

Response to Call for Comments:

Barriers & Solutions to Achieving Net-Zero Emissions Goals in Canada's Electricity Sector

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Below is the Conservation Council of New Brunswick's (CCNB) response to the invitation by the Canada Electricity Advisory Council (CEAC) Stakeholder Engagement on Barriers & Solutions to Achieving Net-Zero Emissions Goals in Canada's Electricity Sector.

For more than 50 years, the Conservation Council has worked to create awareness of environmental problems and advocate solutions through research, education, and interventions. The Conservation Council is steadfast in promoting solutions that are environmentally, socially, and economically sound. In response to questions posed by the CEAC, our focus remains on ensuring a net-zero economy by 2050, with a specific emphasis on achieving a net-zero electricity sector by 2035.

The questions posed by CEAC are in blue font below, and the Conservation Council's response is in black. The responses are at a higher level of discussion, we would be happy to discuss these points in more detail with the CEAC in the future.

1. Improving planning and oversight of electricity systems

- i. [How might the mandates of regulators, system operators and utilities need to change or expand, to meet net-zero? How could net-zero mandates be implemented and operationalized?](#)
- Integration of Decarbonization Goals:
 - Regulators should incorporate clear decarbonization goals into their mandates, emphasizing the importance of achieving a net-zero grid by 2035.
 - Mandates should explicitly address reducing greenhouse gas emissions, promoting renewable energy sources, and the overall sustainability of the electricity sector.
- Flexible Regulatory Frameworks:
 - Regulators need to adopt more flexible regulatory frameworks that accommodate evolving technologies and rapidly changing market dynamics.
 - Develop mechanisms that allow for timely adjustments to regulations in response to advancements in clean energy technologies and emerging challenges.
- Performance-Based Regulation:

- Shift towards performance-based regulation, where utilities are incentivized based on achieving specific environmental and net-zero targets.
 - Tie regulatory approvals and financial incentives to the successful implementation of measures that contribute to a net-zero electricity sector.
- Incentives for Clean Energy Investments:
 - Regulators should implement incentives that encourage utilities to invest in clean energy projects, grid modernization, and energy storage.
 - Consider regulatory mechanisms such as performance-based rate-making to reward utilities for achieving and exceeding net-zero milestones.
- Enhanced System Planning and Coordination:
 - System operators should expand their mandates to include comprehensive system planning that prioritizes renewable energy integration and grid resilience and consider how these projects will impact the community and environment.
 - Develop coordination mechanisms to ensure a smooth transition, focusing on optimizing the use of renewable resources and minimizing reliance on fossil fuels.
- Grid Flexibility and Energy Storage:
 - Mandate utilities and system operators to prioritize grid flexibility and invest in energy storage technologies to manage intermittent renewable energy sources.
 - Develop regulations that facilitate the integration of energy storage solutions, including advanced batteries and other storage technologies.
- Demand-Side Management:
 - Regulators should promote demand-side management initiatives and incorporate them into utility mandates.
 - Encourage utilities to implement programs incentivizing consumers to shift energy usage during peak demand periods and adopt energy-efficient practices.
- Customer Engagement and Empowerment:
 - Utilities should expand their mandates to actively engage customers in the transition to a net-zero grid.
 - Implement customer empowerment programs, providing information, incentives, and tools for consumers to make informed choices about their energy consumption.
- Risk Mitigation Strategies:
 - Regulators and utilities should develop and implement risk mitigation strategies to address challenges associated with the transition, such as grid reliability and system resilience.
 - Explore innovative approaches to assess and mitigate risks associated with integrating renewable energy sources.
- Transparent Reporting and Accountability:
 - Mandate utilities and system operators to provide transparent reporting on their progress toward net-zero goals.
 - Establish accountability mechanisms to ensure utilities adhere to regulations and commitments related to the transition.
- Collaboration and Information Sharing:

