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**Item No. 12.1.1**  
**Environment and Sustainability Standing Committee**  
**April 6, 2023**

**TO:** Chair and Members of Environment and Sustainability Standing Committee

**SUBMITTED BY:**

  
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Cathie O'Toole, Chief Administrative Officer

**DATE:** April 3, 2023

**SUBJECT:** **Bylaw U100 Amendment – Electric Vehicle Charging Fees**

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**ORIGIN**

November 23, 2021: Halifax Regional Council passed the following motion (Item No. 15.2.2):

MOVED by Councillor Mancini, seconded by Deputy Mayor Lovelace

That Halifax Regional Council:

1. Adopt the Halifax Regional Municipality Electric Vehicle Strategy as set out in Attachment 1 of the staff report dated August 10, 2021;
2. Recommend that the Minister of Municipal Affairs and Housing prescribe additional standards by regulation of the Building Code Act to require “EV Ready” parking stalls for the construction of new buildings within the Halifax Regional Municipality and request the Mayor write a letter to the Minister requesting these regulations; and
3. Request the Mayor write a letter to the Premier of Nova Scotia requesting that the Zero Emission Vehicle mandate, introduced in the Environmental Goals and Climate Change Reduction Act, be strengthened to better align with HalifACT.

MOTION PUT AND PASSED

**RECOMMENDATION ON PAGE 2**

## **LEGISLATIVE AUTHORITY**

*Halifax Regional Municipality Charter*, SNS 2008, c 39:

### **Purposes of Municipality**

7A The purposes of the Municipality are to (a) provide good government; (b) provide services, facilities, and other things that, in the opinion of the Council, are necessary or desirable for all or part of the Municipality; and (c) develop and maintain safe and viable communities.

### **Municipal expenditures**

79A (1) Subject to subsections (2) to (4), the Municipality may only spend money for municipal purposes if (a) the expenditure is included in the Municipality's operating budget or capital budget or is otherwise authorized by the Municipality; (b) the expenditure is in respect of an emergency under the Emergency Management Act; or (c) the expenditure is legally required to be paid.

### **User charges**

102 Subject to the approval of the Board for those services that are subject to the *Public Utilities Act*, the Council may, by by-law, prescribe charges for the provision of services for persons who use or benefit from the service, on a basis to be set out in the by-law.

## **RECOMMENDATION**

It is recommended that the Environment and Sustainability Standing Committee recommend that Halifax Regional Council adopt By-law U-113, amending By-law U-100, the *User Charges By-law*, as set out in Attachment 1 to this report.

## **BACKGROUND**

The Municipal Electric Vehicle Strategy (the Strategy) was approved by Halifax Regional Council in November 2021<sup>1</sup>. The Strategy supports the transportation decarbonization targets of HalifACT, the municipality's climate action plan. The installation of public charging infrastructure is one of the four key focus areas of the Strategy. The Strategy includes detail on the number of chargers needed, specific recommendations on geographical locations for these chargers, and overall cost estimates.

One of the most cited barriers to electric vehicle (EV) adoption is range anxiety.<sup>2</sup> While the private sector is expected to be the primary installer of public charging infrastructure across the province as EV adoption increases, Regional Council has committed to leading the initial deployment in the short term. This approach aligns with cities like Toronto, Victoria, and Montreal, who have already deployed or have plans to deploy public charging infrastructure.

To develop the list of recommended public charging locations, the consultant considered existing public charging infrastructure, the average driving distance of residents and the density of multi-use residential buildings to determine priority areas for public charging infrastructure, as illustrated in Figure 1 below.

