Draft Recommendation of EV Parking Requirements for Section 8 of the Envision St. John's Development Regulations

The recommendations outlined for the St. John's parking regulations to include electric vehicle ("EV") infrastructure aims to reduce costs associated with installing charging infrastructure, reduce GHG emissions, improve access to EV charging infrastructure, prepare for future EV charging needs, and increase EV adoption.

Incorporating EV charging infrastructure into the City's parking requirements will help prepare St. John's for EVs, as a proactive cost reducing approach. It is important to anticipate the future needs of EV charging infrastructure. Savings by installing EV charging infrastructure at time of construction could typically be 30-40% compared to the cost of installation after facility has been constructed. Essentially savings accrue based on:

1. Significantly reduced civil work costs (75%),
2. Reduced electrical works and foundation costs (20%)

The St. John's City Council declared climate mitigation and adaptation as a strategic priority for the city and committed to the development of specific GHG emissions reduction targets for 2030 and 2050 and, ultimately, actions and strategies for St. John's to achieve its targets. Increasing EV charging infrastructure will assist in meeting GHG targets. According to the *City of St. John's Energy and Greenhouse Gas Inventory*, Transportation consumed approximately 41% of the energy use (gasoline and diesel) and emitted 59% of the community's GHGs in 2018.

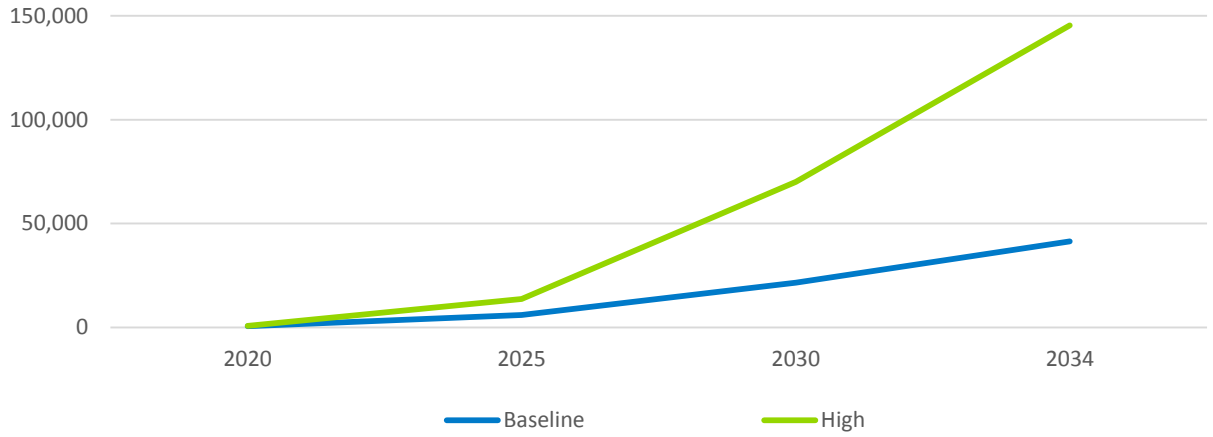
Public EV charging infrastructure play a significant role in encouraging the adoption of EVs. Research conducted by the U.S. Department of Energy ("DOE") has shown that workplace charging minimizes range anxiety, which is drivers' concern that an EV battery will run out of power before completing a trip. This research indicates that more than 40% of EV charging occurs at the workplace. Further, 14% of EV drivers need workplace charging to complete their daily commutes. Workplace charging also contributes to the visibility and consumers' familiarity with EVs, which can be important for spurring market adoption. According to the DOE, employees who are offered workplace charging are six times more likely to drive an EV than the average worker. Workplace charging also improves access to charging for individuals with limited or no residential charging options.

In 2018, Newfoundland Power and Newfoundland and Labrador Hydro initiated a comprehensive market assessment ("the Potential Study") of potential for electrification, conservation and demand management technologies for the 2020-2034 timeframe, with the assistance of Dunsky Energy Consulting.[1] The study used Newfoundland and Labrador specific inputs and assumptions to assess the electrification potential and corresponding opportunities and challenges.

