

Improving the flexibility of the Clean Electricity Regulations

Pembina Institute comments and recommendations

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Regarding: Clean Electricity Regulations public update

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Summary

The updated Clean Electricity Regulations (CER) parameters provide necessary flexibility, balancing environmental and affordability objectives. However, we have several recommendations regarding the proposed changes to the unit-specific annual emissions limit and end of prescribed life parameters, as well as the inclusion of net-exporting cogeneration facilities.

1. The performance standard should be set such that it discourages investment in unabated or incrementally abated gas plants. A weaker standard that is ratcheted down until the full regulations come into effect in 2035 would help ease the transition.
2. Offsets for units that surpass their emissions limits should be used sparingly, and they must be verifiable, compliance-grade instruments. These offsets must have a similar price point as carbon removal technologies (e.g. direct air capture) or be indexed to carbon pricing so long as clarity on the federal output-based pricing system (OBPS) and industrial carbon pricing is provided past 2030.
3. The end of prescribed life parameter should not exceed 20 years. Facilities facing uncontrollable circumstances that push their planned commission date beyond January 1, 2025 may be granted an exemption of up to one year.
4. As proposed in the public update, electricity produced at cogeneration facilities should only fall under the CER if it is exported to the grid. Electricity that is generated and consumed behind the fence should be captured by complementary regulations such as the oil and gas cap.

We also recommend creating supporting frameworks and revising existing policies to complement the proposed updates:

1. Rather than relaxing the end of prescribed life parameter and risking the regulations' effectiveness, the CER should allow facilities to submit deviation requests for non-compliance in extenuating circumstances. A framework for this request is provided in this submission.
2. To plug exemption gaps in the CER and align policy outcomes with net zero grid targets, OBPS should be revised to fully price emissions from the electricity sector by 2035. An updated pricing schedule should also be provided past 2030 to reduce uncertainty.

While it is essential that these regulations are carefully considered to ensure a balance between economics and the environment, unnecessary delay in their implementation risks harm in both areas. Finalizing and implementing the CER must be an urgent priority.

Context: Draft Clean Electricity Regulations

The draft Clean Electricity Regulations (CER) published in Canada Gazette 1 (CG1) are a meaningful and ambitious effort by the federal government to balance emissions reduction with realizing an affordable and reliable electricity grid — a key aspect of addressing climate change.

Given the environmental and health consequences of emitting energy sources, it is imperative that these regulations are implemented urgently. However, if a sustainable equilibrium between environmental objectives and consumer impacts is not achieved, the durability and longevity of the regulations could be put into question. As such, a more flexible regulation that gains marginally fewer emissions reductions, but has a lesser cost impact on Canadians, is preferable. And, any loss in emissions reductions can subsequently be addressed through complementary regulatory measures, such as strengthened industrial carbon pricing— both price level and performance benchmark — and procurements of high-quality emissions offsets. This submission outlines the Pembina Institute's recommendations on the updates being considered for the CER, and outlines additional complementary actions that should also be implemented to ensure a credible path to net-zero. Table 1 provides a summary of the key CG1 CER design elements that are relevant to this submission.¹

¹ Further information on the Pembina Institute's response to these design elements can be found in our original submission: Will Noel, Binu Jeyakumar, Ben Thibault, and Scott MacDougall, *Pembina Institute response to draft Clean electricity Regulations: Submitted to Environment and Climate Change Canada*, (Pembina Institute, 2023), 26. <https://www.pembina.org/pub/response-draft-clean-electricity-regulations>

Table 1. Key design elements of the draft Clean Electricity Regulations

Design Parameter	Canada Gazette 1 Approach
Updates under consideration	
Emissions performance standard	Annual average standard of 30 t/GWh, allowing units with carbon capture to emit up to 40 t/GWh until the earlier of the first seven years after commissioning or December 31, 2039. Compliance cannot be achieved through emissions offsets (i.e., “netting”) and performance is unit-based, rather than fleet-based.
Peaking provisions	Any unit that cannot meet the emissions performance standard can “operate at any emissions intensity for a maximum of 450 hours per year, with an [emissions] limit of 150 kt/yr.”
End of prescribed life provisions	The CER would “phase in the performance standard on existing units by applying the standard to any given unit 20 years following its commissioning date, known as a unit’s end of prescribed life.” This provision is only granted to units installed prior to January 1, 2025.
Inclusion of net-exporting cogeneration	“In any given compliance year, industrial units that have net exports to a NERC-regulated electricity system (i.e. they sell more electricity than they buy) would have to meet the proposed Regulations’ performance standard in that year.”