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<sup>1</sup> Halifax Regional Council, Municipal Electric Vehicle Strategy, <https://cdn.halifax.ca/sites/default/files/documents/city-hall/standing-committees/211104essc1211.pdf>

<sup>2</sup> The concern that the vehicles battery will run out before finding a charging site due to the lack of publicly available charging infrastructure

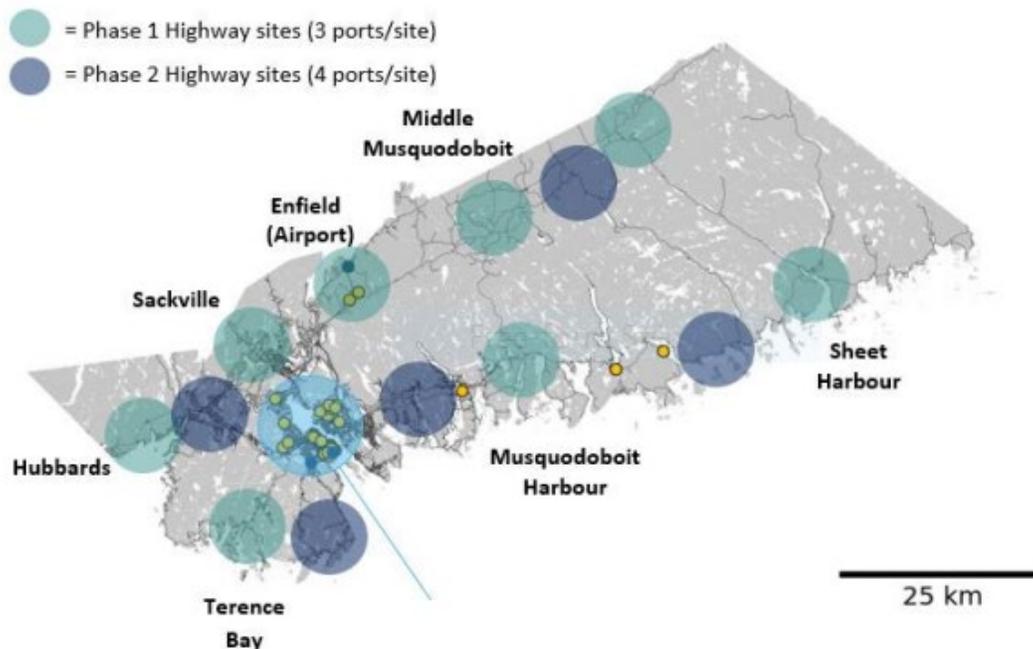


Figure 1: Geographical distribution of public charging infrastructure throughout the Halifax Region, as recommended in the Strategy.

With the 2022/23 Capital Budget approval for account CB200012, HalifACT – Climate Action Plan, Halifax Regional Council reaffirmed their commitment to the implementation of the strategy.

## **DISCUSSION**

Following the approval of the Strategy, staff engaged WSP to support the design of a public charging package that will act as the standard for future near-term, municipal-led installations. A multi-year request for proposal<sup>3</sup> for supply and install of charging infrastructure at up to 18 locations was issued using this design. The sites will span the entirety of the municipality and will fill current gaps in the public charging network. While there may be slight variations in charging infrastructure due to site limitations, the standard charging package will consist of one fast charger, approximately 175 kilowatts (kW) and two, dual port level 2 units (maximum capacity of 19.2 kW). Based on stakeholder consultation and research, a fast charger capacity of 150 kW or more is recommended to ensure suitability for the charging of newer, larger, and longer range EVs. Drivers who use a 175 kW fast charger can expect an 80% charge within 20 minutes. The two dual port level 2 units will be used as overflow and overnight charging for those who live in multi-unit residential buildings and do not have access to at-home charging.

### **Operating Costs**

Installing public charging infrastructure will result in ongoing fixed and variable operational costs for the municipality. Fixed costs include an annual service fee, general maintenance, inspections, insurance and base Nova Scotia Power connection charge. The annual service fee is standard across the industry and crucial for the successful operation of public charging infrastructure. The service fee is paid to manage payment collection, customer service inquiries, major maintenance and repairs, data monitoring and to

<sup>3</sup> Nova Scotia Tenders, Non-binding Request for Proposal for Supply & Install Public Charging Infrastructure <https://procurement-portal.novascotia.ca/tenders/HRM-23-039>

ensure that charger uptime standards are met. The service fee is estimated to be \$150 per L2 port and \$1,500 per fast charger annually. General maintenance and inspections, which will be the responsibility of HRM, is estimated at \$3,400 per site annually. This will consist of regular check-ups, minor inspections as required and snow clearing. Annual insurance and base connection charges are estimated at \$120 and \$280 per site respectively. In total, fixed annual operating costs are estimated to be \$5,600.00 per site.

