

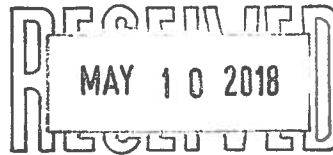


Dianne Saxe, J.D., Ph.D. in Law
Commissioner

Dianne Saxe, J.D., Ph.D. en droit
Commissaire

May 8, 2018

To the Head of Council:



File ☒ Incoming ☐ Other
Mayor ☒ Council ☒ CAO ☐
Building ☐ Finance ☐ Ec Dev ☐ Parks & Rec ☐ Planning ☐ Public Wks ☐ PPP ☐ Social Services ☐

Re: Environment, Energy and Climate Resources for Municipalities

As you know better than most, much of the work that affects Ontario's energy, environment and climate is performed by municipal governments, and provincial action/inaction on these topics have huge impacts on municipal governments, assets and budgets.

I have the privilege of serving as Environmental Commissioner of Ontario (ECO), an independent officer of the Ontario Legislature. Under Ontario's Environmental Bill of Rights, my staff and I provide the Legislature with independent, non-partisan research and advice on energy, environment and climate issues in Ontario. In the course of this work, we examine many issues that are directly relevant to municipal governments.

Last year, for example, we reported, among other topics, on energy use and opportunities in Ontario's municipal water and wastewater systems,¹ and on waste, recycling and the circular economy,² as well as opportunities to use recycled aggregate in municipal construction.³ In 2018, we have reported on Ontario's climate and electricity policies, in reports entitled "Ontario's Climate Act: From Plan to Progress" and "Making Connections: Straight Talk about Electricity in Ontario" respectively.

Ontario's Climate Act: From Plan to Progress outlines Ontario's greenhouse gas (GHG) emissions in 2015, identifies challenges to further reducing GHGs, and reviews programs developed to implement the Climate Change Mitigation and Low-carbon Economy Act, and the Climate Change Action Plan. Central to the government's plans is Ontario's cap and trade program. The report comments on the first year of cap and trade, and how the resulting funds are being spent. Our evaluation of how the province tracks its own GHG emissions provides useful guidance for GHG tracking in your own organization, and we also look at climate-smart public procurement.

.../2

¹ Every Drop Counts: Reducing the Energy and Climate Footprint of Ontario's Water Use

² Beyond the Blue Box: Ontario's Fresh Start on Waste Diversion and the Circular Economy

³ Good Choices, Bad Choices

ATTACHMENT ITEMS ARE FILED ON SHELF



Making Connections: Straight Talk about Electricity in Ontario describes the province's electricity system and identifies some of the key issues facing decision makers. The report has information about how sources and demand for electricity have changed, and why Ontario exports it. It explains electricity pricing and the increases Ontario has experienced over the last 13 years, as well as the benefits of conservation and clean energy sources to the environment and human health. The report has a particular focus on the future in its discussion of the Long-Term Energy Plan and how critical it is to meeting Ontario's climate change commitments in 2030 and beyond.

All of our reports are available at our website at eco.on.ca, together with explanatory webinars. For ease of reference, we are also providing you with one hard copy of our two most recent reports for your library, together with summaries for use by members of Council and staff. I hope they will be useful to you in policy discussions, planning and implementation.

Please share these reports with your colleagues. For more information about any of the topics covered in these reports, for additional hard copies of the reports or summaries in either official language, or to request a meeting or briefing, please contact us at commissioner@eco.on.ca or 1-800-701-6454.

Thank you for all your hard work on behalf of your community.

Sincerely,



Dianne Saxe
Environmental Commissioner of Ontario

* hard copies in
municipal office

ONTARIO'S CLIMATE ACT
Plan to Progress Summary

[docs.assets.eco.on.ca/reports/
climate-change/2017/From-Plan-to-
Progress-Summary.pdf](https://docs.assets.eco.on.ca/reports/climate-change/2017/From-Plan-to-Progress-Summary.pdf)

Plan to Progress Report -- [docs.assets.eco.on.ca/reports/climate-change/
2017/From-Plan-to-Progress.pdf](https://docs.assets.eco.on.ca/reports/climate-change/2017/From-Plan-to-Progress.pdf)

MAKING CONNECTIONS

STRAIGHT TALK ABOUT ELECTRICITY Summary

[docs.assets.eco.on.ca/reports/energy/2018/
making-connections-Summary.pdf](https://docs.assets.eco.on.ca/reports/energy/2018/making-connections-Summary.pdf)

STRAIGHT TALK ABOUT ELECTRICITY REPORT

[docs.assets.eco.on.ca/reports/energy/2018/
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Ontario's Climate Act From Plan to Progress

Annual Greenhouse Gas Progress Report 2017

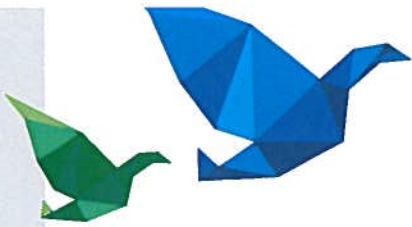
SUMMARY



Download the full report at:
eco.on.ca/reports/2017-from-plan-to-progress



Environmental
Commissioner
of Ontario



It's complicated, but Ontario is on the right track

How are our emissions?

