Clean Energy Canada Submission to the Net-Zero Advisory Body

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Introduction

Clean Energy Canada is an independent think tank based at the Morris J. Wosk Centre for Dialogue at Simon Fraser University. We work to accelerate Canada's transition to a clean and renewable energy system.

Clean Energy Canada welcomes the opportunity to submit comments to the Net Zero Advisory Board as it develops guiding principles to inform the development of Canada's first Emissions Reduction Plan. Action over the next decade—and policy decisions made over the next 6-12 months—will be critical in setting Canada on the path to net-zero.

Our comments focus on several areas where strong regulatory action is needed by government, including capping and reducing emissions from the oil and gas sector, mandating a shift to 100% zero-emissions vehicles by 2035 (for light-duty vehicles) and 2040 (for medium- and heavy-duty vehicles), and regulating the phase-out of fossil fuel-generated electricity by 2035.

In addition, we highlight the need for governments—and the private sector—to invest in key enabling net-zero technologies, including a massive ramp-up in renewable and non-emitting electricity, developing a clean domestic battery supply chain, and growing the market for low-carbon building materials.

Finally, we believe it is time to move beyond principles to focus on the actions needed to bend the emissions curve toward zero. In most cases, we know what needs to be done, but policy and action lag behind the latest climate science and economic modeling. Further delay will only make the transition more costly and disruptive, particularly for vulnerable Canadians. By acting now with urgency and ambition, Canada can limit economic and environmental damage at home while benefiting from opportunities created by the transition to net zero.

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Summary of Guiding Principles

Sector	Guiding Principles
Oil and gas	Government must carry out its publicly stated commitments to cap oil and gas sector emissions at current (2020) levels and set five-year targets in line with Canada's 2030 and 2050 climate commitments. Oil and gas emission reductions must move at a pace and scale equal to the climate emergency. Emissions cap should include all upstream, midstream, and downstream operations, and cover Scope 1 and 2 emissions. Align the five-year milestones and emissions pathway with a 1.5C world in which global oil and gas demand peaks and declines. Plan for and invest in worker transition in affected communities and regions to support a shift into clean energy and other growth industries. Align public and private energy and infrastructure investments with net-zero and industries with long term growth prospects.
Transportation	Ensure all policies, regulations, and investments align with the goal of 100% zero emissions vehicles by 2035 (LDV) and 2040 (MHDV). Incent the purchase of lower emitting vehicles while accelerating ZEV uptake in line with commitments. Address the individual context, needs, and barriers for light duty and medium/heavy duty vehicle segments. Align Canada's policies and regulations with the highest ambition in the U.S. (federal or state-level) while maintaining allowances for Canada's specific circumstances. Front load ambition and action to stimulate investment, increase near-term emission reductions, reduce transition costs, and limit the risks of delay in meeting ZEV targets.
Buildings and Infrastructure	Use all tools available (public procurement, infrastructure investment, codes and standards) to reduce lifecycle emissions in buildings and infrastructure. Address the embodied emissions from building materials in all relevant policies and programs. Take a lifecycle emissions approach to building energy efficiency and

	retrofit programs to avoid higher upfront emissions. Use public spending to increase the market for cleaner, low-carbon building materials. Work with partner jurisdictions to develop consistent rules and standards to support greater disclosure and uptake of low carbon materials.
Batteries	Set out an ambitious vision to guide industrial development. Act swiftly and ambitiously given the scale of this opportunity, and the speed at which other countries are moving to capture it. Make Canada a global supplier of sustainable metals and minerals. Focus on value creation, and capturing jobs and economic opportunity beyond raw material extraction. Tap Canada's clean battery advantage, including by building a world-class battery recycling industry.
Clean Electricity	Make 100% clean electricity the foundation of Canada's transition to net-zero, and position Canada for success in the net-zero economy. Phase out the use of fossil fuels to produce electricity, and increase the uptake of clean electricity sources. Invest in the development, scale-up, and installation of new generation, storage, transmission, and efficiency technologies to make Canada ready for net zero. Collaborate and coordinate between governments, utilities, industries, clean energy companies, and Indigenous nations to ensure innovation and investment in line with net-zero.

Detailed Comments and Recommendations

How should the NZAB implement or refine its existing 10 values and principles to ensure 2030 puts Canada on the mostly likely pathways to net-zero by 2050?

We agree with the current list of values and principles for developing Canada's net-zero pathways. Regarding #8 ("Acknowledge there is more certainty than uncertainty"), while we agree this is largely true, it must also be acknowledged that net-zero solutions and technologies in

certain sectors (e.g. heavy industry, long-distance transportation) are still costly relative to incumbent technologies, with a need for more testing and demonstration to bring costs down.

