

**March 6, 2019**

**To: Power Advisory Clients**

**From: Travis Lusney, Power Advisory LLC**

**RE: IESO Bulk Planning Process Engagement**

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## CONTEXT

- Independent Electricity System Operator (IESO) is formalizing the integrated bulk system planning process<sup>1</sup>.
- The Ontario system planning process will include an annual Ontario Planning Outlook (OPO)<sup>2</sup>, a 3-year bulk transmission plan, and 5-year regional plans.
- The IESO hosted a stakeholder engagement on February 26<sup>th</sup>, 2019, to outline the next steps in the establishment of the new bulk planning process.

## BACKGROUND

The Independent Electricity System Operator (IESO) oversees Ontario's wholesale electricity market, operates its power system in real time, and is responsible for planning for Ontario's future energy needs. The Long-Term Energy Plan (LTEP)<sup>3</sup> serves as Ontario's vision for the electricity and energy sectors and endeavors to balance dual priorities of affordability and greenhouse gas (GHG) reduction. The IESO developed an Implementation Plan for the 2017 LTEP<sup>4</sup> outlining how it will achieve certain objectives in the 2017 LTEP. As part of the IESO's LTEP Implementation Plan, the IESO is reviewing and reporting on system planning processes and proposing adjustments or recommendations to improve the processes.

The IESO is presently in the process of redesigning Ontario's wholesale electricity market through the Market Renewal Program (MRP). MRP includes the most ambitious enhancements to Ontario's wholesale electricity market design since market opened in 2002, addressing

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<sup>1</sup> Information on the bulk planning process stakeholder engagement can be found here:

<http://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Formalizing-the-Integrated-Bulk-System-Planning-Process>

<sup>2</sup> See Power Advisory's previous client note on the 2019 OPO circulated on February 7, 2019

<sup>3</sup> The 2017 LTEP can be found here - [https://files.ontario.ca/books/ltep2017\\_0.pdf](https://files.ontario.ca/books/ltep2017_0.pdf)

<sup>4</sup> The IESO Implementation Plan for the 2017 LTEP, *Putting Ontario's Long-Term Energy Plan Into Action*, can be found here - <http://www.ieso.ca/-/media/Files/IESO/Document-Library/ltep/IESO-ltep-implementation-plan.pdf?la=en>

known issues with market design. As part of MRP and their broader system planning mandate, the IESO is considering changes to its system planning processes. The IESO will be moving toward more market-based mechanisms to procure resources, specifically through the proposal of Incremental Capacity Auctions (ICAs) that operate in a similar fashion to capacity markets in other jurisdictions. Implementing such mechanisms will require more long-term planning studies to ensure that system needs can be met effectively to maintain the reliability of the system.

In particular, the IESO has identified five core initiatives:

- (1) Develop a formal, integrated bulk system planning process;
- (2) Review and report on the existing regional planning process (local area planning) and provide options and recommendations. This includes identifying barriers to the implementation of non-wires solutions as alternatives to traditional network investment and options to address any such barriers;
- (3) Develop a coordinated, cost-effective, long-term approach to replacing transmission assets at end of life;
- (4) Develop a competitive transmitter selection or transmission procurement process; and
- (5) Review and report on its technical criteria used to assess customer reliability.

On February 26<sup>th</sup>, 2019, the IESO hosted the second webinar on formalizing an integrated bulk planning process (i.e., core initiative 1) in support of market design evolution underway. This client note will review bulk planning process webinar presentation by the IESO and provide our commentary at the end of the note.

## **BULK PLANNING PROCESS**

To support the formalization of the integrated bulk planning process, the IESO listed objectives for planning process activities (see table on next page). A majority of the planning activity objectives relate to the core mandate of the IESO as system planning and market operator. While the IESO and the former Ontario Power Authority<sup>5</sup> have performed bulk system planning for the past decade, the new competitive market environment envisioned in the MRP is a primary driver for redesigning the bulk planning process

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<sup>5</sup> The OPA and IESO were merged at the beginning of 2015. Prior to the merger, the OPA was responsible for central planning for the Ontario power system and procurement of resources to meet supply adequacy and public policy objectives.

