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ALBERTA UTILITIES COMMISSION

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6 Application No. 24116-A001

7 Proceeding ID No. 24116

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10 DISTRIBUTION SYSTEM INQUIRY

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## P R O C E E D I N G S

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Volume 1

22

June 24, 2020

23

Held via videoconferencing

24

Calgary and Edmonton, Alberta

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1

organizational changes to the composition of the Panel

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for this proceeding. As a result of those changes,

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I'll be chairing this meeting today for the

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Distribution System Inquiry initiated as

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AUC Proceeding 24116.

6

On the Panel and with me in Calgary today, but at

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a socially acceptable distance is Commission Member

8

Tracee Collins. Also on the Panel, but at an even more

9

socially acceptable distance, in Edmonton is Commission

10

Member Henry van Egteren.

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Assisting the Commission today are Commission

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counsel David Reese, who will also be moderating

13

today's virtual meeting.

14

Staff members assisting us are Dr. Frank Wolak,

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Olex Vasetsky, Randy Lucas, Geoff Bourque,

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Abhinav Ayri, Carl Fuchshuber, Scott McCallum, and

17

Ragaey Habashy. Staff members are joining us from both

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the Calgary and Edmonton hearing rooms.

19

While I would love to see everyone's faces to

20

welcome you to our virtual meeting, I would ask that

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you keep your video turned off unless prompted

22

otherwise. I understand that we have at least

23

75 representatives and parties participating in the

24

inquiry, and if we all turned on our videos at once it

25

might overload the available bandwidth.

2

1 Proceedings taken via videoconferencing at the Alberta

2 Utilities Commission, at suite 1400, 600-3 Avenue SW,

3 Calgary, and 10055-106 Street, Edmonton, Alberta.

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5 Volume 1

6 June 24, 2020

7

Don Romaniuk

Chair

8 Tracee Collins

Commission Member

Henry van Egteren

Commission Member

9

David Reese

Commission Counsel

10

Randy Lucas

Commission Staff

11 Dr. Frank Wolak

Commission Staff

Olex Vasetsky

Commission Staff

12 Geoff Bourque

Commission Staff

Abhinav Ayri

Commission Staff

13 Carl Fuchshuber

Commission Staff

Scott McCallum

Commission Staff

14 Ragaey Habashy

Commission Staff

15 Donna Gerbrandt, CSR(A)

Official Court Reporter

16

(PROCEEDINGS COMMENCED AT 9:02 A.M.)

17 THE CHAIR:

Good morning, and welcome to

18

today's virtual meeting for the Combined Module of the

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Distribution System Inquiry.

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My name is Don Romaniuk. I'm a Commission member

21

at the Alberta Utilities Commission, also referred to

22

as the AUC. In light of recent events involving the

23

government's appointment of Carolyn Dahl Rees as the

24

new chair of the Commission, there have been

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1

Today's virtual meeting is still new for us at the

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AUC. We have attempted to take steps to make today go

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as seamlessly as possible, but I ask for your

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understanding and patience if we have any hiccups along

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the way today.

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I would like to take a moment and thank all

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parties for your contributions to date on the

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Distribution System Inquiry. Parties have filed well

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thought out and comprehensive submissions on all of the

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topics in scope for this Combined Module. Your

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submissions are assisting us as we think about the

12

future, possible evolution of the utility distribution

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systems in Alberta.

14

To that end, the purpose of today's meeting is to

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facilitate an efficient and in-depth exploration of a

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few select topics within scope for the Combined Module.

17

If certain issues raised by parties in their

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submissions are not touched upon during today's

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discussion, this should in no way be seen to minimize

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the importance of those issues.

21

As you know, the Commission has asked the authors

22

of the independent evidence submitted by Charles River

23

Associates; the Brattle Group; Energy and Environmental

24

Economics Inc., E3; and InterGroup Consultants to

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actively participate in today's virtual meeting.

5

1 Today's discussion may evolve in such a way that the  
2 Commission may also call upon other parties to answer a  
3 follow-up question.

4 Over the course of this process, the Commission  
5 has consistently stated that it has undertaken this  
6 inquiry to map out the key issues related to the future  
7 of the distribution system and establish the regulatory  
8 agenda for subsequent proceedings that will consider,  
9 and then implement, the regulatory framework necessary  
10 to accommodate emerging economic and technological  
11 forces. Resolution of the issues identified in the  
12 inquiry will take place in subsequent proceedings.

13 Staff and Commission members will ask the invited  
14 individuals questions to help the Commission think  
15 through whether, how, and to what extent it may want to  
16 address some of these issues in subsequent proceedings.

17 I will now turn it over to David, who will be our  
18 moderator for this meeting, to explain how the meeting  
19 will be run and to get us started. Thank you.

20 MR. REESE: Good morning, everyone.

21 My name is David Reese and I'm counsel of the  
22 Alberta Utilities Commission. I'll be moderating  
23 today's meeting.

24 A transcript will be taken of today's meeting.  
25 For the purposes of obtaining an accurate transcript,

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1 re-establish the connection. If a representative of  
2 another party loses connectivity, we may continue with  
3 the meeting and it may be easiest for that individual  
4 to listen in using the public link available on the AUC  
5 webpage.

6 My role as moderator today will be to help direct  
7 speaking order and keep us on schedule. For each  
8 topical session a designated AUC staff member will read  
9 the questioning. A question may be directed to a  
10 specific consultant group, or more generally to the  
11 panelists of consultants. Questions directed to a  
12 specific consulting group will be directed to the  
13 group's lead representative. A question may be  
14 redirected by the lead individual to another person in  
15 their group or the group may briefly confer using their  
16 own private messaging, as they might whisper amongst  
17 themselves in an in-person situation. Alternatively,  
18 the individual that is called upon may decline to  
19 respond.

20 If someone other than the lead individual provides  
21 the answer, the person answering the question should  
22 identify themselves by name prior to answering the  
23 question. This will allow the court reporter to  
24 properly attribute the answer to the person who is  
25 speaking. I will also invite this person to turn on

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1 participants are requested to refrain from speaking at  
2 the same time. I may ask you to repeat yourself or to  
3 slow the pace of speech. You can obtain a copy of the  
4 transcript in the usual manner by contacting the  
5 reporting firm, Amicus, directly.

6 This meeting is also being recorded. Understand  
7 that it will be archived on the AUC website for up to  
8 30 days following the close of the meeting.

9 A live stream of this meeting is currently open to  
10 the public on the Commission's website.

11 The messaging and comment functionality in Zoom  
12 will not be monitored during the virtual meeting, so we  
13 ask that you not use the chat function of this meeting.

14 If you as a representative have connection issues,  
15 please email [webinar@auc.ab.ca](mailto:webinar@auc.ab.ca) and include your phone  
16 number. A member of our IT team will try to help you  
17 if the problem is on our end. Further instructions are  
18 provided in Exhibit 0680, that is, 24116-X0680.

19 Given today's video configuration, the yellow  
20 perimeter in Zoom that highlights who is speaking may  
21 not be an accurate reflection of who is speaking, as  
22 I'm sure you already noted as I am speaking.

23 If Commission staff or Panel, or one of the lead  
24 representatives of the four consulting groups loses  
25 connectivity, we will likely pause for a break to

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1 their video, but this is optional.

2 To facilitate a more orderly and organic  
3 information exchange and discussion, we will use the  
4 time-honoured practice used to facilitate classroom  
5 discussion, physically raising a hand. If the  
6 consultant wishes to respond to a question or provide  
7 remarks, please indicate so by physically raising your  
8 hand once the person who is speaking is finished. We  
9 will then select the speaking order.

10 If a consultant wants to agree with something that  
11 has been said by someone else, I ask that you limit  
12 your remarks to stating your agreement and only add  
13 what is necessary to supplement the information that's  
14 already been provided. In situations where more than  
15 one of the invited consultants wishes to respond to the  
16 remarks made by another, I will do my best to select  
17 the order of responses in a random fashion.

18 During the questioning, Commission Panel members  
19 or staff may have related or follow-up questions. They  
20 will communicate this to me, so as to minimize any  
21 disruption to the flow of the discussions by raising a  
22 hand, either virtually or through a private message --  
23 sorry -- virtually through a private message or  
24 physically. At an appropriate time, I will invite that  
25 Commission Panel member or staff to ask their question.

9

1 The four invited consultants will have their video  
2 turned on for the duration of the discussion, but with  
3 their audio muted unless they're speaking.

4 The Commission members and myself will also keep  
5 our videos turned on, together with our court reporter,  
6 so she can promptly intervene if she needs to. Staff  
7 will have their video turned off when they are not  
8 asking questions.

9 For those of us whose cameras will be on for the  
10 full day, should any of us appear distracted, rest  
11 assured that we are taking notes or viewing  
12 meeting-related materials on a second monitor or a hard  
13 copy. If an actual distraction arises for any of the  
14 participants that are screen, we ask that you  
15 temporarily turn off your camera for that time.

16 In situations where Commission members or staff  
17 wish to pose a question to a representative, other than  
18 the four individuals from the consultancies, we'll  
19 invite a representative from the party to indicate if  
20 you are on the line. You can indicate that you're on  
21 the line by selecting "raise your hand" function at the  
22 bottom of your screen on Zoom. Once you "raise your  
23 hand," a videoconference organizer will note it and  
24 turn you from an "attendee" to a "participant." This  
25 will disconnect your feed briefly for 3 seconds and

10

1 immediately reconnect, at which point you will be able  
2 to unmute yourself, turn on your video, and respond to  
3 the question.

4 To make the most effective use of everyone's time,  
5 I may step in as moderator when someone is going off  
6 topic in their answer or providing more detail than is  
7 required. If I do step in, don't feel bad about it.  
8 We're talking about very interesting topics and things  
9 can get carried away.

10 Another situation where I may step in as moderator  
11 is when we need to move on from a topic. We likely do  
12 not have time for all representatives of the four  
13 consultant groups to respond to or comment on every  
14 question. In these cases, the option of submitting  
15 written concluding remarks is available to all parties  
16 should a party wish to respond to an answer that is  
17 provided in the course of this virtual meeting.

18 I may also step in if the court reporter, or  
19 others, are having technical difficulties.

20 To step into the discussion in my role as  
21 moderator, I will do so by initially using a visual cue  
22 of raising my hand, and then speaking. These visual  
23 and verbal cues may also be used by the court reporter,  
24 Ms. Gerbrandt, and Commission Panel and staff.

25 Today's discussion will primarily focus on three

11

1 topics as previously communicated; however, we have  
2 reordered the topics.

3 So the first topic will be on rate design and  
4 dynamic pricing; the second topic will be advanced  
5 metering infrastructure and access to data; the third  
6 data will be a more general discussion, particularly on  
7 the next steps following the inquiry.

8 There are scheduled breaks throughout the agenda,  
9 being largely unchanged from what was communicated in  
10 Exhibit 680. So our first break will begin roughly at  
11 10 a.m.

12 A further point of order is the definition of  
13 distributed energy resources, or D-E-R-S, or DERs.  
14 Module One revealed there's no subtle definition of  
15 DERs. To be as inclusive and comprehensive as  
16 possible, Commission staff and Commission Panel  
17 members, at least in the context of this meeting, adopt  
18 the National Association of Regulatory Utility  
19 Commissioners definition of DERs. Namely: (as read)

20 "A DER is a resource cited close to  
21 customers that can provide all or some  
22 of their immediate electric and power  
23 needs. It can also be used by the  
24 system to either reduce demand or  
25 provide supply to satisfy the energy,

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1 capacity, or ancillary service needs on  
2 the distribution grid. The resources  
3 are generally small in scale, connected  
4 to the distribution system, and close to  
5 load. Resources included in this  
6 definition are solar PV, combined heat  
7 and power, energy storage, demand  
8 response, electric vehicles, and energy  
9 efficiency."

10 There is much ground to cover and we are limited in our  
11 time.

12 I now invite and welcome our four lead consultants:  
13 Mr. Friesen of InterGroup Consultants; Dr. Faruqui of  
14 the Brattle Group; Mr. DesLauriers of Charles River  
15 Associates; and Dr. Orans of E3.

16 I will now turn it over to Randy Lucas, who will  
17 lead us in our first set of questions on rate design.

18 MR. VAN EGTEREN: Just before we jump to Randy for  
19 those questions, I just wanted to check with the  
20 transcriptionist -- I hope that's correct -- and  
21 determine whether or not Mr. Reese's pace was  
22 sufficient for you.

23 COURT REPORTER: Yes, it was fine. Thank you for  
24 checking. But I found the Chair was hard to hear at  
25 times. I don't know if his microphone is close enough.

13

1 MR. VAN EGTEREN: Okay. Thank you, Ms. Gerbrandt.  
2 We'll make sure that Mr. Romaniuk has his mic  
3 appropriately located.

4 MR. LUCAS: Thank you, Mr. Reese.

5

6 D. FRIESEN, A. FARUQUI, D. DESLAURIERS, R. ORANS

7 THE COMMISSION QUESTIONS THE PANEL:

8 MR. LUCAS: Welcome, witness panelists.

9 As Commission Member Romaniuk

10 mentioned in his opening remarks, the purpose of the  
11 inquiry is to begin to determine the regulatory  
12 framework necessary to accommodate DERs and the  
13 possible evolution of utility distribution systems.

14 Starting with Mr. DesLauriers, can you please  
15 describe for me how you see utility distribution  
16 systems evolving to accommodate the changes to the grid  
17 that you see coming and the regulatory framework  
18 necessary to accommodate that evolution?

19 MR. DESLAURIERS: Sure, I would be happy to. Good  
20 morning, everybody. David DesLauriers, Charles River  
21 Associates.

22 As we know, the impact of DERs has a tremendous  
23 influence on how distribution systems will be changing  
24 over the coming years and coming months. We see today  
25 that we are evolving from a one-way system, where,

14

1 under traditional architecture power is flowing from a  
2 generation source over a distribution and transmission  
3 system to end customers, and it's essentially a one-way  
4 and, if you will, highly regular flow in the sense that  
5 demands are pretty well understood, energy flows are  
6 understood, through measuring and load profiling, but  
7 it's essentially a one-way direction. That's obviously  
8 changing now as we have two-way flows coming from the  
9 influence of DERs.

10 And so that leads to a host of operational  
11 considerations that need to be managed with  
12 intermittent power flows. There are regulatory and  
13 tariff considerations to be considered as we have  
14 addressed in our report related to the tariff  
15 mechanisms for DER to, in particular, residential,  
16 small customers.

17 And so I think the -- you know, the need for  
18 distribution systems and regulatory oversight of  
19 distribution systems continues to be there. As we  
20 outlined in our report, we believe that rates continue  
21 need to be cost causative. I think that regulation  
22 continues to be a necessary oversight to prevent  
23 cross-subsidies in rate application and tariffs that  
24 might occur from DERs.

25 And there's obviously greater incentive and need

15

1 for new technologies to come onto the system, including  
2 energy storage, electric vehicles, larger scale DERs.  
3 These are all providing additional innovations and  
4 value to consumers and opportunities to reduce the  
5 overall cost on the system. And so I believe  
6 regulation has a role to play in that in helping  
7 utilities foster that innovation as well as to receive  
8 reasonable and fair rate recovery.

9 MR. LUCAS: Thank you, Mr. DesLauriers.

10 Does anyone disagree with Mr. DesLauriers'  
11 response or have anything to add to his remarks?

12 MR. FRIESEN: This is Mr. Friesen, or  
13 Dale Friesen, from InterGroup Consultants.

14 I would strongly support the nature of  
15 Mr. DesLauriers' comments and agree with them.

16 I think, when we look at the three primary  
17 influencing factors, which are commonly referred to as  
18 digitalization, carbonization, and decentralization, we  
19 really have to look at how each of those is changing  
20 the nature of the grid in a forward-looking fashion.

21 We will enter an era where information becomes  
22 plentiful, and we will need to learn to use that  
23 information in a productive and efficient manner to  
24 improve the grid and reduce the costs.

25 Decarbonization is going to change the nature of

16

1 how we use electricity and produce electricity  
2 considerably.

3 You know, we're all aware of the growth in the  
4 photovoltaic market and renewable energy and how that  
5 is creating a move away from centralization generation  
6 towards decentralized generation. Consumers for the  
7 first time will be very actively involved in the  
8 production of energy for their own use and for use by  
9 grid customers at large.

10 We're also talking about a tremendous shift in  
11 energy consumption, transportation being a prime  
12 example of that and, you know, we're running a balance  
13 here.

14 If we look at traditional load consumption, we're  
15 seeing either stagnation or a decline in load, which  
16 may be offset by some of these shifts in use to  
17 transportation and other means, electrification of  
18 heating, et cetera.

19 But I think the aspect of tariff design that will  
20 be most profoundly impacted is through  
21 decentralization. And how we examine tariffs for  
22 production that are uniform, non-discriminatory between  
23 transmission and distribution, will be a particularly  
24 challenging item when we look at the nature of the  
25 changes that decentralized generation will force onto

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1 the distribution system with their variability, and,  
2 you know, they generally do not have the same  
3 dispatchability as centralized generation, and those  
4 aspects are going to have a significant influence on  
5 tariff design. Thank you.

6 MR. LUCAS: Thank you for those added  
7 comments, Mr. Friesen.

8 So you both mentioned tariff design and cost  
9 causative rate, so now that we're in the  
10 Combined Module, let's move to the rate design, shall  
11 we?

12 So, in IRs, we discussed balancing several  
13 competing objectives in rate design.

14 On the one side, collecting the embedded cost of  
15 the existing infrastructure and the utilities approved  
16 revenue requirements suggest to some the need for a  
17 rate design that contains more fixed charges. Further  
18 motivation for additional emphasis on fixed charges may  
19 be caused by the incumbent utility facing, or expecting  
20 to face, increased competition and bypass.

21 And when I refer to "bypass," I'm referring to  
22 both economic bypass, which lowers costs to society,  
23 and uneconomic bypass, which lowers costs to the  
24 individual customer but raises costs to society.

25 On the other side of the balancing act, customers

19

1 are nearly all fixed.

2 What purpose do volumetric charges, as in dollars  
3 per kilowatt hours, serve in modern rate designs,  
4 particularly, if the goal is to pursue economic  
5 efficiency?

6 MR. DESLAURIERS: Well, I think it -- as we stressed  
7 in our report, we think that underlying all rate design  
8 considerations is cost causation that we believe rates  
9 should be designed so that they have a close tie to  
10 cost causation and they communicate proper price  
11 signals with relation to cost.

12 That said, we also know that there are non-cost  
13 considerations that need to be considered, including  
14 gradualism, affordability, bill impacts, ease of  
15 administration, understandability of the tariff itself.

16 But as we step back and look at the cost construct  
17 of traditional utility distribution systems, and this  
18 construct hasn't changed with the imposition or the  
19 existence of DERs, they're fundamentally primarily  
20 fixed-cost base systems. And I believe that we  
21 stressed that and others that submitted reports in this  
22 proceeding have as well.

23 So to the extent that we recognize that  
24 distribution systems are fixed-cost systems, from a  
25 cost causation point of view we believe that

18

1 should be subject to price signals that allows them to  
2 make decisions that would lead to economic, efficient  
3 outcomes in the long run for both themselves and the  
4 amount of infrastructure required to serve them. This  
5 may argue for a rate design to retain some form of  
6 variable charges.

7 The Commission asked each of you to connect --  
8 excuse me -- to comment on the rate design that would  
9 achieve such a balance.

10 Before I proceed with my questions, my detailed  
11 questions, are there any additional comments or  
12 observations you would like to add to your written  
13 recommendations?

14 All right. Seeing no hands, I will move to my  
15 more detailed questions.

16 So, first, I want to focus on volumetric charges  
17 as an element of efficient rate design, and then we  
18 will later move to discussing demand charges, and then,  
19 hopefully, we're able to cover most of that before the  
20 break; and then after the break, we're going to move to  
21 discussing dynamic pricing.

22 So I'll start with you again, Mr. DesLauriers.

23 The three-part tariff that you recommended has  
24 fixed demand and volumetric charges. We heard from  
25 many parties in this proceeding that distribution costs

20

1 demand charges are an appropriate way to align recovery  
2 of costs with fixed costs.

3 With regards to variable costs, there are variable  
4 costs on the system, and we understand that there are  
5 variable O&M costs that change with the amount of  
6 energy that's sold, either exported or imported on the  
7 system, as well as energy-related costs that have a  
8 variable component. And that component really is  
9 variable due to the cost of fuel and the mix of  
10 generation resources that are being used any time on  
11 the system. And so there really is a time-based  
12 component and a variable component to a piece of the  
13 cost structure. And that's where we believe variable  
14 costs come into play and where there's a cost causative  
15 link.

16 And so to the extent that DERs can be considered  
17 as replacing higher-cost generation supply at certain  
18 points of the day, there is value to communicate that  
19 price signal through the variable rate in the tariff  
20 design.

21 And so in our recommendation we haven't excluded  
22 the use of the variable rate. We've in fact included  
23 that. But our recommendation is to -- to the extent  
24 possible, have that variable rate set so that it  
25 closely mimics the cost of that energy.

21

1 With DER, for instance, as solar -- for the  
2 example of a solar foot PV facility, when a facility is  
3 generating electricity, in effect, the centralized  
4 dispatched generation resources are saving on fuel, if  
5 you will, they're avoiding fuel costs, and so that does  
6 have a very significant influence on the value of that  
7 energy at that point in time.

8 Does that answer your question?

9 MR. LUCAS: I think so.

10 So it sounds like you're connecting this  
11 volumetric charge to O&M costs, particularly the cost  
12 of fuel.

13 So I want to direct a question at Dr. Orans. You  
14 also recommended a three-part tariff with a volumetric  
15 component, and I believe you said that the energy  
16 component should correspond with the cost of providing  
17 the energy and, ideally, has a time-bearing rate that  
18 reflects the time-dependent cost of generation?

19 So in your recommended rate design, and in the  
20 context of Alberta's unbundled environment, is the  
21 volumetric charge component you're referring to  
22 suitable for collecting any of the distribution tariff,  
23 as in, the distribution and transmission wires cost  
24 billed to the final use customer? Or is it just for  
25 capturing the cost for generation?

22

1 Sorry, Dr. Orans. I believe you're muted still.

2 DR. ORANS: Sorry. That's a good question and  
3 a difficult question to answer. I'll do my best to see  
4 if I can bring some clarity to that issue.

5 I don't disagree with Mr. DesLauriers'  
6 characterization that the -- most of the costs in the  
7 distribution system for a time frame we're considering,  
8 less than 10 years, less than 20 years, a relatively  
9 short time frame, are operating and maintenance costs  
10 and perhaps some distribution costs, mainly related to  
11 energy losses.

12 You can talk about load factor and efficiency,  
13 et cetera, but most of the costs in the distribution  
14 system, over a relatively short time frame, within  
15 three years, let's say, let's define our incremental  
16 costs over that period, because if we say it's long  
17 enough, everything is variable. Remember,  
18 everything -- if you say it's fixed, you know, you  
19 can't have fixed forever; right? If I say the time  
20 frame we're looking at is 50 years, everything becomes  
21 variable; right? The whole system can be replaced.

22 Let's talk about a practical time frame where  
23 we're looking at substitutes for the distribution  
24 system. I would agree most of the distribution system  
25 is fixed, the operations and maintenance is potentially

23

1 a little bit variable, not entirely variable, and  
2 certainly losses are variable, potentially by time  
3 variation.

4 That's not to say -- and we're going to move, I  
5 know, to fixed charges -- that you can't have  
6 time-varying fixed charges to reflect some of those  
7 differences in the opportunity cost of service by a  
8 time period.

9 MR. LUCAS: Thank you, Dr. Orans.

10 MR. REESE: Sorry, I see Mr. DesLauriers has  
11 raised his hand.

12 MR. LUCAS: Thank you, Mr. Reese.

13 Please, Mr. DesLauriers.

14 MR. DESLAURIERS: Thank you.

15 I agree with everything that Dr. Orans said. I  
16 think, to put some perspective on my comments, I was  
17 speaking within the traditional regulated rate  
18 environment where there is typically a test year of  
19 about 12 months, there may be some pro forma  
20 adjustments of known and measurable changes outside of  
21 that test year; but within, as Dr. Orans points out,  
22 within the shorter time frame in which rates are  
23 typically set in a regulated environment and they are  
24 set on an embedded cost approach where there is a  
25 dollar amount, revenue requirements that is to be

24

1 recovered from rates, to recover the cost of a  
2 distribution system that are primarily fixed, I think  
3 we do need to consider demand and energy rates  
4 together, particularly with regards to the three-part  
5 rate design.

6 Under a traditional full requirements rate design  
7 without solar PV, to the extent that you have a lot of  
8 distribution costs, fixed costs recovered from a  
9 variable charge, that may not result in significant  
10 cross-subsidies among customers.

11 However, when we look at a typical, let's just  
12 say, for example, a net metering approach, where  
13 there's a one-for-one offset at the full cost of the  
14 retail delivery charge, when we don't change the  
15 allocation of recovery of costs from the energy over to  
16 a demand component, what happens is you do have some  
17 significant uneconomic bypass, as you pointed out at  
18 the beginning of the question, where you have costs  
19 that are not being recovered from a certain set of  
20 customers, and that, under a -- you know, a net zero  
21 rate design where all costs need to be recovered in  
22 that test year creates subsidies to non-participating  
23 customers.

24 MR. LUCAS: Thank you. Just to clarify one of  
25 your last points, Mr. DesLauriers, did you say that

25

1 moving from energy charges to a demand -- a higher  
2 emphasis on a demand component may lead to uneconomic  
3 bypass or subvert uneconomic bypass?

4 MR. DESLAURIERS: May avoid economic bypass for  
5 customer requirements --

6 MR. LUCAS: That's what I thought --

7 MR. DESLAURIERS: -- sorry.

8 MR. LUCAS: No problem. I just wanted to make  
9 sure I got that right.

10 So, Dr. Orans, you mentioned the idea of losses,  
11 so I want to keep that idea, but I want to put it in  
12 the parking lot for a moment and I'm going to return to  
13 it after the break. Okay?

14 MR. REESE: Randy, Dr. Faruqui had raised his  
15 hand.

16 MR. LUCAS: Okay. Please. Thank you,  
17 Mr. Reese.

18 Dr. Faruqui?

19 DR. FARUQUI: Thank you. I wanted to make a  
20 couple of comments about rate design.

21 But before I do those, let me indicate that, as a  
22 customer, I satisfy just about all the requirements of  
23 being a DER. DER sounds like a horrible curse word,  
24 and that's what our industry specializes in.

25 But, basically, the better word is "prosumer" and

26

1 the more advanced term now is "prosumager." So  
2 prosumager is a customer with solar, with battery  
3 storage, and, of course, an efficient consumption  
4 cycle, and then you add to it an electric car. So I  
5 have all of those. I just wanted to make that  
6 statement. As a customer, I thought it was important  
7 to adopt all these new technologies just to see what is  
8 the other side of the coin.

9 The term "uneconomic bypass" or "economic bypass,"  
10 those terms are utilities speak, regulatory speak  
11 terms. The customer ultimately cares what their total  
12 bill is, and you can alter the rate design up to a  
13 point, whether the price of electricity is high from  
14 the grid, they're going to go and do what they can as a  
15 customer to lower their bill. Those are the realities  
16 down the road.

17 In the near term, there are subsidies that arise  
18 when a prosumer becomes a net zero customer and is on a  
19 volumetric rate, which is true in much of the globe.  
20 Distribution rates are largely volumetric with a small  
21 fixed charge.

22 If you look at the cost structure of the  
23 distribution grid, in just about every case that I have  
24 worked on around the globe, the distribution costs are  
25 largely fixed, with one utility estimating them as

27

1 98 percent fixed, there's Commonwealth Edison in  
2 Chicago, and others estimating it as upwards of  
3 85 percent. So volumetric rate doesn't make any sense  
4 for recovering a cost structure for distribution that  
5 is largely fixed.

6 I support three-part rates, I have written  
7 articles on them, I have testimony on them. But the  
8 third part, the volumetric part, is for energy and not  
9 for distribution costs.

10 I believe the ideal distribution rate would have a  
11 fixed charge and a demand charge. What we have today  
12 is a very small fixed charge for most utilities and a  
13 very large volumetric charge, and that leads to  
14 inefficient decision-making by the customers.

15 So the ideal rate, at least as far as I'm  
16 concerned, for distribution grid is a two-part rate:  
17 Fixed charge and a demand charge, where the combination  
18 of those two depends on the cost structure of the  
19 utility.

20 All of the conversations about efficiency have to  
21 do with energy, and, therefore, they have to do with  
22 the energy charge, and we can come to that later on,  
23 but I just wanted to clarify that I have a polite  
24 disagreement with the other two experts on the issue of  
25 applying three-part rates to distribution pricing.

28

1 MR. LUCAS: Thank you for that clarification.

2 So before I invite you, Mr. Friesen.

3 So, Dr. Faruqui, I'm familiar with the term  
4 prosumer, but you introduced a new term that I've never  
5 heard before.

6 Can you spell that for, not only myself, but  
7 Ms. Gerbrandt and her transcription, please?

8 DR. FARUQUI: Yeah, I hope I get the spelling  
9 right. I need to have it in front of me. There are  
10 actually books now on the subject.  
11 P-R-O-S-U-M-A-G-E-R. So storage is the ending part.  
12 So it's prosumer plus storage, and it becomes  
13 prosumager, but I can follow up with an email to pin it  
14 down.

15 It's sort of basically combining storage and  
16 battery storage could be as a separate battery in your  
17 garage or it could be in your electric car, it's that  
18 combination.

19 MR. LUCAS: It looks like my colleague  
20 Mr. Bourque wants to follow up as well, so I'll give  
21 him the floor and then, Mr. Friesen, we'll give you  
22 time to say your views on volumetric charges.

23 MR. BOURQUE: Thank you very much, Mr. Lucas.

24 I wanted to test the idea. With regards to wires  
25 recovery, having volumetric charges, in the preliminary

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1 IRs, the Commission asked questions with regards to the  
2 avoided cost.

3 So if wires are being recovered via volumetric  
4 charges, is that not an avoided cost signal to become a  
5 prosumer and not just the avoided energy costs, but  
6 now you're helping avoiding the recovery of the wires  
7 through those volumetric charges?

8 DR. FARUQUI: Was that a question for me?

9 MR. BOURQUE: That was a question to anyone, and  
10 I saw Mr. DesLauriers also raise his hand, so --

11 DR. FARUQUI: Okay. I'll just give a quick  
12 response.

13 Absolutely, I agree. And that's why we should  
14 have demand charges, so if the customer reduces their  
15 demand and all they have is a fixed charge, they cannot  
16 lower that. They cannot look forward for reducing the  
17 cost of the wires. But if they reduce the cost of the  
18 wires by lowering their demand, then they should have a  
19 lower demand charge and a lower bill as a result of  
20 that.

21 So I believe a demand charge promotes efficient  
22 utilization of capacity as opposed to efficient  
23 utilization of energy. The energy portion, in my view,  
24 doesn't belong in the distribution charge.

25 MR. BOURQUE: Thank you very much.

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1 ability to change their consuming behaviour to offset  
2 potential future costs of the system, I don't think the  
3 use of a flat energy rate, for instance, the style that  
4 is predominantly used in residential tariffs today in  
5 North America really give customers the proper signal  
6 because, in effect, they're being charged the same unit  
7 rate for an energy purchase from one time to the next  
8 and it doesn't necessarily reflect where scarcity is on  
9 the distribution system in terms of potential deferral  
10 of future costs.

11 So I agree with Dr. Faruqui that demand charges  
12 are probably a better way to deliver that signal than  
13 an energy-only charge today.

14 But I think in terms of the concept of avoided  
15 costs, we have to think of them for distribution  
16 system, really, avoided costs are future-looking, that  
17 distribution systems today that are operating are  
18 reflective of costs that are already incurred and won't  
19 be avoided in the future unless certain transformers,  
20 parts of the system are retired.

21 MR. BOURQUE: Thank you very much.

22 I see Dr. Orans, you have a follow-up, and then I  
23 wanted to turn and continue with the questioning that  
24 Mr. Lucas had for Mr. Friesen.

25 So, Mr. Orans, thank you.

30

1 Mr. DesLauriers, you had a follow-up as well I  
2 saw.

3 MR. DESLAURIERS: Thank you. I just want to respond  
4 directly to your question.

5 I believe the question was, does the use of energy  
6 charges to recover distribution costs not permit  
7 customers or does it permit customers to avoid any  
8 distribution charges. Was that the question that you  
9 stated, Mr. Bourque?

10 MR. BOURQUE: It was more, I believe, related to  
11 the recovery of the wires and, as an avoidable cost,  
12 being the volumetric charge --

13 MR. DESLAURIERS: Sure.

14 MR. BOURQUE: -- that it is a signal of some  
15 type of bypass, whether economic or uneconomic, or the  
16 potential for that.

