



Consultation on the oversight of Level 1 and Level 2 electric vehicle charging devices already in service

Comments and recommendations
Submitted to Measurement Canada
By Electric Mobility Canada

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1. Introduction

Electric Mobility Canada (EMC) is a national membership-based not-for-profit organization dedicated exclusively to the advancement of e-mobility as an opportunity to fight climate change and air pollution while stimulating the Canadian economy. Our members are organizations from industry such as light, medium, heavy-duty and off-road manufacturers, utilities, infrastructure providers, tech companies, mining companies, research centers, unions, fleet managers), non-profits and associations, all three levels of government, and individual EV drivers. Several our members have extensive experience in EVSE development, manufacturing, deployment, as well as charging network operation and maintenance, while others have been users of EV charging services. Of the electric vehicle public charging devices currently installed or under construction in Canada, 71% of L2 ports and 75% of DC fast charging ports were manufactured or are operated by EMC members.¹

As charging infrastructure is essential to nurturing Canada’s electrified transportation ecosystem, we welcome this opportunity to participate in Measurement Canada’s consultation on pathways to enable energy-based

¹ 2022 Snapshot of Canada’s Electric Charging Network and Hydrogen Refuelling Stations for Light-duty Vehicles - NRCan-5000062968 - Percentage calculated with data from Table 2 - Charging Sites and Ports by Charging Operators in Canada (p.12).

billing on Level 1 and Level 2 electric vehicle supply equipment (EVSE) already deployed in the Canadian marketplace.

While our members share Measurement Canada's goal of enabling pricing based on energy (kWh), we wish to ensure that the installed base of over 17,000² (and tens of thousands more currently in the pipeline or soon to be planned) charging devices will continue to serve EV drivers as cost-effectively as possible. We recognize and appreciate these "early adopter" hosts of EV charging stations, especially the small businesses and other organizations providing them as amenities or add-on services for their customers and the public, as being critical for building awareness of EVs. We feel that dispensation conditions need to be flexible and recognize that different situations require different solutions, and that retroactively regulating with one-size-fits-all requirements could risk removal by these early adopters, to avoid expensive upgrades of this installed base, potentially a huge loss to Canadian EV drivers across the country. As it develops its policy on the oversight of Level 1 and Level 2 electric vehicle charging devices already in service and upcoming type-approval specifications for EVSE to be deployed, EMC encourages Measurement Canada to adopt a forward-looking approach. Every effort and resource spent retrofitting charging infrastructure already deployed is not spent developing and deploying much needed charging devices across the country.

Temporary dispensation from Measurement Canada rules is an important mechanism that allows the federal agency to promptly enable energy-based billing on existing devices and devices in construction, *while type approval specifications are in development*. Temporary dispensation allows Measurement Canada to:

- Focus on the development of type approval specifications;
- Avoid penalizing consumers with unfair billing approaches while specifications are in development;
- Avoid slowing down the deployment of charging infrastructure that is essential to meet an accelerating EV deployment;
- Provide manufacturers and network operators with a reasonable time frame to make the retrofits that *may* be necessary to meet type approval specifications, once those specifications are finalized and adopted.

Using the currently proposed temporary dispensation mechanism to *phase-in type approval requirements* would delay the transition to kWh-billing and may result in multiple rounds of overly burdensome and costly retrofits -- which will negatively impact consumers.

Measurement Canada can play a key role in supporting the Federal government's transport electrification goals, by ensuring fair and accurate energy-based billing. EMC's suggestions and recommendations seek to balance consumer protection, with consumer transparency and the Government of Canada's objective to accelerate EV adoption, which is also EMC's core mission.

Impact of enabling kWh billing via a temporary dispensation

The ability to offer pricing on a per kWh basis is a frequent customer request for many operators. Each vehicle model has a different capacity for charging speed. For alternating current charging devices (AC); 3.3 kW, 6.6 kW, 7.2 kW and 10 kW charging speeds are all common. For direct current charging stations (DC); 50 kW, 100 kW and 250 kW are all common. Further, maximum charging speed can change based on battery temperature. Hot batteries in summer or cold batteries in winter can slow charging speeds below the maximum speed accepted by the vehicle or offered by the EVSE. For these reasons, per kWh billing can be a more accurate option for billing than a time-based approach, particularly regarding DC fast charging.

