

Establishing a Clean Electricity Standard: Clean Energy Canada's Submission

April 14, 2022

Introduction

Clean Energy Canada is a climate and clean energy program within the Morris J. Wosk Centre for Dialogue at Simon Fraser University.

We are pleased to submit these comments as part of the Government of Canada's consultations on [A clean electricity standard in support of a net-zero electricity sector: discussion paper](#).

Clean Energy Canada recently published a report titled "[Underneath it All](#)", which articulates Canada's clean electricity opportunity and what governments must do now to position Canada in a net-zero world.

Please find Clean Energy Canada's responses to the discussion paper's questions below and please don't hesitate to contact us if you have any further questions.

Recommendations

Recommendation 1: Establish a Clean Electricity Standard (CES) that:

- Sets out interim carbon intensity performance standards for new and existing electricity generators, and;
- Establishes a stringency of 0g CO₂/kWh by 2035 for all electricity generation in Canada.

Recommendation 2: Ensure the CES comes into force by 2023, including the establishment of an interim standard in 2023 that applies to new facilities, and an interim standard in 2030 that applies to existing facilities.

Recommendation 3: Establish an interim standard for 2023, which sets a carbon intensity performance standard for all new electricity generation facilities that is sufficiently stringent to exclude non-abated natural gas facilities from complying.

Recommendation 4: Establish an interim standard for 2030 that applies to all existing electricity generation facilities, which sets a carbon intensity performance standard that is sufficiently stringent to exclude non-abated natural gas facilities from complying.

Recommendation 5: Establish the CES as a federal backstop policy that can be superseded by an equivalent provincial policy, including approaches that regulate the grid as a whole instead of individual generators. The Government of Canada should actively encourage provinces to implement equivalent, comprehensive policies, but must establish clear guidelines on what constitutes equivalency.

Recommendation 6: Remove the electricity sector from the federal output-based pricing system and apply the full federal carbon price to emissions associated with electricity generation.

Recommendation 7: Ensure revenue generated by the application of the full carbon price on the electricity sector is used to help mitigate impacts of decarbonizing the electricity system on consumer rates and ensure affordability.

Recommendation 8: In addition to carbon pricing and electricity regulation, the federal government must play a leadership role in decarbonizing Canada's electricity grid by:

- Convening relevant stakeholders to provide advice and oversight;
- Supporting the planning efforts of provinces, utilities, and Indigenous Nations, and helping drive the deployment of net-zero energy plans; and
- Accelerating the deployment of clean electricity infrastructure and technologies, including investments in new clean electricity generation capacity, grid modernization, and transmission infrastructure.

Detailed Responses

Note: Clean Energy Canada is responding to a subset of the discussion questions based on our work advancing clean electricity.

Question	Clean Energy Canada comments
General	
<p>Q1: Should interim standards be included in the period before 2035?</p>	<p>Recommendation 3: Establish an interim standard for 2023, which sets a carbon intensity performance standard for all new electricity generation facilities that is sufficiently stringent to exclude non-abated natural gas facilities from complying.</p> <p>Recommendation 4: Establish an interim standard for 2030 that applies to all existing electricity generation facilities, which sets a carbon intensity performance standard that is sufficiently stringent to exclude non-abated natural gas facilities from complying.</p> <p>While Canada currently generates approximately 83% of its electricity from non-GHG emitting sources, there are significant differences in both emissions intensity and renewable power generation across provinces.¹ Meeting the Government of Canada’s targets of a “net-zero emission electricity grid by 2035”—and economy-wide net-zero emissions by 2050—in part through the establishment of a Clean Electricity Standard will require the use of interim standards in order to meet these objectives.²</p>

¹ <https://cleanenergycanada.org/wp-content/uploads/2021/12/Clean-Electricity-Report-Layout-Web-1.pdf>

² <https://pm.gc.ca/en/mandate-letters/2021/12/16/minister-environment-and-climate-change-mandate-letter>

First and foremost, near-term interim standards can help prevent major new investments in natural gas generating capacity in the period between now and 2035. Currently, both the market signal from the output-based pricing system (OBPS), and the regulatory limitations on the emission intensity of coal and natural gas electricity generating facilities are insufficient to prevent the build-out of additional unabated natural gas generating capacity.³ While natural gas facilities may help reduce emissions by replacing coal-powered electricity generation, they are ultimately inconsistent with the requirements of a net-zero electricity system in 2035, let alone a net-zero economy in 2050.⁴ A Clean Electricity Standard will help re-prioritize the deployment of clean energy generation wherever possible and create investment certainty for utilities. **Establishing an interim standard for 2023, which sets a carbon intensity performance standard for all new electricity generation facilities that is sufficiently stringent to exclude non-abated natural gas facilities from complying will be crucial in avoiding the build-out of new natural gas facilities and stranding assets.**

Second, interim standards can prevent utilities and generators from “back-loading” emissions reductions and capital improvements to the 2030’s, which would increase the risk of failing to reach emissions reductions goals.

