



Efficient growth: Breaking the link between economic growth and rising electricity usage

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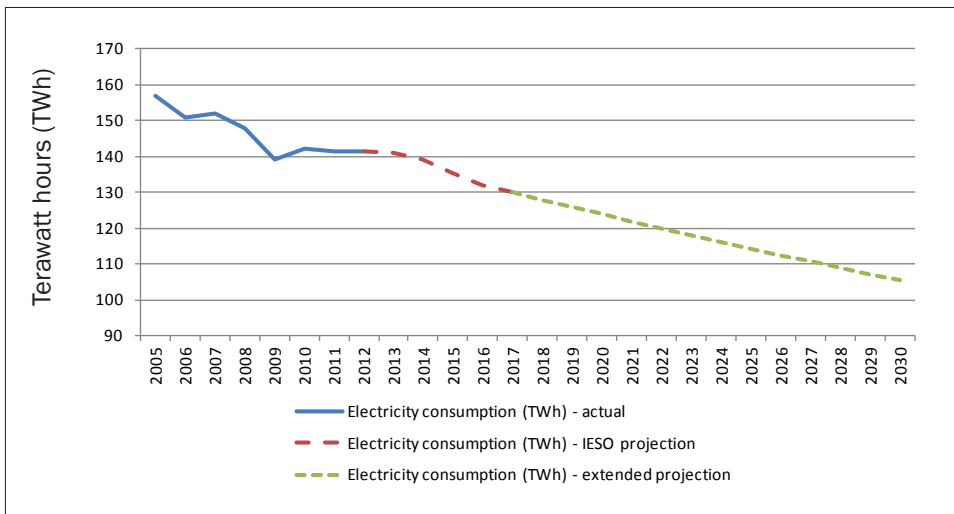
During the 20th century, economic growth in Ontario equaled growing demand for electricity. In the last seven years, however, a dramatic rise in our level of electricity productivity has led to a falling demand for electricity despite the fact that our population and economy continue to grow. And according to Ontario's Independent Electricity System Operator (IESO), this trend is going to continue until at least 2016.

Between 2005 and 2012, our electricity productivity (GDP per kWh) grew more than twice as fast as our economy. As a result, our total electricity demand fell during this period despite a rising population and Gross Domestic Product (GDP). According to the IESO, Ontario's electricity consumption will drop at an average rate of 1.6% per year between 2005 and 2017. If this trend continues, our electricity consumption will be 25% or 35.9 billion kWh lower than it was in 2012 by 2030. This level of electricity demand reduction (35.9 billion kWh) would be 1.3 times greater than the total output of the Darlington Nuclear Station in 2012.¹

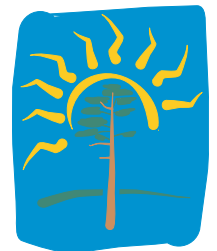
**New technology
such as LED lighting
is contributing to a
decline in electricity
usage**



Figure 1: Declining electricity consumption²



This decline in electricity consumption and the decoupling of electricity consumption and economic growth is being driven by a variety of factors, including an increased emphasis on energy efficiency, a shift in the provincial economy away from heavy industry and toward more knowledge-intensive enterprises, better technology, and a shift to self-generation in some manufacturing sectors (e.g., combined heat and power generation fired by wood waste or other byproducts in the pulp and paper industry).



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It is increasingly cost effective to build homes with no net external energy demand – homes that produce as much energy as they consume. “Designing in” features such as rooftop solar or geothermal heating can significantly reduce the costs of adding these new measures.

Given that all new sources of electricity generation in Ontario are likely to lead to increased costs for consumers and businesses, it is important for the province to continue – and accelerate – this trend of rising electricity productivity beyond 2017. Fortunately, the province still has significant room for improvement: Ontario’s electricity productivity was 34% lower than New York State’s as of 2011 (\$7.01 GDP/kWh for New York vs. \$4.62 GDP/kWh for Ontario).³

At Ontario’s current rate of improvement, it will take the province until roughly 2025 to reach New York’s current level of electricity productivity. However, given New York State’s robust energy efficiency programs and U.S. President Obama’s commitment to double energy productivity by 2030⁴, New York’s productivity level will likely continue to rise. So Ontario clearly has to pick up the pace on its own efficiency efforts to keep abreast of some of its strongest competitors.

