

APPENDIX 1
INTERCONNECTION REQUEST

The undersigned Interconnection Customer submits this request to interconnect its Large Generating Facility to the Administered Transmission System under Schedule 22 - Large Generator Interconnection Procedures (“LGIP”) of the ISO New England Inc. Open Access Transmission Tariff (the “Tariff”). Capitalized terms have the meanings specified in the Tariff.

PROJECT INFORMATION

Proposed Project Name: _____

1. This Interconnection Request is for (check one):

- _____ **A proposed new Large Generating Facility**
- _____ **An increase in the generating capacity or a modification that has the potential to be a Material Modification of an existing Generating Facility**
- _____ **Commencement of participation in the wholesale markets by an existing Generating Facility**
- _____ **A change from Network Resource Interconnection Service to Capacity Network Resource Interconnection Service**

2. The types of Interconnection Service requested:

- _____ **Network Resource Interconnection Service (energy capability only)**
- _____ **Capacity Network Resource Interconnection Service (energy capability and capacity capability)**

☐ **Interconnection Customer requests to be downgraded to Network Resource Interconnection**

Service where violations are identified in the thermal analysis associated with Capacity Network Resource Interconnection Service testing

3. Interconnection Customer shall provide the following information:

Address or Location of the Facility (including Town/City, County and State):

Requested Point of Interconnection:

Type of Generating Facility to be Constructed:_____

Will the Generating Facility include electric storage capacity? Yes___No___

Will the electric storage device charge from the Administered Transmission System? Yes___No___

If yes, describe the electric storage device and specifications to include aggregate charging capability measured at the POI and the associated aggregate reactive capability measured at the high side of the main transformer:

Primary frequency response operating range for electric storage resources:

Generating Facility Fuel Type:

Generating Facility Capacity (MW):

Temperatures¹	Maximum Gross MW Electrical Output²	Maximum Net MW Electrical Output³	Net MW Capability at the Point of Interconnection⁴
At or above 90 degrees F			
At or above 50 degrees F			
At or above 20 degrees F			
At or above 0 degrees F			

Requested Interconnection Service (in MW):

Service Level⁵			Requested Net MW Capability at the Point of Interconnection⁴
CNR Capability Summer			
NR Capability Summer			
CNR Capability Winter			
NR Capability Winter			

Notes:

¹ In each row, insert all values corresponding to the given temperature, or a temperature greater than the given temperature, at which aggregate maximum gross output of the Generating Facility would be the highest. For example, if the aggregate maximum gross Generating Facility output occurs at 12 degrees F, all values in the “At or above 0 degrees F” row shall correspond to the 12 degrees F operating condition.

² Measured at the terminal(s) or inverter/converter terminal(s), as applicable, for each generating unit comprising the Generating Facility.

³ Measured at the terminal(s) or inverter/converter terminal(s), as applicable, for each generating unit comprising the Generating Facility less any station service at each generating unit’s terminal(s) or inverter/converter terminal(s), as applicable.

⁴ Measured at Interconnection Customer’s proposed Point of Interconnection. The values correspond to the requested levels of Interconnection Service pursuant to Section 3.1 of the LGIP. The values account for any station service, losses incurred in Interconnection Facilities, station or generator step up transformers, and any other auxiliary systems. After the Interconnection Request is deemed valid, any increases to these values shall be subject to a new, separate Interconnection Request.

⁵ As described in Section II.48.1 for CNR Capability and II.48.2 for NR Capability.

General description of the equipment configuration, including any proposed control technologies to restrict the Large Generating Facility's output to the requested Interconnection Service levels, if applicable (# of units and GSUs):

Requested Commercial Operation Date:

Requested Initial Synchronization Date:

Requested In-Service Date:

Evidence of Site Control (check one):

_____ **For a request for CNR Interconnection Service: 100% exclusive Site Control in Interconnection Customer's name is provided herewith.**

_____ **For a request for NR Interconnection Service: 100% exclusive Site Control in Interconnection Customer's name is provided herewith; or in lieu of evidence of Site Control,**

_____ **a \$10,000/MW deposit subject to a minimum of \$500,000 and a maximum of \$2,000,000 is provided (refundable within the cure period as described in Section 3.4.3 of the LGIP), and.**

_____ **a signed affidavit from an officer of the company indicating that Site Control is unobtainable due to Regulatory Limitations, and**

_____ **documentation sufficiently describing and explaining the source and effects of such Regulatory Limitations**

_____ **Site Control is not provided because the proposed modification is to Interconnection Customer's existing Large Generating Facility and, by checking this option, Interconnection Customer certifies that it has Site Control and that the proposed modification does not require additional real property.**

The ISO will post the Project Information on the ISO web site under “Interconnection Service” and the Interconnection Request Tracking Tool or IRTT.