17 MR. DESLAURIERS: Well, if we start with the  
18 assumption that distribution costs are a sunk  
19 investment today, that they are costs that are spent to  
20 build and maintain the distribution system, those are  
21 dollars that are, if you will, sunk, in effect. You  
22 know, they're not unavoidable by the utility to the  
23 extent that they are dollars that are invested in  
24 serving today.

25 In terms of price signals and giving customers the

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1 DR. ORANS: If I could just add a little bit  
2 very quickly to something Dr. Faruqui mentioned.

3 So I agree with the concept that most of the  
4 distribution system is fixed. You build it, you build  
5 it based on connective load, and then not much is saved  
6 based on energy consumption. Perhaps with smart  
7 charging in a new world, you can avoid some future  
8 costs.

9 And if you agree with Dr. Faruqui's 98 percent or  
10 95 percent or 90 percent of it being fixed, that's not  
11 to say, in a few areas in the distribution system,  
12 there are potential needs for upgrades and an  
13 opportunity to defer those.

14 So I want to make sure the Commission doesn't come  
15 out of this saying, "All costs are fixed in the  
16 distribution system everywhere all the time."

17 On average, for a standard, non-geographically  
18 differentiated rate, that is true, generally costs are  
19 fixed once the loads are there, but there are areas  
20 that change over time that have avoidable costs due to  
21 new upgrades.

22 MR. BOURQUE: Thank you for that additional  
23 follow-up.

24 Mr. Friesen.

25 MR. FRIESEN: Thank you, Mr. Lucas. I want to



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1 echo and confirm a lot of the comments that were  
2 provided by the three independent experts. We concur,  
3 I would say, generally with most of those.

4 I did appreciate in particular the customer  
5 centric perspective that was provided by Dr. Faruqui.  
6 It really is an important perspective to understand, in  
7 that we are trying to promote cost-effective behaviour,  
8 and it's impossible to promote cost-effective behaviour  
9 without price signals that customers can respond to.

10 So when we specifically address the volumetric  
11 component of a distribution rate, I think we do have to  
12 consider that there are some variable components. You  
13 know, roughly 10, maybe up to 15 percent, depending on  
14 the nature of the grid, of energy consumed by consumers  
15 is lost through transportation, through the grid. And  
16 there's an opportunity to use the volumetric rate to  
17 reflect that cost of lost energy in the distribution  
18 system, and we shouldn't ignore that opportunity.

19 I also want to speak a little bit to the concept  
20 of diversity. The further back you go into the  
21 distribution system, the more reliant our capacity  
22 sizing, our capacity accommodations are dependent on  
23 diversity. There's tremendous diversity within  
24 consumer behaviour, and when we lose that diversity, we  
25 create peak loads.

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1 And if we -- if we send price signals -- and  
2 capacity price signals are probably the most  
3 appropriate way of doing that -- to consumers that they  
4 can respond to, I would argue that we're providing a  
5 forward-looking price signal to customers that will  
6 affect or influence future costs incurred by DFOs.

7 Yes, DFOs have some costs, and those create a  
8 fixed-cost environment, but we still need to  
9 appropriately allocate those costs to the consumers  
10 that are driving the peaks, and a capacity charge does  
11 that much more effectively than a fixed charge can,  
12 which views customers indiscriminantly, or at least  
13 indiscriminately within a rate category.

14 So I think it's very important that we recognize  
15 the role of diversity in the design of the distribution  
16 system, and we look at ways to maximize that  
17 opportunity for the purpose of reducing capacity  
18 requirements on the grid, and we have many new  
19 technologies entering the market such as  
20 electric vehicles, such as storage, et cetera, which  
21 can be used to maximize that diversity and, therefore,  
22 decrease the fee. Those are opportunities we should  
23 explore to their fullest and we shouldn't ignore.

24 Finally, I want to speak to the issue of economic  
25 or uneconomic bypass. I think the point was made, that

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1 is a DFO term or a utility term, and I would agree  
2 strongly with that characterization.

3 If a customer, through the implementation of  
4 technology is able to move away from certain services  
5 that the utility provides -- so if they choose to make  
6 a decision in respect to reliability, and no longer  
7 depend on the distribution system for reliability, in  
8 my view, that is not "uneconomic bypass."

9 I think we have a tendency in the industry to  
10 characterize "uneconomic bypass" as any bypass or any  
11 avoidance of charges that are applied through tariffs.  
12 That is an unfair characterization of consumer  
13 behaviour.

14 I think consumers, at the end of the day, are  
15 willing -- are seeking to manage their energy bills and  
16 do so in a way that is as unfettered as possible, and  
17 if they are able to minimize their use of certain  
18 services from the utility grid, they should not be  
19 charged for those services if they're not utilizing  
20 them.

21 So let's be very careful in how we characterize  
22 "uneconomic bypass." I think it's important that we  
23 all have a clear understanding of what we mean by  
24 "bypass" and "uneconomic bypass" in particular.

25 Thank you.

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1 MR. BOURQUE: I believe my colleague Mr. Lucas  
2 had a question and a follow-up.

3 MR. LUCAS: Yes. So, thank you, Mr. Bourque.  
4 Mr. Friesen, you talked quite a bit about bypass,  
5 economic bypass, or uneconomic bypass.

6 So are you, in effect, disagreeing with  
7 Dr. Faruqui's characterization of thinking about bypass  
8 in terms of social costs? Or are you more in  
9 alignment? I didn't quite catch it.

10 MR. FRIESEN: Thank you, Mr. Lucas.

11 No, I'm not disagreeing. The point I'm making is  
12 that, no matter what technology we're talking about,  
13 we've seen tremendous evolutions of technologies across  
14 many sectors of consumer use, and industry has had to  
15 respond to those changes in technology.

16 And the utilities network is no different. While  
17 they are a regulated entity, and while we have ascribed  
18 certain responsibilities to them, and as a result of  
19 that, we've provided them with certain guarantees in  
20 respect to cost recovery, we cannot use those  
21 guarantees as a way of subverting changes in consumer  
22 behaviour. Consumers are at the top of the food chain,  
23 really, in many respects, and industry has to adapt to  
24 consumer behaviour.

25 So when I'm referring to "bypass," I recognize

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1 that consumer technology adoption may result in  
2 economic bypass. I hesitate a little to refer to all  
3 of that bypass as "uneconomic."

4 Some of it is a result of change in technology,  
5 change in behaviour, that the industry simply needs to  
6 adapt to, and that means there's some risk in the  
7 equation for industry and they have to accept that  
8 risk.

9 I think, fundamentally, that was the point I was  
10 trying to make.

11 MR. LUCAS: Thank you.

12 I would now like to move on the discussion towards  
13 focusing on demand charges. It's something each of you  
14 talked about moments ago, as well as in your written  
15 submissions.

16 So I think there's a lot of different, call them  
17 "flavours" of demand charges out there, based on system  
18 peak, like your own capacity demand during system peak,  
19 your own absolute peak, is there a ratchet,  
20 unratcheted, is that charge flown through for a month,  
21 a year, two years, how durable is it.

22 So I would like, maybe starting with Dr. Faruqui  
23 because you only suggested a two-part tariff for  
24 recovering distribution costs, what kind of demand  
25 charges you had in mind as your ideal demand charge?

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1 DR. FARUQUI: Sure. So it comes in many  
2 flavours, and I hesitate to say one of them is ideal.  
3 So let me first just briefly talk about the different  
4 ways in which demand charges are collected today.

5 So in Europe, for example, in France and Italy and  
6 Spain, they have a capacity charge. It's based on your  
7 connected load. And so if you have a bigger load  
8 because it's a bigger house, you pay a bigger capacity  
9 charge; and if it's a smaller house, you space -- and  
10 that's unchangeable, it's just hard wired, the size of  
11 your connection. That's been around for 50 years, you  
12 know, and longer, it's a post World War II innovation.

13 And it makes sense. It's sort of like, if you  
14 think of it in a particular house, you have a circuit  
15 breaker. You have a lot of circuit breakers. And if  
16 you have a big party and every circuit is on, at some  
17 point you're going to trip a circuit breaker and there  
18 will be darkness and very annoying to the partygoers.  
19 So then you have to go back, reshuffle the circuits and  
20 then turn it back on. So that's kind of a capacity  
21 charge, which nobody realizes until they trip it.

22 But the utility is saying, look, that's for your  
23 house, but we also have the similar capacity issue for  
24 transformers and, ultimately, feeders, circuits, and  
25 substations.

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1 So how do we capture that. Well, we do it quite  
2 well for large customers. It's still the same system  
3 whether it's a large customer or a small customer. The  
4 grid is essentially the same kind of grid in terms of  
5 its cost structure.

6 So the ideal demand charge would have two  
7 elements: There would be a non-coincident peak element  
8 and a coincident peak element. The non-coincident peak  
9 element would be your demand regardless of time of  
10 occurrence, the maximum demand, because that's what, as  
11 the utility, we have to design the system to be able to  
12 make sure your lights stay on regardless of how much  
13 you consume. It doesn't matter what time of day it is  
14 because that transformer is there 24/7.

15 However, there are additional elements that arise  
16 in the equation when there's a coincident peak  
17 occurring on the distribution system, and that should  
18 be captured in a demand charge as well.

19 So a lot of the large customer -- C&I customer  
20 tariffs have both an NCP, or non-coincident peak,  
21 demand charge, as well as a coincident peak, or CP,  
22 demand charge.

23 The challenge arises when we deal with residential  
24 customers. Partly it is a metering question. They  
25 just don't have the metering to do it in many

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1 utilities. And I believe that is the case in  
2 Alberta -- I could be off-base there, but certainly  
3 that is the case for ATCO Electric Distribution.

4 If you had the metering in place, then you could  
5 conceivably try to emulate the demand charge that you  
6 have for C&I customers. The question would be one of  
7 customer comprehension, understanding, and acceptance.

8 I've had several discussions on this topic at  
9 conferences with commissioners and utilities and  
10 stakeholders, and there is no easy consensus that I can  
11 point to to say that they agree that two demand charges  
12 are appropriate for residential customers.

13 The simple reason is, most of them don't even have  
14 a single demand charge today. So it's quite a leap of  
15 faith to go from no demand charge, as we have heard  
16 from the others, the charges in place today are largely  
17 volumetric for distribution cost recovery, along with a  
18 fixed charge.

19 Alberta has higher fixed charges than I have seen  
20 in many other jurisdictions in the US, some have fixed  
21 charges of zero. That's California, for example. Some  
22 have fixed charges of \$20 and some have \$40, but by and  
23 large, the issue is, if you are going to introduce a  
24 demand charge, can you even think of introducing two,  
25 and most people say no, you can't, for residential

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1 customers. So let's be realistic, and so then it will  
2 be a single demand charge.

3 So if you look at the US, for example, we have  
4 about 70 demand charges being offered today to  
5 residential customers across the country. Most of them  
6 are non-coincident peak, it's that maximum load in the  
7 month regardless of time of occurrence.

8 But some of the more, let's say, innovative rates  
9 are the ones you see in Arizona, the APS and SRP, and  
10 they have a peak period definition, five hours to six  
11 hours, it's the highest demand in that window of time.

12 So there are many flavours of demand charges, and  
13 each one has to reflect the competing principles of  
14 rate design, one of which is cost reflectivity, which  
15 would argue for the two demand charges I was  
16 mentioning, maybe even three, with the capacity charge  
17 being one element, and the notion of simplicity and  
18 gradualism.

19 So there is no consensus today on what is the best  
20 way to start when you don't have a demand charge to  
21 begin with. I think it requires a stakeholder  
22 conversation, it, of course, requires the right kind of  
23 metering; but, ultimately, I would say, throughout the  
24 globe, including New Zealand and Hong Kong where I'm  
25 working on these issues, you have to begin to move in

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1 that direction. It does not make any sense to have a  
2 volumetric charge for distribution.

3 The other point is how do you measure demand. Is  
4 it over one hour? Is it over half an hour? Is it over  
5 15 minutes? And, again, if you look at the commercial  
6 and industrial demand charges, they tend to be, in many  
7 cases, for 15 minutes. Many people have argued,  
8 including the hearings I have been in, in Arizona, for  
9 example, that's too difficult for a customer to relate  
10 to.

11 So I would say, to summarize, probably a one-hour  
12 definition of demand, where the demand charge is  
13 collected for a peak period that you define based on  
14 the distribution peak considerations. I think that  
15 might be the most practical way to look at it.

16 MR. LUCAS: I believe Ms. Collins had a  
17 follow-up question. I received a note from her.

18 Ms. Collins.

19 MS. COLLINS: Thank you, Mr. Lucas.

20 Yes. Just when we were on the -- I was interested  
21 to hear Dr. Faruqui's discussion of ideal design of  
22 demand charges with an NCP component and a CP  
23 component.

24 And I know there's been a lot of discussion around  
25 ratchet, and ratchets, are they fair, are they needed.

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1 Is that an integral part of an NCP component in  
2 your view? Could you speak a little bit to the merits  
3 of a ratchet. Thank you.

4 DR. FARUQUI: So, great question.

5 And I would say ratchets traditionally have been  
6 part of commercial and industrial demand charges. The  
7 residential demand charges, I am familiar with the 70  
8 or so that I mentioned. I don't believe any of them  
9 have a ratchet. I would have to double check it to be  
10 exactly sure, but, certainly, the more prominent ones  
11 don't have a ratchet. And ratchets have acquired  
12 generally a bad reputation in the industry, even for  
13 C&I customers, they are under attack, I don't know how  
14 long they will survive.

15 I would think for residential distribution demand  
16 charges, a ratchet is probably not needed. I wouldn't  
17 recommend it, because even if you do not have a  
18 ratchet, there's going to be a lot of opposition to  
19 introducing demand charges, even of the simplest kind.

20 The objections would be people don't know what  
21 demand is, people won't know how to respond to it.  
22 What if a soccer mom brings her kids home and they all  
23 take a shower at the same time. Those are all the  
24 issues that are going to be encountered, there are  
25 answers to all of them. There are successful examples,

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1 like in Arizona, where you simply say to the customer,  
2 here are your five major appliances, don't run all of  
3 them at the same time.

4 So there are very simple ways of messaging, what  
5 is demand and how to manage it, but introducing a  
6 ratchet is going to create, I'm going to call it a  
7 "scarecrow effect," and it's best avoided.

8 MS. COLLINS: Thank you. That's very helpful.

9 MR. REESE: I'll just point out that we're now  
10 at 10:00, which is the time for our scheduled break.  
11 So I'll put it to Commissioner Romaniuk if you would  
12 like to continue?

13 THE CHAIR: Thanks very much, Mr. Reese. I  
14 think, in fact, we should stick to our scheduled  
15 ten-minute break and return at, let's make it 10:12, if  
16 that's okay with everyone -- 10:12 Alberta time.

17 I'll leave it to everybody else to work out what  
18 your time zone is in and what that translates into.

19 Thank you.

20 (ADJOURNMENT)

21 THE CHAIR: I'll turn it over to Mr. Reese  
22 again.

23 MR. REESE: Thank you, Commissioner Romaniuk.

24 Randy, would you like to continue your  
25 questioning?

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1 MR. LUCAS: Yes. Thank you.

2 So thank you for your comments before the break,

3 Dr. Faruqui.

4 So if we --

5 MR. REESE: Randy, could you please turn on

6 your camera.

7 MR. LUCAS: Yes. Thank you. I remembered to

8 unmute myself, but I forgot my camera.

9 So if we think about the cost of the system, so in

10 my mind, I've been thinking about it in terms of

11 embedded costs as one big bucket and then a separate

12 bucket, but much, much smaller to the point you made

13 earlier in terms of percentages of fixed and variable

14 costs in the system, is this marginal cost bucket.

15 So we have fixed charges, they're going towards

16 the embedded costs and, Dr. Faruqui, you're arguing

17 that some or all of the demand charges that you're

18 recommending would be going towards collecting the

19 embedded costs as well, and my presumption, this is

20 what I want to test, that would be the NCP portion of

21 the demand charge.

22 And then is it fair to say that the CP demand

23 charge would be this marginal cost -- fit with this

24 marginal cost bucket, or would it also be recovering

25 any of the embedded costs?

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1 DR. FARUQUI: A great question, and clearly one

2 that different experts will have different opinions on,

3 even opinions that might change by the year.

4 But let me step back and address the broader

5 question you have, and then I'll answer the specific

6 one.

7 We all have discussed in the last hour that there

8 is both the issue of the short run (phonetic), in which

9 cost recovery is paramount for the utilities to stay in

10 business, but also the fact that systems grow with

11 time, new loads come in, new challenges come in.

12 I think it was mentioned by the CRA experts that

13 there is the issue of, you know, turnover that has to

14 occur, new growth occurs. It's a balancing act.

15 I think Dr. Orans did some pioneering work earlier

16 in California on using DSM to avoid distribution

17 upgrades -- I might be misquoting it, but I'm sure

18 he'll correct it -- but it was certainly one of the

19 early studies to show that distribution investments

20 could be avoided using customer-side resources.

21 More recently in New York, Con Edison has had this

22 project for a while, to avoid upgrading a big

23 distribution substation which would cost a billion

24 dollars, they're avoiding that by investing

25 \$200 million in DSM.

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1 So there are avoidable elements of distribution

2 costs, even though the first response is to say it's

3 entirely fixed, but it is fixed currently; but as you

4 look at the future, as growth occurs, or even as growth

5 doesn't occur but you have the two-way grid being

6 created, you will need to invest in new distribution

7 upgrades to accommodate these challenges. That's a

8 marginal cost element.

9 And so what I was thinking of was, for a

10 customer -- let's imagine cases A and B. Case A is

11 they just have a fixed charge for distribution. They

12 cannot do anything to avoid it. \$50 a month or

13 whatever the number is. Well, that's, I believe, not a

14 very efficient way to look at it as a progressive

15 forward-looking way.

16 So that's why I'm saying we have to combine it

17 with some element that the customer has some control

18 over, so that if they were to control the growth in

19 their load, then the distribution grid wouldn't have to

20 make all those investments that otherwise it would have

21 to make.

22 So there is a progressive, forward-looking element

23 to the demand charge, and that could be the CP element

24 or you could even formulate the NCP element to be

25 forward-looking. It's just a question of which

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1 philosophy you have.

2 But if you have just a fixed charge, the customer

3 cannot do anything. And that's all embedded costs for

4 lost fee at work. Even with an NCP demand charge, the

5 customer can lower it. They can lower it by not

6 running all their appliances at the same time, being

7 sensitive to demand as a metric as opposed to just

8 energy as a metric.

9 So it can promote efficiency, but with CP, you're

10 now more targeted. You're looking for particular times

11 of day when the distribution grid is peaking and you're

12 trying to avoid upgrading the transformer.

13 Take the case of electric cars. I know in

14 Alberta, the penetration is relatively low, but it is

15 picking up fast throughout the globe, and in about ten

16 years, a lot of car companies won't even make

17 conventional cars -- I think that's a well-known fact.

18 So it's very clear that if a lot of people in a

19 cul-de-sac were to get some kind of a Tesla, let's say,

20 then suddenly there will be a huge strain on the

21 transformer that feeds those houses. That will have to

22 be upgraded. How do you collect the cost of that?

23 It's a marginal issue.

24 You can do a time-of-use rate. But if you're just

25 a distribution utility, can you do a time-of-use rate?

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1 Yeah. I mean, if you are going to stick with a  
2 volumetric rate and you cannot put in a demand charge,  
3 then you're going to have a time-of-use rate for  
4 distribution.

5 And that's what I cite. I cite two examples of  
6 that in my report, one in New Zealand and one in  
7 Australia; and then more recently Con Edison has  
8 introduced such a rate as well, for the distribution  
9 only portion of it.

10 So it's a philosophical issue. Being an  
11 economist, I'm not an accountant, but I've talked to  
12 enough accountants, including my wife, to know that  
13 there's a need for cost recovery in the short term for  
14 companies to stay in business. So you have to have a  
15 blend of the two.

16 MR. LUCAS: Thank you.

17 So, Dr. Orans, I want to ask you a similar  
18 question.

19 In your recommended three-part rate structure, the  
20 main function of the demand charge is to collect the  
21 embedded cost of service and not to send an efficient  
22 price signal? Hopefully, I got that right.

23 So, if that is true, then which part of your  
24 recommended three-part tariff would send that price  
25 signal?

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1 DR. ORANS: First of all, I want to say, I  
2 agree with almost everything Dr. Faruqui said. So  
3 we're totally in alignment, and I think this  
4 distinction between a two-part and three-part is a  
5 difference without any significance.

6 We agree that basically you have two goals: You  
7 want to collect the revenue requirement, the fixed  
8 costs, and you want to do that in as safe a way as  
9 possible to keep the risk down to the basically owners  
10 so that they don't have a high cost of capital.

11 So it's a distribution monopoly, natural monopoly  
12 still; it's contestable in some parts, so you want to  
13 allow efficient expansion and alternatives to flourish;  
14 but, largely, you want to keep the fixed charges as  
15 non-bypassable -- difficult to bypass as possible.

16 At the same time, you want a piece that's  
17 variable. So we would say the fixed charges, to come  
18 back to your direct question, could be NCP, as  
19 Dr. Faruqui said.

20 I'm not so hung over on whether there is a ratchet  
21 or not. If a ratchet helps you make it more fixed, I'm  
22 okay with that. Many utilities still have ratchets in  
23 their demand charges, so NCP with ratchets.

24 I would also argue there's a place for customer  
25 charge, whether that's a minimum bill or a customer

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1 charge, there's some fixed costs that are reoccurring  
2 that have nothing to do with load spikes. There's some  
3 variable O&M and there's certainly distribution losses.  
4 That could be in the fixed charge or the distribution  
5 losses, and the variable O&M could go into a variable  
6 charge. Either one, I don't think that is a big  
7 distinction either. That is why I think the two- and  
8 three-part rate are similar for distribution.

9 Variable -- I also agree with Dr. Faruqui, you  
10 could have a time -- if you wanted something relatively  
11 simple, you could have a time-varying form of a CP  
12 charge. And you might want to make that more complex  
13 and more dynamic and more updating. The larger the  
14 customer and the more understanding and the more  
15 ability they have to react in understanding and consume  
16 it, if you will. Simpler if they have less.

17 MR. LUCAS: So this notion of a CP charge for  
18 demand tariffs, can we talk about that a bit?

19 Because I'm familiar with the concept in terms of,  
20 say, our ISO tariff and when it bills at the POD level,  
21 but given that the distribution system is often a  
22 collection of separate feeders, there's no -- as my  
23 non-engineering understanding goes -- there's no  
24 coincident peak on a utility's given distribution  
25 system per se, but maybe on individual feeders. So how

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1 do you take that into account when you design a CP?  
2 DR. ORANS: So I wrote, actually, a doctoral  
3 dissertation on this very topic. So I am probably the  
4 world's expert on defining an incremental avoidable  
5 cost in a distribution system, and it's been used in  
6 multiple places.

7 So you need to find -- you need to define what we  
8 call a distribution planning area. That is where loads  
9 and investments are causally interconnected. So that  
10 is, under normal operations, the open and close switch  
11 positions define the loads served in that area and the  
12 investments connected to it.

13 So let's just take Dr. Faruqui's cul-de-sac idea.  
14 Let's say there are ten cul-de-sacs served by two  
15 distribution substations and eight feeders in that  
16 area, not the cul-de-sac itself, but the distribution  
17 planning area. In most cases, as Dr. Faruqui already  
18 mentioned, you will look forward for the practical,  
19 let's say it's three- to five-year time period, and  
20 there will be plenty of distribution capacity on that  
21 system. The time-varying, then, value of that  
22 distribution capacity, whether I'm charging on peak in  
23 that distribution area or off peak, is pretty much the  
24 same. There's not much distinction in that and you  
25 don't need to send a signal, other than losses perhaps;

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1 right? But for collection of fixed costs and sending a  
2 capacity signal, it doesn't vary.

3 Now, if that cul-de-sac has a whole bunch of  
4 people across the eight distribution feeders, all with  
5 Teslas, all charging at the same time, you might have a  
6 problem. You want them to efficiently shift, modify  
7 behaviour. If the distribution company then has an  
8 upgrade that they would like to make, you can basically  
9 look at deferring that upgrade, put it in a capacity  
10 signal, charge a coincident peak charge for that  
11 distribution planning area that matches the incremental  
12 forward-looking costs in that distribution planning  
13 area. If you wanted to.

14 Now, this is a whole bunch of work, and if you go  
15 back to what we said in our roadmap, you know, I think  
16 you don't want -- if 99 percent of the distribution  
17 planning areas in Alberta look like the first case  
18 where they're not constrained, there are not enough  
19 Teslas, and other connected end uses that are  
20 substantially pushing capacity needs, then I think it's  
21 a lot of work to do to permeate that through all the  
22 distribution systems without much efficiency gain.

23 MR. LUCAS: Thank you.

24 MR. REESE: Dr. Faruqui has something to add.

25 Mr. DesLauriers, did you have something to add?

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1 Your microphone is off.

2 MR. DESLAURIERS: I apologize. I didn't hear you.

3 I agree with everything that Dr. Orans said. You  
4 know, we do a lot of rate work and pricing work,  
5 cost-of-service work across the country, and there are  
6 a couple of -- you know, a couple of fundamentals that  
7 we recognize in that work.

8 You know, as you move down the voltage in a  
9 distribution system, down to, say, the transformer  
10 level and the end-customer level, there is less  
11 diversity than if you are enlarging that viewpoint in  
12 that planning area. And so, typically, in  
13 cost-of-service studies, we allocate costs on the NCP  
14 because that is what is the planning criteria to manage  
15 that lesser diversity.

16 And so we haven't seen a lot of CP pricing and a  
17 lot of usage for CP cost allocation within the  
18 residential class itself. We typically see CP used on  
19 the transmission system that drives those costs. So I  
20 just wanted to make that point that, primarily, we'd  
21 seek cost-of-service studies using the NCP to allocate  
22 costs down to residential customers.

23 And we agree with Dr. Orans. Right now, we're not  
24 seeing a lot of distribution systems with a lot of load  
25 growth, and that comes from our marginal

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1 cost-of-service work. That doesn't necessarily mean  
2 that that won't be the case -- the case in the future.

3 MR. LUCAS: Thank you, Mr. DesLauriers.

4 So I want to go back to Dr. Orans' concept of a  
5 distribution planning area. So my presumption is it  
6 would be a smaller set within a distribution facility  
7 operator's service territory. So then there's this  
8 geographic element to it.

9 And you said that, for most of the time, and  
10 especially in Alberta, they're not bumping up against  
11 that kind of ceiling, as it were, to capacity. There's  
12 no cul-de-sacs that have 12 Teslas spaced up through  
13 various houses.

14 So my understanding is, then, it would keep that  
15 fixed element is what you're suggesting, and then when  
16 it gets close to that system peak capacity, then this  
17 dynamic element would start to kick in for that  
18 distribution planning area.

19 So how do you get that -- how do you have that  
20 charge lined up so that it will kick in when it's not  
21 needed now?

22 DR. ORANS: So in the IR responses, I find  
23 myself asking myself that same question when you asked  
24 it.

25 If there is a variable component, you know, in my

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1 roadmapping concept, you know, would I ask the  
2 Commission to ask, you know, the distribution owners to  
3 basically start implementing this, and is this the  
4 pathway forward that makes the most sense?

5 I think before you get to that, you have to ask  
6 yourself -- let's go back to Dr. Faruqui's cul-de-sac  
7 example -- does time-of-use pricing or CPP pricing or  
8 real-time pricing solve the 11 Tesla problem in the  
9 cul-de-sac? The answer I think is clearly no. It's  
10 too -- it's not a durable substitute long term for  
11 distribution capacity.

12 That's not to say, Dr. Faruqui, that I disagree  
13 with you, that you could have a simple time-varying  
14 charge that would help those people efficiently charge  
15 off peak, those that can, and maybe the distribution  
16 upgrade is deferred partly or smaller, and there's a  
17 benefit to the prosumer and there's a benefit to  
18 everybody in that.

19 So you can have that as part of the roadmap, but I  
20 think you need also this alternative wire service kind  
21 of option idea where it might include a combination of  
22 pricing things and quantity-based rationing and  
23 distributed generation or micro-grid alternatives that  
24 compete with, basically, long-term distribution  
25 upgrades when we see distribution planning areas

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1 nearing -- and you need to do this -- you can't do it  
 2 within the year, you need to look at this in a  
 3 multiyear time frame, because it's unrealistic to be  
 4 able to go out for bid for a long-term, durable  
 5 contracted source of capacity in a distribution system,  
 6 you know, in a short time frame.

7 MR. LUCAS: So that question that you find  
 8 yourself asking yourself that you put in IR responses,  
 9 I actually noted that, and I noted your response where  
 10 you said: (as read)  
 11 "The tariff can provide efficient  
 12 short-run price signals mainly  
 13 reflecting energy costs and losses..."

14 So we're returning to this idea of losses that I parked  
 15 earlier this morning: (as read)  
 16 "...that are time varying, easy to  
 17 implement and understand. The  
 18 dynamics..."

19 You went on to say: (as read)  
 20 "...the dynamic time scale of the price  
 21 signal can vary by class of service with  
 22 smaller customers seeing relatively  
 23 simple forms of time-of-use pricing and  
 24 larger customers seeing more dynamically  
 25 updated pricing."

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1 So, to me, in your response, there are two elements:  
 2 There's the energy costs and losses that might reflect  
 3 kind of the dynamic -- or potentially dynamic portion.

4 And so if we just take the energy costs for a  
 5 moment, and I guess still keep losses in the parking  
 6 lot, so given Alberta's functioning -- has a functioning  
 7 wholesale energy market, if retailers were required to  
 8 recover the actual cost of supplying each customer with  
 9 the energy they consume, as in the hourly wholesale  
 10 price times their hourly consumption, instead of an  
 11 hourly load profile that we currently use for most, if  
 12 not all, customers, would this achieve or work towards  
 13 achieving the objective of providing an efficient price  
 14 signal?

15 DR. ORANS: I think, if I understand your  
 16 question -- all of it, it's packed with a lot of  
 17 different things -- I think if I understand it  
 18 correctly, my answer is yes. If retailers, whether  
 19 they're aggregations of retail loads or the loads  
 20 themselves, see the short-run costs of loss and any  
 21 variable cost in a distribution system, that's an  
 22 efficient price signal.

23 MR. LUCAS: Okay. So then if we pick up the  
 24 second component, the losses -- and in this case we're  
 25 just thinking about distribution losses. So the paper

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1 by the Council of European Energy Regulators that the  
 2 Commission shared indicated that network losses can be  
 3 recovered through marginal pricing such as volumetric  
 4 hourly marginal losses -- pardon me -- such as  
 5 volumetric hourly pricing.

6 Is it possible to design an effective price signal  
 7 based on, let's say, distribution system losses  
 8 approximated on the aggregate average losses for the  
 9 entire system on a given hour?

10 DR. ORANS: It's an approximation. I mean,  
 11 all of these are what I -- this concept of marginal  
 12 cost is pretty useless, I think, for rate design, and  
 13 especially when you're talking about small residential  
 14 customers embedded in distribution systems.

15 So you're averaging over something. So it's an  
 16 incremental improvement to have time varying over a  
 17 single load profile losses for a distribution system.

18 And if you look at many ISOs in North America,  
 19 that's exactly what they do. They don't really have a  
 20 nodal loss. They have an aggregate average loss matrix  
 21 that they apply to the gen wholesale load price to  
 22 bring them down to the distribution level.

23 MR. LUCAS: So what I heard is, pursuing the  
 24 distribution losses, then, may not actually be worth  
 25 the effort in trying to add that into rate design to

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1 create some kind of dynamic price signal of when your  
 2 11 Teslas on the block are hitting that system  
 3 capacity?

4 DR. ORANS: Yeah, I'm going to come back to  
 5 the roadmap idea. I think it's -- it's -- as  
 6 Dr. Faruqi said, you know, it's a lot of detail for  
 7 customers to understand right now, and the  
 8 infrastructure necessary to do that is potentially  
 9 expensive and could be obsolete by the time you get  
 10 there in the roadmap. Basically, the latency, the  
 11 signal, the automation, the interface, all of that is  
 12 evolving quickly.

13 So I wouldn't encourage, basically, everybody to  
 14 run out right now and dive in, you know, from this  
 15 proceeding into that piece as a short-term  
 16 recommendation.

17 MR. LUCAS: Fair, fair. But if we've gone to  
 18 the trouble of installing AMI systems that could build  
 19 based on demand as you recommended, then why not go the  
 20 next step further and start having retail prices based  
 21 on time of use and then add this distribution -- or,  
 22 pardon me, distribution line losses component as well.

23 DR. ORANS: I have no problem with that. If  
 24 you spent all the money on that and you've seen all the  
 25 enabling conditions happen and all the triggers have

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1 happened, then I have no problem with it, as long as  
2 what you're signalling are truly variable costs like  
3 we've just discussed in those, and you're not basically  
4 putting a big portion of the fixed costs in there as  
5 well.