Variable annual operating costs include the cost of electricity and transaction fees. As there is currently no set Nova Scotia Power tariff for public charging, calculating the annual electricity costs is complex and will depend on overall usage. While staff have engaged with Nova Scotia Power regarding the development of a tariff, a timeline for the release of one has not been set. Therefore, electricity costs are being estimated using the recently approved 2023 and 2024 tariff structure. Pending annual utilization, electricity costs will fall under either the Small General Tariff<sup>4</sup> or the General Tariff<sup>5</sup>. Transaction fees are also dependant on usage. Annual operating costs are being estimated using a conservative transaction fee of 15%.

**Proposed Fees**

As per Administrative Order 2017-002-ADM - **Charter of Governing Principles for Regulation**, the Regulatory Impact Assessment tool was utilized, and it was determined that a by-law for EV charging fees is required. Therefore, it is recommended that Halifax Regional Council amend By-law U-100 to include EV charging fees (exclusive of HST) as recommended in Attachment 1 and Table 1.

*Table 1: Proposed EV charging fees*

Charging Type	Charger Capacity (kW)	Cost per minute	Cost per hour
Level 2	3.3 to 19.2	\$0.03	\$1.80
Fast Charger	100+	\$0.75	\$45.00

The proposed fees will be charged on a “per session” basis, not per kWh of energy consumed. While Measurements Canada has recently granted fast charging operators’ temporary dispensation to charge per kWh, more investigation is needed before this can be implemented. Consideration will need to be given to cover the fixed operating fees regardless of kWh consumption as well as the potential low turnover rate that could come with per kWh billing instead of per session. As an electric vehicle charges at a slower speed the closer it is to a 100% battery charge, there is nothing in place to encourage the driver to move if they are not charged per session. The intention of a fast charger is to charge the vehicle up to an optimal battery charge of 80% as quickly as possible. Should kWh billing be deemed appropriate in the future, staff will return to Regional Council with amendments to the above fees.

Comparing the proposed fees to those in other municipalities across Canada is not straightforward due to varying electricity tariffs and differing rates of charge. Level 2 charging fees across Nova Scotia range between \$1.50 and \$2.00 per hour. The majority of fast chargers in Nova Scotia are rated at 50 kW and cost \$15 per hour, therefore no standard currently exists. Instead, the recommended fee for fast charging was selected to balance cost neutrality and market acceptance. Stakeholder consultation found that drivers were willing to pay up to \$60 per hour for a reliable, faster charge. If a driver of a standard 40-60 kWh battery EV was using a 175kW charger at the recommended fee above, they could expect to gain an 80% charge (or 290 kilometers of range) in about 20 minutes at a cost of \$15. To achieve the same range with a standard internal combustion engine vehicle at a cost of \$1.70 per litre, would cost the driver about \$39.<sup>6</sup>

<sup>4</sup> Nova Scotia Power, Small General Tariff <https://www.nspower.ca/about-us/electricity/rates-tariffs/small-general>

<sup>5</sup> Nova Scotia Power, General Tariff <https://www.nspower.ca/about-us/electricity/rates-tariffs/general>

<sup>6</sup> 2022 Nissan Leaf S Plus with a range of 363km compared to a 2022 Nissan Altima AWD, with a fuel economy of 7.9 litres per 100 kilometres. Natural Resources Canada, 2022 Fuel Consumption Guide <https://www.nrcan.gc.ca/sites/nrcan/files/oeef/pdf/transportation/fuel-efficient-technologies/2022%20Fuel%20Consumption%20Guide.pdf>

**Per Site Operating Costs**

Using the proposed fees in Table 1 and the estimated operating costs above, the net annual operating costs (at 2023 electricity rates) per site at varying utilization rates are presented in Table 2. The upper limit of utilization presented is 10% because a maturing market is likely to see utilization rates of about 10%. This is further supported by new research conducted at the Renewable Energy Storage Laboratory at Dalhousie,<sup>7</sup> which states that a utilization rate of **over** 10% will result in excessive queuing, diminishing the effectiveness of the chargers. Any sites which experience utilization rates greater than 10% will be considered for an additional charger.

