POLICYBRIEF

CHANGING ENERGY:
CANADA AND THE UNITED STATES

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SUMMARY

Americans are generally surprised to learn that more of the energy that the United States imports comes from Canada than from any other country. Really, you say? The United States imports 2.7 million barrels of crude oil and refined products from Canada every day, representing 24 percent of total petroleum imports—about twice what is imported from Saudi Arabia. Approximately 20 percent of the uranium used in U.S. nuclear power plants comes from Canada. And of the natural gas that the United States does import, 90 percent of it comes from Canada, which is 13 percent of U.S. natural gas consumption. The two countries' electricity grid is deeply integrated, with all border states connected to a Canadian province. Hydroelectric power from Quebec, British Columbia, and Manitoba is already used to power well over a million homes in the United States.

SELF-SUFFICIENCY IN ENERGY

The world of energy is changing. According to the International Energy Agency, increased oil production, combined with new U.S. policies to improve energy efficiency, means that the United States will become "all but self-sufficient" in meeting its energy needs in about two decades.[1] Higher global prices for oil and new technology have enabled expansion of oil and gas development in Canada as well, which now has the world's third-largest proven reserves. Technological research and development have also helped to develop major new hydroelectric projects in Canada. By adding Canada, a country with which we already have extensive energy ties, to this equation, the United States may be able to remove the "all but." The United States is fast becoming energy independent and will join Canada as a net energy exporter well before 2030.

New technology has permitted improvements and expansion of decades-old production techniques for shale oil and shale gas, notably oil from the Bakken formation (encompassing some 25,000 square miles in North Dakota, Montana, Saskatchewan, and Manitoba) and natural gas from the several shale gas formations, including the Marcellus formation (in Pennsylvania, Ohio, West Virginia, and New York), thereby creating new major energy centers in the United States. We have a domestic energy revolution that has increased supply and lowered prices; the same can be said for Canada.

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Yet getting shale gas from formations throughout the United States to market requires new infrastructure. Oil from Canada and the Bakken formation needs new infrastructure for the same reasons. Even hydroelectric power from Canada needs new infrastructure if it is to get to eager consumers in the United States. Canada's energy, just like U.S. energy, does not get to market on its own.

ENERGY USE

We need to be honest with ourselves about how much energy we use in the United States and Canada. We use a lot. Even though per capita use declined during the Great Recession of the past several years, the United States and Canada remain among the world's top countries in energy use. As the developed world continues its crawl toward increased economic expansion, global energy use will continue to grow, particularly as China and India increase their economic activity and become middle-class societies. Global energy demand is expected to rise by 35 percent by 2035.

EXPORTS

An energy-exporting North America will change global energy dynamics. What is not used within North America will supply hungry markets in Europe, Japan, and the rest of Asia. Russia may no longer be the only option as a source of energy imports for Europeans.

Already the use of coal is decreasing in Canada and the United States. Extremely low prices for natural gas, decisions by federal and provincial governments in Canada to reduce coal-fired electric generation, and health and environmental regulations have all contributed to the decline in the consumption of coal in North America. U.S. Energy Information Administration (EIA) electric power data for April 2012 show that, for the first time since EIA began collecting the data, generation from natural gas–fired plants is virtually equal to generation from coal-fired plants, with each fuel providing 32 percent of total generation.[2] But coal production continues to increase.

Where does the coal go? EIA also reports that coal exports are increasing and are reaching all-time highs. In 2012, about three-quarters of U.S. coal exports were shipped to Europe and Asia; despite growing demand in Asia, the United States exported more coal to Europe than it sent to the rest of the world combined.[3] Canadian coal production has been relatively steady; 40 percent of its production is exported, of which 90 percent is metallurgical coal.[4] Given lower North American demand and increased Asian demand, coal exports show no signs of decreasing.

GREENHOUSE GAS EMISSIONS

No current discussion of energy can ignore greenhouse gas (GHG) emissions. We all should know by now that the use of hydrocarbons contributes to GHG emissions that cause global climate change. Increased energy use, especially in the short run, means more GHG emissions. We and our forebears have built a global economy on carbon-based fuels. We cannot snap our fingers and be off hydrocarbons tomorrow, nor can we snap our fingers and move instantly to renewable sources of energy.

