



**Hawaiian  
Electric**

*Draft Project Specific Addendum*

*For*

*Renewable Dispatchable Generation*

*Projects Located on Maui or Hawai‘i Island*

*Project Type (Check One): PV + BESS  Wind + BESS*

*Contract Capacity: \_\_\_\_\_MW of Generation*

*BESS Contract Capacity: \_\_\_\_\_ / \_\_\_\_\_MW/MWh of Storage*

*Are the PV System and the BESS DC-Coupled?*

*No  Yes  There Is No PV System*

*If “Yes,” attach Attachment DCC*

*Facility Location: \_\_\_\_\_*

*Is the Facility Location Owned by Maui Electric or Hawaii*

*Electric Light? No  Yes*

*If “Yes,” attach Attachment COS*

*Execution Date: \_\_\_\_\_*

May 2, 2022 Version

## PROJECT SPECIFIC ADDENDUM

This **PROJECT SPECIFIC ADDENDUM** is incorporated by reference into the **POWER PURCHASE AGREEMENT FOR RENEWABLE DISPATCHABLE GENERATION** for the Facility identified on the coversheet of this Project Specific Addendum and is entered into coterminous with such Power Purchase Agreement as of \_\_\_\_\_, 20\_\_ (the "Execution Date"), by [Maui Electric Company, Ltd., Hawai'i Electric Light Company, Inc.], a Hawai'i corporation ("Company"), and \_\_\_\_\_, [**insert type of entity and jurisdiction of organization**] ("Seller"). Together, the Company and Seller are the "Parties" and may singularly each be referred to as a "Party".

**WHEREAS**, the Company has certain technical and contractual requirements that are specific to the individual islands;

**WHEREAS**, certain metrics are specific to this Facility;

**WHEREAS**, this Project Specific Addendum contains all of the island specific provisions and certain of the metrics that apply to this Facility;

**WHEREAS**, the Parties agree to abide by the provisions of this Project Specific Addendum, as hereinafter set-forth.

### **NOW, THEREFORE THE PARTIES AGREE AS FOLLOWS:**

1. The text of Section 29.24 (Hawai'i General Excise Tax) of the Power Purchase Agreement for this Facility shall read as follows:

Hawai'i General Excise Tax. Seller shall, when making payments to Company under this Contract, pay such additional amount as may be necessary to reimburse Company for the Hawai'i general excise tax on gross income and all other similar taxes imposed on Company by any Governmental Authority with respect to payments in the nature of gross receipts tax, sales tax, privilege tax or the like, but excluding federal or state net income taxes. By way of example and not limitation, as of the Execution Date, all payments subject to the Hawai'i general excise tax, (i) on the islands of on Maui, Moloka'i and Lāna'i (totaling 4.0% as of the Execution Date) would include an additional 4.166% so that the underlying payment will be net of such tax liability; and (ii) all payments subject to general excise tax plus surcharge on Hawai'i island (totaling 4.5% as of the Execution Date) would include an additional 4.712% so the underlying payment will be net of such tax liability.

2. The following specifics apply to this Facility:

- (a) The "Contract Capacity" is [REDACTED] kW, which represents the anticipated maximum net instantaneous active power for export at the Point of Interconnection of the Facility upon Commercial Operations as proposed by Seller in its RFP Proposal.
- (b) The "BESS Contract Capacity" is [REDACTED]/\_\_\_ MW/MWh, which represents the anticipated maximum net instantaneous active power and maximum energy storage capability (MWh stored that represents a 100% State of Charge) for export to the Point of Interconnection upon Commercial Operations as proposed by Seller in its RFP Proposal.
- (c) Under Section 5.4 (Seller's Annual Maintenance Schedule) of the Power Purchase Agreement for this Facility, the threshold for the maintenance outages that Seller is required to include in its written schedule of maintenance outages is any maintenance

outage that will reduce the capacity of the Facility by an amount equal to or greater than 5 MW or 25% of the Net Nameplate Capacity.

- (d) The “RTE Performance Metric” is [REDACTED]%, which represents the lowest acceptable efficiency of the BESS for a full charge and discharge cycle as more fully set forth in Attachment W (BESS Tests) to the Power Purchase Agreement for this Facility. **[DRAFTING NOTE: RTE PERFORMANCE METRIC TO BE TAKEN FROM RESPONSE TO RFP.]**
- (e) The “NEP RFP Projection” for the Facility as specified in Seller's RFP Proposal is: [REDACTED] MWh, which represents the Net Energy Potential of the Facility to which Seller assigned a P-Value of 95 for a ten-year period as more fully set forth in Attachment U (Calculation and Adjustment of Net Energy Potential) to the Power Purchase Agreement for this Facility.
- (f) The “Unit Price” is \$ [REDACTED]/MWh of Net Energy Potential. **[TO BE CALCULATED FROM RESPONSE TO RFP.]**
- (g) The amount Company shall pay for electric energy produced by the Facility and delivered to the Point of Interconnection in response to Company Dispatch in accordance with the Agreement shall be calculated at the rate of \$ 0.00/MWh.
- (h) The “Guaranteed Commercial Operation Date” is [REDACTED].
- (i) Under Section 13.3(a) of the Power Purchase Agreement for the Facility, the Guaranteed Commercial Operations Date may not be extended beyond [REDACTED]. **[DRAFTING NOTE: OUTSIDE DATE TO BE INSERTED BASED ON TYPE OF PROPOSAL.]**
- (j) The amount of “Daily Delay Damages” is \$ [REDACTED] per Day. **[DRAFTING NOTE: Calculate as follows: (Contract Capacity X \$50/kW) ÷ 180 Days = Daily Delay Damages.]**
- (k) As of the Execution Date, Seller is a subsidiary of [REDACTED], a [state type of entity and jurisdiction of organization], (the “Parent Entity”).
- (l) The “RFP” to which Seller responded in proposing this project is Company’s Request for Proposals for [REDACTED], Island of [REDACTED], issued on [REDACTED], 202[REDACTED].
- (m) Under Section 29.21(e) of the Power Purchase Agreement for the Facility, as of the Execution Date, the name and email address for Seller’s Community Representative is :  
Name: [REDACTED]  
Email Address: [REDACTED]  
Phone Number: [REDACTED]
- (n) Under Section 5(d) of Attachment J (Company Payments for Energy, Dispatchability and Availability of BESS), \$ [REDACTED] is the amount of the liquidated damages to which Company shall be entitled if Seller fails to apply for and to use commercially reasonable efforts to obtain the Hawai’i Renewable Energy Tax Credit as described in Section 5 (Tax Credit Pass Through) of said Attachment J.
- (o) The following engineering firms are, as of the Execution Date, mutually acceptable to the Parties under Section 4(j) (Acceptable Persons and Entities) of Attachment U (Calculation and Adjustment of Net Energy Potential) to the Power Purchase Agreement for this Facility:

DNV GL  
UL  
Black & Veatch  
Leidos Engineering

- (p) The addresses and email addresses for Company and Seller under the “Notices” provisions of Section 29.3(a) of the Power Purchase Agreement for the Facility are as follows:

**[Maui Electric Company, Ltd.] [Hawaii Electric Light Company, Inc.]:**

By Mail:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Delivered By Hand or Overnight Delivery:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

By E-mail:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

With a copy to:

By Mail:

Hawaiian Electric Company, Inc.  
Legal Division  
P.O. Box 2750  
Honolulu, Hawai'i 96840

By E-mail:

Hawaiian Electric Company, Inc.  
Legal Division  
Email: legalnotices@hawaiianelectric.com

**Seller:** The contact information listed in Attachment A (Description of Generation, Conversion and Storage Facility) hereto.

