Testimony to the Joint Economic Committee

United States Congress

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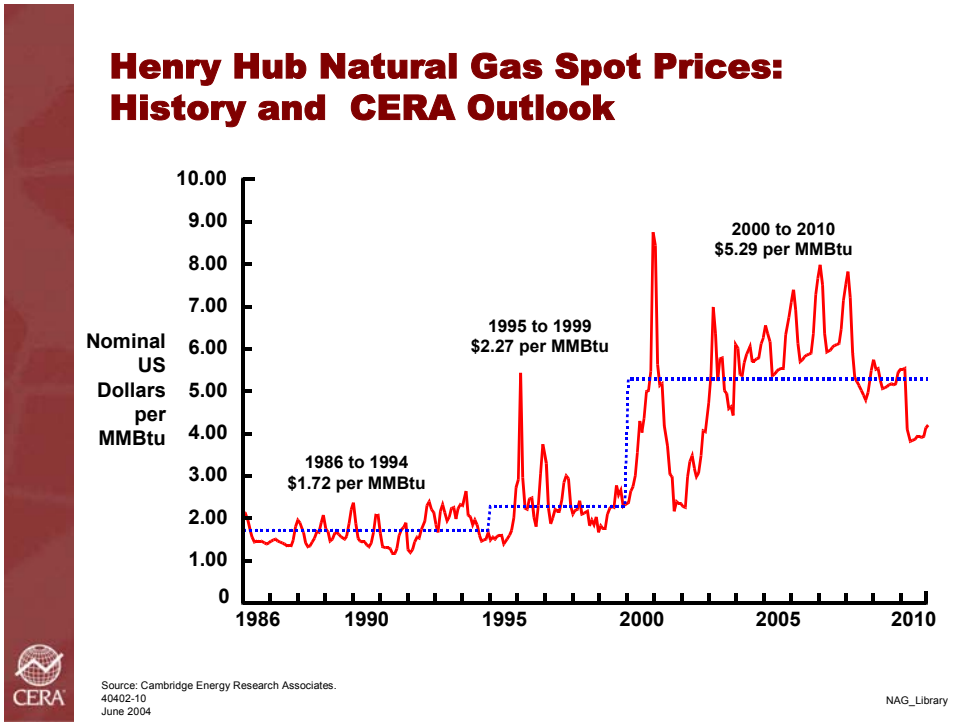
Introduction: The Current Natural Gas Crisis

Natural gas is critical to the American economy. It provides almost a quarter of the total energy on which our economy runs. Yet, seemingly overnight, at least in the public's perception, natural gas has shifted from the "fuel of choice" in North America to the "fuel of risk"— from a plentiful, relatively inexpensive fuel to one marked by uncertainty, volatility, and record price levels. This comes at a time when natural gas is being counted on as a clean, competitive fuel to meet economic and environmental challenges, embodied in part by the dramatic embrace of natural gas for a large fleet of new power plants.

The higher and volatile gas prices are not a failure of markets. Rather they are the result of a disappointing geological experience over the last several years, compounded by issues involving access to resources. With upward pressure from demand, prices are performing their essential function—signaling the change in conditions to both producers and consumers. Prices for the next three to four years are expected by Cambridge Energy Research Associates (CERA) to exceed $5.00 per MMBtu—more than double levels of just a few years ago (see Figure 1 "Henry Hub Natural Gas Spot Prices: History and CERA Outlook"). These prices are adding to the burdens of consumers and shifting the competitiveness of key industries that depend on natural gas. Yet it is important to understand that producers have limited ability to significantly increase gas production in the near term without access to new sources and new areas.



The Gas Supply Crunch

The reason we are in a crisis is not that demand has surged—it is that supplies are stagnant. Unlike crude oil, there is at this time little capacity to import natural gas from overseas. The natural gas resource base in North America has been developed for many decades; many of the largest fields are in decline.

- In the lower-48 United States, we have not been able to increase gas production for a decade. Productive capacity peaked at 55 Bcf per day in 1994, and has been creeping ever downward, and stands at 50 Bcf per day now.

