

November 2, 2023

Jean-François Tremblay
Deputy Minister
Environment and Climate Change Canada (ECCC)
Jf.tremblay@ec.gc.ca

Dear Jean-François Tremblay:

The following is a technical submission in response to the public consultation on the Clean Electricity Regulations published in *Canada Gazette, Part I* on August 19, 2023. The provincial government has clearly stated that the Clean Electricity Regulations are unattainable, unaffordable, and jeopardize the reliability of the provincial electricity system. This correspondence is made without prejudice to any positions put forward by the Government of Saskatchewan and the provincial Crown sector.

It is a continuing priority for Saskatchewan to work with ECCC on the modelling used to inform federal regulatory design. Federal policy would be more informed by models that accurately reflect regional circumstances and where the regional effect of policy design is modelled. Saskatchewan urges ECCC to operate with greater transparency and to collaborate with the provincial utility and the provincial government on modelling.

Please contact us at CIC if you have any questions about the contents of this submission.

Sincerely,



Kent Campbell
President and CEO, Crown Investments Corporation of Saskatchewan

Enclosure: Saskatchewan Technical Submission

cc: Rupen Pandya, President and CEO, SaskPower
David Brock, Vice President of Energy Security, CIC
John Moffet, Assistant Deputy Minister, ECCC

SK TECHNICAL APPENDIX CLEAN ELECTRICITY REGULATIONS

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1. Overview

On August 19th, 2023, Environment and Climate Change Canada (ECCC) published the proposed Clean Electricity Regulations (CER) in the Canada Gazette, Part I.

The province has reviewed the CER and the accompanying Regulatory Impact Analysis Statement (RIAS) within the context of the existing provincial generation mix, SaskPower's future supply plan, and anticipated future load growth. The draft CER is not financially, logistically, or technologically feasible for Saskatchewan, and threatens the reliability of the province's electricity system. The cost-benefit analysis (CBA) in the RIAS underestimates the costs of the CER for the province and makes several erroneous assumptions that Saskatchewan will comment on in this submission.

The province has carefully reviewed and considered the impacts of the proposed CER and accompanying RIAS. Below is a summary of the concerns, and what follows is a detailed analysis and constructive critique.

RIAS Assumptions

- The RIAS and CBA contain several concerning assumptions, methodologies, and potential errors. These concerns are significant enough to change the overall conclusions of the CBA from the reported *net benefit* of \$28.9B to an overall *net cost* of \$33.7 B.
- The base case scenario modelled in the RIAS shows significant emissions to 2050, and beyond, and is inconsistent with the current policy commitments of provinces which have set a target of net zero by 2050. By basing the analysis on the existing federal regulatory regime instead of provincial policy commitments, the CER is attributed with significant reductions that would already result from planned action at the provincial level. This overestimates the benefit of the CER which is used to justify the disproportionate cost faced by some jurisdictions.
 - To properly assess the impact of the CER, the base case should reflect a generation mix guided by provincial commitments intended to meet net zero by 2050.
- Reliability is continually mentioned as a priority in the RIAS, however, there is no analysis or consideration of how this will be achieved at the regional level. The availability of capital and the feasibility of managing a wholesale change in the electricity system are significant risks that were not considered.
- Rather than imposing strict operational standards on individual units based on abstract and inaccurate federal models, electricity supply planning decisions should be made by provincial authorities who prioritize reliability, affordability, and customer access. Saskatchewan officials have consistently expressed concerns about the accuracy of federal modelling and data, which has not been shared, in detail, with Saskatchewan.

Regional Considerations

- The RIAS concludes that the regulations "provide the electricity sector with adequate timelines to adjust their capital investments plans to meet the proposed CO₂ emissions standards by 2035,". This ignores the

reality of achieving compliance in Saskatchewan and other provinces currently reliant on unabated thermal power generation.

- Significantly increased electricity prices in Saskatchewan, and this further erosion of regional rate competitiveness will have substantial impacts on Saskatchewan's economy and ability to attract investment.
- Additional costs, including the decommissioning of coal and natural gas infrastructure and workforce transition, must be factored into any responsible compliance assessment with the CER.
- The conclusions of the RIAS require that incremental costs of the regulations be averaged and applied at the national level. The RIAS was also prefaced on a national future generation mix that optimizes investment in a fictional national grid. While the benefits to climate, resulting from reductions in emissions, will accrue at the national and global levels, grids exist and are managed at the provincial level, investment is made at multiple levels within each province, and costs ultimately impact regional ratepayers. The average impact reported is not realistic and downplays the disproportionate impact the CER will have on jurisdictions like Saskatchewan.
- The RIAS also concludes that the cost of the regulations will be offset by lower overall energy costs. These energy savings will not be realized until well after investments are made and will also not be distributed evenly as the rate of uptake of electrification will vary with jurisdiction, climate, economic sector, and socioeconomic status.
- The RIAS presented no socioeconomic analysis on how the regulations will impact communities, which is a significant consideration for Saskatchewan. Regional shifts in generation will most impact the neighbouring communities of stranded assets.
- The regulations severely restrict the use of natural gas generation as a transitional step towards non-emitting technologies.

Logistics

- Currently, there are no commercially available non-emitting baseload generation technologies available for Saskatchewan that can replace baseload conventional coal-fired generation by the end of 2029 and baseload natural gas-fired generation by the end of 2034.
 - Restrictions imposed by the CER on existing and future natural gas-fired generation will put SaskPower in the position of having to choose between providing reliable electricity for our customers and compliance with the CER.
- The RIAS does not include analysis of planning timelines, regulatory and consultation requirements, technology, supply chain, and labour force readiness, or the ability of ratepayers to afford rate increases.
- The short transition period afforded by the CER will prevent Saskatchewan from benefiting from improvements in low and zero emission technology as the timeline for compliance will require premature

large-scale investment in untested technology. Longer time frames for reaching net zero would allow for investment in best placed technology, reduce overall cost, and distribute rate impacts over a longer period minimizing the impact on ratepayers.

- Saskatchewan must also continue to make historic investments in new transmission and distribution lines, grid modernization, and the sustainment of the province's existing electricity system.
- The CER will require Saskatchewan to replace units that would have otherwise been operated to the end of their service life. Newer gas-fired units will need to be retrofitted with carbon capture to avoid early retirement and maintain baseload capacity. This is on top of work to replace coal fired units that, due to federal policy, cannot operate beyond 2030.
- SaskPower's experience in development of carbon capture and storage (CCS) technology, and more recently in planning for the development and deployment of SMRs, demonstrates that capital costs of certain technologies can be as much as three times higher than assumed in the CBA. Current projects under construction are experiencing significant cost increases due to competition with other jurisdictions for limited supplies and labour resources. The imposition of the CER, and the short timeframe available to achieve compliance, will only increase this inflationary pressure on costs in the electricity sector.
- Dismissing the technological and logistical constraints on the massive buildout of low or non-emitting generation required, the conclusion of the RIAS, and in particular the CBA, greatly underestimates the financial impact that compliance with the CER will have on Saskatchewan.

Rate Impacts

- The rate impacts predicted in the RIAS are significantly underestimated. Based on SaskPower's analysis the expected impact on rates will be a 107% increase by 2035, significantly more than Saskatchewan's electricity plan.
- As of April 1, 2022, electricity rates charged to residential customers in Saskatchewan are more than 50% higher when compared to similar rates offered by the average Canadian hydro utility. This rate disparity will only widen under the CER.
- The RIAS relies on the assumption that the costs of the regulation are incremental to the base case of infrastructure replacement and expansion. While these costs may be incremental, their impact on ratepayers is cumulative. These same ratepayers are already expected to cover the costs of both system maintenance and expansion to support electrification in addition to their own capital expenses to transition and meet other federal policy objectives.
- Rate increases will further impact First Nations and remote communities in Saskatchewan that are already burdened by high costs due to electric heat. These communities, as well as low-income customers, are likely to be slower to adopt more efficient technologies due to the high capital cost. As such, these communities will not benefit from the suggested energy cost savings underpinning the CBA conclusions.

