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One Issue, Two Voices

Moving Toward Dialogue: Challenges in Canada-U.S. Energy Trade

Moving Toward Dialogue: Challenges in Canada-U.S. Energy Trade is the second publication in our new *One Issue, Two Voices* series. Using expertise from both sides of the Canada-U.S. border, this series is our contribution to dialogue on policy issues relevant to the bilateral relationship. We look at energy in this paper, specifically the issue of infrastructure and cooperation in the delivery of energy resources across the 49th parallel. Our authors, Daniel Yergin and Michael Zenker of Cambridge Energy Research Associates (Cambridge and Washington) and Paul Ziff of Ziff Energy Group (Calgary) are well-known experts on energy issues who have agreed to share their opinions on this important aspect of the energy trade.

Canada has significant energy resources in natural gas, oil, coal, and hydropower, certainly more than it can consume. The United States has an enormous appetite for energy in many forms; although it has significant energy resources itself, it cannot meet domestic needs without importing energy. Canada has been an important source of energy for the United States

and has become, in recent years, its single largest foreign energy supplier. Even though proximity might dictate ease of delivery and similar regulatory schemes, reality has proved different. Our two authors question recent challenges to increased energy delivery on the regulatory level and on compatibility of infrastructure. A binational forum will mark the publication of these papers. At this forum, the two authors and a select group of policy-makers and industry leaders will discuss improving the situation. The forum meets in Washington at the Woodrow Wilson International Center for Scholars on September 27, 2004.

This project has been made possible through the efforts of several organizations and people. First, I would like to thank The Canada Institute on North American Issues for their support of our *One Issue, Two Voices* series. I would also like to thank Cambridge Energy Research Associates and the Ziff Energy Group for their work on the papers, Pat Daniel and Enbridge Inc. for support of the project, and Lorraine Royer of Global Public Affairs in Calgary.

We hope that you enjoy this publication and that it will encourage dialogue on this important issue.

David N. Biette
Director, Canada Institute
September 2004

Paul Ziff

Ziff Energy Group

Cross-Border Regulatory Collaboration in Its Context:
Energy Balances and Energy Policy

Introduction: The Regulatory MOU

During the past decade, communication has grown between the staffs of the National Energy Board (NEB) and Federal Energy Regulatory Commission (FERC) through semi-annual meetings. This relationship has evolved with the Memorandum of Understanding (MOU) signed May 10, 2004 by the chairs of both boards: Ken Vollman for Canada's NEB, and Pat Wood for the U.S. FERC.

The heart of the MOU is found in Articles 4 and 5:

4. "The parties recognize that *appropriate coordination of their efforts* could promote the public interest through *increased efficiency, expedited and coordinated action on significant energy infrastructure projects, and cost savings* to both the public and regulated entities. The parties agree that the regulatory efforts of both the NEB and FERC will benefit from *increased communication and cooperation concerning the timing and other procedural aspects of related matters...*
5. The parties contemplate that *coordinated reviews may be considered* in cases where related matters are pending before both agencies...the two agencies will, where practicable, *coordinate the timing of related decision making*, including...coordinating the submission of evidence, the timing of developing findings of facts and conclusions of law, and the ultimate resolution of the related matters." [emphasis added]

This essay is written largely from a Canadian perspective, although from the vantage point of a dual citizen and a dual inhabitant, dealing with both governments and a wide variety of energy players in both countries. To present a more comprehensive perspective, I conducted 15 interviews with prominent industry, government, and regulatory figures (Appendix A).

Regulatory Cooperation

Canada-U.S. energy trade is running very smoothly, particularly in contrast to earlier decades (pre-1985). The NEB's cost-of-service tolling approach was modeled after the practices of the U.S. Federal Power Commission (FPC), and the concept of "prudence" examined by the NEB in the 1970s for the Montreal extension of the InterProvincial (oil) Pipeline (now Enbridge) hearing was also based on U.S. jurisprudence. However, policies, tolling, and rate structures have since diverged. Today the two senior energy regulatory agencies seem to be aware of and comfortable with the other's broad approach. Cooperation among the two would have the greatest future benefit for new projects.

Even under the pre-existing regulatory status quo, the last major gas project—Alliance Pipeline, about five years ago—is generally considered to have been well handled by FERC and the NEB on both sides of the border, with principles "reasonably in sync." One gap is the lack of similar and consistent tolling in bi-national pipelines systems. This presents another area for effective collaboration.

Sponsors of new energy projects have offered suggestions for bilateral and national regulation, including:

- Minimizing duplication
- Better scheduling to shorten the elapsed time (“cycle time”)
- Streamlining wherever possible
- Providing a path with some certainty

Taken together, these goals would reduce both cost and regulatory risk. All parties—the government, the people, regulators, and interviewees—accept that institutional authority and national sovereignty cannot be compromised.

A key perspective comes from reviewing the overall responsibilities of the NEB and FERC respectively, as well as their differing overall agendas, bilateral energy trade being just one area they share. By contrast, key issues for FERC in recent years have been:

- Marketing affiliates (not really an issue in Canada, as most regulated entities do not have affiliates any more)
- Power markets re-organization (“Standard Market Rule Design,” especially after the Northeast blackout in August 2003 (the NEB does not have much responsibility for power, which is mainly a provincial area)
- California pricing issues
- Enron issues

Such issues are high profile and attract political attention from Congress; issues before the NEB rarely receive notice from the Canadian Parliament. Historically, FERC and its predecessor agency make policy, whereas the NEB’s role is more to implement policy. The NEB also prepares technical analysis as an input for energy decision makers and stakeholders, a role closer to that played by the U.S. Department of Energy’s Energy Information Administration (EIA). It is to be noted that FERC is based in Washington, the seat of the U.S. government, whereas the NEB moved more than a decade ago from Ottawa to Calgary to be close to its stakeholders.

How Far Can Cooperation Go?

Communication regarding issues and process can go a long way to avoid discontinuities between decisions; communication also leads to more coordinated timing and agenda-setting of the two regulatory schedules to facilitate the regulatory process. As for large projects such as Alaska Gas, one of the people interviewed for this paper expressed a strong desire that the process be mapped for all involved.

Better and more frequent communication can avoid unintended consequences without compromising genuine differences in viewpoint or policy. With the scale of some projects such as the Alaska pipeline, and the controversy of others, including liquefied natural gas (LNG) siting and coastal drilling, early communication is essential for a more effective process. The Interstate Natural Gas Association of America (INGAA), under the sponsorship of TransCanada PipeLines, is currently conducting a study on “cross-border harmonization” in legal, regulatory, procedural, and technical areas.

Joint submissions, or a joint technical conference in appropriate areas, would reduce the amount of effort required in areas where content and format can be converged,

Reviewing technical and scientific evidence presents the clearest area for cooperation.

especially with technical details on facilities and financial data. Both FERC and NEB have settlement processes that can reduce the scope and time of hearings. Another area of potential synergy is in the area of complex hearing processes; although the United States often leads in complexity and litigation, Canada's Mackenzie Valley Gas Pipeline hearing may challenge in complexity.

Reviewing technical and scientific evidence (for example, the type and thickness of steel pipe, maximum operating pressure, and northern construction involving permafrost) presents the clearest area for cooperation. If cooperation supercedes politics and turf protection, the combined internal talent of the two agencies sharing their technical understanding should arrive more quickly at a deeper understanding.