3. The definition of "Seller-Attributable Non-Generation" reads as follows:

Model PSA (PV+BESS or Wind+BESS)  
Maui Electric Company, Limited  
Hawai'i Electric Light Company, Inc.

"Seller-Attributable Non-Generation": Time periods during which the inverter in question (or the Facility as a whole) is not dispatched or is derated or shutdown (or the Facility is disconnected) because of any of the following:

- (i) The Facility's failure to comply with any of the Performance Standards, Good Engineering and Operating Practices, Governmental Approvals, applicable Laws or Seller's other obligations under this Agreement;
- (ii) Seller-Attributable System Conditions;
- (iii) Conditions at or on either side of the Point of Interconnection arising from the acts or omissions of Seller or any of its affiliates, employees, agents, contractors, vendors, materialmen, independent contractors or suppliers of Seller, acting in such capacity for the benefit of Seller ("Seller Representatives"), unless such acts or omissions are themselves excused by reasons of Force Majeure pursuant to Article 21 (Force Majeure) of this Agreement;
- (iv) A disconnection initiated by the Company pursuant to Article 9 (Personnel and System Safety) of this Agreement) that is caused by Seller or any Seller Representatives;
- (v) The Company has reasonably decided that it is inadvisable for such inverter (or the Facility as a whole) to continue normal operations without a further Control System Acceptance Test as provided in Section 7(a) (Testing Requirements) of Attachment B (Facility Owned by Seller);
- (vi) The Facility is deemed to be in Seller-Attributable Non-Generation status under any of the following Sections of Attachment B (Facility Owned by Seller): Section 1(g)(vi), Section 1(j) (Demonstration of Facility) or Section 4(e);
- (vii) The Facility is shutdown at the direction of Company as provided in Section 6.4 (Shutdown For Lack of Reliable Real Time Data), and such shutdown is caused by Seller or any Seller Representatives; and
- (viii) The Facility fails to comply with Company Dispatch or other outage or deration as provided in Section 8.3 (Company Rights of Dispatch)

Each time period of Seller-Attributable Non-Generation shall constitute an Outage or Deration, as applicable.

4. The following project specific provisions are attached to this Project Specific Addendum and constitute part the Agreement:

Attachment A (Description of Generation, Conversion and Storage Facility)

Exhibit A-1 (Good Standing Certificates)

Exhibit A-2 (Ownership Structure)

Attachment B (Facility Owned by Seller)

Exhibit B-1 (Modeling Requirements)

Exhibit B-2 (Generator and Energy Storage Capability Curve(s))

Attachment D (Consultants List)  
Attachment E (Single-Line Drawing and Interface Block Diagram)  
Attachment F (Relay List and Trip Scheme)  
Attachment G (Company-Owned Interconnection Facilities)  
Attachment K (Guaranteed Project Milestones)  
Attachment K-1 (Seller's Conditions Precedent and Company Milestones)  
Attachment L (Reporting Milestones)  
Attachment N (Acceptance Test General Criteria)  
Attachment O (Control System Acceptance Test Criteria)

5. In addition to the foregoing Attachments:
- (a) If the coversheet of this Project Specific Addendum identifies the Facility as having a PV System and BESS that are DC-Coupled, Attachment DCC (DC-Coupled Storage) is attached to this Project Specific Addendum and constitutes part of the Agreement.
  - (b) If the coversheet of this Project Specific Addendum indicates that the Facility is located on a site owned by the Company, Attachment COS (Company-Owned Site) is attached to this Project Specific Addendum and constitutes part of the Agreement.

**IN WITNESS WHEREOF**, the Parties hereto have caused this Project Specific Addendum to be executed by their duly authorized representatives.

**MAUI ELECTRIC COMPANY, LIMITED  
OR  
HAWAI`I ELECTRIC LIGHT COMPANY,  
INC.**

By \_\_\_\_\_  
Name:  
Its:

By \_\_\_\_\_  
Name:  
Its:

("Company")

**[NAME OF PROJECT ENTITY]**

By \_\_\_\_\_  
Name:  
Its:

By \_\_\_\_\_  
Name:  
Its:

("Seller")

ATTACHMENT A  
DESCRIPTION OF GENERATION, CONVERSION AND STORAGE FACILITY

1. Name of Facility: \_\_\_\_\_
  - (a) Location: \_\_\_\_\_ (TMK No. \_\_\_\_\_)
  - (b) Telephone number (for system emergencies): \_\_\_\_\_
  - (c) E-mail Address: \_\_\_\_\_
  - (d) Contact Information for notices pursuant to Section 29.3 (Notices) of the Agreement:  
  
Mailing Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
  
Address for Delivery by Hand or Overnight Delivery:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
  
E-mail Address: \_\_\_\_\_
  
2. Owner (If different from Seller): \_\_\_\_\_

If Seller is not the owner, Seller shall provide Company with a certified copy of a certificate warranting that the owner is a corporation, partnership or limited liability company in good standing with the Hawai'i Department of Commerce and Consumer Affairs which shall be attached hereto as Exhibit A-1 (Good Standing Certificates).
  
3. Operator: \_\_\_\_\_
  
4. Name of person to whom payments are to be made:
  - (a) Mailing address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  
  - (b) Hawai'i Gross Excise Tax License number: \_\_\_\_\_
  
5. Equipment:



(a) Type of facility and conversion equipment:

**[For example: Small power production facility designated as a Qualifying Facility that produces electric energy using \_\_\_\_\_.]**

(b) Design and capacity

Contract Capacity: The anticipated maximum net instantaneous active power for export at the Point of Interconnection of the Facility generators upon Commercial Operations:

\_\_\_\_\_ kW

Total Number of Generators (Wind Turbines, PV Modules, BESS Modules, & Inverters):

**Example 1 (Wind + BESS):**

**Ten (10) Brand X, 1500 kW AC, Wind Turbine Generators;**

**Ten (10) Brand Y, 1650 kW DC, BESS Modules**

**Ten (10) Brand Z, 1500 kW AC, BESS Inverters**

**Example 2 (PV + BESS; AC-Coupled):**

**Seventy-five thousand (75000) Brand W, 200 W DC, PV Modules;**

**Ten (10) Brand X, 1500 kW AC, PV-Inverters;**

**Ten (10) Brand Y, 1650 kW DC, BESS Modules**

**Ten (10) Brand Z, 1500 kW AC, BESS Inverters**

**Example 3 (PV + BESS; DC-Coupled):**

**Seventy-five thousand (75000) Brand X, 200 W DC, PV Modules;**

**Ten (10) Brand Y, 1650 kW DC, BESS Modules**

**Ten (10) Brand Z, 1500 kW AC, Central Inverters**

Description of Equipment:

**[For example: Describe the type of energy conversion equipment, capacity, and any special features (i.e. Modules per converter; AC or DC coupling; DC/AC ratio; plant controller information)]**

Individual Unit: **[if more than one type of generator, list information for each generator]**

Maximum Auxiliary load:

kW	kVAR Consumed	kVAR Produced

Generator:

Type (PV Inverter, BESS Inverter, Central Inverter) \_\_\_\_\_

Rated Power \_\_\_\_\_ kW (AC)

Voltage \_\_\_\_\_ V, \_\_\_\_\_ phase

Frequency \_\_\_\_\_ Hz

Class of Protection

Rated Current \_\_\_\_\_ A

(c) Installed Nameplate Capacity: Shall be the aggregate sum of the net nameplate active power capability of all generator and converter equipment installed.