- Facilitate collaboration and information sharing among regulators, system operators, utilities, and other stakeholders.
- Establish platforms for knowledge exchange, best practice sharing, and coordination to accelerate the transition collectively.
- ii. **How should independent, provincial/territorial pathway to decarbonization assessments be approached and scoped to inform net-zero energy roadmaps and coordinated system planning?**
- **Comprehensive Scope:**
 - Assessments should encompass a comprehensive scope, considering all relevant sectors contributing to carbon emissions, including electricity generation, transportation, industry, and buildings.
 - Evaluate both the demand and supply sides of the energy equation, exploring opportunities for efficiency improvements and renewable energy integration.
- **Integrated Approach:**
 - Adopt an integrated approach that acknowledges the interconnectedness of various energy sectors and their impact on the overall decarbonization goals.
 - Consider synergies between electricity and other energy vectors, such as electrification of transportation and heating, to maximize emissions reductions.
- **Stakeholder Engagement:**
 - Ensure meaningful engagement with diverse stakeholders, including government agencies, utilities, Indigenous communities, industry representatives, environmental groups, and the public.
 - Solicit input from key stakeholders to incorporate diverse perspectives, gather local knowledge and enhance the legitimacy of the assessment.
- **Data-Driven Analysis:**
 - Conduct a robust data-driven analysis to quantify current carbon emissions, assess existing infrastructure, and project future emissions under different scenarios.
 - Leverage advanced modeling tools and data analytics to simulate the impact of various policy measures and technological interventions.
- **Risk and Uncertainty Analysis:**
 - Integrate risk and uncertainty analysis to identify potential challenges and assess the resilience of proposed pathways.
 - Recognize uncertainties related to technological advancements, policy changes and external factors that may influence the decarbonization trajectory.
- **Scenario Planning:**
 - Develop multiple scenarios that explore different pathways to decarbonization, considering variations in technological adoption, policy implementation, and economic factors.
 - Assess each scenario's feasibility, costs and benefits to inform decision-making.
- **Economic and Social Impacts:**

- Evaluate the economic and social impacts of proposed decarbonization pathways, considering potential job creation, investment opportunities, and community resilience.
- Assess the distributional impacts to ensure the transition is fair and inclusive, minimizing negative consequences for vulnerable communities.
- Align with National Goals:
 - Align provincial/territorial assessments with national net-zero goals and consider how each region's pathway contributes to the overall Canadian decarbonization effort.
 - Collaborate with federal agencies to harmonize strategies and leverage synergies between national and regional initiatives.
- Adaptive Governance:
 - Establish adaptive governance mechanisms that allow for periodic reassessment and adjustments based on evolving technologies, changing policy landscapes, and emerging challenges.
 - Foster a continuous feedback loop to update energy roadmaps in response to new information and experiences.
- Transparency and Communication:
 - Ensure transparency in the assessment process, making data, assumptions, and methodologies accessible to the public.
 - Develop effective communication strategies to convey the assessment's findings, rationale, and implications to a broad audience.

iii. What features should provincial governments build into their net-zero energy roadmaps to enable more effective planning and utility regulation?

- Comprehensive Emission Reduction Targets:
 - Establish clear and ambitious emission reduction targets aligned with national and international climate goals. Define measurable milestones and timelines to track progress.
- Integrated Energy Planning:
 - Adopt an integrated approach considering the entire energy ecosystem, including electricity generation, transportation, heating, and industrial processes. Promote synergy between sectors for holistic emissions reduction.
- Renewable Energy Deployment:
 - Prioritize the deployment of renewable energy sources, such as wind and solar, to increase the share of clean energy in the overall energy mix.
- Electrification Strategies:
 - Develop strategies for electrifying key sectors like transportation and heating, encouraging the transition from fossil fuels to electricity to reduce overall emissions.
- Energy Storage and Grid Modernization:

