

November 12, 2021



Access Request: 2021-G-0003

Dear Ms. Shulz,

Re: **Reply to Freedom of Information and Protection of Privacy ("FOIP Act") Request**

This letter is to inform you that the processing of your request 2020-G-0003 is now complete. The AESO is pleased to advise you that partial access is being provided to the records you requested (copy enclosed).

There was a total of 6 pages of records responsive to your request. Portions of the records you requested contain information that is excepted from disclosure under the FOIP Act. We have severed the excepted information so that we could disclose to you the remaining information in the records.

Exceptions to Disclosure

The detailed sections supporting the severing are indicated on the face of the record.

The sections used to withhold information include:

- *Section 24(1)(a) - the head of a public body may refuse to disclose information if that disclosure could reasonably be expected to reveal advice, proposals, recommendations, analyses or policy options developed by or for a public body or a member of the Executive Council*
- *Section 24(1)(b) - the head of a public body may refuse to disclose information if that disclosure could reasonably be expected to reveal consultations or deliberations involving officers or employees of a public body; a member of the Executive Council; or the staff of a member of the Executive Council*

A copy of Section 24 is enclosed for your reference.

Right to Request a Review

If you have any questions or concerns about a decision made during the processing of your request, you may write or call me at (403) 539-2890 so that we can look at ways to address them. You do have the right to ask the Information and Privacy Commissioner to conduct a review under section 65 of the FOIP Act. You have 60 days from the date of this notice to request a review by completing a *Request for Review* form and submitting it to:

Information and Privacy Commissioner
410, 9925 - 109 Street
Edmonton, Alberta, T5K 2J8
Fax (780) 422-5682

The form is available under the *Action Items* menu on the Commissioner's website www.oipc.ab.ca or you can call 1-888-878-4044 to request a copy of the form.

Initial Fee Receipt

The processing of your initial fee payment for completed. Please find enclosed the receipt for your payment of \$25. There are no additional fees owing.

If you have any questions, please feel free to reach out to me to discuss.

Sincerely,



Kurt Gonzales
Manager, FOIP and Records Management

Enclosures: Section 24; Records Package (pages 1 – 6); Initial Fee Receipt

Galen Lam

From: Peter Huang
Sent: Thursday, July 29, 2021 19:28
To: Gabriel John; David Johnson
Cc: Ata Rehman; Kevin Dawson
Subject: RE: Another urgent BN needing your help

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Gabriel,

We are indeed at the early stage of assessing the potential impact of the Clean Tech scenario on the transmission system. The intention is to better understand what the current transmission system is capable of and what strategies we may want to consider into the future. With that said, here are a few commentaries you may find helpful.

I want to start by saying that the 5,000 MW peak EV load as indicated would be a challenge for the transmission/distribution infrastructure. For your reference, the peak load for the City of Calgary and City of Edmonton is roughly 1,700-1,800 MW for each city; 5,000 MW is practically doubling of existing urban area load. To be prepared for the situation, the solution will likely involve a multi-pronged strategy. For example, before the EV load hits the transmission grid, distribution systems would be impacted first and a strategy to manage the situation would be required. If the strategy involves minimal expansion of the distribution line infrastructure (say with battery storage, DER, and/or market incentives/policy), then the corresponding transmission expansion would be minimal as well. However, there is still a cost associated with these strategies.

Now, IF distribution system is somehow expanded and doubled in size for the urban areas (at significant cost), a corresponding expansion of the transmission system to serve the additional 5,000 MW of load will also incur significant costs. Typically a 240 kV transmission line is capable of serving 500 MW, while a substation is typically capable of serving 100-200 MW. This gives you a sense of the infrastructure expansion that could be required if we simply build to serve 5,000 MW of new load. This does not include other transmission expansions required to accommodate the corresponding 5,000+ MW increase in generation resources and other transmission services. In addition, routing these large 240 kV transmission towers in densely populated areas will be extremely challenging to say the least; finding sites to build 30-40 new substations will also face the same challenge, if it's feasible.

The main message of the previous paragraph is to highlight the challenge of approaching the EV situation strictly from a wires infrastructure angle. What the situation needs is a coordinated solution that involves transmission/distribution consideration, technology integration, as well as market and policy changes to enable the EV shift.

I hope this helps. Please let me know if you would like further information or discussion.

