Designing Alberta's New Electricity Capacity Market: Work Begins but Much to Be Done

January 24, 2017

Earlier this month, members of BLG attended the Alberta Electric System Operator's (AESO's) first stakeholder engagement session in Calgary on the design of Alberta's forthcoming capacity market. As we wrote about in *Alberta to Cap Electricity Rates and Bring in a Capacity Market*, the provincial government first announced the introduction of a capacity market in November. Stakeholders turned out in large numbers and filled the conference room to hear more from the AESO about this fundamental change to Alberta's power market.

The session was not a debate on the merits of the government's decision to introduce a capacity market — that ship has sailed. Rather, it was about identifying the capacity market's desired end state, key market design features to resolve, expected timelines, and the development of the AESO's consultation process to involve stakeholders in the decision making. While the session provided valuable insight into the AESO's current thinking, participants — including BLG — left with many unanswered questions.

Objective and Timeline

The capacity market is intended to ensure an adequate power supply in Alberta by placing a value on generators' ability to supply capacity, and compensating the generators for that service. Capacity will become a monetized product, exchangeable in a market that will operate in parallel with the province's existing energy-only market (EOM) and ancillary services market.

The AESO provided the audience with an instructive statement describing a potential outcome of the capacity market's development:

*"The desired end state is to develop a capacity market that utilizes **competitive market forces**, ensures continued **supply adequacy and reliability** at a **reasonable cost** and is **flexible** to **reflect the unique aspects of Alberta's electricity industry**. **(emphasis added)**"*

The goal is to complete the design and implementation structure of the capacity market by the end of 2018, to facilitate first capacity procurement in 2019, and first delivery in 2021.

Starting Market Design Assumptions

While the AESO did not provide a definitive framework, it revealed several potential starting assumptions for the capacity market's design. These provide stakeholders with an indication of the AESO's design starting point, unless stakeholder feedback suggests that one (or more) of these assumptions require further consideration. The assumptions are summarized below, with some of our preliminary thoughts to encourage discussion at this early stage of the market design process.

- **The Capacity Product** — Capacity obligations will be a forward physical obligation requiring the capacity sold in the capacity market to be available to provide energy when needed in Alberta. The intent is to provide capacity payments for a physical product that is ultimately delivered. No surprise here. The goal is to keep the lights on, so physical supply (and not a financial product/obligation) that can be called upon if needed is a reasonable assumption in our view, in light of the indicated desired end state.
- **Generator Obligations** — There will be a "must offer" requirement. All existing capacity must offer their eligible capacity to the market and planned capacity (i.e. new, including expansions) must offer for the delivery year they are connected. This is consistent with the "must offer, must comply" rule in the EOM, and prevents generators from withholding eligible capacity to drive up the clearing price in a procurement.
- **One Market** — Alberta will initially be a single market zone. This is consistent with Alberta's EOM rules that do not provide for locational pricing. The AESO acknowledged that design flexibility to permit locational pricing is required in the event that Alberta's transmission policy changes in the future.
- **Resource Adequacy Components —** A key component of any capacity market is the determination of the projected peak load and reserve requirement needed for the forward period for which capacity is procured. Capacity cannot be procured without first forecasting market requirements for capacity. This will be done by a single market coordinator, presumably the AESO.
- **Product Characteristics** — The capacity market will only deal with the supply of eligible capacity. Attributes of that capacity (e.g. greenhouse gas emission (GHG) intensity, total capacity factor, ramp-up capability, and energy production costs) will not be considered when awarding capacity contracts. Like the upcoming Renewable Energy Program (REP), capacity procurements will be technology-neutral. It is assumed that the capacity market's objective will solely be ensuring sufficient power supply– not achieving any other electricity system or policy goal. We look forward to stakeholders' reactions to this proposed assumption, but the AESO is suggesting that other policy goals will be achieved through other mechanisms. For example, GHG reductions in the power sector will be achieved through programs like the REP. Another mechanism to reduce GHG reductions is the way in which Alberta's carbon levy is imposed on different types of generation to impact the merit-order dispatch of the different types of generation in the EOM.
- **Market Independence** — Energy and ancillary services markets will be separate from the capacity market. Capacity market procurements will operate independently.
- **Participation rights** — Market participants who unsuccessfully bid to supply the capacity market will still be eligible to participate in the energy and ancillary

services markets. This is consistent with the independent but parallel operation of the energy, ancillary service and capacity markets.