6 MR. REESE: Dr. Faruqui, did you have  
7 something to add here?

8 DR. FARUQUI: Yes, just two brief comments, if I  
9 might.

10 Going back to the cul-de-sac example, that  
11 actually came up in a discussion with the city of  
12 Palo Alto about ten years ago when they were seeing  
13 Teslas proliferating and your neighbour got it, so you  
14 had to get it, et cetera, et cetera, and then they were  
15 a utility with no smart meters, lots of smart people  
16 living in Palo Alto, Stanford next door with no smart  
17 meters, so they were just saying, we hate these EVs.  
18 Well, too bad, customers are getting them.

19 So without AMI, you can still do certain things.  
20 You can have smart charging, you could have -- you  
21 know, most of these Teslas, and I'm sure most of these  
22 other cars, have the capability, if you have a smart  
23 charger, you can just stagger the charging times, and  
24 this is something the utility could control, with the  
25 agreement, of course, of the customer, they get

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1 something in return for it. So that prevents you from  
2 having to upgrade your -- you know, distribution  
3 circuits around that cul-de-sac. So that's one point I  
4 wanted to make.

5 The other point I wanted to make is more of a  
6 practical point about locational variation in  
7 distribution pricing, which I know comes up a lot, but  
8 I have not seen any practical way of convincing  
9 customers that your rates are going to vary based on  
10 your location. It has been talked about with a lot of  
11 passion over the years, and IEEE at other conferences,  
12 locational-based, marginal-cost pricing, but I just  
13 don't know if that is the first priority that one shall  
14 have when trying to modernize rates. There is so much  
15 more that can be done without locationally varying the  
16 prices.

17 Now, you could provide other incentives that vary  
18 by location, you could certainly do that, But trying to  
19 vary rates by location, I think might be politically a  
20 very challenging -- and potentially, you know, a  
21 roadblock that may not be easy to overcome, and then  
22 the whole movement could be thrown away because you  
23 came up with too idealistic of a notion. So I just  
24 wanted to share that.

25 It's just sort of an observation based on

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1 anecdotes, I cannot prove that is the case, but the  
2 proof is in the fact that it doesn't exist today, and  
3 the reason it doesn't exist today is because of the  
4 practical, almost unsurmountable difficulties.

5 Easier to deal with rebates that vary  
6 locationally, like the Brooklyn-Queens project in  
7 New York.

8 So some hybrid approaches might be useful to do  
9 than idealize locational marginal cost base pricing,  
10 especially for distribution.

11 MR. LUCAS: Mr. Friesen, I think you've been  
12 waiting patient to get in, and then I also noticed  
13 Mr. DesLauriers had his hand raised. So, please.

14 MR. FRIESEN: Thank you, Mr. Lucas.

15 You made a brief comment, Dr. Orans, in respect to  
16 the roadmap. One piece of your earlier submission that  
17 I particularly enjoyed were your comments on the  
18 roadmap, and I think I would like to draw the  
19 Commission to those comments about how a properly  
20 implemented and executed DERs roadmap can be very, very  
21 useful in determining pace and prioritization for  
22 investment.

23 I think dynamic pricing has many interesting  
24 implications, but at the same time, it requires a  
25 tremendous amount of technology, and we can't separate

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1 those. I'm an engineer, so I get kind of pragmatic  
2 about things like that, and we have a -- we don't even  
3 have visibility on many distribution feeders today, let  
4 alone the mechanisms to facilitate dynamic pricing,  
5 locationally dynamic pricing.

6 So we have to look at these interim steps, and I  
7 think the DERs roadmap provides a very useful tool for  
8 determining what these incremental technology steps  
9 are, and that opens up a real view into the rate  
10 structures that are available and appropriate for each  
11 step of that technology implementation.

12 So I like the DERs roadmap approach, I like how it  
13 can be used to establish pace, to establish  
14 prioritization, to manage investment, and risk, most  
15 importantly to manage risk for ratepayers.

16 MR. LUCAS: Over to you, Mr. DesLauriers.

17 MR. DESLAURIERS: Thank you.

18 I just wanted to follow up on Mr. Lucas's  
19 question, I believe, on pricing of energy losses and  
20 rates and how that might differ.

21 And I'm not an electrical engineer, but my  
22 understanding is that losses really are a function of  
23 voltage and distance, and it's very difficult to assign  
24 a location-specific loss factor the way the loss  
25 studies are done and computed, and so with regards to



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1 how we handle losses in our cost-of-service studies,  
2 they're generally assigned across all of the service  
3 classes on a primary and secondary distribution voltage  
4 basis.

5 But getting it down to a basis lower than that,  
6 true rates, is very difficult, and we haven't  
7 necessarily seen it, and I don't think at all, we do  
8 assign loss factors for primary and secondary, but down  
9 to specific rate classes down to the cul-de-sac, I  
10 don't believe is practical at this time.

11 MR. LUCAS: Thanks. Those are helpful  
12 comments.

13 And with respect to the roadmap, we do have a set  
14 of questions that we will pursue on that topic after  
15 lunch, but I agree with you, Mr. Friesen.

16 Now I would like to shift to thinking about  
17 non-wires alternatives as well.

18 And so you four have just said now, as well as in  
19 your written IR responses, don't focus on dynamic  
20 pricing, we should instead start focusing on developing  
21 a cost-effective procurement process for non-wires  
22 alternatives.

23 So if we think about -- if we stay with this idea  
24 of dynamic pricing, not just -- like, if we lose the  
25 idea of dynamic pricing and the geographical element of

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1 provide proper cost signals, that that would be  
2 something we would recommend in tandem with the a  
3 non-wires alternatives.

4 MR. LUCAS: Thank you.

5 Anybody else who would like to comment on that?  
6 Well, Dr. Orans, I'll, I guess, go one step  
7 further.

8 So you recommended pursuing an efficient  
9 procurement process for developing non-wires  
10 alternatives.

11 Can you help me understand what that might look  
12 like in the Alberta context, and how would you  
13 recommend objectively determining the value of  
14 non-wires alternatives?

15 DR. ORANS: Rather than dive into all the  
16 details about that calculation, because it can get very  
17 complex really quickly, I would say that I would like  
18 to see the Commission form a group -- you know, a  
19 stakeholder group, a distribution owners group,  
20 et cetera, that could define collectively what they  
21 mean by distribution alternative, term, duration, what  
22 qualifies, et cetera. And it not just be a simple, is  
23 this dispatchable, is it not dispatchable. It would be  
24 a detailed estimate of what each whole set of  
25 alternatives, whether they are micro-grids, whether

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1 it, and we just think about dynamic pricing in the form  
2 of reflecting Alberta's wholesale pool price of energy,  
3 and maybe we include distribution line losses or maybe  
4 we don't, depending on the complexity, would you  
5 recommend -- would your recommendation change? Would  
6 you still recommend leaving that idea to the side and  
7 focusing on designing an effective procurement process  
8 for NWAs?

9 And this question is open to anybody who would  
10 like to respond. Everyone is being so shy now.

11 Mr. DesLauriers.

12 MR. DESLAURIERS: Well, I'll kick the conversation  
13 off. I think you can read from our report and our IR  
14 responses that we are very supportive of non-wires  
15 alternatives and any kind of approach or mechanism to  
16 introduce that into distribution system planning.

17 Underlying that, though, we believe that having  
18 rates that send proper price signals and that are  
19 reflective of costs on the system will establish the  
20 proper context in which to evaluate the cost  
21 effectiveness of non-wire alternatives against more  
22 traditional processes.

23 And so we believe that, although we're supportive  
24 of that, we would encourage that, to the extent that  
25 there are iterations or refinements to rates that can

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1 they are DERs, whether they're demand response, whether  
2 it's energy efficiency, could provide, and make it a  
3 generic methodology that could be applied in any sets  
4 of areas.

5 If you -- I don't remember who brought it up -- I  
6 think Dr. Faruqi brought up New York.

7 So we did -- we have done a lot of work in New  
8 York on non-wires alternatives. If you look at our --  
9 we did the roadmap, which has 1800 megawatts of battery  
10 storage in New York. Most of that is going into  
11 downtown New York City, into Con Ed service territory,  
12 and if you look at the calls that Con Ed had for  
13 storage, they basically gave -- you know, they didn't  
14 give 20-year contracts for storage, they gave 7-year  
15 contracts, leaving the remainder of the value to the  
16 distribution proposer and owner. They would contract  
17 fixed price for seven years and let the owner have the  
18 residual value to energy, might get recontracted or  
19 not.

20 There are whole sets of issues that needed to be  
21 defined in getting a reasonable contracting and  
22 procurement mechanism that accurately defines avoided  
23 cost and value to all customers, provides an  
24 opportunity for people to reasonably construct  
25 alternatives that would lower costs on the distribution

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1 system.

2 It's detailed. There's a lot of work in other  
3 areas that you can borrow from. The Commission should  
4 form a group to start that process, I would recommend,  
5 as soon as possible.

6 MR. LUCAS: Fair. So maybe we'll switch back  
7 to you, Mr. Friesen.

8 So you mentioned, from an engineering standpoint,  
9 we don't have visibility on our current non-wires --  
10 pardon me -- on our current distribution systems, so  
11 when we think about non-wires alternatives, I think  
12 it's pretty easy to quantify the costs, but can you  
13 quantify that benefit in any meaningful way without  
14 that visibility?

15 MR. FRIESEN: Well, I think there's two aspects  
16 to that. One is most of our ancillary services today  
17 are provided on the distribution system by DFO-owned  
18 equipment, and so they've installed whatever visibility  
19 they've needed to control those devices, which is often  
20 very, very localized, particularly in terms of voltage  
21 support and things like that.

22 If you want to engage third party -- particularly  
23 third party behind the metering devices to provide  
24 those ancillary services, you need, first and foremost,  
25 a way of determining the need, the location, and you

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1 infrastructure.

2 My understanding of Alberta is that there is very  
3 little activity currently in the province as far as  
4 solar rooftop deployments go or battery storage or EVs  
5 or energy efficiency or demand response. Now, I could  
6 be wrong on that, but I have been a visitor to Alberta  
7 over the years, going back to 1993, for conferences,  
8 for work with the AUC, for work with ATCO; and, you  
9 know, I know a lot of folks there, I keep notes on the  
10 penetration of these new technologies, and for all  
11 kinds of reasons that you know better than me,  
12 penetration is very limited, number one.

13 Number two, there is no real AMI deployment. So I  
14 also heard, at least from my client, that there is no  
15 congestion issue currently that they're looking at.

16 So the notion of non-wires alternatives obviously  
17 is an important notion, it's receiving interest  
18 throughout the globe. But what might be helpful, and I  
19 think Dr. Orans indicated this, is initially to have a  
20 stakeholder conversation just to size up the  
21 opportunity and then to look at the costs and the  
22 benefits.

23 Unless that's done, a lot of what we are perhaps  
24 going to be doing is talking about states that are  
25 much, much further along on these issues, and trying to

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1 need to be able to measure the delivery of the service.  
2 That requires visibility in the term -- you know, in  
3 respect to smart meters, the back-end systems to do  
4 that in near realtime, all of which don't exist in  
5 sufficient quantity or state to facilitate that.

6 So I believe we're -- we're still a ways away from  
7 having the infrastructure in place to actively  
8 facilitate a DERs market for providing ancillary  
9 services, particularly behind the meter equipment.

10 It might be a little different with larger  
11 distribution-connected facilities, where you can put  
12 that metering and monitoring infrastructure in place at  
13 a more reasonable cost, but we've got a time frame  
14 here, and there are many moving pieces within that time  
15 frame, and visibility right now would be, in my view, a  
16 significant constraint to the near-term implementation  
17 of DERs -- third-party DERs provided ancillary  
18 services, particularly from behind the meter  
19 installations.

20 I don't know, does that sort of answer your  
21 question?

22 MR. LUCAS: I think so, yes.

23 I saw Dr. Faruqui raise his hand.

24 DR. FARUQUI: Yes. I wanted to just make some  
25 infrastructure kind of comments, intellectual

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1 emulate them may not be the best use of time, because  
2 Hawaii, California, New York, they are way out there  
3 when it comes to deployment of all of these new  
4 technologies.

5 California, in particular. One quarter of the US  
6 solar installation are in one state; half of the EVs  
7 are in one state, and that's California.

8 And so why is that the case? Well, prices of  
9 electricity are very high. That's why you have so much  
10 penetration of solar rooftop. The same thing is true  
11 in Hawaii. Hawaii ended net metering, and now they  
12 have 60 percent of the new installations of battery  
13 storage coming in with the solar installations. Those  
14 are issues that are really shaping the grid in those  
15 areas today, and not ten years out.

16 So for Alberta to begin this journey is important,  
17 but it's a question of what comes first, and I think  
18 the first thing should be a stakeholder conversation,  
19 different viewpoints, and, of course, an assessment of  
20 the technical and economic potential of these NWAs.

21 If the potential is very small, for all kinds of  
22 reasons that are specific to Alberta, then you may  
23 approach it differently; but if there's a lot of  
24 urgency, then you have to move much faster, like the  
25 congestion in New York City is a very different story

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1 from what we have in much of Alberta.

2 So it's just a question of perspective. I just  
3 wanted to share that.

4 MR. LUCAS: Mr. DesLauriers or Mr. Reese, did  
5 you want to step in?

6 MR. REESE: Mr. DesLauriers had raised his  
7 hand.

8 MR. DESLAURIERS: Thank you. Very quickly.

9 We support a stakeholder session as well, and I  
10 think that this discussion really ties in nicely with  
11 all of the viewpoints of the experts today on this  
12 topic. I think there is a need for a stakeholder  
13 session. I think the success of evaluating non-wire  
14 alternatives really goes back to the success and the  
15 precision that the group can have in accurately  
16 predicting what the avoided costs are and what goes  
17 into an avoided cost analysis, and that's part of a  
18 cost-benefit analysis of each state, California,  
19 New York, Hawaii, has done, and others are anticipating  
20 doing, but unless those avoided costs can really be  
21 measured accurately, it's very difficult to come up and  
22 deliver a consensus decision on what the value of  
23 non-wire alternatives are. There are some states that  
24 measure some benefits that are very difficult to  
25 quantify at this point in time like the value of carbon

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1 So are you talking about engaging the UCA and the  
2 CCA as consumer advocacy groups? Or are you talking  
3 more, like, kind of a statistical sampling of customers  
4 and focus groups sitting down directly with customers?  
5 And, if so, who would you suggest lead that? And what  
6 kind of conversations or objectives would you have in  
7 sitting down with those individual customers?

8 MR. DESLAURIERS: Well, you know what, I don't know  
9 that I would necessarily brought the thought process  
10 down to that level of detail.

11 I think that it would be a stakeholder group  
12 represented by representatives of different interests  
13 in the question of what non-wires alternatives might  
14 deliver and what the value of avoided costs are.

15 So, you know, open for discussion, but I think it  
16 probably would be something that the AUC would want to  
17 lead and set up the context for, and that individual  
18 customer groups could be represented in the stakeholder  
19 process in that way.

20 I don't necessarily see that focus groups down to  
21 the customer level as being the only process would be  
22 something that in and of itself would be recommended.  
23 I think there's a broader discussion from the utility  
24 viewpoint, the customer viewpoint, regulatory  
25 viewpoint, and service provider viewpoint.

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1 pricing, and there are others that do not.

2 So there's a lot of variation in how to evaluate  
3 those avoided costs and we just suggest that that  
4 session in that regard might be helpful to set up those  
5 parameters.

6 MR. LUCAS: And, sorry, to clarify,  
7 Mr. DesLauriers, are you talking about engaging DERs  
8 proponents or technology installers? Or customers more  
9 broadly and their interest in deploying some of these  
10 technologies?

11 MR. DESLAURIERS: Well, I think it -- the broader  
12 the better because I think there are good viewpoints  
13 from all of the different stakeholder groups involved,  
14 and there are probably -- you know, some groups  
15 probably have a particular viewpoint that's valuable in  
16 being heard, and there are technical details that might  
17 come from experts within particular groups that are  
18 valuable.

19 So I believe a stakeholder group involving  
20 regulators and customers, as well as service providers,  
21 would be recommended.

22 MR. LUCAS: So that, I guess, aligns with what  
23 Dr. Faruqui was suggesting in engaging customers.

24 So can we go one step further, and help me get a  
25 better picture of what it is you're recommending.

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1 So, you know, open to discussion, but it could be  
2 an AUC-led stakeholder workshop where -- very much like  
3 the proceeding we're in today where reports and  
4 comments are filed and there's an open conversation  
5 about what are -- where the agreements are and where  
6 maybe some of the different viewpoints may lay.

7 MR. LUCAS: Dr. Faruqui, do you have anything  
8 to add to this idea of how we might implement this  
9 customer engagement kind of approach that you  
10 recommended?

11 DR. FARUQUI: So I agree with what was just  
12 said, and I think initially it should begin with a  
13 higher level stakeholder involvement led by the AUC,  
14 just see who is interested in it, who are the  
15 parties -- it could be the same parties that have  
16 submitted comments in these proceedings.

17 For example, I saw ChargePoint was one of those  
18 entities. I don't know to what extent the solar  
19 industry or the battery storage industry even exists  
20 today in Alberta. I'm sure there is some sliver of  
21 existence. And for Edmonton, has the fourth highest  
22 amount of solar radiation on the globe, the first one  
23 being Cairo, Egypt. So, of course, most of the time  
24 there is cloud cover and snow and rain and sleet.

25 So it's an infrastructure development at task

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1 that will take some time and effort. I think the AUC  
2 should lead it. If the parties are invited, I think  
3 they should look certainly at avoided costs, they  
4 should also look at the value and the benefits created,  
5 and then if it's found to be a useful journey, then  
6 perhaps the AUC should lead a study to quantify the  
7 benefits, and that is where I believe the individual  
8 customer focus groups will be relevant. Also  
9 conversations with builders, car dealerships,  
10 manufacturing companies.

11 So like a staged approach beginning with,  
12 initially, a broad stakeholder conception and then  
13 gradually coming down closer to the actual end-user  
14 market, because if the end user is not going to buy  
15 these DERs, then there is no existence of NWAs. NWAs  
16 only have meaning if the customer is interested in  
17 becoming a part of the new strategy.

18 I am optimistic. I mean, just about everywhere  
19 else throughout the globe, customers are now equipped  
20 with digital technologies, they have smart phones, they  
21 have smart computers, they have digital appliances.  
22 It's just a question of what are the prices of  
23 electricity today and are they sufficiently motivating  
24 them, you want to look at non-wires alternatives, or  
25 NWAs.

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1 between a demand charge and a volumetric charge is. I  
2 wonder if you would be so kind as to elaborate on that  
3 point.  
4 MR. DESLAURIERS: Well, I think that all we're  
5 really saying there is that, over a very narrow period  
6 of time, let's even make it an extreme example of one  
7 hour, a kWh-based charge and a demand-based charge is  
8 no different. You're just recovering the cost of that  
9 one hour of unit.

10 I think what we're trying to reinforce in that  
11 statement there, Mr. Bourque, is that, you know, as  
12 we've really probably discussed at length this morning,  
13 most of the costs on a distribution system, within the  
14 short term, within a rate-making context if you will,  
15 are fixed costs that are embedded and sunk, but that,  
16 you know, it's just sort of an example to show that  
17 time frame is a very important dimension to consider in  
18 all of these issues, whether, you know, you're looking  
19 at rate design or you're looking at capacity expansion,  
20 or you're looking at non-wires alternatives, there's  
21 always a dimension of time that has to be considered.

22 MR. BOURQUE: Thank you.

23 And then to pivot to Dr. Faruqui.

24 You mention that there -- or, actually, a  
25 question: Are there any significant differences

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1 MR. REESE: I'll just take note that we're  
2 currently at 11:00 where we had a scheduled 20-minute  
3 break. I understand that Commissioner van Egteren has  
4 suggested that we may consider going through until  
5 lunch. Alternatively, we could scale back on the break  
6 and have a short bio break for panelists and others, or  
7 we could continue with the break as currently  
8 scheduled?

9 I put that in your capable hands,  
10 Commissioner Romaniuk.

11 THE CHAIR: I've just checked here with  
12 Commissioner Collins. She's okay to go through. I'm  
13 fine to go through.

14 Are panelists okay to continue on for the next  
15 hour? Just raise your hand if you are.

16 Okay. So if there's no objection, then let's go  
17 through till 12 noon. Thank you.

18 MR. LUCAS: So I want to check in with my  
19 colleague, Mr. Bourque. I think he also might have  
20 some follow-up questions that he wanted to chime in on.

21 MR. BOURQUE: Thank you very much, Mr. Lucas.

22 I wanted to focus the first question to  
23 Mr. DesLauriers.

24 You had mentioned that, over a sufficiently narrow  
25 period of time, it's not clear what the difference

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1 between the time-of-use demand charge you proposed  
2 versus the time-of-use volume charge?

3 And to start off, could you explain in detail what  
4 you had anticipated by a time-of-use demand charge? I  
5 believe most participants would be familiar with a  
6 time-of-use volumetric charge, but if you could  
7 elaborate on what a time-of-use demand charge is and  
8 then the differences between time-of-use volumetric and  
9 time-of-use demand?

10 DR. FARUQUI: Sure, happy to do that.

11 So a time-of-use demand charge, let's suppose, to  
12 keep it simple, we have two pricing periods, peak and  
13 off peak. Let's assume they're defined with respect to  
14 the distribution peak, which may not be the same as the  
15 generational transmission peak, just focusing on  
16 distribution charges. So let's say the distribution  
17 system, just making up an example here, peaks between  
18 7 p.m. and 9 p.m. or maybe 7 p.m. to 10 p.m., it's an  
19 evening peak, residential load, and then you have all  
20 of the other hours.

21 So you will have a demand charge for both periods.

22 You will have a demand charge for the peak period and  
23 you would have a smaller demand charge for the off-peak  
24 period.

25 So it's as simple as that. It's just a split

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1 demand charge with a higher value when the grid is more  
2 congested and you're putting a bigger demand on the  
3 system, it's more expensive to meet that demand. You  
4 time differentiate the demand charges.

5 The way most people do demand charges, they just  
6 have one number, and that one number just applies to  
7 the peak period, and during the off peak it is zero,  
8 but it is still two. One is the peak period demand  
9 charge and then there is the non-existent demand  
10 charge, which is basically a demand charge of zero.  
11 That's for demand charges that vary with time.

12 Then you have the non-coincident peak version of  
13 demand charges, which are there regardless of time of  
14 occurrence.

15 So I was using that term "time-based" demand  
16 charge to distinguish the two categories of demand  
17 charges, one being regardless of time, it's your  
18 maximum number, that's your NCP demand charge, and it  
19 was not very popular with consumers anywhere; and then  
20 you have the one that you have some control over and  
21 you give it some time variation.

22 Now, compare that with the time-of-use energy  
23 charge as the contrast. So demand is not measured, the  
24 customer doesn't have to worry about a spike in their  
25 demand, they just have to focus on energy. And so

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1 And the market that comes the closest to your  
2 market, at least in my conception, is the market in  
3 Texas with Urquhart, and I have done some work there  
4 recently and I have discovered that the retailers are  
5 now finally discovering the virtues of time-of-use  
6 pricing, and they have some one million customers now  
7 in Texas, residential customers, on time-of-use energy  
8 rates.

9 So, you know, the future is full of possibilities.

10 MR. BOURQUE: Thank you very much.

11 I would like to tie together the two ideas that  
12 were just discussed.

13 As my colleague Mr. Lucas alluded to, we do have  
14 some coincident peak pricing in our transmission  
15 tariff, and that transmission tariff is redesigned at  
16 the distribution tariff level, so those price signals  
17 have the potential to get distorted. If the  
18 transmission price signal is a CP, how does one go  
19 about designing a CP price for residential customers  
20 for understandability?

21 And if small enough time scales demand charges do  
22 end up looking like volumetric charges, what is the  
23 ideal way in which these signals can be sent through to  
24 the customers without doing too much of a signal  
25 mismatch?

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1 there is an energy peak period price, there's a lower  
2 energy off-peak period price, and you can actually  
3 combine demand charges with energy charges, as we have  
4 been discussing.

5 And so then you could have the ultimate jigsaw  
6 puzzle. There are time periods and you have demand  
7 charges and you have energy charges. Believe me, for  
8 residential customers, that might be overkill. I mean,  
9 I have certainly talked about it, discussed it at  
10 conferences. People have a tough time just with a  
11 simple demand charge coexisting with an energy charge.

12 I did some work in the Middle East and one  
13 question I got was, you're going to charge us twice for  
14 the same thing. I said no, they are two different  
15 things. Energy is different from demand. It becomes a  
16 longer conversation than you may want to have.

17 So the simplest case is just focus on the fixed  
18 charge plus a demand charge, make the demand charge  
19 time varying, then you have addressed most of the  
20 issues that we have been discussing here. For  
21 distribution only.

22 Now, I did hear earlier on some good discussion  
23 about retailer pricing of energy, and that could be  
24 either RTP or time of use. Even in a market like  
25 Alberta, I think that would be worth exploring.

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1 And this question is open to anyone.

2 DR. FARUQUI: If I can ask a clarifying  
3 question, not being very familiar with how the  
4 structure of charges is today.

5 So what does the typical residential customer bill  
6 look like? If you can just give me sort of a -- I've  
7 seen some of them, but I don't have it in front of me,  
8 but is transmission broken off separately from  
9 distribution and from generation for the average  
10 customer's bill?

11 MR. BOURQUE: At present, residential bills  
12 contain line items with each of those charges broken  
13 down, and not necessarily have the price signals for  
14 each line item broken down, but, nevertheless, they are  
15 separate schedules.

16 For the DFOs, they vary by DFO service territory,  
17 and in the preliminary IRs to the Combined Module, we  
18 created a table that had price signals such as  
19 distribution rates might be \$20 fixed and 1 cent  
20 volumetric recovery, and then the transmission schedule  
21 might be something like roughly 4 cents per kilowatt  
22 hour as a transmission recovery.

23 And so noting that those price signals at the  
24 transmission level come from rates CTS, they're  
25 redesigned due to either a meter being a cumulative

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1 meter and unable to make time distinctions, or  
2 understandability, or for a myriad of other reasons.  
3 Some of those price signals may have been taken into  
4 consideration -- or changed, taking into consideration  
5 relative on right times of use.

6 So in that regard, though, if one wanted to send  
7 the correct price signal that is sent at the  
8 transmission level through to customers that then go  
9 through a distribution system, how should those price  
10 signals be flown through to customers in an  
11 understandable way?

12 Because, as you alluded to, having NCP and CP  
13 demand charges for individual customers is a very  
14 challenging task.

15 DR. FARUQUI: So it's absolutely challenging.  
16 And the way -- so there are three elements in your  
17 question: One is customer understandability, which is  
18 absolutely the key to rate design success. I believe  
19 we have to be customer centric as we look at  
20 rate design changes in the future.

21 But in addition to that you need the metering  
22 capability to be able to actually do the measurements.

23 And, third, you need to have innovative  
24 rate designs. Otherwise, there is no reason for doing  
25 any of this.

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1 So looking at examples from around the US, like in  
2 Maryland and California and elsewhere, even before  
3 demand charges enter the picture, I have seen  
4 time-of-use charges for energy and transmission and  
5 distribution that are not exactly the same number or  
6 defined over the same period. The customer is shown  
7 the details, for those who have an interest in looking  
8 at the details, but, ultimately, it adds up and it  
9 tells the customer this is your total bill, so much is  
10 for transmission, distribution, and generation, and if  
11 you are on a time-of-use rate, you have the right  
12 meter, for example, then it's broken up into those  
13 buckets.

14 As I mentioned earlier, I switched over and became  
15 a prosumer or prosumer, I now get a 14-page bill, and  
16 if you count the cover page, it's 15 pages; and I  
17 called the customer service centre of the local  
18 utility, and I said, do you really want me to spend an  
19 hour trying to understand my bill? Is there a simpler  
20 way to show it? And we had some good discussion and  
21 debate, and the answer was, just look at the second  
22 page and the last page, and throw the others away. So,  
23 obviously, there's a lot of improvement that can be  
24 made. The consumer psychology has to be factored in,  
25 not just the engineering details.

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1 So, to summarize, if you have the meters and you  
2 have the algorithms for transmission, distribution, and  
3 generation, you can show as much as you want to the  
4 customer, but nine out of ten customers will simply  
5 want to know, what is my total cost and if it varies by  
6 time of day or varies by demand, how much is that  
7 variation, and what can I do to lower the cost. That's  
8 the number one desire of most customers.

9 I don't know if I answered your question.

10 MR. BOURQUE: You did. And I see Dr. Orans has  
11 just raised his hand. So, please, Dr. Orans.

12 Your microphone is not turned on, Dr. Orans.

13 DR. ORANS: I don't want to jump in front of  
14 anybody else who wants to answer this, but I agree with  
15 Dr. Faruqui that the information -- getting the  
16 information to people so that they can do the right  
17 thing is critical here, and too much information is not  
18 better than the right amount.

19 But to make it more Alberta specific -- and this  
20 is where I think the roadmap -- coming back to the  
21 roadmap, this is a critical issue right now. So more  
22 people are installing more generators behind the meter  
23 at the transmission and the distribution level.

24 Dr. Faruqui, I don't know if you're aware, but the  
25 12 CP rate in the transmission system is \$10 a kilowatt

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1 month, on the order of that. That's an astronomically  
2 high number on the order of things, and it pays for a  
3 customer to install a CT to bypass a bulk system that  
4 is largely built and largely has no variable cost in  
5 the short-run going forward.

6 That permeates through into the distribution  
7 system because distribution has to pay credits back to  
8 transmission when they lose money. If people do the  
9 same thing at the distribution level, whether that is  
10 battery storage or whether it is rooftop PV or any  
11 forms of DER.

12 So I think another reason to have this avoided  
13 cost methodology at the transmission and distribution  
14 group, stakeholder group approved methodology, is to be  
15 able to apply it at the transmission and the  
16 distribution levels. So then you can make a decision,  
17 Dr. Faruqui, on the tradeoff between, here's the real  
18 information, let's get that first, and then let's talk  
19 about what is an efficient level that's the right  
20 amount for information and response at all the levels.

21 But the critical issue right now -- and this is  
22 where -- you know -- and I have certainly been guilty  
23 of using this word "uneconomic bypass" as much as  
24 anybody; and the only reason I'm using it, it's not  
25 pejorative, is it is cost shifting and it is happening,

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1 a large extent now, in the transmission system, I'm  
2 convinced I've looked hard enough at that problem, I'm  
3 not sure it's happening as much at the distribution  
4 system level, but if Alberta doesn't get it right on  
5 the transmission system level, there is a real chance  
6 this same thing happens at the distribution level.

7 And, Dr. Faruqui, you and I watched very closely  
8 this happened in Hawaii, and it happened very quickly.  
9 We designed with them a (phonetic) tariff and all its  
10 structure. So we were as guilty as anybody in letting  
11 that happen, and I wouldn't want to see that happen in  
12 Alberta because I don't think it's the right roadmap  
13 pathway to pursue.

14 MR. BOURQUE: Mr. DesLauriers?

15 MR. DESLAURIERS: Just very quickly. I agree with  
16 everything that's been said here today.

17 I just want to reinforce the two points that seem  
18 to be part of a thread throughout this conversation.  
19 It's really price signal and cost shifting when it  
20 comes to the transmission system, and I'm certainly not  
21 as familiar with the Alberta system as Dr. Orans is or  
22 Dr. Faruqui; but, you know, we did make a point in our  
23 report that, you know, if we assume that the 12 CP cost  
24 allocation approach and the 12 CP demand charge is the  
25 most suitable for transmission and that's how

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1 transmission systems are built and to accommodate that  
2 peak.

3 In terms of price signals, if we're just simply  
4 giving price signals for large, sophisticated customers  
5 who have energy managers or have the metering to do so  
6 to avoid that 12 CP and we're merely just shifting the  
7 peak to another time and shifting costs from customers,  
8 I'm not sure there's a real economic value that's  
9 gained from that. So I just want to, you know, point  
10 you to that piece in our report and remind others of  
11 that.

12 With regards to the price of a transmission  
13 unbundled rate, I'm a ratepayer up in Massachusetts,  
14 and similar to Alberta, I see a transmission component  
15 to my bill, but it's billed through on an energy-charge  
16 basis or a variable-charge basis. So, really, there is  
17 no price signal per se that's communicated to me as a  
18 consumer in Massachusetts that allows me to do anything  
19 about avoiding the transmission peak as a residential  
20 customer.

21 And I don't -- back to Dr. Faruqui's point -- I  
22 don't believe that the complexity that's introduced by  
23 a CP-based demand charge for residential customers is  
24 really of value given the use of understanding and the  
25 trouble with consumer understandability of that tariff.

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1 So I haven't seen a lot of CP-based residential charges  
2 for transmission, and I believe that's probably the  
3 reason why.

