IDAHO POWER®
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Cluster Study Submission Checklist

Failure to meet the following documentation, data, and financial requirements within 45 calendar days from the opening of the Cluster Request Window (March 1) will result in the request being deemed invalid with the application fee forfeited (LGIP Section 3.4.4).

1. Application

- ☐ **Completed** Large Generation Interconnection Application
  - ☐ Generating Facility Capacity (MW) and requested Interconnection Service level if less than the Generating Facility Capacity.
  - ☐ Selected Point of Interconnection
  - ☐ Selection of NRIS, ERIS, or a concurrent study of both, consistent with Section 3.2 of the LGIP

2. Demonstration of Site Control

- ☐ **90% Exclusive Site Control**
  - ☐ Acceptable documentation as outlined in Idaho Power's Business Practices Section 1.2-1.4
- ☐ **Demonstration of Exclusive Site Control**
  - ☐ Executed Attestation Form
  - ☐ Detailed KMZ as outlined in Idaho Power's Business Practices Section 1.3
- ☐ **Qualifying Regulatory Limitations Demonstration if applicable** as outlined in Idaho Power's Business Practices Section 1.5

3. Financial Requirements

- ☐ **Non-refundable Application Fee** of $5,000 in the form of cash
- ☐ **Study Deposit** in the form of an irrevocable letter of credit, cash, surety bond, or other form of security that is reasonably acceptable to IPC
  a) $35,000 plus $1,000 per MW for Interconnection Requests < 80 MW; or
  b) $150,000 for Interconnection Requests ≥ 80 MW < 200 MW; or
  c) $250,000 for Interconnection Requests ≥ 200 MW
- ☐ **Commercial Readiness Deposit** equal to two times (2x) study deposit in the form of an irrevocable letter of credit, cash, a surety bond, or other form of security that is reasonably acceptable to IPC
- ☐ **Qualifying Regulatory Limitation Deposit if applicable** in the form of cash
  a) $10,000 per MW, subject to a minimum of $500,000 and a maximum of $2,000,000

IPC EFT-Wire/ACH Instructions:

To:	Idaho Power Concentration Account
Bank:	Wells Fargo Bank, Boise ID
Bank ABA:	121000248
Account #:	4000033514
Account Type:	Checking
SWIFT:	WFBIUS6S

IPC Credit/Risk Department:

To:	Anita Calhoun / IPC Credit Department
Email	Credit@idahopower.com
Re:	Cluster Study Funding: (Project Name)
Phone:	208-388-2783

4. Modeling

☐ **Appropriately parameterized generic library RMS positive sequence dynamic models** using GE PSLF Formatting[1,2]. IPC uses the WECC approved dynamic models. A list of approved models can be found on the WECC site under the Modeling and Validation Subcommittee.

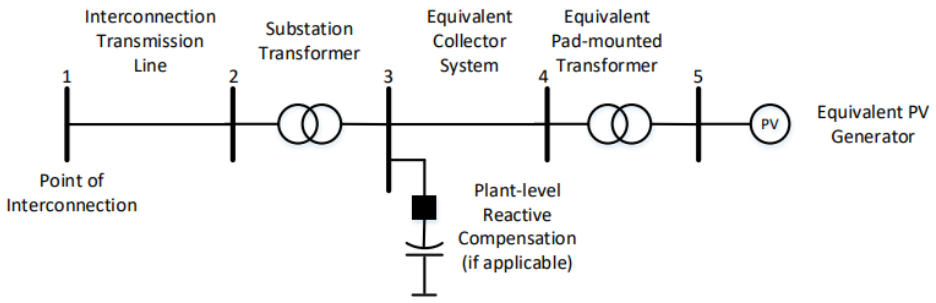
☐ **A validated positive sequence user defined dynamic model (UDM)**[2]. IC must also demonstrate that the model is validated by providing evidence that the equipment behavior is consistent with the model behavior, (e.g., an attestation from Interconnection Customer that the model accurately represents the entire Large Generating Facility; attestations from each equipment manufacturer that the user defined model accurately represents the component of the Large Generating Facility; or the response obtained by the corresponding generic library models results in similar performance).

☐ **A validated PSCAD electromagnetic transient model** using either an Intel or Fortran compiler.[3]

☐ **Steady State Power Flow Models** using .epc, .pwb, or .raw data formats. These models should include:

- An explicit representation of the interconnection transmission line;
- An explicit representation of all station transformers;
- An equivalent representation of the collector systems;
- An equivalent representation of inverter pad-mounted transformers with a scaled MVA rating;
- An equivalent representation of generators scaled to match the total capacity of the plant; and
- An explicit representation of all plant-level reactive compensation devices either as shunts (fixed or switchable) or as generators (FACTs devices), if applicable.