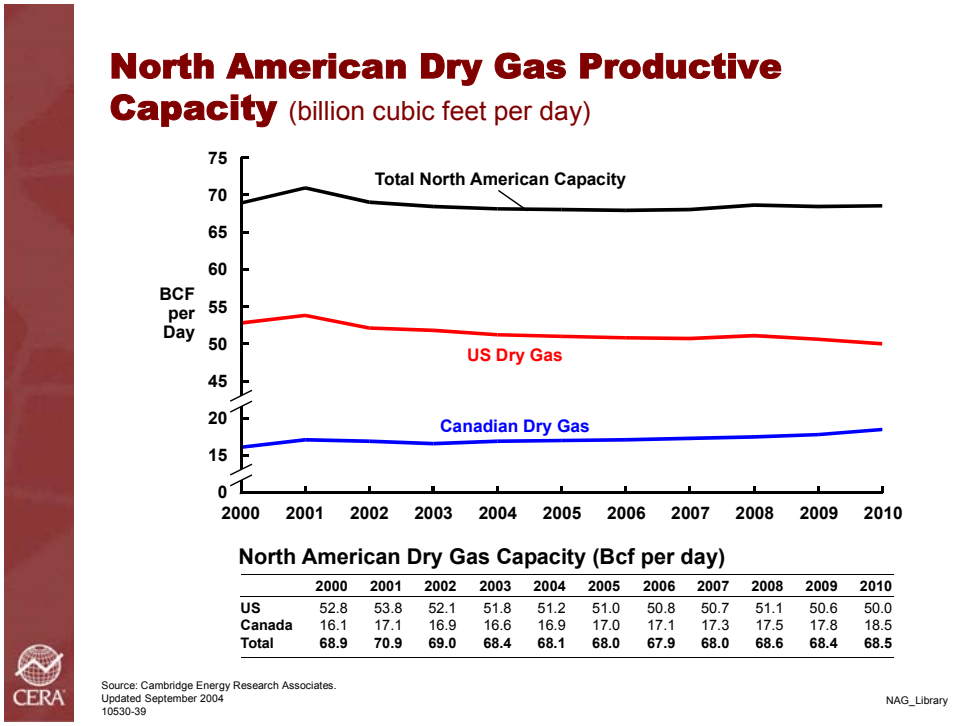
- Over recent years, Canada has become a major source of gas – some 16 percent of US consumption is met by imports from Canada today. The U.S. market has become a North American market. Canada, however, is witnessing a shift -- from strong growth in western Canadian production to a flattening of production in recent years. CERA expects only modest growth from Canada over the next several years, which, when combined with growing Canadian demand, translates to declining exports to the US.

- There have been no new, large discoveries of natural gas in Canada and the United States in the past few years, though not for lack of effort, if you look at industry spending

There is strong evidence that simply adding more drilling rigs will not solve the problem, as it has in previous decades.[1]

The response to a surge in drilling following higher gas prices in 2001 provided a bellwether for the new difficulties in adding new supplies even with higher prices and drilling rates. Gas prices spiked in the winter of 2000/01 owing to colder-than-normal weather. The gas industry responded to higher prices, putting over 1,000 rigs to work drilling for gas by the summer of 2001, up from fewer than 700 rigs drilling the year before. But this large surge in effort added very little productive capacity—less than a 4 percent increase in US production—which quickly eroded by 2002. This was a surprise in an industry accustomed to the stimulus of pricing usually leading to a relatively fast response in terms of higher production. For 2004, drilling has returned to record levels for onshore drilling but US gas productive capacity is expected by CERA to fall from 2003 levels. This is in spite of industry efforts, which will yield very strong spending and drilling efforts for the foreseeable future, North American natural gas productive capacity is not expected to grow meaningfully, and United States gas productive capacity appears now to be in permanent decline (see Figure 2 "North American Dry Gas Productive Capacity).

[1] See CERA Decision Brief *Can We Drill Our Way Out of the Supply Shortage*?



North American Dry Gas Capacity (Bcf per day)

