

# Small Hydropower Interconnection Best Practices Guidelines and Templates



Christopher J. O'Reilley  
Hope J. Corsair

**February 2024**



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Electrification and Energy Infrastructures Division

**SMALL HYDROPOWER INTERCONNECTION BEST PRACTICES GUIDELINES  
AND TEMPLATES**

Christopher J. O'Reilly  
Hope J. Corsair

February 2024

Prepared by  
OAK RIDGE NATIONAL LABORATORY  
Oak Ridge, TN 37831  
managed by  
UT-BATTELLE LLC  
for the  
US DEPARTMENT OF ENERGY  
under contract DE-AC05-00OR22725



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## ABBREVIATIONS

ALP	Alternative Licensing Process
BIA	US Bureau of Indian Affairs
BLM	US Bureau of Land Management
BOR	US Bureau of Reclamation
cooperative	cooperative utility
DOD	US Department of Defense
EPA	US Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Agency
FWS	US Fish and Wildlife Service
IA	interconnection authority
IEEE	Institute of Electrical and Electronic Engineers
ILP	Integrated Licensing Process
IOU	investor-owned utility
ISO	independent system operator
LGIP	Large Generator Interconnection Process
municipal	municipal utility
NEMA	National Electrical Manufacturers Association
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOI	notice of intent
NPS	National Park Service
NRTL	Nationally Recognized Testing Laboratory
OEP	Office of Energy Projects
POI	point of interconnection
PUC	public utility commission
PUD	public utility district
PURPA	Public Utility Regulatory Policies Act
PV	photovoltaic
REA	Ready for Environmental Analysis
RTO	Regional Transmission Operator
SGIP	small generator interconnection process
T&D	Transmission & Distribution
TLP	Traditional Licensing Process
UL	Underwriters Laboratories
USACE	US Army Corp of Engineers
USFS	US Forest Service
WDAT	Wholesale Distribution Access Tariff

# 1. INTRODUCTION

## 1.1 BACKGROUND

The process for development of a hydropower project can be a convoluted and lengthy process involving numerous federal, state, and local agencies and encompass a plethora of stakeholders that other renewable project development processes may not have to consider. Additionally, the process may vary depending on who the owner/operator is, such as private, nonutility companies; private utility companies; municipalities; electric cooperatives; private citizens; and state and federal government agencies.

Permitting and regulation are necessary to ensure hydropower projects comply with statutory requirements and address multiple stakeholder priorities that consider a range of factors, including water quality, water usage and availability, species protection, cultural resource effects, recreation, and others. The time involved in acquiring a license for an individual hydropower project can be highly variable result in and lead to increased project licensing costs, risks, and uncertainties partly due to the consequences of having a of a regulatory structure that has evolved over time to include multiple approvals and compliance requirements administered by the Federal Energy Regulatory Commission (FERC), US Army Corps of Engineers (USACE), federal land management agencies, federal and state resource agencies, and Native American tribes.

Table 1.1 provides a high-level description of the federal agency, state agency, and tribe hydropower that have regulatory &/or legislative authorization roles.

Table 1.1. Federal hydropower authorization roles [1]

Agency	FPA (4e)	FPA (10a)	FPA (10J)	FPA 18	NEPA Lead Agency	NEPA Coop. Agency	ESA Sec. 7	WSRA Sec. 7	CWA 401/402	CWA 404	CZMA	NHPA 106	RHA Sec. 14	TSDA (LOPP)	Land Access	Other Species Act	
BIA	●	●				●									●		
BLM	●	●				●		●							●		
BOR	●	●			●	●								●			
DOD															●		
EPA									●	●							
FWS	●	●	●	●		●	●	●							●	●	
USFS	●	●				●		●							●		
NOAA		●	●	●		●	●									●	
NPS	●	●				●									●		
USACE	●	●			●	●		●		●			●				
Indian Tribes		●							●			●					
State Agencies		●	●						●		●	●					
FERC	✔	✔	✔	✔	●		✔	✔	✔	✔	✔	✔					
●	Generally, all agencies within one project								●	Generally, <u>NOT</u> all agencies within one project							
✔	Review, approval, and/or integration into license																
BIA: US Bureau of Indian Affairs BLM: US Bureau of Land Management BOR: US Bureau of Reclamation DOD: US Department of Defense EPA: US Environmental Protection Agency FPA: Federal Power Act								FWS: US Fish and Wildlife Service NEPA: National Environmental Policy Act NOAA: National Oceanic and Atmospheric Administration NPS: National Park Service TSP: Thrift Savings Plan USFS: US Forest Service									

## **1.2 PURPOSE, OBJECTIVES, AND BENEFITS**

### **1.2.1 Purpose**

The purpose of the Small Hydropower Interconnection Best Practices Guidelines and Templates is to provide small hydropower developers with the knowledge, tools, templates, and guidance for navigating the interconnection process from licensing through interconnection process.

### **1.2.2 Objectives**

The primary objectives of the Small Hydropower Interconnection Best Practices Guidelines and Templates are to provide small hydropower developers with

- a clear understanding of the processes, procedures, studies, and stakeholders necessary to develop a small hydropower project from concept through interconnection.
- specific tools, templates, and methodologies for each phase of the project, including licensing, stakeholder engagement, and interconnection with the utility; and
- links and references to specific additional resources available to assist throughout the process.

### **1.2.3 Scope**

The scope of the guide covers:

- basic good practice requirements for the identification and management of issues of importance or concern to small hydropower developers and
- all stages of a project's life, from the concept stage through preparation, implementation, and interconnection.

This guide does not attempt to comprehensively cover all aspects of navigating the process(es) for each specific location, state, or region. Rather, it focuses on understanding the process phases and their specific requirements. Tools and templates are provided for the overarching or common best practices. Links are provided for state- and local-specific practices where they differ from common best practices.

### **1.2.4 Benefits**

The primary benefits of this guide for project planners, developers, owners, and operators are the following:

- Expedite the process of project development from concept to interconnection.
- Streamline the communication with stakeholders, providing stakeholders with the information needed early in the process. This communication includes studies, information requests, and more.
- Understand the development process from concept to interconnection.
- Provide detailed methodologies, tools, and templates for navigating each step of the process.
- Provide links to appropriate resources, such as formal FERC guidelines.

## **1.3 AUDIENCE**

The primary audience is the small hydropower developer. Additional audiences may include local utilities, city and state officials, and the public in which the hydropower plant shall be installed.

## 1.4 DOCUMENT OUTLINE

The *Small Hydropower Interconnection Best Practices Guidelines and Templates* document is organized to support a developer from the beginning of the process through the implementation of the interconnection of the hydropower plant with the grid. Throughout the document and within the appendices are forms, templates, and additional links that may be used to assist the developer in navigating the process. The document is organized into the following sections:

- Section 1: Introduction
- Section 2: Interconnection Process
- Section 3: Interconnecting to the Grid
- Section 4: Federal Energy Regulatory Commission Licensing
- Section 5: Summary and Conclusion
- Section 6: References
- Appendixes
  - APPENDIX A: Referenced small generator interconnection process (SGIP) sections.
  - APPENDIX B: Developer discussions with interconnection authority (IA)

## 2. INTERCONNECTION PROCESS

### 2.1 INTERCONNECTION PROCESS DESCRIBED

For a small hydropower generator to connect to the electric utility grid, there are a number of interdependent processes that happen. Business planning, financing, and engineering design processes take place iteratively and in parallel throughout the development of the project.

Site identification should consider the physical characteristics of the waterway, potential points of interconnection to the electric grid, and—importantly—the business, political, and social contexts where the project is proposed. This last consideration is important while a project may be relatively simply deemed feasible or infeasible based on head and flow or based on availability of transmission; the *human factors* are less predictable in terms of identifying them as well as the time and expense needed to resolve them in terms of their timing and the costs to overcome them.

FERC licensure (or exemption) is critical to building and operating even small hydroelectric plants in the United States. This process is detailed in other documents and is only touched on briefly here. However, it is likely to be a major, if not the primary, driver of the project timeline.

However, developers are wise to begin iterations with the interconnection authority (IA) even at the stage in the process where FERC licensure is being considered. Understanding what can realistically be implemented at the desired point of interconnection (POI) can save time and resources compared to revising FERC applications after details of a proposed system are found to be infeasible from the interconnection authority's point of view. Discourse with the IA will encourage a sense of partnership, so the IA views the project as an asset to its service territory, or at a minimum does not find it to be an unwelcome intrusion.

Other stakeholders can and should be contacted early and involved in the planning process. Giving the public, affected tribes, state and local government authorities, and others affected by the project an early voice can mitigate potential problems—or at least alert the developer to what might be expected. The project developer should also be in contact with the State Public Utilities Commission and the relevant independent system operator (ISO) or regional transmission operator, if appropriate.

### 2.2 WHERE TO START

As described in the previous section, the interconnection process and timelines are driven primarily by agreements between the small hydropower developer and the IA; however, other stakeholders may need to be kept informed throughout the process and may exert influence on the timeline.

This best practice guide is structured such that a small hydropower developer (new or experienced) has the information available to successfully navigate the process. As such, some of the information provided may not be needed by an experienced developer versus a newer developer.

One question that is often asked is whether the FERC license to operate or the interconnection agreement with the utility should be implemented first. As with many of the processes governing hydropower—specifically, small hydropower—the answer is not clear: the FERC license and the interconnection agreement serve two different purposes. The license issued by FERC authorizes construction of the hydropower plant based on specific operating conditions, water flow, and environmental impacts. These constraints may affect the construction timelines and operating conditions allowable based on the impact studies required for FERC licensing.

The interconnection agreement and interconnecting to the grid are separate but related processes from the FERC licensing process. The interconnection agreement is a contract between the utility and the hydropower operator on how the hydropower plant will provide power to the grid. Thus, the two are developed for different purposes but are not mutually exclusive. The operating license issued by FERC may have limitations on power generation of the hydropower plant, thus affecting the interconnection agreement. This effect is one reason that early and frequent communication between the developer and IA is critical.

Specifics related to FERC licensing are presented in Section 4. Notably, the FERC license process may take between 5 and five and a half 5.5 years to navigate.

The guide and interconnection process is presented as a series of process flows and supporting descriptions/information to guide the developer through the options and paths that may need to be taken. The process and begins at the overall small hydropower interconnection process flow, presented in Figure 2.1.

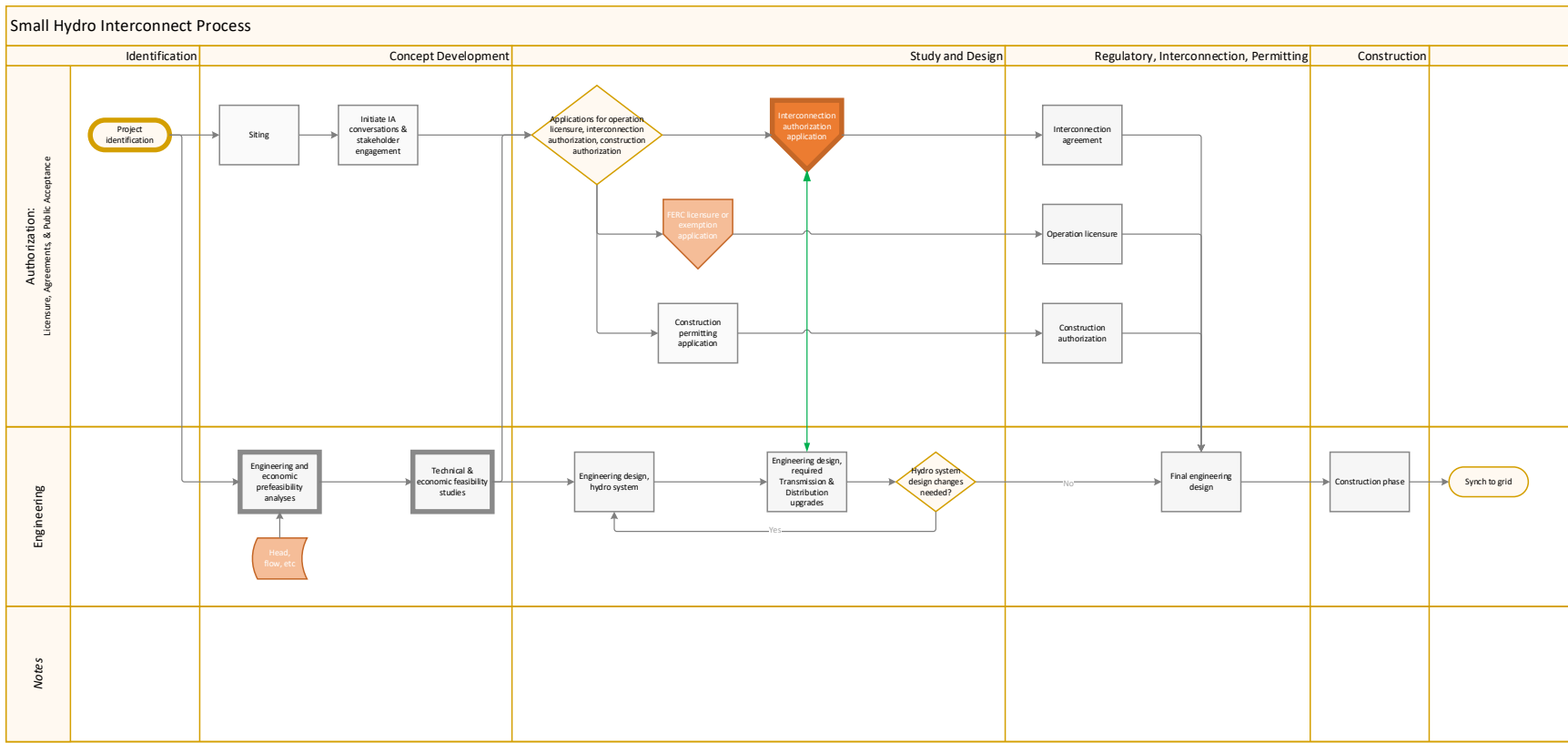


Figure 2.1. Small hydropower interconnection process flow.