An example of a single-generator equivalent power flow representation for a solar PV power plant is shown here:

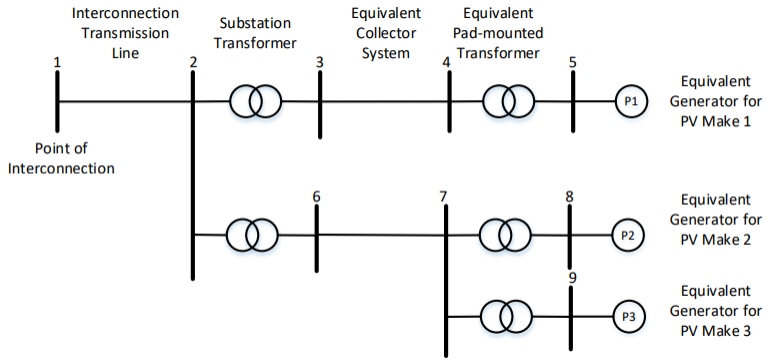


If a plant has different makes of the inverters installed and these inverters have different reactive capability, control setup, or protection setup, a multi-generator representation is fitting. The determination of single or multiple generator equivalence should take into account the number of the main substation transformers, the collector system behind each main substation transformer, the placement of different makes of inverters behind the main substation transformers, the setting difference among inverters, and the mix of different inverters.

- Each substation transformer is explicitly represented in the power flow model.
- If the same inverters are installed behind the substation transformer, represent the inverters with one equivalent collector circuit, one equivalent pad-mounted transformer, and one equivalent generator.
- If different inverters with the same control and protection setting are installed behind one substation transformer, represent all inverters by one equivalent collector circuit, one equivalent pad-mounted transformer, and one equivalent generator.
- If inverters with different settings are installed behind the same substation transformer, model each type of inverter that has at least 10 MVA installed capacity by one equivalent generator with its own equivalent

pad-mounted transformer. The type of inverters less than 10 MVA installed capacity may be aggregated with another type of inverter in one equivalent generator.

An example of a multi-generator equivalent power flow representation for a solar PV power plant is shown here:



☐ **Single Line Diagram**

☐ **Map with proposed interconnection transmission line route from collector substation to the POI**

☐ **Project/Inverter Data Sheets** to include PQ capability curve (see notes in Projects with Energy Storage Components)

☐ **Other Applicable data** as outlined in the Large Generation Interconnection Application

☐**Projects with Energy Storage Components:**

☐**Project/Inverter Data Sheets** are provided in Exhibit A to the Energy Storage System Process.

☐**The requested operating assumptions** (i.e., whether the Generating Facility will or will not charge at peak load) to be used by IPC that reflect the proposed charging behavior of the Generating Facility

☐ **A description of any control technologies** (software and/or hardware) that will limit the operation of the Generating Facility to the operating assumptions submitted

Important Notes:

1. The default parameters listed in the library model software manuals are provided only as a starting point to prevent model initialization issues. Those parameters are not suitable replacements for site-specific parameters. Documentation showing how the library model was parameterized and compared to inverter and plant-level controller settings should be provided.

2. While finalized plant settings are not available at this stage of the interconnection process, the models should be parameterized with control modes and parameters that are as reflective of the intended final design as possible. Models should be compatible with PowerWorld.

3. NERC Supporting Paper: *EMT Models in NERC MOD, TPL, and FAC Standards*, NERC Inverter-Based Resource Performance Subcommittee (IRPS), April 2022 “Industry has also recognized that the collection of EMT models during the interconnection process is the most effective means of gathering these models for newly connecting facilities. Requiring EMT models after interconnection presents some challenges for the TP, PC, GO, and equipment manufacturers. As more inverter-based resources are connected to the BPS without collecting high quality EMT models for these facilities, the risk of future BPS reliability challenges increases.”

4. Important references include: Idaho Power Facility Interconnection Requirements, NERC Dynamic Modeling Recommendations, WECC Solar PV Plant Modeling and Validation Guideline.

Submitting Your Cluster Study Request

When submitting the Generation Interconnection Request Application and applicable Project Data, please submit at one time via email as a Zip File or request a secure FTP Link from Idaho Power to securely upload the documents. It is necessary to notify the Generation Interconnection Team once they are uploaded.

Questions and Submission Contact Information:

Contact: Generation Interconnection Team
Email: GeneratorInterconnection@idahopower.com
Re: Cluster Study Submission: (Project Name)
Phone: 208-388-2658