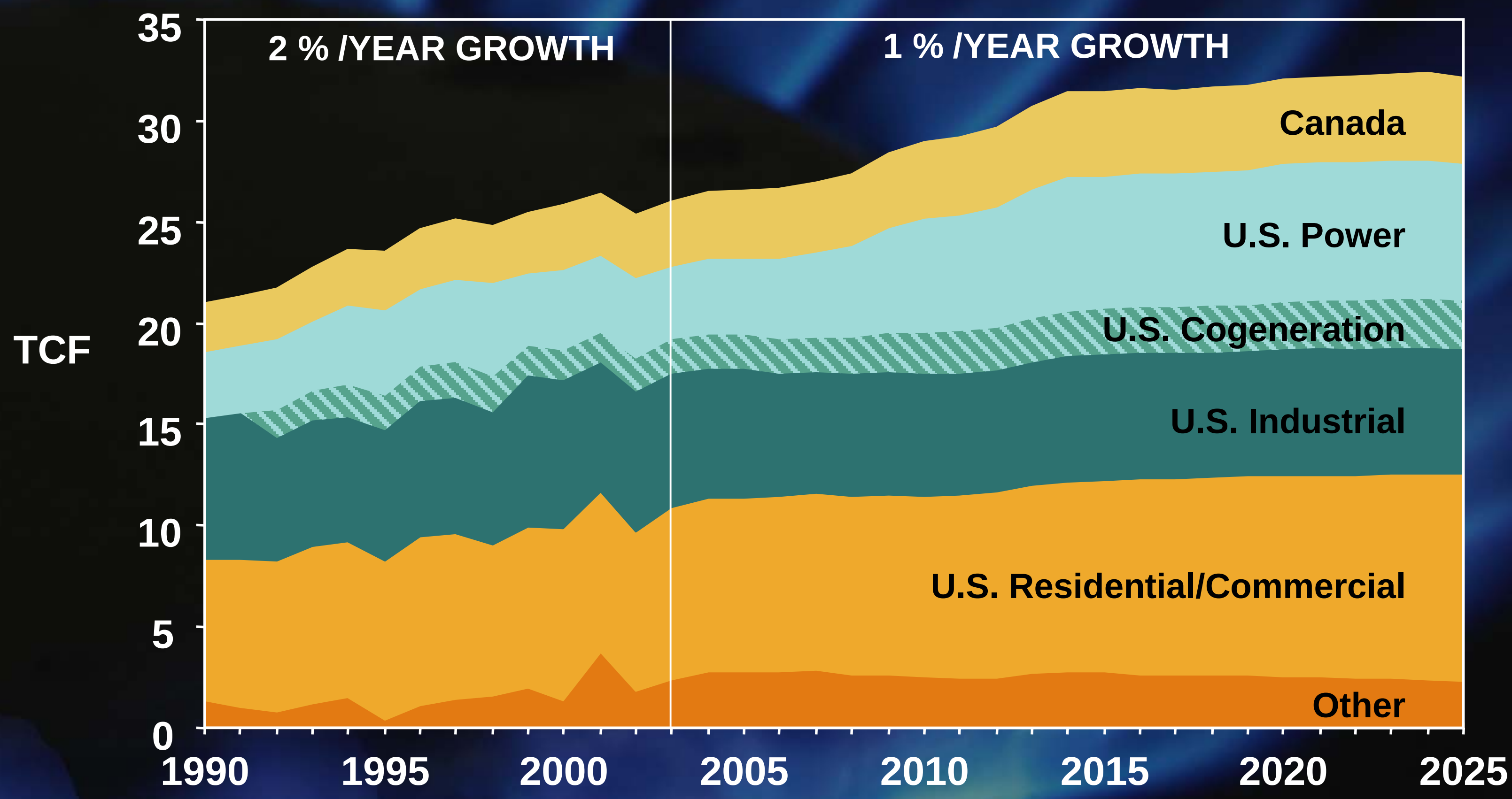
U.S. Figures Only

Overall Demand Growth Will Likely Moderate, While the Power Sector Drives Growth



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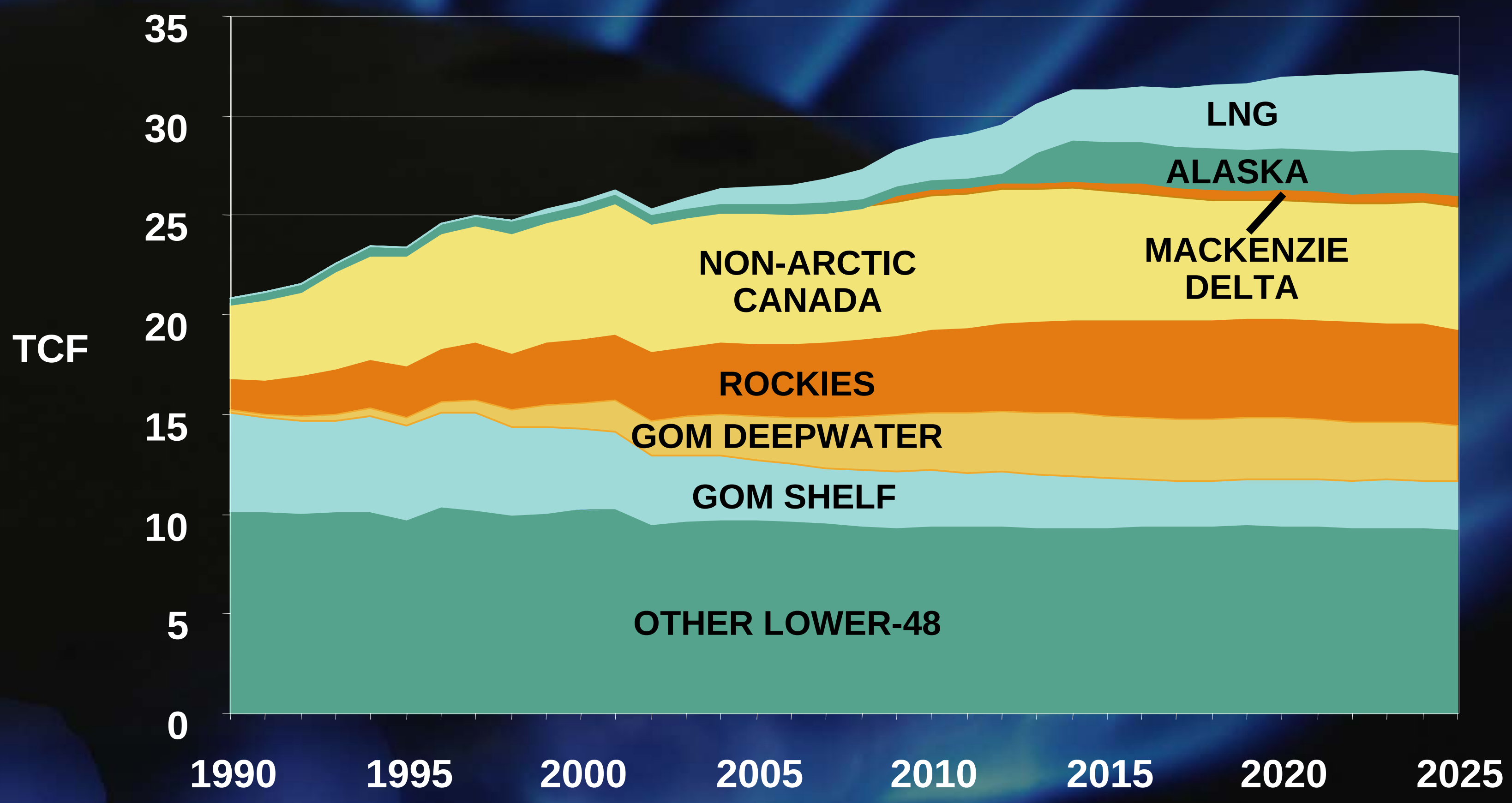
Demand is Met from Diverse Sources of Supply



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Findings on Natural Gas Supply

Traditional North American producing areas will provide 75% of long-term U.S. gas needs, but will be unable to meet projected demand