- With three customers per kilometre of line, SaskPower has one of the lowest customer densities in Canada; this means a relatively small number of customers must bear the growing cost of operating an already costly electricity system with an operating area of approximately 652,000 square kilometres.
- Relocation and retraining of operational and maintenance staff will present significant costs not discussed in the CBA. These costs would be deferred or spread over a longer timeframe in Saskatchewan's existing plan to achieve net-zero by 2050.

2. Regulatory Impact Assessment

The following sections are a comprehensive review and response to the commentary outlined in the RIAS.

Executive Summary

Saskatchewan's primary concerns with the Regulations are the time frame at which the standard takes effect, the limited flexibility that constrains utility-level planning, and the matter of federal intervention into an area of provincial constitutional authority. The rationale supporting the CER comes from federal modelling that is not broadly accepted by the electricity sector as realistic, while lacking transparency for provincial entities to fully assess the inputs and assumptions that comprise the models.

Issues

Saskatchewan supports the need to reduce emissions from electricity generation in order to address climate change. To contribute to the issues outlined in this section of the RIAS, Saskatchewan would like to share additional observations of significant issues impacting the electricity sector that create barriers to reaching net-zero while maintaining the reliability and affordability of the provincial power grid.

SaskPower is already challenged to maintain current planned generation and transmission additions and renewals. The number of projects that can be realized in a set time period is dependent on the ability to secure materials, equipment, and labour. Major equipment and commodities have recently seen a significant increase in cost and delivery timeframes. For example:

- Large transformer delivery increased from 14 to 24 months;
- Major electrical systems delivery increased from 10 to over 18 months;
- Major commodities (steel, pipe, high voltage cabling) face 3-7 month delays and a 50 per cent price increase from 2021 to 2022;
- Shipping from China to the West Coast rate increase of 500%.

Saskatchewan's electrification and grid decarbonization efforts will be impacted by resilient supply chains. There is an impending risk that the supply of critical minerals, crucial equipment, and the labour resources needed for a clean energy transition will become tighter worldwide, with the potential for price spikes and supply chain disruptions. As the demand for those resources are expected to grow in the coming decade at a potentially unprecedented rate, SaskPower is directly competing for the same resources as other utilities and purchasing entities across Canada and beyond. Multiple sectors, such as oil and gas, mining and civil construction, rely on the same skills, equipment, minerals, or components.

Meanwhile, limited availability of critical equipment in the North American market such as transformers has already caused prices to soar. Associated delivery lead times have extended from months to years which poses significant risks to projects, ranging from clean generation development to transmission grid modernization. Delays in these projects will impede the resilience of the current infrastructure. Suppliers are also challenged to source critical raw materials, such as copper, of which many wire and cable products and other grid components rely on as a primary component. As countries around the world attempt to reach net-zero goals, copper demand is expected to outpace supply causing a risk of a shortage and slowing the energy transition.

These pressures are being compounded by persistent inflationary pressures, geopolitical uncertainty, and global events, resulting in increased sourcing costs for SaskPower and utilities across Canada.

A labour market study done for SaskPower found craft labour demand exceeds supply by 1,600-1,700 personnel from 2022 to 2026. There is significant competition for skilled craft labour in western Canada due to concurrent heavy industrial, mining, and infrastructure projects, resulting in schedule delays and cost increase as compensation packages to attract and retain labour increase.

Approximately 73 per cent of SaskPower’s capital and operational expenditures are attributed to Saskatchewan suppliers, representing hundreds of businesses throughout the province. Achieving net-zero targets will require both retraining and upskilling the current workforce. Despite SaskPower’s continued efforts in attracting and supporting a skilled workforce for the clean energy transition, the supplier community will have a significant role in augmenting the workforce and leading several aspects of the work required. This workforce transition and training require significant funding support from all stakeholders and would take years to complete for both SaskPower and its future supplier partners.

Background

Urgent need to address climate change and Canada’s climate change commitments

Saskatchewan appreciates the necessity to reduce and eventually eliminate emissions from electricity. What is arbitrary, and at issue, are the dates by which actions are to be taken. Saskatchewan’s energy transition plan will contribute to Canada reaching its 2050 targets.

“Although Canada’s contribution to global totals may seem relatively small, per capita Canada ranks as the 7th highest GHG emitter globally.”

The statistic used in this statement is for total greenhouse gas (GHG) emissions, not specific to electricity. Canada has one of the cleanest electricity systems in the G7, second only to France. Additionally, Canada uses an outsized amount of energy due to its large natural resource/export driven economy that is essential for global energy and food security.

Canada has been active in seeking to reduce GHG emissions both internationally and nationally

This section uses the word “Canada” but fails to mention any actions and commitments taken at the provincial level. Saskatchewan has also been active to reduce GHG emissions from the provincial economy. This work started over decade ago with joint federal-provincial investment in world-leading carbon capture technology at Boundary Dam and continues with the massive build-out of renewable energy committed to in *Prairie Resilience*, the provincial comprehensive climate change strategy, as well as the development and deployment of nuclear power as reflected in the *Interprovincial Strategic Plan on Small Modular Reactors*. All of this is part of Saskatchewan’s *Growth Plan* for a strong economy.

This past May Premier Scott Moe reiterated the province’s commitment to reach net-zero emissions from the provincial electricity sector by 2050. Premier Moe announced the Saskatchewan’s electricity plan, emphasizing the need to deliver affordable and reliable power in the province while continuing efforts to reduce greenhouse gas emissions. This is a made-in-Saskatchewan solution that accounts for regional

realities and climate resilience. Under this plan, SaskPower will build more than 3,000 MW of wind and solar, add to its fleet of efficient natural gas units to transition from conventional coal, import more power from the United States (U.S.), enhance and expand transmission and distribution infrastructure, and build the province’s first nuclear power using SMR technology. Further investments will grow the total system capacity while targeting net-zero emissions by 2050.

Federal actions (regulatory and non-regulatory) to support the reduction of GHG emissions from the emitting electricity-generating sector

While the RIAS only focuses on the incremental costs of the CER, the list of federal climate measures are compounding costs to the electricity sector that are passed on to the rest of the provincial economy. The effects of these “one-size-fits-all” national policies disproportionately impact resource-intensive provinces like Saskatchewan. The layering of federal climate policies and changing goal posts have created regulatory uncertainty and undermined industry competitiveness in the province.

Current and emerging electricity system technologies needed to meet net-zero GHG emissions

SaskPower estimates for baseload electricity technologies are much higher than what is presented in Table 3 of the RIAS. Compared to SaskPower’s recent experience building two new combined cycle gas turbine plants, capital costs are expected to be nearly double those forecasted in the ECCC model. These plants are critical for Saskatchewan’s energy future in the medium term as they provide baseload power during the transition away from coal. Highly-efficient gas plants will also allow for low-emitting baseload power once retrofitted with carbon capture (CCS) systems and will support the high intermittency rate of renewables.

SaskPower estimates for small modular reactors (SMRs) are more than 50% higher than what is in the RIAS.

Objective

“The objectives of the proposed Regulations are to

- 1. Help Canada achieve its climate change commitments towards achieving net-zero GHG emissions economy-wide by 2050 by constraining emissions from unabated thermal power generation. This transition will support global efforts to address climate change and help limit associated damage;*
- and*
- 2. Reduce GHG (i.e. CO₂) emissions from emitting electricity generation beginning in 2035.”*

The CER is not necessary to meet these commitments. Federal-provincial collaboration along with the involvement of industry stakeholders will be the most effective approach to meeting Canada’s climate change commitments.

The CER does not achieve objective 2. First, the reduction has to start now in order to meet the near-zero requirements set into law at 2035, so it is not correct to say that the reduction will “begin in 2035.” Second, the CER is designed to eliminate nearly all emissions from electricity, rather than to simply reduce them.

Description

Saskatchewan will comment on the design of the Regulations in the Regulatory Issues section of this submission.