Finally, interim standards can play an important role in guiding the investment decisions and timing for existing electricity infrastructure in different provinces. Given the different energy make-ups of Canadian

³ <https://davidsuzuki.org/wp-content/uploads/2021/08/Jaccard-Griffin-Zero-emission-electricity-DSF-2021.pdf>

⁴ <https://www.pembina.org/reports/from-coal-to-clean-2021.pdf>

provinces, there will be different pathways to achieving a net-zero electricity system by 2035. In Alberta, Saskatchewan, Ontario, Nova Scotia, and New Brunswick, natural gas currently plays a large, and in some cases, growing role in providing capacity to the provincial grid. In order to meet our 2035 goal, **establishing an interim standard for 2030 that applies to all existing electricity generation facilities and which sets a carbon intensity performance standard that is sufficiently stringent to exclude non-abated natural gas facilities will be critical.**

As Canada looks to achieve its goals of a net-zero electricity system by 2035 and a net-zero economy by 2050, provinces and utilities will have to balance a number of competing objectives. They will need to replace infrastructure that is both nearing the end of its useful life or is inconsistent with net-zero goals, update existing facilities with carbon capture, utilization and storage (CCUS) technology, and expand the overall clean generating capacity of its grid. Sequencing the interim standards in the manner outlined above—an immediate standard for new facilities and a 2030 standard for existing facilities—helps to prioritize near-term investments in new clean generating capacity, reducing the risk of additional stranded assets over time, while giving a longer window for the costs of CCUS to decline and the updates to existing infrastructure to occur.

<p>Q2: How should the CES regulation be designed to minimize stranded capital assets and associated rate impacts?</p>	<p>Recommendation 2: Ensure the CES comes into force by 2023, including the establishment of an interim standard in 2023 that applies to new facilities, and an interim standard in 2030 that applies to existing facilities.</p> <p>The best way to avoid the growth of stranded assets is for the Government of Canada to ensure that the CES comes into force by 2023, including the establishment of an interim standard in 2023 that applies to new facilities, and an interim standard in 2030 that applies to existing facilities. This gives generators, other electric utilities, and provinces certainty regarding the pathway to a net-zero emission electricity grid by 2035, allowing for integrated grid planning amongst all those involved.</p> <p>As noted in our response to Question 1, interim standards that prohibit the deployment of new unabated natural gas generators but leave room for near-zero technologies (CCUS, hydrogen) will provide a clear market signal and discourage investment in facilities that will rapidly fall outside of the intensity limits set by the federal government.</p> <p>Additionally, see our response to Question 9 for recommendations regarding changes to how electricity is treated under the OBPS, and how the federal government should support ratepayers.</p>
<p>Q3: What would be an acceptable end-point emissions intensity standard to achieve the objective of the CES?</p>	<p>Recommendation 1: Establish a Clean Electricity Standard (CES) that:</p> <ul style="list-style-type: none"> • Sets out interim carbon intensity performance standards for new and existing electricity generators, and; • Establishes a stringency of 0g CO₂/kWh by 2035 for all electricity generation in Canada. <p>The carbon intensity threshold for electricity production must fall to 0g</p>

	<p>CO₂/kWh by 2035 in order to reach Canada’s net-zero by 2035 goal for the electricity grid. Generators may operate above this threshold only if they are fully offsetting emissions through permanent (i.e. geological basalt or equivalent) storage, or through the the use of negative emission technologies like bio-energy with carbon capture and storage (BECCS) and direct-air capture (DAC) where a specific capacity or reliability challenge that lacks a clear solution has been identified.⁵ The use of offsets and zero-emission technology should not be considered a long term solution, and non-permanent offsets (e.g. nature-based solutions) must not be considered.</p>
<p>Q4: How do considerations differ for non-competitive electricity markets, vertically integrated utilities, etc.?</p>	<p>Recommendation 5: Establish the CES as a federal backstop policy that can be superseded by an equivalent provincial policy, including approaches that regulate the grid as a whole instead of individual generator compliance.</p> <p>Similar to the federal government’s approach to carbon pricing, the establishment of a CES should be viewed as the creation of a federal backstop policy, where provinces can negotiate equivalency agreements where provincial policy will supersede the federal CES.⁶</p> <p>Energy policy falls largely under provincial jurisdiction, including the regulation of competitive or noncompetitive energy markets and the degree of vertical integration among utilities.⁷ This is why the creation of a</p>

