Zero Emission Vehicle Charging in Multi-Unit Residential Buildings and for Garage Orphans

Presentation for Clean Air Partnership's Municipal Electric Vehicle Strategies Workshop

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Presentation Overview

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Study Background

- Study made possible through support from Natural Resources Canada and with input from the Infrastructure and Grid Readiness Working Group (IGRWG)
- Significant proportion of population in major urban centres reside in MURBs or are garage orphans
- Majority of EV charging occurs at home

City	Apartments	Single-detached houses
Vancouver	58%	29%
Montréal	58%	33%
Québec City	49%	41%
Toronto	44%	40%
Ottawa-Gatineau	31%	45%
Edmonton	27%	57%
Calgary	25%	58%

- Ensuring Canadians have access to convenient, reliable charging where they live is critical to supporting widespread EV adoption
- MURB residents and garage orphans are potential mainstream adopters of EV technologies but face unique charging-related barriers

Study Objectives

To provide a comprehensive assessment of the barriers to and opportunities for ZEV charging in MURBs and for garage orphans.

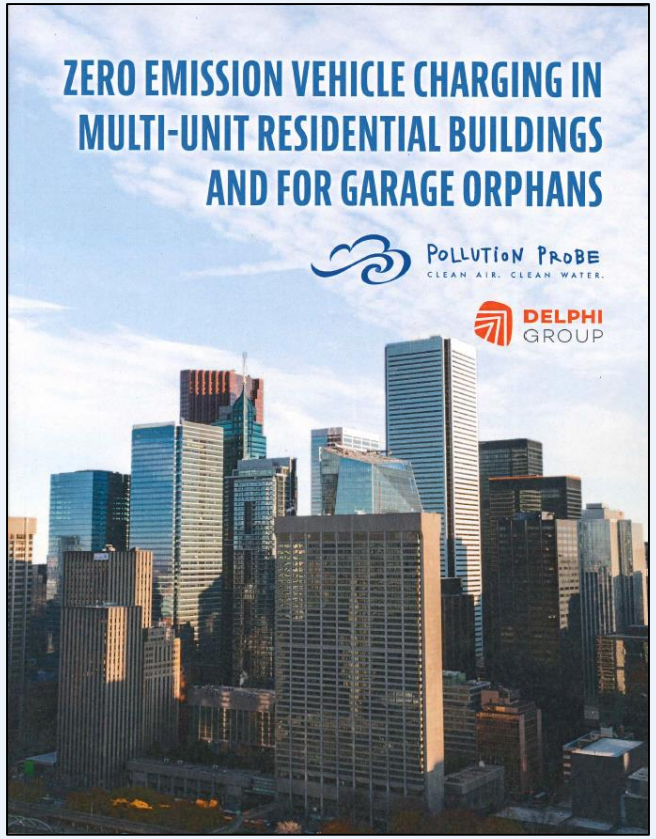
- Identify key barriers, opportunities and potential solutions associated with ZEV charging in MURBs and for garage orphans
- Communicate best practices and lessons learned for a wide range of audiences
- Develop a set of practical actions based on identified barriers and solutions

Methodology

- Review of relevant literature and interviews with key stakeholders across Canada including representatives from the following groups:
  - Government (federal, provincial, municipal)
  - Electric vehicle supply equipment (EVSE) providers and technology companies
  - Residential property developers
  - Property managers
  - Utilities (local distribution companies and electricity generation companies)
  - Academia
  - Not-for-profit organizations
  - Standards associations
  - EV societies and owners
  - Automakers and vehicle associations
- Regulatory-related content contributed by Travis Allan, VP Public Affairs and General Counsel for AddÉnergie
- Matrices of action provide framework to visualize key actions and potential roles for stakeholders

Report Outline

- **SECTION ONE**: Canadian Context for ZEV Charging in MURBs and for Garage Orphans
- **SECTION TWO:** Barriers, Solutions and Best Practices
- **SECTION THREE:** Matrix of Actions
- **APPENDIX A:** Dwelling Types and Distribution
- **APPENDIX B:** Municipal and District Initiatives and Activities



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Key Barriers & Solutions

1. **Grid Preparedness & Charging Infrastructure**: electrical grid capacity and EV charging infrastructure
2. **Building Design & Physical Infrastructure:** physical design of building and location of electrical infrastructure
3. **Education & Awareness:** EV awareness for consumers, building owners, condo boards/strata councils and property managers
4. **Regulatory & Policy:** codes, standards, acts, process policies and bylaws
5. **Financial:** installation and operational costs and ability to charge for electricity
6. **Other:** those barriers that do not fit easily within other categories

Role of the Municipality

What we Heard:

- Number of policy options available to municipalities
- Need for harmonization and standardization across jurisdictions
- Municipalities considered a credible source of information

Stakeholder	Relevant Areas for Participation	Other Potential Activities of Interest
Government (federal, provincial/ territorial and municipal)	• Regulatory or policy (all) • Funding or incentives (federal and provincial/territorial) • RD&D (federal) • Local scale infrastructure (municipal)	• Strategy/targets (all) • Funding/incentives (municipal) • Education/awareness/advisory services/training (all) • RD&D (provincial) • Regional scale infrastructure (federal and provincial) • Support for sharing economy (all) • Host sharing network (federal and provincial)

- Investments in public charging infrastructure can also support MURB residents and garage orphans
- Municipalities can play an important role in supporting innovative pilot projects

Grid Preparedness & Charging Infrastructure

Barrier: Lack of access to charging infrastructure for garage orphans

- No driveway or garage and municipal encroachment bylaws may restrict installation of charging stations curbside and extension cords running over or underneath sidewalks.

