

Comments and Recommendations on
Clean Electricity Regulations – Public Update

Submitted to:
Environment and Climate Change Canada

By:
The Atmospheric Fund

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About The Atmospheric Fund

The Atmospheric Fund (TAF) is a regional climate agency that invests in low-carbon solutions for the Greater Toronto and Hamilton Area (GTHA) and helps scale them up for broad implementation. Please note that the views expressed in this submission do not necessarily represent those of the City of Toronto or other GTHA stakeholders. We are experienced leaders and collaborate with stakeholders in the private, public and non-profit sectors who have ideas and opportunities for reducing carbon emissions. Supported by endowment funds, we advance the most promising concepts by investing, providing grants, influencing policies and running programs. We're particularly interested in ideas that offer benefits in addition to carbon reduction such as improving people's health, creating local jobs, boosting urban resiliency, and contributing to a fair society.

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Summary

The Atmospheric Fund (TAF) supports the development and implementation of the Clean Electricity Regulations. We understand that there are many stakeholders and provinces with different energy mixes that must be weighed and accounted for along with the need to mitigate costs for consumers and plan for Canada's future energy needs. These needs, in combination with the goal of technology neutrality, are well understood and accounted for in our submission. Below, we provide detailed feedback on each section of the proposed changes post-CG I. However, to clarify our concerns upfront, we feel it is necessary to emphasize that our principal concern is the extensive suite of proposed amendments and how they potentially interact with one another. While understanding the impact of a few individual amendments would be simple, the cumulative result of all the proposed amendments is significant to the goal of net-zero electricity in Canada. Notably, the **proposed changes to unit-specific annual emissions limits provide significant flexibility to the regulations**, and we believe will achieve the goal sought by ECCC through this update. Concerningly, **the additional amendments have significant potential to weaken this regulation too far in its ability to achieve its stated goals and objectives if too many options are adopted**. Moreover, the lack of clarity around how Carbon Capture and Sequestration, and Offsets will work makes it impossible to provide substantive and significant feedback and risks further delaying the implementation of this regulation. Lastly, to be clear, **TAF does not support any expansion of the End of Prescribed Life Provisions as that has the greatest impact on the goal of this regulation**.

1. Unit-specific annual emissions limit

The shift to a unit-specific annual emissions limit is a sensible way to improve flexibility while avoiding unintended consequences. The original approach of a fixed emissions intensity standard, while allowing facilities that don't meet the standard to operate up to 450 hours per year, could result in unnecessary use of low-efficiency gas generators after higher-efficiency gas generators have maxed out their allowable hours. The proposed change would eliminate this unintended outcome by enabling higher capacity utilization factors for more efficient gas generators, as illustrated in Table 1 below.

However, we are concerned that this change, in combination with the other proposed changes, would significantly undermine the emissions impact of the regulations. It is important to note that proposed change 1 – in and of itself – allows significantly higher utilization of gas generators of all types. Compared to the original standard, conventional gas generators would be allowed between 100 and 400 extra hours of operation annually. The combination of proposed change 1 with proposed changes 2 and 4 would further extend the allowable operating hours for all gas generators. **Therefore, TAF strongly recommends that proposed change 1 should not be combined with either proposed change 2 or 4.** To assess the implications of this proposed change, consider the following comparative analysis of the allowed capacity utilization factor from the existing draft CER versus the proposed update. Table 1 outlines the permitted capacity utilization factor across different scenarios, including both simple and combined cycle gas-fired power generation systems, along with a combined cycle system employing CCS technology achieving an 80% capture rate. While target capture rates typically range between 90 – 95%, [projects routinely achieve rates significantly lower than this](#) as noted by ECCC in its rationale for this proposed change.

Table 1: Uniform emissions intensity standard vs. unit-specific annual emissions limit

Type of generation facility	Generation intensity (t/GWh)	Annual emissions limit under standard applied to all units (t/year)	Allowed capacity utilization factor under standard applied to all units (%)	Annual emissions limit under proposed formula (t/year)	Allowed annual capacity utilization factor under proposed formula (%)
Natural Gas – Simple Cycle (100 MW)	478.4	21,528	5.1	26,280	6.3
Natural Gas – Combined Cycle (100 MW)	305.8	13,761	5.1	26,280	9.8
Natural Gas – Combined Cycle with 80% CCS (100 MW)	61.2	2,754	5.1	26,280	49

Generation intensity data sourced from [Environment and Climate Change Canada](#).

2. Adjusted underlying performance standard

This proposed change responds to concerns regarding the feasibility of achieving a 30t/GWh performance standard for natural gas facilities employing CCS, especially when operating as load-following resources amid periods of fluctuating renewable output or high demand. We recognize that this change aims to incentivize the adoption of cleaner technologies and increase the use of CCS to mitigate overall emissions and provide certainty to encourage investments in developing CCS technology at gas-fired power plants. However, we are concerned that weakening the performance standard may further undermine emissions reduction of the regulation. Furthermore, this change is not necessary if proposed changes 1 and 3 are implemented.