*Table 2: Estimated annual operating costs and revenue for a single site.*

Utilization Rate	Operating Cost	Annual Revenue	Net Surplus/ (Deficit)
0%	\$5,600.00	\$-	\$(5,600.00)
1%	\$7,500.00	\$4,000.00	\$(3,500.00)
2%	\$9,300.00	\$8,000.00	\$(1,300.00)
3%	\$11,100.00	\$11,900.00	\$800.00
4%	\$12,900.00	\$15,900.00	\$3,000.00
5%	\$14,700.00	\$19,900.00	\$5,200.00
6%	\$23,000.00	\$23,900.00	\$900.00
7%	\$26,000.00	\$27,900.00	\$1,900.00
8%	\$29,000.00	\$31,900.00	\$2,900.00
9%	\$31,900.00	\$35,800.00	\$3,900.00
10%	\$34,900.00	\$39,800.00	\$4,900.00

While it is anticipated that the urban sites will experience higher utilization than the rural sites, if the average utilization across all sites is more than 2% (0.5 hours per day), all estimated operating costs will be covered. If operating costs are not covered or the operating costs are less than estimated, staff will return to Council with recommended amendments to the user fees.

**Enforcement**

All parking stalls with public charging infrastructure will be equipped with an official parking restriction sign (RB-52) with “except when charging” listed. When a vehicle is parked in these stalls and not actively charging, they will be subject to the standard parking fine under the *Motor Vehicle Act*, and potentially towed.

The amendments to Bylaw U-100 will also clarify that electric vehicles may only be charged at a clearly marked, designated electric vehicle charging stations. In areas where there is already a fee for parking, users will be required to pay separate fees for both charging and parking their vehicle.

**FINANCIAL IMPLICATIONS**

The multi-year request for proposal should be awarded by April 2023. While discussions are still underway regarding specific sites, staff estimate that approximately eight sites will be operational by August 2023, another six by March 2024 and the final four by June 2024. Based on this projected timeline, Tables 3 and 4 outline the estimated net annual operating costs at varying utilizations rates for each of the next two fiscal years.

<sup>7</sup> MDPI, Observational Evaluation of the Maximum Practical Utilization of Electric Vehicle DCFC Infrastructure  
<https://www.mdpi.com/2032-6653/13/10/190>

*Table 3: Estimated net annual operating costs for fiscal 2023/24.*

<b>Utilization Rate</b>	<b>Operating Cost</b>	<b>Annual Revenue</b>	<b>Net Surplus/ (Deficit)</b>
0%	\$26,100.00	\$-	\$(26,100.00)
1%	\$35,200.00	\$18,600.00	\$(16,600.00)
2%	\$43,800.00	\$37,300.00	\$(6,500.00)
3%	\$52,400.00	\$55,600.00	\$3,200.00
4%	\$61,100.00	\$74,300.00	\$13,200.00
5%	\$69,700.00	\$92,900.00	\$23,200.00
6%	\$109,400.00	\$111,500.00	\$2,100.00
7%	\$123,600.00	\$130,100.00	\$6,500.00
8%	\$137,900.00	\$148,800.00	\$10,900.00
9%	\$151,800.00	\$167,100.00	\$15,300.00
10%	\$166,100.00	\$185,800.00	\$19,700.00

*Table 4: Estimated net annual operating costs for fiscal 2024/25.*

<b>Utilization Rate</b>	<b>Operating Cost</b>	<b>Annual Revenue</b>	<b>Net Surplus/ (Deficit)</b>
0%	\$95,400.00	\$-	\$(95,400.00)
1%	\$129,500.00	\$67,700.00	\$(61,800.00)
2%	\$162,600.00	\$135,400.00	\$(27,200.00)
3%	\$195,700.00	\$203,100.00	\$7,400.00
4%	\$228,900.00	\$270,700.00	\$41,800.00
5%	\$262,000.00	\$338,400.00	\$76,400.00
6%	\$413,300.00	\$406,100.00	\$(7,200.00)
7%	\$467,200.00	\$473,800.00	\$6,600.00
8%	\$521,000.00	\$541,500.00	\$20,500.00
9%	\$574,800.00	\$609,200.00	\$34,400.00
10%	\$628,600.00	\$676,800.00	\$48,200.00

