

## State Jurisdiction (non FERC) Distributed Renewable Generation Schedule 152 and Power Purchase Agreement Schedule 91 – Interconnection Process Overview

Last Updated September 2nd, 2021

In order to interconnect to the PSE electrical distribution system with a generator (typically above 100 KW and up to 5 MW) in Parallel Operation with PSE, interconnection studies shall be done to ensure safety and reliability for all customers. Both federal and state laws are explicit that all costs of interconnection; studies, interconnection facilities, metering, commissioning and witness testing must be paid by the Interconnection Customer and not by other utility customers.

There are several aspects to a successful interconnection involving many different departments at PSE. The following is an outline of requirements for completing power generation projects.

### **Email and Correspondence Guidelines**

In order to expedite communication and track project progress, we direct customer questions to a program level mailbox. The mailbox is tended to by several people and serves to facilitate efficient conversation even if a PSE member is absent.

- All email communication with PSE during the course of the project **must specify the exact project name in the subject field of the email.**
- Correspond with [distributedrenewables@pse.com](mailto:distributedrenewables@pse.com)

### **Application Submission Guidelines**

- Applications for generator interconnection are only accepted through PSE's online application portal
  - Application portal and essential resources can be found at [www.pse.com/distributedrenewables](http://www.pse.com/distributedrenewables)
- Customer project engineer prepares *One Line Schematic* according to requirements of [PSE Electrical Technical Specifications 160.70](#) and a *Protection Scheme Description if no UL1741 inverter is used*
  - During the process PSE will specify metering details to be included in the final version of the schematic, which must be 'wet stamped' and signed by a licensed Washington State Professional Electrical Engineer.
- Customer project engineer shall provide PSE with an 8760 hourly estimate of generation output.
- Completely fill out, sign, and submit Application through PSE's online portal and provide the required application fee, as defined and instructed in the portal.
  - For Generating Facilities of 0 kW to 25 kW, the fee is \$100
  - For Generating Facilities of greater than 25 kW to 500 kW, the fee \$500
  - For Generating Facilities of greater than 500 kW to 20 MW, the fee is \$1000
  - For Generating Facilities of greater than 2 MW or up to 20MW the fee is \$1000

### **Preliminary Site Assessment**

In certain situations a Customer may request a Preliminary Site Assessment, which will provide a very broad assessment of site-specific interconnection variables. If you would like to have a Preliminary Site Assessment send us a Google Maps pdf of the site with a minimum of two roads clearly marked, the intended maximum name plate generation in KW and KVA, and a pin drop showing intended Point of Interconnection. Include an excel spreadsheet with 8760 hours of estimated KW output Jan 1- Dec 31.

### **Timelines**

It has been our experience that it takes about 9-24 months to move through entire process: initial contact, application, scoping meeting, three studies, construction and witness testing. Based on the findings of studies, some projects have moved their proposed location on the same site or moved to a completely new location. In rare cases the project was withdrawn based on high interconnection cost estimates. The timelines noted below are PSE's target turnaround times to serve our generation customers (unless some aspect is incomplete).

- Preliminary Site Assessment (optional): 20 Business Days

- Scoping Meeting: Coordinated within 10 business Days from a complete Application
- Within 30 business days subsequent to the Scoping Meeting, PSE will identify which studies are required, and study cost estimate and target deliverable date for the first study.
- Engineering Studies: Each study typically take 3 months to complete. Possible studies can include: Feasibility Study, Distribution & Transmission System Impact Study, Affected Systems Study, and Facilities Study.
- Smaller generation projects may be eligible for a single combined study.
- Construction timelines are variable:
  - Smaller projects may have no construction costs or timeline.
  - Smaller projects (<1 MW) construction could be in the 6 months range for completion.
  - Larger projects (greater than 2 MW) and those that require major substation work typically take 10+ months (in good weather conditions - generally April through September) i.e. larger projects will take 20+/- months from initial study to Certificate of Completion.