⁵ For instance, replacing the capacity currently provided by natural gas on the Alberta electricity grid may take longer than other provinces, and rely on the development of battery storage technologies to maximize the role renewables will play. In the 2022-2035 window, allowances for BECCS or DAC deployment may be necessary to bridge this gap (but should not be viewed as a long term solution).

⁶ <https://www.canada.ca/content/dam/eccc/documents/pdf/20170518-2-en.pdf>

⁷ <https://www.nrcan.gc.ca/our-natural-resources/energy-sources-distribution/electricity-infrastructure/about-electricity/7359>

federal clean electricity standard proposes to use the regulatory powers of the Canadian Environmental Protection Act (CEPA) in regulating the emissions that individual generators produce.⁸

The federal government should encourage provinces to establish equivalent policies, including those that would regulate the emissions intensity of the grid as a whole, instead of individual generators. This approach would allow for more comprehensive energy planning and better management of the costs that utilities and ratepayers may face.⁹

Compliance Flexibilities

⁸ <https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/achieving-net-zero-emissions-electricity-generation-discussion-paper.html>

⁹ <https://davidsuzuki.org/wp-content/uploads/2021/08/Jaccard-Griffin-Zero-emission-electricity-DSF-2021.pdf>

Q5: Should the CES offer compliance flexibilities?

- a. What kinds of flexibilities?
- b. Should the flexibilities be targeted to individual generating units? To corporate fleets of units, such as fleet averaging, etc.?
- c. What constraints or limitations should be incorporated into flexibilities?

Q6: Under what conditions should offset credits available through federal, provincial/territorial, or other programs be permitted?

Q7: To what extent can negative emission technologies like BECCS and DAC contribute to meeting the obligations of a CES regulation? To what extent should they be allowed to contribute to meeting those obligations?

Given the technology advancements and significant cost declines in clean energy over the last decade, **no compliance flexibilities should be established for new electricity generation facilities.**¹⁰

Although Canada's electricity grid is already 83% non-emitting, reaching net-zero by 2035 will be a significant undertaking, with the electrification of our economy expected to roughly double the amount of clean energy we need to generate by 2050.¹¹

With 2035 only 13 years away, the creation of complex compliance pathways risks distorting the clear market signal that is needed to support the rapid investment in and deployment of non-emitting energy resources.

For existing facilities, the government should consider allowing the use of permanent geological offsets and the use of negative emission technologies like BECCS and DAC toward compliance, where a province or a utility has identified a specific capacity or reliability challenge that lacks a clear solution. Any compliance flexibility considered should operate as a support for *transitioning* to a net-zero electricity grid by 2035, and should not lock in a reliance on GHG-emitting electricity generation.¹² The CES regulation should establish clear protocols for which types of emission offsets can be used for compliance, limits on the use of those offsets to meet compliance obligations, and procurement and verification of eligible offsets.¹³

¹⁰ <https://www.iea.org/reports/projected-costs-of-generating-electricity-2020>

¹¹ <https://cleanenergycanada.org/wp-content/uploads/2021/12/Clean-Electricity-Report-Layout-Web-1.pdf>

¹² See footnote 5 for an example.