The combined effect of proposed changes 1 and 2 would be to substantially expand the allowable capacity utilization of conventional gas generators in addition to those using CCS.

Building on Table 1, we consider the impact of combining these proposed changes in Table 2, assuming an increase in the performance standard to 35 t/GWh. We find that this would permit all facility types to run more often and emit more. Note that under this scenario, an NGCC facility without CCS would be allowed to emit more than double the pollution as under the original draft regulations.

Table 2: Uniform emissions intensity standard vs. unit-specific annual emissions limit and adjusted underlying performance standard

Type of generation facility	Generation intensity (t/GWh)	Annual emissions limit under standard applied to all units (t/year)	Allowed capacity utilization factor under standard applied to all units (%)	Annual emissions limit under proposed formula, assuming 35 t/GWh (t/year)	Allowed annual capacity utilization factor under proposed formula, assuming 35 t/GWh (%)
Natural Gas – Simple Cycle (100 MW)	478.4	21,528	5.1	30,660	7.3
Natural Gas – Combined Cycle (100 MW)	305.8	13,761	5.1	30,660	11.4
Natural Gas – Combined Cycle with 80% CCS (100 MW)	61.2	2,754	5.1	30,660	57

Generation intensity data sourced from [Environment and Climate Change Canada](#).

The cumulative impact of these two proposed changes goes beyond what is necessary to enable further investment in and use of CCS technology and risks undermining emissions reductions – even before considering the impacts when combined with the suite of further changes proposed in the update. Under the draft CER’s original annual emissions intensity standard applied to all units, a

natural gas combined cycle facility employing CCS that fails to meet the performance standard would have been subject to the same 450-hour restriction as the standard combined cycle facility – with an effective capacity utilization factor of 5.1%. However, under proposed change 1, an NGCC facility employing CCS with an 80% capture rate could substantially increase its capacity utilization factor to 49%. The significant enhancement in operational flexibility that proposed change 1 allows for would certainly enable units equipped with CCS to function as load-following resources. Further, combining the enhanced capacity utilization factor resulting from proposed change 1 with proposed change 3 even further underscores the efficacy of these measures. **TAF strongly recommends against weakening the underlying performance standard.** This change is simply unnecessary and, in combination with the other changes, would deeply undermine the emission impact of the regulations.

3. Pooling

Allowing for the pooling of emissions limits across multiple generating units within a fleet is a sensible means of improving flexibility while minimizing the usage of the least efficient generating units. Combined with proposed change 1, it will allow further flexibility for NGCC facilities employing CCS. In fact, given the small share of gas generators likely to be equipped with CCS, this could enable such facilities to operate at up to 100% capacity utilization even if they do not meet the underlying performance standard. In the context of enabling NGCC facilities employing CCS to feasibly operate as load-following resources, it appears that proposed changes 1 and 3 collectively render the second proposal to weaken the underlying performance standard redundant.

However, we are concerned that enabling pooling may inadvertently create a scenario where older, less efficient plants are kept operational solely to exploit the higher emissions threshold allowed when included within a fleet. Operators may seek out opportunities to maximize their overall emissions limit by including these older plants within their fleets beyond their economically viable lifespan. Careful consideration and potential safeguards must be implemented to ensure that pooling contributes to the CER's objectives, without inadvertently incentivizing the continued operation of inefficient or obsolete plants and increased emissions. **To mitigate this risk, we propose limiting the duration of pooling with an interim deadline.** This would serve as a temporary provision to optimize the efficient use of remaining plants while providing operators with sufficient time to transition towards cleaner energy technologies.

4. Offsets

TAF recommends against allowing the use of offsets to enable units to exceed their annual emissions limits. While recognizing the challenges posed by the unpredictable nature of electricity systems, we believe that this addition risks further undermining the CER. Integrating offsets into this regulation would introduce significant complexity, requiring a robust framework to ensure transparency, accountability and effectiveness. Without further details of the compliance pathway, it is challenging to provide comprehensive feedback.

Considering the flexibility that would be provided by the proposed shift to unit-specific annual emissions limits, combined with pooling, offsets will likely introduce unnecessary leniency. Additionally, relying on offsets to provide units with greater flexibility may not be as effective as anticipated. Emissions reductions from offsets are difficult to measure and aren't always quantified correctly, making it challenging to accurately assess their effectiveness. There are significant criticisms of emissions offset schemes in terms of verifying that emissions reductions are genuinely additional. Further, offsets [provide disincentives](#) for emitters to invest in emission reduction efforts, undermining the transition

away from fossil fuels. **We strongly oppose this proposal as it significantly risks increasing emissions and detracts from the goal of achieving sustainable emissions reductions.** If greater flexibility is needed than is achieved by proposed changes 1 and 3, it would be preferable to expand the pooling provision to allow for pooling across different owners in the same jurisdiction.