## 2.2.1 Small Hydropower Interconnection Process Description

The small hydropower interconnection process flow is the initial flow to assist the developer in navigating the interconnection process. The horizontal lanes describe the *responsibility*, and the vertical lanes describe *phases of development*. Notably, several of these actions (blocks within these vertical and horizontal lanes) may go through iterative processes.

Additional specific process flows describing subprocesses are presented later in this document:

- Figure 3.1. Interconnection agreement flow
- Figure 3.2. SGIP (as recommended by FERC)
- Figure 3.3. Small hydropower FERC SGIP technical screens for fast track eligibility
- Figure 3.5. Interconnection process state Group 1 (California)
- Figure 3.6. Interconnection process state Group 2 (tiered processes) screens.
- Figure 4.1. FERC screening process flow
- Figure 4.2. FERC ILP
- Figure 4.3. FERC
- Figure 4.4. FERC

### 2.2.1.1 Identification

Identification is the process of generally identifying the goals, objectives, and desired outcomes of the project. This step includes the identification of need and general justification of the geographic location. This step the responsibility of the developer and lays the foundation for the rest of the tasks/decisions within the small hydropower interconnection flow (Figure 2.1).

The project identification output also becomes the initial input to the concept development phases for both the authorization and engineering functions.

### 2.2.1.2 Concept Development

The concept development is the initial, more detailed determination of the project scope and feasibility and encompasses both the authorization and engineering areas. A key first step is project siting. Once the project location has been selected, tasks in the authorization lane begin. At the concept development stage, these tasks largely include initiation of contact with the IA, as well as other known and potential stakeholders.

Preliminary engineering and economic analyses also begin. At this point, developers should undertake prefeasibility analyses and begin technical and economic feasibility studies. These analyses are refined throughout the development process.

### 2.2.1.3 Study and Design

The authorization tasks in the study and design phase of the project are the focus of this document and the key to successful project development. Three interdependent application processes take place:

- Authorization
  - This process is the application for FERC licensure or exemption. This step is the federal license (or license exemption) allowing the developer to construct and operate the hydropower plant. It can be a lengthy process spanning multiple years and requires environmental, cultural, and other studies, as well as significant stakeholder engagement.

- During this phase, the developer will also initiate the interconnection process with the IA. This process also frequently requires different studies revolving around providing power to the grid.
- Construction and permitting process
  - Once design details are finalized
- Engineering
  - In parallel, the engineering tasks relate to system design of both the hydropower project itself and of any required transmission and distribution upgrades are undertaken. These tasks are interdependent with the authorization processes: the project size, needed Transmission and Distribution upgrades, operating/generating profile, and other engineering characteristics will influence the outcome of the authorization processes, and the outcomes of these processes may require changes to the engineering design.

#### **2.2.1.4 Regulatory, Interconnection, and Permitting**

The results of the authorization tasks will include permissions to proceed from federal to local levels and an interconnection agreement with the IA. Once these agreements are in place, engineering design can be finalized, and the project can move into the construction phase and finally to the production of hydroelectric power provided to the grid.

The construction phase begins after the regulatory and contractual components have been completed and approvals received, including the following:

- FERC license to operate or exemption. Note that dam or power plant construction or upgrades can be initiated after receipt of FERC license.
- Interconnection-related construction is initiated after the interconnection agreement is approved by both the IA and the developer and all interconnection construction and equipment permits have been received. All interconnection-related construction should be closely coordinated with the IA throughout the process to ensure compliance with the IA and ensure construction meets the National Electric Safety Code, utility requirements, and interconnection agreement requirements. This standard will limit any issues (technical and schedule) associated with the developer's ability to initiate and operate a grid-connected generation facility.

### **3. INTERCONNECTING TO THE GRID**

#### **3.1 GENERAL INTERCONNECTION PROCESS**

The general process for interconnection is as follows:

0. Initiation of contact and informal information exchange with the IA and all other relevant stakeholders
1. Formal preapplication process (Section 3.2.1) and exchange of information
2. Formal application (Section 3.2.2) and determination of queue position based on a first arrived first reviewed determination.
3. Eligibility to bypass some or all study requirements determined (Section 3.2.3)
  - a. Fast track or supplemental review. Details of the supplemental reviews and are provided in Appendix A, Section 2.4.
4. Detailed study process, if required
  - a. Feasibility study
  - b. Distribution system impact study
  - c. Facilities study
5. Negotiation of study results resolution
6. Negotiation of additional interconnection authority requirements
7. Negotiation and signature of interconnection agreement

This process should be considered iterative rather than linear, where steps may be revisited as plans and designs change. For instance, the detailed study process may reveal that a small change to the hydropower system design could result in being able to avoid potentially expensive transmission system upgrades, so the project developer may opt to change the design and revise the application.

Step 0, the initiation of contact with the IA and other relevant stakeholders, should be considered a good practice rather than a requirement. Building partnerships with the utility, affected communities, and water users to create solutions that serve all concerned can take more time initially but has the potential to reduce time and expense throughout the rest of the process. These partnerships should be active throughout the life of the interconnection project and allow for open communication and stakeholder input into the process. The project developer and interconnection authority are obvious decision-makers in the process. If the IA has the opportunity to provide feedback throughout the process, it can likely provide information to the developer about where technical obstacles may arise and how best to address them.

Additionally, public officials, community groups, and local businesses can create delays through unexpected regulation, mobilizing public opposition, or litigation if they feel the project works against their best interest. Validating their concerns (e.g., yes, there will be construction traffic on the roads while the project is being built), clarifying misconceptions (e.g., no, the hydropower plant will not kill all the fish), pre-emptively anticipating or mitigating any concerns and problems as they arise can be less expensive and time-consuming than solving them after public objection has built.

The subsequent steps are described in the following sections.

#### **3.2 FEDERAL ENERGY REGULATORY COMMISSION STANDARDIZATION AND THE SMALL GENERATOR INTERCONNECTION PROCESS**

To streamline the process of interconnection, FERC has created standardized, recommended procedures for interconnection to the grid that address all or most of the common issues to be reconciled between the

IA and a generator to be interconnected. Importantly, IAs are not legally bound to adhere to these procedures, and many IAs use them as a starting point or a set of general guidelines but use requirements that are specific to the needs of the grid at a given location. As such, companies seeking to interconnect a small hydropower generator might benefit from a thorough familiarity with the SGIP but should not assume that it encompasses all requirements and contingencies they may face. Full details of the SGIP are found at [this website](#).<sup>1</sup> In all cases, if there is a discrepancy between this document and the then-current SGIP published by FERC (see the linked website), the FERC documentation should be understood to be correct.

The following steps define the basic process. Note that IAs are not legally bound to this process and may deviate from it substantially. Thus, the developer should obtain from the specific IA the specific processes, procedures, requirements, timing, it prefers.

### 3.2.1 Preapplication

The transmission provider or interconnection authority will have a designated employee or office with whom the proposed generator will exchange information. The generator should contact this office as early in the interconnection process as feasible in an effort to develop a *partnership* approach to interconnection. The IA will provide electric system information such as relevant system studies, previous interconnection studies, or other material to help the generator understand the system—to the extent that this information can be provided without violating confidentiality or security requirements.

The generator should (but may not be required to) submit a formal written preapplication request together with a nonrefundable \$300 fee for each proposed point of interconnection. This preapplication is nonbinding and confers no rights to either party. The generator provides the following related to the project:

- Contact information.
- Location, including street location and/or meter or pole number.
- Generator type (e.g., hydroelectric)
- Size
- Configuration (single- or three-phase)
- Presence or absence of on-site load
- Customer account number and related information of any existing service, or request for new service.

Within 20 business days, the IA will provide a preapplication report. This report will identify the most likely substation, bank, or circuit that will serve as POI, which may be subject to change after relevant studies are complete. This report is expected to include only existing data that are readily available and does not obligate the IA to perform any studies. This report will contain the following information about the relevant substation, bank, or circuit. State-specific information is provided in Section 3.3.

- Total capacity
- Existing aggregate generation capacity interconnected
- Aggregate queued generation capacity
- Available capacity
- Nominal transmission and/or distribution voltage
- Nominal distribution circuit voltage
- Approximate circuit distance between the POI and substation

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<sup>1</sup> <https://www.ferc.gov/sites/default/files/2020-04/sm-gen-procedures.pdf>

- Estimated peak and minimum load data on relevant lines.
- Number and rating of protective devices and number and type of voltage regulating devices between the POI and substation, as well as presence or absence of a load tap changer.
- Number of phases available at POI and, if relevant, distance to three-phase circuit
- Limiting conductor rating
- Network type at location (spot, grid, radial supply)
- Known or suspected constraints relevant to the project, including electrical dependencies, short circuit interrupting capacity issues, or other concerns.

With the insights gained from the preapplication report, the generator makes the decision whether to withdraw the proposed project, to make changes to the initial project design, or to proceed with the application and interconnection request. Figure 3.1 presents the interconnection agreement flow. The SGIP preapplication is presented in APPENDIX A, Section 1.2.

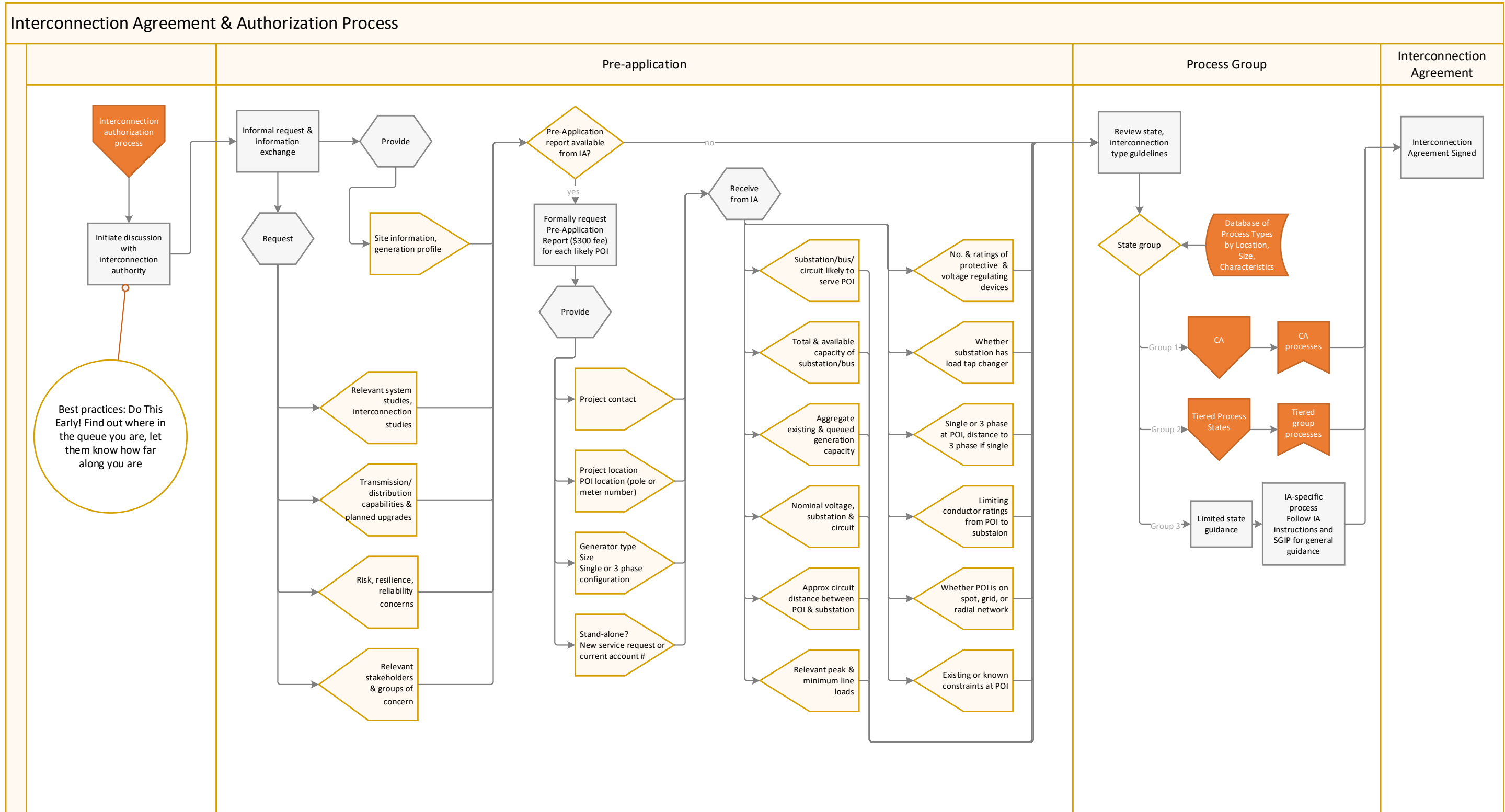


Figure 3.1. Interconnection agreement flow.

### 3.2.2 Application and Interconnection Request

After relevant preapplication processes, the generator submits an interconnection request application to the IA. The IA may ask for further information beyond what is initially submitted, and the application should not be considered complete until the IA deems it so. Upon acceptance of the application, the applicant will be asked to provide evidence of site control and will be assigned a queue position *based upon the time and date the application is accepted*. This time is noteworthy as many IAs use this *first come, first served* approach to approving applications, and it may have bearing on which applicant is responsible for paying for system upgrades.

Once queue position is determined, the applicant may opt to apply to the fast track interconnection process, potentially substantially reducing time and expense of interconnecting. Figure 3.2 presents the SGIP process flow. The SGIP application and interconnection request is presented in Appendix A, Section 0.

