

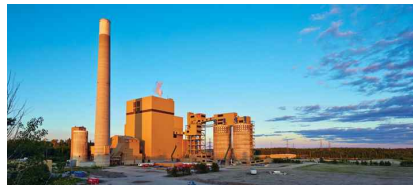
Ontario's Electricity Rates

What Went Wrong and Where Do We Go from Here?

Prepared by
OSPE's Energy Task Force

with Data Analysis and Graphical Support from
Market Intelligence & Data Analysis Corp. (MIDAC)

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Ontario's Electricity Rates

What Went Wrong and Where Do We Go from Here?

Presentation Outline

- ✧ Constructive Policies
- ✧ Power System Carbon Dioxide Emissions
- ✧ Unexpected Economic Turmoil
- ✧ Ontario's Excess Capacity
- ✧ Weak Policies that Drive Rates Higher
- ✧ Is the Fair Hydro Plan Fair?
- ✧ Where Do We Go From Here?

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What Went Wrong and Where Do We Go from Here?

Constructive Policies

- ✧ Elimination of coal generation
 - ✧ Reduced carbon dioxide emissions significantly
 - ✧ Reduced air pollution (heavy metals, NO_x, SO_x, particulates)
 - ✧ Reduced emissions of radioactive isotopes contained in coal
- ✧ Improved lighting, appliance and insulation efficiency standards
- ✧ Conservation programs
- ✧ Peak demand reduction programs

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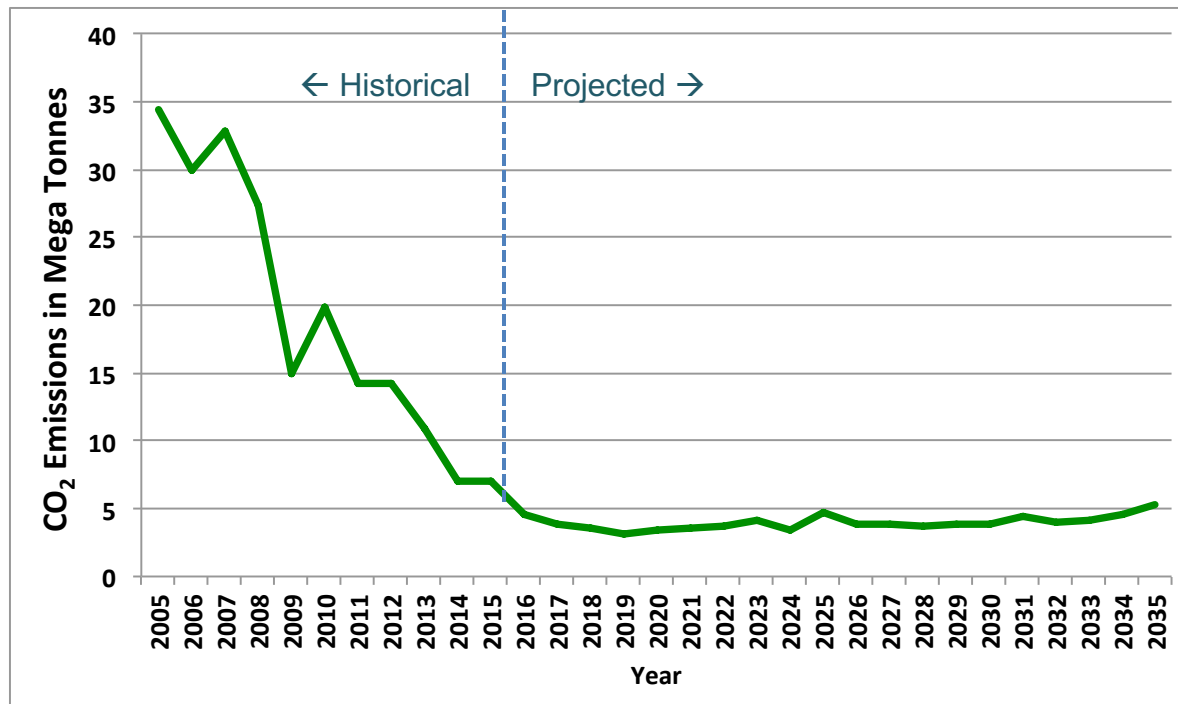
Constructive Policies

- ✧ Refurbishment of nuclear units at rates below the prevailing rates
- ✧ Constructive policies led to an 80% reduction in CO₂ emissions by 2016 compared to 1990 levels
- ✧ That's 35 years ahead of the international goal of 2050 !
- ✧ Current Ontario rates (2018) are in mid-range of all US states
- ✧ Ontario rates are lower than European countries with aggressive carbon dioxide reduction programs

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Ontario's Power System CO₂ Emissions (BEFORE Renewables Cancellation in 2018)

