



Canada-U.S. Energy Relations: Overview and Commentary

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Background/Introduction

Canada and the U.S. have been friend and foe, adversary and associate, challenger and supporter—everything, short of family, over their history. Thus there have been periods of conflict, where national interests of one party dictated action that was detrimental to the other¹. However, since the mid-1980s, the energy relationship has been one of growing cooperation and integration. Though there are examples of significant issues, they have, more often than not, been resolved by negotiated compromise. This is not typical of all trade relations between these two countries who, in spite of their well-known “longest undefended border in the world” have shown themselves capable of engaging in major commercial disputes requiring adjudication at international levels². A few salient points illustrate the evolution of the energy relationship.

- After a long period in which governments of both countries actively intervened in both energy markets and trade, these markets were largely deregulated in the 1980s. This allowed commercial interests to define cross-border energy relations and trade to a greater degree than ever before.
- The Free Trade Agreement of 1989 and its successor, the North American Free Trade Agreement³ of 1992, included energy sources and petrochemicals with a clear intent to foster market rule, with limited exceptions that could be triggered by supply shortages, conservation concerns, price volatility, and matters of national security. Even in exceptional circumstances, fair treatment for export customers was assured through proportionality provisions that preserve some access.
- Canada’s National Energy Board (NEB) and the U.S. Federal Energy Regulatory Commission (FERC) signed a memorandum of agreement that was intended to

¹ In the 50s and 60s, the United States restricted imports of oil from all sources, although Canada and Mexico were less constrained than other exporters. In the mid-80s, Canada’s National Energy Program imposed taxes on certain energy exports that increased costs to the U.S.

² Of recent examples, the most dramatic is the closing of the U.S. border to Canadian beef, although the case of softwood lumber may be the most clearly commercially motivated dispute.

³ The NAFTA includes Mexico; however, Mexico reserved some significant aspects of energy activity to itself and, in any case, is not directly relevant to the current discussion.

ensure a cooperative approach and the implementation of “conscious parallelism” in the approaches of the two regulators. Regular meetings of the staff of the two national regulators as well as increased frequency of meeting of the leaders in informal venues such as the annual meeting of the Canadian Association of Members of Public Utility Tribunals (CAMPUT) enable greater understanding of differing points of view.

- The tri-lateral North American Energy Working Group meets twice a year and subgroups meet to define issues and prospects for discussion.
- There have been no occasions of disagreement to date that required either interpretive or resolution processes under NAFTA.

Given this history of relatively quiescent energy relations between the two countries, at least over the past two decades, an obvious question arises as to whether a discussion of future relations need include the energy sector. History may not justify complacency about the future. We will consider oil and oil sands, natural gas, and electricity in some detail, with less emphasis on coal and nuclear, since these latter have not had cross-border issues associated with them; yet they are relevant to ensuring adequate energy to support growth. Table 1 sets out consumption, production and reserves, in the two countries. Table 2 below, compares exports and imports in 1991 and 2003. Both of these tables are included essentially as background to the discussion. For perspective, the U.S. population is roughly 9 times Canada’s and GDP is a little over 12 times greater.⁴

Table 1

	2003	Canada	U.S.	US/Canada
Energy Demand				
Oil (thousand bbl/day)		1799.7	20043.5	11
Gas (bcf)		2543.5	21893.7	9
Coal (million short tons)		2.9	1094.1	372
Electricity (TWh)		561.1	3675.1	7
Energy Supply				
Oil (thousand bbl/day)		2154.5	8837.9	4
Gas (bcf)		6673.4	19105.6	3
Coal (million short tons)		68.5	1069.5	16
Electricity generation (TWh)		567.8	3848.0	7
Electricity Capacity (GWh)		106.6	953.2	9
Reserves				
Conventional Oil (billion bbl)		4.5	22.7	5
Oil Sands (billion bbl)		174.5	-	-
Gas (tcf)		58.7	153.1	3
Coal (billion short tons)		5.0	497.7	99

⁴ Tables adapted from “Canada and the U.S.: A Seamless Energy Border?” Paul G. Bradley and G. Campbell Watkins, C. D. Howe Institute Commentary No. 178, April 2003. Population in 2003 was 291 million in US, 32 million in Canada, GDP in billions of 1990 \$US, 8470 vs. 695.