¹³ <https://climateinstitute.ca/stronger-carbon-pricing-is-the-way-to-net-zero/>

<p>Q8: Should compliance be assessed for the electricity sector on an annual or multi-year basis?</p>	<p>Compliance should be assessed in line with the interim standards that have been developed, applying to new facilities in 2023, and to existing facilities in 2030.</p> <p>In order to ensure transparency, as well as track progress toward the goal of a “net-zero emission electricity grid by 2035”, an annual report should be prepared by Environment and Climate Change Canada that documents progress and identifies issues and gaps.</p>
<p>Alignment with carbon pricing</p>	
<p>Q9: Should the way in which electricity generation is currently treated by carbon pricing be changed to facilitate achieving NZ2035?</p> <p>Q10: How might the treatment of electricity under the OBPS have to change to align with the CES?</p>	<p>Recommendation 6: Remove the electricity sector from the OBPS and apply the full federal carbon price to emissions associated with electricity generation.</p> <p>Recommendation 7: Ensure revenue generated by the application of the full carbon price on the electricity sector is used to help mitigate impacts of decarbonizing the electricity system on consumer rates and ensure affordability.</p> <p>A CES should be structured in such a way that it complements rather than substitutes or duplicates the existing benefits of the carbon price.</p> <p>The carbon price establishes a price signal that helps drive the economics of different industries toward lower carbon options.¹⁴ A CES, on the other hand, uses regulations to help ensure the technologies replacing carbon-emitting power generation are in line with a pathway to net-zero by 2035, steering us away from options inconsistent with that goal, such as</p>

¹⁴ <https://ecofiscal.ca/2017/05/24/explaining-output-based-allocations-obas/>

unabated natural gas. Simply put, where the carbon price operates to create an incentive to reduce emissions from power generation, the CES creates standards that help drive investment decisions towards cleaner technologies, avoiding the creation of more stranded assets.

The current manner in which the electricity sector is being treated by carbon pricing—specifically its inclusion under the OBPS and the way that the OBPS is being applied—is distorting the market signal that is necessary to drive investment decisions that are in line with achieving the goal of a net-zero electricity grid by 2035.¹⁵ The OBPS was intended to apply to emissions-intensive, trade-exposed industries to prevent carbon leakage, a challenge largely not faced by Canada’s electricity sector.¹⁶ Including electricity generation under the OBPS has led to a number of challenges, principally hiding the emissions differences—and therefore the cost—of different forms of power generation.¹⁷ Failing to properly account for the additional costs associated with higher-emission electricity generation risks reducing investment in clean power, thereby increasing emissions.¹⁸

To address these challenges and align carbon pricing with a CES, **the Government of Canada should remove the electricity sector from the OBPS and apply the full federal carbon price to emissions associated with electricity generation.** This approach would strengthen the incentive to

¹⁵ <https://www.macleans.ca/opinion/canadas-new-large-emitter-pricing-system-defeats-the-carbon-taxs-own-purpose/>

¹⁶ <https://ecofiscal.ca/2018/05/09/do-obas-make-sense-for-electricity/>

¹⁷ <https://www.macleans.ca/opinion/canadas-new-large-emitter-pricing-system-defeats-the-carbon-taxs-own-purpose/>

¹⁸ Ibid.

	<p>reduce emissions from power generation, with the CES further establishing a standard for the options that could be considered.¹⁹</p> <p>To help address the potential cost increases electricity consumers will face, particularly in jurisdictions with electricity grids that are currently more GHG-intensive, the Government of Canada should use the revenue generated by the application of the full carbon price to help lower the energy costs of consumers. A number of authors have made proposals for how the federal government could design this system—either through tax cuts, rebates, or directly through electricity billing.²⁰ The government could also return the money to provinces with specific conditions (such as requiring regulators and utilities to establish net-zero mandates and/or provinces to use the revenue to provide a rebate to consumers and small businesses).</p>
<p>Treatment of natural gas generation</p>	
<p>Q11: What is the role of natural gas in a net-zero electricity sector before 2035? Post-2035?</p>	<p>As a fossil fuel with large direct and upstream GHG impacts, natural gas must not play a role in the post-2035 electricity sector, except in limited situations where permanent CCS is a feasible and cost effective option.</p> <p>As such, achieving the goal of a net-zero electricity system by 2035 will require an approach that prevents major new investments in unabated natural gas generating capacity in the period between now and 2035.</p>

¹⁹ <https://climateinstitute.ca/stronger-carbon-pricing-is-the-way-to-net-zero/>;
<https://davidsuzuki.org/wp-content/uploads/2021/08/Jaccard-Griffin-Zero-emission-electricity-DSF-2021.pdf>

²⁰ <https://climateinstitute.ca/stronger-carbon-pricing-is-the-way-to-net-zero/>;
<https://www.macleans.ca/opinion/canadas-new-large-emitter-pricing-system-defeats-the-carbon-taxes-own-purpose/>