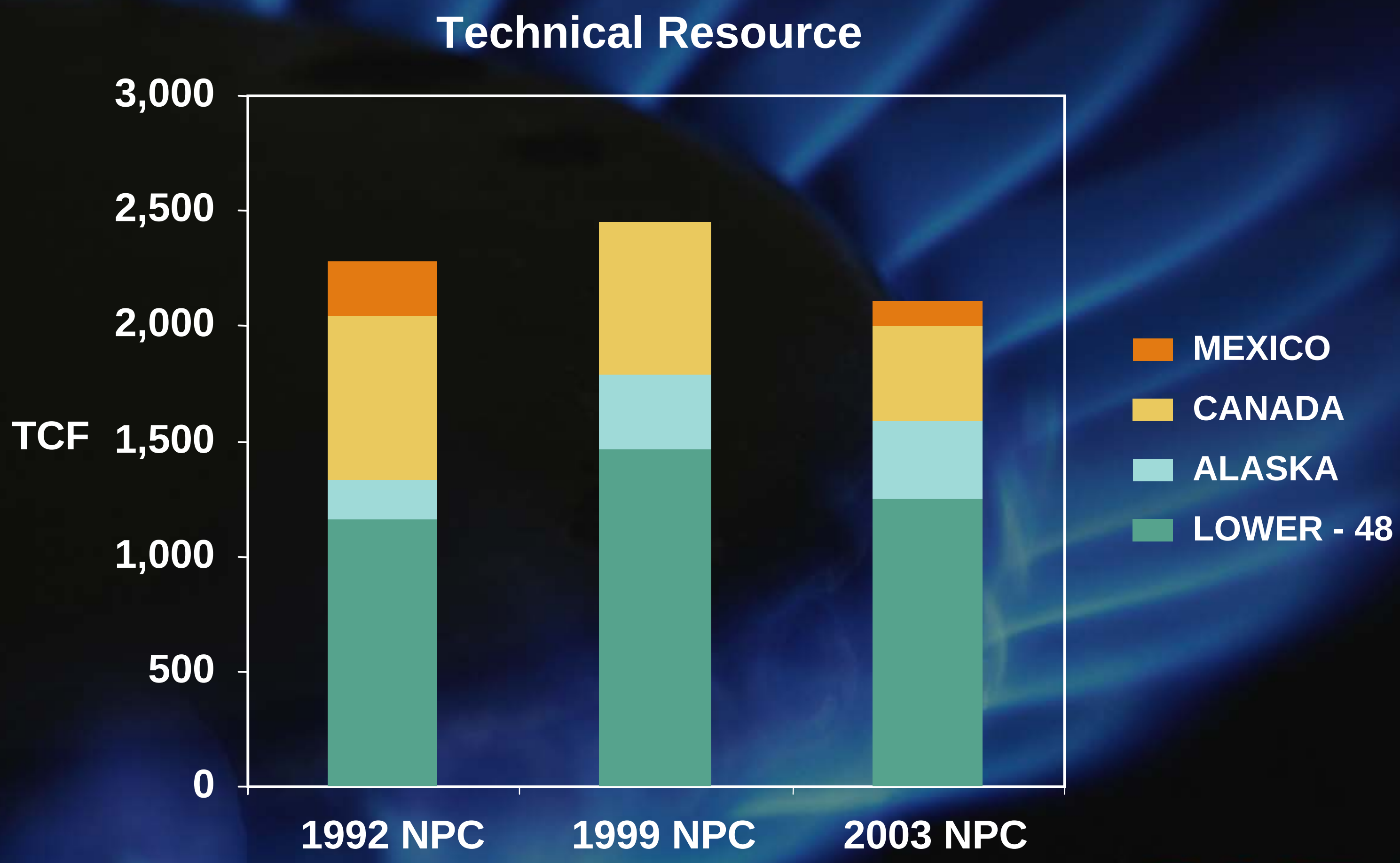
Increased access to U.S. resources (excluding designated wilderness areas and national parks) could save consumers $300 billion in natural gas costs over the next 20 years

New, large-scale resources such as LNG and Arctic gas are available and could meet 20-25% of demand, but are higher-cost, have longer lead times, and face major barriers to development

Recommendations on Natural Gas Supply

Access	Increase Access and Reduce Permitting Impediments to Development of Lower-48 Natural Gas Resources
Arctic Resources	Enact Enabling Legislation in 2003 for an Alaska Gas Pipeline
LNG	Process LNG Project Permit Applications Within One Year

North American Resource Base Was Comprehensively Reviewed



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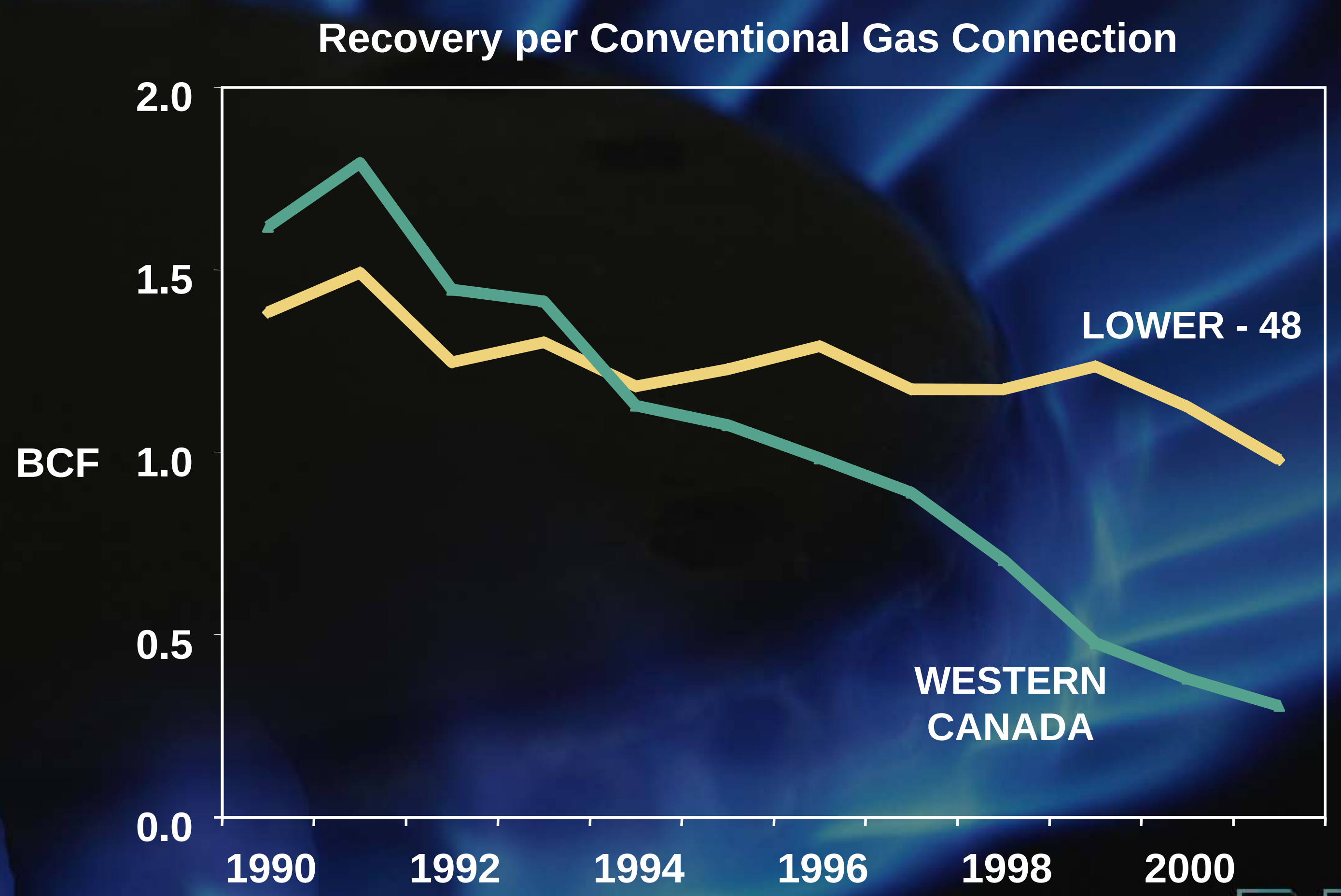
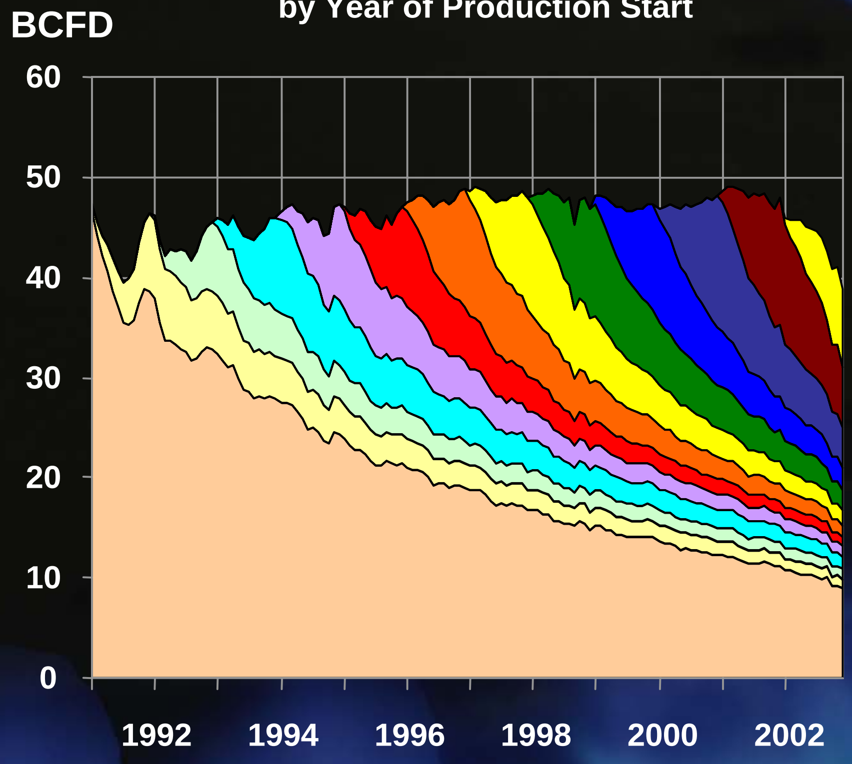
Production History Confirms a Maturing Resource Base