The Installed Nameplate Capacity of this Facility shall be: \_\_\_kW

(d) Net Nameplate Capacity: Shall be the net instantaneous active power capability of the Facility at the point of interconnection, considering all generation and converter equipment and power plant controls which may act to limit the Facility capability. The Net Nameplate Capacity shall not be less than the Contract Capacity.

The Net Nameplate Capacity of this Facility shall be: \_\_\_\_\_ kW.  
The maximum kW value set forth in the Interconnection Requirements Study.

(e) Description of Facility SCADA and control system(s): **Describe the SCADA and control system utilized for Facility monitoring and control.**

(f) BESS Contract Capacity [FOR PV+BESS]: The anticipated maximum net instantaneous active power and maximum energy storage capability (MWh stored that represents a 100% State of Charge) for export to the Point of Interconnection upon Commercial Operations. The BESS Contract Capacity (MW) shall not be less than the Net Nameplate Capacity. The BESS Contract Capacity of this Facility shall be: \_\_\_\_\_ MW / \_\_\_\_\_ MWh

**[DRAFTING NOTE: For Stage 3 the BESS Contract Capacity MWh rating for a PV+BESS Facility must be four (4) hours at the BESS Contract Capacity MW output.]**

BESS Contract Capacity [FOR WIND+BESS]: The anticipated maximum net instantaneous active power and maximum energy storage capability (MWh stored that represents a 100% State of Charge) for export to the Point of Interconnection upon Commercial Operations. The BESS Contract Capacity (MW) shall not be less than one-third (1/3) the Net Nameplate Capacity. The BESS Contract Capacity of this Facility shall be:  
\_\_\_\_\_ MW / \_\_\_\_\_ MWh

**[DRAFTING NOTE: For Stage 3 the BESS Contract Capacity MWh rating for a Wind+BESS Facility must be two (2) / four (4) hours at the BESS Contract Capacity MW output.]**

(g) Seller may propose revisions to this Section 5 (Equipment) of Attachment A (Description of Generation, Conversion and Storage Facility) ("Section 5") for Company's approval prior to commencement of construction, provided, however, that (i) no such revision to this Section 5 shall change the type of renewable resource used by the Facility; (ii) Seller shall be in compliance with all other terms and conditions of this Agreement; and (iii) such revision(s) shall not change the characteristics of the Facility equipment or the specifications used in the IRS. Any revision to this Section 5 complying with items (i) through (iii) above shall be subject to Company's prior approval, which approval shall not be unreasonably withheld. If Seller's proposed revision(s) to this Section 5 otherwise satisfies items (i) and (ii) above but not item (iii) such that Company, in its reasonable discretion, determines that a re-study or revision to all or any part of the IRS is required to accommodate Seller's proposed revision(s), Company may, in its sole and absolute discretion, conditionally approve such revision(s) subject to a satisfactory re-study or revision to the IRS and Seller's payment and continued obligation to be liable and responsible for all costs and expenses of re-studying or revising such portions of the IRS and for modifying and paying for all costs and expenses of modification to the Facility, the Company-Owned Interconnection Facilities based on the results of the re-studies or revisions to the IRS. Any changes made to this Attachment A (Description of Generation, Conversion and Storage Facility) or the Agreement as a result of this Section 5(f) of Attachment A (Description of Generation, Conversion and Storage Facility) shall be reflected in a written amendment to the Agreement.

Seller understands and acknowledges that Company's review and approval of Seller's proposed revisions to this Section 5 and any necessary re-studies or revisions to the IRS

shall be subject to Company's then-existing time and personnel constraints. Company agrees to use commercially reasonable efforts, under such time and personnel constraints, to complete any necessary reviews, approvals and/or re-studies or revisions to the IRS.

Any delay in completing, or failure by Seller to meet, any subsequent Seller milestones under Article 13 (Guaranteed Project Milestones Including Commercial Operations) as a result of any revision pursuant to this Section 5 by Seller (whether requiring a re-study or revision to the IRS or not) shall be borne entirely by Seller and Company shall not be responsible or liable for any delay or failure to meet any such milestones by Seller.

6. Insurance carrier(s): **[SELLER TO PROVIDE INFORMATION]**
7. If Seller is not the operator, Seller shall provide a copy of the agreement between Seller and the operator which requires the operator to operate the Facility and which establishes the scope of operations by the operator and the respective rights of Seller and the operator with respect to the sale of electric energy from Facility no later than the Commercial Operations Date. In addition, Seller shall provide a certified copy of a certificate warranting that the operator is a corporation, partnership or limited liability company in good standing with the Hawai'i Department of Commerce and Consumer Affairs no later than the Commercial Operations Date.
8. Seller shall provide a certified copy of a certificate establishing that Seller is a corporation, partnership or limited liability company in good standing with the Hawai'i Department of Commerce and Consumer Affairs which shall be attached hereto as Exhibit A-1 (Good Standing Certificates).
9. Seller, owner and operator shall provide Company a certificate and/or description of their ownership structures which shall be attached hereto as Exhibit A-2 (Ownership Structure).

10. In the event of a change in ownership or identity of Seller, owner or operator, such entity shall provide within 30 Days thereof, a certified copy of a new certificate and a revised ownership structure. The preceding sentence is without limitation to the provisions Article 19 (Transfers, Assignments, and Facility Debt) of the Agreement.

EXHIBIT A-1  
GOOD STANDING CERTIFICATES

Model RDG PPA (PV+BESS or Wind+BESS )  
Maui Electric Company, Limited  
Hawai'i Electric Light Company, Inc.

EXHIBIT A-2  
OWNERSHIP STRUCTURE

Model RDG PPA (PV+BESS or Wind+BESS )  
Maui Electric Company, Limited  
Hawai'i Electric Light Company, Inc.



ATTACHMENT B  
FACILITY OWNED BY SELLER

1. The Facility.

(a) Drawings, Diagrams, Lists, Settings and As-Builts.