EMC's submission will thus include comments pertaining to the diverse billing approaches, as well as on the options and terms and conditions submitted by Measurement Canada for consultation.

² <https://electricautonomy.ca/2022/03/31/canadas-public-charging-networks-2021/>
and <https://www.nrca.gc.ca/energy-efficiency/transportation-alternative-fuels/electric-charging-alternative-fuelling-stationslocator-map/20487#/analyze?country=CA&fuel=ELEC&access=public&access=private>

2. EMC comments and recommendations

2.1 Limited scope

In this section, two elements of concern: limiting standards to Level 1 and Level 2 charging while seemingly not considering standards for DC fast charging (DCFC) and broadly excluding relevant residential settings such as multi-unit residential buildings.

2.1.1 Level 1 and 2 but not DC fast charging

EMC finds that limiting temporary dispensation pathways to Level 1 and Level 2 charging devices is concerning. Establishing dispensation pathways for DC fast charging stations is at least as important as it is for Level 1 and 2, and more urgent. While enabling energy-based billing on level 2 devices could make billing somewhat more accurate and transparent on some devices, in comparison with DC Fast stations, the risks to consumers are minimal. The amount of power delivered at DC Fast stations varies much more, based on multiple factors such as vehicle model, battery state of charge, battery temperature and ambient temperature.

For example, an Audi e-Tron driver would typically draw 1.7 times more electricity than a Chevrolet Bolt driver over a 30-minute fast charging session. If each driver were paying the same price per minute (\$0.20/min), both drivers would pay \$6.00. However, if they were paying per kWh (\$0.25/kWh), then the e-Tron driver would pay \$7.81 while the Bolt driver would pay \$4.50. While the energy provided to the driver is not the only factor in the cost of providing charging services, it is an important one. An analogous situation with an AC Level 2 charger is not as impacted by this as the AC charging speed is less variable and more standardized with many vehicles capable of 7 kW charging. Some are only capable of 3 kW or up to 19 kW, but this is less common today. This example highlights how transparent pricing, including a kWh-based component, could allow charging station owners/operators to more accurately reflect the actual costs of providing charging services to different vehicles, for DC Fast charging stations.

EMC RECOMMENDATION: Include provisions for temporary dispensation for DC Fast Chargers, alongside AC Level 1 and Level 2.

2.1.2 Multi-Unit Residential Buildings (MURBs)

The current policy options presented exclude residential -- including multi-family -- charging from the policy framework. Although a distinct use case from a more traditional commercial transaction where multiple users may access charging services for a fee, there are use cases like residential or fleet where there may be a need to facilitate some form of kWh-based transaction, such as sub-metering condominium owners charging activity from the primary utility meter, or facilitating residential time of use rates, or providing charging services to a fleet depot.

Enabling fair kWh-billing in relevant residential settings can play a crucial role in providing charging services where drivers need them most – at home – and where installation costs and complex logistics can be too prohibitive for privately-owned individual charging stations. Enabling kWh-billing in MURBs would facilitate the installation of EVSE and accurate billing to users but Measurement Canada has excluded these use cases at present. Given the value and need to enable kWh-based pricing in these use cases, their inclusion or timelines for their inclusion would benefit customers.

EMC RECOMMENDATION: Include provisions for temporary dispensation for charging stations in residential settings, including MURBs.

2.2 Flexible billing options

It is still unknown if regulations will include limitations on billing approaches for EV charging, but some degree of flexibility is needed to ensure operators can cover energy costs, recuperate investments on infrastructure and ensure optimal rotation by applying higher rates as the battery reaches a higher state of charge.

For some use cases, time can be a better fit, or complement energy-based billing. For example, a shopping mall or movie theatre may wish to offer free or discounted charging for the length of an average customer visit, independent of vehicle charging capabilities. Or a DC fast station operator may wish to incentivize customers to disconnect from equipment during periods of slower battery charging, such as when the battery reaches a certain state of charge, to ensure efficient use of equipment by as many customers as possible, helping to prevent line-ups. A flexible approach is necessary to cover a much wider array of business models and use cases than what is seen in traditional fuelling from fossil fuels.

