APPENDIX 1 to RIP

**WHOLESALE DISTRIBUTION ACCESS TARIFF
INTERCONNECTION REQUEST FOR A
GENERATING FACILITY**

Provide two copies of this completed form pursuant to Section 7 of this RIP Appendix 1 below.

1. The undersigned Interconnection Customer submits this request to interconnect its Generating Facility with Distribution Provider's Distribution System pursuant to the following process under Appendix I of the Tariff (check only one):
   - ☐ Cluster Study Process
   - ☐ Fast Track Process
   - ☐ Annual As-Available Application Window per RIP 3.15.2.2.2
   - ☐ Other (specify)_____

2. This Interconnection Request is for (check only one):
   - ☐ A proposed new Generating Facility.
   - ☐ An increase in the generating capacity, or increase in the Charging Capacity resulting from installation of new equipment, or a Material Modification of an existing Generating Facility.
   - ☐ A new request for Charging Distribution Service for an existing or queued Generating Facility not resulting from installation of new equipment at the Generating Facility.*

     *Please complete only Sections 4, 5(c) and 10 of this Appendix 1, and Sections 2 and 11(C) of Attachment A to Appendix 1.

3. Deliverability Study is performed by the ISO. Requested Deliverability Status is for (check only one):
   - ☐ Full Capacity Deliverability Status (this option applies to the Cluster Study Processonly)
   - ☐ Partial Capacity Deliverability Status for ____ MW [specify requested MW to be evaluated for Deliverability. This MW amount should be less than the total MW of the Generating Facility) of electrical output (this option applies to the Cluster Study Process only)
   - ☐ Energy Only Deliverability Status (this option applies to the Cluster Study Process, and Fast Track Process)

4. Requested Charging Distribution Service for Generating Facilities with storage is for (choose only one option and list Contract Demand amount):

☐ As-Available Charging Distribution Service only: ____ MW
☐ Firm Charging Distribution Service only: _____ MW
☐ Combination of Firm Charging Distribution Service and As-Available Charging Distribution Service:
Firm Charging Distribution Service: ____ MW
As-Available Charging Distribution Service____ MW
☐ None (Charging from onsite generation)

If the Interconnection Request is for Charging Distribution Service for an Existing or Queued Generating Facility per Section 2, include the requested commencement date(s) for the Firm Charging Distribution Service and/or As-Available Charging Distribution Service: _____.

5. Interconnection Customer provides the following information:

a. Address or location, including the county, of the proposed new Generating Facility site (to the extent known) or, in the case of an existing Generating Facility, the name and specific location, including the county, of the existing Generating Facility;

Project Name:

Project Location:
Street Address:
City, State:
County:
Zip Code:
GPS Coordinates:
Assessor's Parcel Numbers (if available):

b. Maximum net megawatt electrical output (as defined by section 2.C. of Attachment A to this appendix) of the proposed new Generating Facility or the amount of net megawatt increase in the generating capacity of an existing Generating Facility;

Maximum net megawatt electrical output (MW): _____ or
Net Megawatt increase (MW): _____

c. Type of project (i.e., gas turbine, hydro, wind, etc.) and general description of the equipment configuration (if more than one type is chosen, include net MW for each);

☐ Cogeneration _____ MW

☐ Reciprocating Engine _____ MW
☐ Biomass _____ MW
☐ Steam Turbine _____ MW
☐ Gas Turbine _____ MW
☐ Wind _____ MW
☐ Hydro _____ MW
☐ Inverter Based: (e.g., Photovoltaic, Fuel Cell) _____ MW
If Fuel Cell, please describe primary fuel source: _____
☐ Storage (rated discharging power) _____ MW
Storage type (e.g., Pump-Storage Hydro, Battery): _____
_____
☐ Combined Cycle _____ MW
☐ Other (please describe):_____ _____ MW

d. Proposed In-Service Date, and Other Key Dates (Day/Month/Year) (Dates must be sequential)

Proposed In-Service Date: / /
Proposed Trial Operation Date: / /
Proposed Commercial Operation Date: / /
Proposed Term of Service (years): _____

e. Name, address, telephone number, and e-mail address of Interconnection Customer's contact person (primary person who will be contacted);

Name:
Title:
Company Name:
Street Address:
City, State:
Zip Code:
Phone Number:
Fax Number:
Email Address:
Interconnection Customer's DUNS Number:

f. Point of Interconnection:

Distribution Substation (Name and voltage level): _____, or
Distribution Feeder: _____, or
Approximate location of the proposed Point of Interconnection _____
_____(i.e., specify distribution facility interconnection point name, voltage level, and the location of interconnection);

g. Interconnection Customer Data (set forth in Attachment A)

The Interconnection Customer shall provide to the Distribution Provider the technical data called for in Attachment A. Two (2) copies are required.

h. Primary frequency response operating range for electric storage resources.

