MTO Discussion Paper on
Electric Vehicle Incentive Initiatives under the Climate Change Action Plan

November 14, 2016

7.1 Electric Vehicle Incentive Program (EVIP)

7.1.1 What should the government tie the EV purchase incentives to (e.g., vehicle tailpipe GHG emissions, battery size, technology type, etc.) in order to support a significant growth in EV sales and GHG emissions reductions?

We do not recommend a major change in the approach of calculating consumer EV incentive values for a number of reasons:

i. The battery size approach has been in place for a number of years and it is an intuitively direct way for consumers to understand and substantiate the level of incentives across the array of plug-in vehicle types.
ii. larger batteries cost more and warrant a larger rebate, furthermore, larger batteries also have greater potential to offset more GHG
iii. The program was just adjusted in Feb 2016 by increasing the max level to $10,000 for the scaled battery portion. Making a significant changes in methodology to the EV incentive program would create significant confusion with consumers and dealers for little to no policy benefit.

The other provinces that provide PEV consumer incentives (Québec and BC) also have consumer incentive systems that scale the level of incentive on the basis of battery size. This common approach underscores the original policy rational and appropriateness. This common approach also helps to avoid confusion with Canadian consumers as they compare the programs in the different provinces.

7.1.2 How should the government adjust the current 30 per cent MSRP incentive cap and the $3,000 cap on vehicles with an MSRP of $75,000 and above in order to promote EV sales and GHG emission reductions in a fiscally responsible manner (e.g. remove the cap? Relax the cap)?

The 30% MSRP incentive cap on EV's less than $75,000 and the $3,000 incentive cap on Luxury EVs over $75,000 are distinctly different policy measures and need to be looked at separately for possible review and revision.

Given the significant incremental cost of PEVs over comparable conventional vehicles today and for the foreseeable future, it has been clearly recognized that government consumer incentive supports for the purchase of new PEVs significantly increases the demand and sale of these vehicles. In Feb of 2016, the government, in addition to expanding the max PEV consumer incentives from $8,500 to $14,000, also introduced a 30% MSRP incentive cap. This 30% of MSRP incentive cap was put in place to provide a proportional level of consumer support across the variety of PEV vehicles eligible in the program.

i. The government could consider eliminating the 30% cap on MSRP. Given the changes to MSRP, this adjustment to eligible incentives is a complicating factor in communicating the incentive program to consumers.

ii. The consumer incentive cap of $3,000 on Luxury PEVs was instituted on the premise and assumption that affluent consumers purchasing these types of vehicles were not significantly influenced by government incentives. That is to say that these purchases had inelastic demand relative to government incentive programs and, hence, high levels of government incentives on these vehicles represented little impact over consumer demand on these vehicles. Industry data shows that Ontario sales for EVs over $75,000 MSRP since the $3,000 incentive cap was implemented were minimally impacted in comparison to sales of these vehicles in the previous years' time frame. Conversely, when the government of British Columbia (BC) stopped their plug-in vehicle incentive program in 2014, there were significant reductions in low to moderately priced PEV sales while high end PEV sales continued with minimal impact.

Upon reinstatement of the BC incentive plan, low to moderately-priced plug-in vehicles have increased and surpassed sales levels when the government incentives were previously in place. In light of this experience in both Ontario and BC, we do not recommend any changes to the over $75,000 MSRP cap for consumer EV incentives.

7.1.3 Do you think these caps influence an EV buyer's decision to purchase an EV or a specific type of EV?

Per the comments above marginally.

7.1.4 How can the government adjust the EVIP to benefit even more EV owners?

i. Apply the EVIP rebate before HST.

ii. Remove the Provincial portion of the HST.

iii. Ideally, negotiate with federal government for the removal of the entire HST. EMC can play an active role in this demand, in light of its recommendations for a federal incentive.

iv. Remove the limit to how many EV's a fleet can purchase each year.

v. Vehicle registration fees should be waived for all PEVs in order to provide a further incentive for consumers to purchase these green vehicles.