- (i) Single-Line Drawing, Interface Block Diagram, Relay List, Relay Settings and Trip Scheme. A preliminary single-line drawing (including notes), Interface Block Diagram, relay list, relay settings, and trip scheme of the Facility shall, after Seller has obtained prior written consent from Company, be attached to this Agreement on the Execution Date as Attachment E (Single-Line Drawing and Interface Block Diagram) and Attachment F (Relay List and Trip Scheme). A final single-line drawing (including notes), Interface Block Diagram, relay list and trip scheme of the Facility shall, after having obtained prior written consent from Company, be labeled the "Final" Single-Line Drawing, the "Final" Interface Block Diagram and the "Final" Relay List and Trip Scheme and shall supersede Attachment E (Single-Line Drawing and Interface Block Diagram) and Attachment F (Relay List and Trip Scheme) to this Agreement and shall be made a part hereof on the Commercial Operations Date. After the Commercial Operations Date, no changes shall be made to the "Final" Single-Line Drawing, the "Final" Interface Block Diagram and the "Final" Relay List and Trip Scheme without the prior written consent of Seller and Company. The single-line drawing shall expressly identify the Point of Interconnection of Facility to Company System.
- (ii) As-Builts. Seller shall provide final as-built drawings of the Seller-Owned Interconnection Facilities within 30 Days of the successful completion of the Acceptance Test.
- (iii) Modeling. Seller shall provide the models as set forth in Exhibit B-1.
- (iv) No Material Changes. Seller agrees that no material changes or additions to the Facility as reflected in

the "Final" Single-Line Drawing (including notes), the "Final" Interface Block Diagram, and the "Final" Relay List and Trip Scheme shall be made without Seller first having obtained prior written consent from Company. The foregoing are subject to changes and additions as part of any Performance Standards Modifications. If Company directs any changes in or additions to the Facility records and operating procedures that are not part of any Performance Standards Modifications, Company shall specify such changes or additions to Seller in writing, and, except in the case of an emergency, Seller shall have the opportunity to review and comment upon any such changes or additions in advance.

(b) Certain Specifications for the Facility.

(i) Seller shall furnish, install, operate and maintain the Facility, including breakers, relays, switches, synchronizing equipment, monitoring equipment and control and protective devices approved by Company as suitable for parallel operation of the Facility with Company System. The Facility shall be accessible at all times to authorized Company personnel.

(ii) The Facility shall include:

**[LIST OF THE FACILITY]**

**Examples may include, but are not limited to:**

- **Seller-Owned Interconnection Facilities**
- **Substation**
- **Control and monitoring facilities**
- **Transformers**
- **Generating and/or Battery Energy Storage System ("BESS") equipment (as described in Attachment A)**
- **"Lockable" cabinets or housings suitable for the installation of the Company-Owned Interconnection Facilities located on the Site**
- **Relays and other protective devices**
- **Leased telephone line and/or equipment to facilitate microwave communication**

(iii) The Facility shall comply with the following **[includes excerpts of language that may be requested by Company]**:

- A. Seller shall install a \_\_\_\_\_ kV gang operated, load breaking, lockable disconnect switch and all other items for its switching station (relaying, control power transformers, high voltage circuit breaker). Bus connection shall be made to a manually and automatically (via protective relays) operated high-voltage circuit breaker. The high-voltage circuit breaker shall be fitted with bushing style current transformers for metering and relaying. Downstream of the high-voltage circuit breaker, a structure shall be provided for metering transformers. From the high-voltage circuit breaker, another bus connection shall be made to another pole mounted disconnect switch, with surge protection.
  
- B. Seller shall provide within the Seller-Owned Interconnection Facilities a separate, fenced area with separate access for Company. Seller shall provide all conduits, structures and accessories necessary for Company to install the Revenue Metering Package. Seller shall also provide within such area, space for Company to install its communications, supervisory control and data acquisition ("SCADA") equipment (remote terminal unit or equivalent) and certain relaying if necessary for the interconnection. Seller shall also provide AC and DC source lines as specified by Company. Seller shall provide a telephone line for Company-owned meters. Seller shall work with Company to determine an acceptable location and size of the fenced-in area. Seller shall provide an acceptable demarcation cabinet on its side of the fence where Seller and Company wiring will connect/interface.
  
- C. Seller shall ensure that the Seller-Owned Interconnection Facilities have a lockable cabinet for switching station relaying

equipment. Seller shall select and install relaying equipment acceptable to Company. At a minimum, the relaying equipment will provide over and under frequency (81), negative phase sequence (46), under voltage (27), over voltage (59), ground over voltage (59G), over current functions (50/51) and direct transfer trip (if required). The settings shall be consistent with the requirements for over/under frequency and voltage ride-through. Seller shall install protective relays that operate a lockout relay (86), which in turn will trip the main circuit breaker and not allow it to be reclosed without reset.

D. High Resolution Data: Seller shall install and make available to the Company time stamped and sequential data recordings for all inverter-based resources (and all generating resources) to perform event analysis and verify Facility performance during steady state and transient disturbance events. This will include a time-synchronized phasor measurement unit and a disturbance monitor fault recorder, as specified by Company, at the Facility POI, and access to multiple sources to provide sufficient clarity as to any abnormal response or behavior within the Facility, including Facility control settings and static values, SCADA data, sequence of events recording (SER) data, dynamic disturbance recorder (DDR) data, and inverter fault codes and inverter-level dynamic recordings. This data will be used to review the Facility response to system dynamics, such as the frequency response (normal droop), reactive response, etc.

E. Seller's equipment also shall provide at a minimum:

- (i) Interface with Company's Telemetry and Control, or designated communications and control interface, to provide telemetry of electrical quantities such as total Facility net MW, MVar, power factor, voltages, currents, and other quantities as identified by the Company;

- (ii) Interface with Company's Telemetry and Control, or designated communications and control interface, to provide status for circuit breakers, reactive devices, switches, and other equipment as identified by the Company;
- (iii) Interface with Company's Telemetry and Control, or designated communications and control interface, to provide control to incrementally raise and lower the voltage target at the point of regulation operating in automatic voltage regulation control;
- (iv) Interface with Company's Telemetry and Control, or designated communications and control interface, to provide the active power control requirements of this Agreement.
- (v) Interface with Company's Telemetry and Control, or designated communications and control interface, for the Company to specify control system modes of operation and parameters, for remotely configurable parameters and operating states required under this Agreement.
- (vi) For Variable Energy Facilities: Interface with Company's Telemetry and Control, or designated communications and control interface, to provide telemetry of equipment availability and meteorological and production data required under Section 8 (Data and Forecasting) of this Attachment B (Facility Owned by Seller) and the Facility's Power Possible.
- (vii) Provision for Loss of Telemetry and Control: If Company's Telemetry and Control, or designated communications and control interface, is unavailable, due to loss of communication link, Telemetry and Control failure, or other event resulting in loss of the remote control by Company,

provision must be made for Seller to be able to institute via local controls, within 5 minutes (or such other period as Company accepts in writing) of the verbal directive by the Company System Operator, such change in voltage regulation target and real power export or import as directed by the Company System Operator.

F. If Seller adds, deletes and/or changes any of its equipment, or changes its design in a manner that would change the characteristics of the equipment and specifications used in the IRS, Seller shall be required to obtain Company's prior written approval. If an analysis to revise parts of the IRS is required, Seller shall be responsible for the cost of revising those parts of the IRS, and modifying and paying for the cost of the modifications to the Facility and/or the Company-Owned Interconnection Facilities based on the revisions to the IRS.

G. Cybersecurity and Critical Infrastructure Protection.

(i) Security Policies and Documentation. Seller shall implement and document security policies and standards in accordance with industry best practices (e.g., aligned with the intent of NERC CIP-003-8 R2) and consistent with Company's security policies and standards. Seller shall submit documentation describing the approach, methodology, and design to provide physical and cyber security (i.e., aligned with the intent of NERC CIP-003-8 R2) with its submittal of the design drawings pursuant to Section 1(c) (Design Drawings, Bill of Materials, Relay Settings and Fuse Selection) of Attachment B (Facility Owned by Seller) which shall be at least sixty (60) Days prior to the Acceptance Test.

