



The Ontario Government Climate Legacy

Robert Lyman

June 28, 2019

Friends of Science Society

Contents

EXECUTIVE SUMMARY	2
Background	6
The Green Energy Act	6
The 2015 Ontario Auditor General Report.....	8
Generation Sources and Costs.....	10
The Effects of Production Imbalances	12
Effects on Ratepayers	12
From Bad to Worse – The “Fair Hydro Plan”	13
Effect on Ontario’s Economy	14
Effects on Greenhouse Gas Emissions	16
Conclusion	17

Cover image licensed from Shutterstock.

THE ONTARIO GOVERNMENT CLIMATE LEGACY

EXECUTIVE SUMMARY

From 2003 to 2018, two Ontario Premiers, Dalton McGuinty and Kathleen Wynne, and their parties governed the province of Ontario and implemented a series of policies founded on the theory that humans are causing catastrophic global warming and that reducing greenhouse emissions in Ontario would make things better. The centerpiece of their climate policy was the transformation of Ontario's electricity sector.

After winning the provincial election in 2003, the McGuinty government began closing coal plants, adding wind and solar power generation and expanding the nuclear and hydro generation in the province. It did not anticipate the effects of the global financial crisis or of the higher electricity prices that resulted from their actions. By 2008, it became clear that electricity demand had declined significantly, and that the by-then available nuclear, hydro and natural-gas fired generation was more than adequate to meet Ontario's needs, even if the coal-fired plants were closed. Yet the Ontario government embarked on a major expenditure program, which it presented as a job creation initiative.

In 2009, the Ontario government passed the *Green Energy Act*. The Act sought to stimulate investment in wind, solar, hydro, biomass and biogas projects and to increase energy conservation. Notably, it:

- Created a Feed-in-Tariff that the Independent Electricity Systems Operator (IESO) must pay, guaranteeing specific above-market rates for energy generated from renewable energy sources under 20-year contracts;

- Gave renewables “first-to-the-grid” rights, meaning that IESO had to take their production in preference to all other sources of generation; and
- Implemented a “smart” grid to support the development of renewable energy projects.

On December 2, 2015, Bonnie Lysyk, Auditor General of Ontario, released her 2015 annual report on the value for money received by Ontario residents from the operations of the Ontario provincial government. Chapter 3 of the report contained a blockbuster – an extraordinarily damning assessment of the actions of the government with respect to electricity power system planning over the period from 2003 to the end of 2014.

The report found that, from 2004 to 2014, the portion of residential and small commercial customers’ bills covering electricity generation costs increased by 80%, from 5.02 cents per kWh to 9.06 cents per kWh. The overall cost of electricity to consumers increased by 56%, from \$12.2 billion in 2004 to \$18.9 billion in 2014. Electricity consumers had to pay \$9.2 billion more for renewable energy (wind, solar and biomass generation sources) over the 20-year contract terms under the Ministry’s current guaranteed price (i.e. feed-in-tariff) program than they would have under the previous program under which renewable energy was purchased through competitive bidding. Because of the mismatch between when wind and solar generation provides power and when consumers want it, Ontario increasingly had to curtail generation from other sources (i.e. pay generators not to produce) and dump surplus generation on the export market. From 2009 to 2014, Ontario exported 95.1 million MWh of power; the total cost of producing this power was about \$3.1 billion more than the revenue Ontario received for exporting it.

This had adverse consequences for ratepayers. Between 2010 and 2016, monthly electricity bills (including tax) in major Canadian cities increased by an average of \$37.68. During the same period, electricity bills in Toronto and Ottawa increased by \$77.09 and \$66.96, respectively. The annual average household cost of electricity in 2009 was \$486.72; in 2016 it was \$1,002.48. By 2016, Ontario’s electricity rates were among the highest in North America.

