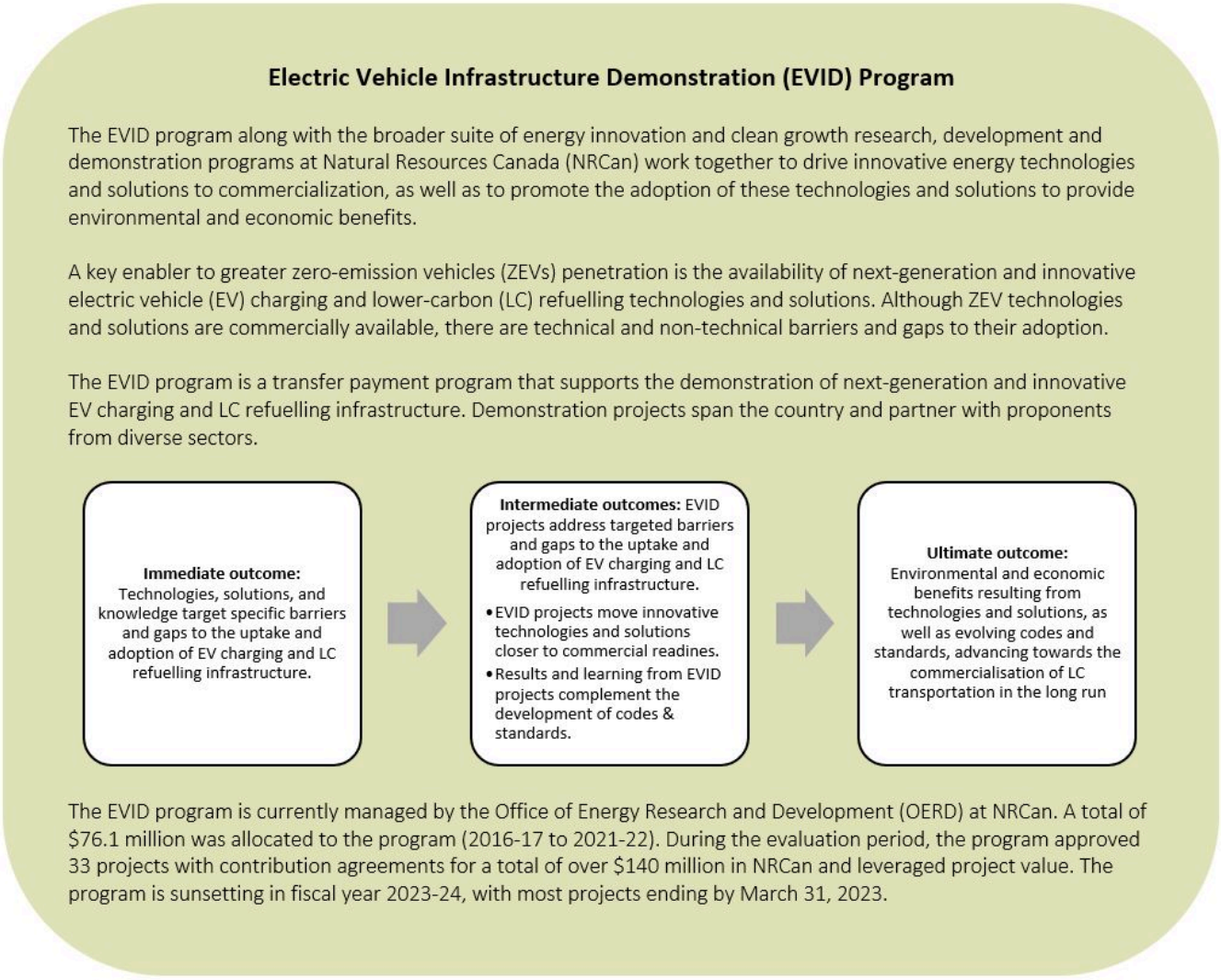
Summary of the Evaluation of the Electric Vehicle Infrastructure Demonstration (EVID) Program



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The figure illustrates the relationships between the expected results of the DIVE program. One arrow points from the immediate result to the intermediate results, and another from the intermediate results to the ultimate result.

The immediate outcome is: “Technologies, solutions, and knowledge target specific barriers and gaps to the uptake and adoption of EV charging and LC refuelling infrastructure”.

There are three intermediate outcomes: “EVID projects address targeted barriers and gaps to the uptake and adoption of EV charging and LC refuelling infrastructure”. “EVID projects move innovative technologies and solutions closer to commercial readiness.” “Results and learning from EVID projects complement the development of codes & standards.”

The ultimate outcome is: “Environmental and economic benefits resulting from technologies and solutions, as well as evolving codes and standards, advancing towards the commercialisation of LC transportation in the long run”.

What the Evaluation Found

Relevance

Canada has several targets and priorities to reduce greenhouse gases (GHG) emissions from the transportation sector.

- New light-duty vehicle sales that are ZEVs – at least 20% by 2026, at least 60% by 2030, and 100% by 2035.
- Total medium- and heavy-duty vehicle sales that are ZEVs – at least 35% by 2030 and 100% by 2040 for a subset of vehicle types based on feasibility.

