

**BRITISH COLUMBIA UTILITIES COMMISSION**  
**IN THE MATTER OF THE UTILITIES COMMISSION ACT**  
**R.S.B.C. 1996, CHAPTER 473**

**And**  
**An inquiry into the Regulation of**  
**Electric Vehicle Charging Service**

**VANCOUVER, B.C.**  
**April 16, 2018**

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**Community Input Session**

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**BEFORE:**

<b>D. Morton,</b>	<b>Chair/ Panel Chair</b>
<b>A. Fung, Q.C.,</b>	<b>Commissioner</b>
<b>H. Harowitz,</b>	<b>Commissioner</b>

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**VANCOUVER, B.C.**

**April 16<sup>th</sup>, 2018**

**Afternoon Session**

**(PROCEEDINGS RESUMED AT 12:05 P.M.)**

THE CHAIRPERSON: Good afternoon, ladies and gentlemen.  
Thank you all for coming out. My name is Dave Morton,  
I'm the Chair of the Panel that's conducting this  
inquiry into EV Charging Inquiry. I'm also the Chair  
of the Commission.

With me on my right is Commissioner Anna  
Fung, and on my left is Commissioner Howard Harowitz,  
and we will be listening to your comments today and  
reviewing all the other evidence in this proceeding  
and will be writing a report later in this year, at a  
specific time yet to be determined.

Before we start, I just want to say that  
there have been complaints earlier in our road trip  
around the province -- this is the last of a number of  
stops that we've made, and there's been complaints  
that there haven't been cookies at every location. So  
I just want to point out that we not only have cookies  
at the back, but we also have a chocolate cake and  
chocolate candies. So, feel free to help yourself to  
that, along with coffee and tea.

What's going to happen this afternoon, as  
Hal mentioned, we're going to have a short

1 presentation from Commission Staff. Patrick Wruck is  
2 going to tell you a little bit about the Commission,  
3 what we do generally, and how to participate in this  
4 inquiry. And then Leon is going to be giving a  
5 presentation about the focus of the inquiry, about  
6 electric vehicle charging.

7 And then I have a list of people who have  
8 registered to speak today, and I'm going to invite  
9 individuals to come up and then if there's anyone that  
10 hasn't registered and would like to speak, you will  
11 have an opportunity when we finish with the registered  
12 speakers to come up and make a presentation.

13 So on that note I'll turn it over to  
14 Patrick now. Thanks, Patrick.

15 **(PRESENTATION GIVEN BY PATRICK WRUCK)**

16 **(PRESENTATION GIVEN BY LEON CHEUNG)**

17 **(PRESENTATION GIVEN BY PATRICK WRUCK)**

18 **Proceeding Time 12:14 p.m. T2/3**

19 THE CHAIRPERSON: Thank you, Patrick. The first speaker  
20 on my list is Mr. Doug Beckett, and I understand, Mr.  
21 Beckett, you're -- the first one on my list is Mr.  
22 Beckett. No? Okay. Okay.

23 Okay, Mr. McGillivray, from Toronto Hydro.

24 **PRESENTATION BY MS. DeMARCO:**

25 MS. DeMARCO: It's actually Lisa DeMarco. I'm here on  
26 behalf of Toronto Hydro. First name is Elizabeth,

1 last name is DeMarco, capital D-E-capital M-A-R-C-O.  
2 And I'm here on behalf of Toronto Hydro Electric  
3 System Limited, and I will probably refer to them  
4 generally as Toronto Hydro.

5 Thank you, Mr. Chair.

6 THE CHAIRPERSON: Thank you.

7 MS. DeMARCO: Mr. Chair, I'm here on behalf of Toronto  
8 Hydro and my comments are organized into two main  
9 parts. The first is covering the context, both the  
10 legislative and the public interest context, in which  
11 you as the panel will be called upon to consider the  
12 subject matter of this inquiry. And the second main  
13 part is specific comments. It includes specific  
14 comments in relation to each of the seven issues that  
15 you have duly set out for the Board to consider -- for  
16 the Utilities Commission to consider.

17 So let me start with context. And first,  
18 it's almost trite for me to say that the energy sector  
19 is changing rapidly, very rapidly. And in fact a  
20 number of Canadian energy regulators have undergone,  
21 or are undergoing, quote-unquote modernization  
22 reviews. Response to that changing, rapidly changing  
23 energy sector, in response to changing expectations of  
24 utilities, in response to changing customer demands  
25 and expectations that all inform the public interest,  
26 and finally in response to procedures that need to

1        adapt to the dynamism that we're seeing in the energy  
2        sector, all in the context of your defined legislative  
3        and regulatory mandate.

4                So first let me congratulate you on your  
5        outreach. And really changing the procedures, and  
6        reaching out to specific communities, to solicit  
7        views. This is in fact a dynamic energy procedure.

8                But on the substance, let me say this  
9        specific inquiry into EV charging stations is  
10       reflective of the innovative development that's being  
11       considered by you in the context of your governing  
12       legislation, your mandate under the *Utilities*  
13       *Commission Act*, and in relation to the statutorily  
14       defined energy objectives in the *Clean Energy Act*.  
15       These are not policy objectives any longer. These are  
16       legislative objectives, clearly set out in the *Clean*  
17       *Energy Act*. And finally, your decision making takes  
18       place in the context of your rules of practice and  
19       procedure.

20                So, Toronto Hydro very generally submits  
21       that a number of the provisions of the *Utility*  
22       *Commission Act*, a number of the precise legislative  
23       objectives sets out in the *Clean Energy Act*,  
24       facilitate utility involvement in the EV charging  
25       infrastructure and EV charging stations at this  
26       critical emerging time in their development.



1           reasonableness, to customer safety, and to the  
2           adequacy and access to services, specifically Section  
3           25 and 26 of your governing legislation. We feel that  
4           this provides contextual parameters to govern and help  
5           you, today, in really getting into the consideration  
6           of a very novel area.

7                         But those duties and jurisdiction has to be  
8           exercised in the context of the decision making  
9           authority and the objectives that are clearly set out  
10          for you in Section 2 of the *Clean Energy Act*, which  
11          certainly include four objectives that we feel are  
12          very important for you today in your considerations.

13                        The first is, you're required to use and  
14          foster the development of innovative technologies that  
15          support energy conservation, efficiency, and the use  
16          of clean and renewable resources. That's section E of  
17          the *Clean Energy Act*.

18                        Secondly, you are in fact charged in part  
19          with mandating and assisting B.C. reduction of  
20          greenhouse gases to get to a reduction of 33 percent  
21          from 2007 levels of greenhouse gas emissions by 2020.  
22          Some two years from now. To get to an 80 percent  
23          reduction from 2007 levels of greenhouses gases by  
24          2050. These are very ambitious goals. Very  
25          significant goals that need equally ambitious and  
26          significant action. That's Section 2(g) of the

1 objectives.

2 You're also charged with encouraging the  
3 switching from one kind of energy source to the use of  
4 another that decreases greenhouse gas emissions in  
5 B.C., and that's Section 2(h) of the *Clean Energy Act*;  
6 and finally last but not least, you're required to  
7 encourage communities to reduce greenhouse gas  
8 emissions and use energy efficiently. And that's  
9 Section 2(i) of the *Clean Energy Act*.

10 These objectives are very pressing, and  
11 they're very important in the context of the decision  
12 that you're being called upon to make today, and the  
13 recommendations that you will put forward. Certainly  
14 Toronto Hydro is of the general view that while  
15 limited competition may exist in certain aspects of EV  
16 charging stations, utility involvement in the  
17 development, in the implementation, and the  
18 integration of EV charging infrastructure is  
19 absolutely necessary.

20 In particular, utility involvement in or  
21 oversight of direct current, fast charging, or Level 3  
22 chargers is absolutely necessary to safely establish  
23 DCFC charging infrastructure in a manner that is  
24 consistent with customer needs, consistent with  
25 distribution and transmission planning, and absolutely  
26 reflective of B.C.'s energy objectives and those very

1           ambitious greenhouse gas reduction timelines.

2                       So with that, that concludes my first part  
3 of our submissions around context. And I say all of  
4 this with no pressure, because certainly there's a  
5 large job ahead of you in coming up with those  
6 objectives in that legislative context.

7                       Let me, if there are no questions on that  
8 portion, move on to the second part of our submissions  
9 which are specific to each of the seven issues you put  
10 forward.

11   **Proceeding Time 12:24 p.m. T5**

12 THE CHAIRPERSON:   Ms. DeMarco, yes, I do have a question,  
13 please. Given your statement that -- or your  
14 statements that you do feel it's entirely appropriate  
15 -- and I'm paraphrasing here, but that it's entirely  
16 appropriate that utilities be involved in the EV  
17 charging market, in part because there really isn't a  
18 competitive market or sufficiently competitive market,  
19 and because there is a need to provide that  
20 infrastructure, how do you address the risk and the  
21 risks to ratepayers, or potential risk to ratepayers,  
22 of utilities becoming involved in a market that is  
23 immature, in that the technology is changing rapidly,  
24 and the write-off times for the technology may be  
25 longer than the effective life of the technology?

26 MS. DeMARCO:       We will address this specifically in our

1 itemized submissions, but let me say generally, there  
2 is a body of evidence that has been considered in and  
3 around the California development of EV charging  
4 infrastructure, number one. And number two, there are  
5 those Bonbright principles and procedural choice that  
6 you've got at your fingertips to ensure that we have  
7 an ongoing consideration of the marketplace as it  
8 evolves.

9 First, we have this critical emergent  
10 phase, where you're looking at facilitating the good  
11 ratemaking principles so we don't have cross-  
12 subsidization that would be contrary to the general  
13 rate-making principles that you implement every day,  
14 and contrary to the customer protection elements that  
15 you constantly bring to bear.

16 Secondly, you have a full bandwidth within  
17 your power to revisit this issue, five, seven, ten  
18 years from now, and change, and update your thinking,  
19 in relation to an evolving marketplace. But what you  
20 don't have at this point is the luxury of time in  
21 meeting those greenhouse gas objectives. 2020 is some  
22 two and a half years away.

23 THE CHAIRPERSON: Yes.

24 MS. DeMARCO: There are a significant amount of emission  
25 reductions that have to happen in that time and  
26 intervening period, and similarly to get to an 80

1           percent reduction by 2050 is extraordinarily  
2           ambitious. So, ensuring that the marketplace is  
3           developed, ensuring that customers who are demanding  
4           choice have that choice, needs to be done in a way  
5           that is fully reflective of the customer safety, the  
6           reasonableness, and the protection elements that  
7           you've always been focused on.

8 THE CHAIRPERSON:    Thank you. I appreciate it. Any other  
9           questions?

10 COMMISSIONER FUNG:   Ms. DeMarco, it's Anna Fung speaking.  
11           In light of your comment about the need for utilities  
12           to be involved at least in DCFC charging facilities,  
13           how do you reconcile that with the OEB staff's opinion  
14           that the Board ought not to be regulating the EV  
15           charging market at all?

16 MS. DeMARCO:        I would say to you that it's my  
17           understanding that that context is evolving, and it's  
18           evolving in the context of a further evolving public  
19           interest. So certainly we're seeing this in relation  
20           to not just energy -- electric vehicle charging  
21           stations, but we're also seeing it evolve in the OEB's  
22           thinking around energy storage. And I would also  
23           submit that the Ontario Energy Board is the subject of  
24           an ongoing and very active modernization review, where  
25           one of the panel members reviewing the OEB's conduct,  
26           and getting it to a more modern stage, is very active

1 in the EV charging space. And I don't think that's a  
2 coincidence.

3 I think there are significant adaptations  
4 that any number of regulators across the country are  
5 going through to adapt to an energy sector that's  
6 changing more broadly, more rapidly, than many of us  
7 with grey hair in the room have anticipated. After 25  
8 years in the sector, I certainly find it -- find it an  
9 interesting development that we're discussing the  
10 issues around electrification of the transportation  
11 sector, in response to public policy and legislative  
12 mandates that pertain to greenhouse gases that we  
13 wouldn't have contemplated even ten years ago.

14 COMMISSIONER FUNG: Thank you.

15 **Proceeding Time 12:28 p.m. T6**

16 COMMISSIONER HAROWITZ: A question for you. I'd like you  
17 to expand a little further on, in saying that whether  
18 it's around safety or more specifically around  
19 achieving the GHG objectives, which I naturally  
20 connect some dots to that saying fast rollout and  
21 faster adoption of EV technology broad-base. Is it  
22 your contention that that will happen more quickly  
23 with utility involvement than private sector  
24 involvement? And do you take it a step further and  
25 say, and it would be the roll of the regulator to  
26 compel the utilities to roll out that technology or

1           just that the utilities will naturally do it no their  
2           own, but if it's utility based then it argues for  
3           regulation? So where's the horse and where's the  
4           cart?

5 MS. DeMARCO:   It's a great question. It's something I've  
6           contemplated quite a bit over the last two years and  
7           I'll speak personally, not on my behalf of the client  
8           right now. But certainly I gave a chat to the  
9           Canadian Association of Major Power Utilities  
10          Tribunals last year about the role of energy tribunals  
11          in innovation broadly.

12                   And what I believe the issue you're  
13          grappling with is are you required to be a facilitator  
14          of technology and innovation by ordering or mandating  
15          utilities to rapidly do something? I would say, as I  
16          did then, the approach should be quite similar to the  
17          Hippocratic Oath. That is if you cannot help and  
18          cannot facilitate, at least do no harm. At least  
19          ensure that there are no regulatory barriers that you  
20          inadvertently are putting into place as a function of  
21          your rate regulating powers that impede innovation and  
22          development by the entire marketplace including  
23          utilities.

24                   So with that as a contextual approach  
25          certainly where you're mandated with a live proceeding  
26          to facilitate those objectives and ensure that the

1 coverage that customers are demanding in relation to  
2 electric vehicle service charging stations is  
3 available. Certainly there's ambit within your  
4 legislative mandate, and it's something I did study  
5 quite carefully. The *Utilities Commissions Act*  
6 certainly provides you with ample legislative  
7 objectives to facilitate the rollout that you're going  
8 to need to meet those *Clean Energy Act* objectives and  
9 to do so in a way that is consistent with the  
10 timelines.

11 All, again, within the context of your  
12 Section 25 and Section 26 duties to make sure that  
13 this occurs in a reasonable, safe, adequate manner  
14 that ensures these customers require that they have  
15 access to the services that they need. Not just in  
16 one part of the province, but certainly coverage  
17 across the province in the areas that they're  
18 required.

19 THE CHAIRPERSON: Thank you. Please go ahead. Thanks,  
20 Ms. DeMarco.

21 MS. DeMARCO: Thank you very much. Let me move on to my  
22 specific submissions in relation to the first issue.  
23 And your first issue was do EV charging stations  
24 operate in a competitive environment in B.C. or are  
25 they a natural monopoly service? Let me just comment  
26 that the issue is presented as a stark dichotomy, one

1 or the other, when the reality might be much more  
2 along the lines of continuum. And it's the general  
3 submission of Toronto Hydro that we're towards the end  
4 of the continuum that looks less like competition,  
5 full and adequate competition, to serve the  
6 marketplace for the ext. five to seven or ten years.

7 So to the best of Toronto Hydro's  
8 knowledge, which seems to be supported by all, the  
9 evidence submitted and adduced in this inquiry, the  
10 extent and nature of competition in each of Level 1,  
11 Level 2, and Level 3 charging station services has not  
12 been the subject of economic analysis. We don't have  
13 precise competition data, competition and economical  
14 analysis to support the fact that there is sufficient  
15 competition to move away from a public utility model,  
16 to forbear on regulation.

17 **Proceeding Time 12:33 p.m. T07**

18 Toronto Hydro notes, however, that customer  
19 choice is, in fact, not existent in a significant  
20 number of areas. And market -- and I use the quotes  
21 here. Market alternatives appear to be very limited  
22 or non-existent in certain public areas, on highways,  
23 and in certain multi-residential buildings. So as one  
24 of the central tenants of a test of sufficient  
25 competitiveness, one looks to, as the Competition  
26 Tribunal would, as you would in other contexts,

1           whether there is sufficient choice as a central  
2           hallmark of competition. And it's my submission that  
3           we don't appear to have that central hallmark of  
4           competition across the province and certainly in  
5           relation to level 3 chargers.

6                           And very specifically on this point, if  
7           B.C. is to meet those very very ambitious legislative  
8           goals, that 33 percent reduction from 2007 levels by  
9           2020, rapid electrification of the transportation  
10          sector will be required. And it's certainly Toronto  
11          Hydro's view that that rapid electrification of the  
12          transportation sector necessitates utility or utility  
13          affiliate involvement in rapidly implementing EV  
14          charging infrastructure throughout the province. And  
15          again, I emphasize "throughout the province".

16                           Moving on to issue number 2, your question  
17          is: Are the customers at EV charging stations captive  
18          or do they have a choice? Certainly EV customers  
19          appear to be captive or appear to be unserved at this  
20          point for DCFC charging in certain public areas, along  
21          major thoroughfares and highways, and in multiple unit  
22          residential buildings. This certainly supports the  
23          need for utilities and/or their affiliates to develop  
24          the requisite infrastructure, at least in this  
25          critical, in this initial, in this first five to seven  
26          year period, in an emerging and changing element of

1 the sector, in this critical emerging infrastructure  
2 phase, particularly if you intend to meet those  
3 greenhouse emission reduction goals.

4 On issue number three, you've asked:  
5 Should the BCUC regulate the services provided by EV  
6 charging stations and specifically what are the  
7 detriments and benefits to such regulation?

8 As we outlined in the contextual piece, you  
9 appear to be required by the *UCA* and the definition of  
10 "a public utility" and your public interest and safety  
11 mandates to provide regulatory oversight of EV charging  
12 stations.

13 Similarly aggressive electrification of the  
14 transportation sector and related charging  
15 infrastructure will be required for you to facilitate  
16 those objectives in the *CEA*, in the *Clean Energy Act*  
17 that we went through.

18 But we certainly understand your needs to  
19 ensure that sufficient growth and coverage of EV  
20 charging infrastructure occurs and to allow for  
21 utilities to recover their costs of developing and  
22 implementing that infrastructure. And this is where  
23 we go back to that hypocritic oath approach.

24 At a minimum we would submit that you  
25 should ensure that utilities and/or their affiliates  
26 are not disincented, are not penalized from providing

1 EV charging services, and facilitating the requisite  
2 growth and coverage of EV charging infrastructure  
3 throughout B.C.

4 Measurement Canada guidance also appears to  
5 support limited regulatory oversight of EV charging  
6 stations and the charging equipment, which could, for  
7 certain purposes, fall within the definition of a  
8 meter and regulation by Measurement Canada.

9 **Proceeding Time 12:38 p.m. T8**

10 Certainly familiar to you is your oversight  
11 mandate regarding public safety. And in this regard,  
12 we would submit that you should ensure that public  
13 safety is ensured, and that the recent provincial  
14 challenges with unregulated smart meters are avoided.

15 Consistency, utility safety standards, all  
16 help in ensuring that we don't walk down the same path  
17 as we've walked down with smart meters in many  
18 jurisdictions. And certainly BCUC may wish to ensure  
19 that your oversight of this infrastructure, your  
20 oversight of electric vehicle charging stations is  
21 dynamic. And that you may want to reassess  
22 competitiveness in EV charging stations, and if  
23 warranted, consider regulatory forbearance in a period  
24 of five to ten years. Certainly this sector that is  
25 changing as rapidly as it is, is conducive to ongoing  
26 jurisdictional oversight, ongoing regulatory oversight

1 of an evolving sector. That's in relation to issue  
2 number 3, moving on to issue number 4.

3 Your question was: Should the rate design  
4 of EV charging stations be established under a public  
5 utility's traditional cost of service model, or some  
6 other model. And within that context, what are the  
7 customer pricing options. For example, energy based  
8 rates versus time based rates.

9 Certainly starting as a basic principle,  
10 Toronto Hydro would submit that the BCUC should  
11 continue to ensure that the Bonbright principles of  
12 good utility regulation are adhered to. It is  
13 something that you've always done, and it is something  
14 that we would submit there is no need to depart from  
15 at this point in time.

16 And those Bonbright principles provide for  
17 the rate design to reflect both cost of service and  
18 incentive regulation approaches that are consistent  
19 with the B.C. Energy Objectives set out in section 2  
20 of the *Clean Energy Act*.

21 Referring back to the bulk of evidence that  
22 we've got coming out of California, those Bonbright  
23 principles were also considered in the work of E3, the  
24 leading electric vehicle consulting firm that has done  
25 much of the work across North America in relation to  
26 EV charging infrastructure. The E3 rate design work

1           that was undertaken in California in both 2014 and  
2           2017, certainly provided for the reflection of a  
3           number of the Bonbright principles. And they include,  
4           first, customer understanding and ease of  
5           implementation. So, charging infrastructure has to be  
6           understandable, and easy to use for customers. It  
7           appears as though a time based charge may be easiest  
8           for customers to understand and implement, and it  
9           currently avoids a second potential level of  
10          regulation whereby Measurement Canada might classify  
11          the infrastructure as a meter, and require further  
12          development that could impede implementation.

13                        Secondly, E3 recommends that any associated  
14          rate design ensures the collection of a utility's cost  
15          of service. The data is important to you, not just at  
16          the outset as you're determining how to proceed, but  
17          in relation to your ongoing jurisdiction over electric  
18          vehicle charging stations.

19                        Secondly -- or thirdly, it's the principle  
20          of avoidance of cross-subsidization, that you referred  
21          to, Mr. Chair. E3 recommends that we facilitate  
22          current customer's payment for the use of current  
23          assets, and not defer or result in an  
24          intergenerational inequity by putting costs on  
25          customers who are not benefiting from the assets in  
26          question.



1           deliberations and your consideration.

2                       Moving on to issue number 5, your question  
3           is, should the EV charging station service rate be  
4           based on a public utility's existing wholesale or  
5           commercial retail rate, or some other rate?

6                       Our submission is quite generally that you  
7           as a Commission, who wrestles and grapples with these  
8           issues all the time, should not be constrained in  
9           considering new or existing rate structures that best  
10          support the development of EV charging infrastructure.  
11          In fact, you're expressly authorized to consider  
12          whatever means you think appropriate; specifically  
13          Section 60(1)(b.1) gives you that exact authority.  
14          You have the discretion. We would ask that you use it  
15          in relation to the facts and evidence that come before  
16          you.

17                      On issue 6, you've asked: Should public  
18          utilities include EV charging stations in their  
19          regulated rate base, or through a separate non-  
20          regulated entity? And again, we would argue that you  
21          have the flexibility to include both utilities  
22          facilitating EV charging infrastructure in their  
23          regulated rate base, and recovering the associated  
24          capital and operating costs if it is supported by  
25          evidence and the Bonbright principles of good rate  
26          making.

1                   Similarly, utilities should not be  
2                   precluded from pursuing EV charging through an  
3                   affiliate if again the evidence and efficiency  
4                   supports such an approach in the jurisdiction or  
5                   region in question.

6                   What we're asking for here is a fact- and  
7                   evidence-based approach that is supported by the  
8                   regulatory principles that you employ, and are well  
9                   versed in.

10                  Last, but certainly not least, on issue  
11                  number 7, you've asked the question: If public  
12                  utilities provide EV charging services within their  
13                  regulated business, is there is a risk of cross-  
14                  subsidization from other rate classes to support this  
15                  new service and, if so, is the proposed rate design  
16                  potentially unduly discriminatory?"

17                  Toronto Hydro certainly submits, as with  
18                  all good governance structures, appropriate accounting  
19                  and rate design can mitigate the risk of cross-  
20                  subsidization. It's also noteworthy that the E3 grid  
21                  impact study in California in 2014 found that utility  
22                  EV charging was likely to result in benefits for all  
23                  customers.

24                  Repeating that second point, EV charging  
25                  decreased the rates for all utility customers. EV  
26                  charging by the utility, particularly managed

1 charging, increased the grid benefits for all.

2 **Proceeding Time 12:48 p.m. T10**

3 But to ensure accountability, to ensure that there is  
4 not the form of cross-subsidization that you're  
5 charged with protecting, you may in fact want to  
6 review your decision in this proceeding.

7 You may want to reconsider EV rate design  
8 and assess regulation of EV charging stations in a  
9 period of five to ten years to, yourself, bring to  
10 bear the accountability and transparency that you're  
11 known for.

12 So with that, that concludes the formal  
13 aspects of my submissions, but I'm certainly open to  
14 any questions or considerations that you may have of  
15 Toronto Hydro.

16 THE CHAIRPERSON: Thank you, Ms. DeMarco.

17 COMMISSIONER FUNG: Ms. DeMarco, thank you very much  
18 for your submissions. I just have one follow-up  
19 question with respect to our question number 3, which  
20 is whether or not we ought to be regulating this  
21 entire area. And you had made the point that perhaps  
22 we should consider forbearance in the first three to  
23 seven years, for example, because the market is  
24 changing and evolving as we speak. And my question to  
25 you is how do we do that when under the legislation,  
26 under the Act by which we are governed, if you are a

1 public utility we must regulate. There is no  
2 forbearance available.

