



Supply Security and Environment As Driving Forces in Canada-US Energy Relations

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Introduction

While political parties of the right and left in Canada and the US will differ somewhat in their efforts, every governing party over the next decades will grapple with two major energy policy imperatives: ensuring long-run supply security and decreasing environmental threats. In this briefing note, I discuss the implications of these imperatives for the evolution of the two countries' energy systems, focusing especially on the question of energy system integration.

Background

The OPEC-associated oil price shocks of the 1970s triggered the typical market response: energy demand grew more slowly and sometimes declined; natural gas, coal and renewables substituted for oil; oil exports increased from non-OPEC countries like Norway, Mexico and Russia; and US dependence on OPEC oil decreased. However, the resulting downward pressure on oil prices in the late 1980s and 90s produced the opposite response: global oil demand rebounded with particularly strong growth in the US and developing countries like China and India; and US dependence on OPEC oil started to rise. In this decade, oil prices are once again on the rise and the US worries increasingly about its growing dependence on oil imports, especially as political and military conflict in the oil-rich Middle East continues to destabilize international oil markets. If current trends continue, the US is projected to become 50% dependent on oil imports in the next decade or two.

Over the coming decades, therefore, the US will pursue two key energy strategies: greater reliance on petroleum imports from sources outside the Middle East, especially its immediate neighbors to the north and south; and development of domestic alternatives to petroleum such as coal, renewables and possibly (but not likely) nuclear. This energy strategy will provide a substantial opportunity for Canadian exports of oil from Alberta's huge oil sands reserves, natural gas from the Rocky Mountain areas and the Arctic, hydroelectricity from provinces like Quebec and Manitoba, and some coal in special circumstances. At the same time, the US will turn increasingly to the development of its own massive coal reserves, which already produce over 50% of its electricity and can be converted into synthetic gasoline using technologies developed in Germany in the 1930s and still applied in South Africa today.

The world energy system is 85% dominated by fossil fuels, whose combustion contributes to local and regional air pollution but is also suspected of disrupting global climate with the accumulation of greenhouse gases in the atmosphere. The Kyoto Protocol of 1997 – the first binding international agreement to reduce greenhouse gas emissions – applies mostly to industrialized countries and will not achieve a dramatic reduction in global emissions by its target date of 2010. However, negotiations for the post-Kyoto period will soon begin and the goal is to involve all key players including India and especially China. If substantial global progress is to be achieved in reducing emissions (to the level that will eventually stabilize global atmospheric concentrations) profound technological change is required in energy systems over several decades. This will involve increased use of renewable sources of energy. It may involve more nuclear power, although fears of domestic accidents and nuclear weapons proliferation could thwart such an effort. It will definitely involve the extraction of energy from fossil fuels in ways that do not release carbon into the atmosphere – using technologies that are already proven but not widely applied because they are slightly more expensive in a world market that does not yet invoke financial penalties for emitting greenhouse gases. The gasification of coal (and other fossil fuels) in order to produce electricity, clean-burning gaseous fuels and perhaps hydrogen, with the resulting carbon dioxide available for permanent underground storage, is likely to be a key technology, especially given the abundance of coal both on a global scale and in key countries such as the US, China and India.

While the US refused to ratify the Kyoto Protocol, it nonetheless has enacted several policies at a national and especially state level to lower greenhouse gas emissions. The ambitious vehicle standards in California, New York and several other states are notable, as are the renewable portfolio standards in about 20 states that ensure a minimum market share for non-emitting, renewable sources of electricity. The federal government and industry have launched several initiatives including a \$1 billion project to provide non-carbon emitting energy from coal. Indeed, some analysts suggest that the US has done more since 1997 to reduce greenhouse gas emissions than Canada even though it is the latter who ratified the Kyoto Protocol in 2002. Regardless of whether the US government makes a commitment after the next round of international negotiations, greenhouse gas abatement will be a growing component of US energy policy at the federal, state and local level in the coming decades. This will continue to provide export opportunities for Canadian natural gas – the cleanest burning fossil fuel – and electricity generated by hydropower and other renewables. It will also provide partnering opportunities for Canadian companies in technological development – such as clean coal initiatives by electric utilities in western Canada and the US. However, it will also present challenges for the export of synthetic and refined energy products based on Canadian oil sands unless – after incorporating technological mechanisms for the capture and storage of carbon dioxide – these are still able to compete with clean energy sources in the US.

Key Issues for Canada

These twin policy imperatives of supply security and environmental protection present both opportunities and challenges for Canada.

On the one hand, these imperatives provide expanded opportunities for the export of Canadian natural gas, oil and electricity to the US, further integrating the energy systems of the two

countries. Energy exports could be a significant driver of economic growth to enhance Canada's standard of living. Collaboration in the development and application of cleaner energy technologies could also be a driver of economic growth if this results in significant opportunities for technology export. For example, clean coal technologies developed in the US and Canada will be available for export to China, India, and other countries, perhaps as part of major joint ventures in electricity generation or production of cleaner fuels (methanol, hydrogen, dimethyl ether).