Source: Statistics Canada, AEUB, EIA, and CERI. Reserves are for 2002, Coal for 2001, 2003 Electricity Capacity is estimated.

Crude Oil is traded in international markets that establish overall prices. Both the U.S. and Canada import about half of their total requirements of crude oil. In 2003 Canada was the US's largest supplier, providing about 15% of imports. For both countries, the international market sets the price and virtually all oil is sold on short-term contracts. Both countries are part of the 26-member International Energy Program under which supply disruptions of significant magnitude trigger commitments to share available supplies. Conventional crude oil production is mature and declining in both Canada and the United States. In Canada, this decline is likely to be offset by offshore development and oil sands.

Table 2
Exports and Imports Canada and United States
(1991, 2003)

	Exports to U.S.			Imports from U.S.			7 Trade Balance
	1 Quantity	2 Value	3 Unit Value	4 Quantity	5 Value	6 Unit Value	
Natural Gas							
	(Bcf)	(MM of \$)	(\$/Mcf)	(Bcf)	(MM of \$)	(\$/Mcf)	(MM of \$)
1991	1583	3590	2.27	15	32	2.19	3558
2003	3568	26083	7.31	294	2494	8.48	23589
Crude Oil							
	(MMbbl)	(MM \$)	(\$/bbl)	(MMbbl)	(MM \$)	(\$/bbl)	(MM of \$)
1991	274	5974	21.82	1.5	39	25.82	5935
2003	561	20414	36.40	7.0	218	31.10	20196
Electricity							
	(GWh)	(MM \$)	(cents/kwh)	(GWh)	(MM \$)	(cents/kwh)	(MM \$)
1991	24614	557	2.3	6283	50	0.8	507
2003	31357	1852	5.9	24795	1063	4.3	789

Source: Statistics Canada, EIA, CAPP.

Natural Gas is primarily traded within the North American market, which currently determines prices across the continent. However, there is increasing potential for the expansion of LNG trade, which would result in a global contribution to price determination. Because it is cleaner burning with respect to both local pollutants and greenhouse gases, natural gas is a preferred fuel, the consequence being tighter markets and higher prices that may last for some time. This parallels higher prices in world oil markets and holds implications for economic activity.

Electricity is traded both inter-provincially and internationally through a North American Grid that, in spite of occasional problems is a remarkable example of cooperative governance. Its operation is governed through the North American Reliability Council (NERC), a non-governmental group whose members include all Canadian provinces, Mexico's electricity regulator and representatives of the private sector. Restructuring in

electricity markets is proceeding at varying speeds in numerous jurisdictions, the complexity is beyond our scope here.

Coal and Nuclear are important to meeting the energy needs of both Canada and the United States. They each have been subject to criticism on various grounds and there are those who believe they should have no part in meeting the energy needs of the future. We believe that is shortsighted and impractical, effectively impossible. It is impractical because both energy sources are highly cost effective in appropriate configurations. As well, coal fuel use can be improved through the development of clean coal variants and through technical enhancements to minimize emissions. The Nuclear option, while currently acceptable to half or more of the population, does have opponents based on cost, safety, waste storage, and possible proliferation. While there is some merit in the concerns, there are also ways to ameliorate those concerns. Given the low full cycle cost of nuclear compared to other fuels and the significant emission-based advantages, we believe nuclear is a legitimate option to meet the continent's energy needs. Nuclear may be the most "under-forecast" source of energy for the 21st century.

Key Issues--General

The cross border issues in energy are not limited to things associated with trading activities. Important concerns arise from each country's plans to meet their needs within their own borders. One basic problem that affects Canada-US relations, as it affects other international relationships, is that sources of energy are usually not found where they are most needed in end-use. They must be transported and transformed, involving land and infrastructure issues that require time to resolve, and that could lead to shortages, requiring the demand side of the market to accommodate the necessary adjustment. For example, while natural gas supplies from Northern Canada and Alaska may ensure a continental balance for many years, the pipelines may be delayed, resulting in imbalances in the market. As well, the decline in conventional fossil fuels may eventually cause real shortages. While this may not happen for 50 to 75 years or longer, when declines begin, they may be relatively rapid; so adequate planning could be important.

