environmental defence

Submission to Environment and Climate Change Canada

A Clean Electricity Standard:

Discussion Paper Recommendations

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Prepared by:

Julia Levin
National Climate Program Manager
Environmental Defence Canada
jlevin@environmentaldefence.ca

Environmental Defence welcomes the Government of Canada's commitments to ensure Canada's electricity grid is 90% non-emitting by 2030 as well as to achieve a net-zero electricity supply by 2035. Implementing a Clean Electricity Standard (CES) is an essential mechanism for achieving these goals.

Tackling the climate crisis will require a total transformation of our current industrial systems away from fossil fuels to renewable, non-emitting systems. The production of oil and gas - in all its forms must rapidly decline and be phased out in order to limit global warming to 1.5°C.2

It is broadly accepted that the electricity sector is an area where GHG emission reductions can occur most quickly because there are many proven, cost-competitive, non-GHG emitting technologies available today to produce electricity. In fact, many jurisdictions, such as the United States, are committing to reach 100% non-emitting electricity generation by 2035.

Wind energy and solar energy are the lowest-cost sources of new electricity generation available today,[1] with per-MWh costs below those of new hydropower, nuclear or fossil fuel generation capacity on a levelized cost of energy basis.[2] Transitioning to distributed energy systems running on wind, water and solar, coupled with storage increases the resiliency of the grid, avoids blackouts, lowers energy requirements and consumer costs, while creating millions of jobs, improving people's health, and reducing land requirements.

Environmental Defence agrees that the goal of the CES must be clean, reliable and affordable electricity for all Canadians. The best way to accomplish this is by ensuring the grid is supplied by renewable energy, paired with adequate storage and distributed energy sources, as well as demand-side management and efficiency measures.

Key outcomes for the Clean Electricity Standard

- Requires Canada's electricity to be 100% non-emitting by 2035.
- Sends an immediate and clear signal against new emitting electricity generation assets
- Generates early and deep reductions of GHGs, rather than relying on greater reductions closer to 2035.
- Drives investments in non-emitting, cost-effective, already commercially available and reliable renewable electricity
- Secures cost effective GHG reductions.
- Protects and enables energy affordability and access to electricity
- Prevents locking in new fossil fuel infrastructure

[1] Lazard (2021) Lazard's Levelized Cost Of Energy Analysis, Version 15.0. Available: https://www.lazard.com/perspective/levelized-cost-of-energy-levelized-cost-of-storage-and-levelized-cost-of-hydrogen/

[2] CanREA (2021) Powering Canada's journey to net-zero. Available: https://renewablesassociation.ca/wpcontent/uploads/2021/11/CanREAs2050Vision_Nov2021_web.pdf

To achieve these outcomes, Environmental Defence recommends:

- The CES regulations under the *Canadian Environmental Protection Act* (CEPA) set emissions intensity caps to ***0 g CO2e/kWh by 2035,*** with regularly tightening interim caps. The tightening rate must align with the pace needed to achieve the 2035 target but also the existing commitment to a 90 per cent emissions-free electricity system by 2030.
- Use the CES as a backstop where provinces regulate to the federal CES intensity level or the federal standard applies to that province. Any equivalency agreement should provide a confident alternative pathway to achieving the same GHG reductions and should involve all key stakeholders in its design.
- In addition to ensuring that no new fossil fuel generation is added to the grid, the CES should eliminate all existing electricity supply from fossil fuels well before 2035 (whether abated or not).
- Expose electricity emissions to the full carbon price and require provinces with their own carbon pricing systems to match the price stringency and expose generators to the full extent of the carbon price.

Concerns with allowing abated fossil fuel generation, offsets, SMRs and unproven technologies

Environmental Defence is concerned with the role given to natural gas generation, unproven technology, SMRs and offsets in the CES discussion paper. None of these expensive, dangerous and unproven technologies and measures align with achieving maximum reductions from the electricity grid, which is necessary for Canada to do its fair share to tackle the climate crisis. Indeed, recent modelling studies show that Canada is not on track to meet its climate change targets and this is in part due to Canada's current approach of leaning too much on short-term solutions that promote more efficient use of fossil fuels.[3] The Government of Canada cannot credibly say it is serious about climate change when it is continuing to allow the burning of fossil fuels to generate electricity.

Carbon capture, utilization and storage (CCUS) is a speculative technology that has not been proven to be effective at scale. Despite five decades of research and tens of billions of dollars in subsidies globally, the current scale of CCUS is minute. CCUS has a track-record of over-promising and under-delivering. For example, while originally projected to capture 90 per cent of emissions, Sask Power's CCUS project at the Boundary Dam is now estimated to capture just 37 per cent of emissions.[4] The vast majority of projects never get off the ground.[5]

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[3] Langlois-Bertrand, S. et al. (2021). Canadian Energy Outlook 2021 — Horizon 2060. Institut de l'énergie Trottier and e3c Hub. Available: http://iet.polymtl.ca/energy-outlook/

[4] https://environmentaldefence.ca/wp-content/uploads/2022/03/Buyer-Beware-FFS-in-2021-March-2022.pdf