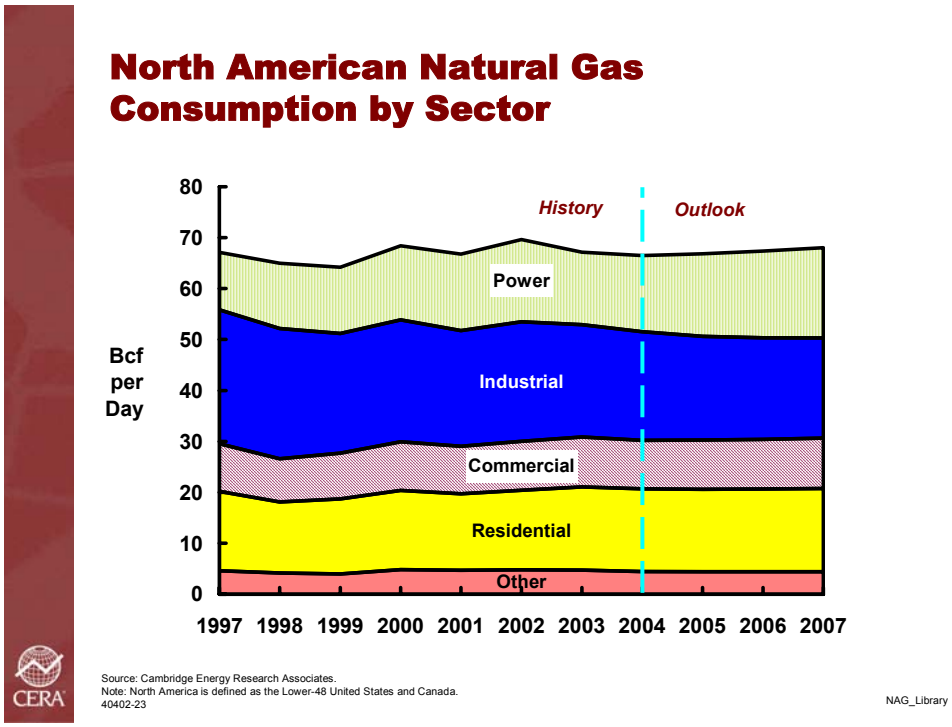
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
US	52.8	53.8	52.1	51.8	51.2	51.0	50.8	50.7	51.1	50.6	50.0
Canada	16.1	17.1	16.9	16.6	16.9	17.0	17.1	17.3	17.5	17.8	18.5
Total	**68.9**	**70.9**	**69.0**	**68.4**	**68.1**	**68.0**	**67.9**	**68.0**	**68.6**	**68.4**	**68.5**

The Gas Demand Imperative

At the same time, North America is set for a large increase in demand for gas to fire electric power plants. Over the last few years, the United States has installed nearly 200,000 megawatts of gas-fired power plants. To give you some context, this is equal to one quarter of the total installed capacity that was already in place in the United States in the year 2000. These gas plants were planned and built because they are more energy-efficient and cleaner-burning compared with older coal or oil plants. Few of these plants were designed to burn alternate fuels.

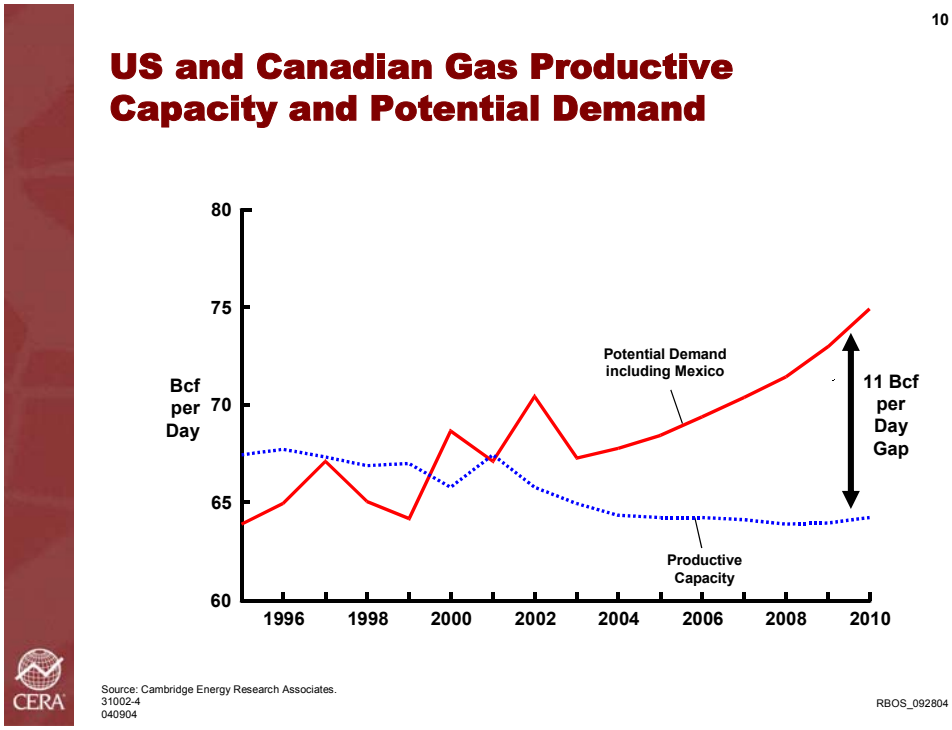
Many of these power plants are not heavily utilized today. However, with these plants now in place, demand for natural gas will grow steadily as economic growth inevitably pushes the usage of these plants higher.[2] With supplies unable to grow in the near term, power demand is squeezing price-sensitive industrial demand out of the

market, with negative consequences for competition and employment in gas-intensive industries in the US and Canada (see Figure 3 “North American Natural Gas Consumption by Sector").