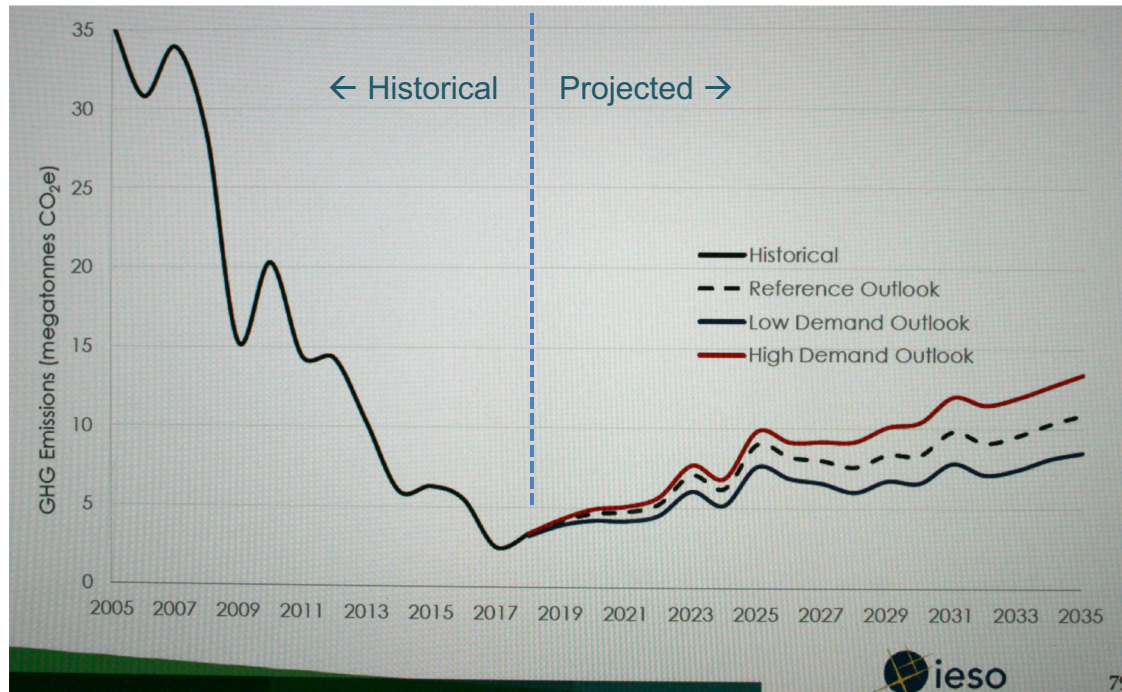


- ✧ 80% below 1990 level of 25.5 Mt
- ✧ Less than 30 grams CO₂ per kWh
- ✧ The cleanest mixed generation grid in the world.
- ✧ Effective for carbon displacement in transportation, buildings, industry.

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Ontario's Power System CO₂ Emissions (AFTER Renewables Cancellation in 2018)



- ✧ Greater use of natural gas
- ✧ Emissions will triple from 2017 to 2035
- ✧ Grid less effective for carbon displacement in transportation, buildings, industry.

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Unexpected Economic Turmoil

- ✧ 2008-09 recession reduced demand growth permanently
- ✧ Nuclear refurbishment programs already well underway
- ✧ New combined cycle gas turbine plants already well underway
- ✧ Loss of jobs severe, government looking for more employment
- ✧ Passed a Green Energy Act to create green jobs
- ✧ Government was slow to appreciate no demand growth
- ✧ Resulted in significant excess capacity by 2016

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Weak Policies that Drive Rates Higher

- ✧ Too much new capacity was contracted for
- ✧ Contracts were typically on a take-or-pay basis
- ✧ Conservation programs were too aggressive and drove demand lower in a high fixed cost power system
- ✧ Class A load management programs transferred costs to Class B residential and commercial loads
- ✧ Non-productive assets were not written off to tax accounts

