2 November 2023

Submission to the Clean Electricity Regulations consultation

To the Minister of Environment and Climate Change Canada:

Thank you for the opportunity to provide input into the Clean Electricity Regulations (CER) consultation. To start, we offer our credentials as experts in electricity and climate policy.

> *Dr. Shaffer is an associate professor in economics and public policy at the University of Calgary. His primary research area is the intersection of electricity markets and climate policy. He co-directs the NRCan-funded Energy Modeling Hub and the Net Zero Electricity Research Initiative. He currently serves on the BC Government's BC Hydro task force, and frequently provides policy advice and research to multiple levels of government (Environment and Climate Change Canada, Natural Resources Canada, Alberta Energy, BC Energy and Mines, City of Calgary). Prior to academia, Shaffer has a 15 year career in electricity trading at BC Hydro, Lehman Brothers, Barclays Capital, and Transalta.*
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> *Dr. Leach is a professor in economics and law at the University of Alberta. His primary research areas are energy and climate policy. He led the panel providing a report to the government of Alberta for its climate leadership plan in 2015 and provides policy advice on various energy and climate related matters across the country.*

We begin our comments by asking, why does Canada even need the Clean Electricity Regulations in the first place? After all, pitched political and legal battles were fought to install carbon pricing as the law of the land. In Alberta, the uniform benchmark structure of their output-based pricing system for electricity (known as TIER in Alberta) has led to a 51% reduction in emissions since 2015, with coal power phased out nearly seven years before regulations would have forced the same outcome.

We see three potential reasons.

The primary motivation for the CER is that the Federal government seeks deeper and quicker emissions reductions in the electricity sector than the $170 per tonne—the carbon price currently prescribed for 2030 and beyond—will deliver. Pushing for the last tonnes of emissions reductions in one sector, while cheaper abatement opportunities exist in other sectors is, however, the definition of inefficient. Sector-specific policies with higher implied carbon prices will raise the cost of decarbonization.

Second, the regulatory nature of the CER may lead to different types of investments in emissions reductions than the carbon price. Investors and utility commissions will have a clearer picture of what acceptable emissions from future generating assets will be. If those same investors and utility commissions are uncertain over future carbon prices, they may not invest in or approve new, clean technologies. But, this effect is double-edged in that some new technology may present more substantial risks under the CER than would be the case with carbon pricing alone.

The CER also targets policy durability by adding layers of policy. Here, federal and provincial coal phase-out initiatives in Alberta come to mind, though these proved less important than carbon pricing in the eventual end of coal in Alberta. But, the mere existence of federal phaseout legislation provided certainty that even if carbon pricing were to be amended or weakened, the economic lives of coal plants were likely to be shortened.

While we find the first reason unsatisfactory, we acknowledge the benefits of the last two, albeit with some caveats we will discuss later as to risks involved with policy overlap.

To that end, the main thrust of our recommendations is two-fold:

1. **Design the CER to provide certainty and durability benefits, but rely primarily on carbon pricing** to avoid the potential for high costs and reliability risks. This means ensuring sufficient flexibility in the regulations to operate under a range of future scenarios.

2. Adjust the performance standard metrics to provide the benefits of **fleet-wide and over-time averaging**. The regulatory goal should be low emissions intensity for the system as a whole over reasonable time frames, not capped emissions for individual units over short timeframes. To the extent possible, the CER should shift from unit-specific to fleet wide and longer time frame metrics.