4 MR. BOURQUE: So I have two more questions  
5 before I turn to a colleague.

6 My first question is related to the wires of both  
7 transmission and distribution, and that is that, if I  
8 understand this correctly, the transmission and  
9 distribution systems are -- have an installed capacity  
10 to them, and that demand charges are a proxy to try to  
11 incent customers to use that demand efficiently. Is my  
12 understanding there correct?

13 Dr. Faruqui.

14 DR. FARUQUI: I believe your understanding is  
15 correct.

16 MR. BOURQUE: So a follow-up to one of  
17 Mr. Friesen's comments that there is not currently a  
18 lot of visibility of either what that installed  
19 capacity is or what those flows are.

20 If the year were 2040, and one could envision that  
21 information is abundant, both about what has been  
22 installed, as well as flows, regardless of who may have  
23 access to that information, with all of that  
24 information at your disposal, would a recommendation of  
25 some sort of dynamic pricing change, given all of that

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1 information, given the sophistication that may come  
2 about in the future?

3 Please, Mr. Friesen.

4 MR. FRIESEN: So I would be hesitant to  
5 characterize the statement I made earlier about  
6 visibility inferring that DFOs are not aware of the  
7 capacity of their current system. I think DFOs have a  
8 pretty astute understanding of the capacity of their  
9 existing system.

10 And those capacity ratings were established, or  
11 the equipment to provide those capacity ratings was  
12 established, based on studies that the DFO undertook as  
13 part of their planning process, which you could argue  
14 would have been hampered to some degree by a lack of  
15 more detailed information at the feeder level. So  
16 they're using an aggregated or an average number,  
17 probably multiplied by the number of customers on a  
18 feeder, to come up with some type of planning criteria.

19 So that information is used, and has been used for  
20 decades, to design the distribution system, but when  
21 you talk about that 2040 scenario, we have a lot more  
22 information, and hopefully that information will be  
23 available in near realtime.

24 We're now talking about control. And the  
25 visibility that I was referring to that is lacking is

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1 the visibility in respect to realtime control, and the  
2 integration of DERs in realtime to manage the  
3 distribution system, which is a little bit different  
4 than what your statement appeared to infer or your  
5 question appeared to infer.

6 So I think that we have an opportunity to  
7 implement multipart rates, as been described throughout  
8 this conversation, in simplified forms, potentially  
9 using static time periods, and that, as customers  
10 become familiar and comfortable with those price  
11 signals, they are in essence -- or we are in essence  
12 preparing them for a dynamic environment.

13 So I don't think there should be an assumption  
14 made that a dynamic pricing structure is required to  
15 achieve economic efficiency. I think we have an  
16 opportunity, though, to look at how more simpler rate  
17 tariff structures that we can implement with the  
18 technology that's available today influence the  
19 economic efficiency while providing customers with some  
20 forward-looking price signals. We desperately need  
21 customers to have forward-looking price signals, and we  
22 can't ignore that in the conversation around fixed  
23 costs.

24 Yes, embedded costs exist. We can't argue with  
25 that aspect, but without forward-looking price signals

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1 rationing.

2 So they have experiments that show, for example,  
3 the grid and telecom used to be constrained at  
4 Thanksgiving and Christmas. Everybody was calling  
5 home. If you just select two options: I need to make  
6 this call or I could make this call at another time.

7 Even without a known price beforehand, they showed  
8 you get a large -- you get effective quantity  
9 curtailment and rationing of scarce capacity just on a  
10 two-part simple design like that during one constrained  
11 period.

12 You know, it's a lot like -- Dr. Faruqui, it's a  
13 lot like CPP in that way; right? It has something  
14 really simple, most of the time, it's really easy, and  
15 customers don't need to calculate anything; they just  
16 need to say whether they need to or not.

17 And so I agree with Mr. Friesen, you know,  
18 utilities need more information to be able to do that,  
19 they can't just do it now, but I also agree, we don't  
20 need to get to an end state of realtime dynamic  
21 pricing, and you're going to be way along the road  
22 before you need to make that decision, and there are a  
23 whole number and slew of other programs you can  
24 implement before that.

25 MR. BOURQUE: Dr. Faruqui, please.

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1 we have no hope of changing the future, and we need to  
2 look at what changes a consumer behaviour will do to  
3 the future design of the distribution system.

4 And we can achieve that with some of the rate  
5 structures, a simpler static rate, time-varying rate  
6 structures, that we've talked about today. We don't  
7 need to make an immediate leap to dynamic and we don't  
8 have to see dynamic pricing as a mandatory end game.

9 I think we have a path that we can walk down, and  
10 we can determine when we walk down that path to a  
11 sufficient degree to reflect cost causation and  
12 appropriate allocation of costs between rate classes  
13 and customers.

14 MR. BOURQUE: Dr. Orans.

15 DR. ORANS: I would agree with all of those  
16 comments.

17 I guess there's one little additional piece I  
18 would like to add on. If you look up Dr. Bob Wilson  
19 and Dr. Hung-po Chao -- Dr. Wilson was a professor at  
20 the business school of Stanford, and Hung-po Chao was  
21 doing some very seminal work on the value of  
22 interruptible, curtailable rates at Ebury for a large  
23 number of years. And they collaborated on some really  
24 interesting work showing, in telecom, you get most of  
25 efficiency from really simple forms of quantity-based

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1 DR. FARUQUI: I just wanted to add a couple of  
2 points. I think I agree with just about everything  
3 that I've heard.

4 The year 2040 was mentioned, and I thought I would  
5 let you know that I actually wrote a paper one time  
6 called "A Pricing Odyssey" and it was the year 2040.  
7 It was like a dream. Somebody wakes up -- they fell  
8 asleep like Rip Van Winkle and they wake up and the  
9 world is totally changed (phonetic), the world of  
10 electricity specifically. There are prices to devices,  
11 there's automation, and life is really easy. They have  
12 lower bills, the grid is less expensive, it's all  
13 renewable, it's very intermittent, and you have growth  
14 (phonetic) flexibility just automatically built in.

15 Now, I was not thinking primarily of the  
16 distribution grid, I was thinking of the entire  
17 operation that we are talking about. But there is a  
18 lot of movement underway, and mostly in California, in  
19 trying to make that vision real, getting prices to  
20 devices.

21 Fred Schweppe, as some of you might remember, the  
22 MIT professor, wrote a seminal paper on that called,  
23 "Homeostatic Control." It was an electrical  
24 engineering kind of terminology, but basically it was  
25 getting prices to devices.



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1 I think between now, which is 2020 and 2040, so  
2 much would change that we can't even conceptually begin  
3 to list what would change. So what seems cumbersome  
4 and painful today from a consumer perspective will  
5 become seamless and easy, but that's two decades away.

6 The question is how do we get there. I think  
7 that's where the roadmap comes in.

8 But while we are discussing the roadmap and  
9 innovation, I thought I'd mention briefly something  
10 that is generating a lot of interest in rate design  
11 conversations, actually, throughout the globe, and it's  
12 not dynamic pricing, it's not demand charges, it's not  
13 anything we have been discussing like multipart  
14 tariffs, it is the complete opposite, and you might  
15 think it's a throwback to the dark ages, but it's out  
16 there and it's being dressed up to look as modern as  
17 one can possibly imagine something being. It's called  
18 the "fixed bill." Okay?

19 So the "fixed bill" is Netflix pricing reborn, and  
20 everybody is looking at telecom and they're looking at  
21 cable, they're saying people want simplicity. Who the  
22 hell cares what time of day it is, mostly a capacity  
23 issue, and over the long haul energy will be virtually  
24 zero price, or so goes the theory. So many utilities  
25 today are offering fixed bill products, not just for

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1 40 percent of the bill, there's not that much that can  
2 be made into realtime.

3 I mean, those are issues in a stakeholder  
4 conversation that I think need to be voiced and heard.

5 I did three staples of workshops last year in the  
6 province of New Brunswick on rate design reform. And  
7 they are not structured the same way that Alberta is,  
8 vertically integrated, the market (phonetic), as you  
9 know, but, ultimately, it is the same consumer issues,  
10 it's prosumers. I saw, actually, much to my surprise,  
11 three or four model 3 Teslas out there too. So the  
12 question was how to change rates and the consensus was,  
13 do not change them. Just leave it the way it is.

14 And one of the staff members of the Board said to  
15 me, the Board has the option of not making any changes  
16 at all. I said, certainly, I'm just a facilitator  
17 here. I'm not pushing for reform. You can certainly  
18 stay in the 19th century if you wish, you know, who is  
19 going to stop you.

20 The reality is the consumers have already gone  
21 into the 21st century and you can't stay constant. You  
22 have to get ahead of change. You have to anticipate  
23 innovation and you have to try to leverage that to do  
24 it in a way that doesn't create cross-subsidies and,  
25 yes, uneconomic bypass I believe is still a term that

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1 distribution but for the entire bill.

2 Many people who are active in the prosumer  
3 community already are on a fixed bill. The leasing  
4 program that you have from a solar supplier, that is a  
5 fixed bill, and it's lower than your current bill,  
6 that's how they get you; right? I mean, it sort of  
7 locks you into a bill that is 10 or 20 percent lower  
8 than your current bill. It's already there.

9 And what I wanted to just mention briefly is, I  
10 know dynamic pricing is hot and attractive, and I have  
11 certainly supported it and continue to support it, but  
12 the reality is relatively few residential customers  
13 have shown any interest for that product.

14 You have about 50,000 customers in the entire  
15 United States with roughly 130 million residential  
16 customers, 50,000 on realtime pricing in the land of  
17 Lincoln, the state of Illinois, the two utilities  
18 there, one 30,000, one 20,000.

19 So it has opportunities, but until it becomes  
20 simpler to implement and automated, maybe it will by  
21 2040, I don't think it's a realistic goal, particularly  
22 in Alberta, with very limited metering capability, with  
23 very limited history and time variation -- and the  
24 number one objection I get when the topic comes up is  
25 that the distribution and transmission charges are

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1 some of us use. I think that's -- now, you could say  
2 there is no such thing, every bypass is economic and  
3 let's have a debate on that issue, then, as to what is  
4 economic and what is uneconomic. That itself is an  
5 empirical question.

6 The solar industry will argue there is no such  
7 thing as uneconomic bypass. I'm sure you've seen the  
8 report that SCE put out saying that it will cost them  
9 \$2 billion to create the two-way grid to incorporate  
10 renewable energy resources. They are immediately  
11 criticized for saying, hey, this is going to lower  
12 costs, this is going to raise costs? Are we on the  
13 same planet? Are we in the same state?

14 So your stakeholders will have similarly vigorous  
15 debates.

16 MR. REESE: Thank you, Dr. Faruqui, for those  
17 additional comments.

18 Geoff, do you have further questions?

19 MR. BOURQUE: No, I just wanted to follow up  
20 before I pass to my colleague, Mr. Fuchshuber.

21 I didn't mean to allege, Mr. Friesen, that the  
22 DFOs did not have information or the TFOs did not have  
23 information about the capacity. Just rather that that  
24 capacity is there, one party knows it, and another  
25 party is trying to be incented to use it correctly

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1 using demand charges.

2 To that end, I would like to pass it off to my  
3 colleague, Mr. Fuchshuber.

4 MR. FUCHSHUBER: Good morning, panel. I'm just  
5 trying to start my video here.

6 All right. While we wait to get that started, I  
7 would like to change the direction from tariffs for a  
8 moment and talk a little bit about, exploring the  
9 interaction of what I understand might be potentially  
10 substantial volumes of distribution-connected non-wires  
11 alternatives with Alberta's wholesale energy market.

12 And I note your recommendations earlier, that, to  
13 engage in some consultation and to assess the scope of  
14 non-wires alternatives and really tailor an  
15 Alberta-specific solution. So, with that in mind, some  
16 of these questions might seem a little premature, but  
17 we have you here today, and to the extent you're  
18 comfortable providing some initial thoughts, we would  
19 appreciate them.

20 So to provide context for these questions, I'll  
21 first outline some aspects to our markets, which you  
22 may find relevant. I imagine you're aware of certain  
23 circumstances.

24 So the Alberta Energy market is an energy-only  
25 market. It's a realtime market. There's no formal

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1 not only on the difference in the wires cost, but also  
2 the forecast difference in the cost of energy from the  
3 pool and from the downstream DERs?

4 And then my follow-up to that is, if that's the  
5 case, how should that variation in energy prices be  
6 accounted for?

7 Go ahead, Dr. Orans.

8 DR. ORANS: I would invite my colleagues to  
9 also jump in here, but I think you've set this up  
10 really nicely for AWS.

11 Basically, the methodology we talked about an hour  
12 ago would define an appropriate benchmark cost if it's  
13 non-constrained, you know, pool-based power with  
14 otherwise applicable, what the distribution and  
15 transmission providers would -- it would cost to  
16 deliver that power. There's your benchmark cost to  
17 beat for your AWS bid; right?

18 It's got a characteristic, it's got a location,  
19 it's got a shape, and it's got a duration, and you're  
20 asking for a contractual, relatively long-term -- let's  
21 say it was like Con Ed's seven-year storage call -- bid  
22 that would match in all those characteristics that  
23 benchmark.

24 MR. FUCHSHUBER: Go ahead, Mr. DesLauriers.

25 MR. DESLAURIERS: I agree with that.

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1 time-ahead market. It clears with a single  
2 province-wide price. The system has -- I think it has  
3 been mentioned already -- it is planned to be free of  
4 congestion under normal circumstances, and the planned  
5 use of transmission must-run, which is a non-wires  
6 alternative at the transmission level is constrained.

7 And, nevertheless, if transmission must-run is  
8 used operationally, which as I say, it's not planned to  
9 be, the ISO takes action to restore the pool price to  
10 the level it would have been had the TMR not occurred.  
11 So, in other words, the use of transmission must-run is  
12 considered as distorting the pool price. And because  
13 of the way the system is planned, that currently  
14 happens very rarely.

15 So with all of that in mind, I had a few  
16 questions.

17 The first one is if, for simplicity, I was to  
18 consider, so the core non-wires alternative tradeoff as  
19 being between relying on all energy being provided by  
20 upstream generators in the pool along with sufficient  
21 wires to deliver that energy versus obtaining some of  
22 the energy from downstream, DERs I suppose, coupled  
23 with less expensive wires, that's the core tradeoff  
24 we're looking at here, would it be fair to expect,  
25 then, that the economics between those scenarios depend

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1 I also just want to -- just thinking about the  
2 question in terms of what the parameters might be for  
3 evaluation of the cost tradeoff.

4 One topic I didn't hear about, which I think is  
5 important to also consider in the tradeoff, is the  
6 value of reliability, which really would be one metric  
7 that should be considered if you're looking at a  
8 premise where you're evaluating a traditional generator  
9 upstream source, dispatchable, let's assume, versus an  
10 alternative of downstream DERs and related wires.

11 You know, I think, from my point of view, there's  
12 probably not a lot of difference in terms of the value  
13 on the system, but one question that might arise is, is  
14 there any degradation of reliability or are there any  
15 incremental costs that need to be considered moving  
16 into the model of the downstream DERs.

17 So I just add that into the consideration and  
18 maybe ask others to comment if they wished.

19 MR. FRIESEN: Sorry, this is Dale.

20 MR. FUCHSHUBER: Go ahead, Mr. Friesen.

21 MR. FRIESEN: Thank you. You know, I think  
22 there's an interesting question within the context of  
23 your question that relates to the ancillary services  
24 that are provided to the transmission system and those  
25 that are provided to the distribution system, and the

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1 criteria for those ancillary services and how they vary  
2 between the two systems due to the fact that the  
3 transmission system is a very interconnected system,  
4 while the distribution system is more radial in nature.

5 So, at the distribution level, you're talking  
6 about those ancillary services very much at the feeder  
7 level, so they're very locational, and they relate to  
8 those reliability criteria that Mr. DesLauriers spoke  
9 to, and the impact that both load and supply may have  
10 on the reliability of that distribution feeder.

11 Which is a little bit of a different discussion  
12 than the energy market, and I think we have to be very  
13 careful when we talk about NWA that we separate those  
14 two. The functions of reliability and the functions of  
15 energy supply, while interrelated, still are dealt with  
16 in a different way, and we have to make sure that the  
17 playing field for the provision of energy is  
18 consistent.

19 So we can't impose costs on distribution  
20 generators, connected generators, if we're not willing  
21 to impose costs on transmission-connected generators.  
22 So there has to be some level playing field if they're  
23 providing energy to the same pool.

24 And given the market size in Alberta, I don't  
25 really see a strong driver for creating regional power

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1 So that came out of -- we weren't locked -- I know  
2 there's one person listening to this call who knows  
3 this because he was running a company that was part of  
4 this whole thing.

5 So after New York published its massive tome on  
6 REV, we were locked on a long hot summer with the  
7 utilities in New York trying to figure out what REV  
8 really meant, and what REV really meant for DERs, in  
9 particular -- and this issue of reliability and/or who  
10 was in control was foremost in the issues.

11 And there's two real worlds under which -- that  
12 will come about when Alberta starts to approach the --  
13 what are the avoided costs for DERs and who controls  
14 them, and one is a kind of what I'll call DSO-centric  
15 model where the non-wires alternative is driven by a  
16 DSO need, or a trigger -- Dr. Faruqi, it is the Tesla  
17 example you gave in the cul-de-sac -- and there's a  
18 problem, and they need to figure out a way to solve it,  
19 and with that case, they're in control, they define the  
20 parameters, they maintain reliability and get first  
21 call on everything: Energy, capacity, any ancillary  
22 services that they need and defining what the needs  
23 are.

24 Alternatively, you can have a TSO-driven need,  
25 where it's just a call for DERs in general that would

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1 pools or distribution centric power pools. I believe  
2 that's a level of complexity that a market the size of  
3 Alberta doesn't necessarily need, but there may be a  
4 future where we allow parties to sell energy to each  
5 other, and is that something that Alberta has  
6 considered, where I, as a residential owner with DERs,  
7 may want to sell power to my neighbour, a third-party  
8 transaction without engaging the pool per se in the way  
9 it is designed today.

10 So I think there are aspects to this whole  
11 non-wire services discussion that we have to be very  
12 careful that we are speaking about the same thing. If  
13 we're speaking about energy, let's be clear, and if  
14 we're speaking about reliability, let's be clear that  
15 we don't create conflict between those two discussions.

16 Thank you.

17 MR. FUCHSHUBER: Thank you.

18 Dr. Orans, I see you put your hand up there.

19 DR. ORANS: Can everybody hear me?

20 I agree, this issue on reliability is critical,  
21 and I agree with Mr. Friesen, this issue of who is in  
22 control of the non-wires service and what benefits you  
23 get is really important.

24 A number of you might ask, well, why did we have  
25 all those funny-looking diagrams in our testimony.

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1 stack in with all the other TSO needs, and then any  
2 residual capacity left over after that TSO uses up the  
3 capacity they need, would qualify for the DSO.

4 And I think Alberta needs to think carefully  
5 about, is the next step in its triggered evolution so  
6 that the non-wires alternatives are triggered and  
7 controlled and contracted for by DSOs with a residual  
8 value going to the bulk season, or is it the other way  
9 around.

10 And I don't want to answer it here, I just think  
11 that's a key next step in the roadmap for Alberta to  
12 decide.

13 MR. FUCHSHUBER: Thank you. You have raised a  
14 number of points here I would like to pursue a little  
15 bit further.

16 The first one you raised, Dr. Orans, was the  
17 benchmark price. And to understand that a little bit  
18 more, the use -- is the benchmark price you're thinking  
19 the -- a going-forward price during the contract term  
20 which is matched to the delivered price of energy on  
21 the distribution system? How would it relate to the  
22 unknown forward wholesale price?

23 DR. ORANS: I think in the ideal world, it's  
24 got both in there. So you've got an avoided cost of  
25 energy delivered through -- let's just assume these

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1 DERs are interconnected at the distribution system, and  
2 it's delivered to, let's just say a distribution  
3 planning area. It's got the energy costs, it's got  
4 relevant transmission costs to the extent there are  
5 any, and it's got also the distribution-avoided costs  
6 as well, and it's got that total cost of delivered  
7 energy to that distribution planning area over a time  
8 period and over a size increment.

9 So let's just do an example. It's ten years and  
10 it's 10 megawatts of peak load capacity under some kind  
11 of shape. That's the baseline forecast, here are the  
12 cost estimates. Can those costs be replaced or  
13 mitigated with a DER or some combination of DER  
14 alternative?

15 MR. FUCHSHUBER: Okay. I think I understand what  
16 you're saying, then, is that, if it's the DFO perhaps  
17 who is contracting for this capacity, they would  
18 establish the avoided costs based on their assessments  
19 of what they thought the alternative was to procure it  
20 from the market, and include in that the value of the  
21 voided transmission -- no, the voided wires that they  
22 are going to have to otherwise spend, and put that  
23 price out there and contract and seek payments -- I  
24 guess use that as the basis for the contract and then  
25 get offers to provide energy at that price, what the

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1 MR. FUCHSHUBER: Okay. And, sorry, just to  
2 clarify, I was thinking more along the perhaps seven-  
3 or ten-year contract term that you're considering.  
4 DR. ORANS: Yeah. Exactly the same thing. So  
5 you could have this battery installed, it would be a  
6 contract for basically services, and the battery would  
7 perform on-call based on, you know, signals from the  
8 DSO.

9 The TSO -- if they were going to participate in a  
10 TSO program as well, they would need telemetry and  
11 controls that the TSO could control for any residual  
12 capacity that was left over during that whole time  
13 period you're thinking about.

14 MR. FUCHSHUBER: All right. Thank you.

15 MR. FRIESEN: Can I just make a quick comment?  
16 Going back to the discussion on avoided costs, I think  
17 Dr. Orans made one particular comment that was very,  
18 very important when he talked about the methodology for  
19 determining avoided costs.

20 He spoke about ten years, 10 megawatts, and then  
21 made a comment at shape. That shape is tremendously  
22 important to that determination of avoided costs, and I  
23 use electric vehicles as an example.

24 The energy delivery to a battery in an  
25 electric vehicles can tremendously change the shape and

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1 cost of providing energy at that price would be.

2 Is that what you're thinking?

3 DR. ORANS: Yes.

4 MR. FUCHSHUBER: Okay. All right.

5 One of the comments that was raised was around the  
6 necessity of maintaining a level playing field for  
7 energy, I think, and in the context of the Alberta  
8 market, which as was said, an energy-only market, where  
9 there really aren't capacity contracts or contracts  
10 offered to generators for entering the market, at least  
11 not by regulated entities, how would you see that  
12 playing into the idea of offering contracts to provide  
13 non-wire alternative services?

14 DR. ORANS: I think you do have a very  
15 short-term capacity ancillary service market in the  
16 generation system, if I'm not mistaken.

17 So let's just say you had a battery provider  
18 who -- and let's say that the DSO needed four hours of  
19 capacity, and the battery provider who bid on this  
20 provided six. So the first -- and let's say it was DFO  
21 triggered and the DFO was going to sign the contract.  
22 The DFO would soak up the first four hours, two hours  
23 would remain as an extra source of value that the TSO  
24 could use and credit, if that's what the contract were  
25 signed for, for the six-hour battery, for example.

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1 resulting cost imposed on the distribution system. If  
2 you're looking at a public-charging scenario, with very  
3 high charge rates, that will be a different picture for  
4 the distribution system than an off-peak residential  
5 behind-the-meter charging scenario at a much, much  
6 lower charging rate.

7 So when we define those shapes for determination  
8 of -- you know, that benchmark price or that avoided  
9 cost, we're going to have to be very careful that we  
10 understand how the consumer is using DERs -- or how the  
11 consumers are using DERs, because it will lead to very  
12 different outcomes for that avoided cost number.

13 And so we have to -- this is where stakeholder  
14 consultation and understanding of market behaviour  
15 becomes incredibly important, because broad assumptions  
16 may lead to very broad, incorrect answers if we're not  
17 careful.

18 MR. FUCHSHUBER: Thank you.

19 Go ahead, Dr. Faruqui.

20 DR. FARUQUI: Just to comment on the EV charging  
21 issue that just came up.

22 As I mentioned, I have an EV and I can charge at  
23 home. The off-peak rate is 17 cents. I can go to a  
24 supercharger and charge it there for about 25 cents,  
25 and it's a lot faster, the supercharger than to charge

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1 at home.

2 So we also have to think of it from the consumer  
3 standpoint as well. A price differential of 8 cents,  
4 or whatever, is not going to necessarily change the  
5 behaviour and encourage them to charge at home.

6 And I guess the other comment I wanted to make was  
7 something that came up earlier, and Mr. Friesen  
8 mentioned it, was the notion of transactive energy or  
9 customers trading load shapes; one has a surplus, one  
10 has a deficit.

11 I think that idea is finally getting some  
12 traction. Southern California Edison has just  
13 completed a pilot, a \$3 million study, and the report  
14 came out two days ago by Ed Cazalet and his colleagues.  
15 And it shows the opportunity is there, but it's still  
16 very much like a dream, way out in the future, because  
17 the amount of time that people don't have to invest in  
18 saving possibly \$5 a month on their bill.

19 But all of these futuristic scenarios are worth  
20 mapping out, it's just a question of priorities as to  
21 what comes first. I mean, there are hardly any  
22 electric vehicles today in Alberta. There are hardly  
23 any solar rooftops in Alberta. So it's a question of  
24 should we look at 2010 -- I'm sorry, 2020 or 2030 or  
25 2040, and the analysis and the conclusions would be

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1 he's back. Hi, Dr. Faruqui.

2 We are approaching our lunch break, and I'm not  
3 sure if this is a good spot for us to take the break  
4 and pick up after lunch.

5 DR. FARUQUI: Sorry, I am back. I was expecting  
6 that AT&T would do its number on me at some point, and  
7 it did, but okay. So, sorry, I think I was almost  
8 done. I just wanted to let you know I'm back.

9 THE CHAIR: Okay. We've had the benefit of  
10 only a 10-minute break in the morning, and I'm thinking  
11 now more of our court reporter. She probably will  
12 benefit from taking our break now.

13 Let's reconvene at 1:00 Alberta time.

14 And then we'll make a call, as we did this  
15 morning, on whether we have two breaks or one longer  
16 break in the afternoon.

17 But that will come later, so for now, let's  
18 terminate our session and come back in just over one  
19 hour, 1:00 Alberta time. Thank you.

20 (PROCEEDINGS ADJOURNED AT 11:58 A.M.)

21 \_\_\_\_\_

22 PROCEEDINGS ADJOURNED TO 1:00 P.M.

23 \_\_\_\_\_

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1 very different.

2 MR. FUCHSHUBER: Thank you. And just to follow up  
3 with that point, I note that you're saying this is a  
4 longer term potential, but to go back to the idea for a  
5 moment.

6 Mr. Friesen, were you suggesting that there should  
7 be sort of point-to-point wheeling rates? Is that what  
8 you're thinking? Where one customer can supply power  
9 to another?

10 MR. FRIESEN: It would generally be the concept  
11 of transactive trading between consumers, yes.

12 MR. FUCHSHUBER: Okay. In terms of how those  
13 participants would participate in the energy market,  
14 are you thinking -- I guess where I'm heading towards  
15 is much larger transactions perhaps, people offering  
16 down schedules and those kinds of things, but perhaps  
17 you're thinking this is much smaller and wouldn't  
18 need -- I guess what I'm wondering about is, do you see  
19 a change in how the energy market operates compared to  
20 the current pool-based design that we have?

21 MR. FRIESEN: It would definitely require some  
22 reconsideration of some of the principles in the  
23 current market, there's no question about that.

24 MR. FUCHSHUBER: All right. Thank you.

25 MR. REESE: It appears that we have -- oh,

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3 P.M. Session

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5 (PROCEEDINGS RESUMED AT 1:00 P.M.)

6 THE CHAIR: I am welcoming everyone back to  
7 our afternoon session by virtual meeting. We will have  
8 one break this afternoon, roughly at 2:30 Alberta time  
9 for 20 minutes.

10 And with that, I will turn it back to Mr. Reese.

11 MR. REESE: Thank you, Commissioner Romaniuk.  
12 Good afternoon, everyone.

13 I would just like to take a moment to remind our  
14 attendees on the use of the "raised hand" function in  
15 the context of this meeting. We'll use the function  
16 coming into play if a Commission Panel member or staff  
17 directs a question to a party representative other than  
18 the four consultants seen on screen.

19 By raising your hand once a question is directed to  
20 you, this will alert our meeting coordinator that a  
21 representative is available and ready to answer the  
22 question that has been posed to them, and then our  
23 meeting coordinator can change the status of that  
24 individual to a participant so that they can be seen and  
25 heard.

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1 As we have communicated in Exhibit 649, following  
2 the virtual meeting, all parties will have an  
3 opportunity to provide concluding remarks. These may  
4 include responses to questions posed for parties by the  
5 Commission during the virtual meeting. So there will be  
6 an opportunity.

7 I will now turn it over to Mr. Ayri to begin the  
8 session on --

9 MR. AYRI: Thank you, Mr. Reese.

10 Good afternoon. My name is Abhinav Ayri, and I  
11 will be asking questions on advanced metering  
12 infrastructure or AMI.

13 So to give you a quick overview of what I'll be  
14 asking, it will be focused on deployment of the AMI  
15 systems, the back-end data processing infrastructure,  
16 and deployment through regulatory intervention or the  
17 market-based approach.

18 Before we start the questions, I would like to  
19 make a clarification based on some of the IR responses  
20 and primarily based on EPCOR's response to the  
21 Commission's first IR on AMI.

22 In that IR, the Commission drew a distinction  
23 between the installation of the AMI system and the  
24 deployment of back-end data processing infrastructure.

25 EPCOR pointed out in its response that the AMI

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1 beyond the basic set-up, and this is a fair point. So  
2 we are going to refer to such infrastructure as the  
3 "enhanced back-end data processing infrastructure."

4 All right, with all of those words, I'm going to  
5 turn over to the questions.

6 So, Dr. Orans, in your written submission and IR  
7 responses, you stated that the deployment of the AMI  
8 system was not an all-or-nothing approach and, in fact,  
9 is often most effectively done through partial or  
10 phased deployment.

11 But, on the other hand, Dr. Faruqui stated that  
12 the AMI system should be deployed universally if it was  
13 shown to be cost effective. In order for the benefits  
14 to be fully realized, universal widespread deployment  
15 is necessary.

16 So can you gentlemen help me understand if this is  
17 a difference of opinion or is this just saying the same  
18 thing in different terms?

19 So, Dr. Orans, you stated that an AMI system  
20 should be implemented in a step-by-step process, which  
21 seems counter to Dr. Faruqui's statement about  
22 widespread deployment. Could you respond to that?

23 DR. ORANS: Certainly. And I think we're in  
24 agreement. I think he also says, this is assuming it's  
25 cost effective.

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1 meter is only one small component of a functional AMI  
2 system, and one needs a basic back-end infrastructure.  
3 This includes: The data collection and communication  
4 systems, the head-end systems, the meter data  
5 management systems, data storage systems, and customer  
6 billing systems that are required to make the AMI  
7 system, which includes the AMI meter, functional.

8 This is a good clarification, and this what we  
9 will refer to when we say a "basic AMI system" or just  
10 an "AMI system."

11 So, for example, in the case of EPCOR's  
12 residential customers, such a basic set-up involves the  
13 AMI meters and related infrastructure to enable  
14 cumulative energy reads on a monthly basis.

15 The Commission, in that preamble to the IRs,  
16 defined "back-end data processing infrastructure" as  
17 the communication network, head-end systems, meter data  
18 management systems, and customer information systems  
19 which would allow the meter data manager to collect  
20 data from the AMI meters at an hourly or more frequent  
21 basis for billing.

22 Customers would have access to their billing data  
23 information at the same intervals. However, the system  
24 would not need to provide control signals to this  
25 customer. And EPCOR pointed this out, that this goes

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1 So I would say if it's cost effective on a whole  
2 system basis, it should be implemented on a whole  
3 system basis. If it's more cost effective on a  
4 deferred basis, it should be on deferred. It will vary  
5 by class and by location and by distribution service  
6 provider.

7 I think we're in pretty much agreement, and I  
8 looked at that closely too to see if there was a gap  
9 there.

10 MR. AYRI: Mr. Friesen, did you have anything  
11 else to add? Or Mr. DesLauriers?

12 MR. FRIESEN: No, I think the comment that was  
13 just made by Dr. Orans, and the one that was provided  
14 in the response by Dr. Faruqui correlated with comments  
15 that I made in my -- our response as well.

16 MR. DESLAURIERS: And this is David DesLauriers. I  
17 agree with all of those comments. I do think that in  
18 order to fully realize the benefits of AMI, it most  
19 likely will be benefits that are near after fully  
20 deployed.

21 We do a lot of work with AMI on the rate and  
22 regulatory side in terms of looking at cost recovery  
23 for it, and from my experience, I can say that a lot of  
24 what you identify for data collection, billing, MDM,  
25 the mesh node network, CGRs, the backbone of the

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1 system, that's a fairly large component of the overall  
2 project cost of an AMI. So, in fact, a lot of that has  
3 to be set up before your first deployed AMI meter even  
4 pings.