| <b>Planning Activity Objective</b>                                | <b>Description</b>  |
|---|---|
| Increase Transparency/<br>Reader Confidence                       | Support IESO’s vision, as described in their mission statement, by sharing relevant and valued information, data, analysis and expertise in a manner that is predictable, easy to read and audience oriented  |
| Satisfy Regulatory<br>Obligations and Market Rule<br>Requirements | Some obligations require the IESO to publish public facing reports or submissions to regulatory/oversight bodies  |
| Ensure Reliability  | Identify supply/demand imbalances, recommend or enable actions to improve reliability through outage planning/negotiation or new investments  |
| Enable Markets by Guiding<br>Investment Decisions                 | Provide developers and Market Participants a view of system needs to help them determine where, when and to what degree investments should be made. Separate reports may be required depending on the vehicle used to make investments. Clear recommendations/suggestions are key to driving a response from the market |
| Guide/Implement Policy  | Inform government policy decisions, directives, long term energy plans  |
| Provide Planning Context  | Provide stakeholders a view of the overall state of Ontario’s electricity system and plan for the products and services that meet Ontario’s electricity needs today and tomorrow  |

**Table 1: Objectives of IESO’s Planning Activities**

At a high-level the IESO planning processes (i.e., bulk and regional planning) will identify system needs based on planning criteria. The IESO will use acquisition processes to secure solutions required to address system needs. Capacity needs will be acquired through ICAs while non-capacity needs will be acquired through other methods. The IESO has not detailed what these other acquisition methods may be but did state at a high-level they would include both traditional transmission system expansion (i.e., wires solutions) and non-traditional solutions (i.e., non-wires alternatives (NWA)). An implementation plan will be developed based on acquisition results. Progress on the implementation plan along with assessment of acquisitions results will inform future system needs identification.

System planning will be divided into three coordinated planning cycles (see figure below). The annual OPO will focus on Resource Adequacy and will provide an annual status report on the Ontario power system for all stakeholders. The OPO will use the latest transmission system plans and other active planning updates to determine resource adequacy needs and the target capacity for the ICA. The bulk planning process will be a three-year planning cycle focused on transmission adequacy. Each part of the provincial transmission network will be assessed at least every three years and results will be inputs into the OPO. The regional planning process

involves coordination with Local Distribution Companies and transmitters and will be on a 5-year planning cycle that has been established since 2013<sup>6</sup>.



**Figure 1: Planning cycles for 1/3/5 years**

In designing the 3-year bulk transmission planning cycle, the IESO considered the following:

- Incorporate transmission adequacy assessments that the IESO estimates can take up to 3 years to complete
- Factor in planning context and needs which can vary regionally throughout the province
- Consider the interactions and interdependencies with other processes (e.g., ICAs, regional planning, distribution system plans, reliability outlook, etc.) that occur with other cycle durations
- Consider a range of possible solution types, and different implementation processes

The above considerations demonstrate how interconnected bulk system planning is to the rest of the market activities in the Ontario electricity sector. In particular, the 3-year timeline for transmission adequacy assessment reflects the effort required to certify inputs, establish assumptions, develop assessment models and analyze results. The IESO reviewed bulk planning processes in other jurisdictions and concluded that a regular process and interaction with stakeholders along with data transparency is a common strategy<sup>7</sup>. The 3-year bulk transmission planning cycle has three key planning objectives:

- Ensure reliability and service quality
- Enable economic efficiency
- Support sector policy and decision making

<sup>6</sup> For more information, see the Integrated Regional Resource Plan (IRRP) (<http://www.ieso.ca/Get-Involved/Regional-Planning/About-Regional-Planning/Overview>) and the Ontario Energy Board's (OEB's) regional planning for electricity infrastructure (<https://www.oeb.ca/industry/policy-initiatives-and-consultations/regional-planning-electricity-infrastructure>)

<sup>7</sup> Power Advisory conducted surveys and interviews with multiple jurisdictions around the world on bulk planning process on behalf of the IESO throughout the 2<sup>nd</sup> half of 2018.

To achieve the key planning objectives, the IESO intends to design a process that is transparent, complete and flexibility. Further information on three components of the design process can be found in Appendix A. The IESO intends to assess the bulk system within separate transmission planning areas (i.e., subdivide the transmission grid into zones). The beginning of the 3-year bulk planning process will start with data gathering on the transmission system and an assessment on the entire system (i.e., each planning area). The planning areas will be prioritized for potentially detailed follow-up assessments. The division of the provincial transmission grid into areas to be studied independently helps the IESO assess the specific scenarios tailors to each planning area (e.g., different generation and demand forecasts). The transmission system has natural interfaces (i.e., assets within the system that often become constrained and then require detailed analysis) that can help define planning areas. Transmission adequacy analysis is a major undertaking and separating the province into planning areas allows for urgent needs to be prioritized and addressed in a timely manner to maintain reliability and safety.