Recently, analysts have been suggesting that energy prices may settle in at higher levels than have been realized over the past decade or so. This has been referred to as a step change in natural gas prices, and the likelihood is that oil prices have experienced the same phenomenon. The tightening supply demand balance and the related higher prices are issues that could affect the economic well being of both Canada and the United States. Both countries need to acknowledge the emerging environment to enable the development of both domestic strategies and measures that could be undertaken cooperatively to meet the challenge. Shortages and associated higher prices may lead to challenges to the existing allocation of resources within North America and to calls for protectionism and domestic subsidies⁵.

⁵ A recent example is the request from the Province of New Brunswick to the NEB to alter the basis for approval of short-term gas exports.

The Kyoto Protocol, regardless of its merits, is likely to have some impact on the future supply or price of fossil fuels. This could have the direct effect of exacerbating the imbalance in the market. However, it could also have an indirect effect, because there is uncertainty as to how Canada plans to achieve the Kyoto objectives and that uncertainty itself could inhibit some investment. If meeting the objectives of the Kyoto Protocol adds costs to Canadian energy supplies in the domestic market, there could be a general deterioration of competitiveness relative to other trading nations, particularly the United States, which has not ratified Kyoto.

Key Issues--Specific

Canada's prolific oil sands resource can contribute to future continental oil supplies. However, their development will require investment in infrastructure, again involving pipelines but also specialized refining capacity, to handle the emerging slate of products from the heavier crude. There is a potential advantage to Canada in providing this capacity, since it would facilitate adding value to exports. However, in the absence of policy direction, the decision will be influenced by the availability of financing, and other commercial considerations. This could result in such investments being made in the U.S. Significant requirements for water and natural gas are also challenges to oil sands development.

While Natural gas supply has emission-related advantages, there are land-based environmental concerns that can generate opposition to its development. These could delay critical developments in Canada's north, offshore British Columbia, coal bed methane, and terminals to receive liquefied natural gas.

Regulatory processes are justified by benefits of various kinds that might not otherwise be realized. The complexity of these processes, particularly when they cross jurisdictions, has raised concerns that delays and costs might be higher than necessary. More effective regulation with lower costs might be possible if the processes could be rationalized. For example, federal and provincial overlap in environmental areas has long been recognized. Attempts to rationalize have had some success but more could be done. Electricity markets and pipeline development offer other examples where intra- and even inter-national streamlining could pay dividends.

Choices for Canadians

There are two areas of choice relevant to this discussion--choices that relate directly to the trading relationship with the United States and others that relate to the domestic production and use of energy. While the latter may seem less relevant to our relationship with the U.S., domestic decisions in both countries could have a significant effect on the need for and volume of trade.

- Canada is one of the highest per capita users of energy in the world. This is partly attributable to our climate, our size, and our geography. While these things argue

