

PSEG Long Island
Distributed Energy Resource (DER) Interconnection
Protection System Test Report

This information outlined in this sample test report must be submitted to PSEGLI as the final test report. Additional tests may be included and results appended as needed. This template may be copied and used.

1. Project Information

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|------------------|--|
| PAM #: | |
| Project Name: | |
| Project Address: | |
| DER Type & Size: | |

2. Test Information

| | |
|---------------------------------|--|
| Date of Test: | |
| Test Equipment: | |
| Tester Engineer's Name: | |
| Relay Setting File Name & Date: | |
| Breaker ID: | |
| Relay ID: | |
| Relay Model: | |
| Relay Serial Number: | |
| CT Ratio: | |
| PT Ratio: | |

3. Relay Visual and Mechanical Inspection

Fill out table of visual and mechanical inspections performed on the protective relay and indicate pass/fail status. Append additional rows as needed.

| Visual or Mechanical Inspection Item | Status <i>(Pass or Fail)</i> |
|--------------------------------------|------------------------------|
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| | |
| | |

4. AC Circuits Test

AC circuits used by the utility grade relay(s) shall be verified by voltage and current injections from the test set. The voltage and current injections shall be made at terminals closest to the protective relaying voltage transformers and current transformers.

| | |
|---------------------------------------|--|
| Status (<i>Pass or Fail</i>) | |
|---------------------------------------|--|

5. Functional Trip & Auto-Reclose Tests

****Test methodology must be defined and reviewed by PSEG-LI prior to performing these tests****

Test Engineer must perform trip tests to verify that all wired output contacts from protective relay that are programmed to trip the breaker (directly or via LOR) do so. Fill out table below with relay contacts programmed to trip and indicate test results for each. Append additional rows as needed.

Test Engineer must perform an auto-reclose (return to service) test to verify that protective relay automatically closes the breaker after measured system conditions are within the acceptable voltage and frequency windows for at least five (5) minutes.

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|-------------------|
| Test Methodology: |
|-------------------|

| | |
|--|--|
| Is an auto-reclosing scheme (79) used? (<i>Yes or No</i>) | |
| Auto-Reclose Output Contact (<i>e.g.: OUT301</i>) | |

| Protective Relay Trip Output Contact Asserted <i>(e.g.: OUT101)</i> | LOR tripped? <i>(Yes, No or N/A)</i> | Breaker tripped? <i>(Yes or No)</i> | Breaker Auto-Recloses after 5 min? (<i>Yes, No, N/A</i>) ^{Note 1} | Pass or Fail? |
|---|--|---|---|----------------------|
| | | | | |
| | | | | |
| | | | | |

Note 1- After trip test is performed, apply voltage and frequency within reclosing window to test if auto-reclosing is successful or blocked.[Section 8.5.1.2 of PSEGLI Guide]

Comments:

6. Relay Failure Test

****Test methodology must be defined and reviewed by PSEG-LI prior to performing these tests****

This test is required only if a non-redundant utility grade relay is used in the project. Test Engineer shall demonstrate that the protective relay will operate the LOR and consequently trip and block close the breaker for a relay failure alarm condition or loss of power to the protective relay.

Test Methodology:

| Output Contact <i>(e.g.: OUT103)</i> | LOR tripped and blocked close breaker? (Yes or No) |
|--|---|
| | |

Comments:

7. DTT Scheme Tests

All DTT testing must be coordinated with PSEGLI.

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|--|--|
| Is a DTT scheme installed? (Yes or No) | |
| Is SCADA between PSEGLI and DER site installed? (Yes or No) | |

8. SCADA Control Points Tests

All SCADA tests must be coordinated with PSEGLI.

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|--|--|
| Is SCADA with control points required for this project? (Yes/No) | |
|--|--|

9. Supplemental Tests

If any project specific supplemental tests are required, the test methodology and results must be presented here. PSEG-LI will inform the developer of any required supplemental tests during the CESIR process or any subsequent project review rounds. Supplemental tests may include: microgrid application testing, unique transfer scheme or any other DER facility automation schemes.

Please be specific when filling out this section. Please refer to any devices on the project drawings by their device IDs in order to simplify review.

| |
|-------------------|
| Test Methodology: |
| Test Results: |

10. Relay Calibration Tests

Test Engineer shall provide full test report output from Test Set.

Calibration reports must include the following details:

1. Include pickup and time tests for each phase of each protective element.
2. Include time test results for multiple points on curve of time overcurrent elements for each phase.
3. Tests for intentional time delays programmed in the relay.
4. Tests to validate any logic programmed in the relay that affects tripping, closing or reclosing of DER.
 - a) Time test results of each programmed timer used in tripping, closing or reclosing logic

- b) Perform pickup and dropout tests of voltage and frequency elements used to establish the lower and upper limits of the auto-reclosing windows.

11. Certification

The Test Engineer certifies the results documented in this report and any additional supporting test documents provided as accurate and in conformance to the requirements set forth in the PSEG-LI technical requirements guide revision applicable to this DER project.

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|-----------------------------------|--|
| Test Engineer's Name: | |
| Test Engineer's Signature: | |
| Test Company: | |
| Date: | |