

Incorporation of Embedded Generation in Ontario - Standards

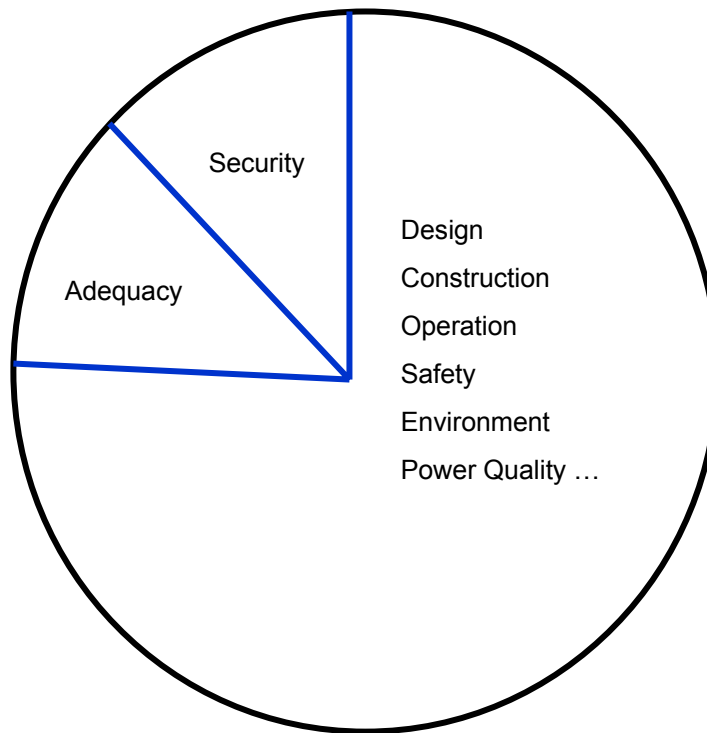
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- Connection Assessment Process
- Visibility
- Standards

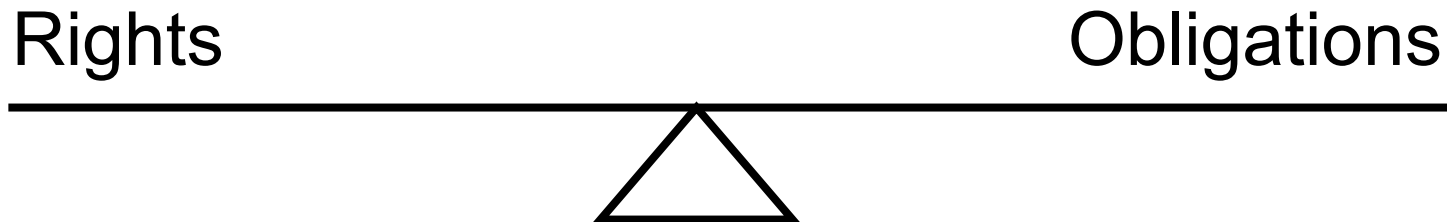
- Only a relatively few refinements will be required to technical standards in the Market Rules to allow reliability to be maintained

- IESO focus is on only few of the aspects necessary for a good electricity system.

