

**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**

**VICTORIA, B.C.**  
**April 9<sup>th</sup>, 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>

**VOLUME 6**

**INDEX**

**PAGE**

**VOLUME 1, MARCH 5, 2018 - KAMLOOPS**

SUBMISSIONS BY MR. HARSHMAN ..... 2  
SUBMISSIONS BY MR. NANSON ..... 6  
SUBMISSIONS BY MR. OWEN ..... 22  
SUBMISSIONS BY MS. KABLOONA ..... 23  
SUBMISSIONS BY MS. COLEMAN ..... 30

**VOLUME 2, MARCH 6, 2018 - KELOWNA**

SUBMISSIONS BY MR. CAWLEY ..... 34  
SUBMISSIONS BY MR. BOND ..... 35  
SUBMISSIONS BY MR. MEIKLEJOHN ..... 40, 85  
SUBMISSIONS BY MR. BROWN ..... 47, 82  
SUBMISSIONS BY MR. CONDON ..... 60  
SUBMISSIONS BY MR. EVANS ..... 73  
SUBMISSIONS BY MS. LOHMANN ..... 87

**VOLUME 3, MARCH 12, 2018 - PRINCE GEORGE**

PRESENTATION BY DR. KOEHLER ..... 102  
PRESENTATION BY MR. KELLY ..... 113  
PRESENTATION BY MR. LEMCKE ..... 117

**VOLUME 4, MARCH 14, 2018 - FORT ST. JOHN**

PRESENTATION BY MR. CHRISTENSEN ..... 124

**INDEX**

**PAGE**

**VOLUME 5, MARCH 26, 2018 - CASTLEGAR**

PRESENTATION BY MS. LOVE .....	134
PRESENTATION BY MR. CHEWTER .....	140
PRESENTATION BY MR. DREW .....	158
PRESENTATION BY MR. PROSSER .....	172

**VOLUME 6, APRIL 9th, 2018 - VICTORIA - Afternoon Session**

PRESENTATION BY MR. SPALTEHOLZ .....	178
PRESENTATION BY MR. BARTLEY .....	181
PRESENTATION BY MR. MACKENZIE .....	186
PRESENTATION BY MR. GARY .....	196
PRESENTATION BY MR. SCHENTAG .....	203
PRESENTATION BY MR. DOMNEY .....	206
PRESENTATION BY MR. KARLEN .....	210
PRESENTATION BY MS. WILSON .....	220
PRESENTATION BY MR. CALVELEY .....	222
PRESENTATION BY MR. HACKNEY .....	225
PRESENTATION BY MR. BROWN .....	227
PRESENTATION BY MR. WILSON .....	229
PRESENTATION BY MR. SCOTT .....	230

**VOLUME 6, APRIL 9th, 2018 - VICTORIA - Evening Session**

PRESENTATION BY MR. SUNSHINE .....	249
PRESENTATION BY MR. MYRANS .....	252
PRESENTATION BY MS. LOCKE .....	263
PRESENTATION BY MR. WIEBE .....	267
PRESENTATION BY MR. BAXTER .....	271
PRESENTATION BY MR. SHORTREED .....	276

**INDEX**

**PAGE**

PRESENTATION BY MR. BARWIN ..... 278  
PRESENTATION BY MR. MACKENZIE ..... 290  
PRESENTATION BY MR. KARLEN ..... 298

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26

**VICTORIA, B.C.**

**April 9<sup>th</sup>, 2018**

**Afternoon Session**

**(PROCEEDINGS RESUMED AT 12:58 P.M.)**

THE CHAIRPERSON: Good afternoon everyone. Thank you for coming. It's good to see you, and we're really pleased to see your interest.

My name is Dave Morton, and I am the Panel Chair for the Electric Vehicle Charging Service Inquiry. I'm also the Chair of the Utilities Commission. With me today is Commissioner Anna Fung, and Commissioner Howard Harowitz on my left. The three of us form the panel that will be looking at the evidence that we gather in this inquiry.

For those of you just arrived late, if you do -- if you would like to talk, if you could just go over and register over here.

I'm going to stop talking in just a moment and hand it over to our staff, and they're going to give you a presentation on Utilities Commission generally, and a little bit about what the inquiry is about and how to participate in the inquiry. And then they will segue into the portion, the main portion of the afternoon where we listen to your views and your opinions, and they'll explain how that will go after that.



1           and cost of the vehicles. If you look at the  
2           projections, Bloomberg, for example suspects that by  
3           2025 EVs will be at price parity with gasoline cars  
4           and then you are going to see very fast adoption. We  
5           saw that in Victoria where once the used Leafs started  
6           coming up from the States at about, you know, \$15,000,  
7           suddenly there was an explosion in adoption. And, you  
8           know, I'm a Leaf driver but let's, you know, be  
9           honest, it's a very limited car. So once you get into  
10          the more capable cars at lower prices, it's going to  
11          be 50 percent of drivers not 2 percent of drivers.

12                        So just as far a regulatory issues, I would  
13          just encourage you to think really big. It's not a  
14          niche issue. On the regulation side, I think there's  
15          a huge opportunity for BC Hydro to lead and to really  
16          be in a very unique position, especially in light of  
17          the Site C decision, to go deep and really provide --  
18          you know, kind of expand their mandate. And I don't  
19          know if there's any opportunity for BCUC to encourage  
20          them to expand their mandate to go to, you know,  
21          providing fundamentally the transportation fuel in  
22          B.C., right? And providing the transportation  
23          infrastructure.

24                        If that's not going to happen, I would say  
25          keeping the regulatory framework quite light, and  
26          because it's in early stages, not over-regulating so





1 U-W-E is how you spell it. Last name is Bartley,  
2 B-A-R-T-L-E-Y. I'm a facilities superintendent for  
3 University of Victoria properties investment. I look  
4 after what the University owns off the ring road.

5 So this has been an issue for us for many  
6 years, the electric vehicle, because as being charged  
7 with making a profit, these things can get very  
8 expensive to put into a commercial building. We've  
9 had -- we've actually just installed one where the  
10 tenant wanted it, so they actually ended up paying for  
11 it, and it was \$2300. And it luckily was within maybe  
12 ten feet of the parking area. If you start getting  
13 out like hundreds of feet, it starts getting extremely  
14 expensive to get an electric vehicle charging station  
15 out there.

16 We agree with it, because you know, we've  
17 been involved in the Canada Green Building Council for  
18 almost 20 years. So we are heading in the right  
19 direction. For us, though, is how do we install it  
20 and get value for the people that own the building.  
21 We can't have dozens of people showing up and charging  
22 and not paying for the hydro. That's the first  
23 question I get asked: How do we charge for the hydro  
24 that's being used.

25 The other thing is, we've been asked to  
26 install some of the stage 3 charging stations because

1 people at home have trickle chargers and apparently  
2 some of the cars require a quicker boost every few  
3 months to keep the batteries in better shape. That's  
4 what's recommended in some of the auto things. So  
5 again, people come to us and say, "When are you going  
6 to install one?"

7 So that's kind of what we are finding.  
8 It's the expense. How do we -- and also parking is a  
9 revenue for us. How do we move people out of the  
10 parking spots that they don't park there at 6 a.m. and  
11 they are still there at 3 p.m. So those are the kind  
12 of things that we're trying to deal with.

13 So some help, some regulation definitely  
14 makes sense on our end.

15 The one building that's really under  
16 pressure, we have 1200 people there. Lots of electric  
17 vehicles are starting to come in from all different  
18 makes. So we are looking at which way to turn to  
19 start putting some charging stations out there. But  
20 again, how do we recover the cost?

21 THE CHAIRPERSON: Sir, that example that you did cite,  
22 was that rental property on the university grounds?

23 MR. BARTLEY: The University owns a bunch of property  
24 downtown and a few other areas in the city. They own  
25 commercial vehicles that we donated them or they've  
26 bought.

1 THE CHAIRPERSON: They're revenue producing.

2 MR. BARTLEY: Yeah, revenue producing. Our job is to  
3 make revenue and return it back to the University  
4 which is then put into the education system.

5 THE CHAIRPERSON: So there's this situation where a  
6 tenant wanted a -- was it a level 2 charger?

7 MR. BARTLEY: He wanted a level 1. Just the one that  
8 we just installed a couple of weeks ago was a Leaf.  
9 He actually drives from the University out to the  
10 airport once or twice a day and he needs the charge  
11 because he says he's got a heavy foot, so he can't  
12 make it back and forth. So they actually paid for it.

13 We own the Vancouver Island Technology Park  
14 that has almost 1200 people working in it and they  
15 have some of these high end Teslas, and they have the  
16 BMW, which are really nice looking cars but -- and  
17 they are saying they need the quicker boost, like the  
18 quick charge. And that again, you know, we looked at  
19 one, it's almost \$30,000 and how do you -- you know.

20 THE CHAIRPERSON: But you haven't had to make an outlay  
21 of that amount yet.

22 MR. BARTLEY: At this point, I haven't.

23 THE CHAIRPERSON: And if you did, you would want a way  
24 to recover that revenue, presumably.

25 MR. BARTLEY: That's what I'm thinking, yeah. Because I  
26 have to go through the accountant and say, "Here's

1           what I want to do." You know. So just before I left  
2           I said, "What do you want me to look for?" And she  
3           said, "Well, we get revenue for the parking, we need  
4           to upcharge over that parking." So if we get \$5.50 a  
5           day for that parking spot, what do we charge when  
6           there's an electric charger sitting there? Or can we  
7           even charge? Because I know we're not allowed to  
8           resell hydro.

9                           The other thing with the quick charging  
10           stations we found is the power factor gets affected.  
11           So somebody plugs that car in, we are running in some  
12           of our buildings 94 and 95 percent. You plug the car  
13           in, and the power factor goes, now we are paying it  
14           for the rest of the month. And our bills are in the,  
15           you know, tens of thousands of dollars a month.

16 THE CHAIRPERSON:       So you are finding that you are in  
17           that situation now?

18 MR. BARTLEY:           Yes. So that's the other issue.

19 THE CHAIRPERSON:       And you have to explain that to the  
20           accountant too.

21 MR. BARTLEY:           Yeah, so we need to set -- so again, now  
22           you are adding more cost because now we have to set a  
23           separate hydro meter just for the charging station.

24 THE CHAIRPERSON:       And have you done that yet?

25 MR. BARTLEY:           No, those are all on the table. Yeah.

26 THE CHAIRPERSON:       Okay, great, thank you, sir.

1 COMMISSIONER FUNG: Before you sit down, Mr. Bartley, I  
2 just want to understand what the situation is  
3 currently at the university. You say you have parking  
4 spots. Do you have EV charging at certain spots? Or  
5 how many do you have, approximately?

6 MR. BARTLEY: Yeah, I don't work at the University. I  
7 work for the University on private properties.

8 COMMISSIONER FUNG: Oh, I see, okay.

9 MR. BARTLEY: But at this moment, we personally have not  
10 installed -- none.

11 COMMISSIONER FUNG: None.

12 MR. BARTLEY: One of our tenants installed one a couple  
13 of weeks ago, because of the pressures getting there,  
14 so we are at the point now where we are going to have  
15 to start looking physically at putting, you know, four  
16 or five stations in here and there.

17 COMMISSIONER FUNG: And when you talk about four or  
18 five stations, are you contemplating the level twos?

19 MR. BARTLEY: Yeah, because we want to keep things -- I  
20 don't want to see -- because if we put four stations  
21 in, there's four cars, we have 1200 people, chances  
22 are we could end up with 50, 60, 70 electric cars.  
23 How do we give them the service, you know, in the  
24 future that's going to be needed to get them rotating  
25 around?

26 COMMISSIONER FUNG: And right now your thinking is that



1 inquiry to lend my voice to really two questions,  
2 fairly limited ones. To hopefully make it easier for  
3 electric vehicle owners in stratas to get electricity  
4 into their vehicles. At the time that I registered as  
5 an intervener, there were no other strata  
6 organizations in that position. And I also would  
7 like to see a longer term view of electricity sales  
8 beyond just electric vehicles.

9 So those are my two main points. And of  
10 course, like many people here, I hope that the  
11 requirement -- a feeling or an idea I see in many of  
12 the documents that have now accumulated for this  
13 inquiry seem to push to the idea that you won't need  
14 to be a utility under the BCUC definition just to sell  
15 some electricity.

16 Now, one of the things that has happened --  
17 actually the day that I sent in my document, I did put  
18 in a three-page document called "Electric Vehicle  
19 Charging in Stratas", and the day that I submitted it  
20 the new Strata Act Regulations came out. No, actually  
21 it was the day I submitted my request to an  
22 intervener, there was a change that came out to the  
23 Strata Act Regulations which clarified that stratas  
24 could charge their residents and owners on a per use  
25 basis, on a resource use and consumption basis.

26 Have you folks heard of that? Do you know?

1 Are you familiar with all of that?

2 THE CHAIRPERSON: I had heard that there are new  
3 regulations around that, but I'm not really personally  
4 familiar with that, yeah.

5 MR. MACKENZIE: Yeah, I'll go -- I'll take a minute for  
6 that then.

7 THE CHAIRPERSON: Please, yeah.

8 MR. MACKENZIE: There really were two severe limitations  
9 to a strata property being able to charge for the  
10 electricity going into a vehicle. And the first of  
11 those was the *Strata Property Act* in general was being  
12 -- it seems like there's a -- for it to charge for a  
13 service, it has to be based on a fixed fee up until  
14 now, and the lawyer that I worked with in a bylaw  
15 revision in my strata said that any charge that's  
16 going to be imposed on any resident must be a fixed  
17 monthly fee, and that's the end of it.

18 So, of course, for electric vehicles, that  
19 would be very inappropriate. That would be like  
20 having to pay a monthly fee at the gas station for  
21 your car.

22 THE CHAIRPERSON: Whether you use the service or not.

23 MR. MACKENZIE: No, it would be for an electric  
24 vehicle. You apply for a connection, and in the case  
25 of my building, just plug into the 110. But it would  
26 -- what the lawyer said is just to plug that in, there



1           would have to be a fixed monthly fee.

2   THE CHAIRPERSON:       Just to plug it in once, for example.

3   MR. MACKENZIE:         Well, to plug it per month, whatever  
4       you use it. The only way that they could apply a fee  
5       would be per month.

6   THE CHAIRPERSON:       Right.

7   MR. MACKENZIE:         So now what happened in early March  
8       was the B.C. Government strata -- or the agency of  
9       B.C. Government that regulates stratas issued a  
10      clarification saying that a strata can charge based on  
11      resource use. So what that does, in effect, as far as  
12      I can tell, is remove one of the barriers to a strata  
13      charging for the electricity that then goes into an  
14      electric vehicle. And I haven't seen any case law or  
15      anything like that, but it seems clear that that's the  
16      intent, from the announcement that that's what they  
17      intend to do.

18   THE CHAIRPERSON:       Was that specifically for electric  
19      vehicles or is it also for, you know, water and snow  
20      clearing and all the rest of it?

21   MR. MACKENZIE:         Well, snow clearing wouldn't really  
22      count. But, yeah, water. Yes, it does say -- there's  
23      one line in the press release that says it's for any  
24      resource, and then the second line says it's for  
25      electric vehicles.

26   THE CHAIRPERSON:       Okay.

1 **Proceeding Time 1:25 p.m. T5**

2 MR. MACKENZIE: So that's barrier one.

3 The second barrier, of course, is the one  
4 that you're hearing about a lot in this room, which is  
5 that strata cannot charge by the kilowatt hour for the  
6 electricity going into a vehicle. And from my  
7 experience in stratas, fairness is very important to  
8 some stratas. Nobody wants to see an owner get an  
9 advantage that they aren't paying for that's uneven  
10 with other residents. And so my presumption is that  
11 to get a wider adoption of electric vehicle charging  
12 into stratas there is going to have to be some way  
13 that it can be charged for what's actually used. And  
14 so that's a very -- I think an important point.

15 I think it's important that the strata  
16 corporations function best when regulatory and legal  
17 regimes are clear and transparent, and *Strata*  
18 *Properties Act* over many years has evolved to reflect  
19 that in many other aspects of condominium life, and I  
20 think it's important that we push them along to do  
21 this with electric vehicles as well.

22 And group decisions in condos are very  
23 susceptible to FUD – fear, uncertainty and doubt. So  
24 a big decision can be derailed by one person with one  
25 concern at an annual general meeting that will tend to  
26 push them off the whole for the next year. And

1           because a change to a strata, the actual  
2           infrastructure of a strata building requires a three-  
3           quarter vote of the owners at a general meeting, the  
4           case has to be presented very well, and any of that  
5           fear and uncertainty and doubt could change it. So  
6           that's why I'm hoping for a clear structure or regime  
7           that stratas can use.

8                        When I talk about a broader application,  
9           several cities within B.C. and around the world have  
10          adopted a 100 percent renewable energy goal by 2050.  
11          Victoria, the City of Victoria has adopted that goal.  
12          Saanich has adopted that goal. Other municipalities  
13          in the district -- or in the capital regional district  
14          are considering that goal. That's a -- I'm not sure  
15          they really understand what that means yet. But what  
16          that ultimately states is that all fossil fuel use  
17          within a city will be replaced with electricity or sun  
18          or solar thermal or something else.

19                       So what I think that means is that not just  
20          electric vehicles, not just cars, but it could be lift  
21          trucks, excavators, who knows what, will want to be  
22          powered by electricity. At this point the technology  
23          doesn't seem to be there, but this will evolve, we  
24          hope.