3 MS. DeMARCO: Yes, certainly in the context of the same  
4 way you proceeded in this inquiry, it's absolutely  
5 within your jurisdiction and mandate to facilitate a  
6 second inquiry, five to seven, seven to ten years from  
7 now to examine the same questions and call for  
8 evidence, call for economic evidence, number one of  
9 associated competition levels being where they should  
10 be. Number 2, to call for coverage and customer  
11 choice evidence.

12 And there are precedents, regulatory  
13 precedents across the country for doing this. For  
14 example, in Ontario there was the natural gas -  
15 electricity infrastructure review. That included a  
16 proceeding to examine forbearance in natural gas  
17 storage regulation. So certainly, as a consequence  
18 of that inquiry, you could certainly make  
19 recommendations, and I would assume that if, in fact,  
20 you determined that there was sufficient competition,  
21 that would be worked through the system, and in my  
22 view, may very well require legislation change in  
23 relation the definition of a public utility. Or  
24 something more interactive, which is well within the  
25 confines of both the UCA, the directive powers, and  
26 the *Clean Energy Act*.

1 COMMISSIONER FUNG: Thank you.

2 THE CHAIRPERSON: Ms. DeMarco, you made a statement a  
3 little while ago when you were discussing issue number  
4 4, I think it was. You said that if meters were to be  
5 -- or if the usage from a meter was to be recorded by  
6 volume of electricity as opposed to time, then an EV  
7 charger would be classified as a meter, which could  
8 impeded implementation.

9 I'm just wondering what do you mean by  
10 "impeding implementation"? Is that because  
11 Measurement Canada doesn't certify volume-based  
12 charging? Is that what you're --

13 MS. DeMARCO: Certainly they would fall within the  
14 context of the definition of "a meter" and the concern  
15 is that yet another step, and yet another regulatory  
16 hurdle to get the associated charging infrastructure  
17 permitted, quote/unquote, and developed and  
18 implemented and operating the way you need it to be is  
19 going to be another regulatory hurdle.

20 So certainly from my perspective, if I were  
21 advising a private sector client, I would say, "Don't  
22 appear to run into this same regulatory hurdle if you  
23 charge on a time basis as opposed to a kilowatt hour  
24 basis."

25 THE CHAIRPERSON: Okay. All right. Thank you very  
26 much. We appreciate your submissions, Ms. DeMarco,

1 and thank you very much for making them.

2 MS. DeMARCO: Thank you so much. I think we are now  
3 charged with signing off and we will call back in and  
4 listen. And thank you for your accommodation of our  
5 participation by video conference. I was speaking to  
6 Patrick briefly before we got on the call, and I don't  
7 think we would have made it out with the snow storms  
8 in Ontario.

9 THE CHAIRPERSON: No, I don't think so. I'm sorry to  
10 hear about that, by the way.

11 MS. DEMARCO: So thank you for being flexible in your  
12 proceeding.

13 THE CHAIRPERSON: Thank you for your participation. I  
14 appreciate it.

15 MS. DEMARCO: Our pleasure.

16 **Proceeding Time 12:53 p.m. T11**

17 THE CHAIRPERSON: Okay, Mr. Beckett? Can you hear me,  
18 Mr. Beckett?

19 MR. BECKETT: I'm sorry, the sound has not been coming  
20 through all the time here. But am I next on the list?  
21 I'm Doug Beckett. If I am, I'm more than willing to  
22 speak.

23 THE CHAIRPERSON: Yes, you are next, Mr. Beckett. Yes,  
24 Mr. Beckett, you are next.

25 MR. BECKETT: Maybe you could use the walk-around mike.  
26 I hear you now, yes, thank you.

1 THE CHAIRPERSON: Okay. You are next, Mr. Beckett.

2 **PRESENTATION BY MR. BECKETT:**

3 MR. BECKETT: Okay. My name is Doug Beckett, that's D-O-  
4 U-G, Beckett, B-E-C-K-E-T-T. I would like to thank  
5 the BCUC to agreeing to host the video lunch to  
6 today's meeting. I appreciate being able to listen to  
7 the previous presenter and look forward to the  
8 following statements and presentations as well.

9 My statement today provides a summary,  
10 summarized recap from the long-winded submission I've  
11 already provided, along with some new suggestions and  
12 reflections.

13 I've been driving electric vehicles, or  
14 EVs, in Prince George, British Columbia, since 2009.  
15 First a pickup that was converted to 100 percent  
16 electric by mechanics' classes in a Prince George high  
17 school. This truck currently has a new owner in  
18 Prince George. And I now drive a 2013 Nissan Leaf  
19 that we purchased a little less than a year ago for a  
20 little over \$13,000.

21 It is a terrific feeling to drive an EV,  
22 knowing they are quiet, they are an important part in  
23 developing a solution to mitigating climate change,  
24 and they are less damaging to the local airshed as  
25 compared to gas and diesel vehicles. We're not  
26 emitting small particulates into the local airshed

1           that would be emitted if we were driving gas or  
2           diesel, and due to the regenerative braking, we're  
3           emitting less in the way of medium-size particulates  
4           as well.

5                         For communities like Prince George, where I  
6           live and I'm speaking from, which has a reputation of  
7           being the community with the third-worst fine  
8           particulate air quality in Canada, all solutions that  
9           improve local airshed also improves the health of the  
10          citizens of Prince George. This also reduces the cost  
11          to the British Columbia government to provide health  
12          services.

13                        In recognition of the social and  
14          environmental benefits of EVs, the BCUC should aim to  
15          increase the percent of vehicles in B.C. that are EVs.

16                        The flow of gas, diesel and other petroleum  
17          products into British Columbia has recently been  
18          threatened. In light of these threats, the BCUC  
19          should work to speed up the transition from using  
20          petroleum products to using electricity. Such action  
21          by the BCUC would mitigate the inconvenience and  
22          economic damage that other jurisdictions could impart  
23          onto British Columbia.

24                        In recognition of the social and economic  
25          benefits of not being at the mercy of other  
26          jurisdictions, the BCUC should aim to increase the

1 percent of vehicles in B.C. that are EVs.

2 Recognizing the sales of EVs as a percent  
3 of vehicle sales in Norway exceeds by far that of any  
4 other country, the BCUC should adopt similar carrot-  
5 and-stick approaches that Norway is using.

6 **Proceeding Time 12:58 p.m. T12**

7 For example, EVs should be provided  
8 preferential parking; free parking; no tolls; use of  
9 HOV lanes; no registration fee; no sales tax; be  
10 provided preferential, or very low, or free  
11 electricity rates. Simultaneously, gas and diesel  
12 vehicles should have sales taxes and registration fees  
13 that increase as their fuel efficiency decreases; have  
14 additional fees applied to cancel the effects of  
15 subsidies currently being provided to the oil and gas  
16 industry.

17 The BCUC must ensure all regulation  
18 promotes environmentally sound decisions. This  
19 includes the promotion of charging habits that will  
20 extend the life of EV batteries, and encourage EV  
21 drivers to continue using EV batteries even when the  
22 capacity of the batteries have significantly  
23 diminished.

24 Some things the BCUC can help with:

25 a) recognize there are already more Level 1 charging  
26 stations in Prince George than gas stations. The BCUC

1 must provide incentives for owners of Level 1 charging  
2 stations, including the City of Prince George, to  
3 formally allow EVs to charge at Level 1 charging  
4 stations. The BCUC can do this by providing to the  
5 owners of Level 1 charging stations equivalent  
6 quantities of electricity for free or for the lowest  
7 of all provincial rates charged for electricity.

8 The BCUC should provide this free or low-  
9 cost electricity on the condition that Level 1  
10 charging stations are formally assigned for EV  
11 charging. EVs are provided privileged parking, for  
12 example, parking spaces reserved for EV charging, and  
13 EV if they're permitted to park for longer time  
14 periods than adjacent parking.

15 b) The BCUC must establish standards for  
16 Level 3 fast charging and industrial charging so that  
17 all EVs can physically charge at all charging  
18 stations. In establishing these standards the BCUC  
19 must consider which standards would inconvenience the  
20 fewest of existing EVs on the road. The earlier these  
21 standards are established, the quicker the transition  
22 to driving EVs will occur.

23 The BCUC must ensure all charging stations  
24 installed using public funding, for example those  
25 being installed by various British Columbia government  
26 ministries, B.C. government Crown corporations,

1 agencies, and utilities, are available for public EV  
2 charging. This is to include all charging stations  
3 that have already been installed in addition to all  
4 future installations.

5 d) The BCUC must ensure any payment or  
6 fees to use a charging station is based upon the power  
7 provided, not on the time spent charging. And there  
8 should not be any minimum charge associated with  
9 charging. This helps to ensure greater equity,  
10 especially recognizing older EVs likely charge at a  
11 much slower rate than newer models. Older EVs likely  
12 have batteries of diminished capacity from age and  
13 use, and as such accept less electricity per charge  
14 and require more frequent charging as compared to when  
15 they were new. EVs with smaller batteries will need  
16 to charge more frequently.

17 e) The BCUC must ensure a reasonable  
18 distribution of charging stations along all formal  
19 roads within British Columbia. To ensure this happens  
20 in a timely fashion, government utilities such as BC  
21 Hydro must be enabled and required to install and  
22 maintain charging stations throughout the province.

23 f) Of utmost importance is for the BCUC to  
24 ensure locations where the EV can be parked for  
25 numerous days in cold environments, such as the Prince  
26 George airport, have at minimum sufficient Level 1

1 charging available. The Level 2 charging would be  
2 preferable.

3 **Proceeding Time 1:03 p.m. T13**

4 The BCUC must also ensure level 1 charging  
5 or better where the EVs can be parked in ambient  
6 temperatures greater than 49 degrees Celsius for  
7 greater than 24 hours.

8 The BCUC must make it mandatory for all new  
9 car dealerships to have level 2 and level 3 charging  
10 stations. This will help motivate these same  
11 dealerships to become certified electric dealerships  
12 which can sell new EVs, and perform all maintenance,  
13 servicing, and repair.

14 i) The BCUC must ensure all new commercial  
15 buildings, and major commercial renovations install  
16 wiring to allow easy installation of charging  
17 stations.

18 j) The BCUC must ensure remote highway  
19 locations where the electrical grid is not present  
20 have solar powered charging stations installed, as  
21 they have in Ontario.

22 So, those are the things that BCUC should  
23 do. The BCUC must enable provincial utility --  
24 electrical utilities, such as BC Hydro to install an  
25 infrastructure of charging stations throughout the  
26 province. I would much rather see BC Hydro profit

1 directly from the sale of the publicly produced  
2 electricity, than having private companies profit.

3 Also, this is the only way that BCUC can  
4 ensure equity of all citizens to be able to drive an  
5 EV. And based on the submission that we first started  
6 off with today, about addressing the greenhouse gas  
7 reductions, it's probably the only way that you can  
8 effectively use the driving of electric vehicles as a  
9 quick way of helping to mitigate and reach those  
10 greenhouse gas objectives of the province.

11 In my previous submissions I had suggested  
12 there are two different markets. The local market,  
13 and the long-distance market for EV charging. I'd  
14 like to add a third market to this mix, and I believe  
15 it's one that your presentation at the beginning also  
16 misses. That being industrial charging. With  
17 industrial charging service transport trucks, such as  
18 the Tesla Beast, busses, that can benefit from even  
19 faster speeds of charging than level 3 or fast  
20 charging of the passenger EVs. And the Beast, for  
21 example, I believe about a 10 minute charging on these  
22 special charging stations will give the Beast a little  
23 over 400 kilometres range, and that allows it to pull  
24 80,000 pounds. Quite impressive.

25 For the local market, level 1 and level 2  
26 charging, the cost charged the EV driver must be the

1 same as, or less expensive than the BC Hydro  
2 residential rate 1. To achieve this objective, BCUC  
3 must ensure the owners of charging stations are  
4 charged a price lower than this, or for free. For  
5 long distance and industrial driving market, a  
6 reasonable cost may be applied in proportion to the  
7 speed the electricity is provided for utilizing the  
8 level three fast charging or industrial  
9 infrastructure.

10 That ends my submission. I am open for  
11 questions or clarification.

12 THE CHAIRPERSON: Thank you very much sir, appreciate it.  
13 Thank you, sir.

14 MR. BECKETT: I'm sorry, I'm not getting any sound.

15 THE CHAIRPERSON: No questions sir, thank you.

16 Okay, is there a Ms. Jay present? Ms. Jay?  
17 No? Mr. Gamble? Or Ms. Gamble?

18 Yes, Mr. Gamble. Thank you. Yes please,  
19 sir.

20 **Proceeding Time 1:07 p.m. T14**

21 **PRESENTATION BY MR. GAMBLE:**

22 MR. GAMBLE: Good afternoon.

23 THE CHAIRPERSON: Good afternoon, sir.

24 MR. GAMBLE: My name is Dale Gamble, G-A-M-B-L-E. I'm a  
25 private citizen in B.C. and I don't represent any  
26 organization at all here today.

1                   I wanted to start by thanking the  
2                   Commission and the panel for allowing private citizens  
3                   to be a part of this process. I think it's valuable.  
4                   It sets a good precedent for other regions as well,  
5                   and hopefully will help us in this process.

6                   THE CHAIRPERSON: Thank you.

7                   MR. GAMBLE: Just by way of background, I'm part of the  
8                   problem. I've been driving for 56 years, and the vast  
9                   majority of that has been in a gasoline burning  
10                  vehicle. And eight years ago we moved in the  
11                  direction of purchasing a hybrid, which we have been  
12                  driving since. And that was largely motivated by a  
13                  daughter's input to start to make a difference. And I  
14                  want to be part of the solution, and we're now looking  
15                  at what we do for the next vehicle, because this one's  
16                  getting a little long in the tooth.

17                  And I've been very interested in an EV  
18                  vehicle, but holding off on purchase and will hold off  
19                  for a little while yet in part because of range  
20                  anxiety and other things that we now know about in  
21                  this field. And in fact, my intention at this point  
22                  is largely looking towards a plug-in hybrid as an  
23                  intermediate option that would provide the sort of  
24                  service that I need, or that we need as a family, for  
25                  our transportation needs.

26                  With the vast majority of those miles being

1 driven under the electric mode within the city, given  
2 the nature of the current models of plug in hybrids  
3 that are out there, but requiring that the ICE to kick  
4 in when we make longer-range trips, which we do with  
5 some frequency. So that's the background for me.

6 I didn't choose to specifically address the  
7 questions. I chose to give my thoughts on some --  
8 just a few points that relate to them, if that's  
9 acceptable. So.

10 And they're not in any particular order.  
11 It's my feeling that end user rates for a kilowatt per  
12 kilometre, if that's -- that's probably a reasonable  
13 way to measure this, shouldn't exceed current average  
14 rates to operate an equivalent ICE-equipped vehicle.  
15 So, meaning size and capacity as well as age should be  
16 taken into account there. Somebody with an old Leaf  
17 that's in some ways maybe the equivalent of somebody  
18 with an old internal combustion engine car.

19 Improvements in the technology are going to  
20 result in greater efficiency. They have been very  
21 regularly, and these benefits will flow to the end  
22 user. So I'm not one who's lobbying for the cost of  
23 charging the EV, or the HEV, to be heavily subsidized  
24 at this point, as long as it's not larger than -- more  
25 than I would with a gas vehicle.

26 I think that some level of cross-

1 subsidization is needed at this stage to support more  
2 rapid development of the infrastructure, with the  
3 common goal here being the reduction of greenhouse  
4 gases. Now, I know reduction of greenhouse gases is  
5 not the Commission's mandate, but it's clearly a  
6 societal mandate and a government mandate. So, and I  
7 see this as no different than the public expenditures  
8 that we make, and continue to make, to build highways  
9 and bridges. They're not tariffed in any direct way  
10 to the specific end users, but they're created to  
11 enable access and development throughout the province.  
12 And so that in the long run we all benefit from that.

13 Third point is that with all emerging  
14 technologies, and the ones that have come before us  
15 and ones to come in the future, we're in a rapidly-  
16 changing shake-out period with a number of standards  
17 issues. You see that when you read all the  
18 submissions that have come to you so far. Is existing  
19 and potential market players, and ultimately there'll  
20 be investment winners and losers.

21 Oversight in the form of utility  
22 regulation, including but not limited to rate  
23 structures, must strive to remain at arm's-length from  
24 this battleground. That's a tough thing to order, and  
25 I have no idea how you do that. But in a sense, I see  
26 the utilities' roles are there to provide the raw

1 product, if you will, the electricity. Not the  
2 bundling, meaning not trying to sell their product in  
3 conjunction with a bunch of other things, or setting  
4 artificial limits on price quantity, and certainly not  
5 the means of display and delivery. Although the  
6 utilities may play an advisory role with industry in  
7 that arena, specifically for safety purposes.

8 I guess my next point is that a number of  
9 the documents submitted to date indicate that there  
10 are downstream impacts directly relevant to the  
11 province's utility providers, in terms of their need  
12 and ability to forecast both overall electrical demand  
13 as well as daily peaks and valleys.

14 **Proceeding Time 1:20 p.m. T15**

15 Widespread EVUs at both the individual and  
16 the commercial level is going to result in increased  
17 electrical demand. Smart charging systems, already  
18 developed, as well as other ideas currently in  
19 development may mitigate some of this challenge, but  
20 it will still exist for the utilities, that we will be  
21 using more electricity. The immense cost of new or  
22 updated production and transmission facilities  
23 requires long-range planning and budgeting, and to the  
24 extent that involvement by the utilities in the  
25 planning and structuring of EV support systems is  
26 possible, it should be supported to make sure that

1           that planning process is as full as possible.

2                         Now, related to the previous point, I think  
3           that rate structures for all end users need to  
4           maintain a degree of predictability. This doesn't  
5           necessarily mean rates must remain static. It is the  
6           common-good goal of greenhouse gas reduction should be  
7           borne across all elements of society. But  
8           incorporation of the demand impacts of growing EV use  
9           in both the private and the commercial transport  
10          sector must be factored in.

11                        And finally, just a small news item, as  
12          reported in today's edition of *Green Car Reports*.  
13          One hundred years ago, the early adopters of the  
14          automobile had serious range anxiety as well.  
15          Gasoline had to be purchased at pharmacies, which sold  
16          other combustibles such as kerosene and alcohol.  
17          Electric vehicles could be charged at home but had  
18          very limited range, and steam-powered cars required  
19          planning for stops along the way to load wood and  
20          coal. It took about 20 years from the invention of  
21          the automobile in 1903 to the mid-20s before the U.S.  
22          could boast that they had 15,000 gas stations across  
23          the country. Unfortunately the climate change  
24          imperative that we're living with suggests we need to  
25          move a bit more quickly on solutions this time around.

26                        And that's all I have to say, thank you.

1 THE CHAIRPERSON: Thank you, sir.

2 COMMISSIONER HAROWITZ: Mr. Gamble, you said, I believe,  
3 that you advocate that some degree of subsidization is  
4 warranted to increase the rate at which adoption takes  
5 place. Do you have a point of view on who should be  
6 picking up the other side of that subsidy? Is it the  
7 ratepayers? Is it the taxpayers? Is it somebody  
8 else? Because subsidization has someone paying for  
9 it. So do you have a sense of who the payor should  
10 be?

11 MR. GAMBLE: I don't, or at least I haven't broken it  
12 down that finely, although I feel that virtually  
13 everyone in this province and everyone who has lived  
14 here since the internal combustion engine came into  
15 being and use, has benefitted from the changes in  
16 lifestyle and the expansion of the province and the  
17 growth that it has experienced as a result of that.  
18 So in some ways we all have benefitted from that. We  
19 all carry a bit of responsibility for the results of  
20 that, meaning the negative results as well as the  
21 positive results, and in that sense I think we should  
22 all carry some responsibility for remedying the  
23 situation.

24 Now, in terms of how that gets meted out,  
25 that's a tough one and I haven't gone there in my  
26 thoughts. It seems to me broader distribution is



1       representing BCIT, but I do have interests related to  
2       BCIT's infrastructure. We have two DC chargers that  
3       we would like to charge for people to use, but we are  
4       trying to avoid any issues with the BCUC reselling  
5       electricity and trying to solve that issue.

6               So I do operate the Energy Oasis at BCIT,  
7       which is a 250 kilowatt PV array system connected to a  
8       500 kilowatt hour lithium battery system provided by  
9       Panasonic, and it is disconnectable from the grid so  
10      it can run in island mode or connected to the grid,  
11      providing power to the grid or taking power from the  
12      grid to provide EV charging.

13              So far, over the last four years that we've  
14      been operating it, we have used 90 percent of the  
15      power for EV charging coming from the PV panels  
16      directly and the other ten percent has been coming  
17      from grid supplied power.

18              So we have tried our best at BCIT to avoid  
19      issues with selling electricity. For the first two  
20      years when we operated the system it was completely  
21      free. People would show up and use it, and it was  
22      very popular. People would use the EV charging spots  
23      as kind of VIP parking because they knew if they just  
24      plugged in, they wouldn't have to pay for parking on  
25      the campus, which was normally fairly expensive –  
26      either \$3.25 an hour or \$5.25 for the evening.

1                   And so in the first couple of years, the  
2                   equipment failed quite often because it had big red  
3                   buttons that when people pressed it would bring the  
4                   system down. We'd send an electrician out to reset  
5                   the equipment because it would trip breakers inside.  
6                   And that was quite common with the first generation of  
7                   DC charging stations.

8                   Since then we've moved to requiring  
9                   everyone to pay for parking no matter where they park  
10                  on campus, and that was working fairly well, but  
11                  people realized that Impark didn't come around enough,  
12                  and they would come to the DC charger and use it for  
13                  free and kind of dine and dash in that sense, and so  
14                  we ended up with a lot less people using the system,  
15                  which seemed a little bit unfair that a lot of the  
16                  people that were using it weren't paying at all, and  
17                  some people seemed to religiously pay, and it seemed  
18                  unfair that we couldn't police it better to make  
19                  everyone pay.

20                  So we're looking now, we would like to put  
21                  payment at the charging stations themselves so they  
22                  wouldn't get any electricity unless they had paid the  
23                  rate that would we consider would be similar for  
24                  parking. Obviously it's a little bit different,  
25                  because if we just set an hourly rate on the charging  
26                  station and they tried to do multiple sessions because

1 of a power failure or something, then they would get  
2 hit double to be able to get the charger started, so  
3 we're moving to like a per minute rate that they could  
4 get charged. If they stayed for the whole hour, they  
5 would get charged the same as the hourly rate that  
6 they used to get charged.

7 The other issue was, is that BCIT corporate  
8 is very risk adverse, so they wouldn't want to turn on  
9 any payment and then end up in trouble with the BCUC  
10 prior to this being resolved at this forum.

11 So to answer some of the questions that you  
12 had posed, is it competitive or monopoly, which is  
13 question 1. I think EV charging as a service is  
14 competitive in B.C. There's an issue that people were  
15 saying it's not competitive, but it's not competitive  
16 only because we're not allowed to sell. If this  
17 barrier was removed for non-government entities and  
18 utilities to be able to sell the service of EV  
19 charging, I think we are in a competitive environment  
20 now.

21 **Proceeding Time 1:21 p.m. T17**

22 Are they captive or do they have a choice?  
23 EV charging customers within MURBs, I think are the  
24 most captive audiences when it comes to EV charging,  
25 because that's where they should be getting most of  
26 their EV charging done over night at home. And

1 installing a 100 percent EV charging in a MURB, which  
2 is Vancouver and Richmond's plan now, they're going to  
3 have to move to a system which is power sharing. And  
4 so you can't just bring your own EV charger, it's  
5 going to be one system that the strata brings in and  
6 installs, and divvies up the power accordingly.

7 And so, there may be some regulation needed  
8 around making sure that they have an adequate charging  
9 and ensure the prices is one of the lower prices  
10 available for them to charge their vehicle. For all  
11 other charging scenarios, I think they have a choice  
12 of supply.

13 For question 3, should BCUC regulate the  
14 services by EV charging stations, I don't think BCUC  
15 should regulate the prices and method of billing.  
16 There is many different scenarios, and BCIT is one  
17 example that they just want to recover their parking  
18 costs, and other people may need to recover a lot more  
19 of the capital costs than what BCIT has done. And so  
20 I think it is very difficult to try to set what a fair  
21 rate would be, because of so many different scenarios.

22 Around rate design, question number 4, I  
23 think the rate design should be left up to the  
24 individual location to what makes sense. There is  
25 obviously an issue currently that Measurement Canada  
26 does not currently have any DC meters listed that are

1           considered revenue grade, which makes selling EV  
2           charging by the kilowatt hour problematic. Hopefully  
3           a solution can be found to enable a reasonable energy  
4           measurement without requiring Measurement Canada to  
5           create a new class of revenue grade DC meters.

6                        I personally favour a time-based  
7           measurement, and having a small fee associated with  
8           the actual energy dispensed, would be okay, but it  
9           adds complexity for the customer to understand how  
10          much they're going to get billed for being there for  
11          like a half hour.

12                       EV charging service rate. When it comes to  
13          the EV charging rates, EV charging could use some  
14          assistance and separate tariff like it was done in  
15          Quebec to remove demand charges from accounts that are  
16          installed for EV charging of over 400 volts, and  
17          replaced with a higher per-kilowatt hour cost to  
18          ensure remote locations aren't punished by low volume.  
19          In Quebec, the experimental rate, BR, which is about  
20          27 cents per kilowatt hour, up to 50 kilowatt demands,  
21          and then it climbs up another five cents.

