

Submission: Consultation on the Proposed Frame for the Clean Electricity Regulations

August 17th, 2022

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 provide this submission in response to Environment and Climate Change Canada's (ECCC) publication of the [Proposed Frame for the Clean Electricity Regulations](#).

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Summary of Recommendations

Building on these principles, the table below provides a summary of our feedback on the proposed components of ECCC's *Proposed Frame for the Clean Electricity Regulations*.

Proposed component	Recommendation
Emission Standard	Recommended Change: Achieve a net-zero intensity of 0 g CO ₂ /kWh in 2035 through a combination of a near-zero physical standard and a mandatory offset protocol.
	Recommended Addition: Establish a physical standard of 0 g CO ₂ /kWh for 2050.
New units	Recommended Change: Create an interim standard for "new units" starting in 2025 that achieves a net-zero intensity of 0 g CO ₂ /kWh through a combination of a near-zero physical standard and the mandatory offset protocol.
Financial compliance	Recommended Change: Establish a mandatory offset protocol by 2025 that represents real, independently

	verified, quantifiable, permanent, and additional emission reductions.
Scope	Recommended definition: Set the small megawatt threshold value at a level that captures all electricity generation except small, self-use generation.
	Recommended change: Apply CER to all electricity generating units not only units that offer electricity for sale onto a regulated electricity system.
Compliance flexibility	Recommended addition: Permit existing units to operate beyond their end of prescribed life (EoPL) only if they are offsetting all emissions beyond the established performance standard using the established mandatory offset protocol.

Overall Clean Energy Canada is concerned that the proposed frame carves out a larger than necessary space for natural gas – whether abated or unabated – and is overly-reliant on a regulatory signal that does not come into force for over 12 years. Recent studies have shown that Canada ranked near the top globally for its ability to meet its electricity needs from renewable sources (such as wind and solar) combined with battery storage technology.¹ The recommendations provided in this document attempt to address some of these shortcomings, and place a larger emphasis on achieving short term GHG reductions and supporting the deployment of renewable energy.

Furthermore, while out of scope for the CER specifically and not addressed in this submission, the government should re-examine the current structure of the OBPS as it applies to the electricity sector. As it currently stands, the signal the carbon price is sending to electricity generation is distorted by the inclusion of the sector within the OBPS, limiting its effectiveness in influencing investment decisions. The emission differences—and therefore the cost—of different forms of power generation are hidden, limiting the effectiveness of the carbon tax in driving the deployment of renewable energy. **Removing the electricity sector from the OBPS would greatly strengthen the price signal sent throughout the 2023-2035 period, helping facilitate a greater deployment of non-emitting power generation.**

¹ Dan Tong et al. Geophysical constraints on the reliability of solar and wind power worldwide. *Nature Communications*. October 2021. <https://www.nature.com/articles/s41467-021-26355-z>

The critical role of the Clean Electricity Regulations

Canada has set an ambitious target of achieving a net-zero electricity grid by 2035.² As acknowledged in the discussion paper released by Environment and Climate Change Canada, a Clean Electricity Standard - now the Clean Electricity Regulations (CER) - will be a key part of achieving this goal.³

To fulfill its role to help Canada achieve a net-zero electricity grid by 2035, the CER needs to be structured in such a way that it builds on the role of the federal pollution pricing system and strengthens the existing emissions performance standards under the Canadian Environmental Protection Act. The CER's main objectives should be:

- 1) Limit the deployment of new non-abated natural gas generating facilities, avoiding a growing base of potentially stranded assets;
- 2) Secure near-term emission reductions in the electricity sector;
- 3) Provide a clear signal that drives rapid investment in and deployment of non-emitting energy resources;
- 4) Support the development of provincial energy strategies that provide a viable pathway to reach a net-zero electricity grid while protecting affordability.

