Clean Air Partnership

Briefing Note

April 2022

Electric Vehicle Charging Infrastructure Costing Study

Introduction

1. Widespread adoption of electric vehicles is required to achieve local and national climate targets. With regulations banning all new Internal Combustion Engine Vehicles (ICEV) sales by 2035, electric vehicle (EV) adoption is growing rapidly

2. At-home charging is widely recognized as the most convenient form of EV charging; therefore, improving access to charging infrastructure across all residential archetypes is critical for driving up community-wide EV adoption.

3. Local governments are increasingly requiring 100% "EV Ready" residential parking in new developments. EV Ready parking is defined as a parking stall that has an adjacent energized outlet at which an EV supply equipment can be installed in the future.

The Challenge of Retrofitting EV Charging in Multifamily Buildings

4. Retrofitting at-home EV charging is usually simpler and less costly for single-family homes with their own private onsite parking space. However, retrofitting EV charging into multi-family buildings is much more complicated and costly.

5. Renovating common electrical systems in buildings involves a host of complicated electrical design, legal and management issues.

6. Multi-family buildings that are not constructed with EV Ready infrastructure can pursue –

    - **Incremental addition of EV chargers** by adding a few chargers at a time, or
    - **Comprehensive EV Ready retrofits** by undertaking an electrical renovation to make all parking EV Ready. A comprehensive EV charging retrofit will be more cost-effective than incremental additions and it makes sense for MURBs to explore how overall electrical design can advance EV readiness to reduce costs for each of the building occupants.

The Need for 100% EV Ready Parking

7. Canada has adopted targets for 100% of passenger vehicle sales to be zero emissions by 2035, which is well within the lifetime of new residential buildings that would need to comply with the EV Ready requirements.

8. Future-proofing all residential parking spaces in new developments would ensure access to simple, reliable, and cost-effective at-home EV charging for all households.

9. 100% EV Ready parking requirement in new developments ensures equity among residents and avoids challenges such as costly retrofitting for EV charging installation and trading parking spaces to access charging infrastructure. In many residential buildings, swapping parking spots can be challenging and expensive, or simply not possible at all.

10. 100% EV Ready requirements are relatively simple for local governments to enforce. EV Ready requirements necessitates checking for the provision of an electrical outlet - which is relatively simple to enforce for staff without a technical background.

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Cost of 100% EV Ready Parking

11. Clean Air Partnership, with funding from The Atmospheric Fund, commissioned Electric Vehicle Charging Infrastructure Costing Study to inform local governments, developers, electrical designers, utilities, and other stakeholders, about the costs of making parking in new construction EV Ready, and the design strategies that can help minimize these costs.

12. The report assessed the cost of implementing EV Ready parking spaces in 4 residential development archetypes- high-rise residential development, midrise residential development, townhouse development, and single-family subdivision.

13. Analysis in the report suggests that 100% EV Ready parking can be implemented in new high-rise and mid-rise multi-family buildings for approximately $1500 to $1800 per parking space. For the new townhouses and single-family subdivision archetypes, parking can be made EV Ready at the cost of approximately $2000 or less per dwelling unit with onsite parking.

Municipal Implications

14. Canadian local governments are increasingly adopting 100% EV Ready residential parking requirements for new construction to avoid future challenges of providing EV charging infrastructure in multi-family buildings.

15. The cost of implementing a 100% EV Ready requirement represents a small fraction of the cost for new development to provide onsite parking. Moreover, future-proofing buildings with EV charging infrastructure will enable drivers to adopt EVs and benefit from associated savings for a lower total cost of ownership.

16. The analysis in the report suggests that implementing EV charging at the time of new construction is far simpler and has a much lower cost than retrofitting for EV readiness at a later stage.

17. It is recommended that local governments implement 100% EV Ready requirements for residential parking in new developments to avoid costly retrofits, to ensure equity to at home charging across building archetypes and to better enable and motivate residents to adopt EVs.

Related Webinars and Further Reading

18. Electric Vehicle Charging Infrastructure Costing Study
19. Making new residential buildings 100 per cent EV-ready: essential and affordable
20. Final Electric Vehicle Costing Study and Performance Requirements Study - Clean Air Council Webinar

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