

42nd ANNUAL CONFERENCE  
of  
New England Governors &  
Eastern Canadian Premiers

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42<sup>e</sup> CONFÉRENCE ANNUELLE  
des  
gouverneurs de la Nouvelle-Angleterre et  
des premiers ministres de l'Est du Canada

Main Conference

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Conférence principale

Stowe, Vermont  
13 August 2018

Stowe (Vermont)  
le 13 août 2018

Stowe, Vermont / Stowe (Vermont)

--- 13 August 2018 at 0919 / le 13 août 2018 à 0919

**Hon. Phil Scott, Governor of Vermont (Co-Chair):** ... we will have a chance to enjoy all that Vermont has to offer.

First of all, I would like to acknowledge the NEG/ECP Co-Chair, Premier Gallant from New Brunswick. Thank you, Premier, for your partnership. As well, I'm glad you're able to join us. I know you have faced adversity over the last weekend in Fredericton and our thoughts and prayers are with those who were involved, as well as the challenges you face -- that we face on a daily basis. So thank you for coming.

As this conference enters its 42nd annual tradition, I want to commend a Governor who has been a steadfast supporter in the success of the NEG/ECP coalition. I understand that for the past eight years Governor Malloy has not missed one single conference. The Governor and his terrific staff have been active partners in NEG and ECP conferences as well as his committee work. As with any coalition, its success depends on the leadership of its members and Governor Malloy appreciates the value of this coalition and our commitments of the strengthening of our region. And as this is your final NEG/ECP conference as a sitting Governor, I would like to extend on behalf of the governors and premiers our deepest appreciation to you for all you have done and we wish you all the best in your next endeavour. Thank you very much.

--- Applause / Applaudissements

**Hon. Dannel P. Malloy, Governor of Connecticut:**  
Governor, can I just...

**Phil Scott (Vermont) (Co-Chair):** Sure. Absolutely.

**Dannel Malloy (Connecticut):** I am reminded of my favourite Monty Python movie, "I'm Not Dead Yet".

--- Laughter / Rires

**Dannel Malloy (Connecticut):** But I do want to say to my New England and Canadian counterparts that this has been a great experience. I think this organization is tremendously important to the work that we all do back in our home jurisdictions and constituencies and I do think that we need to stay the course and continue to work on energy, which we will do a lot about today, but I think we should not shy away on any turn on the climate challenges that we collectively face and I think the work that we have done on both of those issues in the past has been extremely important and more progress needs to be made, but thank you very much for recognizing it.

**Phil Scott (Vermont) (Co-Chair):** Well, Governor, we appreciate your leadership and, as you can see if you look around the crowd, a few former governors and premiers, they are here, we wouldn't be surprised if we saw you at a future event. So again, we wish you the best.

I hope you all enjoyed the "Taste of Vermont" reception last night, sampling some of Vermont's finest food products. I was reminded that excellent food and beverage, particularly beer, exists across borders, so we have a lot in common with Canada and throughout the region. I believe that this shared interest in certain sectors, food and beverage as an example, provides tremendous opportunities to work together as a region to have a broader impact in world markets.

For this 42nd NEG/ECP conference we have assembled an esteemed group of experts to discuss key policy issues with us, so I would like to give you a quick overview of today's agenda.

Immediately following this opening meeting will be Session 1, a discussion of the energy storage, moderated by Josh Castonguay of Green Mountain Storage. Then we will have a short break and we will hear about the role of policy in electric vehicle innovation by a panel moderated by Vicki Arroyo of the Georgetown Climate Center. Our lunch keynote speaker is Jason Grumet from the Bipartisan Policy Center and I will be having a conversation with Mr. Grumet about civility and collaboration in this ever polarizing and divided world we are living in, which I think is appropriate. Our final session is on NAFTA and trade -- you might have heard that there might be a little bit of a disagreement there -- that Jon Sorenson from the New England Canadian Business Council will moderate. Tonight's dinner begins at 6:30 in Spruce Camp and the Starline Rhythm Boys will provide the musical entertainment.

So at this time I would like to turn it over to Premier Gallant from New Brunswick to say a few words.

**Hon. Brian Gallant, Premier of New Brunswick (Co-Chair):** Thank you very much, Governor Scott. As you mentioned, we are certainly all thinking of the people of Fredericton, the capital of our province, the Fredericton Police Force. There was a tragic shooting that occurred just days ago. We lost two police officers and two civilians. Although we are very pleased to be here to discuss with all of you, our thoughts are certainly with all of the families of the victims and I can tell you that your condolences and thoughts that you all offered on

behalf of the people you represent is very much appreciated. Knowing that the rest of Canada and our family in New England is there to support us really does make a difference, so thank you very much for that.

I also, on behalf of all of my colleagues, want to thank you, Governor Scott, for hosting us. Thank you to the organizers for making this a great event. It's a pretty nice spot too, by the way. This is a nice place, so hats off for choosing this and showcasing what your state has to offer. Obviously with some of the uncertainty looming over trade between Canada, the U.S. and our Mexican partners, organizations like this, like the NEG/ECP, I think become all that much more relevant and it's a reminder that these discussions that we are able to have are important and can make a difference. So again, thank you to all my colleagues for what you are doing to ensure that we continue to send some positivity about the relationship between our two countries, how it helps our economies and the quality of life for the people of our regions.

Alors, merci beaucoup à vous tous et toutes pour votre collaboration, leadership et travail, et j'ai bien hâte de continuer à travailler avec vous aujourd'hui et pour des semaines, des mois et des années à venir. Merci.

**Phil Scott (Vermont) (Co-Chair):** Well, thank you very much. And this is probably the last time I will say this today, we may be ahead of schedule but we are going to continue because I like to be on time.

So at this point I would like to introduce Josh Castonguay, the Vice President and CIO of Green Mountain Power, who will be moderating our first session today on the evolution of energy storage. Josh leads Green Mountain Power's innovation team, leveraging new technology and out-of-the-box thinking to deliver value to its customers. He developed the country's first energy company partnership with Tesla to deliver home battery energy storage directly to customers. So with that...

--- Pause

**SESSION 1: THE EVOLUTION OF ENERGY STORAGE /  
SEANCE 1 : L'EVOLUTION DU STOCKAGE DE L'ENERGIE**

**Mr. Josh Castonguay, VP/CIO Green Mountain Power (Moderator):** Thank you, Governor Scott and Heads of Delegation for making the trek to beautiful Stowe, Vermont.

So again, my name is Josh Castonguay. I am the Vice President and Chief Innovation Officer at Green Mountain

Power. We are an energy transformation company here in Vermont. Today we are going to talk about the evolution of energy storage. I will quickly hit some of the things that we have been doing and then we have a panel of folks here that are involved in every aspect from manufacturing to leading policy in the energy storage space.

We will focus on battery storage and I know somebody will probably raise the question that has come up. There's a lot of forms of energy storage, many different systems that have been used for decades, from thermal energy storage like the water heater in your basement that pumps hydro, to ice energy. So we will focus on battery storage more specifically today, but also understand that there is a lot more context around broader energy storage.

So in terms of what, just quickly, GMP has done over the last few years, we have been really pushing to make a shift on what we call a transformation of our energy system, the energy delivery system, how it's produced, how it's consumed, how it's delivered, and that has led us, under our CEO's leadership, Mary Powell, to move to a much more distributed energy system, one that's more home business community-based. And quickly we are realizing, you know, without some form of storage that's not necessarily achievable.

Battery storage offers a very unique -- if I could put it in one word, it's the ultimate flexible tool. So we have been leveraging battery storage through partnerships with folks like Tesla, like Dynapower and a number of others that deploy systems. In fact, just this summer as we head -- you know, for folks who have been local and felt the heat, we have had some really heavy peak energy demand events over the last few weeks and just during some of those single hours we were able to reduce our costs by well over half \$1 million using battery storage.

So again, we have a great panel today and I'm going to quickly tick through and do an introduction of the folks here on the panel and then we can get into a few questions.

So first, Adam Knudsen as the President of Dynapower, which is located right here in South Burlington, Vermont. Dynapower is an award-winning leader in energy storage. Under Adam's leadership, Dynapower has deployed a number of projects throughout the U.S., including, as I mentioned, a first of its kind project with Green Mountain Power right in southern Vermont.

And next to Adam, Mary Sprayregen. Mary has brought 15 years of policy experience from both the business and energy sector. She is currently the Director of Policy and

Public Affairs at VEIC, also located right here in Vermont. There is a ton of work in the energy efficiency space, as well as many energy policy leadership spaces beyond just Vermont around the country. Mary previously ran Con Edison's D.C. office and managed our Congressman Peter Welch's Energy and Commerce Committee portfolio.

Next to Mary, Jason, Jason Aspin. Jason cofounded Aspin Kemp & Associates. They are a systems integration company focused in the energy space. Jason has over 30 years of progressive experience in systems engineering for industrial, marine and offshore. He has collaborated with global innovators to develop new technologies focused on reducing the environmental footprint while increasing reliability of marine power generation systems.

And last at the end is Sue Gander. Sue directs the Environment, Energy and Transportation Division of the National Governors Association. She has over 20 years experience working on state, national and international energy, environmental and infrastructure issues. Prior to joining the NGA Sue served as a program manager for the U.S. EPA Clean Energy-Environment State Partnership Program.

So that is our panelist lineup today. So what we will do is we have a general question for the entire panel and then a few specific questions for panel members and then we will be able to open it up to the Heads of Delegation here for questions after that. So with that, Adam, we will start with you and we can work down the panel.

So this is focused on given how far storage has come, both technologically, cost-wise, performance, even over the last few years it has made some amazing leaps, what do you all see as sort of the next great leap, the next great opportunity, using storage to transform our energy space today?

**Mr. Adam Knudsen, President, Dynapower:** Great. Thanks, Josh.

My six-year-old son has a T-shirt that says "Almost Perfect, Totally Awesome" and that's how I look at energy storage.

--- Laughter / Rires

**Adam Knudsen (Dynapower):** It's not yet perfect, it will never be perfect, but it is awesome and, you know, to Josh's lead-in, there's a lot of great things that have unfolded on energy storage deployment in the last few years. Notably, cost curves on the battery side have come down to a point where maybe economically you really had to struggle to make the projects work. That is very

aggressively going into a more favourable economic equation. So what ends up happening is planners, business individuals, maybe on the utility side like leadership with GMP, but also nationally on the CNI space, people are able to put that equation together where it makes good economic sense either on the renewable side or on a commercial industrial scale level, the Walmarts, the Home Depots, they are putting in energy storage to solve grid problems. And when you have a technology that is maturing that economically makes sense, can be financed, which is really one of the primary drivers over the last year and a half -- a while back there were plenty of projects, no money, now there is plenty of money and trying to deploy them in the right project is the challenge. So I see in the next evolution of energy storages, you know, smart engineers, planners, they are really going to use this tool to solve the energy challenges of the current grid and really structure the grid going forward as a result of those variables coming into play.

**Josh Castonguay (Moderator):** Great.

Mary...?

**Ms Mary Sprayregen, Policy Director, Vermont Energy Investment Corporation:** Great. Is my microphone working? Okay. Okay, great.

So I actually am looking at this, the future of our energy distribution system and what's next in a more integrated systems approach, that all these pieces have to come together, including energy storage. In this room I believe every state and province has a pretty ambitious climate goal and in order to reach those goals we are going to have to use every resource at our disposal, including energy storage. What we are looking at is how all the pieces fit together. You maximize energy efficiency to reduce total cost, that also reduces the cost of integrating renewables and storage onto the grid, and then you take a look at how you meet these goals.

VEIC actually took a look at Vermont's 90 percent renewables by 2050 goal to see how you might cost-effectively meet that pretty ambitious goal and what we found is after you maximize all your resources you are still going to have quite an imbalance, a grid imbalance between supply and demand. This is where, you know, we are seeing how energy storage could help resolve that. What the analysis showed us is the projected magnitude, timing, duration of all of those imbalances between supply and demand. As you might imagine, it is going to be different at different times of the year. What we forecast in

January for example is quite a delta between what the demand for energy is versus what the state could generate under that renewable scenario, while in April you will see a far oversupply of power, mostly because of solar in that scenario. So how do you use storage to fit into that picture is the kind of thing we are thinking about. And I think it would be useful if we had a regional look at, you know, how do all these goals fit together and what do we need to do in order to reach those. I think that could help us today to decide where to invest and what policies we need to enact in order to reach those. So that's how I'm thinking about it, in that sort of integrated broader look.

**Josh Castonguay (Moderator):** Thanks, Mary.

Jason...?

**Mr. Jason Aspin, CEO/CTO, Aspin Kemp & Associates:**

Yes. Great question. Thanks, Josh.

Certainly I think that we have come to an alignment within industry, policy, you know, a bunch of things have lined up to really drive this forward. So if we look at the commitments made in Paris, if we look at the cost of renewables and coming down to approach what conventional generation costs, all of that is really going to drive up the uptake in energy storage. And then when we look at the automotive industry, the commitments that all the big automotive industry players are making, with Volkswagen announcing \$25 billion in investment and then doubling down on that later, that is a huge thing that is going to change the landscape incredibly over the next few years. And how it changes it I think none of us really knows. Certainly the automotive industry is driving lithium ion technology ahead and it's going to make it cheaper and cheaper, but maybe it won't be as available as it is right now, it's hard to say. So the supply -- demand side of it is going to be interesting to see. And as the renewables continue to grow and then this has an impact on the grid as you hit that ceiling where basically how much renewables you can absorb with that, including energy storage, that is going to really drive that as well. So I think it is going to be an interesting decade or so for that industry. Thank you.

**Josh Castonguay (Moderator):** Thanks, Jason.

Sue...?

**Ms Sue Gander, Division Director, National Governors Association:** Okay, thanks. I'm going to agree with everything said previously and add maybe a little bit of a different perspective or some added context.

I really see energy storage as the next decade being really critical in terms of its evolution and taking off. When I started at NGA about 10 years ago we would talk about storage and there was always a lot of interest and this notion that it was the Holy Grail, right, not to make another Monty Python reference, but it really does seem like we are at that point where it's really poised to take off and really have some tremendous growth. And it has had some tremendous growth even in the last few years. There has been a fourfold increase in the capacity in the U.S. within the last five years and if you look at some of the projections going forward, staggering numbers. A 17-fold increase is one of the estimates I have read and there are numbers that are even greater than that. So a pretty wide range there in terms of what's going to happen, but I think what we are seeing in terms of states taking a lot of action -- and I know we will talk about that later -- really pushing the market forward, the place that I would look is something I think you referred to, Josh, in terms of combination packages of solar plus storage really taking off. You have had agreements that are being made that are at 4.5 cents per kilowatt hour, which is an extremely competitive rate, so you have costs going down, you have states pushing the policies forward and I think really a lot of opportunities to meet those various needs that the market has.

**Josh Castonguay (Moderator):** Great. Thank you.

So again, I will just go back to -- I just love to highlight the fact about the flexibility. GMP, as every utility in the U.S. and beyond, has been running an infrastructure system, a poles and wires based system for well over a century and it has served us well, it has served the purpose, and as we look ahead and we look at a much more distributed energy environment you have to have these new tools and these new solutions. And again, with systems we have deployed with various partners we were able to do things like help ISO New England balance the grid, reduce costs from peaks, give customers new options to power their home during an outage instead of a fossil fuel generator. That has really, you know, accelerated where we see battery storage going. It's the ultimate flexible tool that not only provides strength to the system but other value streams for customers as well.

So let's get in a few specific questions and, Adam, we will start with you.

**Adam Knudsen (Dynapower):** All right.

**Josh Castonguay (Moderator):** Being in the manufacturing space of a lot of the equipment, the power electronics, the things that are used in these energy storage products, what have been some of the biggest kind of steps forward, the biggest leaps in innovation around this stuff and, more specifically, what do you see in the next few coming years here for the technology itself and where it's going?

**Adam Knudsen (Dynapower):** Yes. Great question. Critical question actually. On the Dynapower side we have been developing power electronics and battery energy storage systems for a long, long time. We got into the stationary storage business really when it was birthed in the '07-'08 timeframe, because we are flexible. You know, we were 200 Vermonters designing, building and supplying energy storage systems in a market that didn't have standards, didn't know how it was going to come together and we have been rewarded through that last 12 years based on being able to harness innovation at a timescale that is staggering. So, you know, just like a lot of technology, energy storage and the power electronics that are connected to energy storage, they have to move at the same pace.

A great example is, you know, a year and a half ago we launched a new product for battery energy storage of commercial industrial product and we have sold a lot of them. There's a lot of people building product not too far from here that's connected to that product line and it is obsolete by the end of the year and our engineers are, "Wait, no, I worked so hard on that project, it has to keep going". Well, it's not about what you want, it's about what the market is demanding. And so entities, specifically on the manufacturing of power electronics and integration side, we have to recognize that that pace is changing and it's accelerating. So we are really excited to announce a product that obsoletes that product line and is at 31 percent lower cost through technology innovation than the predecessor that we launched just 16 months ago.

If you are looking at those kinds of cost curve reductions to really layer on top of what's going on on the battery side, well then you can stay relevant. And entities that can't move that quickly on a technology level or a cost level -- and hopefully they are both, since it's really just a balance sheet and a margin loss play -- that's not sustainable in my opinion. It's not even sustainable for the world's largest organizations. If you went out and you looked at these, you know, multiple companies that are in the Fortune 100 playing in battery

energy storage, they have all tapped out. They will be back, but they have tapped out because they cannot innovate fast enough. And so from our side we really do believe that innovation, innovation that drives cost reduction but maintains reliance and performance, if you have that recipe then you are going to be successful.

To specifically Josh's questions about what's next -- and Sue mentioned it already -- solar and storage is a huge impact to the overall economy, to the climate economy that Governor Scott is driving in the State of Vermont, but also to the solutions of the grid. The more that you can enable solar generation and other renewables to be firmly dispatchable within the grid solution, then you are solving challenges. So from our side we have developed some technology, a DC to DC converter that lets more economic energy storage connections to solar and I think, as important, allows retrofitting battery energy storage to the greater than 25 GW utility scale PV that are already in the grid. So what's next? The DC to DC to couple energy storage with solar in a more economic and technology level, and then on a deep engineer basis there is some technology that is permeating the market -- and we are playing in that as well -- that significantly reduce the overall cost of deploying the battery energy storage through power electronics on the grid.

**Josh Castonguay (Moderator):** Nice. Thank you, Adam.

I will just hit the point again Adam made about pairing, and Sue as well, in terms of solar and storage. So Vermont specifically, we are, you know, number two or maybe number three at last check in terms of the amount of solar per amount of load we have next to like Hawaii, believe it or not, in little Vermont, and what solar has done in New England it has done an amazing job at suppressing the peak, that midday peak energy demand time. It has done it so well that now we are seeing a peak usage come in, you know, dinnertime and beyond. So the pairing of storage, the solar allows you to continue to get that free fuel from the sun, store it up and then release it out later in the day, and that's again where we have focused very heavily to cut down costs for customers directly. So thank you very much, Adam.

So Mary, you had hit earlier some of the aggressive climate goals that Vermont as well as many others are working to achieve. So what do you think from a policy perspective, what is needed to involve states and provincial governments to move that forward?

**Mary Sprayregen (Vermont Energy Investment Corporation):** Great, thanks.

I will first say that so much of what's happening in this space is what you have heard from Adam and others, innovation and what's happening in our businesses, you know, for the brains a lot smarter than mine working on solving these solutions is where a lot of this is going to come from. Policy does play an important role and I think it can support where we are headed. And actually there are a lot of really interesting things we can look at in our own backyards. I see some of you here are working on some of these policies already, so I will just highlight a few of them that I find interesting.

One of them that is actually being discussed in Vermont is on codes and standards. So nearly every state has a building code and many of those states have stretch codes. Things you can do to reach a stretch code, you can add renewable energy, you can have solar in your building, you can have Energy Star appliances to get extra points to reach that higher goal. One thing that's being discussed in Vermont is could you have grid connected battery backup in your building? Could that help you reach your stretch code goals? So that's one policy that is being considered.

One that I am really interested in, and there has been a lot of work in Massachusetts, is on a clean peak standard. Essentially a clean peak standard is a way of giving a utility extra credit for using the cleanest sources of power during the highest demand, which also happens to most often be the dirtiest source of fuel in our system. So, as I said, Massachusetts just, actually last month, passed legislation to start creating one and New York is also pursuing a clean peak standard in ratemaking. So stay tuned to see how that plays out and how that might help.

Another policy that's interesting is something called stacking benefits. It's used for other resources. So for example if a battery application is providing multiple benefits to the system, that it's reducing peak demand, it's adding reliability, it's time-shifting -- you know, you mentioned our shifting peak -- it could be rewarded, it could be paid for all of those things and you stack those benefits to have a much higher financial incentive for the battery application.

And the last thing I will mention is more regulatory policy. You have probably heard of time of use rates. It's something that may have an application here, where if you are a consumer and you have a flat rate for your

electricity, there is no signal that is being sent to you to charge or discharge a battery, but if there were a signal through rates that told you we need you now or we need your power now, that could add yet another policy incentive to increase the use of storage.

So I will leave it at that. There are lots of other things going on, lots of other policies that we can get into if anyone is interested in exploring those, but I will leave it at that.

**Josh Castonguay (Moderator):** Thanks, Mary.

The brief point I will hit there, you mentioned time of use rates, it's always a fun topic of discussion around. The balance -- from our perspective too, in thinking about it, you are right in terms of you want to send the right signals to have customers who have energy storage deploy it at the right time. The way we have been thinking about it a little bit is people also don't want to be thinking about energy in their homes, businesses, they have lives and a lot of things going on, so it is really about -- the way we have looked at it is how do you leverage that stored energy in a way that is sort of invisible to the customer, there is not sort of the carrot-and-stick approach, but it's this balance of getting the signal out there but not interfering with daily lives of many customers and still extracting the value of that battery storage. And that's a number of things we have been testing. That is a really good point.

**Mary Sprayregen (Vermont Energy Investment Corporation):** And not harming customers too.

**Josh Castonguay (Moderator):** Yes, that's right.

**Mary Sprayregen (Vermont Energy Investment Corporation):** Time of use rates can be --

**Josh Castonguay (Moderator):** Yes, it's a carrot-and-stick approach.

**Mary Sprayregen (Vermont Energy Investment Corporation):** It's not an error.

**Josh Castonguay (Moderator):** Well, thank you. Thank you very much, Mary.

So, Jason, you are in the development space of these projects. Adam mentioned there's tons of money available, so I'm sure you are ready to rock. You know, from dealing directly with customers and projects, I guess what are the things that have stood out where you have started to see this transformation of people beginning to adopt energy storage as a tool, as a new resource? Again, what have you been seeing in your world, Jason?