What President Obama understands is that economic growth no longer has to mean higher levels of energy consumption. In fact, as a study conducted for the Ontario Clean Air Alliance found (see www.cleanairalliance.org/energy_efficiency), higher levels of energy efficiency can actually drive higher levels of economic growth by reducing costs for businesses and consumers.

The Ontario Government projects that population growth will slow over the next 25 years, with rates gradually declining from 1.2% per year in 2011 to 1% per year by 2036⁵, which again indicates that – thanks to increased efficiency – there is every reason to believe that electricity consumption will continue to decline beyond 2017.

With declining electricity consumption now increasingly “locked in” to our economy and the potential for significantly improved productivity within our grasp, this is the worst possible time for the Ontario Government to commit to large inflexible electricity mega-projects. What we need instead is a flexible and dynamic electricity system that maximizes cost-effective efficiency, builds up modular distributed generation resources like solar, wind and biomass, and uses options like hydro imports from Quebec as an “as needed” resource to support our transition to a high-efficiency future.

Endnotes

1. <http://www.opg.com/power/nuclear/pdf/2012Q4Darlington.pdf>
2. Ontario Independent Electricity System Operator (IESO): https://www.ieso.ca/imoweb/media/md_demand.asp; IESO, *18-Month Outlook: From June 2013 to November 2014*, (May 24, 2013), page 4; and March 21, 2013 email from Chantelle Valerio, Customer Relations, IESO to Jack Gibbons,
3. New York Independent System Operator, *Power Trends 2012: State of the Grid*; and http://www.bea.gov/newsreleases/regional/gdp_state/2012/pdf/gsp0612.pdf
4. <http://www.whitehouse.gov/the-press-office/2013/03/15/fact-sheet-president-obama-s-blueprint-clean-and-secure-energy-future>
5. <http://www.fin.gov.on.ca/en/economy/demographics/projections/>
6. Statistics Canada, CANSIM Tables 384-0002 and 384-0038 and Ontario Ministry of Finance, *2013 Ontario Budget*, Table 2.6. We have used Statistics Canada’s actual data for 2005 to 2011 and Ontario Ministry of Finance forecasts for the years 2012 to 2016. See Endnote 2 for electricity consumption reference.

Figure 2: Rising GDP and falling electricity consumption⁶

The link between economic growth and electricity demand is broken as the economy becomes much more efficient in its use of energy.

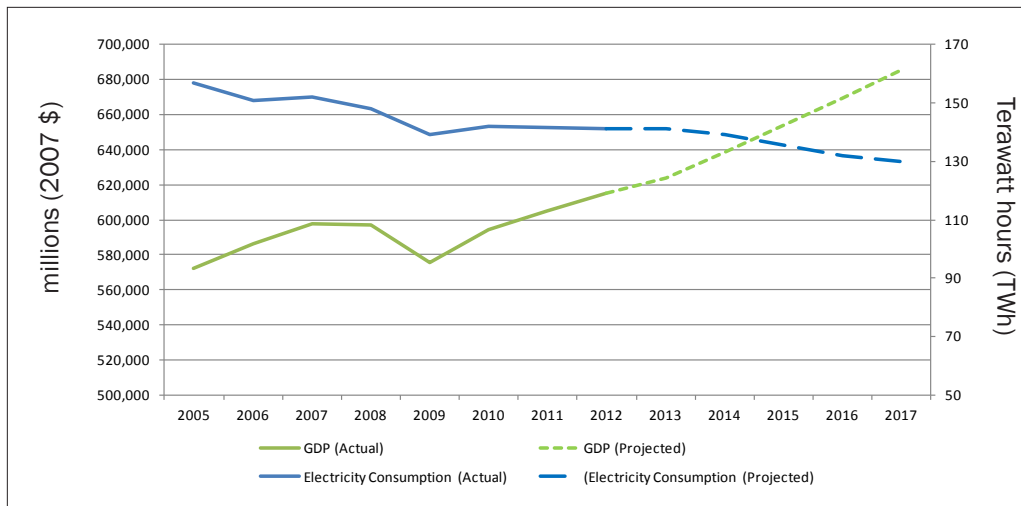


Figure 3: Ontario's electricity productivity improves — but leaves a large gap to be closed

Ontario's electricity productivity improves significantly over the decade, but still does not come close to closing the gap with New York's high level of productivity.

