ELECTRIFYING CANADA

Electrifying Medium- and Heavy-Duty Fleets

Supported by

IISD International Institute for Sustainable Development

dunsky Energy + Climate

May 2022

Published by the International Institute for Sustainable Development

Electrifying Medium- and Heavy-Duty fleets

May 2022

Cover photo: iStock

Citation: Electrifying Canada. (2022). *Electrifying medium- and heavy-duty fleets. International Institute for Sustainable Development.* https://www.iisd.org/system/files/2022-05/electrifying-medium-heavy-duty fleets-en.pdf

About Electrifying Canada

Electrifying Canada is a business-led task force aiming to accelerate electrification across Canada to reach net-zero by 2050. As business leaders, we are eager to collaborate with government, Indigenous, and civil society leaders to translate electrification ambition into action. The Electrifying Canada task force is affiliated with the Energy Transitions Commission and funded by its founding members. Learn more at electrifyingcanada.ca.

Members:

BMO

Cameco

First Nations Major Projects Coalition

INNERGEX
Renewable Energy.
Sustainable Development.

IVEY foundation

Teck

Ontario Power Generation

IISD
International Institute for Sustainable Development

dunsky
Energy + Climate

Advisors:

Energy Transitions Commission

About the Research

Research for the Electrifying Canada task force is provided by Dunsky Energy + Climate Advisors. Dunsky's team of nearly 50 specialists across the buildings, transportation, industry, and energy supply sectors is proud to serve as the task force's research arm.

This report is a collective view of the Electrifying Canada task force and may not represent the individual viewpoints of members and/or their respective organizations.

Table of Contents

List of Figures

List of Boxes

1. Turning Net-Zero Ambition Into Action on Fleet Electrification

Transportation is a major driver of Canadian greenhouse gas (GHG) emissions that must be addressed to meet our net-zero by 2050 climate targets. Ranked by economic sector, emissions from transportation are second only to the oil and gas sector (Environment and Climate Change Canada, 2022b). Switching from internal combustion engines (ICE) to electric-powered motors—whether that electricity comes from on-board batteries, overhead catenaries, or hydrogen fuel cells—can dramatically reduce transportation emissions while leveraging Canada's clean electricity advantage.

The Electrifying Canada task force is targeting market segments where transformation is slower because the policy and technical directions are less clear and where businesses have significant GHG emission reduction opportunities. For the transportation sector, these criteria lead us to focus on on-road medium- and heavy-duty vehicle (MHDV) fleets (off-road MHDV electrification is covered in our Industrial Electrification brief).