Canada's carbon pricing system sends a long term and escalating price signal to the market, impacting the investment decisions made by provinces and industries and helping drive some emission reductions without major impacts on electricity rates. However there are three challenges that the carbon pricing system faces that the CER can help address.

First, independent modeling has shown that the Canadian government cannot rely on the carbon price alone to achieve the emission reductions in the electricity sector to reach the goal of a net-zero electricity grid in 2035, nor a net-zero economy in 2050.⁴ Even in a scenario with a carbon price reaching \$370/tonne in 2050, Canada can expect to see both combined-cycle natural gas

² This commitment has been reiterated in Canada's [Strengthened Climate Plan for a Healthy Environment and a Healthy Economy](#), at the 26th United Nations Framework Convention on Climate Change Climate Change Conference of the Parties and in the most recent mandate letters for the ministers of the Environment and Natural Resources.

³ Environment and Climate Change Canada. A clean electricity standard in support of a net-zero electricity sector: discussion paper. March 2022.

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

⁴ Analysis by Reza Arjmand and Madeleine McPherson [demonstrates](#) that even at the highest \$/tonne, a carbon tax is unable to unilaterally achieve net-zero emissions, with gasCC and gasCCS remaining in operation at \$470/tonne.

units and natural gas with carbon capture and storage (CCS), inconsistent with a net-zero electricity grid.⁵

Second, the signal the carbon price is sending is distorted by the inclusion of the electricity sector within the output-based pricing system (OBPS). By underpricing the emission differences—and therefore the cost—of different forms of power generation, the carbon price is not playing the role it could in influencing investment decisions and driving the deployment of renewable energy.

Finally, it should not be taken for granted that a future government would repeal the Greenhouse Gas Pollution Pricing Act, eliminating the carbon pricing system.⁶ Even now, the federal government has only announced increases to the carbon price of up to \$170/tonne in 2030, leaving ambiguity as to the price that electricity generating units may be facing beyond 2030.

The CER can also help address some of the limitations of the existing emissions performance standards under the Canadian Environmental Protection Act.⁷ While these standards are expected to completely eliminate non-abated coal-fired power generation in Canada by 2030, they are not expected to phase out the use of combined-cycle natural gas or natural gas that uses CCS technology.⁸ While CCS technology can greatly reduce the emissions associated with natural gas, there remains emissions associated with “these abated-facilities”, negating the ability of CCS to achieve net-zero on its own.

Structured correctly, the CER can be a critical regulatory tool to address these gaps and set Canada on a path to achieving the goal of a net-zero electricity grid by 2030.

⁵ Reza Arjmand and Madeleine McPherson. *Canada's electricity system transition under alternative policy scenarios*. Energy Policy. April 2022. <https://www.sciencedirect.com/science/article/abs/pii/S0301421522000696>

⁶ Franco Terrazzano. Toronto Sun. Not all Conservatives oppose a second carbon tax – but they should. August 2022. <https://torontosun.com/opinion/columnists/terrazzano-not-all-conservatives-oppose-second-carbon-tax-but-they-should/wcm/91959d-c2-04c5-4d00-a1f9-6dbac94d05d8/amp/>

⁷ Canada has adopted regulations that set performance standards on both [coal-fired](#) and [natural gas-fired](#) electricity generation.

⁸ Mark Jaccard and Bradford Griffin. *David Suzuki Foundation*. A Zero-Emission Canadian Electricity System by 2035. August 2021. <https://david Suzuki.org/wp-content/uploads/2021/08/Jaccard-Griffin-Zero-emission-electricity-DSF-2021.pdf>

Designing an effective Clean Electricity Standard

The following section provides feedback and design recommendations on ECCC's *Proposed Frame for the Clean Electricity Regulations*, identifying where Clean Energy Canada has recommended changes or additions.

Priority Recommendations

Recommended Change: Achieve a net-zero intensity of 0 g CO₂/kWh in 2035 through a combination of a near-zero physical standard and a mandatory offset protocol.