[5] Abdulla A. et al (2021) Explaining successful and failed investments in U.S. carbon capture and storage using empirical and expert assessments. Environ. Res. Lett. Available: https://iopscience.iop.org/article/10.1088/1748- 9326/abd19e/pdf

Furthermore, CCUS only addresses a fraction of emissions from the lifecycle of natural gas and does nothing to address fugitive emissions. Lastly, natural gas is already not a cost-effective way to produce electricity, equipping natural gas power plants with expensive and energy-intensive CCUS greatly adds to those costs. For example, if instead of paying for the CCUS retrofit of the Boundary Dam thermal coal power plant, the government of Saskatchewan had instead turned to wind power generation, it could have saved electricity consumers in Saskatchewan more than $1 billion while generating the same amount of electricity.[6]

Direct air capture (DAC) poses significant challenges for energy use and there is currently insufficient evidence that it provides a feasible climate mitigation solution. Since CO2 represents 0.04% of air by volume, massive volumes of air must be filtered to capture any reasonable amount of CO2. DAC is in its infancy and is very costly (the range of costs for DAC vary between USD $250-600 per tonne of CO2 captured[7]) and energy intensive, with serious doubts about its effectiveness.[8] One study examining the potential of DAC to help meet the Paris Agreement goal found that wide scale deployment of DAC would account for a full one quarter of global energy demand for heat and power by the end of this century.[9] The buildout of DAC would significantly delay efforts to achieve and maintain a 100% renewable energy system. Another concern with wide scale DAC deployment are the impacts associated with the manufacture of the chemical sorbent required to capture CO2 from the atmosphere.

The use of offsets has been widely discussed, and convincingly refuted as a sustainable strategy.[10] Studies have shown that most offset schemes do not lead to emissions reductions.[11] Issues of additionality and verifiability are very difficult to enforce. Offsets should not be used in sectors where achieving zero-emissions is possible, such as electricity.

The role that natural gas plays in providing fast-response power and for peaks can be achieved through a combination of measures, including effective demand-side management. In fact the

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[6] Glennie, J. (2015) Analysis of the cash and carbon flows of boundary dam coal-fired power station. Saskatchewan Community Wind. Available: https://static1.squarespace.com/static/5394a3cbe4b032d797fe179c/t/55142e0ee4b06a02803077d1/1427385870286/150326-BoundaryCCSReport.pdf

[7] Lebling, K. et al. (2021) Direct Air Capture: Resource Considerations and Costs for Carbon Removal. World Resources Institute. Online: https://www.wri.org/insights/direct-air-capture-resource-considerations-and-costs-carbonremoval

[8] Climate Action Network International (January 2021) Position: Carbon Capture, Storage and Utilisation. Online: https://climatenetwork.org/wpcontent/uploads/2021/01/can_position_carbon_capture_storage_and_utilisation_january_2021.pdf

[9] Realmonte, G., Drouet, L., Gambhir, A. et al. An inter-model assessment of the role of direct air capture in deep mitigation pathways. Nature Communications 10, 3277 (2019). https://doi.org/10.1038/s41467-019-10842-5

[10] See for example Nicholas Rivers and others, “Federal carbon-offset proposal will likely give illusion of progress, even as it increases emissions,” CBC, March 29, 2021. Accessed at: https://www.cbc.ca/news/opinion/opinion-carbon-offsets-1.5951395

[11] Murphy, A. (2017) 85% of offsets failed to reduce emissions, says EU study. Transport & Environment. Available: https://www.transportenvironment.org/discover/85-offsets-failed-reduce-emissions-says-eu-study/

latest official national greenhouse gas inventory demonstrates that Canada would have achieved greater emissions reductions from the transition off of coal, if it had not been for the increased use of natural gas offsetting those reductions.

Decarbonizing Canada's grid can protect people's health in addition to helping to meet our climate goals. The phasing out of coal-fired electricity generation creates significant health benefits by improving local air quality. However, simply shifting from coal to natural gas for electricity means that communities are still affected by hazardous air pollution, such as nitrous oxides.

Treatment of electricity under the OBPS

The Federal government can provide a strong incentive to accelerate the transition to the 2035 target by ensuring that the carbon price at the core of Canada's current greenhouse gas emission reduction strategy sends a clear pricing signal to the electricity sector that non-GHG emitting generation is preferred to GHG emitting generation in both federal and provincial carbon pricing frameworks. While new natural gas-fired electricity generation faces increasing exposure to the carbon price over time and will feel the full force of the carbon price in 2030, existing natural gas-fired electricity-generation facilities are largely sheltered from the Federal carbon price – providing no real incentive to reduce emissions from these facilities or explore alternative forms of generation.

Therefore Environmental Defence also recommends that the federal government remove the electricity sector from the Output-Based Pricing System (OBPS) and expose the sector to the full carbon price, in line with the federal benchmark in each compliance year. We further recommend that the government require provinces with their own carbon pricing systems to match the price stringency and expose generators to the full extent of the carbon price.