- that it is not entirely fair to characterize Canadians' level of energy use as profligate, there is scope for improvement at both individual and societal levels. Such change requires ongoing education with respect to the benefits of reducing energy use. From simple improvements in home insulation, which require little investment, to expensive initiatives that are often deferred even though they are sometimes excellent financial investments, there are numerous actions that might be taken if they were better understood by individual citizens. The demand side of the energy market deserves more effort in both Canada and the United States.
- The supply of primary sources of energy occasionally involves conflicts with individuals, communities, and special interest groups. Sometimes the concerns have a legitimate basis. In other instances, the concerns stem from lack of understanding of the impact of energy development, which has been significantly reduced by modern technology. In Canada, these conflicts have been resolved through independent arbiters, the National Energy Board where federal jurisdiction is involved, and provincial boards and commissions when the jurisdiction is provincial. With all their difficulties and delays, these agencies have been effective in Canada, particularly as compared to the more litigious approach in the U.S. Information and clear communication remains critical.
 - Environmental issues are often in conflict with energy needs. Clean sources of energy are not sufficient to meet the needs of the continent, and this has led to calls for command and control approaches that arbitrarily remove the less clean sources from consideration. Such dramatic action should only be considered with full knowledge of the economic costs involved.
 - Nuclear Power provides another example where knowledge is critical. While public opinion is split on the desirability of nuclear power as an energy source, some of the opposition is likely attributable to a less than full understanding of cost overruns, safety and storage issues, possible proliferation, and vulnerability of nuclear facilities. Nuclear energy is cheap and clean. If or when associated issues such as waste handling and nuclear proliferation concerns are resolved by government and industry, nuclear could be an attractive source of future energy.
 - Yet another knowledge example involves the degree to which alternate energy sources should be relied on—particularly those from renewable energy sources. Some renewable energy sources are also desirable because of lower emissions, although they may have other environmental impacts. However, the scope for their development may be more limited than many think. The degree of focus on renewable sources of energy is a choice that should be made on the basis of objective information about both benefits and costs, as well as how much, realistically, those sources of energy can contribute to the solution.

Potential Flash Points

- The supply demand balance differs for each fuel. In the case of natural gas, adequate supplies for Canadians have prevented complaints under the NEB's established procedures or through political channels. However, during the period prior to start-up of the Mackenzie Valley pipeline, tighter supplies accompanied

by higher prices could lead to calls for protecting local markets through diversion of exports.

- A combination of tighter energy markets, higher prices and winter peaks that could reach record levels, could precipitate a government response that directs remedial action in some way.
- Higher energy costs related to structural and seasonal pressures in both oil and natural gas markets could become political issues leading to calls for government subsidies of energy costs.
- Recent trade disputes have led to suggestions that friction in other areas should be dealt with by playing the more powerful energy card, NAFTA notwithstanding.

Options/Recommendations

- After two decades of relative energy balance, we could be entering periods of occasional shortage. That suggests there is a need to increase resources directed at analyzing resource issues and developing strategies and policies to address both demand and supply in the resource sector.
- While regulators in both the United States and Canada have been working and communicating more cooperatively in recent years, there may be an increasing need to address planning issues jointly, particularly in electricity markets, to ensure the most effective cross-border relationships.
- In electricity markets, inter-provincial and interstate trade might be enhanced, to the benefit of both Canada and the U.S., through the development of stronger technical and market links between provinces. This may not require identical market structures in each jurisdiction; however, understanding the benefits of alternative market structures within and between jurisdictions would be useful.
- While there may be a strategic advantage in including energy in a broadly based review of trading relationships with the U.S., there could be dangers in attempting to tie resolution of problems in other areas to access to energy sources.
- We recommend governments at all levels resist pressure to respond to problems in markets either directly or through subsidizing energy costs. Such responses can interfere with the market signals that might otherwise bring the market back into balance. Special cases of hardship can be addressed directly.
- Efforts to meet the Kyoto requirements may best achieve long-term objectives if, after taking advantage of the easy, low-cost improvements (low hanging fruit in daily activities and commerce) they focus primarily on technological advances to enable reduced emissions at minimum cost to the economy.
- For the longer term, the significance of meeting increasing energy needs efficiently while minimizing impact on the environment, suggests that both countries need to lengthen their planning horizons and open their thinking to all possibilities. This requires acknowledging long lead times and possible shortages of fossil fuel resources sometime during this century, and accepting the need to acknowledge all possible contributors to resolving the problem, including nuclear energy and coal, as well as alternate energy sources such as solar, tidal, wind, geothermal and conservation. No less important will be efficiency improvements

in using energy to slow the growth of demand without unduly lowering living standards.

- Policy choices relating to both the demand and supply of energy can range from total command and control to market-based instruments that specify desired outcomes and allow the system to determine how they will be achieved. These choices should balance short- and long-term needs, consider all benefits and costs, and acknowledge the success of market approaches in the past.