

*The excitement and uncertainty of a rapidly evolving electricity sector*

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DO WE  
HAVE THE  
**ENERGY**  
FOR THIS?





# Reshaping and redesigning the electricity system to take advantage of smart grid technologies requires purposeful decisions – multi-decade bets that the system being planned now will be useful to customers in the future ...

make decisions about how they fit into the current system.

This often means not only considering the current applications, but also looking well into the future to consider the application of technologies over their useful lives. This is because the large capital investments, which are necessary for building such an extensive system, have traditionally been financed with long-term loans. The primary reason for the extended term of these loans is to help to keep the costs low for customers. When considering new technologies, regulators must decide if the investment made now will still be useful 20 years from now, when the loans that were required to buy the equipment have finally been paid off.

## Significant Investments in the Electricity System

Reshaping and redesigning the electricity system to take advantage of smart grid technologies requires purposeful decisions by regulators. These decisions represent multi-decade bets that the system being planned now will be useful to customers in the future, and the investments being made are substantial. Conference Board of Canada has predicted that over \$290 billion will be invested in the Cana-

dian electricity sector just to maintain the current system and meet growth demands between 2010 and 2030.<sup>2</sup> Integrating smart grid technologies may require re-directing these investments, or investing even more to reshape the system.

As Ontario residents know, these investments will need to be repaid whether they successfully transition the system or not. For the last 13 years, a debt retirement charge appeared on the bills of Ontario electricity customers. The charge contributed to paying down \$19.4 billion of stranded debt from bets left unpaid by the former Ontario Hydro.<sup>3</sup> In other sectors, customers can take advantage of new innovations while older technology falls by the wayside at no cost to the customers. With the electricity system, however, loans for obsolete technology are still paid for by customers (even if a new system is being used) because a good deal of the infrastructure is publicly financed. Even in Ontario, where parts of the system were privatized in the late 1990s, many municipalities remain the primary shareholder of the private company providing electricity distribution services in their community. The policy approach taken in this sector has implications for the environment, for the economy, and for the state of our public finances.

## What Is the Big Picture and What Should We Do?

The challenge moving forward is to find a planning and regulatory approach

that will allow us to balance the risk and reward of transitioning our electricity system. The vision of a smart grid with more flexibility and greater integration of renewable technologies is exciting; however, to reshape our electricity system in that direction will involve significant investment. At this stage, while technologies are still maturing, we cannot be sure what the best design will be. In an uncertain planning environment, how can we keep our options open and maintain economical electricity services?

Our historical regulatory approach does not seem well suited to manage a more rapidly innovating sector, but neither is there an obvious alternative. Given the public stake in the sector, and the large financial commitments involved, we need to start advancing a more purposeful conversation about our visions and goals for the electricity system. *MW*

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The authors of this article recently held a workshop for executives and senior management from several local electricity distribution companies in Southwestern Ontario to discuss the changing electricity sector. A report about the event can be accessed at <https://uwaterloo.ca/sustainable-energy-policy/news/workshop-report-available>. The authors would like to thank the Social Sciences and Humanities Research Council of Canada (SSHRC) for support as part of the research project entitled “Unlocking the Potential of Smart Grids: A Partnership to Explore Policy Dimensions,” available at <http://tinyurl.com/SG-Partnership>.

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2 <[www.conferenceboard.ca/e-library/abstract.aspx?did=4132](http://www.conferenceboard.ca/e-library/abstract.aspx?did=4132)>.

3 <[www.fin.gov.on.ca/en/tax/drc](http://www.fin.gov.on.ca/en/tax/drc)>.

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