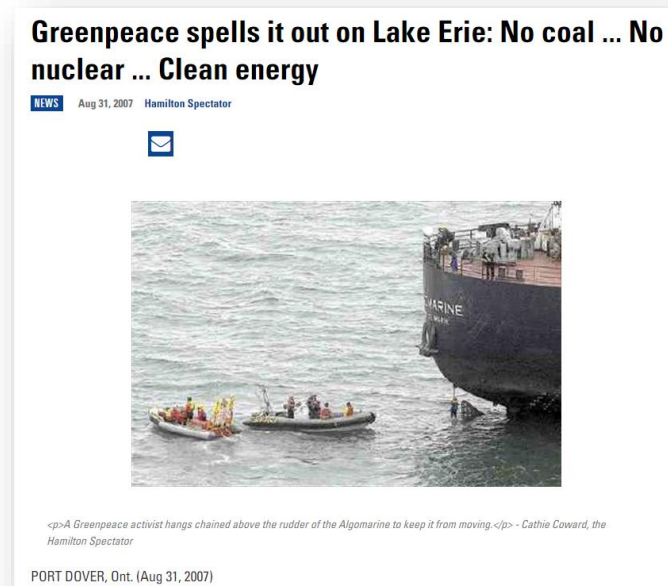
The largest corporations in the province, especially those facing stiff competition from companies in other jurisdictions, successfully lobbied to have their rates reduced. So, in 2011 the Wynne government decided that residential and small commercial customers should be forced to cross-subsidize the large companies. From mid-2011 to 2017, \$6.2 billion in costs were transferred from large industrial users to residential and commercial users. Despite having some of their costs allocated to other users, large industrial firms saw their rates rise above those of their competitors and downsized accordingly. Ontario lost almost 75,000 industrial jobs.

To deal with the mounting political opposition to high electricity costs, the Wynne government belatedly introduced the “Fair Hydro Plan”. The plan involved a shifting of costs from some groups to others through a complicated system of refinancing. Basically, the province will borrow the money to pay some of the current costs that would normally be passed on to electricity users in their rates, to reduce rates below the levels they would otherwise be until 2027, then increase rates after that to recover both the deferred costs and the interest that it had to pay to borrow. It was initially estimated that electricity cost refinancing alone would reduce ratepayers’ bills by \$18.4 billion from 2017 to 2027. The actual costs have been higher. As a result, after paying elevated electricity bills for the next ten years, future ratepayers could be on the hook for as much as \$54.7 billion in deferred generation and interest costs.

From 2005 to 2016, Ontario reduced greenhouse gas emissions from utilities by 27 megatonnes. Canada’s GHG emissions declined due to the economic recession and then gradually increased to 722 Mt. Global emissions, meanwhile, grew from 30.1 billion tonnes in 2007 to 32.8 billion tonnes in 2015 and 33.4 billion tonnes in 2017, almost entirely due to economic developments in the Asia-Pacific area. So, Ontario’s actions reduced Canada’s overall emissions in 2015 by 3.7% and had no effect whatsoever on global emissions.

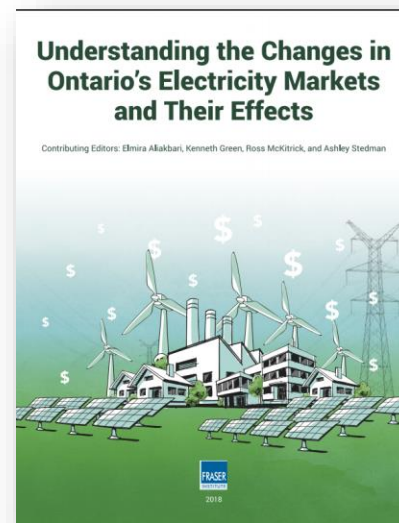
THE ONTARIO GOVERNMENT CLIMATE LEGACY

Canadians who wonder what might be the effects of the climate policies now being advocated by almost all the major political parties have a real-life example that they can consider. From 2003 to 2018, two Ontario Premiers, Dalton McGuinty and Kathleen Wynne, and their parties governed the province of Ontario and implemented a series of policies founded on the theory that humans are causing catastrophic global warming and that reducing greenhouse emissions in Ontario would make things better. The centerpiece of their climate policy was the transformation of Ontario's electricity sector. Even today, after a new provincial government has been elected, most residents of Ontario are unaware of the costs and damages to the province imposed by the "green energy" policy.



Source: <https://www.thespec.com/news-story/2143511-greenpeace-spells-it-out-on-lake-erie-no-coal-no-nuclear-clean-energy/>

Several authors have already published extensive reports on Ontario's electricity system and "what went wrong". The Fraser Institute published a series of papers and reports on this subject. Of these, I especially recommend [Understanding the Changes in Ontario's Electricity Markets and their Effects](#), a collection of papers published in 2018. This article will attempt only to note the most important facts, and to explain the issues in terms the average person will understand.