25                       And so I think it's important that the  
26          Commission, which it looks at the ability to sell

1 electricity into a vehicle, include not just electric  
2 vehicles but other things. And the example I have in  
3 my paper that I submitted was somebody walks into a  
4 gas station somewhere in the Chilcotin with a propane  
5 tank. They just hook it up, they put on the scale,  
6 they pay 27 pounds of propane and nobody's really  
7 trying to regulate what the cost of that to be. They  
8 don't have to be a utility to sell it. So I think  
9 that should be -- I hope the Commission will be  
10 thinking future, where any old thing will come into a  
11 place and fill it up with electricity without having  
12 to be a registered utility.

13 I agree with many of the statements that  
14 overnight is probably going to be quite practical for  
15 many drivers and so a 110 volt outlet, I think, is a  
16 great way for people to start, and for stratas to  
17 start. So there's really no infrastructure cost, so  
18 long as they can charge for the electricity.

19 It's easy to use a \$20 power meter, a  
20 kilowatt meter is what I use, and just plug it into  
21 the wall, plug the car into that and for 110 volt it  
22 will record very accurately how much electricity is  
23 used. So again, if the strata have the regulatory  
24 permission to record that and charge by the kilowatt  
25 hour, I think that would open up a lot of options  
26 without the cost that you mentioned for the level 2

1 chargers. As a way to get started.

2 So I've probably taken enough time here to  
3 -- oh, there's one other thing that stratas -- a  
4 challenge with stratas. And that is where are you  
5 going to put the meter. So in some strata buildings,  
6 the strata owns all of the parking and can allocate  
7 spaces as needed just with motions of council. But in  
8 some stratas, like the one I live in, the actual  
9 parking lot number is registered on title at land  
10 titles. And my understanding is that to change that,  
11 or say for two units to swap their parking spots  
12 requires one -- because it changes -- the building  
13 requires 100 percent agreement of all the owners. And  
14 so that's a huge barrier. I can't imagine, you know,  
15 the challenge of doing that.

16 So if there was some way -- and this isn't  
17 really your purview perhaps, but I think in the longer  
18 term, having some way of changing that, making it  
19 easier to just swap spaces so that you could put an  
20 electric vehicle owner closer to the electrical room  
21 rather than running a conduit all the way across to  
22 wherever your space is, would be something that would  
23 be use. And I've mentioned that in my notes.

24 THE CHAIRPERSON: Sorry, the scenario where electric  
25 vehicles were ubiquitous, everyone would need a plug  
26 in their parking spot in any event.

1 MR. MACKENZIE: That right. But I expect, you know,  
2 we're looking at --

3 THE CHAIRPERSON: That's a little ways away.

4 MR. MACKENZIE: At this point we're trying to ease it  
5 for the early adopters, I would hope. Yeah. So I'll  
6 leave it there.

7 COMMISSIONER HOROWITZ: Mr. Mackenzie, I think that I  
8 just want to clarify that some of your comments around  
9 buildings is as it relates to existing physical stock  
10 and the transition to build out charging in those as  
11 opposed to new buildings and the regulation that would  
12 be around those that may or may not include entirely  
13 different physical configuration, installation of, you  
14 know, charging spots at individual stalls or whatever.  
15 I think you're talking about how do we transition for  
16 the existing building stock, is that correct?

17 MR. MACKENZIE: That's primarily, but on the other  
18 hand, even a new building which, I think in Vancouver  
19 now there's a requirement that conduit be run to every  
20 parking spot.

21 COMMISSIONER HOROWITZ: Right.

22 MR. MACKENZIE: There's still -- if they are going to  
23 put in level 2, there's still a couple of thousand  
24 dollar charge. So it's unlikely that every unit in  
25 the building is going to need that, so -- yeah, I  
26 guess I'm mainly talking about existing buildings,



1 THE CHAIRPERSON: Thank you, sir.

2 Good afternoon.

3 **PRESENTATION BY MR. GARY:**

4 MR. GARY: Good afternoon. My name is Glenn Gary, G-A-R-  
5 Y. I'm here just representing myself today. Yeah,  
6 thanks for coming out, thanks for getting down the  
7 road on this item.

8 THE CHAIRPERSON: Thank you, sir.

9 MR. GARY: Does anybody in the Commission or their Staff  
10 own an electric vehicle?

11 THE CHAIRPERSON: We do have -- there's no one here, but  
12 we do have an electric vehicle owner, member of our  
13 staff who's an electric vehicle owner, yes.

14 MR. GARY: Okay. Okay, good. You want to spend time  
15 with people who actually operate them.

16 THE CHAIRPERSON: Yeah.

17 MR. GARY: Okay, because as Mr. Mackenzie was saying  
18 there is a lot of fear, uncertainty and doubt. I'll  
19 just tack on one of those and it's not uncertainty or  
20 doubt. Getting and charging to individual stalls. As  
21 Vancouver knows and anybody who builds a building  
22 knows, if you're doing something up front in the  
23 build, it's very cheap. Right? You put the conduits  
24 in, you don't even have to specify which gauge, yet.  
25 But as long as the routes are there and there's panels  
26 set up to accept that down the road, then that part is



1           easy. Into existing stratas, that is more difficult  
2           but not impossible.

3                       I'm a home owner. I had to run my own in  
4           my house. I chose to go to a Level 2, which is as  
5           simple as providing an outlet for another water  
6           heater. Somebody who owns a hot tub uses far more  
7           energy every year than any electric car. Right? So  
8           just in the -- I guess it's in fear reduction going  
9           forward, these are not, you know, insurmountable  
10          obstacles. These are fairly simple.

11                      So going forward, I would like to say that  
12          I like BC Hydro, I like what they do, I think they  
13          should stay in the business of providing electricity.  
14          I think it would be wonderful if I as a user, you  
15          know, big power in my house, I walk up to a public  
16          charger that's run by BC Hydro, you know, an RFID card  
17          or my PIN number or whatever, I go up, I place that in  
18          there, it charges me for the electricity and then  
19          charges me another amount to pay for that level of  
20          charging, and that is to run back the costs for the  
21          charger. Level 2 is a whole lot simpler than a Level  
22          3. Level 3s are somewhere between 50 and 100?  
23          Something like that. 50 and 100 thousand dollars. So  
24          you have to be able to make that money back.

25                      But, again, if it's our public utility, we  
26          don't need to make it back in a four-year term like a

1 business might. We might make it back in a ten-year  
2 term. Right? So those costs then become more usable.

3 And I suggest this in our ramp-up years,  
4 the next five years, next seven years. You do that  
5 sort of thing, that allows the public the certainty  
6 going forward into electric vehicles. It allows  
7 people who want to get into the business a certain  
8 amount of certainty there as well. Maybe BC Hydro  
9 does not want to own the actual charger and get other  
10 businesses to put those in, subcontracted to. But BC  
11 Hydro is the one providing. And more importantly,  
12 regulated by you guys. Okay?

13 Those are the really important parts I  
14 think we need going forward. And we do need to  
15 encourage it, big-time. And because B.C. is so huge  
16 with our 95 percent I think we're at now for renewable  
17 energy, you know, and 87 percent of that I think is  
18 hydro, we can turn around and make really big inroads  
19 and tell the rest of North America how to do this, and  
20 how to do it right.

21 Okay, that's all I got.

22 **Proceeding Time 1:38 p.m. T7**

23 THE CHAIRPERSON: So just a quick question, sir. So I  
24 appreciate your suggestion about cost recovery for the  
25 charging infrastructure itself, and you know, it's  
26 reasonable that that be included in some sort of

1 charge for the service.

2 MR. GARY: Yeah.

3 THE CHAIRPERSON: But I'm just wondering if you have any  
4 thoughts about the rapidly changing technology and the  
5 sort of -- the tension between recovering it over a  
6 long period of time, when in ten years that technology  
7 might, in fact, have been usurp by the next generation  
8 of chargers and nobody wants a level 3 charger because  
9 there's a level 4 charger by then.

10 MR. GARY: You do have to be concerned with that.

11 THE CHAIRPERSON: Yes.

12 MR. GARY: However, going forward, and the difference in  
13 the chargers might be an impact if, let's say, solid  
14 state batteries come in. However, those are still a  
15 fair way off. We are almost back into the beta VHS  
16 stage, right?

17 THE CHAIRPERSON: Yeah.

18 MR. GARY: The beta was the better product, the VHS was  
19 the better marketed product.

20 THE CHAIRPERSON: Was the market winner, certainly, yes.

21 MR. GARY: It turned out to be the economic winner. So  
22 going forward I think you'd probably be fairly safe in  
23 the next five to seven years going with the current  
24 sort of levels of charging, but you do have to keep an  
25 eye on Europe. So us, you know, being really excited  
26 about charging at a level 3 at 50 kilowatts, well,

1 Europe, they are moving towards 350 kilowatts.

2 THE CHAIRPERSON: Right.

3 MR. GARY: You know, and to make that easier on the  
4 grip, they have on-site solar and they store a lot.  
5 They trickle charge into large battery arrays. So  
6 when people come up, it automatically goes out and  
7 it's not a huge thing for the grid.

8 THE CHAIRPERSON: Yeah, very good. Yeah. Thank you.

9 COMMISSIONER FUNG: Mr. Gary, I am curious as to why  
10 you think we need to regulate this entire field, given  
11 that we don't currently and there is a myriad of  
12 options out there.

13 MR. GARY: Well, any time you don't regulate something  
14 for the public good, it generally ends up being to the  
15 public disadvantage. And let's look at -- let's look  
16 at oil, the oil industry. It does not work for the  
17 public good, right? If we don't regulate this, people  
18 will come in and they'll make it so that it does not  
19 work for the public good, and it may, indeed, strangle  
20 this major shift.

21 Regulation, I think, is key to what we do  
22 going forward, and it has to be for the public good.  
23 If you are not working for the public good, you're  
24 working for somebody with deep pockets.

25 COMMISSIONER FUNG: Thank you.

26 THE CHAIRPERSON: Thank you, sir, appreciate it.

1 MR. GARY: Thank you all.

2 THE CHAIRPERSON: Thank you.

3 MR. SPALTEHOLZ: May I make another point?

4 THE CHAIRPERSON: Please. Yes, please do.

5 MR. SPATSEHOLZ: So it's Leo Spalteholz again. Just two  
6 things that I thought of.

7 I think there's this assumption that if 100  
8 percent of drivers are driving EVs, I think you  
9 mentioned it, that we would then need charging  
10 facilities at every parking spot. I don't think we  
11 should be set on that assumption. I mean right now,  
12 yes, perhaps with the vehicles we have, but if you  
13 have a range of 600 kilometres and you can charge it  
14 up in fifteen minutes – some of the new technology –  
15 then suddenly this whole issue is much less important,  
16 and a hundred percent of EV drivers might need only a  
17 couple charging spots again in a condo. That's  
18 rapidly evolving.

19 The other question is, Tesla is charging  
20 for their super chargers now, for some of their  
21 clients, depending on what vehicle they bought. And  
22 they actually have multiple levels of charge based on  
23 the rate that you're getting. So they will charge you  
24 by the time because I think in a lot of jurisdictions  
25 you are not allowed to charge for the energy you use,  
26 but they will charge you for the time and they will

1 charge you a different rate for the time depending on  
2 how much charge you are actually getting.

3 So is that actually a loophole in B.C. as  
4 well, that you could fundamentally not charge for the  
5 energy but charge for the time and that rate changes  
6 by how much energy is actually being delivered?

7 THE CHAIRPERSON: Well, that's a legal question and it's  
8 one that we haven't turned our minds to. It's  
9 probably something we will look at in this inquiry.  
10 But it's a very good question. I don't know if Mr.  
11 Miller has any further comment on that or not.

12 MR. MILLER: Mr. Chair, I agree with your comment. That  
13 is an issue the panel will have to address.

14 MR. SPALTEHOLZ: Okay, thanks.

15 THE CHAIRPERSON: Thank you.

16 MR. SCHENTAG: Hi there.

17 THE CHAIRPERSON: Hello, sir.

18 **PRESENTATION BY MR. SCHENTAG:**

19 MR. SCHENTAG: I'm Glen Schentag. It's S-C-H-E-N-T-A-G,  
20 and I'm from Metchosin. I'm just a private citizen  
21 that came in my little electric Smart Car.

22 THE CHAIRPERSON: Okay.

23 MR. SCHENTAG: Well, I guess first off, I appreciate that  
24 you guys are doing this. It does need to get done.  
25 And I also wanted to say thank you for the work that  
26 this group did on the Site C. I think that was a bad

1 decision in the end, but anyway.

2 As far as a model goes, I guess what I  
3 would like to see as a citizen is something that would  
4 be kind of akin to a bank machine, where I could  
5 approach an electric vehicle charging station and plug  
6 in and know that I'm going to pay a fee. Maybe it's  
7 five bucks. But the cost of the energy and the amount  
8 of energy I use is reflected based on my vehicle.

9 **Proceeding Time 1:44 p.m. T8**

10 I can tell you that my little Smart Car doesn't use  
11 anything like the energy that a Tesla would use, and  
12 at the same time I'm prepared to pay the same five  
13 bucks they would pay to have access to a port that  
14 gives me what I need at the time.

15 So I'd like to see regulation that govern  
16 what they were allowed to charge, because like  
17 somebody else here said, given the opportunity,  
18 private capital goes for more private capital. I'm  
19 totally game with them being able to recoup their  
20 costs. So in the case of DC fast charger, you know,  
21 if I owned a Tesla, I guess then I'd be prepared to  
22 pay more than somebody who owns a Smart Car to have  
23 access to that port and then naturally pay more for  
24 the amount of energy that I would consume.

25 So that was really my comment around the  
26 regulatory piece, was I'd like to see it regulated,

1           and I think it's fair that these people get a return  
2           on their investment so they can pay for the privilege  
3           of using -- I'm happy to pay for the privilege of  
4           using it.

5                           And then I guess lastly, it's more of a  
6           comment which was, you know, I understand over the  
7           last few years we've transitioned to smart metering,  
8           and I've noticed my meter's gotten dumber lately. I  
9           used to be able to see my consumption by hour and now  
10          I can only see it by day. And it's intermittent. I'd  
11          really like to see BC Hydro go down the path of using  
12          the smarts of those meters, because it is possible for  
13          us -- it's certainly possible with my electric car,  
14          and I think as far I know, all of them, for me to tell  
15          my car to start charging at 2:00 a.m. and finish off  
16          at 4 or 6 or something. And I too installed a level  
17          2 charger. But there's no bonus or incentive for me  
18          to set it up to go off hours, and I certainly know  
19          other jurisdictions like California allow you to  
20          purchase power at a different rate in the middle of  
21          the night than during peak times.

22   THE CHAIRPERSON:       So is that something that you are  
23                           saying that you would be in favour of that?

24   MR. SCHENTAG:        You know, and this relates to my whole  
25                           opinion around Site C as well, is we can manage the  
26                           power we do have access differently than we do now.



1           And that would -- you know, BC Hydro has just spent a  
2           lot of money putting in smart meters that could  
3           facilitate that.

4   COMMISSIONER FUNG:       Mr. Schentag, I'm curious. You  
5           said you have a level 2 charger at home.

6   MR. SCHENTAG:        Yes.

7   COMMISSIONER FUNG:       So do you rely primarily on home  
8           charging then for your charging needs, or are you  
9           driven to using public charging services however and  
10          wherever they are available?

11   MR. SCHENTAG:        Yeah, you know, I think what's really  
12          interesting about that question is the answer is  
13          really going to be variable. I know a number of other  
14          people with electric vehicles and I know some people  
15          get a bit of a thrill from, you know, getting free  
16          power from lots different locations and are kind of  
17          excited by that journey. And for me that journey, you  
18          know, was maybe a day or so and I realized that, no,  
19          I'm going to plug this in at home and for the most  
20          plan my life in a way that I don't jump from charger  
21          to charger. I get into a fully charged vehicle in the  
22          morning and I kind of know where I'll be by the time I  
23          get home today.

24                        So it's actually in the last three years of  
25          owning this vehicle, I've only had one instance where I  
26          really had to plan my trip based on getting juiced up

1 at another location, and that's a small range car.

2 It's only good for about 110 kilometres.

3 COMMISSIONER FUNG: Okay, thank you.

4 THE CHAIRPERSON: Thank you, sir.

5 MR. SCHENTAG: Thank you.

6 **PRESENTATION BY MR. DOMNEY:**

7 MR. DOMNEY: Good afternoon. My name is Brian Domney,  
8 D-O-M-N-E-Y. I'm a member of the Metchosin  
9 delegation. My wife and I bought a Leaf about a year  
10 and a half ago. About six months after we put 4.3  
11 kilowatts of solar panels on our roof. And for the  
12 first year we owned the Leaf, we used public charging  
13 stations. Metchosin has a population of about 4700  
14 people and has two free charging stations in the  
15 village core, one at the café and one at the community  
16 house.

17 And for that year we used it a significant  
18 amount of time. We would also use the trickle charger  
19 at home. But over that year, more and more people in  
20 Metchosin were buying EVs. I can think of eight or  
21 nine friends now who drive electric cars in Metchosin.  
22 And it became more and more challenging to find an  
23 empty spot at the charger over that time. So in  
24 November of last year, we put in a level two charger.  
25 And that, after a month or two precipitated quite an  
26 outburst from wife because she started to complain



1 issue.

2 When we bought the Leaf we decided to keep  
3 our RAV4 for road trips. We have a daughter in Nelson  
4 and if we were to use the Leaf to go to visit her in  
5 Nelson it would be an epic journey of many days at  
6 this point. Fortunately the car we have has Level 3  
7 charging, the quick charge option, and I'm hoping that  
8 if the Commission does step in, into this regulatory  
9 regime, that it finds ways of encouraging quick  
10 charging on the highways of the province so that  
11 people can get around without having to spend  
12 tremendous amounts of time charging their vehicles.  
13 And that's all I have to say.

