New Transmission Development in Alberta: AESO Focuses its Attention on Integrating Renewable Electricity

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Importance of the LTP

The Alberta Electricity System Operator (**AESO**) recently released its 2017 Long-term Transmission Plan (**LTP**) – a forecast by the AESO of the new transmission development that it currently expects will occur in the province. The LTP is very important for power project developers because it helps guide them to where there is now, or is likely to be in the future, available capacity for their generation projects on Alberta's transmission system. Connecting to and using existing transmission (or distribution) capacity will be a requirement for a project to qualify for this year's Round 2 (300 MW) and Round 3 (400 MW) of Alberta's Renewable Electricity Program (). It is also expected to be a requirement in future rounds of REP, at least as long as there is enough available transmission (or distribution) capacity to accommodate the procured renewable electricity. Renewable project developers, and AlbertaPowerMarket.com, were therefore highly anticipating the release of the LTP. Most of us also attended the AESO's presentation of the LTP earlier this month at the Westin Hotel in Calgary, but for those that could not attend we thought we would share with you what stood out to AlbertaPowerMarket.com.

Role of AESO in Transmission

It is important for readers to first have a general understanding of the AESO's role when it comes to Alberta's transmission system. The AESO does not own the transmission system in Alberta. The transmission system is actually owned by different privately- and municipally- owned transmission facility owners (**TFOs**), like AltaLink, ATCO and EPCOR, who operate based on a cost-of-service model (regulated rate of return) in dedicated service territories. The AESO is, however, the government entity charged under provincial legislation with transmission planning and implementation to ensure that the transmission system is designed and operated in a manner that meets Alberta's electricity demands. In short, the AESO (i) first decides that a new transmission

development is needed in Alberta, (ii) then seeks the approval of the Alberta Utilities Commission (**AUC**) for that transmission development, and (iii) finally, if approved by the AUC, the AESO assigns the siting, construction, ownership and operation of the transmission development to a particular TFO, usually to the TFO that operates in the service territory where the transmission development is to be located. The LTP, released every two years by the AESO, is the primary means by which the AESO communicates to stakeholders the new transmission developments that it believes are needed in Alberta.

The Berries in the LTP

AlbertaPowerMarket.com found lots of interesting information in the LTP, but five berries stood out to us among the leaves:

1. Less money will be spent on transmission development in Alberta in the near-term compared to what the AESO forecasted in the past. The AESO currently sees a need for 15 near-term transmission developments, with an aggregate cost of about $1 billion. The 2015 LTP forecasted 17 transmission developments, with an aggregate cost of about $2.5 billion. The decline is driven mainly by lower projected load growth/electricity use (0.9 per cent per annum growth over the next 20 years) caused by a downturn in Alberta's oil and gas economy, including a slow-down in development (both for oil production and cogeneration) in the oil sands. The fact that Alberta invested heavily in its transmission system over the past 10 years also permits less money to be spent now on transmission development.

2. Alberta's existing transmission system has a capacity (upper limit) to integrate 2,600 MW of new renewable projects without any new transmission development taking place. The LTP breaks the 2,600 MW of available capacity down, assuming the optimal placement of the new renewable generation within the transmission system (not going to happen), by region: (i) 1,000 MW in the southeast, (ii) 800 MW in the southwest, (iii) 500 MW in the northwest, and (iv) 300 MW elsewhere in the province. This 2,600 MW of available capacity will be reduced to 2,000 MW after the four winning transmission-connected projects from REP Round 1, with an aggregate capacity of about 600 MW, get built and connected to the transmission system in 2019.

3. The AESO's focus is now on how best to increase the 2,600 MW of existing transmission capacity to accommodate up to 5,000 MW of additional renewable generation by 2030, so that Alberta can meet its renewable electricity targets. The AESO will therefore pursue new transmission developments that optimally, in a cost-efficient way, integrate more renewable electricity from what it describes as the "renewable rich regions" of the province. The renewable-rich regions are the Southeast, Southwest and Central East areas (**Renewable Rich Regions**) depicted on the excellent map found on page 26 of the LTP that have the best wind and solar resources.

According to the LTP, though these Renewable Rich Regions already have strong 240 kV collector systems, the transfer-out capability – the transmission needed to get the surplus renewable electricity onto the parts of the transmission system backbone with available capacity, so that it can be transmitted from the Renewable Rich Regions to the cities and industrial heartland where it is consumed – needs to be improved. Two key projects will therefore be pursued by the AESO to improve the transfer-out capability from the Renewable Rich Regions. Both transmission projects will be staged to align with the pace and location of new renewable generation projects.

First, the Chapel Rock-Pincher Creek Transmission Development will add a new 500 kV substation and two new 40 kilometer 240 kV transmission circuits in the Pincher Creek area. It will permit the integration of an additional 700 MW of renewable generation in the Southwest Renewable Rich Region. Second, the Central East Transfer-out Transmission Development will strengthen the existing transmission path between Cordel and Gaetz, near Red Deer. That project helps with the integration of renewables in both the Central East and Southeast Renewable Rich Regions, and permits the integration of another 1,000 MW of new renewable generation.

If you are counting, the AESO will still be 700 MW short of its 5,000 MW goal – current 2,600 MW plus 700 MW plus 1,000 MW, totals 4,300 MW – after it completes these two projects. According to the AESO, the 700 MW shortfall will be made up as transmission capacity gets freed up when new urban distributed-connected projects (closer to load) get built, new hydro development occurs in the northwest, and new technologies are introduced in the system.