Regulatory Development

Consultation

Saskatchewan officials participated in various federal engagement sessions, including visits to Ottawa to have bilateral meetings with federal officials from different departments involved in drafting the Regulations.

Multiple provinces commented on the fact that it is inappropriate for the federal government to be regulating electricity generation. Additionally, and specifically, the potential for criminal sanctions was a major issue for utilities and industry stakeholders. These concerns are critical yet have been excluded from this section on what ECCC heard in its consultation process.

“A third webinar was held on September 13-14, 2022, with a focus on modelling assumptions. A number of bilateral modelling sessions were held with various provinces to ensure that the assumptions used in federal modelling were correct.”

Electricity Canada sent a letter to ECCC in November 2022, followed shortly after by a letter from SaskPower specifically detailing concerns with the assumptions used in federal modelling. This letter formalized discussions held between officials on the same topic. For the most part, issues identified by SaskPower remained unaddressed by the time of the release of the regulations in Canada Gazette I.

Instrument Choice

“Transforming electricity systems must occur much earlier than 2050, since it requires growth of electricity supply to support the use of more electric technologies, such as electric transportation, heating and cooling of buildings, solutions for various industrial processes and that the electricity generated results in net-zero GHG emissions. If this transformation is not under way by 2035 there is a risk that Canada may not meet its climate change goals of becoming a net-zero GHG emissions economy by 2050.”

It is a fallacy to assume the power grid must be net-zero by 2035 in order for the economy to be net zero by 2050. Electrification of the economy and the cleaning of the grid can happen at the same time; progress on one is not dependent upon the other. Evidence of this is that the number of electric vehicles on the road is already increasing despite the power grid not being net-zero.

To facilitate the electrification of everything it is imperative that electricity costs be kept low. This is best done by minimizing the number of stranded assets and pursuing low-cost supply options.

The CER goes beyond ensuring the transition to net zero is underway by 2035, it requires the transition to net-zero electricity be substantially complete by 2035.

“In determining the most effective and appropriate instrument or mix of instruments that would ensure the electricity-generating sector is on a path to achieve the required transformation by 2035, the Department considered the current federal regulatory regime affecting the sector in the baseline scenario (status quo), including non-regulatory actions. It was determined that the current federal regulatory regime does not ensure that the sector would achieve the required transformation by 2035 and therefore federal regulations would be required.”

This assessment is incomplete if it only considered the federal regulatory regime. Electricity generation is the constitutional responsibility of the provinces, therefore, any analysis of policy instruments being used to achieve a net-zero objective must take the plans, targets, and strategies of provincial governments into account. Developments in the private sector should also be taken into account, including what technologies are being developed, how costs are changing, and the change in electricity demand.

This section of the RIAS fails to acknowledge that the federal government is not the only stakeholder in the electricity system, nor the only one with agency to impact change.

“In the baseline scenario, unabated natural gas generation and associated GHG emissions would be expected to rise in future years as more electric technologies are implemented (e.g. electric transportation) in Canada.”

Currently there is no technology available, at scale, over the next ten years, that can provide low cost dispatchable power other than natural gas.

If the CER increases the price and decreases the availability of electricity, it will slow the process of electrification, which is a necessary prerequisite to achieving net zero by 2050. This statement points to a contradiction in the policy objectives in the CER. At present, emphasis needs to be placed on keeping the price of electricity low to incentivize electrification in the broader economy.

“Modelling by the Department indicates that electricity sector emissions would not decrease sufficiently so as to meet the objectives of the proposed Regulations and could, in fact, increase significantly in the coming decades.”

It is challenging to comment on this without details of the model used to make these assertions. It is problematic that ECCC modelling shows that the existing suite of federal measures, including the carbon tax, could still result in an increase in emissions in the far future. Stacking on another measure on top of several unsuccessful measures is not an appropriate approach to governance.

“Moreover, the carbon pollution pricing systems in Canada are an economy-wide tool that provides a strong price incentive to reduce emissions in the most cost-effective manner across all emission sources it covers. It provides this strong incentive by its design, which does not set specific limits for emissions from individual sectors. They do not guarantee a certain level of reductions from a specific sector and as such, are not the right tool to ensure achievement of the objective of a net-zero electricity sector.”

If ECCC is abandoning its goals of economic efficiency in favor of prescribed actions, it no longer makes sense to apply the carbon price on electricity. Carbon pricing and regulatory prescriptions are incompatible and do

nothing but create redundant regulatory overlap. Canada needs to choose one strategy or the other, it does not make sense to have both.

“In the absence of a regulated standard, it is likely to be more economic for utilities to (i) continue to use unabated natural gas to generate reliable baseload power and pay an increased price on pollution, or (ii) to acquire and remit surplus or offset credits. In the absence of other constraints, this would be the choice generators would likely make rather than transition their generating equipment to produce reliable, near-zero emission electricity through technological solutions like wind or solar coupled with energy storage or natural gas coupled with modern CCS technology.”

As a provincially-owned Crown Corporation, SaskPower makes decisions using commercial considerations through the lens of provincial policy objectives. For example, part of Saskatchewan’s interest in pursuing nuclear includes reducing emissions from the electricity sector to attract investment, while generating opportunities for the provincial uranium industry.

These statements ignore other significant efforts already being made to transition away from coal in Saskatchewan; the major investment in CCS at Boundary Dam didn’t require a regulated performance standard to be carried out. Saskatchewan has also made significant investments in increasing renewables and exploring the use of geothermal. The RIAS itself shows a 14,000 per cent increase in national wind and solar generation between 2000 and 2020 – all completed without the need for a federal performance standard.

“This approach would also provide a clear regulatory reference point that lays out what would constitute clean electricity, while providing power producers with timelines adequate to adjust their capital investment plans.”

SaskPower does not agree that the timelines in the CER are adequate to support capital planning in Saskatchewan. No analysis of planning timelines, regulatory and consultation requirements, technology, supply chain, and labour force readiness, the availability of capital, or the ability of ratepayers to pay is presented in the RIAS to support this conclusion.

The short transition period afforded by the CER will prevent Saskatchewan from benefiting from improvements in low and zero emission technology as the timeline for compliance will require premature large-scale investment in untested technology. Longer time horizons for capital planning allow for investment in best placed technology, reduce overall cost, and distribute rate impacts over a longer period minimizing the impact on ratepayers.

Regulatory Analysis

Data sources and analytical parameters

SaskPower has identified several concerning assumptions, methodologies, and potential errors in the RIAS and CBA. These concerns are sufficient to change the overall conclusions of the CBA such that the reported net benefit of \$28.9 billion is unlikely to be realized and the CER would instead result in an overall net cost of \$33.7 billion. Specific technical concerns are best addressed through bilateral discussions at the technical level.

“NextGrid and E3MC are capable of modelling electricity system mixes in Canada out to 2050 and base their results on optimization algorithms and constraints that are distinct to each model, utilizing data from a multitude of sources including Statistics Canada and ongoing collaboration with provinces and utilities.”

Canada’s electricity system is not nation-wide, but rather a series of interconnected provincial electricity grids. As previously stated, SaskPower shared numerous concerns about the federal models, pointed out errors in the assumptions, and requested further information – none of which was provided prior to the publishing of the draft Regulations. Saskatchewan has since received data showing the “optimized” generating mix for the province in both a baseline and CER scenario. The baseline is not consistent with SaskPower’s current plans absent any federal regulations, calling into question what sources of information were used to set this baseline.

“Specifically, NextGrid modelled the decisions that may be made by existing units that do not meet the CO₂ emissions intensity limit starting in 2035 (i.e. retire early, retrofit with CCS, or change operation regime to operate under the mass-based emission/duration flexibility), while E3MC modelled the decisions that may be made by all other units.”

Utilities like SaskPower make decisions about specific units in the context of the whole electricity system, not in isolation.

“Results from E3MC indicate that changes to Canada’s electricity system mix and associated changes to system costs could begin as early as 2026 in anticipation of the CO₂ emission intensity limit coming into force starting in 2035.”