Moving in the right direction

This is my second report to the Ontario Legislature about greenhouse gases (GHGs) and climate change.

In 2018, it is much too late to just *talk* about the climate; what counts now is action. Ontario took an essential first step when it closed its coal-fired power plants – still Canada's largest GHG reduction, and a help to air quality.

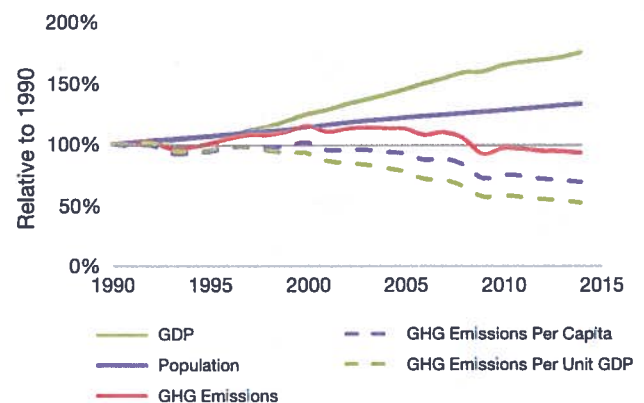
This report examines Ontario's progress on the second major step, putting a price on GHGs emitted into the atmosphere, for the benefit of our environment, our economy and our health.

Dianne Saxe, Environmental Commissioner of Ontario

Chapter 1: Ontario's GHG Emissions are Down

According to the latest available data, Ontario's GHG emissions dropped to the lowest level since reporting began in 1990, while gross domestic product and population continued to grow.

Mild weather, energy conservation/efficiencies, and coal-free electricity all helped reduce our emissions, but transportation emissions (especially from trucking – see Chapter 6) keep increasing.



Ontario's GHG emissions relative to GDP and population.

Source: Statistics Canada, *Gross domestic product, expenditure-based, provincial and territorial* (2016), CANSIM Table 384-0038; Statistics Canada, *Population by year, by province and territory* (2016), CANSIM Table 051-0001.

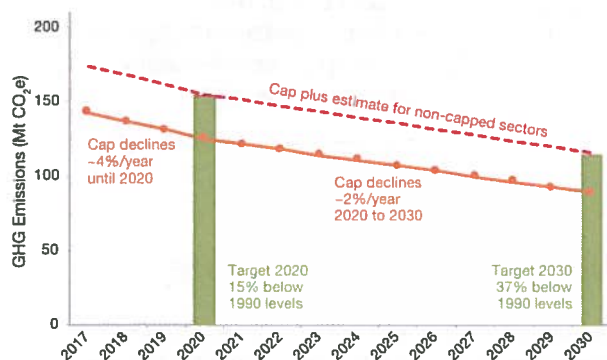
What has happened since the release of the *Climate Change Action Plan*?

A lot, actually

Chapter 2: Policies and Programs Since the Action Plan

This has been a busy time for Ontario climate policy. Since the government released its *Climate Change Action Plan* in June 2016, it has introduced dozens of additional policies and programs to reduce emissions from buildings, waste, transportation, land use, etc.

The central pillar was to put a cap and a price on Ontario's GHG emissions through a new carbon market (cap and trade program) that began January 1, 2017. Because long-term predictability of carbon policy is so important, Ontario has announced its cap on future GHG emissions for every year until 2030.



Ontario's emissions-reduction targets, cap on allowances for capped emitters, and estimate for non-capped sectors.

Source: Environmental Commissioner of Ontario.

The first year's distribution of carbon allowances (permits to emit GHGs) went smoothly, and the first four quarterly allowance auctions raised \$1.9 billion for the Greenhouse Gas Reduction Account (see Chapter 5).

Ontario is not alone

Cap and trade is getting better and more popular around the world. The link with California and Quebec should help Ontarians

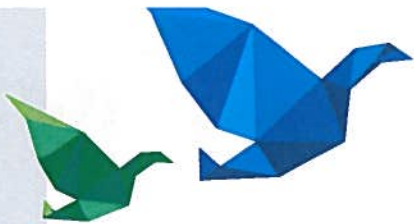
Chapter 3: National and International Context for Ontario's Climate Policy

Ontario has joined other jurisdictions around the world that are producing economic, health and environmental gains by putting a price on carbon pollution.



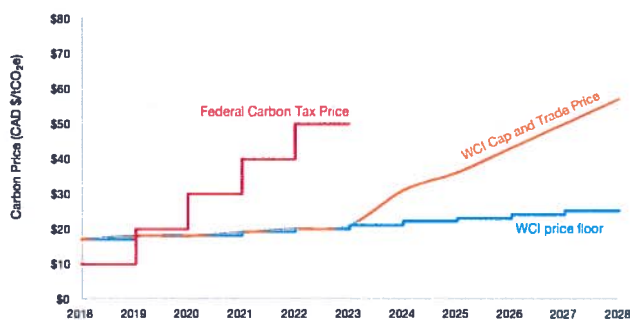
Carbon pricing initiatives around the world. China also now has a national cap and trade program.

Source: International Emissions Trading Association Global Carbon Pricing Map (December 2017).