- Invest in energy storage technologies and modernize the electricity grid to accommodate intermittent renewable energy sources. Enhance grid flexibility and reliability to support increased electrification.
- Demand-Side Management Programs:
 - Implement demand-side management programs to optimize energy use, reduce peak demand, and enhance overall energy efficiency. Encourage consumer participation in demand response initiatives.
- Incentives for Innovation:
 - Provide financial incentives and support for research and development in clean energy technologies. Foster innovation in areas such as energy storage, smart grids, and advanced grid management systems.
- Carbon Pricing Mechanisms:
 - Implement effective carbon pricing mechanisms to internalize the social cost of carbon emissions. Create economic incentives for businesses and individuals to reduce their carbon footprint.
- Regulatory Reforms:
 - Review and update regulatory frameworks to accommodate the evolving energy landscape. Remove barriers to entry for clean energy projects and establish mechanisms for fair competition.
- Community Engagement and Consultation:
 - Engage with local communities and stakeholders in the development of net-zero energy roadmaps. Seek input on planning decisions, address concerns, and build support for the transition.
- Job Creation and Training Programs:
 - Develop programs to create jobs in the clean energy sector and provide training for workers transitioning from traditional energy industries. Ensure a just and inclusive transition for affected communities.
- Resilience and Adaptation Measures:
 - Incorporate resilience and adaptation measures to address the impacts of climate change on energy infrastructure. Consider factors such as extreme weather events and changing patterns in energy demand.
- Monitoring and Reporting Mechanisms:
 - Establish robust monitoring and reporting mechanisms to track progress toward net-zero goals. Provide regular updates to the public and stakeholders, fostering transparency and accountability.
- Flexibility in Regulations:
 - Build flexibility into regulations to accommodate evolving technologies and changing circumstances. Enable adaptive governance that allows for adjustments based on new information and experiences.
- Cross-Border Collaboration:
 - Foster collaboration with neighbouring provinces and territories to align energy strategies and promote regional integration. Explore opportunities for sharing resources and optimizing energy use across borders.

iv. What policy changes are needed to enable accelerated investment in electricity systems and infrastructure, and how does our appetite for risk need to evolve?

- Accelerated Investment:
 - Policies should include financial incentives, such as tax credits and subsidies, to attract private investments in clean energy projects. An increase in tax credits for well-established renewable technologies like wind and solar coupled with storage should be prioritized to motivate investment into longer-term net-zero options with minimal risk to 3rd party investors. Innovative financing mechanisms should be explored to share financial burdens and mitigate risks associated with accelerated investments.
- Carbon Pricing Mechanisms:
 - Expand and strengthen carbon pricing mechanisms to internalize the social cost of carbon emissions. Establish clear and predictable carbon pricing frameworks to guide investment decisions.
- Long-Term Power Purchase Agreements (PPAs):
 - Encourage the use of long-term PPAs between utilities and clean energy producers. Provide financial certainty and stability, making investments in renewable energy projects more attractive to investors.
- Public-Private Partnerships (PPPs):
 - Facilitate public-private partnerships to leverage public and private sector resources for large-scale infrastructure projects. Share risks and responsibilities between government entities and private investors.
- Green Bonds and Financing Mechanisms:
 - Promote green bonds to fund sustainable energy projects from residents and communities. Develop innovative financing mechanisms that attract investment from institutional investors seeking environmentally responsible opportunities.
- Capacity Markets:
 - Consider implementing capacity markets to ensure the electricity grid's reliability. Provide financial incentives for power generators to maintain a specified level of capacity, supporting grid stability.
- Risk Mitigation Instruments:
 - Develop risk mitigation instruments, such as insurance or guarantees, to address specific challenges associated with clean energy investments. Provide a safety net for investors facing uncertainties.

v. What conditions, if any, should be attached to provincial and territorial receipt of federal supports in order to facilitate a cost-effective decarbonization and build-out of Canadian electricity systems in line with climate goals?

- Implementation of Clean Electricity Regulations (CER):
 - Mandate the adoption and effective implementation of Clean Electricity Regulations (CER) to ensure a transition to cleaner energy sources. Provinces

and territories should align their regulatory frameworks with federal guidelines for achieving net-zero electricity.

- Provincial Net-Zero Energy Roadmaps:
 - Require provinces to develop comprehensive net-zero energy roadmaps that go beyond electricity to encompass broader energy sectors. Roadmaps should outline clear strategies, milestones, and commitments toward achieving net-zero emissions by 2050.
- Regular Reporting on Progress:
 - Mandate provinces and territories to provide regular and transparent reports on their progress toward net-zero goals. Reporting mechanisms should include key performance indicators related to emissions reduction, renewable energy capacity, and energy efficiency.