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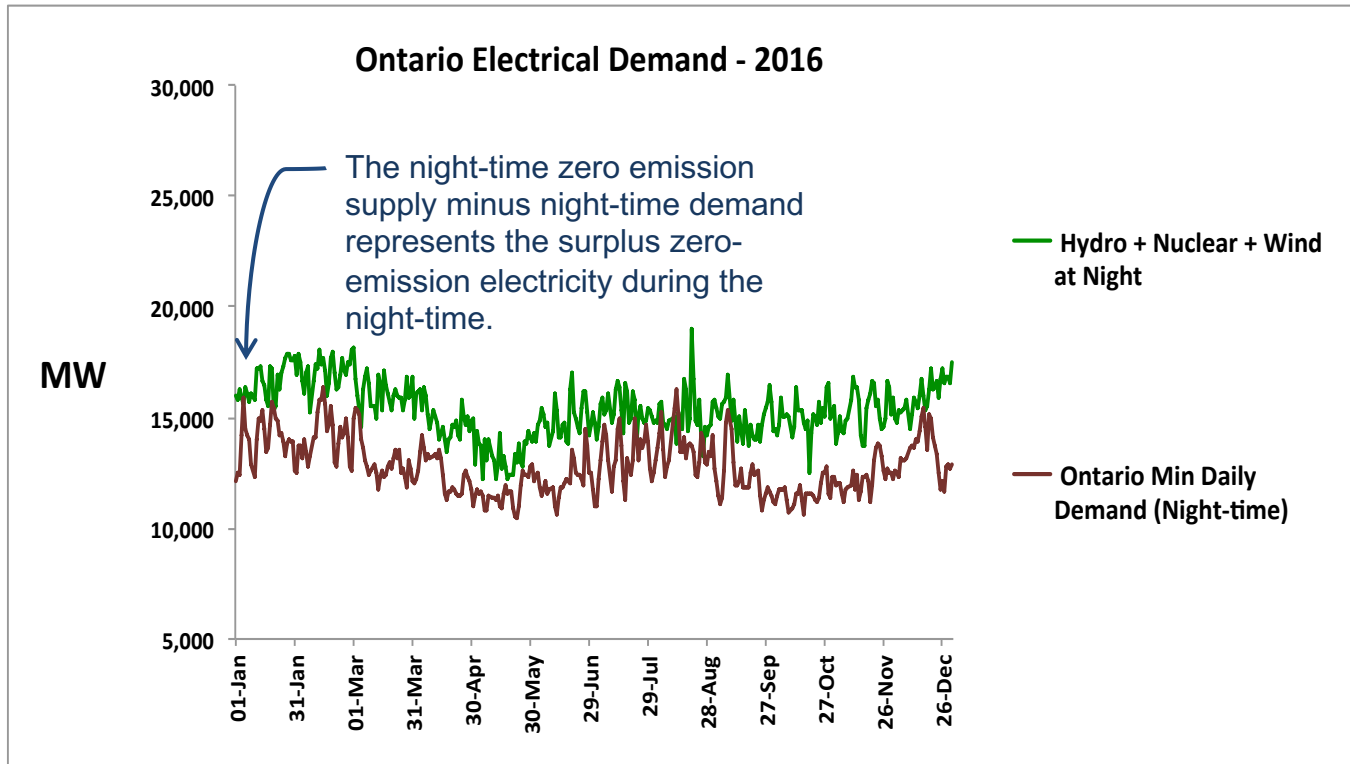
What Went Wrong and Where Do We Go from Here?

Weak Policies that Drive Rates Higher

- ✧ Rates used to subsidize several groups of consumers (the poor, rural consumers, off grid communities and large industrials)
- ✧ No retail market created in Ontario to use surplus electricity for interruptible loads such as fossil fuel displacement
- ✧ Significant amounts of surplus production was exported at very low rates of about \$16/MWh in 2017 (1.6 cents/kWh)
- ✧ Significant amounts of curtailment (waste) of clean generation (10.2 TWh in 2017, enough for 1.1 million homes)

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Weak Policies that Drive Rates Higher

- ✧ Wind and solar are intermittent and have relatively low market value but their contractual costs are high.
- ✧ Ontario Energy Board 2018 “generation” cost data:

| | | |
|-----------------------------|----------------|-------------------------------|
| ✧ Hydro-electric generation | 6.2 cents/kWh |] These 2 hold rates down. |
| ✧ Nuclear generation | 7.7 cents/kWh | |
| ✧ Gas/Oil fired generation | 18.8 cents/kWh |] These 4 drive rates higher. |
| ✧ Wind turbine generation | 15.9 cents/kWh | |
| ✧ Solar generation | 51.3 cents/kWh | |
| ✧ Bio-energy generation | 23.6 cents/kWh | |
- ✧ 2018 retail price of electricity (total price) ~ 14 cents/kWh

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Is the Fair Hydro Plan Fair ?

✧ The Good:

- ✧ rates are coming down 25% in 2017 for 5 years
- ✧ Some social subsidies will be paid from taxes not rates

✧ The Bad:

- ✧ the rate reduction is being financed in a deferral account at OPG along with the compound interest charges

✧ The Ugly:

- ✧ the deferral account charges will show up after 2021 as large increases in rates.

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Where do We Go From Here ?

- ✧ Let's use the surplus clean electricity in Ontario to displace fossil fuels in other sectors on an interruptible basis
- ✧ Interruptible electricity is available at its marginal cost of production (1.6 cents/kWh)
- ✧ In the longer term, restructure electricity rates so the fixed costs (90%) are recovered based on capacity use (peak kW demand) and variable costs (10%) are recovered based on energy use (kWh)
- ✧ Reconsider the use of a deferral account and write off non-productive contract costs and assets to a tax supported account

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Questions ?

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