**Jason Aspin (Aspin Kemp & Associates):** Yes. Thanks. A great question, Josh.

We definitely have -- you know, our company started off with hybrid marine systems about 14 years ago and it was pretty lonely for the last, you know, 14 years pretty much and we have seen huge changes in the industry as we are going forward now. The adaptation of hybrid and energy storage to the applications that we have dealt with, mostly in the oil and gas and marine sector, the uptake has been huge. If you look at a country like Norway for instance right now, through drivers like policy and incentives they have gone from, you know, the oil and gas industry where there was almost 0 interest in energy savings to statements like there will be no ships working in Norway that don't have batteries on them. And it's the only thing that they can do in Norway for instance right now because their mission profile and their energy production is almost all hydro. The only place that they can make a difference to meet their commitments at Paris is through transportation in the marine sector. So that's a big shift and we have seen the drivers there that have really moved that forward.

And it is changing so quickly, as Adam said. In the course of a year or two we have just seen that landscape totally change. And that we are seeing in the land-based side too. So with the automotive commitment, which has been a pretty rapid change as well, to utilizing energy storage, committing to all cars having some form of energy storage by a certain time, I think that is going to be a huge driver because that energy storage becomes embedded really in our society. It is used for mobility and for transportation but, you know, a large percentage of the day it is sitting there connected to the grid, so vehicle to grid is going to be a big part of our future and that is going to be a driver for adaptation of energy storage in our day-to-day lives.

I think that pricing is another big one that you guys have mentioned. So if we can make pricing flexible and transparent so that the energy storage units that are out there can respond autonomously, then that is going to be a big driver to it in the future as well.

The industrial and consumer trends, I really don't think that there is a way for us to predict how much the automotive industry is going to change things. I think that that is going to be a huge driver for us in the future. So yes, that's some thoughts on that.

**Josh Castonguay (Moderator):** Great. Thank you, Jason.

Sue...? So you have a bit more of a national view in the role that you have been leading. What do you see as

some of the more promising developments in storage around the country and beyond and some things that our governors and premiers can look at to help for support?

**Sue Gander (National Governors Association):** Right. There is a full range of actions that the governors and premiers can take. We have been citing this issue the last couple of years in depth. A couple of white papers on it I think have maybe gone around and we've just completed our roadmap on energy innovation that includes some highlights of that as well. But I would say first off that we have seen at least 35 states take some kind of action to advance energy storage and we put that in seven different buckets and it ranges from everything from setting procurement targets to investing in R&D, to looking at things like integrating energy storage in their planning efforts, a whole range of activities and of course those can all be combined and kind of further amplified in many different ways.

I think some of the things I would point to that stand out to me are -- one of the ones I mentioned is setting procurement targets. Right now you have five states that have done that, so not a huge push there, including Massachusetts here, the most recent one actually being New Jersey which set a 2000 MW target. So you have just seen over the last few years those targets being increased over time and new ways of looking at that. That's not to say that's the only way to advance storage. If you look at the five states that are meeting capacity, which are California, Hawaii, Arizona, New York and Texas, just two of those have those targets, so there is certainly growth in other ways, but certainly something that can at least put a marker out there, tell the companies and the businesses that you are interested in that effort.

You know, another approach is setting some kind of financial incentive. Recently Maryland set a tax incentive of 30 percent for investments behind the meter for energy storage, so another way to bring down a little bit of the cost. Even though the costs have been dropping pretty subtly, it's another way to make it attractive for folks that are thinking about pursuing investments.

And then I would say another thing that I think -- well, it's certainly a very popular approach, is to look at how to compel states and utilities to look at storage as an option as they are planning out their electricity generation and transmission as well. You have 17 states that have some kind of requirement to look at energy storage within their integrative resource planning efforts,

you have another couple of states that are looking at that in terms of a broader energy plan for the state. So again, it's being able to take a look, evaluate storage for the many different benefits and certainly tradeoffs that it has as well, but there are some really key actions that states can take to help move forward.

I wanted to add one thing on the solar-plus-storage which I meant to mention earlier, which is the role that energy efficiency can play in that as well. I know that is part of the Green Mountain Power effort, which is the notion that you can get a lot of savings cost effectively through energy efficiency. The idea is that if you put those efforts in place and those technologies in place you can then lower your overall demand and therefore you have less of a need for a smaller PV system, a smaller battery system, so kind of a package altogether, so it's the three technologies that can work really effectively together.

**Josh Castonguay (Moderator):** Great. Thank you, Sue.

Kudos to Governor Scott for kicking this off so much earlier, we are way ahead of schedule. That has to be a first for something like this. It's a big event. Thank you.

So with that, we will actually turn it over to the heads of delegation if there are any questions for the panelists or myself.

**Phil Scott (Vermont) (Co-Chair):** Does anybody have any questions? Governor Baker...?

**Hon. Charlie Baker, Governor of Massachusetts:** That was very helpful, thank you.

I guess one of the questions I would have is the New England Governors all play under a regional rubric led by kind of a star chamber called ISO -- which is no offence meant to ISO, I call a lot of things star chambers.

--- Laughter / Rires

**Charlie Baker (Massachusetts):** What policies either inhibit or promote the furtherance of storage, especially with -- and in that context, given the technology, where it's going and how it's being developed, should we be thinking about this as a distributed technology which is literally house to house to house, building to building to building, or should we be thinking about it as a community-based entity where, you know, you set up a battery capacity to deliver very significant power to particular regions in the Commonwealth or around New England during peak periods to deal with some of the issues associated with the use of dirty technologies during sort

of crash times, which for us are especially relevant in the winter?

**Josh Castonguay (Moderator):** Sure. Thank you. I can start if you want. Okay.

So in terms of your first question on ISO New England, I would say there are two things. One is underway and it has been, you know, with the push of FERC to basically recognize battery storage as able to participate in other markets, other wholesale markets. I forget the exact FERC order number, but basically --

**Sue Gander (National Governors Association):** 841.

**Josh Castonguay (Moderator):** Was it 841? Sue's got it on the tip of her tongue. It allowed energy storage to participate like a generator or something else in the markets, produce new value streams there.

The second piece I would say isn't so much maybe a policy thing, maybe it is, but it's much more about just recognizing what storage can do as a solution. When we built a project with Adam's Dynapower in Rutland it was one of the first projects to provide ISO with what's called frequency regulation, basically a really fast-acting resource, and when they actually saw what it could do and how quickly it could perform there was quite a bit of shock on the ISO side about its speed and ability to follow a signal and manage. So I would say just continued recognition that storage is a solution for, you know, solving some traditional issues and provides a new tool set.

And the last piece I will add on the types, I mean we definitely look at it as all of the above in terms of distributed in the home or business and community scale in the right locations. I think location is going to matter with that, the use case, the issue you are trying to solve and that will all come into play, but I do think both will definitely have a role in the future.

Sue, did you want to...?

**Sue Gander (National Governors Association):** Yes. I actually was going to say I think ISO New England has been, you know, really upfront in terms of trying to accommodate storage in the market, looking at it. You know, certainly the urging of FERC was to put out an order a year or so ago that compels the various markets, star chambers, to issue some tariffs on that. From what I have seen in terms of what ISO New England has done, they really are moving forward on that and looking at all the different value streams within different types of markets, the energy supply and the capacity and so forth. So I think that's --

to me that is moving forward pretty well. Some of the barriers that I know other states have encountered, which is really actually more at a state level, are things like interconnection standards and so that's something that maybe states and provinces might want to take a look at in terms of are the things that are on the books in terms of those measures standing in the way. Sometimes things like caps on how much power folks can put into the grid on their own have also played a role in maybe stifling the market a little bit as far as that goes as well. So it's kind of a mix but I think things are moving forward.

**Josh Castonguay (Moderator):** Mary...?

**Mary Sprayregen (Vermont Energy Investment Corporation):** I would just add a thought to that. I think another factor for that with the new order from FERC and the regional transmission organizations working to comply is who gets to own the capacity. So, you know, we are talking about bidding a resource into the capacity market and getting paid for it and so I think who gets to retain those rights will impact who is investing and the value that it brings.

The other thing just quickly I want to add that I think will be important in all of this is better and more granular utility data. So the better data that we have on time and location of the needs on the grid, the more accurate we can be in deployment of resources, including storage, so where the system needs it the most or where you can get the greatest greenhouse gas reductions. So I think that's going to be critical to figuring out the rest of the pieces.

**Josh Castonguay (Moderator):** Thank you.

Jason...?

**Jason Aspin (Aspin Kemp & Associates):** I was just going to say, I think to the question of whether you take the distributed model or a more centralized approach, I really think the distributed model is the way to go, it's more efficient, but really we have to focus on the -- I like to call it the uberization of capital assets. So if we are talking about a battery, that battery has to perform many functions. It has to provide value to the asset owner but it also has to provide value to the utility and there has to be the stacked sort of thing that you were talking about, Mary, and really you have to be able to take advantage of all those potential value streams. And there is no really technology barriers here, it's just how do we set it up so that there are multiple ways of participating

with the energy storage that exists and that's going to be the secret I think going forward.

**Josh Castonguay (Moderator):** Great.

**Sue Gander (National Governors Association):** I have one more response, Governor Baker, to your question. I have been just looking at some of the legislation that has been going through Massachusetts and there is a Bill out there to look at how to incentivize the use of mobile storage, so being able to kind of have on demand storage. I think particularly in light of your last winter's power issues with the storms and so forth, I think that's one area where it's intriguing, you know, I don't know all the details, but it sounds like another way to think about how can you use storage and deploy it, you know, where it's needed effectively.

**Josh Castonguay (Moderator):** Great.

**Adam Knudsen (Dynapower):** Josh, let me just comment. I think it's phenomenal that, one, the crew gets together and has this dialogue and that you put energy as one of the first and most important dialogues in the process, so thank you for that. I had a football coach in college say to me, "Knudsen, you can't make all the mistakes yourself, you have to learn from the successes and failures of others". So one thing I would encourage is, you know, as policy is evolving, which is often a slow connotation, I would pitch to the team: Dynamically change that, learn from what's working, you know, and the provinces learn from what's working in the states and aggressively go after that, because if we can match pace, pace of policy, pace of cost reductions and put those two together then, you know, we will be sitting here in a year and two years talking about the impact that collectively has been had. And I think they all have to work at approximately the same pace to have, you know, the real positive impact. So I encourage you guys to absolutely share what's working and what's not across state and provincial lines. I think it would be really helpful. The market would see a huge benefit if you can do that.

**Josh Castonguay (Moderator):** Yes.

**Mary Sprayregen (Vermont Energy Investment Corporation):** Are you implying that not everybody talks about energy all the time?

--- Laughter / Rires

**Adam Knudsen (Dynapower):** I do. It seems to be a positive piece.

**Josh Castonguay (Moderator):** I think, you know, it goes without saying as you think about these things, the

way we think about them, they can be done in a way that drives out costs for customers, that reduces costs for customers. There are plenty of things driving up costs, whether in the region, in the states, wherever, and storage is there. It's a tool that if done the right way can actually lower costs for all, you know, electric customers, and that's just an important thing to keep in mind as you think through some of these options.

Premier Couillard...?

**M. Philippe Couillard, Premier ministre du Québec:**

Thank you. Merci.

Quelques mots d'abord d'introduction pour saluer les collègues ici et rappeler que lors de ma première participation à cette réunion j'avais cité le livre de Robert Bourassa des années '70 qui s'appelait « Power from the North. » I quoted Robert Bourassa the first time I attended this meeting, a book from the '70s called "Power from the North" in which he reminded our American friends that they had then and still have a neighbour, an ally up North that can provide power to the continent and I think it needs to be repeated.

The comparison between Monty Python and the Holy Grail and storage is very good. I have a few other Monty Python things to say, but not today, don't worry. I would like to say that our public utility Hydro-Québec has been very active in R&D on solid-state batteries, started commercializing them and even collaborating with the U.S. military. I think this needs to be said these days, that also our defence and security is well integrated, particularly in the energy sector. As you know, Hydro-Québec has 37,000 MW of power capacity installed and we will soon complete 4000 MW of wind power, which is interesting. We do have a significant amount of hydroelectricity but we also develop particularly this type of renewable.

Now, just a reminder. It needs to be said, but I'm not saying this because it should replace what other subjects we are discussing. I would suggest that by far the simplest and the cheapest way to store electricity in North America is keeping water behind the dams in Northern Québec. You know, if you think of it that way, you could see that those dams have the battery of Northeastern America and it is also a security issue and it is also a commercial issue. This is why we should always aim at more integration of our transmission networks, because this battery will always be there and actually climate change will increase the rainfall up north, so behind the dams

there will be a significant amount of energy. And again, all these installations are paid for, so the margin cost of this is very low. And with this of course we need more transmission and long-distance direct-current transmission obviously.

As far as policy goes, you know, I was listening with lots of interest to what was said by the panel members. We do already put a lot of energy -- no pun intended -- in the policies regarding the generation of batteries and microgrids and all these technologies. I would suggest that governments should invest much more in the intelligence associated with all these technologies, whether it's power, electronics, software, and I would suggest now artificial intelligence, that can be extremely effective in streamlining the processes and making them much more efficient.

And lastly about cost, cost to the consumer as was mentioned, there is a book by Jeremy Rifkin that maybe some of you have read called "The Zero Marginal Cost Society". As the marginal cost of these technologies is going down, think of solar panels for example, the cost to the consumer normally should be going down as well and this is what we should be seeing in the coming years. This is also something we should communicate to our fellow citizens.

**Phil Scott (Vermont) (Co-Chair):** Was that a question or an infomercial?

--- Laughter / Rires

**Philippe Couillard (Québec):** Well, we are here to promote what we do, there's no problem with this, but I was just pointing out the policy section, the intelligence part of what we do. It's not only hardware and this part should be developed as aggressively, if not even more, by governments.

**Phil Scott (Vermont) (Co-Chair):** Thanks, Governor. Premier MacLauchlan...?

**Hon. Wade MacLauchlan, Premier of Prince Edward Island:** Thanks, Governor.

I, in listening to the presentation, took away the point perhaps best captured by your comment, Adam, about not needing to make all the mistakes ourselves, and in particular in this area it's probably easy to do the right thing at the wrong time and I'm looking for any comments that you or others on the panel may have about how we might in the current mix of technologies and integration, et cetera, try something on a small scale that would be instructive, perhaps something that you might not want to do on a large scale but that would allow us to step out

further in terms of what may be the optimal combination of measures or investments that we could make. So have you got any suggestions for something that any of our jurisdictions might take a crack at without putting everything on the line? I would be interested in that.

**Josh Castonguay (Moderator):** Do you want to take that first?

**Adam Knudsen (Dynapower):** Sure. I think it's a perfect lead-in relative to the observation of others. You know, my joke is that we have been in energy storage since I was in Little League, you know. So 1976 was the first time that we deployed energy storage systems and they are vastly different today than they were that many years ago, but I would push you to think, what are you actually trying to demonstrate, because the reason we are talking about energy storage with this esteemed group is because it is now ready to be deployed as a tool.

Dynapower has done countless demonstration projects in '08, '09, '10, '11, '12, five-six years of real focus, while a lot of people were trying to understand, well, how does it work and how does it solve and what are the economics and is it predictable for five or six years down the road? What most of those demonstration projects have done is kind of weed out the problems, what technologies might not be optimal, what businesses may be needed to also be weeded out, but what it really did provide is it provided a platform to legitimize battery energy storage as a solution. So if you are trying to look at an economic model, yes, absolutely.

If you are trying to learn more about energy storage, then demonstration projects or scaled projects absolutely encouraged. By no means are they gone. But so many of those early stage project have already delivered what they had intended to teach us. So I think it's about, well, what is that? And if you can collaborate among yourselves but also globally as to the project you are trying to deploy, I think you'll find that a lot of those boxes -- not all but a lot of those boxes have been checked by prior projects. So which ones have not may be focused there. And I think oftentimes it ends up becoming an economic question, you are deploying funds and how are you deploying funds in that area to solve. And there is some great modelling that goes on to help.

So I'm not encouraging you to jump out of the plane and sew the parachute on the way down for the project, but I do think that you will find that you can go from concept to scale probably a little bit faster and more economically

than, you know, a decade ago and I would encourage you to do that through the communication and collaboration with your peers.

**Josh Castonguay (Moderator):** Jason...?

**Jason Aspin (Aspin Kemp & Associates):** I think establishing what's a reasonable rate of return on investment as well is critical. So if you're looking at industry, then, you know, you use kind of a five-year benchmark, but infrastructure investments made by governments can take a longer period of time to pay back and still be something that is, you know, viable. And I think there are lots of business cases within those sorts of infrastructure areas that make sense now and there is a general fear that taking the leap now is you are going to miss the next best thing, you know, tomorrow. But really, you know, if it makes sense to do it and it pays back in 7 to 10 years, why not do it and get that experience and then adopt them. You know, there is no shortage of projects to do. I think that picking the right ones and just doing it is something that is something that's really, really important.

**Adam Knudsen (Dynapower):** Just for a second, sorry. There's a great example of -- you know, there was a major project on a wind farm out in the middle of Texas that was put in place for a ramp rate control functionality and over the course of four or five years the batteries didn't perform and they were replaced. They were replaced economically by Duke Energy with the latest technology. All the other infrastructure stayed the same. So when you are investing in that infrastructure and the batteries are going to be, you know, improved in their performance and energy density, just expect that that's going to happen, but the neat thing is the battery guys are going to want to sell you more batteries, so they are going to design systems that they can retrofit to existing programs. So I don't really see it as, geez, you bought the VCR in the last week that it was being sold before Blu-ray hit. You know, you can upgrade the core of it through time and keep the infrastructure cost I think pretty reasonable and intact over a long period of time.

**Mary Sprayregen (Vermont Energy Investment Corporation):** I just want to reiterate that what you said in the beginning is I think the key question here is what is the goal, what is it that you are trying to do or solve and, you know, it's the reason I mentioned the ambitious climate goals that you all have, is when you are looking at what those guideposts are, I think that really helps inform

that total picture that you are going to need. It's not batteries for batteries sake, you know. We're not talking about, you know -- because it is cool and sexy and exciting, you know. There is a whole lot that goes into that that will be needed and you mentioned efficiency as being key to reducing all those costs, that it's that whole approach of how you are reaching that end goal.

**Josh Castonguay (Moderator):** Sue...?

**Sue Gander (National Governors Association):** I just wanted to add to that. I again agree with the point of, you know, meeting to understand what you feel like you need to test.

One area that I do think is more emerging and maybe does call for more pilots, and I welcome you to push back on that concept, is looking at opportunities for vehicle-to-grid supports with the development in particular in automobile batteries and the example I point to is looking at the role of electric school buses. Newer technology is just starting to be manufactured as original equipment, so not a lot to work with there, but I know in the State of Maryland one of the excellent companies has put in a proposal to the PEC there to kind of pilot this idea, the concept being if you have these pretty large batteries and particularly in the summer months you don't have as much use of those school buses so they could be kind of on demand for any kind of emergency or even kind of, you know, non-emergency events that might make it more cost effective to go to the battery store. So maybe something like that is, you know, ripe for more testing, but I welcome hearing otherwise.

**Mary Sprayregen (Vermont Energy Investment Corporation):** We didn't coordinate this ahead of time, but VEIC is actually doing a pilot now in Massachusetts on Martha's Vineyard to see if you could -- how you could apply school buses and their storage. Not only is it seasonality, it's also during the day you have certain hours where buses aren't being used. I totally agree that it's a really exciting area for both buildings and the grid how you use that battery.

**Josh Castonguay (Moderator):** I think that the fact that you are asking the question about, you know, we want to move forward and what scale, what size, is much at this point to Adam's point, it's much -- it's the right question versus should we study it or do something. We are beyond having a study, a white paper and study. I think there are use cases that may continue to be cited, but in terms of you are at the point where doing something, the amount --

and again I will say from an early project we did, the amount you learn from actually just executing and going through all the hiccups and everything that comes with it is amazingly invaluable as you look ahead to what's next and to reducing costs for your customers. So very good point, very good question.

Jason...?

**Jason Aspin (Aspin Kemp & Associates):** I was just going to add to the school bus application and challenge Premier MacLauchlan on the thousands of lobster boats that we have sitting around for 10 months of the year. So, you know, there's lots of different applications. I'm sure there are colleagues in Maine that --

**Josh Castonguay (Moderator):** Marine engineers.

**Jason Aspin (Aspin Kemp & Associates):** Yes, that's right.

**Phil Scott (Vermont) (Co-Chair):** Yes, that's right.

**Josh Castonguay (Moderator):** Mr. MacLellan...?

**Hon. Geoff MacLellan, Minister of Business (Nova Scotia):** Thank you, Governor. Thank you, Governor, and good morning to the panelists. Great job and certainly timely information.

My question is going to seem very rudimentary I think to you folks, but I'm not that smart, I'm electable, so that's why I'm here representing Nova Scotia.

--- Laughter / Rires

**Geoff MacLellan (Nova Scotia):** For us -- yes, that was a joke guys, by the way.

--- Laughter / Rires

**Geoff MacLellan (Nova Scotia):** Battery storage is the link between fossil fuels and a renewable economy and a renewable society and I think that for us in the province we have done incredibly well with GHG reductions and where we have gone with the renewable technologies and using sort of the regional capacity to add renewables to our mix, but we still have coal-fired generating stations. So for us I think that gap, that bridge is going to be this very topic.

And Adam mentioned it vis-à-vis his son's T-shirt about, "Not Perfect, But Awesome". I think there is a lack of understanding across the board about what exactly battery storage even is. If you think of your traditional batteries, is it the same thing, do the same kind of applications apply to that? And I think that when you look at televisions, at smartphones, vehicles, we have that foundation piece. We have the foundation of what the technology is, but there's always innovations, tinkering, changes, improvements to that. Are we there, is that where

we are at with battery storage or we are not to that point, we have the basic foundation but we are still building on top of it? So I guess the question for the panelists, speaking to Adam's opening remarks, how is it that we are not perfect but we are awesome and can we get the perfect? And as an addition to this, and again all the panelists have touched on this from a policy perspective, are we at the point in the cost curve where we can actually start to mandate some of the battery storage applications?