Because most Canadian pipeline construction is more recent by several decades than most U.S. pipelines, Canadian standards tend to be most current. In both countries, certain technical matters are handled by other bodies. The NEB has delegated technical standards to the Canadian Standards Association (CSA), and in the United States these matters are handled by the Office of Pipeline Safety (OPS), part of the Department of Transportation. These agencies might also collaborate on common technical specifications.

One executive interviewed remarked that the approach of the agencies is fairly different in pipeline safety and integrity. The NEB now delegates more implementation responsibility to the pipeline and verifies that the management system and process are in place to achieve their required results. FERC, by contrast, is more prescriptive in laying out specific steps to reach the goal, although management might have alternate approaches. Another executive felt that FERC allows pipeline companies to take economic risks in transportation, whereas the NEB prescribes tolls more closely.

Supply and Markets

To the extent that supply and market analysis related issues are considered "public need and necessity," typically more so in Canada, the evidence could be heard jointly by both agencies to mitigate the regulatory burden and reduce the time required for hearings. Again, approaches differ. The NEB typically selects the best project, whereas FERC allows the market to decide which project will be developed (for example, FERC recently approved two LNG applications in the Bahamas).

The unbundling of core markets (residential and commercial) by utilities seriously impacts the question of which gas players (for example, distribution companies, industrials, and merchants)—will make long term commitments for new gas supply and gas transportation capacity.

Joint Hearings?

The hearing processes used by FERC and the NEB are not identical. The FERC process relies more on Administrative Law Judges (ALJs), who hear in a less formal manner than does the NEB, from the interested parties with a broad interpretation of who can participate. The ALJ forwards a recommendation to the commissioners, who make their decisions in monthly public or periodic internal sessions, based on the written record established before the ALJs. The sheer number of players and proceedings at FERC makes it impractical for commissioners to sit at hearings. The NEB process is more formal, with a panel of board members (usually three) presiding over the public hearings, which can often be lengthy. Reflecting the different approaches, FERC has just five commissioners, whereas the NEB has eight members.

FERC is also different in that it is more political. The president appoints five commissioners; no more than three may be from the same political party. Appointees often have industry knowledge and are referred by state regulators. FERC has been the focus of controversy in Congress which can threaten its funding. The NEB, on the other hand, is more politically independent; the government appoints its members, with a number of appointments coming from staff.

Several of the people interviewed for this article were attracted by the idea of joint FERC-NEB hearings to avoid duplication and shorten the time period for the hearing process. The NEB has pioneered joint hearings with members of various authorities sitting on the same hearing panel, which have included in the past, the Canadian Environmental Assessment Agency (CEAA) and soon may include many jurisdictions in the Northwest Territories. For an NEB-FERC joint hearing, there might be co-chairs from each country and a balance of technical staff support from each agency. Harmonizing information requests would also streamline the process and make it more efficient.

The Environment

Cooperation regarding environmental issues may be less likely; one of the people interviewed commented that environmental issues tend to be local issues. Socio-cultural beliefs also differ between Canada and the United States. In Canada, the CEAA was created a decade ago to establish a standard federal environmental assessment process; its approach can be quite far-reaching. A related example of such differences can be found in the climate change issue. Canada previously ratified the Kyoto Accord whereas the United States did not. A significant difference in process is that environmental issues in Canada tend to be dealt with early on in the process as a “pre-early planning tool,” whereas FERC may make its decision conditional on obtaining other environmental approvals. CEAA recently required a climate change filing from the Mackenzie Delta Project applicants before the project’s NEB application was filed. Negative comments about CEAA and its role in the process include:

- with CEAA the average process time is two years, 18 months at best
- CEAA has difficulty in moving from the conceptual level to the project level
- the CEAA process is byzantine, with built-in delays
- CEAA staff focuses more on process and lacks technical expertise, especially on energy

In the United States, the Office of Energy Projects has the environmental responsibility for pipelines.

Issues: The Lack of Full Authority

Unfortunately, regulating large projects is not a straightforward matter of the two senior agencies reaching a common understanding or decision. In both countries, consent is required from many more agencies and boards, both at a federal, state, provincial, and local level; this is often a major impediment. The issue of shared jurisdiction challenges each senior agency and the regulated parties. It has been suggested that a major structural difference between the two countries is that in Canada, the residual power rests with the federal government, whereas in the United States, more powers reside with the states (although federal law prevails where there is a conflict). One of

those interviewed from the United States suggested that the NEB tends to take a lead role, whereas FERC often delegates more to states and local communities.

Canada

The issue of partial or conflicting authority is most prevalent in the frontier beyond the traditional Western Canada production area: new regions such as the Canadian East Coast and the North.

In the Canadian East Coast, the main players are the provincial governments of Newfoundland and Labrador and Nova Scotia, as well as the federal government. It has been said that the various authorities are not working well together and that there is fighting and lack of clarity among various agencies. For explorers, the regulatory process is not currently seamless.

Ziff Energy Group's in-depth study last year for the Petroleum Council demonstrated the challenges on the East Coast, including staffing requirements for each province for the same drilling rig. Similar overlap exists at a regulatory/jurisdictional level, contributing to the longest time out by a leading player, EnCana, for submitting their development plan for the Deep Panuke gas project.

In Northern Canada (north of the 60th parallel) the manner by which the Canadian government resolved First Nations' land claims has created a complex mix of players, all of equal standing, that rivals the complexity and uncertainty of regulatory and policy making found anywhere overseas. While applauding the settlement of land claims and the participation of First Nations in decision-making, the presence now of more than a dozen bodies of equal authority (land, water, and environmental boards, federal authorities including the Departments of Environment and Oceans, CEAA, and the NEB) in addition to numerous independent bodies in a region with fewer than 100,000 individuals, staggers the imagination. The Northwest Territories is a veritable latticework of "equal authorities"—it appears that the designers of the First Nations' land claims settlements (a necessary and positive step) did not understand the nature of larger projects and issues such as the Mackenzie Valley Pipeline, which will benefit the North's people.

Much detail needs to be defined on overlapping legislation, information that is required to be filed, and on how decisions will be made. We credit the NEB for taking a lead role, using its long experience and laboring diligently with the new authorities that have few staff and no track record, to help facilitate a unified approach contained in a Cooperation Plan (June 2002). This includes coordination of a joint environment impact statement and regulatory components—no small feat. Some parties involved in the process estimate the time for a Mackenzie Delta hearing has been reduced from 40 months to less than two years. While this is a meritorious challenge, this new process is unproven, with untried new instruments; success is not guaranteed. The new approach will be tested soon. Some of the lessons from the Mackenzie Valley Pipeline review may be applicable and beneficial to optimize some regulatory aspects of the Alaska Gas mega-project.

United States

The United States faces the challenge of shared jurisdiction issues. But unlike in Canada, it is not the frontier supply regions but rather the states and an almost limitless array of local bodies in the lower 48 that control site permits, as well as some equal ranking federal agencies. When FERC issues a project certification conditioned on

obtaining other authorizations, there is no assurance as to when the project can start activities, as many other local agreements must be obtained—a process over which FERC has no control. The March Woodrow Wilson Forum recognized “...the growing impact of local public resistance to large new energy developments (the ‘not in my backyard’—NIMBY syndrome).” One of the people interviewed for this article remarked on the extraordinary ability of local, state, and other agencies to filibuster for up to two years, despite FERC having already given approval. Often this occurs in the very areas that need energy (the Northeast and California). Another U.S. interviewee perceived that there has been a decrease in the recognition and primacy of the “public good,” with parochial interests too often winning out.