22                       I also see that in the future there may be  
23          a potential for a virtual meter tariff to be created  
24          by the utilities, where an EV service provider that  
25          has many sites, would be able to contract a purchase  
26          agreement with a fixed peak power demand, that they

1 would be allowed across all sites, and share that load  
2 and then manage the peak so they never reach the  
3 contracted amount with the utility, which would enable  
4 the utility to not have to charge extra demand charges  
5 because they have to have that spinning reserve  
6 available.

7 The last thing I would point out is that  
8 everyone keeps talking about level 1, level 2 and  
9 level 3 charging, and there is actually six levels of  
10 charging according to this SAE, the Society of  
11 Automotive Engineers, and they developed it in 2010,  
12 and there is actually AC level 1, AC level 2 and AC  
13 level 3. AC level three isn't used in North America  
14 at this point, but in Europe it is used if anything  
15 over 20 kilowatts, so they have three phase, AC power  
16 being fed into cars, as a cheaper alternative to DC  
17 charging.

18 **Proceeding Time 1:26 p.m. T18**

19 And then we have DC Level 1, DC Level 2, and DC Level  
20 3. DC Level 1 is up to 20 kilowatts, DC Level 2 is up  
21 to 50 kilowatts or 100 kilowatts, and over 100  
22 kilowatts is DC Level 3.

23 Now, in North America the only CD Level 3s  
24 are really the Tesla super charge stations that are  
25 available. The DC chargers BC Hydro are deploying are  
26 DC Level 2. And the Ministry of Transportation is

1 primary installing DC Level 1. It's important to  
2 understand that there's a difference, because there  
3 may be circumstances where we want to regulate a  
4 service, but it may not make sense that DC Level 1  
5 versus DC Level 3.

6 Thank you.

7 THE CHAIRPERSON: Thank you, sir. Do you have any  
8 suggestions why AC 3 is not deployed in North America?

9 MR. CARMICHAEL: The lack of generally available three  
10 phase power. Normally it's a three phase 208 or --

11 THE CHAIRPERSON: Right, okay. And a second question is  
12 you made a statement that you felt the market, the EV  
13 charging market, is not competitive because of us  
14 basically. That we're an impediment, that we would --  
15 so people are reluctant to charge -- or to charge  
16 money for it. Is that what you said essentially?

17 MR. CARMICHAEL: Yeah, it's difficult to get someone  
18 interested in installing a fast charging station when  
19 they're not allowed to sell it.

20 THE CHAIRPERSON: Right. So to your knowledge then, any  
21 fast charging stations in the province, no -- sorry,  
22 let me rephrase that. No fast charging stations in  
23 the province charge money for the charge, is that  
24 correct?

25 MR. CARMICHAEL: The utility can charge and so -- and  
26 EcoDairy, which spent 18 months doing their exemption

1 process.

2 THE CHAIRPERSON: Yeah. And Fortis's new fast charges.

3 MR. CARMICHAEL: Exactly.

4 THE CHAIRPERSON: They charge by time, right?

5 MR. CARMICHAEL: Yeah.

6 THE CHAIRPERSON: But notwithstanding those, there are  
7 no other fast chargers yet?

8 MR. CARMICHAEL: There's no private companies charging  
9 for fast chargers.

10 THE CHAIRPERSON: Right, okay. Sorry.

11 COMMISSIONER FUNG: Mr. Carmichael, do you have any idea  
12 of how much the superchargers -- not super chargers,  
13 but the Level 3 chargers at BCIT currently that you  
14 have, I understand you have two of them?

15 MR. CARMICHAEL: Yes.

16 COMMISSIONER FUNG: Do you have any idea how much they  
17 cost in terms of capital cost, installation?

18 MR. CARMICHAEL: We've replaced them once now, and so the  
19 newest ones we've just installed were \$30,000 U.S. to  
20 purchase and \$22,000 to install, and that was already  
21 having the services in place.

22 COMMISSIONER FUNG: And BCIT was willing to absorb those  
23 costs within its own internal budget? Because  
24 obviously you're not charging for -- to recoup those  
25 costs?

26 MR. CARMICHAEL: No. They were purchased using NRCan

1 funding through research grants.

2 COMMISSIONER FUNG: Okay, thank you.

3 COMMISSIONER HAROWITZ: Following up on Ms. Fung's  
4 questions, so you replaced them once, so what was the  
5 useful life of the first generation that you  
6 installed?

7 MR. CARMICHAEL: Five years.

8 COMMISSIONER HAROWITZ: And are you presuming or do you  
9 have any assumptions on useful life of the  
10 replacement? Or are you anticipating it might --

11 MR. CARMICHAEL: Another five years. The new technology  
12 rolls out in two years, so we're figuring that in five  
13 years people will be complaining as much as they were  
14 before we replaced the ones we had, we just put in.

15 COMMISSIONER HAROWITZ: So five years at the outside is  
16 how long you might subject people to the existing  
17 technology, but you presume there will be something  
18 even sooner than that?

19 MR. CARMICHAEL: Yes, I expect in two years the new  
20 generation will be out and that's when the cars will  
21 start to roll out. And then three years after the  
22 cars start rolling out they will really be complaining  
23 if the stations are just the old ones.

24 COMMISSIONER HAROWITZ: Okay, thank you.

25 THE CHAIRPERSON: What does the new generation look like?

26 MR. CARMICHAEL: A thousand volt systems versus 500

1 volts.

2 THE CHAIRPERSON: And what's the implication of that in  
3 terms of charging times?

4 MR. CARMICHAEL: They will -- about six times faster.

5 THE CHAIRPERSON: Six times? Okay. Thank you very much  
6 sir.

7 MR. CARMICHAEL: Okay, thanks.

8 **Proceeding Time 1:30 p.m. T19**

9 THE CHAIRPERSON: Okay, Mr. Demopoulus. Is there a  
10 William Demopoulus here? No? Okay, Ms. Argue?

11 Good afternoon.

12 **PRESENTATION BY MS. ARGUE:**

13 MS. ARGUE: Thanks very much. So my name is Charlotte  
14 Argue. That's spelled A-R-G-U-E, and I work for the  
15 Fraser Basin Council, which is a not-for-profit  
16 organization with a mandate to advance sustainability  
17 in the province. I'm the program manager of PlugIn  
18 BC. That's a program of Fraser Basin Council which  
19 works alongside many different organizations to  
20 support the uptake of electric vehicles in this  
21 province. And since 2012, PlugIn BC has administered  
22 several of the provincial charging stations programs  
23 and incentives.

24 These programs include a variety of station  
25 types and locations, and this includes public level 2,  
26 fleet charging, home and multiunit residential

1 charging, workplace charging and DC fast charging.

2 I'll mention that Fraser Basin Council is  
3 registered as an intervener as well. We have not  
4 submitted a letter, but I will likely follow up with a  
5 letter.

6 So my comments today is mainly with the  
7 outlook of supporting EV uptake in B.C. And I believe  
8 there are primarily two factors when it comes to  
9 regulating EV charging that will impact market growth  
10 and EV uptake.

11 The first is the cost to the charge. So we  
12 want to ensure car owners have a business case for  
13 making the switch to electric and are protected from  
14 predatory pricing or exorbitant fees for charging that  
15 would reduce the economic benefits. And currently we  
16 do see there's an economic driver for people to switch  
17 to electric vehicles because of the differential in  
18 costs between gas and electricity.

19 And then second is the availability and the  
20 prevalence of a wide-variety of charging options. And  
21 while EV owners typically charge at home, the  
22 availability of charging in public and at work is  
23 critical for EV market uptake. We've seen that the  
24 existing regulations in B.C. that prevent non-  
25 utilities from reselling electricity has hindered the  
26 expansion of EV charging infrastructure, primarily

1           because it prevents potential hosts from finding a  
2           business case to install these stations, and we heard  
3           from the previous speaker situations like that.

4                        I would say that this is particularly true  
5           for DC fast charging stations, where the costs are  
6           considerably higher than level 2 and level 1.  
7           Currently we see that the vast majority of DC fast  
8           chargers are owned and operated by utilities and/or  
9           local governments who are able to resell electricity  
10          without having to file for an exemption. And I'll  
11          just note that the numbers that you had at the  
12          beginning of the session are out of date. So BC Hydro  
13          stated that there are about 30 DC fast charging.  
14          We're actually at about 60 DC fast charging stations  
15          in the province, not including the Tesla  
16          superchargers. So that level 3, DC fast.

17                      So while it's unlikely that utilities  
18          and/or governments will continue to need to provide  
19          this service in rural areas of B.C., I feel that in  
20          urban areas there is a growing possibility of the  
21          private sector to be interested in supporting fast  
22          charge stations or find a business case, and they  
23          should be able to recoup some of the operating costs,  
24          otherwise they may never go through with the projects.

25                      On level 2, there is an impact for level 2  
26          in terms of the inability to resell electricity as

1 well. So while level 2 stations cost must less to  
2 install and operate, as EV numbers increase, there's  
3 an argument for allowing hosts to recoup usage costs  
4 and to charge a fee to help with usage management.  
5 Right now most of these stations are free to use,  
6 which might tempt EV users who don't actually need a  
7 charge to use them. So I believe that hosts should  
8 have the option, at least, to choose whether or not  
9 they charge a fee and decide whether it's a time-based  
10 fee or a kilowatt hour based fee, or a combination of  
11 both.

12 **Proceeding Time 1:35 p.m. T20**

13 Given the large numbers of level 2 charging  
14 stations in B.C. currently, we have over a thousand  
15 right now in the province, and the hosts of these  
16 stations come from a variety of sectors and  
17 organizations, I feel conditions are good for a  
18 competitive environment in most cases for level 2.

19 Regarding continuing with level 2, I do  
20 want to comment on the multi-unit residential building  
21 situations. So there is a current lack of clarity  
22 around stratas being able to recoup electricity costs  
23 from EV owners in condo buildings, and in some cases  
24 this lack of clarity has been enough for the strata to  
25 simply deny the residents charging. In our opinion it  
26 would make sense to give stratas at least the option

1 to resell electricity, kind of in the same way that  
2 landlords are able to do so with their tenants. And  
3 residents are protected by other acts and regulations  
4 beyond BCUC, such as the *Strata* or *Residential Tenancy*  
5 *Acts*. So these might be a more apt approach to  
6 protect those residents from predatory pricing.

7 Given the number of growing people living  
8 in condos in British Columbia, access to charging in  
9 condos is a critical issue for future EV market  
10 growth. As we know, the home is the primary place  
11 where people need to charge, or do charge.

12 So overall, I'd say that in order to  
13 promote EV uptake, the BCUC should refrain from  
14 regulating EV charging except perhaps in certain  
15 defined cases, such as regulation of existing  
16 utilities who are providing fast charging stations,  
17 particularly in rural areas. Or potentially in  
18 dealing with complaints that arise from EV drivers.  
19 Doing so would promote competitiveness in the market,  
20 thereby increasing options for EV drivers.

21 I'd also add that the situation probably  
22 should be closely monitored should additional  
23 regulation be required in future, and it is an  
24 emerging and changing market. Although there's other  
25 mechanisms again, possibly such as the *Consumer*  
26 *Protection B.C.* or the federal *Competition Bureau* that

1           might be suitable than the BCUC to govern that.

2                           Thank you for your time.

3   COMMISSIONER HAROWITZ:       Just one question if I may.  You  
4       mentioned predatory pricing as being a concern.  Am I  
5       correct in understanding that your case is that by  
6       moving away from regulation we'd increase competition  
7       and it would be the competition that would protect  
8       consumers from predatory pricing?  Is that the logic  
9       link that I'm hearing?

10  MS. ARGUE:       That is the logic.  I would say that  
11       predatory pricing is much less of a concern right now  
12       in terms of the overall market.  And right now, EV  
13       consumers are having much more greater issue with lack  
14       of charging options or reliability of the existing  
15       infrastructure, and so the predatory pricing, if it is  
16       an issue and a concern to the BCUC, I would suggest  
17       that by making the market more competitive, it would  
18       help mitigate that as well.

19  COMMISSIONER HAROWITZ:       Okay, thank you.

20  THE CHAIRPERSON:       You made a statement that you thought  
21       there was over a thousand level 2 charging stations.  
22       I assume you're talking about publicly assessable?

23  MS. ARGUE:       Mm-hmm, yes.

24  THE CHAIRPERSON:       Presumably there could be more.

25  MS. ARGUE:       Yes, if you include residential it would be  
26       more.  I'm kind grouping in fleet charging in that



1 is getting more and more of a pain getting there, so  
2 really increasing the pace at which we are installing  
3 electric car charging station, is very important.

4 As a business owner as well, we've seen a  
5 big, big reluctant from private investors, just  
6 because there is no ROI if you provide free  
7 electricity. And I think Kelly who mentioned it, as  
8 well as Charlotte, this is a deterrent for private  
9 investment to get in. And if we're only waiting for  
10 BC Hydro to deploy the whole network that is going to  
11 be necessary for all electric car chargers, that is  
12 going to take a long time.

13 Three, also we have mentioned that we might  
14 be concentrating on oil from other jurisdictions. And  
15 as we're having another dam built, I think even for  
16 B.C. would be a great opportunity to really push  
17 electric car charging station. Not only you don't  
18 rely on fossil fuel anymore, but you are creating your  
19 own market within your own province.

20 Now, there is also a disconnect as Kelly  
21 mentioned with the NRCAN grant. When you are applying  
22 for the grant, Canada wants you to put an ROI and an  
23 expected revenue generation from those DC fast  
24 chargers. However, if in B.C. we are not allowed to  
25 charge for it, well, there is an overlap that really  
26 doesn't connect. And does that exclude B.C. companies

1 or municipalities to really get into that grant?  
2 Because they won't be able to meet requirements. And  
3 we've got a few clients that really were kind of  
4 wondering. We applied anyways, we move forward, but  
5 we want to make sure that they can charge a fee,  
6 whatever it is, whether it is per kilowatt hour, or  
7 per hour, timewise, per minute, half an hour, whatever  
8 it is, to make sure that they can follow every single  
9 requirements that NRCAN is mandating them.

10 THE CHAIRPERSON: Excuse me sir. What are these grants  
11 for exactly? Are they for wiring a new building? Or  
12 retrofitting? Or are they even for MURBs?

13 MR. CHARRON: Okay, so the NR grant, the NRCAN grant is  
14 specifically for 50 kilowatt fast chargers.

15 THE CHAIRPERSON: Okay.

16 MR. CHARRON: And the purpose of those is to connect the  
17 whole province together.

18 THE CHAIRPERSON: Okay, so these are stand-alone fast  
19 chargers. This is not to do with providing chargers  
20 within stratas, for example?

21 MR. CHARRON: No, no, exactly, it is for public.

22 THE CHAIRPERSON: Okay.

23 MR. CHARRON: It's for public. So it's basically a  
24 private investor who will invest money, whether it's  
25 \$50,000 or good they have to upgrade the electrical  
26 infrastructure, it's going to be different. But it's

1 to make sure it's instant, and -- sorry. Just to make  
2 sure they have a little bit of incentive to say hey,  
3 we are going to pay up to 50 percent of the project,  
4 but you've got to show us that there is money  
5 potentially to be made, and the first 10 years, if  
6 there is profit, basically the profit goes back to  
7 NRCAN, up to what they actually funded the project.

8 THE CHAIRPERSON: Okay, thank you, sir.

9 MR. CHARRON: Then I just want to second what Kelly  
10 Carmichael said about the MURBs as well. It is very  
11 important for, especially that the new rules of  
12 Vancouver, Richmond, and Port Coquitlam at the 100  
13 percent of all stalls needs to be powered. It's nice  
14 that we have those requirements in place, but now how  
15 do you regulate them? How do you meter? How do  
16 stratas actually going to pay for it, is the second  
17 issue that we need to overcome. And if it is allowed  
18 to pay per kilowatt hour at residential rate, then it  
19 would solve the entire problem really.

20 Again, BCUC might want to do -- I think the  
21 private market in the metro area or Victoria, for  
22 example, will pretty much take care of pricing.  
23 Because if you're not competitive, just like Toronto,  
24 then nobody is going to go to your charging station,  
25 therefore you need to lower your price.

26 **Proceeding Time 1:45 p.m. T22**

1                   However, in smaller communities like  
2                   Nelson, where people can be kind of secluded and they  
3                   have to charge there, otherwise you're away from any  
4                   other charger, then you might want to avoid collusion  
5                   as we've seen previously with gas stations in smaller  
6                   communities.

7                   Yeah, that's all I have. Thank you.

8                   THE CHAIRPERSON: Thank you. Thank you, very much, sir.

9                   Is there anyone else before we move into  
10                  the -- there's two PowerPoint presentations.

11                  Sir, do you have some comments?

12                  **PRESENTATION BY MR. SUDDABY:**

13                  MR. SUDDABY: My name is Vic Suddaby, S-U-D-D-A-B-Y. I'm  
14                  an electrical engineer, so therefore I have an  
15                  electric car. I've had it for the last five years  
16                  actually. And it's Leaf and they are wonderful cars  
17                  to drive.

18                  I'm just interested in the comment about  
19                  we're not able to sell electricity, or buy  
20                  electricity. I charged on Friday at the Greenlots  
21                  level 3 charger at the Langley Event Centre, and I  
22                  have a bill saying you used 11.36 kilowatt hours, sale  
23                  amount \$3.98. So I'm not quite sure of --

24                  THE CHAIRPERSON: Sounds like there's at least one place  
25                  that charges.

26                  MR. SUDDABY: There's at least one place that does.

1 THE CHAIRPERSON: We'll get right on that, sir.

2 MR. SUDDABY: Yeah, tell them to quit it. No. I'm happy  
3 to pay a reasonable amount for my charging. And what  
4 would also bother me is there is such a mish-mash of  
5 different companies. You have to have a fob for  
6 Greenlots. You have to have a fob for GE. You have  
7 to have a fob for everybody else. Why can't we do  
8 like gas stations and just pay by credit card or  
9 something simple like that?

10 I've been charged -- I have installed three  
11 level 2 chargers privately in my house. So that to me  
12 is -- and they are very very cheap. So I'm hoping  
13 that I don't get kicked out of doing that myself.  
14 Anyway as an engineer, I think I should be able to get  
15 a permit to do that.

16 COMMISSIONER HAROWITZ: Sir, when you say that you've  
17 installed them, at your own home or a friend's?

18 MR. SUDDABY: Yes, in my own home.

19 COMMISSIONER HAROWITZ: So you say "cheap", what's the  
20 all in and does that include your free labour or  
21 charging at commercial rates for --

22 MR. SUDDABY: There's a brand that I get from the States  
23 that is about two or three hundred dollars U.S. and  
24 then you need a breaker in your panel and the wiring  
25 which I do myself. So I think \$500 altogether at the  
26 maximum.

1 COMMISSIONER HAROWITZ: Okay, thank you.

2 THE CHAIRPERSON: Hold on a second.

3 MR. SUDDABY: Oh, I'm sorry.

4 COMMISSIONER FUNG: Did you say that you've installed  
5 three level two chargers in your home?

6 MR. SUDDABY: Yes.

7 COMMISSIONER FUNG: May I ask why you've done that?

8 MR. SUDDABY: Because we have two electric cars in our --  
9 one's in the driveway and one's in the garage and then  
10 one more. This is everything, to get everything  
11 ready.

12 COMMISSIONER FUNG: Okay, and have you noticed any  
13 noticeable change in your electricity charge as a  
14 result of having these three level 2 chargers?

15 MR. SUDDABY: About \$20 a month or something like that.  
16 It's barely noticeable, which to me is amazing because  
17 we drive a decent amount, 10,000 kilometres, at least,  
18 a year on two different cars.

19 COMMISSIONER FUNG: Okay, thank you.

20 THE CHAIRPERSON: Thank you very much, sir.

21 So I think we'll take a short break while  
22 our next presenters get ready. We'll come back at  
23 2:00. Thank you.

24 **(PROCEEDINGS ADJOURNED AT 1:49 P.M.)**

25 **(PROCEEDINGS RESUMED AT 2:02 P.M.)** T23

26 THE CHAIRPERSON: Okay, please be seated.

1                   And next on the agenda is I understand we  
2                   have someone from BC Hydro who is going to give a  
3                   presentation. Thank you.

4 PRESENTATION BY MR. SIMMONS (BC HYDRO):

5 MR. SIMMONS: My name is Greg Simmons. G-R-E-G S-I-M-M-  
6 O-N-S. And I represent BC Hydro. And I'll try to get  
7 these slides to work properly.

8                   So I know that BC Hydro has submitted  
9                   evidence in this proceeding and so I won't be talking  
10                  specifically about what we've filed in paper and I  
11                  think any technical questions, whether the legal or  
12                  otherwise, regulatory, should be left to the IR  
13                  process.

14 THE CHAIRPERSON: Fair enough.

15 MR. SIMMONS: So I'll just go over a few of the things  
16 that I will be talking about, and first of all I'll go  
17 over BC Hydro's forecast for electric vehicle  
18 ownership in the Province of B.C. And also talk about  
19 some of the factors that will affect the growth in EVs  
20 in the province and the ownership. I'll go over some  
21 of our activities, BC Hydro's activities in the EV  
22 space that began about 2012, which coincided with the  
23 delivery of the first commercial EV vehicle and  
24 recent, the Nissan Leaf.

25                  And then I'll go on to our involvement with  
26 the deployment of DC fast charging stations. Many of

1           you know we have a number -- we own a number of  
2           stations in the province and by May 31<sup>st</sup> there'll be 58  
3           BC Hydro owned DC fast charging stations.

4   COMMISSIONER FUNG:    Sorry, how many was that?

5   MR. CARMICHAEL:    Fifty-eight.

6   COMMISSIONER FUNG:    Thank you.

7   MR. SIMMONS:    It was 58 at 56. I'll talk about it later,  
8           but 56 specific locations, some -- two locations have  
9           two chargers in each.

10                   I'll show a station map and that will give  
11           you an indication of what the planning and site  
12           selection process and what the sort of philosophy was  
13           in choosing those specific sites. Then I'll talk  
14           specifically about the two deployments, one from  
15           2013/2016, and then the one's that's just wrapping up  
16           as of May 31<sup>st</sup>, and that began last year. And after  
17           that I'll comment on our model and methodology for  
18           station maintenance, because we have sort of rejigged  
19           that over the last year to try to enhance the  
20           reliability of the stations. And then finally I'll  
21           open up to any questions that anybody may have for BC  
22           Hydro.

23                   So this is the forecast of EV ownership and  
24           usage that's embedded in BC Hydro's current load  
25           forecast. And I can't really comment on what the sort  
26           of methodology or the process is for generating this,

1 but there's a couple of key points that should be  
2 highlighted.

3 And that is by fiscal 2030, so that would  
4 be as of April 1<sup>st</sup>, 2030, there's expected to be  
5 300,000 electric vehicles in the province. And  
6 assuming that each of these vehicles drives an average  
7 of 15,000 kilometres per year and the efficiency of  
8 each vehicle is 20 kilowatt hours per 100 kilometres,  
9 that would give us about 900 gigawatt hours per year  
10 in incremental consumption. So this is equivalent to  
11 about 90,000 dwellings and the power that those  
12 dwellings would take, assuming 10,000 kilowatt hours  
13 per year per dwelling, which is BC Hydro's average  
14 across all the loading sites currently.

15 And it does show an increasing market  
16 share. So by 2030 it's a little over 20 percent of  
17 all vehicle sold in that year will be electric  
18 vehicles and that's what the forecast prediction  
19 suggests.

20 THE CHAIRPERSON: Just to clarify, sir --

21 MR. SIMMONS: Yeah.

22 THE CHAIRPERSON: -- on the axis on the left, then, "EV  
23 stock".

24 MR. SIMMONS: Yeah.

25 THE CHAIRPERSON: That's not the number of vehicles sold,  
26 that's the existing fleet, is that correct?

1 MR. SIMMONS: That's the existing fleet. Once over time  
2 you take into consideration some of the attrition, so  
3 sales less attrition, and then so it's the fleet on  
4 the roads at that particular year.

5 THE CHAIRPERSON: Okay. Are you moving on to the next  
6 slide?

7 MR. SIMMONS: If you want me to?

8 THE CHAIRPERSON: Well, no, I just have a question. I'm  
9 just wondering if I ask it now.

10 MR. SIMMONS: Oh, on the next slide?

11 THE CHAIRPERSON: No, on this slide.

12 MR. SIMMONS: Oh, yeah.

13 THE CHAIRPERSON: Should I ask it now? Okay. The green  
14 line, the market share --

15 MR. SIMMONS: Yeah.

16 THE CHAIRPERSON: It seems to flatten significantly  
17 around 2028, 2029. Do you know way that is? I know  
18 you said you weren't sure about the methodology, but  
19 could you speak to that?

20 MR. SIMMONS: Yeah, you know what? I actually don't know  
21 specifically why there would be --

22 THE CHAIRPERSON: Okay.

23 MR. SIMMONS: I can hazard a guess, but I'd probably get  
24 it wrong, so -- it may have something to do with the  
25 number of vehicles and types of vehicles and the  
26 saturation of vehicle types in the marketplace.

