

OPUC Transmission Workshop 2

FERC Pro Forma Interconnection

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Background of FERC Pro Forma Documents

- When and why did FERC create its pro forma documents and transparency requirements?
 - Remove impediments to competition in the wholesale bulk power marketplace.
 - Bring more efficient, lower cost power to the nation's electricity consumers.
 - Remedy undue discrimination in access to the monopoly owned transmission wires that control whether and to whom electricity can be transported in interstate commerce.
 - Address recovery of the transition costs of moving from a monopoly-regulated regime to one in which all sellers can compete on a fair basis and electricity is more competitively priced.
- Do a transmission provider's tariff and agreements have to exactly match FERC's pro forma documents?
- Who takes service under the pro forma tariff?

FERC Pro Forma Interconnection Overview

“Customer” definition in this context:

An entity proposing to interconnect its generating facility with the transmission system.

Large Generators (more than 20 MWs):

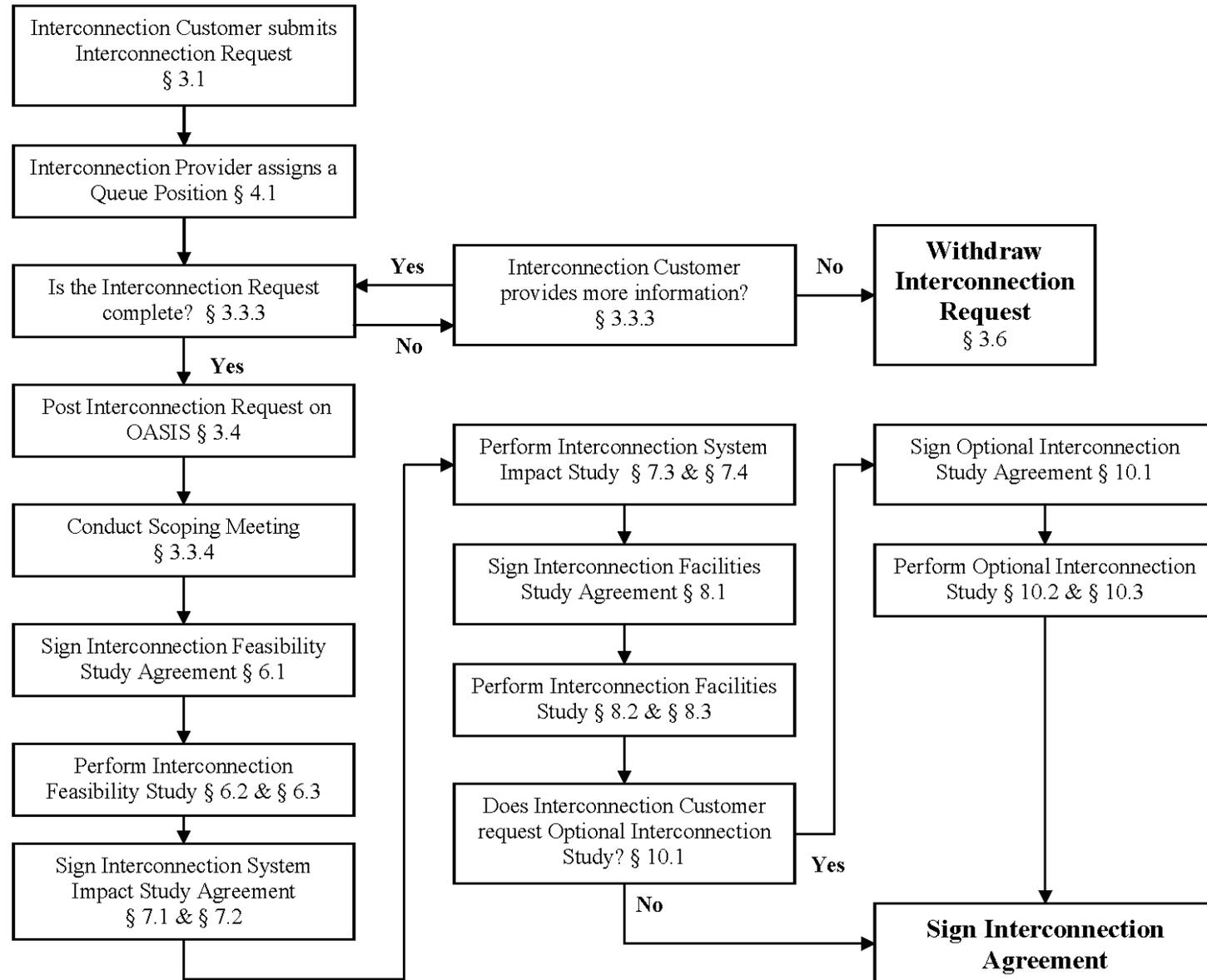
1. Standard Large Generator Interconnection Procedures (LGIP)
2. Standard Large Generator Interconnection Agreements (LGIA)

Small Generators (up to 20 MWs):

1. Standard Small Generator Interconnection Procedures (SGIP)
2. Standard Small Generator Interconnection Agreements (SGIA)

Incorporated into every transmission provider’s Open Access Transmission Tariff (OATT).