The major negative impact of NIMBY is on new pipelines to under-served regions. Examples include the Millennium Project in the Northeast and siting LNG receiving terminals. States or even individuals along a multi-state pipeline route or near an LNG site can delay a project—or even cause it to be cancelled—resulting in hardship in another. Some states are efficient, with “one-stop shopping,” but others have multiple and sometimes overlapping authorities. Another concern is reports of the politicization of local siting hearings, which even involve members of Congress. At one extreme, NIMBY-itis could result in a number of new LNG plants being sited in Canada to serve the U.S. Northeast, and in Mexico to serve southern California markets, thereby outsourcing economic development and jobs.

Regulating New Supplies: The Ziff Energy Gas Supply Pyramid

With existing flat supply from traditional “workhorse” gas supply basins, coupled with market growth, industry is examining areas to grow supply. New frontier gas supply will be required to supplement the conventional gas supply. In 2000, Ziff Energy Group conceived the Ziff Energy gas supply pyramid to clarify the new building blocks of gas supply. The largest conventional basins forming the base of the supply pyramid are:

- U.S. Gulf region (onshore, shallow Gulf of Mexico, “deep shelf”)
- Western Canada Sedimentary Basin
- Plus: six types of non-traditional gas supply make up 16 percent of U.S.-Canada supply (already delivering gas):
 1. **LNG** (international gas)
 2. Deepwater Gulf of Mexico (more oily)
 3. Scotian Shelf (Canada’s East Coast)
 4. **Coal bed methane (CBM)**

Also in North America, and at the top of our supply pyramid, but not yet connected are:

5. Canada’s Mackenzie Delta
6. **Alaska’s North Slope (Prudhoe Bay)**

The supplies noted in bold text above dominate new supply and prospects: CBM today supplies more than nine percent of total U.S. gas supply; Canadian CBM is just starting commercial production; LNG is only one percent today, however, it has the largest capacity for rapid growth. The Alaska Pipeline would be huge—shipping three



Ziff Energy Gas Supply Pyramid

to six billion cubic feet per day (Bcf/d)—but this project has a huge price tag of US\$15–20 billion (equal to three or four entire LNG systems).

These future gas supplies are critical and will be affected by U.S. and Canadian regulation. Two key questions are what projects might fall under joint regulation, and how might such projects be handled. Table 1 describes some of these regional jurisdiction issues and their effects on the regulatory process.

Table 1 REGIONAL JURISDICTION ISSUES

REGION	ISSUES	JURISDICTION
Scotian Shelf	poor co-ordination	all Canada: federal and provincial
Coal Bed	local issues, especially drilling and water disposal (mainly environmental)	mainly state/provincial, and some federal, especially if on government (Department of Interior) lands
Canada's North	too many equal authorities, most new	many jurisdictions: all Canadian
LNG	local authorities regarding siting	federal; state; and local (United States, Mexico, Canada)
Alaska	economic (expensive) and political (variety of interests)	Alaska; federal; downstream states if new pipeline; Canada if pipeline
Deepwater	very few, sole jurisdiction. Minerals Management Service (MMS)	U.S. federal

The challenges of accessing new gas supplies will involve multiple agencies and authorities. Deepwater projects in the United States are simple while projects in Canada's North can be extremely complicated. The Alaska Pipeline, and potentially LNG sites in Canada designed to serve the U.S. market, would be good opportunities for cooperation by the NEB and FERC.

Other frontier gas and energy issues will mainly be decided within each country; the international MOU cannot be a panacea for these issues. In a world dependent on a precarious balance of energy sources, it is critical that FERC and the NEB, and equally or more so the governments and politicians of the United States and Canada, recognize the responsibility each has to implement new approaches that are equal to the importance of the task.

A New Vision for Regulation in a New Period?

In a key speech to the Canadian Association of Members of Public Utilities Tribunals (CAMPUT) in June 2004, NEB Chair Ken Vollman laid out a new role for regulators:

- “Regulators must provide a *clear, timely process* on which project proponents can rely for fair treatment.”

- “Reliable regulatory processes are necessary if industry is to bring on projects in the public interest on a timely basis” [uncertainty deters investment]
- The role of regulators is “...to both enable and protect [integrity of our environment, property, public safety, consumers, investors]...to achieve outcomes that are in the public interest.”
- *Enabling* means: “providing an efficient and effective regulatory framework; reducing uncertainty through clear rules; creating predictable timelines; ensuring that projects in the public interest can proceed.” [emphasis added]

Shared Challenges and Wild Cards: What Could Go Wrong?
 What Could Slow Increasing Environmental and Stakeholder Involvement?

Figure 1 REGULATORY MATRIX FOR FRONTIER GAS ENVIRONMENTAL ISSUES

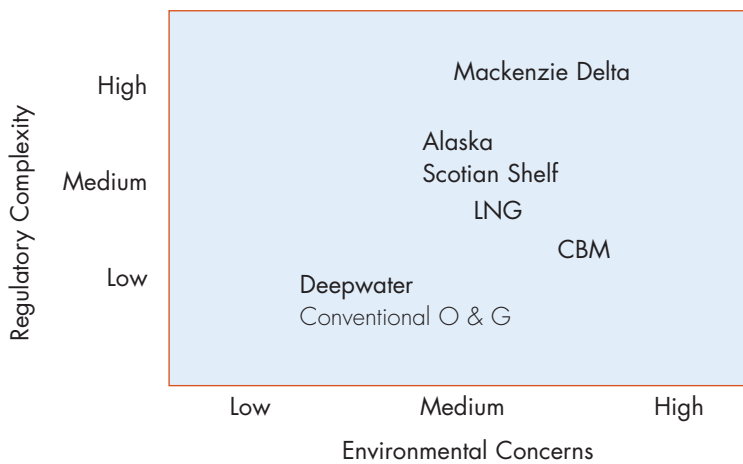
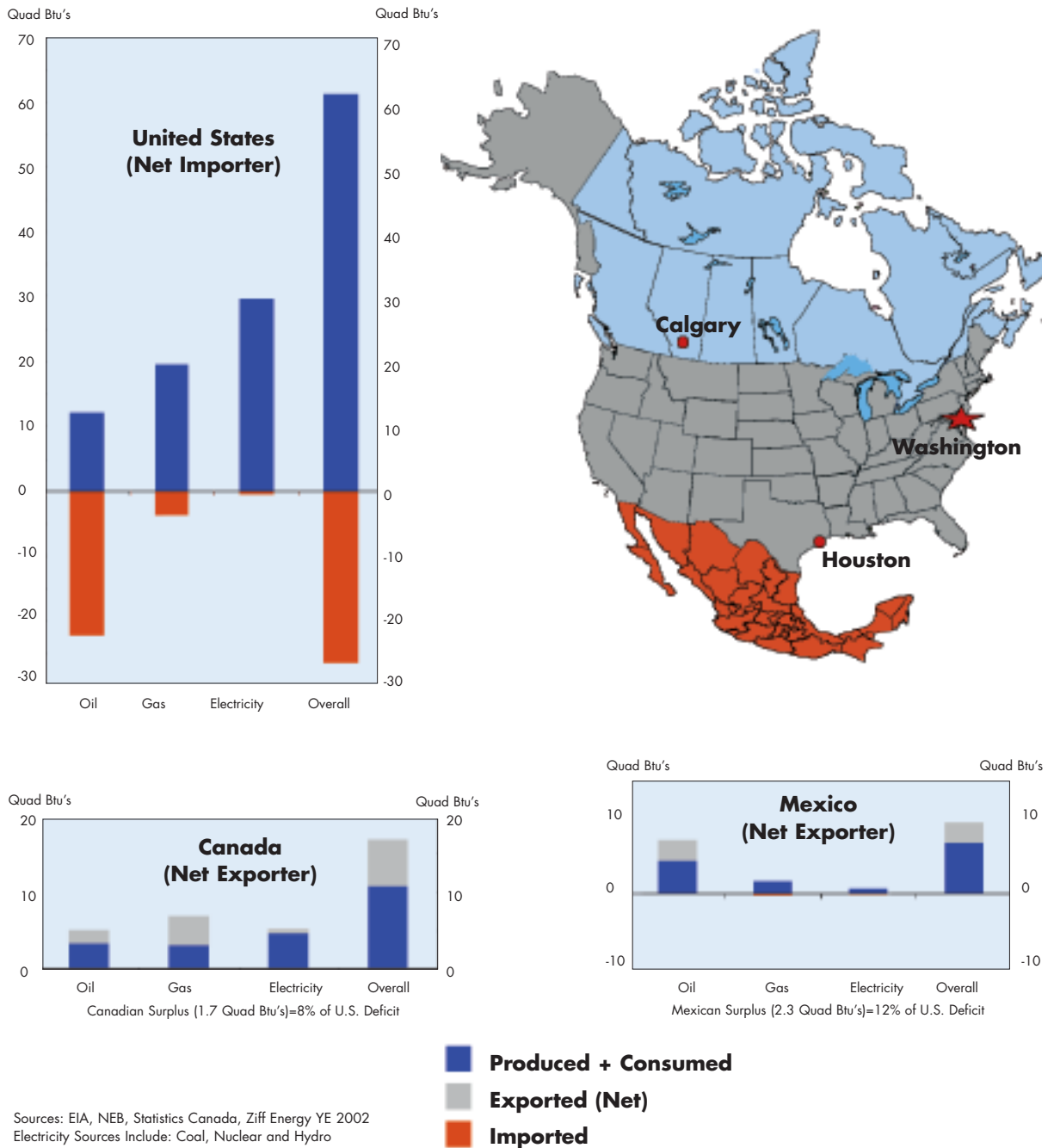