- The design shall meet industry standards and best practices, consistent with the National Institute of Standards and Technology ("NIST") guidelines as indicated in Special Publication 800-53 Rev. 4 "Security and Privacy Controls for Federal Information Systems and Organizations" and Special Publication 800-82 Rev. 2 "Guide to Industrial Control Systems (ICS) Security". The system shall be designed with the criteria to meet applicable compliance requirements and identify areas that are not consistent with NIST guidelines and recommendations.
- The cybersecurity documentation shall include a block diagram of the control system with all external connections clearly described.
- Seller shall provide such additional information as Company may reasonably request as part of a security posture assessment.
- Company shall be notified in advance when there is any condition that would compromise physical or cyber security.
- Seller shall, at the request of Company or, in the absence of any request from Company, at least annually during the term of this Agreement, provide Company with updated documentation and diagrams including a record of changes.

(ii) Network and Application Security. Seller shall implement appropriate network and application security processes and practices commensurate with the level of

risk as determined by periodic risk assessments (i.e., aligned with the intent of NERC CIP-005-5):

- Segment and segregate networks and functions, including physical and logical separation between business networks and control system networks (i.e., aligned with the intent of NERC CIP-005-5 R1).
- Limit unnecessary lateral communications (i.e., aligned with the intent of NERC CIP-005-5 R1).
- Harden network devices (i.e., aligned with the intent of NERC CIP-007-6 R1).
- Secure access to infrastructure devices (i.e., aligned with the intent of NERC CIP-004-6 R4).
- Perform out-of-band (OoB) network management (i.e., aligned with the intent of NERC CIP-005-5 R2).
- Validate integrity of hardware and software (i.e., aligned with the intent of NERC CIP-010-3 R1 and NERC CIP-006-6 R1 Part 10).

(iii) Endpoint and Server Security. Seller shall implement appropriate endpoint and server security processes and practices commensurate with the level of risk as determined by periodic risk assessments:

- Mechanisms to identify vulnerabilities and apply security patches in a timely manner (i.e., aligned with the intent of NERC CIP-007-6 R2).



- Malware defense and anti-phishing capabilities (i.e., aligned with the intent of NERC CIP-007-6 R3).
- Access Controls to enforce the least privilege principle and provide access to resources only for authorized users (i.e., aligned with the intent of NERC CIP-004-6 R4).
- Secure authentication mechanisms including multi-factor authentication for systems with higher risk exposure (i.e., aligned with the intent of NERC CIP-007-6 R5 and NERC CIP-005-5 R2).
- Data confidentiality, protection, and encryption technologies for endpoints, servers, and mobile devices (i.e., aligned with the intent of NERC CIP-011-2 R1 and NERC CIP-005-5 R2).

Seller shall (consistent with the following sentence) ensure that no malicious software ("Malware") or unauthorized code is introduced into any aspect of the Facility, Interconnection Facilities, the Company Systems interfacing with the Facility and Interconnection Facilities, and any of Seller's critical control systems or processes used by Seller to provide energy, including the information, data and other materials delivered by or on behalf of Seller to Company, (collectively, the "Environment"). Seller shall periodically review, analyze and implement improvements to and upgrades of its Malware prevention and detection programs and processes that are commercially reasonable and consistent with the then current technology industry's standards and, in any case, not less robust than the

programs and processes implemented by Seller with respect to its own information systems.

(iv) Cybersecurity Program. Seller shall establish and maintain a continuous cybersecurity program (i.e., aligned with the intent of NERC CIP-003-8) that enables the Seller (or its designated third party) to:

(aa) Define the scope and boundaries, policies, and organizational structure of the cybersecurity program.

(bb) Conduct periodic risk assessments to identify the specific threats to and vulnerabilities of the Seller's Organization consistent with guidance provided in NIST Special Publication 800-30 Rev. 1 "Guide for Conducting Risk Assessments".

(cc) Implement appropriate mitigating controls and training programs and manage resources.

(dd) Monitor and periodically test the cybersecurity program to ensure its effectiveness. Seller shall review and adjust their cybersecurity program as appropriate for any assessed risks.

(ee) Applicability is extended to Cloud Service providers and other third-party services the Seller may use.

(v) Security Monitoring and Incident Response. Company and Seller shall collaborate on security monitoring and incident response, define points of contact on both sides, establish monitoring and response procedures, set escalation thresholds, and conduct training (i.e., aligned with the intent

of NERC CIP-008-6). Seller shall, at the request of Company or, in the absence of any request from Company, at least quarterly, provide Company with a report of the incidents that it has identified and describe measures taken to resolve or mitigate.

In the event that Seller discovers or is notified of a breach, potential breach of security, or security incident at Seller's Facility or of Seller's systems, Seller shall immediately (aa) notify Company of such potential, suspected or actual security breach, whether or not such breach has compromised any of Company's confidential information; (bb) investigate and promptly remediate the effects of the breach, whether or not the breach was caused by Seller; (cc) cooperate with Company with respect to any such breach or unauthorized access or use; (dd) comply with all applicable privacy and data protection laws governing Company's or any other individual's or entity's data; and (ee) to the extent such breach was caused by Seller, provide Company with reasonable assurances satisfactory to Company that such breach, potential breach, or security incident shall not recur. Seller shall provide documentation to Company evidencing the length and impact of the breach. Any remediation of any such breach will be at Seller's sole expense.

If malicious software or unauthorized code is found to have been introduced into the Environment, Seller will promptly notify Company. Seller shall take immediate action to eliminate and remediate the effects of the Malware, at Seller's expense. Seller shall not modify or otherwise take corrective action with respect to the Company

Systems except at Company's request. Seller shall promptly report to Company the nature and status of all efforts to isolate and eliminate malicious software or unauthorized code.

- (vi) Monitoring and Audit. Seller shall provide information on available audit logs and reports relating to cyber and physical security (i.e., aligned with the intent of NERC CIP-007-6 R4). Company may audit Seller's records to ensure Seller's compliance with the terms of this Section 1(b)(iii)G (Cybersecurity and Critical Infrastructure Protection) of this Attachment B (Facility Owned by Seller), provided that Company has provided reasonable notice to Seller and any such records of Seller's will be treated by Company as confidential.
- (vii) Contingency Plans. Seller shall implement and maintain a business continuity plan, a disaster recovery plan, and an incident response plan ("Contingency Plans" - i.e., aligned with the intent of NERC CIP-009-6) appropriate for the level of risk based on the impact of Seller's associated facilities, systems and equipment, which, if destroyed, degraded, misused, or otherwise rendered unavailable, would affect the reliable operation of the Company System. The Contingency Plans shall be provided to Company upon request. Such Contingency Plans shall be updated to reflect lessons learned from real recovery events.
- (viii) Supply Chain Risk Management. Seller shall implement and maintain a supply chain risk management plan with implementation of appropriate security controls (i.e., aligned with the intent of NERC CIP-013-1). Controls should address the following security considerations: (1) software integrity

and authenticity; (2) vendor remote access; (3) information system planning; and (4) vendor risk management and procurement controls.