In order to establish a credible CER that will fulfill the stated objective of achieving a net-zero electricity grid by 2035, generating assets must achieve a net GHG intensity of 0 g CO₂_e/kWh by 2035. This can be accomplished through the establishment of a near-zero physical standard that would preclude non-abated natural gas, and the use of a clearly laid out offset protocol compliance mechanism applied to any remaining emissions.

The current proposal for a “near-zero” intensity value that is “in line with direct emissions from well-performing, low-emitting generation such as, geothermal or combined cycle natural gas with CCS” is a strong starting place for the standard. However, the ultimate quantification of “near-zero” will matter significantly, and needs to be set in line with the best available commercial CCS technology for high efficiency natural gas facilities. It will be critical that the physical standard is as ambitious as possible in drawing this line, driving further innovation in this technology in order to account for the greatest share of emissions as possible. Ultimately the goal must be to see as little additional natural gas (even with CCS) deployed as possible.

Furthermore, the proposed “Financial Compliance Requirement” proposed in the frame should be replaced with a requirement that any remaining emissions that fall below the physical standard must be offset. Failing to offset these emissions will undermine the credibility of a net-zero electricity grid, leaving emissions unaccounted for. As is discussed further below, the use of offsets for the electricity sector should ideally be as limited as possible.

Recommended Addition: Establish a physical standard of 0 g CO₂/kWh for 2050.

While a near-zero physical standard (along with a requirement to offset any remaining emissions) is capable of achieving a net-zero electricity grid in 2035, the government must also establish a clear signal that the electricity grid in 2050 must be 100% non-emitting. To do this, the government should establish a physical standard for 2050 that has an intensity of 0 g CO₂/kWh.

Establishing a physical standard for 2050 that precludes emitting power generation represents an important signal that provinces and utilities must plan to retire these assets – including natural gas with CCS – by this date, forcing an evaluation of and investment into non-emitting alternatives, such as battery storage, interties and the advancement of energy efficiency and smart grid technologies. While offsets may play a role in achieving the 2035 net-zero target, they should not play any role in achieving the goal in 2050. Offsets should be re-prioritized for the 2035-2050 window for hard to decarbonize sectors in order to reach the 2050 net-zero target.

Recommended Change: Create an interim standard for “new units” starting in 2025 that achieves a net-zero intensity of 0 g CO₂/kWh through a combination of a near-zero physical standard and the mandatory offset protocol.

While the CER should apply in full in 2035, it must also be designed to influence short term investment decisions through the establishment of an interim standard that applies to new generating facilities. For generating units commissioned after 2025, a near-zero physical standard and a mandatory offset protocol should apply. This will help drive investment away from further emitting generation units, towards renewables and other technologies that support grid reliability (ex: interties between provinces and battery storage technology).

While ECCC’s proposal for a stand-alone definition for “new units” is an important start, it fails to adequately influence the investments decisions in the near term, relying instead on the assumption that the existence of the CER in 2035 will act as a sufficient incentive to discourage further investment in emitting generation. All net zero planning models require interim steps at milestone years. Without adopting this structure, legislation that does not take meaningful effect for 12 years cannot be expected to achieve the desired outcome because the time horizon is so far beyond most established planning cycles, and relies on future governments choosing to maintain these policies. This approach back loads potential emission reductions, and increases the chances that Canada will be contending with more natural gas relying on CCS technology. This is unacceptable and would significantly endanger Canada’s ability to achieve a net-zero electricity grid in 2035.

Avoiding additional natural gas build out (even with CCS) beyond 2025 needs to be a priority. Significant new deployment will elevate natural gas with CCS technology to a more permanent role on the Canadian grid rather than a resource that is leveraged only in scenarios where additional grid interties, energy storage technologies and other non-emitting sources of firm generation are unable to provide the necessary reliability. This approach also represents a gamble that CCS technology will be able to be cost effectively deployed at scale and at an effectiveness to meet Canada’s 2035 net-zero electricity grid target. If CCS technology fails to mature to such a degree, Canada will be facing either significant more stranded assets and greater costs deploying

non-emitting capacity, or will be forced to abandon the 2035 target. In either case, under the current proposal, emission reduction looks to be back loaded, and contingent on the maturity of CCS technology.