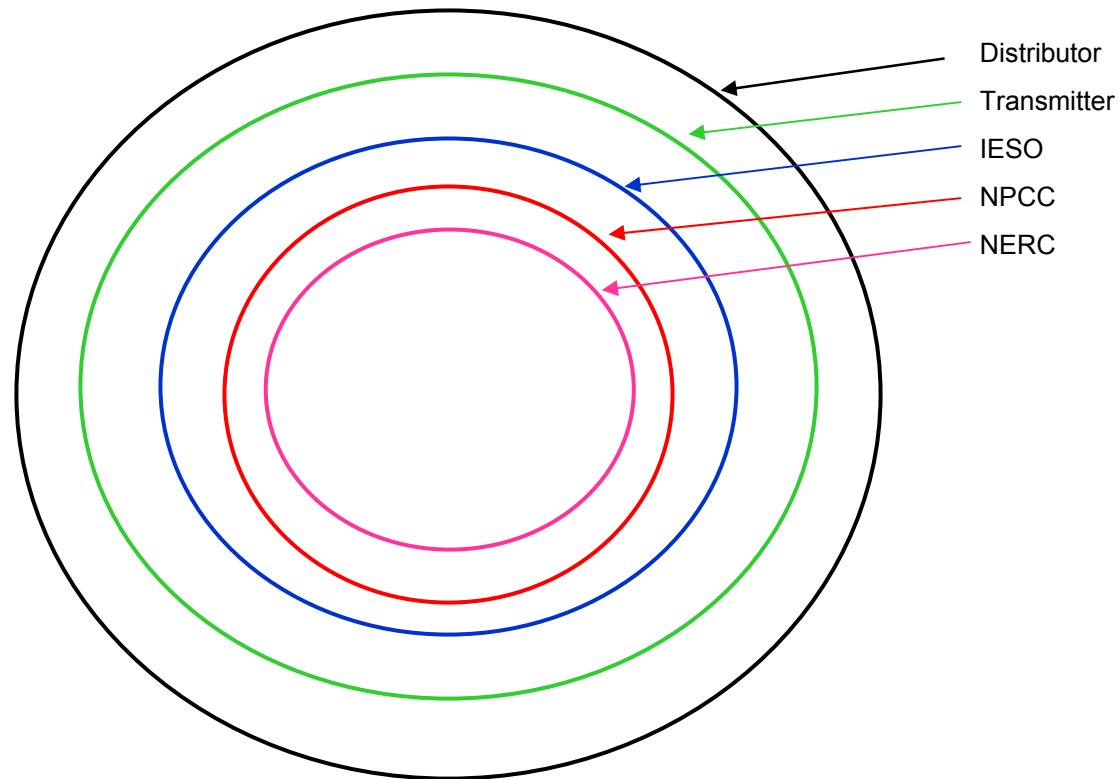


- Limit constraints to the extent consistent with the objects of the IESO, but a completely laissez-faire approach will result in some material adverse consequences.
- Promote confidence that fair treatment is received by having relatively simple requirements that are consistently applied

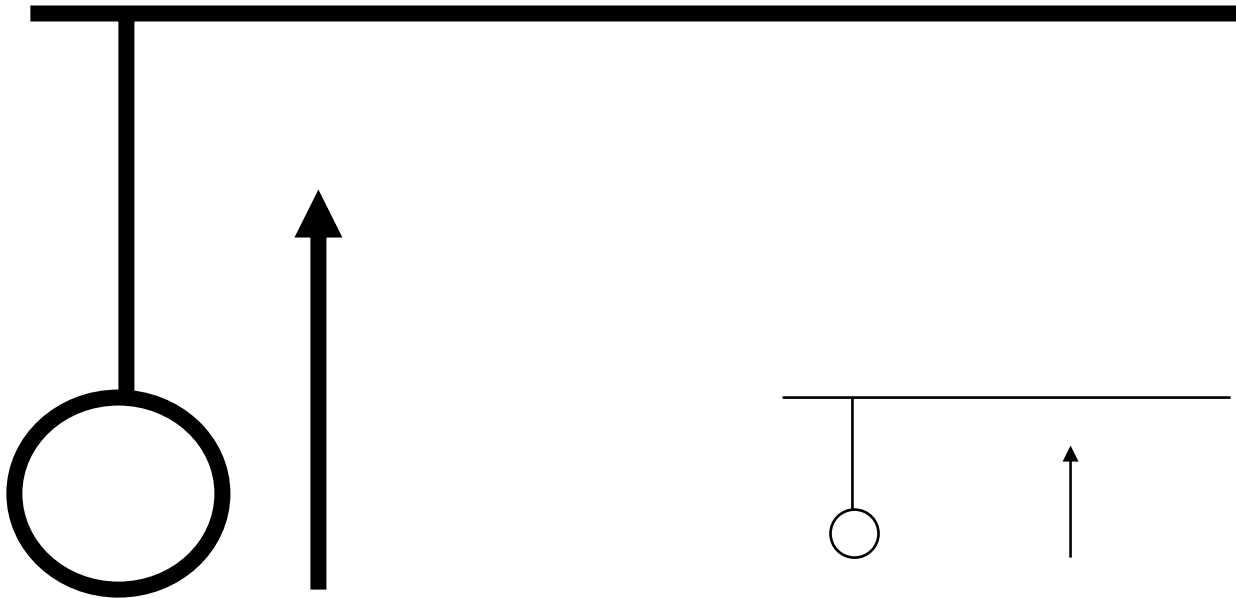
- The right to connect equipment is balanced by an obligation to demonstrate performance