5 So if we step back and look at the economics of  
6 these AMI systems, what we realize is that there's a  
7 significant upfront cost in getting this backbone  
8 system in, and to the extent that you can add more and  
9 more meters to deliver those benefits, I think the cost  
10 benefit begins to make more sense. I think it's more  
11 difficult if you were to install all of that and only  
12 deploy meters for a select few. For instance, those  
13 that were willing to burden the cost of that -- share  
14 in the cost of that.

15 MR. AYRI: Thank you.

16 So, Dr. Faruqui, you said in your responses that  
17 if the deployment of the AMI systems were left up to  
18 the market forces, where customers have the ability to  
19 opt in and pay for the installation of an AMI meter, it  
20 would be likely unsuccessful. Could I just get you to  
21 expand upon this statement?

22 DR. FARUQUI: Certainly. I was thinking  
23 specifically of a few markets where that approach has  
24 been tried out, in particular, in Great Britain and in  
25 Germany and parts of Australia. It has not succeeded

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1 because, to the customers, it's not clear what's in it  
2 for them, so why should they pay extra for a meter that  
3 may or may not do anything for them.

4 In markets where it has been found to be cost  
5 effective in terms of whole full-scale deployment by  
6 utilities and commissions examining the issue with  
7 stakeholders, so you have California as an example, you  
8 have Illinois, you have Maryland, and you have many  
9 other states in the United States with AMI, approaching  
10 a hundred million by year end, most of those  
11 deployments have been sort of carried out under the  
12 regulatory guidance, and they have been full-scale  
13 deployments to make sure that the benefits of  
14 distribution automation are fully realized.

15 If you have selective deployment -- first of all,  
16 it's very hard to have selective deployment because  
17 customers show very little interest and retailers also  
18 show relatively little interest.

19 Like, take the case of Texas with Urquhart.  
20 Urquhart is -- there is no default supply option, as  
21 you know. There is just retail supply and there is  
22 TDSPs, or transmission distribution service providers.  
23 This question was examined there, and a decision was  
24 reached by the PUC, to have universal deployment and  
25 customers pay for it regardless of what rate structure

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1 they're on, regardless of what retailer they're getting  
2 their services from, it's a successful model.

3 As I mentioned in the morning, there are now  
4 a million customers voluntarily taking time-varying  
5 rates for their energy portion of the bill. They have  
6 AMI, if they didn't have AMI, they would not be able to  
7 do it, they would have to pay extra, and most of them  
8 probably would decline. That's primarily what I meant  
9 to say.

10 But let me add, just as a footnote, that there  
11 have been cases with traditional time-of-use rates  
12 going back decades where customers have voluntarily  
13 signed on to a time-of-use rate and paid something like  
14 \$4 a month. I was one of those customers in Northern  
15 California where the utility offered a rate, which was  
16 a time-of-use rate, it was quite attractive, it had  
17 savings opportunities, but you had to pay, you know, \$4  
18 a month in perpetuity, essentially, and it got 70,000  
19 customers signed on out of 5 million customers. So  
20 that was the old-fashioned time-of-use meter.

21 So you will always find some customers will be  
22 willing to pay extra for a better meter, but it will be  
23 a very sparse deployment. You will not get any  
24 operational benefits from that kind of AMI deployment.

25 And in my experience, I've testified in several

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1 AMI cases, most of the benefits are coming from the  
2 automation side of the distribution and sometimes no  
3 benefits are required from the customer side for the  
4 business case to pass. That was, for example, true for  
5 Commonwealth Edison in Illinois, but in most cases you  
6 need customer engagement.

7 For example, in New York, they did not have smart  
8 meters for a very long time. At some point, Con Edison  
9 decided to move ahead with smart meters and the  
10 condition that the commission laid out was, you need to  
11 have customer engagement because it was an expensive  
12 proposition.

13 So you can find examples of both kinds, but I  
14 would say the successful examples are the ones that  
15 are, by far and the vast majority, are the ones where  
16 you have regulators approving full-scale deployment.

17 But, of course, as Dr. Orans pointed out and the  
18 other experts have opined, it has to be shown to be  
19 cost effective within some reasonable degree of risk.  
20 There will always be risk.

21 The first objection is the cost is certain, the  
22 benefits are uncertain. The benefits have to be  
23 quantified carefully, shown, and shared with the  
24 stakeholders and, of course, they go through a  
25 regulatory process to gain approval. And then

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1 sometimes the commissions will say, we won't let you  
2 recover this investment cost until you show us that the  
3 benefits are real.

4 That's what they did in Maryland. So the  
5 utilities were given five years in which to show that  
6 the benefits of the particular rate design they went  
7 with, which was peak time rebates, were sufficient by  
8 way of demand response in a PJM market to justify the  
9 investment. That was true for PEPCO, as well as for  
10 Baltimore Gas and Electric. It varies by jurisdiction  
11 as to how much of a risk is put on the customer versus  
12 the utility.

13 But, in any event, it has to pass the cost-benefit  
14 test.

15 MR. AYRI: Thank you, Dr. Faruqui. That was  
16 very informative.

17 I'm going to move over to the back-end data  
18 processing infrastructure, and I'm going to -- this is  
19 going to be for Mr. Friesen.

20 So, in your responses to the Commission's IRs,  
21 Mr. Friesen, you commented that some of the possible  
22 benefits of AMI systems depend on the level of  
23 sophistication of the back-end data or the back-end  
24 data processing infrastructure.

25 EPCOR's and other people's responses to the

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1 As we seek some of the benefits that are available  
2 through the deployment of these DERs, and those  
3 benefits become substantive enough as the adoption rate  
4 grows, we need to make decisions about metering  
5 infrastructure and information management control and  
6 processing.

7 So the point I was trying to make is that the  
8 diversity of the benefits that were described in the IR  
9 are quite large. Some of them are achievable with the  
10 basic system, some of them required an enhanced  
11 back-end data processing system, and some of them go  
12 beyond the enhanced system and actually require  
13 realtime data management system, which appears to be a  
14 step beyond what you've defined as "enhanced." So,  
15 overall, I would say that timeline is very dependent on  
16 the pace and prioritization you place.

17 So, for instance, if you look at metered life,  
18 with meters in the field having a lifespan of, you  
19 know, 8 to, let's say, 12, 14 years, if you remove  
20 those meters from service early, you create a stranded  
21 investment. If you choose to roll out AMI in a manner  
22 that respects the life of the current meter  
23 installation, then you're looking at a timeline of a  
24 decade, plus or minus a little bit. That may not fully  
25 meet your objectives for obtaining the benefits that

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1 Commission's IRs seem to agree. It is this distinction  
2 between the basic AMI system and what we call "enhanced  
3 back-end data processing infrastructure" that the  
4 Commission was trying to make in many of its IRs.

5 So I'm just thinking, in the context of this third  
6 road map, you brought this up in the morning, what  
7 would you say is the timing for this enhanced back-end  
8 data processing infrastructure?

9 MR. FRIESEN: Thank you. To be precise about  
10 it, about the timing, or the timeline, for AMI  
11 deployment with an enhanced back-end data processing  
12 system, I think in some respects, defeats the whole  
13 purpose of the roadmap as it was defined by Dr. Orans  
14 in his submission, which was provided through Fortis.

15 The purpose of the roadmap in and of itself is to  
16 define the timeline and create decision points along  
17 that timeline that would trigger certain levels of  
18 activity.

19 So what could trigger those levels of activity?  
20 There are many different factors, but a few of them  
21 could relate to the desired tariff design or  
22 rate design; they could relate to the level of DERs  
23 penetration: The amount of solar PV, the amount of  
24 storage, the number of electric vehicles that are in  
25 the market.

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1 are available through AMI, and you may choose to  
2 accelerate that.

3 So, you know, as Dr. Faruqui pointed out, if you  
4 want widespread deployment so that you can capture many  
5 of the benefits and you can provide optional rates for  
6 customers to opt into, you may want to do that in four  
7 to five years instead.

8 So I think all of us recognize that the deployment  
9 of AMI is not a small undertaking, creating the  
10 communication networks alone can be quite an expensive  
11 and protracted process.

12 So, you know, we're talking about a process that  
13 will, at a minimum, probably be at three to five years,  
14 even under an accelerated scenario, which may not be  
15 cost effective.

16 So if you look at all the factors that are  
17 involved and the direction that utilities or DFOs want  
18 to progress with rate design, et cetera, and combine  
19 that with the rate of the DER adoption, you know, a  
20 decade is not an unreasonable timeline for it to occur.

21 I think many of us would like it to happen a  
22 little earlier than that because it provides  
23 information and flexibility that does provide many  
24 benefits, but the DERs roadmap really is instrumental  
25 in setting those target points and establishing when to



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1 move ahead with various levels of investments.  
2 So follow the DERs roadmap process and I think you  
3 will come to a conclusion that's most beneficial to the  
4 ratepayer.

5 MR. AYRI: Thank you, Mr. Friesen.

6 Just to this point about the AMI system, the  
7 deployment of the AMI system, and with the DERs, I'm  
8 just thinking about the question of, can this full  
9 value of the DERs be realized without this AMI system?

10 MR. FRIESEN: If you're referring to -- that  
11 question to me, I wasn't sure if you were, but I'll  
12 take a first crack at responding to you.

13 I would say in its purest form or its most  
14 theoretical form, the answer to that would be no. We  
15 do require smart metering to fully realize all of the  
16 benefits, particularly those available through  
17 ancillary services, and some of the other benefits that  
18 are referenced in the IR. But that doesn't mean we  
19 need full deployment of enhanced systems to achieve all  
20 of those benefits.

21 If you look at, for instance, participation in the  
22 energy market, it really comes down to the requirement  
23 for settlement. So if you require settlement on an  
24 hourly basis as is required for large micro-generation  
25 and small-scale generation in Alberta, if you want to

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1 me -- have any jurisdictions ever contemplated  
2 pre-collection of some of this, this money, so that you  
3 have a relatively small collection -- a longer time  
4 period for collection, and then you have the money  
5 available to have really rapid deployment without any  
6 sort of really big rate shock?  
7 So I'm just wondering if anybody has ever  
8 contemplated that kind of scenario for rapid deployment  
9 of these kinds of assets?

10 Again, not suggesting anything, just wondering.

11 Thanks.

12 MR. AYRI: Go ahead, Mr. Friesen. Oh, sorry.

13 Mr. DesLauriers.

14 MR. DESLAURIERS: Thank you.

15 I'm not aware of any pre-funding, to answer your  
16 question, Mr. van Egteren -- I'm not aware of any  
17 pre-funding of such programs in rates prior to  
18 deployment, but I am aware of a number of rate and  
19 regulatory kinds of treatments that go to the effect of  
20 reducing rate shock and rate impact.

21 One of the experts mentioned earlier in this  
22 conversation the existence of potential stranded costs  
23 of existing meters that are replaced and, typically,  
24 what a utility will request is recovery of that through  
25 a regulatory asset. You know, the number of years to

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1 extend that settlement practice down to small  
2 micro-generation, you will need to have an AMI meter in  
3 place. Now, how often you read that meter, and the  
4 method that you use to read that meter, will really  
5 determine what level of back-end system you require.

6 As EPCOR noted, you know, they read their meter  
7 monthly on a cumulative basis. If you are okay with  
8 settling monthly for small micro-generation, you could  
9 read that data, load interval data, once a month as  
10 well.

11 But you really have to, you know, determine what  
12 your requirement and that will determine your read  
13 frequency and it will also, to some degree, determine  
14 the capabilities you need in your back-end system.

15 MR. AYRI: Mr. Van Egteren has a question.

16 MR. VAN EGTEREN: So what I'm going to ask, I'm not  
17 proposing. I'm just sitting here thinking about -- I  
18 mean, this is a lot of money involved, rapid  
19 deployment, suggesting relatively short lives  
20 associated with these assets, and so to -- what I'm  
21 hearing is that, in order to garner the benefits, rapid  
22 deployment might be a good idea.

23 So what I'm wondering about is, is there any  
24 experience -- and I haven't thought this through  
25 deeply, so if this is obviously wrong, then please tell

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1 amortize that asset doesn't necessarily have to be a  
2 short period, it can be amortized over a longer period  
3 of time to have a lower effect on rates, and so that's  
4 sort of one way to sort of soften the impact.

5 Another way to soften the impact is to gradually  
6 recover the costs in rates and defer some of those  
7 costs over time, and so that it's not a sort of an all  
8 or nothing or one-time hit to rates.

9 So maybe one suggestion to think about is, rather  
10 than pre-funding, to think about ways through the rate  
11 and regulatory process to sort of soften the blow.

12 MR. VAN EGTEREN: Okay. Thank you very much for  
13 that.

14 I'll get to you in a minute, Dr. Orans.

15 One of the other aspects of this problem that I've  
16 been thinking about sort of comes from the  
17 sustainability literature, and I think regulatory  
18 nimbleness is a really important factor, especially  
19 when you've got these random shocks in innovation, and  
20 Dr. Faruqui talked about that too.

21 So if you do have -- if you are pre-funding, then  
22 you have this in the bank. Instead of funding  
23 something that might be obsolete in a relatively short  
24 time, you now collect, see the landscape, and then  
25 deploy quickly, so that's part of what I have in mind

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1 in terms of being nimble, but, anyway, just so you  
2 know.

3 Dr. Orans, please.

4 DR. ORANS: I agree. I think a roadmap is the  
5 nimble process. It reacts in just-in-time deployment,  
6 and I'm not bought in -- I don't want to leave you with  
7 the impression that you have to put in all the meters  
8 all at once to drive down the cost per meter of the  
9 back end.

10 I mean, if the value of the pricing deviations on  
11 the customer side is de minimis anyway initially, then,  
12 you know, you can't make it up in volume. There is no  
13 additional benefit per meter, there's just an  
14 additional cost.

15 And if the value initially is, you know, two-fold,  
16 it is grid reliability, vision, and interconnection, it  
17 just becomes more and more gradually the new standard.

18 I think you need to look at the Hawaii case, its  
19 failures, and where it did it right closely. So Hawaii  
20 initially proposed, just like everybody else, a big  
21 massive, swallow this big huge AMI budget, along with  
22 all the back end. The commission rejected it. And it  
23 was a tome filing. It wasn't -- you know, it was  
24 state-of-the-art filing five years ago. And it had all  
25 of these customer-related benefits, it had all the REV

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1 MR. VAN EGTEREN: Okay. Thank you very much.

2 Oh, Dr. Faruqui. Go ahead.

3 DR. FARUQUI: Just two comments to supplement  
4 what we have just heard. If you already have AMR in  
5 place, then AMI incremental benefits are substantially  
6 reduced, and that seems to be the case with a number of  
7 utilities, including ATCO Electric, so that has to be  
8 factored in.

9 Now, so suppose you find it to be cost effective,  
10 and the question is should you pre-collect? I have not  
11 seen that being done anywhere else. It's an intriguing  
12 idea. It's certainly something worth contemplating,  
13 but I don't know how a commission would ever be able to  
14 approve such a pre-collection plan with all the  
15 opposition that normally arises to charges for that  
16 pertain to things that haven't yet been done. There's  
17 enough of a challenge recovering costs for charges  
18 already incurred. So that's just my perspective.

19 However, if you think about what has been the cost  
20 where AMI has been deployed, based on the numbers I  
21 have seen -- and I'm by no means an AMI expert, I'm  
22 more on the customer side, but I do look at what the  
23 impact is on the customers' bills, it's typically been  
24 about \$1 per customer per month, somewhere in that  
25 range. So it's easily dwarfed by all of the other

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1 stuff, everything was cooked in it. The commission  
2 rejected it without prejudice.

3 And when we filed it with a skinnied-down back  
4 end, about half of the back end they had before, not  
5 all the automation, not all the vision, partial  
6 deployment spread out, cellular instead of mesh  
7 network, which was higher cost per customer in  
8 application, and we got that approved. It's a small  
9 amount of dollars, broadly stakeholder supported.

10 And then immediately after that, the commission  
11 said, "Now send us your strategic pricing plan."  
12 Dr. Faruqui commented on that too, and he's been  
13 partially involved in this. And it's a phased pricing  
14 plan that works with the phased deployment.

15 It's funny, because the latest comments are,  
16 what's taking these guys so long on AMI? They don't  
17 realize they didn't want the full funding initially,  
18 we're five years down the road, and they're wondering  
19 how come you can't go faster. But there is a phased  
20 implementation.

21 You know, my own opinion is, I don't think it's --  
22 I think it's unlikely that when you're done defining  
23 the cost-effectiveness approach, you're going to find a  
24 quick immediate hit piece with initial costs, all of it  
25 all together, to be cost effective widely in Alberta.

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1 costs that are in that bill of the customer. It's not  
2 a huge number.

3 But in some places that collection begins  
4 simultaneously with the rollout of the AMI, and that's  
5 been my experience in most cases.

6 However, in some cases, as I mentioned in  
7 Maryland, they wouldn't let you collect it until five  
8 years had passed, they created a regulatory asset,  
9 et cetera, show that it was cost effective, and then  
10 you collected it.

11 But one big issue that I think some of the experts  
12 have mentioned, and I believe this is a challenge in  
13 Alberta from what I understand, that the issue is what  
14 about the cost, the unrecoverable cost, of the existing  
15 meters that have not lived through their full life, who  
16 will bear the cost?

17 Based on my experience, and it's not comprehensive  
18 by any means in this area, it's usually the customer.  
19 If the utility has to absorb that, it becomes a big  
20 deterrent, and that's something that I believe should  
21 be considered as well.

22 There is no real market value for those meters.  
23 You can't take your old meter and trade it in like a  
24 new car. Maybe there is a market in some other  
25 countries, but it hasn't yet manifested itself on eBay.

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1 MR. VAN EGTEREN: Thank you.

2 Yes, Mr. Friesen, just one second, I just -- we do  
3 pre-collect net salvage here in Alberta, and it's an  
4 unknown future cost that is pre-collected, so that was  
5 sort of part of my tie-in there.

6 Mr. Friesen, if you're ready, jump in.

7 MR. FRIESEN: So I just want to address the  
8 pre-collection issue. InterGroup has participated in  
9 proceedings that have proposed to pre-collect.  
10 Generally been highly controversial for the reasons  
11 that Dr. Faruqui outlined, and raises real concerns  
12 about generational equity and collecting funds from  
13 customers who may never benefit from that collection.

14 So I think there's caution that we would suggest  
15 in that area, particularly in respect to pre-funding.

16 MR. VAN EGTEREN: Thank you. And I want to inform  
17 all parties that I was just sitting here listening to  
18 the testimony and it's just off the top of my head.

19 So everybody calm down, I'm not proposing this or  
20 anything. We had you in the room and I wanted to get  
21 your reactions to that. Thank you very much.

22 And, Mr. Faruqui, we are all too aware of the  
23 stranded asset problem here in Alberta.

24 MR. AYRI: Just one more question for  
25 Mr. Friesen, and then I'll just move on.

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1 This goes back to the sophistication of an AMI  
2 system. I'm just wondering, how would the  
3 sophistication of an AMI system, whether basic or  
4 enhanced, how would that affect the provision of  
5 non-wire alternatives by DERs?

6 Did I address it to Mr. Friesen?

7 MR. FRIESEN: Sorry, I wasn't sure if you had  
8 addressed it to anyone specifically.

9 But I've always been of the opinion that, if you  
10 can't measure it, you can't compensate for it, or you  
11 can't charge for it, and that fundamentally is the  
12 basis of why we need smart metering to facilitate  
13 ancillary services. We need a way to measure them,  
14 they're typically time based, so we need appropriate  
15 interval resolution to measure those at services, as  
16 they're being delivered. And, you know, fundamentally,  
17 if you can't measure, you can't compensate or charge.

18 So, for that reason, you know, that back-end --  
19 that more enhanced back end is required to ensure that  
20 you measure appropriately and charge or compensate  
21 appropriately.

22 MR. AYRI: Go ahead, Dr. Orans.

23 DR. ORANS: Just hopefully Mr. Friesen agrees  
24 with this.

25 You're not saying, Mr. Friesen, that you need full

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1 deployment of AMI to all customers to be able to get  
2 telecom into distributed generators sufficient to do an  
3 NWA bid, are you?

4 MR. FRIESEN: No, I'm not. No --

5 DR. ORANS: Okay. I just wanted to make that  
6 clear.

7 MR. FRIESEN: I'm talking -- to be fair, and  
8 I'll clarify that statement -- obviously, deployment of  
9 those types of capabilities into larger generation  
10 sites is already quite common and is being done today.

11 I'm more talking about an environment where we're  
12 using behind-the-meter generation at the residential  
13 and small commercial level to provide -- you know, DERs  
14 at that level to provide ancillary services through  
15 aggregation and other means. So I'm looking at an  
16 environment where the consumer is being engaged quite  
17 heavily for provision of ancillary services.

18 I hope that helps explain what I meant.

19 MR. AYRI: Thank you.

20 So now I'm going to turn over to Mr. DesLauriers,  
21 and I'm going to ask a question about the responses  
22 provided in the Commission's IRs.

23 And it was regarding the deployment of AMI systems  
24 through the market forces, because you stated that you  
25 don't believe AMI services need to be provided on a

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1 monopolistic basis by a regulated utility.

2 So could I get you to expand on that statement?  
3 What AMI services are you specifically talking about?

4 And then what are these other --

5 MR. DESLAURIERS: Well -- sorry, go ahead.

6 MR. AYRI: And then my other question was  
7 going to be, what other entities could provide these  
8 services?

9 I'll let you take it away.

10 MR. DESLAURIERS: Sure. You know, that statement  
11 was made broadly in the sense that, when we're looking  
12 at AMI services and we're speaking about data  
13 management, we're speaking about custody of billing  
14 data, we're speaking about aggregated data, we're  
15 speaking about a lot of information that's gathered  
16 from these systems.

17 And if we go back to some of the framework  
18 principles that we outlined in our report, you know, we  
19 do believe that there is a lot of value and competition  
20 and recognizing where competition and market forces can  
21 be brought into the delivery chain of the utility  
22 service network.

23 And, so, if we could conceive of a situation where  
24 the MDM and the communication system collects  
25 information -- and, of course, as we outlined in our

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1 IR, we believe that customer -- protection of customer  
2 information is paramount, and the answer to this  
3 question assumes that those protections are firmly in  
4 place.

5 But the statement really goes to the thought or  
6 the idea that a utility itself isn't necessarily the  
7 only potential provider or user or disseminator of that  
8 information, so there could be potentially down the  
9 road an organization or an entity that serves to help  
10 facilitate energy transactions or other kinds of energy  
11 flows between the consumer and the distribution utility  
12 that could have access to that information and could  
13 provide information services as well.

14 We believe, obviously, that the T&D function is  
15 purely a monopolistic function, and that's sort of the  
16 structure of the setup and economic benefits it  
17 provides, but we don't see that that necessarily  
18 carries over to the management of the data itself and  
19 how that data is disseminated. It isn't necessarily  
20 purely a utility service in our sort of creative  
21 concept.

22 MR. REESE: I'm sensing some enhanced vigour  
23 after lunch, and I'll just remind people to speak at a  
24 pace so our court reporter can keep up and to keep --  
25 answer as succinct as possible. Thank you.

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1 point of view, that regulation in and of itself is not  
2 necessary as an implementing force for AMI purely from  
3 the example that, you know, municipal systems,  
4 non-regulated systems, are able to implement these  
5 programs without regulatory intervention.

6 MR. AYRI: Thank you.

7 Seeing no hands being raised, I'm going to turn it  
8 over to -- oh, go ahead, Dr. Faruqui.

9 DR. FARUQUI: Just a footnote on the municipal  
10 utilities and the cooperatives.

11 Yes, they're not regulated by state commissions,  
12 but they have their boards, and the boards have to  
13 approve their investments.

14 That is the case, for example, for Salt River  
15 project in Arizona or SMUD in California or any other  
16 utilities.

17 I mean, they have to show it starts beneficial to  
18 somebody, whether it's their board or regulator is sort  
19 of like a semantic issue. They are not being driven by  
20 free market forces. They are being driven by some kind  
21 of organized financial metering and rate design entity  
22 that oversees their operations.

23 So that's the comment I wanted to make.

24 MR. AYRI: Thank you.

25 Go ahead, Mr. DesLauriers.

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1 MR. AYRI: Okay. Back again to you,  
2 Mr. DesLauriers.

3 Again, with one of your responses to the  
4 Commission IRs, because you indicated it was possible  
5 to implement these AMI systems without regulatory  
6 intervention, as was the case for some municipal and  
7 cooperative utilities in the United States.

8 However, the Brattle Group, E3 and InterGroup all  
9 stated widespread deployment could not happen without  
10 some form of regulatory intervention.

11 So could you just help me understand how these  
12 municipal and cooperative utilities implemented their  
13 AMI systems and to what capacity?

14 MR. DESLAURIERS: Well, I think our response to the  
15 question went to whether regulatory intervention in and  
16 of itself was necessary for AMI systems to be deployed,  
17 at least that's how we considered the question when we  
18 made that response.

19 And in our point of view, you know, if we've  
20 conceive of a municipal utility or an electric  
21 cooperative, they would have the authority to make  
22 those investment decisions just as they have authority  
23 to make investment decisions for their power supply and  
24 other portions of their system.

25 And so the response really just highlights, in our

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1 MR. DESLAURIERS: Thank you. Just to clarify our  
2 response, and I think we make this response in our  
3 report with regards to AMI implementations, they're not  
4 regulated utilities. That was not to suggest that  
5 there isn't a cost-benefit analysis or an approval  
6 process that they go through at their level.

7 The only distinction that we make in the report is  
8 we assume that process takes place, but it's in a  
9 non-regulated rate environment per se relative to what  
10 we have in Alberta or with investor and regulated  
11 utilities for PUCs.

12 MR. AYRI: Thank you.

13 I'm going to turn it over to Mr. Bourque for  
14 another question.

15 MR. VAN EGTEREN: Can I just jump in there quickly,  
16 Mr. Bourque?

17 I just wanted to follow up with one thing with  
18 Dr. Orans.

19 I just wanted to assure you, sir, that we -- and I  
20 as well -- did make this connection between the  
21 regulatory roadmap and that nimbleness of the  
22 regulator. So just to confirm that to you, sir.

23 MR. BOURQUE: We have been speaking a lot about  
24 the cost-benefit analyses, and it raised a question for  
25 me that when AMI brings about some of these benefits,

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1 that they might be hard to quantify.

2 For example, the benefits of improved rate design,  
3 removing load profiles or billing on an actual  
4 consumption data and their associated economically  
5 efficient outcomes.

6 So from -- and this is an open question -- from  
7 your knowledge of other jurisdictions, how would a  
8 regulator go about including such benefits into their  
9 cost-benefit analyses for AMI?

10 MR. REESE: Dr. Faruqui.

11 DR. FARUQUI: Thank you.

12 As I mentioned earlier, I have been involved in  
13 several of the AMI filings of utilities, sometimes  
14 called "business case," sometimes called "cost-benefit  
15 analysis." The first one was Pacific Gas and Electric  
16 Company in California; the next one was Southern  
17 California Edison. I was involved in both of those.  
18 And both of them had to show that the benefits exceeded  
19 the costs under a reasonable set of scenarios and  
20 assumptions. Both of those two utilities included a  
21 fair amount of dynamic pricing to create demand  
22 response benefits.

23 Now, keep in mind that market is different from  
24 the one you have. We're dealing here with largely  
25 vertically integrated utilities.

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1 In Massachusetts, they had AMR, and so AMI's  
2 incremental operational benefits were quite limited.  
3 They didn't even want to do pilots. And so despite  
4 having more PhDs per capita in the area of Boston, MIT  
5 and Hartford and whatnot, they still don't have AMI  
6 there.

7 It's a question of judgment, ultimately, and most  
8 people will do a pilot to test customer engagement, and  
9 we keep track of those pilots, and there have been,  
10 last count, 400 pilots done throughout the globe in the  
11 last two decades, but everyone feels they still have to  
12 do their own pilot because they're unique and  
13 different, their climate, their socio-demographics, et  
14 cetera, and so it varies by jurisdiction.

15 Economists only have so much influence on  
16 regulators, right, when all is said and done. And,  
17 ultimately, legislators are involved and premiers and  
18 governors. It's an issue of public perception as much  
19 as anything else.

20 You have a projection of the future benefits, but  
21 there is no guarantee that the benefits will be  
22 realized, so you have to somehow come together as  
23 regulators and take a vote on it, and then you decide  
24 to move ahead or not move ahead.

25 In Illinois, for example, they moved ahead without

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1 And so they were able to show that if you had  
2 16 percent adoption rate for critical peak pricing,  
3 that was the case for PG&E's assumptions, then it  
4 passed; if you didn't have customer engagement, it  
5 didn't pass. And the same was true of the other  
6 utilities.

7 So the question was, how comfortable were people  
8 with the estimates of impact of these new innovative  
9 pricing designs. Initially, they were quite  
10 uncomfortable and, therefore, they formed stakeholder  
11 groups, working groups, and those working groups  
12 monitored very carefully the results of the analysis  
13 that the utilities were jointly doing to show that  
14 customer engagement was feasible and also predictable.

15 So they ran pilots with customers, large and  
16 small, two separate pilots, and it took two years to do  
17 that and then the business case filings took another  
18 two years, and then all was said and done, and then the  
19 movement began to happen towards deployment in 2007  
20 onwards.

21 The same was true in Maryland.

22 In Connecticut, they ran a pilot. It showed good  
23 results. But the Attorney General wasn't convinced,  
24 thought the numbers were soft, and so it -- the  
25 commission was not supportive.

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1 any customer engagement benefits being counted because  
2 Commonwealth Edison showed that the distribution  
3 automation benefits were sufficient to cover the costs.

4 In Ameren's case in Illinois, they had to include  
5 customer benefits.

6 It's very system specific, it depends on whether  
7 you're rural or urban, it depends on whether you have  
8 AMR or you don't have AMR, and it also depends on the  
9 utility's interests and abilities along with the  
10 Commission or Boards, to think that time-varying rates  
11 can make a difference or that somehow AMI will enable  
12 more customer side benefits from being realized than if  
13 AMI was not ruled out. So it's partly subjective and  
14 partly objective and partly political.

15 MR. BOURQUE: Thank you very much.

16 I saw Dr. Orans.

17 DR. ORANS: I want to just add to what  
18 Dr. Faruqui already gave you as background.

19 So I would just categorize the initial wave of AMI  
20 and grid modernization, and what I would call the more  
21 than \$10 billion of failed proceedings across  
22 North America on the whole thing based primarily on  
23 customer response as the major benefit.

24 And then there's a pivot in the, I would say over  
25 the last couple of years, to most of the benefits being

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1 grid integration related and then a supplemental  
2 benefit being customer side.  
3 Dr. Faruqui already mentioned that initially in  
4 what he was talking about, and it's particularly  
5 relevant to Alberta, where I think all of us have said  
6 we agreed with both of those.

7 So the two cases that I think you should look to  
8 for precedent on this is, Massachusetts did an  
9 extensive review of all of the benefits and adopted a  
10 broad standard -- we think actually way too broad --  
11 but it has every category of benefits under the sun  
12 under it.

13 And then Rhode Island -- funny thing because  
14 Rhode Island sits between New York -- it's served by  
15 National Grid, who serves New York. National Grid is  
16 also in Massachusetts. And Rhode Island has a very  
17 progressive commission. It has studied all kinds of  
18 things and done nothing.

19 But you can use them -- you should look at their  
20 work because they've done lots of good work, and  
21 they've taken the Massachusetts set of benefits and  
22 narrowed them down to a defined set already.

23 So I'm not saying Alberta should use that. I  
24 would -- that's one big source of input I would direct  
25 for the group that would start in Alberta to refocus

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1 that?  
2 DR. ORANS: I think this really goes to the  
3 previous question, which is, are we talking about  
4 back-end, are we talking about extended back end or are  
5 we just talking about meters.

6 And I think to get the robust, you know,  
7 Massachusetts set of benefits, we're talking about  
8 extended back end and meters; right? Because it's  
9 customer side and the whole thing. I think you should  
10 look at that.

11 At the same time, I'm not an all or nothing. You  
12 know, I think fixing the transmission rate design,  
13 fixing the distribution rate design, you know,  
14 basically fixing the credits, fixing the planning  
15 standards, looking at some alternatives for use of  
16 battery storage or demand response on a limited basis  
17 for non-wires alternatives, those are all incremental  
18 steps that don't have huge back-end, extended back-end,  
19 or metering costs.

20 So I think a roadmap idea is map out the benefit  
21 cost analysis, like Dr. Faruqui said, look at the  
22 customer side, look at the other grid-related side, and  
23 then talk about things you can do in the interim to  
24 move -- that each of the distribution utilities can  
25 move themselves along that roadmap on.

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1 itself on a benefit-cost approach that I would call  
2 more of the modern approach than going back and doing  
3 pilots on behavioural and on demand response, which  
4 aren't going to lead you really to much in Alberta in  
5 terms of short-term benefits.