For example, the International Energy Agency's Net Zero by 2050 report estimates that almost half of global emissions reductions needed by 2050 will come from early-stage technologies that are still under development, such as green hydrogen, carbon capture, utilization and storage (for use in heavy industry, not for fossil fuels), or advanced batteries.

This lack of certainty requires coordinated leadership from government and industry, as well as significant public and private sector investments in research, development, and scaling up solutions with the greatest potential.

What key guiding principles should the NZAB consider in its advice on milestones for the oil and gas sector?

Context:

- The oil and gas sector is Canada's highest emitting sector, accounting for 26% of emissions in 2019. This is an 87% increase from 1990 emissions, driven by massive expansion of the oil sands (+750%).
- At COP26, Canada's Prime Minister announced that oil and gas sector emissions would be capped, and that reductions would continue at a pace and scale needed to reach net-zero emissions by 2050.
- The Minister of Environment and Climate Change's 2021 mandate letter directed the Minister to "cap oil and gas sector emissions at current levels and ensure that the sector makes an ambitious and achievable contribution to meeting the country's 2030 climate goals [and] require the oil and gas sector to reduce emissions at a pace and on a scale needed to align with the achievement of net-zero emissions by 2050, with five-year targets to stay on track."
- B.C.'s experience of setting a binding sectoral target for its oil and gas sector, under its 2007 *Climate Change Accountability Act*, offers instructive guidance that could be applied at the federal level.

Guiding Principles and Recommendations:

1. The Government must carry out its publicly stated commitments:
    - Sector emissions must be capped at 2020 levels.
    - Emissions targets must incrementally step down emissions toward 2050.

2. Oil and gas emission reductions must move at a pace and scale equal to the climate emergency:

- The cap and initial targets must be finalized by the end of 2023.
- The emissions cap must be legally binding with penalties for non compliance.
- Targets for the oil and gas sector must be commensurate with other sectors (i.e. no free rides).

3. Acknowledge the realities of a net-zero world:
    - Refer to the International Energy Agency's Net-Zero scenarios and other relevant analysis when making investment decisions.
    - View the future of the oil and gas sector in the context of $170 carbon price, stringent methane regulations, and an emissions cap.
    - Canada's oil sands are high cost, high carbon, and increasingly uncompetitive.
    - Canadian LNG export projects are not materializing.
    - Offsets should be used as a last resort and only for residual emissions.
    - CCUS, blue hydrogen, and enhanced oil recovery are expensive, likely to be outcompeted by other technologies, and are unlikely to grow after 2050.

4. Invest in industries consistent with a net-zero world and that will grow in 2030 and 2040:
    - Government incentives and investments should be aligned to those industries growing in 2040.
    - Don't subsidize the status quo or lock in new, fossil fuel-related growth.

5. Align energy and infrastructure investments with oil and gas workforce transition issues

What key guiding principles should the NZAB consider in its transportation sector advice?

Context:

- Transportation is Canada's second largest emitting sector, accounting for 25% of emissions in 2019. Emissions from light duty vehicles rose 39% while emissions from heavy duty vehicles rose 230% between 1990-2019.[1]
- The increase in transport sector emissions is driven by a growing vehicle fleet (notably light and heavy duty trucks), and a shift toward higher-emitting vehicle types.
- The 2021 Environment and Climate Change Canada mandate letter directs the Minister to:
    - Develop a regulated sales mandate that at least 50% of all new light duty vehicle sales are zero emission vehicles in 2030 as an interim step toward achieving Canada's mandatory target of 100% by 2035; and,
    - Develop a regulated sales requirement that 100% of medium- and heavy-duty vehicles sales are zero emission by 2040, where feasible.

[1] LDV includes passenger cars, SUVs, and light-duty trucks. HDV includes freight trucks, buses, and other medium- and heavy-duty vehicles. Source: Table 2-3 in Canada's 2019 National Inventory Report.

- Canada is not on track to meet its zero-emission vehicle sales goals or greenhouse gas emission reduction targets by 2030 under existing policies, according to modelling.
- A policy approach that relies on standards to reduce tailpipe emissions alone will not ensure Canada achieves its targets because Canada is dependent on regulatory, legal, and electoral outcomes in the U.S., and Canadians are choosing to drive larger, more polluting vehicles. Canada has the best chance at meeting its objectives by combining strong passenger vehicle regulations with a national ZEV standard.