1.1 State of Play

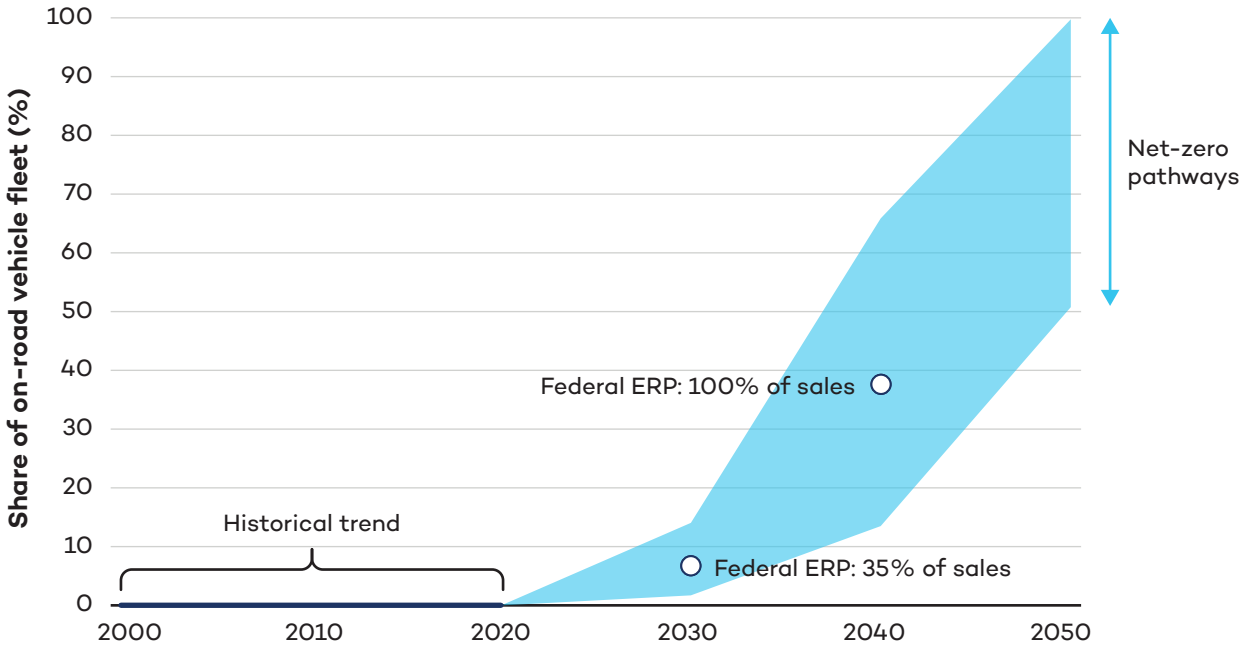
Electrifying transportation has shown early promise in Canada. Light-duty vehicle adoption has been supported by federal, provincial, and Indigenous community efforts to reduce or remove barriers to electric vehicle (EV) ownership while also ensuring market availability through zero-emission vehicle (ZEV) sales requirements. Light-duty EV sales reached 5% of new vehicle sales across Canada in 2021 (including a high of 13% of sales in B.C.) (IHS Markit, 2022), and the federal government has committed to a mandate that 100% of light-duty vehicle sales will be zero emission by 2035. To reduce emissions from MHDVs, the recent Emission Reductions Plan outlined the federal government's intention to require 35% zero emissions in total MHDV sales by 2030 and 100% zero emissions for a subset of vehicle types by 2040 (Environment and Climate Change Canada, 2022a). These goals align with the federal government's commitment under the *Global Memorandum of Understanding on Zero-Emission Medium-and Heavy-Duty Vehicles*, which aims for 100% ZEV sales by 2040 and has been signed by 14 other countries (CALSTART, 2022).

Corporate uptake of light-duty EVs is supported by a strong business case for electrification in many vehicle segments. These electric light-duty fleets commonly have lower lifetime costs than ICE fleets thanks to much greater efficiency—which lowers fuel costs—and lower maintenance requirements. Given this promising business case, transportation electrification is ramping up in light-duty fleets across the country.

But the electrification of MHDV classes is running a few years behind the light-duty market. Despite its potential, MHDV electrification is not yet happening at the pace and scale needed to achieve significant emission reductions. Our meta-analysis of pathways to net-zero highlights

a critical transformation in the fuel used to power MHDV transport. In each study reviewed, electricity moves from being a minor player in on-road transportation to powering the majority, if not all, of the MHDV vehicles on the road in Canada by 2050, as shown in Figure 1.

Figure 1. Across numerous studies, a significant increase in the portion of MHDVs powered by electricity is required to reach net-zero



Source: Produced by Dunsky Energy + Climate Advisors for Electrifying Canada, 2022.

Data source for historical trend: Natural Resources Canada, 2022.

Data sources for net-zero pathways: Electric Power Research Institute, 2021; Langlois-Bertrand et al., 2021; Larson et al., 2021. Sales targets: Federal Emission Reductions Plan (ERP): Environment and Climate Change Canada, 2022a.

Fortunately, MHDV electrification is rapidly evolving with major original equipment manufacturer (OEM) innovations in recent years, leading to a rush of models arriving or announced in the market. A growing number of companies are piloting and expanding electric options in their light-, medium- and heavy-duty fleets to meet corporate climate targets and take advantage of a strengthening business case. Fleet electrification offers one of the most cost-effective emission mitigation options available to Canadian businesses.