Potential Municipal Actions

- Build out network of residential on-street charging station for use by local owners
- Explore opportunities to install EV charging infrastructure in neighbourhood municipal parking lots, community centres or schools
- Develop bylaws (including permitting) that allow for curbside EV charging station installation in residential areas

Building Design & Physical Infrastructure

Barrier: Parking supply in existing MURBs

- Older buildings may have little or no parking while MURB residents with parking garages may not have regular access to a space. Parking spaces deeded to a unit limit ability to re-assign spaces to accommodate EV charging.

Potential Municipal Actions

- Installation and preferential use of nearby public charging infrastructure to address overnight charging needs
- Pilot programs that promote the use of new technologies that address physical constraints for EV charging in buildings

Education & Awareness

Barrier: Condo board or strata council decision-making and building owner awareness in existing MURBs

- In many jurisdictions, condo boards/strata councils have the right to reject requests by EV owners to install charging stations. Decisions are often based on misunderstanding or misconceptions.

Potential Municipal Actions

- Develop "how to" guidance and web content for EV and building owners, property management and condo boards/strata councils to reference
- Undertake educational campaigns targeting various stakeholder groups based on unique informational needs
- Develop public education materials to improve general knowledge about EV charging and connect potential buyers with current EV owners (complementary action)

Regulation & Policy

Barrier: Physical barriers in new and existing (renovated) MURBs

- Regulatory requirements are necessary to ensure sufficient building electrical capacity and cost-effective connection to a buildings' electrical systems as retrofitting can be prohibitively expensive.

Potential Municipal Actions

- Where appropriate, use zoning or parking bylaws to require parking spaces be EV ready (roughed-in or EVSE installed) with minimum charging performance standards
- Include model requirements for EV ready parking spaces and buildings electrical capacity in National Building Code and work with provinces to establish province-wide standards (work with federal government)

Financial

Barrier: Installation costs

- Capital costs for installation of EV charging station can be prohibitive and ability to recover investment limited.

Potential Municipal Actions

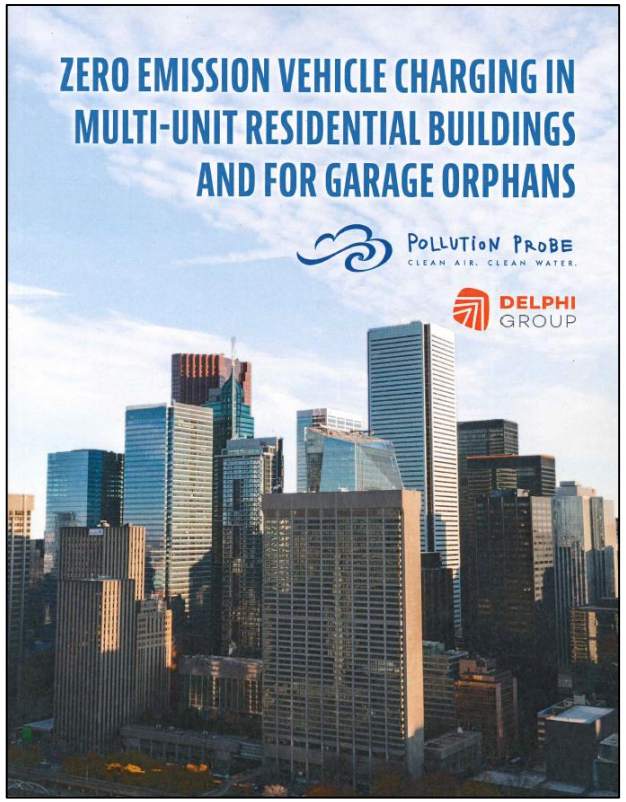
- Provide financial incentive to MURB residents, building owners or condo boards/strata councils to purchase and install networked or otherwise energy managed EV charging stations
- Provide financial incentives specific to rental apartments

Next Steps

- Knowledge-sharing across municipalities and access to subject-matter experts are effective means of addressing need for greater understanding and harmonization
- Increased opportunities for collaboration across stakeholder groups
- Engagement and education identified as important tools for addressing misinformation related to ZEVs
- Continue to develop a supportive regulatory and policy framework

Thank You!

For a copy of the Zero Emission Vehicle Charging in MURBs and for Garage Orphans report, please visit: https://www.pollutionprobe.org/zev-charging-in-murbs/



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