

Designated Entity Design Standards Task Force (DEDSTF) Minimum Design Requirements for FERC Order 1000 Projects System Protection Subgroup

Purpose of this document

The charge of the DEDSTF states that the purpose of the group is to establish minimum design standards to assure a minimum level of robustness is provided such that the new competitively-solicited facility (one that would require the signing of a Designated Entity Agreement) would not introduce a weak point in the system in terms of performance. These minimum design standards would only apply to projects that would require the signing of a Designated Entity Agreement (DEA).

Section 4.2 of the DEA states

For the purposes of this Agreement, applicable technical requirements and standards of the Transmission Owner(s) to whose facilities the Project will interconnect shall apply to the design, engineering, procurement, construction and installation of the Project to the extent that the provisions thereof relate to the interconnection of the Project to the Transmission Owner(s) facilities.

The System Protection Subgroup views this language as the basis for the minimum system protection related requirements. However, as written, section 4.2 of the DEA is in need of clarity as it relates to system protection.

Applicable Relay schemes under DEA 4.2 Relay schemes applicable to DEA 4.2 are schemes that “relate to the interconnection of the Project to the Transmission Owner(s) facilities”. This refers to those items listed below under the “Relay ‘design and engineering’ requirements” section.

Relay “design and engineering” requirements

The applicable system protection technical requirements and standards of the TO, as related to DEA 4.2 include:

- Line relay types
- Line relay scheme (POTT, current diff, etc)
- Line protection communication media (Fiber, Power Line Carrier, etc).
- Line protection communication scheme requirements – number of channels, channel type, general remote trip requirements
- Any protection system maintenance must be able to be performed without taking any primary element (e.g., line, transformer, bus) out of service. (This may be more appropriate in a new section of PJM M7)

- Reclosing timing and reclosing method (HBDL, sync check, etc) must be coordinated with the local TO.
- Breaker failure timing must be coordinated per NERC Standard PRC-001.

As related to the above listed bullets, the local TO has the right to require the Developer to follow local TO standards as related to the bullets listed above. The Local TO, at their discretion, may allow the Developer to utilize their own standards as related to the bullets listed above.

The requirements listed above are meant to be general in nature and must be “performance based”. The Developer has the ability to develop schematics, rack layout details, relay I/O, wiring drawings, etc.

Relay schemes that are not applicable to DEA 4.2

Relay schemes that are not applicable to DEA 4.2 are those not related to the line protection schemes/systems (or schemes that are shared by the local TO and the Developer) as outlined above. For these schemes, the Developer must follow the requirements of PJM Manual 7.

Relay protection review

Ongoing project review process will be facilitated by PJM as per Manual 14C. This is the opportunity for incumbent T.O.’s to review the protection design.

Protection System Design Reliability

The PJM RS is going to discuss if a “Protection System Reliability” section should be added to PJM M7. This section should address minimum Rack separation requirements, possibly maintenance requirements (design with test switches to ensure that relays can be removed from service for testing without removing a BES element from service)

Additional requirements

All protection schemes in the PJM footprint are required to follow the PJM Manual 7, “PJM Protection Standards”. Additionally, all Developers must follow all applicable NERC reliability standards. For protection systems in the Developer substation that do not meet the applicability of PJM Manual 7 (for example, protection systems protecting only equipment < 200kV), the PJM Relay Subcommittee has developed a PJM M7 exceptions document.

Individual Interconnection Requirements Document

PJM is currently reviewing the feasibility of using the Interconnections Requirements Document to indicate any performance related technical requirements specific to that Transmission Owner. that a potential Developer would need to know. Compliance with NERC FAC-001 requires all Transmission Owners to have an Interconnection Requirements Document. These documents are all currently posted on the PJM website. Developers must follow the requirements in this document when interconnecting with a specific Transmission Owner.

Specific protection requirements (that do not conflict with PJM M7 or DEDSTF final documents) for individual Transmission Owners, as it relates to the design and engineering of a proposed new interconnected facility, can be added to this document to address specific performance related requirements. This will ensure the potential Developer is aware of any additional requirements not addressed in PJM M7 or DEDSTF documents. (ie breaker failure timing requirements near a large generating facility) .

If the use of this document for that purpose is not feasible, then the DEDSTF would either add an appendix with each PJM Member relay requirements, or create a new document.