Figure 1 contrasts the regulatory complexity of frontier projects with environmental concerns.

A number of the people interviewed for this article remarked that modern society confers much greater importance to environmental and local impact issues, which are very often intertwined. Many such issues are being raised more forcefully in hearings. While neither FERC nor the NEB provides intervener funding, both agencies experience significant interventions from members of the public. A recent INGAA report cites a 10-fold increase in interventions in pipeline projects compared to a decade ago. A senior executive noted the power that disenfranchised and minor stakeholders have to materially delay a project through intervention action at one or more levels of review. In Canada’s North, for example, settlement has not yet been reached with the First Nations of the Northwest Territories on land access and employment benefits issues. A representative of the Canadian public sector expressed concern about the expanding number of stakeholders and their impact on hearings. A U.S. interviewee noted the increasing sophistication of interveners using the Internet and electronic communications, who are able to influence local authorities with their techniques.

A recent INGAA study concluded that a delay of just two years in overall gas project approvals would cost U.S. consumers \$200 billion (in constant 2003 dollars) by 2020. The Alaska Gas Pipeline project has already been delayed by more than two

Figure 2 U.S. ENERGY SHORTFALL



years. It should be noted that the INGAA figure includes neither increased risk to the U.S. economy nor the loss of jobs due to higher gas prices.

Canada has become the United States' largest overall energy trading partner, the leading supplier of oil (new), natural gas, and electricity. Mexico is also a top supplier of crude oil to the United States. However, Figure 2 demonstrates the very real limits to the ability of Canada and Mexico to fill the large U.S. energy deficit.

National Energy Policies

A coherent energy policy is likely of greater importance to the United States, an energy-short economy, than to Canada, which has an energy surplus. A number of observers in both the private and public sectors in Canada have commented that the Free Trade Agreement seems to be freer for commodities which the United States has in short supply, than for those where there is U.S. production and associated regional interests. This seems to be the lesson of softwood lumber, beef, and steel, where U.S. import policy has caused massive economic disruptions in Canada. This might not be unexpected for an average trading partner, but seems unusual for the world's largest trading partnership with a long-standing "free" trade agreement.

During the June 2004 Canadian federal election, Paul Martin's Liberal party lost the large majority the party had under its prior leader, Jean Chrétien. The stability of Martin's minority government is far weaker and depends on support from at least one of three opposition parties whose agendas differ considerably regarding relations with the United States. At the March 2, 2004 Woodrow Wilson Forum, it was noted that "... non-energy trade issues, if not resolved, could spill over and have a significant negative effect on energy trade" as softwood lumber and beef cattle have important regional constituencies in Canada.

Important Next Steps?

The now famous Cheney Report, notorious for challenges to the process of its preparation, unfortunately not receiving the same intense readership for its content, highlighted many U.S. national issues:

- "America in the year 2001 faces the most serious energy shortage since the oil embargoes of the 1970s"
- "A fundamental imbalance between supply and demand defines our nation's energy crisis ... This imbalance, if allowed to continue, will inevitably undermine our economy, our standard of living, and our national security."

Graphs from the Cheney Report shown in Appendix B starkly portray the growing U.S. dilemma. The current source and stability of U.S. oil imports, each \$1 increase in the price of a barrel of oil, and the recently weaker U.S. dollar, all conspire to have a significant negative effect on security, balance of payments, and the overall U.S. economy. Just as the United States used petroleum pricing during the Reagan years to weaken and bring down the former Soviet Union, so might the United States face a security risk with an energy policy vacuum and an unstable price of petroleum. The close correlation of energy prices and the GNP is well known. Both friends and foes of the current energy policy have speculated about U.S. energy interests in Iraq. The saga of the U.S. energy bill is depressing to any student of public policy—especially in the wake of the Northeast electricity blackout of August 2003, which cost billions to the U.S. economy. The United States has not been able to pass an energy bill, even during a rare period of control of both the executive branch and Congress by one party. The March Woodrow Wilson forum noted that, "...the U.S. legislative process was cumbersome and at some risk of being hijacked by other issues." A U.S. interviewee complained that it was very difficult "to develop a political consensus; even non-controversial areas were undermined by the controversial, such as the Arctic National Wildlife Refuge (ANWR)

in Alaska and methyl tertiary-butyl ether (MTBE). The executive branch has not placed a high enough priority on an energy bill, and it is increasingly hard for Congress to speak with one voice...The Northeast power blackout last August should have been a wake-up call, but there is no clear policy direction.”

Initiators of the energy bill are to be applauded for taking important initial steps. However, the process quickly became mired in a seemingly endless range of tangentially related regional issues and tradeoffs. The eventual lack of success this year is a tragic failure in U.S. national decision-making.

Vulnerability to energy concerns, whether availability or pricing or both, is a major concern for the United States and for global economic well-being. At a time when homeland security is a prime focus of the U.S. psyche and an increasing portion of the U.S. budget, little attention has been paid to the critical role of energy security.

The March Woodrow Wilson Forum also observed that, “...strong political leadership, supported by equally committed business leadership, was critical. ...Political leadership is essential to formulate needed policies and to set directions for regulators to address streamlining within jurisdictions and harmonization between jurisdictions.” The political leadership needs to understand the urgency surrounding energy issues and then seriously engage in finding solutions.

Barry Worthington, executive director of the U.S. Energy Association, said at the Forum that “...despite the critical importance of energy to the well-being of the United States, the hugely diverse range of local and national issues makes keeping a focus on energy issues difficult...”