14 THE CHAIRPERSON: Thank you. Thank you, sir.

15 COMMISSIONER FUNG: Thank you.

16 MR. GARY: Yeah, Glen Gary, I'll pop up again in support  
17 of, because this isn't your mandate specifically but  
18 it is the BCUC writ large. Time of day of charging.  
19 Okay. Or rather, yeah, time of charging of your bill.  
20 All right. If we can go to that, as every other  
21 country in Europe has done, we can make much better  
22 use of our resources. You know, charge everybody 15  
23 cents a kilowatt hour from 1600 to 2200, charge them 5  
24 cents an hour between midnight and four, and then ramp  
25 it back up during the day to eight or ten, whatever.  
26 You do that, you're going to solve a lot of capacity

1 issues, right?

2 Like I said, electric cars aren't going to  
3 be a hard -- a big problem if you can do that. In  
4 fact they could be part of the solution. So time of  
5 day, which you kind of got onto, we got onto and I  
6 know you guys love. Everybody loves it, but I'm not  
7 sure why, why the governments don't like it, but yeah,  
8 we do that --

9 THE CHAIRPERSON: Just to be clear, you're only  
10 suggesting it for a limited use which would be  
11 electric vehicles. You're not necessarily --

12 MR. GARY: No, everything.

13 THE CHAIRPERSON: Everything, okay.

14 MR. GARY: Because every time you buy a new dishwasher or  
15 a new clothes washer, dryer, every car out there, you  
16 can tell it when to charge.

17 THE CHAIRPERSON: Right. Right.

18 MR. GARY: So you do that, you start making the silly  
19 appetite for more capacity.

20 THE CHAIRPERSON: Yeah.

21 MR. GARY: That goes away. I think even BC Hydro itself  
22 has said if 90 percent of light vehicles went to  
23 electric cars tomorrow, it increases base load by 20  
24 percent. So if you can sort out time of day charging,  
25 help fill in that vast valley, then everything else  
26 works.

1 THE CHAIRPERSON: Yeah, you're not getting -- yeah.

2 MR. GARY: Okay, thanks.

3 THE CHAIRPERSON: Thank you, sir.

4 **Proceeding Time 1:54 p.m. T10**

5 **PRESENTATION BY MR. KARLEN:**

6 MR. KARLEN: Good afternoon, everyone. I'm Eric Karlen,  
7 K-A-R-L-E-N. I'm with Greenlots. I'm a provider of  
8 EV charging software and services. We're a party to  
9 this proceeding and I should say we are a supplier, a  
10 partner with BC Hydro and a lot of the DC fast  
11 chargers they currently have deployed.

12 So I'm here to offer some perspective.  
13 Also here to listen to the people's comments. It's  
14 been very illuminating. And just from our experience,  
15 you know, I can speak to the challenges that the  
16 market currently faces and why, you know, utilities we  
17 feel should have a very strong role in continuing to  
18 develop EV charging infrastructure.

19 I mean, I think a lot of people here  
20 realize that in an era of ever declining load, which  
21 continues to put upward pressure on rates -- you know,  
22 electric vehicle load is arguable the single greatest  
23 opportunity to kind of reverse that trend and increase  
24 the utilization of the existing electric grid in a way  
25 that can benefit all utility ratepayers, not only EV  
26 drivers. But that's only the case if that load is

1 integrated intelligently.

2 A lot of people here have spoken to rates  
3 that send a more accurate price signal to the drivers.  
4 Time of use rates is a great example of that. In  
5 other provinces -- or in states in the U.S. are even  
6 doing more advanced pricing plans that use managed  
7 charging, that utilize smart networked EV charges to  
8 do that. There's a lot of possibility there.

9 But with respect to the market challenges  
10 that we see right now, I mean, quite simply there is  
11 not a -- there is no market for selling EV charging  
12 services directly to EV drivers. And we see that to  
13 be the case pretty much across the board, regardless  
14 of the market segment, or even the technology. Of  
15 course, there is certain technologies, DC fast  
16 charging, also certain segments, like multi-unit  
17 dwellings that we've heard about earlier, that have  
18 particularly constrained and difficult economics to  
19 get around. But there's a reason why there aren't  
20 companies like ourselves out there that are building  
21 infrastructure solely to sell it to drivers.

22 There's a market for selling EV chargers  
23 directly to motivated site hosts, or motivated  
24 businesses, and usually they are doing that as a  
25 value-add to their employees, to their customers, to  
26 bolster their environmental responsibilities, so on

1 and so forth, but there's rarely -- or there's no  
2 cases that I'm personally aware of where they are  
3 doing that with the intention to profitably make money  
4 by selling those services to drivers directly outside  
5 of the kind of tangential other benefits that come,  
6 like I kind of spoke to.

7 THE CHAIRPERSON: So jut to -- what you are saying is  
8 there is no analogy in the electric vehicle charging  
9 world to a petroleum service station.

10 MR. KARLEN: Exactly right. At least at this point. At  
11 some point down in the future, that might be the case,  
12 but we don't see that on the horizon, yet.

13 THE CHAIRPERSON: Do you think part of the reason for  
14 that is the amount of time it takes to recharge?  
15 Let's just say it took three minutes or five minutes,  
16 or seven minutes to recharge an electric vehicle. Do  
17 you think then that electric vehicle charging would or  
18 could follow the petroleum service station model?

19 MR. KARLEN: Yeah, but the challenge there is the faster  
20 the infrastructure can charge, the most it costs,  
21 right? There's a reason why DC fast chargers are the  
22 most expensive things out there and why that has some  
23 of the most constrained economics.

24 THE CHAIRPERSON: Right.

25 MR. KARLEN: I mean the main issue is there's low  
26 utilization rates, currently, and at the same time



1           there's the classic chicken and the egg, Catch-22  
2           issue that people always cite when they look at this  
3           market. People don't want to buy EVs because where am  
4           I going to charge it? That's one of the number one  
5           cited reasons for potential purchasers of EVs not  
6           doing it.

7                           And then on the other side of the equation  
8           there is companies like ourselves that there's no  
9           market to be offering those in the gas station model  
10          that you speak of.

11                          So you know, with that said, with respect  
12          to kind of key questions of this inquiry, I'll just  
13          offer that -- I mean, we believe that regulation by  
14          this Commission should be loosened to potentially  
15          allow other market actors other than just utilities to  
16          be able to provide those services, and that there  
17          aren't any artificial limitations on the way that they  
18          could potentially charge for them.

19                          That being said, that in and of itself we  
20          don't believe is going too all of a sudden make it  
21          such that the private market can take over and start  
22          providing services in a way that's necessary to  
23          support EV drivers and potential EV drivers in their  
24          purchasing decisions sufficiently. We kind of see it  
25          as it's two things that need to happen. That needs to  
26          happen on that side.

1 I mean, you can look at what California did  
2 about eight years ago when their commission down there  
3 said that utilities could not invest in EV charging  
4 structure, period. And they waited around four years,  
5 and guess what, the power market did not fill in the  
6 gaps and they had to go and loosen that decision, and  
7 now the utility they're proposing a whole suite of  
8 programs under those new rules.

9 **Proceeding Time 2:00 p.m. T11**

10 But the market is simply not at a point at  
11 which, for the biggest issue that drivers need, public  
12 charging, there's just not a market for that.

13 But then secondly also, we do believe that  
14 regulated utilities here should be contained and be  
15 able to invest in rate base, their investments in  
16 public charging infrastructure for all the reasons  
17 that you guys are allowing them to do so thus far,  
18 because it's a segment of the market where there's a  
19 market failure. There's no private investments  
20 happening there naturally. And while, as I think most  
21 people who have commented, they suggested that this  
22 isn't a segment of the market that is inherently a  
23 natural monopoly service, which we'd agree with that  
24 statement. There's definitely a lot of aspects that  
25 currently are an actual monopoly service, right? So  
26 there's nothing inherently that makes them one.

1                   You know, in the future we can conceivably  
2                   see the power market taking over, but right now due to  
3                   these constraints that I spoke to, it's not very --  
4                   there's a whole host of other reasons why we think  
5                   utilities should have a continued strong role in this  
6                   market. One of the biggest ones is reliability. A  
7                   lot of people have spoken to that. You guys have  
8                   hinted at it. Right now for the infrastructure out  
9                   there, when it's not run by utilities, there are  
10                  reliability issues and there's a lot of, you know,  
11                  early adopters of electric vehicles that probably have  
12                  a higher tolerance for reliability issues. But I  
13                  mean, that's not something that the bottom market is  
14                  going to tolerate, you know. Pulling up to a gas  
15                  station and 20 percent of the time being down, that's  
16                  not a workable thing, right.

17                  So utilities stand in a very powerful and  
18                  unique position to provide the same level of  
19                  reliability to the service that, you know, ratepayers  
20                  expect of all their other services, having high up  
21                  time, high degree of reliability due to their core  
22                  competencies in these areas. So that's important to  
23                  realize.

24                  Yeah, so I mean, unless there are some  
25                  questions, comments, I'm here to answer any questions  
26                  that you guys might have. I'm just glad to be here

1           and hear everyone's thoughts and offer some of our  
2           perspective as well.

3 THE CHAIRPERSON:   Thank you. We appreciate your thoughts  
4           too.

5 COMMISSIONER HAROWITZ:   Thank you. I have a few  
6           questions and some of these may be things that  
7           Greenlots considers confidential and you don't  
8           necessarily want to share.

9 MR. KARLEN:    Sure.

10 COMMISSIONER HAROWITZ:   But I'll ask anyway. First, and  
11           we heard a little bit already about the notion of  
12           longer versus shorter-term amortization of a piece of  
13           capital equipment. Do you guys have any view on the  
14           approximate useful life of the equipment that's  
15           currently being deployed and/or do you have a sense of  
16           it accelerating and that you're going to need to  
17           recapture those costs more quickly, less quickly? Do  
18           you have a point of view on that that you'd be willing  
19           to share?

20 MR. KARLEN:    I could probably speak more broadly and this  
21           is in a sense related to some of the other questions  
22           that were asked earlier, you know, as technology  
23           evolves and gets better down the road, does that mean  
24           perhaps we should be more -- take a second look at  
25           investments that are being made today? I think it's  
26           pretty clear to us that in order to accelerate the

1 market, investments need to be made now but they  
2 should be made prudently. There's a whole host of  
3 issues that I think, you know, BC Hydro has been  
4 pretty cognizant of with respect to making sure that  
5 the equipment -- you know, adopts open standards to,  
6 you know, guard against issues such as what you're  
7 speaking of and to prevent stranded assets that the  
8 ratepayers would be left holding the bill for.

9 With respect to some of the more specific  
10 questions that you answered and -- asked, I think, I  
11 probably can't speak to those here right now. The  
12 extent to which you do have more detailed questions I  
13 would encourage in the process for written questions  
14 and response, might be able to do, and I can circulate  
15 those more internally and perhaps get you a more  
16 specific answer to those questions.

17 COMMISSIONER HAROWITZ: Fair enough. A follow-on of a  
18 similar nature. You've probably done some modelling,  
19 and then again the question is probably on a  
20 presumption that you have, what of it might you be  
21 willing to share? The sense of, you know, how many  
22 chargers do we need, or do you have a rule of thumb  
23 about number per thousand vehicles or what -- how do  
24 you do your projections around what you think a fully  
25 built out system looks like? Are we looking at 50,000  
26 units? Are we looking at -- or how do you --

1 MR. KARLEN: Yeah, that's a great question. So I mean  
2 that's a question -- depends entirely on geography,  
3 right? And I know there's a lot of good studies that  
4 have happened in the States that we're familiar with,  
5 different universities that have made modelling tools  
6 that different regulatory commissions have used. LB&L  
7 in California has done some work on that, different  
8 models that you can plug in to kind of get an  
9 approximate idea for that.

10 Of course it varies widely if it's a  
11 metropolitan area as opposed to a rural area, so and  
12 so and so and so forth. But I mean those are  
13 definitely good considerations to be thinking of, and  
14 there are quite a few resources out there from  
15 academic sources and such that have kind of really  
16 done a lot of consideration of those with the goal of  
17 providing tools to the regulators and such.

18 **Proceeding Time 2:05 p.m. T12**

19 COMMISSIONER HAROWITZ: I'm trying to pin you down a  
20 little bit more.

21 MR. KARLEN: Yeah.

22 COMMISSIONER HAROWITZ: In the sense that there's lots of  
23 academics and/or other research organizations that are  
24 doing modelling. I'm looking at it from the  
25 perspective of saying someone in the private sector  
26 who is now having to put more skin in the game, do you

1           have a view as to which of those models are more --  
2           that you consider more representative or more in line  
3           with how you see the world? Any insights that you  
4           could give on that would be really helpful.

5 MR. KARLEN:       Yeah, I think the extent to which I can  
6           comment. There's the balance there, obviously. If  
7           you have one charger deployed, it's going to probably  
8           have higher utilization rates than if there's a bunch  
9           in the area that would arguably better serve EV  
10          drivers, right? And there's a balance there.

11                    I can't speak more specifically to that  
12          question at this time, but again if there's written  
13          comments, we could probably get those back to you.

14 COMMISSIONER HAROWITZ:    Okay, thank you.

15 MR. KARLEN:        Yeah.

16 COMMISSIONER FUNG:        Mr. Karlen, we have heard previously  
17          from other participants at these sessions that there's  
18          a concern with respect to not having several chargers  
19          at one site. So what is your view of that? That  
20          typically, you know, especially in remote areas, you  
21          drive up and you see a sign that says there's an EV  
22          charger, you pull up and it's not working. And the  
23          question is, why can you not simply put, you know, at  
24          the time of installation put more than one so that  
25          there's no single point of failure when you get there?

26 MR. KARLEN:        I mean, I would argue that probably that

1           should be happening, the extent to which there is an  
2           investment happening. And one, the incremental cost  
3           of having another would probably be a prudent thing to  
4           do. I mean, how many gas stations do you go to where  
5           there's only one fueling. That's not a thing. So I  
6           would agree with those sentiments, yeah.

7   COMMISSIONER FUNG:        Okay, thank you.

8   THE CHAIRPERSON:        Thank you, sir.

9   MR. KARLEN:            Absolutely. Yes.

10   THE CHAIRPERSON:        Much appreciated.

11   COMMISSIONER FUNG:        Don't be shy. Whoever comes up  
12           here gets the extra cookie, and that's mine, so you  
13           can have it.

14   THE CHAIRPERSON:        All right. Well, that seemed to work.

15   COMMISSIONER FUNG:        I knew that would.

16   **PRESENTATION BY MS. WILSON:**

17   MS. WILSON:            Well, I'm Donalda Wilson, W-I-L-S-O-N. I  
18           drive a gas guzzler. I pay for my gas with all those  
19           various levels of taxes, and I kind of object to my  
20           tax dollars feeding cars at the Cedar Hill Rec Centre  
21           because they've got a meter. I wouldn't mind if they  
22           were paying for it, but I'm paying for it. So I hope  
23           that eventually the electric car people will pay for  
24           their fuel, and we will be joining them in a year or  
25           two, and then I would prefer to be paying for my own  
26           way than somebody else paying for me to go from A to



1 B.

2 That's all.

3 THE CHAIRPERSON: Thank you, Ma'am. Any questions?

4 Thank you, Ma'am.

5 MS. WILSON: Cookie?

6 THE CHAIRPERSON: Yes, they're at the back. They're at  
7 the back.

8 MS. WILSON: Okay. Okay.

9 MR. BARTLEY: I'm back, Uwe Bartley. There's been some  
10 really good discussion and for me what I find since  
11 we're right in the midst of deciding on these charging  
12 stations, a building of 1200, how many charging  
13 stations do I put in? You know, you say there's an  
14 incremental charge, like when we're putting in four,  
15 or five, six. Yes, there is -- you know, there is an  
16 economy of scale but at a certain point it gets to a  
17 tipping point where it's too expensive. It's just not  
18 practical.

19 You know, like I've watched Camosun.  
20 They've just put a couple in. They put the four  
21 double stations in, and they seem to be -- some days  
22 you see absolutely nobody there for days. Other days  
23 you see the same car there on, you know, four days.  
24 So, it's going to be a bit convincing -- like some  
25 day, when I look at -- like I was saying we could have  
26 50, 60 cars a day there. I don't know how to rotate

1           them. I can't put 30 stations in because the cost  
2           would just be, you know, astronomical.

3                       The other question is with all the research  
4           going on, if I put a lot of money into it now, in two  
5           years is something coming out that's going to save me  
6           half the price?

7   **Proceeding Time 2:05 p.m. T13**

8                       You know, I've had that experience with a  
9           green building, where stuff came out, we jumped on it,  
10          and it cost us a lot of money to find out it didn't  
11          work. So I'm kind of -- you know, I can see where  
12          we're going and we need to go there, but I'm kind of  
13          hesitant about how do I convince and put the money in  
14          and support my infrastructure dollar requests in the  
15          long run?

16                      But other than that, there's been some good  
17          comments. I'm president of a strata too, so I know  
18          exactly what the strata pain is.

19   THE CHAIRPERSON:     Thank you, sir. Thank you.     So if  
20          there is -- yes?

21   **PRESENTATION BY MR. CALVELEY:**

22   MR. CALVELEY:         So my name is David Calveley, C-A-L-V-E-  
23          L-E-Y. I am now a private retired citizen and in the  
24          spirit of full disclosure, I've eaten two cookies.

25   COMMISSIONER FUNG:     Thank you for being honest.

26   MR. CALVELEY:         Well, you know. And a coffee, so, you

1 know, whatever.

2 I came here originally because our strata  
3 is looking at the trials and tribulations of a strata  
4 next door who are also struggling with having 12  
5 units. One person wants to put in a Tesla and who  
6 pays for what. And you know, eight of the twelve  
7 don't see any reason because we're already 90 years  
8 old and you know, we're never going to drive a car  
9 again anyway, so. All of those things that go on.