CUSTOMER INFORMATION

Company Name: _____

ISO Customer ID#: _____

(Interconnection Customer)

Company Address: PO Box No.:

Street Address: _____

City, State ZIP: _____

Company Representative: Name: _____

Title: _____

Company Representative's Company and Address (if different from above):

Company Name: _____

PO Box No.: _____

Street Address: _____

City, State ZIP: _____

Phone: _____ **FAX:** _____ **email:** _____

This Interconnection Request is submitted by:

Authorized Signature: _____

Name (type or print): _____

Title: _____

Date: _____

In order for an Interconnection Request to be considered a valid request, it must include:

- (a) Be accompanied by all required deposits provided electronically and may be refundable in accordance with Section 3.4.2 of the LGIP;*
- (b) Required Cluster Study Deposit that may be refundable in accordance with Section 3.4.2 of the LGIP that is provided electronically;*
- (c) Commercial Readiness Deposit and may be refundable in accordance with Section 3.4.2 of the LGIP;*
- (d) For CNR Interconnection Service, upload documentation demonstrating 100% Site Control in accordance with Section 3.4.2 (iv). If for NR Interconnection Service, upload documentation demonstrating 100% Site Control in accordance with Section 3.4.2 (iv) or (1) a signed affidavit from an officer of Interconnection Customer indicating that Site Control is unobtainable due to Regulatory Limitations as such term is defined by the System Operator; and (2) documentation sufficiently describing and explaining the source and effects of such Regulatory Limitations, including a description of any conditions that must be met to satisfy the Regulatory Limitations and the anticipated time by which Interconnection Customer expects to satisfy the regulatory requirements and (3) a cash deposit in lieu of Site Control of \$10,000 per MW, subject to a minimum of \$500,000 and a maximum of \$2,000,000. (An Interconnection Customer does not need to demonstrate Site Control for an Interconnection Request for a modification to its existing Large Generating Facility where Interconnection Customer has certified that it has Site Control and that the proposed modification does not require additional real property). Interconnection Requests from multiple Interconnection Customers for multiple Generating Facilities that share a site must include a contract or other agreement that allows for shared land use;*
- (e) Include a detailed map, such as a map of the quality produced by the U.S. Geological Survey, which clearly indicates the site of the new facility and pertinent surrounding structures; and*

(f) Include all information required on the Interconnection Request form and attachments thereto.

The Interconnection Request and attachments thereto must be submitted to the System Operator via the Interconnection Request Tracking Tool or IRTT, a web-based application for submitting, tracking and viewing Interconnection Requests available on the ISO New England website.

The technical data required below must be inputted directly into IRTT and submitted with the Interconnection Request pursuant to Section 3.4.2 of the LGIP.

LARGE GENERATING FACILITY DATA

UNIT RATINGS

Kva	°F	Voltage
Power Factor		
Speed (RPM)		Connection (e.g. Wye)
Short Circuit Ratio		Frequency, Hertz
Stator Amperes at Rated Kva		Field Volts
Max Turbine MW	°F	

Primary frequency response operating range for electric storage resources:

Minimum State of Charge:

Maximum State of Charge:

GREATEST UNIT RATING AT AMBIENT TEMPERATURE OF 90 ° OR ABOVE

Gross Unit Rating (MW)	Gross Lagging (MVAR)
Net Unit Rating (MW)	Gross Leading (MVAR)
Station Service (MW)	Station Service (MVAR)
Temperature (°F)	

GREATEST UNIT RATING AT AMBIENT TEMPERATURE OF 50° OR ABOVE

Gross Unit Rating (MW)	Gross Lagging (MVAR)
Net Unit Rating (MW)	Gross Leading (MVAR)
Station Service (MW)	Station Service (MVAR)
Temperature (°F)	