Background

The McGuinty government that won the 2003 provincial election promised to eliminate coal-fired power generation by 2007. In 2005, they spelled out their plans in greater detail and added that they would add five per cent of generating capacity, or 1,350 megawatts (MW) of new renewable energy generating capacity, by 2007.

The government began closing coal plants, adding wind and solar power generation and expanding the nuclear and hydro generation in the province. It did not anticipate the effects of the global financial crisis or of the higher electricity prices that resulted from their actions. By 2008, it became clear that electricity demand had declined significantly, and that the by-then available nuclear, hydro and natural-gas fired generation was more than adequate to meet Ontario's needs, even if the coal-fired plants were closed.

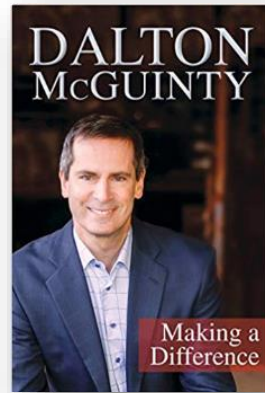
In other words, by 2008, it was clear that all the GHG emissions associated with the burning of coal to produce electricity could be eliminated without additional major expenditures on wind, solar and other renewable energy generation and the related facilities. Yet the Ontario government embarked on a major expenditure program, which it presented as a job creation initiative.

The Green Energy Act

In 2009, acting largely on the advice of influential environmental organizations and with the strong support of the wind and solar power industries, the Ontario government passed the *Green Energy Act*. The Act sought to stimulate investment in wind, solar, hydro, biomass and biogas projects and to increase energy conservation. Notably, it:

- Created a Feed-in-Tariff that the Independent Electricity Systems Operator (IESO) must pay, guaranteeing specific above-market rates for energy generated from renewable energy sources under 20-year contracts;
- Gave renewables “first-to-the-grid” rights, meaning that IESO had to take their production in preference to all other sources of generation; and
- Implemented a “smart” grid to support the development of renewable energy projects.

The GEA granted powers that superseded the rights of municipal governments to carry out land use planning and to tax with respect to renewable energy projects. The Act also stripped the Ontario Energy Board of its ability to regulate the electricity sector in a balanced way, taking the interests of consumers into account, and gave the Minister of Energy the power to issue simple “directives” to the Ontario Power Authority. **These actions were justified as necessary to meet the objectives of a “green” agenda.**



The results of this legislation were that Ontario embarked on an expensive and largely unneeded expansion of its electricity generation system. To accommodate this construction of generation plants dispersed all over the province, billions of dollars were spent on more transmission facilities. A new system of “smart meters” was installed in residences across the province at a cost of over \$2 billion and \$1.6 billion was spent on creating a “smart grid”.



Port Burwell Wind Farm, Wikipedia

CC BY 2.5, <https://commons.wikimedia.org/w/index.php?curid=5332922>

The 2015 Ontario Auditor General Report

On December 2, 2015, Bonnie Lysyk, Auditor General of Ontario, released her 2015 annual report on the value for money received by Ontario residents from the operations of the Ontario provincial government. Chapter 3 of the report contained a blockbuster – an extraordinarily damning assessment of the actions of the government with respect to electricity power system planning over the period from 2003 to the end of 2014.

Here are some of the key findings of the AG's report:

From 2004 to 2014, the portion of residential and small commercial customers' bills covering electricity generation costs increased by 80%, from 5.02 cents per kWh to 9.06 cents per kWh. The overall cost of electricity to consumers increased by 56%, from \$12.2 billion in 2004 to \$18.9 billion in 2014.

Generation costs increased by 74%, from \$6.7 billion in 2004 to \$11.8 billion in 2014, and they were expected to grow to \$13.8 billion by 2022.

Electricity consumers had to pay \$9.2 billion more for renewable energy (wind, solar and biomass generation sources) over the 20-year contract terms under the Ministry's current guaranteed price (i.e. feed-in-tariff) program than they would have under the previous program under which renewable energy was purchased through competitive bidding.