2. Building electricity infrastructure in a timely manner while creating benefits for Indigenous partners

CCNB strongly advocates for the meaningful and inclusive involvement of Indigenous communities and organizations in all stages of energy-related projects, from inception to completion. Recognizing the vital importance of Indigenous consultation, CCNB asserts that such engagement must be genuine, ensuring that Indigenous communities have a substantive role in decision-making processes. Beyond consultation, CCNB believes in fostering true partnerships where Indigenous groups are given an equitable share in the projects themselves. Indigenous consultation and any community engagement related to energy projects should be meaningful, inclusive, and timely. Please see our report on [Best Practices Guide for Community Engagement in Energy Projects](#).

- ## 3. Attracting capital investments to clean electricity projects and maintaining affordability for consumers.
- i. What are the policy, regulatory, and other conditions that would lower the capital costs (including risk capital) for clean electricity projects?

Lowering Capital Costs:

- Advocate for additional and enhanced government incentives and subsidies for clean electricity projects to reduce the upfront capital costs and make them more attractive to private investors. A combination of federal and provincial incentives may promote increased investment due to two separate financial support mechanisms.
- Clear regulated targets help reduce risk so organizations are more likely to invest. Adopting and implementing policies like the Clean Electricity Regulations (CER) may encourage investments.
- Foster market competition through transparent and competitive auction processes for clean energy projects. Competitive bidding can drive down costs and ensure efficient allocation of resources.

- Introduce Green Bonds or similar programs for residents/communities to invest in municipal energy infrastructure and projects.
- Develop streamlined regulatory processes to expedite project approvals, reducing delays and uncertainties that may contribute to increased capital costs.
- Increase federal funding for interprovincial projects such as transmission lines to alleviate the burden on provincial governments to invest in projects outside their jurisdictions.
- Encourage public-private partnerships where the government collaborates with private investors in clean energy projects. Such partnerships can leverage public resources, reduce capital costs, and share risks and rewards.
- Establish green finance mechanisms and investment funds that specifically support clean energy projects. These funds can attract investors interested in sustainable and environmentally friendly initiatives.
- Ensure that electricity tariffs and power purchase agreements (PPAs) reflect the true costs of clean energy production. Fair and cost-reflective pricing provides revenue certainty for project developers and investors.

ii. What can governments do to support creating a competitive investment climate for the electricity grid in Canada and attract sufficient private capital to fund the electricity grid's decarbonization and expansion?

Creating a Competitive Investment Climate:

- Establish a clear and stable regulatory environment that provides long-term visibility for investors. Predictable regulations reduce uncertainty and encourage private investment in clean energy projects.
- Provide policy certainty and consistency to assure investors that government commitments to clean energy will remain steadfast. Consistent policies contribute to a stable investment climate.
- Facilitate the creation of long-term PPAs between project developers and utilities. Long-term agreements provide revenue certainty, making projects more attractive to private investors.
- Introduce risk mitigation mechanisms, such as government-backed loan guarantees, insurance, or financial incentives. These instruments can help share risks between the public and private sectors, making projects more financeable.
- Encourage public-private partnerships where the government collaborates with private investors in clean energy projects. Such partnerships can leverage public resources, reduce capital costs, and share risks and rewards.
- Implement financial mechanisms, such as green bonds, to attract socially responsible investors to clean electricity projects.
- Foster market competition through transparent and competitive auction processes for clean energy projects. Competitive bidding can drive down costs and ensure efficient allocation of resources.

iii. What policies, programs, or other structural changes would support affordable and competitive electricity rates for all Canadians and businesses?

