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BC Hydro 2021 Integrated Resource Plan Summary Notes: Public Consultation

Meeting	Public Workshop about the Integrated Resource Plan
Date	December 17, 2020 – 7:00 p.m. to 8:30 p.m.
Location	Virtual Workshop (Webex)
Participants	23 public attendees from across the province Large Group Discussions Breakout Group Sessions
Host services	ACI Argyle Communications Inc. Tom Hovland; Darcy Vermeulen: Lead facilitators Taruni Sing; Group Session Driver
BC Hydro Representatives	Alex Tu; Presenter / Senior Strategic Technical Specialist Tony Chu; Subject Matter Expert – Conservation and Energy Management Anne Wilson; Subject Matter Expert – IRP Jen Walker-Larsen; Subject Matter Expert – Rev 6 Francis Tang-Graham; Group Facilitator Judy Dobrowolski, Shaka Baker, Ivana Guevara; Notetakers

Legend	
Answer	BC Hydro Staff member response
Comment	Answer or comment from public attendee
EPA	Expiring Purchase Agreement
IRP	Integrated Resource Plan
IPP	Independent Power Producer
TOU	Time of Use
EV	Electric Vehicles
DSM	Demand Side Management
AI	Artificial Intelligence
PV	Photovoltaics
GHG	Green House Gas
GW	Giga Watt
MW	Mega Watt
kWh	Kilowatt Hour
PV	Photo-voltaic models (Solar Panels)

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Workshop Objectives:

- Inform communities about the Integrated Resource Plan (IRP) process
- Garner feedback on the IRP objectives
- Grander feedback on key topic areas to inform future Draft Action for BC Hydro

Summary of presentation

Welcome and Introductory Remarks

The workshops began with Tom Hovland acknowledging the traditional meeting place and welcoming everyone to the meeting. Tom followed up by asking participants to type in the chat window where they were calling in from to acknowledge their territory as an exercise for attendees to familiarize themselves with Webex.

After the quick exercise of recognizing participants call-in locations, Tom then went into a tutorial of some of the virtual meeting tools and etiquette, followed by outlining the workshop agenda:

- Introductions and welcome
- What is Integrated Resource Planning?
- IRP objectives discussion
- Planning topic small group discussions
- Wrap up and next steps

Tom followed up this workshop agenda by introducing BC Hydro staff members. He welcomed the main speaker, Alex Tu, who would cover the next steps of explaining what an IRP is and the timeline for the IRP.

What is Integrated Resource Planning?

Alex then then provided an overview of what an IRP is and the timeline for the IRP. The items included:

- Outline considerations for first 10 years, and the next 10 years (the foundations of the plan)
- Regional snapshot to better connect IRP process to participants at each session

IRP objectives discussion

Alex Tu provided an overview of what planning objectives mean for the IRP and explained BC Hydro's definitions of the five objectives.

- Keep costs down for customers
- Limit land and water impacts
- Limit greenhouse gas emissions through clean electricity
- Support reconciliation with Indigenous Nations

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- Support the growth of B.C.'s economy

After an overview of the five objectives from Alex, he welcomed Tom Hovland back to lead participants in the first exercise of providing input into the planning objectives. A poll was conducted to collect input from the audience on planning objectives followed by Tom discussing the results with plenary, having participants use the chat feature to add feedback. The Poll questions, discussions aids and responses are outlined in **Appendix 1**.

Planning Topic Group Discussion

Managing Resources in the near term: 2020-2030

After reviewing the IRP objectives, Alex then went into overview of how planning topics will share 2020 to 2030 and 2030 to 2040. Alex then instructed participants that the first part of the group discussion would be focused on 2020 to 2030, reiterating how the objectives guide how BC Hydro approaches the topics.

To help the workshop activities, ACI Argyle Communications used 'Google Jamboards' to help document the group discussion. The note takers would document any verbal input. Participants were asked to share their thought on the topics. This was a silent activity where attendees got a chance to provide notes directly into the Google Jamboard application or comments in the chat feature.

The comments and input for the following activities have minorly edited for spelling and clarity.

Conservation and Energy Management

Tell us what matters to you in this topic?