Figure 1 shows the baseline and high scenarios for provincial EV adoption forecasted for the study period of 2020 through 2034.

[1] Newfoundland Power and Hydro commissioned Dunsky Energy Consulting to complete the Potential Study. Dunsky Energy Consulting, located in Montreal and Toronto, provides expertise in assessing the potential for adoption of energy efficiency, demand management, renewable energy and clean mobility solutions.

Figure 1
Electric Vehicle Potential
(Total Number of Electric Vehicles)



In the baseline scenario, uptake of EVs results in approximately 41,000 EVs on the road in the province by 2034. In the high scenario, adoption could increase to over 145,000 EVs by 2034. In both the baseline and high scenario, reducing the costs associated with installing infrastructure will be important to help meet demand for charging.

Definitions:

Electric vehicle means a vehicle that uses electricity for propulsion, and that can use an external source of electricity to charge the vehicle's batteries

Electrical Vehicle Supply Equipment (EVSE) an AC charge station as defined in the Canadian electrical code.

Energized *means* is electrically connected to, or is, a source of voltage. An energized parking spot is charger ready but does not require an EVSE be installed until later as required.

Level 2 (L2) refers to a 208/240 Volt, less than or equal to 80 Amps continuous AC circuit as defined in the Society of Automotive Engineers (SAE) J1772 standard.

Level 2 Managed (L2M) refers to Level 2 AC charging capability that varies electrical power to EVSE loads.

The minimum number of off-street parking spaces and electric vehicle infrastructure that shall be provided and maintained in respect of each land use or building class shall be in accordance with the following tables and in accordance with the land uses as set out in the table below.

Type or Nature of Building	Minimum Energized	Minimum Charging Level
Adult Day Care Facility (Non-residential)	10%	L2M
Adult Day Care Facility (Residential)	10%	L2M

Apartment building	15%	L2M
Bank	10%	L2M
Bed and Breakfast	10%	L2M
car sales lot	10%	L2M
Clinic	10%	L2M
Commercial Garage	10%	L2M
Day Care Center	10%	L2M
Dry Cleaning Establishment	10%	L2M
Funeral home	10%	L2M
Gas Station	0%	L2M
Health and wellness clinic	10%	L2M
Heritage Use	0%	
Home Occupation	0%	
Hotel	10%	L2M
Light Industrial	10%	L2M
Lodging House	0%	
Long term care facility/Hospital	10%	L2M
Lounge	10%	L2M
Micro unit dwelling	0%	L2M
Office	10%	L2M
Personal Care Home	10%	L2M
Place of Amusement, or Place of Assembly Or Auditorium (excluding a Movie Theatre)	10%	L2M
Place of Worship	10%	L2M
Residential Use, except Tiny Home Dwelling and Micro Unit Dwelling	0%	
Restaurant	10%	L2M
Retail Use	10%	L2M
Service shop	10%	L2M
Shopping Center	10%	L2M
Tiny Home Dwelling	0%	
Townhouse Center	0%	
Training School	10%	L2M
Veterinary Clinic	10%	L2M
Warehouse	10%	L2M

Exceptions to the above are as follows:

- 5 or more parking spaces would be required before the above recommendations would need to be implemented.

- Where the calculation of a parking requirement results in a fractional number, the number shall be rounded up to the nearest whole number where the fractional portion equals or exceeds 0.5.

- EV energy management systems or "load sharing" can be used to meet the requirements.

Utility Impacts

Any addition of electrical load will require an increase in capacity of the service equipment that the utility will install. This is usually determined during the application for service and the utility equipment is installed to meet the needs of the building. In the case of a General Service (commercial) Customer, this will not have a major impact on the Company's Distribution Standards as they are written to instruct the design technologist in the size of equipment to install based on a submitted connected load.