- Energy Efficiency Programs:
 - Introduce and expand energy efficiency programs targeting residential, commercial, and industrial sectors. These programs can reduce overall electricity demand, lowering costs for consumers.
- Demand Response Initiatives:
 - Implement demand response initiatives that incentivize consumers to adjust their electricity consumption during peak periods. This helps optimize grid operations and avoids the need for expensive additional capacity.
- Time-of-Use Pricing:
 - Implement time-of-use pricing mechanisms to encourage consumers to shift their electricity usage to off-peak hours when costs are lower. This can help flatten demand peaks and reduce the need for expensive infrastructure upgrades.
- Competitive Procurement Processes:
 - Foster competitive procurement processes for electricity generation projects. Competitive bidding can drive down costs, leading to more affordable rates for consumers.
- Innovative Financing Models:
 - Develop innovative financing models that enable utilities to fund capital-intensive projects at lower costs. This can help prevent the passing on of high upfront costs to consumers.
 - The government should consider phased financing to ease the initial financial burden on ratepayers, making the energy transition more affordable and socially acceptable in the long run.
- Transmission and Distribution Efficiency:
 - Invest in upgrading and modernizing the transmission and distribution infrastructure to enhance efficiency. Reduced transmission losses contribute to cost savings that can be passed on to consumers.
- Rate Design Reform:
 - Evaluate and reform rate design structures to ensure fairness and affordability for all consumer groups. This may involve adjusting rate structures based on income levels or consumption patterns.
- Cross-Border Energy Trade:
 - Facilitate cross-border energy trade to take advantage of regional variations in renewable energy production. Interprovincial and international cooperation can enhance energy reliability and affordability.
- Community-Owned Renewable Projects:
 - Encourage community-owned renewable energy projects to foster local engagement and benefit-sharing. This approach can contribute to social acceptance and support for the energy transition.
- Smart Grid Technologies and Energy Storage:

- Invest in smart grid technologies and energy storage that improve grid efficiency and allow for better management of energy resources. A smarter grid can lead to cost savings and more competitive rates.
- Inclusive Energy Planning:
 - Ensure inclusive energy planning that considers the needs and perspectives of diverse communities. This can prevent disproportionate impacts on vulnerable populations and promote equitable access to affordable energy.

iv. How can governments address the cost impact inequalities across and within electricity user groups (residential, commercial, and industrial) and provinces/territories?

Addressing Cost Impact Inequalities:

- Develop progressive rate structures that consider the ability to pay, ensuring that the cost burden is distributed equitably among residential, commercial, and industrial users.
- Implement income-based assistance programs to support low-income households facing potential electricity rate increases due to the transition to clean energy.
- Develop and expand energy efficiency programs explicitly targeting vulnerable and low-income groups to help reduce their overall energy bills and address energy poverty concerns.
- Conduct region-specific cost-benefit analyses to understand the unique challenges and opportunities in different provinces and territories. Tailor policies to address specific regional considerations and economic disparities.
- Maintain transparency in cost allocation methodologies to communicate how costs are distributed among different user groups clearly. This transparency fosters public understanding and trust in the fairness of the transition process.
- Incorporate long-term planning strategies to anticipate and address affordability challenges throughout the transition. This may involve phased implementation of cost adjustments and ongoing monitoring of socio-economic impacts.

4. Enhancing regional cooperation to take advantage of efficient, low-cost pathways to a net-zero grid.

- i. Do you think an improvement in regional integration and cooperation is required to meet electrification and decarbonisation targets? If so, what are the advantages and/or risks of deepened regional cooperation?

Importance of Regional Integration:

- Regional integration is crucial for meeting electrification and decarbonization targets, offering advantages such as optimized resource utilization, improved grid reliability, and sharing technological innovations.
- Strengthening regional cooperation is crucial for developing interprovincial transmission lines, fostering efficient trade of renewable energy across provinces to compensate for intermittent energy sources and ensure a reliable, interconnected grid.

- Risks may include challenges related to aligning diverse regulatory frameworks, addressing varying energy resource potentials, and ensuring equitable distribution of benefits.

ii. What general approach do you think could help advance regional integration and collaboration in Canada to meet electrification needs and goals?

General Approach for Regional Integration:

- Develop a collaborative framework at the federal level that encourages provinces and territories to work together on shared electrification goals, emphasizing the mutual benefits of regional integration.
- Establish a task force or working group dedicated to regional integration within existing federal or intergovernmental structures.

iii. What specific Canadian regional planning activities would advance the ability of provinces and territories to meet electricity needs and net-zero goals? What steps are required to foster dialogue among key system stakeholders to ultimately advance these actions/solutions? What challenges would need to be overcome?