Targeting the biggest energy users (1 comment) whether it be industries that still burn fossil fuels, or industries that that are the biggest electricity users was mentioned from participants in this workshop.

Continue to provide education and incentives (10 comments) some participants simply suggested that BC Hydro should continue energy conservation programs is a great initiative for demand side management and meeting the future demands of BC. Increasing the public's awareness around important issues such as climate change, different sources of power generation and their impacts will only help foster better decision making and support for BC Hydro's IRP objectives. Other comments were raised suggesting BC Hydro be more transparent with budget costs, providing actual, not modelled costs for different types of technology such as heat pumps. Other individuals in this group were opposed to incentives and rebates that are provided by BC Hydro, stating that BC Hydro's efforts should focused on further education of more complex decisions. Participants felt that there should be growth in the Net Metering program as it provides economic opportunities for BC residents.

Small scale customer level supply (6 comments) participants felt that there should be growth in the Net Metering program as it provides economic opportunities for BC residents. There was a strong desire for net

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metering and how BC Hydro customer should have the option to be a “prosumer,” as it would provide economic opportunities.

Adaptability (3 comments) participants mentioned that with the increased uncertainty due to COVID-19’s economic impact, government debt and unpredictable weather, BC Hydro should seek a diverse approach with their IRP. Having a portfolio of different types of renewables, coupled with strengthening the power grid will help mitigate against uncertainty and provide stability to the power grid.

Diversity (2 comments) although, adaptability and diversity are closely interconnected, in terms of conservation and energy management, there was still a strong support for diversifying by creating smaller scale projects. Participants had a strong desire to increase capacity by partnering with more IPPs, explaining that it would only help provide stability for the BC Hydro system in the face of uncertainty.

Simplify Programs (1 comment) participants mentioned that Fortis BC has done an excellent job with the simplicity of their rebate programs, stating BC Hydro should benchmark and follow in the foot steps to help customers with upgrading their homes to more energy efficient products.

Time of Use Rates (TOU)

Tell us what matters to you in this topic?

Develop TOU (5 comments) participants had a very strong desire for time of use rates as it would “help with load management and customer involvement.” Some individuals in the workshop felt that time of use rates is “falling flat in BC,” that rates need to change much sooner.

Equitable TOU rates (3 comments) one participant found that time of use pricing only works for rate payers, stating that it doesn’t benefit IPPs in terms of rate of return. There needs to be a system in place that will provide economic opportunities for IPPs and rate payers. Participants mentioned that time of use pricing maximizes benefits of existing resources. Simply having an option to opt into time of use rates was shared by participants; “not everyone benefits from time of use.”

Transparency (1 comment) there was some support behind participants regarding the relationship between BC Utilities Commission (BCUC) and BC Hydro and how there needs to be more transparency on the IRP. Individuals want to know that there is a full assessment and that all roles and responsibilities are clear.

Home Automation

Tell us what matters to you in this topic?

Security measures (2 comments) home automatization didn’t have a lot of feedback, although, participants felt that if there is an increase in home automation, then there should be a focus on security of smart home

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appliances such as smart thermostats to prevent hackers and other cyber security threats that would impact BC Hydro and customers. The general feedback was that smart home technology should be a gradual process, with small sample sizes introduced as pilots, then applied at a larger scale.

Small BC Hydro Plants reaching end-of-life

Tell us what matters to you in this topic?

Decommission to restore natural habitat (4 comments) some support was shown to decommission old facilities as the impact on land and water are high, also, some of these plants are just outdated to be refurbished. If BC Hydro does plan to decommission these old plants, then it should be done by a third party to help reduce the waste impact. Another aspect that supported the decommissioning was the cost associated to refurbish these old plants, participants were against the costs associated and think it should be avoided.

Avoid sunk costs (4 comments) some individuals were quite stern about building new projects, stating that BC Hydro should “only invest into projects that aren’t chasing sunk costs.” Individuals want BC Hydro to provide value in terms of services, having high costs will only lead to a lack of support behind BC Hydro’s decisions.