1 THE CHAIRPERSON: Could it possibly have to do with  
2 incentives and fading out of incentives?

3 MR. SIMMONS: I don't know. My sense is it doesn't.

4 THE CHAIRPERSON: Okay.

5 MR. SIMMONS: Just forecasting incentives that far in the  
6 future would be difficult to do.

7 THE CHAIRPERSON: It's difficult, yeah. Okay. I think  
8 we have another question.

9 **Proceeding Time 2:08 p.m. T24**

10 COMMISSIONER HAROWITZ: So just to understand, the share  
11 on the right-hand scale is share of sales.

12 MR. SIMMONS: Yes.

13 COMMISSIONER HAROWITZ: Are there numbers that the same  
14 folks have done, which is share of fleet? What  
15 percent of the rolling stock is electric? Because on  
16 the left you have rolling stock. There's no  
17 denominator assumptions to divide that by. I don't  
18 know what the share of the --

19 MR. SIMMONS: Yeah, I don't know what the number of sort  
20 of passenger vehicles in its entirety would be at that  
21 time. We do have that as part of the forecast, I just  
22 didn't bring that with me today, so.

23 COMMISSIONER HAROWITZ: Okay.

24 COMMISSIONER FUNG: Mr. Simmons, you may not be able to  
25 answer this right now, but I'm just curious, is this  
26 an internal BC Hydro forecast, or is based on some

1 external studies that you've got access to?  
2 MR. SIMMONS: It's an internal forecast and so it's based  
3 on the people that do the same load forecasts that you  
4 see underlying our revenue requirements, things like  
5 that, put this together. We have one person in  
6 particular that looks -- his role, amongst other  
7 things, is specifically EV adoption and so we've  
8 looked at that.

9 Now, I have looked at this forecast some  
10 time ago relative to those put together. There was  
11 one in an SFU study that came out about a year and a  
12 half ago, maybe two years ago, and the other one, and  
13 I can't remember the body that put that together, but  
14 they're all kind of in the same ballpark. It wasn't  
15 -- you know, some were a bit higher, some were a bit  
16 lower.

17 The SFU study varied quite a bit based on  
18 assumptions regarding the number of models available  
19 and things of that nature which I will talk about in  
20 the next slide, so.

21 COMMISSIONER FUNG: Okay, thank you.

22 MR. SIMMONS: So what are the factors that drive the  
23 decision to purchase an EV? And one of the more  
24 significant ones I think is the availability of  
25 reliable charging opportunities, and I put in reliable  
26 and I was reading an article from somebody senior at

1 Nissan talking about the new Leaf that has a larger  
2 battery and I think it's now over -- it's about 240  
3 kilometres range, and he says at that range, people's  
4 anxiety will be more related to reaching that charging  
5 station and having it operating than it will the  
6 actual range of the vehicle. So, you know, once the  
7 range hits a certain point, the reliability of the  
8 stations become more significant to owners.

9 Of course, the vehicle purchase price and  
10 purchase incentives. So really the net price of the  
11 vehicle is going to be a factor to anybody purchasing  
12 a vehicle.

13 The next one is dealer inventory and wait  
14 times, and that's one thing that a lot of perspective  
15 purchasers have encountered. That is, is they want an  
16 EV, they go to the dealer. They don't have any EVs,  
17 for example a Chevrolet Bolt, or if they do have one,  
18 it's sold. It's going to be delivered to somebody  
19 else, and if they want one, it's a pretty protracted  
20 period to actually obtain one. So that has been cited  
21 as a problem in the past, and I'm not sure whether  
22 it's just the capability of automakers to produce  
23 enough of these electric vehicles or a shortage of  
24 batteries or it's just the dealers don't want to  
25 inventory electric vehicles, because a lot of their  
26 business is on service, and these don't really have

1 much service associated with them.

2 So it's a mystery to me. But that's what  
3 we do -- or what prospective purchasers do encounter.

4 The other one that is -- the other factor  
5 is the variety of models available. So if you have a  
6 larger family, you know, lots of sports equipment and  
7 things like that, and you want an electric vehicle, a  
8 battery electric vehicle, to the best of my knowledge  
9 you have one option and that's the Tesla Model X,  
10 which is not really a car for everybody. It's quite  
11 expensive, and I think they are in the order of 125 to  
12 150 thousand dollars.

13 Now, there are some that are available in  
14 the States, like the RAV4 and things that are  
15 available there, that you do see some making their way  
16 into B.C., but they are not that ubiquitous right now.  
17 So I think once the availability of models increases  
18 by automakers, then I think we're going to see a  
19 bigger push in the ownership of EVs.

20 And then, of course, and this is related to  
21 purchase price, but ownership economics. And that's  
22 like annual maintenance. And so the annual  
23 maintenance on an EV is very little. There's no oil  
24 to change. You know, there just isn't a lot to do  
25 with these vehicles. The only maintenance issue may  
26 be the battery and there is some uncertainty with



1       \$300 per year, which is substantially less. The fuel  
2       cost at \$.35 per kilometre, which is a bit more and  
3       assumes that you were purchasing some of your energy  
4       at DC fast charging stations and think of it that way,  
5       that's a little over a thousand dollars. Still quite  
6       a bit less than the \$1800 in gasoline costs.

7                   And if you had charging stations at 60  
8       cents per kilowatt hour, and you were charging by the  
9       energy unit, kilowatt hours, it would be the same in  
10      annual fuel costs as \$1.50 per litre. So that's kind  
11      of your point where -- you know, your break-even point  
12      or where the two costs meet. So that's a pretty  
13      substantial, \$.60 per kilowatt hour.

14   THE CHAIRPERSON:     Sir, I'm just curious. When you are  
15      talking about \$1.50 per litre, if I pull up to a gas  
16      station, and the price that's shown is \$1.50 per  
17      litre, I'm actually paying a fair amount of taxes,  
18      GST, various Translink taxes and so on. Have you  
19      factored that into this calculation?

20   MR. SIMMONS:        No, I haven't. Any of the road taxes or  
21      anything that's embedded into this. I've just assumed  
22      what the price that the consumer sees at the current  
23      moment.

24   THE CHAIRPERSON:     Right. Thank you.

25   COMMISSIONER FUNG:    I have a question for you, Mr.  
26      Simmons. Have you done the conversion if it's based

1 on a time-based charge, what it would be?

2 THE CHAIRPERSON: Yeah. Yeah, you know, I'll get to  
3 that maybe in another slide. That's a very good point  
4 because unfortunately that question is similar to "How  
5 long is a piece of string?" Because there's a lot of  
6 factors that are unknown in that, and it depends on  
7 battery size, a stable charge and things like that.  
8 So let me get back to that, because that's a very  
9 interesting question. It's somewhat complicated so.

10 COMMISSIONER FUNG: Thank you.

11 MR. SIMMONS: So what has BC Hydro been doing in this  
12 space? So in 2012, or since 2012 BC Hydro has been  
13 working with the federal/provincial/local governments,  
14 businesses and other stakeholders to essentially  
15 remove barriers from EV adoption in the province, and  
16 so I talked about the deployment of 58 direct current  
17 charging stations. We also are involved in a project,  
18 it uses funding from the province of B.C. and NRCAN,  
19 and it's looking at a technology that is for level 2  
20 charging and the technologies will lower the cost, and  
21 I have to explain why -- lower the cost of deployment  
22 of level 2 charging in MURB-type setting. And as  
23 you've heard from others in this, the MURB problem --  
24 I won't say problem. MURB challenge is probably the  
25 greatest in EV environment or EV space right now,  
26 because retrofitting buildings, existing buildings



1 the power at 600 volts and put the next one in.

2 The other problem with transformers and  
3 scaling them up, is transformers that are in place  
4 that are under utilized, so if you put in a  
5 transformer for one vehicle expecting that in three  
6 years you'll have 10 vehicles, you probably size the  
7 transformer for something larger than what you need  
8 for one vehicle or two vehicles. You probably want to  
9 future proof this. The problem is is that  
10 transformers don't -- aren't very efficient running at  
11 low load factors. They actually consume VARS, which  
12 creates power factor issues, and they just use a lot  
13 of electricity themselves. So they are quite  
14 inefficient if they're loaded quite low. So this will  
15 -- this technology will at least alleviate some of  
16 those concerns and lower the costs. So we're  
17 demonstrating that technology right now in conjunction  
18 with NRCAN and the province. And there are working  
19 models, so I think in the summer we'll start deploying  
20 those in 60 specific locations to test the technology.

21 THE CHAIRPERSON: So this is technology that you have  
22 developed with NRCAN? Is that what you're saying? Or  
23 sorry, a grant from NRCAN?

24 MR. SIMMONS: Yes, NRCAN, and the province has provided  
25 funding for it, and there is also a local company  
26 called SMPC that they make some of the parts for some

1 of the DC fast charging stations.

2 THE CHAIRPERSON: And so I would imagine there is some  
3 marketability to this, in other jurisdictions, is that  
4 right?

5 MR. SIMMONS: Yeah.

6 THE CHAIRPERSON: So, you have the commercial --

7 MR. SIMMONS: The IP?

8 THE CHAIRPERSON: Yeah?

9 MR. SIMMONS: Yeah, you know what? I don't know the  
10 answer to that, but I hope so. Yeah.

11 THE CHAIRPERSON: And is there work of this nature to  
12 your knowledge going on in other areas too? I mean,  
13 because this is a problem I'm sure a lot of  
14 jurisdictions are wrestling with.

15 MR. SIMMONS: Yeah, I mean, most of the commercial  
16 entities I think will be a bit closed mouth about what  
17 their research is and what they're looking at, but I  
18 suspect there are others that will be looking at this,  
19 so.

20 THE CHAIRPERSON: Right. Okay.

21 MR. SIMMONS: I mean, at BC Hydro, at the Dunsmuir  
22 office, we have two of these already, but it uses the  
23 previous technology, which was just a normal smaller  
24 scale transformer, it wasn't the solid state  
25 transformer that will be in these ones. So that's the  
26 major difference or the technological changes, the

1 implementation of a solid state transformer.

2 THE CHAIRPERSON: Thank you.

3 COMMISSIONER FUNG: Before we leave that, Mr. Simmons, is  
4 this technology also usable for new MURBs? Or --

5 MR. SIMMONS: Yeah.

6 COMMISSIONER FUNG: Okay, great, thank you.

7 MR. SIMMONS: It would be.

8 THE CHAIRPERSON: You would actually put the transform  
9 in, you would wire the parkade with 240, as opposed to  
10 using this solution generally, wouldn't you?

11 MR. SIMMONS: Yeah. I mean, this is probably more  
12 focused on the retrofit. On a new build, you know,  
13 you have a lot more degrees of freedom to add a  
14 transformer room and things like that, so.

15 In addition to that, we are looking at grid  
16 standards that support EV load, and so we're reviewing  
17 our customer distribution policy. Equipment standards  
18 to accommodate EVs. We're looking at transformer  
19 loads to make sure that using smart meter data to make  
20 sure that they are capable of handling the addition of  
21 some growth in electric vehicles and things of that  
22 nature.

23 And then finally, we've identified through  
24 the -- what used to be called the PowerSmart Alliance,  
25 but now BC Hydro's branding has changed the Alliance  
26 of Energy Professionals, and that is those

1 electricians that have taken a course specific on the  
2 implementation of EV charging facilities. We have  
3 them, so if you're looking for someone to install a  
4 level 2 charger in your house, then you can go to our  
5 website, and it will provide you with a list of  
6 qualified electricians that you can choose.

7 So, I thought -- some of you may have seen  
8 this diagram already, because it was included in our  
9 evidence, but I just wanted to go over the difference  
10 between DC charging and charging using alternating  
11 current. I think if I can get this thing to work.  
12 So, I don't think you can see this unfortunately, so  
13 on the left of your screen shows, if you have AC, if  
14 your car is plugged into AC current, each car has an  
15 onboard charger, and essentially that's like a  
16 miniature DC fast charger. It's taking alternating  
17 current and it's creating direct current through what  
18 is referred to as rectification. And it's DC current  
19 that actually charges the battery.

20 **Proceeding Time 2:23 p.m. T27**

21 But when you have a DC fast charging  
22 station you're actually connecting the vehicle --  
23 you're bypassing that onboard charger and connecting  
24 straight into the vehicle's battery. And that's why  
25 you can get those higher charge rates because you  
26 don't have to have a large onboard charger. There's

1           some limits to what you can fit onto a small package  
2           and carry in your car, you know, relative to what you  
3           can on the curbside, which is a DC fast charging unit.

4                        So AC Level 1, that's just when you plug  
5           into your wall outlet, 120 volts. With a battery  
6           electric vehicle you're looking at 16 plus hours for a  
7           full charge. And there's some people that get away  
8           with that. I have a colleague that has a Leaf. He  
9           doesn't have a garage, he runs an extension cord out  
10          to the road, and nobody's taken it yet, and he charges  
11          his Leaf that way.

12                       And then second is you've heard AC Level 2.  
13          This is gen- -- this is 240 volts, between 6 and 80  
14          amps; 30 amps is most common. For a battery electric  
15          vehicle you're looking at 48 hours for a charge  
16          depending on the amperage and that's -- and then  
17          finally, the DC fast charging, about 30 to 40 minutes  
18          for an 80 percent charge. 50 kilowatts, all the  
19          stations that we have installed or deployed are 50  
20          kilowatts, but I should note that the Tesla  
21          supercharger stations are 120 kilowatts, so they're  
22          significantly more than that.

23   COMMISSIONER HAROWITZ: Before you move on --

24   MR. SIMMONS: Mm-hmm.

25   COMMISSIONER HAROWITZ: So we heard someone talking about  
26          that, you know, the next wave might be 100 as opposed

1 to 50.

2 MR. SIMMONS: Yeah.

3 COMMISSIONER HAROWITZ: Do you have any plans to -- on  
4 your future rollouts what's the thoughts in -- do you  
5 have some sense of how fast the technology is going to  
6 be changing and where you're going to be going with  
7 that?

8 MR. SIMMONS: Yeah, you read my mind, because I was just  
9 flipping forward to wondering when we were going to  
10 talk about that. But we have ordered a next  
11 generation fast charging unit that we're going to  
12 deploy at Powertech Labs, which is a subsidiary of BC  
13 Hydro in Surrey. And that charging station is 150  
14 kilowatts versus the 50. And it's built using three  
15 50 kilowatt modules. And so it's similar to the Tesla  
16 stations. And so what that will do is you can put  
17 numerous posts on there. And so if one car parks and  
18 hooks up to it, and it's the only car, and it's  
19 capable of fast charge, like beyond the 50 kilowatt,  
20 like the new Porsche for example, it can go up to 150  
21 kilowatts. If someone else plugs in, it'll share that  
22 and give the next one 50 kilowatts, leave 100 for that  
23 one. And then if another car parks in, it will share  
24 the 50 kilowatts evenly. So there's a bit of, you  
25 know, sort of power sharing in amongst the things. So  
26 we've ordered it with two posts and 150 kilowatt units

1           so it could do 150 kilowatts, or 75, or 50, or  
2           whatever the car is able to take.

3   COMMISSIONER HAROWITZ:   And is it a straight linear  
4           translation of charge time, you know, three times the  
5           capacity is one-third of the charge time, or is there  
6           some other curve that you'd use to --

7   MR. SIMMONS:   Probably not.  And there's probably  
8           engineers, like, you know, in the room that could  
9           probably answer that better, but I do know that  
10          charging is -- and this goes back to Commissioner  
11          Fung's question, the charging rate is dependent on a  
12          number of factors, including state of charge, the  
13          technology in the battery, and things like that, so --

14   COMMISSIONER HAROWITZ:   No, but like for like, same  
15          vehicle, same charge level.

16   MR. SIMMONS:   If it's capable of 150 I suspect that it  
17          would be -- it should be, yeah.

18   COMMISSIONER HAROWITZ:   Okay.

19   MR. SIMMONS:   The amount of power going in.  Like I said,  
20          there's a bunch of factors.  Heat, for example.  So,  
21          at 150 you're going to be putting a lot more heat into  
22          that battery and the car may shut that down to keep it  
23          at a certain temperature.  So it depends on what the  
24          cooling is on the battery.

25                           And I should note that at the 150 kilowatts  
26          that necessitates -- unless you want giant cords



1 -- we've already heard about a few times and DC fast  
2 charging stations. So, transportation electrification  
3 is a key contributor to the attainment of the  
4 province's climate action goals, and that's the  
5 reduction of total provincial GHGs to 80 percent below  
6 2007 levels by 2050. And so, transportation sector  
7 contributes, according to the provincial government,  
8 29 percent of BC Hydro's GHG emissions. Or sorry, 39  
9 percent. 25 of that is from commercial  
10 transportation, trains, busses, tractor trailer  
11 things. 14 percent is from passenger vehicles and  
12 things of that nature.

13 So, really, to even come close to attaining  
14 these, there needs to be something done in the  
15 transportation electrification. So, even though 80  
16 percent of charging today occurs at home, or at work,  
17 the DC fast charging stations are considered to be  
18 critical to the large scale use of electric vehicles.  
19 And so, they provide -- they extend the practical  
20 range of electric vehicles. So if you're going from  
21 say Vancouver to Kamloops, you're going to want to  
22 charge at Hope, or somewhere along the way, at  
23 Abbotsford, so that your vehicle can actually make it  
24 to Kamloops without being stranded on the Coquihalla.

25 And DC fast charging, some of our customer  
26 service people went out and they waited at the

1 charging stations. This is the one in North  
2 Vancouver, and talked to the people who were charging  
3 there. And it was very interesting to see how many of  
4 those users of this charging station were there  
5 because they didn't have access in their apartments.  
6 So, it's located at Lower Lonsdale, but there were  
7 people coming in from the Bellview area of West Van,  
8 and somewhere where there is some higher density  
9 housing. Just because they didn't have charging, they  
10 were working with their stratas, but they were hitting  
11 road blocks. And it was -- this is how they charge  
12 their vehicle. So, that was quite surprising.

13 The other item where they come in handy is  
14 is if you have a day where you have -- let's say you  
15 have children, and you have a tournament in Surrey,  
16 and you live in North Van, and you have to drive out a  
17 few times to Surrey, or White Rock, wherever you're  
18 going. Level 2 doesn't provide you a quick enough  
19 charge so that you can use this electric vehicle  
20 throughout that day. You need something that will  
21 give you a charge within a 30 minute period to get you  
22 to Surrey. Because when it's parked on either end,  
23 even assuming you had level 2 charging on either end,  
24 it may not be sufficient to do that. So in those  
25 types of instances, so when the duty cycle gets pretty  
26 significant, the level 2 charging just won't be

1       adequate to get you through your day in your vehicle.  
2       So, that is another use for these DC fast charging  
3       stations.

4               So, I'll go to the next slide. So this is  
5       a map of our two deployments of stations. And then  
6       I'll also include the stations, I don't know if you  
7       have it in colour, on the right -- or some red  
8       stations, and I'll talk about those a little bit. So  
9       our first deployment was from 2013 to 2016, and those  
10      are the blue dots on the screen. And one thing you'll  
11      notice about the locations that those blue dots  
12      represent is stations in those areas, is they are all  
13      along highway corridors, and they are -- so those  
14      stations were selected using a UBC study. They were  
15      selected to extend the range, and almost work with  
16      this EV tourism model, and that is you can get to  
17      these different locales using your electric vehicle.

18             And in the second phase that you see with  
19      the green, and you'll see a far higher concentration  
20      of those in the Lower Mainland, and those were put  
21      into place to provide charging opportunities for those  
22      people that live in MURBs. And we see that the  
23      urban/suburban locations, do, by quite a great extent,  
24      have the highest utilization factors. So they are by  
25      far the ones that are used most in that fleet that you  
26      see there.

**Proceeding Time 2:33 p.m. T29**

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THE CHAIRPERSON: These are all DC fast chargers?

MR. SIMMONS: Yes, they're all DC fast chargers.

THE CHAIRPERSON: And each dot is one charger?

MR. SIMMONS: That's correct, yeah.

You will see on Highway 5 there's a blue dot between Kamloops and the green dot which represents Hope. That one is Britton Creek. We are putting two DC fast charging stations in that location. Not for reasons of congestion, but reasons of reliability and to ensure that somebody doesn't drive up and get stranded in Britton Creek because the station is not working. Because it does take a technician quite a while to get to some of these locations.

THE CHAIRPERSON: You have one in Manning Park, is that right?

MR. SIMMONS: That's correct.

THE CHAIRPERSON: We've heard a lot about that station.

MR. SIMMONS: Good or bad?

THE CHAIRPERSON: Not so good, I'm afraid. About availability. Whether it's that station or there's another one in Manning Park.

MR. SIMMONS: Yeah, there's a few of them and I'm going to get into that.

THE CHAIRPERSON: You can say it's someone else's,

1           that's fine.

2 MR. SIMMONS:       No, it's a BC Hydro owned station, but  
3           it's operated by the municipality in that area.

4 THE CHAIRPERSON:   It's questions about the availability  
5           of it and either because somebody else is already  
6           there or it doesn't take the fob properly or they  
7           can't get it to operate, those kind of things.

8 COMMISSIONER FUNG:   There's a lack of WiFi in that  
9           area.

10 MR. SIMMONS:       Yeah. On some of these stations that  
11           we're deploying now, if there is no cell connection  
12           we'll have to use -- it either goes to free mode or  
13           we'll have to use a satellite connection, which the  
14           amount of bandwidth that it uses is very low, so it's  
15           actually not that expensive, so.

16                   And at the stations on the right, you'll  
17           see -- now these were stations that the funding was  
18           provided by the Community Energy Association. They  
19           raised funds from the Regional District of East  
20           Kootenays, the Canadian -- I believe it's the  
21           Federation of Municipalities provided funding. That  
22           was part of their Accelerate Kootenays project, and  
23           they provided funding for stations along these  
24           Kootenay corridors, and so I'm going to probably get  
25           these towns wrong. But to the north is Golden and  
26           Radium Hot Springs. I believe the one after that,

1 below that is Canal Flats, Cranbrook, Jaffrey and then  
2 Sparwood, I think the final one is.

3 And BC Hydro will operate those. So as  
4 soon as they are complete, the ownership will be  
5 turned over to BC Hydro at those stations.

6 THE CHAIRPERSON: What's the model for payment for  
7 these?

8 MR. SIMMONS: Yeah, the next slide I'll go into it,  
9 because it depends on when they were deployed. So,  
10 I'll get into all that.

11 Are there any questions about that?

12 COMMISSIONER FUNG: Before we leave that slide, Mr.  
13 Simmons, is there a phase 3 coming up? Because I  
14 noticed there are segments of the province are not  
15 covered, namely north of 99 and north of Whistler, 97,  
16 Highway 6, Highway 3. What's the plans?

17 MR. SIMMONS: Yeah, BC Hydro has put in an application  
18 to NRCAN for their most recent round of funding, and  
19 we worked with Ministry of Energy Mines and Petroleum  
20 Resources and the Ministry of Transportation  
21 Infrastructure to develop what that next group will  
22 be.

23 So we've looked at the sites. The Ministry  
24 of transportation will be taking on numerous of the  
25 sites, but I'll tell you where we proposed, and you  
26 hit most of them, Commissioner Fung. We are looking

1 from Kamloops north on Highway 97 to Prince George,  
2 and so -- in this round. And then also up Highway 5  
3 which loops around to Prince George.

4 On the Vancouver Island side you can't see,  
5 they'll go all the way to Port Hardy. So we're  
6 looking at a station in Woss, a station in Sayward and  
7 a station in Port Hardy. Completing that circuit,  
8 north to Haida Gwaii, we're looking at a station in  
9 Masset and we're looking at a station in Queen  
10 Charlotte City, I believe. Not Sandspit, it would be  
11 Queen Charlotte City or the town right next to it. I  
12 think it's Queen Charlotte City. They are all very  
13 close to each other.

14 THE CHAIRPERSON: Are there enough electric vehicles on  
15 the Queen Charlottes?

16 MR. SIMMONS: That is a good question. I think there  
17 are some, but I'm not sure, and this is something that  
18 the Ministry wanted to put together to complete.

19 And then once we get to Prince George, the  
20 final segment of this, but it's not part of this call,  
21 it may be part of a future call, is Highway 16 to  
22 Prince Rupert. And so that will just complete the  
23 circuit in the province at that point.

24 And so, I think beyond that, there may be  
25 some other -- like other segments or driving routes  
26 that we might look at, but by that time we probably



1 sites, the operator is the municipality which the  
2 station is located. And because the municipalities  
3 are exempt from certain parts of the *Utilities*  
4 *Commission Act*, they are able to charge customers,  
5 should they desire to do so, for electric vehicle  
6 charging.

7 COMMISSIONER HAROWITZ: Could I stop you there for a  
8 second? There is one reading of the *Act* which would  
9 say that the municipality is exempt if it is owned and  
10 operated, "and" being operative there. So, these are  
11 owned by you, operated by them.

12 MR. SIMMONS: Yeah.

13 COMMISSIONER HAROWITZ: So they're regulated? They're  
14 not regulated? What is Hydro's position on this?

15 MR. SIMMONS: Our legal position, I would have to not  
16 talk to that. But --

17 COMMISSIONER HAROWITZ: Because we've heard from people  
18 that people are charging, and these regulated,  
19 unregulated, in rate base?

20 MR. SIMMONS: I'll tell you the way it's structured.  
21 It's structured that we own them and lease these  
22 stations to the station operator, and the reign 2 is  
23 Eco Derry, heard about before. Eco Derry was provided  
24 an exemption from certain parts of the *Utilities*  
25 *Commission Act* in 2016.