Three big wins for corporate Canada

We see three big wins from the electrification of MHDVs in Canada:

1. Significant GHG emission reductions

Transportation emissions are a major direct or indirect contributor to corporate emissions. MHDV electrification can dramatically reduce these emissions to meet corporate climate targets and support customer preferences for lower life-cycle GHG products and services.

2. Reduced total cost of ownership for MHDV fleets

Fleet owners and operators can benefit from lower lifetime operational costs of EVs in many MHDV classes today. The higher upfront investment is balanced by lower fuel and maintenance costs, and the upfront costs are coming down thanks to OEM innovation and increased competition as more new models enter the market each year.

3. Fostering Canada's ZEV industry

There is a major economic opportunity to grow Canada's domestic ZEV supply chain. Canada's competitive advantage in this sector comes from our natural and human resources, our clean energy, and our ability to compete throughout the entire supply chain: from mines to manufacturing plants. Increasing ZEV adoption in Canada can be a win–win for slashing emissions and supporting Canadian manufacturing.

1.2 Key Barriers to Corporate MHDV Fleet Electrification

Our research and interviews with Canadian and Indigenous corporate leaders identified three main barriers to corporate MHDV fleet electrification that will need to be overcome to reach net-zero:

1. **Constrained vehicle supply:** OEM manufacturing capacity of vehicles is currently limited for some classes, with demand outstripping supply and presenting fleet operators with long waitlists. In other cases, particularly where the vehicle class is more niche, there are no EV options available or the available options do not yet offer a sufficiently robust business case.
2. **Charging constraints:** Many fleet operators have electrical capacity concerns, specifically: Can their depot manage the electricity supply needed to power their fleets? Upgrades may be required at the building or the substation level; currently, who is responsible and the process for navigating and paying for these upgrades are unclear. While many fleets will rely on depot charging, some fleets will need public charging to support smooth operation, especially long-distance fleets. There remains uncertainty

regarding who will deploy public MHDV charging and where and when it will become available.