Refurbish small local projects (9 comments) there were individuals that supported the idea of refurbishing small local projects as it provides support to the microgrid system and resilience due to uncertainty from climate change. Participants mentioned that if BC Hydro does go down this route, that there needs to be a focus on mitigating the number of risks, such as floods, to keep farm land safe and other potential risks. If BC Hydro goes down the route of refurbishment, then there also needs to be upgrades to the infrastructure.

Small local IPPs (7 comment) there was a strong support of using new types of renewables such as wind, solar coupled with battery storage would help build resilience. Additional comments were added, stating that IPPs should only be utilized in rural areas as it provides economic opportunities for those in the area. Some questioned that, “if local IPPs disappear, would there be a need for local capacity?”

Expiring EPAs

Tell us what matters to you in this topic?

Grid resilience and reliability (11 comments) a general theme that came from this portion was providing grid resilience and reliability. This would come in the form of small independent power producers and Indigenous Nations, which would provide more capacity. There was a strong opposition to Site C and how the costs for this project have been very high. Some individuals noted that IPP and solar and battery storage are becoming preferred solutions in many jurisdictions.

Keep costs low (4 comments) keeping costs low was a very desirable theme throughout the workshop, participants thought if BC Hydro decides to renew expiring EPAs, then they should seek the lowest marginal cost resource with the least amount of environmental impacts.

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Transparency (2 comment) whether it is involving BC Hydro customers through each phase of the IRP or transparent dialogue with Indigenous Nations and IPPs, participants would like BC Hydro to take more responsibility around this matter.

Equitable renewable rates (2 comments) individuals from this workshop pushed heavily for IPPs and Indigenous Nations to receive “fair and realistic renewal rates” that would allow for investors and Indigenous Nations to generate meaningful returns. Fair compensation would “provide certainty so that investors can invest in proper maintenance of generating facilities.”

More economic opportunities in Rural areas (1 comment) an individual raised a point that the Lower Mainland and Victoria tend to be the center of attention in terms of economic opportunities. The individual mentioned that there should be more economic opportunities in more remote areas; IPPs would provide this.

New Power Supply: 2030-2040

Following the Planning Topic Group Discussion regarding managing resources in the near term from 2020 to 2030, Alex Tu reviewed the three broad ways of meeting electricity needs, leading the presentation to new sources of power supply from 2030 to 2040.

Tom Hovland then explained to attendees that they would be placed into three separate breakout rooms for the next exercise. This exercise would allow participants to provide feedback on each of the topics, where attendees could share their thoughts on the Google Jamboard.

The comments and input for the following activities have been minorly edited for spelling and clarity.

Conservation and Customer Involvement

Tell us what matters to you in this topic?

Retail Access (1 comment) having retail access for industrial and commercial and other large customer should be assessed and available to help provide ease of access to efficient and new technologies to help with load management.

Invest in technology and securities (4 comments) with smart home technology slowly being integrated with conservation and energy management initiatives, there is also the aspect of cyber security threats and the potential for hackers impacting customers and BC Hydro. Participants feel the need to invest into securities in order to prevent these potential threats.

Heavy focus for conservation programs (13 comments) some individuals thought that there needs to be more incentives for wind and solar panels, coupled with distributed storage, as there are currently no incentives for purchasing these technologies. There was support shown for BC Hydro’s initiatives with the

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current conservation programs. Individuals appreciate the encouragement of getting BC residents to move away from incandescent lighting and make the switch to LED lighting. Attendees from the workshop found that there were a lot of different type of rebates, navigating through all the rebates and benefits can be overwhelming. Simplifying programs might be something to monitor to help BC residents make smarter choices with Conservation and energy management.

Lowering Costs for BC Residents (5 comments) some participants said that they would like to see “improved monitoring of rates from BC Hydro to ensure that they reflect the true cost of distribution, generation and transmission. There was a strong sense of individuals wanting to move closer to user pay as the current rates are very discouraging for electrification and induces BC residents towards fossil fuels. Staying away from large scale projects such as Site C was voiced by participants during this workshop.

Focus on education (4 comments) some felt that BC Hydro should move away from incentivising BC residents and put more emphasis on education, saying to “let the market and technical innovation.” There was also strong expression from a few participants that mentioned how there is a “lack of market penetration to meet our climate targets. There was also the expression that “rebates are a social issue and should be dealt through government policy.