26 And then the final site is a test site at

1 Powertech Labs, and that's where we'll be putting the  
2 new generation charger at Powertech Labs.

3 With respect to charging a fee, of these  
4 municipalities, I believe 17 out of 30 charge for the  
5 charging services. They all charge a similar fee of  
6 35 cents per kilowatt hour, of those that do charge a  
7 fee.

8 We heard earlier --

9 THE CHAIRPERSON: Do you know how they came up with that  
10 number?

11 MR. SIMMONS: Yeah, it was to reach a certain proportion  
12 of what the gasoline charges were, and I think it was  
13 like 50 or 60 percent.

14 THE CHAIRPERSON: Right, from your earlier graph, yes.

15 MR. SIMMONS: Yeah, it was kind of, okay, what is -- and  
16 remember, these stations began in 2012. There weren't  
17 a lot of EVs around, so you're trying -- what can we  
18 charge to recover some of the costs without deterring  
19 people from buying EVs.

20 COMMISSIONER HAROWITZ: If I may, given what we've heard  
21 about Measurement Canada and the problems associated  
22 there, what metering is being used to actually come up  
23 with the actual final charge?

24 MR. SIMMONS: Yeah, I was going to get into that. But it  
25 is a DC meter. And so the issue with Measurement  
26 Canada right now is is that there is no standard for a

1 DC meter in Canada, and without a standard, there is  
2 no approved metering. So, to the best of my  
3 knowledge, Measurement Canada is aware, and they have  
4 inquired about what we're doing, and we said "Well  
5 this is being done on a pilot basis," and they have  
6 not said anything after that. So, they have been  
7 advised that we are charging by 35 cents per kilowatt.

8 THE CHAIRPERSON: You use the word "in Canada." To your  
9 knowledge, are there other jurisdictions outside of  
10 Canada where they charge by the unit, and, you know,  
11 that's properly measured, and whatever authority looks  
12 after that?

13 MR. SIMMONS: Yeah, my understanding, California  
14 there is a standard that they use, and they can charge  
15 from kilowatt hour. And so I just point out at this  
16 time, without getting into rate design or anything  
17 like that, but I do differ with Kelly Carmichael on  
18 the issue where the time is fairer than per kilowatt  
19 hour. And the reason being is there is a whole host  
20 of battery sizes and technologies used in batteries.  
21 So if you have an older Leaf, or even a Leaf, they  
22 don't have any onboard cooling in the batteries. So  
23 when you charge them up, the -- it will start  
24 regulating it, to keep the heat down, because heat is  
25 what causes the battery to degenerate.

26

**Proceeding Time 2:44 p.m. T31**

1                   So if you bring a Tesla to one of our  
2                   stations, and you can always see the Teslas because  
3                   when you look at the graph of the charting profile,  
4                   they'll be at 50 or 49 right through the whole  
5                   charging piece, and then they'll drive away.

6                   And you see the Leafs or some of the  
7                   smaller ones, they'll plug in. They'll start at 25  
8                   kilowatt and then it will drop very markedly as the  
9                   battery heats up. And so if you're charging by time,  
10                  you think about the Tesla owner is driving away with  
11                  -- in an hour or half an hour whatever time it takes,  
12                  significantly more kilowatt hours than some of the  
13                  other units. And so I think the most appropriate rate  
14                  structure would be for time because you don't want  
15                  people camping out.

16                  Like our station at Squamish, for example.  
17                  We get some charging sessions for two and a half  
18                  hours, three hours, and then you have people  
19                  complaining, "What's this car doing here?" Well, I  
20                  suspect that they plug their car in and walked down  
21                  the street and went and had lunch and walked around.  
22                  Which isn't particularly fair. So you do want some  
23                  time-based element to get people to move on. But I  
24                  think beyond that, I think everybody takes up the same  
25                  amount of space so they should be charged the same  
26                  amount. But when it comes time to the energy there

1           should be something else.

2                     One way around that is a time-based rate  
3           that is tiered. So if you are using ten kilowatts of  
4           power, you get some charge. If you are using between  
5           ten and say twenty-five kilowatts, it's a higher  
6           charge, and if you're using 25 to 50, it's another  
7           charge. So that's what the Tesla stations, the super-  
8           charger stations that do charge for charging, that's  
9           how it works with them, is it depends on how much  
10          power is actually going into the vehicle. And I think  
11          if we're stuck with time, that would be the fairest  
12          way of doing that.

13                    But I think -- you know, if we could do  
14          anything we want, it would be a time-based plus a  
15          kilowatt hour base. I think a hybrid approach is  
16          economically the most sound approach.

17 THE CHAIRPERSON:   Well, presumably you have to recover  
18          some of the amortization of the charger, and that  
19          could be argued to be time based. Whereas the  
20          electricity itself could, you know, be volume based.

21 MR. SIMMONS:        Yeah. With respect to the 30 station  
22          pilot, I'll also add that all the municipalities pay  
23          for the electricity on our general services -- general  
24          service rates, so that's how that works.

25                    So I'll go to the next slide. So our  
26          current deployment, which will end on May 31<sup>st</sup> with the

1 Britton Creek station which, unfortunately it keeps  
2 snowing there, so it's making that deployment a bit  
3 difficult because of the snow. But we're deploying 22  
4 stations in 20 unique locations in the province. And  
5 again funding provided, NRCAN, the province. The  
6 province being Ministry of Energy, Mines, Petroleum  
7 Resources and MOTI, which is Ministry of  
8 Transportation and Infrastructure. And of course, BC  
9 Hydro is funding some of that.

10 The Ministry of Transportation is paying  
11 for some of the costs at Britton Creek, because it was  
12 a particularly wanted station there and was a  
13 particularly expensive location. So they are paying  
14 for a good amount of that, beyond what NRCAN is  
15 providing, and MEMPR.

16 And again, I talked about the Community  
17 Energy Association and providing funds for the  
18 Kootenay stations for the Accelerate Kootenay  
19 Stations.

20 For these stations, BC Hydro not only will  
21 be the owner but would also be the operator of those  
22 stations, and so for BC Hydro, being the operator, we  
23 will be applying, similar to FortisBC, for a rate, and  
24 we expect that application to be filed in September  
25 2018. So, after this summer for our rate.

26 And then -- so finally I'll talk about

1 station maintenance, and you'd indicated Manning Park.  
2 You know, one thing we found out, BC Hydro found out  
3 about the operation of these stations, and especially  
4 when we did it on a pilot basis is these stations were  
5 first generation technology, and they were  
6 problematic. They did require quite a bit of  
7 maintenance because of plant outages and it was  
8 something that was not expected of BC Hydro and what  
9 you would expect of utility assets.

10 So over the last year, we've revamped our  
11 operating model reflecting the people's views when  
12 they do drive up to a station that doesn't operate.

13 **Proceeding Time 2:49 p.m. T32**

14 And so Power Pros Electrical has been  
15 retained province-wide to respond to any trouble  
16 calls. And so what happens, if there's a trouble call  
17 a customer will drive up and then there's a phone  
18 number. They'll phone to a call centre, and then the  
19 call centre will try to reboot the station, a remote  
20 reboot. And it's very similar to your WiFi at home.  
21 And it turns off the telemetry elements of the station  
22 and starts it up again. And in the past or history 80  
23 percent of the trouble call station faults have been  
24 remedied by simply by a remote reboot of the station.

25 So that leaves 20 percent of the station  
26 faults. For the remaining 15 or for -- well, 15 of

1           the remaining 20 percent we send out a technician.  
2           And the technician -- well, 15 percent of the time  
3           that station will be -- the fault will be remedied by  
4           a hard reboot. So they open up the kiosk where the  
5           transformer is and there's a breaker in there. They  
6           turn the breaker off, they turn it back on, and the  
7           station ends up working.

8                           And then the residual five percent of  
9           station faults are a result, if they need parts  
10          replacement, there's a fuse blown, power module is  
11          blown, you know, there's all sorts of things that  
12          require parts and some, you know, getting in there and  
13          swapping stuff out.

14 THE CHAIRPERSON:   How quickly can a technician get out to  
15          a relatively remote station?

16 MR. SIMMONS:       Yeah, in time -- and depending -- the more  
17          remote areas the longer it'll take. We actually have  
18          three tiers of service from Power Pros and it's based  
19          on the response time. So if it's critical we can tell  
20          them to go out immediately, or if it's not critical,  
21          you know, they can --

22 THE CHAIRPERSON:   And who operates this maintenance  
23          infrastructure? Is that Hydro or is this -- or is  
24          that the operator of the charging station?

25 MR. SIMMONS:       Well, for all 58, including the 30, because  
26          BC Hydro is the owner for the pilot first 30 stations,

1       we still have the responsibility of keeping them  
2       maintained and running, so --

3       THE CHAIRPERSON:     Maintained.

4       MR. SIMMONS:     And also Powertech Labs has created an  
5       inventory of spare parts for our stations. And so  
6       instead of going to the manufacturer and saying "We  
7       need this component" and they say, "Well, that's going  
8       to be, you know, two weeks to get it to you," it's  
9       backordered or whatever the case may be, we'll have  
10      these parts so that they can be swapped out. And in  
11      situations where the problem can't be remedied or  
12      can't be diagnosed right away, we'll have spare  
13      stations that will just truck in and just swap out.  
14      So that's -- so we expect a significant improvement in  
15      station reliability. Or I should say, we have been  
16      swapping out some of those problematic old stations,  
17      first generation, to the newer -- newest generation  
18      stations and that will solve some of the reliability  
19      issues.

20                        So all that said we expect-- and we have  
21      experienced since we've revamped this, we've  
22      significantly better reliabilities for our stations.  
23      And when those stations do go down, they're up and  
24      running quite a bit quicker. There are instances --  
25      there's was an instance in Saanich where a fuse kept  
26      blowing, and so we replaced the fuse, it would work,

1           and then it would blow again. And then it did that --  
2           I think we went through six fuses until we didn't have  
3           any inventory of fuses. And we called the  
4           manufacturer and they were on backorder. So --

5 THE CHAIRPERSON:    A common problem, perhaps.

6 MR. SIMMONS:        Hmm?

7 THE CHAIRPERSON:    A common problem perhaps.

8 MR. SIMMONS:        Yeah. They -- it was resolved, it was  
9           actually the fuse socket that was somehow shorting out  
10          and causing the fuse to blow, but that was the  
11          problem. But you do encounter situations like that  
12          where diagnosing the problems is very difficult, so.

13 THE CHAIRPERSON:    I'll just pass along a couple of other  
14          comments that we've had had charging stations  
15          generally. I don't know if they specifically relate  
16          to yours, although I assume that they would because,  
17          you know, you have a fair number of them.

18                    And one of them is that since the charging  
19          stations attracts vehicles because they know that  
20          there's one there, then there's quite often more than  
21          one vehicle there that need to be charged up. So it's  
22          been pointed out -- it was pointed out to us that you  
23          rarely find a gas station with one pump. And so the  
24          question was why are there electric vehicle charging  
25          stations with only one nozzle?

26 MR. SIMMONS:        Yeah.

1 THE CHAIRPERSON: And I'm not being critical, I'm just  
2 pointing that out.

3 MR. SIMMONS: You're sounding like my boss actually.

4 **Proceeding Time 2:54 p.m. T32**

5 THE CHAIRPERSON: Sorry. The other comment was that, and  
6 again a comparison to gas stations, is that there's  
7 often a washroom and a place to buy some chips and a  
8 coffee and so on. So, I'm just wondering if, you  
9 know, where do you see -- like, who's responsibility  
10 as it were, like, you see BC Hydro maybe as properly  
11 owning and operating the actual nozzle, I'll call it  
12 for want of a better word. But what about the  
13 infrastructure that people seem to want.

14 MR. SIMMONS: The amenities around the station, yeah. I  
15 should have mentioned that in our selection for -- at  
16 least this deployment that's going to be complete on  
17 May 31<sup>st</sup>, a lot of those stations are going in at  
18 Loblaw Stores, and we looked very closely at what  
19 amenities were nearby. Bearing in mind that, you  
20 know, they're going to have 30 - 40 minutes to do  
21 something. Loblaws was a great sort of corporate  
22 sponsor and they were quite willing and continue to be  
23 willing to host stations on their property because  
24 they want to attract customers, of course, but it also  
25 gives individuals that are using these stations  
26 something.

1                   There's a station at the Surrey Museum  
2                   right now which is -- Surrey Museum is being renovated  
3                   and so we need to potentially look at relocating that  
4                   station. One of the issue with that station is  
5                   there's nothing around there. And at night, it's kind  
6                   of in the back alley, and there's youngsters or  
7                   teenagers or whoever hanging around. It's kind of  
8                   prohibitive for some people to drive to their station  
9                   -- drive to that station and sit.

10                   So, we're looking at that, exactly that  
11                   amenities, so first of all you look at where you need  
12                   the station, location wise, and then you sort of  
13                   narrow it down to some spots. And then the  
14                   availability of amenities is certainly a critical --  
15                   and safety is one of the key issues too, public  
16                   safety.

17                   And that's all I have.

18                   COMMISSIONER HAROWITZ: We've heard various people, both  
19                   today and otherwise, talking about the incremental  
20                   energy that this adoption of electric vehicles  
21                   represents. Which then inevitably leads to the shape  
22                   of that load. And so far there's nothing in here, in  
23                   your comments about time of use or anything like that.  
24                   Is Hydro developing a point of view and if so, what's  
25                   that look like around time of use and how electric --  
26                   you know the demand for energy that's coming out of

1           this initiative, you know, does or doesn't help you  
2           with that?

3 MR. SIMMONS:    Yeah, I mean BC Hydro is reviewing  
4           everything to make the economics -- you know, looking  
5           at the economics of everything. I will say everything  
6           now has to be in the context of affordability with our  
7           current government, that's the lens that they're  
8           taking. And so, if time-based rates result in lower  
9           cost for not only EV users but everybody else, then it  
10          potentially could be something that we'd look at.  
11          But, you know, affordability is --

12 COMMISSIONER HAROWITZ:   I'm asking if -- or perhaps the  
13          supplementary question, have you done any of the  
14          modeling and analysis around shifting the time of use  
15          load and the impacts that that would have on rates?

16 MR. SIMMONS:    Yeah, we've done a distribution study that  
17          looks at the impact of coincident loads on our  
18          distribution system, including local transformers and  
19          things. Having people come home at 6 o'clock, for  
20          example and if they're incentive -- I mean there's a  
21          cultural thing that, you know, people will want to use  
22          the least amount of resources possible, so they'll  
23          plug in -- you know, they'll set the timer on their  
24          car to start charging at 11 because they don't need  
25          and so, yeah, we have done some work looking at those  
26          coincident loads and what the impact of the shifting,

1           that new EV load into other time periods, what that  
2           would look like.

3                           I saw -- sorry.

4   COMMISSIONER HAROWITZ:   Is that work going to be either  
5           already or in due course submitted as part of this  
6           proceeding?

7   MR. SIMMONS:   I can't answer that. I would have to take  
8           that back, but I have our regulatory person here who  
9           can take that back and figure out what we can provide,  
10          yeah. I don't know how --

11   COMMISSIONER FUNG:   Mr. Simmons, you've heard earlier  
12          this afternoon from Mr. Carmichael that he's of the  
13          view that essentially the fast charging technology is  
14          changing so rapidly that in five years time your  
15          stations, whatever you have in place will become  
16          obsolete or redundant or be replaced by new  
17          technology. Do you agree with that given that you've  
18          already said, I believe, earlier, that you've already  
19          swapped out some of your first generation charging  
20          stations already. And you started doing this in 2012.

21   **Proceeding Time 2:59 p.m. T34**

22   MR. SIMMONS:   Yeah. Well, just -- we swapped out those  
23          stations due to reliability concerns, and it was just  
24          costing us too much to maintain them because they were  
25          first generation.

26   With respect to new technologies, you know,

1 higher power, I suspect in five years, yeah, we're  
2 going to see something different. We're going to see  
3 more 150 kilowatt chargers out there. Because people  
4 don't want to sit by their car. You know, if there  
5 was a gas station that had a really slow pump, and it  
6 took you 30, 40 minutes to fill up your car, you'd  
7 probably avoid that one and go to the one that goes  
8 really fast.

9 But there always is a use. I mean, it's  
10 like computers. You know, you buy a computer and it's  
11 kind of -- it does what it does. And then when  
12 something new is out, you kind of want that one. Not  
13 that the one that you bought does anything different  
14 than what you had set out to do, it's only that  
15 relative, you know, value.

16 COMMISSIONER FUNG: Yeah.

17 MR. SIMMONS: Yeah. Or phones, yeah. And we're not  
18 intentionally trying to slow anything down either.

19 But, yeah, it's -- in answer to your  
20 question, I think that there will be technological  
21 change, and it will be fairly rapid. Like, I said  
22 that we're going to be testing 150 kilowatt. And it's  
23 very different. That one, I think from our  
24 perspective given the footprint, it's more attractive  
25 because it has more than one post, so it deals with  
26 that congestion issue that we're finding, rather than

1 the speed. Because quite honestly, aside from the  
2 Teslas that use the supercharger stations, there  
3 aren't any cars right now that can use anything over  
4 50 kilowatts.

5 So, but, we have Audi and Porsche and some  
6 of the higher-end cars too. So it's not going to be  
7 all that ubiquitous soon.

8 So I think we're a few years away from  
9 that. How long it will take before we look at this 50  
10 kilowatt machine and say, you know what, it's just not  
11 useful any more, that's a big question. It could be  
12 five, it could be more than that. It could be ten.  
13 You know.

14 COMMISSIONER FUNG: So I will ask you a follow-up  
15 question, then. Tell me if you cannot answer this,  
16 because it may not be fair to put you in the position  
17 of having to answer it. But it occurs to me that if  
18 indeed, you know, that the useful life of the station  
19 is five years, it does pose some issues with respect  
20 to stranded assets.

21 MR. SIMMONS: Mm-hmm.

22 COMMISSIONER FUNG: For the utility. If you include it  
23 in rate base. And how do you recover the capital cost  
24 of that in five years' time without charging people an  
25 exorbitant price to charge at your station?

26 MR. SIMMONS: Yeah. Yeah, obviously if the useful life

1           and the amortization period is five years versus ten,  
2           it will make the requirement to recover your costs  
3           that much greater in a short period of time. That's  
4           absolutely -- but, you know, we -- well, it's -- the  
5           stations could still be useful. For example, of the  
6           stations we've taken out of service, we have  
7           jurisdictions that we don't really have an intention  
8           of putting in DC Fast Charging, asking us, can we have  
9           that station? Rather than us take it to the junk  
10          yard, they would like it. And now we need a process  
11          for figuring out how we do that, and all that.

12                        So they still have some usefulness to  
13          somebody, and that may be the utility or the station  
14          owner. Maybe they get moved to areas where it's not  
15          as important to get a charge, you know, really  
16          quickly. So --

17   COMMISSIONER FUNG:    Thank you.

18   MR. SIMMONS:        Okay.

19   COMMISSIONER HAROWITZ:    I want to go back, and I think  
20          it's sort of the beginning and the end of your  
21          presentation. The beginning, you talked about  
22          forecasts of EVs out there in that world.

23   MR. SIMMONS:        Mm-hmm.

24   COMMISSIONER HAROWITZ:    And then the end, though, the map  
25          seems to be more location-driven around range anxiety  
26          to allow any vehicle to drive anywhere in the

1 province. But I'm wondering what modeling you've done  
2 and I'm presuming you've done some, and if so what  
3 you'd be willing to share with this inquiry around --  
4 as it relates to queueing theory and number of  
5 nozzles.

6 MR. SIMMONS: Yes.

7 COMMISSIONER HAROWITZ: As opposed to simply getting a  
8 car anywhere in the province. If you talk about  
9 350,000 vehicles out there, surely the number of  
10 nozzles you need is very different than saying,  
11 there's one -- you know, along any highway there is a  
12 place for a vehicle to get charged.

13 MR. SIMMONS: Yeah. Yeah.

14 COMMISSIONER HAROWITZ: You may have a three-day wait to  
15 get to the nozzle.

16 MR. SIMMONS: Yeah.

17 COMMISSIONER HAROWITZ: So what modeling have you done  
18 around how you handle that queuing and peak demand,  
19 and you know, how many vehicles per nozzle, or nozzles  
20 per vehicle, or however you want to do it.

21 MR. SIMMONS: You guys are really starting to sound like  
22 my boss, because part of my plan for the year, which  
23 I've been told to do, is undertake a study on queueing  
24 theory to see what -- you know, what the optimal  
25 number should be, given a certain amount of capacity  
26 -- or, you know, station utilization.



1 appreciated.

2 I think we'll take a couple of minutes  
3 before Mr. Flintoff. We'll come back at quarter past.  
4 Thanks.

5 **(PROCEEDINGS ADJOURNED AT 3:06 P.M.)**

6 **(PROCEEDINGS RESUMED AT 3:20 P.M.)**

7 THE CHAIRPERSON: Mr. Flintoff, before we start, I wonder  
8 if you could give us an idea of how long you think  
9 your presentation would be?

10 MR. FLINTOFF: I was sort of suggesting 5 o'clock, but  
11 obviously we're out of time. So, it would probably be  
12 25 pages long, so you figure a minute a page maximum.  
13 Is that good enough?

14 THE CHAIRPERSON: Sorry, a maximum of what?

15 MR. FLINTOFF: A minute a page if you're 25 pages?

16 THE CHAIRPERSON: Sure, yeah, I mean we're not going to  
17 hold you to a time limit, but I just want to make  
18 sure.

19 MR. FLINTOFF: I'm used to this.

20 THE CHAIRPERSON: Please go ahead.

21 **PRESENTATION BY MR. FLINTOFF:**

22 MR. FLINTOFF: Okay, so we'll start with the scope issue.  
23 Should the Commission regulate the services? Yes. I  
24 agree they should regulate the services, but you can  
25 regulate light-handed by complaint, you don't have to  
26 take a full regulation.

1                    Now, when I say regulate the charging  
2                    stations, I mean the services provided to the charging  
3                    station, not the charging station itself. The  
4                    charging station should remain with the non-regulated  
5                    branches of the public utilities to avoid any cross-  
6                    subsidation [*sic*] and what else would you call it?  
7                    Impact to the infrastructure. Because there will be  
8                    impact.

9                    Should the rates -- how should the rates be  
10                   set and designed? Well, if we're only supplying to  
11                   the charging stations, we should base the rates on KVA  
12                   hours, instead of kilowatt hours, because KVA hours,  
13                   if you look at the specs on the charging station, the  
14                   power factor is only high when it is doing its maximum  
15                   load. And it's like any solid state power supply, as  
16                   the load backs off, the power factor decreases, and  
17                   the risk of harmonics is there. Depending where you  
18                   are in the province, that could be a big risk. It  
19                   might not be so stiff, and the harmonics might require  
20                   additional reinforcement.

21                   I dug out some data because I was curious.  
22                   I saw all these numbers on how popular EVs are. So,  
23                   we only got 13 percent of the people in B.C. using  
24                   public transit, and I'm one of them. I've got myself  
25                   a Compass card. Average commuting duration in B.C. is  
26                   25.9 minutes. Total vehicle registrations though, is

1           3.6 million and we hear these numbers about EV sales  
2           as a percentage increase year over year. It's all  
3           great numbers, but actually when you look at it  
4           against the total, we've increased from .2 percent in  
5           2013, to just about 1 percent in 2016, and if you go  
6           out on the websites and you check, there's about 6,000  
7           plug-in hybrids, or battery electric vehicles in the  
8           province So, really the penetration of EVs in the  
9           province is quite low.

10                   The grid shape -- grid stability and load  
11           shape. If the system is stiff enough, and I assume  
12           Site C will provide stiffness, the load shape, if  
13           we're still looking at peak loads in the daytime, then  
14           charging in the evening hours will improve the load  
15           shape. But assuming that people are driving any  
16           distance to get to work, they will want to plug in  
17           during the working hours, which may affect the load  
18           share. So, Hydro is going to produce that  
19           information, right?

20                   Does it align with government policies?  
21           Yes. It aligns with government policies, but the  
22           problem is government policy should be paid by the  
23           taxpayers, not the ratepayers.

24                   How far is the next EV charging station?  
25           This should be a consideration for the EV owner and  
26           seller, not the ratepayer. Like do I care how far the

1 next charging station is? He could have bought a  
2 plug-in hybrid electric vehicle and this issue would  
3 disappear. If you're up in Terrace, or Smithers, Toad  
4 River, there is not going to be many charging  
5 stations, and a hybrid vehicle would make more sense  
6 than a battery operated pure vehicle.

7 **Proceeding Time 3:24 p.m. T36**

8 Will we need more generation capacity? Not  
9 at the moment because of the low numbers, but say we  
10 get to a 30 percent penetration in the market, then  
11 things are going to change radically. There's more  
12 load out there to pick up and this will be up to Hydro  
13 to determine. There could be an impact and there  
14 probably will be on generation transmission and  
15 distribution depending on the location more than  
16 anything else. If you're out in the middle of nowhere  
17 and you suddenly got to put in a bunch of super  
18 charging stations, will the grid take it?