This activity is not a result of the Regulations but stems from provincial commitments already in place.

Key modelling assumptions in the CBA

The base case scenario modelled in the RIAS shows significant emissions to 2050, and beyond, and is inconsistent with the current policy commitments of provinces which have set a target of net zero by 2050. By basing the analysis on the existing federal regulatory regime instead of provincial policy commitments, the CER is attributed with significant reductions that would already result from planned action at the provincial level. This overestimates the benefit of the CER. The resulting net benefit is also an overestimation and is then used to justify the disproportionate cost faced by some jurisdictions.

To properly assess the impact of the CER, the base case should reflect a generation mix guided by provincial commitments and intended to meet net zero by 2050.

“The CBA modelling assumes that all industrial generation units with net exports to the electricity system in the baseline scenario would undertake the emission reduction related investments necessary to continue selling a portion of the electricity they generate to the electricity system in the regulatory scenario. By extension, the proportion of electricity that these industrial units produce for use “behind-the-fence” would also meet the CO₂ emission intensity standard.”

Industrial generation that exports to the grid in Saskatchewan is a byproduct of the energy generated through cogeneration for heating purposes. With natural gas already being consumed to meet large-scale

heat requirements for facilities like mines, electricity is sold to the power grid as a surplus product of what is needed by the facility. Emissions from these facilities are already subject to the provincial output-based pricing system.

It is incorrect to assume that these facilities will invest in emissions reduction; with limited certainty around CCS and the capacity to use it at this scale, many facilities will be forced to retire and instead rely on lower-efficiency boilers to produce steam for industrial needs. Others will opt simply to not sell surplus electricity to the grid, which would be a lost financial opportunity for these companies and a waste of available power.

“For the purposes of analysis, the Department modelled into the baseline scenario, interprovincial transmission lines (or interties) including those that are not yet constructed (e.g. the Atlantic Loop). Regional interties are considered to be a key compliance strategy for coal-dependent provinces to meet the requirements of the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations as amended in 2018, and are not considered incremental to the proposed Regulations.”

The model inaccurately assumes a barrier-free exchange of electricity between provinces and that Manitoba will be a key partner in Saskatchewan’s transition. These assumptions are flawed due to differing electricity market structures in neighbouring provinces; differing domestic priorities and contractual commitments for export to the United States (U.S.); inadequacy of existing interprovincial transmission capacity; and insufficient time to address capacity constraints through new transmission project developments. In addition, Manitoba has limited surplus capacity available to export, beyond our existing 290 MW import contracts.

“The modelled ITC affects the relative cost that industry faces to construct qualifying non-emitting electricity system technologies versus emitting electricity system technologies, thereby increasing the attractiveness of investments in non-emitting capacity in the baseline scenario relative to what it has been historically.”

These results modelled qualifying technologies, rather than qualified applicants. Details of the ITC applicable to non-taxable entities, like SaskPower as a Crown Corporation, are currently not available.

Electricity System Mix

Table 4 indicates the capacity of the Canadian electricity mix in the baseline scenario. This information comes from E3MC. Saskatchewan has received a copy of the baseline scenario from ECCC which assumes that the majority of generation in Saskatchewan will come from natural gas, with almost no construction of nuclear and no addition of CCS on natural gas by 2050. This is inconsistent with SaskPower’s current supply plan, where the first 315 MW SMR may be operational by 2035, with up to three additional SMR units thereafter. While SaskPower has not confirmed the future use of CCS on natural gas, it will investigate this option as the technology matures.

“In absence of the proposed Regulations (Table 6), Canada’s electricity system would have been expected to reduce unabated emitting generation from 14.3% in 2025 to 6.2% in 2050 and would have been expected to increase non-emitting generation from 85.5% in 2025 to 93.7% in 2050. By contrast, under the proposed Regulations (Table 7), Canada’s electricity system would be expected to

reduce unabated emitting generation from 14.3% in 2025 to 1.1% in 2050 and would be expected to increase non-emitting generation from 85.5% in 2025 to 97.9% in 2050.”

According to this data, the Regulations only result in a 4.2 per cent increase in non-emitting generation over the baseline scenario by 2050. This underscores the CER’s imposition of unnecessary costs to provinces reliant on unabated thermal power generation, like Saskatchewan, who already have established ambitious net-zero plans.

Benefits

“As emitting sources of electricity generation are replaced by low or non-emitting sources, the proposed Regulations would also result in cost savings over time to the electricity sector in the form of avoided fuel usage, variable operations and maintenance and refurbishment.”

Setting aside the technological and logistical constraints on the massive buildout of low or non-emitting generation required, the conclusion of the RIAS, and in particular the CBA, greatly underestimate the financial impact that compliance with the CER will have on Saskatchewan. Limiting the capacity of natural gas generating units to only operate as peaking facilities will result in continuing variable operation and maintenance costs at a much higher cost per MW of generation.

“The CBA modelling assumes that [CCS] units would be capable of meeting 30 t/GWh by 2035 and therefore does not model use of this compliance flexibility.”

Acknowledging that the model attempts to compare the baseline, derived from the existing regulations on natural gas-fired generating units, with the regulated performance standards, it is worth noting that SaskPower’s experience with CCS suggests that the performance standard and the flexibility provided in the Regulations are too low to be technically feasible. Whether or not this has a significant impact on the outputs from the model, it is another example of an assumption that is not based on a realistic scenario.

Costs

“Using outputs from E3MC, the CBA estimates that the proposed Regulations would result in a total of \$53.7 billion in incremental capital costs to the electricity generation sector for new electricity system capacity over the 27-year analytical period.”

Saskatchewan’s estimates for meeting the CER scenario are significantly higher than those presented in the RIAS. SaskPower estimates the incremental capital costs to reach \$10 billion by 2035, while the RIAS shows only \$1.6 billion in incremental costs over the same time period.

Table 17 shows that most of Saskatchewan’s incremental costs to 2050 come from nuclear and natural gas with CCS. Both SMRs and CCS on gas are emerging technologies and are not commercially available today. The cost and lead time required for development and deployment of SMRs make them a long-term option for non-emitting generation; however, SMRs will not be a viable interim measure for Saskatchewan by 2035.

Saskatchewan began development of an SMR program well in advance of Canada’s commitment to a net-zero electricity grid by 2035. Even with that early start, Saskatchewan does not expect to have

commissioned SMR(s) in operation until 2034 under an ideal timeline. At this time, the SMRs under development would not be sufficient to offset the retirement of units expected under the *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations*, let alone provide any additional capacity for compliance with the CER or for future load growth resulting from electrification.

Table 16 and 17 demonstrate the incremental capital cost by province, by time period and by technology type. There are 2 challenges with relying on this data to inform a policy position: firstly, the costs of technology are not consistent with SaskPower’s projections. Secondly, while the Regulations claim to be technology-neutral, the RIAS is prescriptive in an attempt to minimize costs without considering other elements of provincial decision-making. The majority of the capital cost shown in Table 16 comes in 2036-2050, after the regulations have taken effect. It is unclear how Saskatchewan is forecasted to replace its baseload generation from coal and natural gas in the 12 years that precede the performance standard.

The capital costs in the CBA do not include the value of stranded assets or the cost of facility decommissioning, reclamation or workforce transition. This additional capital cost also does not include the debt servicing that will result due to the accelerated timeline of the CER over Saskatchewan’s planned net-zero target of 2050.

“The CBA assumes that the capital cost of all new transmission lines would be shared evenly between the two provinces that the line connects.”

The fact that transmission costs in the CBA are entirely focused on interprovincial transmission ignores the massive investments needed for intraprovincial transmission to accommodate the buildout of renewables on a large scale, along with greenfield development of other non-emitting technologies like nuclear. SaskPower estimates that the costs of transmission and distribution will be roughly equivalent to the capital costs of new generation required to get to net-zero, so this is a significant omission from the CBA.