Small scale customer level supply (6 comments) having small scale customer level supply available would create economic opportunities for individuals and provide new types of jobs. Other participants that agree with this mentioned that “at some point you reach a max on energy efficiency/DSM.”

New Local Power Sources

Tell us what matters to you in this topic.

Small Scale Projects (24 comments) a lot of participants want to see BC Hydro move away from the traditional centralized power grid and move towards a microgrid that would provide much more resilience in the face of uncertainty with global warming. Having different sources of generation would also in turn create more economic opportunities. Participants are very stern about having local IPPs and Indigenous Nations developing local renewables and working with BC Hydro to have the least impact on the environment and provide a stable power grid. Each region within BC have different needs, having small scale projects would help meet the demand for each region versus the centralized power grid and having to transmit power across vast distances.

Education on new power generation options (6 comments) participants were very curious about the potential of geothermal energy and if it is viable source of energy to develop in 20230 to 2040. Some individuals wondered why this option has not been assessed further as a new option for generation. There was also the agreement from participants that thought run of river was the best viable option for most costal regions as it has the least impact on the environment. There were opposing views against solar panels due to the chemicals found in solar panels that cause “ground water pollution.” There should be a full investigation of each type of generation options, assessing ‘pro’s and con’s’ of each source of energy. Benchmarking with other utilities across the globe would help develop models that would for BC Hydro.

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Develop Battery and pumped storage (17 comments) although, there was support shown for battery and pumped storage, there was the view from participants that pumped storage is difficult to price and that it needs to be developed to fully reap the benefits. The main attraction for pumped storage was the fact that it has the ability to control the dispatch time and the type of power. There were also opposing views for battery and pumped storage, stating that there is “energy efficiency loss for investing into pump storage and that losing power when you pump is too costly.” Other interest was shown for solar panels and battery storage and how BC Hydro should be creating incentives such as rebates or even “zero-dollar interest loans.”

Lower Costs (9 comments) as it is a general theme throughout each workshop, participants felt the desire for BC Hydro to lower costs by further developing technologies. With advancements in new technologies, over time these advancements would ultimately lower costs for materials and other production factors allowing BC Hydro to charge less for electrification.

Adaptability (2 comments) one participant mentioned that clean technology is rapidly advancing and mentioned that “predicting what new technologies may be relevant in 10-15 years may be difficult, therefore BC Hydro needs to be able to adapt to new changes quickly and develop new frameworks to meet demand.”

Upgrading BCH System

Tell us what matters to you in this topic.

Life cycle analysis of new renewables (7 comments) one participant mentioned that BC Hydro should do a complete life cycle analysis of how each new type of renewable would impact the environment. The participant used an example of how some renewable are great from an “air management issues but not with the materials that are produced.” BC Hydro needs to create business cases for each type of renewable so that BC residents have a complete understanding of the impact of their choices for new options of renewable energy. There were other mentions of renewables that participants were wanting BC Hydro to investigate such as ocean wave, tidal current, and maybe biomass.

Customer Involvement (6 comment) participants want to see more focus on net metering and see it become fully developed due to the economic opportunities that come from customer level generation and the resilience it brings to the power grid.

Focus on conservation programs (1 comment) there was a desire from individuals to see BC Hydro create more incentives for battery storage in homes for EVs and getting BC residents to switch from fossil fuels to electricity.

Leveraging capabilities (4 comments) some individuals thought that leveraging some of BC Hydro’s capabilities to industries or small IPPs could help improve building the resilience and distribute generation. “BC should be looking at ways to leverage capabilities in neighbouring provinces through interconnections.”

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Build resilience to the power grid (15 comments) Building security measures and resilience to the grid will significantly reduce the impact from potential risks such as wildfires, floods, storms, cyber security threats. A high number of comments from participants suggested that costs need to be reduced, with a strong desire for renewable power such as wind, solar, battery storage, run of river and the potential for geothermal. There were individuals in this workshop that mentioned that BC Hydro shouldn't spend as much money into transmission lines as it is very costly. There were also individuals that supported transmission line upgrades as it has been "long overdue."