GREATEST UNIT RATING AT AMBIENT TEMPERATURE OF 20° OR ABOVE

Gross Unit Rating (MW)	Gross Lagging (MVAR)
Net Unit Rating (MW)	Gross Leading (MVAR)
Station Service (MW)	Station Service (MVAR)
Temperature (° F)	

GREATEST UNIT RATING AT AMBIENT TEMPERATURE OF 0° OR ABOVE

Gross Unit Rating (MW)	Gross Lagging (MVAR)
Net Unit Rating (MW)	Gross Leading (MVAR)
Station Service (MW)	Station Service (MVAR)
Temperature (°F)	

COMBINED TURBINE-GENERATOR-EXCITER INERTIA DATA

Inertia Constant, H	=	kW sec/kVA
Moment-of-Inertia, WR ²	=	lb. ft. ²

REACTANCE DATA (PER UNIT-RATED KVA)

	DIRECT AXIS	QUADRATURE AXIS
Synchronous – saturated	X _{dv}	X _{qv}
Synchronous – unsaturated	X _{di}	X _{qi}
Transient – saturated	X' _{dv}	X' _{qv}
Transient – unsaturated	X' _{di}	X' _{qi}
Subtransient – saturated	X'' _{dv}	X'' _{qv}
Subtransient – unsaturated	X'' _{di}	X'' _{qi}
Negative Sequence – saturated	X _{2v}	
Negative Sequence – unsaturated	X _{2i}	

FIELD TIME CONSTANT DATA (SEC)

Zero Sequence – saturated	X _{0v}	
Zero Sequence – unsaturated	X _{0i}	
Leakage Reactance	X _{lm}	
Open Circuit	T' _{qo}	T' _{do}
Three-Phase Short Circuit Transient	T' _{d3}	T' _q
Line to Line Short Circuit Transient	T' _{d2}	
Line to Neutral Short Circuit Transient	T' _{d1}	
Short Circuit Subtransient	T'' _d	T'' _q
Open Circuit Subtransient	T'' _{do}	T'' _{qo}

ARMATURE TIME CONSTANT DATA (SEC)

Three Phase Short Circuit	T _{a3}
Line to Line Short Circuit	T _{a2}
Line to Neutral Short Circuit	T _{a1}

NOTE: If requested information is not applicable, indicate by marking “N/A.”

MW CAPABILITY AND PLANT CONFIGURATION
LARGE GENERATING FACILITY DATA
ARMATURE WINDING RESISTANCE DATA (PER UNIT)

Positive	R1	
Negative	R2	
Zero	R0	
Rotor Short Time Thermal Capacity I^2t	=	
Field Current at Rated kVA, Armature Voltage and PF	=	amps
Field Current at Rated kVA and Armature Voltage, 0 PF	=	amps
Three Phase Armature Winding Capacitance	=	microfarad
Field Winding Resistance	=	ohms °C
Armature Winding Resistance (Per Phase)	=	ohms °C

CURVES

As applicable, provide Saturation, Vee, Capacity Temperature Correction curves. A Reactive Capability is required for all Large Generating Facilities. As applicable, designate normal and emergency Hydrogen Pressure operating range for multiple curves.

MODELS FOR NON-SYNCHRONOUS GENERATORS

Models that meet the requirements of ISO New England Planning Procedures:

1. an appropriately parameterized 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, a model otherwise approved by the Western Electricity Coordinating Council, or a model as otherwise reviewed and deemed acceptable by System Operator that corresponds to Interconnection Customer's Large Generating Facility, and,
2. a validated user-defined model where one exists for the equipment (i.e. where the manufacturer attests that a library model may fully capture the behavior of the equipment). The user model will only be used for the fuller understanding of equipment behavior and will not be used to finalize the upgrade requirements in the Cluster Study and will not be added to base cases going forward.
3. A validated electromagnetic transient 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 Large Generating Facility; attestations from each equipment manufacturer that the user defined model accurately represents the component of the Large Generating Facility; or test data).

