

Meeting Minutes
Embedded Generation
Thursday January 31, 2008 9:00 – 2:00
Otello's Banquet and Conference Centre, Mississauga

Name (Attending in Person)	Company
Bober, George	Energy Profiles Limited
Chang, Selina	Rodan Energy & Metering Solutions Inc.
Dahlstrom, Winton	Helix Synergy Incorporated
Dubeski, Phil	Toronto Hydro
Duimering, Doug	John Deere Wind Energy
Earnshaw, Brian	Hydro Ottawa
Garg, Ajay	Hydro One
Hunt, Robert	Optimal Technologies (Canada) Inc.
Jenkins, Allan	Ontario Ministry of Energy
Kieran, Jon	Ontario Ministry of Energy
MacDougall, Jim	Ontario Power Authority
Malinowski, Martin	Rodan Energy & Metering Solutions Inc.
Mawani, Zohrab	Suez Renewable Energy North America
Petrella, Tony	Ontario Power Generation
Rabadi, Adi	Windrush Energy
Reyns, Roberta	Ontario Power Generation
Ryckman, Gordon	Ontario Energy Board
Singh, Bob	Hydro One
Taylor, Kristopher	Essex Power Group
Timm, David	Canadian Wind Energy Association
Tintor, John	Aquilon Power Corporation
Vanderheide, Tim	Bluewater Power Generation Corp.
Whitehead, Kevin	Whitby Hydro
Wozniak, Kevin	Norfolk Power Distribution

IESO
Adam, Gabriel
Baker, Stephen
Boudreau, John
Burns, Stephen
Chase, Maia
Constantinescu, Barbara
Drake, Gordon
Goa, Fang
Gohgari, Zahir
Haynes, Daryl
Wright-Hilbig, Rhonda

Agenda Item No.1: Administration

Maia Chase welcomed the group. Individual introductions were made as this was the first meeting of this group.

Agenda Item No. 2: Overview – the IESO and embedded generation (Gordon Drake)

The presentation by Gordon Drake can be found at:

<http://www.ieso.ca/imoweb/pubs/consult/se57/se57-20080131-Overview-Embedded-Generation.pdf>

Gordon Drake gave an overview presentation on embedded generation and its interaction with the IESO. He also noted that the deadline for comments on the draft Discussion Paper has been extended to Thursday February 7, 2008.

Agenda Item No.3: Connection Assessments (Barbara Constantinescu)

The presentation by Barbara Constantinescu can be found at:

<http://www.ieso.ca/imoweb/pubs/consult/se57/se57-20080131-Connection-Assessments.pdf>

Barbara Constantinescu presented an overview of the IESO's concerns and proposal related the Connection Assessment process. Participant comments as result of the presentation were as follows:

- There may be a requirement for transmission and/or distribution upgrades as a result of the installation of embedded generation. The potential requirement for additional reactive support would be an example of an upgrade.

- Transmission upgrades as result of the installation of embedded generation should be identified as soon as possible. Any upgrades should be clearly defined.
- A large amount of embedded generation may affect system stability.
- Cost allocation of distribution improvements to allow generator connections is currently not socialized. Hearings to review this practice, are currently active at the Ontario Energy Board. A link has been provided.
http://www.oeb.gov.on.ca/html/en/industryrelations/ongoingprojects_costallocation_review.htm
- Clarification was provided that the purpose of the Standard Offer Program (SOP) was to provide opportunities for proponents that might not normally have responded to prior RFP's. The SOP was also designed to take advantage of existing capacity on the distribution system.
- There was an indication from a participant that studies on the size of the impact of known embedded generation applications should be completed. The IESO is planning such a study but need to determine the parameters of the study. It was identified that this study would be beneficial before going to the Technical Panel. The IESO indicated that at the very least, an overview of the potential injections can be provided to the Technical Panel in time for their deliberations on potential market rules.
- Reasoning for the proposed connection assessment requirement triggers identified in the presentation were requested by the IESO. There was a comment that the proposed 50 MW aggregate trigger may be too high, due to the potential need for performance standards to be met at lower aggregate amounts. Another LDC participant indicated that lowering this requirement would have to be balanced against the LDC cost of gathering the information for the System Impact Assessment.
- Assumptions in the calculation of the proposed triggers are maximum generation minus lowest load. It was identified that due to solar power load profiles, there may be a need to treat solar power differently in this calculation.