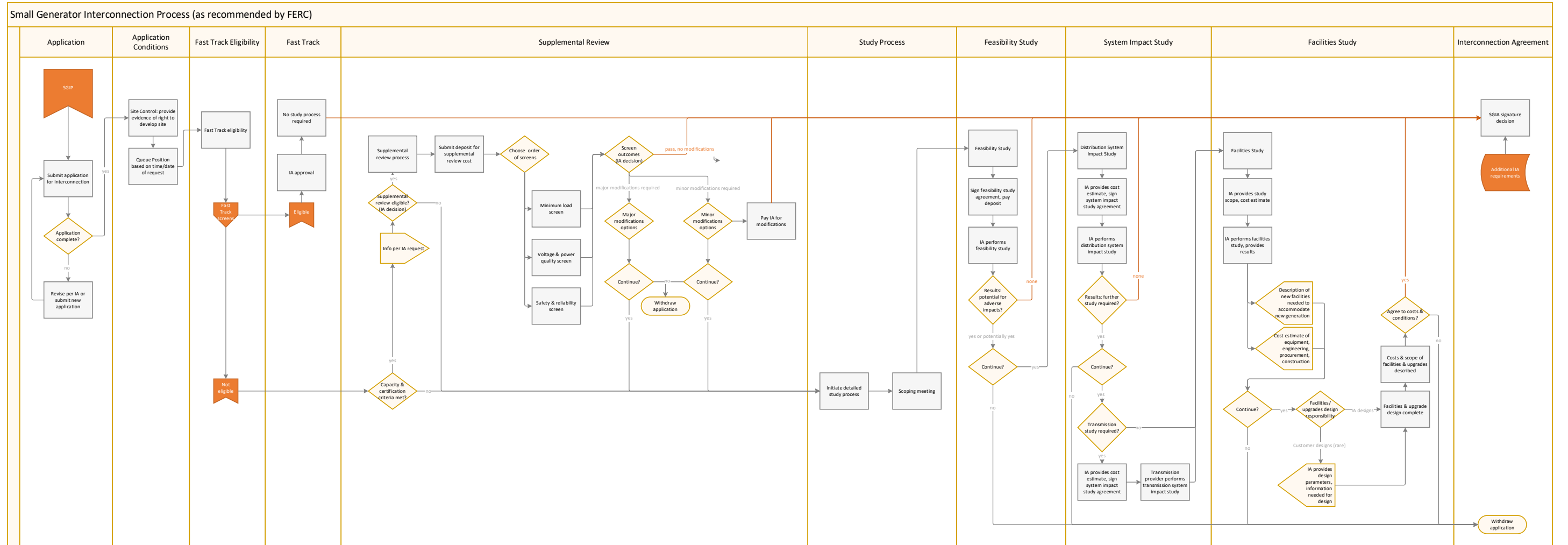


Figure 3.2. SGIP (as recommended by FERC).

### **3.2.3 Fast Track Screening and Eligibility and Supplemental Review**

Projects that are eligible for fast track approval may be able to bypass feasibility, system impact, and facilities studies. Section 2 is presented in Appendix A. The IA must agree that a project meets all fast track screening criteria and that the project will not have adverse effects on its system if these studies are bypassed. There are a number of criteria for being eligible for the fast track process, the first of which is certification.

To be considered for fast track approval, the facility must meet all of the codes, standards, and certification requirements listed in of the Section 2 of Appendix A (SGIP). Any equipment interconnecting to the grid, other than bespoke or experimental systems, should meet all applicable certification criteria listed in these attachments, regardless of intent to apply for fast track approval. If a system meets these certifications, the next consideration for fast track approval is system size.

All synchronous and induction generators must be 2 MW or smaller to be considered for fast track screening. Size limitations for inverter-based systems are dependent upon line voltage and location. Furthermore, the system's POI must be on a portion of the IA's distribution system that is subject to tariff and is 69 kV or smaller.

If all elements of the system meet certification requirements, the system is sufficiently small in size, and the POI is established as connecting to the distribution rather than transmission grid, the IA will subject the system to a series of technical screenings per the SGIP fast track procedure. The interconnection customer should review these screens and have confidence that the system will pass them with the IA before submitting the fast track application. Clear and open communication with the IA is critical and can save both parties time and resources should the IA know of specific reasons why the fast track application is unlikely to be approved. For instance, the IA may know that the proposed POI will need transmission upgrades for any new capacity to be added, which would likely preclude the use of the fast track process.

The IA will respond to the interconnection customer within 15 business days after receiving the completed request, informing them of their approval or denial of the request to proceed with the fast track approval and providing notification copies of analysis and data underlying the decision.

Figure 3.3 presents the SGIP and the small hydropower FERC SGIP technical screens for fast track eligibility.

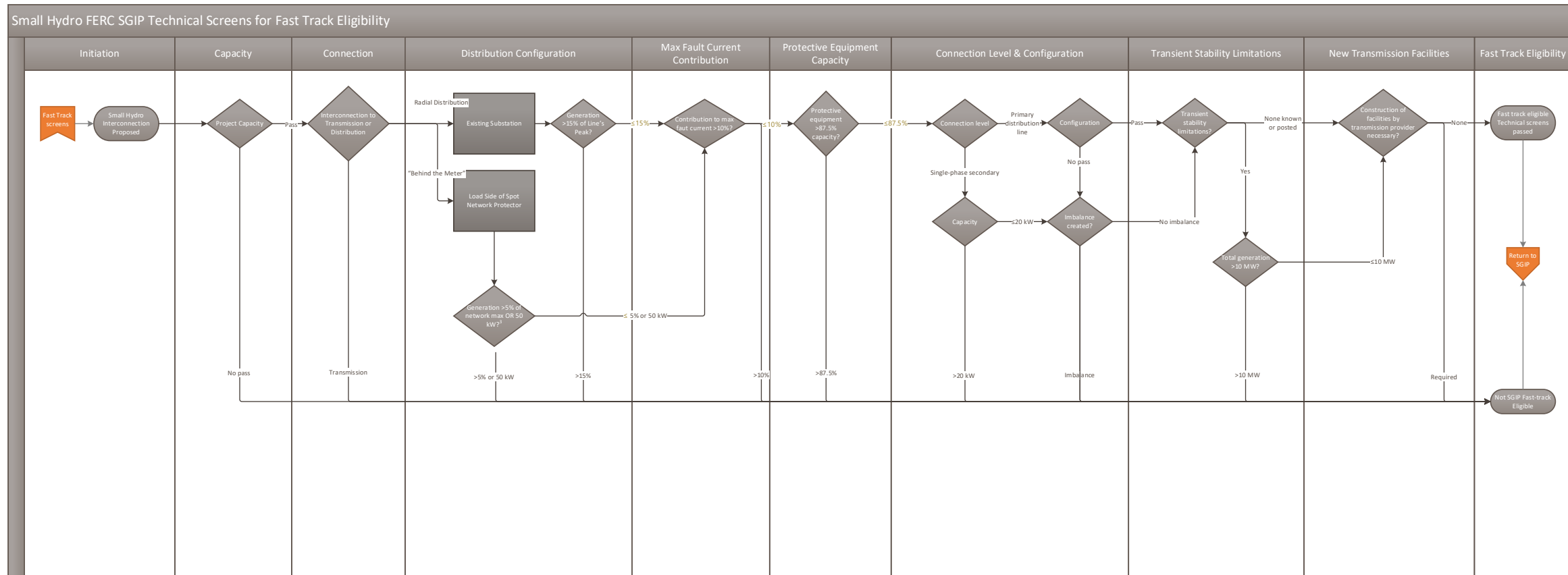


Figure 3.3. Small hydropower FERC SGIP technical screens for fast track eligibility.

Projects that do not qualify for the fast track exemption to studies may still be able to simplify the interconnection process by requesting supplemental review. The supplemental review process involved three screens: the minimum load screen, voltage and power quality screen, and safety and reliability screen.

The IA makes a good faith estimate of the cost of these screens, which are carried out by the IA, and the interconnection customer submits a deposit for that amount. The screens carried out by the IA are as follows:

- Minimum load screen. The aggregate generating facility capacity must be less than 100% of the minimum load existing on the line to which the facility will connect.
- Voltage and power quality screen. The generator will not cause the line voltage to be out of compliance with relevant standards and will not cause voltage fluctuations that exceed acceptable limits.
- Safety and reliability screen. The potential safety and reliability effect of the generator can be addressed without the need for the formal study process normally associated with the interconnection process (described in the following section).

If the generator passes these screens, along with other requirements as determined by the IA, the detailed study process can be bypassed, and an interconnection agreement signed.

#### **3.2.4 The Study Process**

If the proposed small hydroelectric generator does not pass fast track or supplemental review screens, a detailed study process is required. This process begins with a scoping meeting between the IA and the interconnection customer in which the terms of the study requirements are established.

The first study required is the *feasibility study*. The interconnection customer pays the IA deposit to help cover the IA's cost of the study to the IA, with the balance to be paid 30 days after completion of the study. The IA performs the feasibility study to identify whether the new generation has the potential to create adverse system impacts. This study includes the identification of any circuit breaker short circuit capability limits that would be exceeded, identification of potential thermal overload or voltage limit violations that would result, a review of electrical system protections, and an estimate of costs to connect the proposed system, as well as to address things such as short circuit or power flow issues.

The results of the feasibility study may be that there is little or no potential for adverse system impacts by the addition of the small generator. In that case, if the generator meets other requirements determined by the IA, no further study process is needed, and an interconnection agreement can be signed. If there are adverse system impacts revealed by the study, the generator may opt to discontinue work and withdraw the application or to proceed with the system impact study.

The *system impact study* also begins with an agreement between the IA and the interconnection customer, and a deposit is paid toward the cost of the study, with the balance paid later. First, the distribution system impact study identifies how the distribution system would be affected if the small hydropower generator were interconnected without modifications to the existing distribution system. If the study shows that the generator can be interconnected with no or very minor modifications to the existing system, and if the generator meets other requirements determined by the IA, no further study process is needed, and an interconnection agreement can be signed. If modifications are required to the distribution system, a facilities study is then undertaken.

A third possible outcome of the distribution system impact study may be that a transmission system impact study is also required. If the transmission system impact study is required, a similar process is undertaken with cost estimates and a study agreement reached. In these cases, the facilities study follows the transmission system impact study.

For the *facilities study*, the IA provides a study scope that is dependent upon the outcome of the system impact studies. The IA provides a cost estimate, and a study agreement is reached. The results of the facilities study include (1) a description of the new facilities needed to accommodate the new generation and (2) an estimate of the costs of equipment, engineering, procurement, and construction of these new facilities. At this point, the developer must decide whether the costs involved merit continuation of the project, whether the project should be redesigned to avoid costly distribution system upgrades, or whether the project should be discontinued.

If the developer chooses to continue, the design of the facilities and upgrades may fall either to the IA or to the developer. If the customer is the designer (which is somewhat rare), the IA provides all of the design parameters and other needed information. In the more usual case, the IA conducts all of the design and construction of the facilities and upgrades at the expense of the interconnection customer. Once the new facilities and upgrades have been designed, the IA and developer agree on costs and conditions, and the customer meets other requirements determined by the IA, the interconnection agreement can be signed.

These general processes outlined by the SGIP are the basis for many IAs' requirements. However, different states and IAs have specific requirements that may deviate from the SGIP, as described in the following sections.

### **3.3 STATE- AND UTILITY-SPECIFIC INFORMATION, PROCESSES, AND STANDARDS**

Each state and each utility within a state may vary on their interconnection processes, forms, and procedures. In some cases, the processes, procedures, and forms are clearly identified by the utility. In other cases, each interconnection is viewed more on a case-by-case basis. For example, regulated investor-owned utilities will have more defined processes, whereas municipal utilities (municipals), cooperative utilities (cooperatives), and public utility districts (PUDs) may have less defined or rigid processes and forms. Additionally, the state public utility commission's (PUC's) authority may vary by state.

The specific processes for interconnection vary by state, IA, and project characteristics, but the following are the three general types of processes:

- Interconnection processes following or closely mirroring the SGIP
- Interconnection processes that are custom to an IA but standardized and may be overseen by the state
- Interconnection processes that have little or no state guidance and potentially lack standardization

Most states use some combination of these processes. States are divided here into three groups: California, states with tiered processes, and states where there is little or no guidance.