6. Applicable Interconnection Study Deposit amount as specified in RIP Section 4.3.1.1 or 4.11.1, as applicable, for the Cluster Study Process, or $1,500 as provided in RIP Section 6.2 for the Fast Track Process made payable to Southern California Edison Company. Send check to Distribution Provider along with:

1. A completed Interconnection Request form for processing.
2. A completed Attachment A (Interconnection Request Generating Facility Data).

7. Evidence of Site Control as specified in GIP Sections 4.3.1or 6.3, as applicable, and name(s), address(es) and contact information of site owner(s). (check one)

☐ Is attached to this Interconnection Request

☐ If Interconnection Customer requests processing under the Cluster Study Process, then deposit in lieu of Site Control due to demonstrated regulatory limitations is attached. Site Control will be demonstrated at a later date in accordance with this RIP.

8. This Interconnection Request shall be submitted to the Distribution Provider as indicated below:

Southern California Edison Company
Grid Interconnection & Contract Development
P.O. Box 800
2244 Walnut Grove Avenue
Rosemead, CA 91770

Email: grid.interconnections@sce.com
Phone: (626) 302-3688

9. Representative of Interconnection Customer to contact:

[To be completed by Interconnection Customer]
Name:
Title:
Company Name:
Street Address:
City, State:
Zip Code:

Phone Number:
Fax Number:
Email Address:

10. An Interconnection Customer requesting interconnection service shall also request Distribution Service, pursuant to Section 15.1 of the Tariff. The following information is required in accordance with Section 15.2 of the Tariff:

    a. Distribution Service capacity requested:
        i. Generation:_____ MW (export quantity as measured at the Point of Interconnection)
        ii. Charging Distribution Service (choose only one option and list Contract Demand amount):
            1. As-Available Charging Distribution Service only: ___ MW
            2. Firm Charging Distribution Service only: ____ MW
            3. Combination of Firm Charging Distribution Service and As-Available Charging Distribution Service:
               Firm Charging Distribution Service____ MW
               As-Available Charging Distribution Service ____MW

    Note: The requested Contract Demand should account for any losses between the Point of Interconnection and the Generating Facility's storage system.

    b. Provide five (5) year forecast of monthly generation output requirements beginning with the first year after service is scheduled to commence.

    _____
    _____
    _____
    _____

    The party requesting Distribution Service shall be, or will be upon commencement of service, an Eligible Customer as defined under Section 2 of the Tariff. An Eligible Customer with Charging Capacity shall have the necessary contractual arrangements or existing contracts in place to receive power from the ISO Grid prior to the commencement of Distribution Service.

11. This Interconnection Request is submitted by:

    Legal name of Interconnection Customer: _____

    By (signature): _____

    Name (type or print): _____

    Title: _____

Date: _____

Attachment A to
Interconnection Request

WHOLESALE DISTRIBUTION ACCESS TARIFF
GENERATING FACILITY DATA

Provide two copies of this completed form pursuant to Section 7 of Interconnection Request.

Each Interconnection Customer will complete Sections 1 and 2 of this Attachment A.
Each Interconnection Customer will complete the applicable data in Sections 3 through 6 of this Attachment A based on the type of generating facility(ies) requesting interconnection. (Section 3 for synchronous generators, Section 4 for induction generators, Section 5 for wind turbine generators, and Section 6 for inverter-based generators).
Each Interconnection Customer will complete Sections 7 through 10, as applicable.
At any time, Distribution Provider may require Interconnection Customer to provide additional technical data, or additional documentation supporting the technical data provided, as deemed necessary by the Distribution Provider to perform Interconnection Studies, other studies, or evaluations as set forth under the RIP.