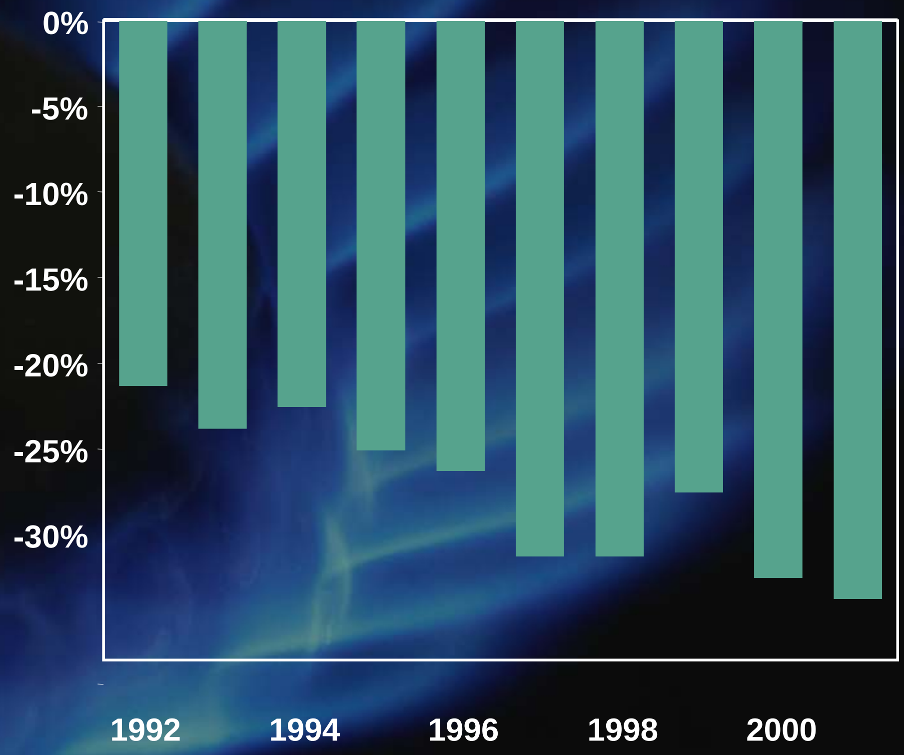
The Rate of Production Decline is Increasing