*Nuclear energy provides the backbone of the generation system, in 2014 providing almost 60% of the production at 52% of the costs. Hydro followed at 23.8 % of the production at 16.2 % of the cost. Wind provided 4.9% of the production at 8.3 % of the cost, solar energy 1.1 % of the production at 7.8 % of the cost, and biomass 0.3 % of the production at 0.9 % of the cost. Natural gas generation provided 9.3 % of the production at 20.2 % of the cost, largely because the natural gas facilities produce sporadically and are needed to back up the wind and solar facilities, which produce intermittently. **The "Green" energy sources (wind, solar and biomass) thus provide 6.3 % of the production but represent 17% of the production costs, not counting their share of the electricity system costs incurred due to the need to back them up.***

“Global Adjustment” fees that cover the costs of newly contracted generation capacity from all sources grew from 2006 to 2014 by a total of \$37 billion.

Consumers are expected to pay another \$133 billion in Global Adjustment fees from 2015 to 2032.

Ontario has long had an over-supply of electricity generation capacity. Annual electricity consumption decreased from 151 million MWh in 2006 to 140 million MWh in 2014. Despite this, Ontario’s generation capacity increased by 19%. From 2009 to 2014, Ontario’s electricity supply exceeded its maximum hourly consumption by 5,160 megawatts (MW) per year, on average. A significant over-supply is projected for the next decade.

Because of the mismatch between when wind and solar generation provides power and when consumers want it, Ontario increasingly had to curtail generation from other sources (i.e. pay generators not to produce) and dump surplus generation on the export market.

From 2009 to 2014, Ontario exported 95.1 million MWh of power; the total cost of producing this power was about \$3.1 billion more than the revenue Ontario received for exporting it.



Image licensed from Shutterstock.

Despite the persistent over-supply situation, Ontario spent \$2.3 billion promoting electricity conservation from 2006 to 2014, and has committed to spend another \$2.6 billion from 2015 to 2020. The effect of the conservation expenditures was to further reduce demand, thus giving rise to higher curtailment expenses and higher losses on export sales.

Generation Sources and Costs

The makeup of Ontario's electricity generation system changed significantly after the passage of the GEA.

Table 1 compares the breakdown of Ontario electricity generation in TWh by fuel type for different years.

Table 1
Electricity Generation by Year for Selected Years (TWh)

<u>Supply Source</u>	<u>2007</u>	<u>2010</u>	<u>2014</u>	<u>2016</u>
Renewables*	18.6	28.8	31.1	33.8
All others**	147.7	131.1	133.1	131.9
Total	166.3	159.9	164.2	165.7

Source: Ontario Power Authority/ Independent Electricity Systems Operator

**Renewables, in this case, includes wind, solar, biomass, conservation, small run-of-river hydro and non-utility generators*

*** All others, in this case, includes generation from nuclear, hydroelectric, natural gas-fired, and import sources.*

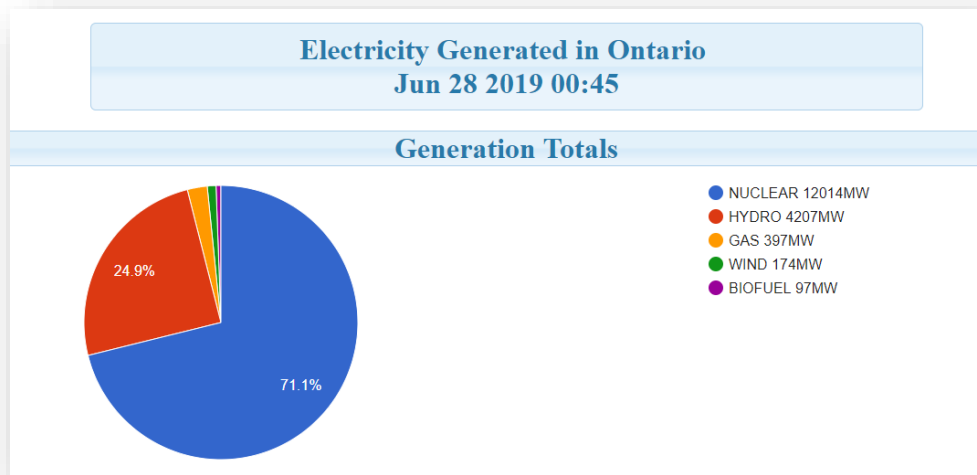
Table 2 compares the breakdown of Ontario electricity sources by cost.