SaskPower’s existing transmission system currently does not have spare capacity for 3,000 MW of wind in the 2035 time frame. To meet current planned infrastructure upgrades SaskPower must build or replace over 1,400 km of transmission lines. Transmission constraints in the southwest part of the province, where wind resources are best, are currently limiting SaskPower’s ability to build out additional generating capacity from wind.

RIAS makes policy assumptions that fail to reflect provincial electricity policy or the reality of the electricity markets in neighbouring jurisdictions. The RIAS shows Saskatchewan will incur among the greatest net costs for domestic imports, primarily from Manitoba, noting that regional interties are a “key compliance strategy for coal-dependent provinces.” The model does not account for the differing market structures in the two provinces, Manitoba’s contractual commitments for US exports, the inadequacy of interprovincial transmission capacity, or the lack of surplus capacity available in Manitoba beyond Saskatchewan’s existing 290 MW import contracts.

“Under the central case modelling, the majority of unabated emitting units (56%) would continue to operate in a limited manner under the mass-based emission/duration flexibility in the year that the CO2 emissions intensity limit begins applying to those units to provide backup capacity to the electricity system for reliability purposes. Another proportion of unabated emitting units (35%) would continue to operate by implementing a CCS system to meet the CO2 emissions intensity limit. A

minority of affected emitting units (9%) would retire earlier than they otherwise would have in the absence of the proposed Regulations.”

SaskPower expects that several of its existing and planned natural gas units would face early retirement as a result of the CER, at a far higher percentage than estimated in the RIAs. With uncertainty about the future cost and availability of CCS on gas, federal estimates for the capital costs of early retirement are likely underestimated by a significant degree.

“The CBA assumes that there would be no significant difference in the average emissions intensity of electricity generated in Canada versus that generated in the US for the purpose of bilateral trade. Carbon leakage is not expected to constitute a risk to the achievement of the avoided climate change damages presented in the benefits subsection.”

The CER deals only with the emissions performance of domestic generating units; however, the RIAs does identify a \$5.6B reduction in net export of electricity to the U.S. Canada primarily exports zero emissions electricity (e.g., hydroelectricity from Manitoba). This redirection of zero emissions exports to serve load in Canada will result in avoided emissions; however, the replacement of these exports with emitting generation in the U.S. is likely to result in less global emissions reductions than assumed. This would reduce the monetized benefit of the CER by as much as \$4B.

Table 21 shows that Saskatchewan’s incremental import expenditures will be reduced as a result of the CER, but this is inconsistent with Saskatchewan’s plans and SaskPower’s economic models given the price and capacity of electricity available from the Southwest Power Pool. In the U.S., only 6% of existing natural gas generating capacity would require significant investment to meet the U.S. Environmental Protection Agency’s proposed rules for greenhouse gas emissions from fossil fuel fired power plants. The U.S. rules only apply to units larger than 300 MW that run with at least a 50% capacity factor. Along with the incentives available through the *Inflation Reduction Act*, the significantly higher level of flexibility will incentivize the import of electricity from the U.S. rather than generation in Saskatchewan. This will drive-up electricity costs for Saskatchewan producers relative to the U.S. and make our exports less competitive. This will also result in additional “leakage” of emissions across the international border.

Costs and cost savings by province

“The proposed Regulations are expected to result in a significant increase to domestic trade activity, greatly facilitated by the new provincial interties modelled by NextGrid to minimize the system-wide compliance costs.”

Earlier in this submission, Saskatchewan has outlined the reasons that increased imports from Manitoba will not be a solution to meeting provincial electricity needs.

Trade between SaskPower and the Alberta Electric System Operator may also be reduced as both jurisdictions will need to manage the operating hours of units that would not otherwise comply with the CER. This could add significant operational constraints for all markets where Saskatchewan has interties, including the U.S., where one operator is in a system emergency and looking for additional generation to avoid customer load shedding. For example, SaskPower exported electricity south for several days in winter 2021 because of the extensive outages in Texas. Being constrained by an hour-limit may preclude the level of sharing and assistance that would have otherwise taken place.

Neighbouring jurisdictions may also be reluctant to respond with assistance during an emergency as the provisions for emergency exemption in the CER are province specific. Further the supporting jurisdiction would not be enabled by a declaration of emergency in the neighbouring jurisdiction.

Overall, it is worth summarizing the percentage costs of the CER attributable to Saskatchewan, relative to the fact that Saskatchewan represents 3% of Canada’s population and 4% of Canada’s economy.

- **Table 16:** 12.5% of the incremental capital costs of the CER are attributable to Saskatchewan.
- **Table 18:** 9.8% of the incremental transmission costs of the CER are attributable to Saskatchewan.
- **Table 20:** 12.6% of the incremental fixed O&M costs of the CER are attributable to Saskatchewan.
- **Table 27:** 19.1% of the total incremental costs of the CER, net of any cost savings, are attributable to Saskatchewan.

Saskatchewan is second only to New Brunswick with respect to the scale of the cost relative to the size of the provincial economy.

Analysis of electricity rates

“As would typically be the case in covering the costs of capital assets, such investment would be financed and paid back to lenders, thereby smoothing out the payments made on this capital over time.”

Even with reduced investment in other Saskatchewan industries, the magnitude of investment in the Saskatchewan electricity sector in a relatively short period of time will lead to substantial construction cost inflation in Saskatchewan with shortages of labour and materials. This will increase the cost to develop new generation facilities.

From a market efficiency perspective, a smoother investment profile from 2025 to 2050 with a steady ramping up of investment over time would achieve the lowest cost by avoiding supply chain constraints. There is a significant boom in incremental investment in the 2031 – 2040 period followed by a bust in the 2041-2050 period.

Shifting incremental investment to the 2041 – 2050 period away from the 2031 – 2040 period provides for a gradual ramp up in investment which reduces inflationary impacts in supply chains and provides large additional opportunities for technical innovation.

“...for provinces that currently rely more heavily on emitting technology to generate electricity, higher incremental rate increases are expected.”

These jurisdictions, including Saskatchewan, are generally those that lack access to hydroelectricity, which already causes higher electricity rates. As of April 1, 2022, electricity rates charged to residential customers in Saskatchewan are more than 50 per cent higher when compared to similar rates offered by the average Canadian hydro utility. Langenburg, Saskatchewan is just over 30 km from Russell, Manitoba. Residential customers in Langenburg pay an average electricity price which is 60 per cent higher than a customer in Russell. This rate disparity will only widen under the CER.

“...in 2040, E3MC modelling estimates that residential rates would increase relative to the baseline scenario by...0.9 cents per kWh in Saskatchewan (3% increase)...in 2050, E3MC modelling estimates that residential rates would increase relative to the baseline scenario by...1.1 cents per kWh in Saskatchewan (3% increase)...”

The numerous errors and incorrect assumptions Saskatchewan has highlighted for the NextGrid and E3MC models result in an underestimation of the rate impacts in the RIAS. SaskPower estimates that a supply plan under the CER would result in a total rate increase of 107% by 2035. When compared to SaskPower’s current plan to be net-zero by 2050, the incremental rate increases are significantly higher than the 3% increase estimated in the RIAS.

Analysis of household electricity demand

“In response to higher electricity prices, consumers may shift their behavior over time to reduce the amount of electricity that they use. For example, some households may respond by substituting from electricity to other sources of energy. Some households may also respond by decreasing the amount of electricity-dependent activities that they partake in (or reduce the hours spent on those activities).”

While the end of this paragraph references price elasticity of demand with respect to differences between households, this analysis fails to note that there is a baseline for households at which electricity demand is highly inelastic. Not being able to afford higher prices will not just shift behaviour – it risks pushing people out of their homes entirely, encouraging increasingly crowded households or homelessness. Saskatchewan’s concerns are less about those households that have the capacity to afford energy-efficient homes and technologies, but rather those households that will lose the capacity to access modern amenities that should be expected in every home. Additionally, regional disparities in utility rates across Canada will discourage people from living and working in Saskatchewan, a potential major issue for future labour force demands.