Source: Environment and Climate Change Canada²

Recommendations on CER updates being considered

The CER updates being explored by Environment and Climate Change Canada (ECCC) are largely aimed at increasing flexibility for generators and system operators. The proposed design changes lay the foundation for an affordable and reliable transition toward a decarbonized electricity sector, an essential part of a net-zero economy. We propose the following recommendations for the unit-specific annual emissions limit, end of prescribed life, and inclusion of net-exporting cogeneration parameters to maximize the CER’s effectiveness. Other design changes being considered by ECCC — namely the minimum size threshold and treatment of emergencies — are not included in this submission, as we are in full agreement with the proposed changes.

Unit-specific annual emissions limit

The updated CER applies an emissions limit (in tonnes per year) to all units based on their installed capacity and the underlying emissions performance standard (value to be

² Government of Canada, “Clean Electricity Regulations,” *Canada Gazette Part I*, 157, no. 33, August 19, 2023, 2726-2734. <https://www.gazette.gc.ca/rp-pr/p1/2023/2023-08-19/pdf/g1-15733.pdf>

determined). Emissions budgets can be shared between individual units that are operating in the same jurisdiction, and a prescribed amount of excess emissions may be accounted for through offsets, if needed.³

Recommendation: The emissions performance standard, used in determining a unit's emissions budget, should be set at a level — such as 40 t/GWh — that discourages investments in unabated or incrementally abated gas plants. To encourage early action, a weaker standard (e.g. 80 t/GWh) may be used for projects built before 2035 and ratcheted down over time.⁴ Pooling of emissions budgets will provide additional flexibility for system operators and generators, providing a more affordable and reliable outcome for consumers.

For units that go over their prescribed carbon budget, offsets should be used sparingly and with a high level of scrutiny. All offsets should be high-quality, result in a verifiable reduction or removal of carbon, and have a price level similar to that of direct-air capture or other engineered carbon removal technologies. If offsets are instead indexed to the carbon price then, on the day the CER is published, the federal government needs to provide further clarity on their intentions for the output-based pricing system and industrial carbon price past 2030. We recommend fully pricing electricity emissions, and increasing the carbon price every year to at least align with inflation.

Rationale for recommendation

Increasing operating flexibility for generators is the most effective method to balance emissions reduction goals with affordability and reliability.

The proposed emissions limit approach improves upon the original CG1 regulatory design, in that it provides similar emissions reduction potential while significantly expanding flexibility for generators. And, by providing units with an emissions budget rather than a fixed emissions performance standard, the CER will incentivize emissions reduction without weakening the investment signal for unabated gas. An early, less-stringent standard that ratchets down over time can incentivize early actions, mitigate the risk of regulatory failure, and reduce cumulative emissions.

³ Government of Canada, *Clean Electricity Regulations: Public update*, (2024), 7.

<https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/clean-electricity-regulation.html#toc2>

⁴ Preliminary modelling results suggest that, while maintaining a 20-year EoPL, an emissions limit based on an initial performance standard of 80 t/GWh would decrease electricity costs in Alberta by 16-22% in 2035 relative to the CG1 regulations, with marginal increases to emissions (<1%).

End of prescribed life

Considerations are being given to extend the EoPL past 20 years. At the same time, considerations are also being given to grant extensions for units that have “substantial investment and work underway” but cannot meet the January 1, 2025 deadline, such that they can take advantage of the EoPL provisions. The duration of the EoPL for these units would be shortened such that they are subject to the emissions limit no later than a unit commissioned before January 1, 2025.⁵

Recommendation: The end of prescribed life provision should not exceed 20 years. Extensions past the January 1, 2025 time limit should only be granted to projects that had a planned commissioning date prior to January 1, 2025, but experienced unforeseen and uncontrollable delays (e.g. supply chain disruptions). These units should be subject to the regulations no later than those commissioned prior to January 1, 2025, and no extensions should be granted past January 1, 2026.

Rationale for recommendation

Given the increased flexibility provided by the emissions limit approach, a 20-year EoPL is sufficient to maintain supply adequacy.

As each plant hits its 20-year life, operators can decide whether to abate, work within their annual emissions limits, or retire the facility. With a 20-year EoPL, there will still be a large amount of unabated gas capacity operating in 2035 — 5,828 MW in Alberta, 934 MW in Saskatchewan, and 1,683 MW in Ontario — that is not covered by the CER, leaving substantial emissions on the grid.⁶ A further extension beyond 20 years would aggravate the situation.

There is no compelling investment expectation justifying an extension of the EoPL past 20 years.

Neither the CER nor the federal government is responsible for investment decisions made without consideration for the global outlook on decarbonization. However, we understand that supply chain issues and labour shortages can cause unforeseen delays in project commissioning. Providing up to a one-year extension for units that were to be commissioned in 2024, but have since experienced unexpected delays, will reduce the risk of those assets — which would have been granted a 20-year EoPL — being stranded.