10 I do have something of a background in  
11 drive systems, drive systems for vehicles, trains, et  
12 cetera, and as I say, I'm now retired. But it did  
13 occur to me that we've heard this afternoon some  
14 discussion about what's happening to the depreciation  
15 rates, for example, for infrastructure when you put  
16 that stuff in. We will find -- and I would hate to  
17 see it leveled out as maybe somebody has suggested,  
18 that you amortize this by using BC Hydro and amortize  
19 it over 20 years. That's going to be a big problem  
20 because, you know, things are changing.

21 We developed -- the company I worked for  
22 developed a transit vehicle transmission. Nice people  
23 next door. Which wasn't full electric. Have now  
24 developed full electric, but at that time was hybrid  
25 but used super capacitors instead of batteries. And  
26 quite successful diesel super caps. Quite possibly in

1       the near future you'll run electric super caps because  
2       that's a very good marriage, as you do.

3                But be clear, you know, as we want longer  
4       range we're going to have to have better storage  
5       capacity, and you cannot fast charge. There are  
6       physical limits. I mean, you guys know that. You  
7       can't run a 500 kV line into a house and charge in  
8       five minutes. You'd generate so much heat you'd fry  
9       the vehicle, fry the house and everything else. So I  
10      do have a feeling that it is going to be private  
11      industry that looks at providing infrastructure  
12      outside the big cities.

13               It's very nice, the little town that I live  
14      in provides two or three charging stations. They  
15      don't charge for them. They hope tourists use them.  
16      They have no cost. In fact, they're almost  
17      permanently filled up with people who can walk to it,  
18      you know, within a couple of hundred metres and charge  
19      their cars. I mean, why wouldn't you? It's free.

20               But to do it out in some of the other  
21      places -- again your question as to why don't you put  
22      two or three in. If you are typically a small, let's  
23      say a 7-Eleven which had two gas pumps and you want  
24      now want to put in two units, or particularly fast  
25      chargers, you've got to think about the power factor  
26      that you're going to come up with. That's going to be

1 an issue because you start bending your overall power  
2 factor. You start then having to put in capacitors  
3 for power factor correction. That adds to the  
4 infrastructure cost, et cetera. So you've got to be  
5 able to recapture that. You don't get 5,000 cars an  
6 hour running along some of the little roads out in the  
7 middle of B.C. So necessarily the cost of the outlets  
8 there is going to have to be higher to recapture that  
9 cost.

10 That's just my opinion. So thank you very  
11 much.

12 THE CHAIRPERSON: Thank you, sir. Thank you, sir.

13 **PRESENTATION BY MR. HACKNEY:**

14 MR. HACKNEY: Good afternoon, Commissioners. My name is  
15 Tom Hackney, H-A-C-K-N-E-Y, and I'm representing the  
16 B.C. Sustainable Energy Association and the Sierra  
17 Club of B.C., and I'm not going to take a lot of time  
18 because as you probably know, our group is intervening  
19 already and we've made a written submission.

20 **Proceeding Time 2:16 p.m. T14**

21 I'd just like to commend the Commission for  
22 holding this inquiry. My groups regard this as very  
23 important part of the overall efforts of society to  
24 move toward a more sustainable lifestyle. So we  
25 encourage the Commission to address this and to think  
26 in the long term as one of the people have said.

1 THE CHAIRPERSON: Right, thank you.

2 MR. HACKNEY: On a personal note, I think my own  
3 intersection with electric vehicle charging is that  
4 I'm living in a condominium and I'm still stuck in a  
5 vehicle that burins gasoline and I have a bumper  
6 sticker that says, "My next vehicle will be an  
7 electric vehicle." And I'm trying to figure out how  
8 that's going to work with all the issues that other  
9 speakers have spoken of.

10 And so I'm certainly hoping that there will  
11 be -- I know you have your scope of issues that you're  
12 dealing with from the regulatory perspective. I'm  
13 hoping that the government will be more involved in  
14 expressing the direction, the policy direction that  
15 will be taken. And in any case I hope the Commission  
16 will be looking at all those aspects that are beyond  
17 its own immediate purview. So we've heard a lot about  
18 condominium situation, and there are many details  
19 there. And who knows, some form of class regulation  
20 may help to -- the condominiums and the owners of  
21 those condominiums to find their way through that maze  
22 of who pays what, and once a charger is installed how  
23 much can be charged for that. Conceivably the  
24 Commission could have a role in that. And if they  
25 don't, if it would be better handled at the level of  
26 the Strata Act, it's possible that the Commission

1           might have some good advice to government for the  
2           issues and how to address them.

3                           Thank you.

4 THE CHAIRPERSON:    Thank you, sir.

5 MR. BROWN:        I'm after the cookie.

6 COMMISSIONER FUNG:   I gave mine away, so you're going to  
7           have to hit somebody else up.

8 COMMISSIONER HAROWITZ:   Limited time offer.

9 **PRESENTATION BY MR. BROWN:**

10 MR. BROWN:        Okay. Okay, I've got nothing to say. No.

11                           My name is William Brown, brown is like the  
12           colour. I would like to first of all thank the  
13           Commission. I think this is a wonderful thing to have  
14           happening. I very much agree with the ideas of the  
15           Commission because of what happened with rural  
16           electrification in the United States. If you read  
17           about the chaos that they went through, it's  
18           horrendous. And with something like the Commission we  
19           should probably have a relatively thoughtful process  
20           going into this electrification. So that's the first  
21           thing.

22                           The second thing is I believe that there  
23           should be a mix of supported and free enterprise  
24           locations for electricity that people should be able  
25           to make a profit off of so that -- and yet when I talk  
26           about -- my wife about getting an electrical car, she

1        says, "Well, how can I go back and visit the kids in  
2        Smithers because there's no station between here and  
3        Smithers?" We would have to -- it would be a very  
4        long process.

5                        So it would be nice if there was logic put  
6        into these stations. British Columbia is a huge  
7        province. Electricity doesn't sit well with really  
8        long trips, so I would suggest that a Commission's --  
9        part of the Commission's job is to make sure that  
10       there is a system available for electric use.

11                       I guess a third thing is that I believe  
12       here's a paradigm shift coming, that people are  
13       actually becoming more conscious of their carbon  
14       footprint and that it's early days, but I think that  
15       all the talk about fossil fuels, all the talk about  
16       carbon problems in the air, that's having an effect.  
17       And the effect in the long run, say five to ten years  
18       down the road, will be that carbon will be almost like  
19       a moral issue. People will say, "You know, I think  
20       I'll do the thing that has the lower carbon  
21       footprint."

22    **Proceeding Time 2:21 p.m. T15**

23                        So once again, that doesn't fit exactly  
24       with the profit motive and once again I think there's  
25       a reasonable pathway through this that the Commission  
26       can think about.





1 air conditioning and I will go and cook dinner, and  
2 all of those things together are going to give us an  
3 accentuation of the current situation of peaks at  
4 certain times of day and will do nothing to solve the  
5 valleys and level out the capacity unless time of day  
6 charging is put in. And that's really all I wanted  
7 to say. Thank you.

8 THE CHAIRPERSON: Thank you, sir. Okay, so I think  
9 we've probably heard from everybody now. Oh, sorry.

10 MR. SCOTT: A late arrival. I've got a couple of things  
11 to pass on to you, perhaps. I'll try and guide myself  
12 through so. Do you mind?

13 THE CHAIRPERSON: And if you could just state your name  
14 and spell your last --

15 MR. SCOTT: (off microphone)

16 **PRESENTATION BY MR. SCOTT:**

17 MR. SCOTT: Good afternoon, folks. My name is Don  
18 Scott and I appreciate the opportunity to come before  
19 you and to give you a few words of -- I don't know if  
20 it's advice. Opinions more than anything, I suppose.

21 But I'm relatively new to electric  
22 vehicles, and the use of them, and I think I can share  
23 a little bit of my experience with you on the  
24 vehicle's usage. And one of the things that I would  
25 like to mention as far as for charging is that a lot  
26 of people are concerned about needing level 2 chargers

1 and more frequent access to them. I certainly think  
2 that's a big requirement for doing any kind of travel  
3 of the city. Most electric vehicles on the road today  
4 are basically city cars, and there is a few of the  
5 very expensive ones that will take you longer  
6 distances, like the Teslas, but as you know, the vast  
7 majority have a range of 140 to 200 kilometres, and  
8 you can easily do that, or part of it at least within  
9 a day.

10 But as far as the charging goes, I just use  
11 my 110-120 socket at home and I've consulted with  
12 electrical engineers as to what is healthiest for the  
13 batteries to the car, for a lithium ion batteries.  
14 There's many myths out there. And they said one of  
15 the best things you can do, actually, is charge them  
16 with the 110, because there's very little heat  
17 generated and heat is the enemy of the batteries.  
18 Whereas if you go to the very high charging stations,  
19 the quick chargers that have like 50 amps, 60 amps,  
20 you get a lot more heat generated into the battery and  
21 you can get battery degradation.

22 Even at that, I know of people who have  
23 used quick chargers regularly and in our temperature  
24 it doesn't seem to be much of a bother for them or  
25 difficulty. When you are into warmer climates, places  
26 like Arizona where your daytime temperatures can be in

1 the high 30s and the low 40s and even higher last  
2 year, it becomes a major problem. Because the  
3 batteries do over heat and there's no way of cooling  
4 them down unless you have an onboard -- some of them  
5 have onboard air conditioners that cool the batteries.  
6 Tesla has that, for example.

7 **Proceeding Time 2:26 a.m. T16**

8 But when you're trying to go anywhere, and  
9 I've only made one out of town trip so far, I've only  
10 had it since November. And I wanted to get up to  
11 Nanaimo, so I headed off and I started off with a full  
12 charge, which gives me about 140 kilometres.

13 THE CHAIRPERSON: What kind of as vehicle is this,  
14 sorry?

15 MR. SCOTT: It's a Leaf.

16 THE CHAIRPERSON: A Leaf.

17 MR. SCOTT: Yeah, it's a 2014 Leaf. And so, the  
18 highest charge I've had on it so far with full 12 bars  
19 is about 140, 144, something like that. So, I head up  
20 the Malalhat and all of a sudden, I'm dropping off  
21 from 140, to 120, 110, 90 and I've only gone 25  
22 kilometers. So -- or not 140 but -- yeah, 140. By  
23 the time I got to the base of the Malahat it was about  
24 120 I think, and then by the time I got to the top of  
25 the Malalhat it had dropped down to about 75. So, but  
26 then when I got down to the other side of the Malahat

1 I was back up to about 90. So, it recharged enough as  
2 you go down the other side of the hill.

3 But I ended up stopping for about three  
4 quarters of an hour in Duncan, just to be safe because  
5 I wasn't sure what the charging station availability  
6 was north of there. Checking online beforehand, it's  
7 difficult to -- or if you go on to some of the online  
8 services you can find where these things are. But  
9 they're not that obvious, they don't advertise  
10 necessarily. Some places have them but other places  
11 don't. And there's not very many. Like in Ladysmith  
12 there's one charging station with two chargers, and  
13 one of them is broken, I found out on the way back.  
14 So that becomes a difficulty, but in Duncan there were  
15 several of them, so I got it charged back up there.

16 And then I made it easily to Nanaimo, did  
17 my stuff there and then coming back I thought I better  
18 stop at Ladysmith, and that's a great opportunity to  
19 have supper. So, I found a great little restaurant in  
20 Ladysmith, plugged into the one that was working. By  
21 that time I was down to about 35 or 40 kilometer  
22 range, that's what it was indicating. So I charged it  
23 for two hours and I was back up to about 125, I think,  
24 declared range at least on the dash. And, so I  
25 started off, and once again now I'm climbing up the  
26 Malalhat again and it dropping, dropping, dropping,

1           and when I got to the top of the Malalhat I think it  
2           was 39. And then, by the time I got home, after  
3           charging it going down the Malalhat, I was still at  
4           about, somewhere's around 30.

5                        So, when you're traveling with an electric  
6           car, especially the smaller ones, you need to have  
7           some level of confidence that there are charging  
8           stations along the way that have access points. And  
9           we just don't have near enough of those in most of the  
10          Island. I try to go to Tofino, I don't think it's  
11          possible, for example. There's a couple of charging  
12          stations in Port Alberni, but you would have to  
13          basically stop somewhere's around Nanaimo, again in  
14          Port Alberni and have a full charge and hope and pray  
15          you can get to the intersection up near -- not to  
16          Tofino but to the town before that, to Ucluelet, and I  
17          think there's a couple of charges there. But they're  
18          on private property. So, unless you're staying at  
19          those hotels you may not have access to them.

20                       So, the main thing I wanted to raise is  
21          just the need for more reliable access points along  
22          the way within our road systems throughout B.C. In  
23          one of the little tables I've given you, this one  
24          here, if you look at it, that's basically -- last  
25          night I took a look at my CO<sub>2</sub> emissions on all my  
26          vehicles for the last decade. So, you can see which

1 vehicles I had and how much emissions were contributed  
2 by each of those vehicles, and this is because I have  
3 a bit of an anal thing with energy consumption. I  
4 track my vehicles every time I fill them up, how much  
5 -- how far I've gone and how much fuel I've used and I  
6 calculate the emissions on that as well. So you can  
7 see it's dropping off dramatic, 2018 of course it's  
8 only a third of a year but you can see that there's a  
9 little tiny dark line on top of the orange on 2018 and  
10 that's the Leaf, and that's three months of driving  
11 the Leaf. You can hardly see the line, it just looks  
12 like the amount of actual kilowatt hours. I'm not  
13 sure if I have that here --

14 THE CHAIRPERSON: So, what are the emissions from the  
15 Leaf, then?

16 MR. SCOTT: Basically, using electricity, our  
17 electricity is around 95, 96 percent generated by  
18 Hydro. So, in hydro generation estimates on it are  
19 something like 24 grams per kilowatt hour.

20 THE CHAIRPERSON: Okay.

21 MR. SCOTT: So, in my -- my vehicle uses 6 kilowatts --  
22 or 6 kilometres per kilowatt hour.

23 THE CHAIRPERSON: Okay, thank you.

24 MR. SCOTT: So, you can work it out from that, but it's  
25 tiny.

26

**Proceeding Time 2:32 p.m. T17**

1                   I think altogether that represented -- I  
2           don't think -- I didn't bring that with me, sorry.  
3           All together -- I don't have it, I'm sorry. But it  
4           was -- like, it's just a few kilos. Like 15 kilos or  
5           something.

6   THE CHAIRPERSON:    Sure.

7   MR. SCOTT:    And that's a vehicle -- the only vehicle I  
8           basically drive now. Our other vehicle that we still  
9           have is a Prius, and my wife uses that most of the  
10          time. And before, we tried to use that more often  
11          than the other to keep our emissions down.

12                   But this is just to show how key electric  
13          cars are going to be to our future. And we should --  
14          we have a wonderful opportunity in B.C., having a  
15          provincial utility like BC Hydro that provides  
16          electricity. And for us to ignore the capacity of  
17          that, to be able to revolutionize, if you wish, or  
18          change the opportunity for how we drive our vehicles,  
19          is really, I think a -- we're lucky to have that kind  
20          of an opportunity. And we should take advantage of  
21          it.

22                   When you look at -- when the world already  
23          has exceeded now 400 parts per million in CO<sub>2</sub> in the  
24          atmosphere, historically it was around 200, 225.  
25          That's a doubling of it basically in the last 60  
26          years. And when you go back in geologic times, the



1 last time we had that kind of emissions, you go back  
2 millions and millions of years. Incidentally, before  
3 humans were around. And in the early evolution of  
4 many of the mammals.

5 So, it hasn't -- the numbers are there, but  
6 the change -- the heating of the earth hasn't happened  
7 yet. And it's happening very, very gradual. And it  
8 takes an awful long time. It takes something like  
9 over 1,000 years for that CO<sub>2</sub> to get reabsorbed back  
10 into the oceans and into the plants on terrestrial  
11 earth.

12 So, this is something we're going to -- our  
13 grandchildren, great-grandchildren, and 15 generations  
14 down the road are going to be dealing with far more so  
15 than us. We're the lucky ones. We've created the  
16 problem but we're not going to live to see the  
17 consequences of the problem that we've created.

18 So, having BC Hydro -- I did some  
19 calculations in a presentation that you can see on  
20 Site C, of the potential to power vehicles -- our cars  
21 that we drive, our cars and light trucks and SUVs that  
22 we drive in B.C., that we could with the amount of  
23 electricity that Site C is going to generate, we could  
24 power almost the complete fleet of vehicles in B.C.

25 Now, when I was doing my Site C  
26 presentation, I said it wasn't necessary, because if

1 we converted homes in B.C. that use baseboard heaters  
2 and electric furnaces to heat their homes, over to  
3 high-efficiency heat pumps, we would save more energy  
4 than Site C will generate. So, about 3700 gigawatts.  
5 And that would supply 85, 90 percent of the vehicles  
6 on the road today.

7 Now, one of the things -- there's another  
8 little table I've given you there, and I think I've  
9 given you all of my -- there's some black and white  
10 ones, but the colour ones you should look at. And  
11 this is a history of vehicle sales in Canada.

12 It's a whole bunch of little charts. And  
13 if you look on those, this is StatsCan data, and it  
14 looks at car sales since 1990, versus truck sales.  
15 Trucks, under StatsCan's definition, basically is  
16 everything that's not a car. So it includes SUVs,  
17 large and small. Most of those are half-ton trucks,  
18 and it includes vans as well.

19 So you can see we as consumers, someone  
20 mentioned earlier, are about -- people are starting to  
21 wake up about the impacts of climate change and our  
22 patterns of use. We're not going in the right  
23 direction. As you can see, we haven't -- I think  
24 since 2007, 2008, when the recession hit -- or the  
25 financial crisis hit, it was the only year in the last  
26 15 years or so where we've sold more cars than trucks.

