

Amendments to Greenhouse Gas & Air Quality Emissions Regulations

BACKGROUND

Nova Scotia is in a period of change: a change to a cleaner and greener future. Our long-standing dependency on coal for electricity generation degrades our air quality, changes the climate, and makes the province vulnerable to volatile world prices and supply. In response, the Government of Nova Scotia has developed a robust approach to reduce the province's reliance on coal by replacing it with cleaner and renewable resources. Switching to renewables provides greater price stability for the future, and improves the health of our environment and our citizens.

Nova Scotia is the first jurisdiction in North America to place a “hard cap” on greenhouse gas (GHG) emissions from the electricity sector. The province's *Greenhouse Gas Emissions Regulations*¹ and *Air Quality Regulations*² provide a clear path for electricity-sector emission reductions until 2020.

The decision to amend these regulations for the 2021 to 2030 period will add regulatory certainty to the electricity sector and Nova Scotia ratepayers. This in turn will facilitate electricity sector investments that put the province on a path to long-term emission reductions and stable energy prices.

1 *Greenhouse Gas Emissions Regulations.*
<http://www.gov.ns.ca/just/regulations/regs/envgreenhouse.htm>

2 *Air Quality Regulations.*
<http://www.gov.ns.ca/just/regulations/regs/envairqt.htm>

GREENHOUSE GAS EMISSIONS REGULATIONS

Nova Scotia has legislation (*Environmental Goals and Sustainable Prosperity Act*) requiring an economy-wide GHG emission target of at least 10% below 1990 levels by 2020³. Since the electricity sector is responsible for almost half of the province's GHG emissions, Nova Scotia imposed regulated "hard caps" on emissions from electricity generation. The regulation includes increasingly lower targets for GHGs for the period of 2010 to 2020. It will result in a 25% reduction in electricity sector GHGs from about 10 Mt in 2007 to 7.5 Mt in 2020. The objective of the caps is to reduce electricity sector emissions in a manner that produces the greatest benefit to the environment over the long-term while minimizing the impact on power rates. The cap allows the utility the flexibility to meet environmental outcomes in the most cost-effective way.

Greenhouse Gas Emission Caps 2021-2030

In September 2012, the Government of Canada published its final regulations for coal-fired electricity generation⁴. The regulations come into force in 2015, and require coal-fired electricity units to meet a new GHG emissions standard (420 t CO₂/GWh) or shut down at the end of their useful life, approximately 50 years from the commissioning date. Under the federal regulation, Nova Scotia would be required to shut down six of its eight coal units by 2030.

Upon review of the federal government regulation it was determined that Nova Scotia's regulatory approach can meet or exceed the federal GHG reductions but in a less costly manner. The Government of Canada agreed, and together we released a draft equivalency agreement for coal-fired electricity for public consultation in September 2012⁵. Once finalized, the agreement will ensure the province's GHG regulations apply in Nova Scotia instead of Canada's new coal-fired electricity regulations. Under the agreement, Nova Scotia's current GHG regulations will apply until 2020, and we are amending these regulations to require additional GHG reductions to 2030 (Table 1). The amended regulations will require a 55% reduction in electricity-sector GHGs from 10 Mt in 2007 to 4.5 Mt in 2030.

3 *Environmental Goals and Sustainable Prosperity Act.*
http://nslegislature.ca/legc/bills/61st_4th/3rd_read/b136.htm

4 *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations.*
<http://gazette.gc.ca/rp-pr/p2/2012/2012-09-12/html/sor-dors167-eng.html>

