Contingency evaluation for a load behind the meter of an existing generator

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Necessary Study Agreement (NSA) Study Scope

- Under NSA study review process - perform steady state and dynamic simulation for the load trip or in-series equipment trip
  - Steady State Simulation
    - Evaluate load tripping of co-located load, screening for both thermal and voltage violations
    - Evaluate abnormal conditions, where one of the units is off-line and co-located load is transferred to be supplied via another unit at the plant.
  - Dynamic State Simulation
    - Performing dynamic simulation to evaluate impact on system transient, small signal disturbance and frequency deviation impact

Dynamic Load representation

- Collaborate with the Interconnection Customer to understand load characteristics to develop accurate representation.
  - Asset owner provides a model or confirms load components
    - Power electronics
    - Small Motor
    - Large Motor
    - Single Phase AC
    - Three phase AC
    - Static load (Constant P/Q, constant current, constant impedance)
  - Voltage ride through characteristics, such as voltage tripping envelope, time delay, reconnection voltage.

Periodic Transmission Planning Evaluation

- As-built data submission provides additional inputs to the planning steady state power flow cases, short circuit model update and dynamic cases update
- Under reliability planning applicable NERC TPL standard contingencies are screened for thermal and voltage criteria's
  - Load related contingency modeling typically reviewed and supplied by TO

Real-Time Evaluation

- Coordination between planning and operations to model co-located load
  - Modeling based on the Issued For Construction drawings and additional data set provided by GO (equipment impedances)
  - Coordinate telemetry addition to ensure full observability
  - Near-term, Interconnection Coordination will coordinate expected load MW's schedule
- Transformers connected to Bulk Electric System will be modeled as explicit contingencies, additional contingencies could be created on as-needed basis (sub-transmission lines)
  - Real time tracking for thermal and voltage resulting for the post-contingency simulation

Real Time Dynamic Simulation

- Real time dynamic simulation monitors balance as well as unbalanced faults.
  - Primary interest is transient stability and small signal disturbance
    - Fault clearing times are initially provided under the NSA study scope, subsequently confirmed under the “as-built” review process
  - Frequency monitoring feature is available

Contact

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