

## 2021 Long-term Outlook Scenarios – December, 2020

2021 Long-term Outlook Stakeholder Feedback



<b>Period of Comment:</b> December 15, 2020 through January 15, 2021	[REDACTED]
<b>Comments From:</b> TransAlta Corporation	[REDACTED]
<b>Date:</b> 2021/01/15	[REDACTED]

Keeping with the mandate of providing safe, reliable and economic operation of the Alberta electricity system while facilitating a fair, efficient and competitive market for electricity, the AESO is developing the 2021 Long-term Outlook (LTO).

Given the challenges faced as a result of the COVID-19 pandemic and the low oil price, feedback provided to the AESO will be an important input into how we forecast Alberta's the near to long-term electricity. The AESO will use scenarios as a means of stress testing various market, technological, consumer behaviour, policy and economic outcomes, to assist stakeholders in understanding potential long-term future outcomes in the Alberta electricity market.

Please fill email your completed questionnaire to [forecast@aeso.ca](mailto:forecast@aeso.ca) by January 15, 2021.

We value stakeholder input and thank you for sharing your perspective. In alignment with our Stakeholder Engagement Framework ([link](#)) all stakeholder submissions, in their original state with personal information redacted, will be published online at [www.aeso.ca](http://www.aeso.ca)

Further stakeholder engagement on LTO scenarios and preliminary results can be expected as the AESO makes progress toward the anticipated publication date in Q2 of 2021.

Preliminary results will be based in part from stakeholder feedback received in June 2020.

The AESO thanks you for your time and appreciates your input.

The AESO is seeking comments from Stakeholders with regard to the following matters:

	Questions	Stakeholder Comments
1.	Do the proposed LTO scenarios cover a reasonable range of plausible future outcomes? Which scenario do you think is more likely? Which one is less likely?	<p><b><i>The proposed Reference and Clean Tech cases do not reflect the New Federal Climate Plan</i></b></p> <p>The Federal Government plans to increase carbon pricing by \$15/tonne each year starting in 2023 with carbon pricing reaching \$170/tonne by 2030. The current Clean Tech and reference case scenarios do not reflect this expected change in carbon pricing levels. More important, the impact of assuming a much lower carbon pricing level is that both cases are likely to underestimate the level of renewable and cogeneration development that would occur in response to the climate plan.</p> <p>It is more likely that the levels of solar, wind, and energy storage that are currently projected to occur by 2040 in the reference case could occur by 2030 or earlier. Likewise, the Clean Tech scenario should see an even faster adoption and higher penetration level of of renewables and energy storage if supported by government spending and greater interest and growth in the corporate PPA market.</p>
2.	Does the “Clean-Tech” scenario focus on the appropriate technologies and policies?	<p><b><i>The Clean Tech case should consider a larger corporate PPA market and a higher penetration of energy storage</i></b></p> <p>The Clean Tech case indicates that it assumes higher renewable corporate PPAs and energy storage than the reference case. We would suggest that a conservative estimate even for the Clean Tech case would be 100 MW per year, which would be four times greater than the projected growth in the reference case (i.e. 1,000 MW by 2030 and 3,000 MW by 2040). We had previously estimated that the PPA market could stand to grow by 200-300 MW per year (in our comments to the previous LTO).</p> <p>We expect that interest in energy storage may also reflect a similar magnitude of growth as the corporate PPA market (4 x greater than the reference case assumptions). While the level of</p>