⁵ *Clean Electricity Regulations: Public update*, 8.

⁶ *Pembina Institute response to draft Clean electricity Regulations*, 17.

Inclusion of net-exporting cogeneration

Cogeneration units will continue to be subject to the emissions requirements of the regulation in the years that they have net exports. However, under the new emissions limit approach, emissions from behind-the-fence operations — that is, heat and power generated for on-site applications — can be differentiated from electricity exported to the grid. Considerations are also being given to remove any special considerations for new cogeneration units, treating them instead the same as any other new fossil fuel plant.

Recommendation: Only emissions associated with grid-exported electricity from cogeneration facilities should be captured under the CER, allowing any behind-the-fence emissions to fall under a complementary regulatory umbrella (e.g. oil and gas cap). This will allow existing cogeneration facilities to continue to provide flexible backup generation during the transition to more low- and zero-emission sources.

Rationale for recommendation

A full exemption for industrial cogeneration would undermine fair competition in Alberta’s deregulated electricity market by advantaging a very large market participant over other generators.

Industrial cogeneration at oil and gas facilities forms a large proportion of Alberta’s electricity system: currently about 25% by installed capacity.⁷ And, while the operation of these facilities is primarily driven by factors outside the electricity sector, they are typically oversized relative to their behind-the-fence electricity demand, exporting up to 40% of their generation over the course of the year.⁸ These power plants compete with other generation on the grid. It would be an unfair economic advantage for cogeneration to be exempt from the regulation, clearly weakening the fair, efficient and open competitive operation of Alberta’s electricity market, undermining investor confidence in the market price signal.

Meanwhile, many cogeneration facilities would enjoy similar opportunities for abatement through carbon capture and storage (CCS) as large combined-cycle gas power plants. In fact, many operators that have cogeneration are considering the feasibility and effectiveness of CCS for their operations.⁹

⁷ As of March 1, 2024, cogeneration makes up 5,254 MW of the total 21,191 MW system. Alberta Electric System Operator, “Current Supply and Demand Report.” http://ets.aeso.ca/ets_web/ip/Market/Reports/CSDReportServlet

⁸ Will Noel and Binu Jeyakumar, *Zeroing In: Pathways to an affordable electricity grid in Alberta*, (Pembina Institute, 2023), 7. <https://www.pembina.org/reports/zeroing-in.pdf>

⁹ See, e.g., Pathways Alliance, “Carbon capture and storage (CCS).” <https://pathwaysalliance.ca/foundational-project/carbon-capture-and-storage-ccs/>

Other industrial sectors besides electricity are under increasing regulatory and competitiveness pressure to decarbonize.

Due to external pressures, cogeneration operators will have incentives and requirements to abate coming from multiple directions, not just the CER (e.g. industrial carbon pricing, oil and gas cap, investment tax credits, provincial supports, carbon contracts for differences). This means the business case for carbon capture on cogeneration will have more going for it than many other types of gas generation. The emissions limit approach in the updated CER lets the CER regulate operations associated with grid-exported electricity, while other regulatory levers (e.g. oil and gas cap) can cover behind-the-fence operations.

Additional recommendations for complimentary measures

Deviation request mechanism for non-compliance

Any changes to the end of prescribed life provisions provided in the CER, including minor adjustments, may have significant impacts on its ability to reduce electricity sector emissions. This is due largely to the fact that the EoPL locks in emissions for a given period, and the regulations apply to a relatively large fleet of fossil fuel generating capacity that is dispersed unevenly across the country. A deviation system, through which individual facilities could apply for temporary exemption from the regulations, provides a more flexible and precise alternative to relaxing key design elements where warranted, avoids unintended consequences, and does not sacrifice emissions reductions as much as broadly increasing flexibilities.

To qualify for deviation, a facility should meet a pre-determined set of criteria. The following section outlines our recommended principles to guide the development of a deviation mechanism for the CER. This list is not intended to be exhaustive and would require further modelling and analysis to round out any specifics.

Guiding principles for a deviation request to the clean electricity regulations

1. **Demonstration of the consequences of compliance.** The facility owner must demonstrate that maintaining compliance with Clean Electricity Regulations (the *baseline* scenario) will result in an immediate and unavoidable restriction or limitation of consumer access to reliable and affordable electricity services, even with a limited use of emissions offsets. These unavoidable circumstances must be outside the control of the facility owner, such as limitations in the existing transmission or distribution infrastructure (e.g. islanding) or supply chain impacts.
2. **Evaluation of a suitable alternative.** The facility owner must demonstrate that the best alternative to the proposed approach (the *project* scenario) for the existing facility is not economically or technically feasible or cannot be implemented in time to allow

the facility to maintain compliance with the Clean Electricity Regulations. A feasibility study with cost-benefit or regulatory analysis should be provided to justify the best alternative is not feasible. For clarity, the best alternative could be within or outside the facility operator's control, and may include: expansion of transmission or distribution infrastructure, installation of non-emitting electricity generation and/or energy storage capacity, implementation of demand-side measures such as load-shifting or energy efficiency, and abatement of emissions through carbon capture and storage or co-firing with non-emitting fuels.