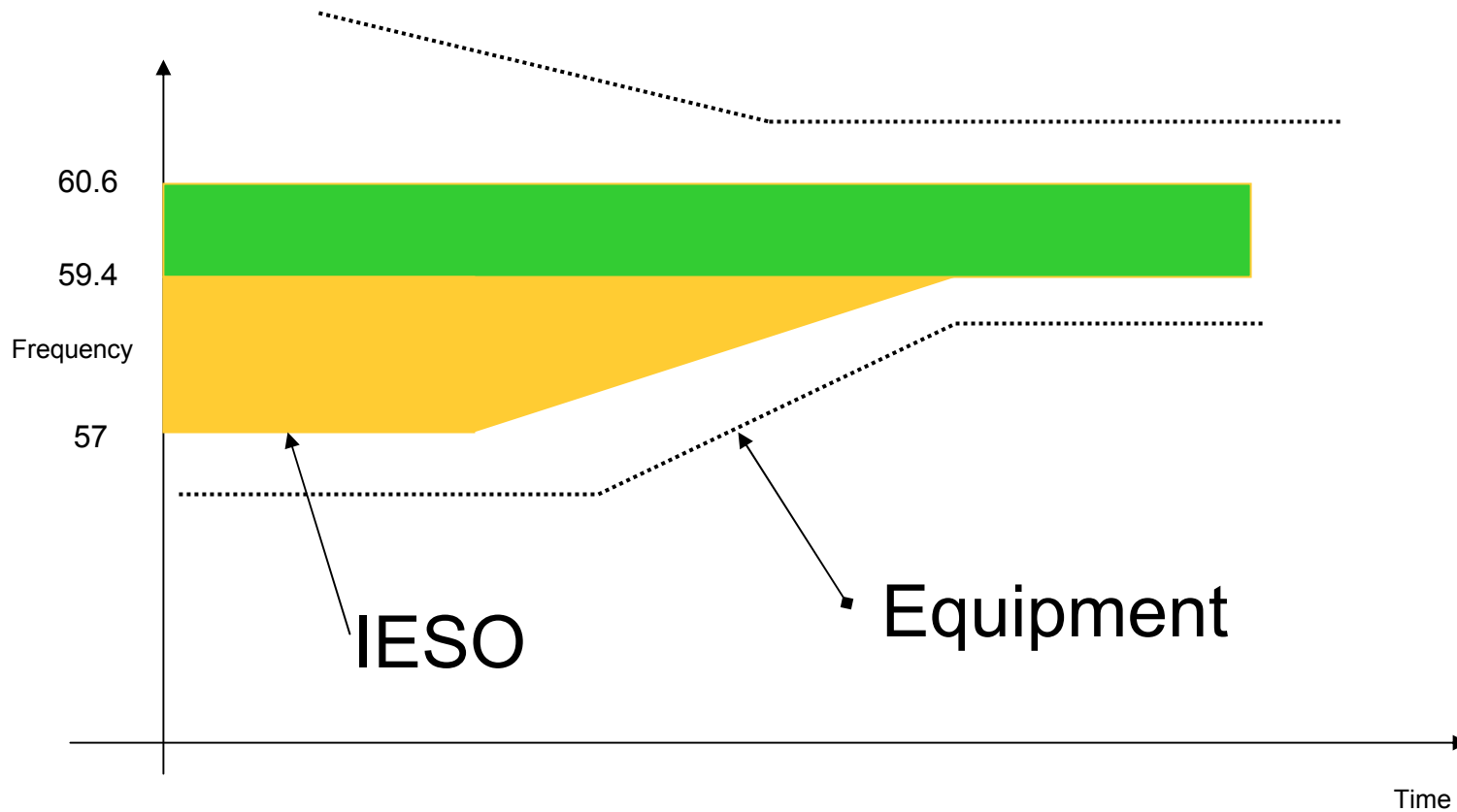
- Some requirements cannot be changed directly