Table 1: Acceptable Generic Library RMS Positive Sequence Dynamics Models

GE PSLF	Siemens PSS/E*	PowerWorld Simulator	Description
pvd1		PVD1	Distributed PV system model
der_a	DERAU1	DER_A	Distributed energy resource model
regc_a	REGCAU1, REGCA1	REGC_A	Generator/converter model
regc_b	REGCBU1	REGC_B	Generator/converter model
wt1g	WT1G1	WT1G and WT1G1	Wind turbine model for Type-1 wind turbines (conventional directly connected induction generator)
wt2g	WT2G1	WT2G and WT2G1	Generator model for generic Type-2 wind turbines
wt2e	WT2E1	WT2E and WT2E1	Rotor resistance control model for wound-rotor induction wind-turbine generator wt2g
reec_a	REECAU1, REECA1	REEC_A	Renewable energy electrical control model
reec_c	REECCU1	REEC_C	Electrical control model for battery energy storage system
reec_d	REECDU1	REEC_D	Renewable energy electrical control model
wt1t	WT12T1	WT1T and WT12T1	Wind turbine model for Type-1 wind turbines (conventional directly connected induction generator)
wt1p_b	wt1p_b	WT12A1U_B	Generic wind turbine pitch controller for WTGs of Types 1 and 2
wt2t	WT12T1	WT2T	Wind turbine model for Type-2 wind turbines (directly connected induction generator wind turbines with an external rotor resistance)

GE PSLF	Siemens PSS/E*	PowerWorld Simulator	Description
wtgt_a	WTDTAU1, WTDTA1	WTGT_A	Wind turbine drive train model
wtga_a	WTARAU1, WTARA1	WTGA_A	Simple aerodynamic model
wtgp_a	WTPTAU1, WTPTA1	WTGPT_A	Wind Turbine Generator Pitch controller
wtgq_a	WTTQAU1, WTTQA1	WTGTRQ_A	Wind Turbine Generator Torque controller
wtgwo_a	WTGWGOAU	WTGWGO_A	Supplementary control model for Weak Grids
wtgibffr_a	WTGIBFFRA	WTGIBFFR_A	Inertial-base fast frequency response control
wtgp_b	WTPTBU1	WTGPT_B	Wind Turbine Generator Pitch controller
wtgt_b	WTDTBU1	WTGT_B	Drive train model
repc_a	Type 4: REPCAU1 (v33), REPCA1 (v34) Type 3: REPCTAU1 (v33), REPCTA1 (v34)	REPC_A	Power Plant Controller

GE PSLF	Siemens PSS/E*	PowerWorld Simulator	Description
repc_b	PLNTBU1	REPC_B	Power Plant Level Controller for controlling several plants/devices In regard to Siemens PSS/E*: Names of other models for interface with other devices: REA3XBU1, REAX4BU1- for interface with Type 3 and 4 renewable machines SWSAXBU1- for interface with SVC (modeled as switched shunt in powerflow) SYNAXBU1- for interface with synchronous condenser FCTAXBU1- for interface with FACTS device
repc_c	REPCCU	REPC_C	Power plant controller

GENERATOR STEP-UP TRANSFORMER DATA RATINGS

Capacity	Self-cooled/Maximum Nameplate / Kva
Voltage Ratio	Generator side/System side/Tertiary / kV
Winding Connections	Generator side/System Side/Tertiary (Delta or Wye) /
Fixed Taps Available	
Present Tap Setting	

IMPEDANCE

Positive	Z1 (on self-cooled kVA rating)	%	X/R
Zero	Z0 (on self-cooled kVA rating)	%	X/R

EXCITATION SYSTEM DATA

Identify appropriate IEEE model block diagram of excitation system and power system stabilizer (“PSS”) for computer representation in power system stability simulations and the corresponding excitation system and PSS constants for use in the model.

GOVERNOR SYSTEM DATA

Identify appropriate IEEE model block diagram of governor system for computer representation in power system stability simulations and the corresponding governor system constants for use in the model.

WIND AND INVERTER-BASED GENERATORS

A completed Attachment A-1 Supplementary Wind and Inverter-Based Generating Facility Form to this Attachment A, must be supplied for all Interconnection Requests for wind and inverter-based Generating Facilities.