19 Can EV store energy and sell it later?  
20 Yeah, I don't know why not, we have net metering  
21 tariffs, right?

22 How does EV adoption affect indigenous  
23 rights? Well, I'm not sure on that one, but I would  
24 say infrastructure reinforcement may impact them. You  
25 may need new right of ways through their territories.  
26 You may have to work within their territories to get

1 power to these charging stations.

2 The rates set, the rates should be set by  
3 the Commission. The energy sold to the charging  
4 station should be set by the -- or the rates set  
5 selling power to the EVs should be set by the  
6 independent operators and regulated by the Commission  
7 through a limited exemption, like I suggested an  
8 exemption by complaint if you wish. So, it would be  
9 light handed regulation.

10 Are the rates just and reasonable? No, I  
11 don't think so. I think we've heard discussions about  
12 time based versus volume based. If we're selling at  
13 the pump side, behind the meter, we should probably be  
14 looking at kilowatt hours. And back in the '60s when  
15 I last dealt with fast charging we used coulomb meters  
16 to monitor kilowatt hours.

17 THE CHAIRPERSON: Why is \$9 for 30 minutes not just?

18 MR. FLINTOFF: Well, say you pull in and your battery is  
19 60 percent charged and you just want to top up. You  
20 could be topped up fairly quickly and your charge --  
21 the whole \$9 is based on 80 percent capacity being  
22 available to be charged. And if you only got -- if  
23 you're at 60 percent already you're only looking at  
24 charging 40 percent, right? So, that's why I don't  
25 think it's just, because each battery that comes in  
26 will be at a different level of discharge but you've

1 got a fixed flat rate. I think they should recover  
2 the costs though.

3 What is the utility role in the EV charging  
4 market? Basically the -- I believe that the non-  
5 regulated arm of the public utility should be involved  
6 in the charging stations along with the private. This  
7 avoids a lot of your issues of trying to determine  
8 what the resale rate is. All you've got to do is  
9 worry about what you're selling to the charging  
10 station, and I believe Fortis has a non-regulated arm  
11 and I believe I dealt with a non-regulated arm of BC  
12 Hydro back in the '90s, it was BC Hydro International  
13 Limited. I don't know if that still exists. It was  
14 Jim Gimmel at the time.

15 I think we need to ask ourselves a couple  
16 of questions. Who's going to benefit? Well the one  
17 percent, the people that can afford EV will benefit.  
18 The EV owners benefit because they're buying energy  
19 that's subsidized, there's no road tax, et cetera, et  
20 cetera. The dealerships are going to benefit because  
21 they get to sell them and make a profit. And the  
22 manufactures get to also sell them to the dealers, so  
23 these are the people that are going to benefit.  
24 Taxpayers are just footing the bill.

25 What do they want? They want high capacity  
26 charging stations subsidized by the ratepayers. Well,

1 no I don't think that's a good idea, I would rather  
2 see the taxpayers if it's government policy. And I  
3 think *Clean Energy Act* falls under government policy.  
4 There's some instruction in the *Act* about providing  
5 programs and funding, but it doesn't mandate, I  
6 believe, that they have to provide charging stations.  
7 So, I think there's something to be looked at there.

8 **Proceeding Time 3:28 p.m. T37**

9 Why do they want it? Well, they want to do  
10 long hauls in their battery-operated vehicles, but  
11 like I said, they can buy hybrids, plug-ins, and  
12 accomplish the same thing. So it's a matter of choice  
13 for them.

14 When do they want it? They want it now.  
15 Where do they want it? Well, the urban areas I kind  
16 of support, because they're short trips, and battery-  
17 operated vehicles do reduce greenhouse gases. The  
18 rural areas, I'd have to question the logic in buying  
19 a pure battery vehicle, because a plug-in hybrid would  
20 make more sense, in the back country. Like, if I was  
21 in Kitimat, I'd be having a plug-in hybrid.

22 And how do they want it? They want the  
23 ratepayer to foot the bill. And they're talking about  
24 free energy and free electricity to encourage the  
25 market. Well, I don't know.

26 Basically this comes back -- questions for

1 B.C., and I guess the Commission. Why should the  
2 ratepayers fund government policy? It should be the  
3 taxpayers. Why should the public utility be directly  
4 involved in providing these charging stations? It's  
5 outside of their core business. Why are the EV  
6 manufacturers and dealers not providing these  
7 stations? I am excluding Tesla from this, because  
8 they do. Why are the taxpayers not funding these  
9 stations? That's a good question. In 2016, there was  
10 still 17 high-capacity stations to be built.

11 THE CHAIRPERSON: So, I just want to ask a question.

12 MR. FLINTOFF: Sure.

13 THE CHAIRPERSON: About your first -- or your second  
14 bullet. Now, you say that providing Level 3 charging  
15 stations is outside of the utility's core business.  
16 Isn't the utility's core business to sell electricity?

17 MR. FLINTOFF: Yes, but does it have to be an interface  
18 at a retail level, for subsidizing the car sales?  
19 Like, I have an electric home. I've got electric  
20 heat, electric hot water. So, if you want to reduce  
21 greenhouse gases, you enforce LEDs and electric heat  
22 on everybody. Is that fair? You've taken away choice.

23 By letting the utilities get directly  
24 involved through their regulated arm, you've sort of  
25 forced the private operators into a problem, because  
26 now they have to finance their projects privately,

1       whereas Hydro can rely on the ratepayer, and any  
2       losses go back to where? It goes back to the cost of  
3       service calculation, right?

4                   So if they lose or get stranded assets, the  
5       ratepayer picks up the tab. There's no risk.

6   THE CHAIRPERSON:    Okay.

7   MR. FLINTOFF:       Does that answer?

8   THE CHAIRPERSON:    Thank you, yes.

9   MR. FLINTOFF:       Okay. I had a look at some of the money  
10       that's been given out to the Clean Energy Vehicle for  
11       B.C. and B.C.'s Point of Sale Incentive program.  
12       We've probably put out \$70 million. You could build a  
13       lot of charging stations for \$70 million, you know.  
14       There's a lot of money that they've already collected  
15       in subsidies. How much more are they going to need?

16                   We've got another thing called the hydrogen  
17       highway that I heard our previous premier, or past  
18       premier, talk about. And does BCUC regulate the sale  
19       of hydrogen? It's within its domain, and I don't  
20       understand why hydrogen isn't regulated. It's not a  
21       petrochemical product.

22   THE CHAIRPERSON:    As far as hydrogen --

23   MR. FLINTOFF:       Powertech is still working on hydrogen  
24       infrastructure solutions, and the Canadian government  
25       is providing 100 percent funded of 150 million per  
26       year, to hydrogen. And B.C., 31 percent of hydrogen

1 fuel cell activities were in B.C. So --

2 THE CHAIRPERSON: But are there stations that sell  
3 hydrogen in British Columbia right now?

4 MR. FLINTOFF: Don't know. But I think Powertech would  
5 be able to answer that, though.

6 I'll drop back 100 years, okay? So now  
7 we're back -- this would be 1921. And electrical  
8 vehicles in 1921 were -- they were the battery --  
9 BEVs, as they're called now. There were electric  
10 trucks and vans, and there was hybrids. Gas/electric.  
11 So in the last 100 years we've come up with a very  
12 similar solution.

13 **Proceeding Time 3:33 p.m. T38**

14 We look at the range at the bottom of this  
15 page. It was ranging at that time from 75 to 100  
16 miles per charge. That's not too bad for turn of the  
17 century. Last century. And if we go in here we can  
18 see the gas electric vehicles, which is a hybrid. I  
19 won't go through the whole page.

20 And the note at the bottom deals with high  
21 charging rates. So this was all known back in around  
22 1917. And you look at it here -- and this comes back  
23 to your other question on charging. They sort of  
24 recommend as a general rule not to try and do a fast  
25 charge on a battery unless it's almost fully  
26 discharged and the reason is heating and gassing.

1       Once you pass, what is it, 135 degrees Fahrenheit the  
2       risk of blowing up the battery is quite real. And the  
3       gassing is significant at near full charge on the lead  
4       acids.

5               Now, this problem, we don't have gassing on  
6       lithium ion but we have a heat problem, and we're  
7       dealing with, I believe, liquid lithium. And back  
8       then they had level 1 chargers. They had a level 1  
9       charger installed in a garage at home with a dynamo.  
10       Then we move up to 1996, and I fit somewhere in the  
11       middle here in the '60s with my experience, but at  
12       that time I had exposure to GM experimental in Oshawa,  
13       so I had some information other people didn't have.  
14       And back then we had another generation of electric  
15       cars and we had something called a magnacharger, which  
16       is a 220 volt charger which would probably be  
17       equivalent to what's a level 2 charger now. And the  
18       magnacharger with -- at the bottom there, a full  
19       charge at home with a level 2 charger takes about four  
20       hours. So like the article said, the owners aren't in  
21       much better shape today.

22               If we go to Tesla and we look at the price  
23       of these vehicles, a Roadster in 2006 was roughly  
24       \$200,000 U.S. dollars. The model 3 is \$35,000 U.S.  
25       They are still fairly expensive vehicles. I believe  
26       the Model X, the price was mentioned at over 100,000.

1           So there's a limited group of people that are going to  
2           be buying these cars.

3                       Tesla, and I've got to give them credit,  
4           they've got their charging station and they've got  
5           their locations well mapped out in the States, and I  
6           think if we listen to arguments from California we're  
7           facing a different distribution of population than  
8           southern California and I think you've got to give  
9           some consideration to the -- more consideration to the  
10          plug-in hybrids, especially when you are up country.

11                      I don't think -- and you know, if we come  
12          back to Vancouver, I do believe it was 2008, the  
13          downtown power outage lasted what? Three days? So  
14          there is an opportunity to be without power even in  
15          the core of the city, okay?

16                      I'm finished. Any questions.

17   THE CHAIRPERSON:    Thank you, Mr. Flintoff.

18                      Well, before we go, is there anyone else  
19          that would like to add any comments? Any further  
20          comments at all? Okay, I'd like to thank everyone for  
21          coming out. I much appreciate your comments. As you  
22          know, we're having another session this evening.  
23          You're welcome to come back at 6:00, and if not, I  
24          hope you all have a safe drive home. Electric or  
25          otherwise. Thank you.

26                      **(PROCEEDINGS ADJOURNED AT 3:37 P.M.)**

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**VANCOUVER, B.C.**  
**April 16<sup>th</sup>, 2018**  
**Evening Session**

**(PROCEEDINGS RESUMED AT 5:58 P.M.)**

THE CHAIRPERSON: Good evening, ladies and gentlemen.

Thank you very much for coming out tonight to this Community Input Session. I'm Dave Morton, and I am the Panel Chair for the panel that's conducting the Electric Vehicle Charging Service Inquiry. And with me is Commissioner Anna Fung and Commissioner Howard Harowitz. The three of us together make the panel.

Tonight you're going to hear a short presentation from a couple of our staff, and then after that we're going to turn the floor over to you, to feel free to make whatever comments you like within the scope of the inquiry, to the panel. And on that note, then, I don't think I need to say anything further.

Patrick, please go ahead.

**(PRESENTATION GIVEN BY PATRICK WRUCK)**

**(PRESENTATION GIVEN BY ASHITA ANAND SANGHERA)**

**(PRESENTATION GIVEN BY PATRICK WRUCK)**

**Proceeding Time 6:09 p.m. T2**

THE CHAIRPERSON: Thank you, Patrick.

So, there's a couple of people that have registered to speak, and I'm going to invite you to

1           come up in a moment, and then after that if there is  
2           any people that -- any latecomers or people in the  
3           audience that would like to comment on anything  
4           they've heard, then we'll give you that opportunity  
5           too.

6                         So as Patrick said, please when you come up  
7           to the microphone, state your name and spell your last  
8           name so that the transcription will capture that  
9           correctly.

10                        Is there a Suzanne Goldberg?

11 MS. GOLDBERG:        Yes.

12 THE CHAIRPERSON:    Please. Thank you.

13 MS. GOLDBERG:        Hi.

14 THE CHAIRPERSON:    Hello.

15 **PRESENTATION BY MS. GOLDBERG:**

16 MS. GOLDBERG:        Too high for me. So, hello and thank you  
17           so much for the opportunity to provide input today.  
18           And it's a very exciting time for our industry. And  
19           as you know, electric vehicle sales and interest is  
20           growing by the day.

21                        My name is Suzanne Goldberg, and that's G-  
22           O-L-D-B-E-R-G, and I'm here on behalf of ChargePoint.  
23           We are the world's leading EV charging provider, with  
24           solutions in every category that EV drivers and  
25           commercial providers need a charge. This includes at  
26           home, work, around town, on the road, and at

1 commercial depots. Our mission is to get everyone  
2 behind the wheel of an EV and provide them a place to  
3 charge. With over a decade in the electric vehicle  
4 charging market, ChargePoint brings experience and  
5 understanding of the sector's technological and  
6 regulatory evolution across North America and Europe.

7 ChargePoint is a global leader in EV  
8 charging solutions, with more than 7,000 customers and  
9 close to 48,000 independently owned public and semi-  
10 private charging points, including 600 public charging  
11 points here in B.C.

12 Our business model is to sell smart network  
13 charging station equipment directly to businesses and  
14 residents, who then own and operate the charging  
15 stations on their properties. ChargePoint also  
16 provides network and maintenance services to the  
17 owners of their stations, and this includes data-  
18 driven cloud-enabled capabilities that allow charging  
19 station owners and operators to better manage their  
20 charging assets, to set pricing for charging sessions,  
21 and optimize utilization.

22 These network services also enable EV  
23 drivers to find a charging station, navigate to it,  
24 start a charge, and have visibility into the price.

25 In addition, we have designed a network to  
26 allow other parties to have access, such as utilities,

1 and they have the ability to access charging data to  
2 conduct load management and enable the most efficient  
3 load integration with the grid. We design, build and  
4 support all of our technologies, so this includes our  
5 network from the charging hardware to the energy  
6 management software to our mobile app.

7 EV adoption represents the critical means  
8 for B.C. and Canada to achieve its climate goals.  
9 Conveniently available charging infrastructure is a  
10 crucial need for more EV drivers. B.C. has the  
11 opportunity to increase EV adoption by fostering  
12 sustainable and widespread charging infrastructure  
13 network, clarifying EV charging, regulatory issues,  
14 will help extend EV charging services and support  
15 healthy and competitive EV charging markets.

16 More specifically, the inquiry that we are  
17 discussing here today is an important opportunity to  
18 address one threshold issue, which was already  
19 described, and that is what, if any, is the  
20 Commission's role in regulating EV charging station  
21 ownership or operation, and the fees charged by  
22 station owners or operators to the EV driver.

23 We feel that addressing this question is  
24 critical to providing sufficient context and more  
25 focused scope to address the other elements posed in  
26 the inquiry such as how utilities ought to engage in

1 the competitive EV charging market.

2 As I mentioned, our charging stations,  
3 which include both Level 2 and DC Fast Charging, are  
4 owned and operated by a number of entities across the  
5 country, including real estate developers, retailers,  
6 municipalities, work places, fleets, homeowners, and  
7 homeowners and tenants, all who are providing unique  
8 service offerings.

9 **Proceeding Time 6:13 p.m. T3**

10 The diversity of EV charging can be seen by  
11 just looking at the ChargePoint network here in B.C.,  
12 and all of the different opportunities and options for  
13 EV drivers to find a place to charge.

14 In this context, the provision of EV  
15 charging services and charging stations, both Level 2  
16 and DC Fast Chargers, are supplied in a competitive  
17 market which both protects consumers and offers them  
18 innovation and choice. EV charging owners and  
19 operators do not possess the characteristics of  
20 electric utilities, as targeted by the *Utilities*  
21 *Commission Act*, because they neither sell power alone  
22 nor possess the barriers to entry or captive market  
23 characteristics of natural monopolies like an electric  
24 utility.

25 Furthermore, EV charging station owners and  
26 operators sell charging services via specialized cords

1           and connectors specific to the activity of charging a  
2           vehicle's battery, rather than the resale of  
3           electricity.

4                        It is within this context we feel that the  
5           Commission should conclude that EV charging station  
6           owners and operators and their services are not public  
7           utility services, fall outside of its jurisdiction,  
8           and should not be regulated. This determination would  
9           be consistent with 21 U.S. states and a staff decision  
10          from one Canadian province. Currently 21 states and  
11          the District of Columbia have determined either  
12          through statutory amendment or regulatory  
13          clarification that charging services provided by non-  
14          utility third party owners and operators are outside  
15          of regulatory Commission's jurisdiction.

16                      California was the first to clarify this  
17          and is the leading jurisdiction in both EV adoption  
18          and charger deployment, and Pennsylvania was the most  
19          recent with a draft Commission decision that came out  
20          after we filed our evidence.

21                      Another recent decision that came out this  
22          year was Missouri, when the Missouri Public Service  
23          Commission found that EV charging stations were not  
24          electric plants as defined in their statute, and that  
25          charging stations use specialized equipment such as  
26          cords and vehicle connectors to provide the service of

1 charging a vehicle's battery. They clearly stated  
2 that the charging service is the product being sold,  
3 not the electricity used to power the system.

4 Also in July of 2016 staff at the Ontario  
5 Energy Board issued a bulletin stating that ownership  
6 or operation of an EV charging station and the selling  
7 of EV charging services from this facility do not  
8 constitute reselling or distributing or retailing.

9 They also clarified that owning and  
10 operating EV charging stations is inherently a  
11 competitive activity, and they also found that many  
12 different entities could and do offer this service.  
13 And given the wide variety of possible business models  
14 that exist, consumers will likely have adequate choice  
15 when it comes to EV services.

16 Clarifying that EV charging owners and  
17 operators and their charging services do not fall  
18 within the Commission's jurisdiction is important to  
19 preserving and sustaining the competitive market for  
20 EV charging, which enables a wide diversity of  
21 entities and a wide range of business models to  
22 provide charging services. This clarification would  
23 enable EV charging owners and operators to recover  
24 energy or investment costs and have the flexibility to  
25 set rates on a time, session or energy basis, and to  
26 do so in a manner that achieves the local objectives

1 or the parking objectives of which they seek.

2 This provides EV drivers with choice and  
3 creates competitive market dynamics which will lead to  
4 more stations and more EV adoption. Allowing charging  
5 on an energy basis is particularly important for DC  
6 Fast Charging deployment, which is vital to connecting  
7 B.C.'s drivers across the province.

8 Because pricing for sessions may need to  
9 reflect the unique electricity costs, including demand  
10 charges, and it may be difficult to quantify shorter  
11 charging sessions on an hourly or time basis, a  
12 kilowatt hour pricing model might be one appropriate  
13 option.

14 Conversely, regulating each individual  
15 station operator or owner as a regulated utility would  
16 be time-consuming and impose high costs on both the  
17 Commission and EV charging owner and operator. This  
18 could in turn distort the competitive EV charging  
19 market, making it uneconomical to own and operate  
20 stations and restrict customer choice and owner and  
21 operator flexibility in providing unique service  
22 offerings.

23 Related to the Commission's inquiry into  
24 utility participation in the EV charging market, we  
25 feel that a decision to exclude charging services from  
26 utility regulation should not preclude utilities from

1 investing in charging infrastructure through the  
2 regulated arm. ChargePoint supports utility programs  
3 designed to promote EV adoption within a competitive  
4 market. We have observed that well-designed utility  
5 programs can significantly lower barriers to EV  
6 charging deployment and help accelerate EV acceptance  
7 and charging markets overall.

8 **Proceeding Time 6:19 p.m. T4**

9 Therefore, utility investments should be  
10 scaled and targeted to the areas where they will have  
11 the greatest impact. We do not prescribe the specific  
12 utility program design, as utility investments can  
13 take many forms. However, we do feel it is important  
14 that utility investment foster customer choice in  
15 charging equipment and services, and support long-term  
16 scaleable competitive markets for EV charging. We  
17 recommend that the Commission review any proposed  
18 investment on a utility-specific basis, taking into  
19 account ratepayer costs and benefits, current market  
20 conditions, and future needs.

21 I appreciate the opportunity to provide  
22 comments here tonight and we look forward to engaging  
23 with the Commission, utilities, and other stakeholders  
24 to support a healthy and competitive charging market  
25 here in B.C.

26 THE CHAIRPERSON: Thank you. I have a question, please.

1 MS. GOLDBERG: Sure.

2 THE CHAIRPERSON: So, as I understand it, you said  
3 essentially that there is no reason for us to  
4 regulate, because a competitive market exists. I'm  
5 paraphrasing somewhat, but I think that's what you  
6 said, is that correct.

7 MS. GOLDBERG: Mm-hmm. That's correct.

8 THE CHAIRPERSON: So, we've heard from a number of people  
9 over the last few weeks that have commented that there  
10 is not enough charging stations around, and the few  
11 that are around are often either not operational or  
12 not available or not accessible. And we've also heard  
13 some evidence today that much of the fast charging  
14 infrastructure in the province has been provided by BC  
15 Hydro and, to a lesser extent, by Fortis, which are  
16 both regulated electric utilities.

17 So I'm wondering if you can reconcile that  
18 with your assertion that it is a competitive market  
19 and therefore is okay to leave alone.

20 MS. GOLDBERG: Sure. And I'll just clarify that we're  
21 talking about third party non-utility stations that  
22 are owned and operated by non-utility parties.

23 THE CHAIRPERSON: Yes.

24 MS. GOLDBERG: I guess I would say a couple of things.  
25 You know, if we look across North America and we're  
26 looking at the definition of a competitive market of

1 different business models and choice, you know, one  
2 key component of that is the ability to have  
3 flexibility to set your own prices, and that be time,  
4 energy basis. And so that flexibility demonstrates  
5 that there is a whole host of different models to  
6 provide customers with choice.

7 And if you look around B.C., you know, I  
8 guess we want to distinguish between Level 2 and DC  
9 Fast Chargers, but if we look at Level 2, for example,  
10 there are a wide range of -- a wide diversity of site  
11 hosts offering different charging services.

12 THE CHAIRPERSON: Right.

13 MS. GOLDBERG: In different locations. And in terms of  
14 DC, we're seeing that growing here in B.C., and I  
15 would suggest that there are some regulatory barriers  
16 that potentially need to be addressed that, you know,  
17 might help improve the -- might be connected to the  
18 competitiveness of the market. Where enabling --  
19 clarifying these regulatory issues, will help  
20 stimulate that competitive market, and we see across  
21 Canada that there are non-utility owners and operators  
22 of DC Fast Charging stations, both in the public  
23 sphere and also in the private sphere, if we're  
24 looking at fleets.

25 THE CHAIRPERSON: So we've also heard today that one of  
26 the possible reasons for a lack of participation in

1 the market in B.C. is that parties are unwilling to  
2 participate because of us. Because they know that  
3 they may be not in line with the *Utilities Commission*  
4 *Act*. Is that essentially what you're saying?

5 MS. GOLDBERG: I think clarifying the regulatory  
6 jurisdiction for non-utility site hosts will be  
7 removing one barrier, and will help support the  
8 competitive market.

9 THE CHAIRPERSON: Right. Okay. And you would say -- and  
10 under those circumstances, then, a competitive market  
11 could develop, or could reasonably develop in all  
12 areas of charging, at all levels, both in urban areas  
13 and in rural areas? Or less urban areas, let's say?

14 MS. GOLDBERG: So, you know, we view it as the  
15 competitive market overall. And you know, any  
16 regional contexts, there are going to be underserved  
17 areas, and that's where we look at what is the role of  
18 the utility and the government in helping to achieve  
19 access to service in those locations. But I think,  
20 you know, when we're looking at the competitiveness of  
21 the market overall, and what helps support that, is  
22 having regulatory clarification on who can own this,  
23 and especially around the fees that site hosts can  
24 charge, which is key.

25 **Proceeding Time 6:24 p.m. T5**

26 THE CHAIRPERSON: Okay. And I just have a couple of

1           questions about some of the numbers that you provided.  
2           You said that your company, ChargePoint, has 600  
3           charging locations in British Columbia. But you don't  
4           operate those or even own them, do you? You've just  
5           supplied the hardware and sold the hardware to the  
6           operator, is that how that works?

7 MS. GOLDBERG:    Yeah, so the 600 charging points, those  
8           are the ports.

9 THE CHAIRPERSON:    Yes.

10 MS. GOLDBERG:    Yeah, ChargePoint sells the charging  
11           hardware, and also operates the network.

12 THE CHAIRPERSON:    Yes. Right, yes.

13 MS. GOLDBERG:    And so that network service helps EV  
14           drivers connect to the station, and helps the site  
15           host manage the asset.

16 THE CHAIRPERSON:    Yes. And those are largely, what,  
17           Level 2?

18 MS. GOLDBERG:    A large portion of those are Level 2.

19 THE CHAIRPERSON:    Right, okay. Thanks. Okay, great.

20 COMMISSIONER FUNG:    Sorry, I just want to follow up on  
21           one question -- or one point that you made. I take  
22           it, Ms. Goldberg, you're -- one of your submissions  
23           was that it would be appropriate to charge based on  
24           kilowatt-hours, is that correct?

25 MS. GOLDBERG:    Mm-hmm. That's correct.

26 COMMISSIONER FUNG:    Now, are you aware of the fact that

1       there is currently a problem with that, at least in  
2       terms of a lack of a Canadian, you know, standard  
3       that's approved by Measurement Canada for how you  
4       would charge? How would you get around that, and  
5       what's your submission with respect to the absence of  
6       that accreditation?