Pro Forma Large Generator Interconnection Process Basics



Pro Forma Large Generator Interconnection Timelines

- **Feasibility Study** - preliminary feasibility analysis within 45 days.
- **System Impact Study** – comprehensive analysis of reliability impacts, using a stability analysis, power flow, and short-circuit analyses within 90 days.
- **Facilities Study** – identify cost and timing of needed Interconnection Facilities and Network Upgrades within 90 to 180 days.
- **Reasonable Efforts** –transmission provider must use “reasonable efforts” to meet study timelines, defined as “efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.”
- **Supporting materials** – upon request, transmission provider will provide supporting materials, such as documentation, workpapers, and relevant pre-request and post-request power flow, short circuit, and stability databases.

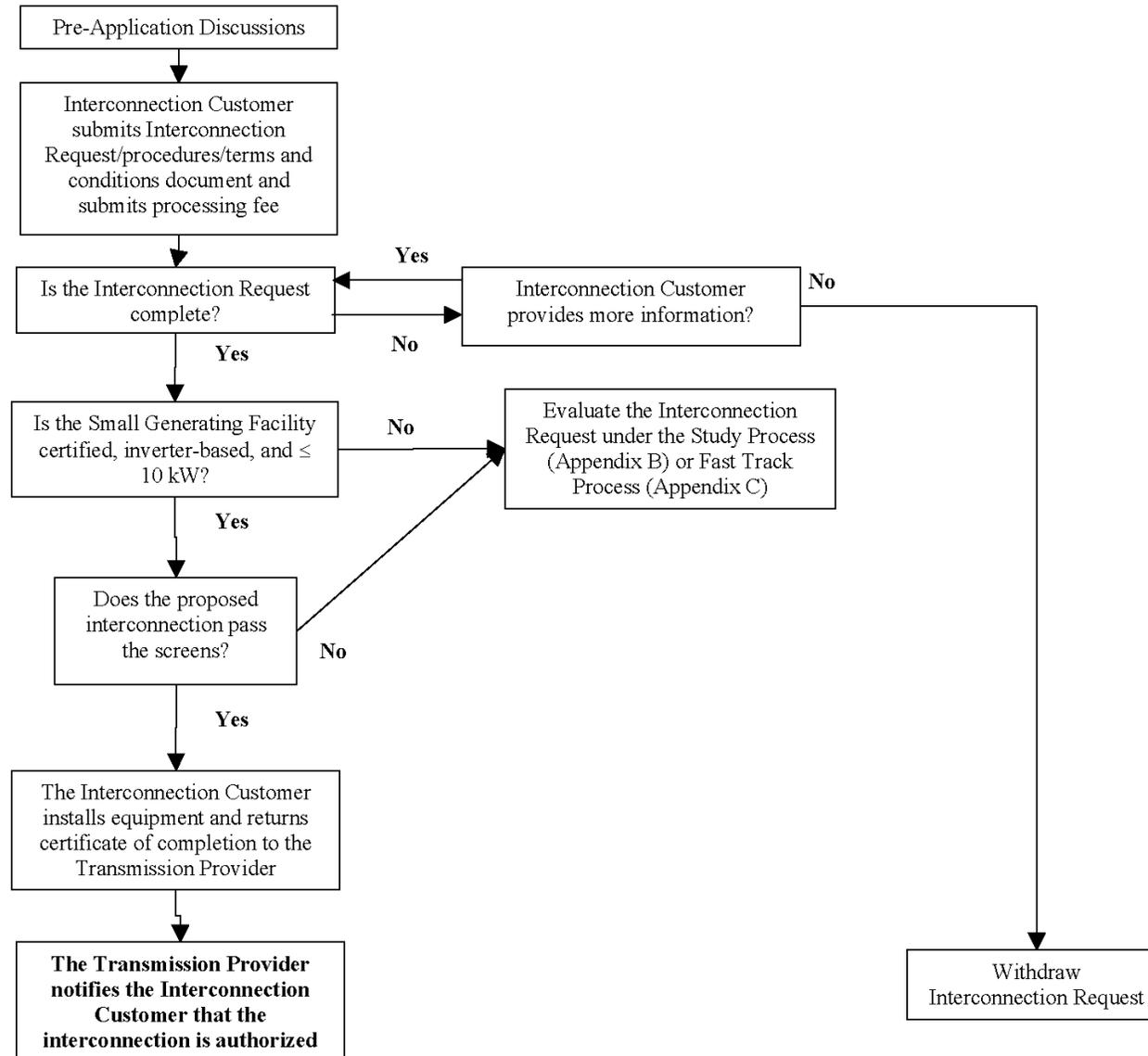
Pro Forma Small Generator Interconnection Process Basics

