

Clean Electricity Regulations

Public Update:

'What We Heard' during consultations and directions being considered for the final regulations

February 16, 2024



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Executive Summary

Following the publication of the draft *Clean Electricity Regulations* (CER) on August 19, 2023, Environment and Climate Change Canada (ECCC) and Natural Resources Canada (NRCan) undertook extensive engagement. This included national public webinars attended by more than 550 participants, bilateral sessions with more than 75 organizations, and meetings in Alberta, Saskatchewan, Ontario, Nova Scotia and New Brunswick with electricity generators, utilities, government officials, non-governmental organizations, academics and Indigenous organizations. ECCC also received around 600 unique written submissions out of a total of over 18,000 letters and emails, including repeated submissions from six letter writing campaigns.

Most parties voiced support for the overarching goal of establishing a net-zero grid as a foundational element of achieving a net zero economy by 2050. There was also widespread support for the three pillars of affordability, grid reliability, and decarbonization.

There was also support for the basic regulatory architecture proposed for the CER, including a technology-neutral compliance obligation with flexibilities for operators to continue to use some natural gas in order to support grid reliability and affordability while the system transitions to net zero.

Many electricity system operators and some provincial governments argued for more flexibility. This position is well summarized by a recent report from the [Canada Electricity Advisory Council](#):

“[O]ur ability to decarbonize the remainder of the economy by 2050 depends in part on our ability to get the CER balance right. ... if the electricity system bears too great a cost burden or is unable to meet growing demand reliably, it will be hindered in its ability to support economy-wide net-zero emissions by 2050. The Council ... is concerned that [the draft CER] does not provide sufficient flexibility to utilities, system operators and market participants to achieve that desired balance. ... [and] calls on the federal government to consider providing substantively greater flexibility to covered entities, recognizing that such flexibility could render the CER more practicable, more affordable and more likely to enable electricity to decarbonize other sectors of the economy in the long run.”

Changes recommended during the consultations by a number of stakeholders include:

- Reduce the stringency of the performance standard to enable facilities that implement CCS to be confident they will achieve the standard.
- Allow the limited use of offsets for units that are unable to meet the standard for various reasons.
- Enable greater use of natural gas-fired units during peak demand periods. Several operators and provinces argued for a percentage of capacity threshold rather than an envelope of hours.
- Adjust the small unit exemption to avoid unintended proliferation of small fossil-fuel fired units.
- Allocate more time for the end-of-prescribed life of existing gas and liquid fuel units to further reduce the cost of stranded assets.
- Avoid a framework that incentivizes operating less efficient units as much as more efficient units.
- Enable more flexibility for co-generation to avoid the unintended result of cogeneration units deciding not to export electricity to the grid, resulting in the loss of a significant source of power in jurisdictions that rely more heavily on electricity from cogeneration.
- Modify emergency circumstance provisions to reduce the risk of a Minister denying an application and to ensure that critical generation during emergency periods will be available.

In addition to the need for more flexibility, some argued that the stringency of some of the provisions in the draft regulations would make it difficult to decide to invest in decarbonization options given the uncertainty about the actual performance levels of some technologies, emphasizing that issues outside of their control could make compliance with the strict performance standard very difficult. By contrast, some members of civil society urged the Government to retain or strengthen the overall stringency of the draft regulations.

This report describes these concerns in more detail. It also describes some changes being considered to address them. We welcome input on the merits of these changes compared to an approach based on changing some of the key parameters in the draft regulations.

What We Heard

The Performance standard and CCS flexibility

Almost all provinces and utilities asserted that a 30t/GWh performance standard would be difficult to achieve by natural gas units equipped with CCS that are “load following”. When load-following, the unit ramps up and down to fill in when renewables are not producing or when demand is very high. This almost inevitably results in a facility operating at a higher emissions intensity than if the same unit were operated on a continuous steady-state basis. Many commentators observed that a natural gas facility with CCS would only be able to achieve an emissions intensity of 30 t/GWh if it operated as baseload. This would limit the ability of utilities to retrofit existing gas plants with CCS for the purpose of playing a back-up or load-following function and would be an undesirable result because an approach that allows natural gas with CCS to load-follow could be an effective way to support the integration of variable renewables onto the grid.