	<p>For existing natural gas generating facilities, they will need to switch to zero-carbon fuels (e.g. renewable natural gas) or fully and permanently sequester their emissions in geologic formations.</p> <p>For new natural gas facilities, only those that can meet the intensity limits under a CES should be allowed to go forward. See our response to Question 1 for the role interim standards will play in achieving this goal.</p> <p>Post-2035, natural gas should only be used in exceptional circumstances for most provinces, serving as an emergency backup and the associated emissions offset using permanent, geological storage. Natural gas does not play a homogenous role in provincial energy grids. For instance, as of 2019, natural gas represented only 10.2% of electricity generation nationwide, but 51% of the power generated in Alberta and 40% of the power generated in Saskatchewan.²¹ Therefore, Saskatchewan and Alberta may see some continued use of abated natural-gas generation while advances in technologies such a battery storage take place, which would allow distributed non-emitting resources to better address the capacity requirements of the grid.²²</p>
<p>Treatment of industry, private generation and remote generation</p>	
<p>Q14: What are the benefits of applying a CES to industrial generation units? What are the challenges of doing so? Of not doing so?</p>	<p>The CES should be applied in a similar manner to industrial generation, with an interim standard established in 2023, which sets a carbon intensity performance standard for all new electricity generation facilities that is sufficiently stringent to exclude non-abated natural gas facilities from</p>

²¹ https://www.nrcan.gc.ca/sites/nrcan/files/energy/energy_fact/2021-2022/PDF/2021_Energy-factbook_december23_EN_accessible.pdf

²² <https://www.cer-rec.gc.ca/en/data-analysis/canada-energy-future/2021/towards-net-zero.html>;
<https://davidsuzuki.org/wp-content/uploads/2021/08/Jaccard-Griffin-Zero-emission-electricity-DSF-2021.pdf>

	<p>complying. This will help prevent industrial facilities from having a loophole that would potentially allow for the build-out of new natural gas facilities. The government could consider whether an interim standard in 2030 makes sense for existing industrial generation units, or whether a longer time frame for adjustment will be required to reduce any risks of carbon leakage.</p>
<p>Q15: How should the CES consider electricity generation in remote, northern, and Indigenous communities?</p>	<p>There are over 200 remote and Indigenous communities in Canada that currently rely on diesel for electricity.²³ These communities frequently have no connection to the broader electricity grid increasing both the complexity and cost of deploying clean electricity resources, requiring a different approach.²⁴</p> <p>The Government of Canada should continue to work closely with provinces and Indigenous communities to deploy clean energy resources, continuing to fund programs such as Clean Energy for Rural and Remote Communities (CERRC) and Northern Responsible Energy Approach for Community Heat and Electricity program (REACHE).²⁵</p> <p>The government could consider alternative compliance pathways for communities that have few options to deploy clean electricity resources or where connection to the grid is not feasible. Where <i>in situ</i> zero-emission generation or connecting to a clean grid are impractical, emissions could be offset through permanent, geological offsets.</p>

²³ <https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf>

²⁴ <https://davidsuzuki.org/wp-content/uploads/2021/08/Jaccard-Griffin-Zero-emission-electricity-DSF-2021.pdf>

²⁵ <https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf>

Other questions

Q20: What additional investments are anticipated to be necessary to achieve NZ2035 to help ensure affordability for consumers?

Recommendation 8: In addition to carbon pricing and electricity regulation, the federal government must play a leadership role in decarbonizing Canada’s electricity grid.

As acknowledged in Budget 2022, the federal government has a critical role to play in achieving a net-zero grid by 2035 beyond carbon pricing and electricity generation regulation.²⁶ This role includes:

- Convening relevant stakeholders to provide advice and oversight;
- Supporting the planning efforts of provinces, utilities, and Indigenous communities, and helping drive the deployment of net-zero energy plans; and
- Accelerating the deployment of renewable resources, including investments in grid modernization and transmission capability.

As previously noted, reaching our 2050 net-zero goal will require the widespread electrification of our economy, and a near doubling of the amount of clean energy we need to generate by 2050.²⁷ The federal government will be a critical source of funding for the deployment of new, clean resources, helping to crowd in additional private sector investment. The Canadian Infrastructure Bank will also be an important partner in deploying the necessary resources and infrastructure.

²⁶ <https://budget.gc.ca/2022/pdf/budget-2022-en.pdf>

²⁷ <https://cleanenergycanada.org/wp-content/uploads/2021/12/Clean-Electricity-Report-Layout-Web-1.pdf>

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