Many solutions are within domestic control, if there is both consciousness and will. Gasoline accounts for two-thirds of U.S. oil consumption and “price spikes have hit the travel and trucking industries particularly hard and have led to the closure of some operations.” [Cheney Report, 2001] Prices of oil, as well as gasoline and diesel, are reaching historic highs. The U.S. aviation industry is in terrible shape in part due to the increasing price of jet fuel, resulting in significant layoffs. In this context, where is the logic to keep low corporate average fuel economy standards and not to consider fuel efficiency-related speed limits? What is the true cost of the proliferation of heavier vehicles like SUVs and even larger vehicles like Hummers? The more the United States depends on foreign oil, the more likely it will need a costly future presence in the Middle East.

Conclusion

The recent NEB-FERC MOU represents a partial solution; regulators can proceed only so far to make policy as exemplified by the controversy and politics concerning FERC’s U.S. power reorganization plans. FERC’s leadership on LNG is to be commended. The NEB is proceeding with a new vision for energy regulation that responds both to national needs and to those of key stakeholders. These steps by regulators, however, are not a substitute for national energy policy.

In the spring of 2004, Alan Greenspan raised national attention to the tight natural gas situation, which FERC had already been addressing for some time. The bipartisan Mr. Greenspan should perhaps soon address the broader topic of the importance of energy for the U.S. economy.

Appendix A CROSS BORDER ENERGY RELATIONSHIP INTERVIEWS

NAME	TITLE	COMPANY
Gaeten Caron	Board Member	National Energy Board
Larry Charach	Co-Chair of Alaska Technical Group	Alberta Department of Energy
Dave Collyer	Vice President, Frontiers	Shell Canada
Pat Daniel	CEO	Enbridge
Bonnie Gray	Profession Leader, Environment	National Energy Board
Doug Haughey	President	Duke Energy (Canada)
Jay Holm	President	Iroquois Pipeline
Hon. Peter Lougheed	Partner (former Premier of Alberta)	Bennett Jones
Hal Kvisle	CEO	TransCanada Pipelines
Randy Ottenbreit	Manager, Mackenzie Delta Project	Imperial Resources
Bob Reid	President	Aboriginal Pipeline Group
Don Santa	President	INGAA (former FERC Commissioner)
Michel Scott	Vice President, Frontiers	Devon Exploration
Jessie Sloan	Principal	Alvarez, Sloan & Associates
Nick Schultz	Vice President, Regulatory & Transportation Policy	Canadian Association of Petroleum Producers (CAPP)

Note: The author has endeavored to accurately convey the content of the various interviews and conversations, and also to bridge the gap in understanding of the two countries' regulatory systems to assist the participants in their meeting in September. However, any misinterpretation is the sole responsibility of the author, and feedback and refinements are welcome by those with deeper knowledge of the issues.

Communication regarding issues and process can go a long way to avoid discontinuities between decisions; communication also leads to more coordinated timing and agenda-setting of the two regulatory schedules to facilitate the regulatory process.

Appendix B CHENEY REPORT: U.S. ENERGY (IM)BALANCE

Figure B1 GROWTH IN U.S. ENERGY CONSUMPTION IS OUTPACING PRODUCTION

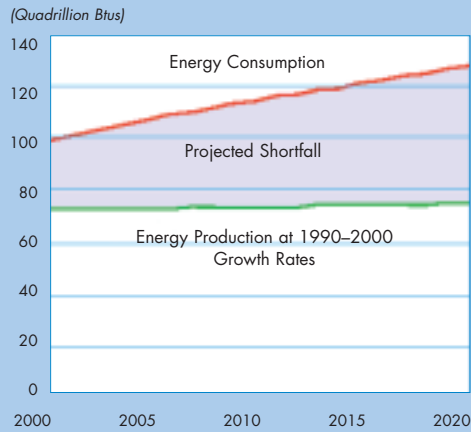


Figure B2 U.S. OIL CONSUMPTION WILL CONTINUE TO EXCEED PRODUCTION

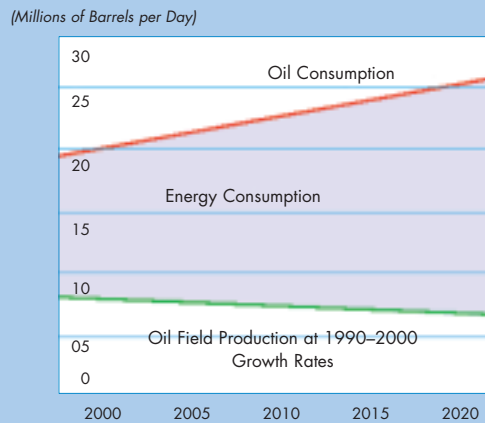
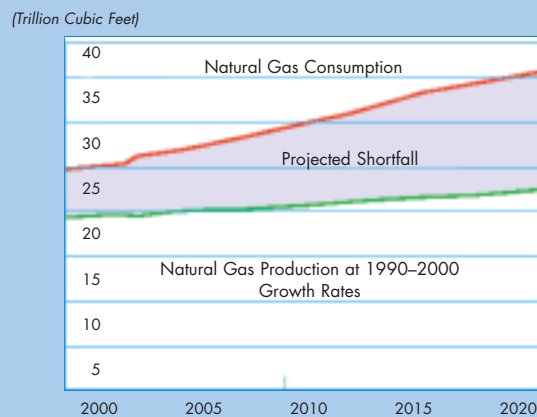


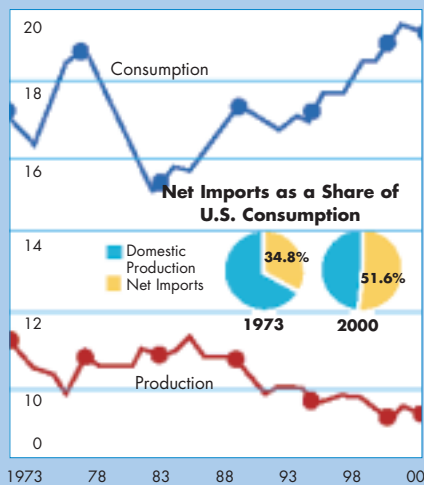
Figure B3 U.S. NATURAL GAS CONSUMPTION IS OUTPACING PRODUCTION



Appendix B CHENEY REPORT: U.S. ENERGY (I)M)BALANCE

Figure B4 DEPENDENCE ON OIL IMPORTS IS RISING

(Millions of Barrels per Day)



List of Abbreviations

- ALJ** Administrative Law Judge
- ANWR** Arctic National Wildlife Refuge
- Bbl/d** Barrels per day
- Bcf/d** Billion cubic feet per day
- CAMPUT** Canadian Association of Members of Public Utilities Tribunals
- CBM** Coal bed methane
- CEAA** Canadian Environmental Assessment Agency
- CSA** Canadian Standards Association
- EIA** Energy Information Administration
- FERC** Federal Energy Regulatory Commission
- FPC** U.S. Federal Power Commission
- INGAA** Interstate Natural Gas Association of America
- LNG** Liquefied Natural Gas
- MTBE** Methyl Tertiary-butyl Ether
- MOU** Memorandum of Understanding
- MMS** Minerals Management Service
- NEB** National Energy Board
- NEP** National Energy Program
- NIMBY** Not in My Backyard
- OPS** Office of Pipeline Safety
- Tcf** Trillion cubic feet

Daniel Yergin and Michael Zenker

Cambridge Energy Research Associates

A New Challenge for the U.S.-Canadian Natural Gas Industry

The natural gas industry meets a major responsibility for the United States and Canada—delivering 20 percent of the primary energy used in the two countries. Moreover, it has done so reliably and at relatively stable and low prices. This is in no small part due to the integration of the natural gas industry in the two countries, which has allowed buyers and sellers to move natural gas seamlessly across North American borders, matching resources and customers and spreading the use of this environmentally attractive fuel to all corners of the continent.