**Josh Castonguay (Moderator):** Go ahead.

**Adam Knudsen (Dynapower):** It's not over and, bluntly, I don't think it's going to be over for decades. Primarily when you look at the battery cost curve reduction, everybody thinks, well, they are scaling up in production and that there's economies of scale. Yeah, a little bit, but what you have is real smart engineers that are figuring out a way to get more energy storage from the same type package, so by default the denominator gets bigger, which means the overall cost for that energy storage goes down per kilowatt hour. And that's what we are seeing. So what ends up happening is a lot of the world's largest lithium ion specifically this is targeted to, they are continued into a technology race of performance. It's less about the scale up, although that plays, it's about the engineering that goes into that. I don't ever see that stopping, you know. So really what ends up happening in my view is you are in a band, and is that band working, and I say absolutely, emphatically yes. Was it working two years ago, it depends on the application, but today it's working. And so where does it go? You are going to see additional double-digit reductions in the overall system costing. Batteries play a huge percent, power electronics play an important percent, the integration of all that together in the controls, and then someone has to put it in. So when you look at all of that, as that standardizes, the someone has to put it in starts to become a little bit more predictable, the packaging becomes a little bit more predictable, but I see continued cost reductions in evolution.

I had a chance at our industry trade shows the last couple of years to give the opening remarks and what I pitched to that group and what I pitch to you is that must be done responsibly. It must be done responsibly on the technology side and it must be done responsibly on the supply chain side. If it's not, then you are going to race and you are going to get out of that band. You are going to deploy projects that are really not technically sound

and then what have we done? As an industry we have set you and us back a long time. So I do pitch responsibility in that mix. Even if you can do it economically, does it make a lot of sense to do that? So my blunt answer is no, we are not done and it shouldn't stop you from moving forward.

**Jason Aspin (Aspin Kemp & Associates):** I would just like to add to that that we have to look at what the drivers are, which I kind of touched on before, but I mean this was a big driver for lithium, right, we all want to carry around -- I used to have one of those big brick cell phones, I had the Motorola thing that weighed 10 pounds, you know, so everybody wanted a smaller phone, so that drove us to lithium. And then we are now -- you know, in the automotive sector the uptake is big and the size and weight of the energy storage is critical in that application too, but when we start talking about energy and land base, sure, vehicle-to-grid is going to play a big part of it, but, you know, does a grid-tied battery have to be lithium? Absolutely not. So there is going to be another big innovation coming up. As we hit the ceiling where we can't put more renewables in but renewables are reaching or below the price of conventional fossil fuels, then we are going to want to increase renewables and the industry will respond with developments in new technology, flow batteries, or whatever it's going to be, that will be grid scale and it will be different from what we are looking at right now.

**Sue Gander (National Governors Association):** Just a couple of thoughts along those lines. I just want to emphasize that there are different, you know, sizes of battery storage applications. So it can be through, you know, a home, a residence size option all the way up to utility scale. There is that range that then pairs with different types of generation resources. Most of it out there now is more of natural gas, often nuclear plants being paired with storage but, you know, there is a whole range that you can envision with renewables of course taking advantage of the opportunities and, you know, address some of the intermittency issues, which is why that is such a good pairing there.

And, you know, I would say that it's important to note that it can be done rather quickly at scale and the example that we have from California -- and I always hesitate to mention California because folks kind of brace up and think, oh, it's California and all that, but I say that to them to their face, don't worry, they know that -- but one of the reasons that they are 41 percent of the capacity in

the U.S., or close to that, and I know some other states are catching up, is because of issues they had with their natural gas storage situation with Aliso Canyon and a need to rather immediately, you know, in energy scale times within six months, ramp up to a pretty high amount of storage. So I think that just points to the fact that it can be done, it can be done of course at a home or a business level but also on a utility scale level as well.

**Phil Scott (Vermont) (Co-Chair):** We will now hear from another "Mac", McCleary. There is a conspiracy going on here, I think we have MacLellan, MacLauchlan, McCleary. If you add a "C" to your name you could be part of the clan.

**Mr. Macky McCleary, Administrator, Public Utilities and Carriers, Rhode Island:** Thank you.

Excuse me a little bit for nerding out, this is my area, so I want to start out with both a statement and move into a question after that.

So one thing I would just like to point out that from my point of view it seems to me that we are actually having this conversation with an incorrect level of urgency and the reason for that is I would challenge the panel to imagine a future grid 10 years from now in which the amount of storage penetration is not a thousandfold what it is right now and then query whether the market is currently prepared to both incentivize and deliver that level of penetration and what the grid would look like if that doesn't occur based on what I think is a really important figure here that folks don't often talk about, not the current penetration of renewables but the rate of increase of renewables on a year-over-year basis, the first derivative. The rate of increase is increasing and so the crisis point around limit is much closer than people are actually realizing. So if the future world actually requires a thousandfold times more storage than we have right now in order to protect ratepayers from large costs -- and that's all kinds of storage, that's both peak shifting, hydro storage and battery storage and all of the above -- what can we do as the states responsible for the regulation of a distribution grid, not the transmission grid, as we are all going through grid modernization at first to figure out how our utilities need to operate in the future world? Are there things that we can do at the distribution level to help address the gap between what I call essentially what is the over-the-horizon value of a battery and its multivalent -- the over-the-horizon value and its multivalent capabilities and the current value?

Because if we don't, it's not necessary for these projects to develop themselves in a 36-month period, a crisis will occur and there will be a price challenge forever.

**Mary Sprayregen (Vermont Energy Investment Corporation):** Yes. I wish -- I don't know if it's on the website, but we have this great chart. When I mentioned the scenario analysis we did for Vermont to reach that 90 percent renewables by 2050 goal, that delta that I mentioned is actually the 2025 interim view. There is that huge gap specifically in January between what we generate versus what we need. I don't have all the answers for you, but I know one component that -- you know, I may sound like a broken record here, is you have to maximize the efficiency of the system and at the end use. That is going to help reduce that gap, it's going to help reduce the costs and I think it's really critical. I know it doesn't sound super exciting, but it's a really important factor in that gap. And these guys may have much more comprehensive solutions for you, but I think that that's key.

**Josh Castonguay (Moderator):** Yes. The piece too as you think about it, especially as you tie it back to carbon and reducing carbon, reducing GHG, you know, the strategic electrification load, responsible load is a good thing essentially in absorbing energy. The traditional thinking around what used to be the typical time of use, the peak was in the middle of the day and that was the most expensive and then later at night it was cheaper, that has really flipped itself on its head. In a lot of states, Vermont especially, in some areas where we have more solar energy in the middle of the day than we have load to consume it in areas, which is where storage comes in, but again having load, you know, whether it's transportation, home heating, a number of things that traditionally weren't electrified, one, the technology has come a long way to make them efficient, to make sure it's the most efficient source of electrification, but that's a good tool.

And just the last point I would make on the over-the-horizon view, I would probably argue that we are pretty much there now in terms of, you know, each ISO is going to be a little different, but New England, the values are there, the cost, the amount of energy, density per storage unit. I mean if you start to couple that with customers using it as a tool to back up their home, there is a value stream there. It's really there today and it's becoming a really strong asset for us to get to the heavy penetration of renewables, as you mentioned.

Sue, do you have something?

**Sue Gander (National Governors Association):** Yes. Thanks for your question, Macky. I was going to throw back at you one of the creative turns of phrase I know you use, which is about having a flotilla of policies. I think really, you know, we identified seven different categories of efforts and I think if states really want to be able to accommodate as much storage as they can to match their goals around renewable energy penetration, I think it will take a combination of things like setting targets and providing financial incentives and working it into different planning efforts, continuing with the R&D, really just, you know, giving it a full force effort to be able to meet those longer-term goals. You know, every year is going to be critical in terms of building up the capacity and being able to accommodate the new technologies that come along and I do think that it's within states' grasp to be able to do that.

**Josh Castonguay (Moderator):** Jason...?

**Jason Aspin (Aspin Kemp & Associates):** I just think that -- I mean we talk a lot about energy storage, but we also need to look at the other options that are out there. Load management is a huge part of that. As we enable energy storage to participate dynamically and autonomously in the greater grid, we also then enable loads to participate in that way too. So I think that's a big part of it as well.

**Adam Knudsen (Dynapower):** I would agree. It's a complex equation, there is not one answer. To pair with you on the nerding out, you know, this is a critically damp system, which means we are slowly approaching the optimal, and what I would encourage is structure the policies where you wander around the optimal, right, so you proactively drive much faster change. As long as you can box it so you don't get way out left or way out right, you will make a lot more progress more quickly than if you slowly get to where you are. So that's going to be a combination of the policies and the incentives that are impacted, and they are not going to be perfect, just like the technology is not perfect, but if you can make that loop really close and tight, then you change it. And I know that's complex when people are setting up 20-year PPAs and putting, you know, hundreds and hundreds of millions of dollars into play, but if you can get that right, then you will get to that optimal level much more quickly. And I agree with Jason, it's not just about storage, it's about load-balancing optimization from current and future grid. And I love the vision of what does it look like in 10 years, what does it

look like in 20 years, and do we have the courage to make those changes today to put us in that optimal sense, all again within the boxed level of responsibility.

**Phil Scott (Vermont) (Co-Chair):** Premier Ball had to step out, but he wanted me to ask you about -- it was based on the comments made by Premier Couillard and hydro and I believe it is more around restrictions, regulations with hydro and what effect that has on storage and so forth, or should that be considered large-scale storage. And feel free to add in if you understand where he is coming from on that particular question. But does that give you any sense for how hydro, large-scale hydro plays into this in terms of the capacity, baseload power and energy storage in some respect from a larger scale, massive scale? I may have got the question wrong.

**Sue Gander (National Governors Association):** It's a really critical point --

**Mary Sprayregen (Vermont Energy Investment Corporation):** No, it's a good question.

**Sue Gander (National Governors Association):** -- and as we were doing our prep call I know a number of us raised the point that we want to acknowledge that we are talking about this narrow and more the emerging area of battery storage but, you know, most of the capacity on hand right now is pumped storage I think.

I guess what I would say, I don't -- I'm not as familiar with the Canadian experience, but in the U.S. there hasn't been a lot of growth in that. It has been hard to permit new facilities for that and grow that, but I know the utilities certainly look to at least maintain where they are at to be able to rely upon that resource going forward. So I think it's something where, you know, you want to look realistically at the different resources that are out there.

**Mary Sprayregen (Vermont Energy Investment Corporation):** I hate to mention California again, but what I would add to that is something to keep an eye on is the city of LA is looking at using the Hoover Dam as pumped storage, as one of their storage solutions. I'm not sure where that's headed or how they are approaching that, but it is something worth keeping an eye on because I agree that hydro is part of this solution, I'm just not sure exactly how.

**Josh Castonguay (Moderator):** Yes. I mean we -- you know, from GMP's perspective, we do use it every day from -- you know, it's not so much the pumped hydro, there is pumped hydro storage in New England, large-scale

systems. We have more ponding, the ability to store water, release it at the right times. Yes, I think it's always a balance. I mean as we look at these, as we relicense facilities, water quality standards have changed over the last few decades, you are always balancing the best value for customers while keeping -- you know, especially in Vermont, as beautiful as it is, tying those things together. And then again, I would say the same thing just thinking about distance, the more you can keep it closer where it's consumed in whatever fashion it is is very important as well.

**Sue Gander (National Governors Association):** One of the issues that we have seen in states is just, you know, there are, depending on the facility, competing uses. Some want to have the water for recreational purposes and other demands there, so that is always an issue that we need to take into account that we have seen states kind of grapple with. And then there is also some larger concerns around what the water resource is going to look like given changes in the climate and what kind of, you know, frankly, precipitation, when and where and how and what that is going to look like. So, you know, there is a whole host of issues to dig into there as well.

**Phil Scott (Vermont) (Co-Chair):** Any further questions from the states or provinces?

**Josh Castonguay (Moderator):** I don't want to lose the goodwill you had, Governor, in keeping things on track and early, we are five or six minutes early. I think at this point we can thank the panelists very much for being here today and thank you all. And again I would invite you for a short break and there are refreshments outside. Again, thank you. Enjoy Vermont, thank you for being here.

**Phil Scott (Vermont) (Co-Chair):** Thank you very much, Josh.

--- Applause / Applaudissements

**Phil Scott (Vermont) (Co-Chair):** We will be back promptly at 11:00 to start the next session.

--- Upon recessing at 1038 / Suspension à 1038

--- Upon resuming at 1103 / Reprise à 1103

**Phil Scott (Vermont) (Co-Chair):** Our next session is going to be on the role of policy to drive electronic vehicle innovation.

I would like to introduce Vicki Arroyo, who is the Executive Director of the Georgetown Climate Center. Before her current role she served as Georgetown's Environmental Law Program Director. She served for over a decade at the Pew Center on Global Climate Change as Vice

President for Policy Analysis and General Counsel, where she oversaw the Center's work on domestic policy, economics, science, impacts and adaptation.

Please join me in welcoming Vicki. Thank you very much.

--- Applause / Applaudissements

**SESSION 2: THE ROLE OF POLICY TO DRIVE EV INNOVATION /  
SEANCE 2 : L'INFLUENCE DES POLITIQUES SUR L'INNOVATION DANS  
LE DOMAINE DES VEHICULES ELECTRIQUES**

**Ms Vicki Arroyo, Executive Director, Georgetown Climate Center (Moderator):** I think the microphone is working now.

Thank you, Governor Scott and Premier Gallant and to all the Heads of Delegation. It's an honour to be with you all today.

We have a terrific panel and there is a lot of interest in electric vehicles, so we did want to get started on time and I appreciate the Governors moving the conversation along.

I'm going to take a few minutes as people file in to give you a little bit of context before we turn it over and introduce the individual speakers on the panel.

For those of you first of all who don't know our Climate Center, we have been around about 10 years. We were set up to inform the federal dialogue with the lessons of the states and to serve as a resource to the states and we have the pleasure of working with your staff, Governors -- and sometimes your staff too, Premiers -- every day, which is a real privilege and honour. We work on reducing emissions that cause climate change from important sectors like transportation and power, also preparing for the impacts of climate change which we are seeing more and more, and we also do help facilitate states engaging in the international climate negotiations and dialogues.

One active project that you might know about from the transportation world is our Transportation and Climate Initiative that we have facilitated in 12 jurisdictions, including all the New England states, states from D.C. to Maine. That has been since 2010, so for eight years this region has been working very hard to reduce emissions from transportation and to promote the clean energy economy in this region through active workgroups, including one on electric vehicles, work on sustainable communities, freight flows through the region and so on.

Most recently you are probably aware that just last November a bipartisan group of seven states and Washington D.C. announced plans to directly engage this year with communities and businesses, and I see many of them in the room who have come to a series of listening sessions that we have held. We have had five already, we will have another one coming up in Maryland shortly, and we are piggybacking on Massachusetts' series of sessions that involve their public and outreach around transportation emissions. It is a challenging sector to reduce emissions and energies from, but there are active dialogues. We have had a very constructive set of conversations and, as you might be aware, electric vehicles often come up both for passenger use as well as school buses, which we heard about earlier. There is a lot of excitement from the 500 or so members of the public who have come to our listening sessions so far and the 100 or so state officials who have engaged in those sessions. So if you haven't made it to one, please do come join us.

Since launching the Transportation and Climate Initiative, states in this region have collaborated in many ways on electric vehicles, including securing large DOE grants some years ago to come up with some siting, charging infrastructure guidance documents. We have done research together on utility investment in electric vehicle charging infrastructure and on utility regulatory issues and converging technology trends such as automation. And recently we have focused on interstate corridor development and that dialogue has included participation of Québec agencies and officials.

To support regional planning of EV charging corridors we have developed an EV corridor analysis tool with our friends at M.J. Bradley & Associates and that corridor tool has an interactive map of fast charging infrastructure along corridors throughout the region. We actually just updated that as of last month. I think we have 9000 miles of roads on that and so it's a tool that you can use to identify where the gaps are and help make it more seamless for people to use electric vehicles throughout the region. The link to a slide that has information on that and on our Transportation and Climate Initiative regional policy dialogues is in your materials and on the website.

The work with states in this region individually and through regional collaborations like NEG/ECP and the Transportation and Climate Initiative is really critical to shift transportation to one that has cleaner air, that has less oil use and create economic benefits. And of course

this follows your discussion last year and your resolution concerning transportation that had a few elements that I will just remind you of. The resolution recognized the regional nature of the transportation system, it resolved to establish a network of charging corridors working together through the Transportation and Air Quality Committee, and the resolution discussed the importance of reducing transportation emissions, identifying electric vehicles as a key strategy.

Reducing transportation emissions, though, is very challenging and it tends to be the largest sector and one in which emissions tend to still be growing, and of course this might be made more difficult should the proposed federal rollbacks of vehicle standards and state authorities succeed, which has implications for the entire North American market. But despite that, there is an opportunity in part because of the policies that have already been in place because EVs are becoming more widespread. These are global trends, the EV market is nearing a tipping point as vehicles become more affordable and performance improves, but to support widespread adoption in North America we need to develop a conference of network and charging infrastructure.

So we are going to dive into this conversation about what might be needed to unlock this opportunity and I am delighted to have this panel of state officials, business leaders and other leading experts with me.

So please join me in welcoming -- I'm going to introduce them one by one -- Marcy Reed, President from Massachusetts and Executive Vice President for Policy and Social Impact of National Grid.

--- Applause / Applaudissements

**Vicki Arroyo (Moderator):** Thank you.

David Farnsworth, Senior Associate for the Regulatory Assistance Project.

--- Applause / Applaudissements

**Vicki Arroyo (Moderator):** Commissioner June Tierney, here from the Vermont Public Service Department.

--- Applause / Applaudissements

**Vicki Arroyo (Moderator):** And John Gilbrook, Director of Sales for ChargePoint.

--- Applause / Applaudissements

**Vicki Arroyo (Moderator):** So I wanted to begin the conversation with Marcy because for this, if you don't know, National Grid just released an exciting report, 80x50 report, this year that lays out very ambitious targets for transportation and other sectors to meet the economy-wide

climate goals and in fact I think your transportation target would have us achieve a 100 percent new vehicle sales target by 2028. That's quite ambitious and I'm wondering, Marcy, if you could tell us what kind of policies states or provinces might put into place to achieve those kind of goals.

**Ms Marcy Reed, President, Massachusetts and EVP Policy and Social Impact, National Grid:** Sure. I'm happy to do that, Vicki. And also, thank you to the Governors and Premiers for allowing us here today on this topic. It's super important.

So just to step back, we did -- National Grid did recently publish a white paper called "Northeast 80x50 Pathway" and in it we lay out a whole plethora of solutions not just on electric vehicles but including storage, large-scale renewables, customer-owned solar, the need for gas pipelines, et cetera. And so we take it quite seriously. We wake up every morning serving 20 million people and so we know as a large utility we have a role to play in helping all of us in society move this forward.

So as it relates specifically to the transportation sector, the report talks about the fact that you just mentioned, Vicki, that actually 42 percent of greenhouse gas emissions in the Northeast of the U.S. come from transportation, which is, sadly, growing. So if we are going to get to our 80x50 targets we decided we would take an interim view of what do we need to do on that trajectory for 2030. And by 2030 we need 50 percent conversion of vehicles to be EVs -- and I'm talking about light duty vehicles here -- which does mean that by 2028, you're right, 10 years from now, all sales of passenger vehicles and light duty vehicles have to be electric, which if you think about it is a massive change and shift for all of us. So that's putting 10 million vehicles on the road that are EVs by then. So consumer behaviour, industry behaviour has to really change dramatically to places where sometimes our brains can't go today. By 2050 that means we have to have 20 million vehicles on the road. So to get there, I actually believe we can, but it will involve having some aggressive and fairly focused policy and regulatory changes. So I will bring out a couple that come to mind, Vicki, that we talk about.

The first is original carbon pricing mechanism. We believe absolutely that we need that and there are a couple of proposals that are actually already out there. One is a regional cap and invest program policy; another is a regional carbon tax. We don't actually pick a dog in the

fight on this, but we have a view on the proceeds and that is that as these programs might get underway, the proceeds from them should fund the electrification of transportation and also the infrastructure. You know, putting a price on carbon will have a real pivotal role and we should look at something someone said in the prior panel as well, which is let's use technologies that are commercially viable right now. You know, we don't really have time to -- there will be time, you know, to get to the 2050 targets, but right now, trying to get to 2030, there are plenty of commercially viable technologies out there. Certainly the EV space, there are plenty. Public transit, there are growing numbers of ways to attack that one as well. And then focusing on the deployment of the infrastructure in ways that ensure standardization and also serving the vulnerable customers, which I might get to later, will help push that forward. So regional pricing on carbon is one.

The second one that I would say is one that most states and potentially provinces, I don't know, have in place and that is the tax credits. If you are going to drive EV adoption, it is certainly something that our customers are telling us about, to be able to, you know, reduce the upfront cost outlay of purchasing a vehicle is very important. The issue is that none of them right now are funded under any long-term mechanism. You sort of wonder year by year is it going to continue to exist. So this brings me back to my first point on the price of carbon. If you had, you know, a long-term mechanism you might be able to fund it that way. So that's a good use of how that policy could be, and certainly a grid. We have some other thoughts as well around the ZEB MOU and cost recovery, but I will leave it at that for now.

**Vicki Arroyo (Moderator):** That's great. Well, it's a great start.

So Dave, you all also put out a report, a beneficial electrification report at RAP. Can you talk about some of the economic opportunities for moving towards electrification for transportation?

**Mr. Dave Farnsworth, Senior Associate, The Regulatory Assistance Project:** Certainly. I'm happy to do that.

First, I would like to thank the visiting Premiers and Governors and Representatives and their staff and Governor Scott for this opportunity. It's great, it's wonderful to be here and have a chance to talk with you all today.

We have been hearing a lot of folks talk about electrify everything and that's an interesting idea, but we don't think that doing something like that makes a lot of

sense. We think that good public policy requires identification of goals and then prioritizing those goals, identifying barriers and asking yourself what you can achieve, what you can fund, what you can afford, and that is sort of the impetus behind this recent paper that we have done at RAP called "Beneficial Electrification: Electrification in the Public Interest".

Before I talk about that, I just wanted to back up and just highlight a couple of points that were made in the last panel because I think they really describe the circumstances that everybody here is faced with.