A four-step interconnection evaluation process for small generators similar to the four step process for large generators, but includes:

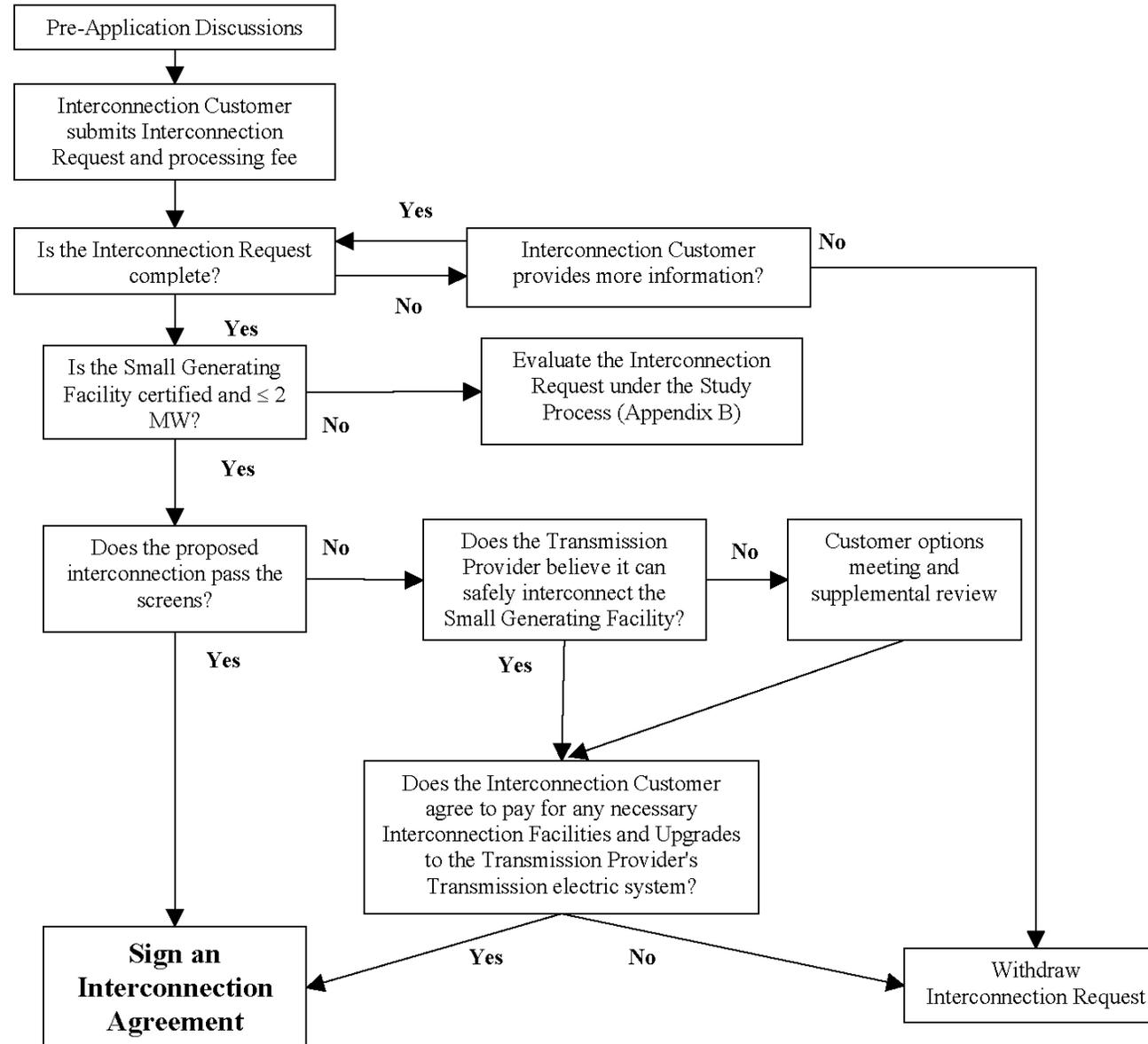
- A "Fast Track Process" that uses technical screens to evaluate generators with certain characteristics (small size or interconnecting voltage).
- A pre-application process that allows a small generator with a proposed project on a specific site to informally request certain information on non-binding basis.