Table 2
Generation Costs by Year for Selected Years (\$Million -nominal)

<u>Supply Source</u>	<u>2007</u>	<u>2010</u>	<u>2014</u>	<u>2016</u>
Renewables	1,014	2,132	4,757	6,251
All others	7,936	7,742	8,017	8,772
Total	8,950	9,874	12,774	15,023

Source: Ontario Power Authority/Independent Electricity Systems Operator

These tables show a remarkable fact. While renewables' share of total electricity supply grew from 11.2% in 2007 to 20% in 2016, their share of costs rose from 11.3% to 41.6% during that period. In other words, their share of production almost doubled, but their share of costs quadrupled.



Source: <http://webroots.ca/static/ontarioelectricity/ontarioelectricity.html>

Other important facts not shown by these tables include the following:

- The annual cost of nuclear energy rose by almost \$1.8 billion from 2007 to 2015, while adding 11.5 TWh of electricity generation.
- **The cost of wind and solar generation combined rose by \$2.65 billion from 2007 to 2015, while adding 12.1 TWh of generation. The combined cost effect is almost 50% higher than that of nuclear.**
- **The cost of solar energy per TWh is seven times higher than nuclear energy and eight times higher than hydro.**
- The cost of solar and wind energy would be higher still if one attributed to them the cost of having to maintain so much natural gas generation as backup on standby much of the time.

Homes Supplied and CO2 Avoided			
Tonnes of CO2 avoided This Hour		CO2 Avoided and Homes Supplied	
Fuel Type	Tonnes of CO2 avoided This Hour	Fuel Type	CO2 Avoided and Homes Supplied
NUCLEAR	10,210	NUCLEAR	9,011,000
GAS	130	GAS	298,000
HYDRO	3,580	HYDRO	3,155,000
WIND	150	WIND	131,000
SOLAR	0	SOLAR	0
BIOFUEL	80	BIOFUEL	73,000

CO2 avoided: Based upon the CO2 emissions from coal for an equivalent energy output, assuming: 0.85 tonnes of CO2 per MWh(e) from coal, 0.50 tonnes CO2 per MWh(e) from natural gas and "other" (assuming natural gas at the Lennox station as the main contributor), and zero tonnes CO2 per MWh(e) for wind, hydro, and nuclear.

homes supplied: This is an illustrative estimate of the number of homes that could be supplied by the specific power source, based upon an average electricity monthly domestic usage of 972 kWh per home (source: Ontario Power Generation). In practice only about 30% of electricity production (in Ontario) is for residential use; the majority is for industrial and commercial customers. <http://webroots.ca/static/ontarioelectricity/ontarioelectricity.html>

The Effects of Production Imbalances

With more and more wind and solar generation whose production was highest when electricity demand was low and whose production was lowest when demand was high, the province's electrical utility ran into several problems. When renewables production was high, the province was frequently required to curtail other generators (i.e. pay them not to produce). When even that was not enough, the province sold the surplus power at distressed prices to neighboring utilities in New York and Michigan.

In 2017, production from Ontario's nuclear power plants was 90.6 terawatt hours (TWh) and that from hydroelectricity was 37.7 TWh, totaling 128.3 TWh or 97.1 per cent of Ontario's total transmission-connected electricity demand. Ontario Power Generation, the provincially-owned generator was required to spill about 6 TWh of hydro. Nuclear power plants were required to "steam off" almost 1 TWh. Even wind power generators were curtailed by 3.3 TWh. The costs of this were \$1,060 million, and the losses on exports sales exceeded \$600 million.

Effects on Ratepayers

For generations, the central goal of Ontario electricity policy was to maintain electricity rates as low as possible consistent with the goal of maintaining the security and reliability of supply. Ontario's electricity rates were among the lowest in North America. The provincial government policies after 2003 instead made the reduction of greenhouse gases and the promotion of renewable energy the preeminent goals.