The power sector has seen a really big change in the last 10 years or so. Everybody talks about what Thomas Edison was doing. Let's take Thomas Edison up to maybe 1990 when that inflexible grid where you had supply and you knew what your load was, where it was a simple sort of relationship, not particularly flexible at all, but that worked just fine. I think that's the model that has been stood on its head recently. With the ability to store energy, whether it's in water heating in large tanks of water or with batteries, which was the subject of a prior panel, or with batteries that have wheels on them, the subject of this panel, you can start doing some very interesting things. And the way I see it is that there is a table with a huge pile of gold, a huge pile of value out there that we need to come to terms with. The ability for a company to actually take some of its load and serve it in the middle of the night when historically nobody uses electricity is a great opportunity for public utilities. There is a great source of value there for consumers. So there is this flexibility available now and there is a huge pile of value that we really have to -- when we think about policy solutions, my recommendation is to think about how to access that value because it is going to be good for state economies, consumers, utilities and others.

So in this report you asked me about what we did was set out a test we thought would be helpful for decision-makers to use. It's a three-condition test. We said, look, if an electrification undertaking is positive with one of the following three criteria and doesn't adversely affect the other two, then you have beneficial electrification. The first is, is it beneficial to the consumer; second, can utilities help manage their grid with it; and third, is there environmental benefit? Like I said, if you check off positive on one of those without adversely affecting the other two, consider the

electrification opportunities that you have there. So I will leave it at that.

**Vicki Arroyo (Moderator):** Yes, that's great.

So, Commissioner Tierney, the Vermont PUC opened an investigation of opportunities for electric vehicles and in your office you have many roles, including the public advocate role in utility proceedings, so I would love to hear how you view the potential opportunities for transportation electrification and how it fits in the current regulatory framework, please.

**Commissioner June Tierney, Vermont Public Service Department:** That's quite a mouthful, so I will do --

**Vicki Arroyo (Moderator):** But I said it fast.

**June Tierney (Vermont Public Service Department):** Yes. It's a good mouthful. I didn't say it was bad.

Like Dave, I thank not just the Premiers and the Governors, and particularly Governor Scott for convening us today, but I also thank the many people who are showing an interest in this topic and who are attending here as well, because it is central to a point that's on my mind a great deal and that is how do we avoid making the mistake of thinking that the gravitas of solving this question lies with any one participant, and particularly where government is concerned, how do we strike the proper tone and set good boundaries for what government can and should do in this space as opposed to, you know, just embarking on this as if we own it alone; we don't.

It was interesting to me that our panel got rolling and Mary started with we need aggressive policy and Dave came back with we have been giving this a lot of thought and here is a decisional framework and now comes my turn as the regulator to say, whoa, just a moment, let's call a timeout. I wouldn't want timeout to be confused with digging in your heels and saying we are not going to move on this, but rather it is in the regulatory space where these impulses and these agendas and these sources of momentum meet, as they should, and hopefully if the regulatory space is run properly in the context of this issue it also brings in the many voices, many of whom are in the audience today, to add to what we have just heard from industry and what we have heard from a very well-regarded think tank source and I am more than curious to hear what John from ChargePoint is going to have to say as well. But the regulator's role here I think is to consider ideas such as, say, the beneficial electrification framework that Dave just described and then in my particular shop, since I house an advocacy function, to

take it to our decisional board, which would be the Public Utility Commission, to say, here is a concept, maybe a framework by which you, PUC, should exercise your judgment to the extent that you are involved in that, recognizing that it isn't just the regulator who is making decisions in this space, it is also industry, it is also intellectual participants, it is also, most importantly of all, consumers.

And now we come to where I really spend a lot of time thinking. I use the term "transportation electrification" many times a day and as I prepared for this seminar I thought to myself, you know, that term means a lot to me and the 200 people I know who work in this space, but what does it mean to the average American, what does it mean to the average Vermonter, and that's when I realized that one of the things we absolutely need to do here is talk in a language that is meaningful to the people we are trying to reach. And I would especially urge that for the leaders around the table today, because when you go out there and talk about transportation electrification you are talking to a small subset of people, but what we are really needing to do is reach a large group of people.

Just to put it in perspective for a moment, in our country we have sufficient excess capacity in our grid to charge 150 million electric vehicles overnight. We can do that without having to build another power plant, but do thought leaders know that and, more importantly, do Americans know that that's a role they can play? And it's a very important one because it leads us to more efficiently and more intelligently use what we already have in order to address a very urgent issue, which is climate change and the need to reduce greenhouse gas emissions.

In Vermont alone we only use 40 percent of our grid. Imagine what could be achieved if we can mobilize that 60 percent of our grid in the service of greenhouse gas reduction by getting people to use electric vehicles, and to do that we need to reach them in channels that they are actually listening to, in words that actually mean something to them.

It can be done. One hundred years ago in Bennington for instance and Rutland and Winooski and Burlington we had trolley cars, we had buggies and horses, and 100 years later the preferred choice of transportation is the personal vehicle. So over time you can help consumers change their behaviour. The problem is we don't have 100 years, we have to get it done much more quickly and we have to get it done intelligently. So that's where the

regulator has to hear from many people, aggregate those perspectives and then try to I guess pray for wisdom in making decisions. I hope that responds to your question.

**Vicki Arroyo (Moderator):** That's totally responsive. Thank you.

**June Tierney (Vermont Public Service Department):** At least it will get our conversation going.

**Vicki Arroyo (Moderator):** Absolutely.

We will hear next from John with ChargePoint and I think you raised some great questions about communications in the public and what might be some barriers to really getting electrification in the transportation sector, which I assume ChargePoint has some thoughts on, so can you share those?

**Mr. John Gilbrook, Director of Sales, ChargePoint:** Absolutely.

And as well I would like to thank the present Governors and Premiers for giving me -- for listening, hearing us out, and CONEG for giving me the opportunity to participate on this panel.

I guess I would take a little bit more of a practical approach to the policy question, being kind of on the ground in a sales role. Four big policies come to mind.

The first we have actually made a lot of progress on, but there is still more work to be done, which is on creating some clear guidance on sale for resale of power through charging stations. So in 24 U.S. states, provinces and the District of Columbia, regulatory commissions have already gone ahead and exempted EV charging from utility regulation. In the remaining states and provinces there is kind of an aura of uncertainty and concern for a charging station, those that want to purvey stations, whether or not they can charge anything and if they choose to charge per unit of measure like kilowatt hour, they could be regulated as a utility. So it definitely presents a barrier that hasn't been clarified. I knew that and we absolutely see that in places where it is clarified it initiates and enables more charging station deployments.

Another one that comes to mind is EV preparedness from a building codes perspective. So by far the biggest impediment to EV infrastructure deployment is installation costs. It is always more expensive than equipment itself and that's because we are retrofitting existing buildings that were never prepared to support EV charging stations. And we are only putting in a few today, never mind when we are talking about hundreds of stations per property or thousands, which is what we have in places like California.

Many jurisdictions around North America have gone ahead and put mandates in place so that new buildings require what we call make-ready, so sufficient electrical capacity and power to the actual parking space for future chargers. Boston is an example, New York City and Ontario, British Columbia. There's actually a lot of progress been made there, but that needs to be taken further. And it helps avoid install costs as well as introduce to the development and construction community that this is something you need to be prepared for and need to be thinking about.

And then another big one is absolutely the role for utilities to play. I know that a lot of -- there has been discussion about it. National Grid has a proposal in front of DPU today, Eversource in Massachusetts has one that has been approved, but utility programs that create an incentive for third-party investment combined with utility investment, right? So you really draw on many business models, many investors and you create an open program where anybody could potentially invest, which allows you to multiply that investment.

And then lastly, I would say this has really specifically to do with D.C. fast charges and creating these international or regional fast-charging quarters is looking at potential demand charge reform from a utility perspective, recognizing that whatever these rates look like have to reflect the cost of service but also recognizing that in the early days these demand charges, the way that the traditional tariffs are structured will basically be project killers. They make it cost-prohibitive to deploy the stations and if we are ever going to make it to the 100 percent mark we really need to appeal to average everyday Americans and Canadians, and to do that some of those folks are going to need to fuel their electric car just like they fuel their gas car.

So I think it's those four big ones for us that we recognize on the ground in places where they have been implemented have created a huge tailwind, if you will, and I would like to see it happen more and more.

**Vicki Arroyo (Moderator):** So do you want to get in on this point, June?

**June Tierney (Vermont Public Service Department):** Yes. John, I had a question on something you just said here. You said that we are going to have to recognize, or people are going to have to recognize that they are going to have to fuel their vehicles the way they fuel their gas vehicles and I just wondered if you could clarify a little bit what you meant by that. You mean that they are going

to have to go to a fuelling station and get their tanks filled up, so to speak, or did you mean something else?

**John Gilbrook (ChargePoint):** Yes. So I guess what I meant to say there is that the average behaviour of an electric vehicle owner is they don't fuel their car, their electric vehicle as they do their gas car, it's more of a top up. You charge it more like you charge your phone than you fuel your gas vehicle. You do it at home, you do it at work, you do it at the supermarket while you are parked. But as one of the big barriers along the lines of education to EV adoption is people don't get that immediately. They don't recognize that they have to have this behavioural change and if they go through the behavioural change that it's actually not all that inconvenient. So I guess what I was saying is that let's say it would be pretty easy to convince 75 percent of the population to go through that behavioural change. The remaining 25 percent probably won't move unless we deploy fast chargers that kind of get them started.

**June Tierney (Vermont Public Service Department):**  
Okay.

**John Gilbrook (ChargePoint):** So I guess I was just talking about that remaining piece.

**June Tierney (Vermont Public Service Department):** I think that's very helpful and the reason I flagged it was because I have been spending a lot of time thinking about how do you teach -- it's not how do you teach people to do this, but rather where do you find the opportunities to help people see that it's in their interest to make this change. And for the leaders that we have collected here today, what I would offer to you is this.

I am finding that there are many parallels to be drawn to how we have lived through the change of communications and how we communicate. For, you know, many, many decades people had landline telephones at home and that was the standard for telephones, but today most of us are carrying cell phones -- I would love to do a show of hands how many people have one -- and every one of them have had to learn adaptive behaviours for charging. So we think nothing now of plugging our phone in and having it charge overnight, we're good. You can analogize to that very easily when you are talking about electric vehicles and that's the kind of thing that leaders need to be doing in order to effectuate this change. In my space we haven't gone into the granularity of how cell phones get charged and in terms of how tariffs are designed in order to accommodate that largely because that particular adaptive behaviour has

happened offstage from the regulatory world, I can say to my chagrin because it puts me out of a job, but after all, the point here is to get services and infrastructure out there to people that's useful, not to keep me employed.

**Vicki Arroyo (Moderator):** Right.

**June Tierney (Vermont Public Service Department):** So anyway, back to you.

**Vicki Arroyo (Moderator):** So I want to get Marcy in on this conversation and then we will loop back around and then we are going to certainly open it up to the Heads of Delegation.

But, Marcy, what is the role of utilities in educating the customers and consumers and also maintaining affordability and what are the barriers that you see --

**Marcy Reed (National Grid):** Right.

**Vicki Arroyo (Moderator):** -- in getting deployment?

**Marcy Reed (National Grid):** Right. Yes. We do think about all that.

I have to start by saying I am in violent agreement with everything that has been said so far.

--- Laughter / Rires

**Marcy Reed (National Grid):** So we think about actually four things at the utilities. Again, if we wake up every morning and there are 20 million people using gas or electricity from National Grid, they are paying attention. So there is customer awareness, we absolutely have a role to play there and I will speak about that; there is access, access to this market; there is affordability for sure -- I worry about the wallet every day of our customers, energy is so expensive for them and it's something they really can't do without; and then their behaviour. So I will just pick them off one at a time.

On the awareness one, our vision is that, as really the Commissioner just stated, people will wake up in the next few years with as much excitement about waiting for the release of the next plug-in vehicle as they do today waiting for the next release of the iPhone. I mean I actually do believe that that will be the case, we will get there. Yet, you do have to talk the language that they are all going to understand. I also say electrification of transportation, Trans NE, all the time, right, but that doesn't play even at my own house. So as we are waiting for the auto manufacturers to improve on vehicle performance, battery life, charging options and certainly cost of these, I think that utilities can drive awareness campaigns so that we can continue to drive adoption. So that's awareness.

On access, and this gets to, you know, John, people filling up their car. I drive an EV and I still do talk about filling up my tank, it's just the way we -- I also talk about dialling a phone, it's just words that we are going to have, right. The vision that we have is that ubiquitous and convenient charging will have to be there, whether it's at home, it's at work, it's out in the public, wherever it happens to be, it just has to not be a question. You cannot have range anxiety. So the access to this has to be dealt with. And also the vehicle manufacturers today are creating options in all vehicle classes and that will be important. Some might want to drive a Tesla, but some might want to drive a LEAF. There are options all over the place.

You mentioned earlier, Vicki, that the support of the federal CAFE standards, and also state EV commitments to improve fleets to make them more efficient and increase their availability will also be important. So that's all about access.

And affordability, which is probably the one I should have started with because it is so important. The plug-ins in the EVs have got to be -- we have to have options at all the different price points. The charging cost, whether you are home or away, has to be lower or comparable to your current vehicle and I do believe actually we will get there. As a utility, as a large utility, National Grid can help with customer incentives, rebates to lower their upfront costs. That of course would have to come through conversations with our regulators as part of the programs that we would develop over time. And I also believe that that is really where some policy can come into play, whether it is creating the incentives and the rebates to create that kind of market pull and improve the business case for it.

And then lastly, behaviour. So our vision is that the price signals that our customers are seeing in the incentives that they might get will inform their choice both of the vehicle but also how they go about charging their car. And to the folks here in the room thinking about what these policies might look like, your leadership in helping to contribute to the emissions reductions by establishing clear targets around fleet electrification, you know, not just in the light-duty space, I think is something in the behaviour space.

So I mean, other than that, I will just also point out that as a utility some of the role that we could play, as I mentioned earlier, we look at the entire 80x50 puzzle, the

large-scale renewables, gas pipelines, storage, EVs, et cetera. As far as EVs go, I do believe that utilities should have some ownership of a certain part of the infrastructure. I don't believe we should own all of it by any stretch, we can't go this alone, there are folks who should and want to be doing this in the merchant space, but there are a couple of things I worry about.

One is, I mentioned it earlier, the vulnerable populations. We have to worry about the people for whom a lot of this is just out of reach, yet they have a role to play in society too as far as driving the right kind of vehicle that is burning the right kind of fuel. So that's the first thing and a utility could easily take that on.

And the second is more of an engineering point and that is, you know, we have a distribution system to run and it needs these charging stations and other components of the infrastructure have to be placed efficiently in that system. Otherwise, as other components across our system cause the network to be haywire right now, we would like to be able to avoid that. So when we go to our regulators, whether we are in Rhode Island or Massachusetts or New York where we serve these customers, we will probably be talking about earmarking the spend in some of these programs so that certainly we can handle that disadvantaged community, but also talking about where on the system the most efficient use of this equipment is, because thereby we are benefiting everyone, we are not creating more disruption in the system.

**Vicki Arroyo (Moderator):** Sure. Those are excellent points. And I will say that the hope is also of course that as we drive cleaner vehicles folks who have health disparities and impacts because they live near major roads and highways will be benefited, whether or not they are driving their vehicle themselves, because the air quality will be better.

But I do want to piggyback on this point about grid innovation at the same time. We are seeing such dynamic change with renewable energy coming onto the grid, with electric vehicles coming onto the grid. David, is there something that we should worry about with all that change at one time or do you feel like the grid is up to handling the new load from electric vehicles? Is there work in your report or otherwise that you can share on that?

**Dave Farnsworth (The Regulatory Assistance Project):** I think that utilities are up to managing this. There are a number of interesting trends. One is that renewables are becoming cheaper and cheaper and that's good news for

utilities, it's good news for the environment. There was an Excel all-requirements RFP put out by Public Service of Colorado last year and solar came in at around one cent, wind at around two cents. Now, Vermont in the northeastern part of the United States and this part of Canada don't have the same wind and solar resources necessarily as Colorado, but there is a trend where renewables are very cheap.

So the point you made is how do you accommodate those, what is the best way to accommodate those, and I think the good news is with EVs and other forms of storage you have load that's flexible and load that you can move around. Just like you used to move around supply, you have demand that you can move around to pick this up. You can do load-shifting; that's reducing the peaks in the morning and the peaks in the evening. You can do ancillary services where it's very fast response and it can work like a demand response program where you have lots of vehicles that you are just using a little bit from, but you are aggregating that.

And there is the opportunity I alluded to which is to avoid renewable curtailment where a utility is matching up this load with renewable. When they come on, everybody is asleep. The wind is blowing at night. Massachusetts has wind systems going, or Minnesota has wind systems going, or in the middle of the day in Hawaii you have all this solar, you can move load around.

I would like to ask the audience if they have ever visited their grandmother in Florida and gone out for dinner at 4:30 in the evening.

--- Laughter / Rires

**Dave Farnsworth (The Regulatory Assistance Project):**

It's funny, everybody just says, yeah, I have done that. Imagine the restaurant being a utility grid, right? Their peak is 7:00 to 10:00 at night and that's when the chef and the cooks and the food and the wait staff are all there. Everybody is there, everybody is dressed up and ready to go, but nobody shows up until 7:00. So what they do is lower the price a little bit and get you and your grandmother to come in at 4:30, because everybody is there, it's all happening, it's all there. Utilities are in the same position. It happens to be in the middle of the night, but you can set it and forget it when it comes to your car charging up in the middle of the night. You can set it and forget it when it comes to controlled integrated grid water heat, heat pumps, that kind of thing. Mary Sprayregen was referring to those things in the prior

panel. I think utilities are up to it, it is way more flexible. If you thought the utility world was confusing 15 years ago, it is really confusing now, but we think that the test we have set out helps put things in a framework. We think that utilities are up to accommodating more renewables, which obviously are cleaner and good for the environment, but they are going to be cheaper. So there's good news for consumers.

**Vicki Arroyo (Moderator):** So this gets to the question that I wanted to raise and I'm going to go next to June and John and then we will open the floor, but Premier MacLauchlan asked earlier a question about timing and I guess the question in this context is how do we build out EV charging infrastructure now in a way that allows for that technological innovation? So Dave gave some answers on that, but I would love your perspective as a person in state government and as ChargePoint on, you know, how do we deal with the fact that more high-capacity fast-charging might come online, how do we deal with innovation in terms of autonomous vehicles, how do we think about is this the right time and how do you do these things in phases if we need to? So whichever one wants to go first.

**June Tierney (Vermont Public Service Department):** I will take a crack at that. A couple of things.

One, I would love if the Governors and the Premiers took away from what Dave just said, set it and forget it. Dave has just illustrated what I was talking about, about the need to change the discourse around transportation electrification so that it's relatable. The example of going out to dinner at 4:30 with grandma in Florida is a perfect example of what I'm talking about.

To the earlier question about whether the grid is up to it, I think absolutely because we have made such progress with the data analytics and our ability through what we know through computer technology and analyzing data to distil trends and opportunities. And I think that is one of the keys to the question that you actually posed, which was actually think about building out charging infrastructure. I think we need to be mindful that while we are tackling a problem or a transition that is very reminiscent of how we came to drive cars in the United States and Canada to begin with 100 years ago or how our telecommunications equipment and conventions have changed, we are not doing that, we are not negotiating that transition with the same tools. We have much more high-powered, sophisticated information tools available to us and our utilities are getting increasingly and increasingly

more sophisticated in developing these models that help us use data analytics. So I think that is one thing we should keep in mind.

How do we approach it? I would urge folks to recognize that we are in a period of transition and so it is important not to get entrenched into regulatory frameworks as if we found the new one. In Vermont we get trapped a lot in conversations about whether we should be using traditional ratemaking for instance to set tariffs or should we be doing new alternative regulation that departs from traditional ratemaking and what I would not want to see happen in the electric vehicle space is that we get so caught up in what we are doing right now and who has what role that we forget that, you know, in 10 years, even sooner maybe, this conversation will be passé, we will have made the transition to electric vehicles because major manufacturers are pushing us that way. Kids are growing up increasingly in a world where they see both kinds of vehicles and before long it is going to make sense to them to go with the electric vehicle. They are going to wonder why were we ever burning gas to begin with. So it's important to try to stay focused on that fact and that the acceleration is real, the change is real, and so I would advocate for a light touch.

One thing I would point out with the buildout of infrastructure is that where utilities have a special role to play is akin to building out middle mile for broadband. It's a significant capital investment getting the infrastructure to the charge point. What you do at the charge point I'm happy to have John speak to, but how you finance getting there from the three-phase power line is a big question and I think that's one the utilities are uniquely suited to answering if regulators are smart enough to listen.

**Vicki Arroyo (Moderator):** That's really helpful.

So, John, from ChargePoint's perspective, how do you deal with the pace of innovation?

**John Gilbrook (ChargePoint):** Yes. I mean it's definitely a very difficult thing but, you know, two things I would kind of take a step back that I would point out.

Number one is that as early as we are and as far as we still have to go, we have a lot of -- we have already learned a lot, right. We have seen a lot. There's nearly 1 million cars now on the road in North America, electric cars, plug-in vehicles. Our company is 10 years old for instance, right, so I think that we can draw on a lot of

those experiences to project to some extent what we are going to need to do 5 years, 10 years, 15 years from now.

The other thing, I think it is very easy in a conversation about acceleration of electrification to think that this isn't moving on its own, like if we do nothing it won't happen, and that's really not the case. This is actually more of a conversation about preparedness than it is a conversation about initiation. So I think the idea of -- you know, to Commissioner Tierney's point about a light touch, recognizing that this is going to be just ever-changing I think is really important.

But, you know, I go back to building codes. I think at the heart of it is really recognizing that these investments are going to need to be made one way or the other at some point and what is the most efficient way to do that, and what we have found is that, again, making them early, making it as a part of, say, a new construction process as opposed to a retrofit, and then not just making an investment or planning for the demand we have today but recognizing that this isn't a gamble, this is a "will there be 10 cars in the parking lot in six months," it's, "no, we are probably going to need to serve 500 in five years." And buildings are built for 15, 20, 50 years; they don't want to be ripped up, you know, in that short a time period.