More generally, a lot of feedback warned that high uncertainty about the ability of CCS to achieve the draft regulation’s performance standard could have the unintended effect of disincentivizing investments in this important, emerging technology.

Peaker provisions

Many operators argued that the 450-hour limit in the proposed peaker provisions would undermine reliability because it would limit the ability of some jurisdictions to provide peaking services.

Many stakeholders also noted a potential unintended outcome of limiting the operation of unabated emitting units by defining a maximum number of hours: once a relatively efficient unit meets its hourly limit, a less efficient unit would then be operated if there remained a need for further peaking services. This would result in more emissions than if the more efficient unit had been allowed to operate for longer.

Offsets

Many stakeholders emphasized the inherently uncertain and unpredictable environment in which electricity systems must operate and argued that the regulation should provide a mechanism for operators who exceed a given limit despite having acted in good faith to remain in compliance. Many proposed allowing the use of GHG offsets for this purpose.

End-of-Prescribed Life

Provinces whose electricity systems include large portions of emitting units asserted that the proposed 20-year end-of-prescribed life (EoPL) is too short, and could strand assets, increase costs and reduce reliability because it would force emitting baseload units into retirement before sufficient replacement low- and non-emitting units can be built. Other provinces did not comment on this aspect of the regulation.

Date for new versus existing units

Due to labour and material shortages and other supply chain disruptions, some generators expressed concern that emitting generation projects that were planned to be commissioned before 2025, and already have substantial investments committed and work underway, may not be commissioned before the proposed deadline of December 31st, 2024 to be considered an “existing” unit. This could result in stranding these assets as they would be considered “new units” and have to abate by 2035 instead of benefiting from the full EoPL timeline.

Cogeneration

Stakeholders from multiple industries, as well as officials from Alberta and Saskatchewan, observed that the performance requirements in the proposed regulations could be difficult for most existing cogen facilities to meet. They expressed concern that these facilities might decide to stop exporting electricity to the grid in order to avoid being subject to those requirements. This would affect Alberta and Saskatchewan in particular, which depend on cogeneration for a significant portion of their generation.

Emergency circumstances

Many stakeholders observed that the provision in the draft regulations requiring the federal Minister to review emergency exemptions after the fact could inhibit decisions to operate during emergencies.

The 25 MW threshold

Many provincial officials noted that the proposed minimum capacity threshold of 25 MW could create a perverse incentive to commission new facilities with multiple units smaller than 25 MW to avoid being subject to the CER. Many Indigenous groups argued that any fix to this issue should be accompanied by another approach to continue to exempt generation in remote communities.

A Possible Emissions Limit Approach

ECCC is considering changes to the performance standard to give provinces, utilities and other electricity regulators and providers more flexibility while still delivering significant emissions reductions. We are interested in hearing if this approach is preferable to the approach proposed in the draft regulations.

The emissions limit approach being considered has four elements:

1. Change the regulated performance standard from a fixed emissions intensity standard that applies uniformly to all units to an **annual emission limit** (in tonnes) that is tailored to each unit’s capacity.
2. Adjust the underlying performance standard used to calculate each unit’s emission limit.
3. Allow regulated parties that own or operate multiple units to **pool** the emission limits of their individual existing units operating in the same jurisdiction.
4. Allow a unit to emit over its emissions limit by a prescribed additional amount provided it remits GHG offsets to account for all excess emissions.