Table 28 shows Saskatchewan far below the national average with respect to the percentage of total residential energy demand that comes from electricity. This data shows how ultra-high electricity costs in Saskatchewan will clearly disincentivize broader electrification efforts, with Saskatchewan residents getting less than 15% of their total energy from electricity by 2050.

Regulatory cooperation and alignment

“The proposed Regulations would not overlap with provincial or territorial regulations.”

This is only true because provinces, who have constitutional authority over electricity generation, have chosen other policy instruments to meet emissions targets for electricity. Saskatchewan recognizes that regulating the sector will only increase costs and reduce flexibility for our electrical utility.

“On March 24, 2023, President Biden and Prime Minister Trudeau issued a joint statement in which they referenced commitments by both countries to achieve net-zero electricity systems by 2035, with both countries also indicating their intention to propose regulations before this fall that will reduce greenhouse gas emissions from the North American electricity sector.”

U.S. modelling suggests that the majority of emissions reductions in the electricity sector will be generated by the massive targeted incentives in the *Inflation Reduction Act*. These incentives are already shifting investment interests south of the border, making it harder for smaller jurisdictions like Saskatchewan to attract investment in clean energy projects.

The U.S. Environmental Protection Agency (EPA) proposed greenhouse gas standards for fossil fuel-fired power plants in May 2023. These standards propose a fair degree of flexibility for both coal and natural gas, specifically only covering gas units that exceed 300 MW and a 50 per cent capacity factor. Generating units are under no obligation to reach a near zero performance standard by 2035. The EPA’s own modelling shows that the U.S. expects to achieve an 80 per cent reduction in electricity sector greenhouse gas emissions over 2005 levels by 2040, far from the “net-zero by 2035” statements being made at the political level.

Gender-based analysis plus

“...actual incremental impacts of the proposed Regulations on electricity rates would be influenced by provincial decision on how to meet the regulatory standards.”

Offloading responsibility for impacts of the CER to provinces is inappropriate; provincial utilities like SaskPower do everything they can to maintain a reliable and affordable grid, but the CER puts them in a position where they have limited flexibility to keep costs down.

“The Department is engaging with academics with expertise in the economics of electricity systems to understand the potential impacts of the proposed Regulations on electricity affordability (e.g. electricity rates), total electricity costs seen by households (with consideration for increased electrification) and changes to electricity expenditures as a share of income; however, these potential impacts are expected to be offset by lower household expenditures on fossil fuels, due to electrification of home heating and transportation.”

It is concerning that this type of study was not completed in time to inform the draft regulations. Electricity affordability is a top concern for Saskatchewan residents and businesses stemming from these regulations, yet it is missing from the analysis in the RIAS.

Northern communities rely on electric heating, which due to our extreme cold climate is far more expensive than gas-powered furnaces used by households in the southern portion of the province. The high capital cost of equipment and retrofitting, and the availability of labour to carry out the work, are all barriers to the adoption of higher-efficiency heat pumps. The north will also be slower to adopt electric vehicles due to their high cost, the long travel distances not possible with existing technology, and limited access to charging infrastructure. Saskatchewan’s north would not be expected to benefit for several generations from the energy cost savings outlined in the CBA.

“Moreover, increased access to clean energy can have long-term socioeconomic benefits for future generations by attracting industry and businesses that are increasingly seeking to use clean electricity and reduce operational emissions.”

High electricity rates will erode industrial competitiveness and jeopardize investment and employment prospects, particularly in sectors with an inelastic demand for electricity, like oil and gas, mining, steel manufacturing, and chemical production. Approximately 80 per cent of electricity consumption in

Saskatchewan is from farms, industrial operations, and small to medium-sized businesses. Saskatchewan's economy relies on export markets where prices are set by global economic conditions, meaning that input cost increases cannot be passed on to buyers. As businesses are made to pay more every year for an essential input, they will move operations and projects outside of Saskatchewan, further harming households and undermining government revenue.

"...Canada is more likely to see a shortage of skilled workers than sustainable jobs in the clean energy sector and there is an opportunity going forward for the inclusion of those that are currently underrepresented in the electric power generation, transmission and distribution industry...As this transition occurs, some workers that work with fossil fuel-based electricity generation may need to transition into new jobs. For some workers, this may require learning new skills, adapting career paths and trajectories, or relocating to places where new clean electricity jobs exist."

SaskPower shares the interest to increase employment from underrepresented groups, having been recognized nationally for its commitment to diversity and inclusion in the workforce by winning a Canada's Best Diversity Employers award every year since 2008. Of concern is that the RIAS presents no socioeconomic analysis on how the regulations will impact communities. The CER effectively prohibits the use of natural gas generation as a transitional step towards non-emitting technologies. Existing facilities and the communities where they are located will be impacted by regional shifts in generation sites.

New non-emitting facilities will require greenfield development as siting requirements for wind, solar, and nuclear may exclude much of the existing brownfield (e.g., coal conversion) potential in Saskatchewan. Relocation and retraining of operational and maintenance staff will present significant costs not covered in the CBA. Saskatchewan's supply plan would defer these costs or spread them over a longer time horizon.

"While some workers will not be able to transition from jobs based in fossil-fuel generation, their number is anticipated to be low as the time provided between publication of the proposed Regulations and when the performance standard comes into effect in 2035, as well as the gradual retirement of existing fossil fuel-based generation, can allow time for the sector's labour force to gain new skills and take advantage of employment opportunities afforded by the clean energy transition."

The time frames for the energy transition are going to be challenging from the perspective of Saskatchewan's labour force. Without an existing nuclear energy sector or educational programming to support it, Saskatchewan needs to build up a workforce from the ground up to transition to a new form of baseload electricity. Additionally, a major concern for coal and natural gas facilities is maintaining staffing levels in communities that are aware all jobs at the facility will be lost or relocated when the facility retires. Workers need to remain at the plants until the final day of operation, but many will begin to seek out other opportunities before the plant closes. SaskPower is developing workforce strategies to support this transition, but the CER will add roadblocks by advancing the retirement of certain facilities earlier than SaskPower had planned.

"...the proposed Regulations' compliance flexibilities have been designed to effectively exempt most Indigenous communities and northern, rural and remote communities not connected to a NERC-regulated electricity system, as they often lack affordable options to use non-emitting electricity generation."

Saskatchewan’s Indigenous population makes up 10.4 per cent of Canada’s total Indigenous population. Of the 17 per cent of Saskatchewan residents who identify as Indigenous, almost half live in cities, with more Indigenous people living off-reserve than living on a reserve.

The GBA+ section of the RIAS assumes that Indigenous communities are not connected to provincial electricity grids. Despite Saskatchewan’s large geographic area and low-density population, SaskPower has managed to build and operate a grid that supplies all but one remote community; information that can be found in Energy and Natural Resources Canada’s Remote Communities Energy Database. This means that the CER will cause the same rate pressures for the Indigenous population as the non-Indigenous population in Saskatchewan, with particularly strong impacts on those in the lowest income quintile.

Rationale

“In the baseline scenario, in which the proposed Regulations do not occur, provinces and territories are going to make significant investments in electricity generation and transmission over the next quarter century to meet this growing electricity demand.”

The RIAS relies on the assumption that the costs of the regulation are incremental to the base case of infrastructure replacement and expansion. While these costs may be incremental, their impact on ratepayers is cumulative. These same ratepayers are already expected to cover the costs of both system maintenance and expansion to support electrification in addition to their own capital expenses to transition and meet other federal policy objectives.

“While the incremental cost to ensure that expanded generation occurs in a way that leads toward a net-zero grid is expected to add only a small percentage to the overall cost of electricity, the Government of Canada has committed more than \$50B to help decarbonize the sector. This funding could cover more than half of the incremental costs needed to ensure that this transformation leads to a net-zero grid and it provides an opportunity to provinces to greatly reduce the impact on rates, especially in Atlantic Canada and the Prairies.”

