

DER FEEDER INTERCONNECTION LIMIT CONSIDERATIONS

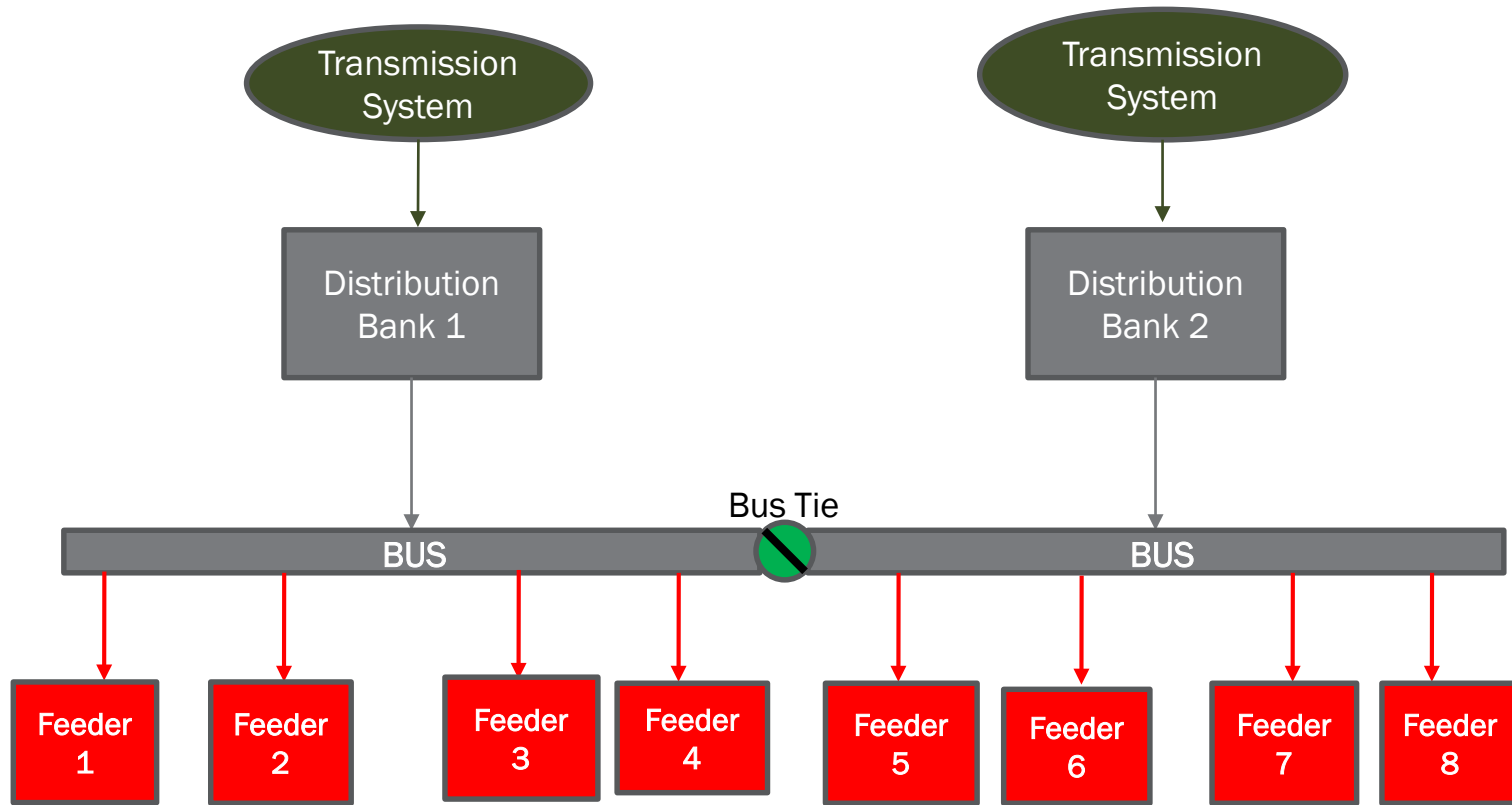
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Typical Distribution System Layout