"Electricity prices in Ontario began increasing sharply after 2008, rising by 71 % from 2008 to 2016, compared to 34 % nationally. From 2008 to 2015, electricity prices also increased two-and-a-half times faster than household disposable income in Ontario. In particular, the growth in electricity prices was almost four times greater than inflation and over four-and-a-half times the growth of Ontario's economy (real GDP)."¹

Between 2010 and 2016, monthly electricity bills (including tax) in major Canadian cities increased by an average of \$37.68. During the same period, electricity bills in Toronto and Ottawa increased by

¹ Taylor Jackson et al *System Shock: Evaluating Electricity Price Growth in Ontario*. 2017, The Fraser Institute

\$77.09 and \$66.96, respectively. The annual average household cost of electricity in 2009 was \$486.72; in 2016 it was \$1,002.48. (Source: Parker Gallant). **By 2016, Ontario’s electricity rates were among the highest in North America.**

The largest corporations in the province, especially those facing stiff competition from companies in other jurisdictions, successfully lobbied to have their rates reduced. So, in 2011 the Wynne government decided that residential and small commercial customers should be forced to cross-subsidize the large companies. It established the “Industrial Conservation Initiative” or ICI. Under this program, a portion of the costs that would normally be allocated by regulation to the large electricity customers, called the “Class A” users, were instead allocated to the residential and commercial customers, the “Class B” users. Sadly, ignoring its legislative mandate to protect consumers’ interests, the Ontario Energy Board approved this program. **From mid-2011 to 2017, \$6.2 billion in costs were transferred from large industrial users to residential and commercial users.**

Ontario’s Electricity Dilemma –
Achieving Low Emissions at Reasonable Electricity Rates


14

Why Are Electricity Rates Rising So Fast in Ontario ?

- ❖ Exports in 2014 averaged less than 4 cents/kWh.
- ❖ OEB estimated 2014 energy price for electricity inside Ontario was 8.9 cents/kWh.
- ❖ According to OEB estimates, the cost of electricity production was :

Nov – Apr 2013	May – Nov 2014	May – Nov 2015	Generation Type
4.8	5.1	5.6	Hydroelectric
6.0	5.9	6.6	Nuclear
12.0	12.3	12.5	Wind
12.6	12.9	21.1	Bio-energy
13.5	14.2	12.7	Natural Gas
48.9	47.6	47.3	Solar
7.2 / 10.9 / 12.9	7.5 / 11.2 / 13.5	8.0 / 12.2 / 16.1	TDU Rates

Note: Exporting is economically attractive if the market price is above the variable (fuel) cost of that energy and the plants are already built (sunk cost). However, we should not build new plants for the purpose of exporting energy if the market price is below the total cost of production.




Ontario’s Electricity Dilemma –
Achieving Low Emissions at Reasonable Electricity Rates

15

Why Will Emissions Double as We Add Wind and Solar Plants ?

- ❖ Wind and Solar require flexible backup generation.
- ❖ Nuclear is too inflexible to backup renewables without expensive engineering changes to the reactors.
- ❖ Flexible electric storage is too expensive at the moment.
- ❖ Consequently natural gas provides the backup for wind and solar in North America.
- ❖ When you add wind and solar you are actually forced to reduce nuclear generation to make room for more natural gas generation to provide flexible backup.
- ❖ Ontario currently produces electricity at less than 40 grams of CO₂ emissions/kWh.
- ❖ Wind and solar with natural gas backup produces electricity at about 200 grams of CO₂ emissions/kWh. Therefore adding wind and solar to Ontario’s grid drives CO₂ emissions higher. From 2016 to 2032 as Ontario phases out nuclear capacity to make room for wind and solar, CO₂ emissions will double (2013 LTEP data).
- ❖ In Ontario, with limited economic hydro and expensive storage, it is mathematically impossible to achieve low CO₂ emissions at reasonable electricity prices without nuclear generation.



Source: <https://www.ospe.on.ca/public/documents/presentations/ontarios-electricity-dilemma.pdf>

The rising electricity cost finally created a political backlash that the Wynne Government could not control. To deal with it, Wynne decided in 2017 to implement a ruse. It was called the “Fair Hydro Plan”.

From Bad to Worse – The “Fair Hydro Plan”

The Fair Hydro Plan involved no reduction in the costs of the electricity generated and sold by Ontario utilities to electricity consumers; those costs are largely driven by the provinces’ continuing spending on generation that was surplus to the needs of consumers in the province, and other long-term investments in transmission and distribution. The plan, instead, involved a shifting of costs from some groups to others.

Most importantly, a portion of the costs of current electricity supply will be shifted from current users to future users through a complicated system of refinancing. Basically, the province will borrow the money to pay some of the current costs that would normally be passed on to electricity users in their rates, to reduce rates below the levels they would otherwise be until 2027, then increase rates after that to recover both the deferred costs and the interest that it had to pay to borrow. Electricity cost refinancing alone will reduce ratepayers' bills by \$18.4 billion from 2017 to 2027.