MODEL REQUIREMENTS

For all Generating Facility types: A completed, fully functioning, public (*i.e.*, non-proprietary, non-confidential) Siemens PTI's ("PSSE") power flow model or other compatible formats, such as IEEE and General Electric Company Power Systems Load Flow ("PSLF") data sheet, must be supplied with this Attachment A. If additional public data sheets are more appropriate to the proposed device then they shall be provided and discussed at the Scoping Meeting. For all Interconnection Studies commencing after January 1, 2017, all power flow models must be standard library models in PSS/E or applicable applications. After January 1, 2017, user-models will not be accepted.

A PSCAD model for all wind and inverter-based Generating Facilities and any Interconnection Facilities such as HVDC or auxiliary dynamic reactive devices must be supplied with this Attachment A. If a PSCAD model is deemed required for other Generating Facility types, such PSCAD model must be provided to the System Operator with this Appendix 1 Attachment A and A-1. A benchmarking analysis, consistent with the requirements in the ISO New England Planning Procedures and shall be provided with this Attachment A and A-1.

INDUCTION GENERATORS:

- (*) Field Volts:
- (*) Field Amperes:
- (*) Motoring Power (kW):
- (*) Neutral Grounding Resistor (If Applicable):
- (*) I_2^2t or K (Heating Time Constant):
- (*) Rotor Resistance:
- (*) Stator Resistance:
- (*) Stator Reactance:
- (*) Rotor Reactance:
- (*) Magnetizing Reactance:
- (*) Short Circuit Reactance:
- (*) Exciting Current:
- (*) Temperature Rise:

(*) Frame Size:

(*) Design Letter:

(*) Reactive Power Required In Vars (No Load):

(*) Reactive Power Required In Vars (Full Load):

(*) Total Rotating Inertia, H: Per Unit on KVA Base

Note: Please consult System Operator prior to submitting the Interconnection Request to determine if the information designated by (*) is required.

Applicant Signature

I hereby certify that, to the best of my knowledge, all the information provided in this Attachment A to the Interconnection Request is true and accurate.

For Interconnection Customer: _____ Date: _____

**SUPPLEMENTARY WIND AND INVERTER-BASED GENERATING FACILITY AND
INTERCONNECTION FACILITIES DATA FORM**

- a) Attach a Geographic Map Demonstrating the Project Layout and its Interconnection to the Power Grid. (Specify the name of the attachment here)
- b) Attach a Bus-Breaker Based One-line Diagram (The diagram should include each of the individual unit generators, generator number, HVDC rating and terminal voltage.) (Specify the name of the attachment here)
- i. Collection system detail impedance sheet

If a collector system is used, attach a collector system data sheet in accordance with the one-line diagram attached above. The data sheet should include: the type, length Z_0 , Z_1 and X_c/B of each circuit (feeder and collector string).

Specify the name of the attachment here: _____

- ii. Collection system aggregate (equivalent) model data sheet

Attach an aggregate (equivalent) collection system data sheet. The data table should include: the type, length, Z_0 , Z_1 and X_c/B of the equivalent circuits (feeders and collector strings).

Specify the name of the attachment here: _____

- c) Summary of the Unit Models in the wind or inverter-based Generating Facility (*List all different unit models in the facility*)

Manufacturer Model	Type of this WTG* (if applicable)	Generator Unit Numbers in the field	Number(s) of these Units	Maximum Output of this Unit (MW)	Total MW

* Type 1 – Cage rotor induction generators

Type 2 – Induction generators with variable rotor resistance

Type 3 – Doubly-fed asynchronous generators with rotor-side converter

Type 4 – Full-power converter interface

Repeat the following sections from 4 to 12 for each different unit model.