vi. The EVIP should be expanded to be applicable to PEVs that OEMs put into their company vehicle programs and that are ultimately sold to the retail market. The current system excludes the consumer incentive from PEVs that OEMS temporarily place in their company-vehicle programs and eventually sell to their dealer network for retail sale to customers. This effectively creates barriers as well as a financial disincentive to having PEVs in OEM fleets that are used on a limited basis by employees to promote these vehicles to consumers and media. Under the existing structure, an OEM that places a PEV in their company fleet would need to provide a further discount equivalent to the size of the Ontario EVCIP program in order to sell these PEVs in the wholesale market to dealers, since a consumer ultimately purchasing this vehicle would be ineligible to apply for the EVIP program on the PEV. Given that the current EVIP has a maximum of $14,000, this additional cost to OEMs for each PEV that is temporarily placed into their OEM company fleet is a significant financial disincentive. Provided that these PEVs (previously been in an OEM fleets) have never had an EVIP incentive applied to the vehicles, these vehicles should be eligible for the incentive program when first sold to the retail customer with no restrictions on vehicle mileage.

vii. Allow dealers to apply the rebate to additional demo PEVs sold, which would serve as an incentive to them to add PEV's to their demo fleet. The current program only allows dealers incentives on 2 vehicles annually with up to 15,000 km. This rule is very limiting and should be removed. Additionally, the restrictions in the current program on who can drive these demo vehicles should be removed. Allowing dealership employees and management to drive demo vehicles home is a common practice, and serves as another way to educate and "market" vehicles to friends and neighbours. Therefore, putting a restriction on PEV demos being driven by dealership personnel does not help to educate potential consumers about PEVs.

viii. Provide an additional rebate for dealers who purchase EV's for their customer courtesy shuttle vehicles. This single initiative has the potential to expose a high number of Ontarians to a ride in an EV. We know from experience that no amount of education has a comparable effect on purchase behaviour as does first-hand experience driving or riding in an EV.

ix. Provide additional rebates to Fleets to do their EV Fleet Business Case, similar to the BC Fleet Champion Program: For example, eligible fleets can apply for a free EV business case assessment (typically a $35,000 cost for a fleet of 20 vehicles), including a FleetCarma EV Suitability Assessment and/or EV Telematics. These analyses can help fleet managers understand the costs and savings of adopting EVs.

x. Permit free or discounted access to the 407 ETR. EV access to HOV lanes and toll roads has been seen to significantly increase consumer EV demand in other leading EV adoption jurisdictions.

xi. Continuity and Predictability of Existing Measures and Program

xii. The programs needs to be better known by the public and stakeholders. In order to reach the goals, the budget and resources must be confirmed and announced in advance for many years to come. Any disruption or discontinuity will definitely have an impact.

xiii. Support of the provinces for federal incentives for EV buyers, workplace charging, and public charging, including DCFC for national corridors.

7.2 Electric Vehicle Chargers Ontario Program (EVCO)

7.2.1 What program features (e.g., eligibility requirements, evaluation criteria, technical requirements) should be considered in a program to deploy charging stations at workplaces, multi-unit residential buildings, downtowns and town centres?

For a buyer of a used EV, apply the rebate for the home charging station.
For non-single or double family home, the following criteria should be encouraged/required, for every building:

i. 24/7 availability for EV site host and EV driver support
ii. Should support all EV makes and models
iii. Charging stations must be networked to show real-time availability and support utilization reporting and analysis.
iv. Rebate structure as basis for incentivizing deployment of infrastructure
v. Smart chargers to manage all aspects for the grid, and the users for these locations.
vi. Reliability of the stations, and network, with demonstrated Key Performance Indicators, including 95% station up time guarantee
vii. Maintenance of charging should be condition for government funding of public chargers.
viii. Long term sustainable business models, with a range of different approaches, considering global profitability for the investor. Therefore, the total costs including not only investments, but also operational costs need to be optimized, with a shared risk.
ix. Multiple access to different forms of payment:

For information only, interoperability is an objective being pursued by all jurisdictions, but has not yet been standardized. The goal on the front-end to simplify EV charging by enabling drivers to use any participating charging network account to conveniently access charging stations across multiple charging networks. Also, back-end interoperability helps ensure the viability of hardware assets by providing site hosts flexibility in network operating systems. Many different solutions are being examined, such as on the front-end:

a. An integrated access for drivers
b. The support of multiple payment options, including credit card over the phone or through mobile technology, subscription- or membership-only, and nonsubscribers or non-members
c. The ROEV association (Roaming for EV charging), an industry trade association focused on increasing adoption in the US through the convenience of a network roaming.
d. Open ClearingHouse Protocol – a widely used network roaming protocol in Europe
e. Hubject – a widely used network roaming methodology in Europe

And on the back-end: OCCP – a widely used back-end open communications protocol.
No decision to implement a completely interoperable solution should be addressed until standards are developed and verified by an international standards making organization.