Lower - 48 Wet Gas Production from Gas Wells,

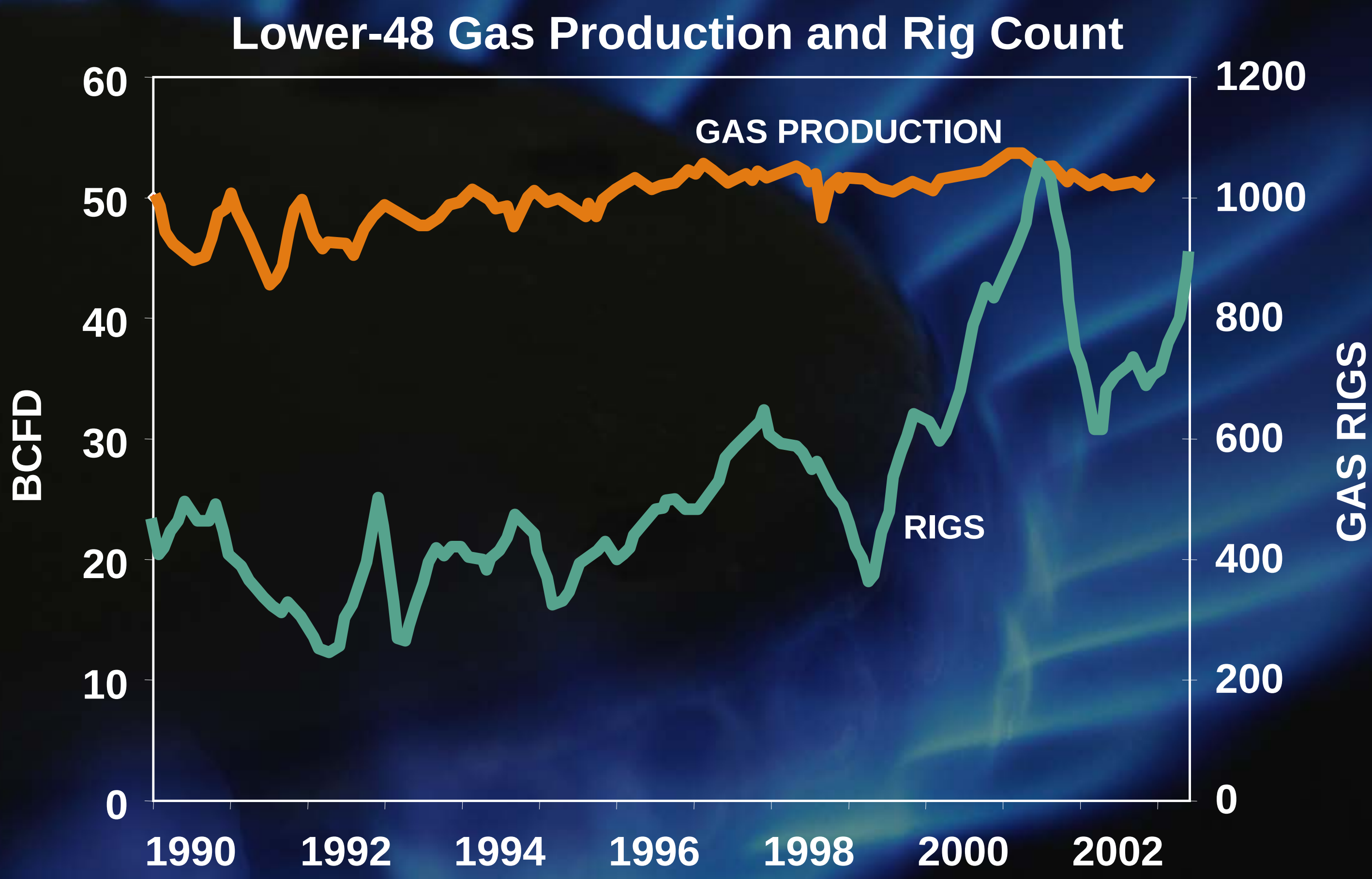
by Year of Production Start



Lower - 48 Decline Rate From Existing Wells



Production Response from Increased Drilling Has Been Modest



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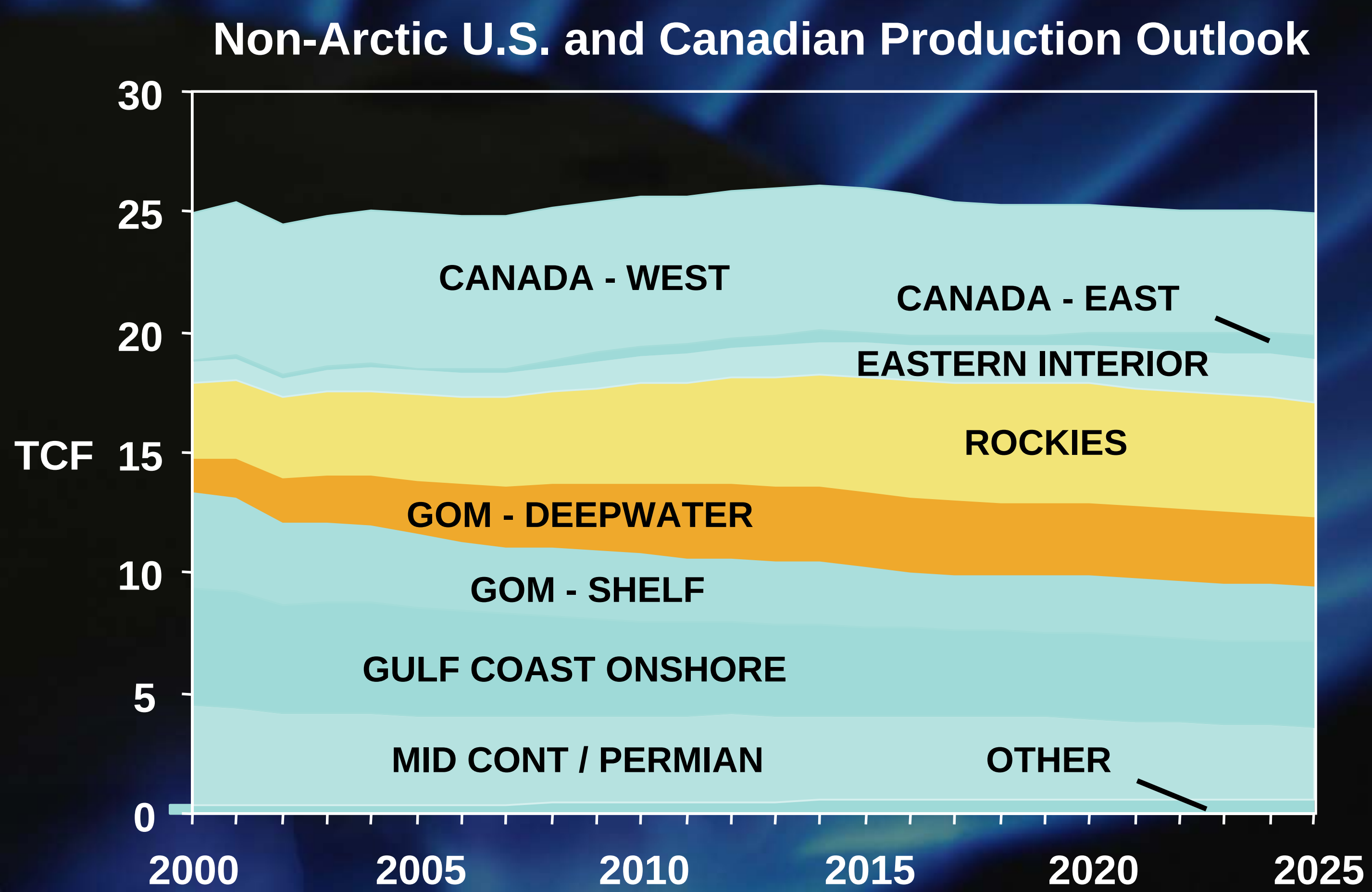
Rockies and Deepwater Gulf of Mexico Production Must Grow



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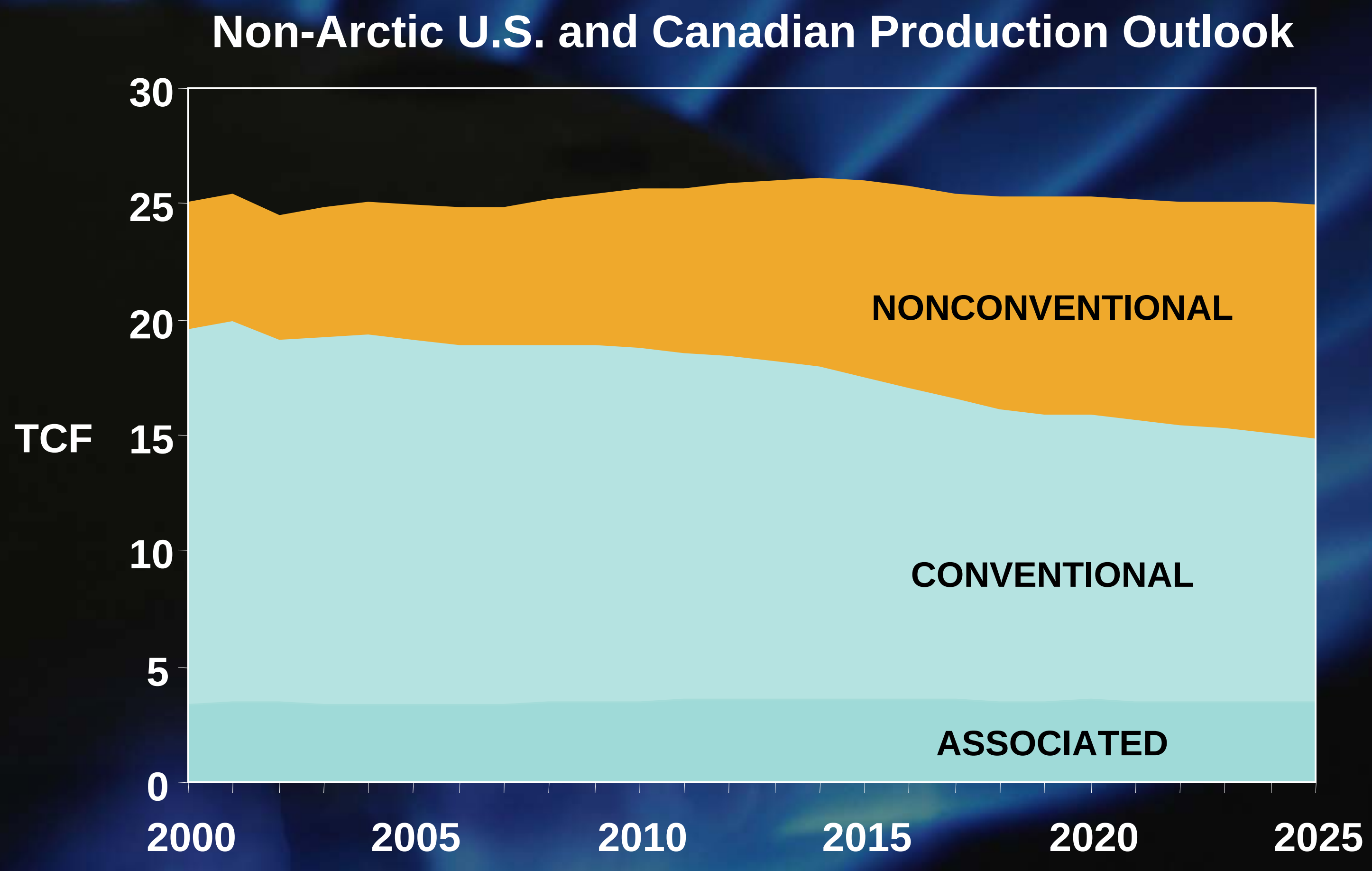
Nonconventional Production is Likely to Play an Increasing Role