So I think the key is to think big and to recognize that this is coming one way or the other, this isn't an if, it's a when, and to plan for those things. And we know enough about what the auto manufacturers are planning, right, they publicize a lot of that stuff, we know enough about behaviour of drivers and how they prefer to charge, where they will charge, that I think to the point about having these tools, this data at our disposal, I think we have everything we need to make the right decisions. I think it's a matter of putting -- you know, in a way maybe forcing people to just do it a little earlier to avoid higher costs and to get a higher efficiency out of the whole transition.

**Vicki Arroyo (Moderator):** That's really helpful.

I want to open it to Governor Scott to let him open it to his colleagues.

**Phil Scott (Vermont) (Co-Chair):** Thank you.

Premier Couillard...?

**Philippe Couillard (Québec):** Yes. Thanks for this very interesting, informative discussion.

Although a significant part, close to 50 percent, of EVs sold in Canada are sold in Québec for obvious reasons,

still the numbers are low. And when you ask people, citizens, families, why don't you -- would you like to have an EV or a plug-in, yes, they would like. Why don't you do it now? I'm not sure yet. So why do they say not sure yet? You know, they talk about of course range anxiety, that is always there. This relates to charging stations and how we can provide this. And also the upfront cost is still an obstacle for a middle-class family. Many jurisdictions like ours have subsidies to make it easier to make the choice, but we have to accept that it's a market distorting mechanism and at some point you should be able to do without.

So if you look at the specific matter of the upfront cost, one of the major items that drives the cost is the battery pack. I was speaking to people that manufacture batteries, so of course they had their own point of view. I wanted to know, you know, now it is an environmental statement that someone makes sometimes buying an EV, when will it be an obvious economic decision for a family? You know, partners in the evening sitting around the kitchen table taking a pencil and a pen, okay, we need a new car, should we have a standard car or an EV? They said roughly in their opinion 2024, when it's going to be an obvious decision not only from the environmental point of view, I want to make a statement that I'm green, not everyone goes like that, it will be obvious because it's so obvious economically for the family that they should go that way. So do you agree with this date or what should we be looking at?

**Dave Farnsworth (The Regulatory Assistance Project):**

It's my understanding there is one influential report from Bloomberg New Energy Finance that uses battery price as the proxy for the crossover between an internal combustion engine car and an EV. Their last publication said 2025 and I have seen a more recent presentation that said we modify that to 2024. I can't give you the exact example. A Nissan LEAF and a Honda Civic, a similar car, and that's where the price -- that's not a great example, but they suspect those figures are along the lines of what you suggested.

I think there is an additional observation worth making and that is that there are a lot of new electric vehicles that are part of leasing programs. They are leased for two years, less than 30,000 miles on them, and a Nissan LEAF in Boston, I think you can go online and find a used Nissan LEAF for \$8,000. A used -- a two-year-old EV used is a little different I think than other used cars. I

have always had used cars. I bought a new car for the first time maybe four years ago. I have always driven Saabs, spent \$3,000, driven them into the ground. It just made sense to me to do it that way. But with EVs, there is such a small amount of maintenance and the way they are being driven within the legal framework of a contract for rental that those used cars are -- they look pretty close to new to me. So I think there are more opportunities.

**June Tierney (Vermont Public Service Department):** If I could follow up on that.

Everything Dave said I know to be true because we went to law school together and I rode in a number of those Saabs.

--- Laughter / Rires

**June Tierney (Vermont Public Service Department):** He actually showed me how to change my bulbs on my VW.

Anyway, what I wanted to get to, Premier, is this. 2024 may or may not be the date and we could find studies that will confirm it or not, but I will say this, in Vermont it is well known that folks actually don't have a good handle on their own facts and so they have range anxiety, but they are not aware that only one in 20 Vermonters commute more than 40 to 50 miles a day. They don't know that their average commute is actually significantly lower and falls well within the range of what a Nissan LEAF allows them to do. They also don't understand that upfront cost is one way to look at purchasing a vehicle, but the life of the car and cost associated therewith is another way to look at it. And I'm sure you know as well as I do that when you look at the lifecycle costs of cars, of EVs, they have become very economically advantageous.

My point is this. We can certainly hope that 2024 brings that crossover point that you are talking about if we are looking at the issue in the aggregate and what you can fairly deduce from data that's available, but we can also understand that today is not too soon to start speaking to people about what their actual habits are. That goes back to what I was saying earlier about discourse about electric vehicles being in a language that they can relate to and for it to reach them through channels that they are actually paying attention to, which means it can't just be government databases, it can't just be a wonderful resource we have in Vermont, Drive Electric Vermont. We have to be reaching and communicating with people on all levels and especially young people to help them understand

that what they have anxiety about in fact they need not have anxiety about.

**Vicki Arroyo (Moderator):** So, Marcy, since you guys thought that we are going to be at 100 percent by 2028, I guess 2024 might sound about right to you, but I would love the two companies to weigh in on the 2024 date.

**Marcy Reed (National Grid):** Yes, I would love to talk about this. A couple of things come to mind to your question, Premier. Thank you for asking.

The first is that there are things that companies can do too. So I realize this isn't going to be for everyone, but at National Grid this year we are going to give any employee who wants to buy an EV \$5,000 on top of any state or federal tax credits they get, and we are doing it because we want to walk the talk, right, and we just think that -- we know of other companies too who will provide incentives to their employees, including free charging at the worksite centre. So there are things that companies can do to help bring down that cost.

The other point goes to what the Commissioner was just talking about, which is the cost over time. So I have had a used Tesla in my garage for about two years at this point. And I did pay the extra money, which I realize is maybe not for everybody, to put the charger in my garage, but I also have a time of use rate, so I am paying 9.5 cents between 10:00 p.m. and 6:00 a.m. to charge my vehicle. And when I -- because I am a bit of a geek, when I do my Excel spreadsheet at the end of every month when I get my electric bill, I can tell you I have spent about 15 percent on "fuelling" -- she says in quotes -- my vehicle that I did for the vehicle that it replaced. And I have never had -- the thing has never been in the shop in two years because there is nothing to service. So over time the cost really is lower. I think that we have to talk -- earlier when I was talking about awareness and education for our customers, a utility can play a huge role in explaining in plain English to people what it is to -- you know, what is the cost of owning a vehicle over time.

**Vicki Arroyo (Moderator):** And part of it is just getting over the barrier of change, right? I mean it's just knowing that you can live that lifestyle and that that is really attractive to people, but I think just getting over that initial barrier of having something installed in your home and figuring out the time of use rates, I mean that's why we have to demonstrate this. So I think it's great that companies are really trying to get the cars out

there because then their employees will talk to their friends and their relatives and that will help.

**Marcy Reed (National Grid):** They are less weird.

**Vicki Arroyo (Moderator):** Right, yes.

--- Laughter / Rires

**Vicki Arroyo (Moderator):** John...?

**John Gilbrook (ChargePoint):** Yes. I guess just to culminate some of this. I think arguably in many places we have already bypassed the economic kind of inflection point of EVs being cheaper. I mean take Canada for instance where most of the provinces you're paying on average less than 10 cents a kilowatt hour for electricity, you are paying \$1.30 a litre for gasoline, right, \$5 a gallon, and frankly I think that more than the economic impediment for, say, Canada, what has been more of a barrier for the adoption is availability of EVs. Many of the auto manufacturers, because cold climates have been a challenge for some EVs, incentives are attractive and they help sell cars a little sooner, so certain provinces have them, certain don't, there has been a lack of availability. Lack of availability has led to just people not being aware that these things exist and they can buy them.

And I think the other part of it, so the other part of the economic challenge isn't that the numbers don't work, it's that they are complicated to put together, right? Most people I would argue don't go through the trouble of calculating the total cost of ownership of a car. They look at the sticker price and what they are getting for a trade-in value and whatever the lowest payment is they go with. They don't consider no maintenance, they don't consider it's going to cost them a third what it cost them to fuel their gasoline vehicle, and they don't do all that math and really consider it. So again, back to the education. It's really important I think not only to show people that owning this car is actually going to be more convenient than owning a gasoline vehicle -- by the way, one of the untold benefits of owning an EV is the charging at home. You never have to go to the gas station, you just -- every morning you leave the house with a full battery.

**Vicki Arroyo (Moderator):** But where do I get my Cheetos?

--- Laughter / Rires

**John Gilbrook (ChargePoint):** But I think educating people that not only can they do this but it's more convenient and it's cheaper is the hard part. It's really the education is the barrier, not the numbers.

**Phil Scott (Vermont) (Co-Chair):** Minister MacLellan...?

**Geoff MacLellan (Nova Scotia):** Thank you. Thank you, Governor Scott, and thank you to the panelists. All driving Saabs and Teslas. I think I'm in the wrong business.

--- Laughter / Rires

**Marcy Reed (National Grid):** They are used. They are used.

--- Laughter / Rires

**Geoff MacLellan (Nova Scotia):** I have a question from -- I guess from the angle of environmental footprint and I think all of our colleagues around the table from the states and provinces have a different position on this and I think that ourselves in Nova Scotia and Premier Gallant in New Brunswick would have a similar challenge. We have all been very aggressive with respect to getting to a point of renewables, energy, electrification, and that's something that we have certainly worked hand in glove with our utility, Nova Scotia Power and the parent Emera. They have been good in lockstep in terms of policy and moving forward at any potential investment. So electrification is definitely part of the plan, no doubt about that, that's a foregone conclusion, which is great, but we have a significant problem, and again I said it in the earlier session, we still rely largely, or at least to a significant extent compared to the other representatives here, we still rely on coal. So it's great to talk about electrification and EVs, but if the back end is still coal-fired generating plants, then really from an environmental footprint perspective we are not getting that further ahead. So this is maybe putting you on the spot a little bit, but I am genuinely asking for advice.

Should we, to use marketing language, use a push or a pull strategy? So do we keep the status quo until we follow our environmental plan to ultimately phase out fossil fuels and reduce that dependency on the generating stations we have now or do we begin aggressively with investing in EV technology charging stations and the other supports that would increase the EV usage in our province and in our region and then have that come along until the point where we are out of that fossil fuel regime?

**Vicki Arroyo (Moderator):** So thoughts on that, Commissioner?

**June Tierney (Vermont Public Service Department):** Yes. I would look at it this way. I'm sorry that you still largely rely on coal, but I know you are going to

make that change. Your policies are underway and that's exactly the right role for government to be playing in that space. It is important to recognize, though, that electric vehicles, though they are fuelled in your case by a baseload, if you will, that is coal-driven, it still represents a more efficient use of energy. So you have far fewer emissions from an electric vehicle than you do from a combustion engine vehicle. So from that point of view I would say you don't have time to wait because that's how urgent the issue is and I have to walk and chew gum at the same time and I know that we can do that. So I would say phasing makes some sense perhaps, provided that you stay apace on it. But I wouldn't wait for solving the coal problem before I got going on EVs. It is so important to win especially young hearts and minds today. I am a child of the seventies. I remember ads from Mobil Oil, of all things, talking about the environment back then. They have stayed with me. My career has been in energy in part because some of those impressions were formed when I was a child. So you have to make EVs visible in the world that kids see and -- I think I have said it already once before, so I will stop there -- get going.

**Vicki Arroyo (Moderator):** Dave...? Dave, anything on this point?

**Dave Farnsworth (The Regulatory Assistance Project):** There is an interesting example of a generation and transmission co-op in Minnesota, they are called Great River Energy, and they have been using controlled water heaters. They have had a program for controlled water heaters for about 30 years now where they take water heater load off of the peak and manage it into the middle of the night. It's cold 24 hours a day there, but what they are doing is saving consumers money by running cheaper coal in the middle of the night for water heating. They have been encouraged by environmental advocates in that area to think about matching up that load management with more renewables and they are currently trying to do that, but what they have done is shown people how they can -- they have certainly demonstrated the case that they can manage load, that they can save consumers money. Now, the next part is the environmental piece that is obviously very important.

I'm not positive of this, but I'm sure you have staffers who can help you with the following. I believe unless you are replacing an internal combustion engine that gets better than 45 miles to the gallon with an EV, your EV even with a coal system is more efficient, which is the point the Commissioner made.

**Vicki Arroyo (Moderator):** Marcy, from a utility perspective, anything to add?

**Marcy Reed (National Grid):** I would say it's both and. I absolutely agree, press ahead with the EV mentality, acceptance, education, infrastructure deployment, et cetera, at the same time that you are hopefully trying to pull down on the coal. And I may differ from others on the panel at this point, but I don't think you will ever get off of all fossil fuels. I do believe that there will be a role for them, so gas over coal would certainly be the way. With all of the electrification of transportation, the inevitable electrification of heat using heat pumps, et cetera, there is going to just be more juice needed and so to switch from coal to gas is part of the play as well.

**Phil Scott (Vermont) (Co-Chair):** Premier MacLauchlan...?

**Wade MacLauchlan (Prince Edward Island):** I might pick up on -- and thanks to the panel -- pick up on the overall question posed by the session, which is how we may through policy provide incentives or impetus for EV innovation. It's always interesting to try to get outside of the debate about gas versus EV to how we can -- to take a direct example, how we can make this part of our overall economic prosperity. The Governor told us last night that Vermont is now at 10 percent of its GDP being derived from tourism, Prince Edward Island we are now at 7 percent, which would be the highest among the Canadian provinces, but everybody is looking at this. If a jurisdiction isn't going to be able to compete for the tourists who are travelling with electric vehicles, that helps us to get in the game. In fact when we look at the network that's currently available in Eastern Canada and then down into the states -- and Premier Couillard has been a big promoter of this -- we are very close to having something that enables people to see that as an advantage, that not only can they come and see Smugglers' Notch but they can do it without having to use any gas to get over the hill.

The other piece that goes with this is it then becomes possible to go and have supper with your grandmother in Florida at 4:30 with your electric vehicle. Thanks.

--- Laughter / Rires

**Phil Scott (Vermont) (Co-Chair):** Governor Baker...?

**Charlie Baker (Massachusetts):** It's very interesting and I want to thank you all for the presentation.

I just have like three general questions and then a particular one for my buddy Marcy Reed.

The question for Marcy is, is there going to be an income standard for whoever gets the \$5,000 out of the rest of the pockets of Massachusetts ratepayers for the Teslas that your employees buy?

On the broader questions --

--- Laughter / Rires

**Charlie Baker (Massachusetts):** I'm not kidding. One of the things that bothers me the most about this conversation and bothers me the most about the direction that this whole thing is going in is the beneficiaries for the most part are on the higher end of the income curve and the people who are paying for a lot of this are on the lower end in the income curve and I think it's really important that we recognize that and we address it and we deal with it as part of these conversations going forward. I don't know a lot of people who work three jobs who drive a Tesla, I just don't, but I know a lot of people who pay taxes and who pay electric rates who work three jobs to help pay for that Tesla and I think that's an important issue in this discussion.

With respect to some of the other questions, on the charging stations, the big question I have on this one is how do you figure out who owns them. Now, the ones in the buildings, that's a different issue. If it's in my garage, it's in my garage. But the question I have about the rest of the charging infrastructure, you know, in theory if the utilities are going to be the ones who drive the train with respect to access to the juice, to use Marcy's term, it would seem to me then the utilities would develop a plan. They would develop that plan, they would send it to the folks at the DPU, the DPU folks would sign off on it and it would be designed to create sort of an infrastructure for EVs in the Commonwealth. That's how I think it would work in Massachusetts. And that would be paid for in many cases by the rest of the ratepayers, but I could see the justification in that, because if a lot of people are going to be using these things because they are electrified vehicles, that's no different than the electrification of your heat or the electrification draw that you have for electricity.

On the building code question, we have a lot of old buildings and we have a stretch code and the question I would have -- and I'm not sure if you did the math and tried to figure out where people in Massachusetts lived, how many were in a freestanding entity and how many were in a multi-unit facility that may or may not have onsite parking. I'm not exactly sure how the numbers work on

that. I get the freestanding piece. I think it gets a little more complicated with multi-unit sites and I would be curious to hear your thoughts on that.

And then the third question is how do you deal with this range question? I mean the number in my mind that I have always thought is 300 miles. I'm not sure there are a lot of options out there right now that get 300 miles. And when I think about 300 miles and I think about getting out of sedans and into SUVs and trucks, that 300-mile question gets a lot more complicated. And that's about half of the vehicles that are bought in the U.S. So those are kind of my three questions and how they affect the 2024 conversation.

**Vicki Arroyo (Moderator):** So yes, with the time remaining maybe we could just go right down the line and you all can answer any of those questions of Governor Baker.

**Marcy Reed (National Grid):** I'll take two quickly.

**Vicki Arroyo (Moderator):** Yes.

**Marcy Reed (National Grid):** First of all, shareholders are picking up the tab for the \$5,000 and that's as it should be. That's not something that other people should play with, so don't worry.

As for the charging station, who owns them, I think it isn't just one answer. The utility can and should own them, particularly where I spoke earlier about the vulnerable populations where we tend to be the provider of last resort. We should be there for all those people. So there is certainly a place for us in that equation. But I think there are other merchant companies who should play in that and therefore the how you pay when you go to the charging station might be different too. You might swipe your card that, you know, you have right now on your key to use something from ChargePoint and get a bill once a month or you could socialize the cost of the electricity if the owner were the utility. So I think there are multiple lines.

**Charlie Baker (Massachusetts):** But am I wrong in assuming that in a house, in an apartment complex, in a commercial building, for all intents and purposes those charging stations are going to be supplied by the utilities, which means the price associated with the charge at that point in time is going to be baked into the cost of occupancy or ownership for whoever owns that property or lives in it or works in it?

**John Gilbrook (ChargePoint):** So today a fraction of less than -- a fraction of a fraction of 1 percent of

charging stations in North America is owned by utilities. They are almost all owned by private entities with some core business benefit. So for instance, a multi-family building, those are typically installed by the developer of the building or the owner in order to entice, lease, you know, rental. On the single family side, the single family property owner is buying that. In the case of workplace charging like National Grid, the business is buying that as a business amenity. When you layer atop that kind of question about isn't the utility collecting some money from that since they are supplying the juice, not really because, again in Massachusetts as an example, the DPU has exempted EV charging from any kind of utility regulation. So the business owner, let's say a workplace, if they would like to collect what they paid for power, what they paid the utility for power so that they are not giving the power away, they can be free to do that and then the idea is they would use that money to cover their operating cost and potentially invest in more stations.

**Charlie Baker (Massachusetts):** That I get. The question I wonder about is the independent charging stations, like where there isn't -- where it's not wrapped around a residential facility, a commercial building or something like that.

**John Gilbrook (ChargePoint):** I would say 98 percent of stations are. That's the interesting thing about EV, is that most stations today, if there's about 70,000 stations in North America, most of these stations are park and charge, what we call Level 2, 240-volt circuit. It will charge a car about 25 miles of range per hour it's plugged in. They are associated with businesses or homes where staying that long is what you are already doing there. And that's that added convenience factor, is that if you are never actually having to stop in between your normal course of business it is an added convenience as opposed to the opposite. So the only stations that are kind of what you would call independent would be these fast-charging stations and what we are finding is that even those there is a huge incentive for existing businesses to offer them as an amenity. So for instance, all the pike sites, the Route 90 rest areas, those stations are -- were, at least in the early days, incented by the DOT, but the -- I'm trying to think of the name of them, the concessionaires actually now purvey them.

**Charlie Baker (Massachusetts):** Okay. All right. I get it. All right.

**Vicki Arroyo (Moderator):** Others...?

**June Tierney (Vermont Public Service Department):**

What I would add to that, Governor, is this. We have a proceeding right now in Vermont that is designed to address these very questions and what I would observe about that is that there will be a multiplicity of views that come into the forum to talk about who ought to own these things. My own early thinking is that it is going to be a mixture. If you think for a moment, there was a time when none of us owned our telephones at home, they were leased to us by the telephone company. Then we transitioned to a period where we could go into a store and buy our preferred phone, like a Princess phone for instance --

--- Laughter / Rires

**June Tierney (Vermont Public Service Department):**

There was a -- I was a Princess once.

**Vicki Arroyo (Moderator):** You almost kept a straight face when you said that.

**June Tierney (Vermont Public Service Department):** The problem is he smiled at me.

--- Laughter / Rires

**June Tierney (Vermont Public Service Department):** But at the same time that we might have had the --

**Charlie Baker (Massachusetts):** I remember the Princess phone.

**June Tierney (Vermont Public Service Department):** Do you now? That's a very intriguing conversation offline, sir.

--- Laughter / Rires

**June Tierney (Vermont Public Service Department):** But as my Princess phone was at home still functional, I grew to have a cell phone in my pocket as well.

**Charlie Baker (Massachusetts):** Yes.

**June Tierney (Vermont Public Service Department):** And then I would be on the street and perhaps my cell phone battery was dead and my Princess phone wasn't at hand, I went to a telephone booth. That telephone booth was owned by the telephone company. So, you know, what we have there is a mixture of who owns what and I think that the key here is to not get dug in into who ought to own it.

One important point to make about something you said, sir, is this. Yes, ratepayers may pay for some of this infrastructure that is built out because it makes sense for utilities to do it, but let us not forget that there are benefits to the utilities laying out this infrastructure that have to do with how they manage load on their grid and whether there are more or less EVs out there that are able to get charged conveniently so that people can make use of

them. So we have to make sure that we don't allow ourselves to be confined by yesterday's thinking about who owns what capital infrastructure. We have to recognize that it can be an investment in order to promote this change that has to happen, which is moving to electric vehicles so we can get greenhouse gas emissions down. So for what that's worth to you, sir.

**Vicki Arroyo (Moderator):** So, Dave, there were a couple of questions about multi-unit dwellings and also range.

**Dave Farnsworth (The Regulatory Assistance Project):** I was going to just talk about multi-family housing. It's my understanding that in the U.S. about half the population lives in multi-family housing.

**Charlie Baker (Massachusetts):** That was going to be my guess, yes.

**Dave Farnsworth (The Regulatory Assistance Project):** It's a serious -- that's a serious concern and it's a really important issue. I was talking with Arthur Marin, the Head of NESCAUM. He can't charge an electric vehicle. I mean if anybody in the world would like to charge an electric vehicle, he can't at his house. I think he lives in Somerville. And well, you know, is the solution getting the power company to connect charging stations to streetlights? I don't know. There need to be solutions there. What I find interesting and actually really hopeful is that a lot of the questions that low income and middle income folks have about this -- you alluded to this -- are similar concerns that people who make a pretty hefty income but happen to live in a multi-family dwelling are going to face. They face the same issues and that is a nut that has to be cracked and I don't think there is any dodging it, you have to square off on it.