6 MR. BOURQUE: Thank you very much for the  
7 additional colour.

8 I saw a lot of head nods there, so I feel  
9 comfortable passing it on to my colleague who is next  
10 to question, Mr. Vasetsky.

11 MR. VASETSKY: Good afternoon, gentlemen.

12 As the day goes on, you will see more and more AUC  
13 faces. There aren't too many of us left hiding in the  
14 background, so I think there is maybe a couple besides  
15 me.

16 I have a question for Dr. Orans.

17 Dr. Orans, I believe in your IR response you said  
18 something to the effect that -- I'm paraphrasing  
19 obviously -- if the regulator thinks that the cost of  
20 AMI is too expensive, one could proceed instead with  
21 simple forms of time-of-use demand charges rate.

22 And I guess my question is -- and maybe it's the  
23 question of definition, what one defines as an AMI.  
24 But given Alberta's situation where we don't have too  
25 many demand and time-of-use meters, how would we do

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1 MR. VASETSKY: Right. And I guess another idea  
2 that I wanted to ask you, and the rest of the  
3 panelists, is, because there may be an opportunity for  
4 Alberta to sort of leapfrog, you know, because when we  
5 talk AMI system, you know, the price that you pay for  
6 the modern AMI meter, you get all of the functions  
7 almost as an added bonus; right?

8 So I guess my question is, is it worse -- in your  
9 idea of the roadmap -- is it worse for us to consider  
10 sort of more traditional demand and time-of-use meters  
11 or systems where one could just, arguably, for a little  
12 extra buck -- dollar -- get a whole bunch of  
13 potentially user capabilities?

14 DR. ORANS: I'm certainly not recommending you  
15 go invest in, you know, the old -- my first job at PG&E  
16 way back when I started, so more than 40 years ago, I  
17 designed the first time-of-use rate in California,  
18 Schedule D7. It was opt in. It was a Sangamo MTM  
19 20 meter. It was \$400 a meter. So I think Dr. Faruqui  
20 said it's a dollar a month now for the AMI meter.

21 I don't think this is an AMI metering issue. I  
22 would not recommend you go by iPhone 4s now. Maybe 7s?  
23 I'm not saying you need the new 11, but that doesn't  
24 mean you shouldn't go and proceed more generally on  
25 more efficient pricing.

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1 AMI -- it's not AMI or nothing, and that's --  
 2 efficient pricing is not just all connected to AMI is  
 3 my point, I guess.  
 4 MR. VASETSKY: A question for Mr. DesLauriers.  
 5 I got very interested in the discussion -- I  
 6 believe you said something earlier that takes a whole  
 7 bunch of -- in a way using simple words -- it takes a  
 8 whole lot of money to set up a system for the first AMI  
 9 meter to function.  
 10 Can you give us a rough idea, either in dollars or  
 11 percentage terms if you have any experience, like, in  
 12 terms of the total project cost, how much do you need  
 13 to spend on the sort of fixed cost to get the first AMI  
 14 meter running versus the incremental costs of putting  
 15 the meters, installing them, and so forth?  
 16 MR. DESLAURIERS: Sure, I'd be happy to --  
 17 COURT REPORTER: Sorry, can I interrupt.  
 18 Mr. Vasetzky, you seem to cut in and out sometimes, so  
 19 I didn't quite catch the end of your question.  
 20 MR. VASETSKY: I'll try to remember it now.  
 21 COURT REPORTER: Thank you.  
 22 MR. VASETSKY: I was asking Mr. DesLauriers if he  
 23 you knows from his experience whether, either in  
 24 percentage terms or in dollar terms the breakdown  
 25 between the fixed cost of the system, the back-end

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1 system, versus the incremental variable cost of  
 2 starting to put the meters in.  
 3 MR. DESLAURIERS: And the response is, you know, as  
 4 we pointed out in our IR response, every system is  
 5 different, so we have to be very cautious of drawing  
 6 broad conclusions of one system versus the next.  
 7 It depends upon the geographic scope of the system  
 8 and how many meters and what kind of functionality and  
 9 operation capabilities you're looking to build into the  
 10 system.  
 11 But, you know, based on my experience and the  
 12 programs that I've been involved with, in general, the  
 13 amount of investment and time to set up what we would  
 14 call that system backbone or back end, whether it's a  
 15 mesh network or other network, as well as the data  
 16 management system, the software, other hardware costs  
 17 related to communications, first of all, in terms of  
 18 timing, they appear to be a prerequisite, all of that  
 19 has to be set up prior to that first meter being  
 20 operational and pinging.  
 21 And, again, without, you know, looking at making  
 22 broad generalizations, I would venture to say that  
 23 those costs, you know, can be as much as 30 or  
 24 40 percent, 50 percent of the total system cost in some  
 25 cases, depending upon the proportion of functionality

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1 you're building into that backbone versus the number of  
 2 meters you're implementing that will connect off of  
 3 that.  
 4 So, certainly, to the extent that you can connect  
 5 more meters to that existing infrastructure, that  
 6 relationship can change, and it is very different for  
 7 systems, but it's certainly not in the range of 2 or 3  
 8 or 5 percent and it's not 90 percent, but it's a  
 9 significant portion.  
 10 MR. VASETSKY: Thank you.  
 11 And, Mr. Orans, you mentioned an example of the  
 12 Hawaiian regulator where a company had to bring back  
 13 the case with, I think you said a skinnier or a lighter  
 14 back-end system. Was that to address the same issue,  
 15 to reduce the amount of fixed costs upfront?  
 16 DR. ORANS: Yes, it was. I can confirm the  
 17 discussion you just had.  
 18 So the five-year NPV spend for Hawaii was just  
 19 under a billion dollars. I mean, that's a huge amount.  
 20 You know, it was near several hundred million dollars,  
 21 you know, a year. So that was the one that got  
 22 rejected.  
 23 The back-end minimal piece with the opt-in slow  
 24 roll on the AMI, the skinnier proposal, was between 200  
 25 and 210 (indiscernible) over five years.

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1 So, really, not a huge amount, you know, in terms  
 2 of rate impact. It was sort of what they could -- I  
 3 mean, you start out with, what do you have to spend,  
 4 and usually what you have to spend is, you look at what  
 5 your depreciation looks like, and the depreciation head  
 6 room gave them that amount to spend. So that's the  
 7 back-end piece that they started with.  
 8 And then the AMI piece is how much did they --  
 9 would they get material benefits from on the  
 10 operational side, and the people -- to go back to  
 11 Dr. Faruqui's kind of comment, different customers have  
 12 different benefits, and so the people -- the customers  
 13 who saw benefits in getting meters and then connecting  
 14 them to the back end, paid to opt in incremental  
 15 metering.  
 16 So they had ones they socialized, that were  
 17 needed, and then incremental opt-in ones that wouldn't  
 18 cost additional customers more money.  
 19 MR. VASETSKY: Thank you. This is very helpful.  
 20 I would like to do something now to give you  
 21 gentlemen a break and continue with discussion with the  
 22 company who actually installed what we call a basic AMI  
 23 system in Alberta, and I would ask my IT friends to  
 24 connect EPCOR representatives if they're available.  
 25 EPCOR.

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1 MR. REESE: If there's a designated  
 2 representative from EPCOR on the call, would you please  
 3 raise your hand in Zoom?  
 4 MR. ZUREK: This is EPCOR.  
 5 MR. VASETSKY: Hi, gentlemen. A couple of quick  
 6 questions for you -- and I apologize, this is going to  
 7 be using some of the numbers that you provided in your  
 8 IR response, so if I go too deep in the numbers, feel  
 9 free to address these questions in your concluding  
 10 remarks if you're thinking of filing any.  
 11 So, to put it in context, so EPCOR indicated that,  
 12 to put your AMI system in place, EPCOR spent, let's  
 13 call it, \$76 million over a three-year term, and the  
 14 back-end systems were configured in such a way as to  
 15 basically continue with the same billing practice that  
 16 was before; right? If someone was billed on a monthly  
 17 cumulative basis, that would continue; if someone was  
 18 billed on an interval basis, that would continue as  
 19 well; right?  
 20 MR. ZUREK: That is correct.  
 21 MR. VASETSKY: So are you gentlemen --  
 22 COURT REPORTER: Sorry to interrupt. Can you tell  
 23 me who at EPCOR is talking?  
 24 MR. ZUREK: Oh, I'm sorry. My name is  
 25 Gerald Zurek. I am the senior manager of rates and

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1 regulatory duties.  
 2 COURT REPORTER: Okay. Thank you.  
 3 MR. VASETSKY: Mr. Zurek, are you able to tell  
 4 me, off the top of your head in context of discussion  
 5 we had before, how much of the \$76 million was spent on  
 6 back-end system versus the meter installation costs?  
 7 MR. ZUREK: We actually don't have that detail  
 8 in front of us right now. We can get that, though, and  
 9 confirm at a later date.  
 10 MR. VASETSKY: That would be perfectly  
 11 reasonable. Thank you.  
 12 UNDERTAKING - FOR EPCOR TO ADVISE HOW  
 13 MUCH OF THE \$76 MILLION WAS SPENT ON  
 14 BACK-END SYSTEMS VERSUS THE METER  
 15 INSTALLATION COSTS  
 16 MR. VASETSKY: And you also mentioned in your IR  
 17 response, according to your rough estimate -- so I'm  
 18 not trying to be super precise here -- according to  
 19 your rough estimate, it's taken an additional  
 20 \$10 million to do a -- to enable an hourly read of  
 21 meters for all customers; right?  
 22 MR. ZUREK: Correct. So that would be  
 23 conversion of the current meters that are read or that  
 24 are -- we have cumulative data for to obtain billing  
 25 quality hourly data for.

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1 MR. VASETSKY: And would that also include the  
 2 possibility to do -- to implement demand charges or  
 3 potentially time-of-use charges for energy, or is that  
 4 a separate operation?  
 5 MR. ZUREK: It gets us partway, but it would  
 6 require further expenditures to be able to actually  
 7 bill in either time-of-use or in demand.  
 8 MR. VASETSKY: Okay. That's very helpful,  
 9 gentlemen. Sorry for calling up on you in such a short  
 10 notice --  
 11 MR. ZUREK: Okay. I can go a little further,  
 12 because what that would give us is, it would give us  
 13 hourly energy, and hourly energy is a proxy for the  
 14 hourly demand. Essentially, the kilowatt hours in the  
 15 hour is the average demand for that hour.  
 16 So that would give us some ability to then design  
 17 a rate, but we would require modifications to our  
 18 billing system and possibly our meter data management  
 19 system in order to actually use that data to bill with  
 20 a demand-type charge.  
 21 MR. VASETSKY: That is very helpful, Mr. Zurek.  
 22 Thank you so much.  
 23 Okay. I just have one more question, and it is a  
 24 question for the four experts here. And this is more  
 25 of a general question, gentlemen.

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1 We discussed this afternoon that AMI --  
 2 implementing an AMI system is not an easy decision and  
 3 it depends on a lot of factors. It depends on the DERs  
 4 penetration, it depends on the cost-benefit analysis,  
 5 it depends, as Dr. Faruqui said, what's already in  
 6 place here.  
 7 So seeing what you see in Alberta, you know, we've  
 8 made some in-roads in terms of both the DERs  
 9 penetration and there is some adoption of AMI  
 10 technology in place, where would you say and what would  
 11 be your recommendation on how to proceed with the AMI?  
 12 Are we still in the evaluating stage? Are we already  
 13 in stage 1 of your DERs roadmap, Mr. Orans? So what  
 14 would be your recommendation? And I mean all four of  
 15 you.  
 16 Okay, Dr. Faruqui.  
 17 DR. FARUQUI: So in the context of ATCO Electric  
 18 Distribution, they already have AMR, they have a large  
 19 rural population that they serve, and they don't have  
 20 significant congestion on the grid based on the  
 21 information they have provided me. So I think --  
 22 they're also proceeding with an AMI pilot in one of  
 23 their communities.  
 24 I believe the best thing at least for that kind of  
 25 utility configuration is to do the pilot to see what



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1 the results look like, and perhaps at that point  
2 consider doing a comprehensive cost-benefit analysis to  
3 see under what conditions is the net present value  
4 positive, what would it take to justify the investment  
5 that would be required.

6 And based on my discussions with them, at this  
7 point, they have not felt the need to carry out a  
8 comprehensive cost-benefit analysis, so it has not been  
9 done, but the pilot that they're doing will provide  
10 insights that will help inform eventually such a  
11 decision.

12 Now, each utility has its own circumstances.  
13 Perhaps each company will have their own analysis  
14 performed. It's ultimately going to be an issue of  
15 what's the investment and what's the benefit.

16 I think Dr. Orans mentioned the \$1 billion number  
17 for Hawaii in their initial filing. That really is  
18 high compared to what California ended up paying for  
19 the three investor-owned utilities, with some  
20 10 million plus customers, the number was \$5 billion.

21 So it's a question of, you know, local  
22 circumstances, it's a question of how costly is it to  
23 put it in. The state of Hawaii, beautiful and charming  
24 as it is, is definitely one of the most expensive parts  
25 of North America, but also a frequent destination.

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1 there probably is a great deal of value in looking at  
2 it on a utility specific basis.

3 Just a few quick thoughts on looking at some of  
4 the benefits of AMI and how they may be or may not be  
5 capturable in Alberta.

6 If we look at the energy side, obviously, AMI  
7 provides the benefit of hourly metering, and so maybe  
8 one question to ask is, given the energy market in  
9 Alberta right now, is there a sufficient level of price  
10 differentiation on an hourly basis in the energy prices  
11 to make TOU pricing something of value to customers and  
12 of value to the utility.

13 There are certainly operational benefits from AMI,  
14 revenue leakage, automatic shut off and shut ons, those  
15 kinds of benefits that accrue outside of what's  
16 happening in the market that are also important to  
17 consider.

18 And we had a lot of discussion today on T&D and  
19 the value of T&D and the costs of T&D and scarcity  
20 pricing of T&D and the demand charges, but unless you  
21 know there is a situation where there is some real  
22 scarcity in either the transmission system or the  
23 distribution systems, the amount of benefits coming out  
24 of AMI from that may also be different. That's not to  
25 say that they're not there and that that can't be

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1 Maybe it cost more because of that.

2 But the reality is, it is very utility specific.  
3 It's not province specific.

4 However, in Texas, they felt the need to move  
5 ahead with it because they felt without AMI you  
6 couldn't get a lot of those customer engagement  
7 benefits. Even though Texas didn't have a lot of DER  
8 penetration at the time, they are gathering momentum  
9 now.

10 DERs are one of those things that can happen very  
11 quickly. Right now, based on my limited experience,  
12 there's not much in Alberta, despite all the solar  
13 radiation they have in the summer months and the long  
14 days, there's not much EV penetration, because my  
15 understanding is gasoline is quite inexpensive.

16 And so there is also -- ultimately, the  
17 preferences of the customers who live there, how keen  
18 are they to become prosumers. Just besides the  
19 economics, there has to be an attitudinal shift.

20 All of those factors require, you know, further  
21 investigation before making a decision on what kind of  
22 AMI and at what pace should AMI be considered.

23 MR. VASETSKY: Mr. DesLauriers?

24 MR. DESLAURIERS: I agree with all that Dr. Faruqui  
25 just said. It is very utility specific and, you know,

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1 constructive for deferring costs in the future.

2 So it really is a very utility-specific question  
3 and the benefits cut across many different aspects,  
4 whether it's operational, energy-related, fixed-cost  
5 related, and it really has to be thought of  
6 wholistically.

7 MR. FRIESEN: I don't want to take any of  
8 Dr. Orans' thunder away, but I do want to highlight, as  
9 I did previously, the value of the roadmap process that  
10 was outlined in his written submission, which was  
11 presented by Fortis.

12 The concept of triggers and enabling conditions, I  
13 think is very useful. They may not be universal for  
14 every DFO in Alberta, as Mr. DesLauriers explained.

15 The conditions for AMI may differ from DFO to DFO,  
16 and a properly executed roadmap provides that  
17 flexibility. It doesn't have to be one roadmap for the  
18 entire province. Each DFO can develop a roadmap that  
19 addresses their specific configuration and needs and  
20 objectives.

21 And, you know, by quantifying the specific  
22 triggers that require action to prevent negative  
23 consequences, you can then look at the forecasting you  
24 need to undertake to identify when the enabling  
25 conditions are present. Whether that's solar PV

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1 penetration, whether that's electric vehicle adoption,  
2 whether that's energy storage implementation, you have  
3 a variety of conditions that you can identify and track  
4 and judge the pace and prioritization for your AMI  
5 investment accordingly.

6 I think it's a very rational and reasonable way to  
7 progress, and it provides the ratepayer, the DFO, and  
8 the regulator with a very transparent platform on which  
9 to make their proposals and gain approval. It's a very  
10 logical approach, and I compliment Dr. Orans on his  
11 submission. It was well done.

12 Thank you.

13 DR. ORANS: Thank you. I just want to add  
14 something short, Mr. Vasetzky. We didn't come to this  
15 idea ourselves. We were sitting in a room that long,  
16 hot summer in New York, and we had Con Ed. Con Ed, as  
17 the natural DSO, wants to do -- it is the furthest  
18 along in North America to being a DSO, and wanting to  
19 own and operate everything, and it's a big giant city;  
20 and we had Central Hudson, which was totally on the  
21 other end of the spectrum, and we were working on what  
22 is the DER integration strategy and what is the  
23 business model.

24 And the only way to get them under the same  
25 general state-wide framework, single regulator, right,

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1 going to find yourself along that roadmap and you'll  
2 kind of get to the right place at the right time rather  
3 than hurry up and get to the wrong place.

4 MR. VASETSKY: Thank you.

5 Oh, Dr. Faruqui.

6 DR. FARUQUI: Yeah, I just wanted to make a  
7 comment on Hawaii and New York, you know, two ends of  
8 the spectrum geographically speaking, with many  
9 similarities. I have been going to both states for at  
10 least 15 years to discuss pricing innovation and  
11 reform, and they keep talking about it and they keep  
12 talking about it and they hardly do anything.

13 So I hope that synchronizes Dr. Orans' experience.

14 Actually, a few years back, Professor Volag  
15 (phonetic) and I were both on a panel in New York when  
16 the REV was new and attracting a lot of excitement, a  
17 conference in the New York School of Law, and it was  
18 all on time-varying rates and the opportunities that  
19 await. It's just like watching paint dry at times and,  
20 really, you know, a scintillating experience.

21 So what I would say is the lesson learned here is  
22 don't analyze it to death. Have a roadmap. You'll  
23 have to take risks. There are no certainties about the  
24 future, only opinions, and so it will take some  
25 decisive leadership to move the ball forward.

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1 was to say, all right, let's toss this back to the  
2 utilities, have them tell the regulators what, where,  
3 when, how much, what technology, how much back end,  
4 where it makes sense to us, which one of our customers  
5 will opt in, et cetera -- now, I'm not saying the  
6 regulators are going to take all that and just let the  
7 utilities do everything. New York being New York will  
8 do some standardization.

9 But at the first step, I think, if you define the  
10 parameters, which is, I want to see it's cost  
11 effective, I want there to be a transparent  
12 methodology, I want it trackable, I want measurable  
13 things, et cetera, you can then give them the  
14 guidelines to make these filings that would form the  
15 basis of an integrated roadmap across Alberta.

16 And, at some point, they'll find out, like Hawaii,  
17 and what Dr. Faruqui said is, well, you've kind of gone  
18 one by one down this pretty far and you have  
19 inconsistent steps. At what point have you gone  
20 40 percent of the way where we should just do the whole  
21 thing, I think that will become naturally evident over  
22 the course of this evolution.

23 And we don't know how fast that will occur, but I  
24 think if you start that process, similar to New York,  
25 similar to Hawaii, or Rhode Island, I think you're

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1 I've been going to the Middle East, those  
2 countries have taken 25 years to do nothing, and I'm  
3 more than happy to be their consultant and get the  
4 hours billed, but the reality is it's like a soccer  
5 team, the people keep passing the ball to each other  
6 and never put it in the goal.

7 So, you know, that's the lesson that I have  
8 learned the hard way, that analysis, planning, and  
9 conversations are good, but sometimes you get caught in  
10 this cyclical struggle and then the commission turns  
11 over, the board turns over, new chairs are appointed,  
12 and we are back to where we were all over again.

13 MR. VASETSKY: Thank you very much. Dr. Faruqui,  
14 be careful for what you wish. Now, that you mentioned  
15 Professor Volag, you may actually see him in the next  
16 section, so...

17 MR. REESE: I believe Commissioner Romaniuk  
18 has a question.

19 THE CHAIR: Actually, two short snappers.

20 And I will direct this to whichever of the  
21 panelists has the most familiarity with the actual  
22 structure, design of pilots. I think one of you -- it  
23 might have been Dr. Faruqui -- said there are  
24 400 pilots that they are aware of in their experience.

25 So the first question is, in designing a pilot

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1 project as part of a process in determining the  
2 benefits, the demonstrable benefits of the rollout of  
3 AMI, is the objective to assemble a representative  
4 collection of customers, or a collection of the most  
5 enthusiastic volunteers or early adopters who are most  
6 likely to put the devices through their paces quickly  
7 and would be more likely to provide evidence of the  
8 actual benefits of the devices as opposed to, again, a  
9 representative sample, some significant percentage of  
10 which may do nothing with it?

11 DR. FARUQUI: A great question. It takes a lot  
12 of time to do justice to it, but at a very high level,  
13 realizing the break is coming up as well, it depends  
14 ultimately on what your full-scale implementation plan  
15 is.

16 So, referring to Dr. Orans' roadmap, every state  
17 has had such a roadmap. Sometimes it has never been  
18 published or shared, it's just been held in the minds  
19 of each person.

20 And when the California pilots were beginning  
21 right after the energy crisis, I was brought in, along  
22 with some others, to help design a pilot with the  
23 stakeholders and then the utilities would run it and  
24 then we would do the evaluation.

25 So the question that I asked was, what's your

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1 selected into the pilot.

2 That's a pilot that's expensive to do. It's a  
3 pilot that gives you results with a lot of confidence  
4 about being able to generalize from -- the pilot  
5 population could just be a few thousand customers to  
6 your aggregate population.

7 On the other hand, if you want -- if you have a  
8 vision where the ultimate deployment will be optional  
9 and the enthusiastic people, the prosumers, the energy  
10 efficiency geeks, et cetera, are your ultimate focus,  
11 then you need a pilot that mimics the behaviour of that  
12 population. So then you can go with voluntary  
13 enrollment.

14 That's probably the kind of pilot that a company  
15 like Starbucks probably does when it introduces new  
16 brands, new tastes. It's just looking for volunteers  
17 who are interested. It wants to see is there interest  
18 or no interest. If there's no interest, they'll move  
19 on to the next product.

20 So there's homework that has to be done at a  
21 policy level before the pilot conception can be laid  
22 out.

23 And the 400 treatments, the experimental  
24 treatments I mentioned, they're all over the place.

25 Some are representative of their population and some

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1 vision of the end state? Is it going to be full-scale  
2 rollout? Is it going to be opt in? Is it going to be  
3 opt out? Is it going to be mandatory for the  
4 particular rates being tested which were time-of-use  
5 and dynamic pricing rates. There was no consensus  
6 among the three dozen people in the room.

7 So they ended up with a hybrid pilot, which was  
8 supposed to be representative of the population at  
9 large, but the people who were selected and given the  
10 option of saying yes or no -- and I was told that you  
11 cannot constrain people to be in the pilot against  
12 their will, it's unconstitutional -- and so that was  
13 one of the early pilots.

14 Much, much better pilots have been done since  
15 then, for example, most recently by SMUD and others,  
16 where they decided as a utility or as a commission or  
17 as a board, they were going to do randomized control  
18 treatment trials, just like a clinical trial for a new  
19 medicine, like for the pandemic vaccine that's being  
20 investigated. They're all RCTs. That's the gold  
21 standard of pilots.

22 You have a group that's randomly assigned to the  
23 treatment or the new rate here and a group that is  
24 acting as a control group, but the two of them didn't  
25 know which bin they were going to be in when they were

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1 are not. Some are very poorly designed and some are  
2 very rigorously designed.

3 But even then, we have at least 100 rigorously  
4 designed pilots from other areas. Of course, their  
5 climate and topography and electricity prices are all  
6 different from Alberta's. As I mentioned, there is an  
7 AMI pilot being talked about. I think it has been  
8 approved for ATCO, so I think that would be worth  
9 looking at -- I'm not directly plugged into the  
10 selection of customers into their pilot, so I don't  
11 know whether it is the enthusiastic folks or it's a  
12 representative sample.

13 That's the kind of topic that I think for future  
14 pilots, if the roadmap concept begins to roll out, has  
15 to be factored in. How should it be designed, how  
16 large a sample should it be, what other analytical  
17 methods should be used to analyze the response of  
18 customers and all of that.

19 THE CHAIR: Okay. Thank you.

20 Does anybody else want to join in? I have one  
21 follow-up question.

22 Okay. Thank you for that very comprehensive  
23 response. It was very, very helpful.

24 My follow-up question is this: Given the  
25 concurrence among our experts as to the importance of a

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1 roadmap, and the roadmap, you know, providing triggers,  
2 or the absence of triggers, for action in the  
3 circumstances, but the importance of the roadmap and  
4 the fact that we have had hundreds of pilots of every  
5 description to date, are pilots in fact necessary at  
6 all?

7 Can you get from roadmap, to the knowledge of  
8 outcomes from hundreds of pilots, to an application for  
9 either incremental staged rollout or continuous rollout  
10 without the need for, say, a year or two or a  
11 three-year pilot? Is it even necessary?

12 DR. ORANS: I don't think you need the  
13 extensive pilot studies of this. I think you can  
14 borrow, use, synthesize the other pilots to  
15 characterize what you're going to get on the customer  
16 side, as long as you're not going to bite the huge  
17 massive bullet right away.

18 If you're proceeding on this roadmap, go ahead and  
19 start, and then as you move through it, you're going to  
20 figure out what that definition, like Dr. Faruqui said,  
21 is, is it for this utility in The City of Calgary, is  
22 it everybody in rural areas, is it optional, is it --  
23 and you're going to figure those out. And at that  
24 point you might want to test some, if the cost-benefit  
25 analysis hinges on it, or you might just want to roll

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1 his hand there.

2 THE CHAIR: Oh, okay. I missed that.

3 DR. FARUQUI: Yeah, just to totally agree with  
4 Dr. Orans' statement.

5 Pilots are not needed most of the time except to  
6 buy time and to postpone the decision. I mean,  
7 that's -- I'm being cynical, with age comes cynicism --  
8 and I have seen many pilots being done with no actions  
9 being taken. And with so many pilots already done,  
10 there should be the opportunity to adapt and innovate.

11 But, yes, if it's going to be a make-or-break  
12 question, then do a pilot.

13 And it might be that you have that, but you won't  
14 know until the roadmap is rolled out, some cost-benefit  
15 analysis is done.

16 In California also, in the early 2000s, they did  
17 not want to do a pilot initially. Well, somebody came  
18 in and said, we have inclining block rates and none of  
19 the previous pilots had inclining block rates. And so  
20 we need a pilot on top of inclining block rates to see  
21 if customer behaviour changes or doesn't change.

22 And when the pilot was done, and it showed  
23 significant response of 13 percent reduction in peak,  
24 when you had a critical peak price, it was five times  
25 higher than the average rate, the debate became, is

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1 it out.

2 You know, I think one of the mistakes we've made  
3 in energy efficiency across North America is we spend  
4 about 40 cents of every dollar on energy efficiency in  
5 EM&V. That's pretty bad market, right, and we don't  
6 seem to improve our designs from it, it just has become  
7 its own world where we have to do EM&V on every light  
8 bulb installed, and I think -- and we're still doing  
9 that 30 years later when we know what the efficiency  
10 change on light bulbs and HVAC is and everything else.

11 So I think we've done, you know, through the good  
12 work of people that are on this panel, lots of work on  
13 pilots, I think we can characterize since the 1970s,  
14 you know, efficiency responses, time-varying responses,  
15 et cetera, within a range; and for the benefit of  
16 decision-making long-term -- remember, this isn't year  
17 by year, what am I making in hour X, it is over the  
18 next decade, what do we think these benefits could look  
19 like and the range, I don't think the pilots are  
20 necessary to get there.

21 THE CHAIR: Okay, thank you.

22 Ms. Collins, did you have anything you wanted to  
23 add before our break?

24 Okay. Mr. Van Egteren?

25 MR. VAN EGTEREN: No, but I think Dr. Faruqui put up

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1 13 percent big enough or not big enough; and my  
2 response was, in the double digits, it could equate to  
3 thousands of megawatts. Now, you might say 20 percent  
4 would be bigger than 13 percent.

5 So it's a question of, if you want to move  
6 forward, you'll have to make some judgments anyway at  
7 some point in time.

8 But, believe me, I've tried the argument in many  
9 cases and been told we need a new pilot. And, believe  
10 me, right now, more pilots are happening throughout  
11 America.

12 But there is one example I want to mention to you  
13 where pilots were not done, and that's your province of  
14 Ontario in Canada. The Premier McGuinty just decided  
15 AMI was a good thing and needed to be done, and so AMI  
16 was rolled out in Ontario -- I actually reached out to  
17 him because I was doing the California work at the  
18 time, and I asked him for a cost-benefit analysis to  
19 see what parallels I could draw; he said we don't need  
20 one here.

21 So, you know, it's a question of what are the  
22 various factors in the roadmap, and his roadmap action  
23 was more important than doing pilots.

24 But ten years later they are now doing pilots to  
25 make sure they did the right thing ten years ago.

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1 THE CHAIR: Very good -- very good  
 2 informational vignette. Thank you for that.  
 3 I'll tell you one other thing that comes with age,  
 4 Dr. Faruqui, I found out at Christmastime on my last  
 5 vacation, \$5 Tuesdays at movie theatres. So when you  
 6 hit that magic 65, all those discounts just come  
 7 flowing in your direction --  
 8 DR. FARUQUI: Believe me, that happened two  
 9 years ago.  
 10 THE CHAIR: We're at exactly 2:30. Now, we  
 11 will come back in 20 minutes and we'll work from that  
 12 point to the end of our session, however long it takes.  
 13 Thank you very much for a very productive first  
 14 half of the afternoon.  
 15 MR. VAN EGTEREN: I have one other thing to say --  
 16 THE CHAIR: Oh, sorry. Go ahead.  
 17 MR. VAN EGTEREN: -- while we're still here.  
 18 I couldn't help but be struck by all of your  
 19 comments regarding progressive leadership, and I agree  
 20 with progressive leadership. Everybody's in favour of  
 21 progressive leadership until it results in a decision  
 22 that is not in their favour.  
 23 And so I hear your comments, but there's a  
 24 process, and so that's what we weigh.  
 25 Thank you.

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1 DR. FARUQUI: May I make a comment before we  
 2 close, just a very quick one to just follow up on the  
 3 remarks you just made?  
 4 So Michael Peevey was the president of the  
 5 California Commission for two terms for a total of  
 6 12 years, and he was the presiding commissioner over  
 7 all of the AMI hearings, all the dynamic pricing work,  
 8 an enthusiastic supporter of that.  
 9 But it still hasn't happened, and it's been almost  
 10 19 years now that we would have default  
 11 time-of-use rates in California, but no real dynamic  
 12 pricing or realtime pricing.  
 13 And so I thought I should ask him words of wisdom  
 14 now that he has been retired for five years, and his  
 15 answer was, "We did our best, but we had other  
 16 priorities," which was perhaps another way of saying  
 17 what you just said, and basically he said, "There was  
 18 no strong advocate for doing it, not in the  
 19 legislature, not the governor's level and, therefore,  
 20 it didn't happen."  
 21 So, I mean, it's sort of -- he was basically  
 22 saying the staff of the PUC was not interested, and I  
 23 said, "But you were the president of the commission."  
 24 He said, "Fair point." It's published. I mean, it's  
 25 not a secret conversation. It's in the Fortnightly.

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1 THE CHAIR: Thank you for that.  
 2 Anything else to add from any staff members?  
 3 MR. REESE: I'll just note that we're breaking  
 4 for 20 minutes; is that correct?  
 5 THE CHAIR: Sorry, yes, that's correct, and I  
 6 will extend it to eight minutes before the hour.  
 7 Okay, we'll see everybody in 20 minutes.  
 8 (ADJOURNMENT)  
 9 THE CHAIR: Welcome back, everyone, for  
 10 today's virtual meeting.  
 11 I think we will begin with one question sort of in  
 12 the nature of follow-up from Commissioner Collins.  
 13 MS. COLLINS: Thank you, Commissioner Romaniuk.  
 14 I would like to just have a high-level discussion  
 15 about how to best incentivize our distribution  
 16 utilities that are operating under performance-based  
 17 regulation, PBR.  
 18 I found the many submissions on current and  
 19 proposed incentives very insightful and especially  
 20 pertinent today, given what we are trying to do with  
 21 this inquiry, to encourage real change and  
 22 implementation of technology that's needed in this  
 23 fast-changing electricity world with intermittent  
 24 renewables, smart technologies, new options to help  
 25 customers get more out of the grid.