1                   So, the consumer in every province of this  
2 country is moving overwhelmingly towards what are  
3 classified as trucks.

4                   Now it doesn't matter -- a small SUV, say a  
5 RAV4, uses about 30 percent more fuel than the car  
6 that it's based on, which is the Corolla. So even  
7 those of us who buy small, more fuel-efficient SUVs,  
8 the cars that they're based on are much more fuel-  
9 efficient. And when we move towards electrifying the  
10 fleet, presently there are very few trucks -- there  
11 are no trucks yet on the market that are SUVs -- or  
12 that are electric -- but they're coming. Of the small  
13 SUVs at least. And of course Tesla has announced its  
14 plans to make a half-ton truck if they can ever get  
15 the other cars produced. We'll wait a bit on that  
16 one.

17   **Proceeding Time 2:37 p.m. T18**

18                   But the point I'm trying to make is that  
19 for us to make that transition is going to be a huge  
20 societal change, because most of us are very much  
21 enamored with driving big things, even though most  
22 trucks hardly ever see a dirt road or gravel road, we  
23 have them -- you look at all the dealerships here,  
24 look at the one across the street, you'll have to look  
25 for a car amongst all the trucks that are on display.  
26 And it's the same in all the dealerships. That is

1           what they're selling, that is what they're making most  
2           money, that is what they promote. You look in any  
3           newspaper advertisements, you won't see any  
4           advertisements for electric cars, and you'll see very  
5           few advertisements for cars itself alone as compared  
6           to high consuming vehicles.

7                         The other mixed up little table I've given  
8           you here is a summary of my electric use, electrical  
9           use in my home, and the blue -- or the purple lines,  
10          those are days that I've plugged in at home to charge  
11          the vehicle. The small nexus and the small lines are  
12          where I've charged into commercial facilities and  
13          charged, so they don't show up necessarily on my home  
14          billing, but they are on there because it's the number  
15          of hours that I've charged the vehicle with.

16                        So, the green line jumping up and down is  
17          my kilowatt hour consumption. The red line is the  
18          temperature. And so you can see where I've plugged  
19          the car in for a long number of hours, like 12 hours,  
20          14 hours. The electric consumption generally goes up,  
21          but it doesn't necessarily go up as usually those  
22          swings are more attributed to the drop in temperature  
23          then they are me plugging my car in.

24   THE CHAIRPERSON:    You have electric heat in your house?

25   MR. SCOTT:        I have a high efficiency heat pump in my  
26                       house. So we have electric heat, correct.

1                   So, the energy consumption -- our house, by  
2                   the way, it consumes less than a thousand kilowatt  
3                   hours a year, total energy demand in our house, and it  
4                   was about 2500 about 10 years ago, before we made the  
5                   changes. And we used to have an oil furnace, believe  
6                   it or not, but we are using less electricity when we  
7                   moved from oil to a high efficiency heat pump than we  
8                   did -- then we used when we were heating with oil.  
9                   And I think part of that is that our heat pump is more  
10                  efficient than the old oil furnace was, just the  
11                  burner on the oil furnace. And some other factors  
12                  that have contributed to that as well, but that's --  
13                  it's not the easiest thing to explain, but generally  
14                  it is just a very, very efficient unit.

15                 So, getting to your particular questions  
16                 that you're asking on this is, do your EV charging  
17                 stations operate in competitive environment in B.C. or  
18                 are they a natural monopoly service? I don't think  
19                 they are a natural monopoly, but I think BC Hydro is  
20                 absolutely foolish not to enter the market. And they,  
21                 you know, they have the infrastructure. They have got  
22                 substations all through the province. Most of those  
23                 substations, a good number of them are locations along  
24                 highways that could be very easily and cheaply, in  
25                 comparison, have charging stations set up alongside of  
26                 those.

1 I don't think it's necessary to be a  
2 monopoly. They should be able to -- Hydro should be  
3 able to sell electricity to third parties who then  
4 resell to the consumer, and that will increase  
5 significantly the number of opportunities that are out  
6 there.

7 I think most people are still going to  
8 charge at home, and you're charging -- I know using  
9 the public stations are going to be mostly used, I  
10 would think, by most people, by when they are  
11 travelling extensive distances, or outside of the city  
12 itself. Because there's very little need to use them  
13 when you're charging at home, even if you're just  
14 using a 110 circuit. I know there is assistance for  
15 people to put in 220 circuits at home, but if I'm  
16 going to be charging my car over night, I don't need  
17 to do it in three hours. So it doesn't make a  
18 difference for me whether it takes 10 hours, because  
19 I'm sleeping anyway, or watching TV or whatever else,  
20 or doing presentations, preparing tables, tracking my  
21 energy use.

22 Should you regulate the services? I think,  
23 I don't know that that is going to be that critical.  
24 I don't think it is your biggest issue that you have  
25 to deal with, but it may be beneficial. And I say  
26 that because of the lack of regulations around the oil



1                   So it's a requirement, you know, that  
2                   people have the much more expensive services. I  
3                   happen to have a very inexpensive cell phone service  
4                   at 28 bucks a month and I'm not willing to go to 60  
5                   bucks a month so I can have the internet access and  
6                   use as I go. It doesn't make sense. For me at least.

7                   But it would be nice to have some way,  
8                   either with a card -- like there are little cards that  
9                   I have for Flow and for Charge It, that I tap onto the  
10                  window of the charger and it automatically knows who I  
11                  am, sets the thing up, and I plug in. And then when I  
12                  get home it will tell me how long I've been plugged in  
13                  and what my kilowatt hours use was and if there's a  
14                  charge, what it is. And it goes automatically into my  
15                  credit card. And that's the sort of system it makes  
16                  sense to set up in these things anywheres you go.

17                 The rates on these ones I understand are  
18                 something like 30 cents per kilowatt hour, which to me  
19                 is excessive. Now, I know that they are also very  
20                 expensive to install, the fast chargers. We don't  
21                 have very many of them here. If you go down to  
22                 Portland, go along the coastal highway in Oregon and  
23                 Washington State, there is a few places. In Seaside  
24                 Tesla has a super charger station and they've got like  
25                 six superchargers there.

26                 But those are incredibly expensive to



1 install and it's going to have to be a higher rate to  
2 using them. I fully accept that, but at 30 cents a  
3 kilowatt hour I think the financial advantage of  
4 having an electric car kinda disappears, and that if  
5 it was at a rate of two-thirds of that, or half of  
6 that, it would make a lot more sense.

7 For the rates, if you are thinking of a  
8 differential rate for apartments or various other  
9 places, I think probably looking at putting in a two-  
10 tier rate -- or a tier 2 rate, which is now at 13  
11 cents a kilowatt hour, is probably a wise way to go as  
12 opposed to trying to equal it to the tier 1 rate that  
13 BC Hydro charges. So I don't think that would be an  
14 impediment.

15 And right now for the electric car owners  
16 and for people coming on board, one of the biggest  
17 anxieties that people have is range anxiety, as they  
18 call it, and they don't -- the best way to ameliorate  
19 that, in the interim until we have larger range  
20 vehicles coming on and larger into the market, is to  
21 have a greater access to charging stations so people  
22 have more places along the way to charge.

23 So that's what I basically wanted to share  
24 with you. Some of the stuff is just to show you how  
25 dramatic our carbon reductions can be with electric  
26 vehicles. In B.C. 40 percent of CO<sub>2</sub> emissions are

1 transportation related. I'm not sure what portion of  
2 that is cars and trucks but I imagine the bulk of it  
3 likely is. Probably 75 percent of it would be. I'm  
4 not talking about the big transport trucks, but  
5 they're coming to. But if we want to do anything for  
6 reducing the emissions as a province, you can't ignore  
7 the transportation sector and when you have a utility  
8 with the capacity of BC Hydro, as well as introducing  
9 more energy conservation measures so that you use the  
10 electricity that we have now far more wisely than we  
11 do -- and I think my home experience is definitely to  
12 that. My proposal for Hydro to have a program for --  
13 and the province to get people to convert baseboard  
14 heater homes -- homes heated with baseboard heaters  
15 which are very very inefficient, to move them over to  
16 high efficiency heat pumps with the utility or the  
17 province financing that, and the person paying it back  
18 by essentially keeping to the pay old bill until the  
19 differential would go to paying down the Hydro bill.

20 So if you are spending -- if your old bill  
21 is \$300 a month, you keep paying 300 bucks a month but  
22 you are using a hundred bucks a month, that \$200 goes  
23 to paying the loan for the upgrade to the house for a  
24 more efficient system. And that would free up, as I  
25 say, enough electricity to supply all the electric  
26 vehicles or convert all of our vehicles to electric.

1 Which isn't going to happen overnight, but my guess --  
2 China's looking at producing something like 6 million  
3 a year. It's a lot of electric cars. So they're  
4 going to -- our industry here that doesn't move with  
5 it is just going to die.

6 **Proceeding Time 2:48 p.m. T20**

7 We won't have -- we have hardly any auto  
8 industry left in Canada as it is and almost all the  
9 stuff we produce in Canada, except for Toyota and  
10 Honda, are gas guzzlers. And I think their days are  
11 really, really numbered. And to me the smart move is  
12 to facilitate the move to move electric vehicles,  
13 charging stations are a key part of that transition.

14 Thank you very much for your time. Do you  
15 have any questions at all or --

16 THE CHAIRPERSON: Thank you very much, sir.

17 MR. SCOTT: Okay. You're welcome.

18 THE CHAIRPERSON: Okay, there's a newcomer. Did you wish  
19 to say anything?

20 So I think we've all have a very good  
21 opportunity to hear what your views are and we really  
22 appreciate everyone coming out and sharing that  
23 information with us. I wish you all a safe drive  
24 home, electric or otherwise and once again, thank you  
25 very much.

26 **(PROCEEDINGS ADJOURNED AT 2:49 P.M.)**

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**VICTORIA, B.C.**  
**April 9<sup>th</sup>, 2018**  
**Evening Session**

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

THE CHAIRPERSON: Good evening, ladies and gentlemen. My name is Dave Morton and I'm the Chair of this Panel that's conducting the Electric Vehicle Charging Service inquiry. I'm also the Chair of the Commission. And with me is Anna Fung and Howard Harowitz. They are -- between the three of us we form this panel and we'll be reviewing the evidence in this inquiry and issuing the report.

I would like to thank everyone for coming tonight and we look forward to hearing your views.

We're just going to take few minutes, though, before we get started or before you get started and we have some staff here that are going to -- first of all Patrick's going to go through a little bit of general information about the Utilities Commission and then secondly about how you can get involved in this inquiry. And then Josh I think is going to give his presentation, a little bit of background of this inquiry itself.

So Patrick, please go ahead.

**(PRESENTATION GIVEN BY PATRICK WRUCK)**

**(PRESENTATION GIVEN BY JOSHUA O'NEAL)**

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

2   **Proceeding Time 6:10 p.m. T22**

3 THE CHAIRPERSON:   Thank you. Thank you, Patrick. As  
4                   Patrick said, and this is where we turn it over to  
5                   you, and we ask if you have a comment, please come  
6                   forward to the podium, state your name and spell your  
7                   last name so that the transcribers can get it right,  
8                   and please go ahead, anyone that has -- thank you,  
9                   sir.

10   Good evening.

11 **PRESENTATION BY MR. SUNSHINE:**

12 MR. SUNSHINE:    My name is Rafe, and that's R-A-F-E, and  
13                   the last name is Sunshine, just like it has been out  
14                   today.

15 THE CHAIRPERSON:    Yeah.

16 MR. SUNSHINE:    Believe it or not, I'm part of the B.C.  
17                   Sustainable Energy Association.

18 THE CHAIRPERSON:    Okay.

19 MR. SUNSHINE:    So, I know that probably Tom Hackney has  
20                   made some presentation.

21 THE CHAIRPERSON:    He did, yes.

22 MR. SUNSHINE:    I am part of the steering committee and,  
23                   as such, we have been approached by Mayor Lisa Helps  
24                   to try and give some positive actions that the city,  
25                   the municipality, can do to arrive at 100 percent  
26                   renewable energy by 2050.

1                   Now, as -- believing in sustainable  
2                   alternative energy technologies, I am very much aware  
3                   that the power for change is at the municipal level.  
4                   The government, both federal and provincial, look to  
5                   the municipalities to carry forth the kind of actions  
6                   that can bring about 100 percent renewable energy.

7                   Now, I have been considering this for quite  
8                   some time. And we need downtown charging stations --  
9                   or parkades. There is more and more need for parkades  
10                  in the city of Victoria, and probably throughout many  
11                  other cities. If the parkades were to be, you know,  
12                  having rechargers for electric vehicles, I'm certain  
13                  that more people would make it part of their lifestyle  
14                  change to actually become part of the renewable energy  
15                  movement.

16                  Also, I believe that changes in the city,  
17                  so that there can be electric-vehicle-only lanes, or  
18                  streets, on secondary streets, so that, okay, we've  
19                  got ICE, internal combustion engines, but we want to  
20                  phase them out. And the best way to phase them out is  
21                  to get -- give preferential treatment to the electric  
22                  vehicles for access from one point to another.

23                  I believe also that there are e-bikes, and  
24                  this would be -- and other electric vehicles. And  
25                  having parking where -- a parking meter that actually  
26                  provides a charge for that electric vehicle, whether

1           it be an e-bike, whether it be an electric vehicle car  
2           or a truck, it would be really essential to the change  
3           in the lifestyle that people are looking towards, to  
4           be responsible for our emissions here in B.C.

5                       And finally, I believe that there is also a  
6           change in the way we will be travelling. I've just  
7           come down from Courtenay to various -- you know,  
8           through various communities. And I'm using an  
9           internal combustion engine, bad on me. But, I look  
10          forward much more to the idea that there would be  
11          hotels and motels that would provide the electric  
12          charging system, so that people that are going up and  
13          down the island, or across the province, they would  
14          actually be able to stay the night and have reasonable  
15          charging fees for their electric vehicle.

16   **Proceeding Time 6:15 p.m. T23**

17                       So those are just some of the ideas that  
18           I've run across in my travels as a member of the B.C.  
19           Sustainable Energy Association. Thank you for  
20           listening.

21   THE CHAIRPERSON:     Thank you.     Thank you, sir.

22   **PRESENTATION BY MR. MYRANS:**

23   MR. MYRANS:           Good afternoon. My name is Iain Myrans,  
24                       that's M-Y-R-A-N-S. I'm here on behalf of Tesla  
25                       Motors.

26   Thanks to the Commission for allowing me to

1           come tonight and provide some remarks today. I lead  
2           Tesla's policy, regulatory and public affairs work for  
3           the company here in Canada. As many of the folks here  
4           in the room will be aware, our missions is to  
5           accelerate the transition to sustainable energy. To  
6           this end Tesla research, design, manufacture and sell  
7           electric vehicles, as well as solar and energy storage  
8           products.

9                         We operate one of the world's largest DC  
10           fast charging networks with over 1,000 supercharger  
11           stations and 9,000 supercharger connectors world-wide.  
12           Additionally we manufacture and deploy level 2  
13           charging stations and connectors working with  
14           Sitehouse in both the public and private sectors.

15                        Throughout my presentation I'll refer to  
16           stations and connectors. At Tesla when we talk about  
17           stations, we're referring to a location that may have  
18           multiple connectors. That's typically the way that we  
19           develop these sites.

20                        In addition to our three retail stores here  
21           in British Columbia, and our vehicle servicing  
22           operations, we operate ten supercharger locations or  
23           stations here in the province with over 78 DC fast  
24           charging connectors. We also help to deploy over 190  
25           public access level two connectors across B.C. at  
26           about 100 locations.



1                   We have extensive experience across North  
2                   America and around the world and are more than happy  
3                   to share this expertise with the Commission.

4                   It's Tesla's view that EV charging really  
5                   represents an end-use service and that such services  
6                   don't equate to transmission distribution or retailing  
7                   of the commodity electricity. I'll speak to this more  
8                   in a moment. It's also our view that the existing  
9                   market for EV charging services here in British  
10                  Columbia is competitive in nature. There are several  
11                  business models already operating in the province and  
12                  consumers do, indeed, have choice. And it's important  
13                  to note that for many, not all consumers, they also  
14                  have the choice to charge at home.

15                  Any attempt to regulate a specific business  
16                  model or to define private charging developers as  
17                  utilities could slow investment and would almost  
18                  certainly slow the development process if another  
19                  level of approvals is required before stations can be  
20                  constructed.

21                  Tesla is not opposed to utilities  
22                  participating in the charging marketplace. Indeed,  
23                  the more charging that can be built and the faster it  
24                  can be developed, the better. More EV charging  
25                  services will support more EV adoption here in British  
26                  Columbia.

1                   In less competitive segments of the market,  
2                   such as inside multi-unit residential buildings,  
3                   existing buildings that the province is doing a lot of  
4                   work on, new buildings -- or certainly at the  
5                   municipal level they are. And in northern and more  
6                   remote areas of the province, utilities can play a key  
7                   role if they are permitted to enable much needed make-  
8                   ready infrastructure. So this could take the form of  
9                   electrical servicing power capacity upgrades for  
10                  multi-unit buildings and preparing sites highway side  
11                  for DC fast charging.

12                  It's worth noting that the current rate  
13                  structure in B.C. does not particularly encourage the  
14                  development of DC fast charging, particularly in  
15                  smaller and more remote communities where the demand  
16                  charges associated with charging activities, where  
17                  there may only be a few site visits in a given month,  
18                  can result in hundreds of dollars in operating costs  
19                  per vehicle over the course of a month for very few  
20                  kilowatt hours delivered.