H. Available Power Production.

- (i) Variable Energy Systems. Seller's available power production considering equipment and resource availability (Power Possible) will be determined at any given time using the best-available data and methods for an accurate representation of the amount of active power available at the Point of Interconnection.
- (ii) Variable Energy Systems Paired with Storage Operated through a Single Active Power Control Interface. For variable energy systems paired with storage operated through a single active power control interface (i.e., charging indirectly controlled through dispatch), Seller's available power production considering equipment and resource availability and state of charge of the storage (Power Possible) will be determined at any given time using the best-available data and methods for an accurate representation of the amount of active power available at the Point of Interconnection. Telemetry will be provided to indicate state of charge, including available estimated duration at the current dispatch given state of charge and forecast production.

- I. For variable resources where Power Possible is derived, in part or in whole, from a measured available variable energy source such as solar or wind: To the extent available, the Parties shall use Seller's real time Power Possible communicated to Company through the SCADA System except to the extent that the Potential Energy does not accurately reflect the actual

available active power at the Point of Interconnection (plus or minus 0.1 MW). During those periods of time when the SCADA derived Power Possible is unavailable or does not accurately represent the available power production considering equipment and resource availability, the Parties shall use the best available data obtained through commercially reasonable methods to determine the Power Possible. Follow up actions to resolve the discrepancy will be as provided in Section 1(j) (Demonstration of Facility) of this Attachment B (Facility Owned by Seller).

- J. Seller shall reserve space within the Site for possible future installation of Company-owned meteorological equipment (such as wind speed, direction and relative humidity monitors, SODAR and irradiance monitors) and AC and DC source lines for such equipment as may be required depending on the Facility resource type and location. In the event Company decides to install such meteorological equipment: (i) Seller shall work with Company to determine an acceptable location for such equipment and any associated wiring, interface or other components; and (ii) Company shall pay for the needed equipment, and installation of such equipment, unless otherwise agreed to by the Parties. Company and Seller shall use commercially reasonable efforts to facilitate installation and minimize interference with the operation of the Facility.
  
- K. The Facility shall, at a minimum, satisfy the wind load and seismic load requirements of the International Building Code and any more stringent requirements imposed under applicable Laws.

- (c) Design Drawings, Bill of Material, Relay Settings and Fuse Selection. Seller shall provide to Company for its review the design drawings, Bill of Material, relay settings and fuse selection for the Facility, and Company shall have the right, but not the obligation, to

specify the type of electrical equipment, the interconnection wiring, the type of protective relaying equipment, including, but not limited to, the control circuits connected to it and the disconnecting devices, and the settings that affect the reliability and safety of operation of Company's and Seller's interconnected system. Seller shall provide the relay settings and protection coordination study, including fuse selection and AC/DC Schematic Trip Scheme (part of design drawings), for the Facility to Company during the 60% design. Company, at its option, may, with reasonable frequency, witness Seller's operation of control, synchronizing, and protection schemes and shall have the right to periodically re-specify the settings. Seller shall utilize relay settings prescribed by Company, which may be changed over time as Company System requirements change.

- (d) Disconnect Device. Seller shall provide a manually operated disconnect device which provides a visible break to separate Facility from Company System. Such disconnect device shall be lockable in the OPEN position and be readily accessible to Company personnel at all times.
- (e) Other Equipment. Seller shall install, own and maintain the infrastructure associated with the Revenue Metering Package, including but not limited to all enclosures (meter cabinets, meter pedestals, meter sockets, pull boxes, and junction boxes, along with their grounding/bonding connections), CT/PT mounting structures, conduits and ductlines, enclosure support structures, ground buses, pads, test switches, terminal blocks, isolation relays, telephone surge suppressors, and analog phone lines (one per meter), subject to Company's review and approval.
- (f) Maintenance Plan. Seller shall maintain Seller-Owned Interconnection Facilities in accordance with Good Engineering and Operating Practices.
- (g) Active Power Control Interface. **[COMPANY MAY REVISE THIS SECTION BASED ON SPECIFICS OF THE PROJECT.]**
  - (i) Seller shall provide and maintain in good working order all equipment, computers and software associated with the control system (the "Active

Power Control Interface") necessary to interface the Facility active power controls with the Company System Operations Control Center for real power control of the Facility by the Company System Operator.

The detailed design will be tailored to the specific resource type and configuration to achieve the functional requirements of the Facility.

The Active Power Control Interface will be used to control the net real power export (or import, as applicable) from the Facility for load following, system balancing, energy arbitrage, and/or supplemental frequency control as required under this Attachment B (Facility Owned by Seller).

For variable resources paired with storage: The implementation of the Active Power Control Interface will allow the Company System Operator to control the net real power export (or import, as applicable) from the entire Facility, up to Power Possible, remotely from the Company System Operations Control Center through control signals from the Company System Operations Control Center. The Facility will maintain the power level specified by the Company through the variable resource and BESS available energy, subject to the availability of resource and BESS State of Charge.

For facilities with grid charging storage, the Active Power Control interface will provide for a negative signal resulting in charging the BESS.

The Facility real power output (or import, if storage charging is enabled) will automatically adjust to a change in frequency in accordance with the frequency response requirements provided in this Attachment B (Facility Owned by Seller).

- (ii) Company shall review and provide prior written approval of the design for the Active Power Control Interface to ensure compatibility with Company's centralized control systems and use of Facility available energy and storage capabilities. To ensure such continued compatibility, Seller shall not materially change the approved design without



Company's prior review and written approval. This will include design description and parameters for the Seller's control system(s), which determine provision of net real power from the variable resource System (i.e., wind or PV) and/or the BESS storage, and charging of the BESS storage, in response to the Active Power Control signal or signals.

- (iii) The Active Power Control Interface shall include, but not be limited to, a demarcation cabinet, ancillary equipment and software necessary for Seller to connect to Company's Telemetry and Control, located in Company's portion of the Facility switching station which shall provide the control signals to the Facility and send feedback status to the Company System Operations Control Center. The control type shall be analog output (set point) or raise/lower controls and will be established by the Company prior to final design approval.
- (iv) The Active Power Control Interface shall also include provision for feedback points from the Facility indicating when active power target in MW for the Active Power Control signal(s). The Facility shall provide the MW target feedback to the Company SCADA system immediately upon receiving the respective control signal from the Company.
- (v) Seller shall provide to the telemetry interface analogs for the gross production of the energy resource(s) at the Facility (for example, DC or AC MW production of the variable resource generator(s), depending on design; gross DC MW of the BESS, etc.) Seller shall also provide the total net AC MW production at the Point of Interconnection.
- (vi) The Active Power Control Interface shall provide for remote control of the real-power output of the Facility by the Company at all times. If the Active Power Control Interface is unavailable or disabled, the Facility may not export electric energy to Company and the Facility shall be deemed to be in Seller-Attributable Non-Generation status,

unless the Company, in its sole discretion, agrees on an alternate means of dispatch. If Seller fails to provide such remote control capability (whether temporarily or throughout the Term), then, notwithstanding any other provision of this Attachment B (Facility Owned by Seller), Company shall have the right to derate or disconnect the entire Facility during those periods that such control capability is not provided and the Facility shall be deemed to be in Seller-Attributable Non-Generation status for such periods.