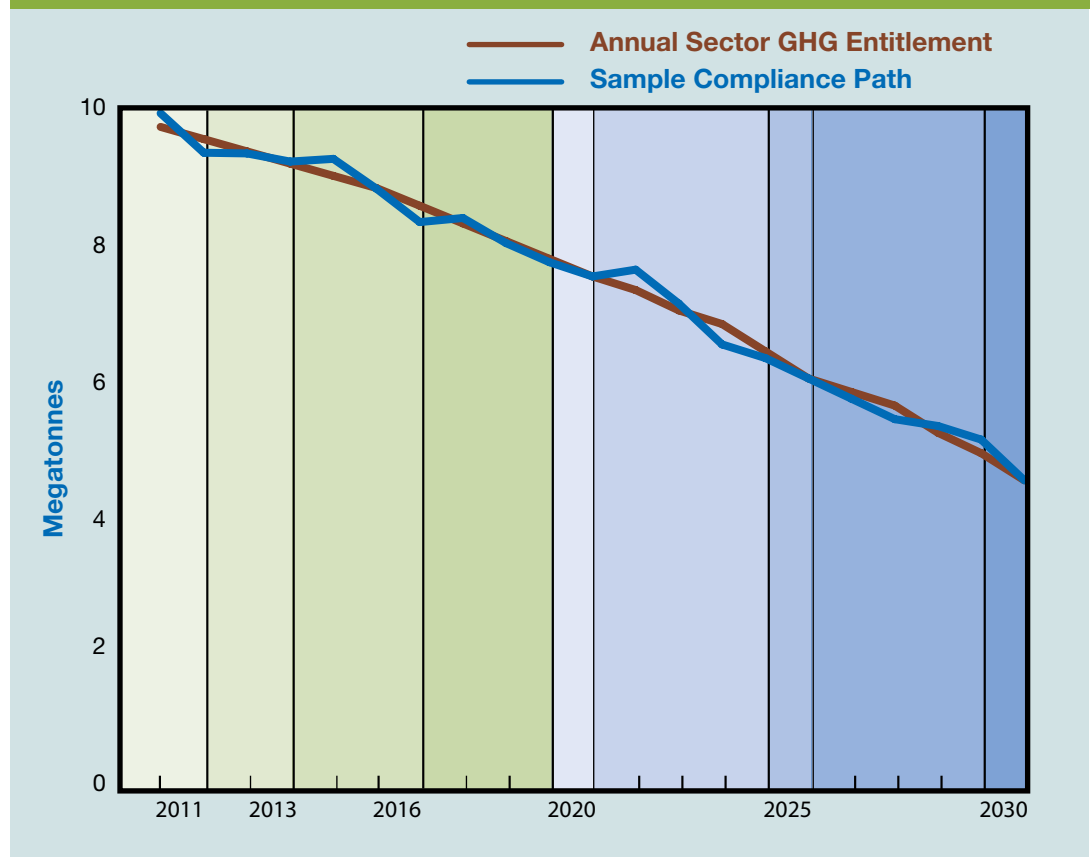
5 *An Agreement on the Equivalency of Federal and Nova Scotia Regulations for the Control of Greenhouse Gas Emissions from Electricity Producers in Nova Scotia.*
<http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=1ADECEDE-1>

Table 1: Electricity Sector GHG Emissions Reduction Schedule

Calendar Year	Annual Sector GHGs (million tonnes CO ₂ e) Illustrative	Compliance Period Limit (million tonnes CO ₂ e) Cumulative
2010	9.7	19.2
2011	9.52	
2012	9.34	18.5
2013	9.16	
2014	8.98	
2015	8.8	26.32
2016	8.54	
2017	8.28	
2018	8.02	24.06
2019	7.76	
2020	7.5	
2021	7.3	27.5
2022	7	
2023	6.8	
2024	6.4	
2025	6	6
2026	5.8	21.5
2027	5.6	
2028	5.2	
2029	4.9	
2030	4.5	4.5

We are adding new “hard caps” in 2025 and 2030 and four-year compliance periods in the intervening years (Figure 1). During the four-year compliance periods, total GHG emissions cannot exceed the cumulative GHG target. These multi-year compliance periods were also part of the regulatory design for the 2010-2020 GHG caps. They provide the flexibility to cope with unexpected changes in supply and demand conditions, while meeting environmental outcomes.

Figure 1: Sample Reduction Compliance Path



Monitoring, Reporting and Verification

Proper monitoring, reporting and verification are crucial to effective GHG reduction policy. Measurement and accountability of reductions are the basis of determining compliance with GHG regulation.

Under the current regulation, regulated facilities must submit a verification report for each compliance period. We are making improvements in the regulation to improve accuracy and completeness of reported GHG information. The changes include:

- Verification must be conducted in accordance with ISO 14064-3 and provide a “reasonable” level of assurance, the highest within the ISO standard.
- The verification body must be accredited by a member of the International Accreditation Forum, in accordance with ISO 14065.

Transmission Incentive

Under the current regulation a facility owner can exceed its emissions cap by up to 3% in exchange for investment in new transmission infrastructure that increases the grid’s capacity to integrate new low-emissions electricity. This infrastructure investment incentive is available through 2019 and is one of the means by which compliance can be met.

The transmission incentive will not be extended to the 2021-2030 time period. To ensure adequate flexibility in meeting the GHG requirements, the proposed 2021-2030 GHG reduction targets will allow for four-year compliance periods rather than the two- to three-year compliance periods in the 2010-2020 GHG caps.