d) Unit Detail Information

Unit Manufacturer Model	
Terminal Voltage	
Rating of Each Unit (MVA)	
Maximum Gross Electrical Output (MW)	
Minimum Gross Electrical Output (MW)	
Lagging Reactive Power Limit at Rated Real Power Output (MVAR)	
Leading Reactive Power Limit at Rated Real Power Output (MVAR)	
Lagging Reactive Power Limit at Zero Real Power Output (MVAR)	
Leading Reactive Power Limit at Zero Real Power Output (MVAR)	
Station Service Load (MW, MVAR)	
Minimum short circuit ratio (SCR) requirement by manufacturer	
On which bus the minimum SCR is required by manufacturer	
What voltage level the minimum SCR is required by manufacturer	
Positive sequence X _{source}	
Zero sequence X _{source}	

e) Unit GSU – _____

Nameplate rating (MVA)	
Total number of the GSUs	
Voltages, generator side/system side	
Winding connections, low voltage/high voltage	
Available tap positions on high voltage side	
Available tap positions on low voltage side	
Will the GSU operate as an LTC?	
Desired voltage control range if LTC	
Tap adjustment time (Tap switching delay + switching time) if LTC	
Desired tap position if applicable	
Impedance, Z1, X/R ratio	
Impedance, Z0, X/R ratio	

f) Low Voltage Ride Through (LVRT) – _____ (*Specify the Manufacturer Model of this Unit*)

Does each Unit have LVRT capability?

Yes___ No___

If yes, please provide:

i. Unit LVRT mode activation and release condition:

When operating at maximum real power, what is the Unit terminal voltage for LVRT mode activation? _____

When operating at maximum real power, what is the Unit terminal voltage for releasing LVRT mode after it is activated? _____

If there is different LVRT activation and release logic, please state here _____

- ii. A wind or other inverter-based generating facility technical manual from the manufacturer including description of LVRT functionality:

Attach the file and specify the name of the attachment here:

- iii. Does the wind or other inverter-based generating facility technical manual attached above include a reactive power capability curve?

Yes__ No__

If no, attach the file and specify the name of the attachment here:

- g) Low Voltage Protection (considering LVRT functionality)

(Specify the Manufacturer Model of this Unit)

Low Voltage Setting (pu)	Relay Pickup Time (Seconds)

*Add more rows in the table as needed

- h) High Voltage Protection - _____(Specify the Manufacturer Model of this Unit)

High Voltage Setting (pu)	Relay Pickup Time (Seconds)

*Add more rows in the table as needed

- i) Low Frequency Protection - _____(Specify the Manufacturer Model of this Unit)

Low Frequency Setting (Hz)	Relay Pickup Time (Seconds)

*Add more rows in the table as needed

j) High Frequency Protection - _____ (Specify the Manufacturer Model of this Unit)

High Frequency Setting (Hz)	Relay Pickup Time (Seconds)

*Add more rows in the table as needed

Please make sure the settings in sections 7 through 10 comply with Applicable Reliability Standards for generator protection relays.

k) Unit Reactive Power Control - _____ (Specify the Manufacturer Model of this Unit)

i. What are the options for the Unit reactive power control (check all available)?

- ____ Control the voltage at the Unit terminal
- ____ Control constant power factor at the Unit terminal
- ____ Control constant power factor at the low side of the station main transformer
- ____ Control constant power factor at the high side of the station main transformer
- ____ Control voltage at the low side of the station main transformer
- ____ Control voltage at the high side of the station main transformer
- ____ Other options. Please describe if select others _____

ii. In all the control options selected above, please list the options in which the Unit is able to control its terminal voltage to prevent low/high voltage tripping.

iii. What is the desired control mode from the selected options above? Specify the control plan in this mode. For example: control voltage at which bus to what schedule.

**WIND OR INVERTER-BASED GENERATING FACILITY AND INTERCONNECTION
FACILITIES MODELS**

(All model files provided under this section should be compatible with Siemens PTI's PSS/E version currently in use at ISO New England and must be a standard library model in PSS/E)

A. Power flow model

- i. A *.RAW file including **aggregated/equivalent** wind or inverter-based generating facility and HVDC, if applicable, power flow model with appropriate parameters and settings.

*Attach the *.RAW file and specify the name of the attachment(s) here:*

- ii. A *.RAW file including **detailed** wind or inverter-based Generating Facility and Interconnection Facilities, if applicable, power flow model with appropriate parameters and settings.

*Attach the *.RAW file and specify the name of the attachment(s) here:*

B. Dynamic simulation model(s)

(Please note that the dynamic model(s) must match the aggregated/equivalent power flow model(s) provided above. Attach the following information for each of the models.)