5. Other changes under consideration

End of Prescribed Life

We strongly oppose any consideration to extend the End of Prescribed Life (EoPL) provisions beyond 20 years. Allowing unabated gas-fired plants to operate without restrictions beyond 2045 is inconsistent with Canada's climate ambitions. An extension is unnecessary in light of the proposed changes to shift to a unit-specific annual emissions limit and the introduction of provisions to allow for pooling. The [Regulatory Impact Analysis Statement](#) has clearly demonstrated that extending the EoPL could have detrimental effects on the entire regulation, significantly hindering emission reductions and increased costs. Additionally, many municipalities in [Ontario](#) and across Canada have called for a gas phaseout by 2030, making an extension as the update proposes inconsistent with this vision. Therefore, we firmly recommend the EoPL not be extended substantially to ensure the transition to net-zero electricity occurs within a reasonable time frame.

New units under development

With the final CER regulation not due to be released until later in 2024, its finalization and publication are occurring much later than originally envisioned. As a result, it is reasonable to allow units under construction but not commissioned by January 2025 to access the EoPL provisions, with the prescribed life for such units shortened commensurately. However, such treatment should be limited to units commissioned by January 1, 2026. This would recognize the uncertainty caused by the delayed implementation timeline without significantly undermining the regulation's emissions impact.

Minimum size threshold

TAF welcomes the proposed change to establish a minimum size threshold for the combined capacities of new units within the same facility. This measure addresses concerns about unintended incentives to aggregate smaller units, which could undermine the effectiveness of the CER if facilities opt to split into smaller units to circumvent compliance obligations. Additionally, smaller units tend to be less efficient, so this change advances the overarching goal of emissions reduction by discouraging their use. Establishing this threshold ensures equitable treatment across facilities, preventing disparities in obligations and compliance of facilities with similar overall capacities but differing configurations. This fosters consistency and fairness in the application of the CER, promoting a level playing field within the energy sector and advancing the overall goal of reducing emissions.

Furthermore, compliance flexibility for small units operating in northern, rural and remote communities should be considered. A flexible approach to the minimum size threshold for these communities acknowledges their unique energy needs, where smaller-scale generation facilities are often the most practical and economically viable solution to meet localized demand.

6. Conclusion

Focusing on proposed changes 1 and 3 and omitting proposed changes 2 and 4 would address concerns related to operating flexibility, without substantially compromising the emissions reduction aims of the CER. This approach aligns with a shift away from fossil fuels and to alternative energy

sources while recognizing an important role for CCS where needed to ensure reliability. As demonstrated in a [2022 TAF commissioned report](#), Ontario could reliably operate its grid while only using gas-fired capacity 5% of the time, if supplemented with investments in non-emitting generation, demand flexibility, and energy efficiency.

The update's proposed changes are intended to permit limited use of gas-fired generation as load-following resources to meet peak demand needs as grid modernization efforts are underway. The CER must ensure that natural gas is the resource of last resort, not a permanent fixture, in securing system reliability during the transition to a net-zero grid. Additionally, it's crucial to acknowledge that the reliability of natural gas is often overestimated.

Recent events earlier this year in Alberta underscore how unreliable natural gas can be. In January, extreme cold weather, an acute low wind event, limited imports, and planned and unexpected outages of gas plants strained the grid, prompting the government of Alberta to issue an emergency alert urging immediate reductions in electricity consumption. Within minutes, the [Alberta Electric System Operator noted](#) a 200 MW drop in demand. Ultimately, the pressure was relieved, and Grid Alert was lifted as increasing wind and solar generation came online. The successful response to the province-wide call for energy conservation illustrates the effectiveness of demand-side strategies. Additionally, battery storage, such as that [installed by Enfinite in 2023](#), contributed by providing the province with additional hours of electricity before the need for an alert arose.

Solutions are readily available that can play a large role in enhancing grid reliability and sustainability – without exacerbating reliance on fossil fuels or compromising emissions reduction efforts. Investing in these solutions will be crucial to the resilience of Canada's grids, particularly as extreme weather events occur more frequently. As identified in the North American Electric Reliability Corporation's [2023-2024 Winter Reliability Assessment](#), areas right across Canada are vulnerable to similar unpredictable winter grid interruption. **As a result, TAF strongly cautions against implementing multiple changes that risk undermining the aims of the CER, when many potential strategies to address grid reliability concerns sustainably exist.**