Most jurisdictions have chosen cap and trade instead of a carbon tax, although both options can work. Cap and trade can be hard for many people to trust because it is hard to understand. But research from Harvard and elsewhere shows that cap and trade can reduce emissions more reliably and at less cost than a carbon tax.

In Canada, the *Pan-Canadian Framework on Clean Growth and Climate Change* requires all provinces and territories to put a price on carbon. Ontario can use its cap and trade program instead of the higher-cost federal carbon tax.



Carbon price forecasts under carbon tax and cap and trade policies.

Source: Environmental Commissioner of Ontario with cap and trade price estimate from ICF, Long-Term Carbon Price Forecast Report (July 2017).

Ontario's carbon market is now linked with California and Quebec, its Western Climate Initiative (WCI) partners. This should keep the cost of gasoline and diesel lower for Ontarians; stabilize Ontario's carbon market; and help Ontario industries invest in emissions reductions here at home. However, the United States' decision to pull out of the Paris Agreement complicates Ontario's plans to count emissions reductions in California as our own, and political uncertainty could weaken the next two WCI auctions.

GHG emissions have dropped faster than expected in all three WCI partner jurisdictions. This good news means that:

- The WCI market needs fine-tuning to reduce the oversupply of allowances;
- Carbon allowance prices are likely to stay low until well after 2020; and
- The predicted (temporary) flow of money from Ontario to California may shrink.

What is an offset credit?

A reduction in GHG emissions outside the cap, to make up for extra emissions by capped emitters

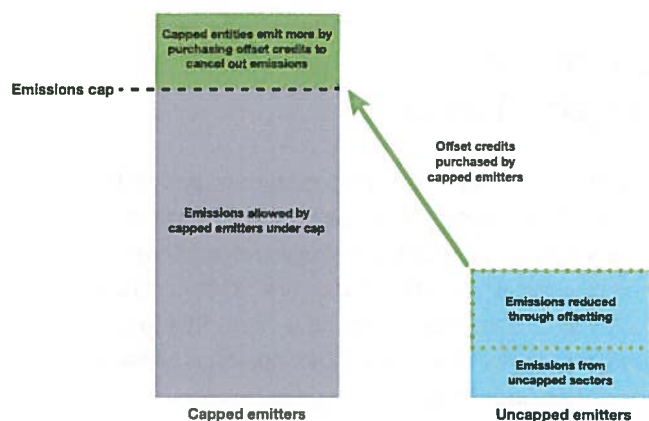
Chapter 4: Carbon Offsets

Offset credits offer a second key tool to reduce emissions while keeping the cost down for Ontarians.

About 18% of Ontario's GHG emissions (such as methane and nitrous oxide from waste, agriculture and forestry) are not covered by the cap and trade program. Offset credits could allow capped emitters to pay these uncapped sectors to reduce their emissions, or to take CO₂ out of the atmosphere, flowing money to rural communities.



How Offsets Work in the Cap and Trade Market



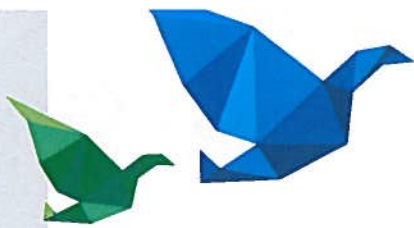
Source: Environmental Commissioner of Ontario.

Offset credits could keep the cost of emissions reductions down for capped emitters. This is particularly important for petroleum product suppliers, who pay most of the cost of cap and trade, and who will pass it on to drivers.

But if offsets are not done right, they can be little more than greenwashing. Some of Ontario's proposed protocols should be rejected.

The ECO's rating of Ontario's proposed offset protocols.

Proposed Offset Protocol	Rating and Recommendation
	<div>● Move Forward</div> <div>● Proceed With Caution</div> <div>● Do Not Move Forward</div> <div>? Not Enough Known</div>
Landfill gas capture and destruction	●
Mine methane capture and destruction	●
Ozone depleting substances capture and destruction	●
Refrigeration systems	●
Conservation cropping	●
Nitrous oxide reductions from fertilizer management in agriculture	●
Emissions reductions from livestock	?
Grassland projects	●
Anaerobic digestion	●
Organic waste management	●
Forest management	●
Afforestation and reforestation	●
Urban forest projects	●



How well is the government using the money from cap and trade?

Good start, but should do better

Chapter 5: Greenhouse Gas Reduction Account

How well is the provincial government using the \$1.9 billion dollars that flowed into the Greenhouse Gas Reduction Account (GGRA) from the first four cap and trade auctions?

According to the *Climate Change Mitigation and Low-carbon Economy Act, 2016 (Climate Act)*, GGRA funds must be used to reduce, or support the reduction of, GHG emissions. The ECO examined all uses of GGRA funds announced as of November 2017. Ninety-nine percent of these funds went to initiatives that met the minimum requirements of the *Climate Act*.