- **Renewables** — Generators awarded support payments under Renewable Energy Support Agreements (RESAs) in round one of the REP (occurring this year) will not be eligible to sell that capacity in the capacity market. While no decision has been made on whether or not renewables will be eligible to supply in the capacity market, the rationale seems to be that this year's RESA winners will obtain all financial support necessary from their RESAs. Also, if this assumption remains, the AESO will not recover any of the payments it will make under a RESA by requiring the RESA generator to participate in future capacity procurements and remit any capacity payments it may receive to the AESO.
- **Market Oversight** — Capacity market mechanisms and the behaviour of its participants will be subject to regulatory oversight. The AESO will "design the 'rules of the game;'" the Market Surveillance Administrator (MSA) and the Alberta Utilities Commission are likely to play an important role as well. Like the EOM, mitigating market power of participants and ensuring a fair, efficient and openly competitive capacity market is a reasonable goal to expect in the final design.

Key Questions

The AESO (along with session attendees) identified and asked a number of questions that will affect the ultimate design of and participation by suppliers in the capacity market. Some of these questions and our thoughts on such questions include:

- **What will be the resource adequacy requirement for each period?** Capacity procurement for a future period will procure a specified amount of capacity for that period. This will require future demand (peak load) for that period to be modelled and determined by the market coordinator. A reserve margin/buffer will be added to the projected peak load to ensure that reliability of electricity is maintained for Albertans under periods of high demand and/or in the event of generation and transmission outages. The way, and transparency, with which this resource adequacy requirement is determined by the market coordinator is likely to spark debate.
- **Who will buy the capacity?** The obligation to procure the capacity must be placed somewhere in the market. In some jurisdictions load serving entities (e.g. distribution facility owners) must procure capacity for the load that they serve. Other jurisdictions place the obligation on a single purchasing entity such as the AESO.
- **What will be the frequency of the capacity procurements and the length of the delivery periods/contracts?** Procurements must be held sufficiently in advance of a future period for newly-procured generation – either green or brownfield projects – to be built in time and for existing generators to make and implement generation retirement decisions. Supplementary procurements for a period may also be required as the resource adequacy requirement evolves approaching that period. Generators will require some assurance that regular procurements for future periods will also be held before committing to new or expansion generation projects.

Financing, as ever, is key. The length of the delivery period or capacity contract will be very important when it comes to project financeability. The AESO rejected long-term contracts in adopting a capacity market, so twenty year contracts would be surprising.

But we could see annual capacity procurements resulting in rolling five to ten year contracts. After all, the AESO has acknowledged the importance of revenue sufficiency and certainty for generators to finance projects. To us, the answer to this question will be critical to incentivizing generators and financiers to develop the new dispatchable capacity needed to firm the renewables and replace the coal capacity that is being phased out.