The small generator is ultimately tendered an SGIA, similar to the LGIA, describing the legal relationships of the parties.

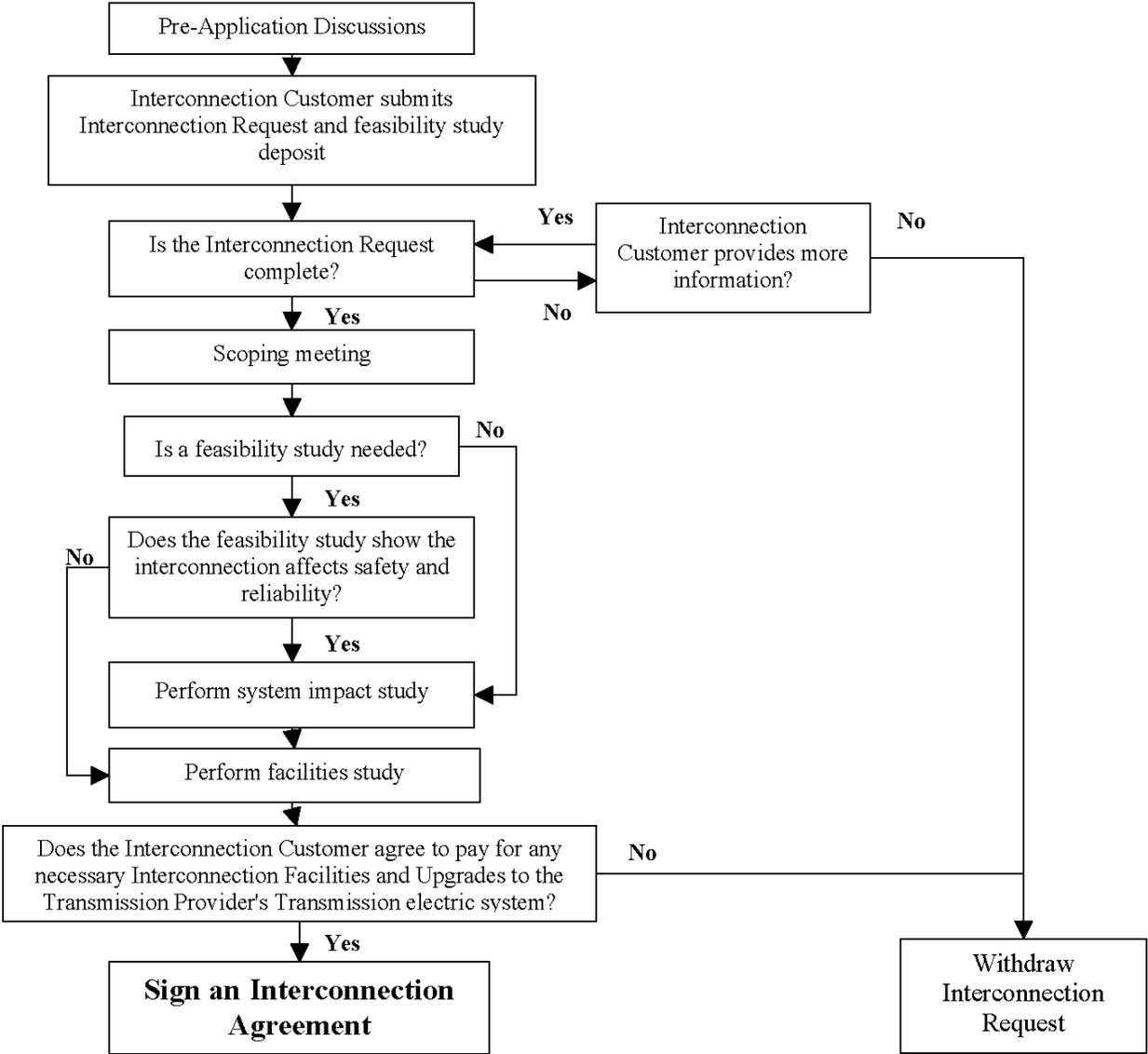
**Flow Chart for Interconnecting a Certified Inverter-Based
Small Generating Facility No Larger than 10 kW
Using the "10 kW Inverter Process"**