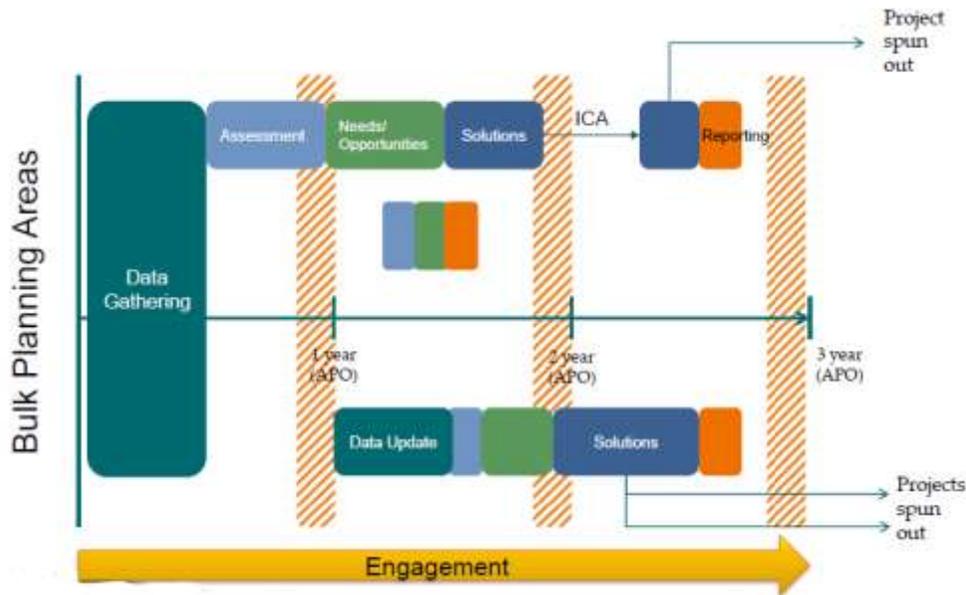


Figure 2: Nominal 3-year Bulk Planning Cycle

The IESO provided a notional overview of a 3-year planning process cycle (see figure above). Each row in the diagram is for a different planning area. The process starts with a data gathering stage for all areas of the province. The planning area represented by top row is identified as a priority area and the IESO would determine needs/opportunities along with solutions for the area. Following the ICA in the 2<sup>nd</sup> year of the cycle, the solutions would be updated and a report on the area would be issued. The planning area in the second row is a low priority planning area that requires minimal effort from the IESO. The final planning area (3<sup>rd</sup> row) was not identified as a priority planning area, but following data update after the 1<sup>st</sup> year cycle required a more detailed assessment and solutions development. Overall, the IESO

expects to be assessing multiple planning areas at any one time during the 3-year bulk planning process.

## NEXT STEPS

**The IESO is seeking feedback on the webinar by March 19, 2019.** A third bulk planning webinar will be hosted in Q2 2019. Sometime in the summer of this year the IESO will post a strawman of the bulk planning process for comment before finalizing the formal bulk planning process in Q3 2019.

### POWER ADVISORY COMMENTARY

Similar to the launch of the OPO, the IESO should be commended for changing their approach to bulk system planning and attempting to formalize the process. A new planning approach is needed if the changes contemplated under the MRP are to be successful. A core IESO planning objective is transparency and openness, a refreshing change to the planning process that has been at times limited and opaque to stakeholders in the recent past.

The establishment of 1-year, 3-year, and 5-year planning cycles for different system assessments will provide clarity to stakeholders and allow the IESO to better manage stakeholder engagement. In particular, Power Advisory views the separation of resource adequacy into a 1-year planning cycle and transmission adequacy into a 3-year planning cycle as a prudent decision by the IESO. Resource adequacy is primarily a single balancing calculation, in other words the analysis is about how much demand is expected during peak hours versus how much supply is available. The IESO can update annually without requiring a significant undertaking. This is supported by experience in other jurisdictions that operate annual capacity markets (e.g., NYISO, ISO-NE, PJM). On the other hand, transmission adequacy is a complex undertaking that must model the system under a wide variety of situations. For example, system constraints can occur under both high demand and low demand situations; therefore, multiple time periods need to be analyzed to determine system need under various future system scenarios.

The three key planning objectives (i.e., reliability, economic efficiency, and supporting public policy) align closely with planning objectives in other jurisdictions. Power Advisory expects that reliability will be the primary driver for system needs in the future based on experience in other jurisdictions; however, unique aspects of the Ontario regulatory framework and power system could support development under the other two planning objectives. For example, the northwest zone has experienced unique negative pricing events that may require solutions to resolve economic efficiency issues. Further, the Minister of Energy directive power can fast track public policy projects that must be incorporated into the bulk system plans.