- i. Wind or inverter-based Generating Facility and Interconnection Facilities, if applicable,
Model(s) _____ (Please Specify the Manufacturer Model(s))

- ii) A compiled PSS/E dynamic model for the Generating Facility and Interconnection Facilities, if necessary (a *.LIB or *.OBJ file)

*Attach the *.LIB or *.OBJ file(s) and specify the name(s) of the attachment(s) here:*

- iii) A dynamic data file with appropriate parameters and settings for the Generating Facility and Interconnection Facilities, if applicable, (typically a *.DYR file)

Attach the *.DYS file(s) and specify the name(s) of the attachment(s) here:

- iv) PSS/E wind or inverter-based Generating Facility model user manual for the Generating Facility and Interconnection Facilities

Attach and specify the name of the attachment here:

Repeat the above sections for each different wind or inverter-based generating facility model.

C. Power Plant Controller

For wind or inverter-based Generating Facility, will PPC have the ability to centrally control the output of the units? Yes__ No__

- i) Manufacturer model of the power plant controller

- ii) What are the reactive power control strategy options of the power plant controller?

- iii) Which of the control options stated above is being used in current operation?

- iv) Is the power plant controller able to control the unit terminal voltages to prevent low/high voltage tripping?

Yes__ No__

Please provide the park controller technical manual from the manufacturer

Attach the file and specify the name of the attachment here:

D. Station Transformer

Transformer Name		
Nameplate ratings (MVA)		
Total number of the main transformer(s)		
Voltage, High/Low/Tertiary (kV)		
Winding connections, High/Low Tertiary		
Available tap positions on high voltage side		
Available tap positions on low voltage side		
Will the transformer operate as a LTC?		
Desired voltage control range if LTC		
Tap adjustment time (Tap switching delay + switching time) if LTC		
Desired tap position if applicable		
Tap adjustment time (Tap switching delay + switching time)		
Impedance Z_1 , X/R ratio	Z_{1H-L}	X/R
	Z_{1H-T}	X/R
	Z_{1T-L}	X/R
Impedance Z_0 , X/R ratio	Z_{0H-L}	X/R
	Z_{0H-T}	X/R
	Z_{0T-L}	X/R

E. Dynamic Simulation Model for the Power Plant Controller(s)

(All model files provided under this section should be compatible with Siemens PTI's PSS/E version currently in use at ISO New England and must be a standard library model in PSS/E)

- i) A compiled PSS/E dynamic model for the power plant controller(s) (a *.LIB or *.OBJ file)

Attach the *.LIB or *.OBJ file and specify the name of the attachment here:

- ii) A dynamic data file with appropriate parameters and settings for the power plant controller(s) (typically a *.DYR file).

Attach the *.DYZ file and specify the name of the attachment here:

- iii) PSS/E model user manual for the power plant controller(s)

Attach the manual and specify the name of the attachment or specify the name of the attachment here:_____

F. Capacitors and Reactors

Please provide necessary modeling data for all the capacitors and reactors that are part of the Interconnection Facilities, including: size, basic electrical parameters, connecting bus, switched or fixed, etc.

G. Dynamic Device(s)

(All model files provided under this section 17 should be compatible with Siemens PTI's PSS/E version currently in use at ISO New England standard library models in PSS/E or applicable applications.)

- i) Provide necessary modeling data file for all the dynamic devices belong to the facility.

Attach the *.LIB or *.OBJ file and specify the name of the attachment here:

- ii) A dynamic data file containing the parameters for the units (typically a *.DYZ file).

Set the parameters in accordance with the desired control mode.

Attach the *.DYZ file and specify the name of the attachment here:

H. Collection System/Transformer Tap-Setting Design

Attach a collection system/transformer tap-setting design calculations, consistent with the requirements in the ISO New England Planning Procedures, that identify the calculations to support the proposed tap settings for the unit step-up transformers and the station step-up transformers.

Attached the design document and specify the name of the attachment here:

- I. Provide PSCAD Model and documentation for the wind or inverter-based Generating Facility, the Power Plant Controller(s) and Other Dynamic Devices or HVDC

CLUSTER SYSTEM IMPACT STUDY APPLICATION FORM

The undersigned Interconnection Customer submits this form to request the inclusion of the Interconnection Request for its Large Generating Facility in a Cluster Interconnection System Impact Study pursuant to Section 4.2.3 of this LGIP.