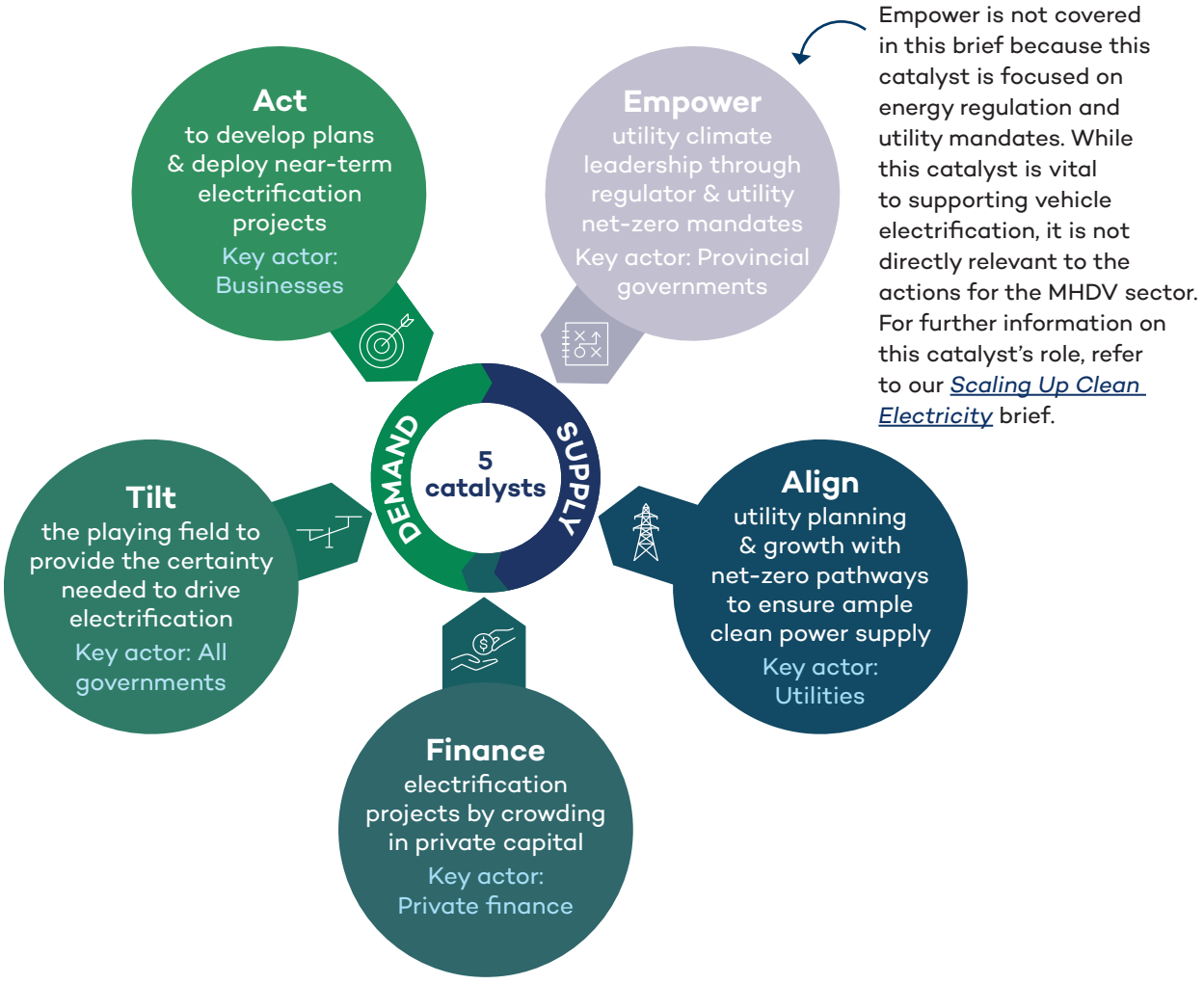
3. **Operational implementation challenges:** The increased capital expenditure for EVs (compared to ICE vehicles) can be difficult to finance. Further, there is limited internal capacity to electrify fleets, which requires navigating the planning process and securing the skills required to manage fleet charging and EV maintenance. Given these challenges, some fleet operators are tempted to wait for the next generation of EVs, delaying the electrification process and the emission reduction benefits.

Despite these barriers, innovative solutions are being tested and implemented across the country to electrify MHDV fleets.

2. Seizing the Opportunity: Five catalysts to accelerate electrification

Canada has a transformational opportunity to meet our net-zero target by leveraging the competitive advantage offered by our clean electricity. However, our research finds that while Canada has huge opportunities and significant advantages, we also face a significant risk: complacency. **Without clear direction, proactive planning, and bold decisions, we will not be successful in overcoming the barriers to electrification** identified above. Failure to do so means losing out on our competitive advantage, vastly increasing transition costs and risks, and foregoing significant opportunities.

Figure 2. Five catalysts to accelerate electrification



But it is clear that whether we succeed or fail is up to us. **Achieving electrification at the pace and scale needed requires the proactive and collaborative efforts of all stakeholders**—electricity producers, end users, regulators, and policy-makers—across the electricity value chain. Meeting Canada's net-zero target is a significant challenge, and clean electrification is the single most valuable tool to reduce emissions. That is why we, as leaders from the nation's private sector, have identified **five evidence-based catalysts to initiate and enable electrification** (Figure 2). This brief translates the catalysts and their implications for MHDV fleet electrification.

2.1 Act to Electrify Fleets via Near-Term Plans and Projects

Setting long-term climate action targets is an important first step toward corporate responsibility. However, meeting future targets requires actions in the present to reduce fleet emissions.

Why?

Many corporations have long-term climate targets, but fleet electrification plans are lagging. By translating climate targets into near-term plans, companies will lend urgency to the action needed today. Fleet electrification already has a strong business case for many fleets, and with the urgency of climate action, it can serve as a highly cost-effective emission reduction solution.

Call to Action: Businesses must develop near-term business plans, pilots, and projects to electrify fleets.

Canadian corporations, ourselves included, must translate long-term corporate climate targets into action: near-term plans and pilots for fleet electrification.