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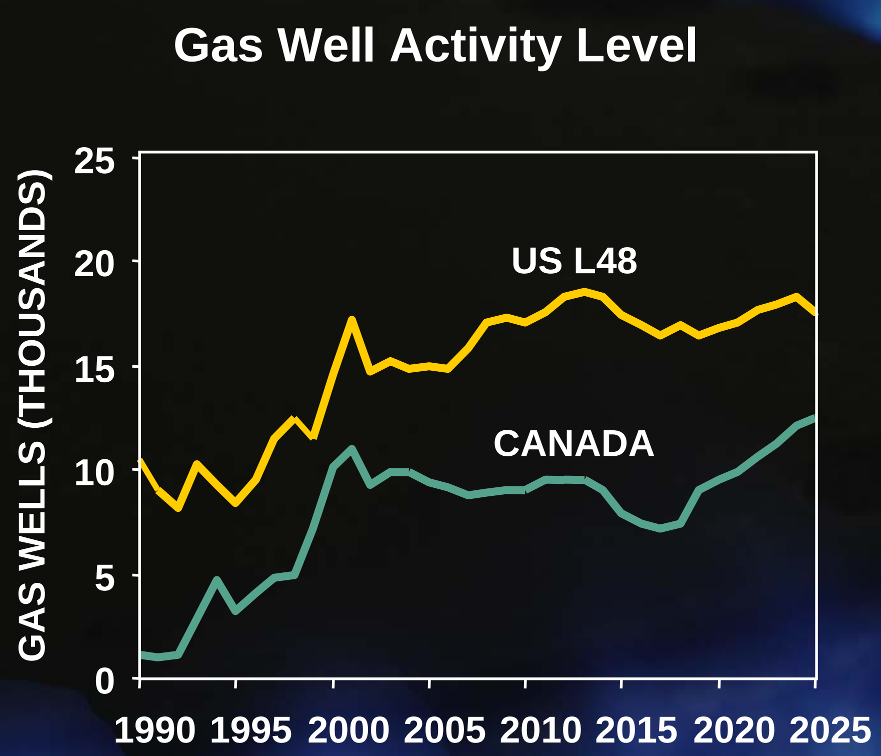
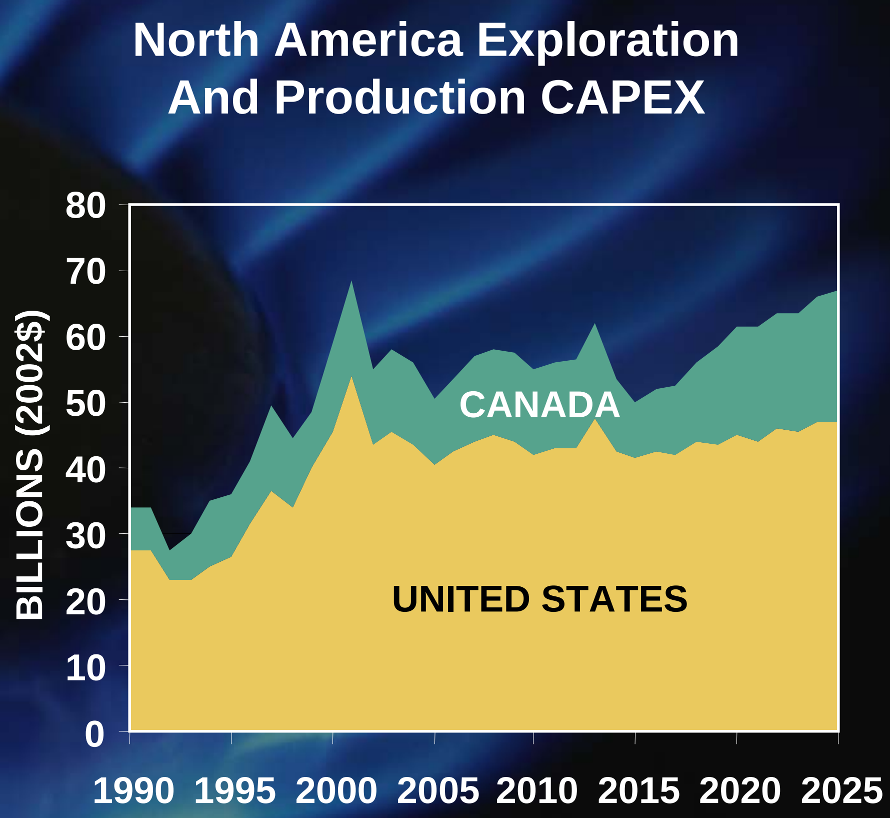
Drilling Activity and Capital Investments Must Continue at High Levels to Sustain Production





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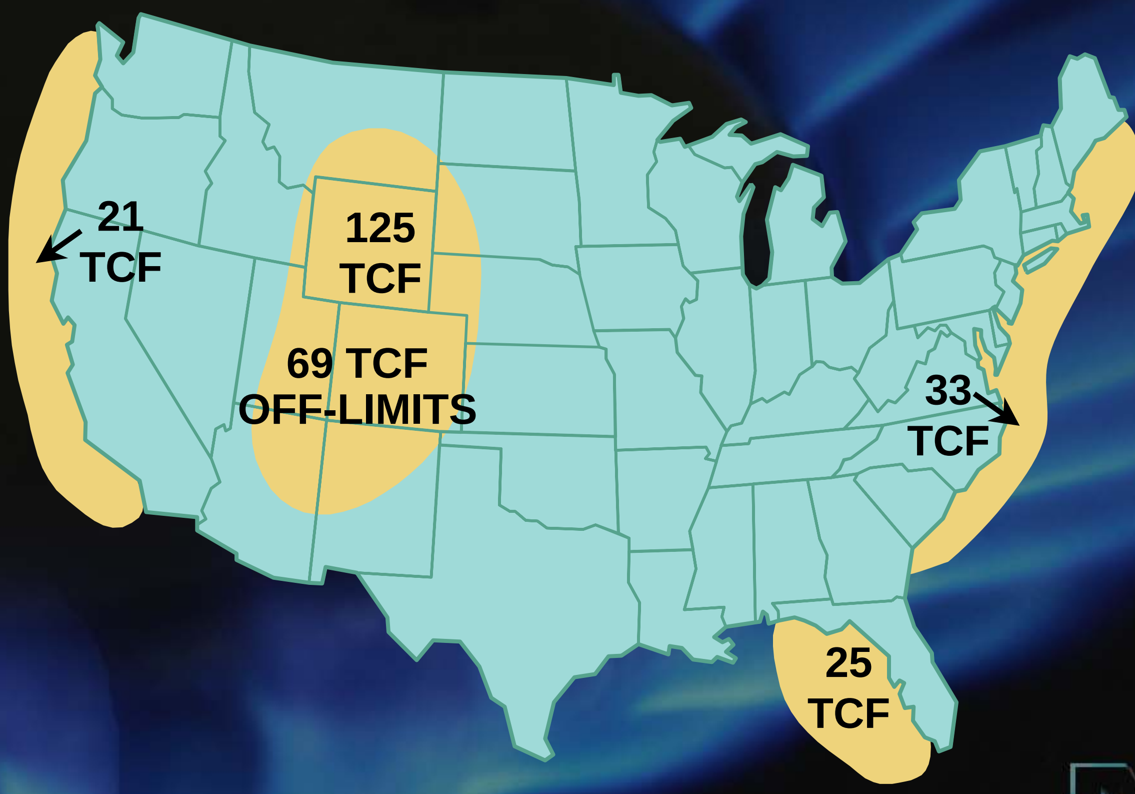
U.S. Resources Are Not Fully Utilized