The Wynne government calculated, incorrectly as it turned out, that the rate reduction would win them the 2018 election. However, the refinancing created an enormous problem. Starting in 2028, those deferred costs will be added back onto ratepayers' bills. The Ontario Financial Accountability Office initially estimated that ratepayers would later pay the \$18.4 billion plus \$21 billion in interest costs. In fact, the actual deferrals of costs have been much higher than initially estimated, and over the first 18 months averaged \$214 million per month. If those averages continued over the period to 2028, the deferred amount would be \$25.7 billion, or \$5,140 per Class B customer, without interest costs. Interest costs would be driven up to about \$29 billion, adding another \$5,800 per ratepayer that will need to be repaid. **In other words, after paying elevated electricity bills for the next ten years, future ratepayers could be on the hook for as much as \$54.7 billion in deferred costs.**

Bill Tufts
@BillTufts

Following

Ontario is what would be called bankruptcy in the private sector. Governments cant go bankrupt but they can be insolvent

Ontario's Auditor General says Ontario is insolvent and cant afford to pay for its basic necessary services because of its debt

#PCPOLdr #onpoli

Top 3 Industries by Employment Ontario

Industry	Employment
Manufacturing	765,400
Wholesale / Retail	1,069,900
Government	1,338,300

Source: Statcan Labour Force Survey

6:11 AM - 5 Feb 2018

Effect on Ontario's Economy

In 2017, the Fraser Institute published a study of the effects of the rising electricity costs and declining employment on Ontario's manufacturing sector. The study found that in 2016 large industrial consumers in Toronto and Ottawa paid almost three times more than consumers in Montreal and Calgary and almost twice the prices paid by consumers in Vancouver. Between 2010 and 2016, electricity costs for small industrial consumers in in Ottawa increased by 50% and in Toronto, 48%, while the average rate of increase in the rest of Canada was only 15%. For medium sized consumers, for example, Toronto prices were 16.27 cents per kilowatt hour (kWh), compared to 9.11 cents per kWh in

Montreal, 6.53 cents per kWh in Calgary, and 11.71 cents per kWh in Detroit. This is in spite of the heavy cross-subsidization of industrial users by Class B ratepayers.

Electricity is a major input cost for the manufacturing process. As a highly competitive environment does not allow manufacturers to simply pass rising costs on to customers, they must cut other costs, such as wages and salaries, accept lower profits and ultimately decide whether to close or move their operations elsewhere. **Between 2005 and 2015, Ontario's manufacturing output declined by 18% and employment by 28%. The paper manufacturing and steel industries, the two most electricity-intensive sectors in Ontario, shrank the most: paper by 22% and iron and steel by 25%.** While many northeastern U.S. states that are Ontario's main competitors increased their manufacturing sector's share of GDP between 2005 and 2016, the manufacturing sector in Ontario declined by 5.1 %. The Fraser Institute study estimated that about 64%, or two thirds, of the lost manufacturing jobs from 2008 to 2015 could be attributable to rising electricity prices.

Based on econometric analysis of the effects on labour markets, the Fraser Institute estimated that this had caused a loss of 74,881 jobs over the 2008 to 2015 period.²

The Ontario government claimed that the Green Energy Act created about 42,000 new jobs but, as the Annual Report of the Auditor General (2011) estimated, the majority of these were likely construction jobs and temporary positions. If one generously assumed that half of the new jobs created by green energy programs were permanent, that would mean that **Ontario lost 3.8 manufacturing jobs for every green job created.**

In 2016, Ontario accounted for half the manufacturing activity in Canada. The loss of a sizeable part of that activity due to unwise climate and energy policies was a loss to the whole country.