Preparing for fleet electrification will vary by organization. Fleet planning and procurement will need to be revised to incorporate electric vehicles, including pilots, with consideration given to the availability of models and current waitlists. Fleet plans will need to incorporate depot preparation—charging infrastructure and energy management systems—along with staff training and knowledge sharing within the sector.

Businesses do not need to act alone. There is a growing transportation electrification services sector that provides a range of services to support fleet planning, depot electrification, vehicle financing, and other services. These services are offered independently and as turnkey services. Leveraging these private sector services will reduce the barriers to implementation and support this emerging industry.

Goal:

This catalyst aims to:

- Electrify company fleets through fleet electrification plans, pilots, and projects.
- Support measurable near-term progress toward long-term corporate climate targets.

- Build internal and sectoral capacity through project learning and knowledge sharing.
- Develop the emerging Canadian transportation electrification services sector to support scaled up efforts.

Spotlight: Purolator Canada's fleet electrification aims for net-zero

Purolator Canada has committed to "work towards achieving net-zero emissions by 2050" (Purolator Inc., 2021b). This commitment leverages its work tracking GHG emissions since 2007. In 2020 its owned fleet accounted for 32% of emissions, and the company began to work with an external firm to set "ambitious, achievable and verifiable GHG emission reduction targets for 2030" (Purolator Inc., 2021a, p. 31). These efforts to translate its 2050 net-zero target into near-term targets have propelled Purolator to make significant efforts to decarbonize its operations, including its fleet.

In 2021, Purolator became the first national courier to deploy fully battery-electric delivery vehicles with the deployment of five fully electric 18-foot curbside delivery trucks in Vancouver (Sarabia, 2021). These vehicles expand on its low-carbon fleet, which has piloted and deployed 186 hybrid-electric vehicles, three electric low-speed vehicles, and 10 e-cargo bikes across the country (Purolator Inc., 2021a).

2.2 Align Utility Planning and Growth With Net-Zero Pathways to Ensure Ample Electricity Supply for MHDV Electrification

Align and optimize utility planning with net-zero pathways to ensure all customers have enough clean power where they need it and when they need it to electrify fleets.

Why?

Proactive utility planning and outreach to fleets will be necessary to understand capacity and demand needs. Electrification of MHDV fleets requires a transformation in the way these vehicles are powered in Canada by mid-century. The current reactive approach to utility capacity planning will not support transportation electrification at the scale and pace needed to meet our net-zero target. Utilities, system planners, and system operators need to assess the impacts of additional generation needed to support increased demand, as well as the distribution capacity of local substations. In addition, planning that engages with fleets can allow utilities to better prepare for the peak demand impacts of electrification. Support for networked charging, energy management systems, and other time-switching tools can allow utilities to prepare for and mitigate peak demand from charging.

Further, corporate fleets require support to navigate electrification. Utilities can provide educational (e.g., knowledge sharing or best practices) or financial (e.g., cost-sharing capacity upgrades) support to smooth the transition and help "sell" fleet electrification.

Call to Action: Governing bodies of utilities and planning authorities must proactively align plans and investments to achieve net-zero emissions from MHDV transportation.

The governing bodies of utilities and planning authorities must focus planning and action on scenarios aligned with pathways to net-zero. This shift would allow utilities to expand their focus to include decarbonizing economy-wide energy use, including for MHDV transportation.

Utility resource planning should expand beyond the traditional capacity planning to proactively assess and plan for the electricity supply needed for fleets ramping up over time to 100% ZEVs, which could include 80%–90% electric vehicles, by 2040 (see Figure 1). For depot charging, utilities can assess their grids and substation capacities to ensure that customers with MHDV fleets are able to electrify fleets in the near term. For public charging, utilities can support highway infrastructure that allows megawatt-scale charging for long-haul transportation.

Goal:

This catalyst aims to:

- Ensure Canadian businesses have enough clean power to electrify their fleets.
- Encourage utilities to become proactive champions of electrification and to bridge the gap between fleet electrification needs and utility planning.
- Improve awareness of utilities regarding their central role in accelerating fleet electrification to reach economy-wide climate targets.