		<p>energy storage development will be highly contingent on tariff treatment and rule requirements, we would anticipate that the Government and AESO would encourage energy storage growth through policy and regulatory treatment under the Clean Tech scenario. Energy storage could help to address the constrained transmission capacity that limits wind renewable development today and, as such, we expect its development will correlate with renewable development more generally.</p> <p>The level of solar and wind development in the reference case appear very low – as mentioned above we would expect that the 2040 scenario will be achieved well before or by 2030. It is plausible that in a Clean Tech case we could see 3 to 4 times the growth to even the adjusted (stated above) reference case level.</p> <p>We also expect that the level of cogeneration is likely underestimated as the focus of the cogeneration assumption is largely on oil sands generation. At very high carbon prices, cogeneration is likely to be considered by many non-oil sands industrial operations.</p> <p>The Clean Tech case should also consider the impacts of additional demand side management and energy conservation (on the load forecast). This could be at the transmission customer level but also from an accelerated adoption of smart metering/grid and distributed energy resource adoption at the distribution level.</p>
3.	Are there different scenarios that warrant inclusion?	<p><b><i>An “unlimited self-supply and export” scenario warrants inclusion</i></b></p> <p>The Government of Alberta is currently conducting a consultation that is considering changes to the legislative framework that may permit unlimited self-supply and export. Under such a scenario, we may see significant generation development in response to out-of-market transmission costs signals.</p> <p>Given that this is a possible scenario that could have very significant impacts on future development, we recommend that the AESO model the generation development impacts that would likely occur in response to avoiding transmission costs that are</p>

		\$40/MWh or greater.
4.	<p>What long-term hydrocarbon demand projections do you think are reasonable for the Robust and Stagnant Global Oil &amp; Gas Demand scenarios?</p>	<p><b><i>The near and mid-term projections may be reasonable but the long term assumptions are optimistic and do not adequately capture the low end range</i></b></p> <p>Canada Energy Regulator (CER) provides two relevant scenarios in its <i>Canada's Energy Future 2020</i> report:<sup>1</sup> a reference energy system and evolving energy system albeit at lower carbon pricing assumption in both cases that that proposed under the Federal Climate Plan.</p> <p>In the CER report, carbon price under the evolving scenario is modeled at \$75/tonne by 2040 and projects that Canadian crude oil production will peak by 2038 at 5.8 million barrels per day. In the reference case scenario, which projects a \$50/tonne carbon price by 2022 and remains at the level for the forecast, Canadian crude oil production peaks in 2045 at a level above 7.2 million barrels per day. While in-situ production is expected to grow through to 2040 in the evolving scenario, with more aggressive carbon pricing this may too flatten out earlier than 2040.</p> <p>With respect to natural gas, Western Canadian Sedimentary Basin production shows robust growth under both scenarios. Under the evolving scenario, Canadian natural gas production peaks in 2040 at 18.4 Bcf/d and decreases to 16.8 Bcf/d by 2050 under the assumption that prices will be too low to keep up with well declines. Under the reference scenario, natural gas production peaks in 2045 at 23.5 Bcf/d and levels off (rather than declining). The significant driver of the production growth is expected to be tight gas in BC's Montney and the export demand will come from Liquefied Natural Gas.</p> <p>If these present representative book ends, we would likely see the peak crude oil production and natural gas emerge quicker than 2038 and 2040 given the Federal Climate Plan's carbon pricing and under both the Robust and Stagnate Global Oil &amp;</p>

<sup>1</sup> <https://www.cer-rec.gc.ca/en/data-analysis/canada-energy-future/2020/canada-energy-futures-2020.pdf>

		Gas Demand scenarios Canadian crude oil production and economic growth related to the oil sands would need to be modeled in decline at least by the end of the LTO's 20 year forecast horizon. In other words, the current scenarios do not appear to reflect the lower range of possible outcomes. While in the near and medium terms the Robust Global Oil & Gas Demand scenarios may be realistic, it appears to be more optimistic in the long term than may be realistically achieved.
5.	Are there additional generation technologies that warrant inclusion in the 2021 Long Term Outlook Scenarios?	<p>The LTO captures the generation technologies that are likely to be significant in the forecast horizon.</p> <p>As suggested in our comments to question 2 above, the impacts to load from the adoption of smart metering/grid technologies with respect to demand side management and distributed energy resources should be considered in the 2021 LTO scenarios.</p>
6.	Do you disagree with any of the assumptions in Slide 4 for any of the scenarios? If so, what would you propose?	Please see our comments above.
7.	The AESO has not yet determined the quantum of change in the scenario variables. Do you agree directionally with the scenario assumptions? Do you have insights regarding the magnitude of scenario changes?	Please see our comments above.