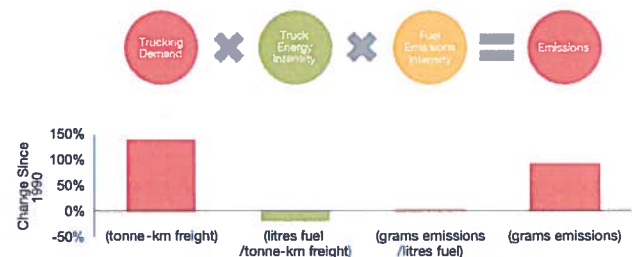
Government use of the GGRA is improving. By next year, the ECO wants to see a coherent plan tying GGRA funding decisions to the emissions-reduction targets in the *Climate Act* and to the reduction responsibilities of each ministry. For now, the GGRA's most important benefit is the improvement it has triggered in understanding Ontario's opportunities to reduce emissions.

How can we reduce freight emissions?

Avoid trucking where possible, improve truck efficiencies, and shift away from fossil fuels

Chapter 6: Freight Trucks

Freight is essential to Ontario's economy, and reducing freight's GHG emissions is essential to our climate targets. GHGs from Ontario's freight sector have more than doubled since 1990. These are predominantly from trucks, whose improvements have done little to offset huge increases in the weight and distances of freight trucked around Ontario.



The growth of heavy truck GHG emissions has been driven by increased demand.

Source: Natural Resources Canada, Comprehensive Energy Use Database (2016), Transportation Sector, Ontario, Table 36: Medium and Heavy Truck Secondary Energy Use and GHG Emissions by Energy Source.

Some Ontario government policies, such as subsidies for natural gas trucking, are not likely to reduce emissions. Instead, the government should encourage the freight sector to *avoid* trucking where possible (e.g., through logistics and road pricing), *improve* diesel truck efficiency (e.g., through incenting the scrapping of older diesel trucks), and *shift* freight away from fossil fuels (e.g., providing more targeted support for zero-emission trucks).



Is the government getting serious about climate change?

Yes - but there is still a long way to go

Chapter 7: Is the Ontario Government Taking Climate Change Seriously?

Some Ontario government ministries are taking climate change seriously. Progress this year included consideration of climate change in the *Long-Term Infrastructure Plan*, improvements to the Building Code, and empowering municipalities to adopt climate change by-laws.

But ministries often fail to treat climate change as the crisis that it is. For example, the government has a blind spot for many of its own emissions, funds projects that worsen urban sprawl, and adopted a *Long-Term Energy Plan* that will not take Ontario to its climate targets. And Ontario's fiscal policy continues to undermine its climate policy, e.g., through fossil fuel subsidies.

The government says it is committed to buying low-carbon products

Great – do it right

Chapter 8: Low-Carbon Procurement

Government procurement is an important tool to build Ontario's low-carbon economy. The Ontario government buys, on average, more than \$10 billion dollars of goods, services and infrastructure every year, and is a critical early market for low-carbon innovations.

The Ontario government has made some efforts to green what it buys and builds, but does not yet:

1. insist on knowing the GHG footprint of what it buys;
2. give that GHG footprint significant weight in procurement decisions;
3. set an emissions-reduction target for what it buys; or
4. report on its progress.

Is climate change already here across Ontario?

Yes, with much more to come

Chapter 9: Climate Change Impacts in Ontario

Climate change isn't just about polar bears, or about other people in other places in the future. Ontario is already feeling the effects of climate change, and much more is ahead.

Higher average temperatures and more extreme events, such as drought, storms, flooding and fires, are affecting people and organizations across the province. Tourism, forestry, agriculture and infrastructure are among the sectors affected by warmer, wilder and more unpredictable weather. Flooding continues to devastate families and communities in many parts of Ontario. Windsor had two "floods of the century" within 12 months.



Flooding in Harriston, Ontario.

Photo credit: Emergency Management Ontario.

Public health is at risk from the spread of ticks, wildfire smoke and hotter weather, which also intensifies the impacts of air pollution. Ontario air quality is degraded even by distant events, such as fires in western Canada and the United States.

Is it too late?

Still time to make a difference

Chapter 10: Talking With Ontarians About Climate Change

The Environmental Commissioner and her staff spend a lot of time talking with Ontarians about the urgency of climate change, what each of us can do about it, and what we owe to the young people we care about.



Young people won't have what we had.

Climate change mitigation and adaptation cannot be left entirely up to government. No one can do everything, but everyone can do something. Ontarians must reduce their carbon footprint, get ready to adapt and speak up. It's not too late to make a difference.

Making Connections Straight Talk About Electricity in Ontario

2018 Energy Conservation Progress Report, Volume One

Summary



Download the full report at:
eco.on.ca/reports/2018-making-connections



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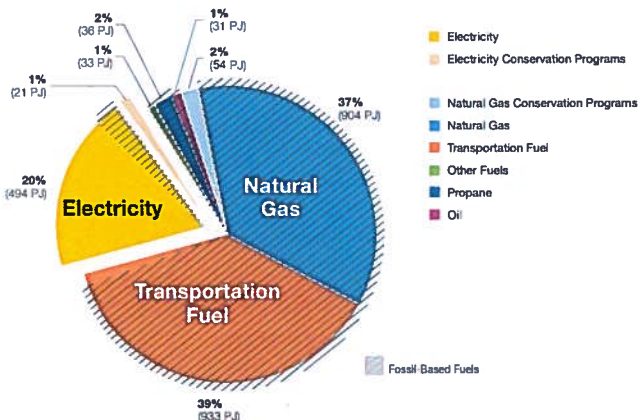


Dianne Saxe
Environmental Commissioner of Ontario

Why is our electricity system so important?