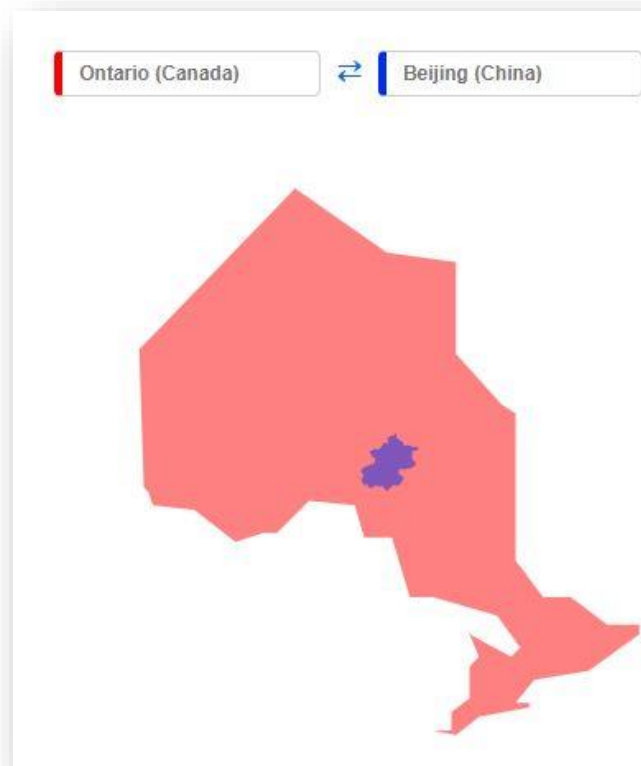
² Ross McKittrick. *Rising Electricity Costs and Declining Employment in Ontario's Manufacturing Sector*. 2017 The Fraser Institute.

Effects on Greenhouse Gas Emissions

From 2005 to 2016, Ontario reduced greenhouse gas emissions from utilities from 36 to 9 megatonnes per year, a 75% reduction. Total Ontario emissions declined by about 40 Mt during the same period. From 2005 to 2015, Canada's GHG emissions declined due to the economic recession and then gradually increased to 722 Mt.

Global emissions, meanwhile, grew from 30.1 billion tonnes in 2007 to 32.8 billion tonnes in 2015 and 33.4 billion tonnes in 2017, almost entirely due to economic developments in the Asia-Pacific area.

So, Ontario's actions reduced Canada's overall emissions in 2015 by 3.7% and had no effect whatsoever on global emissions.



Ontario's emissions are about the same as those of the city of Beijing, China.

Map – Map Fight **Ontario (Canada)** (1,076,000 km²) is 64 times as big as **Beijing (China)** (16,800 km²).

<https://mapfight.appspot.com/ontario-vs-beijing/ontario-canada-beijing-china-size-comparison>

Conclusion

In summary, from 2003 to 2018, successive governments in Ontario pursued an environmentalist agenda that aimed to eliminate coal-fired generation and to increase renewable electricity production through the use of regulation. The result was a significant over-building of capacity relative to Ontario's needs, payment to wind and solar generators of \$9.2 billion more than what would have been paid through competitive procurement, much increased reliance on intermittent sources of electricity generation (with the attendant back-up costs), and losses on export sales now averaging over \$500 million per year. The higher electricity rates have punished Ontario's residential and commercial ratepayers. Despite having some of their costs allocated to Class B users, large industrial firms saw their rates rise above those of their competitors and downsized accordingly. Ontario lost almost 75,000 industrial jobs.

The McGuinty and Wynne governments politicized the decision-making process that governs electricity planning, construction and operation in the province. In an attempt to avoid the political consequences of the higher electricity rates, they first reallocated generation costs from industrial to residential and commercial ratepayers and then established a deferred account that may add almost \$55 billion to future electricity bills. It will take many decades before electricity users have paid off all the debts incurred.

These actions had no effect on global emissions trends.

Ontario's experience shows that climate-inspired policies have already had major adverse effects on Canada's economy and will continue to do so for the foreseeable future, especially if more like this are implemented.





About the Author

Robert Lyman is an Ottawa energy policy consultant. He was a public servant for 27 years and prior to that a diplomat for 10 years. His full biography can be found [here](#).

About

Friends of Science Society is an independent group of earth, atmospheric and solar scientists, engineers, and citizens who are celebrating its 16th year of offering climate science insights. After a thorough review of a broad spectrum of literature on climate change, Friends of Science Society has concluded that the sun is the main driver of climate change, not carbon dioxide (CO₂).

Friends of Science Society

P.O. Box 23167, Mission P.O.

Calgary, Alberta

Canada T2S 3B1

Toll-free Telephone: 1-888-789-9597

Web: friendsofscience.org

E-mail: contact@friendsofscience.org

Web: climatechange101.ca