Technical Resource Impacted by Access Restrictions



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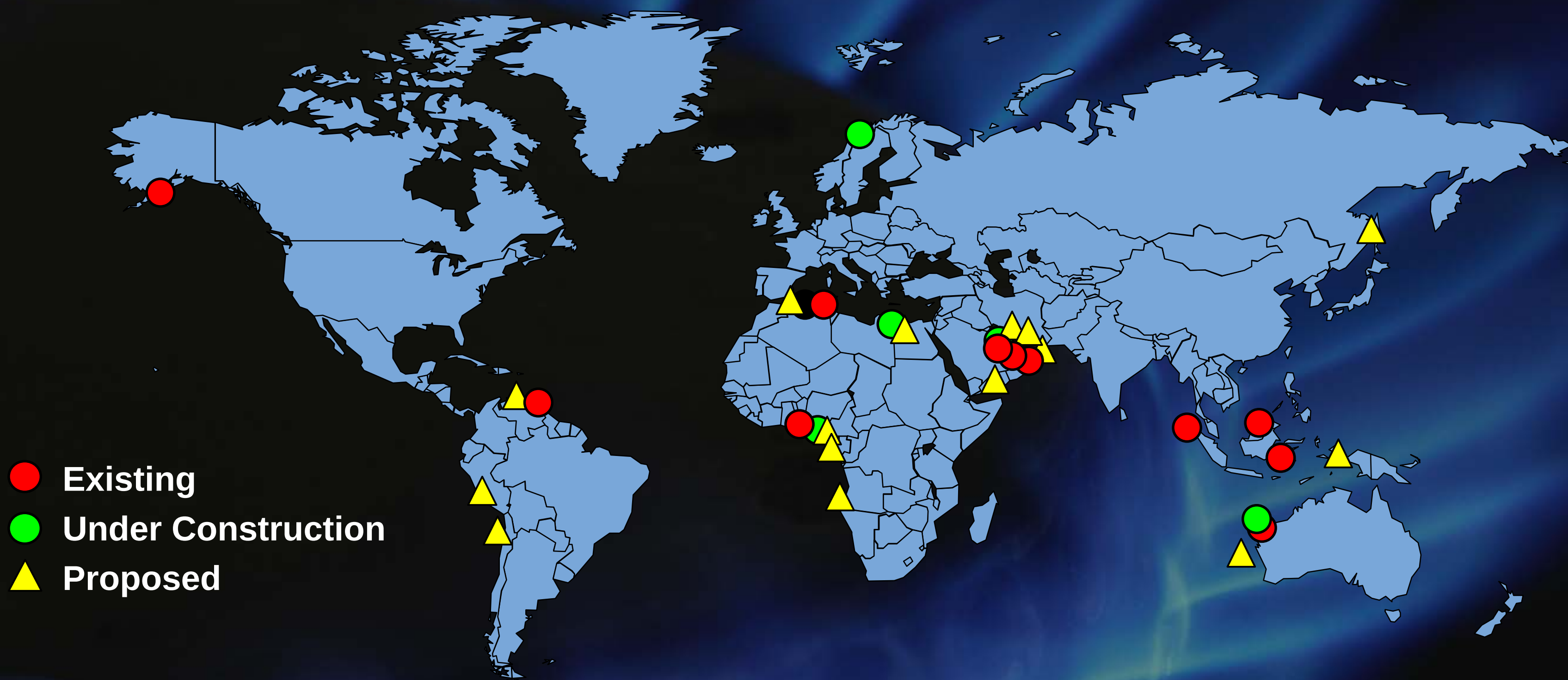
Worldwide Natural Gas Resources Are Vast

Global LNG Supply Facilities



Annual Global Consumption
< 2% of World Proved Reserves

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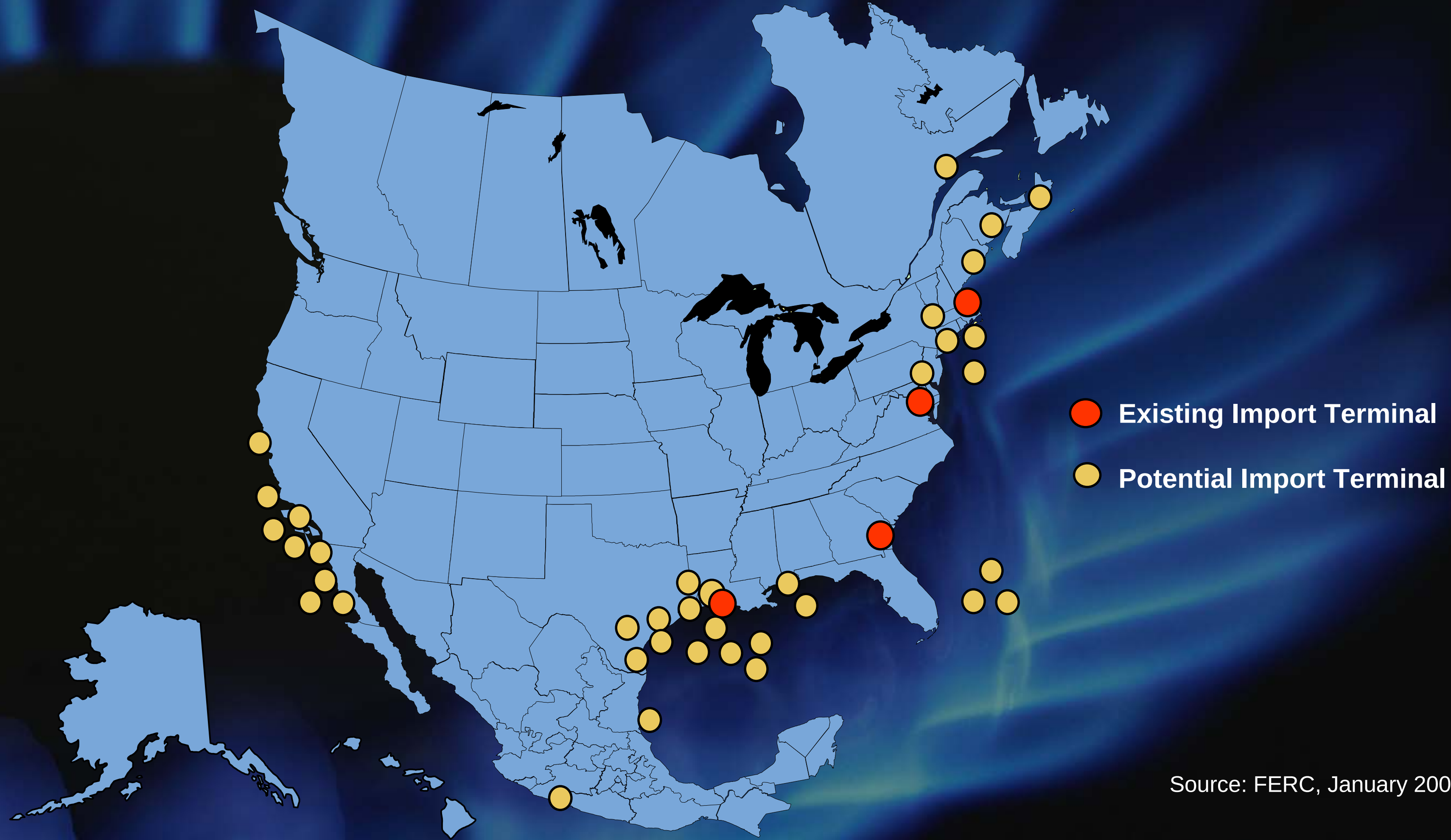
Many LNG Terminals are Proposed



Source: FERC, January 2004

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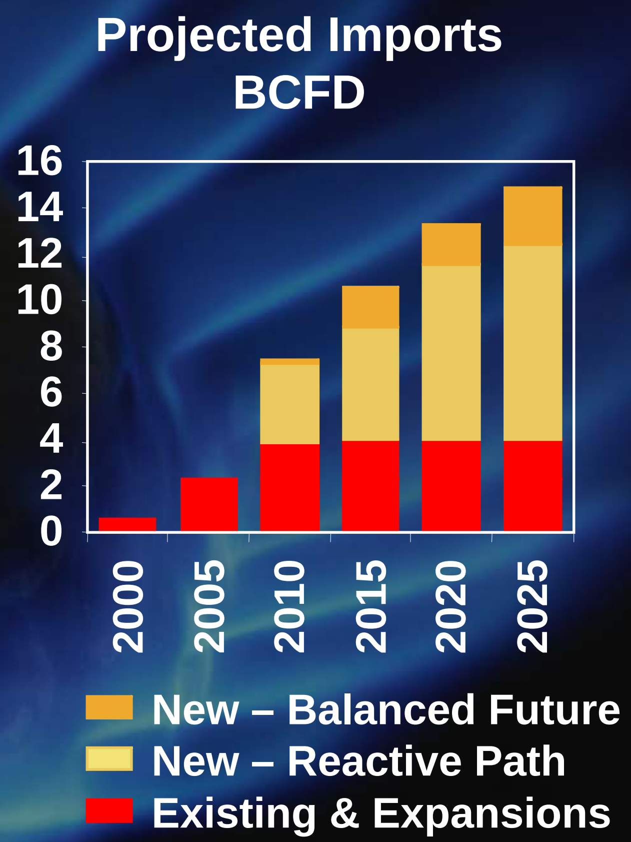
NPC Scenarios for LNG Imports