Electricity provided only 20% of Ontario's energy in 2015. But low-carbon electricity is the key to Ontario's energy future.

Electricity is the smallest and greenest of Ontario's energy sources, providing only 20% of Ontario's energy in 2015. Because the other 80% comes almost entirely from fossil fuels (natural gas and petroleum products for heating, transportation and industry), electricity is the key to our energy future.



Ontario's energy use, by fuel type in 2015, including demand reduced by utility-run conservation programs.

Greenhouse gas emissions from burning fossil fuels are the major cause of climate change, the defining challenge of our time. Governments of the world have agreed to dramatically reduce these emissions. Key first steps include increasing conservation, and minimizing fossil fuel use in the electricity system. Second steps are to convert other fossil fuel uses to low-carbon electricity, plus even more conservation.

This report answers 19 questions about electricity in Ontario. Each question and answer is a separate report chapter. The chapters are grouped into five sections:

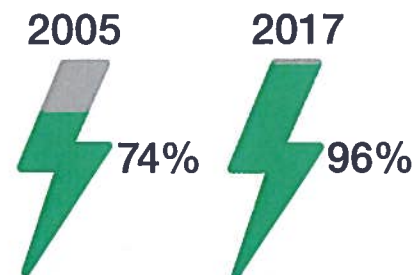
- ✕ Ontario's Transition to a Low-Carbon Electricity System
- ⚙️ Impact on the Electricity System
- 💰 Impact on Electricity Prices
- 🌿 Impact on the Environment
- 🔌 Ontario's Electricity Future

Throughout this report, section icons and question numbers are used to indicate that additional information can be found in other report chapters. For example, **Q10** is a cross-reference to question 10 within the "Impact on the Environment" section.

Ontario is midway through this crucial transformation. In 2005, Ontario had a creaking, highly indebted, high-polluting electricity system that strained to meet demand. Coal-fired electricity looked cheap on the power bill but came at a high cost to the environment, the climate and human health. This could not continue.

Today, Ontario has a more expensive but a more reliable, cleaner electricity system that was 96% carbon-emission free in 2017. This transformation has created dramatic changes and opportunities for those who provide Ontario's electricity, for all of us who depend on that system, for the economy and for our natural environment. And much more change is ahead.

This report, the first volume of the ECO's 2018 Energy Conservation Progress Report, analyzes this transformation. Volume Two (to be released in summer 2018) will focus on the progress of conservation programs in 2016.

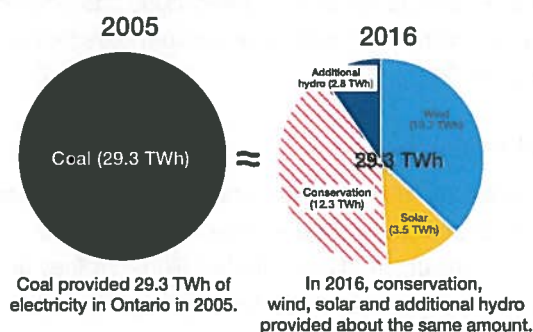


Ontario's electricity system went from 74% low-carbon generation in 2005 to 96% low-carbon generation in 2017

Where does our electricity come from?

Mostly nuclear, plus hydro (water), wind, natural gas and solar. Plus conservation.

Since 2005, Ontario has replaced coal and added capacity with nuclear, solar, wind, hydro (water) and natural gas generation facilities. Conservation has helped reduce demand. In 2016, conservation and new renewable power equalled most of the electricity formerly provided by coal. (X Q3, X Q4)



Ontario uses different sources of electricity at different times. Demand swings from high to low at different times of day, weekdays versus weekends, and as seasons change. Peak electricity use on the hottest days and coldest evenings can be more than double off-peak electricity use. (X Q3) Peak demand has an outsized impact on Ontario electricity costs. (\$ Q9)

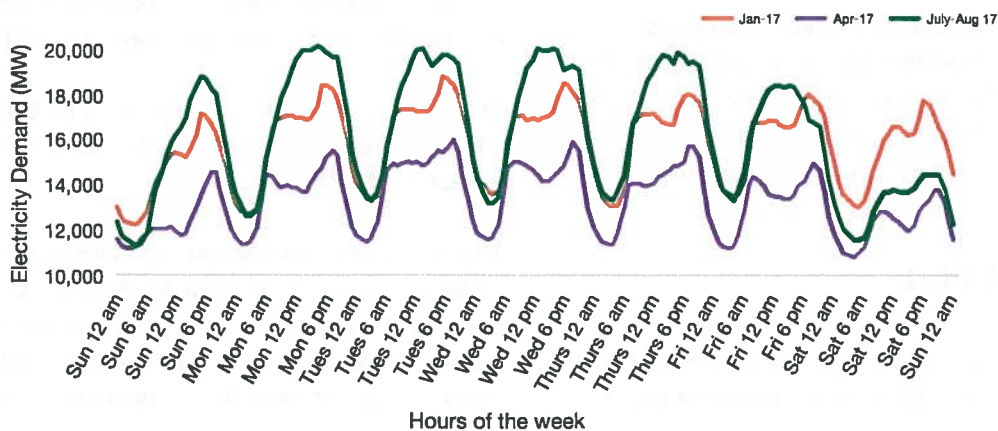
In most hours of the year, Ontario uses little or no gas-fired generation. When demand is low (e.g., nights, weekends, spring and fall), nuclear, water and wind provide the power. Solar helps on sunny days. When demand is high, Ontario uses all its sources of power, including natural gas. (X Q3, X Q4)

How well does Ontario's electricity system work?