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1 I recognize that many parties made submissions in  
 2 this regard, I think all of the experts did, and I will  
 3 highlight the submission from InterGroup's Mr. Friesen,  
 4 that: (as read)  
 5 "A PBR framework for DFOs should develop  
 6 ways to integrate emerging customer  
 7 needs and innovation requirements into a  
 8 modernized regulatory framework, a PBR  
 9 framework, to support transformative  
 10 innovation, to provide reasonable  
 11 substitutes for the incentives, risks  
 12 and rewards facing unregulated markets  
 13 undergoing transformational change."  
 14 If you would please just take a moment, and I'm happy to  
 15 hear briefly from each of the experts, to highlight how  
 16 to best incent innovation under our current five-year  
 17 PBR plans.  
 18 And I guess I'll start with Mr. Friesen, and  
 19 thank you.  
 20 MR. FRIESEN: Thank you.  
 21 I think one of the criticisms that I heard come  
 22 through in the various submissions that have been  
 23 provided throughout this Distribution System Inquiry in  
 24 respect to PBR have been primarily focused around the  
 25 backward-focused nature of the PBR process where the

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1 target costs that have been established for successive  
2 five-year terms have largely been set based on historic  
3 performance in the previous five-year terms.

4 And while that is maybe a suitable approach in a  
5 static environment with minimal change occurring, it  
6 struggles a little bit to address a world with  
7 transformational change.

8 And as the DFOs argued or presented in their  
9 submissions, they feel that they're entering a world of  
10 pretty significant transformational change with the  
11 anticipated adoption of DERs and not quite sure how to  
12 fit that into the current PBR framework.

13 So do I have an answer for you? Not an immediate  
14 one. It's an issue that we've somewhat started to  
15 examine, but I'm not sure we have a very strong  
16 position on it, other than to state, we need to look at  
17 the impact of transformational change and the costs  
18 associated with such change on the PBR framework, and  
19 make sure that there are mechanisms in there that  
20 encourage DFOs to look forward at ways -- or look  
21 "proactively" may be a better term -- proactively at  
22 ways of integrating DERs, capturing their benefits,  
23 and, you know, becoming more customer centric in their  
24 overall framework and in their operations. If we  
25 continue to do what we've done in the past, we won't be

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1 well suited to responding to the future.

2 And I think somewhere I once read a quote that,  
3 "Walking into the future while facing backwards is a  
4 precarious situation to put yourself into." And I  
5 think that's really what I'm mentioning here -- or  
6 referring to here, is that we need a forward-looking  
7 perspective within PBR that helps the DFOs focus on  
8 both the benefits of DERs in addition -- or on the  
9 benefits of DERs in addition to the costs.

10 I think almost universally when I read the DFOs  
11 submissions, I felt that there was a heavy emphasis on  
12 the costs of DERs and the costs for integrating DERs.  
13 It was almost at times appeared to be fatalistic and  
14 with very little emphasis on how to explore those  
15 benefits, how to capture those benefits, and if we  
16 could modify the PBR approach to put a reward mechanism  
17 in there for capturing those benefits, I think there  
18 would be some incentive for the DFOs to pursue those  
19 more aggressively and examine, you know, various states  
20 of deployment for AMI and, you know, various levels of  
21 back-end systems and explore more innovative rate  
22 structures that support the integration of DERs.

23 So, you know, for now, that would be the position  
24 that we would take and the view that we would have in  
25 respect to PBR. I think PBR in itself has been

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1 something that the DFOs value tremendously. I think,  
2 for the most part, they've been highly supportive of  
3 PBR and feel that it has been a positive thing for  
4 them, but I think the current format of PBR has some  
5 aspects to it that various parties are now finding  
6 constraining given the nature of change.

7 Having said that, and when we talk about  
8 transformational change, I think we need to be careful  
9 in playing chicken -- what is it -- Chicken Little on  
10 this one, "The sky is falling, the sky is falling." As  
11 has been mentioned at various points, DERs adoption in  
12 Alberta is still in its early stages. We have some  
13 time here. We can take a measured approach. We can  
14 examine this in detail. We can look at the examples  
15 from other jurisdictions and learn from them and do  
16 this in an orderly manner and thereby hopefully avoid  
17 some of the mistakes that have occurred in other  
18 jurisdictions. We don't need an answer tomorrow.

19 MS. COLLINS: Thank you, Mr. Friesen. That's  
20 very helpful.

21 Is there anybody else who would like to add  
22 anything? Otherwise we can move on to the -- oh, I'm  
23 sorry. Dr. Orans.

24 We can't hear you, Dr. Orans.

25 DR. ORANS: I agree with Mr. Friesen's

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1 characterization of the cost and benefits. I think one  
2 of the problems with the benefits is they're back-ended  
3 and long term and the costs are short term, and your  
4 PBR is short term.

5 But just one idea is, you know, if you're  
6 convinced that over 10 or 20 years the benefits are  
7 bigger than the costs, you can make an adjustment to  
8 the baselines in the five-year time frame to re-adjust  
9 the baseline framework in your PBR, and perhaps then  
10 you could get that in place as a long-term glide path  
11 and way to implement this under your PBR framework.

12 MS. COLLINS: Thank you, Dr. Orans.

13 Dr. Faruqui, I saw your hand up.

14 DR. FARUQUI: Yes, thank you.

15 I just wanted to cite the example of the state of  
16 Illinois where they have essentially a PBR-type  
17 approach, and for years, there was not much of an  
18 incentive for Commonwealth Edison, the utility, with  
19 something like 3 million customers to do much in terms  
20 of customer engagement, and so they created performance  
21 incentive mechanisms sometimes called "PIMs." Many  
22 utilities with PBR are being encouraged by the use of  
23 PIMs, P-I-M-S, to do more customer engagement, like  
24 energy efficiency, demand response, DERs, all of those  
25 kinds of things, so that creates a win/win opportunity.

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1 And so what initially might look like, oh, why  
2 should I do this as a utility, I will lose business, I  
3 will lose revenue, I will lose earnings, my  
4 shareholders won't be happy, to a situation where,  
5 well, your shareholders could be happy because you now  
6 have a win/win situation.

7 I think one of the key concepts here that I know  
8 the other experts have also mentioned is customer  
9 centricity. The customer is changing fast, maybe not  
10 in Alberta, but they will change fast in five years,  
11 certainly within ten years, they have changed  
12 everywhere else, and those customers are going to drive  
13 the change, so there's an opportunity for the utilities  
14 and the AUC to get the customer engaged in this  
15 conversation so that they don't bypass what are part of  
16 the change.

17 How do you do that? Well, you have to create  
18 those performance-incentive mechanisms for the  
19 utilities. Meaningful and feasible PIMs can lead to  
20 significant change.

21 So I just wanted to make that comment.  
22 MS. COLLINS: Thank you, Dr. Faruqui. I think  
23 the customer side is very important, so thanks for  
24 adding that.

25 And, Mr. DesLauriers, I would like to hear your

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1 that might make PBR the risk/reward ratio such that  
2 utilities might be further incented relative to what's  
3 in place today to make some of these innovative  
4 investments, and they most likely are in the best  
5 position to evaluate which of those will work on their  
6 system.

7 I just wanted to impart that thought.

8 MS. COLLINS: I'll turn it over to  
9 Commission Member van Egteren. Thank you.

10 MR. VAN EGTEREN: Thank you very much.

11 So we do have some experience with this kind of  
12 thing here in Alberta related to EPCOR's deployment,  
13 investment in AMI.

14 And so one of the issues -- well, first of all, if  
15 the -- the planning horizon for anything, the  
16 investment in anything here is in fact longer than the  
17 PBR period, then there's every possibility that, during  
18 a PBR period, the incentives might be not to minimize  
19 costs. Okay? So we're aware of that.

20 And so the company comes forward, they've got a --  
21 you know, an excellent business case, say, and it's got  
22 net present values calculated and showing very positive  
23 things, but the problem is it extends over the course  
24 of the ending period of a PBR term and so there's all  
25 this uncertainty associated with rebasing, then you've

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1 perspective as well.

2 MR. DESLAURIERS: Yes, thank you. I agree with all  
3 the experts' comments on this topic. I just wanted to  
4 add that -- and we echo this in our report -- is there  
5 may be an opportunity to rethink the risk/reward  
6 continuum for utilities under PBR as they rightfully  
7 begin to consider the value of innovating and meeting  
8 the evolving nature of customer needs.

9 I think -- I know in North America, and in  
10 particular in the United States in the jurisdictions  
11 I've worked heavily in, there's often the emphasis of a  
12 backward-looking prudence review to justify investments  
13 that have been made by the utility, and when those  
14 reviews, you know, aren't met with favourable results  
15 for cost recovery, it's a disincentive for that utility  
16 to continue to try to innovate in some of those  
17 particular examples.

18 And so one suggestion in PBR is maybe an evolution  
19 in PBR, as we're looking at innovation, is possibly  
20 rethinking where that risk/reward balance is and  
21 providing some opportunities for the DFOs to take risks  
22 to innovate with proper controls, obviously, for rates  
23 and managerial outcomes.

24 But I believe that might make the PBR, as we're  
25 going forward into the evolving utility world, I think

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1 got issues here.

2 So is it -- is one simple solution -- and I'm not  
3 proposing this, right -- but is one simple solution to  
4 make the timeline on the disconnect between revenues  
5 and costs simply longer; that is, the PBR term is  
6 longer? Is that a reasonable compromise in some sense?  
7 Because you're always going to get some investments  
8 that will extend over the arbitrary demarcation of end  
9 of PBR term. They just have to be thought of and you  
10 arrive at these investment decisions a year before the  
11 end, and so that's always going to occur.

12 But do you mitigate some of the issues there if  
13 you simply extend the PBR term?

14 DR. ORANS: I don't think you can extend it  
15 long enough. I mean, I think price cap or revenue cap  
16 or formulaic rates are really good at incenting  
17 utilities to drive a short-term efficiency and cost  
18 reductions.

19 I think long-term bets on new technology are  
20 just -- I've never seen it in my nearly 40 years in the  
21 business. Any pipes or wires company under a PBR who  
22 has done any kind of long-term strategic technology  
23 investment -- I can't think of one under a PBR  
24 framework. And so even if you -- and, you know, I  
25 can't imagine them living under the DIAC (phonetic) for

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1 15 or 20 years. So usually it's five years, maybe six  
2 or seven, squeezed down, get efficient, and then rebase  
3 like you said, and look at the things they want to  
4 bring in and then go on another one.

5 I was thinking of an interim way is keep your  
6 framework, you know, the five-year framework, and then  
7 potentially allow a utility -- if they can make their  
8 cost benefit case longer term, to rebase in the term  
9 only for that amount, not everything else. So here's  
10 the rebase required for the net benefit piece and for  
11 me to -- and I might not implement the whole thing, but  
12 at least a piece of it during that five-year period.

13 MR. VAN EGTEREN: I understand.

14 Any other comments?

15 MR. FRIESEN: I think one of the things, you  
16 know, with PBR you have to create a baseline of some  
17 kind to measure against, and in a time of  
18 transformational change, establishing that baseline out  
19 five years may already be a challenge. Extending it to  
20 seven, eight, nine, ten years is -- you know, it  
21 becomes almost impossible in many respects if that  
22 change is substantive enough.

23 So I think you're going to run into a lot of  
24 controversy about what the new baseline should be once  
25 you're looking eight, nine, ten years or more out. So

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1 exactly that amount is, but it's -- but your point, I  
2 think, is a good one.

3 If, in setting the baseline, if you're doing it  
4 again, you know, could you pick a different period, you  
5 know, of maybe even a longer period as the baseline  
6 that includes some transformation in it that's akin to  
7 this so that it has some of that growth, natural growth  
8 in it, that includes new technology.

9 MR. VAN EGTEREN: Okay, I will end it there, but I  
10 suspect this might be a topic we'll visit again in the  
11 future, but thank you very much for your comments.  
12 Very informative and helpful.

13 MR. REESE: Were there any other Commission  
14 Panel member questions?

15 If not, I will turn it over to Mr. Vasetsky who  
16 has some follow-up questions from our earlier  
17 discussion.

18 MR. VASETSKY: Thank you, Mr. Reese.

19 I just have a couple of questions, I want to take  
20 you back to the rate design or tariff area, and I want  
21 to do it so we are very clear on what -- that we didn't  
22 miss your recommendation.

23 So I'll start with Dr. Orans.

24 Dr. Orans, you mentioned in the morning that  
25 perhaps an ideal way or a better way to price a

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1 that's also a consideration in lengthening the PBR time  
2 frame.

3 MR. VAN EGTEREN: Sure.

4 Okay. One last thing on this because I don't want  
5 to derail this, but this is a really interesting area  
6 for me.

7 There are those who would argue, and who have  
8 argued in the past, and I'm not an expert in this area,  
9 but I've heard this phrase a lot, that there are --  
10 within the X factor, the way in which it's developed  
11 using the data set that it's used, there are instances  
12 in that history where they perhaps have had  
13 transformational change.

14 And so in setting the benchmark here, which we'll  
15 call the X factor, and given the flexibility you build  
16 into your PBR framework hopefully, are there enough  
17 checks and balances in there given the fact that this  
18 kind of experience might be in the X that you don't  
19 have to do anything? Simply let the system work --  
20 okay.

21 DR. ORANS: It's possible, but none of them  
22 are doing huge amounts of back end for right now.

23 So I'm sure there's something in there. To say  
24 it's zero is not realistic, like you say. There's  
25 something in there. It's hard to tease out what

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1 distribution network cost is to do it on a, I believe  
2 you said distribution planning zone basis; right?

3 DR. ORANS: I was talking about basically  
4 connecting causal costs, you know, with load.

5 MR. VASETSKY: Right.

6 DR. ORANS: I didn't extrapolate and go as far  
7 as you said and say it made sense for Alberta to do  
8 distribution zonal level pricing. I was following the  
9 argument basically on how do you do that.

10 MR. VASETSKY: It's always nice when someone  
11 answers your question before you ask it, but that was  
12 my question. I just wanted to make sure that zonal  
13 pricing was not on the table at this time.

14 DR. ORANS: Not from me.

15 MR. VASETSKY: Okay, thank you.

16 The second clarification I wanted to make is I  
17 believe what I heard from each of you gentlemen is  
18 that, so if we go to the next step of having a two- or  
19 three-part tariff where there would be a fixed charge  
20 to recover the embedded costs and there would be some  
21 form of a variable charge to send that deficient price  
22 signal, I believe I heard that you said that doing it  
23 on a time-variant basis would be an improvement over  
24 just coming up with the, you know, static three-part  
25 tariff.



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1 Did I hear it correctly?

2 DR. FARUQUI: I'll give you my perspective.

3 I think the variable element for a distribution  
4 utility should be a demand charge that is time varying.

5 I still do not see the role of an energy element or a  
6 volumetric element in a distribution charge, which is  
7 not to say that it is not on the list of options, it's  
8 not just the first best option, it would be a second  
9 best option, where you price distribution costs  
10 volumetrically, as you do today, but you go one step  
11 further and make them time varying.

12 To the extent that there is time variation in the  
13 cost for the distribution system, peak versus off peak,  
14 you can offer time-varying rates, and that's what one  
15 utility in Australia and one utility in New Zealand are  
16 doing. They would much rather do time-varying demand  
17 charges, but they don't have the support with the  
18 regulatory bodies or the politicians to introduce a  
19 demand charge.

20 But Con Edison has a pilot underway where they  
21 have the time-varying demand charge, they also have  
22 made it available to anyone else who wants to opt into  
23 that demand charge, and they did see a lot of cost  
24 justification for having time-varying demand charges.

25 In Arizona, we have that as well for the two

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1 charge would be better than one that aggregates it all  
2 and averages out across time.

3 DR. FARUQUI: May I ask a question, just a  
4 clarification question?

5 So the time-varying energy charge makes perfect  
6 sense to me, but what I'm trying to reconcile is how  
7 does that influence the pricing or distribution  
8 services as opposed to energy services?

9 MR. DESLAURIERS: I think we're getting confused on  
10 what we're pricing out. There is a supply component of  
11 what an end user pays through rates, and so I  
12 completely agree that I believe, on the distribution  
13 side, those costs are primarily fixed and could be  
14 recovered from a demand charge in a three-part rate.

15 My focus on the energy piece is on that supply  
16 portion. That supply portion, the value of that supply  
17 does vary by time, it has a different nature to it from  
18 a cost point of view.

19 DR. FARUQUI: Oh, I agree totally. I just  
20 wanted to be sure that that's what was being mentioned.

21 But my understanding was that the supply portion  
22 of the rate, in a competitive market like Alberta, is  
23 left with the retailers and doesn't fall within the  
24 jurisdiction of the Commission. Maybe somebody can  
25 comment on that.

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1 utilities, APS and SRP.

2 So that's kind of, I believe, realistically the  
3 best option, but if you can't get it, the second best  
4 is a time-varying energy charge, and the third best is  
5 what is there currently, which is a fixed charge plus a  
6 volumetric charge. That's what's been there for a  
7 hundred years.

8 MR. DESLAURIERS: And this is David DesLauriers.

9 I would agree with that, with what Dr. Faruqui  
10 just mentioned, but I would say that my recollection of  
11 that question, we discussed it this morning, was in the  
12 context of the three-part rate that Charles River had  
13 been one of the recommenders on.

14 And in terms of going back to the principles of  
15 cost causation and cost recovery, I believe that the  
16 variable charge thought was that that should be tied as  
17 closely as possible to the energy market, we know that  
18 that varies by time based upon the fuel costs of the  
19 source of generation.

20 And so we do think that there's a time-based  
21 component to fuel and to energy charges, and that's  
22 obviously clearing in the energy markets today through  
23 the AESO. And so, you know, our statement was that  
24 energy charges correctly priced should reflect those  
25 price signals and most likely a time-varying energy

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1 MR. FRIESEN: I was actually going to make a  
2 comment related to the energy component of the bill.

3 It is interesting that Alberta has an energy  
4 market, an hourly energy market, that's competitive,  
5 yet very few customers at the residential or at the  
6 distribution level actually take advantage of that  
7 time-variable capability, and -- and I'm sure there are  
8 some, but when I looked at the -- you know, I took a  
9 moment awhile back to skim through the offerings of the  
10 various energy retailers, and there are very, very few  
11 time-varying options available. Almost everybody is  
12 offering, you know, one, two, three, five-year kind of  
13 fixed-rate options for energy.

14 So you have an energy pool in Alberta, and it is a  
15 time-varying rate, an hourly time-varying rate, and  
16 that price signal is largely absent from your market,  
17 at least in terms of the residential consumer or the  
18 small C&I consumer.

19 So, you know, there's an opportunity there, I  
20 believe, to introduce customers to time-varying rates  
21 within a market mechanism that you already have in  
22 place. You don't have to invent a new market  
23 mechanism.

24 Now, one of the challenges you may have is legacy  
25 metering, and we've talked about that and I won't

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1 expound on that any further, I think we all understand  
2 what kind of constraints that may impose.

3 On the demand side, when we're specifically  
4 looking at distribution tariffs, I agree that, you  
5 know, capacity is the driver, and a demand charge is  
6 the best indicator of capacity causation and -- or the  
7 best link to capacity causation, cost causation, and my  
8 only concern would be that we don't lock ourselves into  
9 a short-term view of the fixed nature of distribution  
10 costs.

11 At InterGroup, we do not subscribe to that  
12 philosophy. We feel that sending a fixed charge price  
13 signal to a customer is a meaningless price signal. It  
14 provides no opportunity for customer response. It  
15 provides no opportunity for customers to manage their  
16 bills, and that is a distinct right that all customers  
17 should be provided with. They should have the right to  
18 manage their bill and they should have the ability to  
19 respond to a price signal.

20 So, for that reason alone, we're not a fan of  
21 fixed charges, no matter how -- no matter how fixed you  
22 view those costs to be in the short term. We would  
23 like a demand charge to have a forward-looking  
24 component so that we can -- or that customers can  
25 impact the future of the grid, and the future cost of

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1 and what I meant.

2 When I said "variable," what I meant is that there  
3 needs to be a price signal that consumers can respond  
4 to, that through a change in their behaviour, can  
5 assist them with managing the physical quantity of  
6 their energy bill.

7 So by that I don't mean uneconomic avoidance. If  
8 they're purchasing a service, a capacity service from a  
9 utility, I fully expect the consumer to pay for that  
10 service, I believe there's an accountability aspect  
11 there, where if you draw a service from the utility,  
12 from the distribution system, you should pay for it.

13 But the point I'm making is that, if you can  
14 modify your behaviour and change the nature of the  
15 service that you're drawing from the utility, and that  
16 reduces the costs for the utility, you should be  
17 rewarded for that.

18 And that is what I mean by the term "variable."  
19 I'm not trying to imply that we should allow people to  
20 avoid costs for services that they draw from the  
21 utility. That's not at all what I'm advocating for.

22 My bigger comment was related to the fact that I'm  
23 in favour of a capacity charge, but I do not believe  
24 that that capacity charge should be viewed on a  
25 short -- or be set based on short-term -- a short-term

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1 the grid, to the benefit of all ratepayers.

2 So, with that caveat, we would agree that a demand  
3 charge that is time varying would probably be the most  
4 effective in conveying a price signal to consumers for  
5 distribution expenses.

6 MR. VASETSKY: Go ahead, Dr. Orans.

7 DR. ORANS: Mr. Friesen, this is the first  
8 time I've heard a real difference with this group, at  
9 least on my side. I was about to say I think we're all  
10 in agreement on the framework.

11 I -- I can't agree with what you've just said is,  
12 I think what you've just said is, regardless of what  
13 the variable costs look like, you want a variable cost  
14 charge that's bypassable, and I can't agree with that.

15 I would agree with what Dr. Faruqui said is, we  
16 can convince ourselves there's an avoidable part of  
17 distribution, and as Mr. DesLauriers said, there's an  
18 avoidable part of energy supply, it should be time  
19 varying, and that makes sense.

20 But what I can agree with is that if there isn't  
21 an avoidable piece in the relevant time frame, that we  
22 differentiate that and put that out as a target to be  
23 shot at. It doesn't make any sense to me economically,  
24 it doesn't make any sense from an equity point of view.

25 MR. FRIESEN: So I'll try to clarify what I said

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1 view of fixed costs.

2 I think it should be based on a forward-looking  
3 perspective that enables changes in consumer behaviour  
4 to reduce the overall cost of operating the  
5 distribution system through reductions in their  
6 capacity requirements as a result of the price signal,  
7 their response to the price signal that's being  
8 provided to them.

9 Does that help a little in clarifying what I  
10 meant?

11 DR. ORANS: Yeah, I just think it muddies the  
12 record from what we said this morning a little bit, is  
13 I thought, following Dr. Faruqui's characterization of  
14 distribution systems, we agreed that the majority of  
15 the costs are fixed for the relevant time frame we're  
16 talking about.

17 So let's just say it's -- let's say it's  
18 80 percent, for example. So those should be something  
19 like a non-coincident, you know, peak demand charge,  
20 connected load. It's principally not for avoiding,  
21 it's principally just cost allocation, equitable  
22 allocation to a customer for their use.

23 And then there's another piece, perhaps time  
24 varying if it makes sense, that's this time-varying  
25 demand charge that is something, like you said, is the

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1 long-term avoidable cost of that system.

2 I thought that's where we -- the central agreement

3 was. I just didn't want to make -- I wanted to make

4 sure you weren't backing up over that record that we

5 already established.

6 MR. FRIESEN: No, I'm not trying to back up on

7 that record.

8 What I think I'm doing is addressing a

9 behaviour -- utilities are very bureaucratic in their

10 construct, I think I'm safe in saying that, having

11 worked in one for 29 years, and we have a tendency to

12 repeat -- and I'll use "we" in the context of when I

13 worked in the utility -- we had a tendency to repeat

14 what we were being rewarded for.

15 And if we were being rewarded for investing in new

16 distribution infrastructure, we continued to invest in

17 new distribution infrastructure and found whatever

18 means we needed to justify that.

19 And I'm looking for a way to reward utilities for

20 behaving in a way that encourages consumer behaviour to

21 mitigate the need for new investment.

22 And I'm concerned that if we focus too much on

23 this 80 percent over the one-year rate application or

24 the two-year rate application being fixed, we're just

25 going to reward embedded costs and not really prevent a

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1 strong enough price signal to positively -- positively

2 influence reductions in distribution spending or new

3 investment in the distribution system going forward.

4 MR. REESE: Mr. Vasetsky's last question has

5 generated considerable discussion, and I just want to

6 check in with him, if he's finished with his line of

7 questioning, then if we're ready to move on to

8 Mr. Lucas's line of questions?

9 MR. VASETSKY: I think we do. Thank you very

10 much.

11 MR. REESE: Mr. Lucas.

12 MR. LUCAS: Thank you.

13 So throughout the day today we've heard quite a

14 bit about this idea of a roadmap.

15 And, Dr. Orans, in your written submission you

16 expressly recommended a roadmap contain two elements,

17 those being triggers and enabling conditions whereby

18 you described all market participants would be able to

19 monitor the triggers, and if a critical mass of

20 triggers was met the distribution utility and its

21 stakeholders would then need to enact any enabling

22 conditions to allow for the evolution of the utility

23 and the successful integration of DERs.

24 You also this morning brought up how you arrived

25 at that as part of a broader team or process and

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1 contrasted Central Hudson with I believe it was

2 Con Edison, and how they were at different places in

3 their own development or evolution of their system.

4 So, Dr. Orans, can you please comment on the

5 advantages and disadvantages of instituting a generic

6 roadmap for all distribution utilities with similar

7 trigger points and enabling conditions, or directing

8 DFOs to design their own roadmap with either individual

9 triggers or individually tailored triggers and enabling

10 conditions?

11 DR. ORANS: That's a very good question, and

12 I'm not sure I have a great answer for it, but I will

13 try. I invite my esteemed colleagues here to jump in

14 if you see it differently or if you can improve upon

15 this.

16 So I'm hoping that the Commission doesn't walk

17 away from this and say, okay, this is all in your court

18 distribution utilities, tell me about this roadmap and

19 enabling conditions and tell me about what your

20 triggers are, and I'm going to basically put it all

21 back on you and you're going to tell us this stuff and

22 then we're going to see whether that's good enough and

23 respond to it.

24 So I think there are a number of concrete things

25 you can do to make this -- make their filings better.

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1 Those concrete things really, to me, look like, what

2 does a cost-effectiveness test look like and what do I

3 need to see, what are the measures I need to see here,

4 what are the categories.

5 It's almost like you need a -- you need to come

6 out of this decision with some more concrete -- I mean,

7 ideally, it would be a white paper saying, here's our

8 vision of the roadmap, here's our characteristics, we

9 don't require you to do those.

10 But it's sort of like what FERC does for US

11 utilities. Here's the FERC standard, is, you can fit

12 your thing exactly to it or you can vary from it and

13 improve it depending on your circumstances.

14 And I think it's worth the Commission going

15 through, thinking about what it would like to see in

16 the filings, helping and using other filings from other

17 places that we've all mentioned to inform that so that

18 people can get somewhat more standardized than, come

19 one, come all, come all sizes with different triggers.

20 MR. VAN EGTEREN: So, Dr. Orans and Dr. Faruqui,

21 would that imply something like the specific form of,

22 say, a cost-benefit analysis as an informative piece

23 on the roadmap?

24 DR. ORANS: Absolutely. I think that's where

25 a lot of places have started is, what's in and what's

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1 out, what can we quantify, what can we take credit for,  
2 and then as you aptly brought up, and then how would it  
3 get fit in a baseline under the existing structure,  
4 et cetera.

5 If you could start that conversation with them in  
6 your decision, I think that would be helpful towards  
7 standardizing responses.

8 MR. VAN EGTEREN: Dr. Faruqui?

9 DR. FARUQUI: Yes. I wanted to say that, what I  
10 have discovered through many stakeholder processes is  
11 the first thing is to get the definitions down: What  
12 is DER, what is an NWA, what are costs and what are  
13 benefits, and I have discovered that the terminology  
14 alone takes a day or two to sort out. And then you  
15 have to find common ground so that everyone agrees that  
16 they are talking about the same concept.

17 Then comes the task of, how do we quantify these  
18 categories of costs and how do we categorize these  
19 categories of -- how do we quantify these categories of  
20 benefits, and that's another round of discussion.

21 Because people have different backgrounds, they  
22 have different interests, they have different  
23 histories, they have different knowledge of what's  
24 happening elsewhere and what's working and what's not  
25 working. So a lot of infrastructure meetings need to

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1 both of you.

2 DR. FARUQUI: Let me comment, it certainly is  
3 not orthogonal to what Dr. Orans was saying. It's just  
4 a question of, at what point do you write the white  
5 paper, how extensive is the white paper, is it  
6 conceptual, does it lay out some ideas on how the  
7 analysis will be done, and then invite comments. Or do  
8 you first do the conversations and then write the white  
9 paper. And it's a bit of a chicken and egg and it just  
10 depends, really, on the emotional temperament of the  
11 AUC.

12 DR. ORANS: Again, I hate to keep coming back  
13 from these cases, but we can learn from them since we  
14 were all in them, we can do better as we go through  
15 them.

16 So all the REV documentation in New York gave  
17 pretty good white paper roadmapping for what the  
18 utilities needed to come back with, and probably went  
19 overboard, so that's too much, right, on the regulatory  
20 side.

21 At the same time, you know, the Hawaii case, you  
22 know, it was very strident in its rejection of the  
23 utilities' vision and mission, and it told it not what  
24 to come back with, you know, but it didn't fill out  
25 what it wanted to see.

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1 be held to create the common ground.

2 And then comes the task of where do we get the  
3 data to measure costs and where do we get the data to  
4 measure benefits, and you form subgroups, and then you  
5 allocate the assignments to them to come with the  
6 quantities that go into that algebra, if you will.

7 So it is partly a process of trying to find common  
8 ground and partly a process of doing the analysis, but  
9 you cannot do the analysis without doing the common  
10 ground or people are talking past each other.

11 MR. VAN EGTEREN: Thank you very much to both of  
12 you.

13 MR. LUCAS: So my follow-up -- my prepared  
14 follow-up to that was going to be, what are the next  
15 steps following the inquiry that the Commission should  
16 pursue, if we did pursue this idea of a roadmap.

17 But I heard Dr. Orans just say we should -- the  
18 Commission should write a white paper and define some  
19 of these things and kind of set -- kind of benchmark  
20 like the FERC might do.

21 And I heard Dr. Faruqui say, I think, something  
22 almost totally different, rather than write a white  
23 paper ourselves in the Commission, to form a bunch of  
24 working groups and subgroups.

25 Is that fair? Did I catch that correctly from

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1 Like Dr. Faruqui said, what does it really want to  
2 see, it would be useful for you guys, and maybe that is  
3 definitional, maybe it is methodological, what is --  
4 you know, what would be required for you to see to  
5 basically give you enough evidence when they come back  
6 with something more concrete, if they could work on it.

7 What the utility did in Hawaii is really  
8 interesting. So they were given six months after they  
9 had got a total strident rejection. They said go back,  
10 talk to stakeholders -- they had a massive stakeholder  
11 process -- and come back with a proposal to us --  
12 remember, they had the billion and then they -- so,  
13 obviously, the stakeholders said, you need to shrink  
14 the costs way down, that was part of the  
15 cost-effectiveness evaluation, and you need to have an  
16 opt-in component, you need to show clear benefits,  
17 categories.

18 So they didn't have much opposition to their plan  
19 when they came back because they did six months of  
20 stakeholder compression work root stuff before they got  
21 to the commission. The commission case was pretty  
22 narrow on, you know, a few people that stayed out on a  
23 few issues, but they basically told them, come back  
24 with something that your broad stakeholders can support  
25 before we look at it.

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1 So I think that looks to me like the discussion we  
2 had this morning, I don't remember who said it, but  
3 somebody other than me said, broad stakeholder support  
4 for whatever you bring back to us on your roadmap and  
5 your strategy and your evaluation.

6 MR. LUCAS: So help me out further as I  
7 conceptualize this. So you laid out some kind of areas  
8 where we may want to set triggers or trigger points,  
9 and, obviously, those would be defined in this  
10 collaborative process if we went down that road that  
11 you suggested.

12 But, at the end of the day, if they're going to be  
13 monitored as key indicators of when we may need to  
14 implement an enabling condition, they would need to be  
15 quantifiable. And when I read your submission, I had a  
16 hard time figuring out how you would quantify some of  
17 your suggested triggers. Can you help me think through  
18 that, please?

19 DR. ORANS: Yeah. So there are some that are  
20 already -- that are relatively easy like  
21 interconnection requests, interconnection queues,  
22 right, amount of credits, amount of upgrades, amount of  
23 DER being installed; right? Those, to me, are all  
24 things, Mr. Lucas, that you could put up on a portal,  
25 right, and just have normal reporting on those things.