As mentioned above, the net annual operating costs are dependant on annual utilization. If the average utilization across all sites is more than 2%, all estimated operating costs will be offset by revenues collected. At worst, if the annual utilization across all sites is 0%, then the estimated net deficit in 23/24 of \$26,100 will be absorbed within the proposed Property, Fleet and Environment Budget. With a target annual utilization rate of 10%, a small annual surplus would result. As the sites are installed and we begin to capture actual utilization data, we will be in a better position to forecast 24/25 revenues and costs.

### **RISK CONSIDERATION**

Operating costs resulting from electricity consumption are difficult to predict. There is currently no set tariff for charging in the province so the annual electricity costs will depend on annual utilization. Staff will monitor electricity costs and usage rates and will recommend user fee amendments as required.

### **COMMUNITY ENGAGEMENT**

Engagement was conducted with experts in the industry, Nova Scotia Power, and academia.

### **ENVIRONMENTAL IMPLICATIONS**

There are significant environmental benefits related to the deployment of public electric vehicle charging infrastructure, as outlined in this report and in the Strategy.

### **ALTERNATIVES**

The Environment and Sustainability Standing Committee may recommend that Council:

1. Adopt Amending By-law U-113 subject to modifications. This may include increasing or reducing the user charges for electric vehicle charging. This may require a supplementary staff report; or
2. Refuse to adopt Amending By-law U-113, amending By-law U-100.

None of these options are recommended. Increasing the fees would result in an increased chance that cost neutrality be achieved but would likely result in significantly reduced usage. If the fees were reduced, usage would be increased but the risk to achieving operating cost neutrality would be increased. Finally, not approving any amendments to By-law U-100 is not recommended as this is a critical step to deploying public charging infrastructure as recommended by Regional Council through its adoption of the Strategy.

### **ATTACHMENTS**

Attachment 1: Amending By-law U-113

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A copy of this report can be obtained online at [halifax.ca](http://halifax.ca) or by contacting the Office of the Municipal Clerk at 902.490.4210.

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## Schedule 7

### Electric Vehicle Charging

#### Interpretation

1. In this Schedule,

(a) “electric vehicle” means a vehicle that solely uses an electric motor that draws electricity from on-board rechargeable batteries or a hybrid that uses both a conventional internal combustion engine and an electric motor;

(b) “Electric Vehicle Charging Station” means infrastructure:

- (i) that supplies energy for the charging of electric vehicles, and
- (ii) is located adjacent to a parking space;

(c) “Executive Director” means the position determined by the CAO to be the head of a department of the Municipality, and who is accountable to the CAO under section 36 of the Halifax Regional Municipality Charter;

(d) “municipal facility” means a building and land owned or operated by the Municipality; and

(e) “parking space” means a space for the parking of a motor vehicle that has been designated for the parking of electric vehicles while using an Electric Vehicle Charging Station.

#### Application

2. (1) The user charges established in this Schedule shall apply to all Electric Vehicle Charging Stations that are owned and operated by the Municipality.

(2) No person shall park and charge an electric vehicle at an Electric Vehicle Charging Station unless the applicable user charge set out in section 5 of this Schedule has been paid.

3. An electric vehicle parked at a municipal facility shall only be charged at an Electric Vehicle Charging Station.

#### Waiver of User Charges

4. (1) Council, by resolution, or the CAO, may waive, in whole or in part, any user charge under this Schedule.

(2) The CAO may delegate the authority under subsection (1) of this section to the Executive Director responsible for environment.

**User Charge for Electric Vehicle Charging**

5. (1) The user charges for electric vehicle charging at an Electric Vehicle Charging Station shall be as follows:

<b>Charger Type</b>	<b>User Charge</b>
3.3kW to 19.2kW charger	\$0.03/min
100 kW to 199 kW charger	\$0.75/min

(2) For any portion of a minute charged, the user charge shall be calculated as price per minute divided by sixty (60), multiplied by the number of seconds charged, rounded to the nearest cent.