Peter Huang, P.Eng.
Manager, System Planning
Direct: 403-539-2687 | Cell: 403-975-1793

Alberta Electric System Operator (AESO)



From: Gabriel John <Gabriel.John@gov.ab.ca>
Sent: Thursday, July 29, 2021 2:52 PM
To: David Johnson <David.Johnson@aeso.ca>
Cc: Peter Huang <Peter.Huang@aeso.ca>; Ata Rehman <Ata.Rehman@aeso.ca>; Kevin Dawson <Kevin.Dawson@aeso.ca>
Subject: RE: Another urgent BN needing your help

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Hi Dave,
Massive thanks for the quick input.
Peter – anything you can add to Dave’s input would be greatly appreciated.

Have a wonderful long weekend and see you on Tuesday, Dave.

Cheers,
Gabe.

Classification: Protected A

From: David Johnson <David.Johnson@aeso.ca>
Sent: July 29, 2021 2:31 PM
To: Gabriel John <Gabriel.John@gov.ab.ca>
Cc: Peter Huang <Peter.Huang@aeso.ca>; Ata Rehman <Ata.Rehman@aeso.ca>; Kevin Dawson <Kevin.Dawson@aeso.ca>
Subject: RE: Another urgent BN needing your help

CAUTION: This email has been sent from an external source. Treat hyperlinks and attachments in this email with care.

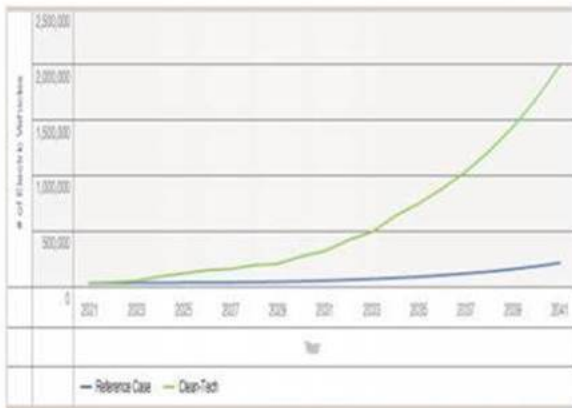
Hi Gabe!

I think this question may be answered better in pieces.

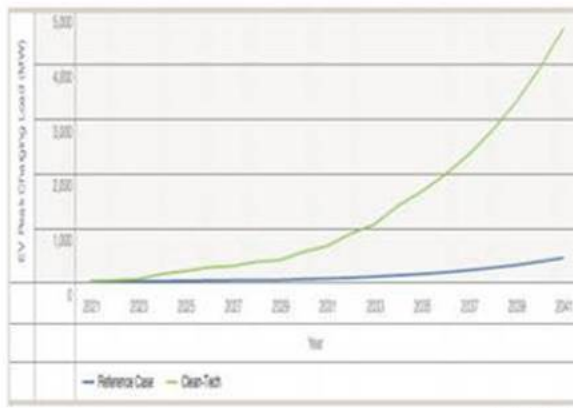
We covered part of this directionally within the EV growth within the CleanTech Scenario in the 2021 LTO. If the federal announcement holds true that only ZEVs are sold by 2035 then our forecast may be a bit light by 2040. But you could use the following slides for directionality:

- EV adoption is very modest in Alberta – currently < 0.5 per cent of total vehicles
- Price, driving range (especially under cold conditions) and charging time are potential barriers to widespread adoption in the near term
- The Reference Case assumes adoption will accelerate, yet overall EV stock remains low
 - Same assumptions used for Robust and Stagnant Oil and Gas Demand scenarios
- The Clean-Tech scenario captures potential impacts of high adoption – assumes 1/3 of vehicles by 2040, equivalent to nine times higher than the Reference Case

Number of EVs in Alberta



Incremental Peak Load from EVs



f 42
20/07/2021 Public



- The reader must interpret the reliability results for the years 2031 and 2036 with caution
 - Sensitivity cases indicate that supply adequacy modeling for periods further out can be significantly impacted by relatively minor changes in fundamental inputs. Given that no immediate risks were identified, the AESO concludes that the risk drivers identified by the modelling can be monitored while providing sufficient time to further mitigate risks should they become more certain.