I don't have all the answers, but related to ownership, the State of California is engaged in EVs and utilities and if any state would get behind cars and transportation it's California. From 2011 to 2014 they said, look, we are going to keep our hands off, we are not going to let the utilities own any of this infrastructure, and nothing happened. That was California. It's not like nothing happened in the low income neighbourhoods, it's nothing happened. The Legislature and the Governor got behind it in 2014 and passed legislation and said, you know, utilities are going to be able to own this stuff and the three big IOUs, investor-owned utilities, came in with proposals that the regulators all chopped back, pared back because they were too expensive and far ranging with

different ownership models. And they are working through those pilots right now and they will come up with conclusions as to which is the best, make-ready, just basically let the utility pay for the infrastructure that goes to the concessionaire and then the concessionaire pays for the rest or should the utilities own some things? There is an argument to be made in low income neighbourhoods that there may not be the concessionaires out there, so the utilities may need to own things there. Anyway, California is a really good example of trying to solve the ownership issue and they are kind of going at it in a multiplicity of ways.

**Charlie Baker (Massachusetts):** The reason I bring this point up is, you know, if the juice runs out on this thing it's an inconvenience and I have to carry it around until I find a place to charge it again. For a lot of people when you think about a vehicle where they are not going to see where it is they can actually -- there's like a -- to get back to the Premier's point about the anxiety around charging, I really do believe that if people saw more places where they could charge one of these vehicles they would worry less about whether or not they would end up someplace without a charge. And I think, you know, human nature being what it is, people see all the gas stations, they know where they are, they don't worry about it, right, to your point, and I wonder if you are going to get a lot of the people even if the math works to go where you want them to go, where we want them to go if they don't see something that gives them some confidence that it won't just be at work or at home.

**Vicki Arroyo (Moderator):** So, Governor, if I may, that is something that we have worked with your team and other states in the region and I know that there is cross-border collaboration --

**Charlie Baker (Massachusetts):** I know. Yes.

**Vicki Arroyo (Moderator):** -- on that very kind of corridor network and signage that is consistent --

**Charlie Baker (Massachusetts):** Right.

**Vicki Arroyo (Moderator):** -- exactly to deal with those concerns.

Go ahead, John.

**John Gilbrook (ChargePoint):** I would just add that, believe it or not, I totally agree with the point that visibility and education is critical to get everybody interested and aware. However, two inevitable points arise.

One is that once you own one of these EVs you do 90+ percent of your charging at home and at work. The rest of the time you don't charge anywhere else.

And the second one is that drivers don't use signs to find -- or atlases to find EV charging stations, they use their phones, their apps. So for instance ChargePoint, we have the most accepted app by EV drivers because we have a lot of stations. And so people just open their phone, like for instance you are coming up to Stowe, Vermont, you type in the hotel you're going to and it tells you in real time where are all the stations within proximity to your hotel, is it available, what does it cost, you can even reserve a space at that station before you drive up. So it is actually the charging of the car. Once you have been introduced to the tech it's even a lot more convenient than a gas station.

**Vicki Arroyo (Moderator):** I know we are over time and I see Governor Scott's light on, so I don't want to go into it. I have been asked to ask the delegates to please stay seated so that the Heads of Delegation and our keynote speaker can make their way out to the next event which is going to be at Spruce Camp. But before we do any of that, please join me in thanking this panel.

--- Applause / Applaudissements

**Vicki Arroyo (Moderator):** And I will turn it back over to Governor Scott.

**Phil Scott (Vermont) (Co-Chair):** Yes. Vicki, I just wanted to give an example of why these types of conferences are so important and just meeting and communicating with one another. Part of what inspired us here in Vermont was my conversation with my good friend Premier Couillard, who shared with me his vision of growing the EV population to 100,000 and I thought, we enjoy so much trade, as you do and P.E.I., we enjoy so much trade and tourism from Québec and so I thought, if we are going to have 100,000 vehicles coming from Québec, we need a place for them to go to charge. So since then I mean we now have 160 public EV stations, charging stations in Vermont and we are growing that number. We are using some of the Volkswagen settlement to do so. This is part of -- you can do it for the economy or you can do it because of the green initiative, but it's all the same and these types of conversations are so important in order to transition to this new step.

And I wanted to agree with Dave on one issue. Part of the problem is that we see our phones and they change so fast, technology changes so fast. Technology is changing

so fast with electric vehicles as well. So nobody wants to get one and then have something change next year. You know, it could get that much better. So going to some sort of lease operation or retrofit operation of some sort, the manufacturers have to get on board with that and try and help us out, because transitioning to EVs is a big step for -- it's a major, major purchase for many Vermonters and it takes a lot of deliberation and you don't want to go out on a limb, so to speak, in order to do so. So I share with Governor Baker his concerns about that and it's a huge investment. So having that two-year provision would be helpful.

So thank you very much. We are going to now be moving to Spruce Camp for lunch where we will be having a conversation about bipartisanship. I hope to see you there and then we will go on to other endeavours this afternoon. Thank you very much.

--- Upon recessing at 1222 / Suspension à 1222

--- Upon resuming at 1404 / Reprise à 1404

**Brian Gallant (Nouveau-Brunswick) (Coprésident) :**

Alors, nous allons débiter. Merci beaucoup. We are going to start the next session. I have the honour of introducing the moderator for the panel discussion.

We have had a great day so far speaking about energy and protecting the environment. We had a great session led by Governor Scott on constructive dialogue and reaching out to other perspectives, so I think this session is going to be an interesting one with all that in mind, and of course something that I think is top of mind for many in our region, our collective region, certainly for the people of New Brunswick, trade and NAFTA. So we have a great panel, we have a great number of panelists here that are going to be able to contribute to this discussion.

I'm going to introduce the moderator and allow him to introduce the panelists.

We have Jon Sorenson with us who heads JFS Energy Advisors. Mr. Sorenson is currently President and a Board Member of the New England-Canada Business Council and is active on the Energy Committee and serves as Co-Chair of the program for the annual NECBC Energy Conference and he has done so for the past 13 years. I think all premiers at this table have certainly worked with Jon in some shape or form, so he is certainly no stranger to the Canadians and I'm sure to the governors as well and I think is a perfect person to moderate this plenary session on NAFTA and trade.

So, Mr. Sorenson...?

**SESSION 3: NAFTA AND TRADE /  
SEANCE 3 : ALÉNA ET COMMERCE**

**Mr. Jon Sorenson, President, New England-Canada**

**Business Council (Moderator):** Thank you. Thank you very much. Thank you, Premier. And a big thank you to Governor Scott. Thank you for a wonderful event. A big round of applause.

--- Applause / Applaudissements

**Jon Sorenson (Moderator):** And CONEG, Lana and Jay, wonderful job as well. Thank you very much for putting this together.

--- Applause / Applaudissements

**Jon Sorenson (Moderator):** So the New England-Canada Business Council, we work very closely with the Québec delegation. Where is Marie-Claude? Where are you? She is here somewhere. Wonderful to work with, thank you very much.

We work very closely with David Alward in the Consul General's office. Is David here somewhere?

And then of course -- and then you can't miss this guy right in the front there with the green jacket, Jim Brett, New England Council, he has been great to work with all these years.

And we just recently, the three or four organizations, collaborated on a NAFTA event. This is a major topic of discussion among many of us that go back and forth across the border and do business in Atlantic Canada and vice versa, Atlantic Canada and Ontario doing business here in New England.

So without further ado, we are very blessed to have to my left Jim Knott, CEO of Riverdale Mills; Raymond Bachand, President, Institut of Québec, right?

**Mr. Raymond Bachand, President, Institut du Québec:**

Yes.

**Jon Sorenson (Moderator):** Thank you.

Maryscott Greenwood, Chief Executive Officer, Canadian American Business Council; and Robert Letovsky, Professor at St. Michael's College.

So thank you all for being here today.

--- Applause / Applaudissements

**Jon Sorenson (Moderator):** I just want to set the stage a little bit. Oh, I just got a tweet from Trump, we are going to go up to 50 percent steel tariffs. Just kidding. By the way, I'm just joking, I don't tweet. I want to be very clear, I don't tweet.

This is some of the interesting facts, and I know you are going to talk a little bit about it here soon in a moment, but the world's largest bilateral economic relationship. Does everybody in the room know that? The world's largest bilateral economic relationship. For 2013 that relationship was \$734 billion between the two countries. Approximately \$1.4 million crosses the border every minute, every single minute. Canada is the number one export marketer for 34 states, including my home state of Massachusetts. 74.8 percent of total Canadian exports go to the United States, so approximately 75 percent. The United States sells more to Canada than it does to the United Kingdom, Germany, Japan and China combined. Again, who knows that interesting fact? The U.S. sells more to Canada than it does among those four countries combined. More than 8 million U.S. jobs depend on trade and investment with Canada.

Now, I am an energy junkie, as many of you know, and that's where it even gets more dense. Canada is the U.S. number one supplier of foreign energy. There is no security problem last I checked -- I don't believe there's a threat, is there -- but anyway, tightly integrated energy infrastructure with grid and pipelines. Canada, not Saudi Arabia, is the U.S.'s largest supplier of crude oil. Again, Canada, not Saudi Arabia, the U.S.'s largest supplier of crude oil. That bilateral energy trade is close to \$130 billion per year.

And then zero in on New England, why we are here today. New England exports to Canada \$27 billion worth of goods and services: equipment, machinery, minerals, energy, agriculture. New England imports, receives from Canada, \$11 billion worth of goods and services. And again, we know the top export destination of five of the six New England states is Canada. 431,400 jobs in New England are dependent on trade and investment with Canada.

Massachusetts, very interesting. Nine million dollars (\$9 million) of Massachusetts exports to Canada right now are subject to 25 percent tariffs. Nine million dollars (\$9 million) are subject to 25 percent tariffs and we are going to talk a little bit about that. One hundred and forty-three million dollars (\$143 million) of Massachusetts exports to Canada are subject to a 10 percent tariff, and, believe it or not, pizza and quiche are included in that. I didn't know that, that pizza and quiche were included in that, 10 percent tariff. So again, our economies are integrated and in my opinion Canada should have a permanent exemption, but we will talk about that today.

So without further ado, let's start the questions. Number one -- we are going to do it for all four panelists -- How are the current NAFTA negotiations affecting you and how do you see the region's progress being stunted, or not, by the current discussions?

Jim...?

**Mr. James Knott Jr., CEO, Riverdale Mills:** First of all, thank you for allowing me to speak here today.

NAFTA for Riverdale Mills basically does not exist. They have taken the "F" out of NAFTA because it's no longer free. And the 800-pound gorilla in the room for us are the tariffs and the tariffs keep growing. Riverdale Mills produces a lot of steel that's used for security mesh, utility protection, school protection, embassies. We also make mesh for lobster traps, crab traps, oyster trays. A lot of that is produced from Canadian steel that moves up to Canada for use in the marine industry and the tariffs are very difficult for us to deal with because what's happening to us is finished goods from Europe and from China are coming into the United States duty-free, but all the inputs that we have been using between Canada, the steel, we buy a large amount of steel from Canada and all those imports come in with a tariff on them, so we are basically at a 25 percent disadvantage before we even start producing steel. So from our perspective, we would like to see the tariffs removed as quickly as possible so that we can get back to a global footprint where we can compete in a much more reasonable manner.

**Jon Sorenson (Moderator):** Excellent.

Raymond...?

**Raymond Bachand (Institut du Québec):** Just to tell you where I come from, I have been in the business sector most of my life as Chief Development Officer and CEO and then seven years in politics as Minister of Industry when Philippe, Premier Couillard, was Minister of Health, and then I was Minister of Finance and now one of my mandates is Québec chief negotiator on mandate.

How is it affecting the economy? You know, when you look at global statistics, the economy in the U.S. and Canada is going very well, very strong and we are close to full employment, certainly in Québec and mostly over the countries, but now there are uncertainties and there are high uncertainties. And now with tariffs there is disruption in the value chains and there are stalled investments. You don't see them. I see them because in my mandate I'm going around to CEOs of large and small companies, service industries, U.S. companies also because

you have organized a lot of elements, and basically, you know, uncertainty, you just stop your investments. You don't push on to the U.S. -- a few do, but basically you just wait.

And the world is moving on, because Europe, Australia, China, they are not waiting on the President as he weakens the greatest trade agreement that was existing. This trade agreement is before WTO. This was the basic agreement by which the world learned how to do free trade agreements. I put a small chart on the Governors' table, basically not to go necessarily through the numbers, but what President Reagan and Mulroney did with the FTA, Canada-U.S. first, and then President Bush and Clinton and our prime ministers, we now have \$700 billion, in round numbers, in basic trade between Canada and the U.S., balanced trade. If you look at the numbers, basically it's balanced, you know. U.S. is in surplus, but it's a few billion dollars. It's balanced in agriculture. And if you look -- people don't look at the bilateral investments, they only look at trade numbers -- there is more than \$700 billion of investments between Canada and U.S., Canadian companies and U.S. companies -- \$700 billion. And that was the great success of NAFTA, it has basically integrated our economies, getting them to work on a global scale. Because if you are integrated then you are more productive, if you are more productive you are more competitive and you can compete in the world market much better.

So this is serious. We never thought Canada would be, as you said, in there. We thought it was all about Mexico. Obviously it's not. But, you know, 200 years of relationships and friendships and cooperation and security arrangements and energy security, there is more than 175 times 30 energy transmission electric lines between Canada and the U.S. Now, at the end of the day the relationship is going to stay and we shall overcome basically what's going on, but it is a serious situation and competition is -- and we will see that in numbers in two quarters, three quarters of a year.

**Jon Sorenson (Moderator):** Maryscott...?

**Ms Maryscott Greenwood, CEO, Canadian American Business Council:** I love it when you a Negro spiritual, it makes me feel at home being here. We shall overcome.

Bonjour, tout le monde. Ça me fait grand plaisir d'être parmi vous aujourd'hui.

I love coming to Vermont. I married a guy from Vermont. I am a flatlander, but I married a guy from Vermont and, you know, I basically think of Vermont as

Baja, Québec, you know, or, as Senator Leahy says, in Vermont, this little State of Vermont, they look at Canada and think about that giant to their North. So it's all about perspective.

I want to give a little perspective on where I think the trade talks are right now. I come from Washington and the Canadian American Business Council spends a lot of time, our members spend a lot of time on these things and the tariffs are terrible, there is no doubt about it, and they are designed to be terrible. We are at the point in the hockey game where we have dropped the mitts and dropped the gloves and we are duking it out, you know. And USTR, the trade negotiators are the enforcers on the ice, I would say the ambassadors are the ones that are supposed to score, you know, so everybody has their role.

What's interesting about where we are at the moment in these negotiations is, you know, for the last 20 years or so that I have been paying attention to Canada-U.S. relations, Canada, the Canadian narrative has more or less been, we are your best friends, we are your closest -- best allies, closest allies, closest trading partners, and whenever the United States would say that or recognize that, that sort of reaffirmed a narrative that rings true to Canadians I think. And when President Trump was elected, you know, he is the disrupter in chief. He -- you know, say what you will about him, he said he was going to do all of these disruptive things that he is now doing. So it's not really such a surprise that he is threatening NAFTA, he said he would do it. So it's uncomfortable and it's designed to be that way because what he said when he was campaigning once, I'm going to get a better deal for the American people, whatever that definition of better deal is.

So, you know, where we are now is we are in a situation where the President -- everybody has had a chance to adjust, it's been like a year and a half, and we have gone through these different phases. The Canadian approach was we are going to engage constructively, we are going to come to the table, we are going to roll up our sleeves, we are going to have dialogue, and the President -- but we didn't get to the end part where you really make all the hard choices. So the real horse trading never began before the congressional deadline to get a new deal approved went south. So we never got to the point of let's really negotiate. So I think the Canadian position made sense, which is you are not going to negotiate against yourself, you are not going to give anything up, but...

So that was May. But the President continues to want to get more leverage and so he will do things that are designed to make Canada feel uncomfortable, right? Like this is what he does and it doesn't feel good because it is not supposed to feel good. And the Canadian countermeasures, the Canadian tariffs, are designed to maximize, inflict the most pain on the U.S. economy and the least on Canada, with the hopes that U.S. policymakers will say to the President, this is unsustainable, this is crazy.

So we are at a point where we are in escalating tensions. The United States and Mexico are engaged in talks. The Canadian media kind of lost its mind, oh my God, where is Canada, are we being frozen out, what's happening? And the President, you know, again tweeted a couple of days ago, "Talks with Mexico going well, Canada not so much". And it was like, oh God, that's not helping, but it's not designed to.

So I think where we are at this moment is Ambassador Lighthizer, in my opinion, made a decision early on that he didn't want to deal with two different congresses, meaning the Congress we have and then the Congress after the election, so I think he is playing a longer game here. You wouldn't get that from the press narrative because we keep having these deadlines. Like the May deadline came and went. We now have this deadline before AMLO, the new President of Mexico, takes over. Canada won't get a deal before then. We will have a new deadline before the lame duck of Congress. Like all these deadlines will come and go and if we don't have a deal by then, people are worried, there is uncertainty. That's not good for business. None of this is healthy or good or productive, but it is where we are.

So I don't think Ambassador Lighthizer really wanted to have to deal with two congresses, because whatever deal is negotiated, if hopefully we get some sort of a modernized agreement, whether it's a modernized Auto Pact, whether it's a modernized NAFTA, whether it's a free-trade world, whatever it is, has to go before Congress for an up or down vote. So there is this other hoop that has to be jumped through. So, in my opinion, he is playing a longer game here and in the meantime the President is getting political credit for beating up on Canada, political credit for saying he would do what he said he would do.

One last point I will make, you wonder when the chickens are going to come home to roost and all of these tariffs and all of this economic pain will be felt and when the President will say, okay, this is bad. I think he has

made the decision that for all of the bad economic pressure in the United States, it's worse everywhere else, so we can outlast everybody and in the end get a better deal.

So if you make tractors or farm equipment, you are subject to steel and aluminum tariffs and you are subject to retaliation from China, who we are also fighting with right now, not just Canada, so your equipment is more expensive in your market, it's harder to sell to your market. That is an existential threat to farmers in America. But if you look at the polling, they are still with the President, like in numbers of 60 percent. Why? Because they think at the end of this we are going to get a better deal.

So he is trying to get through the midterms, everybody is trying to get through the congressional midterms. When we come out of that, hopefully everyone will come to the dance, including Canada, with something to offer and we will get to the hard issues and we will get a deal done. That's where I think we are.

**Jon Sorenson (Moderator):** Thank you. Great. Thank you.

Robert....?

**Dr. Robert Letovsky, Business Administration Professor, St. Michael's College:** Is this working? I think it is.

Premièrement, j'aimerais souhaiter la bienvenue à nos invités des provinces et des états voisins. J'aimerais aussi remercier les organisateurs de cet événement pour l'opportunité de participer dans les discussions.

Anyway, I realize that this is not a collective therapy session or a taping of Dr. Phil, but that said I'm going to make a public confession, which is I detest pronouns: you, us, we. I think that goes back to years ago in my department -- it's much better now, but back in the day, Jon, we had several people, let us say, who weren't pulling their weight. So in a department meeting whenever I heard someone say, "We are going to", "Let's...", I would figure out that that was code for saying, "Robert is going to do it."

--- Laughter / Rires

**Robert Letovsky (St. Michael's College):** So I have developed the habit whenever I hear someone using the word "we", I stop and I say, "Timeout. Who is we? Am I part of we?"

So having said that, I'm going to be a bit of a hypocrite. Imagine that, a hypocritical college professor, you never see that. I'm going to use the word "we" to

suggest that -- and I recognize the world would be a better place without NAFTA. I guess I'm obligated to say that or I won't be invited to dinner. But I think that NAFTA to a certain extent is irrelevant and I hope to make a quick point on the first level and then Jon will come up to the second question later.

What I mean by irrelevant is not that it would be good if NAFTA is ended, but there are things that the provinces and the states can and should do. If you thought of us as a we -- I'm not suggesting, by the way, a political union. That is ridiculous and absurd, and in any event there are about 10 people sitting in front of me, if we could pull that off today, you would be unemployed. Governor Scott, don't worry, you would keep your job, you would be the combined Premier and Governor. By the way, I live on the other side of the mountain, I file Vermont taxes, I have to say that, so think of me as a hostage speaking under duress. But I'm saying if we could think as a we, even though we are not really a we, could we compete more, could we approach certain sectors differently?

I know on Sunday I got the news that Governor Scott and Premier Couillard signed an agreement of cooperation, including tourism. Well, here is one for you. If we were a we going from Newfoundland west to Québec, down to Vermont, up through Massachusetts, New Hampshire, Maine, anyone who has travelled would agree with me, we have a diversity of attractions that no country on the planet has. We also have two international airports, Boston's Logan and Montréal's Trudeau with nonstop service to the east coast of China, Hong Kong and beyond. Could we talk about working together to somehow tap into the last frontier of world tourism, which is the middle class of Asia?

Another one very quickly. Montréal has a well-developed aerospace cluster. One is starting to be developed here in Vermont. At the end of September in fact they are getting together here in Burlington. Who knew there were 200 aerospace companies in Atlantic Canada, not to mention Connecticut with United Technologies?

Could we somehow figure out a way -- again, it's not a merger, but could we think a little bit as if we were a we. And that does not depend on the outcome of the negotiations in NAFTA. Again, to repeat, because I don't want to be kicked out of dinner, the world would be great if we have NAFTA, but you shouldn't wait for that to look at ways that you can work together as a we.

**Jon Sorenson (Moderator):** Great. Thank you.

So, Jim, you are in the trenches. You are actually dealing with buying steel, aluminum every day. Again, you see the steel lobster traps up and down the coast. How does this affect your cost and how is it affecting your business?

**James Knott Jr. (Riverdale Mills):** Well, first of all, about seven weeks ago we placed an order for steel from Turkey for four truckloads.

**Jon Sorenson (Moderator):** Turkey?

**James Knott Jr. (Riverdale Mills):** Yes. Not that we don't like Canadian steel. We love Canadian steel because we think it's high quality and it works very, very well in our process. But this was Turkish steel that we went under contract for and it shipped and it's on the water and it's due to arrive in port in three days. That had a value of \$140,000 on it and today the tariffs are \$70,000 on that \$140,000 shipment. Because it is under contract we are obligated to pay. So that is a very difficult situation for us.