Power Advisory supports the proposed design of the formal bulk planning process by the IESO; however, there are a number of questions outstanding at this time. First, the IESO has discussed developing solutions for identified needs. It is not clear if only the IESO will be developing solutions or if stakeholders will be allowed to submit their own solutions. In addition, the process for assessing NWAs compared to traditional wires solutions has not been discussed yet.

Second, there is a natural conflict of interest in transmission system planning. A majority of the system information is held by the transmitter (i.e., Hydro One) who is motivated to support traditional wires solution to maintain and grow their asset base. Bulk system planners in other jurisdictions have had to ensure an arms-length relationship with established transmitters to resolve the conflict. Power Advisory believes the IESO will need to establish the same arm-length relationship with Hydro One to maintain fair and equal treatment when assessing system needs and identifying solutions.

Third, the IESO connection process may have to evolve to meet the changes in the bulk planning process. Determining potential system needs based on market activities related to resource development is difficult for a system operator (i.e., the IESO cannot be certain where new generation will be developed in the future). Other jurisdictions (e.g., PJM, NYISO) have adopted a connection assessment process that groups potential projects seeking to connect for transmission adequacy assessment. Projects must demonstrate a level of commitment (e.g., an executed bi-lateral agreement, regulatory approval, etc.) to be included in the connection assessment group. The results of the analysis not only inform potential bulk system needs, but also can be used for cost allocation purposes of the required system upgrades. In other words, the group connection process can determine how much each new project pays for required transmission system upgrades. Power Advisory believes that the IESO will need to review their connection assessment process. Changes to the connection assessment process will impact clients considering new developments or expansions of their existing facilities in the future.

Finally, the IESO is considering the adoption of competitive procurement for transmission resources. The competitive procurement process could be part of the solution development in the bulk planning process. More information is needed how the IESO intends to use the competitive transmission procurement process and how that process will link to the formalized bulk planning process. Clients interested in NWAs or traditional transmission developments should monitor these developments closely.

**Appendix A: Bulk Planning Process Design Components**

| <b>Design Component</b> | <b>Description</b>  | <b>IESO Action</b>  | <b>Next Steps</b>  |
|-------------------------|---|---|--|
| Transparency            | <p>A transparent process has well defined products and components, with deliverables prepared at regular intervals, informed by engagement, and a fully documented procedure.</p> <p>Inputs and assumptions are also available, where possible, to help stakeholders carry out their own analysis and support their decision making</p> | <p>Leverage the 1-year planning process to provide regular updates on the status of the 3-year, transmission focused, planning cycle.</p> <p>Provide updates on the status of any projects which had been initiated as a result of this process</p> <p>Where needs were identified and a solution recommended, publish a report detailing analysis and conclusions, similar in scope to the Integrated Regional Resource Plan (IRRP) final report</p> | <p>Determine how much information (assumptions, decision rationale) can be made public, and at what stages in the planning process.</p> <p>Determine how much of this information will already be made public through other products</p> <p>Identify when the engagement take place and what feedback will be sought</p> |
| Completeness            | <p>Needs should be identified with sufficient lead time to select and implement a preferred solution. Analysis should be thorough, and ensure all relevant reliability criteria are respected</p>   | <p>Begin the 3-year cycle with an initial Ontario-wide assessment. Based on the results, carry out the detailed evaluations according to priority</p> <p>To enable detailed analysis of priority areas, divide the province into bulk planning areas, with detailed analysis carried out for each at least once each cycle</p>  | <p>Overview of what type of evaluations are carried out during the initial assessment, as opposed to during the more detailed analysis.</p> <p>Determine how is priority determined and how are bulk planning areas formed and/or modified over time</p>   |
| Flexibility             | <p>A well-defined process with standard approaches and templates improves overall efficiency and transparency. At the same time, system conditions and assumptions can change quickly, meaning the process should be flexible enough to adjust as required, particularly where needs become more urgent and must be prioritised</p>     | <p>Bulk Planning Areas are studied in order of anticipated priority. Study can be reinitiated at any time if new information becomes available</p> <p>Front end stages of the process (data gathering, identifying needs and opportunities, selection of solution type) should occur as part of the regular planning cycle, while project development may be "spun out" and occur on its own timeline</p>   | <p>How much project development occurs before it is "spun out", and what is the role of bulk planning at this point</p>  |