

Reactive Testing Guidelines

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Reactive Power Compensation Task Force
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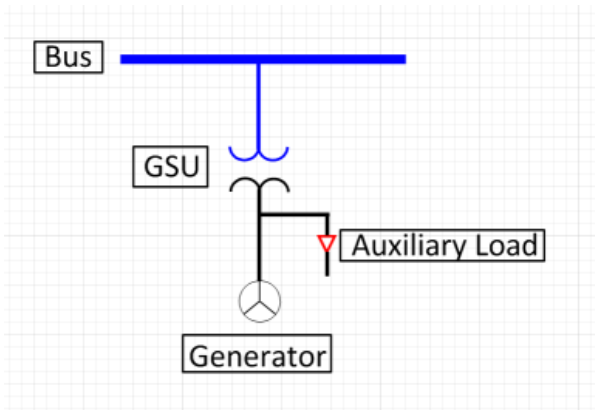
- General Requirements
- Testing Requirements
- Notification and Reporting Requirements
 - GO Actions
 - TO Actions
 - PJM Actions

- MVAR Test ticket – Submit 3 days ahead.
- Desired MW and MVAR output.
- Telemetry Verification.
- Contact PJM 3 hours prior to the start of the test.
- If unable to achieve desired MVAR capability due to:
 - external operational limitations or,
 - internal operational limitations caused by an external condition, such as high or low transmission system voltage,GO must communicate this issue to the TO and PJM prior to completing the test.

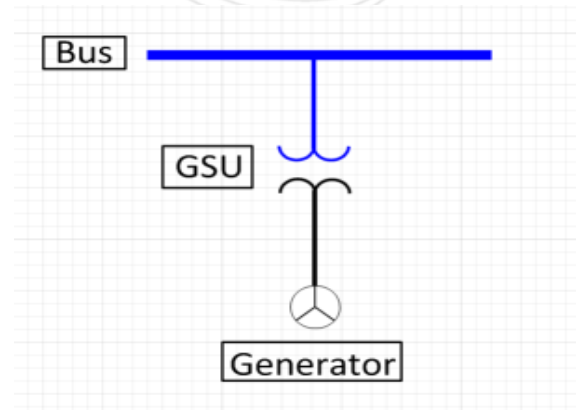
- Conduct studies in accordance with established company procedure in order to determine the effect of scheduled testing on their systems
- Discuss, coordinate, and implement any actions necessary as required by mitigation strategies with PJM prior to the start of testing.
- Coordinate the implementation of their portion of the exit strategy with PJM, if required.

- Review and approve the test.
- Contact TO to initiate transmission study process.
- Discuss possible mitigation strategies with TO.
- Contact GO whether mitigation steps will be required.
- Coordinate with GO and TO in order to implement the selected mitigation strategy.
- Coordinate the implementation of the exit strategy with the GO and TOs, if required.
 - PJM will NOT allow operation over any applicable post-contingency emergency rating.
 - PJM will NOT allow operation over any applicable pre-contingency normal rating.

Low Side Gross

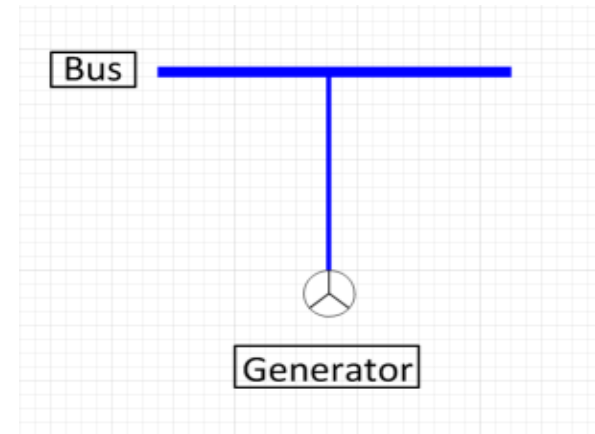


Low Side Net



$$\text{LSN} = \text{LSG} - \text{Aux Load}$$

High Side Net



$$\text{HSN} = \text{LSN} - \text{GSU Losses}$$

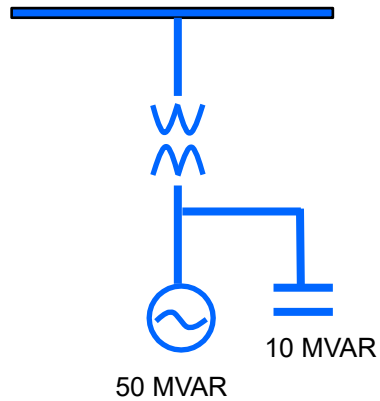
- MW and MVAR telemetry should be paired at the same location
- D-curve could be based on LSG, LSN or HSN

Example:

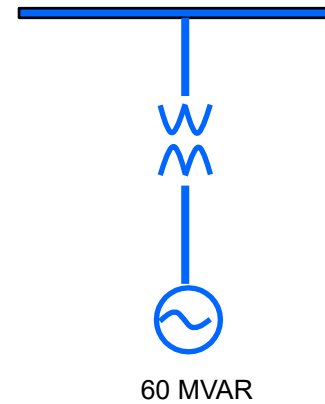
	Lagging	Leading
GO Data	100	-40
PJM Data	80	-60
New D-curve	80	-60

- GO data could be LSN if GSU losses = 20
- PJM may request GO to provide LSN telemetry links
- New D-curve will stay HSN until LSN enabled
- Total MVAR capability unchanged
 - $LSN = 100 + |-40| = 140$
 - $HSN = 80 + |-60| = 140$

- Capacitor banks might be modeled standalone or imbedded in generator:



D-curve includes generator only



D-curve includes generator and capacitor banks

Note: must be automatic voltage-regulating capacitor banks

- Multiple units connected to the same bus can be tested with “push and pull” method:
 - The unit being tested in one direction can be supported by other units in opposite direction
- Should notify PJM and verify individual telemetry
- *PJM proposal: Must notify PJM if units share GSU and there are limitations on the shared GSU*
 - *PJM will require units that share a GSU to test all at once as an aggregated unit*



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