To be included in a Cluster Interconnection System Impact Study, the following must be submitted together with this form to the System Operator by the Cluster Entry Deadline:

1. Project Information:

- a. Project Name: _____
- (a) Queue Position: _____
- (b) Is the Interconnection Request contractually associated with an Interconnection Request for an Elective Transmission Upgrade? Yes ____ No ____
If yes, identify Queue Position of the associated Interconnection Request and provide evidence of the contractual commitment. Queue Position No.: _____

2. Initial CETU Participation Deposit as specified in Section 4.2.3

Applicant Signature

I hereby certify that, to the best of my knowledge, all the information provided in this form is true and accurate.

Customer: _____ Date: _____ For Interconnection

SURPLUS INTERCONNECTION SERVICE REQUEST APPLICATION

The Surplus Interconnection Customer submits this application to request Surplus Interconnection Service pursuant to Section 3.3 of this LGIP.

SURPLUS INTERCONNECTION CUSTOMER AND ORIGINAL INTERCONNECTION
CUSTOMER INFORMATION

Surplus Interconnection Customer Company Name: _____

ISO Customer ID# (If available): _____

Company Address:

PO Box No.: _____

Street Address: _____

City, State ZIP: _____

Company Representative: Name: _____

Title: _____

Company Representative's Company and Address (if different from above):

Company Name: _____

PO Box No.: _____

Attachment C (page 2)
To Appendix 1
Surplus Interconnection Service
Request Application

Street Address: _____

City, State ZIP: _____

Phone: _____ FAX: _____ E-mail: _____

Original Interconnection Customer Company Name: _____

ISO Customer ID# (If available): _____

Company Address:

PO Box No.: _____

Street Address: _____

City, State ZIP: _____

Company Representative: Name: _____

Title: _____

Company Representative's Company and Address (if different from above):

Company Name: _____

PO Box No.: _____

Street Address: _____

City, State ZIP: _____

Phone: _____ FAX: _____ email: _____

PROJECT INFORMATION

Description of the Original Interconnection Customer's Large Generating Facility:

Description of the Surplus Interconnection Customer's Generating Facility:

Select Type of Interconnection Service for the Surplus Interconnection Customer's Generating Facility:

☐ CNR Interconnection Service

☐ NR Interconnection Service

Specify the amount of Unused Capability at the corresponding CNR Interconnection Service or NR Interconnection Service available for the Surplus Interconnection Customer's Generating Facility:

Requested Commercial Operations Date for the Surplus Interconnection Customer's Generating Facility:

Requested Initial Synchronization Date for the Surplus Interconnection Customer's Generating Facility:

Requested In-Service Date for the Surplus Interconnection Customer's Generating Facility:

To request Surplus Interconnection Service, the Surplus Interconnection Customer shall provide the following, together with this Surplus Interconnection Service Request Application:

- 11 The Original Interconnection Customer's written consent for the Surplus Interconnection Customer's Generating Facility to use Unused Capability associated with Interconnection Service established under the Interconnection Agreement for the Original Interconnection Customer's Generating Facility, together with a copy of that Interconnection Agreement;
- 12 A detailed description of the Original Interconnection Customer's Generating Facility and the Surplus Interconnection Customer's Generating Facility and their respective Interconnection Facilities and existing Point of Interconnection and Point of Change of Ownership, together with a completed Attachment A and Attachment A-1, as applicable, to Appendix 1 of this LGIP, including a site electrical one-line diagram reflecting both the Original Interconnection Customer's Generating Facility and the proposed Surplus Interconnection Customer's Generating Facility and a plot plan; and
- 13 Site Control for the Surplus Interconnection Customer's Generating Facility.

System Operator and Interconnecting Transmission Owner reserve the right to request additional technical and non-technical information necessary from the Original Interconnection Customer or the Surplus Interconnection Customer as may reasonably become necessary to facilitate their review of the Surplus Interconnection Service request.

Applicant Signature

I hereby certify that, to the best of my knowledge, all the information provided in this form is true and accurate.

Authorized Signature: _____

Name (type or print): _____

Title: _____

Date: _____