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1 whether the investment in the back end, the extended  
2 back end, and the AMI meters and the rate design, you  
3 know, make sense. I think those numbers, you'll be  
4 surprised in some areas could grow quite rapidly if  
5 you're not watching them, if you're not addressing them  
6 in a roadmap fashion.

7 MR. LUCAS: Just to follow up on those  
8 comments, doesn't that -- by quantifying what the  
9 bypass might be, wouldn't that be suggestive of what I  
10 think Mr. Friesen referred to earlier this morning,  
11 that all bypass being bad? Is that what you're  
12 suggesting? If you're quantifying bypass -- no, okay,  
13 I misunderstood.

14 DR. ORANS: No. I think you want to look at  
15 how many customers are making investments in behind the  
16 meter gen. I agree with the statement that a lot of  
17 them do it for liability reasons and, you know, that's  
18 fine. And they get improved service, they get back-up  
19 service. All of that is fine. I think you want to  
20 look, though, is there a bad design also sending  
21 another incentive that customers are paying for.

22 So I don't like it that some customers are paying  
23 for some -- partially some other customer's increased  
24 reliability either. So that's another triggering  
25 thing.

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1 The things you can't do that you should be doing  
2 is also this cost of the inefficient rate design and  
3 cost-shifting piece. You know, how much is flowing  
4 through -- if you've got a poor design but nothing is  
5 happening and it all -- you know, so what? There isn't  
6 a bunch of people making bad investment decisions, you  
7 know, long term and it's not that big a deal. But you  
8 can quantify the damage done with rate design that  
9 isn't, you know, appropriately reflective of costs.

10 And, you know, that will be also a trigger for,  
11 I'm losing 50 million a year, I'm losing a  
12 hundred million a year, customers are making X, Y, and  
13 Z investments based on those decisions. Oh, this  
14 \$200 million investment now looks to be -- it triggers  
15 a, "please file a case to correct this," right, when  
16 you see those numbers.

17 Right now, it's totally not transparent, those  
18 numbers. There's nowhere in Alberta where you can see  
19 what the potential bypass is of the transmission 12 CP  
20 rate, for example, or the various distribution  
21 companies, you know, designs that are largely  
22 volumetric that we just talked about. I think you want  
23 to be tracking those too and I think you want the  
24 utility tracking those, regulators tracking those,  
25 customers tracking those, to determine how fast and

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1 You're never going to have perfect rate design and  
2 you're going to be constantly tweaking it. I think  
3 cost shifting is a measure that utilities don't do  
4 well. They don't show it to anybody. It's not popular  
5 to show your customers that, but I think that's what  
6 we're really talking about.

7 Are customers able to install behind-the-meter  
8 generation? And I like it that they're able to do it  
9 and interconnect and benefit themselves, but I also  
10 like the concept of what I think of as margin neutral  
11 rates. I want the distribution and transmission  
12 natural monopoly utilities to be indifferent between  
13 whether they do that or not, and the only way you get  
14 them indifferent is have margin neutral rates. Their  
15 margin and their total rate levels. They don't need a  
16 rate increase or decrease as associated with.

17 MR. LUCAS: So the last question on this topic  
18 while I have you and we're able to get your insights on  
19 this. So what would you recommend -- or how would you  
20 recommend addressing trigger points that may have  
21 already been triggered and implementing enabling  
22 conditions? And perhaps this is something that would  
23 be worked through in any kind of stakeholder process.

24 DR. ORANS: I think those triggers -- I think  
25 those triggers are more important to some people, less

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1 to others. And I think the litmus test is does it go  
2 into the cost-effectiveness evaluation. And if it  
3 does, how is it counted? As Mr. Friesen said, is it  
4 really long term or is it short term? Is there a  
5 reliability piece that we didn't count? I think all  
6 those are in play in this work group that would define  
7 these. And I think the Commission has a major role to  
8 play.

9 There won't be uniform agreement in what the  
10 methodology is; right? And the Commission can be -- to  
11 use Dr. Faruqui's term, it can look more like a  
12 leadership position if it looks super long term. It  
13 can look more conservative and business focused if it  
14 looks shorter term.

15 I think each issue will bring its own definitional  
16 case and the Commission can reach some reasonable  
17 balance of what makes sense in the long and short term  
18 in terms of is this -- is this something it wants its  
19 utilities to lean into earlier or later than it would  
20 otherwise.

21 MR. LUCAS: Thank you, Dr. Orans.

22 I just want to canvass the other panelists, if  
23 they have anything to add to this matter because --  
24 yes, please, Dr. Faruqui.

25 DR. FARUQUI: I want to comment on the issue of

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1 CEO on the East Coast as to why is it so difficult to  
2 bring about change in rate design to minimize those  
3 cross-subsidies. The utility is trying to help one  
4 group of customers who are currently paying a hidden  
5 tax without knowing it.

6 And his response has stayed with me. He said, we  
7 are regarded as a regulated monopoly. We are not  
8 regarded as a company that anyone likes or is friendly  
9 to. So when we try to say we are doing the fair thing,  
10 it doesn't have credibility.

11 I am just mentioning it because it is a challenge.  
12 How do you deal with the cross-subsidy issue?

13 Let me just make one other analogy. Let me switch  
14 over to energy efficiency for a moment, which was  
15 mentioned earlier.

16 Billions are being spent on energy efficiency.  
17 When the US, when the movement began, the economists  
18 argued that you should use the ratepayer impact measure  
19 test, or RIM. So if rates go up as a result of the  
20 energy efficiency programs, you wouldn't do those  
21 programs. Well, that was when I began my career.  
22 Around the same time as Ren Orans.

23 And 20 years later, just about everyone switched  
24 to using the total resource cost test, or the TRC test,  
25 which basically ignored the cross-subsidy argument. It

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1 cross-subsidies between customers, which clearly has  
2 been the flip side of the coin when it comes to DERs.  
3 Some customers have high bills, they invest in these  
4 technologies and they lower their bills, to the point  
5 that maybe they're not covering their fair share of the  
6 capacity costs of being connected to the grid.

7 They're more than happy to see the reduction in  
8 their bill. Their bill used to be \$200 a month. They  
9 have dropped it down to \$10 a month. And they're sort  
10 of having, you know, barbecue parties and they're  
11 bragging about how much their bill has fallen. And  
12 sometimes I'm at those parties before I put my solar on  
13 my roof and I'm trying to tell them that, you know, it  
14 costs \$50 to connect you to the grid. And they're  
15 saying, oh, that's just nonsense, that couldn't  
16 possibly be true. They're just making money off me.  
17 I'm a net zero customer. Why do I have to pay the \$10?  
18 But that's the perception of those customers.

19 Then you go and talk to the other customers at  
20 some other barbecue parties about the fact that they  
21 are subsidizing those other customers. And,  
22 interestingly, most of them don't know, number one.  
23 Number two, they don't care.

24 And the apathy for the cross-subsidy argument,  
25 one, the public is huge. I was talking to a utility

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1 said as a cost-benefit analysis the benefits exceed the  
2 costs, we're going to do it.

3 And so about ten years ago in Florida I was  
4 working for a utility on a project to look at different  
5 ways of looking at cost effectiveness of energy  
6 efficiency programs. And they use the RIM test in  
7 Florida. They're the only state out of the 50 states  
8 that use the RIM test today. And they wanted to see if  
9 there was some other way of proceeding with it.

10 So I reached out to my local utility, where  
11 Ren Orans used to work and where I have been a customer  
12 and consultant, to Pacific Gas and Electric Company. I  
13 asked their head office -- the DSM, I said, what do you  
14 say to a customer whose neighbour put in an efficient  
15 air conditioner and half of the cost was paid for  
16 through a rebate by the utility and their bill really  
17 went down and you didn't see any benefits. Actually  
18 your rate went up a little bit because you have to pay  
19 that person's rebate.

20 So I asked Bill Miller that question. And  
21 Bill Miller said, the RIM test has not been mentioned  
22 in California for 20 years. Interesting you bring it  
23 up.

24 I said, yeah, but please answer my question.

25 So he said, well, we tell that customer, you had

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1 the opportunity to put in that efficient air  
2 conditioner yourself. It's still there. So why don't  
3 you do it next year.

4 So, in other words, the cross-subsidy argument for  
5 energy efficiency has been long forgotten. At least in  
6 the US that's the story. I don't know what's in  
7 Canada. I'm just saying we have to -- as part of the  
8 triggers it should be there, but I don't know how much  
9 weight to put on it.

10 MR. REESE: Thank you, Dr. Faruqui.

11 I see Mr. DesLauriers has raised his hand.

12 MR. DESLAURIERS: Thank you. I just wanted to  
13 respond to all this good conversation about  
14 cross-subsidies.

15 I would say that, you know, my experience was a  
16 bit different in terms of utility apathy and/or  
17 customer apathy with regard to cross-subsidies and DER.  
18 I was pretty heavily involved with the net metering  
19 rate debates in Arizona back in 2014, '15, and '16,  
20 where sort of the debate about cross-subsidies and net  
21 metering was at ground zero at that time.

22 And, you know, there are ways to quantify what the  
23 cross-subsidies are without having measured them by  
24 meter, there are ways of working with load profiles and  
25 with production profiles, meters, and assume kW size

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1 being raised, but I just want to check with Mr. Lucas  
2 if he has any further questions to ask on this topic?

3 MR. LUCAS: No. That concludes my questions.

4 Thank you.

5 MR. REESE: Okay. I invite the further  
6 remarks that you were looking to bring in with the hand  
7 raising to be part of your written submissions.

8 And, at this point, Commission staff has concluded  
9 its questioning and thanks to the four consultants for  
10 their answers today.

11 I would now like to check in with  
12 Commissioner Romaniuk to see if there are any  
13 Commission Panel questions.

14 THE CHAIR: I do have the two related  
15 questions, and then I'll turn to Mr. Van Egteren and  
16 Ms. Collins to see if they have any wrap-up questions  
17 before we complete today's virtual meeting.

18 This question -- and I'm very sensitive to the  
19 amount of time we have available, so this is a big  
20 sweeping question, and if members of the panel feel  
21 more comfortable addressing it in their client's final  
22 comments or their own final comments on behalf of their  
23 clients in mid July, that would be perfectly welcome,  
24 or if you're comfortable and confident that you've  
25 already addressed it in the entire span of your

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1 and number of installed facilities, and within the  
2 existing framework to really come down with a pretty  
3 precise calculation of what the cross-subsidies were  
4 that were going between classes -- I'm sorry, customers  
5 within the residential class.

6 And so, you know, I would just like to remind  
7 that, you know, I think I respectfully disagree when we  
8 say that, you know, customer apathy and utility apathy  
9 really isn't there. I think once the dollars become  
10 known, that those cross-subsidies and those shifts  
11 become pretty significant. And that really goes back  
12 to also the conversation we had about quantifying what  
13 some of these triggers might be.

14 And, again, even when it comes to residential DER  
15 and solar PVs, there are ways to quantify what those  
16 impacts are, and we've done those studies where we know  
17 exactly at what point you need to have penetration of  
18 DER by a certain kW, and size and account that will  
19 create a certain dollar amount of cross-subsidy.

20 So I think there's a lot of good work that we can  
21 do in a roadmap that Dr. Orans suggests. There's a lot  
22 of quantification that can bring a lot of informed  
23 insight into those questions.

24 MR. REESE: Thank you. This question has  
25 generated considerable discussion, and I see more hands

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1 submissions to date, written submissions to date,  
2 that's fine too.

3 And, finally, the third alternative, if you have a  
4 really short crisp response that you would like to put  
5 on the record of today's event or today's meeting, that  
6 would be fine too. It's just that we really don't have  
7 that much time left for expanded answers.

8 So, with that by way of introduction, let me just  
9 qualify the question.

10 We have two fundamental realities in the  
11 distribution world. One is that electric distribution  
12 systems are natural monopolies, I think we've actually  
13 had two of our panelists actually use that term in  
14 today, Dr. Faruqui and Dr. Orans, I believe, both spoke  
15 to the natural monopoly nature of electric distribution  
16 systems.

17 And the second foundational premise of regulation  
18 of electric distribution systems is the governing  
19 legislation in Alberta which places considerable  
20 emphasis, if not primacy, on the FEOC principle: fair,  
21 efficient, open competition.

22 Indeed, if I'm not mistaken, Charles River  
23 Associates -- I'll be looking at Mr. DesLauriers  
24 here -- as one of its principals in its March 13th  
25 written submission was to, I'm quoting here, "simulate

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1 outcomes of competitive markets," which kind of fits in  
 2 nicely with what the Alberta legislation speaks to.  
 3 So my first question is, on what basis or using  
 4 what criteria will we be able to assess over time, so,  
 5 again, in a dynamic setting, whether and to what extent  
 6 the monopoly's electrical distribution grid is and  
 7 continues to be optimally, that is, efficiently,  
 8 resourced, configured, augmented, upgraded, managed,  
 9 operated, and utilized in the public interest?

10 And I'm going to skip right to my second question  
 11 because they're related.

12 What regulatory, that is to say public interest  
 13 policies, should be followed and given effect...

14 MR. LUCAS: Sorry, Randy here in Edmonton.  
 15 Excuse the interruption, we lost volume, if Commission  
 16 Member Romaniuk was still speaking.

17 No, we still can't hear anything from Calgary, and  
 18 I see from Dr. Orans that he can't hear anything  
 19 either. The same from Mr. Friesen.

20 DR. FARUQUI: I can't hear anything either.

21 MR. DESLAURIERS: I heard the last portion of  
 22 Commissioner Romaniuk's question: What policies should  
 23 be filled and given effect...I'm just reading my pen  
 24 scratching, but I heard two questions. Did I get that  
 25 all?

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1 regulatory, that is, public interest policies, should  
 2 be followed and given effect in ensuring that the  
 3 monopoly electrical distribution grid is being  
 4 resourced, configured, augmented, upgraded, managed,  
 5 operated, and utilized on an economically optimal basis  
 6 in the public interest over time.

7 Just as a final sort of qualification, for all the  
 8 other parties that are on the line that are  
 9 participating in this event but who are participating  
 10 as listeners, I would welcome any and all to the extent  
 11 that you wish to respond to those questions, comment on  
 12 those questions in your final submissions in the middle  
 13 of July as well.

14 So having said that, I will look at the panelists.  
 15 And if any of you have anything you would like to say  
 16 either in response to that or, you know, by way of any  
 17 kind of qualification or elaboration, bearing in mind  
 18 that we have about 25 minutes or so left in our  
 19 scheduled time, I would welcome hearing from you.

20 Okay, I'll start with Dr. Faruqui and then  
 21 Dr. Orans. And if Mr. DesLauriers and Mr. Friesen want  
 22 to say -- or add anything else, I would be more than  
 23 happy to welcome your comments as well.

24 DR. FARUQUI: Thank you. So what I believe will  
 25 need to happen, based on all of the discussions you've

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1 MR. LUCAS: That's where we lost his, what  
 2 regulatory -- that is to say public interest policies  
 3 that should be given policy and effect, and that's  
 4 where we lost the feed.

5 Mr. Reese, can you try your microphone? No, we're  
 6 not getting anything from Calgary.

7 I'm going to hand it over to Mr. Van Egteren, who  
 8 I think will try the question.

9 MR. BOURQUE: We're having a short technical  
 10 problem with the audio in the Calgary hearing room, so  
 11 if you'll bear with us for just one moment, please.

12 MR. LUCAS: Okay.

13 MR. BOURQUE: We are proposing a very short  
 14 five-minute break. So we will adjourn until one minute  
 15 after the hour. Thank you.

16 (ADJOURNMENT)

17 THE CHAIR: I must confess that I am much  
 18 relieved that I didn't touch any buttons to make what  
 19 happened happen. I usually am the cause, but in this  
 20 circumstance I was not the cause, so I am relieved, and  
 21 I'm also happy to see that people can hear.

22 So what I'm going to do is, I'll just repeat the  
 23 second part, which is very, very close to the first  
 24 part, except for the introduction.

25 So the second part of the question was: And what

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1 had today, I think everyone is on the same page that  
 2 change is coming. And even though it might not be  
 3 evident today in Alberta, it is extremely likely that  
 4 in the next five to ten years the landscape will look  
 5 very different, with a lot of DERs, a lot of new  
 6 digital technologies. All of those mean that the  
 7 utility regulated monopoly that we have today will not  
 8 look at all like what it will look like in five to ten  
 9 years' time.

10 Because if it doesn't move, if it doesn't change  
 11 with the times, it will see more and more customers  
 12 defecting as batteries and rooftop solar and other  
 13 devices like micro-grid and CHP come into play.

14 So the utility will have to redefine its  
 15 relationship, in my view, with its customers. It will  
 16 have to reinvent itself. And I believe the best way to  
 17 do that would be for the utility to become customer  
 18 centric, which basically means that the process of  
 19 regulation will have to recognize that and give  
 20 utilities that opportunity. So that might mean in many  
 21 cases perhaps the utility doing new functions than what  
 22 it has done in the past.

23 For example, in Illinois the utility ComEd is  
 24 interested in improving the reliability by installing  
 25 micro-grids. In other cases utilities are interested



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1 in owning charging stations for EVs. And still in  
2 other cases utilities are interested in somehow  
3 initiating the PV revolution by doing community solar  
4 or doing solar projects where otherwise nobody would be  
5 focusing on them.

6 So there are big gaps in coverage today between  
7 what the utility does and what it could do. It will  
8 require a reinterpretation of the regulatory compact to  
9 redefine the utility's role as the market changes.  
10 Otherwise it will become increasingly less and less  
11 relevant to what's happening inside the customers'  
12 premises.

13 And one last thing I will say, it might even mean  
14 that in those areas where there are reliability issues,  
15 the utilities might be encouraged to install storage  
16 devices. And that is already happening in places like  
17 Hawaii and New York and California and Montana.

18 So I believe the regulatory compact will have to  
19 be flexible enough to adapt to the dynamic changes in  
20 how electricity is being consumed and not just in how  
21 it's being produced.

22 Those are my comments.

23 THE CHAIR: Thank you very much.

24 Dr. Orans.

25 DR. ORANS: Thank you for the question. I

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1 So I fundamentally believe what you said, it  
2 remains a natural monopoly. But I also believe there  
3 will be many more DERs and lots of ability to control  
4 all the new electric uses.

5 I think 15 years from now when you plug in an end  
6 use, it will have an IP address and it will be  
7 controllable and you will have some kind of smart  
8 interface on the ability to control it.

9 At that point, Dr. Faruqi, I'm not worried about  
10 the complexity of the design. The interfaces will take  
11 care of it. And, at that point, absolutely all of  
12 Alberta should have all the back-end, the extended  
13 back-end, and the metering to be able to even allow  
14 access and use of all that stuff.

15 So it's not too early that you're having this  
16 proceeding, if that's what you're thinking, and it's  
17 not too early to start and have the roadmap and the  
18 triggers. I don't know all the details, but I know  
19 pieces that I think we all have agreed to today is  
20 adopt a flexible, non-risky but aggressive in its own  
21 way roadmap that is triggered by the things that you  
22 care about. Use the years of experience in other  
23 competitive markets that Dr. Wolak can help you write  
24 in the decision that is like a white paper for guidance  
25 for what utilities should come back with on their

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1 think it is at the heart of really what this case is  
2 about. And I would agree with your characterization  
3 that a distribution system remains a natural monopoly,  
4 but in parts of it it's becoming more and more what  
5 economists call "contestable." So what we've got is a  
6 contestable natural monopoly, if you will. It's not by  
7 any means a workably competitive market. An  
8 interfacing with a natural monopoly is a difficult  
9 situation.

10 The case -- and I would love to see what Dr. Wolak  
11 kind of could bring to your decision in terms of what  
12 did we learn from railroad regulation. Railroads had  
13 incredibly average politically derived tariffs for  
14 years and years and years and they were the backbone of  
15 economic development. And when they became  
16 contestable, the other forms of freight, trucking and  
17 air, they got cherry picked all over the place and  
18 their rates went through the roof. They became  
19 non-viable at that point as a system.

20 And I think -- you know, I believe that  
21 electrification is going to be the biggest thing that  
22 hits this wires business, you know, over the last  
23 hundred years: electrification of transportation,  
24 electrification of buildings. So I see 30, 40 years  
25 down the road, you know, levels of load that are 2X.

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1 cost-effectiveness evaluations and what they should do  
2 with the back-end material.

3 Move pretty quickly on efficient rate design.  
4 That doesn't mean you need to do all the metering at  
5 once. But I think to the extent you can move on  
6 efficient rate design, I think moving quickly on that  
7 rather than later is going to prepare you for basically  
8 all the steps in the roadmap.

9 And then I think this alternative wire service,  
10 even though it might not be huge right now, the biggest  
11 technology change that we're going to see, you know, in  
12 the next five years is battery storage. And battery  
13 storage is already basically predicted to be  
14 competitive with gas, you know, within five years for  
15 peaking capacity and generation systems. At some point  
16 it's going to be a cost-effective supplement, not total  
17 substitute but supplement, for distribution and it  
18 would be too bad if Alberta can't catch part of that  
19 wave and include it in their distribution operations as  
20 well. So it seems like an alternative wires efficient  
21 procurement process would be part of your roadmap.

22 THE CHAIR: Thank you very much for those  
23 comments.

24 Mr. Friesen.

25 MR. FRIESEN: You know, in principle I agree

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1 with, you know, everything that we've been -- that's  
2 been shared with us to this point.

3 I might have one little exception with Dr. Orans  
4 in respect to the impact of electrification. I think  
5 we sometimes forget how efficient electric vehicles are  
6 and how persuasive energy efficiency has become. And  
7 if electric vehicle consumption replaces the gains we  
8 make through energy efficiency, I think we may have a  
9 net sum zero, or very close to that, in the future.

10 You know, I remind people continuously the amazing  
11 things about electric vehicles is not that they're  
12 electric, it's that they're three to four times more  
13 efficient than a fossil-fuelled powered vehicle. So  
14 the total share of energy that they require to do their  
15 job is substantially less, and that will not translate  
16 into the level of load growth that some of us seem to  
17 feel will occur.

18 But my summary statement is that we'll know that  
19 distribution system is working optimally when we can  
20 measure the performance against the customer need. And  
21 the customer need is changing so we have to develop  
22 metrics for performance that optimally reflect the  
23 customer need, and then measure that performance on a  
24 continuous basis. And that will be done through the  
25 regulatory process, as it is today, and it will be done

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1 regarding configuration and resourcing and overall  
2 optimization of the grid and when can regulators and  
3 consumers and when can we know when that is really  
4 calibrated well and when that's not. And I think, you  
5 know, answering that question right now is extremely  
6 difficult. I think we all know when it's not working.  
7 But answering the question of when it's working or how  
8 much better could it be working, as Mr. Friesen points  
9 out, is still a question that's out there. And I think  
10 that there are a lot of metrics that still need to be  
11 developed as we go forward into electrification that  
12 can help us answer that question.

13 So I share the urgency with my other panelists. I  
14 think that electrification is happening and that there  
15 needs to be a new generation of metrics evaluation  
16 requirements to measure just how well that monopoly  
17 approach is working.

18 And then just to reiterate our preamble in the  
19 report and the quote that you said the question about  
20 simulating market conditions, we continue to believe  
21 that there will always be a role for T&D utilities,  
22 even with electrification, that there is a natural  
23 monopoly that exists in a regulatory context that they  
24 operate under, and that will continue to be a role that  
25 is important all the time. But we also believe that

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1 by customer response to what rate -- what regulated  
2 utilities provide.

3 Grid defection is not a myth. It is a real  
4 possibility with the technologies that are coming down  
5 the road and it's very difficult to bill a customer  
6 that isn't connected. And if utilities do not respond,  
7 if the integrated electric system does not respond  
8 appropriately to changing customer behaviour, grid  
9 defection will become real. That will be the true  
10 litmus test for the industry, to see whether they've  
11 adopted appropriately to changes in technology and  
12 customer behaviour.

13 But that would be my summary.

14 THE CHAIR: Thank you. That was a very, very  
15 useful perspective as well.

16 And, Mr. DesLauriers, I have not forgotten you. I  
17 was just kind of clearing the decks left to right on my  
18 screen and you were just in the next row. Your turn.

19 MR. DESLAURIERS: No worries. I have the distinct  
20 disadvantage of being the last to speak on this topic.  
21 With so many good things already spoken, I probably  
22 don't have a great deal to add, but just to reiterate  
23 our position on this.

24 You know, when I first jotted down some of the  
25 metrics that you were asking about in your question

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1 where market forces can provide input and can provide  
2 an influence over development of new technologies, we  
3 think an important regulatory policy is to allow those  
4 forces to occur where they can occur naturally, and  
5 that the interaction of market forces will produce an  
6 outcome that we believe will be valuable and possibly  
7 better than what would occur under a pure monopoly  
8 approach.

9 So those are just some closing thoughts on your  
10 question with regards to the monopoly position of the  
11 grid.

12 And then one other thing that I haven't heard yet,  
13 but obviously I think is behind all of our comments is  
14 that being technological agnostic I think is an  
15 important sort of assumption to this approach. That if  
16 we do leave market forces to develop, those market  
17 forces will in effect, as we outlined in our report,  
18 naturally develop those innovations that make sense to  
19 consumers and make sense to utilities and that we don't  
20 really see that there is a role for regulators per se  
21 or utilities per se or any one individual per se  
22 outside of market forces to encourage one technology  
23 over the other. As we stated, we know there are a lot  
24 of technologies out there and they're all competing  
25 with each other and they're all in some regards

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1 advancing at rapid rates. And so we just advise that  
 2 we let market forces play out where they can.  
 3 And that concludes my comments.  
 4 THE CHAIR: Thank you. Very, very helpful as  
 5 well.  
 6 I'm going to turn over to my left here.  
 7 Commissioner Collins, any last questions or comments?  
 8 MS. COLLINS: Thank you.  
 9 I don't have any further questions. It's been an  
 10 extraordinary day. I've really enjoyed hearing from  
 11 all of our expert panel members, thank you so much and,  
 12 yeah, that's what I had to say. Thank you.  
 13 THE CHAIR: Thank you. And  
 14 Commissioner van Egteren?  
 15 MR. VAN EGTEREN: Thank you. I don't have a  
 16 question. I'm going to save questions for another day,  
 17 but I would just like to make a comment, and some day  
 18 we'll have this conversation hopefully with similar  
 19 people in the room.  
 20 We've mentioned let markets do their work,  
 21 Mr. DesLauriers, you've mentioned -- we've mentioned  
 22 FEOC principles, we've mentioned implementing changes  
 23 according to the concept of efficiency, and then we had  
 24 a discussion just recently about cross-subsidization,  
 25 and it reminded me of the -- and these are the kinds of

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1 things I often think about -- it reminded me of -- the  
 2 cross-subsidization discussion reminded me of the two  
 3 definitions of efficiency that I'm aware of.  
 4 So in your earlier days, Dr. Faruqui, the idea was  
 5 that if people were worse off, then that was a bad  
 6 deal, but later on it came -- a different consideration  
 7 was given to whether or not something was implementable  
 8 or good, and that was the cost-benefit analysis in  
 9 which, in fact, if the benefits were greater than the  
 10 costs, you could implement a solution like that, even  
 11 though some people were worse off. And, to me, this  
 12 represented the two definitions for efficiency -- and I  
 13 recognize that this is esoteric and I'm almost  
 14 finished -- the two definitions of efficiency based on  
 15 Pareto as opposed to Kaldor-Hicks.  
 16 And so when I come to think about these things,  
 17 implementing it based on markets, and we understand the  
 18 theoretical underpinning of implementing things through  
 19 markets is based on Pareto efficiency as opposed to  
 20 Kaldor-Hicks, and then we talk about doing cost-benefit  
 21 analysis, which is based on a different definition of  
 22 efficiency, which is Kaldor-Hicks, and we've got  
 23 comparability and measurability issues, and all of  
 24 those things.  
 25 And so some day I would like to have that

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1 definition about, are there consistent theoretical  
 2 underpinnings for what we are doing based on the  
 3 different definitions of efficiency.  
 4 So I'll end my comments there. Thank you very  
 5 much.  
 6 THE CHAIR: Thanks very much,  
 7 Commissioner van Egteren.  
 8 I'm going to look at Mr. Reese here. Any wrap-up  
 9 comments before I go into my closing remarks?  
 10 And just the staff members, anything else that we  
 11 may have left on the table that we want to clear up?  
 12 Seeing none, hearing none, I will go into my  
 13 closing remarks.  
 14 So just like we did in Red Deer for Module One of  
 15 this inquiry, we tried something new today, and I hope  
 16 everyone's computers and Internet connection worked  
 17 throughout the discussion today, except that one  
 18 unfortunate part where it didn't, and that you feel is  
 19 a valuable information exchange. Nevertheless, we  
 20 would welcome your feedback on how today's meeting went  
 21 from a technical perspective.  
 22 I'd like to express my appreciation to Commission  
 23 staff for preparing this meeting and taking care of all  
 24 of the organizational issues, in particular, a big  
 25 thanks to our local IT guru, I'm looking over here to

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1 my left at Mr. Scott McCallum for pulling this off for  
 2 us. From my perspective, other than that one little  
 3 glitch when I was talking, things went really, really  
 4 well.  
 5 I want to thank everyone else for taking time out  
 6 of your busy schedules, making yourselves available for  
 7 today's virtual meeting, and I do especially want to  
 8 thank Mr. Friesen of InterGroup Consultants;  
 9 Dr. Faruqui of the Brattle Group; Mr. DesLauriers of  
 10 the Charles River Associates; and Dr. Orans of E3.  
 11 Your comments, your insights, your thoughts were very,  
 12 very instructive, informative, helpful. Gentlemen, you  
 13 distinguished yourselves today, and we thank you for  
 14 that.  
 15 It's been a long day for you, and we appreciate  
 16 you helping us gain a better understanding of the  
 17 issues we discussed today. Today's conversation will  
 18 help Commission members greatly as we continue to  
 19 consider the regulatory framework necessary to  
 20 accommodate the emerging economic and technological  
 21 forces poised to effect utility distribution systems.  
 22 As described in Exhibit X0649 in this proceeding,  
 23 24116, all parties are invited to provide concluding  
 24 remarks for the Combined Module by July 15th. These  
 25 remarks should be brief and not raise new issues.

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1 Concluding remarks should focus on parties' responses  
 2 to the discussion that took place today during the  
 3 virtual meeting, but, more importantly, we would like  
 4 to hear your thoughts on what you think an ideal  
 5 regulatory schedule would look like. We asked this  
 6 question of our four panelists today, and I know some  
 7 parties have made comments on future proceedings in  
 8 their written submissions. So now is the chance for  
 9 the rest of the parties to do so if they intend to file  
 10 concluding comments.

11 A key outcome of this inquiry will be to establish  
 12 the regulatory agenda for subsequent proceedings that  
 13 will consider and then implement the regulatory  
 14 framework necessary to accommodate the emerging  
 15 economic and technological forces we have been  
 16 discussing.

17 So I look forward to hearing everyone's  
 18 perspectives in your concluding remarks on the order in  
 19 which we should tackle these issues. For example,  
 20 based on what was discussed today, should the  
 21 Commission undertake a rigorous cost-benefit analysis,  
 22 as was suggested by several of our panelists, to  
 23 determine whether AMI should be widely deployed; should  
 24 the Commission launch a generic proceeding on  
 25 rate design for the DFOs to harmonize rate structures

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1 to bring them more in line with some of the things we  
 2 heard today; or do we need to focus on other issues  
 3 that were not discussed today like energy storage  
 4 ownership rules and metering or how we should deal with  
 5 distribution connected generation, DCG, credits. These  
 6 are just some examples of the issues we've heard over  
 7 the course of the inquiry, but you get the idea.

8 We at the Commission look forward to receiving  
 9 your best advice on how we should structure the  
 10 regulatory agenda that follows the completion of this  
 11 inquiry.

12 After we receive parties' concluding remarks, that  
 13 will complete the information-gathering stage of this  
 14 inquiry. My expectation is that we will issue a report  
 15 on the inquiry in early fall of 2020.

16 Once again, thank you all for being here and for  
 17 your participation. Please stay safe, everyone. Good  
 18 evening.

19 (PROCEEDINGS ADJOURNED AT 4:27 P.M.)

20 \_\_\_\_\_  
 21 PROCEEDINGS CONCLUDED  
 22 \_\_\_\_\_  
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1 Certificate of Transcript

2  
 3 We, the undersigned, hereby certify that the foregoing  
 4 pages 1 to 239 are a complete and accurate transcript of  
 5 the proceedings taken down by us in shorthand and  
 6 transcribed from our shorthand notes to the best of our  
 7 skill and ability.  
 8 Dated at the City of Calgary, Province of Alberta, on  
 9 June 24, 2020.

11  
 12 "Donna Gerbrandt"

13 Donna Gerbrandt, CSR(A)  
 14 Official Court Reporter  
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