

Visibility of Embedded Generation in Ontario

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- Need for visibility
- Telemetry requirements
- Options going forward
- Recommendation

- IESO is responsible for:
 - Directing the operation and maintaining reliability of the IESO Controlled Grid (>50 kV)
 - Operating Ontario's wholesale electricity markets
- “Prime objective” – Balance load and generation efficiently
 - Done by clearing the market, assessing system security, and dispatching generation every five minutes, based on offers/bids from participants
- Visibility
 - Seek to develop effective and inexpensive means of providing real time visibility of embedded generators for effective market and system operation

- Once embedded generation is in service and exceeds some threshold amount, the IESO's ability to efficiently operate the market may be impacted.
 - IESO uses a “Similar Day Load Forecast” methodology to feed the market dispatch and current load forecast models only can account for existing embedded generation.
 - Inaccuracies in the forecast can lead to inefficient unit commitment day ahead or three hours ahead of real time, and can lead to inefficient setting of import and export schedules.
 - Demand forecast inaccuracy due to non-manoeuvrable generation will lead to an increase in the volatility of dispatches sent to generation facilities under IESO dispatch control, leading to wear & tear on units

- Visibility of embedded generation would allow the IESO to modify forecast methodologies to accommodate the uncertainty of generation not under our dispatch control
- Reliability can be better managed through real-time visibility
 - Determining when intervention is required to manage demand forecast deviation or to correct security limit concerns

- A lesser telemetry standard (such as that in the market rules Chapter 4 Section 7.3.2.3. and Appendix 4.19) will be sufficient for IESO requirements
 - would apply only where high speed internet facilities exist
- Threshold for provision of this data will need stakeholder input
- Threshold will need to be aligned with LDC requirements for telemetry, through the Distribution System Code

- OPA could specify requirements in contracts.
 - Generators would need to provide an “internet gateway” connection to communicate the number of MWs being generated
 - Standard protocols would be used (TCP/IP)
 - Generators would be responsible for the standard communication costs (e.g., high speed Internet Service Provider)
 - The IESO would need to provide an aggregation server in order to integrate the data into IESO systems

- Connected hosts such as Connected Wholesale Customers or LDCs would provide a telemetered value of the total MWs per service territory or connection point
 - These values would be provided to the IESO within less than one minute from change in field monitored quantity (same requirement as for minor dispatchable load facilities and non-dispatchable load facilities)
 - LDCs would need to mandate participation through their connection agreements
 - Both Connected Wholesale Customers and LDCs would need to be obligated to provide this telemetry through market rule changes

- Option 2 has benefits if the implementation is coordinated with LDC requirements for telemetry arising from their own system operation and the OEB Distribution System Code
- The Code currently allows LDCs to request real time data from embedded generators larger than 250 kVA (Appendix F2, Section 9)

- IESO should work with LDCs, the OPA and the OEB to develop an effective and inexpensive means of providing Real Time visibility of embedded generators to the IESO, and possibly to distributors for effective market and system operation, including the operation of the distribution system