1. Provide two original prints and one reproducible copy (no larger than 36" x 24") of the following:

A. Site drawing showing generator location and Point of Interconnection with the Distribution Provider's Distribution System.
B. Single-line diagram showing applicable equipment such as generating units, step-up transformers, auxiliary transformers, switches/disconnects of the proposed interconnection, including the required protection devices and circuit breakers. This one-line drawing must be signed and stamped by a licensed Professional Engineer if the Generating Facility is larger than 50 kW.

2. Generating Facility General Information:

A. Total Generating Facility rated output (MW): _____
A1. Maximum Generating Facility operating capacity (MW): _____ (applicable if the Generating Facility output will be limited to less than rated capacity)
B. Generating Facility auxiliary load (MW): _____
C. Net Generating Facility capacity at generator/inverter terminals (MW): _____ (A-B) or (A1-B)
D. Collector system losses (MW): _____ (insert "n/a" if not applicable or negligible)
E. Main step-up transformer losses (MW): _____ (insert "n/a" if not applicable or negligible)
F. Net Generating Facility capacity at high-side of main step-up transformer (MW): _____ (C-D-E)
G. Gen-tie loss to Point of Interconnection (MW): _____ (insert "n/a" if

not applicable or negligible)

H. Net Generating Facility capacity at Point of Interconnection (MW): _____ (F-G)

H1. Maximum export capacity at Point of Interconnection (MW): _____ (applicable if the requested export capacity at the Point of Interconnection is less than the Net Generating Facility capacity at the Point of Interconnection. If so, please indicate the reason (e.g., serving host load, etc.)) _____

I. Standby Load when Generating Facility is off-line (MW): _____

J. Number of Generating Units: _____
(Please repeat the following items for each generator)

K. Individual generator rated output (MW for each unit): _____

L. Manufacturer of the Generating Units: _____

M. Year Manufactured: _____

N. Nominal Terminal Voltage (kV): _____

O. Rated Power Factor (%): _____

P. Type (induction, synchronous, D.C. with inverter): _____

Q. Phase (3 phase or single phase): _____

R. Connection (Delta, Grounded WYE, Ungrounded WYE, impedance grounded): _____

S. Generator Voltage Regulation Range (+/- %): _____

T. Generator Power Factor Regulation Range: _____

U. For combined cycle plants, specify the plant net output capacity (MW) for an outage of the steam turbine or an outage of a single combustion turbine_____

3. Synchronous Generator –Information:

3A Generator Information:
(Please repeat the following for each generator)

A. Rated Generator speed (rpm): _____

B. Rated MVA: _____

C. Rated Generator Power Factor: _____

D. Generator Efficiency at Rated Load (%): _____

E. Moment of Inertia (including prime mover): _____

F. Inertia Time Constant (on machine base) H: _____ sec or MJ/MVA

G. SCR (Short-Circuit Ratio - the ratio of the field current required for rated open-circuit voltage to the field current required for rated short-circuit current): _____

H. Please attach generator reactive capability curves.

I. Rated Hydrogen Cooling Pressure in psig (Steam Units only): _____

J. Please attach a plot of generator terminal voltage versus field current that shows the air gap line, the open-circuit saturation curve, and the saturation

curve at full load and rated power factor.

3B Excitation System Information:
(Please repeat the following for each generator)

A. Indicate the Manufacturer _____ and Type _____of excitation system used for the generator. For exciter type, please choose from 1 to 9 below or describe the specific excitation system.
   (1) Rotating DC commutator exciter with continuously acting regulator. The regulator power source is independent of the generator terminal voltage and current.
   (2) Rotating DC commentator exciter with continuously acting regulator. The regulator power source is bus fed from the generator terminal voltage.
   (3) Rotating DC commutator exciter with non-continuously acting regulator (i.e., regulator adjustments are made in discrete increments).
   (4) Rotating AC Alternator Exciter with non-controlled (diode) rectifiers. The regulator power source is independent of the generator terminal voltage and current (not bus-fed).
   (5) Rotating AC Alternator Exciter with controlled (thyristor) rectifiers. The regulator power source is fed from the exciter output voltage.
   (6) Rotating AC Alternator Exciter with controlled (thyristor) rectifiers.
   (7) Static Exciter with controlled (thyristor) rectifiers. The regulator power source is bus-fed from the generator terminal voltage.
   (8) Static Exciter with controlled (thyristor) rectifiers. The regulator power source is bus-fed from a combination of generator terminal voltage and current (compound-source controlled rectifiers system.
   (9) Other (specify): _____
B. Attach a copy of the block diagram of the excitation system from its instruction manual. The diagram should show the input, output, and all feedback loops of the excitation system.
C. Excitation system response ratio (ASA): _____
D. Full load rated exciter output voltage: _____
E. Maximum exciter output voltage (ceiling voltage): _____
F. Other comments regarding the excitation system? _____
   _____