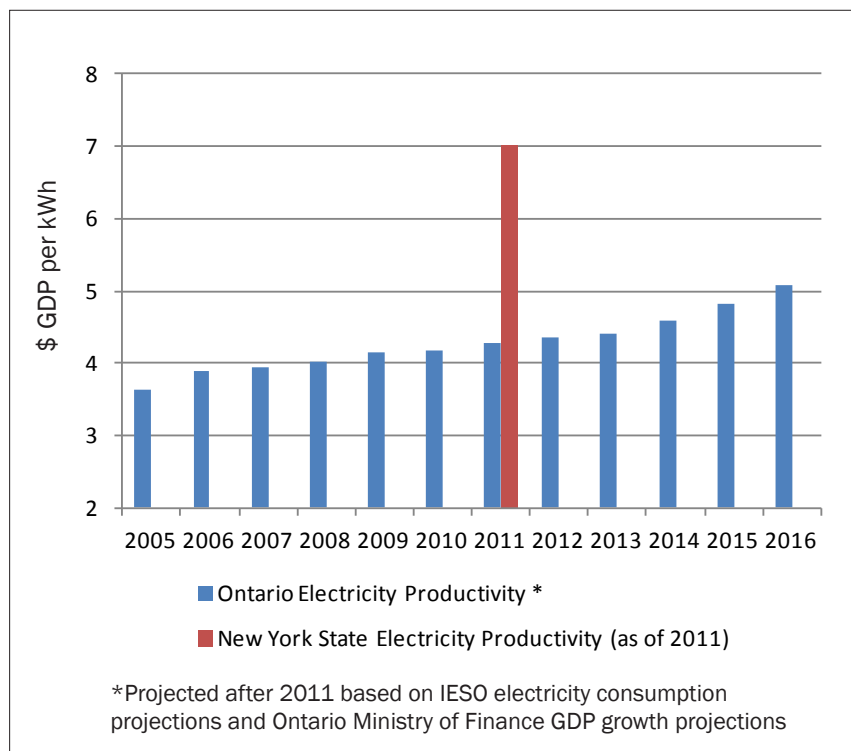
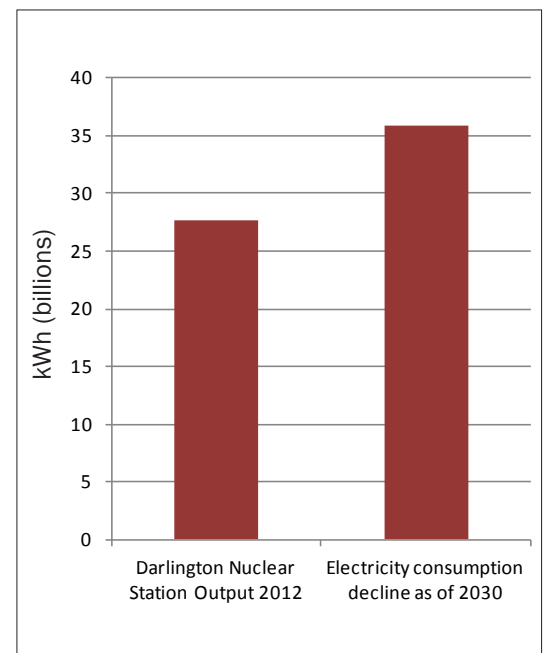
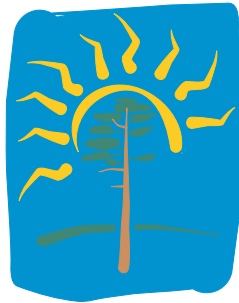


Fig. 4: Decline in electricity use vs. output of Darlington Nuclear Station

Between 2012 and 2030, electricity use in Ontario is projected to drop by more than the total output of the Darlington Nuclear Station in 2012.





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