Spotlight: Ontario Power Generation offers turnkey fleet electrification

Ontario Power Generation (OPG) launched a new subsidiary, PowerON Energy Solutions, in 2021 to provide turnkey electrification services to public transit and other corporate fleets looking to electrify. This service offers fleet operators all-electrical infrastructure from the electricity grid connection to vehicle chargers, including infrastructure delivery, operations and maintenance, on-site generation, battery storage and backup power, smart charging, and energy management (OPG, 2021).

PowerON also provides financial services, including financing and charging-as-a-service (PowerON Energy Solutions, 2022). These services support OPG's goal to be net-zero by 2040 and to act on economy-wide emissions, including transportation. It has expanded the service pilot to a 20-year agreement with the Toronto Transit Commission to design, build, operate, and maintain the charging and related electrical infrastructure to power the transit service's electric bus fleet (OPG, 2022).

2.3 Tilt the Playing Field Toward Decarbonization by Establishing a ZEV Mandate for MHDVs

Facilitate greater investment certainty by requiring new vehicles to be ZEVs, with clarity on the classes that fall under the requirement and interim and full target timelines. Setting zero-emission sales mandates allows flexibility in how the private sector meets the requirement while ensuring a decline in emissions over time.

Why?

MHDV fleet operators are actively working to advance electrification because it is cost-effective from a total-cost-of-ownership perspective. However, a market lag exists with a lack of near-term vehicle availability in some classes and no availability (or no cost-effective availability) in other classes. Regulation is needed to provide market certainty for OEMs and fleets alike and to ensure timely and widespread electrification of MHDVs while supporting local opportunities throughout the supply chain.

Utilities and their system planners are currently hesitant to plan and build their electricity supply and distribution grids for MHDV electrification. Fleet electrification is not seen as a given for fleets with a strong business case, and even less so for long-haul fleets where there is uncertainty around whether electricity will come from on-board batteries, overhead catenaries, or hydrogen fuel cells. Establishing a ZEV mandate provides certainty about the scale and timing of MHDV adoption, enabling utilities to plan accordingly.

Call to Action: The federal and provincial governments must set ZEV sales mandates for MHDVs.

The federal government must follow through on its commitment to set a ZEV sales mandate for MHDVs. Provincial governments must set provincial mandates to reinforce federal efforts and guarantee provincial requirements and vehicle supply, even if federal policy changes.

Goal:

This catalyst aims to:

- Level the playing field by requiring—not simply encouraging—decarbonization so that early movers are not disadvantaged in the transition.
- Ensure MHDV vehicle supply matches industry demand.
- Enable utilities to plan for near-term, large-scale MHDV electricity demand.

Spotlight: Setting sights on zero-emission MHDV transportation

In Canada, there are no requirements for MHDV transportation, but there are important policies in the works. The federal Emission Reductions Plan outlined its intention to require 35% of total MHDV sales to be zero emission by 2030 and 100% by 2040 for a subset of vehicle types (Environment and Climate Change Canada, 2022a). The federal government also signed the *Global Memorandum of Understanding on Zero-Emission Medium- and Heavy-Duty Vehicles*, targeting 100% of new sales for zero-emission medium- and heavy-duty buses and trucks by 2040 (CALSTART, 2022). B.C.'s CleanBC Roadmap to 2030 committed to setting new standards for MHDVs that are aligned with leading jurisdictions (Government of British Columbia, 2021). Quebec has also outlined plans to set an MHDV target in its 2030 Green Economy Plan (Gouvernement du Québec, 2020).

The federal, B.C., and Quebec governments have all noted that they looked to the leading jurisdiction in North America for guidance: California and its Advanced Clean Truck (ACT) regulation. The ACT regulation aims to develop strategies to achieve 100% ZEV short-haul and drayage trucks by 2035 and a full transition to ZEV buses and heavy-duty long-haul trucks by 2045, where feasible. This regulation, the first of its kind, requires manufacturers to sell between 5% and 9% of heavy-duty ZEVs beginning in 2024, depending on the class and up to between 30% and 50% by 2030. For 2035 and beyond, ZEVs as a percentage of annual sales must be a minimum of 40% to 75% (California Air Resources Board, 2021).

