Stakeholder Comment Matrix – June, 2020

2021 Long-term Outlook Stakeholder Feedback

Period of Comment: June 4, 2020 through July 6, 2020	**Contact:** [redacted]
Comments From: TransCanada Energy Ltd. (TCE)	**Phone:**
Date: 2020/07/06	**Email:**

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments. Email your completed comment matrix to forecast@aeso.ca by **July 6, 2020**

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

	Questions	Stakeholder Comments
a.	**Long-term Outlook** a. What information do you find most useful within the Long-term Outlook? Is there additional information you would like to see? b. Do you use the Long-term Outlook data file? Which information within the Long-term Outlook data file is most useful to you? What additional data would you like to see within the data file? c. What delivery format of the data file would you find most useful? (Excel file, web query and download, interactive web based data visualization tool, other)	a. TCE finds the reference case and the scenarios to be the most useful. It is important that the Long-term Outlook (LTO) present low and high scenarios and alternative scenarios to bound all possible outcomes. TCE recommends that the reference case be vetted by a reputable third-party and that the AESO consult with stakeholders to determine the appropriate weighting of the scenarios. All of the Excel sheets/tabs are also of interest. TCE would also like to see some cogeneration generation costs and battery costs be included in future LTOs. b. Yes, TCE does use the LTO data file. The demand forecast data is useful as well as all of the Excel sheets/tabs. As mentioned in (a) above, we would like to see some cogeneration generation and battery costs be added. c. An Excel file is acceptable.

b.	**Macroeconomic variables** a. The economic outlook could range from a V-shape recovery by Q2 2021 to a longer-term recovery by 2023, with some permanent load loss in the commercial and industrial sectors going forward. What is your view on the Alberta GDP over the medium- (next 5 years) and long-term (5+ years)? b. Oil sector production capacity is expected to increase in 2023 with the completion of pipeline projects (e.g., Keystone XL, etc.). I. The 2019 CAPP Crude Oil Forecast released in June 2019[1] had oilsands forecast growth from 3.2MM bbls/d in 2020 to 3.6MM bbls/d in 2025 and then 3.9MM bbls/d in 2030. a. What is your view on oil production in Alberta over these time periods given the market changes over the last year? What is your view post 2030? b. Do you expect new oil production developments to be in situ or mining, or a combination of both? c. Do you expect domestic condensate growth, required for transport, to meet the incremental oilsands growth? Will domestic condensate displace imported condensate? II. What is your view on further oil sector investments over the same timeframe? III. What kind of oil price or other environment would allow for further cogeneration development in the oilsands and/or petrochemical sectors? d. Current forward gas prices are in the $2.25/GJ range. Post 5 years,	a. While TCE expects that a recovery will occur, the pace of the recovery is unknown. TCE recommends that the AESO model a few scenarios (e.g., the V-shape recovery, the longer-term recovery by 2023, and a permanent load loss scenario as suggested by the question). b. TCE recommends that the AESO consult with stakeholders to develop reasonable forecast scenarios and determine the appropriate weighting of these scenarios. d. TCE expects that that prices may trend somewhat higher if LNG exports grow. TCE encourages the AESO to consult with stakeholders to develop reasonable forecast scenarios and determine the appropriate weighting of these scenarios.

[1] Canadian Association of Petroleum Producers https://www.capp.ca/resources/crude-oil-forecast/

	do you see gas prices remaining at this level, decreasing, or increasing beyond inflation?	