Exporting excess power (1 comment) some individual want to see BC Hydro transmit electricity to Alberta in the near future to provide economic opportunities.

Summary and Wrap-up

Following the workshop's conclusion, BC Hydro employees remained available for 15 minutes so that attendees had a chance for questions and answer with Anne Wilson thanking attendees for participating in the virtual workshop.

Attendees were informed that they would be sent an email that allow participants to garner feedback on the presentation and the content.

Appendix 1: Poll results – questions on objectives

A poll was conducted so participants could provide input on BC Hydro's IRP objectives. The poll results were as follows:

Select the most important Objective to you (**Pick 2**)

A. Keep costs down for customers	12/42 (29%)
B. Limit land and water impacts	3/42 (7%)
C. Limit greenhouse gas emissions through clean electricity	11/42 (26%)
D. Support reconciliations with Indigenous Nations	5/42 (12%)
E. Support the growth of B. C's economy	11/42 (26%)
No Answer (BC Hydro Staff + 2 Public Attendees)	13/34 (39%)

Verbatim comments from the workshop were provided verbally or through the chat function in Webex. Answers have been minorly edited for spelling and clarity.

Is anyone surprised/not surprised about how an objective was ranks by the group?

- All five are important - it's a great list!
- Yes, cost of electricity should increase to incentivise saving energy for peak usage requirements.

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- Not surprising.
- Cheap energy can attract more industry to the province, promoting economy growth.
 - Look at it from industry
 - Boom town in Kitimat due to LNG
 - LNG is happening because we have a deep-water port but also cheap energy
 - Having cheap electricity can promote the industries that can cause the economy to grow in the province
 - There are contradictions or trade-offs involved with satisfying those categories; should be interesting.
- I am not surprised; low cost energy is needed to offset fossil fuel use.
- There are contradictions or trade-offs involved with satisfying those categories; should be interesting.
- I would have suggested that Grid Security would be on the list so, reliable supply.
- Strengthening BC's economy and supporting Indigenous reconciliation are the same in light of the fact that 90% of clean energy projects have First Nations participation.
- I'm not surprised that the economics were near the top and was pleasantly surprised to see that emissions was up there but kind of wish it was our number one pick!
- Good objectives, but how do they link to Clean BC and submissions to Comprehensive Review of BC Hydro which is currently underway?

Tom Hovland then opened the floor to participants and asked if anyone would care to share why they chose the objective they did. Each objective had a response from multiple participants. Answers have been minorly edited for spelling, clarity and categorized by the type of IRP objective

Keep Costs down for Customers

- Strengthening BC's economy and supporting Indigenous reconciliation are the same in light of the fact that 90% of clean energy projects have First Nations participation
- Heating my house with hydropower means my heating costs are order of magnitude higher than using propane to heat my house, increasing cost of electricity seems counterproductive
- Ensure that keeping costs low for consumers is a goal.
- 2020 - 2030 - Grid Security, Cost Savings, Support IPP's.
 - As long as IPPs don't cost more than standard BC Hydro cost.
- The moment BCH provides energy/power at a lower cost than burning gas/propane/wood the customer pool will grow enormously.
- Use hydro to heat house – halfway through each period I learn that I am bumped from 9 to 15 cents per kWh because using electricity. Neighbours use propane tank and it costs them \$40/month. Feel punished for buying electricity to heat house. Look to put on solar panels but will only reduce electricity use by half and they are expensive. How do I make sure that I reduce my personal rate without burdening myself with higher costs? It is cheaper to use gas to heat the house.
 - Comment: It shouldn't be an order of magnitude increase in cost to use electricity rather than propane or gas. Used TOU pricing in Ontario. Consumers adjust to it. If it changes costs for the producer, then it is an effective tool in the toolbox.

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- What makes it easier to use TOU? Incentives/rebates for smart products so that we can set timing for energy usage. You can set a time to charge EVs, but that is not an option for all products.
- Response: You are nice Erich, but my wallet shrunk tremendously the last year and lower cost energy is a need, not a nice to have.

Limit land and water impacts

- I love all three of those options, but we would need to be sure to maintain proper treatment of our land and water. I wouldn't want to export excess energy if it means poor land usage/degradation in our province.