In all cases, the completion of the SGIP or custom IA process steps does not guarantee the right to interconnect. IAs may have additional requirements to ensure the security and reliability of their systems. The final interconnection agreement is reached via a process of negotiation to ensure that the needs of both parties are met. Figure 3.4 presents the three groupings of states:

- Detailed, refined process (Group 1)—California

- Tiered process (Group 2)—This group includes states that implement a tiered process with three or four different interconnection tracks—or tiers—depending on the capacity and complexity of an interconnection request. Most states use a tiered process.
- Limited state guidance or information (Group 3)

### Interconnection Process Groupings

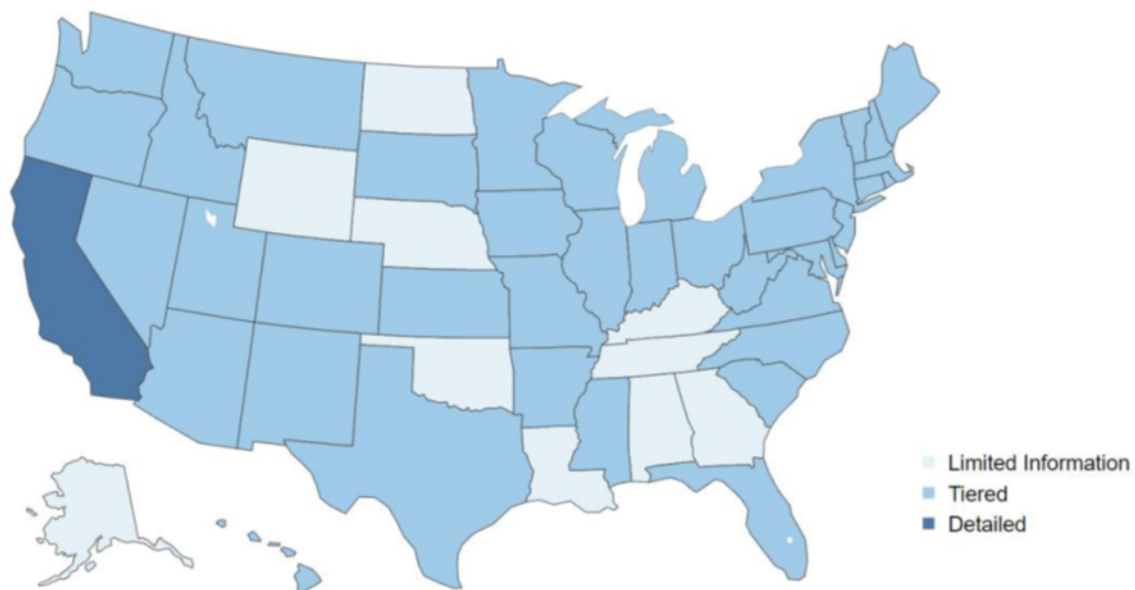


Figure 3.4. Interconnection process group by state [2].

### 3.3.1 California-Specific Processes (Group 1)

California uses a variety of processes depending on the sale of the output, capacity of the interconnected system, specific interconnection authority, fast track eligibility, and a number of other factors. As such, California serves as a good example of the range of processes the interconnection customer may encounter.

In general, if the interconnection customer intends to sell its power exclusively and directly to the IA, or if the customer is applying for a net metering type arrangement, the customer will fall under California Rule 21 found at this website<sup>2</sup>. This space is dominated by residential and commercial solar-plus-storage and bidirectional vehicle charging arrangements and is of less interest to small hydroelectric developers. Rule 21 is under the jurisdiction of the California PUC. Those applying for interconnection with the intention of selling power under California Rule 21 should contact their interconnection authority for the application process. Many, though not all, will qualify for fast track approval based on IA-specific guidelines.

Wholesale sales of power in California, which would be the case for the majority of small hydroelectric facilities connecting to the California transmission or distribution grid, are under FERC jurisdiction with the Wholesale Distribution Access Tariff. Those selling power into the California wholesale electric market follow interconnection procedures based on IAIA:

<sup>2</sup> <https://www.cpuc.ca.gov/rule21/>

- *Pacific Gas and Electric* service territory customers follow the SGIP, described previously, to interconnect wholesale generation up to 20 MW. Larger generators of greater than 20 MW are ineligible for SGIPs and will follow FERC’s Large Generator Interconnection Process (LGIP), which is not covered in this document.
- *Southern California Edison* has custom processes with separate online applications depending on whether the interconnection customer will fall under California Rule 21 or not. Both sets of interconnection customers may be eligible for fast track approval.
- *San Diego Gas and Electric* interconnection customers follow a hybrid process, beginning with a custom online application, which follows the SGIP.

Those facilities not located within these three listed services territories should contact their IA for the application process. The process may follow or mirror the SGIP, with deviations specific to the circumstances of that IA. Figure 3.5 presents the Group 1 process flow. The [Small Hydropower Developer Interconnection Tool](#)<sup>3</sup> will give guidance relevant to specific circumstances. The general categories of interest to the states include those listed in the following subsections.

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<sup>3</sup> <https://hydrosorce.ornl.gov/tool/small-hydropower-interconnection-decision-support-tool>

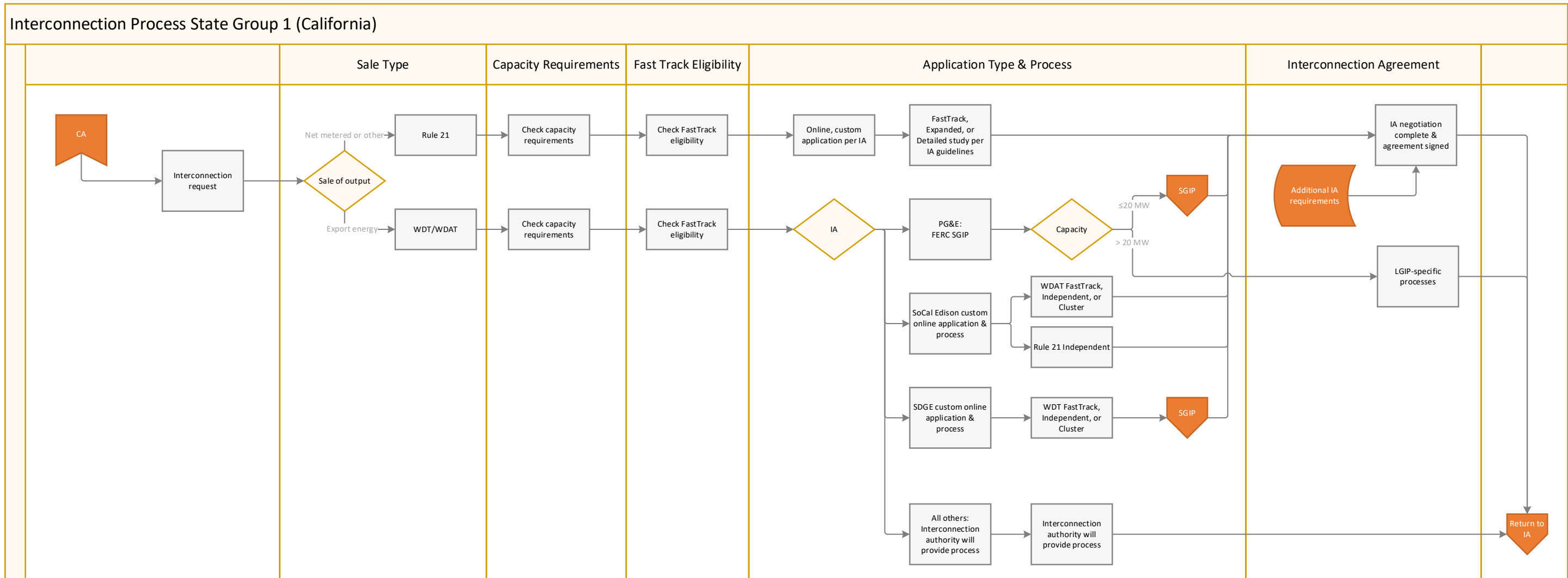


Figure 3.5. Interconnection process state Group 1 (California).

### 3.3.2 Tiered Processes

The majority of states have different interconnection requirements based on a number of criteria, although most follow the SGIP at least in part under some circumstances. A total of 39 states used some form of tiered process in at least some circumstance. The requirements in these states may depend upon the type of interconnection authority (e.g., investor-owned utilities [IOUs] may be required to comply, but compliance for other IAs may be voluntary). The general categories of interest to the states include those listed in the following subsections. Specific information on the Group 2 (tiered group) interconnection may be found in the interconnection process state Group 2 flows presented in Figure 3.6. The [Small Hydropower Developer Interconnection Tool](#)<sup>4</sup> will give guidance relevant to specific circumstances. The general categories of interest to the states include those listed in the following subsections.

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<sup>4</sup> <https://hydrosources.ornl.gov/tool/small-hydropower-interconnection-decision-support-tool>

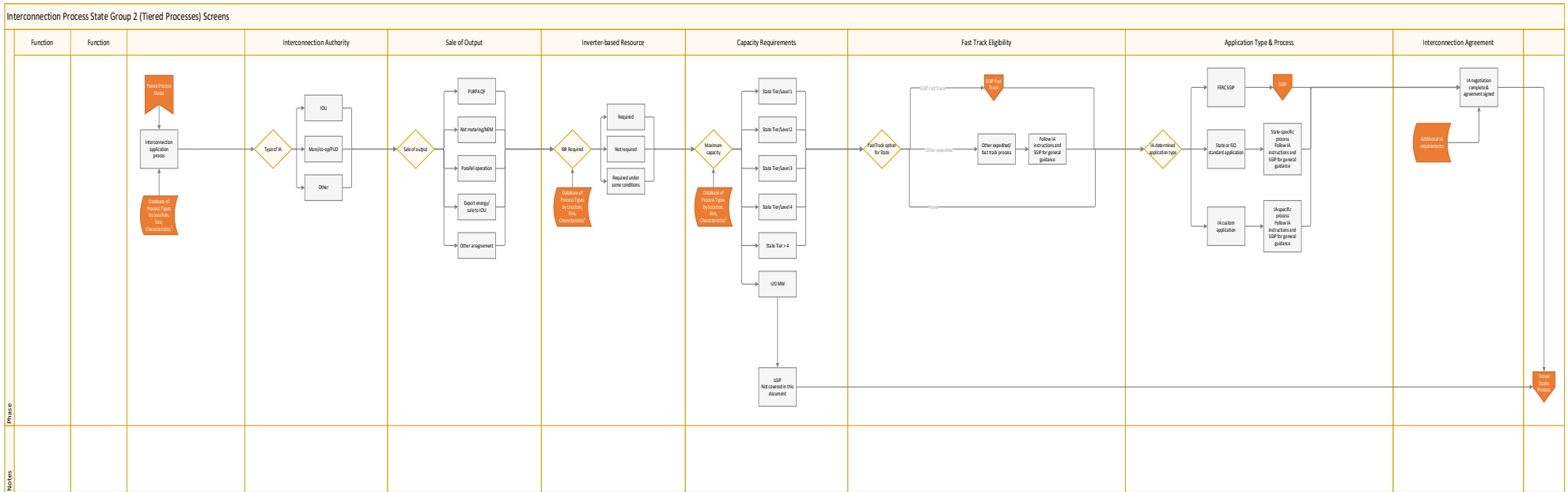


Figure 3.6. Interconnection process state Group 2 (tiered processes) screens.

### 3.3.2.1 Capacity Requirements

All states that have tiered requirements vary these by capacity level. Categorically, projects of greater than 20 MW are ineligible for SGIPs, and most will follow FERC’s LGIP, which is not covered in this document. States have up to four capacity tiers; inverter-based resources may have different capacity tiers compared with synchronous generators.

### 3.3.2.2 Inverter-Based Resources

Some states apply SGIPs only to inverter-based resources. Others do not stipulate this or stipulate it under only some circumstances. In these circumstances, synchronous generators undergo a more rigorous study and interconnection process, potentially regardless of system size.

### 3.3.2.3 Fast Track/Expedited Process

In total, 44 states use the SGIP fast track screening criteria described in previous sections. Other states use a derivative of the SGIP or some other process to allow some projects to expedite the interconnection process. Six states do not have an expedited option.

An expedited process will have a shorter timeline and lower cost to the applicant because the reviewing authority is checking technical screens rather than conducting a full study. Figure 3.7 presents the states that offer an expedited process.

Expedited Process Availability & Maximum Capacity Threshold

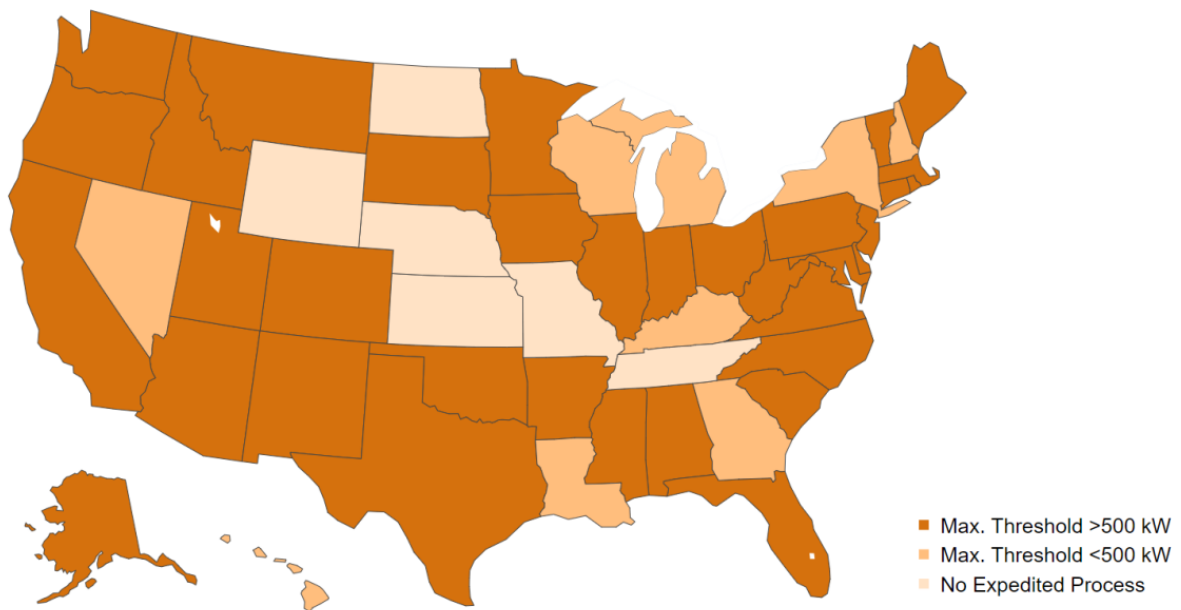


Figure 3.7. Expedited processes availability (shaded states) [2].