This integration has been one of the great success stories of cooperation between Canada and the United States and a major contribution to the overall economic growth and progress of the two nations. “More and more, we have a North American economy,” Pierre Pettigrew, Canada’s foreign minister recently observed. Nothing more clearly represents the truth of his statement than the way in which energy relations have developed between the United States and Canada over the last two decades.

Today, however, this integrated natural gas industry is being challenged by new market fundamentals, created by geological realities and new demand requirements. Understanding and meeting these challenges will be of central importance not only to the industry itself, and the consumers it supplies, but also the overall integrated economy that characterizes the United States and Canada in the twenty-first century. To meet future needs, it appears that the principle of continental integration will need to be expanded to include global integration.

The integration of the natural gas industries grew from a modest start—the shipment of relatively small quantities of Canadian gas to a copper smelter in Montana starting in 1953—to the point where Canada now represents the largest single continental source of natural gas for the United States, serving 15 percent of U.S. demand.

This mobility has given rise to further flexibility as transactions are tailored to need. The extent of this flexibility is often not understood. For virtually any volume, buyers can lock in prices for twenty years or for just one day in a wide range of locations around the continent. Producers have a range of options as well: from selling the gas themselves on the spot market, to locking in a price for multiple years, to storing the gas. Of course, this flexibility means more than just convenience; it assures security. Since natural gas can be rerouted from one region of the continent to meet demand

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spikes in another, no significant disruptions of natural gas supplies have occurred in North America in the last quarter century.

Such successes have bred high expectations, as policymakers and publics alike have grown accustomed to relying on natural gas to solve environmental challenges and to meet the bulk of growing electricity demand. Indeed, natural gas seems to have served both of these needs in tandem. Over the last few years, the United States has installed 200,000 megawatts of gas-fired power plants which offer very significant fuel efficiency and environmental gains when compared with older conventional coal or oil-burning plants. The scale of this addition is often not appreciated—it is equivalent to a quarter of the total installed capacity in the United States in the year 2000. This shift to cleaner-burning natural gas amidst rising levels of power consumption and economic growth was widely welcomed. Natural gas is also a critical component in the tapping of Canada's vast oil sands potential, which promises to make Canada one of the fastest growing oil producers in the world. Natural gas consumption to produce synthetic crude oil from oil sands is slated to more than double by 2015 from current levels.

Yet natural gas supply faces new challenges. On the one hand, U.S. supply is unable to keep pace with growing U.S. demand, and gas supply for North America as a whole is flattening. On the other hand, global natural gas reserves are growing and are now equivalent to global oil reserves. Moreover, projects are now in progress to invest an estimated US\$50 billion to bring these new global resources to North America via liquefied natural gas (LNG) later this decade. At the same time, new, longer-lead time continental supplies must be added to the resource base.

So it is with some concern that North America has been facing record level natural gas prices (even adjusting for inflation). Growing expectations for the use of natural gas are confronting the reality of higher and more volatile prices, which are set to become the norm for the North American market for several years. As those prices are attracting increasing attention, the industry must work quickly to maintain confidence in natural gas markets.

The root of the matter is supply. It has become clear that production of natural gas within the contiguous forty-eight United States and Canada is flattening. This comes at a time when a large increase in demand is on track, led by power generation. Economic growth will propel higher the utilization of the large, new fleet of gas-fired power plants, driving consumption of gas higher as well. Domestic supplies appear unable to keep pace with forecast demand.

The challenge before the United States and Canada lies between now and the arrival of LNG on North American shores. This is a multi-year period when Cambridge Energy Research Associates (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 ago, now we are facing a period in which natural gas risks becoming a seemingly scarce and highly priced fuel. Back then, gas prices were driven down partly by the integration of the U.S. and Canadian natural



gas industry, as well as natural gas deregulation and cross-border trade. Fundamental shifts in government policies, and the U.S.–Canada relationship in particular, made natural gas an abundant, cheap, and highly desirable fuel.

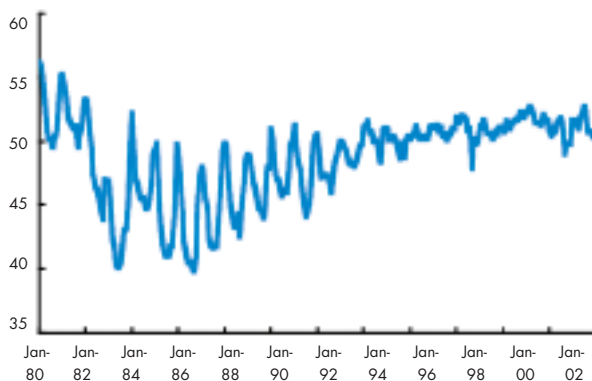
A Relationship That Almost Wasn't

The integration of the U.S. and Canadian natural gas industry—combined with the ability of natural gas deregulation and cross-border trade to promote competition and drive natural gas prices lower—is a striking example of successful market-oriented policy.¹ The long history of successful cross border energy trade, marked by today's unfettered energy market access across the U.S.–Canadian border, was borne of difficult decisions.

Both the U.S. and Canadian natural gas industries were, in the middle of the last century, heavily regulated and sealed from cross-border interaction. These barriers would fade, but only slowly. A hot political issue in Canada in the 1950s was which company would be allowed to build a gas pipeline from Alberta, the country's base of supply, to Eastern Canada, the center of demand, and whether that pipeline could serve the United States. In 1956, the government of Louis St. Laurent chose the all-Canadian route of TransCanada PipeLines Ltd. The first significant Canadian access to the U.S. market occurred in 1958 when TransCanada PipeLines, as part of its large new pipeline from Alberta to Montreal, was allowed to include a relatively modest spur to Minnesota and Wisconsin. The same year, the Westcoast Transmission Company began supplying natural gas to Vancouver, British Columbia, and the U.S. Pacific Northwest market. This was followed by the commissioning of a new, large Alberta-to-California pipeline in the 1960s. This great boom in development stagnated however when Canada's National Energy Board (NEB) refused to approve additional exports to the United States on the grounds that proven Canadian reserves were insufficient for expected Canadian demand. For much the same reason, Canada's National Energy Program (NEP) reinforced a made-in-Canada price policy by further increasing taxes on gas production and providing incentives to only Canadian-owned gas producers.

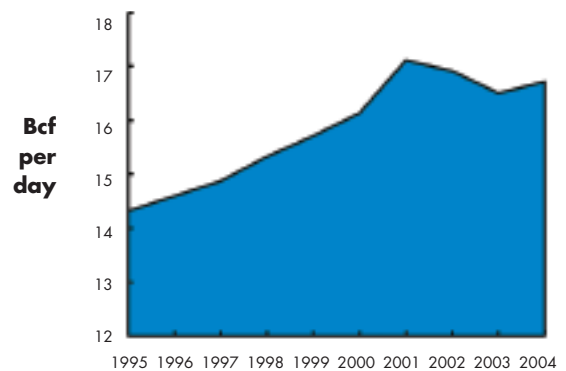
Concurrently, the United States was experiencing a natural gas crisis, the result of wellhead price regulation going back to the 1950s that discouraged supply. The move towards price deregulation was a bruising political battle in the late 1970s. With deregulation, however, gas supplies increased, gas prices declined significantly, and they

Figure 1 U.S. NATURAL GAS PRODUCTION



Source: US Energy Information Administration (EIA)

Figure 2 CANADIAN NATURAL GAS PRODUCTION



Source: Cambridge Energy Research Associates

remained low throughout the following decade. The undoing of key regulations turned out to be effective in eliminating the “shortage” because supplies had been kept artificially tight by prices that were kept artificially low.