Specific Planning Activities:

- Conduct comprehensive regional planning activities that assess each province or territory's unique strengths and challenges, identifying synergies for collaboration.
- Prioritize interprovincial transmission projects that enhance the flow of clean electricity between regions.
- Foster dialogue through regular forums involving key stakeholders, including utilities, regulators, Indigenous communities, and environmental organizations.
- Address regulatory misalignments by establishing a federal oversight mechanism that ensures coherence and consistency in regional integration efforts.
- Provide financial incentives, grants, or other support mechanisms to encourage provinces and territories to collaborate.

iv. What existing or new organisation/institution(s) are best placed to advance regional integration and cooperation amongst provinces and territories, and why?

For Atlantic Canada: FERC, NERC, NPCC, NEB and Provincial Utilities

5. Enabling electricity sector innovations that can reduce the cost and risk of the energy transition while maintaining grid reliability and resiliency

i. How could federal measures (including funding) support the development of new market capabilities, regardless of the local electricity market structure? What measures should be implemented in the short, medium, and long term to drive

local system changes to enhance innovation uptake at the distribution system level?

Federal Support for Market Capabilities:

- Short-Term Measures:
 - Establish a federal innovation fund to support short-term research and development projects focused on enhancing market capabilities, irrespective of local market structures.
 - Provide targeted grants and incentives for utilities and market participants to pilot and adopt innovative solutions.
- Medium-Term Measures:
 - Develop a federal framework for standardized market capabilities that can be customized to fit local electricity market structures.
 - Foster collaborations between federal agencies, provinces, utilities, and technology providers to share best practices and accelerate innovation.
- Long-Term Measures:
 - Implement a continuous funding mechanism to support ongoing innovation in market capabilities, ensuring adaptability to evolving energy needs.
- Establish a federal platform for knowledge exchange and collaboration to facilitate long-term innovation strategies.
 - ii. [How can financing from ratepayers and taxpayers be shared and effectively coordinated to create a more predictable investment context for innovation and operational changes to support reliability in a highly electrified future?](#)

Coordinated Financing for Innovation:

- Transparent Funding Mechanisms: Implement transparent funding mechanisms that clearly delineate the contributions from ratepayers and taxpayers. Establishing a clear understanding of financial responsibilities helps build public trust and ensures accountability in financing the transition.
- Public-Private Partnerships: Foster collaboration between public and private sectors to leverage both ratepayer funds and taxpayer support. Public-private partnerships can bring in additional capital, expertise, and innovation, creating a more robust financial framework for the energy transition.
- Long-Term Planning and Commitments: Develop long-term plans and commitments from government agencies, utilities, and relevant stakeholders. Providing certainty about the duration and scale of financial commitments allows for better planning and execution of innovative projects, promoting reliability in the electrified future.
- Incentives and Subsidies: Introduce targeted incentives and subsidies to encourage private investments in innovative technologies and operational changes. This can ease the financial burden on both ratepayers and taxpayers while promoting advancements in the energy sector.
- Risk Mitigation Strategies: Implement risk mitigation strategies to address uncertainties associated with innovative projects. This could involve creating dedicated funds for

handling unexpected challenges, ensuring that financial burdens do not disproportionately fall on ratepayers or taxpayers.

- **Community Engagement:** Engage communities in decision-making processes and ensure that their perspectives are considered in financial planning. This helps build social acceptance and support for the transition, making it more likely that ratepayers and taxpayers will endorse and contribute to funding initiatives.
- **Regular Communication:** Establish regular communication channels to keep the public informed about the financial aspects of the energy transition. Transparent communication builds understanding and support, reducing the likelihood of resistance to financial contributions.
- **Flexibility in Financing Models:** Explore flexible financing models that accommodate varying economic conditions and evolving energy needs. This may include adjustable tariffs, tax structures, or other financial instruments that can adapt to changing circumstances while maintaining reliability in the electrified future.