***Individual Documents and estimated costs:***

1. **Preliminary Site Assessment** (optional \$300 per site)
2. **Interconnection Application & Scoping Meeting** - (fee \$100 ≤ 25 KW, \$500 ≤ 500KW or \$1,000 > 500KW)
3. **Feasibility Study** (estimated study cost \$5,000 to \$20,000) - May be waived for simpler projects
4. **Distribution System Impact Study** (estimated study cost \$10,000 to \$45,000)
5. **Transmission Study** (required only if generation exceeds minimum load at substation - \$30,000 – \$60,000)
6. **Affected Systems Study** (required in limited applications with a Transmission System Impact Study - \$10,000 - \$60,000)
7. **Facilities Study** (estimated study cost \$10,000 to \$45,000) May be combined with System Impact Study for simple projects
8. **Construction Agreement** - (cost estimate provided in Studies) – PSE construction costs range from \$0 to over \$3,000,000 based on size and complexity.

Each of the three studies requires a \$1,000 deposit. The Application and combined costs for interconnection studies have ranged between \$6,000 and \$100,000.

***Size of Generator and its impacts to Study and Interconnection Costs***

Some but not all higher cost elements are roughly estimated:

- Generation above 500 KW shall require separate redundant protection relays including more time for review and witness test \$6000 - \$25,000 (both study and construction costs)
- Generation typically greater than 500 KW will require Direct Transfer Trip scheme and fiber or radio communications with the substation \$250,000-\$350,000 (this is a construction cost – usually requiring a smart breaker upgrade at the substation)
- Generation of 2 MW and greater will require SCADA and fiber or radio communications showing real-time generator status \$10,000 - \$250,000 (this is a construction cost and depends on equipment and distance from substation)

***Project Background and Objectives in Preparing an Application***

- Identify the Interconnection Customer – They will be responsible for signing documents.
- Identify the billable party – Who is responsible for study costs – Sometimes this is a Project consultant.
- Who will be primary and secondary point of contact for this project?

- Prepare a brief description of this project – Official Project name, location with map showing at least two named roads, resource, technology.
- Prepare an Excel spreadsheet with 8760 hours of estimated KW output Jan 1- Dec 31.
- Anticipated Commercial Operation Date with this generator? (Does this fit the time frames identified above: 12 to 20+/- months from beginning of interconnection studies?)
- Describe experience completing similar projects
- Identified WA consulting electrical engineer for this project (for iterative design and final wet stamp)
- Describe your status of securing the financial resources necessary for this project.
- Describe insurability of Project (For Interconnection Agreement and optional PPA)
- Describe site control – Does the Interconnecting Customer own the land? Has the Project secured the necessary leases, easements, permits, surveys (archaeological/environmental) or other control documentation?
- Describe site control issues (if any) that may impact permitting or construction of this project. e.g. wetlands, county or state roadways, DNR, Fish and Wildlife, railroad or river crossings, FAA (glare issues).
- Understand and be familiar with PSE's Small Generation Technical Specifications 160.70 for electrical design requirements (see below)
- Identify final electrical permitting jurisdiction

***Possible questions and items to be discussed in the Scoping Meeting (Some details will be provided by PSE)***

- Initial impacts to the distribution system.
- Could a Direct Transfer Trip scheme be required?
- Will a Transmission system impact study be required?
- Will there be restrictions to underground or overhead power and communications?
- Review one-line drawing and site plan (a three-line is required in the Facilities Study)
- Has the generating customer demonstrated site control?
- If larger than 1 MW, has the Project registered as a Qualified Facility? (go to the FERC website below)
- PSE will address potential planned and unplanned shut downs for PSE maintenance
- The potential to have dedicated or alternate feeder circuits to minimize generation interruptions
- Optional alternate Points of Interconnection
- Options for combined Storage and Generation solutions

There are three types of interconnection under Schedule 152:

1. **'Export Only Power'**: A site with no customer load where the entire output is metered and connected to the distribution system. 100% of the energy is purchase by PSE under Schedule 91.
2. **'Import and Export Power'**: A site with a significant load but less than the output capacity of the generation where generated energy offsets imported energy purchased from PSE and where generation in excess of the site load is purchased by PSE under Schedule 91.
3. **'On-site Only Power'**: A site where generation is less than the lowest existing customer load with no intention to export power to PSE. 100% of the energy generated is used on site and there will be no export to PSE (power export will be prohibited by protection devices in some cases).