Resource Adequacy Results

	2026	2031	2036	
Reference Case				<ul style="list-style-type: none"> Reference Case shows no issues in 2026 and 2031 Issues in 2036 are primarily due to timing of new firm capacity replacement
Reference Case - Sensitivity				<ul style="list-style-type: none"> Moving firm capacity that builds post 2036 a year or two earlier resolves the resource adequacy issues
Clean-Tech				<ul style="list-style-type: none"> Firm capacity retirement post 2026 leads to significantly higher expected unserved energy for the remainder of the forecast The risk is significantly influenced by the electric vehicle load charging shape.
Clean-Tech - Sensitivity				<ul style="list-style-type: none"> Adjusting the daily charging profile of the electric vehicle additions while maintaining total energy requirements Adding a firm capacity generic combined cycle in 2030
Robust O&G				<ul style="list-style-type: none"> Approximating the Reference Case, issues late in the forecast period are mainly due to timing of new replacement firm capacity
Robust O&G - Sensitivity				<ul style="list-style-type: none"> Moving firm capacity that builds post 2036 a year earlier resolves the resource adequacy issues
Stagnant O&G				<ul style="list-style-type: none"> Stagnant Oil shows no issues in 2026 Issues in 2031 and 2036 are due to early retirements and timing of new firm capacity replacements.
Stagnant O&G - Sensitivity				<ul style="list-style-type: none"> Adding a firm capacity generic combined cycle in 2030

Note: the threshold is based on the AESO supply adequacy expected unserved energy metric threshold (as per ISO Rule 202.6). The green circles represent RAM results that are well under the threshold, orange circles represent results within +/- 50 per cent of threshold, and red circles represent results exceeding the threshold by more than 50 per cent.

So based primarily on the assumed charging profile we see no immediate risks with the Clean-Tech growth profile. Further out it seems that there could be challenges HOWEVER as explained in the slides there is uncertainty as to the future path and changes to some of the current assumptions alleviate the risks. This implies that we will need to continue to monitor these assumptions and make appropriate decisions with the stakeholder (ie, GoA, AESO, AUC, participants) when warranted.

In terms of infrastructure costs that is outside of my domain. The process now is that System Planning takes our forecasts and does an assessment within the Long-term Transmission Plan, which will be released early next year. Peter might be able to give you ball-park numbers on the costs but I am thinking that is highly unlikely given that they have just started their process. Peter, correct me if I am wrong.

There would also be distribution costs for upgrading circuits to ensure say “quick charging” could occur.

I hope this helps!

I am off in a little bit until Tuesday.

Cheers!

Dave

From: Gabriel John <Gabriel.John@gov.ab.ca>
Sent: Thursday, July 29, 2021 2:11 PM
To: David Johnson <David.Johnson@aeso.ca>
Subject: RE: Another urgent BN needing your help

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Just to confirm, the question is wrt to the **Canada 100% car and passenger truck sales to be zero-emission by 2035 announcement about a month ago.**

In the interest of time, I am looking for the "how are we prepared" type information. I believe references to the LTO and LTP processes and AESO's mandate for reliability would be relevant here...?

Thanks.
Gabe

Classification: Protected A

From: Gabriel John
Sent: July 29, 2021 2:05 PM
To: David Johnson <David.Johnson@aesoc.ca>
Subject: Another urgent BN needing your help

Hi Dave,
I understand if you are probably tired with me bringing in all these urgent ask your way. If it makes you feel any better, The AESO is sincerely duly recognized and appreciated for its assistance to the department, and we wouldn't be effective in briefing up and completing some of our assignment without the collaborative efforts of both parties.

With that said, I have another urgent AR due tomorrow and could use any comments/information that your shop can provide.

Section 24(1)(a)(b)(i)

I am thinking that they are referring to the Canada 100% car and passenger truck sales to be zero-emission by 2035 announcement about a month ago. Unless there is a recent announcement I am not aware of.
<https://www.canada.ca/en/transport-canada/news/2021/06/building-a-green-economy-government-of-canada-to-require-100-of-car-and-passenger-truck-sales-be-zero-emission-by-2035-in-canada.html>

Anything you can provide by noon tomorrow would be greatly appreciated. Please feel free to let me know if you have any questions.

Thanks.
Gabe.

Acting Manager & Environment Lead
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Cell: 780-908-0233

"The worth of a man is a function of his character, love and tolerance towards other beings". Anonymous.

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