Deregulation of the U.S. gas market provided some of the motivation for the 1985 dismantling of the NEP by Prime Minister Mulroney’s government. The subsequent *Western Accord* and the *Agreement on Natural Gas Markets and Prices* featured Canadian price deregulation and open access for shippers on the country’s natural gas pipelines. However, with expanded export access to the United States largely blocked, Canadian gas prices plummeted.

By the late 1980s, the Boundary gas project provided the first new access to U.S. markets for Canadian gas, with access this time to the supply-constrained U.S. Northeast. This provided Boston and New York City expanded supply to meet growing residential gas demand. Canadian suppliers finally had access to the very large U.S. market. Pipelines now linked Canada with all of the major U.S. markets including the Midwest, the Pacific Northwest, California, and the Northeast. Further liberalization of Canadian gas exports allowed cross-border trade to flourish.

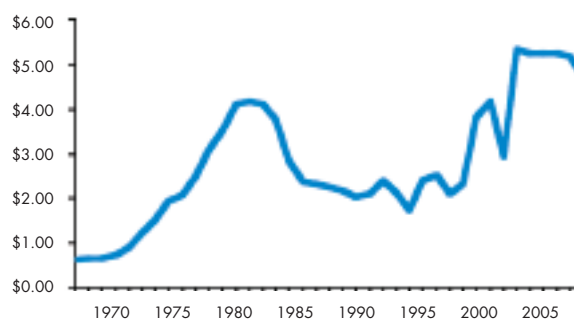
The integration of the U.S. and Canadian energy markets has been tremendously beneficial to both countries. The benefits flowed nearly as rapidly as the gas, with the United States in need of new supplies and Canada in need of new markets. In fact, the proliferation in use of natural gas in the United States would have been stymied without Canadian gas. In the United States, gas production growth had begun to slow by 1990 and plateaued by the mid-1990s (see Figure 1). Yet Canada, encouraged by access to continental prices, kept the continental market well supplied (see Figure 2). Indeed, Canada’s exports to the United States have increased 80 percent over the last 15 years, and today Canadian gas serves 15 percent of the total U.S. market. Additionally, Canada’s growing oil output from its vast oil sands region promises to become a large, stable oil source for the United States.

Naturally, Canada has also benefited from the relationship. Its links to the United States have allowed it to grow to become the third largest natural gas producer in the world and ninth largest oil producer. Energy represents over half of Canada’s merchandise trade balance. The oil and gas sector provides direct and indirect employment of an estimated 365,000 Canadians, the largest employer in the country. The sector pours c\$28 billion of capital spending into Canadian energy projects, while generating about c\$80 billion in annual revenues, representing nearly six percent of total Canadian GDP. More broadly, the extensive linking of the natural gas pipeline network between the two countries has ensured the stability of continental supply, favorable prices, and ease with which the industry has been able to transport volumes of natural gas to any corner of the continent. This relationship did much to help a growing role for natural gas in the North American economy.

A New, Joint Natural Gas Crisis

The symbiosis between the natural gas industries in both countries was a direct response to the crisis of the 1970s. The supply shortage the continent is witnessing now is

Figure 3 U.S. NATURAL GAS PRODUCTION



Source: Cambridge Energy Research Associates

The troubled near-term outlook for natural gas suggests that if policy is to respond to this situation, it must be executed quickly and be coordinated between the United States and Canada.

different from the artificial shortage of the 1970s—a shortage that was then resolved by the undoing of key restrictive regulations. The roots of today's shortage are the limitations of the North American resource base and the time lag before frontier supplies can get to market. Moreover, the current crisis will demand policymaking and strategy development in a market completely unlike the one of the past two decades. Today, energy infrastructure in the United States and Canada is highly integrated and co-dependent. Free and open energy trade between the two countries is profitable, and resource and transportation coordination is imperative. Clearly, the contours of the industry's landscape have changed over the last twenty-five years. It is in this new environment that the current shortage must be understood. The lessons of the past still provide a useful guide for policymakers; perhaps the first rule when confronting an energy issue is “do no harm.”

CERA's outlook of the natural gas industry reflects high prices. Between 2004 and 2008 prices will be approximately two-and-one-half times the average price level of the 1990s. The soonest the market could ease back to the \$4.00 per thousand cubic feet range—still double 1990s levels—would be after 2007, which is the soonest LNG could arrive in substantial quantities (see Figure 3). However, new LNG facilities are not guaranteed and if they are delayed, gas prices could continue their upward trajectory beyond 2007.

This outlook projects the longest sustained real prices in the history of the natural gas market. The reverberations of this are already flowing down throughout the economy. Higher natural gas prices are translating into higher power prices in many regions of North America. Key North American industries are being hard hit: petrochemicals, pulp and paper, ammonia and fertilizers, and primary metals. Gas utilities are increasingly concerned about the impact on their broader range of customers. Natural gas is adding to a growing concern that higher energy prices can become a drag on the U.S. and North American economy—among other things—prompting U.S. Federal Reserve Chairman Alan Greenspan to endorse the import of LNG.

Such concerns over higher prices will inevitably raise issues of public confidence, especially as they coincide with specific issues, including the California crisis of 2000 and 2001, that have fostered mistrust about manipulation of energy markets.² Most recently, natural gas price spikes in winter 2003–2004 gave rise to a new set of calls for investigations into possible price manipulation.

Yet, despite this abundance of concern, there lacks political consensus on how to provide relief to the natural gas market. There is disagreement over the causes behind higher natural gas prices; voters and consumers question the capacity and roles of government and industry in mitigating the effects of higher prices; and indeed, policymakers lack a clear constituency to motivate their interest in doing so. This lack of consensus potentially threatens to delay the development of domestic gas resources and slow progress toward the opening of new LNG projects that could bring market relief after 2007. Thus, there is a clear risk that an “un-virtuous” cycle may ensue, where higher prices breed suspicion and indecision, further hampering the development of new supplies that would moderate prices.

An Opportunity to Mitigate the Crisis

The troubled near-term outlook for natural gas suggests that if policy is to respond to this situation, it must be executed quickly and be coordinated between the United States and Canada. In May, the joint NEB/FERC Memorandum of Understanding made explicit

this need for joint action, observing, “Coordination of their efforts could promote the public interest through increased efficiency, expedited and coordinated action on significant infrastructure projects.”