Limit greenhouse gas emissions through clean electricity

- Need to keep carbon emissions down. Need to employ battery storage for peak usage requirements.
- Renewable energy generation with energy storage for peak requirements is essential.
- Hydro's role is absolutely critical to a net zero future.
- BC Hydro can reduce GHG emissions through its own operations, extend to consumers by promoting fuel switching.
- How should BC Hydro think about reducing GHG?
- As a British Columbian, look at BCH as sustainable energy supplier – don't want ratepayers to shoulder costs of (reducing GHG efforts?), seems to go beyond its mandate.
 - BCH mandate does not really include reducing GHGs. This is a government policy.
 - BCH not an educational institute
 - How do we make this equitable, how does mandate need to change? Sticking to it seems to work well, critical for this plan to consider beyond boundaries of mandate.
- Cross country connection that will benefit decarbonization of other jurisdictions, benefit their industry as well i.e. east-west connection.
 - Energy Corridor across Canada as well. Taking credit for greenhouse gas reduction in our neighbors while encouraging others to increase solar, wind and other renewables.
- Every jurisdiction who has made any progress on GHG reduction has done so via fuel switching the electric sector. BC does not have this option.
- I look at BC Hydro primarily as a clean energy provider. Having to go beyond the mandate of BC Clean Energy Act caused the customer to pay as it affects BC Hydro's model. Higher costs for customer trying to go clean.
- BC Clean Energy Act is great however, we need to look beyond those jurisdictions. Integrating into other industries can influence strong carbon producing industries to move towards clean electricity. Look outside of BC.
- Electricity is one of the only competitive advantages left in BC
- 100% green is good.
- Renewable energy generation with energy storage for peak requirements is essential.
- The fact is that every jurisdiction who has made any progress on GHG reduction has done so via fuel switching in the electric sector. BC does not have this option.
- Reducing GHG should be country-wide.

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- GHGs are a World-wide problem; if we can produce power with lesser environmental impact than, say Alberta or even Washington State. Then why not do the 'Green' thing. As long as it makes economic sense.
- GHG is global issue, we can all do our bit.
- From now to 2030 we need to cut our GHG emissions in half in order to stay within the Intergovernmental Panel on Climate Change (IPCC) 1.5-degree warming scenario.
- We need to switch from fossils to renewable energy.
- As Carbon tax increases burning fossils fuels will become less and less economic.
- Replacing natural gas for heating will require far more electricity than electric vehicles.

Support the growth of BC's economy

- We should open up greater transmission to Alberta and ship power out of province and make money with the sales while at the same time reducing green house gases, similar to an American Cap and Trade.
 - Comment: I think they can produce green power in Alberta cheaper than we can in BC. We would be importing if there was a "free trade" in power.
- New capacity generates economic development.
- I am concerned about the lack of value attributed to IPPs as an economic objective.

General

- Some objectives seem contradictory, e.g. keep costs down and reconcile with First Nations. A big issue is lack of transparency in BC Hydro numbers, e.g. Site C
- Electricity is a commodity and should be sold to other jurisdictions.
- Might not be an objective, but how will IRP address and manage uncertainty resulting from climate change. Are adaptation and mitigation measures included in the demand forecast?
- Expand the mandate then.
- Fully agree that BCH mandate does not really include reducing GHG's. This is a Government policy.
- Agreed, BCH is not an educational institute.
- Answer: BCH is looking at climate change adaptation and mitigation - it is an important aspect.
- Comment: BCH needs to adopt the government and the world's mandate.
- Is climate adaptation included in the IRP predicted supply and demand? (e.g. snow pack, heating load, increased windstorms interrupting service, etc.?)
- Quebec's economy benefits hugely from export to New York City.
- Do you publish a climate adaptation risk analysis?
- Answer: I can take that away and see what has been published. I know there are BCH employees working on this topic!
- I am a fan of an "Energy Corridor" across Canada as well. Taking credit for greenhouse gas reduction in our neighbors while encouraging others to increase solar, wind and other renewables.
- Public engagement in 2020-2030 needs to lay the groundwork and support for costs and changes needed in 2030-2040.

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