1. Unit-specific annual emissions limit

The core change being considered is to move from an emissions intensity standard uniformly applied to all units to an annual emissions limit tailored to each unit’s capacity. In this approach, a unit’s limit would be set at the level of emissions in a year from a natural gas unit of the same size that operates full time and at an emissions intensity prescribed by the regulations (see #2 below). The CER would set the emissions limit for each unit according to the following formula:

$$\begin{array}{ccccccc}
 \textit{Unit} & & \textit{Performance} & & \textit{MW} & & \textit{8760 hours} \\
 \textit{Emission limit} & = & \textit{standard} & \times & & \times & \\
 \textit{(t/year)} & & \textit{(t/GWh)} & & \textit{(capacity of unit)} & & \textit{(total hours in} \\
 & & & & & & \textit{a year)} \\
 & & & & & & \times \left(\frac{1 \textit{ GW}}{1000 \textit{ MW}} \right) \\
 & & & & & & \textit{(unit} \\
 & & & & & & \textit{conversion)}
 \end{array}$$

A unit with a higher emissions intensity than the performance standard used to set the emissions limit would have to operate less than full time to remain under its limit. This would create an incentive to modify all units to be as efficient as possible, but would also give electricity providers considerable flexibility. Along with the potential to pool emissions limits (#3) and include offsets as a compliance option (#4), this would enable operators to decide to install CCS without the concern that the technology might not achieve the performance standard. Units could also increase the amount of time they can operate by improving equipment to increase efficiency or by blending with low-carbon fuel to reduce emissions intensity. All units would be able to manage within their annual emission limit by adjusting the amount of time they operate.

2. Adjusted underlying performance standard

Recognizing that the emissions intensity of 30 t/GWh proposed in the draft regulations would likely not be feasible on a load-following basis for most units equipped with CCS, an adjustment to the performance standard is under consideration.

3. Pooling

Consideration is being given to allowing responsible parties (e.g. utility, crown corporation) owning multiple existing units in the same jurisdiction to combine the emissions limits of individual existing unit into a pooled emissions limit. This would enable them to operate their more efficient units above each individual unit's limit, compensated by less operation of less efficient units. In addition to enhancing flexibility, this may avoid the need to prescribe a time limit for peaker units, given that all emitting units would have an emission limit.

Consideration is also being given to whether and how to enable individual units to pool with other units owned or operated by different entities in the same jurisdiction.

4. Offsets

Consideration is also being given to enabling a unit to operate over its annual emissions limit by a limited amount provided it remits eligible GHG offsets for the excess emissions.

Other Changes Under Consideration

End of Prescribed Life

The EoPL provisions are intended to allow natural gas-fired units that were financed, approved and brought into operation before the CER comes into force in 2025 to continue operating past 2035 for a limited period of time relative to their age. Consideration is being given to slightly extending the EoPL, compared with maintaining the EoPL as proposed.

New units under development

Consideration is being given to allowing units that have substantial investment and work underway but are unable to commission by January 1, 2025 to make use of the EoPL provisions provided they start selling electricity to the grid by a future date to be determined. The duration of these units' prescribed lives would be shortened commensurate with their delay in commissioning past 2025 so that such units would become subject to a regulated annual emissions limit no later than a unit commissioned by January 1, 2025. This would avoid adverse impacts on investment decisions that have already been made.

Cogeneration units

In keeping with the draft regulations, all cogeneration units would only be subject to the emissions requirements in the years they have net exports to the grid.

Under the emissions limit approach described above, it is possible to distinguish the emissions from "behind the fence" electricity from the emissions associated with electricity provided to the grid. For existing units, consideration is being given to differentiating the treatment of emissions from electricity exported to the grid from "behind the fence" generation for a time-limited period.

Consideration is also being given to treating new cogeneration units the same as all other new units.

Minimum size threshold

Consideration is being given to applying the CER to all new units at the same facility whose capacities collectively amount to 25 MW or more, as well as to single units 25 MW and greater. This would avoid the unintended incentive identified during consultations for a facility to aggregate multiple small units, each of which would not meet the threshold to be subject to an emission limit on its own. Consideration is being given to how to continue to exempt remote communities in this context.

Emergencies

Consideration is being given to enabling a system operator's declaration of an emergency to trigger an exemption from the emissions limit for a reasonable period of time (duration TBD) to enable operators to respond to emergencies. Emissions during this period would not count against the unit's annual emissions limit. The Minister would need to be notified in all cases, and consideration is being given to requiring the Minister's approval to continue operating under emergency circumstances beyond the exemption period.