3C Power System Stabilizer ("PSS") Information:
(Please repeat the following for each generator model. All new generators are required to install PSS unless an exemption has been obtained from WECC. Such an exemption can be obtained for units that do not have suitable excitation systems.)

A. Manufacturer: _____
B. Is the PSS digital or analog? _____
C. Note the input signal source for the PSS?
_____ Bus frequency _____ Shaft speed _____
Bus Voltage _____ Other (specify source)
D. Please attach a copy of a block diagram of the PSS from the PSS Instruction Manual and the correspondence between dial settings and the time constants or PSS gain.
E. Other comments regarding the PSS?
_____
_____
_____

3D Turbine-Governor Information:
(Please repeat the following for each generator model.)

Please complete Part A for steam, gas or combined-cycle turbines, Part B for hydro turbines, and Part C for both.

A. Steam, gas or combined-cycle turbines:

(1) List type of unit (Steam, Gas, or Combined-cycle):_____
(2) If steam or combined-cycle, does the turbine system have a reheat process (i.e., both high and low pressure turbines)? _____
(3) If steam with reheat process, or if combined-cycle, indicate in the space provided, the percent of full load power produced by each turbine:
Low pressure turbine or gas turbine:_____%
High pressure turbine or steam turbine:_____%
(4) For combined cycle plants, specify the plant net output capacity (MW) for an outage of the steam turbine or an outage of a single combustion turbine:_____

B. Hydro turbines:

(1) Turbine efficiency at rated load: _____%
(2) Length of penstock: _____ft
(3) Average cross-sectional area of the penstock: _____ft2
(4) Typical maximum head (vertical distance from the bottom of the penstock, at the gate, to the water level): _____ft
(5) Is the water supply run-of-the-river or reservoir: _____
(6) Water flow rate at the typical maximum head: _____ft^3/sec
(7) Average energy rate: _____kW-hrs/acre-ft
(8) Estimated yearly energy production: _____kW-hrs

C. Complete this section for each machine, independent of the turbine type.

(1) Turbine manufacturer: _____
(2) Maximum turbine power output: _____MW
(3) Minimum turbine power output (while on line): _____MW
(4) Governor information:
(a) Droop setting (speed regulation): _____
(b) Is the governor mechanical-hydraulic or electro-hydraulic (Electro-hydraulic governors have an electronic speed sensor and transducer.)? _____
(c) Other comments regarding the turbine governor system?
_____
_____
_____
_____

3E Short Circuit Duty Information:
For each generator, provide the following reactances expressed in p.u. on the generator base:

- Xd – Direct Axis Synchronous Reactance: _____ p.u.
- X'd – Direct Axis Transient Reactance: _____ p.u.
- X"d – Direct Axis Subtransient Reactance: _____ p.u.
- X2 – Negative Sequence Reactance: _____ p.u.
- X0 – Zero Sequence Reactance: _____ p.u.

Generator Grounding (select one for each model):

A. _____ Solidly grounded
B. _____ Grounded through an impedance
(Impedance value in p.u. on generator base. R:_____p.u.
X:_____p.u.)
C. _____ Ungrounded

4. Induction Generator Information:
(Please repeat the following for each generator)

A. Motoring Power (kW): _____
B. I_2^2t or K (Heating Time Constant): _____
C. Rotor Resistance, Rr: _____
D. Stator Resistance, Rs: _____
E. Stator Reactance, Xs: _____
F. Rotor Reactance, Xr: _____
G. Magnetizing Reactance, Xm: _____
H. Short Circuit Reactance, Xd": _____

I. Exciting Current: _____
J. Temperature Rise: _____
K. Frame Size: _____
L. Design Letter: _____
M. Reactive Power Required In Vars (No Load): _____
N. Reactive Power Required In Vars (Full Load): _____
O. Total Rotating Inertia, H: _____ Per Unit on kVA Base

5. Wind Turbine Generator (WTG) Information:

(Proposed projects may include one or more WTG types. Please repeat the following for each type of WTG).