7       MS. GOLDBERG: That's a great question, and I think, you  
8       know, when we're looking at enabling a wide variety of  
9       business models, kilowatt-hour charging is one of  
10      them. And both are necessary. So we are going to  
11      need Measurement Canada certification, and all of our  
12      chargers have meters embedded in them. There are  
13      processes that are happening in the United States,  
14      we're just waiting for a bill in California that will  
15      outline the procedures and process for testing the  
16      meters embedded in equipment. And they're highly  
17      accurate.

18                But we'll need both. We'll need a  
19      Commission to, you know, say that the resale -- or  
20      selling charging services per kilowatt-hour is  
21      approved, but we'll also need Measurement Canada and  
22      both need to be empowered to support that business  
23      model.

24                And so, you know, one function of the  
25      Commission clarifying jurisdiction over the sale of  
26      charging services can provide even greater motivation

1 for Measurement Canada to address this particular  
2 issue, and providing certification for this stream of  
3 meters.

4 COMMISSIONER FUNG: Okay, thank you. Could I just follow  
5 up one question for you, if you're able to answer it.  
6 Why do you say that charging on the basis of kilowatt-  
7 hours is preferable over, let's say, a time-based  
8 charging scheme?

9 MS. GOLDBERG: So, I guess I'll clarify. I think a wide  
10 range of options for fees is beneficial, and it's  
11 really all dependent on the context. So if you're a  
12 retail location, your motivation for installing a  
13 charging station might be to attract consumers to your  
14 store. So you might give it free for two hours, and  
15 then charge, you know, a \$4 fee after that, or a  
16 workplace might want to charge on a monthly basis or a  
17 session. We suggest that for DC Fast Chargers, in  
18 addition to that indirect benefit of revenue for the  
19 services on site, a kilowatt-hour pricing model might  
20 be appropriate for that particular use case to address  
21 energy costs and demand charges.

22 But generally we want to keep it flexible  
23 so that the site hosts, those who own and operate that  
24 station, who have the best knowledge of how their EV  
25 drivers use their station, and the types of behaviours  
26 they'd like to encourage, we want to empower that

1 flexibility, first and foremost.

2 COMMISSIONER FUNG: Okay, thank you.

3 MS. GOLDBERG: Thanks.

4 THE CHAIRPERSON: Thank you very much.

5 MS. GOLDBERG: Thanks.

6 THE CHAIRPERSON: Travis Allan.

7 **PRESENTATION BY MR. ALLAN:**

8 MR. ALLAN: Good evening --

9 THE CHAIRPERSON: Good evening.

10 MR. ALLAN: -- Commissioners, and thank you. My name is  
11 Travis Allan, A-L-L-A-N. I'm the vice-president of  
12 public affairs and general counsel for AddÉnergie  
13 Technologies Inc. I am joined tonight by our CEO and  
14 founder, Mr. Louis Tremblay, T-R-E-M-B-L-A-Y.

15 THE CHAIRPERSON: Thank you.

16 MR. ALLAN: Our company is, to our knowledge, the largest  
17 manufacturer of electric vehicle charging equipment in  
18 Canada, and we operate the largest network of EV  
19 charging stations in the country, which includes  
20 30,000 users and, on average, 100,000 charging  
21 sessions per month, including 10,000 fast charging  
22 sessions. We operate over 4,500 commercial chargers.  
23 We are --

24 **Proceeding Time 6:29 p.m. T6**

25 THE CHAIRPERSON: Sorry, how many?

26 MR. ALLAN: 4,500.

1 COMMISSIONER FUNG: Is that throughout Canada, you said?

2 MR. ALLAN: Yes.

3 COMMISSIONER FUNG: Thank you.

4 MR. ALLAN: We are particularly pleased to be here  
5 tonight in Vancouver because, as the Commission may be  
6 aware, Vancouver is actually home to the first public  
7 gasoline fueling station in Canada which was started  
8 in 1907 on Smithe Street. And the inauguration of the  
9 first gasoline fueling station, and this inquiry, has  
10 huge potential to impact the accessibility of personal  
11 vehicular transportation for British Columbians.

12 The difference, and the key impact of what  
13 the Commission is doing here, is that we have the  
14 opportunity to access British Columbia's plentiful and  
15 clean supply of electricity, which is a major  
16 opportunity indeed.

17 But how do we make sure that the supports  
18 are in place to allow British Columbians to adopt this  
19 new technology? Well, studies of potential EV users  
20 tell us that many people are unlikely to adopt  
21 electric vehicles unless they have access to public  
22 charging. This is despite the fact that data show us  
23 that most people charge at home and at the workplace  
24 most of the time.

25 People want to know that they could charge  
26 publicly, even if they don't actually do it very

1 often.

2 And access to public charging has two  
3 relevant features. It includes both geographic  
4 comprehensiveness and also dependability. People need  
5 to know that stations are available across the  
6 province of British Columbia, and they need to know  
7 that those stations will be working or that there will  
8 be a process in place to quickly resolve issues when  
9 they show up at those stations, if there is a problem.

10 And B.C. already does have public fast  
11 chargers, as you've heard. And in fact, our company  
12 operates a number of them. But it's not a  
13 comprehensive provincial network, even when you add in  
14 Level 2 infrastructure, which can also play an  
15 important role.

16 And so, as a result, when the Commission  
17 asks if consumers really have choice, and if this is  
18 in fact a truly competitive market, our view, based on  
19 our view across Canada, is that no, in fact, customers  
20 don't have broad choice at this moment in all areas of  
21 the province of British Columbia. And that in fact  
22 this couldn't be characterized as a completely  
23 competitive market at the moment.

24 Now, where we would agree with our friends  
25 from ChargePoint is that there is potential that one  
26 day it could become a competitive market, certainly.



1 with generic fairly conservative assumptions to try  
2 and help illustrate this as part of our submission.  
3 And we did it as an Excel model because we wanted  
4 people to be able to vary the inputs and see how that  
5 might impact the business case.

6 So what this means is that we really aren't  
7 likely to get there with the private sector alone.  
8 That's kind of our main take away. And what that  
9 means as well is that we don't get the benefits of  
10 people charging elsewhere. Because if people are  
11 dissuaded from adopting because of a lack of public  
12 infrastructure, then they're also not going to be  
13 charging at home or in their workplaces, which  
14 provides a number of benefits, both to the province's  
15 environmental objectives and also to other ratepayers  
16 by creating additional demand for electricity, as  
17 you've already heard today.

18 But we also wanted to point out that there  
19 are special competitiveness issues facing at least two  
20 other categories of people. One is MURB or strata  
21 residents, and you've heard that already at the  
22 earlier session today. Big capital costs to install.  
23 Also governance challenges. Stratas are just more  
24 difficult to operate in than a single-family home.

25 But there's another category of users, and  
26 I was lucky enough to be at your Nanaimo Community

1 Input Session as well, where we had a couple  
2 presenters who lived in rental apartments. And I was,  
3 you know, saddened to hear how hard it is for some of  
4 them to charge, but also pleased that they were able  
5 to actually share their experiences. Because people  
6 in rental suites do face a real challenge. They don't  
7 always have access to parking spots at all. And so in  
8 that case the optimal solution is typically what's  
9 called on street charging. And that's a Level 2  
10 station that's specifically designed for use on a  
11 public street that can be used by a car parking at  
12 that space.

13 Public street-side infrastructure is really  
14 handy not only for people who don't have parking  
15 spaces, but also as a supplement for the DCFC network.  
16 So for example, someone might find that a DCFC station  
17 is too busy, and so they will go to a street-side  
18 charger. And this is being used to supplement the  
19 fast charging network in Montreal, for example, which  
20 has a pretty comprehensive network.

21 The challenge with street-side charging is  
22 that it is complex. Municipally controlled streets  
23 and sidewalk infrastructure you need to connect into  
24 utilities. This is another area where it's not likely  
25 that the private sector is going to be able to sort of  
26 cover the province's cities alone without utility

1 involvement.

2 And the challenging point is that  
3 particularly in the case of those residents in stratas  
4 and in suites, we have a category of ratepayers who  
5 are basically prevented in practical terms, in some  
6 cases in real terms, from adopting electric vehicle  
7 technology because of the type of dwelling that they  
8 live in. And I think that's something that really  
9 does concern the Commission because it could be  
10 characterized as a form of practical discrimination  
11 based on residence type.

12 So that leads us to probably the main  
13 submission that AddÉnergie has made in our materials,  
14 which is that we do really see a role for utilities in  
15 this province to help build that network. We would  
16 certainly agree with our friends from ChargePoint and  
17 others that in dense urban areas we might actually get  
18 a lot of private sector investment. But the point  
19 remains that without utilities being involved we won't  
20 actually achieve the province's objectives.

21 Now, I wanted to go back to the second  
22 factor of access that I mentioned earlier, because it  
23 actually did come up in a number of the points today.  
24 This is about dependability. So, you know, I was  
25 reflecting on how long it has taken the Crock-Pot  
26 industry to overcome some of the challenges people

1 face because the first Crock-Pots were poorly designed  
2 so they would explode on people's stoves. And I was  
3 thinking about restaurant chains that have had to come  
4 back from big sort of prominent health concerns.

5 **Proceeding Time 6:38 p.m. T8**

6 When an industry is nascent, when a product  
7 is nascent, it is particularly important that people  
8 have a good user experience because all it takes is  
9 one or two bad tweets, one or two bad Facebook stories  
10 and a whole bunch of people think that electric  
11 vehicle charging is fraught with risk of people  
12 getting stranding. And stranding is a real safety  
13 issue for users. We can't allow people, for example,  
14 especially on inter-municipal trips to run out of  
15 charge in their batteries. And that's why it's  
16 important for stations to be adequately maintained.

17 And so to the extent that the BCUC is  
18 prepared to permit utility investment in public  
19 charging infrastructure, one of the most important  
20 things is to make sure that utilities have sufficient  
21 approval to spend to build quality stations and to  
22 make sure that those are maintained and operated in an  
23 appropriate fashion. And also that utilities are  
24 given performance standards against which to measure  
25 their investments.

26 Now, performance standards that we have

1 found to be helpful include a number of things,  
2 including network reliability, mean time to repair  
3 faults at stations, proactive monitoring, availability  
4 of 24/7 customer support, quality of installation,  
5 scalability of services as onsite demand grows, and  
6 interoperability, which means that roaming is  
7 permitted for EV drivers to access charging stations  
8 on multiple networks while only requiring one  
9 membership account.

10 Our experience also suggests that having a  
11 network membership model is important. You don't have  
12 to pay necessarily for the network membership, but  
13 having people register within a network is very  
14 helpful. First because it allows for cheaper fee  
15 processing versus direct credit card payment, and  
16 secondly, because it allows for network operators to  
17 contact members in the event of a problem with a  
18 charge as part of their proactive monitoring, so they  
19 can get in touch if they are starting to identify  
20 concerns.

21 Now, of course, if we're saying that  
22 there's a lack of competition and we're saying that we  
23 want utilities to be involved through their rate base,  
24 the question becomes what do we do with the privately  
25 owned stations, or the potential stations that could  
26 be owned by private sector? And here, I think

1 AddÉnergie's position is fairly similar to what you've  
2 already heard, which is that we don't see the need to  
3 prevent other private sector participants from  
4 investing in this market. And we think it would be  
5 helpful for either the BCUC or the province of British  
6 Columbia to clarify that private sector investment in  
7 public charging infrastructure is permitted and that  
8 private sector site hosts are permitting to charge  
9 users for charging services.

10 How that goes about happening, whether  
11 that's through the Commission's own interpretation of  
12 the definition of public utility, or through a  
13 regulatory amendment, of course we would leave it in  
14 your capable hands.

15 And I wanted to also clarify one point.  
16 Commissioner Fung, you asked earlier about Ontario's  
17 staff bulletin, which is an interesting document,  
18 because as we've previously heard, it does interpret  
19 such that -- you know, it indicates that they don't  
20 see cost recovery for EV charging services being the  
21 distribution of electricity.

22 But one point to make sure we note in  
23 saying that is that the staff bulletin still sees a  
24 role for utility involvement in charging  
25 infrastructure and in particular, it sees it where  
26 there is already statutory permission within the

1 applicable legislation. So things like where it could  
2 promote clean energy or grid optimization.

3 So what I just wanted to make sure is that  
4 we understood that that staff bulletin doesn't  
5 preclude utilities from being involved even as it  
6 opens the market in Ontario for private investment.

7 **Proceeding Time 6:43 p.m. T9**

8 Other ways that the BCUC could potentially  
9 support private investment include ensuring that DCFC  
10 site hosts face the same input costs for electricity  
11 as utilities, when utilities are operating DCFC. So  
12 making sure that rates charged don't discriminate  
13 against private sector hosts.

14 And as Mr. Carmichael already pointed out,  
15 some jurisdictions are starting to experiment with  
16 rate structures targeted specifically at DCFC that  
17 might be more appropriate. So, for example, Quebec  
18 has adopted a five-year experimental rate called the  
19 BR rate, which basically does away with demand  
20 charges.

21 Now, obviously that would require  
22 consultation with our utilities, to make sure that an  
23 appropriate rate structure was determined. But there  
24 may be ways to help improve the economics of DCFC,  
25 even if it's not going to resolve the economic  
26 barriers that I've mentioned overnight.

1                   The BCUC can also provide some much-needed  
2                   clarity to stratas. Stratas just seem to have all the  
3                   problems here today. One of the big challenges with  
4                   stratas is that they may have a single meter for  
5                   electricity for EV charging, but yet they use a smart  
6                   energy management system with multiple EV/SC Level 2  
7                   chargers. So, at the end of the month when they get  
8                   their electricity bill they need to find a way to  
9                   correctly apportion that bill between the different  
10                  users.

11                  And right now we are hearing that a number  
12                  of stratas are concerned that apportioning that bill  
13                  could somehow put them offside of the BCUC's  
14                  regulatory requirements and the definition of "public  
15                  utility". It would be such a win if we could get it  
16                  clarified that the stratas may do that without  
17                  regulation.

18                  And finally on rate design, I will not  
19                  rehash all the Measurement Canada things that  
20                  Councillor Fung's questions noted that the panel has  
21                  clearly already heard the challenges associated with  
22                  Measurement Canada's restrictions. But I would just  
23                  note that we've submitted as part of our evidentiary  
24                  package confirmation from Measurement Canada as of  
25                  March 6<sup>th</sup>, 2018, that there is no certified  
26                  commercially available DCFCs billing device in Canada.

1           So we are still working with them and will continue to  
2           do so to try and resolve that. But at this point to  
3           the extent that the BCUC finds itself specifying rates  
4           in some way, obviously we would just want to make sure  
5           that we're not offside of federal jurisdiction on this  
6           matter.

7                         So, while we may still be a ways away from  
8           a fully comprehensive network of EV charging stations  
9           in the province, and maybe a bit closer to the Smithe  
10          Street original gas station, we really do see a path  
11          forward. We think that B.C. is poised to lead on  
12          this, and to lead other utilities commissions across  
13          the country, frankly, and I'm sure the Commission has  
14          noted how much interest there is from across the  
15          country, because you really are dealing with these  
16          issues in a proactive way. And we would just like to  
17          thank you so much for taking the time to really  
18          thoroughly listen to the opinions of British  
19          Columbians on these points. It's been an incredibly  
20          impressive process so far, and we're delighted to  
21          continue to participate in any way we can.

22         THE CHAIRPERSON:    Thank you.

23         MR. ALLAN:         Thank you.

24         COMMISSIONER HAROWITZ:    Thank you for that, that was  
25                                 great.

26                                 One of the things that we wrestle with is,

1 we've heard many submissions that seem to argue both  
2 sides of the same problem, and I'd like you to give me  
3 your thoughts on this. On the one hand, there is a  
4 role for utilities, including in rate base. On the  
5 other hand, let the free market have its full rein  
6 with a long leash.

7 So, let me give you just two examples of  
8 what -- from your material and others as well.

9 There's a number of incidences where it's  
10 not an economic proposition, which the flip side of  
11 that statement is subsidy. So I can envision if we  
12 have a utility that is allowed to have a cross-  
13 subsidization of theirs, that we are soon to receive a  
14 complaint from the private sector that it's an unfair  
15 competitive landscape because we'd like to offer  
16 something in Cranbrook, wherever the heck it is,  
17 doesn't matter, and here the utility has got an unfair  
18 competitive advantage because they're allowed to  
19 cross-subsidize from somewhere else.

20 **Proceeding Time 6:48 p.m. T10**

21 And then on the flip-side, you argued that  
22 with the utilities we would have some performance  
23 standards. And the utility says "Well, why are we  
24 operating under these performance standards?" And  
25 then you've got this free market where it works, it  
26 doesn't work, it's open, it's not open. That's not

1 fair in the reverse direction.

2 So, for me the devil's in the details of  
3 how do you work in a world that seems -- and you're  
4 not the only ones advocating this, I just decided to  
5 pick on you.

6 MR. ALLAN: Fair enough.

7 COMMISSIONER HAROWITZ: But this world of, on the one  
8 hand, yeah, we should regulate parts of it where we  
9 want to and be firm with them, and hold them  
10 accountable, and then over here let them play.

11 So, help me out with that please.

12 MR. ALLAN: Absolutely. Yeah. So, there is a couple  
13 points I would make. The first is that I believe it  
14 is important to move beyond assessing the economic  
15 viability of one individual DCFC public charging  
16 station, because I loved the comment, I think it was  
17 by BC Hydro this morning, that the fast charging  
18 stations extend the vehicles range. That is sort of  
19 how we can think of them.

20 Another way of putting it is that DCFC  
21 charging stations are part of an ecosystem that allow  
22 for the adoption of electric vehicles. And if you  
23 look at every single station, some of them will be  
24 profitable, and others will not be profitable. But,  
25 overall, if you look at the overall impact on B.C.s  
26 two major electrical utilities, we believe that the

1 impacts will be a net positive for ratepayers. We  
2 believe that it will lead to more people charging,  
3 more demand for electricity, and that is only possible  
4 if we get that comprehensive network in place.

5 So, the rationale for having utilities  
6 involved, even in cases where individual stations may  
7 be a net subsidy for those individual stations, is  
8 that overall it leads to positive impacts on the grid,  
9 and also supports the achievement of the Province's  
10 clean energy objectives.

11 COMMISSIONER HAROWITZ: Let me ask you a question. So,  
12 fair enough, but then what's the argument at that  
13 point that says we should have the free market  
14 playing, as opposed to saying, well, okay, if the  
15 utilities have a role to create the ecosystem, that's  
16 kind of what the natural monopolies are all about, and  
17 that might argue for saying put the whole thing inside  
18 regulation and have the utilities do their thing.  
19 But, you're arguing that there is a good case for  
20 saying no we should also have this other opportunity,  
21 and so what's the case for not regulating given what  
22 you've just said?

23 MR. ALLAN: Right, and I mean, I think it was interesting  
24 to me when the parties initially filed their  
25 submissions, you know, BC Hydro, Fortis, they could  
26 have taken that position. They also could have said,

1 "If you want us in here, that's fine, but we better  
2 get everything. We better get not only the  
3 unprofitable stations in remote areas of the province,  
4 but also we want everything in the City of Vancouver."  
5 And it was interesting because they didn't say that.  
6 And I think that is because there is pretty widespread  
7 agreement that where the private market is going to  
8 get involved, where there are attractive conditions  
9 for DCFC charging providers, that we don't actually  
10 need to exclude those only for utilities.

11 And I think, you know, if you look at that  
12 economic model we submitted, you will see that even in  
13 ideal use cases, it's not going to be a huge  
14 moneymaker. So, I don't think frankly that at this  
15 point, one or two downtown Vancouver DCFC stations are  
16 going to make so much money that they're going to  
17 subsidize very, very remote stations. I think it is  
18 about going beyond looking just at DCFC and looking at  
19 the broader ecosystem of level 2 charging at home and  
20 workplace charging. And I think when you do that,  
21 even if you allow and encourage private sector  
22 competition in those DCFC metropolitan areas, the  
23 benefits for the utilities are still there because of  
24 the home charging and the work place charging. That's  
25 my best guess.

26

**Proceeding Time 6:53 p.m. T11**

1 THE CHAIRPERSON: So as a follow up to that, and that's  
2 an area where you've got utilities participation and  
3 private sector participation. How do you ensure or  
4 how would we ensure a level playing field? You know,  
5 and I'm thinking here about the ability of the utility  
6 to cross-subsidize or the natural consequence may be  
7 cross-subsidization because this -- it would be  
8 utility infrastructure and it would be included in  
9 rate base. And that may make it difficult for the  
10 private sector to compete with that.

11 MR. ALLAN: I think a lot of it comes down to the  
12 justification under which the Commission determines  
13 that utility involvement in DCFC charging is  
14 permissible. So, if I could return for a moment to  
15 the Ontario staff bulletin, which again does not bind  
16 the OEB, it is only a staff bulletin, and persuasive  
17 therefore at best. What their view was is that, you  
18 know, this isn't distributing electricity but utility  
19 investments are permissible if they meet X and Y  
20 statutory objectives.

21 And I think if the Commission were to  
22 choose to permit utility investment then we would need  
23 to create some sort of prudent standard or some sort  
24 of standard for accessing those investments that were  
25 based directly on the legislative basis under which  
26 you permitted that investment or under which the

1 province determined that that investment was  
2 permissible.

3 And so, with knowing exactly -- without  
4 knowing exactly what those heads of authority are I  
5 couldn't give you specific examples. But that would  
6 be my recommendation for how they would be determined.

7 COMMISSIONER HAROWITZ: Can I follow up on that then?

8 So, do I hear you saying something along the lines of,  
9 so the utilities wouldn't -- as opposed to the  
10 opposite of the utilities aren't saying we want it  
11 all, it's -- there would be some standard against  
12 which saying the utilities in fact wouldn't inside  
13 rate base be able to, with cross-subsidization  
14 available to them, be able to compete in the  
15 potentially more attractive markets. That there would  
16 have to be some case made as to why they're involved  
17 as opposed to the private sector -- they'd have to  
18 justify why they're building that station as opposed  
19 to the private sector, is that what your hinting at?

20 MR. ALLAN: I wouldn't want to tell the Commission what  
21 to do on this, quite frankly.

22 COMMISSIONER HAROWITZ: No, just your recommendation or  
23 your view.

24 MR. ALLAN: So, my recommendation is that it would be  
25 based specifically on the justification under which  
26 utility investments were permitted. And so, for

1           example, if that justification were achieving BC clean  
2           energy objectives, then that -- presumably the tests  
3           would be based on that. If it was about dealing with  
4           market failure, i.e. situations in which a network  
5           would not otherwise be provided, then presumably the  
6           tests would be based on that. And I think there's a  
7           wide range of potential justifications that you could  
8           assess based on that.

9   THE CHAIRPERSON:   We heard from BC Hydro this afternoon  
10           about -- around the issue of this technology being  
11           immature and how they've already -- or are replacing  
12           some relatively new DC fast chargers.

13                        So, you made the statement early on that  
14           you -- that, you know, ideally, you know, there's  
15           private sector investment that would be available to  
16           develop a competitive market, you know, provided other  
17           certain -- you know, other things were in place.  
18           Given that the technology is immature and as a result  
19           may have a short life span, how do private investors  
20           look at that? Is that not a risk and an impediment to  
21           getting private investment? I imagine you would know  
22           something about that from what you said --

23   MR. ALLAN:        Yeah, we had an interesting discussion about  
24           this between the sessions today, actually. So, here's  
25           what our thoughts are on that point. It's true that  
26           this technology is changing. Vehicle ability and

1 capacity to actually use faster chargers is also  
2 changing.

3 **Proceeding Time 6:57 p.m. T12**

4 And the truth is, is that the chargers are out here,  
5 and a lot of the vehicles are way back here. So, even  
6 if the chargers, you know, are at higher speeds in one  
7 or two years, there is going to be a significant lag  
8 before your run of the mill EV and common use is  
9 actually able to use some of those faster chargers.

10 THE CHAIRPERSON: So you have time to recover your money  
11 then, basically?

12 MR. ALLAN: That's right. Also, the highest cost of  
13 installation tends to be the primary electrical and  
14 civil work to actually prepare a site for DC fast  
15 charging. And that can often last for multiple years.  
16 If you're substituting new equipment, you're not  
17 dealing with one of the most major costs, as long as  
18 you don't need to upgrade that infrastructure.

19 And also, we actually recommend to go to  
20 some of these issues that have been raised about  
21 dependability and accessibility of sites, we recommend  
22 having multiple redundant chargers at strategic  
23 charging locations. So, even if a DCFC unit isn't the  
24 optimal one and the primary one, there may still be  
25 circumstances where it can be re-used as a backup, or  
26 as an alternative, if there is, for example a long

1           wait time to use the main charging device. So, there  
2           are still ways to make sure that that capital asset  
3           has a longer life.

4 THE CHAIRPERSON:   That's very informative, thanks. Anna,  
5           do you have?

6                       Well, I have a couple more questions, not  
7           related to that last topic. I was just curious about  
8           these level 2 street chargers that you talked about in  
9           Montreal. So these are just scattered as it were,  
10          along the street? So are there no parking zones  
11          around them? Or how does access to them, how is that  
12          managed?