	Policy a. What are your expectations of carbon prices in the future? Do you expect any change from a $30/t rising to $50/t, inflated by 2% thereafter? b. Other than policy on carbon pricing, what coming policies or policy scenarios do you see impacting load growth and generation development?	a. The current price expectation is that prices will rise to $50/t as per the federal system. TCE recommends that the AESO develop reasonable forecast scenarios that include higher and lower prices. b. Electric vehicles and the electrification of industrial or heating demand could be advanced more quickly through government policy. The development of the Federal Clean Fuel Standard (CFS) has the potential to significantly impact supply-demand fundamentals. The 2030 targets set for the CFS are aggressive and could have a material impact on Alberta power consumers and on the future generation mix.
	Impact of the COVID-19 pandemic a. What is your expectation on behaviour changes (e.g., work-from-home practices, online shopping, etc.) and the way Albertans consume electricity going forward? b. How are near-term costs and future generation projects being impacted by covid-19? Do you anticipate long term impacts to generation development?	a. This is difficult to answer at this point in time, but will likely depend on the likelihood and duration of future waves of the virus and the time required to develop an effective vaccine. TCE recommends that the AESO develop a reference case with a short-term decline followed by a recovery as well as alternate forecast scenarios. b. In the short-term, projects will likely suffer delays, whereas in the long-term, generation development will need to rebalance to whatever new demand level emerges.
	Load growth and modifiers a. Where do you think load growth will be concentrated –at the System Load (all metered demand) level, or at the Alberta Internal Load (system load plus load served by on-site generating units) level? b. Under what conditions could Alberta see sustained negative system load growth? c. In the 2019 Long-term Outlook, the AESO had a number of economic and technological advances that are expected to impact the load growth in the province (see section 4 of the 2019 LTO and "New Load Modifiers" tab of the 2019 LTO data file). What is your view on load growth and the impact of the following modifiers within the	a. TCE expects that this will be largely driven by government policy with respect to self-supply and AESO tariff design. b. Sustained negative system growth conditions would likely be the result of a weak economy, weak commodity prices, or a failure to diversify the provincial economy. In addition, federal policies such as the CFS may disproportionately impact Alberta and future load growth in Alberta. c. TCE expects that the need for energy storage will grow as more wind and solar is added. Electric vehicles and charging stations as well as distributed resources are expected to play a larger role in the 5-10 year timeframe. d. Load growth would be dependent on commodity prices and whether Alberta is able to diversify into the mentioned emerging industries.

	next 5 years, from 5 to 10 years, and after 10 years for: i. Distributed energy resources: 1. Rooftop solar PV 2. Electric vehicles and charging stations 3. Gas generation 4. Wind generation 5. Energy storage 6. Energy efficiency d. What is your view on load growth and the impact of other emerging industries, sectors or technologies (e.g., bitcoin and cryptocurrency mining, cannabis facilities, petrochemical facilities, data centers, others)?	

	Generation Technologies a. What renewable technologies are likely to be developed by PPA's? b. What is the potential size of the corporate PPA market for renewables, being funded fully or in part, in Alberta? c. What challenges do you foresee in implementing PPA's for renewable development in Alberta? d. Recent public announcements indicate all existing coal-fired units will utilize natural gas in the near term. How do you see the operation of the converted units changing compared to operations as a coal-fired unit? e. Outside of existing generation technology in Alberta, what technology will show up in Alberta next? f. What are the challenges surrounding generation development in Alberta and what are the major factors that will determine what gets built?	a. Both solar and wind projects are currently being developed by PPAs and more is expected in the future. b. Directionally, TCE expects further corporate PPAs. c. No comment. d. TCE anticipates that the owners of these assets will operate them in a manner to maximize profitability. e. No comment. f. A significant challenge facing the development of energy storage in Alberta is the current tariff treatment under Rate DTS.
	Future technologies The following table contains generation technologies and specifications on potential future generation development. Do you believe that these are representative of potential future Alberta generation projects? Would you like to share views on additional technologies and specifications that are not included within the table?	TCE recommends that the AESO expand the table to include cogeneration, solar/battery hybrid, and wind/battery hybrid facilities.

Facility Type	Overnight Capital Cost ($/kW)	Fixed O&M ($ / kW-year)	Variable O&M ($/MWh)	Generator Capacity (MW)	Heat Rate (GJ/MWh)
Combined-Cycle Natural Gas	1,667	$49.71	$2.49	479	7.03
Simple-Cycle Natural Gas – Aeroderivative	1,159	$52.83	$4.24	46.5	9.68
Solar Photovoltaic – 2021-2025	1,643	$31.85	Credit: grid intensity x carbon price	50	N/A
Solar Photovoltaic – 2026-2030	1,388	$31.85	Credit: grid intensity x carbon price	50	N/A
Wind Generation - 2021-2025	1,586	$32.50	Credit: grid intensity x carbon price	50	N/A
Wind Generation - 2026-2030	1,105	$29.25	Credit: grid intensity x carbon price	50	N/A

	Other a. Is there any information that you would like to share, which would contribute to the Long-term Outlook development (ie. Developing trends)? b. What do you think is likely to disrupt Alberta's electricity industry in the next 20 years and in what way?	a. No comment. b. Some likely candidates to disrupt Alberta's electricity industry would be environmental policy, transmission policy, distributed energy resources, electric vehicles, and further electrification.