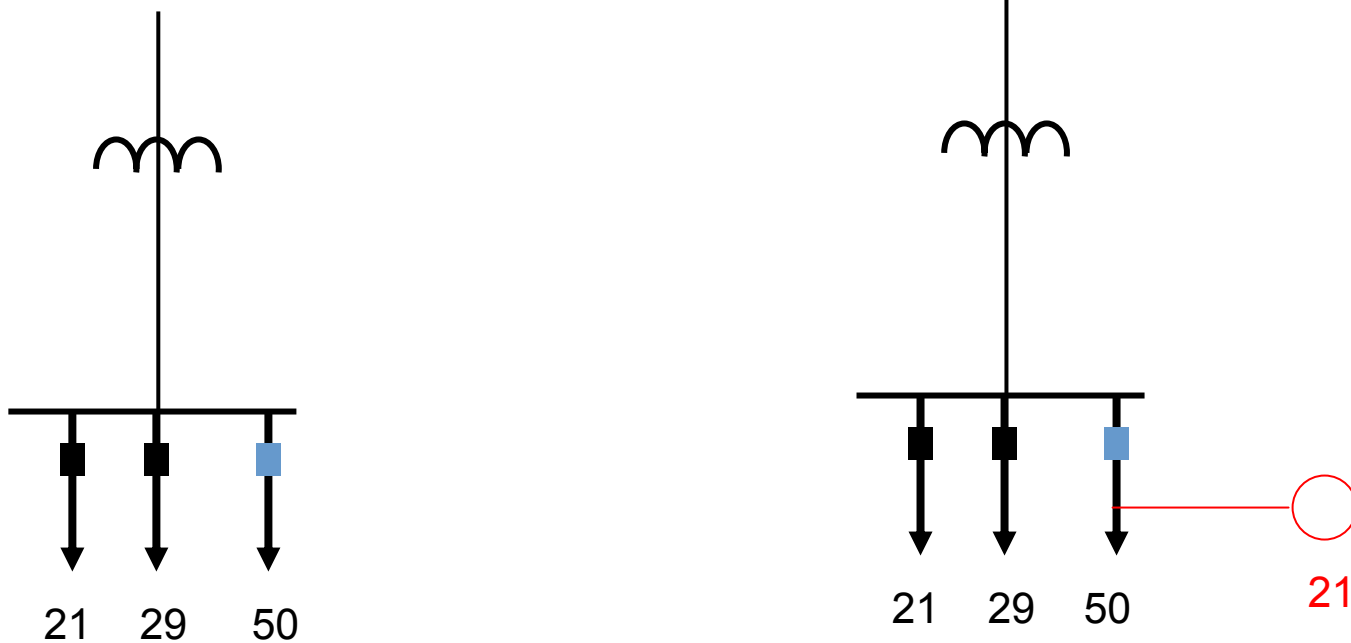
- Performance requirements are proportional to market participation when feasible