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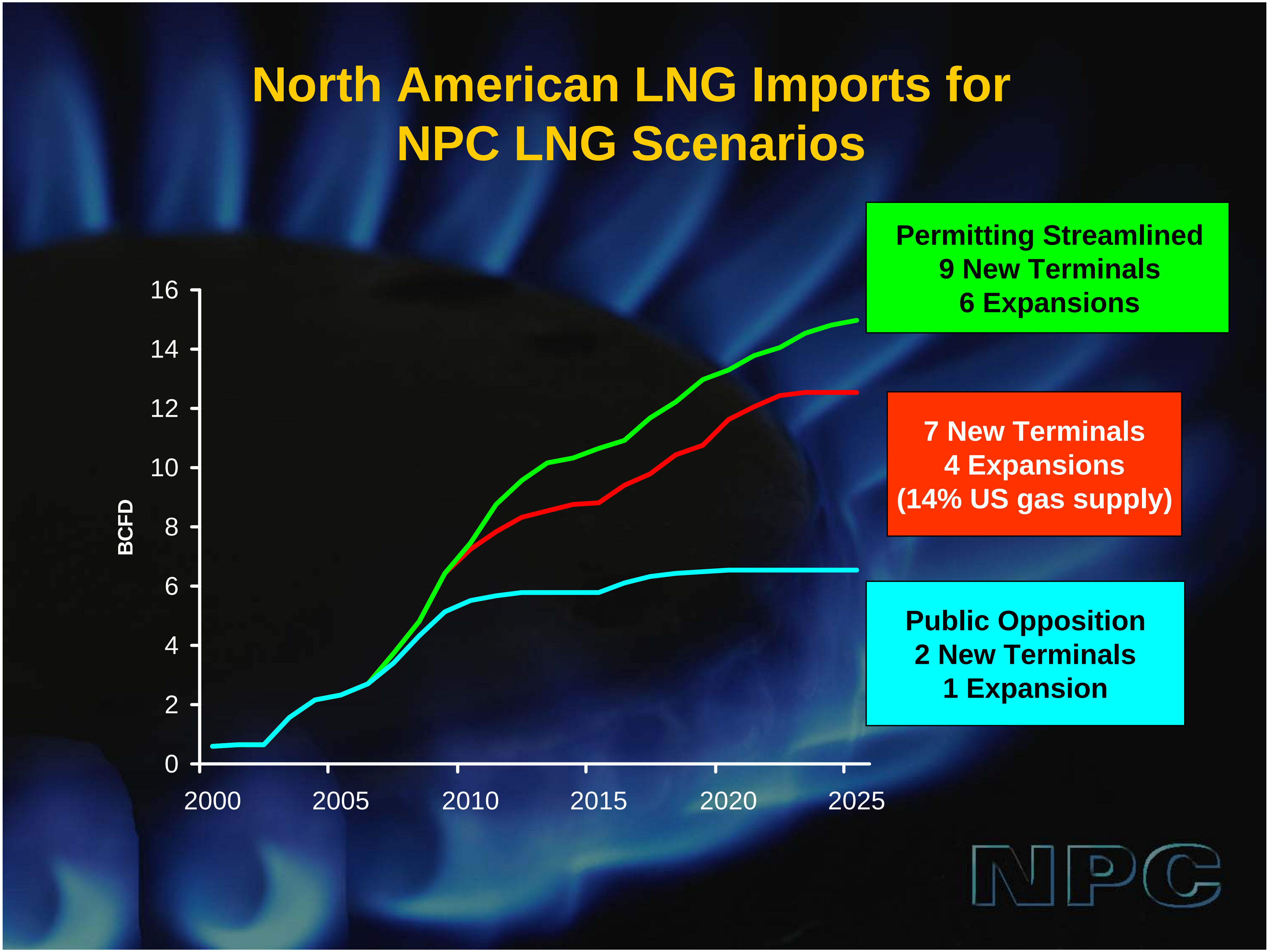
North American LNG Imports for
NPC LNG Scenarios
Permitting Streamlined
9 New Terminals
6 Expansions
7 New Terminals
4 Expansions
(14% US gas supply)
Public Opposition
2 New Terminals
1 Expansion
BCFD
0
2
4
6
8
10
12
14
16
2000
2005
2010
2015
2020
2025
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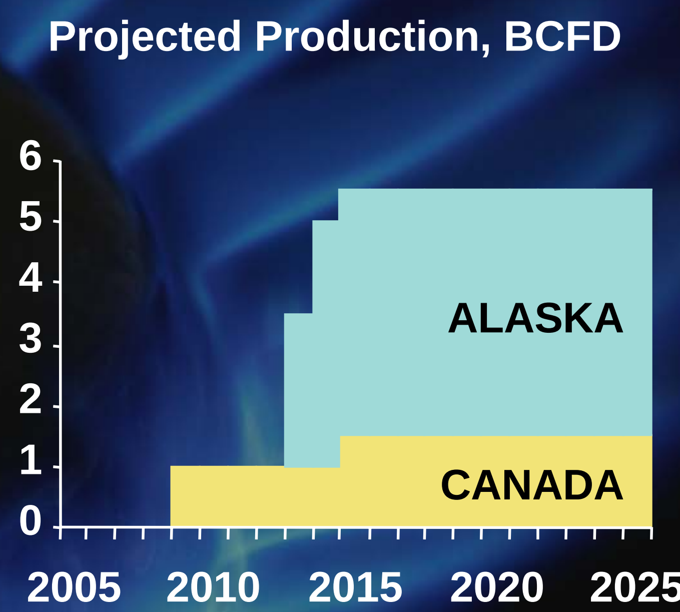
Arctic Pipeline Projects Can Deliver Important New Supplies



Findings on Infrastructure

Pipeline and distribution investments will average $8 billion/year, with an increasing share required to sustain the reliability of existing infrastructure

Regulatory barriers to long-term contracts for transportation and storage impair infrastructure investment

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Recommendations on Infrastructure

Regulatory Certainty, Long-Term Contracts	Provide regulatory certainty by maintaining a consistent cost-recovery and contracting environment and removing regulatory barriers to long-term capacity contracting and cost recovery of collaborative research
Permitting	Permit projects within a one-year period utilizing a Joint Agency Review Process