13 MR. ALLAN:   Louis, can you answer that?

14 MR. TREMBLAY:   Most of them are close to a parking  
15          payment system, and we are integrating both systems  
16          together. So we are spreading a thousand charging  
17          station in the most busy area, and then spread that to  
18          less busier area where people leave like in the -- and  
19          on the Plateau where people don't have a place to park  
20          at night.

21 THE CHAIRPERSON:   So you pay for the charge as part of  
22          the parking fee, is that --

23 MR. TREMBLAY:   Yeah, right now you pay both on separate  
24          billing, so you have to pay by phone for parking, and  
25          then the Flo app, and soon you'll have both integrated  
26          together.

1 THE CHAIRPERSON: Right, okay.

2 COMMISSIONER FUNG: And these level 2 chargers on the  
3 street, who are they owned by and operated by in  
4 Quebec?

5 MR. TREMBLAY: They are owned by the city, and the main  
6 utility, Hydro Quebec.

7 COMMISSIONER FUNG: Okay, thank you.

8 THE CHAIRPERSON: Further to that, just a clarification  
9 about your company then, you don't operate any of the  
10 infrastructure. You sell the hardware, is that  
11 correct?

12 MR. TREMBLAY: Part of our business case is to sell the  
13 units, so we make revenue of the units, but we operate  
14 all of those chargers.

15 THE CHAIRPERSON: You do?

16 MR. TREMBLAY: Yes.

17 THE CHAIRPERSON: But you don't own them, you sell them  
18 to someone else and then operate them?

19 MR. TREMBLAY: Yeah, like your cell phones. You buy it,  
20 but someone else is operating it, making sure we meet  
21 our reliability and TTR.

22 COMMISSIONER HAROWITZ: So, by operating, you main  
23 maintain it? Maintain its functionality --

24 MR. TREMBLAY: Yeah, we do the proactive maintaining.

25 COMMISSIONER HAROWITZ: But you are not the owner  
26 operator in the sense of, the revenue isn't coming to

1       you, you are acting as a service to keep it up and  
2       running?

3       MR. TREMBLAY:    Keep it up and running. We collect all  
4       revenues, and we give the revenues back to the site  
5       host.

6       THE CHAIRPERSON:   So, in a scenario, let's say, for  
7       example, where there was monopoly, utilities were the  
8       only player in the EV market, you would attempt to  
9       sell your hardware to the utility, and then maintain  
10      that hardware?

11      MR. TREMBLAY:    I will give you the best example that is  
12      in Quebec. In Quebec there is two large networks.  
13      There is the Flo Network, and the electric circuit  
14      network which is owned by Hydro Quebec. So, and both  
15      products are the same, both back end are the same.  
16      There is two separate entities, but AddÉnergie offer,  
17      as a service provider, the operation of the electric  
18      circuit, and we also operate our own network.

19      THE CHAIRPERSON:   Right.

20      MR. TREMBLAY:    So, let's say it would be a monopoly  
21      network here, we could quote on the hardware, and also  
22      on the software, and also on the service of operating  
23      a third party network.

24      THE CHAIRPERSON:   Okay, thank you very much. I think  
25      that's it. Thank you, Gentlemen, much appreciated.  
26      Thank you.

1                   Is there anyone else that would like the  
2                   opportunity to speak? Please come, sir, yeah. Good  
3                   evening.

4                   **PRESENTATION BY MR. MACEACHERN:**

5                   MR. MACEACHERN: Hello.

6                   THE CHAIRPERSON: Hello.

7                   MR. MACEACHERN: Hi, my name is Neil MacEachern. That's  
8                   Mike-Alpha-Charlie-Echo-Alpha-Charlie-Hotel-Echo-  
9                   Romeo-November.

10                  VOICE: Nicely done.

11                  THE CHAIRPERSON: And you're an airline pilot.

12                  MR. MACEACHERN: Former firefighter.

13                                Yeah, so I am a future EV owner, not a  
14                                current EV owner yet. But I have done a lot of work  
15                                on EVs through my capacity as the environmental  
16                                coordinator for a municipality in the Lower Mainland,  
17                                but I will not be speaking on behalf of that  
18                                municipality today. But, I will be speaking based on  
19                                my experience through that work.

20    **Proceeding Time 7:03 p.m. A1**

21                                And I'll just kind of quickly go through  
22                                some of the questions that were presented as the  
23                                targets of this inquiry and speak to some of those,  
24                                and I'm just going to work my way through, but not  
25                                necessarily hitting them all because I think some of  
26                                them have been spoken about quite extensively and I

1 don't have too much to add to them.

2 THE CHAIRPERSON: Thank you.

3 MR. MACEACHERN: But the first question: Do EV charging  
4 stations operate in a competitive environment in B.C.  
5 or are they a natural monopoly service? I think an  
6 important distinction and something that will kind of  
7 come up through my presentation today is it really  
8 depends if you're talking about DCFC or if you're  
9 talking about level 2.

10 Of course there are many other complexities  
11 that surround this topic, but I think in very broad  
12 strokes we can say that level 2 is a fairly  
13 competitive environment, the limitations imposed by  
14 the *Utilities Commission Act* notwithstanding. The  
15 entry costs are low, the access to the power to be  
16 able to supply that service is generally quite  
17 accessible and the supplies to be able to put that  
18 equipment in place are widely available.

19 However, high start-up costs as well as  
20 further distances often to substations for DCFC,  
21 especially outside of urban areas, can render this to  
22 be non-competitive and creates larger barriers to  
23 entry.

24 And there are also some permutations, some  
25 complexities where users may be beholden to a single  
26 service provider in buildings that are stratified

1       where you have shared parking areas with proprietary  
2       services. So if you have a building that has, for  
3       example, all of ChargePoint equipment and someone  
4       moves into that building, it would be very challenging  
5       for them to go with say AddÉnergie. And in that case  
6       you have something of a captive environment which ties  
7       someone into the monopoly.

8                   And should the Commission regulate services  
9       provided by EV charging stations and what are the  
10      benefits and detriments to such regulation? If yes,  
11      only lightly and I believe only in the case of DC fast  
12      chargers because you are talking about higher levels  
13      of power delivery, large amounts of energy delivered  
14      over time periods, as well as larger opportunities for  
15      cross-subsidization that that is where, if there is  
16      regulation, that it should happen.

17                   In the case of level 2 you are talking  
18      about much smaller amounts of power being delivered.  
19      You are talking about a much more competitive  
20      environment where the start-up costs are much lower  
21      and it provides unnecessary barriers to smaller levels  
22      of energy delivery.

23                   And the current regulation that we have now  
24      kind of covers all DCFC and level 2 by excluding power  
25      sale except for, obviously, in certain limited  
26      circumstances, and that complicates the provision of

1 EV charging services to stratified buildings with  
2 shared parking, as has already been brought up, and  
3 also disincentivizes the establishment of publicly  
4 accessible, privately-owned charging stations by  
5 prohibiting cost recovery. And this is something that  
6 we've seen in my community that there were, for  
7 example, townhouse developments that had in their  
8 parking area free EV charging level 2, but because  
9 there was no opportunity for them to recover the costs  
10 in any way, shape or form, whether or not it was part  
11 of one of the charging networks or none, that they  
12 simply cut off the power and people who were relying  
13 on those services to be able to charge their vehicles  
14 now no longer are able to access them.

15 And so by deregulating level 2, people  
16 could, for example, sign up with one of the services  
17 for a network. People would be able to tap in and the  
18 cost recover revenues from that would be able to be  
19 given back to the site host.

20 Should rate design of EV charging stations  
21 be established under a public utilities traditional  
22 cost of service model, or some other model within that  
23 context? What are the customer pricing option?  
24 Again, speaking here only with respect to DC fast  
25 charging, because charging rates vary substantially  
26 among vehicles, energy based pricing makes more sense,

1           however that is not withstanding the issues with  
2           Measurement Canada that we've already discussed and  
3           have already come up numerous times. But if that can  
4           be resolved, I believe energy payments is a more  
5           logical option.

6                         However, as we all know, the charging rates  
7           for most vehicles decreases over the length of a  
8           charging station, eventually reaching zero at a full  
9           rate of charge, at which point often people will stay  
10          plugged in and bogart the parking space preventing  
11          other users from being able to access it.

12                                 **Proceeding Time 7:09 p.m. T14**

13                         In which case having a time-based element  
14           may also serve a purpose. And so, perhaps if there is  
15           regulation to be put around DC Fast Charging, a hybrid  
16           approach, where you have an energy-based rate for a  
17           certain limited period of time to begin, and then  
18           follow with a time-based method afterwards, may be the  
19           most socially optimal way of approaching it.

20                         Should the EV charging station service rate  
21           be based on a public utility's existing wholesale or  
22           commercial rate, or some other rate? Well, because of  
23           demand charges and infrastructure costs, a simple  
24           mark-up based on the utility's rate may not be a  
25           reasonable approach. An alternative way of looking at  
26           it could be that because the power for EV charging is

1 more analogous to gasoline pricing than it is to  
2 normal electricity use, maximum pricing could  
3 potentially be indexed to local gasoline prices.

4 However, straight-line equivalents would  
5 not likely be considered fair, of course, because of  
6 the convenience of a three-minute fill-up is not  
7 possible for EVs, even with a DC Fast Charger.

8 If public utilities provide EV charging  
9 services within the regulated business, is there a  
10 risk of cross-subsidization from other rate classes to  
11 support this new service, and if so is the proposed  
12 rate design potentially unduly discriminatory? The  
13 answer to that, in the absence of regulation, is quite  
14 likely there is the opportunity for cross-  
15 subsidization. But a consideration is that EV  
16 chargers can be seen as an investment in future  
17 demand. Effectively, a way of advertising the  
18 usability of EVs in particularly inter-urban settings,  
19 and because of the marginal business case for DC Fast  
20 Charging, there's an important role in public  
21 utilities providing that service, at least initially.

22 And so the public utilities may be  
23 investing in future demand by cross-subsidizing EV  
24 charging from other ratepayers. It's very common for  
25 players in all industries to sell new products at a  
26 loss for the short term in order to gain consumer

1 confidence. And we see this, for example, in  
2 airplanes and even electric vehicles themselves, these  
3 days.

4 And in this case, it may be beneficial for  
5 all ratepayers in the long run to subsidize EV  
6 charging in the early stages of EV markets in order to  
7 prevent over-supply related costs when new power  
8 supplies come on line. Read into that what you will.

9 THE CHAIRPERSON: Thank you.

10 COMMISSIONER FUNG: Thank you.

11 THE CHAIRPERSON: Thank you, sir. Thank you. @@

12 **PRESENTATION BY MR. KARLEN:**

13 MR. KARLEN: Good evening, Commissioners.

14 THE CHAIRPERSON: Good evening.

15 MR. KARLEN: You'll likely recognize me. I'm Eric  
16 Karlen. I'm with Greenlots. I offered some comments  
17 at the session in Victoria, and I just want to briefly  
18 here make a few more, based on the comments I've heard  
19 today, and also to attempt to maybe address some of  
20 the questions that you asked of us, and you also asked  
21 of some other commenters a little bit more accurately.

22 One of those questions was, what our  
23 thought process is on how much, kind of in terms of  
24 like a rule of thumb, public charging needs to be  
25 deployed to support a certain amount of EV drivers --

26 THE CHAIRPERSON: Right.

1 MR. KARLEN: -- that are out there. I would just add  
2 that no one exactly knows that exact ratio, but I can  
3 offer some traditional perspective and insight as to  
4 how we think about that.

5 You know, right now everyone throws around  
6 the figure of 80 to 90 percent of charging being done  
7 at home. And that thought might lead to the  
8 conclusion that if that's the case then only a modest  
9 amount of public charging may be necessary.

10 But that assumption is flawed. As is the  
11 basis on which someone might come to that  
12 determination. It's largely based on early adopter  
13 data. People who can afford \$80,000-plus EVs, people  
14 that are probably more likely to live in a stand-alone  
15 single family home, so on and so forth. And commuters  
16 that use it for that situation. So, extrapolating  
17 that out to then think that public charging isn't  
18 necessary just doesn't follow from that data.

19 So, I mean, we would contend that to  
20 accelerate the market and support all drivers, a much  
21 more robust network is needed and it's needed to think  
22 way differently on this topic than we have in the  
23 past.

24 I can offer a few data points that might  
25 help thinking on this issue. When we were in  
26 discussion with a certain ride-sharing company about



1 THE CHAIRPERSON: -- what you mean is four to seven, I'll  
2 call them, nozzles?

3 MR. KARLEN: So somewhere between four to one, five to  
4 one, six to one, seven -- yeah.

5 THE CHAIRPERSON: That's nozzles as it were per charging  
6 facility, is that what you're talking about?

7 MR. KARLEN: How many chargers you need to support --

8 THE CHAIRPERSON: Right.

9 MR. KARLEN: Yeah, so one charger could support seven  
10 electric vehicles.

11 THE CHAIRPERSON: Okay.

12 MR. KARLEN: Or one charger could support four electric  
13 vehicles or somewhere between there.

14 THE CHAIRPERSON: And when you say support for electric,  
15 you mean have the ability -- four vehicles would be  
16 able to charge at the same time for that facility, is  
17 that what you mean?

18 MR. KARLEN: Yeah.

19 THE CHAIRPERSON: Yeah, okay. Yeah.

20 MR. KARLEN: If you're looking at it to see, hey, we need  
21 to deploy infrastructure, how much infrastructure do  
22 we need to support how many electric vehicles? These  
23 are the figures that different geographies are  
24 thinking about. And ones that exist at different  
25 areas. So the figure that I quoted for Los Angeles,  
26 that's approximately what it is right now. And we

1 know that's adequately -- entirely insufficient.

2 THE CHAIRPERSON: Okay.

3 MR. KARLEN: I'll also just add that there's often --  
4 there's like a knee jerk reaction to associate DC fast  
5 charging with -- exclusively with corridor  
6 transportation and facilitating long-range travel. We  
7 need to remember that that's a very important use case  
8 and that's something that needs to be encouraged, but  
9 the majority of chargers out there -- and I think BC  
10 Hydro spoke to this earlier and we would add that with  
11 that DC fast chargers that we have deployed, the ones  
12 that have the highest load factors, the ones that have  
13 the highest utilization rates are the ones that are  
14 deployed in metro areas. And these are the ones that  
15 are serving people who may not have an ability to  
16 charge at home, and that's very important use case in  
17 context that you need to be thinking about when you're  
18 deciding how much infrastructure should be deployed  
19 and where it should be deployed.

20 I'd also just mention that some people  
21 might have seen the headline today, but Porsche just  
22 announced that they're going to be developing their  
23 own Tesla style network of chargers. I think it's --  
24 there's going to be at least 300 DC fast chargers  
25 across the States. We're starting to see a trend  
26 here, right? There's indicators that the private

1 market is largely failing to adequately support this  
2 use case and companies that are looking to sell  
3 \$80,000 plus luxury vehicles don't think that the  
4 people of those means with be able to see that the  
5 private market's going to provide them the  
6 infrastructure needed to support that decision. And  
7 that's the case for these very luxury brands.

8 People that are -- you know, the rest of us  
9 out here that are driving Leafs and -- or have  
10 ambitions of buying a mass market electric vehicle  
11 when it comes to market, all those factors or even  
12 more so we're less likely to have a standalone single-  
13 family home. We're less likely to be able to not rely  
14 on public charging infrastructure. So I think these  
15 developments are very indicative of where the market  
16 is and what people are doing right now to work within  
17 that space.

18 There's been quite a few commenters this  
19 evening here that have articulated what we see to be a  
20 pretty flawed view of the market, that if tomorrow you  
21 -- the Commission were to drop all regulatory barriers  
22 to developing electric vehicle charging  
23 infrastructure, then all of a sudden the private  
24 market would jump into action and start deploying  
25 adequate infrastructure that would support every EV  
26 driver current and future.

1 **Proceeding Time 7:18 p.m. T16**

2 There is no data to support that. In fact  
3 there is plenty of data from other jurisdictions that  
4 show when those barriers are removed that the market  
5 doesn't jump in. And I spoke previously to  
6 California's experience, there's a whole host of other  
7 ones as well. So, while we see it's very important to  
8 remove those barriers, because we want to see all  
9 market participants be able to sell our EV adoption,  
10 we need to remember that in and of itself is not going  
11 to solve the problem and -- yes?

12 THE CHAIRPERSON: What about the 21 states and DC and  
13 Ontario that we've heard about earlier that have --  
14 I'm not sure if they've removed all regulatory  
15 barriers, but what we heard was that they had removed  
16 regulatory barriers.

17 MR. KARLEN: Right, so these are jurisdictions that have  
18 determined, either through regulatory action or  
19 legislation, that owners and operators of charging  
20 infrastructure aren't subject to regulation as a  
21 public utility. So that's allowing them to play in  
22 the market and participate, which they should.

23 THE CHAIRPERSON: Right.

24 MR. KARLEN: But that's not keeping utilities or banning  
25 utilities from being able to play in the market as  
26 well. And AddÉnergie spoke very well to this point

1           that there's different segments of the market and the  
2           extent to which the utilities play in this market, as  
3           they should, and as we've, you know, made comments  
4           already to that extent, I think a great way of doing  
5           that is setting tests and standards against which to  
6           judge utility proposals for developing EV  
7           infrastructure. And then deciding which segments of  
8           the market are most needing and most deserving of  
9           those investments.

10 THE CHAIRPERSON:    Thank you.

11 MR. KARLEN:        I'll just conclude by adding that, you know,  
12           B.C. had some very aggressive goals with respect to  
13           greenhouse gas emissions, enviro locals and the like,  
14           and the one thing that this province can't afford to  
15           do is to do nothing. We should be removing all  
16           barriers. We should allow the current market to play,  
17           but we should not be depending on it as evidence and  
18           experience in other geographies show. And doing that  
19           would be risky and would compromise our ability to  
20           meet any of these goals that are coming in the very  
21           near term. Thank you.

22 THE CHAIRPERSON:    Thank you. Thank you, very much.

23                        If there's no one else that wants to come  
24           up, I think my fellow panel member has a question for  
25           anyone.

26 COMMISSIONER HAROWITZ:    I want to put it to the floor,

1           and I'm not interested particularly in people's  
2           conjecture, but if anyone can bring any evidence or  
3           information forward around the following idea, and it  
4           kind of builds on this last point and it's one that  
5           we've spent some time this evening talking about and  
6           in other hearings that we've had. Which is, there are  
7           some who would argue that there but for the regulation  
8           and the fact that there are many folks who might want  
9           to get into this business but they would come under  
10          regulation and therefore saying, for one reason or  
11          another, they've chosen to stay away.

12                        We've also heard about the notion of, and  
13          lots of comparisons to the ICE world and, you know,  
14          conventional gasoline fueling stations, and saying  
15          they've got the amenities and the washrooms and the  
16          washer fluid and all those things.

17                        So, it occurs to me that if you put those  
18          two ideas together, if you removed regulation are  
19          filling stations a logical set of already existing  
20          infrastructure where you might expect that if  
21          unfettered they might consider that putting a level 2  
22          or maybe a level 3 charger beside their gasoline pump  
23          would be a way for them to hold on to both sides of  
24          the same market. They've got their ICE vehicle and  
25          now they're going to get that same customer who also  
26          has a Leaf.

1 I'm wondering if anybody has any  
2 information, again as opposed to just a matter of  
3 personal opinion, as to where the filling station  
4 industry might or might not be interested in playing  
5 if the regulation was such that they weren't going to  
6 run afoul of the UCA?

7 So, anybody who wants to provide something  
8 on that?

9 MR. TREMBLAY: We work with Canadian Tire Petroleum, we  
10 work with Irvine, with two other private gas company  
11 in Quebec and they want to be part of it. They see  
12 themselves now as an energy provider, so they want to  
13 be able to offer electricity as well. But it is more  
14 suitable for fast charging than other mean. But  
15 they're really interested about that market, I'm  
16 telling you.

17 THE CHAIRPERSON: Do you have installations at gas  
18 stations or are there --

19 MR. TREMBLAY: Yeah, already we got 28 fast charger  
20 that's going to be totally deployed by the end of  
21 June. We have 15-ish right now.

22 **Proceeding Time 7:24 p.m. T17**

23 THE CHAIRPERSON: Right.

24 MR. TREMBLAY: And with (inaudible) Groupe Petroleum  
25 Quebec, we have five of them.

26 THE CHAIRPERSON: Okay, thank you. Thank you.

1 COMMISSIONER FUNG: Mr. Tremblay --  
2 MR. TREMBLAY: Yes.  
3 COMMISSIONER FUNG: -- how would -- what is the basis for  
4 the charging, then, at these gas stations?  
5 MR. TREMBLAY: The rate?  
6 COMMISSIONER FUNG: Yes.  
7 MR. TREMBLAY: It's -- in Quebec, it's between \$10 to \$15  
8 an hour. In the Maritimes, is \$15 an hour, if I  
9 recall properly. In Ontario it's \$20, Alberta it's  
10 \$20, and it's \$18 in B.C., I would say. \$18, yeah.  
11 COMMISSIONER FUNG: And that's for the electrical vehicle  
12 charging at the filling stations?  
13 MR. TREMBLAY: Yeah, most -- all of them are fast  
14 chargers. But basically I would say in Quebec you  
15 have two rates, 10 and 15. In Ontario, it's 20  
16 everywhere. In Maritimes, it's 15, and in B.C. it's  
17 18. Pretty much we don't oblige people to build for  
18 that, we just, you know, suggest a rate and most of  
19 the time the site host decides to go with that rate.  
20 COMMISSIONER FUNG: Okay. And how big would you say that  
21 market is currently in Quebec, relative to the other  
22 chargers that are non-gas-station affiliated?  
23 MR. TREMBLAY: Oh, it's pretty low on the fuel side, I  
24 would say.  
25 COMMISSIONER FUNG: And why is that?  
26 MR. TREMBLAY: It's just they get -- you know, we've been

1 talking for years. We -- you know, with Canadian Tire  
2 it's been five years or so, and they jumped into that  
3 last year, and there will be more news this year about  
4 their commitment to the electrification of  
5 transportation.

6 But basically I was, for instance, at the  
7 VIP event with Canadian Tire a few months ago, and  
8 they just said the market is going there, so we're  
9 going to lose revenue. So -- and, you know, one of --  
10 a friend of mine that owns a Circle K, told me that  
11 they realize from their testing in Norway that it's  
12 not switching from gas to electricity. It's switching  
13 from, you know, fueling on the go to now fueling at  
14 home. So those company that has, you know, the money  
15 to think, you know, 20 years in advance, or more  
16 thinking outside of the box to see, you know, all our  
17 convenience stores or proximity stores, you know, will  
18 be disrupt by that new gas. So how can we go into  
19 that industry, not only in fast charging, but how can  
20 we play a role in other market segments, as we said --  
21 on curbside, on residential. Because this is a big  
22 part of their revenue, so they're thinking about how  
23 they're going after that business that, you know, is  
24 slowly decreased for them, but they want to be part of  
25 it in the future.

26 COMMISSIONER FUNG: Okay, thank you very much.

1 THE CHAIRPERSON: Thank you very much.

2 MR. CARMICHAEL: Others on this point?

3 THE CHAIRPERSON: Yes.

4 **PRESENTATION BY MR. CARMICHAEL:**

5 MR. CARMICHAEL: Kelly Carmichael, C-A-R-M-I-C-H-A-E-L.

6 I live in Surrey. The City of Surrey about  
7 four years ago passed a bylaw that any gas station  
8 that was being remodeled must include an EV charging  
9 station in their remodeling plans. And since that  
10 time there was only one application for a gas station  
11 remodel, and then it was canceled because of the cost  
12 of the EV charger was much more than they were  
13 expecting.

14 And the other issue was, many of the gas  
15 station owners I talked to said they didn't have the  
16 space -- and the property value is too expensive to  
17 have someone idling for a half an hour. So most of  
18 their services were five-minute stops for getting  
19 coffee, doughnuts, whatever. And so the half-hour was  
20 the detriment to their -- to the cost of their  
21 property.

22 THE CHAIRPERSON: I imagine that would apply to new gas  
23 stations, although there's not a lot of new gas  
24 stations being built, I understand. But presumably it  
25 would, or just --

26 MR. CARMICHAEL: Yeah.

1 THE CHAIRPERSON: Yes, okay. Thank you, sir.

2 Okay, well, on that note, then, I'd like to  
3 thank everyone for joining us tonight, and thank you  
4 for sharing your thoughts with us. It's very much  
5 appreciated. And the panel will be considering this  
6 and the other evidence in the proceeding, and I can't  
7 give you a definitive date for the report. We haven't  
8 -- largely because we haven't determined the further  
9 regulatory timetable, but I would expect it would be  
10 probably late summer, fall at the earliest before we  
11 do get the report ready.

12 But in the meantime, I encourage you to --  
13 those of you that are intervening and participating in  
14 the proceeding, we appreciate that. And if you're  
15 not, we encourage you to follow it on the website.  
16 It's a completely public proceeding. Everything will  
17 be published on the website.

18 So once again, thank you very much and have  
19 a safe electric drive home. Thank you.

20 (PROCEEDINGS ADJOURNED AT 7:29 P.M.)

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I HEREBY CERTIFY THAT THE FORGOING  
is a true and accurate transcript  
of the proceedings herein, to the  
best of my skill and ability.



A.B. Lanigan, Court Reporter

April 17<sup>th</sup>, 2018