Agenda Item No.4: Performance Standards (Steve Burns)

The presentation by Steve Burns can be found at:

<http://www.ieso.ca/imoweb/pubs/consult/se57/se57-20080131-Performance-Standards.pdf>

Steve Burns provided an overview of the performance standards and how they relate to embedded generation. Stakeholder comments as result of the presentation are as follows:

- There may be a need for transmitters and LDCs to redistribute Under Frequency Load Shedding (UFLS) with the addition of embedded generation. In addition, UFLS requirements will need to take into account connected embedded generation that does not meet under-frequency tripping requirements.
- Power factor requirements at a transformer stations do not presently account for embedded generation within a LDC. The IESO proposes to measure power factor

performance of only the load connected at the transformer station. This will require that the IESO know the quantity of embedded generation behind a station to accurately calculate the power factor performance.

- The IESO proposes that reactive support and voltage requirements will be equivalent to that expected from a generator of a size equal to the embedded generators maximum anticipated injection onto the transmission system, rather than for the total amount of embedded generation installed behind the transformer station.
- There is a need for coordination of requirements between the needs of the IESO and the LDCs. For example, the IESO may require generators to operate in voltage control to improve reliability of the transmission system and the distributor may have a requirement to operate in power factor control to improve local power quality. Another example is the IESO requirement for Low Voltage Ride-Through (LVRT) to ensure that embedded generators ride through disturbances on the bulk system. However, LDCs need embedded generators to trip off on feeder trips to avoid islanding with loads. Uncoordinated selection of these trip settings by the LDC may lead to the embedded generation tripping for contingencies on the transmission system. These unintended trips could have material adverse effects on the reliability of the entire transmission system..
- Automatic reconnection of wind generators after a contingency is a common practice. This is not allowed on transmission connected wind farms, and needs to be reviewed for embedded generators. For embedded generators, the IESO is anticipating that it's requirement to block automatic reconnection will be limited to circumstances that could have a material adverse effect on the reliability of the transmission system.
- The IESO is seeking to amend Chapter 4 Appendix 4.2 Ref 1 to allow certain types of embedded generators to connect to the distribution system. Any other items participants identify as needing modification or clarification should be forwarded to Stakeholder Engagement.

Agenda Item No. 5: Visibility (Gordon Drake)

The presentation by Gordon Drake can be found at:

<http://www.ieso.ca/imoweb/pubs/consult/se57/se57-20080131-Visibility-Embedded-Generation.pdf>

Gordon Drake provided details of the IESO proposal for visibility of embedded generation. Some additional comments as result of the presentation are:

- LDCs pointed out that it might be difficult to obtain telemetry from more remote sites that do not have conventional telecom services. The IESO indicated that the proposal would require telemetry where high speed internet facilities exist.
- The IESO would not be seeking any telemetry requirements more onerous than the host LDC may require for the operation of the distribution system.

- The option the IESO recommends would be irrespective of the OPA contract process. This would allow the IESO to receive telemetry from any merchant embedded generation necessary.
- A question was raised on whether existing embedded generation should be held to different telemetry requirements than new proponents.
- The threshold for providing telemetry has not been determined. It is agreed that it would be beneficial to coordinate the threshold with LDC requirements.

Agenda Item No. 7: Next Steps

The IESO will wait for comments to the Draft Discussion Paper. Responses to the comments will be published. A decision on the requirement for another meeting, a webcast or the next steps will be determined at that time.

Action Item Summary				
#	Date	Action	Comments	Status
1	January 31, 2008	IESO to study the size of the impact of known generation applications. The IESO is planning such a study but will need to determine the parameters of the study.		Open
2	January 31, 2008	The IESO will provide an overview of the potential injections to the Technical Panel in time for their deliberations on potential market rules		Open
3	January 31, 2008	The IESO to provide the reasons for the proposed connection assessment requirement triggers.		Open
4	January 31, 2008	The IESO is to coordination the threshold for providing telemetry with the LDCs requirements		Open