Much better than in 2005.

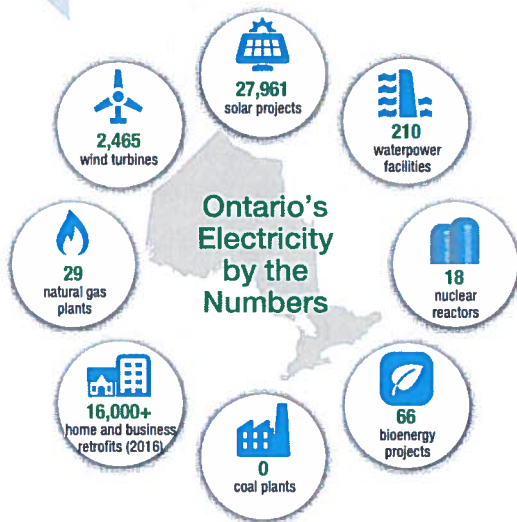
Ontario's electricity system is in much better shape than it was in 2005. Ontario is self-sufficient, with about the right amount of reliable power available for peak demand, with no brownouts or emergency appeals to reduce electricity use. (A Q5)

Hourly electricity demand patterns over a week in January, April and July-August of 2017.



After conservation, which source of power is best?

Every source of electricity has advantages and disadvantages.



Nuclear

Nuclear power provides most of Ontario's electricity, with no air pollution or greenhouse gas emissions and a relatively low cost per kilowatt-hour. To justify refurbishment of the Bruce and Darlington nuclear reactors, Ontario has committed to buy billions of dollars of power from them every year until 2064. (🔥 Q14)

Nuclear power has risks that Ontario must balance against Ontario's share of the grave consequences of climate change. Ontario has made a heavy commitment to nuclear while largely abandoning renewables. Nuclear power may not be cheaper than renewables over the long run. (🔥 Q14, 🔥 Q16)

Waterpower (hydro)

Ontario's electricity system was originally built on waterpower, starting with Niagara. Most accessible Ontario waterpower sites were developed long ago,

and provide Ontario's cheapest electricity. Some existing sites have added capacity since 2005, and there is underused storage capacity. Ontario has a weak approval process for waterpower with no public hearings, despite the serious ecosystem disruptions that dams often cause. Waterpower's environmental footprint is usually lower if it takes place at sites that have already been altered. (🔥 Q4, 🌿 Q10)

Natural gas

Natural gas-fired electricity can be turned on and off at will, which makes it useful for meeting peak demand and as backup power. Importing the gas drains money out of Ontario. Its price fluctuates on international markets beyond Ontario's control; in 2005, it was much more expensive than it is now. (🔥 Q4) Natural gas is a fossil fuel that causes air and greenhouse gas pollution; upstream methane emissions are potent greenhouse gases. (🌿 Q11)

Wind and solar

Wind and solar do not cause air pollution or greenhouse gas emissions and are the world's fastest growing sources of electricity. Costs started high, but they are increasingly competitive with fossil fuels and nuclear power. (🔥 Q4, 💰 Q9)

The Green Energy Act, 2009, fulfilled its key objectives of growing distributed renewable power and a renewable electricity industry, although not as much as planned. Having a Feed-in Tariff was the international best practice, and the rates paid were reduced as costs fell. (💰 Q9)

Wind turbines can have adverse impacts, especially on birds and bats. Appropriate siting helps minimize these impacts. (🌿 Q10)

The contributions of solar and wind are systematically underrepresented in some public reports. For example, the 87% of solar power and the 12% of wind power that are embedded (connected to local distribution utilities instead of the bulk grid) are not included in the

Independent Electricity System Operator's real-time online energy reporting (Power Data). (✗ Q4)

With the end of procurements such as the FIT program, Ontario has largely abandoned its renewable electricity industry, though customers may still generate some of their own power, through net metering. (🔌 Q17, 🔌 Q18)

**Aren't solar and wind too variable?
Ontario can use them well, as others do.**

Ontario's electricity system is successfully integrating wind and solar power. For example, solar power helps meet peak summer demand, the most expensive to serve. (🔌 Q6)

As renewable electricity grows, Ontario will need more ways to match supply and demand, including storage and more flexible pricing. Ontario can learn how from other jurisdictions who use much more wind and solar electricity than we do. (🔌 Q6, 🔌 Q16)

How much good did phasing out coal do?

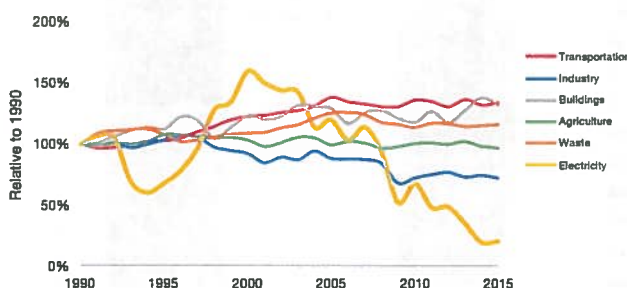
A lot, actually.