The Electricity and Gas Inspection Act (EGIA) and Regulations aim to provide oversight of activities where electricity is sold based on units of measurement. However, the EGIA does not preclude the sale of electricity on some other unmetered basis, or sale of services that include electricity. For example, a campground may include unmetered electricity in the daily rate, or a utility may offer a “flat” unmetered monthly streetlight tariff. Those billing models provide reasonable alternatives to metering, where metering would render those services too cost prohibitive and inaccessible to users. Measurement Canada’s EV charger authority only applies where the operator elects to supply electricity based on a kWh measurement. Specifically, it should not preclude the continued supply of EV charging services on a time or other unmetered basis.

AC Level 2 charging posts are required in large numbers in the near future for all types of housing, in hotels, workplaces, restaurants, shops and other businesses. Considering the installation and maintenance costs, it is important to allow owners to cover their expenses with minimal operating costs. There is a wide variety of business models for owning and operating Level 2 charging posts, from small entities to well established networks. To facilitate country-wide installation of Level 2 charging, Measurement Canada should allow as much flexibility as possible for owners and operators to bill based on time, energy, a fixed rate or a combination of these.

EMC RECOMMENDATION: Allow as much flexibility as possible for owners and operators to bill based on time, energy, fixed rate, or a combination of these.

2.3 Type Specification & Process

Measurement Canada has provided three proposed timelines for when new devices will need to be certified in Canada, the earliest of which starts in January of 2023. EMC supports ambitious timelines for new devices to comply with type approval specifications but is unable to support any of the options presented without a full review of the final type specifications as well as a clear understanding of Measurement Canada’s lead times and processes for type approval. This information is key to understanding how soon the certification process can begin. Once this information is provided, EMC will be better positioned to provide feedback from its members on the type specification compliance timeline.

EMC RECOMMENDATION: Provide information on type specifications, lead times and processes for type approval before consulting on compliance timelines.

2.4 Dispensation

EMC understands the need to provide transparency and assurance to customers on the accuracy of the EV charging stations installed across Canada. We also acknowledge that many of the EV charging stations

in Canada are owned by small businesses, non-profits and municipalities for which EV charging is not a primary activity. Revenues generated from EV charging aim to cover infrastructure investments and energy costs, and charging services are often offered to attract and accommodate clients or visitors.

EMC is therefore concerned that the proposed terms and conditions for charging station operators are too complex and costly and will have a negative effect on available charging infrastructure, especially as they may result in station owners opting to remove existing charging stations because of the burden or cost of compliance.

To support Measurement Canada’s objective of consumer transparency and protection, EMC recommends a revised set of terms and conditions to reduce station operator burden and avoid stranding assets – many of which have been funded by government programs. Allowing EV charging station operators to bill their customers on a per-kWh basis, should they elect to do so, under a temporary dispensation with simplified terms and conditions will allow to maintain existing charging equipment in operation. Reasonable terms and conditions include:

- Informing customers that devices are under temporary dispensation (with flexible display options including electronic means)
- Requiring EVSE manufacturers to confirm that their devices are designed to meet high levels of accuracy over the duration of the dispensation.
 - o Risk/reward: MC’s proposed field verification requirements for devices under temporary dispensation would limit benefits to consumers, as compared with the lack of transparency and fairness of the existing time-based billing approach. Allowing existing devices to shift to a per-kWh billing approach, even with minimal verification conditions, would offer more benefits than risks to consumers.
 - o Cost/benefit: The cost of complex field verifications that would be required under Measurement Canada’s proposed terms and conditions would likely not result in any benefit to consumers, given how onerous they would be versus their results on individual bills.
- Complaints mechanism: We agree that customers should have a way to communicate their concerns to MC. MC should use its normal complaints mechanism

While we highly value EV drivers’ customer experience, we fear the proposed process is too burdensome. Managing complaints, as currently proposed by MC, will add a significant burden onto station owners and operators. The federal government has made a point of funding the deployment of accessible charging infrastructure in underserved and remote areas, across the country. This means a considerable number of stations are deployed in some very remote regions where a day of travelling may be required to service the station. If each complaint requires to test the charging station, this process can seriously be abused by ill-intentioned stakeholders. Onerous verification requirements may discourage the deployment of EV charging stations in remote parts of the country, where utilization tends to be low, and maintenance and verification costs would be disproportionately high.

EMC RECOMMENDATION: Simplify the terms and conditions of temporary dispensations to reduce the burden to station owners and operators of existing devices. This will reduce confusion in the marketplace as well as cost to small businesses that operate stations.

3. EMC Contact Information

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