3. **Demonstration of a path to compliance.** The facility owner must provide a plan detailing its pathway to compliance under the Clean Electricity Regulations. The plan must include, but is not limited to:
- A timeline estimate of the key milestones to achieve compliance. The timeline starts at the date of the application for deviation and ends at the date that compliance is achieved.
 - A budget estimate and cashflow analysis of the proposed compliance plan including, where applicable, the decommissioning and reclamation of the original facility.
 - An estimate of the total cumulative greenhouse gas emissions (in tonnes of CO₂) that would result from the proposed deviation.
 - An estimate of the average electricity cost savings (in dollars per megawatt hour) that would result from the proposed deviation.

Once per year, the facility owner would be required to submit a progress report, outlining the milestones that have been achieved. The report would also provide justification for the milestones, if any, that are behind schedule and the projected impact to the original timeline and budget.

Fully priced electricity emissions

Canada has a goal to achieve net-zero emissions electricity by 2035. The CG1 CER acknowledged that the regulations alone do not achieve a net-zero grid by 2035 or even 2050. At the same time, several studies — including from the Pembina Institute,¹⁰ Alberta Electric System Operator,¹¹ and the Government of Alberta¹² — have shown the effectiveness of

¹⁰ *Zeroing In*, 31.

¹¹ Alberta Electric System Operator, *AESO Net-Zero Emissions Pathways Report (2022)*, 3. <https://www.aeso.ca/assets/AESO-Net-Zero-Emissions-Pathways-Report-July7.pdf>

¹² Alberta Environment and Protected Areas, *Federal Draft Clean Electricity Regulations: Government of Alberta technical submission*, (2023), 5. <https://www.alberta.ca/system/files/epa-government-of-alberta-submission-on-draft-federal-electricity-regulations.pdf>

industrial carbon pricing in reducing electricity sector emissions close to, but not quite achieving, net-zero emissions.

Recommendation: Given the historic success of combining industrial carbon pricing with other regulatory measures (e.g. the federal coal phase-out), the federal government should immediately announce its intention to revise the OBPS to require full pricing of all electricity sector emissions in all provinces by 2035. Full pricing of electricity emissions is essential to plugging the CER’s exemption gaps and to setting a path to reduce physical emissions in line with Canada’s target of achieving a net-zero grid by 2035. Independent of this change, an updated carbon pricing schedule past 2030 is needed to increase investment certainty for low-carbon and decarbonization projects.

To manage the risk that fully pricing electricity sector emissions could lead to household affordability impacts, consumer rebates must be reviewed and potentially increased should it be found that gas-fired generators pass on too much of their increased carbon costs to consumers.

Rationale for recommendation

Full pricing of emissions is necessary to substantiate a net-zero grid claim.

To align carbon pricing with Canada’s goal of a net-zero emissions grid by 2035, fully pricing electricity emissions allows emitting generators to “net out” their remaining emissions over and above their emissions budget. This approach can be credible, so long as:

- All emissions are priced with no free allocations.
- The price is high enough to enable procurement of negative emissions and the government should use those revenues for that purpose on a tonne-for-tonne basis.
- If the federal carbon price is used as a benchmark, provincial industrial carbon pricing schemes need to be evaluated much more stringently for equivalency against the federal output-based pricing system’s benchmark than they currently are, and with a **sector-specific lens** to avoid weakening due to a “whole-of-package” approach.¹³

While we have shown that significant decarbonization will not increase electricity costs, as a proactive measure, the federal government and provinces should commit to ongoing joint work to monitor and ensure electricity affordability is maintained, especially for the most vulnerable consumers.

¹³ Existing equivalency agreements — such as those in the Technology Innovation and Emissions Reduction (TIER) Regulation in Alberta — are evaluated on the basis of economy-wide emissions reductions. This system allows provinces to justify inaction in one sector (e.g. electricity) with emissions reductions in another (e.g. oil and gas). A sector-by-sector approach would ensure greater alignment of provincial emission-intensity benchmarks and federal climate targets (e.g. net-zero electricity by 2035). *Pembina Institute response to draft Clean electricity Regulations*, 26.