A working group with the industry and other leading provinces is recommended to share the vision and inform policymakers given rapid evolution and growth in the EV charging market.

7.2.2 Specifically for multi-residential and workplaces: Who are best positioned to implement the installation of charging infrastructure?

The same entities as for public charging, and some emerging providers of services for an annual fee.
For the operational implementation: Qualified Master Electricians/Integrators with proven track records and history in EVSE installations.

7.2.3 How should funding for charging stations be structured and/or capped? What value(s) of cap(s) should be applied?

For AC Level 2 Stations: A rebate program for networked EV charging stations that may cover 50% of costs, to a maximum of $5,000 (capital and installation costs), for commercial and multifamily Level 2 smart chargers, is recommended for commercial charging stations. This level of incentive is comparable to the workplace charging incentives in Quebec, and the Multi-unit incentives in BC.
For DC Fast Charging Stations: A rebate program for DC fast charging stations should cover up $40,000. Stations should support multiple connection standards.
These amount should be adapted to the duration of a service fee agreement provided by a recognized provider.

7.2.4 How can government best engage workplaces, condos and apartments to participate in the EVCO program?

Integrate awareness campaign targeting potential applicants as part of 7.3.3, well in advance of EVCO 2.0.
Review the US DOE Workplace charging initiative program which was established to make a 10 fold increase in Workplace charging by 2018.
A minimum percentage of program expenditures should be dedicated to education and awareness efforts.

7.2.5 How should government ensure that Local Distribution Companies are involved in EVCO applications?

In the planning and in the choice of final sites for DCFC especially, the LDCs should be consulted, and be prepared to facilitate their installation.

7.2.6 What aspects of the first round of EVCO do you feel should be repeated or done differently?

i. Conduct studies similar to "Patrick Jochem, Karlsruhe Institute of Technology, Optimizing the allocation of fast charging infrastructure along the German autobahn" in order to determine appropriate location of DCFC on primary and secondary highways.
ii. EVCO should be split into a 2-stage process: 1) establish priority EV charging corridors with input from stakeholders, 2) issue an RFQ for proposals to deploy fast charging stations along EV charging corridors.
iii. Ensure that chargers are located within 2 minute walk from 24-hour food and restrooms.
iv. Ensure that tourist sites (e.g.: provincial and federal parks, government buildings, government sites, etc. e.g. Niagara Falls) are well serviced.
v. Work more closely with independent experts to assess suitability of location submissions and bids.
vi. Consider leveraging pre-existing electrical infrastructure at Provincial parks.
vii. Require standard signage indicating EV parking only while charging and provide significant fine and enforcement measures for miss use by non-compliant vehicles.
viii. Allow significantly more time between announcement and submission deadline. Also allow for expert panel review of the submissions under an application program submission.
ix. Announce winners during late-winter to permit construction to begin early-spring.
x. Require all L2 chargers to be smart-chargers and that the LDC is able to limit charge-rate if necessary.

7.3 Education and Awareness - EV Educational Campaigns

7.3.1 What are your current perceptions related to EVs? How can government help in improving perceptions related to EVs, and help consumers better understand the benefits of EVs?

Communication, Awareness and Test Drives

Awareness is the one of the most important areas of improvement that is not well taken care of by any of the stakeholders. A recent survey in Quebec shows that the perception around EVs has not evolved in the last 5 years. A centralized, coordinated, structured and repetitive approach is needed, under the responsibility of an entity. Governments should take the lead, on these communication efforts with input from other key stakeholders and with the consideration for providing common materials (visuals and tag lines) and visuals at point of sale, education events, government vehicle registration sites etc. and educate and encourage consumers to seriously consider EVs as a way for each them to contribute to reduce their GHG footprint.

Increase in awareness levels is easy to follow and should be captured on a regular basis.
See 7.3.3 and 7.3.4

7.3.2 What innovative education and/or awareness programs or policies, currently operating in other jurisdictions that provide support for the adoption of EVs, could be applied in Ontario?

In other provinces, some programs and initiatives exist such as Fraser Basin Council http://pluginbc.ca/ in BC, AVEQ in Quebec http://www.aveq.ca, and New Brunswick Power http://www.fleetcarma.com/customers/nb-power/, Quebec hydro GHG and fuel cost calculator site http://www.hydroquebec.com/transportation-electrification/personal-transportation/charging-cost.html
A centralized, coordinated with all provinces, structured and repetitive approach is needed, under the responsibility of an entity such as EMC.