Guiding principles:

1. Ensure all policies, regulations, and investments align with the goal of 100% zero emissions vehicles by 2035 (LDV) and 2040 (MHDV).
2. Incent the purchase of lower emitting vehicles while accelerating ZEV uptake in line with commitments.
3. Address the individual context, needs, and barriers for light duty and medium/heavy duty vehicle segments.
4. Align Canada's policy with the highest ambition in the U.S. (federal or state-level), while addressing loopholes and maintaining allowances for Canada's specific circumstances (e.g. cold weather, unique vehicle/fleet types).
5. Front load ambition and action to stimulate investment, increase near-term emission reductions, reduce transition costs, and limit the risks of delay in meeting ZEV targets.

Recommendations for Light Duty Vehicles:

- Implement a package of clean car policies. Ambitious vehicle emission standards and a ZEV standard must be part of a larger policy package that addresses both supply and demand-side barriers to EV uptake, while also ensuring Canada's auto sector captures the economic benefits of the domestic and global shift to electric vehicles.
- Ensure Canada has control over its clean car future. Canada has historically linked its LDV emission standards with the U.S. given the deeply integrated nature of the North American market. This leaves Canada's climate goals vulnerable to the political whims of another jurisdiction.
- Canada must: (1) layer a ZEV standard on top of the U.S.-Canada LDV emission rules; (2) include a "release valve" provision that allows Canada to de-link if U.S. regulations are no longer sufficiently stringent; (3) Address key loopholes in existing LDV emission regulations by not adopting compliance flexibilities contained in Biden's proposed regulations; and (4) Begin work immediately on post-2025 passenger vehicle emission standards that are among the most stringent in the world.
- In developing its ZEV Standard, Canada should:
    - Update the Canada-California memorandum of understanding in early 2022 to signal Canada's intention to align with California's ZEV standard.

- Update interim ZEV sales targets to 25% by 2026 and 65% by 2030 en route to 100% by 2035, in line with Quebec and California's proposed ramp up.
- Finalize the ZEV standard in 2023 and implement it by 2024.
- Treat the federal ZEV standard as a "backstop" that would only be applied where provinces do not have equal or more stringent mandatory ZEV standards in place.

Recommendations for Medium and Heavy Duty Vehicles:

- Design updated greenhouse gas emission standards for heavy-duty vehicles which:
  - Are aligned with the most stringent emissions standards in the U.S., whether at the federal or state level.
  - Consider specific Canadian features, including a colder climate, unique vehicle and fleet types, and the prevalence of smaller ownership models, all of which will impact the deployment of zero emissions vehicles.
  - Are linked to both greenhouse gas intensity objectives, and the deployment of zero-emission medium- and heavy-duty vehicles.
- These new standards should be informed by the best practices from other jurisdictions, including:
  - Use of fleet average standards (in contrast to vehicle-based standards), which introduce stringent targets that boost adoption of zero-emission vehicles without prescribing them;
  - Use of "technology-forcing standards" which establish requirements based on the best zero-emission technology expected to be available in future years. This incentivizes innovation while providing sufficient lead time for technologies to be proven, anddrives an acceleration toward cost-effective zero-emission technology, instead of a reliance on incremental improvements to existing technologies.
  - Creation of zero-emission heavy-duty vehicle incentives that reduce the cost of meeting the standards with a new technology; and
  - Consideration of the different characteristics of vehicle segments in the design of the standards (payload, annual distance travelled, etc.).
- Development of a medium- and heavy-duty sales mandate that's modelled on California's Advanced Clean Trucks regulation and includes the following policy design elements:
  - Establishes ambitious short-term sales requirements where possible;
  - Provides coverage of the entirety of the MHDV market—broken down by broad segments that reflect the higher emission footprints of certain vehicle classes—and the relative complexity in producing zero-emission vehicles for different applications (this breakdown should be developed to be technology-neutral);
  - Establishes penalties and enforcement mechanisms to ensure effectiveness;
  - Establishes clear long-term targets that provide manufacturers with the necessary clarity for business planning and investments; and

    - Develops provisions that support compliance for manufacturers, such as credit banking and trading, and early credit generation policies.
- In addition to an MHDV sales mandate and updated GHG emission standards, Canada should advance a comprehensive set of policies aimed at transitioning our heavy-duty vehicle fleets to zero emission vehicles as quickly as possible. Policies should include:
    - **Demand-side regulations.** The development of regulations that place requirements on priority fleets to purchase a specified number of zero-emission vehicles, and the creation of incentive programs to help support cost competitiveness between zero-emission vehicles and diesel vehicles should both be a priority. These demand-side regulations are essential in accelerating the pace of zero-emission heavy-duty truck sales in order to meet near-term emission reduction targets, and to help drive the necessary cost reduction and market growth for widespread adoption.
    - **Transparent and proactive stakeholder engagement.** Canada should ensure the process for developing its regulations is transparent and done with the full engagement of industry. This will shorten the implementation of piloted technologies, reduce the adversarial nature of the process, and ensure solutions to challenges can be found that don't involve weakening standards.
    - **Prioritize Infrastructure**. Development of targeted policies to facilitate the needed roll-out of both the public and private charging infrastructure required to support widespread zero-emission heavy-duty vehicle adoption is essential.[2]
    - **Coordination with other levels of government.** The federal government's regulation of medium- and heavy duty vehicle emissions should be coordinated with provinces, municipalities, and utilities. Each level of government has different policy tools it can bring to bear, and all have a critical role in facilitating a transformation to zero-emission heavy-duty vehicle fleets. Utilities will also be an essential partner in the deployment of the necessary public and private charging infrastructure.