We need to be critical about the information that is presented to us. On a life-cycle (well-to-wheels) basis, the carbon intensity of fuels from oil sands falls within the range of carbon intensities for other conventional crude-based fuels used in the United States. We also need to compare apples to apples:

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currently GHG emissions from oil sands equal about 2 percent of emissions from U.S. power generation. Is there too much noise about the imagined horrors of Alberta's oil sands and not enough about the externalities of our other fuels? And how do these fuels compare to the large amounts of oil, gas, and coal used by other countries? In contrast, Canada does have an enormous supply of renewable energy—including hydropower, which could provide more clean energy to the United States. Hydroelectricity accounts for about 60 percent of Canada's total electricity generation, representing more than three times the global average. Approximately 10 percent of all renewable electricity consumed in the United States is generated by Canadian hydropower. There is room for more.

The renewable portfolio standards (RPSs) that various states have implemented to boost their production of renewable fuels largely reject Canadian hydropower. Many disqualify hydro imports because they give utilities renewable targets that are too easy to achieve. Whereas RPSs have spurred development in wind and solar power (which have needed subsidies), they have slowed the growth of hydropower and hindered investment in the infrastructure necessary to carry the electricity over long distances. Electricity from the small percentage of solar and wind farms needs a way to get to customers.

INFRASTRUCTURE

Aging infrastructure and long distances between power sources and distribution have created vast inefficiencies in the system. And new energy geography calls for new infrastructure projects. Many biomass and microhydro plants have created new supplies of energy that the current grid is not prepared to accept. Canada and the United States should work together to upgrade and replace our aging transmission lines while also modifying our grid to take advantage of the new ways in which we produce our electricity.

Unfortunately for Canada, infrastructure limitations also ensure that nearly all of its oil remains within North America, which has depressed the price of a barrel of Canadian oil by as much as $20 below the world market where rates are set. Pipelines still represent the most efficient and environmentally safe way to get these valuable supplies to refineries in the United States.

We need to be honest about our energy needs and capabilities in the near term and the long term. We have oil in the United States waiting to get to market. The proposed Keystone XL Pipeline would join an extensive network of existing energy pipelines in the United States, which include those that already deliver bitumen from Alberta to existing heavy-oil refineries in the United States. Given the extremely high bar that has been set for construction of the Keystone XL Pipeline, it would be among the safest pipelines in the world. Because we're being honest about our fuel needs, wouldn't it make more sense to transport bitumen in a pipeline than by rail or truck?

CONCLUSION

We will continue to need oil for at least the next 40 to 50 years. Let's use it sensibly. If we are seri-

ous about meeting our needs and reducing GHG emissions, we cannot just look at our own efforts to reduce energy consumption in North America. Energy demand is increasing fast in other parts of the world. As we export ever-increasing amounts of energy, we should also export some of the carbon-reducing and energy conservation technologies that our use of carbon-based fuels has forced us to develop.

But again, let's be honest about our fuel choices. Let's continue the research that is under way to reduce emissions, to produce energy in a cleaner fashion, and to promote high standards for oil and gas development. People are hungry to hear from honest brokers who value science and pragmatism over ideology and absolutes.

The United States and Canada need new energy infrastructure for current needs and for the future. We must ease the barriers, both physical and political, that keep North American energy from getting to the consumer.

ENDNOTES

1 International Energy Agency, "World Energy Outlook 2012 Factsheet," http://www.worldenergyoutlook.org/media/weowebsite/2012/factsheets.pdf.

2 U.S. Energy Information Agency, "Monthly Coal- and Natural Gas–Fired Generation Equal for First Time in April 2012," January 4, 2013, http://www.eia.gov/todayinenergy/detail.cfm?id=9450.

3 U.S. Energy Information Agency, "Europe and Asia Are the Leading Destinations for U.S. Coal Exports in 2012," November 15, 2012, http://www.eia.gov/todayinenergy/detail.cfm?id=8790.

4 Natural Resources Canada, "About Coal," December 24, 2010, http://www.nrcan.gc.ca/energy/sources/1205.

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