Low-Emissions Electricity

We will amend the definition of “low-emissions electricity” to also include the following:

- biomass that has been harvested in a sustainable manner
- any resource that, in the opinion of the Minister and consistent with Canadian standards, is able to be replenished through natural processes or through sustainable management practices so that the resource is not depleted at current levels of consumption

Current Definition of Low-Emissions Electricity

means electric energy produced from any source of renewable energy, including any of the following:

- solar energy
- wind energy
- biomass
- run-of-the-river hydroelectric energy
- ocean-powered energy
- tidal energy
- wave energy
- landfill gas
- liquid biofuel and other biogas energy
- nuclear power
- large hydro

Amendments to Greenhouse Gas Emissions Regulations

The proposed provincial amendments are as follows:

- New “hard caps” in 2025 and 2030 and four-year compliance periods in intervening years
- Verification must be conducted in accordance with ISO 14064-3 and provide a “reasonable” level of assurance
- Verification body must be accredited by a member of the International Accreditation Forum, in accordance with ISO 14065
- Transmission incentive will not be extended to the 2021-2030 time period
- Definition of “low emission electricity” will be amended

AIR QUALITY REGULATIONS

Air pollution from electricity generation directly affects both the health of the environment and the citizens of Nova Scotia. Pollutants such as nitrogen oxides (NO_x) and sulphur dioxide (SO₂) are key contributors to acid rain and smog. Acid rain is a chronic problem in Nova Scotia that is particularly damaging to our natural environment. Health impacts of air pollution are numerous and include respiratory and cardiac conditions, and even cancers and premature death.

Significant reductions in air pollutants from the electricity sector have already been achieved. For example, SO₂ emissions declined by 50% between 1995 and 2010, while NO_x declined by 20% between 2000 and 2009. These reductions are significant achievements. However, Nova Scotia's power plants continually rank among some of the highest polluting units in Canada for certain pollutants, such as sulphur dioxide⁶. In 2011, Nova Scotia's electricity generation accounted for 70% of SO₂ emissions, 71% of mercury (Hg) emissions and 28% of NO_x emissions for the entire province, even though coal usage for electricity generation had significantly decreased (down to 57% of the electricity mix in 2011 from 80% in 2006). We need to have new air pollution reduction targets in order to realize the benefits that are created by reducing GHGs. Putting such targets into regulation will ensure the reductions occur.

Balancing good environmental outcomes with economics is essential when examining air pollution reductions after 2020. Our plan to increase renewable energy and reduce GHGs allows us to also regulate reductions in air pollution after 2020 in a way that does not significantly impact ratepayers. In fact, a recent study⁷ indicates the proposed air pollution targets after 2020 can be met with minimal measures beyond the Province's efforts to reduce GHGs and increase renewable energy. Thus, this approach minimizes the economic impact on ratepayers. New air pollutant targets in regulation will ensure we realize the air-pollutant reduction opportunities that are created by GHG reduction and the switch to renewable energy.

6 National Pollutant Release Inventory. <http://www.ec.gc.ca/inrp-npri/>

7 Power Advisory, April 17, 2013. Updated Analysis of Proposed Development of the Maritime Link and Associated Energy from Muskrat Falls Relative to Alternatives. <http://novascotia.ca/fairenergy>

Starting in 2021, the regulated approach will be different than the current approach in legislation by allowing for more flexibility in compliance while still achieving continual reductions and gaining more protection for the local communities. Like the proposed GHG amendments, the amended regulation will include new multi-year compliance periods for NO_x and SO₂, with annual hard caps occurring in 2025 and 2030. The compliance period caps require continual air pollution reduction but provide more protection from volatile fuel markets by allowing facilities to move emission reductions to other years to avoid escalating fuel costs in a single year. The compliance period caps also have a yearly maximum so that human health and the local environment remain protected, and avoids facilities using the majority of the compliance period cap in a single year. For mercury, a new fleet cap⁸ is proposed for 2030 only.

Proposed Reductions of Air Pollutant Emissions

The proposed reductions are as follows:

SO₂

- From 2021 to 2024, emissions cannot exceed 136,000 tonnes in total and within each year cannot exceed 36,250 tonnes and not more than 17,760 tonnes per unit.
- For 2025, emissions cannot exceed 28,000 tonnes in total and not more than 13,720 tonnes per unit.
- From 2026 to 2029 emissions, cannot exceed 104,000 tonnes in total and within each year cannot exceed 28,000 tonnes and not more than 13,720 tonnes per unit.
- For 2030 onward, emissions cannot exceed 20,000 tonnes in total per year and not more than 9,800 tonnes per unit.