Taking coal out of electricity dramatically reduced Ontario's greenhouse gas emissions, and has improved air quality and public health. (🌿 Q11, 🌿 Q12)

Almost all of Ontario electricity's remaining greenhouse gas emissions and air pollution come from natural gas-fired power plants, which are used mostly to meet peak demand. (✗ Q4, 🌿 Q11)



Smog over downtown Toronto



Ontario historical GHG emissions by economic sector relative to 1990 levels.

Why does electricity cost what it does?

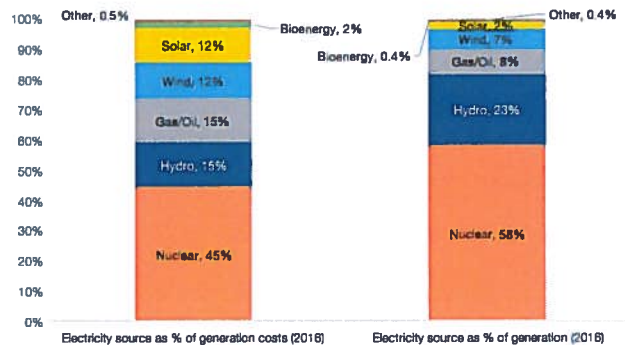
**There are many good reasons.
And some bad ones.**

There are many good reasons why Ontario electricity prices have gone up and will rise further.

Ontario's cleaner, more reliable electricity system costs about \$21 billion each year, up from about \$15 billion in 2006. Most of the extra cost is for additional

generation capacity. All new sources of power (except conservation) cost more than the old ones, partly because of inflation. Building electricity infrastructure with private capital also costs more than building it with publicly guaranteed debt, as Ontario Hydro used to do. (💰 Q9)

Nuclear, solar and wind power have contributed the most to the rise in rates. Going forward, nuclear costs will rise and solar and wind power costs will fall. (💰 Q9)



Electricity source as a share of generation costs, and share of generation (Ontario, 2016).

Note that additional hydro and wind power was available at no extra cost but was not used as supply. See 🌱 Q7.

In setting the Feed-in Tariff rates for solar and wind electricity, the government balanced multiple public policy goals, including encouraging small-scale and community power, economic development and environmental protection. Ontario's climate makes wind and solar more expensive here than in many other places. The Green Energy Act added costs and delays, including an elaborate process of environmental approvals, a unique third-party right of appeal to the Environmental Review Tribunal and, initially, domestic content requirements. (💰 Q9, 🌱 Q10)

There are also some bad reasons for today's electricity prices. The Environmental Commissioner of Ontario, the Financial Accountability Officer and the Auditor General of Ontario have all documented mistakes in Ontario's energy policy and implementation, some of which affect rates. For example, the relocation of gas plants from Oakville and Mississauga will cost about \$40 million a year for 20 years after 2017, increasing system costs about a fifth of one percent (0.2%). Past nuclear plant cost overruns added about seven-tenths of a cent (\$0.007) per kilowatt-hour until March 31, 2018. On the other hand, the sale of Hydro One has not materially affected electricity rates. (💰 Q9)

Today's electricity customers pay only 80% of the cost of the electricity system through their electricity bills. The other 20% has been shifted to taxpayers and to future ratepayers, who will also pay \$21 billion in interest on money the province has borrowed under the Fair Hydro Plan. (💰 Q9) Electricity rates will go up again after 2021, when the borrowed money must start to be repaid. (🔥 Q13)

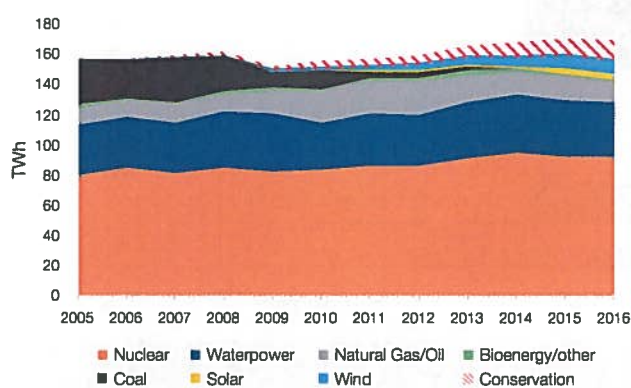
Why conserve?

Why bother conserving? To save money, to reduce emissions at peak, and to make electricity available to replace fossil fuels.

The average Ontario household uses 13% less electricity today than it did in 2005. This has helped to buffer the impact of higher electricity rates. (💰 Q8)

Electricity conservation remains the cheapest way to match supply and demand, but Ontario needs to focus more on conserving electricity when demand is high (e.g., hot summer weekdays and cold winter evenings). (🔊 Q19)

Electricity production and conservation by resource, 2005-2016.



Is there a surplus?

Why does Ontario sell cheap power to the U.S.? Because it turns spare capacity into money.