Flow Chart for Interconnecting a Certified Small Generating Facility No Larger than 2 MW Using the "Fast Track Process"



Flow Chart for Interconnecting a Small Generating Facility Using the "Study Process"



Pro Forma Process for Selecting Interconnection Service Type

- A generator's interconnection request must indicate if the generator wishes to be studied as: (1) an energy resource interconnection; (2) a network resource interconnection; or (3) both.
- If the generator chooses both, when it reaches the facilities study agreement stage, it can either elect to proceed with network resource interconnection service or under a lower level of interconnection service to the extent only certain upgrades will be completed.

Energy Resource Interconnection Service

The Product. Energy Resource Interconnection Service allows Interconnection Customer to connect the Large Generating Facility to the Transmission System and be eligible to deliver the Large Generating Facility's output using the existing firm or non-firm capacity of the Transmission System on an "as available" basis. Energy Resource Interconnection Service does not in and of itself convey any right to deliver electricity to any specific customer or Point of Delivery.

Network Resource Interconnection Service

The Product. Transmission Provider must conduct the necessary studies and construct the Network Upgrades needed to integrate the Large Generating Facility in a manner comparable to that in which Transmission Provider integrates its generating facilities to serve native load customers. Network Resource Interconnection Service allows Interconnection Customer's Large Generating Facility to be designated as a Network Resource, up to the Large Generating Facility's full output, on the same basis as existing Network Resources interconnected to Transmission Provider's Transmission System, and to be studied as a Network Resource on the assumption that such a designation will occur.

Pro Forma Study Assumption Basics and Restudies

Study assumptions. Interconnection studies are performed in serial-queue order and start with the baseline assumption that the following are in-service:

- Generators already directly interconnected to the Transmission System;
- Generators that are interconnected to affected systems and may have an impact on the interconnection request;
- Generators with a pending higher queued interconnection request, including all of their the network upgrade requirements identified in their studies;
- Generators that no longer have a queue position but have an executed LGIA.

Restudies. Because of the cumulative nature of FERC's study assumption requirements, queue changes (e.g., a withdrawal or other non-material project changes) can trigger restudies for projects with a higher queue number, which can have cost or timing impacts on study results.

Pro Forma Interconnection Cost Basics

- The queue position of an interconnection request determines:
 - The order of performing the studies (as noted above); and
 - The determination of cost responsibility for the facilities necessary to accommodate the interconnection request.
- FERC's cost responsibility rules generally center around FERC's simple, bright-line rules for facility classification:
 - Interconnection Facilities – “up to” the point of interconnection
 - Network Upgrades – “at or beyond” the point of interconnection

Facility Classification Definitions

Point of Interconnection (or “POI”)

The point where the Interconnection Facilities connect to the Transmission Provider's Transmission System.

Interconnection Facilities

All facilities and equipment ***between the Generating Facility and the Point of Interconnection***, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the generator to the transmission system.

Network Upgrades

The additions, modifications, and upgrades to the transmission system required ***at or beyond the point at which the Interconnection Facilities connect*** to the transmission system to accommodate the interconnection of the generator to the transmission system.

Cost Responsibility for Specific Facilities

- Interconnection Facilities (“up to” the point of interconnection):
 - May be owned or controlled by either the interconnection customer or the transmission provider, depending on who designed and constructed the facilities.
 - Regardless of ownership and control, Interconnection Facilities are paid for by the interconnection customer.
- Network Upgrades (“at or beyond” the point of interconnection):
 - Constructed, owned, and controlled by the transmission provider.
 - The interconnection customer initially upfront funds the capital for Network Upgrades, subject to later reimbursement by the transmission provider.
 - The reimbursed Network Upgrades are rolled into a transmission provider’s transmission rate base and paid for by all system users.

Clustering Interconnection Service Request Studies

- The traditional study assumptions noted above require the processing of interconnection service requests:
 - In serial-queue order; and
 - Starting each study with the baseline assumption that all requests with lower queue numbers are in-service, along with any of their required upgrades.
- Transmission providers can choose to study requests together—in a “cluster”—instead of serially and allocate the cost of the common upgrades to the clustered requests without regard to queue position.
- If a transmission provider elects to cluster study, it develops a queue cluster window, i.e., requests received during the window are in the cluster.
- A transmission provider can study a request separately from the cluster if the proposed interconnecting generator is electrically remote.