To date, federal fiscal programs are not designed to target the regions where expenditures are needed most. Eligibility for some recent programs require a provincial commitment to reach net-zero by 2035, which Saskatchewan has stated is not possible. The CBA excludes from its modelling the effects of federal funding on the marginal capital cost of the CER because programs announced in Budget 2023 remain under development. It is not possible to state that federal funding is sufficient when this information is absent.

Saskatchewan’s energy transition relies heavily on the successful rollout of SMRs, carbon capture on natural gas, and long-term utility-scale battery storage – all unproven, pre-commercial technologies subject to significant uncertainty for reliability and future cost profiles. Considering the benefit to all of Canada of pursuing emerging technologies in the clean electricity sector, federal investment is critical to managing the volatile investment risks that the CER will place on SaskPower, and by extension, Saskatchewan ratepayers.

Saskatchewan’s future electricity plan incorporates a reasonable expectation of federal grant funding for 75% of the cost of a first SMR and 50% for the build-out of renewable power. These are the kind of investments needed to get to a net-zero electricity sector in Saskatchewan. To improve the regulatory

environment to make this happen, Saskatchewan also requested that existing fossil assets be allowed to run through to their end-of-life, better alignment with US policy on net-zero electricity, and no further increases to the carbon tax.

“If provinces and utilities in Canada were to make a broad commitment to a net-zero electricity grid and take full advantage of federal funding support, the clean electrification agenda is expected to be achieved with minimal additional cost to ratepayers while helping reduce overall household and business energy costs.”

Saskatchewan has made a commitment to a net-zero electricity grid by 2050, based on supply and infrastructure planning by SaskPower that considers what is feasible and economical without the imposition of federal regulations.

3. Regulatory Issues

Exception Hours limit (per s.6.3)

Exception — hours

(3) Despite subsection (1), a responsible person may, for a unit that has not combusted coal during the calendar year and with respect to which net exports are greater than 0 GWh, emit from that unit up to 150 kilotonnes of CO₂ in a calendar year, determined in accordance with section 8, if the unit operates for 450 hours or less during that calendar year, not including any hours the unit operates and CO₂ the unit emits during a period for which the Minister has issued an exemption under section 19 or an extension under section 20.

Issue

The 450-hour limit granted as a peaking provision per unit would result in unintended consequences of creating more emissions and is inadequate to meet peak demands and support highly intermittent renewables. Also, the requirement to meet peak power demands under Saskatchewan's climate will further challenge capacity under the proposed hour limit. Renewable generation in Saskatchewan has shown variations between 0% and 100% in actual generation capacity in a 12-hour timeframe. Recently in Saskatchewan the entire fleet of wind turbines produced zero electricity for over three hours during three separate periods on a day in August, this also coincided with a neighboring jurisdiction who also saw wind generation decrease to 0.8% of nameplate capacity.

This variation in renewable energy output requires a greater hour limit for supplemental gas generation than is currently proposed under the CER. Enforcing a 450-hour annual capacity for all units (about 5%) raises costs per MWh, as units still accrue substantial operational and maintenance expenses even when operating less frequently and less efficiently. This approach also forces reliance on older units, which have higher emission intensities and higher operating costs, to maintain grid reliability.

Normal utility planning and operations reduces the reliance on the oldest and least efficient units and instead gives the system operator the flexibility to run the most efficient units at average loads which reduces emissions, provides greater grid reliability, and reduces the average cost per MWh. Utility management of the fleet has the following benefits:

- Significant reduction in emissions and reduced costs due to the more efficient units being able to run longer and at average loads, avoiding inefficient starts and stops. Continually starting and stopping units, instead of running at average loads has the unintended consequences of increasing emissions and increasing the cost per MWh of electricity generated.
- Improves grid reliability by being able to run efficient units longer, reducing the need to accurately predict when combined cycle units need to be run. Combined cycle units can take up to 8 hours to start up, this could be detrimental to grid reliability if demand forecasts are higher than anticipated and the units have yet to begin the start-up process. Significant operational complexity can be avoided for system operators who balance system reliability.

- Allows for a margin of error when forecasting renewable energy outputs. This puts less emphasis on making near-perfect renewable forecasts and provides grid operators with more flexibility to adapt to forecast variances, in turn improving grid reliability and reducing the risk of unexpected outages.
- Allows the necessary flexibility to accommodate for unit downtime during the installation carbon capture on natural gas units. A large natural gas plant in Saskatchewan, like Chinook, needs to be shut down for 6 months to install carbon capture which significantly impacts available baseload supply and grid reliability.
- Creates less reliance on electricity imports, supporting more investment in Canada.

Prescribed Life (per s.6.4, per s.6.5)

Start of prohibition

(4) The responsible person for a unit must meet the emission intensity limit set out in subsection (1), beginning

(a) January 1, 2035, with respect to a unit that

(i) has a commissioning date on or after January 1, 2025,

(ii) has increased its electricity generation capacity by 10% or more since

submitting the registration report for the unit, or

(iii) combusts coal;

(b) in the case of a boiler unit referred to in subsection 3(4) of the Regulations Limiting Carbon Dioxide Emissions from Natural Gas-fired Generation of Electricity, the later of

(i) January 1 of the calendar year the prohibition set out in subsection 4(2) of

those Regulations begins to apply to the unit, as determined under that subsection; or

(ii) January 1, 2035, or

(c) January 1 of the calendar year following the unit's end of prescribed life, with respect to all other units.

Definition — prescribed life

(5) For the purposes of paragraph (4)(c), prescribed life means the period that begins on the commissioning date and ends on the later of

(a) December 31 of the calendar year that is 20 years after the commissioning date,

and

(b) December 31, 2034.

Issue

An impractical “prescribed life” term of 20 years constrains the ability to build out new capacity and creates an unachievable transition for provinces currently reliant on unabated thermal power generation. This term along with the requirement for units to be commissioned before January 1, 2025, will lead to significant amounts of stranded assets while also creating capacity concerns, reduced reliability, and will have a major impact on affordability.

Most notably, the required commissioning date of January 1, 2025, doesn't allow for projects that are currently under development and required to maintain system reliability to be eligible for the prescribed life term.

Not artificially prescribing end-of-life allows for a more natural turnover of capital assets and reduces stranded asset costs that would be caused by the proposed 20-year term. The absence of prescription enables the province to spread out the delivery of major capital projects reducing bottlenecks in both regulatory processes and supply chains, reduce overall cost, and distribute rate impacts over a longer period minimizing the impact on ratepayers. The cost and reliability benefits are as follows:

- Allows for a more practical transition by reducing the need for premature large-scale investment in unproven CCS technology and allows greater time to prove out CCS technology as a retrofit option.
- Allows modern and more efficient assets to run longer and closer to the expected end of life dates, reducing the estimated costs of stranded assets.
- Distributes capital costs over a longer period instead of 20 years, which helps distribute rate impacts.

Significant investment has already been made in the development of additional natural gas generation that will not be commissioned in time to utilize the proposed "prescribed life" phase of the prohibition. The long lead time necessary to get a project through design, permitting, construction, and commissioning necessitated these investments well in advance of the release of the draft regulations. These projects remain necessary interim steps in Saskatchewan's plan to maintain a reliable grid while also transitioning to net zero. This is critical to allow provinces reliant on unabated thermal power generation to proceed with existing plans to phase out coal by 2030 by using natural gas as a bridging technology to replace coal capacity which reduces emissions, costs, and continues to allow the grid to operate reliably.

Allowing necessary projects to operate has the following benefits:

- Significant reductions in stranded assets.
- Reduces the need to prematurely install carbon capture retrofits which come with financial risk, reduced capacity due to parasitic load losses, and significant downtime. Carbon capture has a high parasitic load, which means approximately 25% more natural gas will be used to offset this loss, and reduces the availability of the unit by approximately 10 percent.
- Increased reliability and availability of baseload power to offset renewable energy fluctuations.
- Allows for natural gas units to bridge the transition from the end of conventional coal fired generation in 2029 to the construction of small modular reactors in the mid-2030s.

