

Incorporation of Distributed Generation in Ontario – CAA Process

Barbara Constantinescu
February 10, 2009



- The CAA process does not capture small non-market participant Embedded Generators (EG)
 - SIA application not required for EG < 10 MW
 - MR performance standards are not applicable to EG's smaller than 10 MVA or facilities below 50 MVA
 - Telemetry Requirements are not applicable to EG facilities below 20 MVA
- High penetration of EG's will change the way the system performs today
- The IESO needs to capture the effect of EG's on ICG: new CAA process, revised performance and telemetry requirements

January 31, 2007: SE-57 Session in Mississauga

- CAA Process
 - Present CAA processes reviewed
 - IESO recommended that LDCs request a SIA on behalf of EG when a critical EG mass connects to the LDC
 - SIA trigger points were proposed on a transformer station basis
 - Need for technical study for the impact of EG
- Performance Standards
 - Existing and anticipated performance standards were discussed
- Visibility
 - Need for and alternatives for telemetry were discussed

- Stakeholders Feedback (CAA)
 - supportive of reverse power flow at TS for SIA trigger
 - concerned about cost allocation of SIA study
 - concerned about cost allocation of Dx and Tx improvements
 - need for clear criteria for reverse power flow calculation
 - need for technical study for the impact of EG on the ICG
- IESO's Answers (CAA)
 - the practices of cost allocation to be reviewed by the OEB
 - IESO will undertake a technical study to identify the impact of EG in the ICG

June 5 (web) - IESO's Recommendations

- CAA Process
 - LDC to request a SIA where EG's could result in 10 MW injection into the ICG at TS
 - LDC to take into consideration the resource mix and demand profiles in determining when to apply for SIA

Stakeholders Feedback (on CAA)

- Acceptance of moving forward with a clearly defined trigger point for SIA
- Cycle-time targets for connection steps would be beneficial
- Concerns about SIA and system upgrades cost allocation
- Concerns about SIA impact on the DSC's prescribed timelines
- Need for rules surrounding assumptions for resource mix and demand profile

IESO's Answers (CAA)

- The SIA cycle-time will follow the existing process, as per MM 2.10
- OEB expected to address cost allocation, Dx losses and DSC prescribed timelines
- Recommended that criteria for evaluating the potential reverse power flow to take into account loading profile and generation characteristics of EG's

IESO's Technical Study

- When TS injects power into the ICG, the EG's supply remote load
- The ICG could be deficient in dynamic reactive power
- Additional dynamic reactive support may need to be added to the system
- System performance depends on the relative EG's location to load and to displaced grid-connected generation
- EG's away from the load: post-contingency voltage recovery deteriorates
- EG's close to the load: system performance is affected less

SIA produced for Hydro One

- Hydro One requested SIA's on the proposed CAA trigger of 10 MW injection
- IESO conducted more than 10 SIA's on a TS basis
- IESO and H1 agreed to move towards a 'regional' SIA approach with quarterly updates
- IESO and H1 agreed that transmission solutions would resolve grid impacts more effectively than distribution solutions

- Move from a TS based assessment to a system / regional assessment
- Move from a SIA based information request to a periodic survey / request for information request
- Move from a SIA based approach to a periodic reliability assessment approach
- IESO in conjunction with the Transmitter will conduct periodic assessments to identify system reinforcements based on the data provided by the LDC's
- The grid reinforcements will be transmission solutions rather than distribution solutions

- The information requests and periodic system assessments will be tied into the existing IESO processes
- System assessment data provided by the LDC's could be as simple as the aggregate output of EG connected at a TS, or as detailed as individual EG type, size, generation profile, I/S date, grid impactive relay settings (under-voltage and underfrequency), depending on the level of EG penetration
- Just the aggregate EG output at TS will be required initially

...Under Construction