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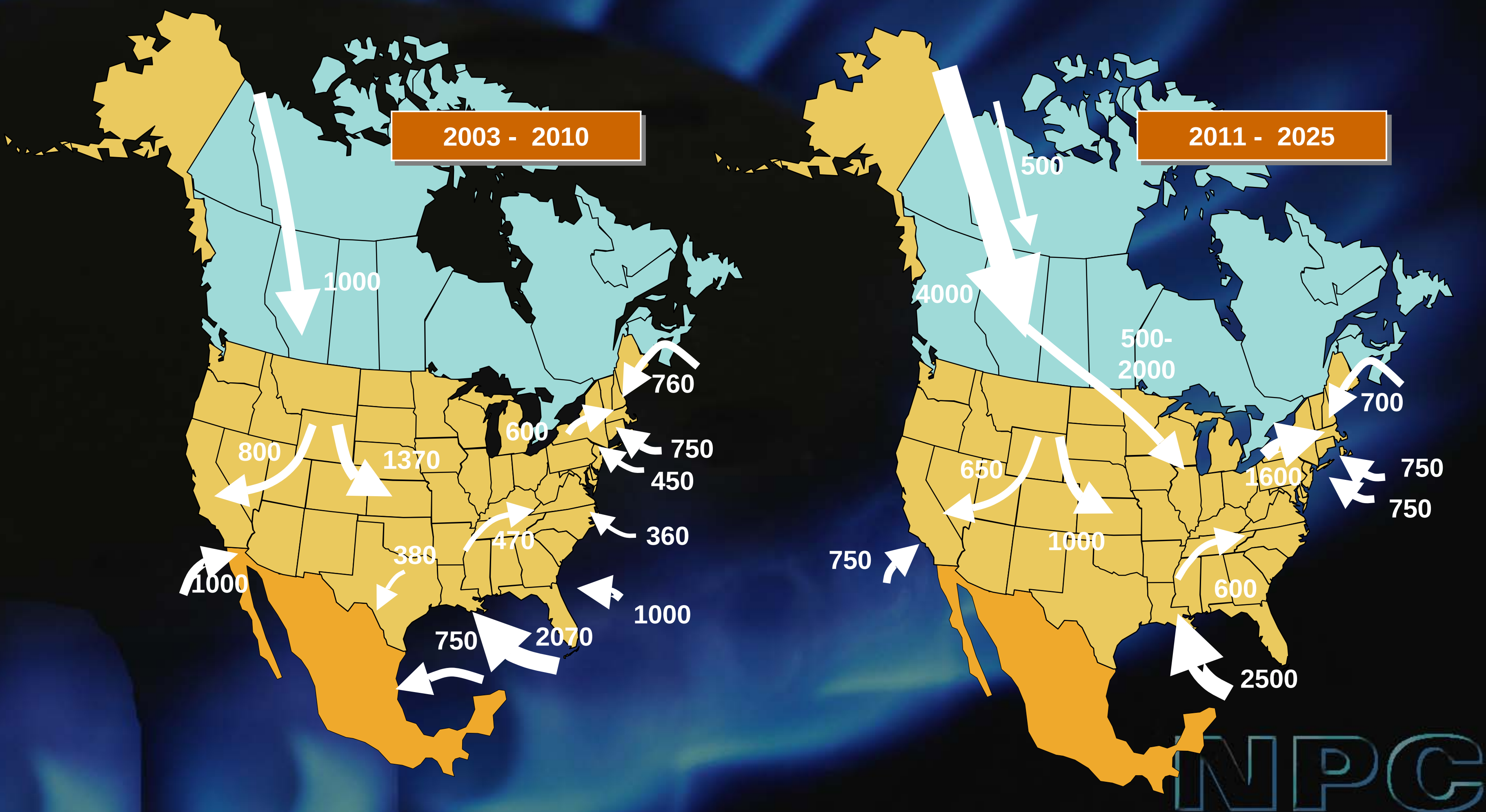
New Infrastructure Will Be Needed for Changes in Supply & Demand

NPC Outlook for New Transmission Pipeline and LNG Capacity



Barriers to Long-Term Contracts Inhibit Infrastructure Development

… Infrastructure contract terms are trending shorter
… Over 75% of LDC term contracts expire within next 5 years.
… Markets should be free to choose appropriate contract term

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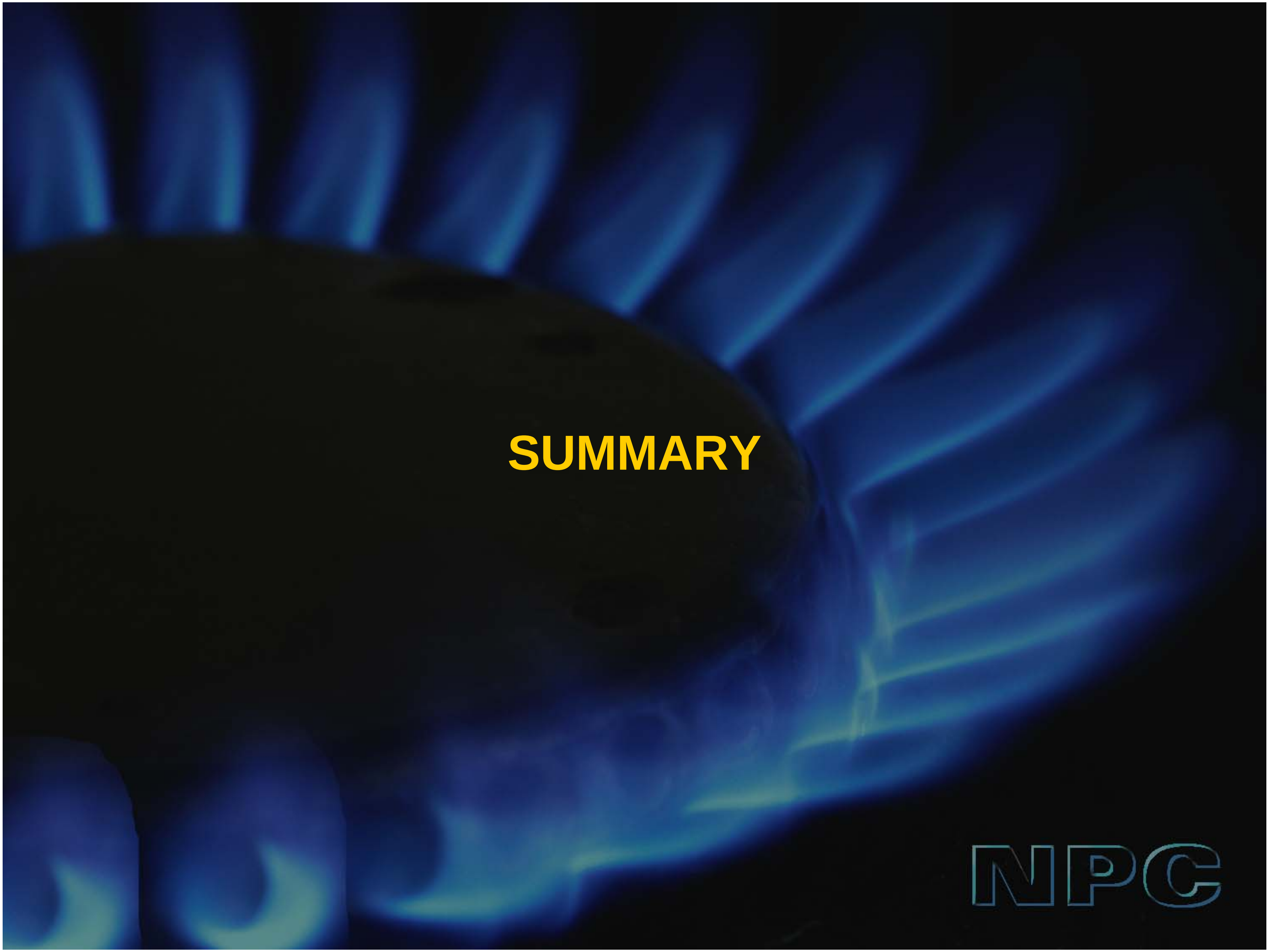
SUMMARY
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The NPC Modeled Sensitivity & Screening Cases Beyond the Two Base Scenarios

- Low Economic Growth
- High Economic Growth
- Low Electricity Demand Growth
- High Electricity Demand Growth
- Low Industrial Production
- High Industrial Production
- Fuel Flexibility
- Carbon Reduction
- Status Quo
- WTI $28 Oil Price
- No Alaska Pipeline
- Delayed Alaska Pipeline
- Expand Alaska Pipeline
- High LNG Imports
- Low LNG Imports
- No New East Coast LNG
- Increased Access
- Increased Offshore Access
- Gradual Rockies Access
- Full Effect Rockies
- Quick Rockies Build
- Slow Rockies Build
- Decrease Rockies Access
- Decrease Offshore Access
- Less Access
- Low Supply Technology
- High Supply Technology
- Static Supply Technology

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Action is Required in All These Areas

Improve demand flexibility & efficiency

and

Increase supply diversity

and

Sustain and enhance infrastructure

and

Promote efficient markets

Higher economic growth

Higher employment

Stronger industrial activity

The NPC Study has been a Vehicle for Understanding, Focused Debate, Action

- Findings and recommendations apply to a wide range of audiences/constituencies
- NARUC has created state-level visibility and focus on ±60 NPC recommendations
- Specific state and regional efforts: Western Governors, New York, New England, Texas, California
- FERC action on LNG, Interior action on access issues
- DOE-led inter-agency working group has created federal-level visibility and focus on ±60 NPC recommendations

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