When demand is low, Ontario often has surplus power. This off-peak surplus is a natural consequence of an electricity system based on nuclear and renewables, because supply is not determined by demand. The surplus may largely disappear after 2020. (🔊 Q7)

Ontario exports surplus power for more than it costs us to generate that power; Ontario does not lose money by exporting. But there are better options for using this power in Ontario, such as storage, charging electric vehicles and making hydrogen ("power to gas"). Flexible pricing would encourage demand to shift to when there is surplus power. (🔊 Q16)

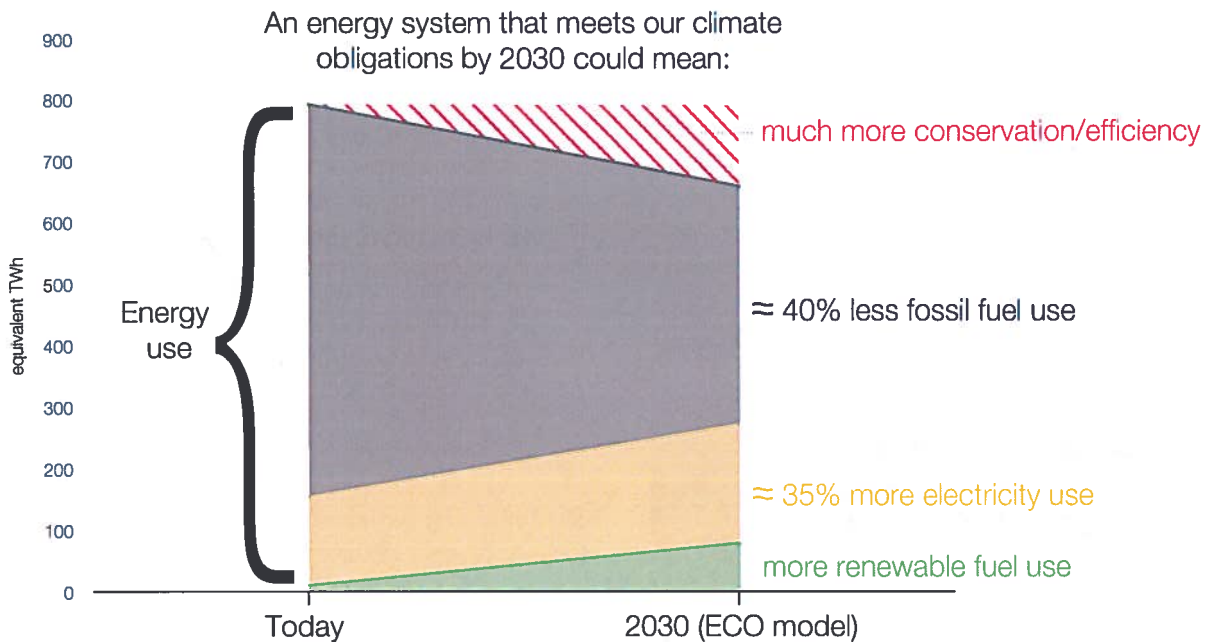
What's ahead?

We need more clean electricity and conservation to replace natural gas, gasoline and diesel. But Ontario is not getting ready.

The limits on greenhouse gas pollution in Ontario's Climate Change Mitigation and Low-carbon Economy Act mean that more than 40% of the fossil fuels now used for heating and transportation must be replaced by conservation, active transportation, biofuels, direct renewable energy and low-carbon electricity over the next 13 years, within the lifetime of today's vehicles and furnaces. This means that low-carbon electricity supply must increase much more than the government plans. (🔊 Q15)

The Ontario government is not prepared for this transformation. The 2017 Long-Term Energy Plan mostly ignores the urgency of climate change and the 80% of Ontario's energy that comes from fossil fuels. (🔊 Q13)

Ontario's current plans for obtaining future electricity supplies (other than nuclear) may save money in the short run if electricity demand remains flat. But they will discourage the growth of renewable electricity, may not save money if demand grows, and may not produce the low-pollution, low-carbon electricity supply that Ontario will need. (🔊 Q15, 🔊 Q17, 🔊 Q18)



Summary of ECO recommendations

The ECO recommends that:

1. Ontario's Long-Term Energy Plan should be required by law to be consistent with the Climate Change Mitigation and Low-carbon Economy Act. It should plan Ontario's energy system, not just electricity, and should prepare for significant electrification of transportation and heating.
2. Conservation should play a larger role than it does now and should be focussed on times of high demand. It will have more value as demand grows.
3. Ontario should do more to minimize adverse impacts of electricity generation, such as bird and bat kills by wind turbines.
4. To help people who are unduly affected by electricity rates, low-income and Aboriginal financial support programs should be supplemented with enhanced conservation programs to make electrically heated homes more efficient.
5. Ontario should learn from jurisdictions who already use much more renewable electricity, and update electricity infrastructure and energy system regulations to encourage the low-carbon transformation. For example:
 - a. Ontario should get better at using flexibility tools, such as storage, demand response, interties and prices, to match supply and demand, instead of turning off (curtailing) low-carbon off-peak electricity and running gas-fired generation at peak.
 - b. Net metering and Market Renewal should provide sufficient incentives to grow renewable electricity as needed to keep Ontario's electricity supply low-carbon.
 - c. Local distribution utilities should facilitate a growing level of renewable generation and storage.