21                  This has been addressed in the U.S. in some  
22                  places through demand charge holidays, or by creating  
23                  special EV charging rate classes for charging service  
24                  providers and this could be done broadly or within  
25                  targetted areas.

26                  Tesla also encourages the Commission to



1 rate in that province. We certainly encourage the  
2 Commission to consider following that path, and  
3 working to avoid creating a patchwork or different  
4 regulatory policy when it comes to EV charging in  
5 Canada.

6 We welcome and encourage broad  
7 participation in the EV charging market place. And  
8 certainly, you know, would be happy if there are  
9 further questions with regard to roles of different  
10 parties, I can answer those. We also think that the  
11 Commission will have ample opportunity going forward.  
12 These are relatively early days for EVs, so at this  
13 point, you know, there is ample opportunity to  
14 continue to monitor and step in when and if needed  
15 going forward.

16 In the meantime, the Commission can  
17 certainly support EV adoption right away by enabling  
18 utilities to install make-ready infrastructure for EV  
19 charging, and by exploring alternative rate structures  
20 for high power stations.

21 Any steps, however, that would have a  
22 direct or unintended consequence of restricting  
23 participation in the charging market, or which would  
24 delay the development process for EV charging  
25 stations, would likely hinder EV adoption here in  
26 British Columbia, and would work against climate

1 change and clean air objectives.

2 So that really wraps it up, but thank you  
3 very much for hearing the comments.

4 THE CHAIRPERSON: Thank you sir. I have a question. You  
5 stated that you think that it is a competitive market  
6 and should be allowed to develop and operate as a  
7 competitive market. I'm paraphrasing, but that -- and  
8 it is alright for established utilities to participate  
9 in that market.

10 I wonder if you have any comments around  
11 how a utility should, or could be allowed to  
12 participate in that market? One of the issues about a  
13 regulated utility participating in a competitive  
14 market is the issue of cross-subsidization, and the  
15 fact that all of the utilities ratepayers could  
16 possibly be financing the capital costs of EV  
17 infrastructure. And that may be unfair to a private  
18 competitor in the market. Do you have any comments on  
19 that? Or do you see that as positive because it would  
20 -- it could increase infrastructure build-out and  
21 adoption?

22 MR. MYRANS: So I think first of all, from a make-ready  
23 standpoint, the back-end infrastructure that is  
24 necessary to support charging? That has broad  
25 benefits for a broad range of ratepayers over a long  
26 period of time. So, I don't think that we see any

1 issue there.

2 Yeah, as we said, the more participants in  
3 the market right now the better, including utilities.  
4 Whether or not utilities should be investing in the  
5 front-end charging services, you know, on the rate  
6 base, or whether that should be done through their  
7 non-regulated business, in our comments that we filed  
8 last month, we suggested that perhaps the best  
9 solution there is to have them do that through their  
10 non-regulated business, but ultimately that is  
11 obviously something that the Commission will need to  
12 consider.

13 THE CHAIRPERSON: Understood. Thank you.

14 COMMISSIONER HAROWITZ: Thank you for that. A couple of  
15 questions, not particularly related to each other. Do  
16 you have, or would you be willing to share with us  
17 what kind of ratios you use for number of charging  
18 stations per 1,000 vehicles? Or however you benchmark  
19 that from a perspective of saying, so, if we were  
20 thinking, you know, into the future that there are x-  
21 million EVs out there in B.C., do you have a model, or  
22 a way that you guys work to translate that into what  
23 you think, not just Tesla stations necessarily, but  
24 what that infrastructure looks like?

25 MR. MYRANS: Yeah, it's a great questions. So when our  
26 charging teams look at developing supercharger

1 projects, we typically, you know, there are obviously  
2 certain constraints, available power, and so on. But  
3 we typically try to plan for the peak --

4 **Proceeding Time 6:25 p.m. T25**

5 We have experienced elsewhere in Canada  
6 where we've done -- built too few stations, they  
7 become congested, and we have -- including one project  
8 here in B.C., we've had to add additional connectors.  
9 So we do try to plan for the peak.

10 Of course when we develop sites we do have  
11 a good sense of how far our cars can travel because  
12 they are Tesla vehicles, so we do plan to make sure  
13 that our customers, our drivers can get from point A  
14 to point B along these corridors in all weather  
15 conditions. But we don't have -- as far as I know we  
16 don't have a specific metric. I'd be happy to look  
17 into that and get back to you.

18 COMMISSIONER HAROWITZ: Okay. And related to that, do  
19 you have a sense -- we've heard this afternoon and at  
20 other times questions around amortization timelines  
21 for infrastructure. Do you have a sense of the rate  
22 at which the technology, yours and/or in general, are  
23 changing such that, you know, is it five years for a  
24 station? It's is three? Is it -- you know, what's  
25 the timeline in which one might consider -- or what's  
26 the boundaries around that before it's leapfrogged

1 with another technology?

2 MR. MYRANS: Yeah, that's a great question. I'd be happy  
3 to check with our charging teams and get back to you.  
4 I don't know the answer on the amortization period.

5 COMMISSIONER HAROWITZ: And third and last, we also heard  
6 from folks about that right now -- they talked about  
7 it in terms of payment and participation at various  
8 charging stations. I want to turn that question  
9 slightly a bit first, that, you know, you otherwise  
10 have to have your membership card in this one, that  
11 one in the other one, and some people are advocating  
12 creating a payment system that is universal and simple  
13 to access, so that however it is that you pay it's  
14 much the same as a gas station, your credit card or  
15 your dollar is good regardless of which station you go  
16 to.

17 I'm wondering if you have -- you know, how  
18 you feel about the role of regulation or otherwise in  
19 creating the notion that any station can charge any  
20 vehicle. Now, I know you have some proprietary  
21 technology, but it seems to me that that in some ways  
22 comes up against the notion of the more the better,  
23 but I'd be interested in just your comments on that.

24 MR. MYRANS: Sure. I may ask you to clarify a few points  
25 there. I will say that with -- you mentioned a  
26 proprietary connector. We are more than happy to



1 speak with other automakers who may want to use the  
2 connector. We have the connector we do because when  
3 we started producing long-range electric cars there  
4 were no other viable options, CCS and CHAdeMO just  
5 couldn't provide the amount of power that would  
6 conveniently charge the car fast enough. I know that  
7 at the beginning of the presentation today we had a  
8 breakdown of level 1, 2, and 3, you know, and how long  
9 it takes to charge. It's very depend on the battery  
10 capacity in the vehicle and sometimes those metrics  
11 can be better expressed in range per half hour, range  
12 per hour provided.

13 Could you perhaps restate or clarify a  
14 couple of your other questions?

15 COMMISSIONER HAROWITZ: Well, I think you perhaps gave  
16 part of an answer to that, which is that Tesla would  
17 be prepared to work with other manufacturers or others  
18 to find ways to -- that your charging stations, for  
19 example, could be accessed by not -- the supercharging  
20 stations by not just a Tesla vehicle, is that what I  
21 heard you say?

22 MR. MYRANS: We're certainly open to conversations with  
23 them using our connector, the actual connector for  
24 their own vehicles and so forth. At this point the  
25 supercharger network is just available to Tesla  
26 drivers.

1 COMMISSIONER HAROWITZ: Thank you.

2 MR. MYRANS: Yeah. I'm not aware of any plan at this  
3 point to change that.

4 COMMISSIONER FUNG: Mr. Myrans, I'm wondering, could you  
5 educate me a bit. Could a Tesla driver use Level 1  
6 charging at home as well as Level 2 charging? It just  
7 needs a different prong, as I understand it.

8 MR. MYRANS: Yeah, the cars come with a kit that allow  
9 you to use either Level 1 or Level 2 using essentially  
10 a NEMA 14-50 stove plug or a regular 110 outlet.

11 COMMISSIONER FUNG: Okay. And in planning your Level 3  
12 chargers, so the fast chargers, your super chargers,  
13 to what extent do you take into account geographical  
14 location in terms of your planning and your buildout?

15 MR. MYRANS: I mean we take that into consideration very  
16 deeply. We want to make sure that our drivers have  
17 access to amenities in the locations where we do site  
18 charging stations. So when we do super charger  
19 projects we always want to make sure to the best of  
20 our ability that they're near amenities that our  
21 drivers would like.

22 We're also in the process right now of  
23 developing charging across the entirety of the  
24 Trans-Canada from Victoria, we're planning to have a  
25 supercharger site up and running here before the end  
26 of the year that will provide connectivity all the way

1 to Halifax.

2 **Proceeding Time 6:30 p.m. T26**

3 COMMISSIONER FUNG: Okay. And to what extent do  
4 economics enter into that? Because obviously certain  
5 stations, you're not going to get the amount of money  
6 back in terms of user fees that you would in a highly  
7 populated area.

8 MR. MYRANS: Yeah, Tesla has -- we have a public  
9 statement on our website. We do not intend to operate  
10 charging as a for-profit business.

11 COMMISSIONER FUNG: So currently would you say it's a  
12 breakeven proposition for you? Or are you actually  
13 losing money?

14 MR. MYRANS: Yeah, I'd have to get back to you on that.

15 COMMISSIONER FUNG: Okay, thank you.

16 THE CHAIRPERSON: Thank you very much, sir.

17 MR. MYRANS: Thank you.

18 **PRESENTATION BY MS. LOCKE:**

19 MS. LOCKE: Good evening. My name is Lisa Locke, L-O-C-  
20 K-E. And I represent the Victoria Electric Vehicle  
21 Association.

22 Good evening, my name is Lisa Locke. I  
23 have a doctorate in electrical engineering, and I am  
24 one of the board members for the Victoria Electric  
25 Vehicle Associate, which operates as the Victoria  
26 Electric Vehicle Club. And we represent more than 600

1 members world-wide, centred mostly in Victoria.

2 I am here today representing the club as  
3 our current president, James Locke, is in the process  
4 of completing a 14,000 kilometer 100 percent electric  
5 vehicle trip from Victoria to Hay River, Northwest  
6 Territories, to Ottawa, to attend an EV conference;  
7 then to Virginia, USA, and back home to Victoria. The  
8 trip that James is taking is another first of many  
9 others that have involved our membership, including  
10 the first EV chargers to be installed at a commercial  
11 location in Western Canada, at the Royal Bay Bakery in  
12 Colwood. The first EV driven north of the 60<sup>th</sup>  
13 parallel in Canada by my family. The first EV to  
14 cross Canada from sea to sea towing a 1,000-kilogram  
15 trailer, by Tesla across Canada. And some of the  
16 first families in Canada to have all their vehicles  
17 100 percent electric.

18 I have personally experienced the changes  
19 in the public perceptions and attitudes about EVs from  
20 the numerous public events and car shows that the Club  
21 has held, and the thousands of people that we have  
22 talked to. Initially there was early rejection of the  
23 technology, followed by curiosity and early concerns,  
24 followed by acceptance and now outright enthusiasm  
25 about EVs. And this is where we are running up  
26 against the next substantial barrier to EV adoption,

1           and that is EV charging capability.

2                       Access to EV charging is particularly  
3           difficult in multiple unit dwellings and for inter-  
4           city travel. Range anxiety is quickly being replaced  
5           by, as you say, charging anxiety.

6                       And that brings me to the central issue  
7           that I wish to bring to the Commission's attention,  
8           and that we believe are within the Commission's  
9           authority to address. Measures need to be taken to  
10          resolve the ability to resell electricity for EV  
11          charging at multiple unit residential, commercial, and  
12          institutional properties; to encourage private-sector  
13          involvement, but not at the expense of ensuring that  
14          there are fast charging facilities linking all British  
15          Columbia cities at a fair price. To invest some of  
16          the increase in BC Hydro revenues from EVs into  
17          additional EV infrastructure, and to ensure that there  
18          are not opportunities for excess profits from the re-  
19          selling of electricity in the interests of fairness to  
20          all Hydro ratepayers.

21                      High speed DCFC, direct current fast  
22          chargers, will be particularly challenging. Our  
23          business case models have indicated that these units  
24          alone cannot produce a positive return on investment  
25          at this time, without ancillary facilities or  
26          incentives. There is a risk that EV adoption rates

1 will be affected if the long-distance travel barrier  
2 is not aggressively addressed throughout British  
3 Columbia. To communicate our findings, the  
4 Association has produced a comprehensive research  
5 submission about these issues, including specific  
6 recommendations for consideration on the subject of  
7 regulation and rate structures.

8 Thank you for the opportunity to speak  
9 before the Commission, and our Association stands  
10 ready and able to provide any further evidence or  
11 clarification that would be of assistance to the  
12 Commission in their deliberations as the process goes  
13 forward.

14 THE CHAIRPERSON: Thank you, ma'am.

15 MS. LOCKE: Thank you.

16 THE CHAIRPERSON: I have a question, please.

17 MS. LOCKE: Okay.

18 THE CHAIRPERSON: I realize that you've -- you have filed  
19 more information and evidence. But if I could just  
20 ask you about the statement that I think I heard you  
21 make just now, which is that B.C. fast charging  
22 stations -- I think you were saying in B.C., perhaps  
23 Canada, I'm not sure -- can't provide a positive rate  
24 of return at this time without incentives, or words to  
25 that effect. Is that what you said?

26 MS. LOCKE: Yes, that was in this letter. I can't speak

1 to that directly. The author of the submission, Jim  
2 Henson, isn't here today, but I could definitely --

3 **Proceeding Time 6:35 p.m. T27**

4 THE CHAIRPERSON: That's okay. If you filed -- I just  
5 wondered for the people in this room if you had  
6 anything.

7 MS. LOCKE: No.

8 THE CHAIRPERSON: No, okay. I wondered what period of  
9 amortization you are looking at and what costs and so  
10 on. But if you don't have that information, that's  
11 fine.

12 MS. LOCKE: No, I don't.

13 THE CHAIRPERSON: That's fine.

14 COMMISSIONER FUNG: It would be helpful, perhaps, when  
15 the author gets back for you to pose that question and  
16 to the extent there is an answer, we would appreciate  
17 it if you would send us a letter

18 MS. LOCKE: I certainly will.

19 COMMISSIONER FUNG: Thank you.

20 MS. LOCKE: Okay, thank you.

21 THE CHAIRPERSON: Thank you very much, Ma'am.

22 **PRESENTATION BY MR. WIEBE:**

23 MR. WIEBE: Hi. My name is Jim, last name is Wiebe,  
24 W-I-E-B-E. I just -- I don't have the background or  
25 involvement, but I am an EV purchaser. I've never  
26 bought a new vehicle before. There is days where I

1 quite regret the decision. And I'll just tell you a  
2 very short recent story.

3 Trying to head up Island to visit family  
4 and I have to spend an hour and a half in Nanaimo to  
5 recharge. My vehicle capacity in the colder weather  
6 is obviously diminished. So there is only one DC  
7 charger in the Nanaimo north area on this Island. So  
8 that's -- fortunately it was available. That's a  
9 twenty-minute hold over.

10 And in order to get my destination, I then  
11 have to go to a level 2 charger. That's an hour and  
12 fifteen minutes on the best of days, and that's if  
13 it's open. So my stop-over is adding another hour and  
14 a half to two hours when I'm travelling.

15 I have got north of Courtenay and there is  
16 nothing to be found. You rely on extension cords and  
17 the goodwill of other people. So even a simple little  
18 trip like this on an island -- and other people may  
19 know secret chargers, better spots, but I'm just using  
20 commonly plug share apps and things like that to find  
21 the charging stations.

22 That network is actually very important. A  
23 lot of cars come with the technology, whether it is  
24 proprietary or not, where is the next charging  
25 station. But that needs to be really addressed as far  
26 as these long-term travels.



1 I really like those terms, the anxiety, and  
2 I have got to the one charger that I needed to get to  
3 in my trip and then find that it doesn't work. So,  
4 and you're looking on the app ahead of time and it  
5 says that its up and running. We need really  
6 consistent and reliable information to plan those  
7 trips and plan detours out of those trips. They need  
8 to be up-to-date real time. And I know this is  
9 nothing in the immediate future, but looking forward  
10 at a proper network. Electrical cars have to be  
11 competitive. You know, Hybrid, you have a choice, but  
12 once you're in the EV, if you're gone, you're going to  
13 need a tow truck. I mean that's pretty extreme for  
14 chargers.

15 Secondly, I want to point out that in that  
16 20 minute charge of the DC 3 charging station, I was  
17 charged for that 18 minutes the equivalent of two  
18 weeks' worth of my home charging. I find that to be  
19 unreasonable. So, and, of course, I'm one of the many  
20 people that has to have three or four different  
21 memberships and cards. So I like that idea of  
22 something that's more standardized.

23 I don't see charging stations -- as an end-  
24 user, I think this is a service. I think we are  
25 talking about BC Hydro, which is a utility, and I  
26 think that that product needs to have some regulation

1 as far as reasonableness. I mean, that was a word I  
2 heard. And reasonableness, people should be able to  
3 make profit, but it has to be within scope, that if  
4 you charge me as much for electricity as triple the  
5 gas, I might as well just continue with the old  
6 technology.

7 As far as just a brief thought, I mean, if  
8 you're trying to build an infrastructure we need to  
9 offer incentives so that a person or a company will  
10 put that in place.

11 **Proceeding Time 2:21 p.m. T28**

12 And it's not subsidizing by paying them,  
13 but you're giving them an incentive of some type to  
14 make it worth their while for a period of time that's  
15 reasonable, and then when they have seen their return,  
16 you know, that that can diminish over time.  
17 Corporations don't need to be greedy. We need to plan  
18 technology cooperatively.

19 So that's just a few of my thoughts as an  
20 EV owner with a limited range vehicle. And I don't  
21 have a high-end, high-range vehicle, so everything has  
22 to be very much calculated when I travel. Thank you.