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7.3.3 Who should the government be partnering and collaborating with to deliver an EV educational campaign?

The governments should work together to share resources, and outcome through a national effort. EMC has described and quantified the budget necessary to do so.
One important measure to prioritize is to raise public awareness regarding transportation electrification and EV by launching a Campaign with major impact, a Resource Center and a permanent Test Driving Program which would be mobile across the Province. These low cost/major impact measures are described with length in the EMC National Roadmap and may be adapted to the Ontario context. The promotion of public transit should also be included in these awareness actions.

Auto manufacturers and dealers should be encouraged to produce and deliver print and media advertisements for their EV's and PHEV's that receive increasing exposure. Increasing consumer demand and awareness of GHG reduction opportunity and fuel costs savings will result OEMs spending increased levels of advertising and exposure.

In complementarity to a national campaign, the Ontario Gov't should produce and deliver its own adapted PEV education campaign via mass media (series of 30 sec Web ads, etc.) that connect Ontario's green grid to the GHG benefits of operation PEVs and the fuel savings to consumers. As well as the educating consumers on the PEV ability to meet their families' transportation needs. Actions that should be considered by the government are:

i. Through the MTO, the government sends vehicle plate renewal forms to vehicle owners every year. The government should include information on the benefits (environmental and financial) of owning a PEV, as well as making them aware of the EVIP and home charging program. Educational material could also be made available at Ontario Service Kiosks, and providing links to Ontario education websites.
ii. This same information could also be provided to local electricity distributors for inclusion in monthly electricity billings that are sent to consumers.
iii. The government and some of it crown corporations like OPG have been airing commercials on their environment objectives and the clean electricity. Those commercials should also feature PEVs as a way for consumers to use this clean electricity and make a difference in their carbon footprint
iv. All Minister and Premier vehicles should be a PEV (visibility of technology and promote the choice to consumers. All executives in Ontario crown corporations that have cars provided should be a PEV. All government (Ministry, crown corporations, agencies, etc.) buildings/workplace parking lots should have a min of 5% of the parking spots with PEV charging capabilities. This will raise awareness with public and with government employees as well as provide them with confidence towards purchasing a PEV for their transportation needs.
v. School curriculum at all grade levels should include material to raise awareness of the role consumers can take to lower their individual carbon footprints (including Home heating, lighting, and personal transportation with a focus on PEV's as practical and affordable option)
vi. Establish a permanent PEV and education display at the Ontario Science Centre.
vii. Community delivery of EV education is best delivered through local or regional not-for-profit organisations such as the EV Society and other owners' groups.
viii. The Government of Ontario has a number of outlets to do this, high visibility government fleet vehicles being one. Government Ministries and government organizations should be given the responsibility of being leaders in the adoption of PEVs in their fleets. As large vehicle fleet users/operators, government fleets have significant opportunities to adopt PEVs, to develop appropriate charging infrastructure facilities that can be used by their fleets and the public, and to raise public's awareness by having their fleet PEVs with a large common logo highlighting that they are PEVs . It is recommended that the provincial government:
    a. Commit that every fleet vehicle purchased should be a PEV if at all possible.
    b. Every Ministry should publicly publish the number of vehicles in their fleet, the current percent of PEVs in their fleet, the planned increase of PEVs in their fleet over the next 5 years and the increases of PEVs in their fleet over the last 3 years.
    c. All crown corporations or organizations majority owned by the province should also publish the same information and have the same PEV fleet objectives as the Ministries.

ix. Encourage plug-in ready cities and municipalities to purchase and set ambitious goals for PEV vehicle adoption in their fleets and publicly measure their progress regularly.
x. Promote fleet adoption to other large and high profile organizations such as utilities, large local employers, and universities

7.3.4 To increase education and awareness of the benefits of EVs, what forms of communication and key messages should the government consider to reach an audience beyond the EV community?

Over and above items and suggestions above, Identify key messages such as:

i. Create a positive and exciting message for EVs (new technology, fun to drive, can meet their family transportation needs, dramatic reductions in GHGs, lower fueling and operating costs, and the government is going to help alleviate the initially higher vehicle cost.…)
ii. consumer cost savings and economic benefits,
iii. Local green energy use and connection to local jobs, etc.
iv. and use those messages consistently throughout all delivery mechanisms such as those described in outreach initiatives above.