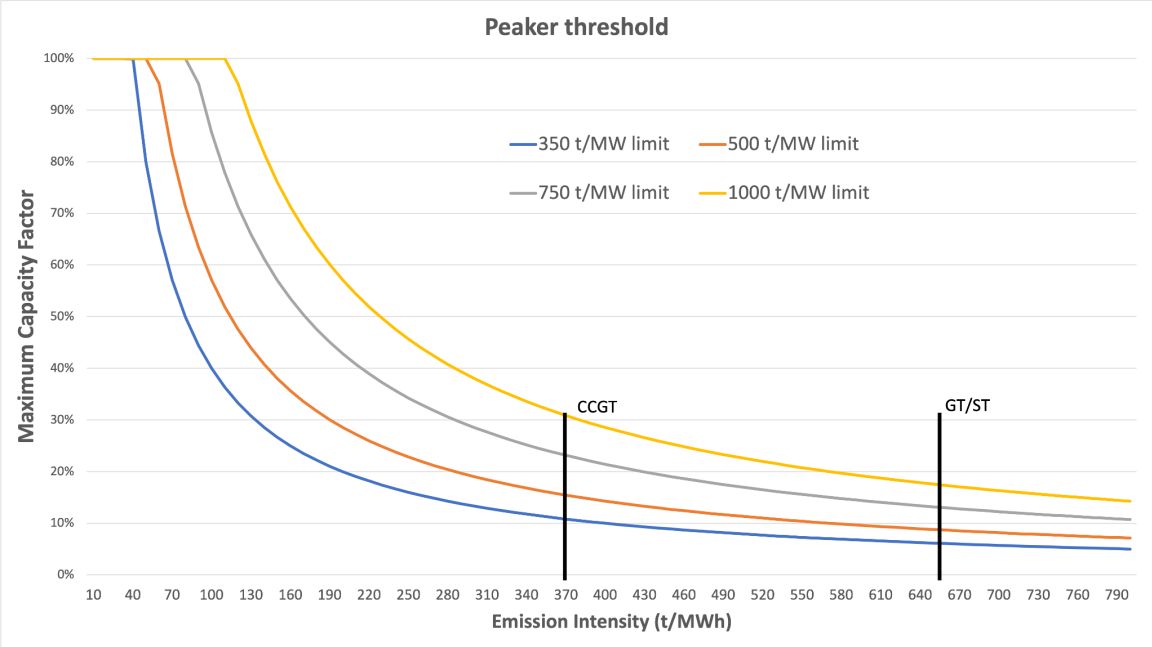
With those goals in mind, we offer the following recommendations:

1. **End-of-prescribed life**
   Increase the end-of-prescribed-life value from 20 years to at a minimum 25 years. This would allow the newest gas plants coming online next year in Alberta to operate without additional abatement until 2049, abutting Alberta's 2050 net zero commitments.

2. **Peaker provisions**
   Increase the maximum run time for emitting plants that have reached their end of prescribed life. A limit of 450 hours is insufficient for a merchant plant in Alberta to be

economic under current market design, and its imposition has the potential to compromise system reliability. We recommend one of these alternatives:

a. Increase the prescribed maximum number of running hours per year to 2000 hours. While this may be more than necessary, it allows for more flexibility in case it is needed.
b. Evaluate compliance with the maximum operating hours on a rolling 3-year basis. This would allow for a lower total, while maintaining flexibility. For example, a rolling 3-year maximum of 4000 hours offers facilities the flexibility to run more hours in years where prices are very high, and also to conserve in years when prices are low, for example when wind and solar generation are plentiful.
c. Move away from an "hours" metric and towards a combination of capacity factor and emission intensity. Under this metric, plants would be allocated a limit in tonnes per MW rather than hours. How much they could then run, i.e. their capacity factor, would be dictated by their emission intensity. Lower emission intensity units would have higher allowable capacity factors. This has the benefit of directing the regulatory prohibition directly at emissions rather than at facility operating hours. We would recommend a high allowable limit, i.e. 700t/MW of greater, and a similar averaging over 3-year rolling periods approach. An example of such a limit is shown here:



3. Cogeneration facilities

Exempt existing co-generation facilities from the CER to allow for their net-to-grid exports. In Alberta, this accounts for roughly 25% of market supply (roughly 40% of gross supply, inclusive of behind-the-fence generation). Absent such an exemption, the

likely response of cogenerators to the proposed restrictions would not be to abate their emissions or shut down the generation, but rather to respond by increasing behind-the-fence load and/or storage. To do so will retain the high value of their heat production and is likely to be a lower cost alternative to abatement or physical redesign. Such an outcome would not produce emissions benefits while removing supply from Alberta's market. Furthermore, we should emphasize that other federal policies (Clean Fuel Regulations) and provincial carbon pricing program reward combined heat and power generation, and so the CER is contradictory to the signals that governments have sent to industrial producers for decades.

4. Performance standard

Provide flexibility around the physical performance standard for abated natural gas. 30kg/MWh is likely too low and should be increased to account both for technology and operating risks. Moreover, whichever target you land on, a slight miss should not result in the choice between stranding an asset or violating regulatory provisions. Flexibility is needed to avoid a binary compliance decision. This could be done in numerous ways:

a. Requiring the payment of the prevailing carbon price times a multiplier on any overage; or
b. Requirements for verified, negative emissions offsets to compensate for any overage.

We would also encourage you to consider expanding the proposed unit-specific performance standards to a tradable fleet-wide performance standard similar to that already used under the *Canadian Environmental Protection Act* renewable fuels regulations which were upheld by the Federal Court of Appeal as well as for vehicle fuel economy and emissions performance standards. An approach based on fleet averages would allow more flexibility for operators and would drive directly at the stated goal of the regulation: reducing grid emissions intensity, with less requirement for direct federal supervision of the annual performance of individual assets.

We thank you for the opportunity to provide comments and are open to more detailed conversations.

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