iii. **Where are the biggest gaps in electricity sector regulatory structures and policy levers in driving the development of technology innovation? Where would be effective points of intervention for the federal government?**

Addressing Regulatory Gaps:

- **Standardization and Interoperability:** Gaps exist in the standardization of technologies and interoperability of systems, hindering the seamless integration of innovative solutions. The federal government can intervene by establishing and promoting industry standards to ensure compatibility and encourage technology innovation.
- **Regulatory Uncertainty:** Ambiguities in regulations related to emerging technologies, such as energy storage and demand response, create uncertainty for investors and innovators. The federal government can provide clear and consistent regulatory frameworks, fostering an environment conducive to technology development and deployment.
- **Market Design and Pricing Mechanisms:** Current market structures may not adequately incentivize or value innovative technologies, such as distributed energy resources. The federal government can intervene by revising market designs and implementing pricing mechanisms that appropriately reward the contributions of innovative solutions to grid reliability and decarbonization.
- **Data Access and Privacy Concerns:** Incomplete or restrictive policies around data access and privacy hinder the development of smart grid technologies and data-driven innovations. The federal government can address these gaps by establishing robust data governance frameworks that balance privacy concerns with the need for data-driven innovations in the electricity sector.
- **Long-Term Planning and Investment Signals:** Lack of long-term planning and investment signals may deter private-sector investment in innovative technologies. The federal government can provide strategic planning initiatives, set clear targets, and offer financial incentives to signal the long-term commitment to technology innovation in the energy transition.

- Collaboration and Information Sharing: Limited collaboration and information sharing between stakeholders, including utilities, innovators, and regulatory bodies, can impede progress. The federal government can facilitate collaboration platforms, industry consortia, and research initiatives to encourage knowledge exchange and accelerate technology development.
- Grid Modernization Investment: Inadequate investment in grid modernization may limit the integration of advanced technologies. The federal government can intervene by allocating funds for research and development, pilot projects, and infrastructure upgrades that support the deployment of innovative solutions and grid modernization.
- Incentives and Support Programs: Limited financial incentives and support programs for technology innovation may hinder adoption. The federal government can create targeted incentives, grants, and support mechanisms to encourage the development and deployment of innovative technologies in the electricity sector.
- Regulatory Agility: Slow and cumbersome regulatory processes may impede the timely adoption of innovative technologies. The federal government can promote regulatory agility by streamlining approval processes, allowing for regulatory sandboxes, and encouraging experimentation within defined frameworks.
- Education and Capacity Building: A lack of expertise and awareness among regulators and industry participants about emerging technologies may be a barrier. The federal government can invest in educational programs and capacity-building initiatives to enhance knowledge and understanding of innovative solutions within the regulatory community.

iv. What methods, policies, and programs should be implemented to support greater customer participation in the electricity grid (including by local and Indigenous communities), and foster social license for and ensure benefits from electricity investments in Canada's net-zero transition?

Customer Participation and Social License:

- Community Energy Planning:
 - Implement community-based energy planning initiatives that involve local communities, including Indigenous groups, in the decision-making process for electricity projects.
 - Develop policies that require utilities to collaborate with communities in designing and planning energy projects to ensure they align with local needs and values.
- Community-Owned Renewable Energy Projects:
 - Establish supportive policies and financial incentives for the development of community-owned renewable energy projects, allowing local communities, including Indigenous groups, to have a direct stake in the energy transition.
 - Create programs that provide technical assistance and funding to support the establishment and operation of community-led renewable energy projects.
- Inclusive Energy Education:
 - Implement educational programs that increase awareness and understanding of energy systems, grid participation, and the benefits of renewable energy within

local communities. Collaborate with local schools, Indigenous communities, and community leaders to integrate energy education into outreach initiatives.