7.3 Education and Awareness - Partner and Dealership Programs

7.3.5 What are potential tools that can be used to increase the availability of EV models on the showroom floor, for test drives and for purchase at dealerships?

See 7.1.4. Essentially, increasing consumer demand levels for PEVs beyond the existing niche vehicle situation that currently exists PEVs. Increased consumer demand and sales will increase the presence of PEVs at dealers, to be monitored.

7.3.6 What supportive mechanisms and/or incentives should the government provide to EV salespeople and dealerships in order to increase EV sales?

OEMs with available PEV models already provide and make available extensive model specific training to their sales staffs and service technicians to EV certified dealers. For dealers that are only likely to sell a small number of PEVs, the costs of training, special tools required to service these vehicles and charging infrastructure installations at dealership can be a barrier to a dealer seeking to become a certified PEV dealer. The governments could therefore consider providing support programs for dealers to conduct PEV training for sales staff and technicians, purchase tools related to servicing PEVs and for the installation of Level 2 or DC fast chargers.

7.3 Education and Awareness - Private Fleet Awareness Campaign

7.3.7 How can we effectively raise awareness of EVs and EV incentives to private fleets?

While fleet managers are generally aware of EVs, most fleet managers view them as risky, or have misperceptions:

- *will they have enough range...*
- *what happens to range in winter...*
- *what kind of infrastructure do I need to install? How much will that cost? How much time will it take?*
- *will the EV ACTUALLY save me money or will it end up costing me more*

For those reasons, the fleet managers are generally more inclined to avoid EVs. Not because they don't think there could be benefits... but there is a lot more downside than upside. "I won't get fired for just continuing to use the same thing we've always used.... I will get fired if I get EVs and they perform poorly"

Getting EVs into private fleets requires a reduction in the perceived risk. *Electric Vehicle Suitability Assessments* (Ex: those offered by Waterloo's FleetCarma) is one way to address common concerns. Consider creating an incentive program to fund such assessments.

Also, the BC Fleet Champions Program (FCP) offers technical and financial support in two areas:

i. EV Fleet Business Case: Eligible fleets can apply for a free EV business case assessment (typically a $35,000 cost for a fleet of 20 vehicles), including a FleetCarma EV Suitability Assessment and/or EV Telematics. These analyses can help fleet managers understand the costs and savings of adopting EVs. See the Business Case Assessment page for more information on how to participate in this program. This opportunity is only available to BC FCP participants (BC-based fleets that sign the WCEF pledge).
ii. Charging Infrastructure Incentives: Fleets can apply for a rebate of 33%, up to $2,000 on the purchase and installation of a Level 2 charging station. Fleets may also qualify for a free site assessment to understand charging needs and options. See the Charging Infrastructure Incentives page for more information and how to apply. This opportunity is only available to BC FCP participants (BC-based fleets that sign the WCEF pledge).

Some market niches deserve special attention such as municipalities, condominiums, employers, and condo developers. Alliances with association representatives, and participation to conferences and events would be beneficial. A recognition of EV leaders would be useful to spread the word of the benefits of transportation electrification.

While Ontario has chosen not to implement a general Zero Emission Vehicle (ZEV) mandate at this time, it should immediately implement such a mandate specifically for all Provincial and Municipal fleets in all cases where an *Electric Vehicle Suitability Assessment* concludes that an EV is a viable option.

Many ministers and Crown corporations have to deal with the rule of the lowest bidder for the purchasing of goods such as electric vehicles. An analysis of the total cost of ownership would be appropriate and would largely favor EVs in many cases.

7.3.8 What elements should be included in a decision-making tool or cost calculator help fleets consider purchasing an EV?

As above, *Electric Vehicle Suitability Assessments* provide exactly these elements.

Additional remarks

Building codes

The modifications to the building code are important on the long run, as highlighted by the government. The provincial building code amendment should include at least the basic elements for EV charging (electrical update and access to upcoming stations) in all new buildings, including condos and apartment blocks. Additional amendments could include a certain percentage of parking spaces in condos, in fleet garages, and in commercial and institutional buildings for workplace charging or other.

One of the options in BC consists of allowing local governments (municipalities) to require the installation of charging infrastructure in new buildings. This approach is probably more efficient and adapted to regional preoccupations of fellow citizens.

Please consult our previous submission at https://emc-mec.ca/wp-content/uploads/EVHAP-Consultation-Joint-Submission-EMC-and-PND-final_v2.pdf