2.4 Finance Fleet Electrification by Crowding in Private Investment

Channel interest in private investment through innovative public–private–Indigenous approaches to finance fleet electrification and charging.

Why?

Electric vehicles require additional upfront capital compared to ICE vehicles and have different returns on investment and risks. Many MHDV fleets have a strong business case for electrification, making this sector one of the most cost-effective for electrification. However, fleet operators are sometimes encountering the limited availability of financing for this new business case, slowing the pace and scale of fleet turnover and charging infrastructure installation. Public–private collaboration can design innovative deals to support electrification while mitigating risk. Innovative products are especially needed in niche sectors with more challenging business cases, such as public charging, small fleets, and niche MHDV classes.

Call to Action: Develop innovative public–private financing initiatives for high capital expense vehicles, niche vehicle classes, and charging infrastructure.

Public and private financial institutions must develop financing initiatives and products to fund MHDV electrification. These initiatives should convene actors and launch new financial products. Convening public, private, and Indigenous partners can support the co-development of new financial products to use public funds to mitigate some—but not all—project risk. This type of public investment, which is exemplified by the Canadian Infrastructure Bank, can leverage broader, long-term private investment.

Goal:

This catalyst aims to:

- Address upfront capital needs and improve opportunities for available private capital.
- Replace widespread public incentives with targeted incentives for the most challenging business cases and vehicle classes.
- Enable utilities to plan for near-term, large-scale MHDV electricity demand.

Spotlight: Turnkey fleet electrification services

Fleet electrification is presently cost-effective for many operators, which has led to the emergence of private actors offering turnkey services in convenient packages to fleet operators that pair financing with other logistics, such as fleet planning, procurement, and charging. These companies take on the technology risk from the fleet operators who do not necessarily have the expertise or capital to transition their fleets.

OPG's PowerOn offers financing in its turnkey model, outlined in the **Align** spotlight above. Other actors are also beginning to offer financial products. For example, 7Gen, a B.C.-based service provider, offers customers leasing projects that cover charging infrastructure and EVs for commercial fleet managers, including IKEA Canada (Bulowski, 2022). In addition, Lion Electric, a Quebec-based electric bus and truck manufacturer, recently launched Lion Capital Solutions to offer MHDV financing, including leases, and carbon credit monetization (Lion Capital Solutions, 2022).

References

Bulowski, N. (2022, January 12). The Canadian startup accelerating electrification of vehicle fleets. *National Observer.* https://www.nationalobserver.com/2022/01/12/news/canadian-startup-accelerating-electrification-vehicle-fleets

California Air Resources Board. (2021, August 20). *Advanced clean trucks fact sheet: Accelerating zero-emission truck markets.* https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-trucks-fact-sheet

CALSTART. (2022). *Global memorandum of understanding on zero-emission medium- and heavy-duty vehicles.* https://globaldrivetozero.org/mou-nations/

Electric Power Research Institute. (2021, September 28). *Canadian national electrification assessment: Electrification opportunities for Canada's energy future.* https://www.epri.com/research/programs/109396/results/3002021160

Environment and Climate Change Canada. (2022a, March 29). *2030 Emissions reduction plan – Canada's next steps for clean air and a strong economy.* https://www.canada.ca/en/environment-climate-change/news/2022/03/2030-emissions-reduction-plan--canadas-next-steps-for-clean-air-and-a-strong-economy.html

Environment and Climate Change Canada. (2022b, April 14). *Canada's official greenhouse gas inventory: GHG Emissions for Canada by Canadian economic sector, 1990-2020 (Table A10-2).* https://data.ec.gc.ca/data/substances/monitor/canada-s-official-greenhouse-gas-inventory/B-Economic-Sector/