The evaluation found that the EVID program is strategically aligned with stakeholders' needs in advancing the adoption of ZEVs and achieving GHG reductions in the transportation sector. EV charging and LC refuelling infrastructure is a critical enabling mechanism to increase ZEV adoption, which will ultimately help reduce GHGs. The ZEV sector, particularly EV charging and LC refuelling infrastructure, is a young and an emerging industry. There is a continued need for prioritizing these objectives to support Canada's decarbonization and transition to a low-carbon future. The program fills a unique niche by addressing needs and priorities in the Canadian context, such as in cold climates, partnering with Indigenous communities, and ensuring pan-Canadian interoperability.

Progress in this area would be more challenging and slower without federal support. The EVID program as a "kick-start" was well timed to be positioned for growth in the sector and was complementary to other initiatives and programs to electrify the transportation sector, as well as to achieve the Government of Canada and NRCan's targets and commitments. The federal government was perceived to play a vital role in enabling pan-Canadian interoperability of EV charging and LC refuelling infrastructure. The evaluation found that Canada is one of the few countries that support the demonstration of next-generation and innovative EV charging and LC refuelling infrastructure.

Effectiveness

The evaluation found that the EVID program achieved its planned outputs. The program has a diverse list of key stakeholders (e.g., provinces, utilities, industries) and partners (including Indigenous communities). Every demonstration project has collaborations among different cohorts (e.g., utilities, academia, vendors). Knowledge products and events have been

generated (e.g., research papers, social media posts, contributions to international standards). Knowledge gained is also disseminated through various platforms and networks.

A notable event is the **OERD's EVID Symposium and Consultation** (2021). The symposium aimed to share information about a range of demonstration projects; to share perspectives and priorities for addressing key barriers and challenges; and to identify key opportunities, barriers, and challenges to accelerate the market entry of next-generation and innovative EV charging and LC refuelling infrastructure. Symposium attendees rated the event as "very good" and perceived it as important to further advance their demonstration projects.

The EVID program has achieved its immediate outcome. The program has at least one demonstration project for each of its key areas or priorities (see insert box below). The program adapted to meet the growing needs and evolving nature of the sector, ensuring that suitable projects are selected to address the barriers and gaps. The program has enabled the generation of vendor innovation (e.g., a novel charging solution that could work for human-operated vehicles and self-driving vehicles), capital assets (e.g., charging points that connect several areas in the North), learning and transferable skills (e.g., ability to test the Open Charge Point Protocol), and valuable relationships (e.g., First Nations partners have become strong advocates for electric mobility).

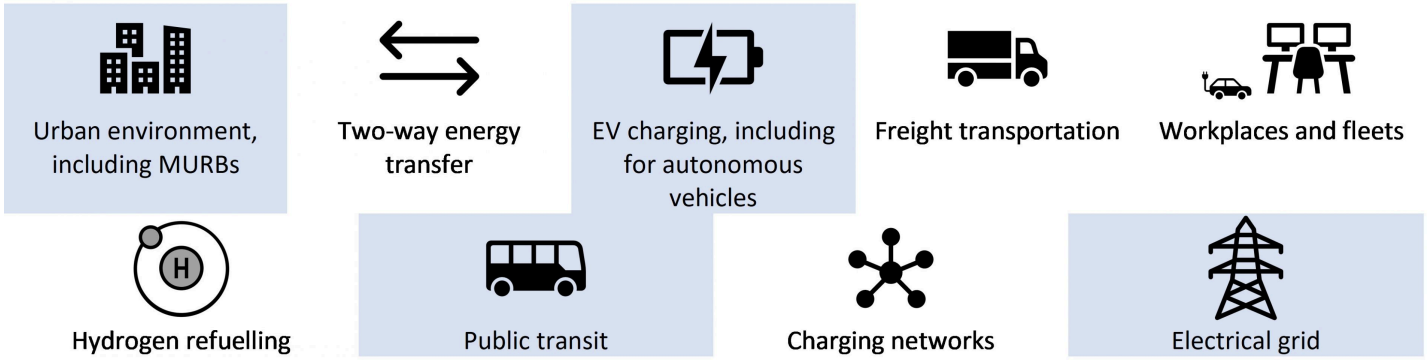

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Figure four: Program priority areas, is an infographic showing the EVID program priority areas: urban environment, including MURBs; two-way energy transfer; EV charging, including autonomous vehicles; freight transportation; workplaces and fleets; hydrogen refuelling; public transit; charging networks; and electrical grid.

During the evaluation period, it was too early to fully evaluate the intermediate and ultimate outcomes. The time range for energy innovation from invention to widespread deployment could take at least 20 years. The EVID program does not have complete results yet. However, knowledge, technologies, and solutions generated by the demonstration project thus far suggests that the program is moving in the right direction to achieve its long-term outcomes.

The evaluation did not find any negative unintended outcomes directly attributed to the EVID program. A positive unintended outcome of the program was the development of standardized transit-industry-specific performance indicators. The evaluation also found that the EVID program and some of its funded projects have considered equity, diversity and inclusion (EDI) factors, although the program is not specifically designed to address EDI.