- Energy Efficiency Programs:
 - Develop and promote energy efficiency programs that empower customers to reduce their energy consumption and costs.
 - Provide financial incentives, rebates, or tax credits for energy-efficient upgrades, with a focus on supporting low-income households and community facilities.
- Feed-in Tariffs and Power Purchase Agreements:
 - Establish feed-in tariffs or power purchase agreements that guarantee fair compensation for electricity generated by local renewable energy projects, creating economic opportunities for communities.
 - Prioritize agreements that include community benefits, such as job creation, skills development, and revenue-sharing mechanisms.
- Regulatory Support for Microgrids:
 - Implement regulatory frameworks that support the development of microgrids, enabling local communities to generate, store, and manage their own electricity.
 - Provide financial incentives or grants for the establishment of community microgrids, especially in remote or off-grid Indigenous communities.
- Public-Private Partnerships:
 - Facilitate public-private partnerships that involve local communities in joint ventures with private entities for the development of renewable energy projects.
 - Ensure that these partnerships prioritize community engagement, benefit-sharing, and adherence to environmental and social standards.
- Community Benefit Agreements:
 - Encourage the negotiation and implementation of community benefit agreements that outline the specific benefits local communities will receive from electricity projects.
 - Include provisions for revenue sharing, job creation, skills development, and community infrastructure improvements.
- Public Awareness Campaigns:
 - Launch public awareness campaigns to inform citizens about the benefits of transitioning to a net-zero grid and the role of community participation.
 - Utilize various media channels and community events to foster understanding and support for electricity investments aligned with net-zero goals.

v. What innovative approaches to working should be adapted to enable our scarce resources to deliver on the energy transition objectives. How do we create practitioners in all the needed skills in a reliable, rapid, and scalable manner? How do we organize our currently siloed expertise to be able to better capture and imbed learnings into subsequent projects?

Innovative Approaches and Skill Development:

- Collaborative Training Programs:

- Establish collaborative training programs that bring together professionals from different sectors to learn and apply skills needed for the energy transition.
 - Facilitate partnerships between educational institutions, industry associations, and government agencies to design a comprehensive training curriculum.
- Cross-Sector Skill Exchanges:
 - Encourage cross-sector skill exchanges, allowing individuals to gain experience in multiple disciplines related to the energy transition.
 - Develop programs that enable professionals from traditional energy sectors to work on renewable energy projects and vice versa, fostering a diverse skill set.
- Digital Learning Platforms:
 - Implement digital learning platforms that offer flexible and accessible training modules for energy transition skills.
 - Leverage online resources, webinars, and virtual collaboration tools to provide ongoing education and upskilling opportunities for practitioners.
- Innovation Hubs and Collaborative Spaces:
 - Establish innovation hubs and collaborative spaces where professionals from different disciplines can work together on energy transition projects.
 - Create physical and virtual spaces that facilitate knowledge sharing, cross-disciplinary collaboration, and the development of innovative solutions.
- Integrated Project Teams:
 - Form integrated project teams comprising experts from various fields to work collectively on energy transition initiatives.
 - Encourage interdisciplinary collaboration to ensure that projects benefit from diverse perspectives and expertise throughout the entire project lifecycle.
- Public-Private Partnerships for Training:
 - Foster public-private partnerships to support training programs for energy transition skills.
 - Collaborate with industry partners to identify specific skill needs, develop targeted training initiatives, and provide real-world project experiences.
- Mentorship and Apprenticeship Programs:
 - Establish mentorship and apprenticeship programs that connect experienced professionals with those entering or transitioning into the energy sector.
 - Facilitate knowledge transfer and skills development through hands-on experiences and guidance from seasoned practitioners.
- Cross-Industry Collaborations:
 - Encourage cross-industry collaborations that bring together experts from energy, technology, finance, and other relevant sectors.
 - Facilitate forums, conferences, and networking events to promote knowledge exchange, identify common challenges, and explore synergies between industries.
- Certification Programs for Emerging Technologies:
 - Develop certification programs focused on emerging technologies relevant to the energy transition, ensuring that practitioners are equipped with the latest skills.

- Work with industry associations and certification bodies to establish recognized credentials for individuals proficient in key technologies.

Conclusion

The Conservation Council views the overarching strategy for this transition as crucially centered on achieving a delicate balance between environmental, social, and economic considerations. We hope our answers help the CEAC develop a robust set of recommendations for the federal government.