23 COMMISSIONER FUNG: Excuse me, sir. Before you leave,  
24 do you have a level 1 charger at home?

25 MR. WIEBE: I have a level 1 charger. I cannot afford  
26 the level 2.

1 COMMISSIONER FUNG: Okay, thank you.

2 MR. WIEBE: Thank you.

3 **PRESENTATION BY MR. BAXTER:**

4 MR. BAXTER: Michael Baxter. It's B-A-X-T-E-R. I'm not  
5 part of any organization to do with this. Although I  
6 did in a previous job install nine different chargers  
7 in the municipality and I have sat on a committee  
8 advising, Fraser Basin Council. We were giving advice  
9 to BC Hydro on locations of chargers.

10 I thought I should say my piece now because  
11 it's a little bit of a contrast to the previous  
12 gentleman. I have driven my car via the inside  
13 passage ferry to Terrace B.C. and it's a five-year old  
14 Leaf. I've been driving it for five years. And it is  
15 possible to get to Campbell River -- to Port Hardy in  
16 a Leaf, but it is very very difficult and I was very  
17 lucky that day that every charger I needed was  
18 working.

19 And I did get a ticket from the Port Hardy  
20 police about driving too slow on the road to preserve  
21 range. Not a ticket, but I got a letter. For that  
22 type of trip, there's not as lot of cars making it,  
23 but I think that if electric cars are going to be  
24 throughout the market, then you've got to be able to  
25 make that trip in a standard electric car.

26 Now, mine is five years old and that trip

1 is difficult. But I know that if I bought a new model  
2 exactly the same today, that trip becomes a lot  
3 easier. But you still need one more fast charger  
4 somewhere.

5 But what's really disgraceful is the  
6 situation in Vancouver, where I think that in the  
7 entire greater Vancouver there's four fast chargers,  
8 and I can't remember how many people live there, but  
9 it's something like a couple of million.

10 Now, the fast chargers -- in fact, I think  
11 all public chargers should be primarily, but  
12 especially the fast chargers, for people who are  
13 travelling. People who are going from A to B, and the  
14 reason is that the level 3 chargers are expensive to  
15 put in. That's always going to be a problem, and a  
16 lot of the expense is getting the electricity to where  
17 you want to put the chargers. The box may get  
18 cheaper; running the electricity is going to get more  
19 expensive, not cheaper.

20 And because there's a limit to how many you  
21 want to put in, you don't want people using them who  
22 could be charging at home. So we want the traveller  
23 to get what he needs when he needs on the road, and  
24 that's a fast charger.

25 The way to deter me from using the fast  
26 charger near my home is price. Okay? There was a

1 situation locally in Colwood, in Duncan where a local  
2 courier was using the chargers, getting all electric  
3 service, and Duncan's was free, and Colwood was  
4 charging for their charger. And the courier said, I'm  
5 absolutely happy to pay the price, about \$3 a charge.

6 **Proceeding Time 6:44 p.m. T29**

7 But I'm really happy in Duncan, because I don't have  
8 to pay the price, and why is the City of Duncan paying  
9 to subsidize that courier? Why aren't they  
10 subsidizing the guy who could go home and park his  
11 car? If you're going into town shopping, you're not  
12 going to run out of electricity. You don't need to  
13 charge. If you do, it's there, and you pay your  
14 money.

15 So, I'm actually in favour of charging more  
16 for chargers. All public chargers should have a  
17 charge, if that's financially feasible, because I was  
18 part of Colwood Municipality, I know that the money  
19 that we charged per kilowatt hour, which was three  
20 times the going rate of electricity, just covered the  
21 cost of the service to collect the money. Everything  
22 else, the electricity was paid for by BC Hydro, and  
23 the installation was paid by BC Hydro, and a very  
24 small piece of the maintenance was paid by the city.

25 And I've lost what point I was making right  
26 there, but I hope you've got it.

1                   So, we need to charge for charging. And  
2                   the other thing is your load curve, the BC Hydro load  
3                   curve. You don't want people using fast chargers at  
4                   peak times of electricity. And again, the way to  
5                   drive them home to charge is the price of the  
6                   electricity. Now, I think it would be beneficial at  
7                   home to give time of day pricing on electricity. And  
8                   I know there has been a promise not to do that, but I  
9                   think we all know that's ridiculous, it is coming one  
10                  day, and it is the solution to the car problem.

11                  I currently have my car charge timer set to  
12                  only charge between 10 o'clock at night and 6 in the  
13                  morning when I'm parked at home. I do that because I  
14                  want to help. But for a lot of people they want to  
15                  make sure the car is charged as fast as possible, so  
16                  they go home at 5 o'clock, turn on all the electrics,  
17                  plug in the car. Again, price is the deterrent to  
18                  that.

19                  Now, I think that the level 3 chargers and  
20                  the level 2 chargers are going to be in different  
21                  places, as well as together. There are shopping malls  
22                  with parking lots that have more than a dozen level 2  
23                  chargers, because they want you to stay there for a  
24                  while, okay? So it gives somebody where to charge.  
25                  And you make him come to your mall, instead of a  
26                  different mall, and he might spend a little more time

1           there, because he wants to get the full charge. Now,  
2           the mall doesn't mind paying for that electricity.  
3           You've still got the problem with load on the grid.  
4           Again, charge to the -- to whoever is paying the bill  
5           will help that.

6                        But the level 3 chargers need to be on what  
7           I would term public charging stations. In other  
8           words, there isn't a business that owns them, and  
9           reserves them for their business. And that's because  
10          they are a service to the traveler. You don't want  
11          the mall saying "you can't use that level 3 unless  
12          you're shopping here." The traveler wants to be  
13          charged up in 20 minutes, half an hour, and be on  
14          their way. Now, they might stop and buy a coffee, or  
15          a sandwich or something, but that's not going to pay  
16          for the charger.

17                       So, I don't know what approach BCUC is  
18          going to take in regulating this, or participating in  
19          it, but I think that those chargers are going to be in  
20          different places.

21    **Proceeding Time 6:49 p.m. T30**

22                       And by the way, there are already millions  
23          of chargers in B.C. They're on the outside of every  
24          single house, a Level 1 charger, and that's one of the  
25          comforts when you're driving around. I've known  
26          people who've stopped and knocked on the door and

1       said, "Can I plug in?"

2                   The problem is those millions of chargers  
3       aren't large enough. We need bigger ones, we need  
4       them more often. And I echo the previous gentleman's  
5       comment. I actually was driving to my daughter's  
6       place in Comox and the charger in Nanaimo went down  
7       while I was traveling and increased the length of my  
8       journey by four hours. Not a pleasant experience.

9       THE CHAIRPERSON: Thank you. Thank you, sir.

10       **PRESENTATION BY MR. SHORTREED:**

11       MR. SHORTREED: Hi, my name is Bill Shortreed. Last name  
12       is spelled S-H-O-R-T-R-E-E-D. I've here as an  
13       individual EV owner.

14                   In January 2016 I bought an all-electric  
15       vehicle. At that time there were four DC fast  
16       chargers on Vancouver Island. More than two years  
17       later there are still just four EV fast chargers on  
18       the island. What that means, for me to drive from  
19       here to Telegraph Cove on the north end of the island,  
20       which I plan to do this summer, it would take 17  
21       hours, of which five and a half hours of driving and  
22       11 and a half hours in charging. And it would be much  
23       longer if I had to wait for any of the Level 2  
24       chargers north of Nanaimo.

25                   So with respect to an electric vehicle  
26       charging network I have five suggestions. And I don't



1 know if any of them are -- will fall under your  
2 purview.

3 They should be located off highways, so  
4 that I can get off the highway, get charged, get back  
5 on the highway. Just like Tesla has done with its  
6 supercharger network. As an example, the Nanaimo DC  
7 fast charger is less desirable because I have to drive  
8 through the city to get to it and that adds 20 minutes  
9 of drive time, plus I have to pay for parking which  
10 doesn't make me happy. Imagine if you went to your  
11 gas station, I had to pay 75 cents just for the  
12 privilege of parking there to fill up with gas.

13 Charging stations should be near 24-hour  
14 facilities, because I'm past the age of 60 and I need  
15 to have facilities when I stop. Imagine if gas  
16 stations didn't have restrooms. Charging stations  
17 should be available 24 hours a day, seven days a week,  
18 365 days a year. The Duncan fast charger was out of  
19 service for several months last year during the  
20 summer, peak travel time, while they repaved their  
21 parking lot. Also, it was out of order for several  
22 weeks just last month. So that, again, adds to my  
23 travel time when I'm going north.

24 There should be at least two DC fast  
25 chargers at each location, because when I arrive in  
26 Duncan there's somebody already there, then I have to

1 sit and wait. If I'm already looking at a 20-minute  
2 fill up, now I'm looking at a 40-minute fill up.

3 And that's all I have to say about that.

4 Thank you for the opportunity.

5 THE CHAIRPERSON: Thank you, sir. Okay, thank you.

6 MR. SHORTREED: Thank you.

7 **PRESENTATION BY MR. BARWIN:**

8 MR. BARWIN: My name is Victor Barwin, B-A-R-W-I-N. I'm  
9 a chartered professional accountant who is retired and  
10 I bought my first EV last November. It was probably  
11 one of the best things I've ever done in my life. One  
12 of the reasons being is that most of my traveling,  
13 being retired, is in the Victoria area. And if I do  
14 need to go outside of Victoria we do have friends,  
15 relatives, there's charging stations, so for my case  
16 I'm not that worried. I also have a gas-powered car  
17 that was given to me so I can use that until some  
18 point in time another vehicle can become available  
19 that is not generation one, but generation two or  
20 three. So I'm a little different situation.

21 For me there's three choices for charging.  
22 At home, Level 1. My brother-in-law up in Mill Bay,  
23 because I can't get home from there, Level 1. I could  
24 put a Level 2 in my house, it's not cost effective at  
25 this stage. Or I can go to the public sites and then  
26 patronize the businesses there. So the dollar that it

1 costs the station -- well, or wherever it happens to  
2 be, \$2.50 for coffee, another \$2.50 for my wife.

3 **Proceeding Time 6:54 p.m. T31**

4 They're making money off of me by going to that mall  
5 as opposed to another mall. So there's a positive  
6 thing. I'm glad to see that these people are  
7 supporting me in my desire to reduce greenhouse gasses  
8 and to be more green in the environment.

9 I've never used a DC, a level 3. I haven't  
10 had to use one yet. But again, as we've heard several  
11 times today, there is a need in the province.

12 But if we look at other users, we've got to  
13 talk about inter-city travel, and one thing we haven't  
14 heard today is visitors to the province of British  
15 Columbia. Tourism is one of the biggest industries in  
16 British Columbia and if we're not providing enough  
17 level 3, we're putting these people at a disservice.  
18 It's discouraging people from coming to B.C. if they  
19 have, you know, cars that need charging.

20 Gas stations are going to disappear.  
21 There's no question about that. We've seen that take  
22 place in my lifetime. Home Gas is gone. Gulf is  
23 gone. BA is gone. Texaco is gone. Shell is taking  
24 their stations down. In Victoria we see no Pay-less  
25 Gas. They're gone. SuperSave Gas, they're gone. So  
26 it's just a question of time.

1                   Gas stations make their money from several  
2 sources: selling gas, which I understand is not  
3 really that profitable, and ancillary services. And  
4 we've heard today from several people that they want a  
5 destination site and other services, whether it be  
6 lottery tickets, washrooms, chips, whatever it happens  
7 to be. And we've heard cases where large stations  
8 have restaurants. So if I have to charge for 20  
9 minutes or two hours, I'll go in and have something to  
10 eat. I know people have gone to Duncan. Two and a  
11 half hours to charge. They've explored Duncan. I've  
12 never -- you know, "Did you know Duncan has this?" So  
13 it's a destination. Same thing with our tourists,  
14 that they want -- they're coming here for a  
15 destination.

16                   We have to look at who the users are. I'm  
17 a private EV user and the vast majority of people are  
18 going to be private EV users. But we already have  
19 public EV users. Saanich has an EV fleet. You know,  
20 every municipality is heading into that direction.  
21 And then what about the corporate owners, the fleets,  
22 the rental cars? Right now there's Hertz and then we  
23 see Moto and Evo coming in. You know, there was an  
24 article in a magazine recently saying that, "Well, why  
25 aren't car share cars electric?" "Well, we can't get  
26 the range." And so from my perspective, if we can

1 get to generation 2, generation 3 which have the  
2 range, there would be a place for them to charge the  
3 car there, and the people would take the car and be  
4 billed, not only the mileage, but a small charge for  
5 electricity. I would think that would be a good thing  
6 for the people who use the cars. Because right now  
7 when you rent a car, you have to fill it up before you  
8 take it back, and that's just an extra cost on it.

9 I'd like to see the private piggyback on  
10 the public sector. We already have an example of that  
11 in Sydney. There is a charging station at the  
12 municipal hall and it says, "For City Use". But  
13 around the corner it says, "For public use when it's  
14 not being used by the city." So I think that there's  
15 an opportunity for the private sector to piggyback on  
16 the public sectors, because a lot of the stations,  
17 they would probably charge at night. But if I'm  
18 travelling, I would probably charge during the course  
19 of the day.

20 So what I'm driving at, there's a new model  
21 that's going to be coming out. Or let me rephrase  
22 that one, new models, as we sort of figure this thing  
23 out, because we are only in the very -- you know, one  
24 or two percent adoption rate in B.C.

25 I believe that EV charging stations are  
26 destination charging stations and, you know, if you're

1 driving up to Campbell River/Comox, you're going to  
2 have to stop in Duncan or Mill Bay or Nanaimo to  
3 charge and then use Plug Share or something else to  
4 find these things. It would be nice to be able to  
5 have some time to do something else while it's  
6 charging. There's just not enough to do that right  
7 now.

8 I also would like to see the charging  
9 stations being put in B.C. parks. I'm very familiar  
10 with Manning Park. I can't get, in my generation 1,  
11 from Princeton to Hope, or Hope to Princeton, not  
12 possible. But if I could stop in Manning Park, I'll  
13 go to the restaurant, I'll hike on the trail, I'll  
14 rent a canoe. Or I could ski in the winter, whatever  
15 it happens to be.

16 **Proceeding Time 6:59 p.m. T32**

17 There's another advantage to the Manning  
18 Park Lodge or B.C. Parks there. Right now if they  
19 need gasoline, they have to drive to Hope or  
20 Princeton. And that's 40, 50, 60 kilometres each way.  
21 So their staff member is having to spend an hour there  
22 and an hour back again. That's a cost to them. If  
23 they could have a charger, or chargers there, then  
24 that would reduce their costs. And if I could  
25 piggyback onto their service, it's a win/win for me  
26 and it's a win/win for B.C. parks, or for Manning Park

1 Lodge in this particular case.

2 The world is changing. I've seen people  
3 steal electricity from B.C. Parks. The lady had her  
4 electric handicapped car up -- you know, a car --  
5 stealing electricity, because she was there camping  
6 for a couple of days, and the only place she could  
7 charge it was at the park. And the only place she  
8 could do it was on the outside of the washroom  
9 facility. So if they had a charging station there,  
10 then I could use it, she could use it, and I'd be  
11 willing to pay for it. I'm sure she'd be willing to  
12 pay for it. We could then use the same facility to  
13 charge her batteries, so I don't have to have a  
14 generator, reduce the noise level.

15 So my point is that, let's find a way to  
16 use not just, you know, a Level 1, Level 2, Level 3  
17 for cars, but for other purposes. For charging  
18 handicapped vehicles, for charging bicycles, for  
19 charging batteries, that sort of thing. Let's find  
20 multiple use, again a new business model, that's out  
21 there.

22 One of the other things is that we could  
23 put them -- we've heard people say, "Let's put them in  
24 accessible areas throughout B.C." We have tourist  
25 information sites, a destination site for people  
26 traveling. In which case you can only get -- you're

1 going to be there for about 20 minutes, half hour, so  
2 charge up there. Put up a Level 2 or even a Level 1  
3 or, you know, DC fast charging. Just to help people  
4 out.

5 And again, the same thing in rest areas  
6 throughout the province. We have thousands -- or  
7 hundreds of rest areas. We could put that in there,  
8 and I'm thinking of the Coquilhalla, for example. And  
9 in summertime, we need to go through the Coquilhalla,  
10 at the rest area, there's five or six food trucks. So  
11 you're going to stop there for various reasons, and if  
12 there's a charging station there, then it's going to  
13 provide multiple services.

14 We talked about the grid. I bought an EV,  
15 and my electricity has actually gone down. Now, why  
16 is that? Because I insulated my roof from R26 to R50.  
17 So I've reduced my electricity consumption by 11  
18 percent by doing that. So if BC Hydro, through their  
19 PowerSmart program, will be able to -- you know, in a  
20 lot of cases if you can retrofit your house, which is  
21 relatively inexpensive, my payback period is three  
22 years on that. And so therefore I can afford to put  
23 an EV on my system because I'm actually using less  
24 electricity.

25 And so if we can do those sort of things,  
26 piggyback not only the introduction of the EV charging



1 stations, but with other things such as PowerSmart and  
2 other things, the retrofits that I've done on my  
3 house, 33 percent less electricity this year than two  
4 years ago, because of LEDs, et cetera. And again,  
5 what I've heard from another fellow, if we can charge  
6 the cars at night, then we can smooth out this power  
7 grid, which is a big problem to BC Hydro and FortisBC.

8 So my final conclusion is that we've got to  
9 come up with new business models, looking what they  
10 are. And throughout history, that's what's happened.  
11 And we've, you know, the adoptions are putting  
12 business models that meet the needs to people in. My  
13 perspective is a little different from some other  
14 people's. I like to see the same price to the  
15 consumer whether they use Level 1, Level 2 or Level 3.  
16 But I wouldn't mind a small increase like you have  
17 with -- if you go to a gas station way out in, you  
18 know, Nimpo Lake or something like that, you're going  
19 to pay a little bit more. And I don't mind paying a  
20 small percentage. But three and a half times?  
21 Because that's just -- that's not fair to people who  
22 don't have access to charging at home at a reasonable  
23 rate.