All three types of interconnection operate in parallel with grid voltage and frequency and therefore require some or all of the studies.

Our understanding from FERC is that battery storage is considered generation and will be addressed as such.

**Power Purchase Agreement (PPA) for Projects up to 5 MW:**

If your proposed project will export power to the PSE Distribution System you can sign a PPA with PSE once the System Impact Study is completed. The PPA, addressed as Schedule 91, is technically limited to 4.999 MW to avoid being included in the Energy Imbalance Market. Schedule 91 is pre-approved by the WA Utilities and Transportation Commission and the price resets each year typically in the Oct-Dec timeframe, there is no negotiation expense.

There is typically a value for the Renewable Energy Credits (RECs) and PSE has the first right of refusal to purchase RECs from projects under Schedule 91. The contract for the RECs is separate from the PPA and can

be signed prior to, but contingent upon, completion of the project. Please note that not all projects are eligible for REC sales. Further discussion on RECs can occur at the Scoping Meeting.

**You can find more information about PSE's standard offer Purchase Power Agreement - Schedule 91 at:**

[Schedule 91 Agreement](#) and [Schedule 91 Rates](#)

**In-depth information on small generator interconnection - Schedule 152 at:**

[Schedule 152 Interconnection Agreement](#)

**PSE Small Generation Technical Specifications & Operating Protocols and Procedures can be found at:**

[http://www.oasis.oati.com/woa/docs/PSEI/PSEIdocs/PSE-ET-160.70\\_NonFERC\\_19Aug07.pdf](http://www.oasis.oati.com/woa/docs/PSEI/PSEIdocs/PSE-ET-160.70_NonFERC_19Aug07.pdf)

***This is a complex document that needs to be read, understood and followed by your electrical engineer to prepare the your design and Application for interconnection. Incomplete Applications will have 15 or 30 business days to complete or the Application will expire and a new Application and fee will be required.***

**PSE Electric Service Handbook for Meter Placement and Location can be found [here](#).**

**Projects greater than 1 MW are required to certify as a Qualified Facility with FERC. To apply for a Qualified Facility retrieve form 556 [here](#).**

**If your project is also requiring new electric service:**

You will need to apply separately and well in advance of when you'll need service. The application for separate electric service is located [here](#).

Please note that we'll be looking for specific generator/inverter and distribution system protection/isolation information on the Schedule 152 application. We will contact you for clarification or to request missing information on the application. Once the application is complete and we have the application fee we will schedule a scoping meeting.

#### **What to do next?**

1. Review "Generator Interconnection" information listed in the Resources section on <http://www.pse.com/distributedrenewables>
2. Visit our [online](#) portal to complete and submit a signed interconnection application.
3. Submit the required application fee.
4. Once received, PSE will review your project application.
5. If accepted, PSE will contact you to coordinate a project scoping meeting.

We look forward to working with you through the steps in the development of your project.

For more information or assistance with the Distributed Renewables interconnection application process, email [DistributedRenewables@pse](mailto:DistributedRenewables@pse) or contact our Energy Advisors at 1-800-562-1482.

#### **Payments and signatures**

A non-refundable fee must accompany the Application.

- For Generating Facilities of 0 kW to 25 kW, the fee is \$100.00
- For Generating Facilities of greater than 25 kW to 500 kW, the fee \$500.00
- For Generating Facilities of greater than 500 kW to 20 MW, the fee is \$1000.00
- For Generating Facilities of greater than 2 MW or up to 20MW the fee is \$1000.00



Puget Sound Energy 355 110<sup>th</sup> Avenue NE Bellevue, WA 98004

A deposit of \$1,000 is required for each study and will be collected with each signed study agreement.

PSE can only accept electronic payments.

Customer authorized signatures are required on the Application, Study Agreements, The Interconnection and Construction Agreements and PPAs. Signatures will be requested via DocuSign.

I look forward to working with you.

Very Respectfully,  
Micah

***Micah Haman***

Puget Sound Energy

***Customer Renewable Energy Program Manager***

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*REP - Certified Renewable Energy Professional with the Association of Energy Engineers*

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