Efficiency and Economy of the Program Model

The evaluation found that the EVID program's timeline was the most significant difference between the planned versus actual design. Several external factors affected proponents' demonstration projects, which ultimately shifted proponents' timelines. The need to accommodate proponents' circumstances affected the program's internal operation. The original timeline and the lack of flexibility in the funding structure were perceived to be the most significant limitations. However, the EVID program's design was generally perceived as efficient and economical for its risk tolerance level. The program was responsive to these factors, including the challenges caused by the COVID-19 pandemic, within allowable parameters. The program design has some strengths, including the common OERD infrastructure and processes that allow the program to leverage existing OERD resources. Consequently, the program could pivot and adapt to the evolving program context, resulting in a largely successful program implementation.

The EVID program has a performance measurement approach in place, which was developed in early 2017 to reflect requirements specified in the Treasury Board (TB) *Policy on Results*. The program's current performance measurement approach provides a basic understanding of program performance, but it prevents the program to capture all relevant information on program impact. The OERD is currently trying to address this limitation. Project reporting requirements were not perceived to be burdensome and were perceived to be effective. However, proponents noted that the program could clarify the requirements of the reporting templates and consider sensitivities when reporting on knowledge products.

The full version of the evaluation report is available on Natural Resources Canada’s website.

The evaluation identified several lessons learned, best practices, and alternative program design. A notable lesson learned is the value of a recurring platform to facilitate discussion and collaboration among proponents and stakeholders to help advance the demonstration projects and sector as a whole.

Recommendations	Management Response and Action Plan

Recommendation 1: The ADM, EETS should clarify the requirements of reporting templates for the EVID program to ensure that proponents are clear on the information being requested and to facilitate consistency in reporting approach among proponents.	• **Management agrees** to update its program reporting guide to further articulate its expectations for how individual proponents are to complete reporting templates, including to identify more clearly which of the standardized energy research, development and demonstration (RD&D) program key performance indicators are relevant to specific projects and will be part of the proponent's required reporting. • To support this action plan, OERD will add further details to the project reporting guide to clarify additional requirements. OERD will also continue to hold annual webinars for proponents to review reporting requirements and will continue to meet individually with proponents requiring additional support. Moving forward OERD will more clearly document the requirements of individual projects. These actions will help to ensure that proponents are clear on their individual reporting requirements. **Position responsible:** DG, OERD on behalf of the ADM, Energy Efficiency and Technology Sector. **Timing:** April 1, 2024

Recommendation 2: The ADM, EETS should explore avenues to support a recurring platform that facilitates discussion and collaboration among proponents and key stakeholders about challenges, lessons learned, priorities, and opportunities to stimulate advancement in the demonstration projects and sector.	• **Management agrees** that the EETS should explore opportunities to further collaboration amongst key stakeholders. • To bolster broader collaboration, the OERD will work with third party organizations such as industry associations to engage with industry stakeholders to advance electric vehicle knowledge sharing and create opportunities for collaboration on various priority topics such as ZEV technologies, charging and hydrogen refueling infrastructure, and infrastructure standards. The third-party organization will target specific technology priorities, meet with key stakeholders to advance the knowledge and report on progress. • EETS will also participate in industry-led zero-emission vehicle forums, such as Electric Mobility Canada's annual Conference to foster stakeholder collaboration and others as the opportunity arises, discuss funded projects, identify lessons learned and to help champion the advancement of the sector. • To foster more continual engagement, EETS is reorienting its online Collaboration Community to serve active program proponents and stakeholders, and more easily

	disseminate results and insights from projects than formal events and standard departmental reporting practices offer. The EETS will also aim to stand up additional ZEV symposiums that enable stakeholders to network and discuss their projects and capabilities with sector peers. The Program must also weigh the benefits of the symposiums with the resources required to deliver them. As such, these symposiums will be organized periodically and will coincide with the completion of a sufficient number of projects. • The described above will be implemented by March 31, 2025. As part of its commitment to continuous improvement, additional activities will be ongoing in future years. **Position responsible:** DG, OERD on behalf of the ADM, Energy Efficiency and Technology Sector. **Timing:** March 31, 2025

About the Evaluation

NRCan's Audit and Evaluation Branch (AEB) conducted an evaluation of the EVID program between November 2021 and May 2023, following the *Policy on Results (2016)*. The evaluation covered the period from 2016-17 to 2021-22. The AEB conducted this evaluation as part of the NRCan

Integrated Audit and Evaluation Plan 2021-26. This evaluation responds to a commitment to TB and adheres to section 42.1 of the *Financial Administration Act*.

The evaluation method included a document review, a literature review, and key informant interviews, following the *Standards on Evaluation*. The evaluation design incorporated both theory of change and impact evaluation concepts. The evaluation focused on:

- The EVID program's ability to appropriately address the evolving needs and priorities of the EV charging and LC refuelling sector (*relevance*).
- The program's achievement of the short-term outcomes, as well as trends towards the achievement of the longer-term outcomes (*effectiveness*).
- The program's capacity to operate as planned to achieve the intended outcomes, given the rapidly evolving context and the resources allocated (*efficiency and economy*).

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