

I. Introduction - Technical Requirements & Design Philosophy

1.0 Introduction

The PJM TSS (“Transmission & Substation Subcommittee”) Transmission Owner Technical Guidelines & Recommendations were formalized to conform in part to NERC Standards as applied to Bulk Electric System facilities. They are intended to apply to facilities proposed/requested in accordance with the process defined in the Open Access Transmission Tariff (“OATT”). They are intended to provide common PJM Transmission Provider connection requirement criteria concerning design philosophy, design requirements and operating practices for interconnecting Generation Facilities, Transmission Facilities, and End-User Facilities. It also allows an Interconnection Customer to evaluate the requirements, as applicable to the Transmission System, on a consistent basis. Each Transmission Owner will have additional, more specific requirements based on the needs of their systems that must also be met and that shall not be limited by these Technical Requirements. General Transmission Owner’s requirements are posted on the PJM website; requirements for a specific project will also be provided on a case by case basis.

The user of these guidelines and recommendations must also look to other documents, including PJM Manuals for example:

- Manual M-14 Series “PJM Regional Transmission Planning Process Manuals”; or
- PJM Relay Subcommittee Philosophy and Design Standards document for guidance concerning “Protective Relaying Philosophy and Design Guidelines”.

In addition the Interconnection Customer’s facility connection must comply with all applicable codes, standards, federal and state regulations, environmental regulations, siting requirements, contracts, operating agreements, FERC tariff requirements and Good Utility Practices. While this document contains certain technical requirements for electrical power apparatus (Section V), the Interconnection Customer should use the TO’s detailed electrical power apparatus specifications for purchase of equipment that will be owned and/or operated and maintained by the TO.

These Technical Guidelines and Recommendations, which address both substations and transmission lines, are organized in the following major sections:

- I. Introduction - Technical Requirements and Design Philosophy (this document)
- II. Transmission System Design Criteria
- III. Substation Bus Configuration and Substation Design Requirements
- IV. Spare Equipment Philosophy
- V. Design, Application, Maintenance and Operation Technical Requirements
- VI. Rating Guides
- VII. Installation and Commissioning
- VIII. Inspection, Testing and Acceptance

Capitalized terms not defined in the body of the PJM TSS Technical Guidelines and Recommendations shall have the meanings set forth in the Open Access Transmission Tariff

2.0 Design Philosophy

All Transmission Network Facility connection designs must meet applicable transmission planning standards, which are intended to:

- Minimize the magnitude and duration of system outages in the event of a component failure,
- Minimize widespread system effects on voltage, dynamic stability, etc., that occur as a result of an unplanned event,
- Facilitate the isolation of failed component(s) while maximizing the amount of transmission system equipment that can remain in service.
- Include plans for expeditious restoration of failed facilities/components (dedicated spare equipment, etc.)

Some less specifically defined, but important factors that are to be considered in determining the overall acceptability of a proposed design include, but are not limited to:

- Constructability (minimizing number and duration of construction outages)
- Criticality of existing facilities impacted by the proposed interconnection
- Operational complexity
- Transmission System reliability
- Component reliability
- Point of Interconnection (ownership transfer)
- Facility Operation & Maintenance
- Safety in construction, operation and maintenance
- Adaptability/Expandability