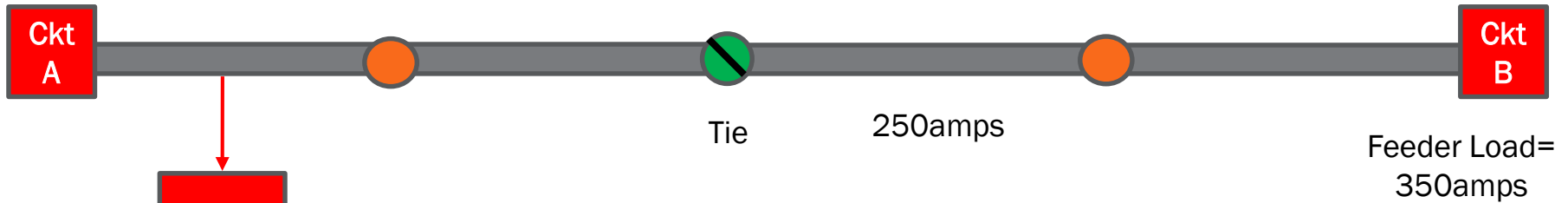


Current DER Feeder Interconnection Limit Considerations

- Satisfy all applicable thermal and voltage limits under normal and contingency conditions
- Maintains the safety, reliability and integrity of distribution system
- Actual feeder load can currently be masked by DERs and can result in thermal overloads during contingency conditions
- The delta between normal and emergency rating of a feeder is the reserve margin under contingency
- Any single DER interconnection greater than 3 MW calls for a dedicated feeder

THERMAL LIMITATION : 5MW DER INJECTION REVIEW CIRCUIT LOADING (450AMPS)

517A Normal/600A Emergency Rating



Ckt A Feeder load =450 amps
Net load is 240 amps

UNDER CONTINGENCY 250 AMPS TRANSFERRED TO CKT A
TOTAL LOAD IS NOW 490AMPS.

**IF THE DER IS LOST THE CIRCUIT WOULD BE ABOVE ITS EMERGENCY RATING
(450 AMPS + 250 AMPS=700AMPS)**

Potential Short Term & Long Term Solution

SHORT TERM SOLUTION

- Implement manual operational procedure to select feeders based on its DER penetration
- A list will be made available to operators for select DER injections
- Operating maps should show DER size and location
- Do not energize/ restore DER facility on feeder during emergency conditions as applicable

LONG TERM SOLUTION

- Procure DER visibility platform/functionalities
- Provides exact location of DER
- Real time Capability to observe the output/status of the DER units
- Ability to control the units via SCADA control (optional)
- Included in 2020 U2.0 filing
- Bring existing DERs with SCADA into DER visibility platform, followed by any new ones that gets added onto the system
- Go Live Date : 06/2022
- Total cost over 5 year period : \$8.5 M

Recommendation

- Implement Short and Long term solutions to address thermal constraints in real time operations
- DER injection limit for each project will be established based on distribution planning studies (case by case studies)
- Preliminary studies indicate that 5 MW will be the maximum limit for any single DER injection resulting from voltage constraints
- SCADA requirement for 500 kW and larger units consistent with NY utilities
- The values indicated below represent the generic limit with respect to thermal contingency conditions but not a representation of an overall circuit limitation
- Individual project studies establish the limit for each project

Scenario	DER Single Injection Limit for Non Dedicated Feeder	Maximum allowed DER penetration per feeder	SCADA Requirement (Preliminary)
Existing	3 MW	3 – 4 MW	1 MW
Proposed	5 MW*	Case by Case basis *	500 kW**

*Provided all applicable study requirements are met and dependent on existing DER penetration on that specific feeder. Specific location of DER on the feeder will also vary this limit

** Alternative modes of communication for smaller size projects under review

PROS

- Permits higher level of DER penetration on non-dedicated distribution feeders
- Reduces feeder load under normal condition
- Helps to achieve NYS clean energy goals
- Enables cost effective interconnection for interconnection customers in certain scenarios by allowing interconnection to a nearby feeder, in lieu of a dedicated feeder
- Prevents the saturation of spare feeder cubicles
- Increased alignment with New York Joint Utilities

CONS

- Require specific operator actions under contingency condition until technology enhancements are in place
- Load transfers may require longer time to perform which may affect reliability metrics
- SCADA requirement will add cost to smaller DER projects from 500 KW to 999kW

Next Steps

- Applicable Reviews
- Implementation Time Frame / Applicability
- Review screening criteria requirements and update technical documents as applicable
- Incorporate in Hosting Capacity Maps