NO_x

- From 2021 to 2024, emissions cannot exceed 56,000 tonnes in total and within each year cannot exceed 14,955 tonnes.
- For 2025, emissions cannot exceed 11,500 tonnes in total.
- From 2026 to 2029, emissions cannot exceed 44,000 tonnes in total and within each year cannot exceed 11,500 tonnes.
- For 2030 onward, emissions cannot exceed 8,800 tonnes in total per year.

Hg

- For 2030 onward, emissions cannot exceed 30 kilograms in total per year.

8 Amount allowed to be emitted by all generating sources combined in a single year.
<http://novascotia.ca/fairenergy>

By 2030, the proposed air pollution amendments will achieve:

- 67% reduction in nitrogen oxides (NO_x) from 2000 (Figure 2)
- 86% reduction in sulphur dioxide (SO₂) from 2001 (Figure 3)
- 89% reduction in mercury (Hg) from pre-2001 levels

Figure 2: NO_x Fleet Emissions • 67% Reduction

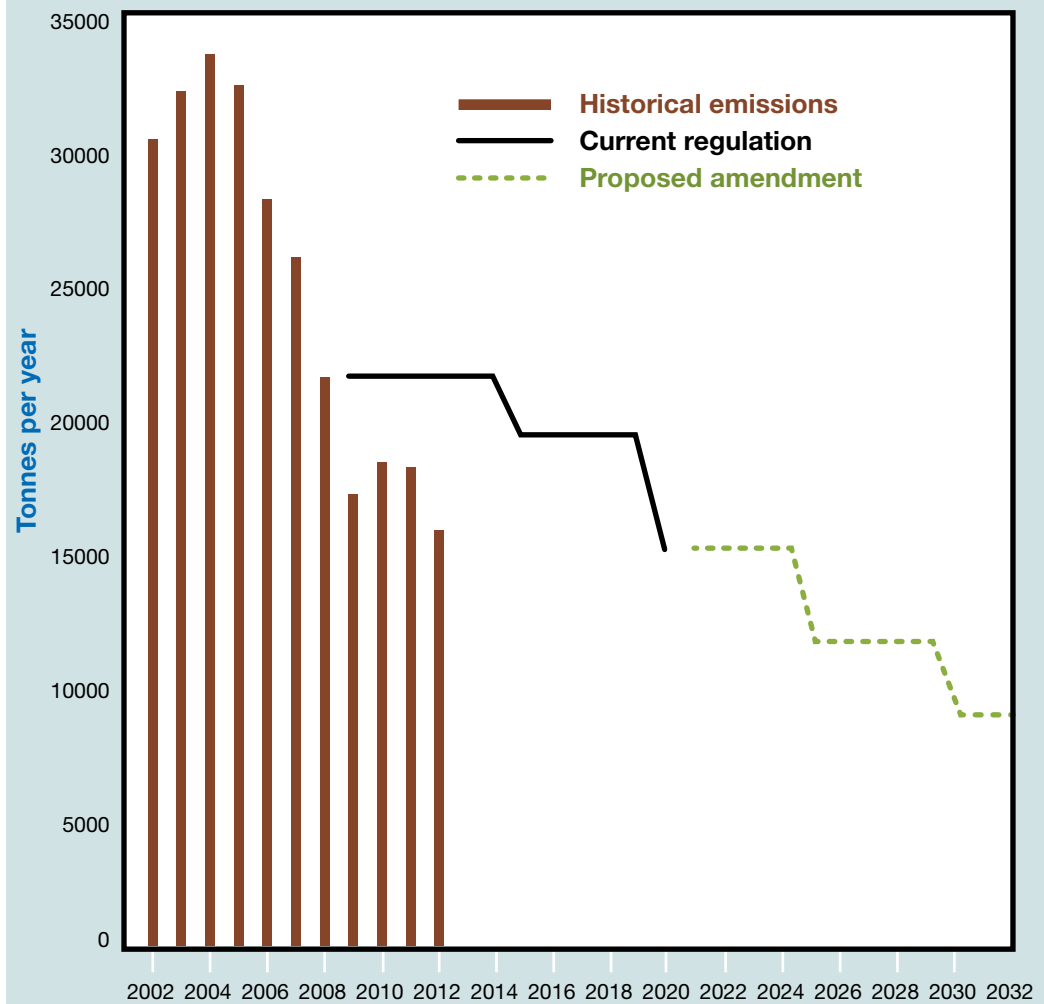
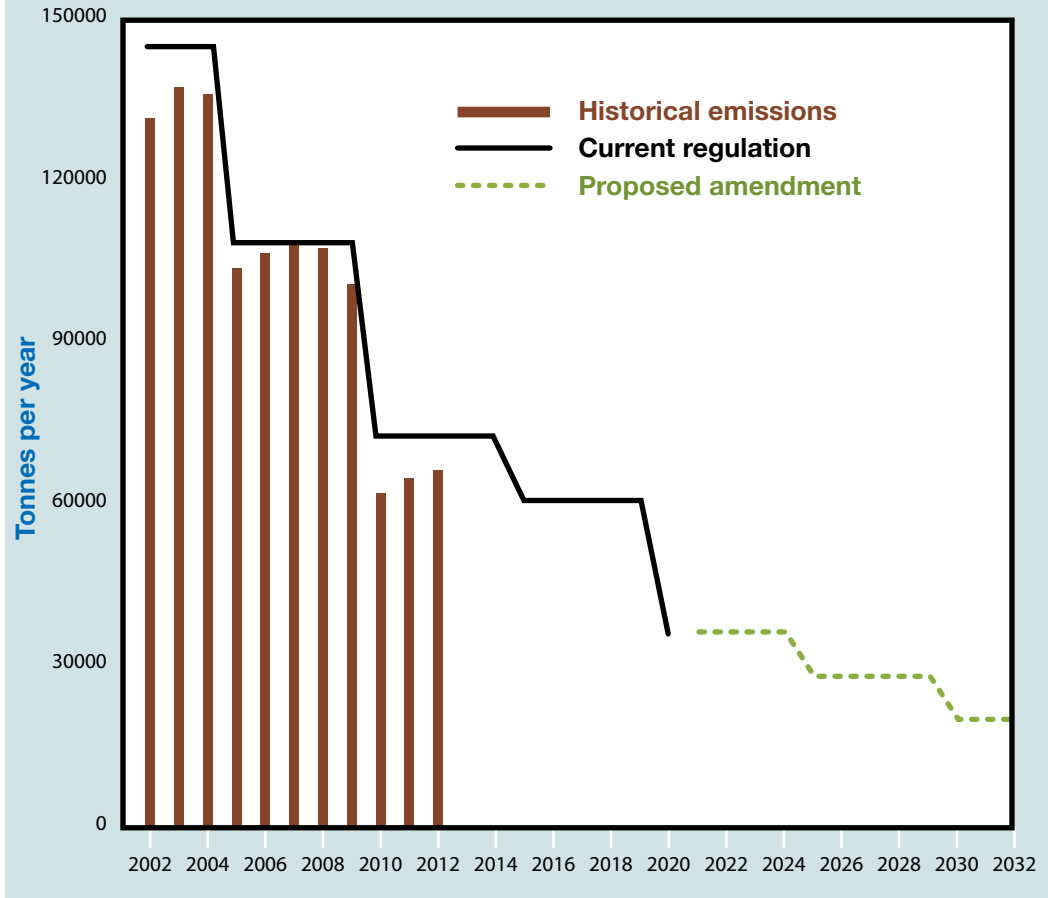