(vii) The rate at which the Facility changes net real power in response to the active power control shall not be less than the greater of 2 MW per minute or 10% of the Facility capacity per minute, and shall make available through agreed parameters, such faster ramp as the installed equipment can support. The Facility's Active Power Control Interface will be used by Company to control the rate at which electric energy is changed to achieve the active power limit for load-following and regulation. The Facility will respond to the active power control request immediately with an echo of the set point and measurable change within the specified control cycle (0.5 to 4 seconds).

(viii) The Facility shall accept the following controls related to active power and frequency response to or from the Company centralized control system:

- Power Reference Setpoint from Company (based on the input to the Facility, from the Active Power Control Interface): The Facility output shall match this setting from the Variable Resource and/or BESS so long as it can be supported by the variable resource and/or BESS State of Charge (Power Possible does not change). This net output should be accurate within +/- 0.1 MW under normal frequency conditions. This setpoint will be modified as appropriate in the controls by the appropriate frequency response consistent with Section 1(g)(xi) (Active Power - Frequency Response (DROOP)), Section 1(g)(xii) (Dynamic Active Power - Frequency Performance), and **[FOR**

**FACILITIES WITH STORAGE]** Section 1(g) (xiii)  
(Alternate Active Power / Frequency Response  
Modes) of this Attachment B (Facility Owned by  
Seller).

- Inverter/WTG Enable/Disable Control: The Facility shall include an inverter/WTG Enable/Disable control. When Disable is selected, the Facility shall ramp down, shutdown, and leave offline its inverters/WTGs. When Enable is selected, the Facility inverters/WTGs can start up, ramp up, and remain in normal operations.
- Frequency Response Mode (DROOP, isochronous).
- From Seller:
  - Power Possible (Available maximum capacity; Maximum Load Frequency Control (Regulation) Limit (lfcmx, ecomx)): See above, instantaneous limit for available energy, represents max level the Facility can produce under present resource, BESS State of Charge (if applicable) and equipment conditions. This is used as upper limit for Company Dispatch.
  - For variable energy resources, maximum level the variable generation resources can produce under present variable resource and equipment conditions.
  - Minimum Sustained Limit: Minimum output level the Facility can be reduced to continuously without delay (ecomn). For projects with BESS: If BESS charging from the grid is permitted, and charging capacity is available, this will be a negative value.
  - Minimum Load Frequency Control (Regulation) Limit (lfcmn). This is the company dispatch low limit for frequency regulation. For projects with BESS: If BESS charging from the grid is permitted,

and charging capacity is available, lfcmm may be a negative value.

- o Maximum Dispatchable Ramp Rate:  
Controlled ramp rate available under company dispatch for controlled changes in output.
  - o For projects with a BESS, Seller shall also provide the following:
    - BESS potential (BESS State of Charge and projected number of hours at present dispatch, minimum dispatch, and maximum dispatch).
    - Frequency Response Mode (DROOP, isochronous; where applicable).
- (ix) Seller shall not override Company's active power controls without first obtaining specific approval to do so from the Company System Operator unless there is a system emergency. Disabling of the remote Active Power Control shall initiate telemetry notification to the Company.
- (x) The requirements of the Active Power Control Interface may be modified as mutually agreed upon in writing by the Parties.

**Active Power Communications between Company and Seller**

Company will receive and send telemetry and control data through the communications interface in accordance with Company standards. The data points covered under this Agreement, as described below, may overlap with data requirements described elsewhere.

**Automatic Generation Control (AGC) Data Points to be sent from Seller to Company via SCADA**

In addition to the items listed above, the following data points will be transmitted via SCADA or similar control system from Seller to Company and represent Facility level data **[Note: Data is representative and may be modified based on resource type and Facility requirements]:**

<u>Description</u>	<u>Units</u>
Power Reference Set-Point (echo)	MW
Auxiliary Power demand	MW
Actual power output at POI	MW
Power Possible	MW
Actual reactive power at POI	Mvars
Average 3 phase Voltage at the POI	Kv
Variable Generation potential	MW
BESS State of Charge	Pct
BESS Inverters Online	Integer
[PV only] Inverters online	Integer
[Wind Only] WTGs Online	Integer
Facility duration at current output	HRS
Active Power Control Status	Remote/Local
[For facilities with alternate modes of frequency response] Indication of Frequency Response Mode	Integer Droop, ISOCH

**Response times and limitations of Facility in regards to Active Power Control**

The following protocols outline the expectations for responding to the Power Reference Set-Point.

Frequency of Changes. Company may send a new Active Power Reference Set-Point to the Facility at up to the AGC control cycle (between 0.5 and 4 seconds).

Range of Power Reference Set-Point. The range of set point values can be between 0% and 100% of Power Possible. For projects offering grid-charging storage, negative set-point values may be required.

The response time of the Facility to commanded active and reactive power setpoints provided by the Company System Operator shall be within specified control cycle. Reaction time is defined as the time interval between the moment of the receiving external control setpoints for active power and voltage control/reactive power from the Company System Operator and the moment when the Facility active and reactive power reach the target (as measured at the POI).

#### **Backup Communications**

In the event of an Active Power Communications failure, Company and Seller shall communicate via telephone, or other method mutually agreeable between the Parties, in order to correct the failure.

#### (xi) Active Power - Frequency Response (DROOP).

The Facility shall provide a primary frequency response with a frequency droop characteristic reacting to system frequency at the Point of Interconnection in both the overfrequency and underfrequency directions except as limited by the minimum and maximum available capacity and energy potential at the time of the event including BESS state of charge. This response must be timely and sustained rather than injected for a short period and then withdrawn. For over-frequency events, response may include absorption through charging (as applicable under the terms of this Agreement). Seller shall provide minimum operational limits for each online resource and the Facility for primary frequency response.

Frequency will be calculated over a period of time (e.g., three to six cycles, or other period as specified by Company), and filtered to take control

action on the fundamental frequency component of the calculated signal. Calculated frequency may not be susceptible to spikes caused by phase jumps on the Company system.

The active power-frequency control system, and overall response of the inverter-based resource (plant), must meet the following performance aspects (see figure below):