Avoiding Unfair Transfer of Obligations

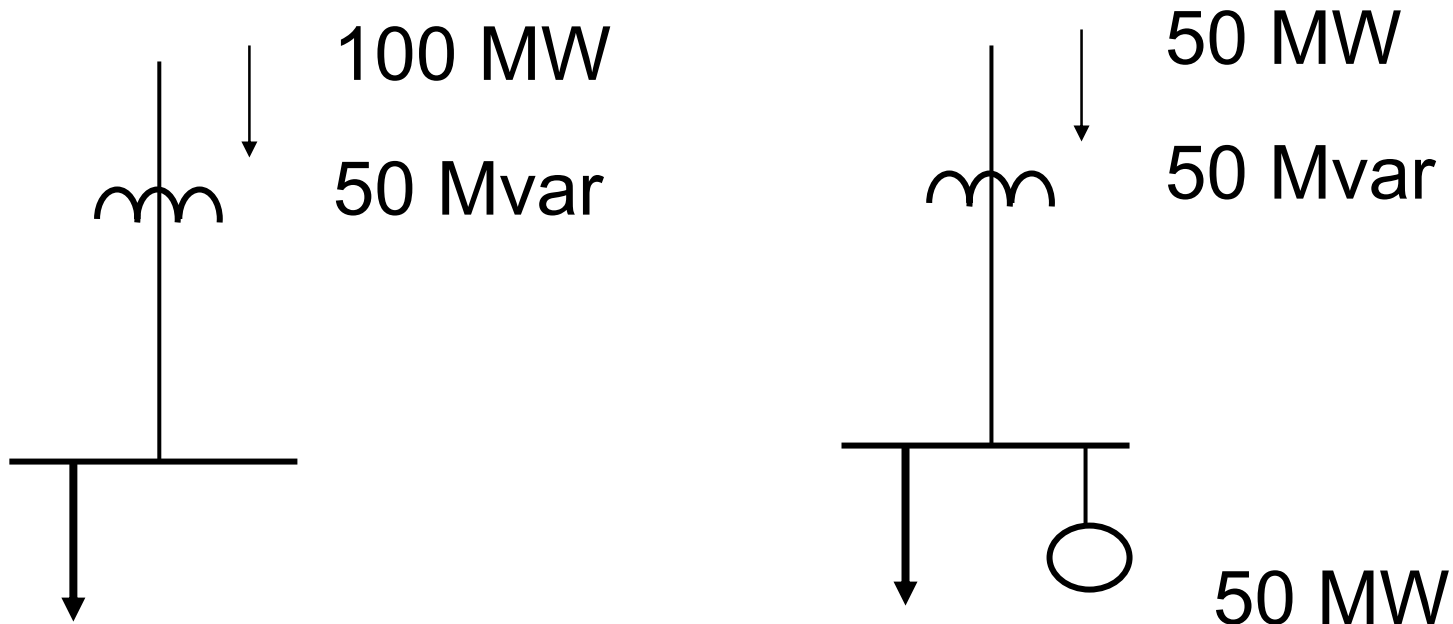


EG will affect UFLS implementation



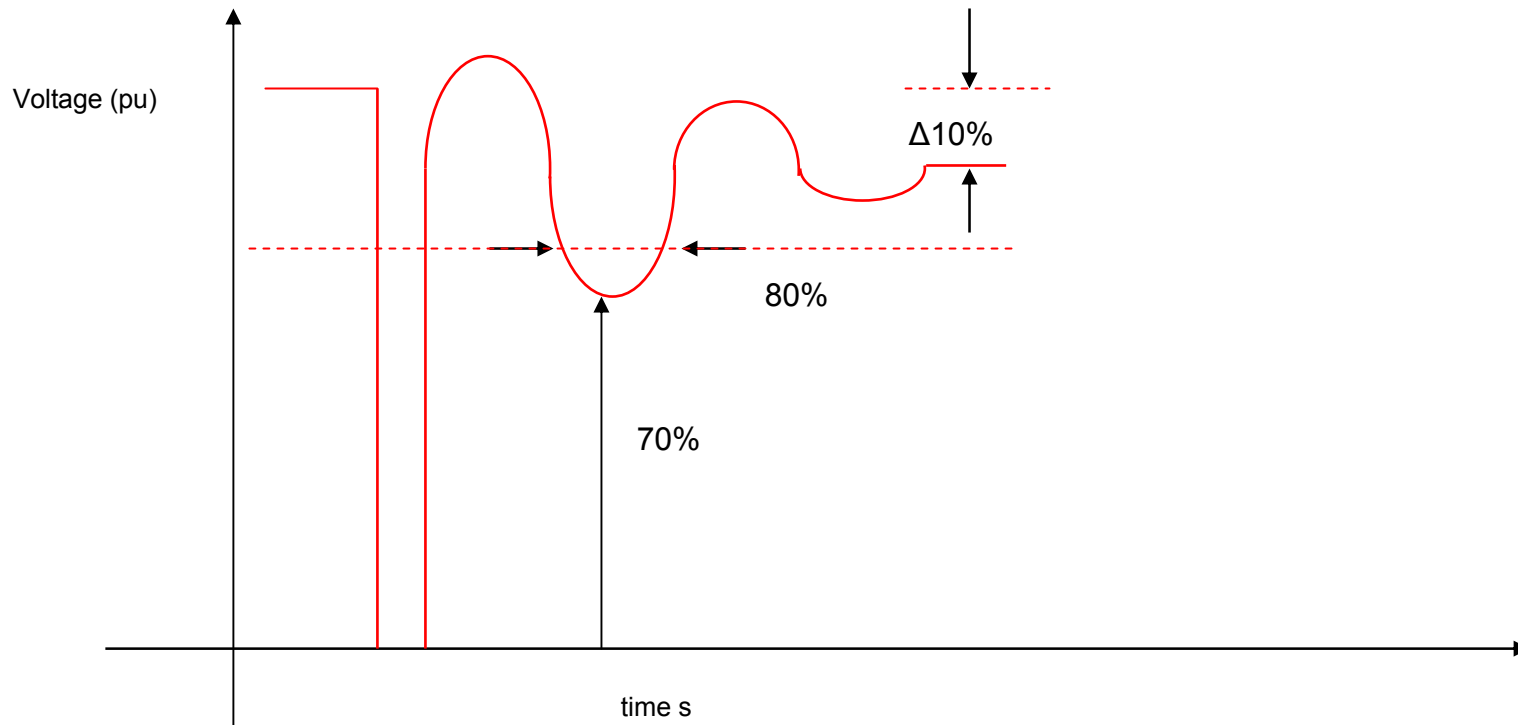
Current/Voltage supervision of UFLS must not interfere with dependable operation

- Revise existing requirement to avoid non-compliance resulting from embedded generation



- EG will displace generation that provides useful services to maintain reliability (inertia, voltage regulation, damping, frequency regulation).
- Additional obligations should be expected at higher levels of EG penetration
- Reactive and voltage performance equivalent to that of synchronous machine rated at the maximum net injection for ICG injections above a threshold (10MW).

- Unless EG is secure (i.e. does not trip except when needed) the reliability of the entire power system will be at risk.



- Single-shot reclosure is used on the transmission system to provide better service to consumers.
- Present transmission-connected generation is manually re-connected following contingencies.
- EG, particularly wind-powered generation, will automatically re-connect. In some cases, this could lead to bad outcomes
- Others?