Figure 3: SO₂ Fleet Emissions • 86% Reduction



In addition to the pollution caps, a new local protection measure will be added:

- A local protection⁹ measure for SO₂ will limit what can be emitted from a stack through a unit cap.

⁹ Imposes restriction on the amount that can be emitted within a given community.

FEEDBACK

We welcome your comments on the amendments to the greenhouse gas and air quality regulations.

You can provide your feedback via mail or e-mail. You can also provide your feedback via an online form.

Comment Period

Submissions will be accepted until **July 8, 2013**.

How to Reach Us

Comments can be submitted via an online consultation form at <http://novascotia.ca/nse/regulation-change/>

Written comments can be sent via mail to:

Greenhouse Gas and Air Pollutant Regulation Comments

Nova Scotia Environment

Policy Division

5151 Terminal Road

P.O. Box 442

Halifax, NS

B3J 2P8

Comments can also be sent via e-mail to policy@gov.ns.ca.

To request a printed copy of this paper, please call 1-902-424-8253.

Submissions received by Nova Scotia Environment will be considered as part of the public consultation process. Your submission may be made available to the public with the exception of your personal information, which will only be disclosed in keeping with the privacy provisions of the *NS Freedom of Information & Protection of Privacy Act*. Should you wish any of the information provided to be held in confidence, please clearly indicate this for consideration.