Comparing the demand imperative to the supply outlook creates a stark picture. The potential demand for gas (if gas were to remain at $3.50 per MMBtu) is set to continue to outstrip continental supply—and the gap is on track to widen (see Figure 4 “US and Canadian Supply and Potential Demand”). The North American market is now dependent on LNG to fill this gap, and to the extent that LNG supplies fall short of expectations, gas prices are set to exceed levels cited earlier.

[2] CERA North American Gas Watch, *Diverging Fundamentals Challenge the North American Gas Market,* Summer 2004.



The Challenge of Getting through the Next Few Years

It used take about 6 months to a year from a strong price signal for new natural gas supplies to arrive to market—the time it took to revisit drilling programs, get drilling permits, and drill and connect new gas wells. But now the maturity of the North American resource base means we can not "drill our way out" of the current shortage in the customary manner – although ongoing substantial drilling will be required to make up for declining output in order to keep U.S. production at current levels of about 50 Bcf per day in 2010.

By contrast, there are many parts of the world that are awash with gas. Outside North America global natural gas reserves are growing. Moreover, projects are now underway to bring these new global resources to North America in the form of liquefied

natural gas (LNG).[3] And there are huge quantities of stranded gas in Alaska, and gas as well in the Canadian Arctic.

How might the supply picture evolve? The North American gas industry will need to work hard to keep production from sliding further. Significant new supplies in the next decade and a half will come from continued exploration and production in North America. But LNG will be needed to play an important role. After gas from the United States and Canada, it will be the third major supply source. Today, LNG provides 3 percent of U.S. supplies. By the year 2020, that share could be 25 to 30 percent.[4]

The challenge is that LNG – as well as Arctic gas—are all long-lead time projects. Four new US LNG projects have received the needed permits—but it will require about three to four years for the construction to be completed. CERA estimates that the soonest LNG could provide significant price relief is 2008, with 2009 a more likely date. Gas from the Canadian Arctic could reach the market by 2010, we estimate; Alaskan gas would arrive well into the next decade.

It is important to note that Mexico, too, has committed to build gas-fired generation and construct new LNG facilities to fuel these power plants.

The challenge before the United States lies between now and the arrival of substantial new volumes of LNG on North American shores. This is a multi-year period when CERA expects that a tightening of the balance between supply and demand could lead to even higher and more volatile prices for the continent. Much like three decades

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[3] CERA LNG Watch *Maintaining Momentum*, Summer, 2004; and Daniel Yergin and Michael Stoppard, "The New Prize, *Foreign Affairs*, November-December 2003.

[4] See CERA North American Gas and Power Scenarios *Rearview Mirror Scenario—Annual Update: Navigating the New Hybrid*.

ago, now we are facing a period in which natural gas risks becoming a seemingly scarce and highly priced fuel. Then, however, in contrast to today, it was the result of irrational regulation that kept the wholesale price of natural gas too low to cause producers to search for new gas supplies.

An event as simple as an abnormally hot summer or cold winter could push prices well above recent levels, to the $6.50 to $8 per MMBtu range in the summer and above $10 per MMBtu during a particularly cold winter.

At these price levels, consumers and businesses will experience both higher natural gas prices and higher prices for electricity in regions where natural gas is a significant fuel source in the power sector. The impact will be felt through lost jobs. Key industries have already been hard hit by these higher natural gas prices, including the ammonia-based fertilizer industry, petrochemical industry, pulp and paper, primary metals such as steel, and other sectors that depend on natural gas. Many of these industries have no fuel alternatives. Unfortunately, CERA expects that natural gas demand growth in the power sector will come at the expense of more constrained industrial sector consumption – what is described as "demand destruction." Indeed, industrial consumers are already examining off-shore locations for new plants.

To CERA, it is clear that, without measures to boost supplies or temper demand, the market is locked in a strong price environment. In our new study, *Charting a Path: Options for a Challenged North American Natural Gas Market*, CERA identifies measures that the US can draw upon to manage natural gas demand and exposure to price volatility during the bridge period of 2004 to 2009:

- Effective customer education and flexible gas procurement mechanisms by utilities
- Fuel flexibility for new and existing electric power capacity
- Resolution of the mismatch between the short-term contracting bias of consumers and the need for longer-term commitments to underpin new natural gas infrastructure, such as Arctic and LNG supplies, and
- Acceleration of gas production in the near term by streamlining permitting for activity—rather than encumbering it—in areas that are already open for gas production, and applying flexibility in areas with various restrictions for gas production.

The challenge is before the industry and regulators and policymakers—and indeed for the nation—to manage a difficult market environment over the next few years while new supply arrangements can be made. Critical decisions, some implemented for just a few years, could provide some real relief for consumers in the coming few years and ensure natural gas' deserved place as a fuel for economic growth and environmental quality.