

Nova Scotia's carbon realities

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Last week, Premier McNeil stated that by 2030, Nova Scotia's greenhouse gas emissions would be 46% below 2005 levels. His projection appears to be based largely on the expectation that Nova Scotia Power will continue its decarbonization program and there will be little growth in demand for carbon-based energy products over the next 14 years.

If the premier's projection for 2030 holds true, it will mean that:

- Nova Scotia's annual greenhouse gas emissions will have been reduced from 23.5 megatonnes (million tonnes) in 2005 to 16.6 megatonnes in 2014 to 12.7 megatonnes in 2030. Over six megatonnes of the 10.8 megatonne reduction between 2005 and 2030 are expected to be the result of regulations requiring Nova Scotia Power to reduce its emissions and increase its use of renewables.
- The province's per-capita emissions will have fallen from 25 tonnes/person in 2005 to 17.6 tonnes/person in 2014, to between 12.8 and 13.3 tonnes/person in 2030. This will put the province's per capita emissions on par with provinces such as British Columbia and Ontario that had, in 2014, per-capita emissions of 13.5 tonnes/person and 12.4 tonnes/person, respectively.
- Nova Scotia will be one of the few provinces to have met Canada's 2030 target of reducing its emissions by 30% below 2005 levels. It will probably be the only province to have reduced its emissions by such a sizable amount. In fact, in 2030, Nova Scotia's emissions will be more than 36% below 1990 levels, almost equal to the European Union's reduction target of 40% below 1990 levels by 2030.

Despite Nova Scotia's success at emissions reduction, Prime Minister Trudeau has repeatedly stated that starting in 2018, all provinces will be required to have some form of carbon-pricing (actually, CO₂e-pricing): either an industrial cap-and-trade program or a consumer carbon-tax. The price of emissions will be \$10/tonne in 2018, increasing by \$10 a year until 2022, when it reaches \$50/tonne.

The prime minister has also made it clear that the federal government will impose the consumer carbon-tax on any province that fails to institute either of the carbon-pricing programs by 2018.

The consumer carbon-tax is a per-unit-of-energy surcharge on the purchase of energy products, such as gasoline, light fuel oil (LFO), and electricity. The surcharge is determined from the greenhouse-gas content of the product; for example, consuming one-litre of gasoline emits about 2.31 kilograms of greenhouse gases.

The following table shows the annual surcharge for a number of different energy products used in Nova Scotia, starting in 2018 and ending in 2022. For example, a litre of gasoline purchased in 2018 will have a surcharge of 2.3 cents/litre, while in 2022, it will be 11.6 cents/litre. The price-per-unit varies because each energy product has a different greenhouse-gas content.

	2018	2019	2020	2021	2022
	\$10/tonne	\$20/tonne	\$30/tonne	\$40/tonne	\$50/tonne
Diesel fuel (per litre)	\$0.027	\$0.054	\$0.080	\$0.107	\$0.134
Gasoline (per litre)	\$0.023	\$0.046	\$0.069	\$0.092	\$0.116
LFO (per litre)	\$0.030	\$0.059	\$0.089	\$0.118	\$0.148
Natural gas (per GJ)	\$0.501	\$1.002	\$1.503	\$2.004	\$2.505
Propane (per litre)	\$0.015	\$0.030	\$0.045	\$0.060	\$0.076
Electricity (per kWh)	\$0.0054	\$0.0104	\$0.0149	\$0.0188	\$0.0221

The annual cost to consumers of the surcharge will depend on the different types and quantities of energy used. For example, the following table shows the average annual quantities of energy purchased in Nova Scotia for three different types of energy (gasoline, electricity, and light fuel oil), the associated surcharges, and the total surcharge costs if a consumer were to purchase all three types of energy between 2018 and 2022. For example, in 2020, purchasing 2,500 litres of light fuel oil would result in a surcharge of \$221.25 (at \$30/tonne); the total annual surcharge on all three energy products in 2020 would be \$460.52. (The emissions associated with electricity are declining as a result of Nova Scotia Power's decarbonization plan; this leads to the total emissions associated with these purchases falling from 15.8 tonnes in 2018 to 14.8 tonnes in 2022.)

Type of energy	Consumption	Tonnes	2018	2019	2020	2021	2022
			\$10/tonne	\$20/tonne	\$30/tonne	\$40/tonne	\$50/tonne
Gasoline	1,300 litres	3.00	\$30.03	\$60.06	\$90.09	\$120.12	\$150.15
Electricity	10,000 kWh	5.45-4.87	\$54.45	\$104.18	\$149.18	\$188.00	\$221.36
LFO	2,500 litres	7.38	\$73.75	\$147.50	\$221.25	\$295.00	\$368.75
Total surcharge			\$158.23	\$311.74	\$460.52	\$603.12	\$740.26
Total emissions (tonnes)			15.8	15.6	15.4	15.1	14.8

The revenues generated from the surcharges (collected by either the provincial or federal government) will be available for the province to spend. One underlying assumption is that some of the revenues will be returned to low-income Nova Scotians in order to defray the cost of the surcharge. This can be in the form a tax reduction, such as lowering income-tax rates (as is being done in B.C.) or an annual or quarterly rebate (as is to take place in Alberta starting in 2017). B.C.'s approach is revenue-neutral, whereas Alberta's allows the government to spend the surplus on a variety of green projects.

Barring a change in federal legislation, it appears highly unlikely that Premier McNeil's arguments will be heeded by the federal government, meaning that some form of carbon pricing will be imposed on the province. The revenues generated will be significant; for example, applying the 2020 emissions charge (\$30/tonne) to Nova Scotia's emissions in 2014 from electricity, transportation, the built environment, and manufacturing, the province would have raised almost \$440 million.

Economists, such as those with Ecofiscal, recommend that the Nova Scotia government give high priority to recycling these revenues in the form of rebates to households and cuts to personal and corporate income taxes.

However, whether the full cost of the consumer carbon-tax should be applied to electricity requires careful consideration since the carbon-tax will begin when Nova Scotia Power's rates will be increasing. One way to limit the impact of these two events on Nova Scotians is for the province to reduce the electricity carbon-tax by the costs of the electricity rate increase as well as the costs of any demand-side programs paid for by NSPI.

One of the principal objectives of the Paris Accord (which Canada has just ratified) is described in Article 2.1(a), notably "*Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels*".

According to the Intergovernmental Panel on Climate Change (IPCC), achieving Article 2.1(a) will require global emissions levels to decline by between 41% and 72% by 2050 (compared to 2010 emissions) and to continue declining by between 78% and 118% by 2100 (compared to 2010 emissions).

In other words, Canada's 2030 target will be the first of many such reduction targets.

Although Nova Scotia has made considerable inroads into meeting the IPCC's 2050 target, it will need to develop a low-carbon economy, that both achieves future targets and is at little risk from, for example, the unexpected imposition of carbon taxes.

Nova Scotia cannot afford to meet reduction targets in the way it achieved its 30% reduction in 2015 [see ans.com 20 September 2016]: half from electricity, which included a 62% electricity rate increase, and half from the loss of industry and manufacturing, and a marked decline in transportation.

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