And it's very similar to Canada. We like to buy steel from Canada because they make a very high quality product that works well in our process, but we are unable to buy it tariff-free. What has happened is the U.S. firms have taken the price of their steel and they have run it up so that it matches the price of the tariff ceiling, even though there is no reason to do that other than to exploit the fact that the tariffs are in place. And there is a lot of demand on U.S. steel, so it makes it very difficult to buy also. And the Canadian mills seem to have a little bit more capacity than the U.S. mills. So the whole situation has become very, very difficult for us to operate.

We export 45 percent of what we make and we need these low-cost imports -- or inputs. We need low-cost inputs so that we can compete on a global footprint. And when you add these tariffs to the inputs that we are using from Canada and all around the world, we have a very globalized supply chain, it makes it difficult to compete.

**Maryscott Greenwood (Canadian American Business Council):** Can I pick up on a point that you both made, just because it dawns on me.

We in this room probably can't solve NAFTA and walk down off the tariffs and that's a challenging story and it underscores why we need to get off of this retaliation, but there are things that state and local leaders really can do during the economic difficulty that we face and that's getting worse and I will just give you a quick example.

There is an aluminum company called Rio Tinto, they are based in the U.K. and Australia, and they have two big facilities in North America. One is in the Saguenay region of Québec and one is in Kitimat, British Columbia, and I have had the privilege of going to both of them in the last year. They actually are producing low carbon aluminum, which is amazing when you think about those words going together, because in order to make aluminum you have to have a lot of energy, it's really hot. But anyway, they are producing the cleanest aluminum in the world.

So I was just there last week at the Kitimat facility in British Columbia and talking to the plant manager, you know, how is it going, how is business, whatever, and the local taxes that he pays to the Kitimat region are killing him. Like they are the biggest employer there, they are not going anywhere, you know, they have invested billions of dollars, they have been there for 50 years, but the tax, his local taxes are something like \$21 million and they go up 5 percent a year. So he said, "Like I need you to help me explain to the Mayor and the Council that this is unsustainable." And I said, "Well, they are just going to look at you and see this big multinational company, a couple of million, you can afford it, you know. But here's an idea, how about present it to him this way: Rio Tinto has the opportunity to -- it can invest anywhere it wants. If it wants to invest in North America it has two choices, Québec or B.C., and both are similarly situated in access to hydropower, incredibly great trained workforce, you know, skills, all of that. The relative tax burden in Québec is much lower than B.C. So what you do, it's like you are two people walking along in the woods and they see a bear, like if I'm walking with you and I see a bear, I don't have to outrun the bear, I just have to outrun you."

**Robert Letovsky (St. Michael's College):** You won't.  
--- Laughter / Rires

**Maryscott Greenwood (Canadian American Business Council):** So what Rio Tinto is going to say to their local government in Kitimat is: "As local policymakers, you know, the decisions you make impact whether or not we invest. If we are coming to North America we are in competition with Québec."

So there are all kinds of things short of renegotiating NAFTA that have to do with the business climate and whether it's interprovincial tariffs or trade or whether it's other impediments to business, now it seems to me is a good time to really look at that, because business is having to sharpen the pencil. So to the extent

that you guys are working together is amazing. To look at ways you can be more economically competitive as a region, notwithstanding the craziness at the federal level, I think that's incredibly valuable, because at some point we will get to the other side of these tariffs and how are we doing will be the big question, how are we doing as a region.

**Jon Sorenson (Moderator):** Raymond, you are ready to -- you are chomping at the bit, as they say.

**Raymond Bachand (Institut du Québec):** Before because she asked me to specifically talk about the process of negotiation, so I will do that in two seconds.

But, you know, there are 9 million Americans today that are working because of NAFTA with Canada. It's 14 million if you take Mexico. We have only one problem, they don't know. Basically they don't know and that's why the mobilization that has been going on -- because when the truck leaves the factory, you know, it's Federal Express, UPS, Bachand Delivery, they don't know, especially in the middle of America, where the products are going. So that is why the governors' role is so important, that is why the U.S. chambers' role is so important, to basically locally make people realize so that the midterms, in the midterms the Congressmen also are going to be solicited.

How are the negotiations going? Basically if you take a sports analogy, okay, we had a first half of the season, negotiations started August last year and the first half of the season until April-May of this year: eight rounds, 300 negotiators, now there are 30 chapters in that, there was more than 1,000 pages to be done, competent people all over, and progress on -- 10 chapters are closed, 10 should be closed (the U.S. has blocked the closing for technical reasons of 10 of them) and 10 are still outstanding. In the fall the U.S. came with what we call politely unconventional proposals like the sunset clause, saying, well, this treaty is only good for five years, or basically we don't want arbitration anymore, Chapter 19 is out, or dismantle supply management in Canada, the rules of origin in automobiles, there's nine of them. And these were kind of put aside and negotiations continued.

In May, NAFTA was supposed to be in Washington and then Secretary Lighthizer basically made two decisions. One is we will concentrate the negotiation at the political level between him and the two Ministers, Minister Freeland and Rondeau, and we will only talk about automobiles. Basically, whatever you hear, there is absolutely no progress since May to August this year on all the rest of the subjects. Politely they discussed them 20 minutes,

agreed to disagree, they are put aside and everything is on automobile, which is okay with Canada because it is the number one issue for the President and the United States, basically the jobs in the largest industry in the country here. And Mexico is what -- we are trying to stop the erosion to Mexico on a long-term basis. So Canada has exactly the same interest as the U.S.

So the discussions are going on bilaterally between the U.S. and Mexico. Since May there have been 15, 17, 20 meetings on the automobile, fixing the rules of origin, getting up the North American content. Canada played a big role in breaking the impasse by saying, okay, let's count steel and aluminum, if it's made in North America it counts for more, let's change rules and R&D counts and basically innovation counts.

Now, when that is solved, or nearly solved, and it's coming to that if you read what's going on between the two countries, that is the second half of the season, then we will get into the playoffs. And the playoffs basically are the eight issues: sunset clause; investor-state dispute settlement; de minimus threshold, which is very important for the coalition of service industries in the United States; government procurement for the U.S. proposal is basically the proposal on the table, Canada and Mexico would have less access to U.S. government procurement than any other country in the world. Basically that's what was put on the table in October-November. So you don't get mad, Canadians don't get mad, we are nice guys, you smile and you say, okay, we will talk about that later. No elimination of --

**Maryscott Greenwood (Canadian American Business Council):** Not that nice.

**Raymond Bachand (Institut du Québec):** -- Chapter 19 and no elimination of the cultural exception, but the real question is does the President -- you will have a lot of noise until the end of August because the new President of Mexico would like this to be signed before the 1st December, the U.S. legally cannot sign without a three-month notice, so if you want to sign on November 30th you have to agree on August 30th. So we will have a lot of noise that we can't agree because our Canadian friends don't agree on these things.

I strongly believe -- two comments. I'm not sure you can -- everybody can read the President, nobody has any insight into his mind. I'm not sure he really wants to solve this before the midterms because it's maybe politically better for him to continue saying I'm standing

strong and not having to concede on, well, there is no sunset clause or -- maybe he wants to, we will see about it, but certainly it's clear that Canada at the end of the day is not going to destructure its economy for what has been the best trade agreement for Americans and the jobs created in the United States, and in Canada for most of us, and the three of us expanded.

So the playoffs will be the playoffs, we will see where it ends, but the difficulty of this negotiation, and I see my friend the Consul General in Montréal, is basically this is an unusual negotiation. Normally your chief negotiators can talk to each other and they have a mandate. And that's how we did Europe and how we did the Trans-Pacific. In this case your negotiators, who are highly competent, they don't have a mandate. And to be very candid, because I am known to be candid, I'm not in politics anymore, I can say what I think, Ambassador Lighthizer, who is very tough on these issues right now, is he tough because he's tough or is he tough because he doesn't have a mandate? So it's very difficult to close a negotiation when you can't open up with someone who can basically close the deal. That will be one of our common challenges going into the playoffs, whenever they start. They could start next week, they could start in three months.

**Jon Sorenson (Moderator):** Robert, you started to talk about taking a different approach to NAFTA, maybe disarming it. Give us a little insight there.

**Robert Letovsky (St. Michael's College):** Well, Jon, let me cut to the chase. To reiterate, I hate pronouns. I am going to use the word "we" however, or "us", to say to a certain extent all this negotiating and all this jetting around from place to place and all of these articles and all of this research is unnecessary. Now, let's remember, three weeks ago, Jon, President Trump stood next to the President of the European Union, Jean-Claude Juncker, outside the White House and he said his ultimate objective was to end all tariffs and non-tariff barriers for the whole world. Well, guess what? If he was sincere, he could do that right now and, you know what, we would be better off. And he does not have to seek Prime Minister Trudeau's permission, he does not have to speak to President Obrador, he does not have to call President Juncker or anybody else. He could do it and we would be better off and, Premiers, Prime Minister Trudeau, if you brought him, could open Canada up to every country in the world. By the way, I should qualify that with one major

exception, we know who it is, and you would be better off. Okay?

So the fact that when I say we would be better off does raise the question who is we. And I recognize this might not be great politics, but it's not as if there are any politicians in the room with us thinking about reelection. I realize maybe the politics of this are tricky, but the unfortunate reality is NAFTA, TPP, whatever is the successor at the end of the day is unnecessary if we all recognized we could declare victory and open our markets up to products from anywhere, again with that one exception, and we would be better off.

You know, Jon, there is a good expression in French, "Les absents ont toujours tort", those who are absent are always wrong. So when you are on a committee and someone misses a meeting, they get the crappiest assignment for next time. But who is absent from all this talk? Our consumers. No one is speaking for consumers. I asked my students, "Do you buy steel," and they look at me like... And I say, "You are not going to want a car when you graduate? Mom and dad are going to drive you around forever? You're not going to want your own condo or house? You are going to buy a stove, a fridge?" There are a heck of a lot more consumers buying steel, Jon, than there are people making steel.

And Premiers, I have relatives or friends in every province. There are a lot more Canadians who like to pour milk in their coffee, enjoy ice cream on a hot day or have a nice glass of wine with some cheese than there are dairy farmers. So I would suggest to you, let's at least be honest with each other. Let's stop insulting people's intelligence and let's just call this whole edifice, this whole enterprise for what it is, it is a giant shell game where most of us get immiserated in order to placate a few politically potent interest groups. In that context, again to reiterate, I suppose the world will be better with NAFTA than without it, but let's not lie to each other about what this really is.

**Raymond Bachand (Institut du Québec):** Just in five seconds.

**Jon Sorenson (Moderator):** Sure.

**Raymond Bachand (Institut du Québec):** We are at zero tariff between Canada and United States for everything except some quotas, yes in dairy and sugar, but basically zero tariff, and Canada is there with Europe. When we deal with the European Union it's zero tariff for Canada and Europe on everything except a few things.

**Maryscott Greenwood (Canadian American Business Council):** Except that we are fighting right now and we have tariffs now on things like water heaters in Tennessee.

**Raymond Bachand (Institut du Québec):** Yes, but they are not in NAFTA basically. Basically these issues are the countervailing duties and things like that. Every country has the right to protect itself against illegal, unfair trade and that's what he's using.

**Maryscott Greenwood (Canadian American Business Council):** Okay. So --

**Raymond Bachand (Institut du Québec):** You don't have to change a word in NAFTA, basically it's zero tariff. And there are tariffs, but you don't have to change a word in that agreement, it is a zero tariff agreement.

**Maryscott Greenwood (Canadian American Business Council):** So let me just respectfully disagree with two people.

First of all --

**Jon Sorenson (Moderator):** Here we go.

**Maryscott Greenwood (Canadian American Business Council):** First of all, Ambassador Lighthizer has zero daylight between what he says and what the President wants. He is the guy that throws red meat to the President and the President loves it and if Ambassador Craft were here right now she would be saying -- there she is. No daylight between Lighthizer and the President, right? Yes, she's nodding. So he does have a mandate. If anybody is aligned with the President of the United States on this it is Ambassador Lighthizer and I realize that is not a great thing to hear because you wish it weren't true. However, it is true.

**Raymond Bachand (Institut du Québec):** But he has no mandate to compromise.

**Maryscott Greenwood (Canadian American Business Council):** He will compromise. He will compromise when we get to the end game. And what has Canada offered by way of compromise? Canada had some interesting ideas on auto, so that's useful, but where are the compromises? Anyway, so we will get there presumably, and Lighthizer has a mandate, as does Chrystia Freeland, right? She has a mandate too. So I don't think that's a problem.

And with great respect to the Professor, a zero tariff world would be great, and the President did mention it, he mentioned it in Charlevoix at the G7 and several of the world leaders said, yes, let's go. So I don't think it makes sense to unilaterally disarm, but if we want to have a conversation about no tariffs, yeah, we can have that.

And by the way, again, this President is into big, radical, disruptive ideas and so I think he could absolutely see a world in which somebody says, you know what, let's not do NAFTA, let's do no tariffs in North America, none Trans-Atlantic, none Trans-Pacific, and let's have a whole new world of no tariffs. That's really hard, that would keep you employed forever, which I guess is a good thing for the law firm.

**Raymond Bachand (Institut du Québec):** No.

**Maryscott Greenwood (Canadian American Business Council):** I could see the President doing that, but it will be a question of political will post midterms.

**Robert Letovsky (St. Michael's College):** A big asterisk there again, this is not a foreign policy forum, there is one big exception to opening us up.

**Maryscott Greenwood (Canadian American Business Council):** Timing.

**Robert Letovsky (St. Michael's College):** Well, you really mean the Chinese dictatorship --

**Maryscott Greenwood (Canadian American Business Council):** Right. Right.

**Robert Letovsky (St. Michael's College):** -- and that's very different.

**Maryscott Greenwood (Canadian American Business Council):** Right. Right. That's right.

**Robert Letovsky (St. Michael's College):** And so we will have to have that conversation at another time.

**Maryscott Greenwood (Canadian American Business Council):** Right.

**Robert Letovsky (St. Michael's College):** And again, for those who are thinking it, yes, the hypocritical tenured college professor -- so let me restate what I said. I don't know -- when I say we will be better off if you opened up, I don't know who is among "we". I know darn well I will be better off, okay, and as an adult my role in life is to look after my welfare and that of my family. But I think there is a lot more of "I"s than there are of the interest groups that are taking over this process.

**James Knott Jr. (Riverdale Mills):** Tariffs in the end are really just an exploitation of the consumer.

**Maryscott Greenwood (Canadian American Business Council):** Yes.

**James Knott Jr. (Riverdale Mills):** Yes. That's the ultimate end game of it and everybody will be worse off. It's going to drive inflation, it will drive interest rates and it will drive investment down and sooner or later they will come back to roost.

**Maryscott Greenwood (Canadian American Business Council):** That's right. We are not --

**Jon Sorenson (Moderator):** So we are the talking heads. Right here is real life, real answers.

**Maryscott Greenwood (Canadian American Business Council):** Yes.

**Jon Sorenson (Moderator):** He is in the trenches, he is living it. Now, you said the other day you can't -- your costs have gone up approximately 50 percent --

**James Knott Jr. (Riverdale Mills):** Correct.

**Jon Sorenson (Moderator):** -- and you can't pass that on to the end user.

**James Knott Jr. (Riverdale Mills):** Can't pass it on.

**Jon Sorenson (Moderator):** Can't pass it on. So that puts pressure on your operating income; right?

**James Knott Jr. (Riverdale Mills):** Yes. You can't invest in capital equipment, you can't invest in your employees, you can't invest in your supply chain, you can't invest in your customers. It makes it very, very difficult to grow the business and to prosper.

**Jon Sorenson (Moderator):** I mean, this is the real deal and he is feeling it firsthand.

Robert, you wanted to...?

**Robert Letovsky (St. Michael's College):** I was just going to say we saw Jim, it was on the NBC Nightly News with Lester Holt last week, it was very eloquent. I just said, "If Lester Holt calls you back, make sure he is inviting you to the Nightly News and not Dateline, because Dateline would mean you are probably going to prison."

--- Laughter / Rires

**Robert Letovsky (St. Michael's College):** But, you know, we had this conversation last week.

**Maryscott Greenwood (Canadian American Business Council):** PR advice from the professor.

**Robert Letovsky (St. Michael's College):** I'm glad Raymond said he's not a trade lawyer. The word "trade law" is a perversion and trade law itself -- people hear the word "trade law" and they think, well, I watch CSI or Blue Bloods, I know the law. Trade law is perverse and starting with exactly Jim's point, imagine a bank robbery where the police show up on the scene and they shoot the customers, that's essentially trade law.

And those who have been following the debacle with the CSeries from Bombardier, had the International Trade Commission ruled in Boeing's favour, that's exactly the kind of plane that would fly here to Burlington. That plane would have gone up in price from \$50 million to

\$300 million and as everyone on the planet except the majority in the Vermont legislature knows, corporations pay nothing. It's either the workers suffer lower wages or the owners suffer lower profits -- by the way, by law 75 percent of shareholders in airlines have to be Americans -- or the customers pay higher prices. So those planes would have gone from \$50 million a pop to \$300 million. Where is the justice there?

**Jon Sorenson (Moderator):** Maryscott...?

**Maryscott Greenwood (Canadian American Business Council):** I mean, meanwhile, back to NAFTA. Look, I mean we are in a situation that is uncomfortable by design and we have to find a way to climb out of this retaliation mode that we are in. It isn't good. It's not comfortable and it's designed to be uncomfortable. So I agree, but it is going to take a resumption of goodwill efforts. It's going to take -- you know, it is not enough for Canada to say, darn it, we are so nice, we are your good friends, we are being treated unfairly, it's time to negotiate, so it's time to bring something to the table and get it going.

You know, Australia doesn't have steel and aluminum tariffs. Why not? Is it because Joe Hockey plays golf with the President more often than David MacNaughton? Not exactly. David MacNaughton is a good golf player and he has opportunities. Australia has taken a different approach to steel and aluminum tariffs. We should look at what they have done, look at the outcome.

You know, the Europeans are now negotiating with the Trump Administration to avoid auto tariffs. What I am suggesting is the pattern of this President is pretty straightforward. If you don't negotiate, he will increase the pressure and if it causes pain in the United States he is okay with that because at the end of the day he thinks he's going to get a better deal. I am not trying to be an apologist, I'm trying to just say this is the reality of the negotiation we are in and, you know, Mexico is coming to the table in a big way because they are motivated to get a deal done before the new President takes over. That makes sense and they are negotiating in good faith. They are making concessions on things like labour, wage rates. So you have to, you know, at some point stop complaining about it and have a real conversation about what are we going to negotiate and what does the future look like.

One last thought. I don't think we actually have to get to a new NAFTA. I think we could get a new Auto Pact. The Auto Pact was written in 1965, autos are being negotiated, as Raymond points out, so let's have a new Auto

Pact that's trilateral and let's just agree to not -- to leave NAFTA as is, not modernize it, allow the President to claim victory in Michigan and some other key states, allow the Canadian economy, particularly in Ontario so dependent on the auto services area, and allow Mexico, AMLO, the new President of Mexico, to take office. Like trilateral Auto Pact, leave NAFTA the way it is, everybody gets to walk off the cliff and in return for that no more steel and aluminum tariffs and no more Canadian or Mexican countermeasures. That's my proposal.

**Raymond Bachand (Institut du Québec):** I know you want to move to the question period, but I have one --

**Jon Sorenson (Moderator):** Go ahead, please.

**Raymond Bachand (Institut du Québec):** -- on your last comment, which is the last one you were asking.

Basically, you know, the world has changed in the past 25 years tremendously with the rise of Europe, with the rise of China and the Asian countries. How do we North Americans respond to that, by retrenching on a country of 350 million people or by integrating more, more than we did in NAFTA? Basically for more integrated, less barriers, more mobility of people, we will be more competitive in the world. It's let's make North America great again that we have to look at. It's North America that is a competitive tool against China and against the others. You have the Canadian natural resources. You have Mexicans as a low-cost producer and we need a low-cost producer in our value chain. Much better Mexico than an Asian country because we get North America stronger and stabilize that democracy and our borders. And let's just continue, because NAFTA and because of governors and senators basically -- there is not one Senator and not one Governor in the States that has said I want to get rid of NAFTA.

**Maryscott Greenwood (Canadian American Business Council):** Yes.

**Raymond Bachand (Institut du Québec):** And I think that is our strength. There is not one Senator that has said they wanted to get rid of NAFTA. So that's basically...

**Jon Sorenson (Moderator):** Jim, any final thoughts before we...?

**James Knott Jr. (Riverdale Mills):** I think the NAFTA framework is important to keep and it will help protect jobs, American jobs as well as Canadian jobs, and I think we should continue, maybe make some changes, but the framework is right.

**Jon Sorenson (Moderator):** Okay. We are going to open it up to the premiers and governors.

**Brian Gallant (New Brunswick) (Co-Chair):** Yes, great. Thank you very much, everyone. Lots of energy from the panelists, so that's good.

So I'm going to pass it over to my colleague, Monsieur Couillard.

**Philippe Couillard (Québec):** Thank you. That was extremely interesting. Thanks to all the panel members.

One thing that has been missing, I would say probably on both sides here, is accurate listening to what the other party says or feels about. I will go now from our point of view and deal with the agricultural sector.

The reality is that both countries immensely support their farmers. The U.S. does it through subsidies, you know, subsidies for water, subsidies for animal feed, this and this and that. And we chose for dairy, particularly dairy, the supply management. As a point of information, I was with, I would say, a senior member of the administration a couple of weeks ago and I was asked the following. He said, "Are you telling me that Quebeckers" -- because I will just restrict my remarks to Québec -- "are perfectly happy to pay the milk more in order to support the farmers?" I said, "Yes." And this has been shown again and again and again.

So this is something that will be defended, you know, very, very strongly because this is our view of what a family-size farm should be about and what type of agriculture it will need to be. We are not telling the U.S. what type of agriculture they should have. We are entitled as a sovereign country to run our country the way we want and look at the family-size farm as the ideal we want to aim for, somewhere where there is a family name on the silo and the son or the daughter can expect, reasonably expect to succeed the father one day.

So that's an area where I think it's going to be extremely difficult to advance. I want to make this very clear. And also, I like what you said, you know, let's restrict this to auto, apparently there is a way, there is a past agreement on auto --

**Maryscott Greenwood (Canadian American Business Council):** Yes.

**Philippe Couillard (Québec):** -- and let's leave the rest, which is not as -- you know, Raymond, with these numbers, how can you say that any country is disadvantaged compared to the other one? It's basically a balanced

relationship. Maybe that's the way hopefully somebody will have listened to what you said.