4. Some renewable project developers will be disappointed because the AESO confirmed in the LTP that Stage 2 of the previously announced Southern Alberta Transmission Reinforcement (**SATR**) project will not proceed. Stage 2 of SATR was a series of four 240kV circuits designed to collect electricity from a geographically dispersed collection of proposed solar and wind projects across Southern Alberta (from Etzicom Coulee to Whitla, Picture Butte and Goose Lake). Renewable project developers with options on land in these areas, which are certainly renewable rich areas, will be disappointed by the cancellation of Stage 2 of SATR.

   The LTP also does not expressly deal with, and may add to, the adverse impact that situating all the wind farms in Southern Alberta has on power pool prices. We refer here to the so-called “wind discount”. The AESO may in fact be adding to this wind discount phenomenon by focusing its efforts on integrating more renewable resources from the Renewable Rich Regions. This will not make existing renewable project owners, who do not have the benefit of a long term REP contract with the AESO, happy, as the AESO’s focus on Renewable Rich Regions may further depress their power pool revenues. Also, developers and project lenders concerned with the dispatch/curtailment risk built into the contract used in Round 1 of REP, and that we wrote about here , will have to consider the impact that the AESO’s focus on Renewable Rich Regions and the two proposed

transmission developments will have on the dispatch/curtailment risk under that form of REP contract for different renewable projects.

5. Despite the recent dispute between Alberta and British Columbia over the permitting of the Trans Mountain Pipeline, the LTP contemplates that by 2022 the Alberta-British Columbia intertie capability will be restored to 1,200 MW of import capability. It is currently only 800 MW, which when combined with the Montana intertie (300 MW) and the Saskatchewan intertie (150 MW) only allows Alberta to import about 10% of the electricity it needs to meet its peak demand. The LTP also references the Regional Electricity Cooperation and Strategic Infrastructure (RECSI) program that is looking into the possibility of a new and larger British Columbia intertie to increase the import of hydroelectricity from that province, though the Trans Mountain Pipeline interprovincial dispute has likely reduced the odds of that RECSI project occurring any time soon.

Concerns of the AESO

Besides the five berries noted above, the AESO also expressed some concerns in the LTP that caught our attention. In law we call this obiter dictum, and it is important because it tells us what might be keeping the transmission planners at the AESO up at night and what might impact the electricity market in the future:

1. The LTP recognizes that the AESO does not currently control, other than indirectly for renewables through its design of the REP and a little bit through market design, including the design of the proposed capacity market, the type and location of the new generation projects that will be built in Alberta. In particular, the AESO does not control when Alberta's coal plants will be retired and how those brownfield sites, and the related transmission capacity, will be used in the future, e.g. coal-to-gas conversions, sites for new combined cycle gas plants, or perhaps simply decommissioned. One just has to look at TransAlta's recent decisions regarding Sundance for evidence of that fact. Also, as evidenced by Suncor's recent announcement to pursue 700 MW of cogeneration at its base plant in the oil sands, the amount of new cogeneration developed in the oil sands is also not controlled by the AESO.
2. The AESO worries about the adverse impact that the rapid ramping up and down of more renewables will have on the transmission system. This will require more fast-ramping non-wind or solar generation (e.g. gas-fired or hydro), and may require changes by the AESO to its ancillary service products and the introduction by the AESO of new fast ramping products.
3. The AESO is worried about its visibility into and control over new distributed energy resources () connected to the distribution system. Currently, there is only about 470 MW of DER in Alberta. If this increases in the Renewable Rich Regions, and it is small solar projects as expected, the AESO believes it may use up some of the transfer-out transmission capability that exists from these regions, but then the DER will not be generating at times when electricity demand in the province is highest – those cold winter evenings after the sun has set. Most DER is also less than 5 MW, so the AESO does not generally dispatch those projects, and the DER does not exchange generation data with the AESO. If DER capacity

is to increase significantly in Alberta, the AESO may seek additional visibility into and control over this DER.

Conclusion

As you can see, the LTP sheds light on Alberta's future transmission system and, in particular, the integration of the new renewable electricity that is required if the province is to reach its renewable electricity targets by 2030. The LTP also helps developers to site projects in locations where they will be able to use existing transmission capacity, a requirement for projects to qualify for this year's, and likely future, rounds of REP. AlbertaPowerMarket.com will continue to monitor the AESO's announcements in the important area of transmission, and will advise you of any significant changes from what is contained in the LTP.

Chidinma, Joelle and Kent are lawyers practicing in the Electricity Markets Group at the Calgary, Alberta office of the national law firm Borden Ladner Gervais LLP. The views expressed in this article are the personal views of the authors, and not the views of Borden Ladner Gervais LLP.

By

Joëlle Dudelzak, Kent D. Howie

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BLG Offices

Calgary
Centennial Place, East Tower
520 3rd Avenue S.W.
Calgary, AB, Canada
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T 403.232.9500
F 403.266.1395

Ottawa
World Exchange Plaza
100 Queen Street
Ottawa, ON, Canada
K1P 1J9

T 613.237.5160
F 613.230.8842

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1200 Waterfront Centre
200 Burrard Street
Vancouver, BC, Canada
V7X 1T2

T 604.687.5744
F 604.687.1415

Montréal

1000 De La Gauchetière Street West
Suite 900
Montréal, QC, Canada
H3B 5H4

T 514.954.2555
F 514.879.9015

Toronto

Bay Adelaide Centre, East Tower
22 Adelaide Street West
Toronto, ON, Canada
M5H 4E3

T 416.367.6000
F 416.367.6749

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