Recommended Change: Establish a mandatory offset protocol by 2025 that represents real, independently verified, quantifiable, permanent, and additional emission reductions.

While a near-zero physical standard can be an effective approach to reducing the emissions on the Canadian electricity grid when it comes into force in 2035, it will be unable to achieve a credible net-zero electricity system unless it accounts for all associated emissions. To achieve this, the proposed “Financial Compliance Requirement” should be changed to a mandatory offset protocol. The protocol can leverage the existing work of the federal government in establishing a robust offset regime that ensures offsets represent real, independently verified, quantifiable, permanent, and additional emissions reductions. Requiring “new units” to offset emissions in 2025 will help ensure investment into offset-related activities, ensuring an adequate supply is available for 2035. Given the additional costs that offsets represent, the requirement will also play a role in pushing utilities and other stakeholders to explore alternative, non-emitting electricity generation options.

However, as noted earlier, the government will need to ensure that the use of offset beyond 2035 is as limited as possible. The electricity sector has a relatively clear set of options to decarbonize. While offsets can play a role between now and 2035 in helping to achieve the goal of a net-zero electricity sector in 2035, they will need to be redeployed to harder to abate sectors in the 2035-2050 period. This is yet another reason why it will be critical to limit the deployment of natural gas – even with CCS – to the greatest extent possible.

Additional Recommendations

Recommended definition: Set the small megawatt threshold value at a level that captures all electricity generation except small, self-use generation.

The CER should apply to any unit that is intended for grid consumption. Setting a threshold that allows units of certain sizes to operate outside of the CER risks creating a loophole where facilities may target operation at a level just below the threshold. However, the value should be set at a level that exempts small generating units that are primarily intended for self-use. Most provinces have some form of regulation on “micro-generation” or “distributed-connected generation”, usually defined as generation under 3-15 MW (depending on the province).⁹ The CER small megawatt

⁹ Canadian Energy Research Institute. A Primer on Distributed-Connected Generation in Canada. January 2020. <https://ceri.ca/assets/files/CERI%20Electricity%20Report%20-%20January%202020.pdf>

threshold value should allow for self-use distributed resources, but capture those intended primarily for grid consumption.

Recommended change: Apply CER to all electricity generating units not only units that offer electricity for sale onto a regulated electricity system.

The CER should apply to all electricity generating units that combust any amount of fossil fuel for the purpose of generating electricity and have a capacity above the established small megawatt (MW) threshold, regardless of whether they offer electricity for sale onto a regulated electricity system. Exempting facilities that operate “behind the fence” risks creating a loophole that may incentivize the deployment of off-grid emitting generation facilities as a means of avoiding CER coverage. This would put potentially emitting-generation outside the scope of this provision, leaving only the OBPS applying to these facilities. It is assumed that “fenced” biomass cogeneration is out of scope, as ECCC’s proposed frame limits application of the CER to generating units that “[c]ombust any amount of fossil fuel for the purpose of generating electricity”.

Recommended addition: Permit existing units to operate beyond their end of prescribed life (EoPL) only if they are offsetting all emissions beyond the established performance standard using the established mandatory offset protocol.

While there may be provinces that will need to rely on existing natural gas facilities beyond their EoPL, these facilities should not receive an exemption from meeting the performance standard established by the CER. Even with conditions on their annual emissions and operating hours, such an exemption is inconsistent with achieving a net-zero grid in 2035. These facilities should make use of the same compliance mechanism as other units, ensuring their emissions under the standard are fully offset using the established mandatory offset protocol.

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