Next Steps

Continued collaboration with provinces, the electricity sector, Indigenous partners, industry, and other key interested parties is essential to ensure that the *Clean Electricity Regulations* are flexible and enable diverse regional electricity systems to deliver significant emissions reductions while safeguarding reliability and ensuring affordability.

ECCC will continue to engage with interested parties to understand the merits of the tailored annual emissions limit approach described above relative to providing increased flexibility based on the emissions intensity approach in the [draft regulations](#). Further, we welcome input on the other changes outlined in this report.

We invite you to send feedback to ecd-dec@ec.gc.ca by 11:30 PM EST March 15, 2024.

ECCC intends to seek approval to publish the final *Clean Electricity Regulations* later this year.

Annex: Comparison of the Draft CER and the Provisions Under Consideration

	Draft Regulations	Changes Being Considered
Performance Standard	30 t/GWh Equivalent to 95% capture rate	Not directly regulated but considering slightly changing the underlying performance standard used to calculate the emissions limit (see below).
Emissions limit	N/A	<p>Unit-specific annual emissions limit.</p> <p>Based on annual emissions from unit of same size operating 100% of the year at [X] t/GWh (TBD—considering increasing above 30 t/GWh).</p> $\begin{matrix} \textit{Unit} \\ \textit{Emission limit} \\ \textit{(t/year)} \end{matrix} = \begin{matrix} \textit{Performance} \\ \textit{standard} \\ \textit{(t/GWh)} \end{matrix} \times \begin{matrix} \textit{MW} \\ \textit{(capacity of unit)} \end{matrix} \times \begin{matrix} \textit{8760 hours} \\ \textit{(total hours in} \\ \textit{a year)} \end{matrix} \times \begin{matrix} \left(\frac{1 \textit{ GW}}{1000 \textit{ MW}} \right) \\ \textit{(unit} \\ \textit{conversion)} \end{matrix}$
Pooling	Not allowed	Allow responsible parties owning multiple existing units in the same jurisdiction to combine the emissions limits of individual existing unit into a pooled emissions limit.
Offsets	Not allowed	Considering allowing up to a specified maximum percentage above each unit’s annual emissions limit.
Peaker provisions	450-hour limit (= capacity factor of roughly 5%)	<p>No peaker provisions.</p> <p>Each unit’s capacity factor would depend on its efficiency and its annual emissions limit.</p>
EoPL for existing units	20 years	[TBD]
New units under development	Units commissioned by Dec 31, 2024 are existing units and exempt until EoPL	Units with substantial investment and work underway before January 1, 2025 and that start selling electricity to the grid by [TBD] would also receive an EOPL. However, the EOPL would be shortened so that the unit would become subject to an annual emissions limit no later than a unit commissioned by January 1, 2025.
Cogeneration units	Any unit with net exports to the grid must meet the emissions intensity performance standard at the end of its EoPL	<p>Existing cogeneration with net exports:</p> <ul style="list-style-type: none"> Considering distinguishing treatment of emissions associated with “behind the fence” generation from generation exported to the grid. <p>New cogeneration units with net exports:</p> <ul style="list-style-type: none"> Considering treating new cogeneration units the same as new utility units.

<p>Emergencies</p>	<p>System operator declares emergency.</p> <p>Federal Minister must approve retroactively for emissions to be exempted.</p>	<p>System operator declares emergency.</p> <p>Emissions not counted against the unit’s annual emissions limit for a reasonable period of time (duration TBD) to enable operators to respond to emergencies.</p> <p>Minister must be notified.</p> <p>Considering requiring Minister’s approval to continue operating under emergency provisions beyond the exemption period.</p>
<p>Minimum size threshold</p>	<p>25 MW</p>	<p>All new units at the same facility whose capacities collectively amount to 25 MW or greater, as well as single units 25 MW or greater.</p>