What key guiding principles should the NZAB consider in its buildings sector advice?

Context:

- Buildings accounted for 12% of Canada's 2019 emissions, a growth of 27% since 1990.
- This figure does not include emissions from construction or end-of-life, nor from the manufacturing and transportation of building materials. Building materials account for 11% of global emissions, and as buildings become more energy efficient, the relative importance of material carbon emissions increases.

[2] The International Council on Clean Transportation estimates that for the U.S. to reach its greenhouse gas emission reduction targets of 50%–52% below 2005 levels by 2030 and to net-zero by 2050, 127,000 charging points and 220 hydrogen refueling stations will be required to support a fleet of 100,000 zero-emission tractor-trailers by 2030, and 2.5 million charging points and almost 7,000 hydrogen fueling stations will be needed to support a fleet of 2.4 million zero-emission tractor-trailers.

- Reaching a net-zero buildings sector will require addressing upfront or "embodied" emissions by prioritizing the use of low-carbon materials in the construction of buildings and infrastructure, as well as other policies to improve material and resource efficiency.
- The federal government has committed to developing a Buy Clean Strategy that includes both public and private infrastructure, and to procuring low-carbon steel and cement. The mandate letters for several departments[3] direct Ministers to work together to "introduce a new Buy Clean Strategy to support and prioritize the use of made-in-Canada low-carbon products in Canadian infrastructure projects".

Guiding Principles:

1. Use all tools available (public procurement, infrastructure investment, codes and standards) to reduce lifecycle emissions in buildings and infrastructure.
2. Address the embodied emissions from building materials in all relevant policies and programs (e.g. Net-zero Emissions Building Strategy, model building codes, Investing in Canada Plan, National Infrastructure Assessment).
3. Take a lifecycle emissions approach to building energy efficiency and retrofit programs to avoid higher upfront emissions (e.g. from CO_2-intensive insulation products).
4. Use public spending to increase the market for cleaner, low-carbon building materials.
5. Work with partner jurisdictions to develop consistent rules and standards to support greater disclosure and uptake of low carbon materials.

Recommendations:

- Develop and phase in Buy Clean performance standards for all federally-funded infrastructure projects, including projects managed by provincial, territorial, and municipal governments.
- Convene an inter-departmental Buy Clean working group consisting of key federal departments tasked with developing and implementing Buy Clean policy and ensuring alignment with the United States.
- Provide additional resources to federal departments leading Buy Clean policy development, including the National Research Council and the Greening Government Secretariat.
- Invest in Buy Clean pilot and demonstration projects in partnership with provinces, municipalities, and industry.
- Work with the U.S. and international partners to develop a coordinated Buy Clean approach (e.g. through the recently created U.S. Buy Clean Task Force and the UN's Industrial Deep Decarbonization Initiative).

[3] Natural Resources Canada, Intergovernmental Affairs, Infrastructure and Communities, and Public Services and Procurement.

Guiding principles and recommendations for other sectors

Clean Electricity:

- Make 100% clean electricity the foundation of Canada's transition to net-zero, and position Canada for competitiveness in the net-zero economy.
- Phase out the use of fossil fuels to produce electricity, and increase the uptake of clean electricity sources.
- Invest in the development, scale-up, and installation of new generation, storage, transmission, and efficiency technologies to make Canada ready for net-zero.
- Collaborate and coordinate investments between governments, utilities, industries, clean energy companies, and Indigenous nations to ensure innovation and investment in line with net-zero.

Batteries:

- Set out an ambitious vision to guide industrial development along the battery supply chain.
- Act swiftly and ambitiously given the scale of this opportunity and the speed at which other countries are moving to capture it.
- Make Canada a global supplier of sustainable metals and minerals.
- Focus on value creation, capturing jobs, and economic opportunity beyond raw material extraction.
- Tap Canada's clean battery advantage, including by building up a world-class battery recycling industry.
- Develop a national battery strategy in coordination with industry to focus efforts.