- **Will there be a price floor or cap as in Alberta's current energy only market?** If, as noted above, all existing capacity will have to be offered, then will there be restrictions on offer prices to influence the capacity clearing price? For example, should the AESO set a cap based upon the estimated net cost (i.e. net of expected revenues in the energy and/or ancillary services markets) to build and operate new capacity or should capacity suppliers be unconstrained in their offers? If a cap is considered, then the way, and transparency, with which it is determined will be important.
- **Which generating sources will be eligible to participate?** Participation of renewables appears to be on the table. Although, renewables will be ineligible if awarded contracts in the first phase of the REP. It is unclear whether included renewables will include only dispatchable renewables like hydro, renewables paired with energy storage, or all renewables. Decisions will also have to be made with respect to capacity located outside of Alberta where the electricity could be imported through existing or new interties. The treatment of cogeneration, common in the oil sands, also has to be addressed, given that some of this capacity is consumed on-site by the generators. Defining procurement participants will also require the AESO to decide if customers willing to reduce demand (e.g. shut down or reduce production) in the forward period will be able to bid and compete with generators for the clearing price.
- **How will capacity costs be allocated?** The capacity market will result in payments being made to ensure the reliability of electricity supply. Customers will benefit and have to pay that cost, even if settled and paid by a market clearing-house (like the AESO) or load providers. This necessitates a decision regarding its allocation across customer groups. Industrial customers will also want to be able to manage that cost, so the ability to enter into hedging arrangements should be facilitated.
- **What existing examples can Alberta draw from?** The AESO indicated at the session that it intends to draw as much as possible from existing capacity market design while designing Alberta's market. Clearly, as the AESO noted, at the same time the “unique aspects of Alberta's electricity industry” will have to be considered. The “PJM” wholesale market serving 14 U.S. states is frequently cited as a successful model, including by the provincial government. While PJM is a potential model, it is also significantly different. PJM serves 61 million people, operates on a fully-integrated, multi-jurisdictional basis and has 180,000 MW of installed capacity. Alberta is a single jurisdiction, weakly interconnected to neighbouring markets, with a comparably small 16,300 MW of installed capacity.
- **How will the capacity market impact the energy and ancillary services market?** The AESO has indicated that introducing a capacity market will put downward pressure on what power pool prices in Alberta would otherwise be. This has been experienced in other capacity markets and is a reasonable position. However, this raises serious concerns for existing generators — for example an existing renewable generator who may not be eligible to participate in the capacity market. In a province trying to increase market share for renewable energy, Alberta will not want to drive existing renewable generators

out of business by denying them capacity payments while at the same time depressing the revenues they earn in the energy market.

Another issue to consider is the relative value of each of the capacity and energy component revenue going forward and the resulting impact on project financing. We understand that in some implemented capacity markets, generators earn a small portion of revenue from the capacity market and the rest is earned from sale of electricity in the energy or ancillary services markets. If that is to be the case in Alberta, will new generation projects be financeable if the bulk of projected revenue is still exposed to price risk in the energy market? Will capacity revenue be sufficient to cover the capital and fixed operating costs needed to build the required new generation in Alberta?

The net result of all of this is that many stakeholders are trying to figure out how the energy, ancillary services and capacity markets are going to effectively operate together, and what the effect will be on their organizations, aggregate revenues and electricity costs under a newly-designed market. Bolting on the REP to the existing energy market was one thing. Alberta now plans to additionally tack on a capacity market. Doable? Yes, but it will not be simple and some participants may not be happy with the impact to their businesses. After just settling the PPA litigation and agreeing to compensate coal plant owners for the phase out of coal by 2030, the Province presumably hopes this design change can be implemented without much controversy. We will be watching the stakeholder consultation with interest to see if that can be done.

Next Steps

The primary purpose of the AESO engagement session was to assure market participants and other stakeholders that engagement will be extensive and thorough, the decision-making process and rationale will be transparent and the consultation process will be designed to ensure that all stakeholders are informed.

In that regard, the AESO is soliciting stakeholder comments about the content of the session. A copy of the presentation given to attendees at the sessions is available online. A feedback matrix has been released for stakeholders to use to comment on the content of the session. The deadline for feedback is February 10, 2017.

Those looking to learn more about a capacity market should also take a look at the report prepared for the MSA that was released the week of January 16, 2017, to help educate stakeholders on unique issues for Alberta. We also understand that Charles River Associates has been retained to help identify issues and inform stakeholders. That should be quite helpful once it is released.

The Alberta capacity market design work has begun but much is to be done. A long road lies ahead to design Alberta's capacity market and complete 2019's first procurement. BLG will be there every step of the way actively monitoring development of the consultation and design processes and sharing our thoughts on the issues. We will publish updates regularly as the design evolves and would welcome the opportunity to receive your thoughts on this important change to Alberta's electricity market.

By

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