### 3.3.2.4 Preapplication Report Availability

Preapplication reports are made available to potential applicants in some states and are available at low to no cost with fees ranging from \$0 to \$750. Preapplication reports provide basic information about the distribution circuit at a proposed POI and can give a hydropower developer early insight into the hosting



### **3.3.2.7 Sale of Output**

Sale arrangements may include net metering, Public Utility Regulatory Policies Act qualifying facility agreements, wholesale sale of energy, and a variety of other arrangements. Like in California, in most states with tiered processes, the sale of the output can change interconnection requirements: for instance, systems that qualify for net metering may have a simplified process relative to those that will sell into the wholesale market.

### **3.3.2.8 Interconnection Agreement**

Meeting the requirements of the application process does not guarantee that a generator will be interconnected. Once the requirements are met, a negotiation process takes place with the IA to ensure that the needs of the system are not compromised by the newly added generator and (often) to ensure that rate payers are not unduly burdened by system requirements that result from the addition of the new generator.

The party wishing to interconnect benefits greatly by maintaining open lines of communication with the IA throughout the process, from before the preapplication up to the point that the application is accepted, to minimize unexpected outcomes or requirements that appear at this point in the process.

## **3.4 STATES OFFERING LIMITED OR NO GUIDANCE (GROUP 3)**

Ten states [2] currently offer little or no guidance to IAs and generators wishing to connect to them. In many states, IAs other than IOUs are not required to follow state guidance or regulation. In these cases, IAs provide requirements to generators. Generators usually benefit from following the SGIP to the degree possible for two reasons. First, many IAs will choose to follow these guidelines because doing so is simpler than creating their own. Second, generators will be forearmed with the types of information and studies that the IA is likely to request in some form, even if the process does not closely parallel the SGIP. The [Small Hydropower Developer Interconnection Tool](#)<sup>5</sup> will give guidance relevant to specific circumstances. The general categories of interest to the states include those listed in the following section.

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<sup>5</sup> <https://hydrosorce.ornl.gov/tool/small-hydropower-interconnection-decision-support-tool>

## 4. FEDERAL ENERGY REGULATORY COMMISSION LICENSING

### 4.1 DETERMINING IF A FEDERAL ENERGY REGULATORY COMMISSION LICENSEE IS REQUIRED

Figure 4.1 presents the FERC license screening process. This flow demonstrates the path a developer would need to follow if their project could be considered for a FERC license exemption. Details can also be found on the [FERC website](#).<sup>6</sup> If a project meets the criteria for exemption, it may expedite the overall timeline to apply for the exemption. Details are available for requesting an exemption and are provided on the linked site.

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<sup>6</sup> <https://www.ferc.gov/licensing/exemptions-licensing>

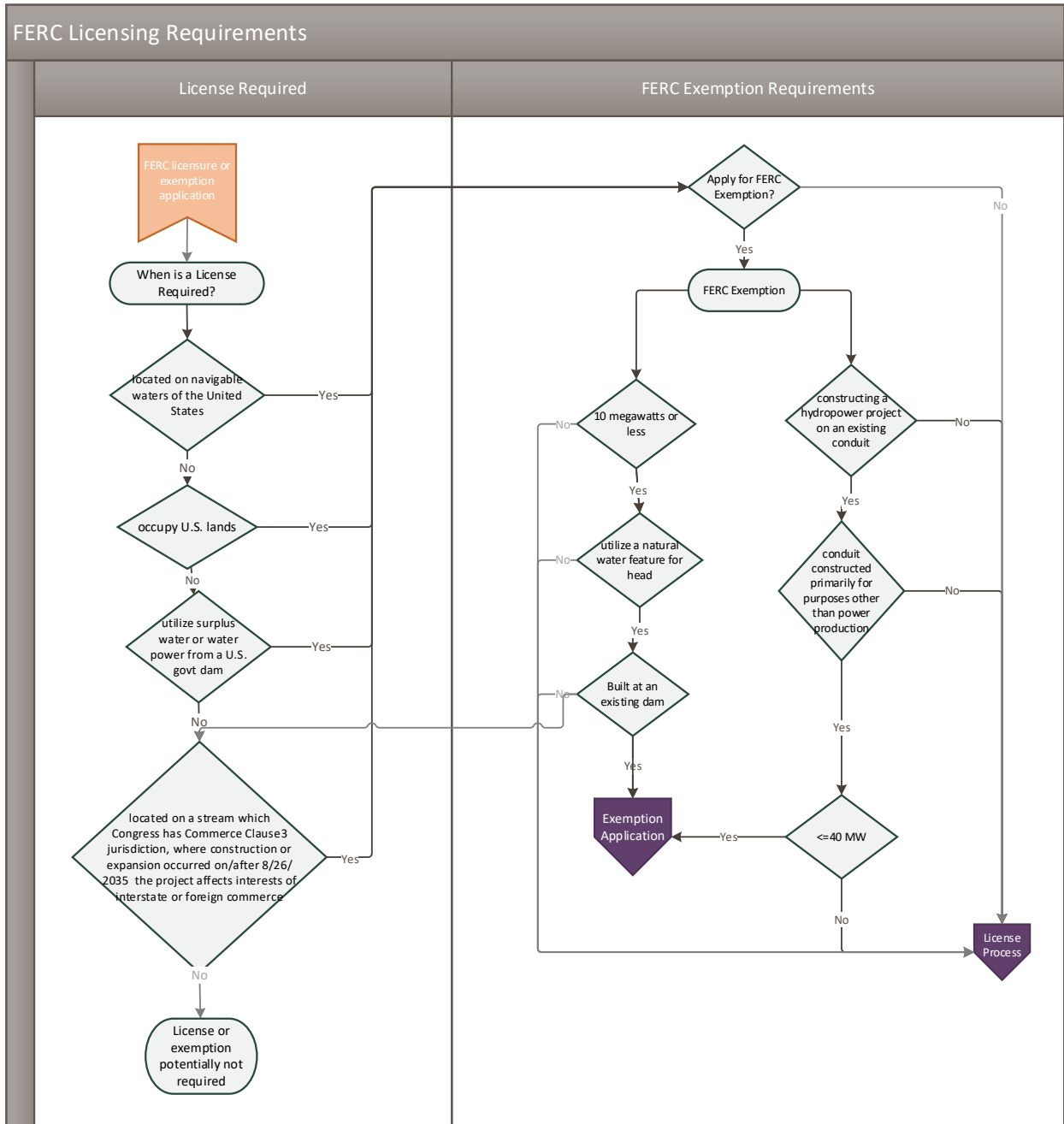


Figure 4.1. FERC screening process flow.

## 4.2 IF A FEDERAL ENERGY REGULATORY COMMISSION LICENSING IS REQUIRED

### 4.2.1 General Timeline and Activities

- Five years before its license expires, an existing hydropower generator notifies FERC that it intends to seek a new license. The generator then develops an application that provides important data on the environmental and recreational impacts of its dam(s) and identifies areas for further study. Extensive research then begins [3]. A developer creating a new hydropower project benefits from initiating the FERC licensing process as early as possible.

- Two years before its license expires, a generator submits a formal application to FERC detailing how the utility proposes to operate its dam(s). Other government agencies and citizen groups can comment on this application and recommend—and in some cases, require—conditions for dam operations. The commission then prepares an environmental impact statement [3].
- FERC approves the license if it is deemed “in the public interest.” The license must protect fish and wildlife; meet water quality standards; provide fish passage, if necessary; protect surrounding lands; and improve recreation opportunities. The final license decision can be appealed to FERC and then beyond to federal courts [3].

#### 4.2.2 FERC Licensing Processes

FERC has defined three licensing processes available to the applicant. These are the

- ILP (default process),
- Traditional Licensing Process (TLP), and
- Alternative Licensing Process (ALP).

Table 4.1 presents a comparison of each process and is also available on the [FERC website](#).<sup>7</sup>

**Table 4.1. FERC licensing process comparison [4]**

	ILP	TLP	ALP
<b>Consultation with resource agencies and Native American tribes</b>	➤ Integrated	➤ Paper-driven	➤ Collaborative
<b>FERC staff involvement</b>	➤ Prefiling (beginning at filing of notice of intent [NOI]). ➤ Early and throughout process	➤ Post filing (after the application has been filed) ➤ Available for education and guidance	➤ Prefiling (beginning at filing the NOI) ➤ Early involvement for National Environmental Policy Act (NEPA) scoping as requested
<b>Deadlines</b>	➤ Defined deadlines for all participants (including FERC) throughout the process	➤ Prefiling: some deadlines for participants ➤ Post filing: defined deadlines for participants	➤ Prefiling: deadlines defined by collaborative group ➤ Postfiling: defined deadlines for participants
<b>Study plan development</b>	➤ Developed through study plan meetings with all stakeholders ➤ Plan approved by FERC	➤ Developed by applicant based on early stakeholder recommendations. ➤ No FERC involvement	➤ Developed by collaborative group—FERC staff assist as resources allow

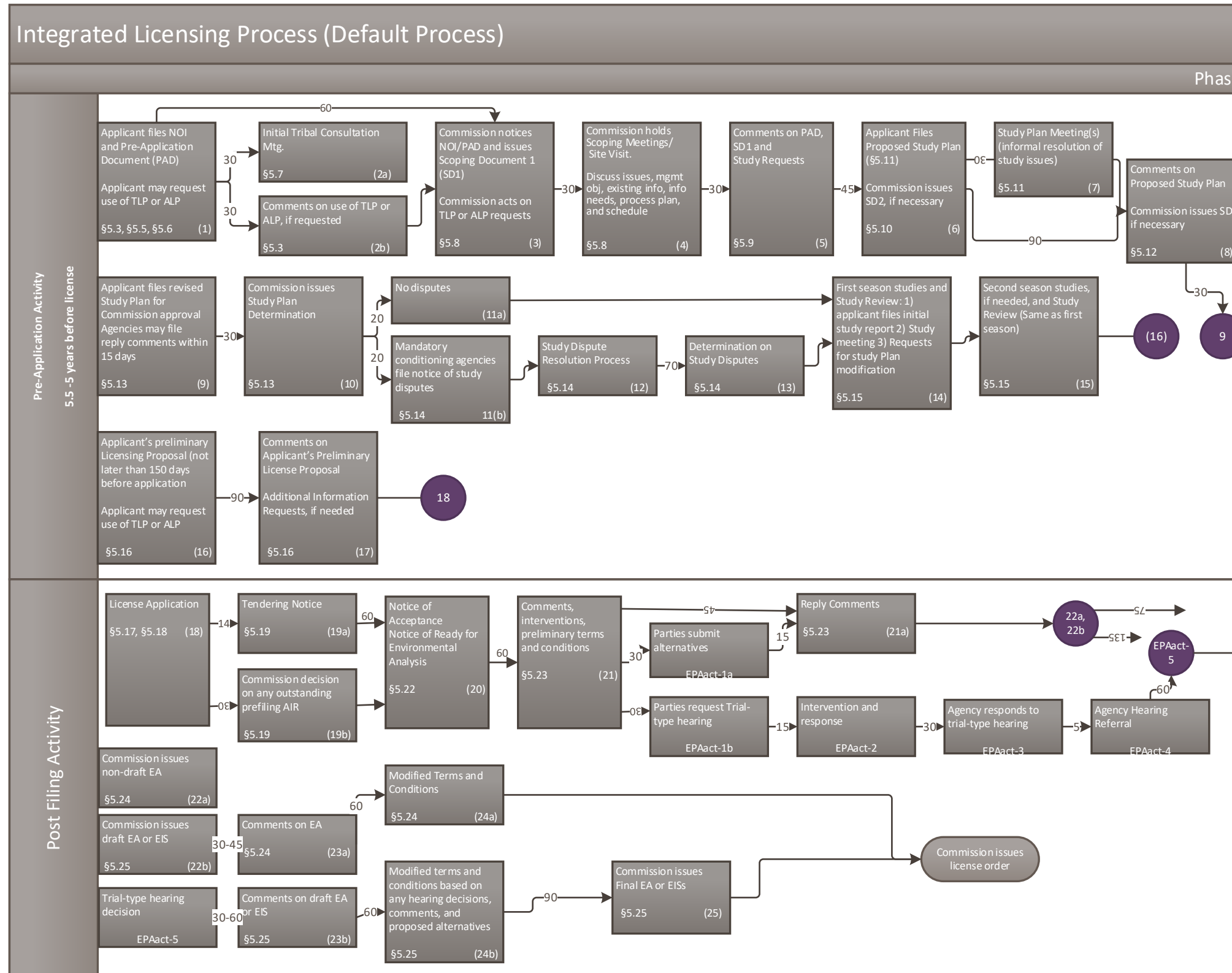
<sup>7</sup> <https://www.ferc.gov/industries-data/hydropower/licensing/licensing-processes-matrix-comparing-three-licensing-processes>

**Table 4.1. FERC licensing process comparison [4] (continued)**

<b>Study dispute resolution</b>	<ul style="list-style-type: none"> <li>➤ Informal dispute resolution available to all participants</li> <li>➤ Formal dispute resolution available to agencies with mandatory conditioning authority</li> <li>➤ Three-member panel provides technical recommendation on study dispute.</li> <li>➤ Office of Energy Projects (OEP) director opinion binding on applicant</li> </ul>	<ul style="list-style-type: none"> <li>➤ FERC study dispute resolution available upon request to agencies and affected tribes</li> <li>➤ OEP director issue’s advisory opinion</li> </ul>	<ul style="list-style-type: none"> <li>➤ FERC study dispute resolution available upon request to agencies and affected tribes</li> <li>➤ OEP director issues advisory opinion</li> </ul>
<b>Application</b>	<ul style="list-style-type: none"> <li>➤ Preliminary licensing proposal or draft application and final application include Exhibit E (environmental report) with form and contents of an environmental assessment</li> </ul>	<ul style="list-style-type: none"> <li>➤ Draft and final application include Exhibit E</li> </ul>	<ul style="list-style-type: none"> <li>➤ Draft and final application with applicant-prepared environmental assessment or third-party environmental impact statement</li> </ul>
<b>Additional information requests</b>	<ul style="list-style-type: none"> <li>➤ Available to participants before application filing</li> <li>➤ No additional information requests after application filing</li> </ul>	<ul style="list-style-type: none"> <li>➤ Available to participants after filing of application</li> </ul>	<ul style="list-style-type: none"> <li>➤ Available to participants primarily before application filing</li> <li>➤ Post filing requests available but should be limited because of collaborative approach</li> </ul>
<b>Timing of resource agency terms and conditions</b>	<ul style="list-style-type: none"> <li>➤ Preliminary terms and conditions filed 60 days after Ready for Environmental Analysis (REA) notice.</li> <li>➤ Modified terms and conditions filed 60 days after comments on draft NEPA document</li> </ul>	<ul style="list-style-type: none"> <li>➤ Preliminary terms and conditions filed 60 days after REA notice</li> <li>➤ Schedule for final terms and conditions</li> </ul>	<ul style="list-style-type: none"> <li>➤ Preliminary terms and conditions filed 60 days after REA notice.</li> <li>➤ Schedule for final terms and conditions</li> </ul>

#### 4.2.3 Federal Energy Regulatory Commission Integrated Licensing Process—Default Process

The ILP was adopted by FERC in 2003 and is the default licensing process for obtaining a hydropower license. The ILP was developed by a number of stakeholders, including members of the Hydropower Reform Coalition. The ILP integrates the development of license application and environmental review, and it coordinates FERC and other regulatory agencies that undertake such environmental review [3]. Figure 4.2 presents the ILP process.