A. Number of generators to be interconnected pursuant to this Interconnection Request: _____
B. Average Site Elevation: _____ Single Phase _____ Three Phase_____
C. Field Volts: _____
D. Field Amperes: _____
E. Motoring Power (MW): _____
F. Neutral Grounding Resistor (If Applicable): _____
G. I_2^2t or K (Heating Time Constant): _____
H. Rotor Resistance: _____
I. Stator Resistance: _____
J. Stator Reactance: _____
K. Rotor Reactance: _____
L. Magnetizing Reactance: _____
M. Short Circuit Reactance: _____
N. Exciting Current: _____
O. Temperature Rise: _____
P. Frame Size: _____
Q. Design Letter: _____
R. Reactive Power Required In Vars (No Load):_____
S. Reactive Power Required In Vars (Full Load):_____
T. Total Rotating Inertia, H: _____ Per Unit on 100 MVA Base

Note: A completed General Electric Company Power Systems Load Flow (PSLF) data sheet must be supplied with the Interconnection Request. If other data sheets are more appropriate to the proposed device then they shall be provided and discussed at Scoping Meeting.

Distribution Provider may require testing verification of voltage and harmonic performance during commissioning test of WTG based generation projects.

6. Inverter Based Generation Systems Information:

(Proposed inverter based generation projects may include one or more types of inverters. Please repeat the following for each type of inverter).

A. Inverter Manufacturer and Model: _____
B. Number of Inverters: _____
C. Nameplate Rating (AC, each inverter): _____/_____ kW
D. Nameplate Voltage Rating (AC): _____ kV
E. Maximum AC line current: _____ Amps
F. Nameplate Power Factor Rating (AC): _____
G. Please attach capability curve describing reactive power or power factor range from no output to full rated output
H. Inverter control mode (e.g. voltage, power factor, reactive power): _____
I. Short Circuit Characteristics: Applicant to provide technical data related to the short circuit characteristics of proposed inverter based generation systems. For example, the applicant can provide a sinusoidal waveform test data showing faulted condition at the AC side of the inverter for a three phase and single-line-to-ground fault.
J. Harmonics Characteristics:
   (1) Inverter switching frequency: _____
   (2) Harmonic characteristics for each unit up to switching frequency: _____
   (3) Harmonic characteristics for aggregate generation facility: _____
K. Inverter disconnection characteristics: Applicant to provide voltage sinusoidal waveform test data which shows the voltage characteristics during disconnection of inverter system from distribution system at 100% and at 50% of rated output.
L. Provide documentation demonstrating compliance with the Smart Inverter requirements specified in Section 3.13 of the GIP.

Distribution Provider may require testing verification of voltage and harmonic performance during commissioning test of the inverter based generation systems.

7. Step-Up Transformer Data:

For each step-up transformer (e.g. main step-up transformers, padmount transformers), fill out the data form provided in Table 1.

8. Interconnection Facilities Line Data:

For transmission lines that are to be planned by the generation developer, please provide the following information:

Nominal Voltage: _____ kV
Line Length (miles): _____
Line termination Points: _____

Conductor Type: _____ Size: _____
If bundled. Number per phase: _____, Bundle spacing: _____in.
Phase Configuration. Vertical: _____, Horizontal: _____
Phase Spacing (ft): A-B: _____, B-C: _____, C-A: _____
Distance of lowest conductor to Ground at full load and 40°C: _____ft
Ground Wire Type: _____ Size: _____ Distance to Ground: _____ft
Attach Tower Configuration Diagram
Summer line ratings in amperes (normal and emergency) _____
Positive Sequence Resistance (R): _____ p.u.** (for entire line length)
Positive Sequence Reactance: (X): _____ p.u.** (for entire line length)
Zero Sequence Resistance (R0): _____ p.u.** (for entire line length)
Zero Sequence Reactance: (X0): _____ p.u.** (for entire line length)
Line Charging (B/2): _____ p.u.**
** On 100-MVA and nominal line voltage (kV) Base

9. For Wind/Photovoltaic Plants, provide Collector System Equivalence Impedance Data (if applicable):

Provide values for each equivalence collector circuit at all voltage levels.