Gouvernement du Québec. (2020). *Plan pour une économie verte 2030: Plan de mise en œuvre 2021–2026.* https://www.quebec.ca/gouv/politiques-orientations/plan-economie-verte/

Government of British Columbia. (2021). *CleanBC Roadmap to 2030.* https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf

IHS Markit. (2022). *Automotive insights - Canadian EV information and analysis Q4 2021.* https://ihsmarkit.com/research-analysis/automotive-insights-canadian-ev-information-analysis-q4-21.html

Langlois-Bertrand, S., Vaillancourt, K., Beaumier, L., Pied, M., Bahn, O., & Mousseau, N. (2021, November 12). *Canadian energy outlook 2021 — Horizon 2060.* Institut de l'énergie Trottier & e3c Hub. http://iet.polymtl.ca/energy-outlook/

Larson, E., Greig, C., Jenkins, J., Mayfield, E., Pascale, A., Zhang, C., Drossman, J., Williams, R., Pacala, S., Socolow, R., Baik, E. J., Birdsey, R., Duke, R., Jones, R., Haley, B., Leslie, E., Paustian, K., & Swan. A. (2021, October 29). *Net-zero America: Potential pathways, infrastructure, and impacts. Final report.* Princeton University, Princeton, NJ. https://netzeroamerica.princeton.edu/the-report

Lion Capital Solutions. (2022). https://pages.thelionelectric.com/lion-capital-solutions/

Natural Resources Canada. (2022). *Comprehensive energy use database*. https://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/menus/trends/comprehensive_tables/list.cfm

Ontario Power Generation (OPG). (2021, October 5). *OPG subsidiary to PowerON electric vehicle fleets.* https://www.opg.com/media_releases/opg-subsidiary-to-poweron-electric-vehicle-fleets/

Ontario Power Generation. (2022, February 11). *PowerON and TTC agree to drive transit electrification.* https://www.opg.com/media_releases/poweron-and-ttc-agree-to-drive-transit-electrification/

PowerON Energy Solutions. (2022). https://poweronenergy.ca/

Purolator Inc. (2021a, October 25). *2020 sustainability report.* https://www.purolator.com/sites/default/files/2021-10/purolator-corporate-social-responsibility-report.pdf

Purolator Inc. (2021b, March 29). *Purolator hits the road as first national courier to deploy fully electric delivery vehicles* [Press release]. https://www.purolator.com/en/articles/purolator-hits-road-first-national-courier-deploy-fully-electric-delivery-vehicles

Sarabia, L. (2021, March 30). *Purolator debuts five 18-foot, fully electric delivery trucks in Vancouver.* Electric Autonomy Canada. https://electricautonomy.ca/2021/03/30/purolator-electric-trucks-vancouver/

Annex 1. Electrifying Canada

Members

- Richard Florizone – President and CEO, IISD (co-chair)
- Susan McGeachie – Head, BMO Climate Institute (co-chair)
- Chris Adachi – Director, Climate Change, Teck Resources
- James Brewer – Vice President of Corporate Strategy and Business Development, OPG
- Philippe Dunsky – President, Dunsky Energy + Climate Advisors
- Niilo Edwards – Executive Director, First Nations Major Projects Coalition
- Colleen Giroux-Schmidt – Vice President, Corporate Relations, Innergex Renewable Energy Inc.
- Grant Isaac – Chief Financial Officer, Cameco
- Bruce Lourie – President, Ivey Foundation
- Michael Torrance – Vice President, Chief Sustainability Officer, BMO Financial Group

Secretariat

- Jane McDonald – Project Director
- Stephanie Cairns – Project Coordinator
- Philippe Dunsky – Research Lead
- Dan Woynillowicz – Communications Lead
- Mathieu Lévesque – Research Coordinator
- Richard Bridle – Research Support
- Vanessa Farquharson – Communications
- Bill Hamlin – Stakeholder relations

Advisors to the Electrifying Canada task force

- Ita Kettleborough, Energy Transitions Commission
- Philip Lake, Energy Transitions Commission


ELECTRIFYING
CANADA