NOVEMBER 20, 2024

Quarterly Bulk Planning Update

South & Central Bulk Study

IESO Transmission Planning Independent Electricity System Operator



Seeking Input – South and Central Bulk Study

Please submit your written comments on this presentation and meeting via email to <u>engagement@ieso.ca</u> by **December 6, 2024**.

Some key questions in the Feedback Form to consider when reviewing the South and Central Bulk Study to inform feedback for the IESO:

- What feedback do you have regarding the content delivered today?
- Do you have feedback on the Early Actions identified? Are there considerations for future Early Actions that may be identified throughout the study for the IESO to take into consideration?
- What level of detail is appropriate when screening 2050 needs and identifying preferred solutions?



South and Central Ontario Bulk Study Updates



South & Central Bulk Study – Revised Schedule





Draft Early Actions

- The IESO is proposing to recommend a set of Early Actions in parallel with the study to accelerate the pace at which future upgrades can be made. These Early Actions look to reduce development lead time for new infrastructure projects, when there is sufficient confidence in its need and/or risks associated with delaying implementation.
- This approach looks to balance the need to advance reinforcement of the transmission system with the risks of committing to reinforcements before detailed analysis of needs and alternatives can be complete.
- There are two sets of early actions the IESO is proposing based on work on the South & Central Bulk Study to date:
 - 1. Bowmanville to GTA transmission reinforcement
 - 2. Corridor studies within the GTA



Draft Early Actions – Bowmanville to GTA transmission

- Need for a new double-circuit 500 kV transmission line from Bowmanville to Toronto
 - This need is initially triggered by the connection of Small Modular Reactors (SMRs) at Darlington Nuclear Generation Station and will also enable new generation connections in Eastern Ontario and load growth throughout the GTA.
- This line will be required before the second SMR can be connected (currently planned for the early 2030s).
- Study work is still needed to finalize the required termination point for the line in the Toronto area before development work on the line can be initiated. However, the need for a new double circuit line from Bowmanville to Toronto should be incorporated into the ongoing design of the expansion at Bowmanville Switching Station which is underway.



Draft Early Actions – Corridor Studies within GTA

- Continue to work with the Ministry of Energy and Electrification to identify and preserve land required for transmission infrastructure to support long-term growth in the GTA. Three corridors have already been identified, with different levels of study underway:
 - <u>Parkway Belt West:</u> Initiate study of land available and required for future transmission reinforcements, including the proposed 500 kV line from Bowmanville
 - <u>Northwest GTA Transmission Corridor:</u> Study already underway to identify suitable land adjacent to the 413 highway for a future transmission corridor
 - <u>Barrie to Buttonville</u>: Initiate study of land required to be preserved along the existing (partially idle) corridor, to support potential future use for 230 kV network line(s)



500 kV Aggregate Modelling – Q1 2025

- As one of the early outputs of the 2035 scenario analysis, we are seeking to create a consolidated picture of possible 500 kV upgrades to carry out more detailed analysis of their combined impacts
 - Potential upgrades identified through the modules will be used to generate 2-3 portfolios of options for upgrades to the 500 kV system
 - Each portfolio will be modelled using the same basecase and results compared to better understand interrelated impacts across the system
 - The IESO will require Hydro One to conduct short circuit studies for each portfolio of options, due to the nature of the upgrades considered
 - Results from the short circuit assessments may require producing a second iteration of 500 kV options to manage any short circuit needs which the studies identify



Cost modelling for 2035 recommendations – Q2 2025

- One of the challenges of understanding the cost of an option in a bulk system study is accounting for the impact of transmission on overall system costs, including system resources.
- As a result, creating an accurate cost estimate for recommendations will require both transmission and generation to be considered over the outlook period.
- Once the preferred transmission upgrades of each module have been identified, each portfolio of options will be modelled in a single system model, along with the basecase assumptions for location of new system resources.
- An energy system model run will then be undertaken using the expected availability and cost of resources by zone.
- Further information on the cost modelling approach will be provided as the energy modelling basecase is prepared.



Role of the 2050 Scenario

- Most recommendations for new infrastructure emerging from the South and Central Bulk Study are expected to be related to the 2035 scenario. This is due to higher degree of certainty in system conditions, and close enough lead time to require development work to be triggered.
- By comparison, the 2050 scenario does not have the same level of confidence in assumptions, and lead time is sufficient that development work is generally not required. The objectives for the 2050 scenario are to:
 - Test robustness and scalability of 2035 recommendations
 - Continue to identify the need to set aside land for future transmission corridors and station infrastructure
 - Provide early indication of locational requirements of resources to minimize future costly transmission infrastructure



Next Steps





- Feedback due to <u>engagement@ieso.ca</u> by **December 6, 2024**
- IESO to post Response to Feedback in advance of the next quarterly update

Potential topics for upcoming Bulk Studies quarterly updates:

- Discussing Needs, Options and Recommendations
- More detailed, targeted engagement sessions to be carried out as required for each individual study



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Questions of clarification on the material presented today? Submit questions by email to engagement@ieso.ca