**Figure 4.2. FERC ILP.**

#### 4.2.4 Federal Energy Regulatory Commission Traditional Licensing Process

The TLP is a simpler process that may be more appropriate for less controversial projects or for exemptions or conduit projects. In the TLP, environmental studies can occur after the application is filed. In a TLP, consultation with stakeholders is limited, and unlike in ILP, FERC participation begins only after a license application is filed [5]. Figure 4.3 presents the TLP process. Additional information is available on the [FERC website](https://www.ferc.gov/licensing/licensing-processes).<sup>8</sup>

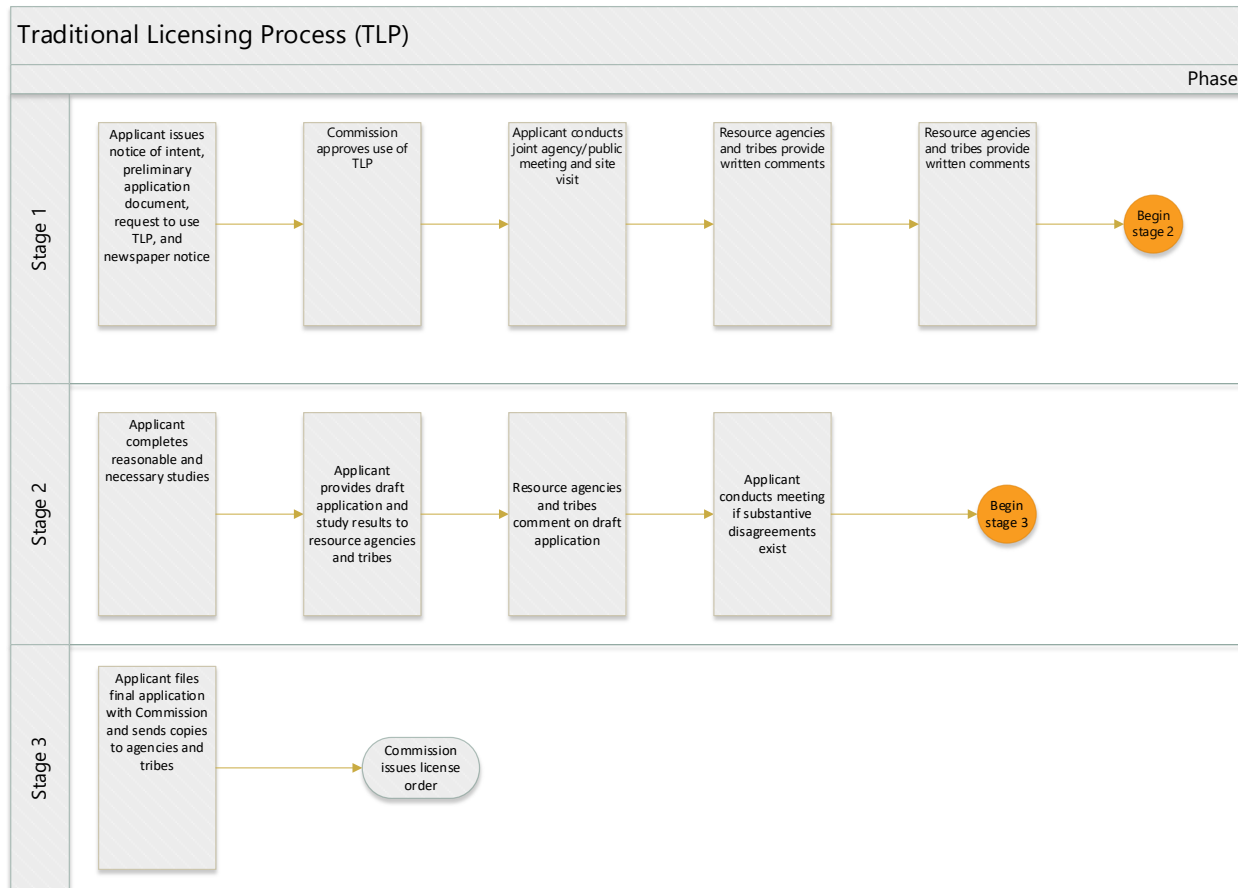


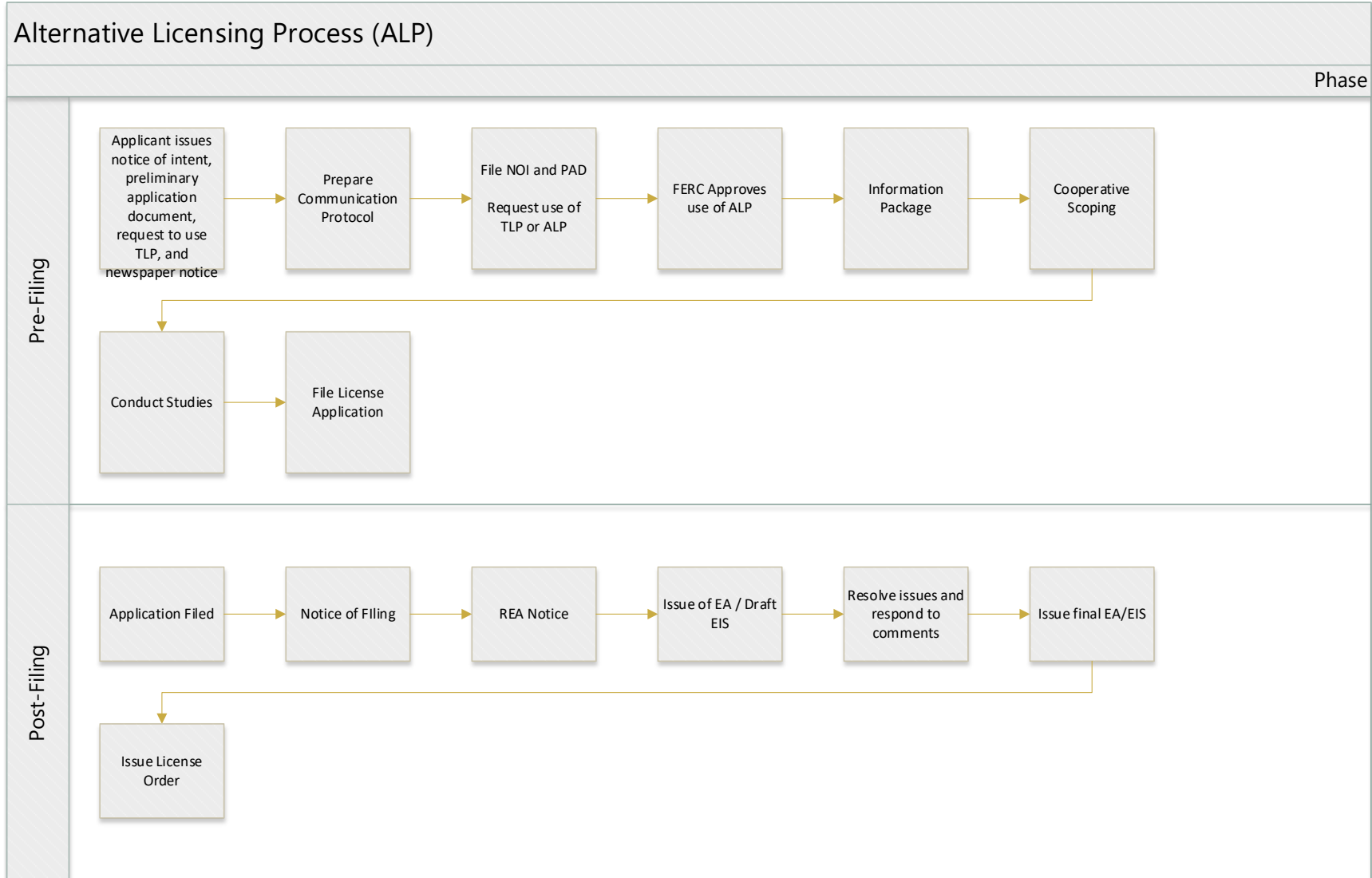
Figure 4.3. FERC TLP.

#### 4.2.5 Federal Energy Regulatory Commission Alternative Licensing Process

Under the ALP, an applicant can combine the pre-filing consultation process and the environmental review under the National Environmental Policy Act into a single process. Adopted in 1997, the ALP's primary purpose is to facilitate the negotiation of a settlement that, when filed with FERC, may serve as the basis for a new license [5]. Figure 4.4 presents the ALP. Additional information is available on the [FERC website](https://www.ferc.gov/licensing/licensing-processes).<sup>9</sup>

<sup>8</sup> <https://www.ferc.gov/licensing/licensing-processes>

<sup>9</sup> Ibid.



**Figure 4.4. FERC ALP.**

## 5. SUMMARY AND CONCLUSIONS

Although the interconnection process contains a great deal of uncertainty, small hydroelectric developers can minimize their investment in time and money in reaching an interconnection agreement by being prepared and forearmed with knowledge of the process.

Good practices include engaging with the IA and other stakeholder groups early and often and building partnership relationships with them whenever possible. Developers should also be aware early in the process of opportunities to manage complexity and expense: for instance, the developer who is aware of fast track requirements may make engineering design decisions that make it more likely that the project will qualify.

Although different interconnection authorities have different processes and requirements, project developers who are familiar with the SGIP will have reasonable expectations of the process and timelines involved. Investing in communications with the IA early in the process is likely to result in fewer iterations and requests for additional information later in the process when designs are more complete and changes more costly.

## 6. REFERENCES

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- [2] Douville, T., M. Severy, T. Wall, and K. Mongird, *Small Hydropower Interconnections: State Interconnection Processes*, Pacific Northwest National Laboratory, Richland, Washington, 2022.
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**APPENDIX A. REFERENCED FEDERAL ENERGY REGULATORY  
COMMISSION SMALL GENERATOR INTERCONNECTION  
PROCESS SECTIONS**

## **APPENDIX A. REFERENCED FEDERAL ENERGY REGULATORY COMMISSION SMALL GENERATOR INTERCONNECTION PROCESS SECTIONS**

### **SECTION 1. APPLICATION**

#### **1.1 Preapplication**

- 1.1.1 The transmission provider shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and email address of such contact employee or office shall be made available on the transmission provider's internet website. Electric system information provided to the interconnection customer should include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the transmission provider's transmission system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The transmission provider shall comply with reasonable requests for such information.
- 1.1.2 In addition to the information described in Section 1.1.1, which may be provided in response to an informal request, an interconnection customer may submit a formal written request form along with a nonrefundable fee of \$300 for a preapplication report on a proposed project at a specific site. The transmission provider shall provide the preapplication data described in Section 1.1.3 to the interconnection customer within 20 business days of receipt of the completed request form and payment of the \$300 fee. The preapplication report produced by the transmission provider is nonbinding and does not confer any rights, and the interconnection customer must still successfully apply to interconnect to the transmission provider's system. The written preapplication report request form shall include the information in Sections 1.1.2.1 through 1.1.2.8 to identify the location of the proposed point of interconnection (POI) clearly and sufficiently.
  - 1.1.2.1 Project contact information, including name, address, phone number, and email address
  - 1.1.2.2 Project location (street address with nearby cross streets and town)
  - 1.1.2.3 Meter number, pole number, or other equivalent information identifying proposed POI, if available
  - 1.1.2.4 Generator type (e.g., solar, wind, combined heat and power)
  - 1.1.2.5 Size (alternating current kilowatts)
  - 1.1.2.6 Single- or three-phase generator configuration
  - 1.1.2.7 Standalone generator (no on-site load, not including station service—yes or no?)
  - 1.1.2.8 Is new service requested— yes or no? If there is existing service, include the customer account number and site minimum and maximum current or proposed electric loads in kilowatts (if available) and specify if the load is expected to change.
- 1.1.3 Using the information provided in the preapplication report request form in Section 1.1.2, the transmission provider will identify the substation/area bus, bank, or circuit likely to

serve the proposed POI. This selection by the transmission provider does not necessarily indicate, after application of the screens and/or study, that this would be the circuit the project ultimately connects to. The interconnection customer must request additional preapplication reports if information about multiple POIs is requested. Subject to Section 1.1.4, the preapplication report will include the following information:

- 1.1.3.1 Total capacity (in megawatts) of substation/area bus, bank, or circuit based on normal or operating ratings likely to serve the proposed POI
  - 1.1.3.2 Existing aggregate generation capacity (in megawatts) interconnected to a substation/area bus, bank, or circuit (i.e., amount of generation online) likely to serve the proposed POI
  - 1.1.3.3 Aggregate queued generation capacity (in megawatts) for a substation/area bus, bank, or circuit (i.e., amount of generation in the queue) likely to serve the proposed POI
  - 1.1.3.4 Available capacity (in megawatts) of substation/area bus or bank and circuit likely to serve the proposed POI (i.e., total capacity minus the sum of existing aggregate generation capacity and aggregate queued generation capacity)
  - 1.1.3.5 Substation nominal distribution voltage and/or transmission nominal voltage, if applicable
  - 1.1.3.6 Nominal distribution circuit voltage at the proposed POI
  - 1.1.3.7 Approximate circuit distance between the proposed POI and the substation
  - 1.1.3.8 Relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load as described in Section 2.4.4.1.1, and absolute minimum load, when available.
  - 1.1.3.9 Number and rating of protective devices and number and type (standard, bidirectional) of voltage regulating devices between the proposed POI and the substation/area. Identify whether the substation has a load tap changer.
  - 1.1.3.10 Number of phases available at the proposed POI. If single-phase, distance from the three-phase circuit.
  - 1.1.3.11 Limiting conductor ratings from the proposed POI to the distribution substation
  - 1.1.3.12 Whether the POI is located on a spot network, grid network, or radial supply
  - 1.1.3.13 Based on the proposed POI, existing or known constraints such as electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks
- 1.1.4 The preapplication report need only include existing data. A preapplication report request does not obligate the transmission provider to conduct a study or other analysis of the proposed generator in the event that data are not readily available. If the transmission provider cannot complete all or some of a preapplication report because of a lack of available data, the transmission provider shall provide the interconnection customer with a preapplication report that includes the data that are available. The provision of

information on available capacity pursuant to Section 1.1.3.4 does not imply that an interconnection up to this level may be completed without effects because many variables are studied as part of the interconnection review process, and data provided in the preapplication report may become outdated at the time of the submission of the complete interconnection request. Notwithstanding any of the provisions of this section, the transmission provider shall, in good faith, include data in the preapplication report that represent the best available information at the time of reporting.

## **1.2 Application and Interconnection Request**

The interconnection customer shall submit its interconnection request to the transmission provider, together with the processing fee or deposit specified in the interconnection request. The interconnection request shall be dated and time-stamped upon receipt. The original date and time stamp applied to the interconnection request at the time of its original submission shall be accepted as the qualifying date and time stamp for the purposes of any time table in these procedures. The interconnection customer shall be notified of receipt by the transmission provider within 3 business days of receiving the interconnection request. The transmission provider shall notify the interconnection customer within 10 business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the transmission provider shall provide, along with the notice that the interconnection request is incomplete, a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have 10 business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the interconnection customer does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. An interconnection request will be deemed complete upon submission of the listed information to the transmission provider.

## **SECTION 2. FAST TRACK PROCESS**

### **2.1 Applicability**

The fast track process is available to an interconnection customer proposing to interconnect its small generating facility with the transmission provider's distribution system if the small generating facility's capacity does not exceed the size limits identified in Table A-1. Small generating facilities below these limits are eligible for fast track review. However, fast track eligibility is distinct from the fast track process itself, and eligibility does not imply or indicate that a small generating facility will pass the fast track screens in Section 2.2.1 or the supplemental review screens in Section 2.4.4.

Fast track eligibility is determined based upon the generator type, the size of the generator, voltage of the line, and the location of and the type of line at the POI. All small generating facilities connecting to lines greater than 69 kV are ineligible for the fast track process regardless of size. All synchronous and induction machines must be no larger than 2 MW to be eligible for the fast track process regardless of location. For certified inverter-based systems, the size limit varies according to the voltage of the line at the proposed POI. Certified inverter-based small generating facilities located within 2.5 electrical circuit miles of a substation and on a main line (as defined in Table A-1) are eligible for the fast track process under the higher thresholds according to the table. In addition to the size threshold, the interconnection customer's proposed small generating facility must meet the codes, standards, and certification requirements of Attachments 3 and 4 of these procedures, or the transmission provider has to have reviewed the design or tested the proposed small generating facility and is satisfied that it is safe to operate.

**Table A-1. Fast track eligibility for inverter-based systems**

Line voltage	Fast track eligibility regardless of location	Fast track eligibility on a main line and $\leq 2.5$ electrical circuit miles from substation
<5 kV	$\leq 500$ kW	$\leq 500$ kW
$\geq 5$ kV and <15 kV	$\leq 2$ MW	$\leq 3$ MW
$\geq 15$ kV and <30 kV	$\leq 3$ MW	$\leq 4$ MW
$\geq 30$ kV and $\leq 69$ kV	$\leq 4$ MW	$\leq 5$ MW

## 2.2 Initial Review

Within 15 business days after the transmission provider notifies the interconnection customer it has received a complete interconnection request, the transmission provider shall perform an initial review using the screens set forth in the following steps, notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the transmission provider’s determinations under the screens.

### 2.2.2 Screens

- 2.2.2.1 The proposed small generating facility’s POI must be on a portion of the transmission provider’s distribution system that is subject to the tariff.
- 2.2.2.2 For interconnection of a proposed small generating facility to a radial distribution circuit, the aggregated generation, including the proposed small generating facility, on the circuit shall not exceed 15 % of the line section annual peak load as most recently measured at the substation. A *line section* is that portion of a transmission provider’s electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line.
- 2.2.2.3 For interconnection of a proposed small generating facility to the load side of spot network protectors, the proposed small generating facility must use an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed 5% of a spot network’s maximum load, or 50 kW.
- 2.2.2.4 The proposed small generating facility, in aggregation with other generation on the distribution circuit, shall not contribute more than 10% to the distribution circuit’s maximum fault current at the point on the high-voltage (primary) level nearest the proposed point of change of ownership.
- 2.2.2.5 The proposed small generating facility, in aggregate with other generation on the distribution circuit, shall not cause any distribution protective devices and equipment (including substation breakers, fuse cutouts, and line reclosers) or interconnection customer equipment on the system to exceed 87.5% of the short circuit interrupting capability, nor shall the interconnection be proposed for a circuit that already exceeds 87.5% of the short circuit interrupting capability.
- 2.2.2.6 Using Table A-2, determine the type of interconnection to a primary distribution line. This screen includes a review of the type of electrical service provided to the interconnecting customer, including line configuration and the transformer

connection to limit the potential for creating over-voltages on the transmission provider’s electric power system owing to a loss of ground during the operating time of any anti-islanding function.

**Table A-2. Screen for primary distribution line and interconnection types**

Primary distribution line type	Type of interconnection to primary distribution line	Result/criteria
Three-phase, three wires	Three-phase or single-phase, phase-to-phase	Pass screen
Three-phase, four wires	Effectively grounded three- phase or single-phase, line-to-neutral	Pass screen

- 2.2.2.7 If the proposed small generating facility is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 20 kW.
- 2.2.2.8 If the proposed small generating facility is single-phase and is to be interconnected on a center tap neutral of a 240 V service, its addition shall not create an imbalance between the two sides of the 240 V service of more than 20% of the nameplate rating of the service transformer.
- 2.2.2.9 The small generating facility, in aggregate with other generation interconnected to the transmission side of a substation transformer feeding the circuit where the small generating facility proposes to interconnect, shall not exceed 10 MW in an area where there are known, or posted, transient stability limitations to generating units located in the general electrical vicinity (e.g., three or four transmission buses from the POI).
- 2.2.2.10 No construction of facilities by the transmission provider on its own system shall be required to accommodate the small generating facility.
- 2.2.3 If the proposed interconnection passes the screens, the interconnection request shall be approved, and the transmission provider will provide the interconnection customer an executable interconnection agreement within 5 business days after the determination.
- 2.2.4 If the proposed interconnection fails the screens but the transmission provider determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the transmission provider shall provide the interconnection customer an executable interconnection agreement within 5 business days after the determination.
- 2.2.5 If the proposed interconnection fails the screens and the transmission provider does not or cannot determine from the initial review that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the interconnection customer is willing to consider minor modifications or further study, the transmission provider shall provide the interconnection customer with the opportunity to attend a customer options meeting.

## **2.3 Customer Options Meeting**

If the transmission provider determines the interconnection request cannot be approved without (1) minor modifications at minimal cost, (2) a supplemental study or other additional studies or actions, or (3) incurring significant cost to address safety, reliability, or power quality problems, the transmission provider shall notify the interconnection customer of that determination within 5 business days after the determination and provide copies of all data and analyses underlying its conclusion. Within 10 business days of the transmission provider's determination, the transmission provider shall offer to convene a customer options meeting with the transmission provider to review possible interconnection customer facility modifications or the screen analysis and related results to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the transmission provider's determination or at the customer options meeting the transmission provider shall do one of the following:

- 2.3.1 Offer to perform facility modifications or minor modifications to the transmission provider's electric system (e.g., changing meters, fuses, relay settings) and provide a nonbinding good-faith estimate of the limited cost to make such modifications to the transmission provider's electric system. If the interconnection customer agrees to pay for the modifications to the transmission provider's electric system, the transmission provider will provide the interconnection customer with an executable interconnection agreement within 10 business days of the customer options meeting.
- 2.3.2 Offer to perform a supplemental review in accordance with Section 2.4 and provide a nonbinding good-faith estimate of the costs of such review.
- 2.3.3 Obtain the interconnection customer's agreement to continue evaluating the interconnection request under Section 3 study process.

## **2.4 Supplemental Review**

- 2.4.1 To accept the offer of a supplemental review, the interconnection customer shall agree in writing and submit a deposit for the estimated costs of the supplemental review in the amount of the transmission provider's good-faith estimate of the costs of such review, both within 15 business days of the offer. If the written agreement and deposit have not been received by the transmission provider within that time frame, the interconnection request shall continue to be evaluated under the Section 3 study process unless it is withdrawn by the interconnection customer.
- 2.4.2 The interconnection customer may specify the order in which the transmission provider will complete the screens in Section 2.4.
- 2.4.3 The interconnection customer shall be responsible for the transmission provider's actual costs for conducting the supplemental review. The interconnection customer must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the transmission provider will return such excess within 20 business days of the invoice without interest.
- 2.4.4 Within 30 business days following receipt of the deposit for a supplemental review, the transmission provider shall (1) perform a supplemental review using the screens set forth in the following steps, (2) notify in writing the interconnection customer of the results, and (3) include with the notification copies of the analysis and data underlying the transmission provider's determinations under the screens. Unless the interconnection customer provided instructions for how to respond to the failure of any of the following

supplemental review screens at the time the interconnection customer accepted the offer of supplemental review, the transmission provider shall notify the interconnection customer following the failure of any of the screens or if it is unable to perform the screen in Section 2.4.4.1 within 2 business days of making such determination to obtain the interconnection customer's permission to (1) continue evaluating the proposed interconnection under Section 2.4.4, (2) terminate the supplemental review and continue evaluating the small generating facility under Section 3, or (3) terminate the supplemental review upon withdrawal of the interconnection request by the interconnection customer.

2.4.4.1 Minimum Load Screen: Where 12 months of line section minimum load data (including on-site load but not station service load served by the proposed small generating facility) are available, can be calculated, can be estimated from existing data, or can be determined from a power flow model, the aggregate generating facility capacity on the line section is less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed small generating facility. If minimum load data are not available or cannot be calculated, estimated, or determined, the transmission provider shall include the reason(s) that the data are unable to be calculated, estimated, or determined.

2.4.4.1.1 The type of generation used by the proposed small generating facility will be taken into account when calculating, estimating, or determining the circuit or line section minimum load relevant for the application of the screen.

2.4.4.1.2 When this screen is being applied to a small generating facility that serves some station service load, only the net injection into the transmission provider's electric system will be considered as part of the aggregate generation.

2.4.4.1.3 The transmission provider will not consider as part of the aggregate generation for purposes of this screen generating facility capacity known to be already reflected in the minimum load data.

2.4.4.2 Voltage and power quality screen: In aggregate with existing generation on the line section, (1) the voltage regulation on the line section can be maintained in compliance with relevant requirements under all system conditions, (2) the voltage fluctuation is within acceptable limits as defined by Institute of Electrical and Electronics Engineers (IEEE) Standard 1453 or utility practice similar to IEEE Standard 1453, and (3) the harmonic levels meet IEEE Standard 519 limits.