Nominal Voltage: _____ kV
Summer line ratings in amperes (normal and emergency): _____
Positive Sequence Resistance (R): _____ p.u.** (for entire line length of each collector circuit)
Positive Sequence Reactance: (X): _____ p.u.** (for entire line length of each collector circuit)
Zero Sequence Resistance (R0): _____ p.u.** (for entire line length of each collector circuit)
Zero Sequence Reactance: (X0): _____ p.u.** (for entire line length of each collector circuit)
Line Charging (B/2): _____ p.u.**

** On 100-MVA and nominal line voltage (kV) Base

10. Plant-Level Reactive Power Compensation Data:

Provide the following information for plant-level reactive power compensation, if applicable:

A. Number of individual shunt capacitor banks: _____
B. Individual shunt capacitor bank rated voltage (kV): _____
C. Individual shunt capacitor bank size (kVAR at rated voltage): _____
D. Planned dynamic reactive control devices (SVC, STATCOM): _____
E. Control range: _____ kVAR (lead) _____ kVAR (lag)
F. Control mode (e.g. voltage, power factor, reactive power): _____
G. Please provide the overall plant reactive power control strategy

11. Storage System Information:

Description of the intended use of the storage system (e.g., export to the grid, peak shaving, load shifting, etc.): _____

Provide the following information for each type of storage device:

A. Manufacturer and model: _____
B. Source Functions
   (1) Total storage capability: _____ MWh
   (2) Rated storage discharging power: _____ MW
   (3) Maximum storage discharging power: _____ MW
   If the maximum storage discharging power is less than the rated storage discharging power, specify the device(s) used to limit the discharge (e.g., inverters, storage control, etc.): _____
   (4) Discharge duration under rated power: ____ Hours
   (5) Discharge duration under maximum power: ____ Hours
C. Charging Functions
   (1) Rated storage charging power: _____ MW
   (2) Maximum storage charging power: _____ MW
   If the maximum storage charging power is less than the rated storage charging power, specify the device(s) used to limit the charging (e.g., inverters, storage control, etc.): _____
   (3) Charge duration under rated power: ____ Hours
   (4) Charge duration under maximum power: ____ Hours
   (5) Will the Distribution System be used to charge the storage device (Yes/No): _____
   If No, specify the device(s) used to prevent charging from the Distribution System (e.g., inverters, storage control, etc.): _____

D. Primary frequency response operating range for electric storage resources (xx % of the upper charging limit of each storage component)
   (1) Minimum State of Charge: _____
   (2) Maximum State of Charge: _____

12. Load Flow and Dynamic Models:

The WECC Data Preparation Manual for Power Flow Base Cases and Dynamic Stability Data has established power flow and dynamic modeling requirements for generation projects in WECC base cases. In general, if the aggregate sum of generation on a bus exceeds 10 MVA, it should not be netted. Furthermore, the total netted generation in an area should not exceed five percent of the area's total generation. Based on current WECC modeling requirements, the following information will be required for all generation projects whose net capacity is greater

than 10 MVA. The following information may also be required for generation projects less than 10 MVA on a case-by-case basis, based on the amount of generation in the area of the requested Point of Interconnection.

A. Provide load flow model for the generating plant and its interconnection facilities in GE PSLF *.epc format, including new buses, generators, transformers, interconnection facilities. An equivalent model is required for the plant with generation collector systems. This data should reflect the technical data provided in this Attachment A.

B. For each generator, governor, exciter, power system stabilizer, WTG, or inverter based generator, select the appropriate dynamic models from the General Electric PSLF Program Manual and provide the required input data. Include any user written *.p EPCL files to simulate inverter based plants' dynamic responses (typically needed for inverter based PV/wind plants). Provide a completed *.dyd file that contains the information specified in this section.