Exception Carbon Capture Storage (per s.6.2)

Exception — carbon capture and storage

(2) Despite subsection (1), a responsible person, for a unit with respect to which net exports are greater than 0 GWh, may, until December 31, 2039, emit from the unit CO₂ from the combustion of fossil fuel that has, on average during the calendar year, an emission intensity no more than 40 tonnes of CO₂ emissions/GWh of electricity generated, determined in accordance with sections 7 to 18, as applicable, if

(a) the unit includes a carbon capture and storage system that started operating within the last seven calendar years; and
(b) the responsible person for that unit has submitted, with the annual report, documentation demonstrating that the unit operated at or below 30 tonnes of CO₂ emissions/GWh for two periods of at least 12 continuous hours, with at least four months between those two periods, in the calendar year for which the annual report is submitted.

Issue

The performance standard of 30 t CO₂/GWh with the exception of 40 t CO₂/GWh during the optimization of CCS facilities are excessively stringent. This standard has not been met on an annual basis by any thermal unit fitted with CCS at the utility scale.

Three facilities (Chinook, Great Plains, and Aspen) totalling 1060 MW would require significant investment in carbon capture and storage to remain in operation and compliant beyond 2035. There are significant costs associated with installing carbon capture on these facilities and these investments would also come with the uncertainty of whether it will meet the performance standard and be compliant come 2035.

Enforcing stringent performance standards for unproven technologies creates significant financial risk. Regulations should aim to reduce ambiguity and encourage investment in these types of technologies, which is not achieved by setting strict performance standards reliant on ideal operating conditions that are most likely unachievable in real-world scenarios. This technological and financial uncertainty for governing Boards of utilities will drive investment decisions away from these emerging emission reducing technologies.

Using an evidence-based approach to regulatory design, instead of arbitrary standards, allows for evaluation of best performing CCS technology available and optimization of new CCS units requiring significant carbon capture investment. Proponents investing in carbon capture technologies will still be incentivized to meet the highest standard possible as it will reduce their reported emissions and associated costs.

An evidence-based performance standard would improve certainty for governing Boards who ultimately make decisions on these investments, in turn creating more uptake and research investment which is expected to lead to reduced technology costs and increased performance. An evidence-based approach enables:

- Increased investment and uptake due to more confidence and certainty that performance standards are realistic and can be met;
- Improve grid reliability by allowing for installation flexibility and certainty;
- Improved affordability due to improved compliance and a reduction in costs. This approach may require less money spent on costly rebuilds to attempt to meet the stringent standards currently proposed in the CER; and
- Optimization of investments by selecting the best available technology, once proven and optimized CCS technologies have been demonstrated.

Application and Prohibition on Cogeneration (per s.3.a, per s.6.1)

Specified units

3 *These Regulations apply to a unit that, on or after January 1, 2025, meets the following criteria:*

- (a) has an electricity generation capacity of 25 MW or more;*
- (b) generates electricity using fossil fuel; and*
- (c) is connected to an electricity system that is subject to NERC standards.*

Prohibition

6 (1) *A responsible person, for a unit with respect to which net exports are greater than 0 GWh during a calendar year, must not emit CO₂ from the unit, from the combustion of fossil fuel, that has on average during that calendar year an emission intensity of more than 30 tonnes of CO₂ emissions/GWh of electricity generated, determined in accordance with sections 7 to 18, as applicable.*

Issue

Behind the fence cogeneration greater than 25MW with net exports greater than 0GWh are required to meet the performance standard of 30 tCO₂/GWh. Industrial producers are unable to meet the performance standard without significant additional investment in carbon capture, which is not anticipated. These producers are also unlikely to continue to operate and maintain generation capacity that is beyond their own immediate needs without the revenue from electricity exports, leading to retirement of those generating assets or disconnection from the grid. This negatively impacts grid reliability, affordability, and is expected to create more emissions behind the fence.

Cogeneration is an extremely efficient use of natural gas, with electricity created as a by-product. Cogeneration facilities require significantly less natural gas and produce far fewer emissions than equivalent boiler systems, which are often the primary alternative. Cogeneration capacity provides:

- Improved grid reliability by maintaining existing and vital base load power capacity;
- Reduced emissions by eliminating the need for industries to replace lost heat output from cogeneration with heat from inefficient and high emitting boiler systems;
- Reduced stranded asset costs by maintaining existing cogeneration capacity and infrastructure;
- A revenue stream for industries that export excess electricity to the grid, which is vital to drive investment and meet project economic hurdle rates.

In addition, industrial electricity emissions remain regulated and priced under the Provincial Output Based Performance Standard (OBPS). Revenue generated from net exports would offset investment into emission reduction technologies like carbon capture to meet tightening OBPS performance standards while concurrently initiating action to address “behind the fence” emissions by 2050.

Emergency Circumstances (per s.19.4, per s.20.3)

Emergency Circumstances

Minister's decision

(4) If the Minister is satisfied that the conditions set out in subsection (1) are met, the Minister must, within 30 days after the day on which the application is received, grant the exemption.

Application for extension of exemption

Minister's decision

(3) If the Minister is satisfied that the condition referred to in paragraph (2)(c) has been demonstrated, the Minister must grant the extension within 15 days after the day on which the application is received.

Issue

Mandating federal ministerial authorization for emergency exemptions may expose power producers to legal liability if the application is denied and emission limits are exceeded. Forecasting weather and unforeseen events is not an exact science, ambiguous emergency circumstance provisions add to the complexity of providing safe and reliable electricity within each jurisdiction.

Provincial and Territorial authority to determine what constitutes an emergency circumstance aligns grid operations with emergency declarations made by provincial governments and international regulatory bodies such as NERC, allows for more certainty on what constitutes an emergency within each jurisdiction, and mitigates federal liability and misalignment of approved emergency circumstances. Provincial and Territorial regulatory bodies have a greater understanding of the limitations and complexities of electricity grids within their respective jurisdiction, this level of regulatory authority will provide more certainty for grid operators, ensuring grid reliability and the safety of Canadians during emergency circumstances.

Coming into Force (per s.34.3)

Repeals

33 The Regulations Limiting Carbon Dioxide Emissions from Natural Gas-fired Generation of Electricity is repealed.

Coming into Force

(3) Section 33 comes into force on January 1, 2045.

Issue

Natural gas peaking plants are currently limited to 33% of their potential output to avoid liability under *The Regulations Limiting Carbon Dioxide Emissions from Natural Gas-fired Generation of Electricity*. This further limits the ability for new and more efficient natural gas plants to load follow renewable energy sources and put more reliance on older less efficient units or the buildout of small, less than 25MW, gas units.

There is a need to improve the load following capabilities of newer highly efficient natural gas units. As a result, emissions decrease and the province’s expansion of renewables is supported. Provincial planning also avoids the need to construct small gas units, with a capacity of less than 25 MW, which are uneconomic but would otherwise be required to support the growth of intermittent renewables.

Consequential Amendment to the Regulations Designating Regulatory Provisions for Purposes of Enforcement (Canadian Environmental Protection Act, 1999) (per s.31)

31 *The schedule to the Regulations Designating Regulatory Provisions for Purposes of Enforcement (Canadian Environmental Protection Act, 1999) is amended by adding the following in numerical order:*

<i>Item</i>	<i>Regulations</i>	<i>Provisions</i>
42	<i>Clean Electricity Regulations</i>	(a) <i>subsection 6(1)</i> (b) <i>subsection 6(2)</i> (c) <i>subsection 6(3)</i>

Issue

There is significant uncertainty in both the efficacy and availability of technologies required to meet the CER performance standards and timelines. Project delays or underperformance of new and emerging technologies must be factored into the decision to pursue enforcement action or the application of penalties.

The performance and availability of emerging technologies are beyond the control of regulated parties and their employees. Current enforcement measures may discourage individuals from participating in decision making and implementation, especially in jurisdictions where the adoption of uncertain and risky technologies is most forced by the CER. Rather than helping to attract top talent in jurisdictions such as Saskatchewan, the provisions of the CER could well do the opposite.