2.4.4.3 Safety and reliability screen: The location of the proposed small generating facility and the aggregate generation

2.4.4.3.1 Whether the line section has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers)

2.4.4.3.2 Whether the loading along the line section is uniform or even

2.4.4.3.3 Whether the proposed small generating facility is located in close proximity to the substation (i.e., less than 2.5 electrical circuit miles), and whether the line section from the substation to the POI is a main line rated for normal and emergency ampacity

2.4.4.3.4 Whether the proposed small generating facility incorporates a time delay function to prevent reconnection of the generator to the system until

- system voltage and frequency are within normal limits for a prescribed time
- 2.4.4.3.5 Whether operational flexibility is reduced by the proposed small generating facility, such that transfer of the line section(s) of the small generating facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues
  - 2.4.4.3.6 Whether the proposed small generating facility employs equipment or systems certified by a recognized standards organization to address technical issues, such as islanding, reverse power flow, or voltage quality
- 2.4.5 If the proposed interconnection passes the supplemental screens in Sections 2.4.4.1, 2.4.4.2, and 2.4.4.3, the interconnection request shall be approved, and the transmission provider will provide the interconnection customer with an executable interconnection agreement within the time frames established in Sections 2.4.5.1 and 2.4.5.2. If the proposed interconnection fails any of the supplemental review screens and the interconnection customer does not withdraw its interconnection request, it shall continue to be evaluated under the Section 3 study process consistent with Section 2.4.5.3.
- 2.4.5.1 If the proposed interconnection passes the supplemental screens in Sections 2.4.4.1, 2.4.4.2, and 2.4.4.3 and does not require construction of facilities by the transmission provider on its own system, the interconnection agreement shall be provided within 10 business days after the notification of the supplemental review results.
  - 2.4.5.2 If interconnection facilities or minor modifications to the transmission provider’s system are required for the proposed interconnection to pass the supplemental screens in Sections 2.4.4.1, 2.4.4.2, and 2.4.4.3 and the interconnection customer agrees to pay for the modifications to the transmission provider’s electric system, the interconnection agreement, along with a nonbinding good-faith estimate for the interconnection facilities and/or minor modifications, shall be provided to the interconnection customer within 15 business days after receiving written notification of the supplemental review results.
  - 2.4.5.3 If the proposed interconnection would require more than interconnection facilities or minor modifications to the transmission provider’s system to pass the supplemental screens in Sections 2.4.4.1, 2.4.4.2, and 2.4.4.3, the transmission provider shall notify the interconnection customer at the same time as it notifies the interconnection customer with the supplemental review results that the interconnection request shall be evaluated under the Section 3 study process unless the interconnection customer withdraws its small generating facility.

**SECTION 3: SMALL GENERATOR INTERCONNECTION PROCESS ATTACHMENT 3—  
CERTIFICATION CODES AND STANDARDS**

IEEE’s IEEE 1547, *Standard for Interconnecting Distributed Resources with Electric Power Systems* (including use of IEEE 1547.1, “Testing Protocols to Establish Conformity”)

Underwriters Laboratories’ UL 1741, *Inverters, Converters, and Controllers for Use in Independent Power Systems*

IEEE Standard 929-2000, *IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems*

National Fire Protection Association’s NFPA 70 (2002), *National Electrical Code*

IEEE Standard C37.90.1-1989 (R1994), *IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems*

IEEE Standard C37.90.2 (1995), *IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers*

IEEE Standard C37.108-1989 (R2002), *IEEE Guide for the Protection of Network Transformers*

IEEE Standard C57.12.44-2000, *IEEE Standard Requirements for Secondary Network Protectors*

IEEE Standard C62.41.2-2002, *IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits*

IEEE Standard C62.45-1992 (R2002), *IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits*

American National Standards Institute's ANSI C84.1-1995, *Electric Power Systems and Equipment—Voltage Ratings (60 Hertz)*

IEEE Standard 100-2000, *IEEE Standard Dictionary of Electrical and Electronic Terms*

National Electrical Manufacturers Association's NEMA MG 1-1998, *Motors and Small Resources*, Revision 3

IEEE Standard 519-1992, *IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems*

NEMA MG 1-2003 (Rev 2004), *Motors and Generators*, Revision 1

#### **SECTION 4: SMALL GENERATOR INTERCONNECTION PROCESS ATTACHMENT 4— CERTIFICATION OF SMALL GENERATOR EQUIPMENT PACKAGES**

- 1.0 Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if (1) it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the US Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in SGIP Attachment 3, (2) it has been labeled and is publicly listed by an NRTL at the time of the interconnection application, and (3) the NRTL makes readily available for verification all test standards and procedures it used in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- 2.0 The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- 3.0 Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing

herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.

- 4.0 If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an interconnection customer must show that the generator or other electric source being used with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- 5.0 Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing, or additional equipment on the customer side of the point of common coupling shall be required to meet the requirements of this interconnection procedure.
- 6.0 An equipment package does not include equipment provided by the utility.
- 7.0 Any equipment package approved and listed in a state by that state's regulatory body for interconnected operation in that state prior to the effective date of these small generator interconnection procedures shall be considered certified under these procedures for use in that state.

**APPENDIX B. DEVELOPER-INTERCONNECTION AUTHORITY  
MEETINGS/DISCUSSIONS**

## **APPENDIX B. DEVELOPER-INTERCONNECTION AUTHORITY MEETINGS/DISCUSSIONS**

Constant and continuous communication with the interconnection authority (IA) is essential for a smooth interconnection process. The level, frequency, and formality of communication will depend on the type of utility (generation, transmission, distribution, and combinations), as well as the ownership structure of the IA (investor-owned utility [IOU], municipal utility, or cooperative utility).

IOUs tend to have more formal processes in establishing interconnection agreements and in their communication processes. Municipal and cooperative utilities vary but tend to be less formal in their processes. For any utility, the objective of the communication between the utility and the developer is twofold:

1. Bidirectional exchange of information (e.g., technical, procedural)
2. Develop a relationship between the developer and the IA to develop the project as a mutually beneficial project as opposed to an adversarial relationship

The structure and flow of communication and information exchange will vary based on each IA and developer, but in general, there should be a minimum of four formal communication meetings/conversations. Some of the information presented in each conversation may actually occur over several conversations. These meetings are in addition to scoping meetings related to specific studies requested by the IA in support of the application to interconnect.

The following sections provide an example or template on the information exchanges between the developer and IA. The structure outlined for each is divided into information provided by the developer to the IA followed by information the developer should request from the IA.

During each meeting or discussion, depending on the formality of the relationship, any agreements between the developer and IA, including roles and responsibilities for specific tasks, scheduling of equipment procurement and installation, testing of equipment and systems final inspection, and authority to conduct grid interconnected operations, should be obtained in writing from the responsible party (developer or IA) to minimize the possibility of a lack of understanding between the two parties. Any changes to the initial agreement(s) should also be formally documented.

### **DEVELOPER AND INTERCONNECTION AUTHORITY CONVERSATION #1 (INTRODUCTION)**

This conversation is an introduction and initial information exchange and is conducted early in the interconnection process, ideally at the time initial siting is determined. This conversation is more for information sharing for the developer and IA (utility).

The primary objective of this meeting is for the developer to provide initial information to the IA on the goals and objectives of the project, as well as a proposed operation plan. During this meeting, the developer will acquire initial information on the IA requirements for interconnection specific to the project. The second objective is to begin building a cooperative partnership with the IA.

During this initial meeting, the developer should have initial engineering complete, even at the feasibility level.

1. Developer provides to IA (this can be done as a formal concept presentation or discussion):
  - a. Proposed location, waterway, and location on the waterway of the project

- i. Include if on public land, private land, tribal land, or other, and if so, describe the existing relationship, approval, endorsement, or other
    - ii. Description of proposed beneficiary
    - iii. Description of purpose, objectives, benefits (e.g., why this location was chosen)
  - b. Any initial plans for hydropower plant operations and capabilities
    - i. Capacity
    - ii. Type of generator
    - iii. Type of hydropower project (e.g., run of river, conduit)
    - iv. Planned generating profile (at this point, it may only be may be 100% or as water flow permits)
  - c. Any studies underway and who is conducting or planned to conduct
  - d. Planned sale of energy sale arrangements may include net metering, Public Utility Regulatory Policies Act qualifying facility agreements, wholesale sale of energy, or a variety of other arrangements
    - i. Ask if any limitations/requirements
  - e. Meter number, pole number, or other equivalent information identifying proposed point of interconnection (POI), if available
  - f. Single- or three-phase generator configuration
  - g. Provide IA project point of contact information
    - i. Name
    - ii. Address
    - iii. Phone number
    - iv. Email
    - v. Role on project
  - h. Approximate circuit distance between the proposed POI and the substation
    - i. Discuss any requirement or plan for expedited/fast track options
2. Questions from developer to IA
- a. Does the IA use the small generation interconnection process (SGIP), modified SGIP, internally developed process, or other process?
  - b. Does the IA have an available a preapplication sample and/or report?
    - i. Is there a cost for this? If so, how much, and what is included?
  - c. Does the IA have fast track/expedited processes? If so, are there any limitations on applying for this option?
  - d. What equipment is generally required for developer to provide?
    - i. Who provides the equipment/services (e.g., conductor installation, pole costs make ready)?
  - e. Where is the potential POI?
  - f. What studies are required by the IA?
  - g. Is there an available sample interconnection agreement/format?
  - h. Which potential stakeholders should be included in further discussion (or separate discussions), and what might their relationship to the project be?
  - i. What is the timeline for the application process?
  - j. What is the cost for the application process?
  - k. Total capacity (in megawatts) of substation/area bus, bank, or circuit based on normal or operating ratings likely to serve the proposed POI
  - l. Existing aggregate generation capacity (in megawatts) interconnected to a substation/area bus, bank, or circuit (i.e., amount of generation online) likely to serve the proposed POI
  - m. Available capacity (in megawatts) of substation/area bus or bank and circuit likely to serve

- n. Substation nominal distribution voltage and/or transmission nominal voltage if applicable
- o. Nominal distribution circuit voltage at the proposed POI
- p. Based on the proposed POI, existing or known constraints, including electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks
- q. Request from IA their project point of contact information
  - i. Name
  - ii. Address
  - iii. Phone number
  - iv. Email
- r. Request for any specific deadlines and dates for study submissions, application and preapplication. Note that this request will allow planning for studies and coordination with Federal Energy Regulatory Commission licensing.
- s. Request any specific standards or codes that must be followed, such as those listed in SGIP Attachment 3
- t. What communication requirements are required by the IA
  - i. Physical (e.g., fiber)
  - ii. Data rate
  - iii. Protocols
  - iv. Data to be transferred and how frequently
  - v. Data format required by IA

**DEVELOPER AND INTERCONNECTION AUTHORITY CONVERSATION #2 (INITIAL DISCUSSION INTERCONNECTION PREAPPLICATION PROCESS)**

This meeting will prepare the developer for submission of the interconnection preapplication to the IA and should be conducted prior to application submission to the IA.

This communication consists of either written communication and in-person meetings. It is recommended that as much in-person meetings as possible are conducted to continue to build the relationship between the developer and IA. This relationship will also allow for additional insights to be learned from the IA on lessons learned from previous interconnectors specific to the IA relevant to the developer’s project.

At this stage, the developer will provide an update to the IA on the licensing process, studies being conducted, and any known schedule information. This update is important because it will assist the IA with planning the system upgrades and remind the IA of this project’s additions while they evaluate other interconnection preapplications and applications.

During this meeting, the developer should request (or update) the following information:

1. Relevant system studies, interconnection studies
2. Transmission/distribution capabilities and planned upgrades
3. Risk, resilience, reliability concerns
4. Relevant stakeholders and groups of concern

If the developer has not provided this information previously or it has changed, they should provide the IA information on or updates to the following:

1. Project contact

2. Project location
3. POI location (pole or meter number)
4. Generator type size—single- or three-phase configuration
5. Standalone? New service request or current account

The developer should request, at a minimum, from the IA and receive from IA the following:

1. Substation/bus/circuit likely to serve POI
2. Total and available capacity of substation/bus
3. Aggregate existing and queued generation capacity
4. Nominal voltage, substation, and circuit
5. Approximate circuit distance between POI and substation
6. Relevant peak and minimum line loads
7. Number and ratings of protective and voltage-regulating devices
8. Whether substation has load tap changer
9. Single- or three-phase at POI, distance to three-phase if single
10. Limiting conductor ratings from POI to substation
11. Whether POI is on spot, grid, or radial network
12. Existing or known constraints at POI

### **DEVELOPER AND INTERCONNECTION AUTHORITY CONVERSATION #3 (APPLICATION PROCESS COMMUNICATION)**

In general, the SGIP Section 1.3 states,

*The Interconnection Customer shall submit its Interconnection Request to the Transmission Provider, together with the processing fee or deposit specified in the Interconnection Request. The Interconnection Request shall be date- and time-stamped upon receipt. The original date- and time- stamp applied to the Interconnection Request at the time of its original submission shall be accepted as the qualifying date- and time-stamp for the purposes of any timetable in these procedures. The Interconnection Customer shall be notified of receipt by the Transmission Provider within three Business Days of receiving the Interconnection Request. The Transmission Provider shall notify the Interconnection Customer within ten Business Days of the receipt of the Interconnection Request as to whether the Interconnection Request is complete or incomplete. If the Interconnection Request is incomplete, the Transmission Provider shall provide along with the notice that the Interconnection Request is incomplete, a written list detailing all information that must be provided to complete the Interconnection Request. The Interconnection Customer will have ten Business Days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the Interconnection Customer does not provide the listed information or a request for an extension of time within the deadline, the Interconnection Request will be deemed withdrawn. An Interconnection Request will be deemed complete upon submission of the listed information to the Transmission Provider.*

Prior to this discussion, the Developer should have conducted preparatory research, including the following, much of which can be found on the IA's website, preapplication report, or follow-up discussion with the IA point of contact after previous meetings:

1. Incorporate any deadlines or time constraints set by the IA
2. Ensure understanding of specific studies and when they need to be completed and/or reviewed.

Prior to submitting the application submission, the developer may wish to request a review by the IA to ensure completeness of the application. The IA is not required to provide this review, but the developer should request to minimize modifications after the initial review, which delay the process.

#### **POSTAPPLICATION DISCUSSION WITH INTERCONNECTION AUTHORITY (MEETING #4)**

The focus of this meeting is for the developer to gain understanding of the application decision and/or modifications requested by the IA. If any specific clarifications are requested by the IA or modification of the application, these topics should be the primary focus.

The developer should request a specific review of the IA's application, requesting detailed information of any shortfalls.

If the application has been accepted and no additional information or clarification is needed by the IA, this meeting may be used for setting the groundwork for the interconnection agreement. The interconnection agreement is a formal contract between the developer and IA facilitating the operation with the IA and permitting the project to be connected and to begin producing power.

