

BEYOND KEYSTONE: CANADA'S CLEAN ELECTRICITY

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It's time to look to electricity exports as a route to a better energy strategy.

Il est temps de comprendre que les exportations d'électricité peuvent tracer la voie à une meilleure stratégie énergétique.

The Keystone pipeline debate is sucking all the oxygen out of a legitimate North American discussion on energy. Notwithstanding the concern opponents of the pipeline are expressing, the real culprit in the emissions that are at the core of climate change is coal — and it is getting a free pass. The caricature of Canada's oil sands as the carbon devil incarnate misses the fact that emissions of greenhouse gases (GHGs) from dominant coal generation in the US electricity mix wear the ugliest mask.

Fortunately there is another route to energy security that will reduce GHGs on a continent-wide scale: dialling in Canada's vast sources of clean electricity. Enhanced electricity trade built on Canada's low-carbon electricity could push fossil fuels (primarily coal) out of the North American energy system. Doing this would require a major expansion of the trade in electricity between the US and Canada. It would have to be buttressed by interconnections and transmission links acting as regional hubs between provinces and neighbouring states. As the primary instrument of public policy, trade — as opposed to regulations and emissions targets — is a more promising pathway to a lower-carbon energy future for North America.

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Carbon-free electricity from Canada as a replacement for coal generation in the US would be a partial but effective response to US Ambassador David Jacobson's warning that Canada must demonstrate a commitment to GHG reductions if it hopes to see a positive decision from the Obama administration on Keystone. While the tighter regulations on emissions proposed by the federal government are a good step in their own right, they may not be sufficient to dampen the political potency of the opposition to the pipeline. In the search for policy solutions with a continental impact, the US and Canada should shift the discussion to what else Canada has to offer.

That would mean more baskets on the table, with different-coloured eggs.

Rejection of Keystone may turn out to be a sharp awakening for the Canadian energy sector, a warning that it is imprudent to be paralyzed by an untenable view of energy futures that is confined to one pipeline, one type of commodity (oil from the oil sands) and one outcome. It is time to change the channel, to broaden the discussion and involve Canada's diverse energy resources.

Increasing interregional electricity trade will simply build on what's already there: a vast electricity system that links distant and diverse sources of generation. It would require adding transmission capacity and knitting it into a coherent interregional trade strategy that amplifies the benefits to both sides. Making the transition to a low-carbon economy over the next 30 to 50 years will be achieved only through a policy framework that removes the barriers to financing and approving the development of the necessary infrastructure.

In the long term the expansion of interregional trade would be more cost-effective for both trading partners than waiting for Godot to deliver on elusive and expensive carbon capture and sequestration technologies. In addition, there are more renewable sources of energy coming into Canada's electricity system. Canada's carbon-free electricity advantage is ready to be exploited and integrated seamlessly into the United States markets on a large enough scale and with meaningful enough timelines to make a difference to the threat of climate change.

There are significant difference between generation capacities in the US and Canada (figure 1). Whereas in 2011 clean, noncarbon energy (nuclear, wind and hydro) made up over 75 percent of Canada's mix, the US got only a little over 25 percent from these sources. In Canada coal-fired plants account for 18 percent of electricity generation, compared with 44.8 percent in the United States (an increase of 14.8 percent from the 2009 level). Meanwhile, Ontario is on track to becoming coal free by 2014. Canada's electricity generation contributed 14.2 percent of the country's total GHG emissions, while that of the US accounted for 33.1 percent of that country's total GHG emissions.

The trading of electricity on a large scale, enabled through regional energy hubs, has not yet been tested to its fullest potential. Currently, regional markets are constrained by limits to interconnections, and the power grid is not geared to the kind of large-scale energy trade that goes through pipelines.

Clean electricity from Ontario, Manitoba and Quebec has the potential to displace coal-generated electricity in Ohio, Pennsylvania, Michigan and beyond. A recent example is the Maritime transmission link from Labrador and Newfoundland that will displace coal in Nova Scotia and also deliver clean hydro to US markets. There's an equally promising story on the West Coast.

What are the impediments to the enhancement of trade in electricity? In the short and medium terms, the abundance of shale gas and low gas prices will heavily influence business decisions. Whether a "shadow" price on carbon emerges through regulations, an effective cap-and-trade regime or a tax, the economic rationale for specific investments will depend on the degree to which the price is affected by a penalty on carbon emissions. But current abatement costs are low, and the

lack of a carbon price, combined with the view that low gas prices will prevail, remains a significant barrier to developing the electricity option.

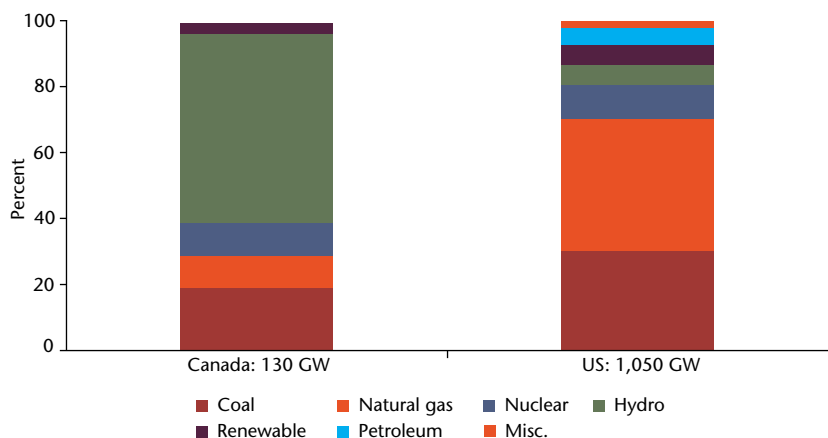
A deeper policy-related barrier to large-scale trade in electricity is the ideal of provincial self-sufficiency that prevails in the public discourse on energy planning in Canada. Lined up against a vision of expanded electricity trade are a number of formidable forces. These include consumer groups that are suspicious of possible rate impacts, multiple layers of environmental approval processes and the challenges of obtaining a social licence for siting the transmission corridors to deliver power to distant locations. The idea of expanding electricity generation and transmission facilities as part of a deliberate "export-driven" strategy has limited support and has too often been met with derision or outright hostility.

But while in the short and medium terms shale gas development will dominate prices and market dynamics, in the long term there is no viable climate change strategy that consists of substituting one form of carbon for another. If there are no substantive policy interventions, energy-related GHG emissions in the US are forecast to decrease by only 0.1 percent per year to 2035, with absolute levels unchanged from 2005.

If this scenario were to prevail, limiting temperature rises to the advised maximum of 2 to 3 degrees would not be feasible. Reaching that target, which is widely seen as essential to stabilizing the climate, would require a 50 percent reduction in emissions by 2050 and a reduction of 80 percent by the end of the century.

These numbers are a compelling case for a dramatic shift in our thinking in favour of an energy market based on cleaner, noncarbon sources. Replacing coal generation in the US with Canadian electricity, which is cleaner than shale gas, is a ticket to prosperity for both countries. If there ever was a compelling case for Canada's clean electricity advantage, then this is the knight on a white horse. ■

FIGURE 1. Installed generation capacity in Canada and the United States, 2011



Source: J. Nathwani and Z. Chen, "Canada's Low Carbon Electricity Advantage: The Case for an Inter-Regional Trade Strategy," University of Waterloo, Waterloo Institute for Sustainable Energy (WISE), April 3, 2013, 11.