In its recent study, *Charting a Path: Options for a Challenged North American Natural Gas Market*, CERA identifies strategic measures both countries can draw upon to manage natural gas demand and exposure to price volatility:

- Effective customer education and flexible gas procurement mechanisms by utilities
- Fuel flexibility for new and existing electric power capacity
- Hedging and process efficiencies by industrial users, combined with re-examination of capital investment plans
- Resolution of the mismatch between short-term contracting and the need for longer-term commitments to underpin new natural gas infrastructure
- Public education and explanation of the gas industry

A Common Approach to Resource and Transportation Issues

Political leaders, policymakers and industry must work to encourage new supplies as well. While growth of new gas supplies is limited in areas already open for exploration and production, there are known gas resources in areas that are currently off-limits, encumbered, or are remote. Land access will continue to be a key issue for natural gas production, especially in the U.S. Rockies, many federal lands areas, and many sensitive offshore areas such as the Eastern Gulf of Mexico and the West and East Coasts of the United States and Canada. Both political and policy leaders will be challenged to balance choices between land access restrictions and regulatory delay with the inevitable consequences of higher natural gas prices if no further lands are made available for gas production. The recent National Petroleum Council *Natural Gas Study* articulates the U.S. domestic supply options available to policymakers.³

Since the gas market is expected to remain very tightly balanced over the next five years, efforts should first be focused on actions that boost supply or reduce demand over that period. Gas production can be accelerated 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 Importance of Planning for Frontier Supplies

Since the gas market is expected to remain very tightly balanced over the next five years, new frontier supplies of natural gas are needed to supplement production from existing producing regions. New potential gas regions include Arctic gas from Alaska and Canadian Arctic regions, Atlantic Canadian gas, unconventional gas supplies in the United States and Canada, and LNG from overseas sources. Decisions, policies, and planning must begin now to bring forward these longer lead time new resources.

Alaskan gas is a potentially large new supply source for North America. The Alaskan North Slope currently possesses an estimated 40 trillion cubic feet (Tcf) of known reserves. In addition, the North Slope and Beaufort Shelf areas of Alaska alone are estimated to have an undiscovered potential of 140 Tcf. Together, these resources represent several years of U.S. and Canadian consumption. But tapping these resources requires considerable investment in a massive pipeline project—one that is unlikely to move forward without encouragement from the state of Alaska and

the U.S. federal government. The project will also require careful coordination with Canadian regulators and policymakers to gain access into or through Canada and to connect with the Canadian pipeline systems. In the end, the rationales for such a project are sound, and both countries should develop a coordinated review and permitting process for the development of Alaska gas.

Other North American frontier resources should be examined on a similar basis using consistent metrics. To this end, environmental and economic impacts should be assessed in a joint fashion. Mechanisms to site and permit infrastructure to access these new resources must also be consistent and transparent. Decisions that overly favor one region or country do not make sense in an integrated market.

In much the same way, policymakers in the United States need to work closely with their Canadian partners on the siting, permitting, and regulation of new LNG regasification facilities. Over the next five years, the development of new LNG facilities will bring significant supplies to the North American market, reducing prices and volatility. In fact, if unimpeded, LNG will become the third largest gas supply source in North America, after Western Canada and the U.S. Gulf Coast. It will be important to facilitate this new, long-term resource.

Avoiding Reactive Policy, Crafting a Joint Solution

The expected prolonged period of higher and volatile natural gas prices will provide new challenges to both the natural gas industry and policymakers. By anticipating this market environment, industry participants and policymakers can take steps to help mitigate the impact on their consumers, their industries, their environment, and their economies. Thirty years of experience also alert us to the additional risks of a political backlash. Call it the “California Phenomenon,” in which finger pointing and the search for villains work against market adjustment and the cooperation necessary to make a difficult situation better. Any shortage can eventually be resolved by markets—by investment, technology, and adjustment. The current situation is provoking a range of adjustments already, including new supplies, alternative power technologies, and shifts by consumers. But in contrast to the long history of the domestic natural gas industry, the time lags for new, large sources of natural gas supply are much longer. It is essential to identify policies that facilitate this adjustment and do not retard it—that encourage flexibility, not rigidity.

The real challenge to the U.S. and Canadian industry and policymakers is to work quickly to address this situation. The acrimony and charged investigations that can be generated by an energy market suddenly out of balance will not result in an easing of high and volatile prices. Rather, critical decisions, some implemented for just a few years, could provide some real relief for consumers in the coming few years and ensure the place of natural gas as a fuel for long-term economic growth and environmental quality. The need—and the fundamentals—are all too apparent.

Notes

1. Yergin, Daniel and Joseph Stainslaw, *The Commanding Heights, The Battle for the World Economy* (New York: Touchstone, 2002), p 365.
2. In a February 2004 poll of 2000 Americans and Canadians conducted by the Canada Institute at the Woodrow Wilson Center.
3. “Balance Natural Gas Policy: Fueling the Demands of a Growing Economy,” National Petroleum Council, Committee on Natural Gas, September 2003.

Paul Ziff

North American energy consultant Paul Ziff is widely respected for his well thought-out and critically analyzed views. Ziff is a graduate of Harvard, and attended the Institut d'Études Politiques and the Université de Paris (Sorbonne). He has testified as an expert witness on natural gas production and transmission issues, in Canada before the National Energy Board, the Court of Queen's Bench, and various regulatory boards in Canada and the United States. He was director of gas pricing for Alberta Petroleum Commission, a key energy agency of the Alberta government, where he was responsible for the design and implementation of initial cost of service procedures for the 1975 Federal-Alberta Energy Pricing Agreement. He has given speeches on upstream issues, natural gas outlook, and energy issues around the world, including the World Petroleum Congress in Rio de Janeiro in 2002, corporate strategy meetings, and a variety of government and technical organizations. He founded Ziff Energy Group in 1982 to advise Canadian, U.S., and international clients. Ziff Energy Group currently has E&P clients in 10 countries on four continents and has assembled the largest operations database in the world (3000 fields).

Daniel Yergin and Michael Zenker

Daniel Yergin is a highly respected authority on international politics, economics, and energy. He received the Pulitzer Prize for General Nonfiction for his work *The Prize: The Epic Quest for Oil, Money & Power*, which became a number one national best seller and was made into an eight-hour PBS/BBC series. His latest book, *The Commanding Heights: The Battle for the World Economy*, with Joseph Stanislaw, has received wide attention for its analysis and narrative of how the “world is changing its mind about markets and government.” Yergin also received the United States Energy Award for “lifelong achievement in energy and the promotion of international understanding.”

Yergin received his B.A. from Yale University and his Ph.D. from Cambridge University where he was a Marshall Scholar. He previously taught at the Harvard Business School and the Kennedy School of Government at Harvard. Yergin is a trustee of the Brookings Institution and a member of the Committee on Studies at the Council on Foreign Relations. He is a member of the board of the U.S. Energy Association and a member of the National Petroleum Council. He is also a member of the U.S. Secretary of Energy's Advisory Board and chaired the U.S. Department of Energy's Task Force on Strategic Energy Research and Development. He is the co-founder and chairman of Cambridge Energy Research Associates. With 200 employees around the world, CERA is one of the world's leading consulting and research firms in its field.

Michael Zenker is Senior Director, North America Natural Gas Service at Cambridge Energy Research Associates (CERA). He has more than 15 years experience in the energy industry, including natural gas price and price basis forecasting, demand modeling, pipeline and storage analysis, and regional gas flow analysis. Zenker also has experience in the power sector. He assists clients with business strategy, asset valuation, LNG strategy, pipeline and storage capacity investment decisions, and procurement strategy. He holds a B.S. and an M.B.A. from the University of California.

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**Woodrow Wilson
International
Center
for Scholars**

The Canada Institute

One Woodrow Wilson Plaza
1300 Pennsylvania Avenue, NW
Washington, DC 20004-3027
www.wilsoncenter.org/canada
canada@wwic.si.edu
T (202) 691-4270
F (202) 691-4001



**Canada
Institute on
North American
Issues**

31st Floor, TD Tower
66 Wellington Street
Toronto, Ontario M5K 1E9
[www.operation-dialogue.com/e/
canada_institute.html](http://www.operation-dialogue.com/e/canada_institute.html)
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