On the other hand, Canada is not assured of a priority position as an energy exporter to the US. Mexico and Venezuela nearby should be competitive suppliers of petroleum products, especially if Venezuela develops its substantial oil resources. The recent progress in marketing liquefied natural gas (transported by ship) opens North America to competition from distant natural gas supplies in Russia, Indonesia and elsewhere. At the same time, the US will be aggressively developing its domestic coal and renewable resources. Declining costs as new technologies mature could make energy markets very competitive within a decade or two, putting downward pressure on prices and presenting competitive challenges for exports from Canada.

Potential Flash-Points

While there can be substantial benefits to an increase in Canada's export of energy to the US, some will not see it that way. Some Canadians will argue that energy trade with the US is an exploitative relationship in which the US consumes our non-renewable resources at prices that do not reflect their true long run value. Some will argue that energy integration with the US is an abrogation of sovereignty, in which US policies in electricity market structure and energy taxation limit Canadian control over our own industrial structure and wealth generation from our own natural resources. Some will argue that energy system integration subjects the Canadian economy to erratic price swings and even electricity blackouts associated with the manipulated, poorly managed US energy system. Some will argue that energy system integration with the US constrains Canada's ability to follow a more progressive path with respect to technological development that promotes environmental protection.

Yet, while some see too much energy integration with the US as a source of problems for Canada, others see integration as a strategic policy lever. In particular, there are those who believe that Canada should use its energy exports to the US as a threat for the extraction of more favorable terms of trade in other areas such as softwood lumber. Again, this is linked to the assumption that we are being generous in selling our energy to the US, that somehow they benefit more than we from our energy trade.

None of these positions are convincing in my view. First, because people have a generally static view of resources and technologies, they tend to assume that any particular resource is more valuable to an economy than it really is on a long run basis – after enough time has passed for technological innovation and resource substitution to occur. Our energy resources may appear to be extremely valuable to the US economy from a static assessment. In the long-run, however, this is unlikely. There are many different ways to produce energy. Globally, there are perhaps over 1,000 years of coal left at current consumption rates, and existing processes already produce

synthetic natural gas and synthetic gasoline from coal at prices not much higher than today's prices for these final products. The US has a lot of coal. So do potential trading partners. This undermines the argument that Canada is doing the US a favor by selling it energy and instead supports the argument that both parties gain from the trade.

Second, erratic price swings are the nature of commodity markets like energy. The general public, media and some interest groups tend to view periods of high prices as evidence of market manipulation, and seem to be unaware that after correcting for inflation average energy prices have trended neither upward nor downward for the past century. At times, some countries – including Canada for a time – have controlled and even subsidized domestic energy prices, but this has never proved satisfactory. Domestic consumers end up consuming more of a product that could have been exported for greater revenue, which leads to slower energy productivity gains and greater environmental harm. In a market economy, high or low prices provide important signals to investors and consumers about the relative scarcity or abundance of a commodity or manufactured product, which helps in turn to bring any given market back toward an equilibrium in which prices reflect long-run production costs.

Third, although some say the opposite, electricity market reform in Canada is not driven by decisions taken by US policy makers like the Federal Energy Regulatory Commission. Reforms in Canada parallel worldwide efforts to achieve the economic efficiency and risk reduction benefits of competition, while recognizing that electricity is a special commodity in that demand and supply must be instantaneously balanced at all points of the grid. The industry model that is emerging worldwide is one that combines an element of central planning with wholesale competition between independent power producers, while transmission and distribution continue to function as regulated monopolies. In this model, there is no need to privatize major infrastructure assets like electricity generation plants (nuclear or hydropower), high voltage transmission lines and lower voltage distribution networks. Also, Canadian consumers can be assured special access to our lower cost hydropower resources in certain provinces, simply via long-term, fixed price contracts – just as public ownership (Bonneville Power Authority, Tennessee Valley Authority) and fixed price contracts will continue to be a reality of the US system (although I have already argued why the lower prices are undesirable). And this new model will deliver the same or better reliability as the old monopoly system, although there will be inevitable problems from time to time as system operators learn how to address the complexities of greater integration between systems. In general, increasing electric system integration has provided greater reliability and economic benefits, and it will continue to do so. In Canada, critics on the left should learn from their counterparts in northern Europe who have largely embraced greater integration and competition of electricity markets.

Recommendation

Although this is often unrecognized, the tendency toward greater integration of the Canadian and US energy systems over the past 20 years has brought many benefits to Canada in terms of economic growth and reliability. In the coming decades, this trend is likely to continue as the US pursues energy supply security and both countries grapple with the challenges of transitioning toward a cleaner energy system that no longer emits greenhouse gases. From a policy perspective, Canada needs to take an active role in ensuring its potential to supply US

needs for clean energy and to foster technological developments that will lead not just to energy commodity exports but also to exports of technology and know-how. At the same time, Canadians must guard against policies based on the mistaken view that energy trade between the two countries benefits the US more than Canada.