24 So I'd like to see, you know, basically the  
25 same rate at home, same rate at Level 2, and same rate  
26 at Level 3, with a small premium to cover off the

1           amortization for the cost of installing and  
2           maintaining the unit.

3                       My final comment -- we haven't talked about  
4           it much here. Health issues. By eliminating fossil  
5           fuels, we're going to eliminate carbon dioxide in the  
6           atmosphere, nitrous oxide, we're going to eliminate a  
7           significant portion of health issues that are caused  
8           by pollution and climate change. And to me, that's a  
9           very significant issue. Introducing electrical  
10          vehicles to replace fossil fuels to be able to improve  
11          the health of British Columbians.

12                       Thank you.

13   **Proceeding Time 7:04 p.m. T33**

14 THE CHAIRPERSON:    Sir, so, with regard to that last issue  
15           I wonder if you could just draw that out to a  
16           conclusion then, because electric vehicles could  
17           improve health, and therefore what, there should be a  
18           subsidization for charging infrastructure? I'm just  
19           not sure where you're going with that.

20 MR. BARWIN:        It's hard to quantify, because in the  
21           Province of British Columbia, the health budget is in  
22           the Ministry of Health, and all we see in the last  
23           couple years, is significant three or four percent  
24           increases in the health budget every year. And if we  
25           can find a way to reduce that, that's going to reduce  
26           taxes to British Columbians. But more importantly,

1 from my perspective, it is going to reduce the  
2 possible health issues. My mother died from lung  
3 cancer, so I am predisposed to that. Theoretically my  
4 children are predisposed to that, so anything I can do  
5 to reduce their risk of dying from lung cancer, I will  
6 do. And that's why I'm here today.

7 THE CHAIRPERSON: Thank you.

8 COMMISSIONER FUNG: Mr. Barwin, I just want to follow-up  
9 on your point about new business models are needed,  
10 and we should be doing what we can to encourage them.  
11 So, with that in mind, what is your view as to whether  
12 or not the whole field of electrical vehicle charging,  
13 should it be regulated? Should we allow utilities to  
14 get into this business? Or do you see a different  
15 type of marketplace?

16 THE CHAIRPERSON: I sort of see a utility is that it  
17 right now, when I use the electricity at home, I am  
18 taking their 110 volts AC, but if I put my charger on,  
19 I'm taking the 110 volt AC and converting it to DC  
20 power, to charge my car. So, they're not really --  
21 the level 2s and level 3s are out there, not really  
22 reselling electricity, they are providing a service  
23 that is converting AC to power that I can use to  
24 charge my car.

25 As far as the regulation's concerned, the  
26 concern that I have is that we've heard earlier on

1           today, that somebody is paying three and a half times  
2           more by using DCFC. My point of view is that I'd  
3           rather see level 1, level 2, level 3 basically being  
4           about the same with a small premium for level 2 and  
5           level 3 to cover the costs of the infrastructure and  
6           the maintenance that are required on those particular  
7           units.

8                           What I haven't said earlier on is my belief  
9           is that 90 percent of charging will be done at home,  
10          and that home is either my particular home, or in a  
11          case of a business or business establishment. So, in  
12          theory we only need to provide 10 percent with level 2  
13          and level 3 out there, and they could be, the utility  
14          is going to make 90 percent of their income from at  
15          home. So in some respects, I don't want to use the  
16          words subsidation [sic] for 2 and 3, but they may be  
17          able to do that. We are seeing that right now with  
18          the gas stations. Small gas stations in a remote  
19          community isn't paying for itself, it's being  
20          subsidized by huge demand in Vancouver and Victoria  
21          and that sort of thing.

22   COMMISSIONER FUNG:    Okay, thank you.

23   COMMISSIONER HAROWITZ: Thank you. I'm just wondering,  
24           you said you'd be willing to tolerate a small  
25           difference for a level 3 service compared to a level  
26           1. How do you reconcile that with, you know, if it is

1 give or take \$100,000 for the install, give or take a  
2 five year useful life for that asset, it seems to me  
3 that that's more than what I think you mean when you  
4 say a small premium for the level 3. So, who would  
5 you advocate picks up that additional loss if it is  
6 only a small premium that you pay when you pull up to  
7 the level 3? Who is -- where do you see that  
8 uncaptured amount of the depreciation being paid for?  
9 Who should be covering that?

10 MR. BARWIN: I think the situation in British Columbia,  
11 we're unique because most of our electricity is coming  
12 from basically one supplier, BC Hydro, you know,  
13 FortisBC. And so therefore, they're going to be  
14 generating a revenue on EV sales. And so therefore if  
15 90 percent of their revenues are coming from home use,  
16 in some respects, if somebody were to do the analysis  
17 it might be possible that the additional revenue from  
18 the home charging would offset the costs for the level  
19 2.

20 The information I've heard is that the  
21 level 3, I've heard numbers from \$100,000 a unit, to  
22 \$50,000 a unit, to \$20,000. I've also heard we'll  
23 wait for the next generation to come out. So, we're  
24 talking about 2018 today, there is only about two or  
25 three percent of the cars in B.C. that are EVs today,  
26 I don't know when the next change is going to take

1 place.

2 **Proceeding Time 7:08 p.m. T14**

3 I don't know when the next technology is going to take  
4 place, but it's going to happen. Because we're not  
5 the only jurisdiction that's working on this right  
6 now. Every other jurisdiction in the world is working  
7 on it, to try to make the business model work. And as  
8 I say, we're unique, because we have some of the  
9 lowest electricity rates on the planet. And you know,  
10 I've heard some other places, like there's 30 cents a  
11 kilowatt hour, 40 cents a kilowatt hour. So we're in  
12 a very unique situation.

13 I do not know if FortisBC's profit  
14 statements or financial analysis, the same with the BC  
15 Hydro, but if you -- one of the numbers I worked out  
16 is that if every car in the province were to convert  
17 to electricity, it would be about \$1.6 billion  
18 additional revenue to BC Hydro above what they are  
19 getting today. That's my number. I don't know what  
20 their number is. And that's basically general, you  
21 know, driving right now.

22 THE CHAIRPERSON: Thank you.

23 MR. BARWIN: Okay, thank you.

24 THE CHAIRPERSON: Is there anyone else that has a  
25 comment?

26 **PRESENTATION BY MR. MACKENZIE:**

1 MR. MACKENZIE: Hi. Bruce Mackenzie, again. I spoke  
2 this afternoon. I just had a couple more points to  
3 throw in.

4 One was the kilowatt meter which I  
5 mentioned, one of the engineers here said that he  
6 hadn't seen one, didn't know about it. So this is  
7 what it is. I can pass it around. It's \$35.

8 THE CHAIRPERSON: You can explain it to people a little  
9 first, but yeah.

10 MR. MACKENZIE: Pardon me?

11 COMMISSIONER HAROWITZ: There's some people who weren't  
12 here this afternoon so --

13 MR. MACKENZIE: Oh, okay. Sure. My name is Bruce  
14 Mackenzie, again, and I'm here mainly with interest in  
15 strata, condominium -- electric vehicle charging in  
16 stratas and condominiums.

17 One of the things that I mentioned is that  
18 in a very easy way for -- to get a strata started with  
19 electric vehicle charging is by just plugging into  
20 110. As a couple people here have mentioned already,  
21 One of the questions is how the strata can charge for  
22 that electricity. And so this little thing here  
23 that's \$40, I can give you -- I'll give you the e-mail  
24 -- or the URL to order one. You just plug it in and  
25 it measures several factors, like voltage, hertz and  
26 even power factor of the power coming through it.

1                   So it's a very easy way for a strata to  
2                   record how much electricity is going into an electric  
3                   vehicle if they choose to do it in an informal kind of  
4                   way.

5 THE CHAIRPERSON:     Is the purpose built for electric  
6                   vehicle market, or did it pre-exist?

7 MR. MACKENZIE:     No, it's been around for years. It just  
8                   measures whatever is going through at 110 volt.

9 COMMISSIONER HAROWITZ:     Now, may I ask --

10 MR. MACKENZIE:     Yeah.

11 COMMISSIONER HAROWITZ:     Measurement Canada says there's  
12                   a problem, that they don't have the certification yet  
13                   on anything that would be a recharging station. Does  
14                   that have any certification on it of any kind that  
15                   speaks to its reliability or accuracy?

16 MR. MACKENZIE:     It's a US Underwriters Lab Approved for  
17                   Safety. But they claim that it's within .2 percent  
18                   accurate. But --

19 COMMISSIONER HAROWITZ:     But it's a manufacturer's claim?

20 MR. MACKENZIE:     Yes.

21 COMMISSIONER HAROWITZ:     Okay, thank you.

22 MR. MACKENZIE:     Yeah. But I don't think anyone would  
23                   really care if it was 1 percent off.

24 COMMISSIONER HAROWITZ:     No, no. I'm just --

25 MR. MACKENZIE:     But fair enough, that's a good question.  
26                   The other thing that was just mentioned is



1 the drop-in -- is the idea of at your home you've  
2 managed to reduce your electricity use by reinsulating  
3 the ceiling. That's happening in strata buildings as  
4 well. Both of the strata's I've been involved with  
5 have converted exterior lights to LED, converting  
6 interior lights to LED. So when I was talking this  
7 afternoon about existing strata buildings, I think  
8 it's important to think that the efficiency measures  
9 that are being brought in are going to reduce the  
10 ongoing, the standard load in the building which  
11 should free up some extra for the chargers.

12 The building I'm in now, we've reduced  
13 about somewhere around 6 kilowatts of constant demand  
14 just by replacing all of our compact fluorescent bulbs  
15 with LED bulbs. There's also -- we've been making big  
16 changes with other heating and such too. So it's not  
17 that difficult to do.

18 I think another question is the idea of if  
19 a strata starts with 110 volt, what will it do as they  
20 get more need -- more users.

21 **Proceeding Time 7:13 p.m. T35**

22 So the easy way of course -- and thinking  
23 in terms again about reducing the capital cost in a  
24 strata so that you don't have to be -- just makes it  
25 easier to keep going, is just add more 110 volt  
26 outlets and then maybe put one or two Level 2 charging

1 stations in with some kind of a swipe key so that the  
2 users who occasionally need a refill can use that --  
3 those one or two stations if they're going to go on a  
4 long trip or something on a particular day.

5 The one last thing I want to add is I am a  
6 member at Modo and I've been using the Modo Kia Soul  
7 to go to Duncan and back. I make that trip always  
8 every week. And the Moto instructions for that  
9 vehicle say do not use for out of town trips, but I  
10 find it works fine. It's got 130 kilometres of range  
11 when I get in in the morning. And driving to Duncan  
12 and back stretches it a bit on the Malahat, but if I  
13 plug it in for a few hours in Duncan just on 110, it  
14 works great.

15 So that -- I'll leave it at that. Thank  
16 you.

17 THE CHAIRPERSON: Thank you, sir.

18 Is there anyone else that would like to  
19 speak?

20 MR. KARLEN: Eric Karlen with Greetlots. For the benefit  
21 of the room I was here earlier today also and just  
22 wanted to add a few more comments based on what I've  
23 heard here at the rest of the session earlier today  
24 and the comments from everyone thus far.

25 This is today's newspaper, *Province*, and  
26 right here in the middle is an article, "Utilities,

1 SUVS set to shock the market. Five coming soon models  
2 are getting the buying public charged up." A lot of  
3 the commentaries we heard from earlier today were  
4 making the point that a lot of the EVs out there,  
5 Leafs and such, they're very light duty vehicles. And  
6 one of the needs for B.C. in particular is vehicles  
7 with greater capabilities along these lines. They're  
8 coming. These are all 2019 model year ones that  
9 should be available to consumers very, very shortly.

10 So the extent to which that already are  
11 constraints on the infrastructure that's deployed out  
12 there, all the factors that compound to bad  
13 reliability, the issues that we've heard some pretty  
14 compelling anecdotes about today, that's just going to  
15 exacerbate for the next few years. It's going to get  
16 more and more challenged. I mean the extent to which  
17 I think we could characterize a lot of these, a lot of  
18 people, some of the anecdotes you're heard in this  
19 room, they would probably call them early adopters.  
20 These issues are not issues that the mass market, the  
21 broader market is going to tolerate. Going to a gas  
22 station and not having the pump work is not something  
23 that a normal person would normally be okay with,  
24 especially if you're trying to get them to purchase  
25 vehicles that already cost more.

26 So I think those are some important things

1 to consider with what this Commission decides to do.  
2 I'd also just add that you've asked a lot of people  
3 about rates and cross-subsidization, and subsidization  
4 and how you guys should consider that. I think it's  
5 very important to consider that whatever rates that  
6 you decide to impose, that they consider broader  
7 public policy goals in addition to just dollars and  
8 cents, and whether or not it's being paid for. That's  
9 obviously, you know, the mandate of this Commission,  
10 to make sure costs are just and reasonable and such,  
11 but the extent to which they are important provincial  
12 goals, federal goals with climate change emissions,  
13 these are very important things for the rates to take  
14 into effect and the extent to which, you know,  
15 transportational edification as one of the biggest  
16 pieces in, you know, the carbon wedge to get to those  
17 goals supporting drivers and their, you know,  
18 purchasing decisions is important to do that. It's  
19 also, you know -- in line with that I would add that  
20 making sure rates are comparable or at parity with  
21 gasoline fueling, that that is, for example, something  
22 that would be in line with public policy goals.

23 I'll leave it at that, in addition to my  
24 comments from earlier. And, yeah, any questions yet?

25 THE CHAIRPERSON: Yeah, I do have, please. Your  
26 organization provides EV charging -- manufactures EV

1 charging infrastructure, is that correct?

2 MR. KARLEN: We do not manufacture it, no. We provide EV  
3 charging software and services, so we provide a  
4 turnkey solution and that, you know, one of the things  
5 we currently provide for BC Hydro, yeah.

6 THE CHAIRPERSON: Okay. Right, and that was my next  
7 question, so you generally provide that to utilities  
8 or at least in British Columbia you provide it to BC  
9 Hydro, is that correct?

10 MR. KARLEN: Yeah.

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

12 THE CHAIRPERSON: So earlier tonight we heard at least  
13 one speaker urge that EV charging infrastructure  
14 should be developed in a place where there's other  
15 services and compared that to gas stations. So I'm  
16 wondering, is there any interest -- have you found any  
17 interest in gas stations, like in companies that  
18 operate gas stations, in providing EV infrastructure  
19 at their gas station? Like it would seem to me that  
20 that may be a natural place to put EV charging  
21 stations.

22 MR. KARLEN: Absolutely, and I'd agree with, you know,  
23 the gentleman from Tesla mentioned this as well. It's  
24 very important to co-locate chargers with things that  
25 people need and care about. So individuals can use  
26 the bathroom. I mean, these are important things. If

1           you are going to sit and charge the car or vehicle for  
2           30 minutes and there's nowhere to use the bathroom,  
3           that's obviously an issue.

4                         And that's just for DC fast charging. If  
5           it's longer charging it should also be co-located.  
6           And all the constraint that I spoke about earlier was  
7           actually economics and -- for this gas station model.  
8           That extends also to level 2 charging in  
9           municipalities. When you want to put an L2 charger  
10          next to -- in parking spots, the economics there are  
11          similarly constrained, and I think the -- you've heard  
12          about how the private market is largely failing to  
13          deliver on current EV drivers' needs, let alone future  
14          EV drivers that are coming.

15                        It's a pretty compelling case for why  
16          utilities need to have a strong role in developing  
17          this infrastructure, and also just to make sure that  
18          the infrastructure that is deployed is reliable to a  
19          level at which can satisfy driver's needs which  
20          currently it's not.

21   THE CHAIRPERSON:     So is it fair to say that -- I have  
22          not heard that there are any gas stations in British  
23          Columbia that have any charging available, other than  
24          maybe the ability to plug into an outdoor -- you know,  
25          a regular 120 volt outlet. But there's certainly no  
26          fast charging available at any gas stations in British

1 Columbia. Is that true to the best of your knowledge?

2 MR. KARLEN: I can't speak to that right off the top of  
3 my head, but the extent to which those are not co-  
4 located, it seems that if I was a gas station owner, I  
5 would be wanting to have more reasons for people to  
6 come and use my facilities, and the extent to which  
7 margins are thin on gas itself, that we heard about.

8 THE CHAIRPERSON: Do you work with any gas stations  
9 then, to provide charging infrastructure, or is that  
10 something that --

11 MR. KARLEN: Have we ever had a site host that is a gas  
12 station? I can't answer that at the top of my head.  
13 I would like to yes, there is probably is, but --

14 THE CHAIRPERSON: But it sounds like it may be rare  
15 though, if that was the case.

16 MR. KARLEN: I think it's a fair statement.

17 THE CHAIRPERSON: Okay, thank you.

18 MR. KARLEN: Yeah, thank you.

19 THE CHAIRPERSON: Thank you, sir.

20 If there is no one else that has any  
21 comments?

22 So I would like to thank everyone for  
23 coming and we certainly appreciate your interest in  
24 this topic and your interest in our inquiry and we  
25 appreciate you coming out tonight and sharing your  
26 thoughts. The panel will consider everything we've

1 heard tonight and at all the other sessions that we've  
2 been to and we will be considering all of that  
3 information when we publish a report a little later  
4 this year.

5 So I wish you all a good evening and have a  
6 safe drive home, whether it's an electric vehicle  
7 drive or not. Thank you.

8 **(PROCEEDINGS ADJOURNED AT 7:09 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 10<sup>th</sup>, 2018