The GE PSLF manual is available upon request from GE. There are links within the GE PSLF User's Manual to detailed descriptions of specific models, a definition of each parameter, a list of the output channels, explanatory notes, and a control system block diagram. In addition, GE PSLF modeling information and various modeling guidelines documents have been prepared by the WECC Modeling and Validation Work Group. This information is available on the WECC website (www.wecc.biz).

If you require assistance in developing the models, we suggest you contact General Electric. Accurate models are important to obtain accurate study results. Costs associated with any changes in facility requirements that are due to differences between model data provided by the generation developer and the actual generator test data, may be the responsibility of the generation developer.

13. MODELS FOR NON-SYNCHRONOUS GENERATORS

For a non-synchronous Generating Facility, Interconnection Customer shall provide (1) a validated user-defined root mean squared (RMS) positive sequence dynamics model; (2) an appropriately parameterized generic library RMS positive sequence dynamics model, including model block diagram of the inverter control and plant control systems, as defined by the selection in Table 1 or a model otherwise approved by the Western Electricity Coordinating Council, that corresponds to Interconnection Customer's Generating Facility; and (3) if applicable, a validated electromagnetic transient model if Distribution Provider performs an electromagnetic transient study as part of the interconnection study process. A user-defined model is a set of programming code created by equipment manufacturers or developers that captures the latest features of controllers that are mainly software based and represents the entities' control strategies but does not necessarily correspond to any generic library model. Interconnection Customer 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 Generating

Facility; attestations from each equipment manufacturer that the user defined model accurately represents the component of the Generating Facility; or test data).

Table 1: Acceptable Generic Library RMS Positive Sequence Dynamics Models

GE PSLF	Description
pvd1	Distributed PV system model
der_a	Distributed energy resource model
regc_a	Generator/converter model
regc_b	Generator/converter model
wt1g	Wind turbine model for Type-1 wind turbines (conventional directly connected induction generator)
wt2g	Generator model for generic Type-2 wind turbines
wt2e	Rotor resistance control model for wound-rotor induction wind-turbine generator wt2g
reec_a	Renewable energy electrical control model
reec_c	Electrical control model for battery energy storage system
reec_d	Renewable energy electrical control model
wt1t	Wind turbine model for Type-1 wind turbines (conventional directly connected induction generator)
wt1p_b	Generic wind turbine pitch controller for WTGs of Types 1 and 2
wt2t	Wind turbine model for Type-2 wind turbines (directly connected induction generator wind turbines with an external rotor resistance)
wtgt_a	Wind turbine drive train model
wtga_a	Simple aerodynamic model
wtgp_a	Wind Turbine Generator Pitch controller
wtgq_a	Wind Turbine Generator Torque controller

GE PSLF	Description
wtgwgo_a	Supplementary control model for Weak Grids
wtgibffr_a	Inertial-base fast frequency response control
wtgp_b	Wind Turbine Generator Pitch controller
wtgt_b	Drive train model
repc_a	Power Plant Controller
repc_b	Power Plant Level Controller for controlling several plants/devices
repc_c	Power plant controller

TABLE 2

TRANSFORMER DATA
(Provide for each level of transformation)

UNIT*_____

NUMBER OF TRANSFORMERS_____ PHASE _____

RATING	H Winding	X Winding	Y Winding
Rated MVA	_____	_____	_____
Connection (Delta, Wye, Gnd.)	_____	_____	_____
Cooling Type (OA,OA/FA, etc) :	_____	_____	_____
Temperature Rise Rating	_____	_____	_____
Rated Voltage	_____	_____	_____
BIL	_____	_____	_____
Available Taps (% of rating)	_____	_____	_____
Load Tap Changer? (Y or N)	_____	_____	_____
Tap Settings	_____	_____	_____
IMPEDANCE	H-X	H-Y	X-Y
Percent	_____	_____	_____
MVA Base	_____	_____	_____
Tested Taps	_____	_____	_____
WINDING RESISTANCE	H	X	Y
Ohms	_____	_____	_____

CURRENT TRANSFORMER RATIOS

H_____ X_____ Y_____ N_____

PERCENT EXCITING CURRENT 100 % Voltage; _____ 110% Voltage_____

Supply copy of nameplate and manufacturer's test report when available.

* For Generating Facilities with multiple step-up transformers, identify the transformer datasheet unit number with that of the single line.