**Jon Sorenson (Moderator):** Any comments?

**Raymond Bachand (Institut du Québec):** Well, agriculture is --

**Maryscott Greenwood (Canadian American Business Council):** Questions or compliments, that's how we do it in my house.

**Raymond Bachand (Institut du Québec):** Agriculture is interesting because the same thing happened with the Europeans, they said, "You have to get rid of supply management or we are not going to start negotiating with you." I was there as a Minister for Jean Charest and then after, every time I met the Ambassador of Europe, I said, "Yes," "No, it's not going to happen, my Premier is not going to resign tomorrow." And then one day I said, "Fine, we will put it on the table", but of course you put all your agricultural policy on the table. And he started laughing, he said, "Yes", knowing that at the end of the day nothing like that would happen. It's the same thing. Supply management is a balanced system in Canada with zero cost to the taxpayer. I am very happy as a taxpayer that it's a balanced system, but President Trump wants free and fair trade. So if you want to open up Canadian agriculture you have to open up with people that are not subsidized and I don't see Congress killing the Farm Bill or carving out all the subsidies to the dairy sector that are in the Farm Bill. It's just impossible for both politically in their territory to move on that.

**Maryscott Greenwood (Canadian American Business Council):** You have to decide -- it's not for me to say whether or not you need to compromise on your supply management program, but what I would suggest respectfully is you have to decide where you are going to compromise, you know. Because the Canadian position in all of the talks -- and again, strategically for the first half of the ballgame I think this position made sense, which is we are not going to compromise on anything because why would we negotiate against ourselves and, you know, the U.S. is going to move the goalpost and we don't really even know who we are negotiating with. But that was all the first half of the ballgame and if we are in the playoffs now --

**Raymond Bachand (Institut du Québec):** We are not in the playoffs yet.

**Maryscott Greenwood (Canadian American Business Council):** -- you need to suit up. I thought you said we were, we're in the playoffs.

**Raymond Bachand (Institut du Québec):** Once the auto is settled, we are going to the playoffs --

**Maryscott Greenwood (Canadian American Business Council):** Ah, then we are in the playoffs. So think about your playoff game, because you have to come to the table and if it's not supply management, what is it, what are you going to offer, and will Canadians support the government in a constructive dialogue or will there just only be this political outcry to stand up to Trump? You know, like where are the politics in Canada going to go and, you know, the business owners and the job creators, as they are called in the United States, really want this madness of escalating tariffs and retaliation and tension and, you know, one-upmanship to end.

**Raymond Bachand (Institut du Québec):** Compromises come in the last week or days of a negotiation. When we have a single -- so I'm not going to answer your question on the compromises of course, but when the signal is that this is -- and the President makes it clear that Ambassador Lighthizer has the mandate to solve it --

**Maryscott Greenwood (Canadian American Business Council):** He has the mandate.

**Raymond Bachand (Institut du Québec):** -- today. No. Every time --

**Maryscott Greenwood (Canadian American Business Council):** You are not offering anything that's interesting to him. He's going to up the tariffs until you do.

**Raymond Bachand (Institut du Québec):** You can't even --

**Maryscott Greenwood (Canadian American Business Council):** I'm just saying.

**Raymond Bachand (Institut du Québec):** You can't talk with the Ambassador without most of the remarks being inside U.S. trade or being to Congress or being somewhere. Very, very difficult to start talking compromise until you are in the end game, clearly not in the last five days of negotiations.

**Maryscott Greenwood (Canadian American Business Council):** Yes.

**RAYMOND Bachand (Institut du Québec):** There are 10 chapters to be closed. You know, there's 1,000 pages that have to be written.

**Maryscott Greenwood (Canadian American Business Council):** Unless you are going to do an Auto Pact --

**Raymond Bachand (Institut du Québec):** So we have to wait for that process.

**Maryscott Greenwood (Canadian American Business Council):** -- in which case we're done, yes.

**Jon Sorenson (Moderator):** Robert...? Robert...?

**Raymond Bachand (Institut du Québec):** But that's fine.

**Robert Letovsky (St. Michael's College):** I'm sorry to harp on the point -- not really --

**Maryscott Greenwood (Canadian American Business Council):** Are you going to talk about pronouns?

**Robert Letovsky (St. Michael's College):** No.

**Maryscott Greenwood (Canadian American Business Council):** Okay.

**Robert Letovsky (St. Michael's College):** I feel much better. I vented and I feel great.

--- Laughter / Rires

**Robert Letovsky (St. Michael's College):** I did want to say, I mean this is not a foreign policy forum. Governors and Premiers, national security is not in your realm, but I am going to urge you, you should not look at trade negotiations through the prism of arms control negotiations. And I realize that's an odd thing and I want to assure our Canadian friends this is not Robert's underhanded way of giving you a dig about defence spending, the numbers are the numbers, and when you speak to Prime Minister Trudeau tell him to spend more globally, we dealt with that.

--- Laughter / Rires

**Robert Letovsky (St. Michael's College):** And for U.S. citizens who follow arms control, the last treaty we negotiated and ratified in the Senate has been blatantly violated and the other side is quite proud of it, so it's not a great example, but let me urge you, don't look at trade negotiations the way we approach arms control. In arms control, if the United States has 2000 warheads, Jon, and we say we will dismantle 10 percent, 200, then it is perfectly reasonable to say to the other side, you dismantle 10 percent. But in trade negotiations -- and again I apologize, as the guy who has made his living repeating himself, let me repeat, we would be better off if we opened the country up and we don't have to present it as a favour to foreigners and too much of the rhetoric, certainly from the President, is he might do this big concession to be nice to whatever country it is, no, it is for us.

**Jon Sorenson (Moderator):** Fair. Fair. Additional questions from the governors, premiers?

**Dannel Malloy (Connecticut):** I'm afraid.

--- Laughter / Rires

**Jon Sorenson (Moderator):** Of us?

**Maryscott Greenwood (Canadian American Business Council):** This is amazing.

**Jon Sorenson (Moderator):** Of Maryscott?

**Dannel Malloy (Connecticut):** I'm afraid I won't hear anything different.

So, Jim, where were you on trade two years ago? Where were you on the issues that gave rise to American discontent on our trade policy? And you don't have to answer it for yourself, but on a broader base, where were the corporations, where were the people, where are the people who have made money, who are losing money or are simply adrift? Because I think a certain reality is that the vast majority of those companies aren't sitting in front of me. We have an American politic where it has become impossible to publicly disagree and I think that's a big part of the problem. And that may be because there just hasn't been enough pain yet.

**James Knott Jr. (Riverdale Mills):** Well, with respect to Riverdale Mills --

**Dannel Malloy (Connecticut):** And again, I was not being disrespectful to you, but as an example.

**James Knott Jr. (Riverdale Mills):** No. But in regard to Riverdale Mills, we are exporters, we export over 45 percent of what we make, so we have had a very globalized supply chain for many, many years and we try to continue with that globalized supply chain. When we can't acquire good quality inputs throughout the world we have a hard time competing globally.

Now, if you take some of the companies like Nucor Steel, for instance, which is a basic steel company, one of the largest producers of steel in the U.S., they are protectionists, they want people to buy U.S. steel. What's interesting about Nucor, if you look at them this year, in 2017 they had the best year in a decade and in 2018, because of the tariffs, they are predicted to have an 80 percent earnings per share increase. And when we go to Nucor for instance at this point in time, just recently last week we asked them to quote us and they said, "We can't quote you, we don't have enough capacity."

**Dannel Malloy (Connecticut):** But one of the interesting things to watch that's going on now is the -- I won't call it a collapse, but the swift decline of the value or the cost of lumber, which none of us would have predicted six months ago, and we are talking about a very sharp decrease at a time where we have seen this extensive

damage across the South of America and other parts of the United States if we consider Puerto Rico part of the United States. I do. These things are going to play themselves out very interestingly and relatively swiftly, except our politics are moving at a snail's pace and I think that that is a gigantic part of the problem. And you are absolutely right to make your point about Nucor, but there are more people who are using Nucor's product than are manufacturing. I honestly think part of the problem in the United States -- and, Scotty, this goes to your point, and actually Raymond it goes to your point, we are not hearing from them. We are not hearing from the politicians. You may get a denial in private, but you are not getting a denial in public.

**James Knott Jr. (Riverdale Mills):** I think you will hear from them sooner or later --

**Maryscott Greenwood (Canadian American Business Council):** Yes.

**James Knott Jr. (Riverdale Mills):** -- and the reason why, bad policy becomes bad politics pretty quickly.

**Dannel Malloy (Connecticut):** Yes, I agree.

**James Knott Jr. (Riverdale Mills):** And what's happened is if you're in the steel industry, like us for instance, we have three quarters worth of steel on the ground in inventory at all times and so we are able to absorb that for the first three months and then when we go off and start buying new product, now we have to raise our prices. So I think we are just getting to the point where prices will start to go up and you will see the consumers get a little angry and you will see some changes.

**Maryscott Greenwood (Canadian American Business Council):** I think that's right. The stockpiling, a lot of people bought materials in anticipation of various tariffs in retaliation. There is a lot of signalling by various governments starting with the United States, so I think the pain is delayed. I agree businesses are trying to keep it together as long as they can, but at some point I agree completely the chickens will come home to roost.

One observation I would just make about Canada-U.S. relations broadly, if I might, is for years the whole thing was Canadians saying to Americans, "You take us for granted," right? That's a thing you would hear, "We Canadians know everything about you and you don't know enough about us and you take us for granted." I think what we are seeing now is a little bit of the reverse of that. You know, suddenly you have a President and an administration that's like, "You're not so special. Sure,

you're our biggest customer, but we're also your biggest customer and, you know, I will negotiate with somebody else." And it's sort of more callous, not appreciating the history of the sort of unique bond that we have enjoyed all these years. And I think it is sort of like Canadians took for granted that the U.S., if it just focused long enough, would know how lucky we are and you have a government now that is sort of agnostic about it and over time maybe that will change, you know. But at the moment I think it's a bit of a shock to the system of, wait a minute, you don't think of us as your best friend, you know, we are not that special? It's like, no, we are just negotiating another deal. You are just another -- you are just another, you know, person across the table in negotiation. And that's tough to take. But once we sort of get through that feelings hurt part and we just to get to a negotiation, we will be okay. I think the economies will work out. I hate that businesses have to make very difficult decisions, though, about how to serve customers, whether or not to lay off workers, all that sort of stuff, because it's real life and the politics do need to catch up with the real life impacts of the decisions that are being made on these trade policies.

**Jon Sorenson (Moderator):** And in the seafood industry, think about it, because they have the issues obviously trying to export lobsters, you know, and tariffs associated with that and now trap price is going up. What is going to give there? I mean there have been numerous articles in the paper regarding Maine lobstermen and how they are just losing money hand over fist.

**Robert Letovsky (St. Michael's College):** Now we come to find out that a very large amount of the seafood that is produced in the -- or consumed in the United States is caught in American waters, sent to China for reprocessing and is coming back and it is being hit by the tariffs.

**Jon Sorenson (Moderator):** Right.

**Robert Letovsky (St. Michael's College):** I guess my concern is though, it's true, if the pain gets bad enough the politicians will hear about it, but I have to agree with Governor Malloy, there are too many people who are silent and certainly the consumers. And, Premier, respectfully I would say, you have figured out that my 92-year-old mother-in-law in Montréal will not picket your office if she is overpaying by 30 or 40 percent for her litre of milk, but we both know that your office will be picketed by whatever the cooperative is called tomorrow if

you were to come out in favour of some kind of opening. So I get that.

**Dannel Malloy (Connecticut):** Can I just have one?

**Jon Sorenson (Moderator):** Yes.

**Dannel Malloy (Connecticut):** There is one other thing. You know, in the northern hemisphere we are within 30 to 40 days of knowing how big the harvest is --

**Maryscott Greenwood (Canadian American Business Council):** Right.

**Dannel Malloy (Connecticut):** -- and I think you cannot underestimate the power of that other party that we are referring to --

**Maryscott Greenwood (Canadian American Business Council):** Yes.

**Dannel Malloy (Connecticut):** -- and their ability to buy selectively if the harvest is big enough, which I think, Scotty, goes to your issue about what happens in the by-election and the implications thereof. But by all appearances the harvest is going to be very bit and if I was on the other side of the Pacific I would be playing that right now. You know, I understand that the prices are set on an international basis, but purchases can be made locally.

**Maryscott Greenwood (Canadian American Business Council):** Absolutely. And, you know, all of this pain that is being caused domestically in Canada and the United States, people don't want to subsidize, like people don't want to be bought out or -- they just want to be able to compete and do what they do, you know. So the answer ultimately will be let's figure out how we compete together vis-à-vis the rest of the world. You know, it will be the ultimate irony if the United States decides -- sees the light and decides to join the Trans-Pacific Partnership in order to have a counter to China. That would be ironic. It would be fine, it would be good, in my opinion, as a free trader, but, you know, you could see that happening. Or again, the dramatic thing. We could see a tariff-free bloc versus that one economy.

**Jon Sorenson (Moderator):** Right.

**Maryscott Greenwood (Canadian American Business Council):** That's possible too.

**Jon Sorenson (Moderator):** Right. Right.

**Raymond Bachand (Institut du Québec):** At the end of the day the competitors try to --

**Maryscott Greenwood (Canadian American Business Council):** Right.

**Raymond Bachand (Institut du Québec):** -- and we have to get our forces together and the President is -- it's a good thing maybe that's going into pushing Europe and everybody to say let's join forces.

**Jon Sorenson (Moderator):** Right.

**James Knott Jr. (Riverdale Mills):** But in the seafood industry, or at least in the lobster industry the consumer is China. For instance, Maine lands \$430 million worth of lobsters a year and they export \$130 million to China, and Canada will probably benefit from this because they put a 25 percent tariff on U.S. lobsters, so what are the Canadian purchasers going to do, they are going to move their purchases to Canada --

**Jon Sorenson (Moderator):** Right.

**James Knott Jr. (Riverdale Mills):** -- until that supply dries up.

**Dannel Malloy (Connecticut):** Well, I want a Dutch-based supermarket chain to buy them at a discount and sell them in Connecticut.

--- Laughter / Rires

**Hon. Dwight Ball, Premier of Newfoundland and Labrador:** Thank you. I want to thank the panel for what has been a lively discussion, as some have already said, as you question each other about mandates and use of pronouns and so on --

--- Laughter / Rires

**Dwight Ball (Newfoundland and Labrador):** -- and even once I guess going as far to almost recommend what a new trade deal would look like, making mention of a new Auto Pact since the '60s, leave NAFTA alone, get rid of the existing tariffs, but it still leaves us, if you go into a negotiation, one of the things that you clearly do not want to do is box yourself into a corner and the lines are no longer blurred but yet they become a line in the sand that no one can actually find a way out.

A couple of things that we have noticed would be around trade dispute mechanisms and about sunset clauses. So if we were ever to get to a point where, as you say, we get into the playoffs and you come down to the last few minutes of the game, how would you anticipate, given where we were, where we had Canada and the U.S. kind of drawing lines in the sand on trade disputes and sunset clauses, so I wouldn't mind getting your comments given the fact that you have done a good job so far in challenging each other. So I would like to get your idea of what that could look like.

**Maryscott Greenwood (Canadian American Business Council):** Well, I could jump in. On sunset clause, nobody thinks it's a good idea for a trade agreement to automatically expire in five years, except for apparently the President of the United States, so no business person I know. You know, capital investments are made long term. So I think the compromise on that would be a five-year review, we will agree to look at it in five years, not that it automatically expires, and I could see that happening in the playoffs.

On dispute resolution, what doesn't make sense, I don't know if it has to be called Chapter 19 or what the label of it is but, you know, at the end of the hockey game when you are behind, you know, you can pull your goalie to have more guys on the ice, right, but you don't pull the ref. You know, you can't not have dispute resolution mechanisms, you have to have something. So maybe you tweak it a little, you call it something else, but there has to be a way to mutually resolve disputes. That's my own view.

**Dwight Ball (Newfoundland and Labrador):** Well, I suspect you do pull the ref, because what you do, you go to a trade dispute or a dispute mechanism that exists outside of the building to actually do the replay, which is actually videotaped and recorded and the decision to actually reverse the call on the ice, which would be the referee's call, so the referee in this case is taken off the ice.

**Maryscott Greenwood (Canadian American Business Council):** All right.

**Jon Sorenson (Moderator):** Raymond...?

**Maryscott Greenwood (Canadian American Business Council):** I defer. You win. If the WTO is the NHL in New York, this is all terrible.

**Jon Sorenson (Moderator):** Raymond...?

**Raymond Bachand (Institut du Québec):** I think on these issues there are ways probably to have a win-win. At the end of the day a sunset clause per se, as brutal as expressed by the President, no. But truly, it is true you shouldn't have a 25-year-old agreement, which you have never had a process to review it, and review it thoroughly and have organizations and people coming in and being heard to say how can we compete better with the world, what do we have to adjust? So maybe there are some lines there. Maybe there are some things in the arbitration process that lawyers and technicians can adjust in the way the process works so it can be called another process.

And there are a lot of wins right now in the negotiations that have been done. There is an anticorruption chapter that never existed as a chapter and Mexico is a strong proponent of that. There is a new -- there is an energy chapter, there is an SME chapter, there is going to be modernization in IP. There are a lot of things. There is an electronic digital trade chapter which didn't exist. There are one or two things to close. So the modernization process, you know, there's -- I have been called to order, to be very polite to him but, you know, the President probably has already five or six tweets of a win, there are two or three more that he needs I think for our countries to move on and get together, but there is a lot of progress that has been made and 20 chapters that are close to being closed. So there is hope also.

**Maryscott Greenwood (Canadian American Business Council):** This is a perfect microcosm of Canada-U.S., because you are the diplomat in a very respectful, substantial way, walking through --

**Raymond Bachand (Institut du Québec):** You told me I was not diplomatic with Lighthizer.

**Maryscott Greenwood (Canadian American Business Council):** No, but you -- no. No, you are diplomatic, you are just wrong on that. That's different.  
--- Laughter / Rires

**Maryscott Greenwood (Canadian American Business Council):** But here I am channelling the U.S. which is the bull in the China shop and you said maybe there is a win-win and the problem is for this administration, they don't want a win-win, they want a win-lose. They want to beat you, you know, and that is a problem for everybody's politics. Because we don't have diplomats on our side, we have tough negotiators and so that is a new paradigm in which to negotiate --

**Jon Sorenson (Moderator):** Right.

**Maryscott Greenwood (Canadian American Business Council):** -- and it's an unpleasant one, but nevertheless it is where we are.

**Jon Sorenson (Moderator):** Are we good? All right. Wonderful. Thank you. Please join me in thanking our distinguished panel.

--- Applause / Applaudissements

**Brian Gallant (New Brunswick) (Co-Chair):** On behalf of all of my colleagues, thank you very much. As Dwight said, it was a lively discussion and we appreciate all of your thoughts and comments. So I am going to pass it over to Governor Scott to go through the policy resolutions.

**Phil Scott (Vermont) (Co-Chair):** Well, thank you again for all your -- it was very interesting from my perspective.

And now for the moment you have all been waiting for, we are going to be signing four resolutions that each of the Governors and Premiers present today have agreed upon.

We will start with Resolution 42-1, a resolution concerning adaptation.

--- Pause

**Phil Scott (Vermont) (Co-Chair):** Secondly, we will do Resolution 42-2, a resolution concerning energy security and affordability.

--- Pause

**Phil Scott (Vermont) (Co-Chair):** Third, we will do Resolution 42-3, a resolution encouraging regional cooperation and supported business development.

--- Pause

**Phil Scott (Vermont) (Co-Chair):** And last but not least, Resolution 42-4 concerning the North American Free Trade Agreement and the benefits of cross-border trade.

--- Pause

--- Applause / Applaudissements

**Phil Scott (Vermont) (Co-Chair):** And now at this point we will take a break. We are coming back here. If we can clear the room, we are going to have a press conference next over there, but they will have to set up for that. So we will see you --

--- Pause

**Phil Scott (Vermont) (Co-Chair):** Oh, I'm sorry. Yes, I missed that part.

First of all, before everyone clears the room, we are going to hear from Premier Gallant about next year's event in your beautiful province.

**Brian Gallant (New Brunswick) (Co-Chair):** Great. So first off, let's give a big round of applause to Governor Scott for all of his hospitality.

--- Applause / Applaudissements

**Brian Gallant (New Brunswick) (Co-Chair):** Governor, I think I speak on behalf of all of our colleagues when I say good job to you and your whole team for organizing this. Certainly big shoes to fill, but we look forward to doing our best to host all of you in Saint John, New Brunswick in September of 2019, so please make sure that you get ready to have a lot of fun. We have beautiful landscapes, coastal communities, incredible people there of course, and Saint John is a very vibrant city and is also Canada's first incorporated city as well. So lots of history and

very much historical ties with the U.S. as well. So I think you are all going to enjoy coming to visit that beautiful part of New Brunswick.

I am told that we may have a video, I don't know if anybody is -- great. If not, I can do some signs and stuff.

--- Laughter / Rires

**Brian Gallant (New Brunswick) (Co-Chair):** We have a video to showcase a little bit of the province here.

--- Video presentation / Présentation vidéo

**Brian Gallant (New Brunswick) (Co-Chair):** Well, after watching that video I sure want to go visit, I will tell you that much.

--- Applause / Applaudissements

**Brian Gallant (New Brunswick) (Co-Chair):** And for those of you who are wondering, we are the third largest producers of maple syrup. If you are wondering who is number one and two, we can look to my right here. So we hope to host you all in September of next year. Again, thank you to Governor Scott and we look forward to seeing you in New Brunswick.

--- Applause / Applaudissements

**Phil Scott (Vermont) (Co-Chair):** Well, thank you again. That was number one and number two, just in case you were wondering. But it's not a little about quantity, it's quality, you know. I keep telling you that.

**Philippe Couillard (Québec):** Don't start me on that because I will start on blueberries.

--- Laughter / Rires

**Phil Scott (Vermont) (Co-Chair):** Talk about trade wars.

--- Laughter / Rires

**Phil Scott (Vermont) (Co-Chair):** So at this point we will clear the room and we will set up for the press conference, which will start at 4 o'clock in the back of the room. Thank you very much.

--- Whereupon the conference concluded at 1521 /

La conférence se termine à 1521