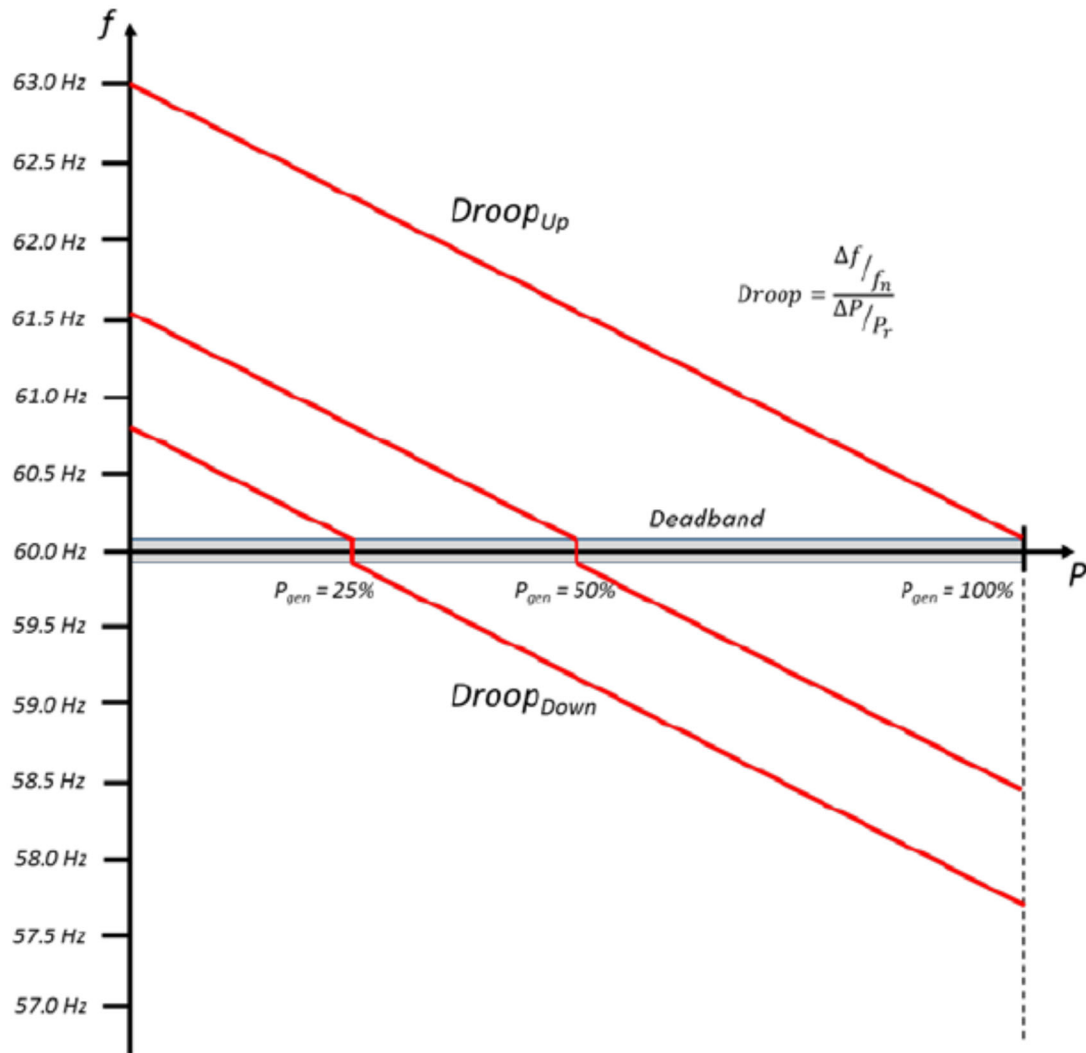
The active power-frequency control system shall have an adjustable proportional droop characteristic with a default value of [4%] percent. The droop setting shall permit a setting from 0.1% to 10%. This setting shall be changed upon Company's written request as necessary for grid droop response coordination. The droop setting shall be tunable and may be specified during commissioning. The droop shall be a permanent value based on Pmax (Net Nameplate Capacity) and Pmin (typically 0 for an inverter based resource, even with a grid charging capable BESS). This keeps the proportional droop constant across the full range of operation and shares the burden fairly across all frequency responsive resources. The curve for an inverter-based BESS may include the negative active power quadrant of this curve but the droop slope is to be based on the minimum output of 0 MW (Pmin). The droop response must include the capability to respond in both the upward (underfrequency) and downward (overfrequency) directions. Frequency droop will be based on the difference between Net Nameplate Capacity (Pmax) and zero output (Pmin) such that the [ ] percent droop line is always constant for a resource.

Seller shall make commercially reasonable efforts to provide frequency response without a deadband, but in any case, not to exceed +/- 0.0166 Hz. If the active power-frequency control system has a deadband, it shall be a nonstep deadband that is adjustable between 0 Hz and the full frequency range of the droop characteristic with a default value 0.0332 Hz and centered at nominal frequency of 60 Hz (i.e. 59.9834 Hz to 60.0166 Hz) . Nonstep

deadband is where the change in active power output starts from zero deviation on either side of the deadband. Frequency deadband is the range of frequencies in which the unit does not change active power output.

Inverter-based resources may consider a small hysteresis characteristic where linear droop meets any deadband to reduce dithering of inverter output when operating near the edges of the deadband. The hysteresis range may not exceed  $\pm 0.005$  Hz on either side of the deadband. If measurement resolution is not sufficient to measure this frequency, hysteresis may not be used.





### Active Power - Frequency Control Characteristic

Nominal System Frequency is 60.00 Hz.

The closed-loop dynamic response of the active power-frequency control system of the overall inverter-based resources, as measured at the POI must have the capability to meet or exceed the performance specified below. Seller shall ensure that the models and parameters for the resources and control equipment are consistent with those provided during the IRS process and that any updates have been provided to the Company

reflecting currently implemented settings and configuration.

(xii) Dynamic Active Power-Frequency Performance.

For a step change in frequency at the point of measure of the inverter-based resource **[NOTE - MAY BE ADJUSTED AS THE RESULT OF IRS]**:

Reaction time: The time between a step change in frequency and the time when the resource active power output begins responding to the change shall be less than 500 milliseconds, or as otherwise specified by Company.<sup>1</sup>

Rise time: The time when the resource has reached 90% of the new steady-state (target) active power output shall be less than 4 seconds, or as otherwise specified by Company.<sup>2</sup>

Settling Time: Time in which the resource has entered into, and remains within, the settling band of the new steady-state active power (target) output shall be less than 10 seconds, or as otherwise specified by Company.

Overshoot: Percentage of the rated active power output that the resource can exceed while reaching the settling band shall be less than 5% or as otherwise specified by Company.<sup>3</sup>

Settling Band: Percentage of rated active power output that the resource should settle to within the settling time shall be less than 2.5%.

When operating in parallel with the Company System, the Facility shall operate with its primary frequency response control in automatic operation and in accordance with Company directions. Notification of changes in the status of the

---

<sup>1</sup> Time between step change in frequency and the time to be within 10 percent of new steady-state value can be used as a proxy for determining this time.

<sup>2</sup> Percentage based on final (expected) settling value.

<sup>3</sup> Percentage based on final (expected) settling value.

frequency response controls and, where applicable, mode of operation must be provided to the Company System Operator immediately through SCADA telemetry indication.

The Facility frequency response control shall adjust, without intentional delay and without regard to the ramp rate limits in Section 3(c) (Ramp Rates) of this Attachment B (Facility Owned by Seller), the Facility's net real power export based on frequency deadband and frequency droop settings specified by the Company.

The Facility frequency response control shall increase the net real power export above the Power Reference Set-point set under Section 1(g)(viii) of this Attachment B (Facility Owned by Seller) or further decrease the net real power export from the Power Reference Set-point in its operations in accordance with the frequency response settings.

The Facility frequency response control shall be in continuous operation unless directed otherwise by the Company.

(xiii) **[FOR FACILITIES WITH STORAGE PROVIDING BLACK START]**. Alternate Active Power/ Frequency Response Modes. The Facility will provide the capability to supply isochronous mode of operation to facilitate black start from the Facility. The control design shall allow for a bumpless transfer between modes of operation.

A. (RESERVED)

B. Isochronous / Black Start: The Facility will be capable of operating in a zero droop (isochronous) mode of operation. When in this mode of operation, the frequency droop characteristic will be configured as needed to keep system frequency at a target. When isochronous mode of operation is selected while connected to the live system the target frequency shall be initialized to the grid frequency and the target increased or

decreased from the Company System through the control interface. In a black start configuration, the target shall be 60 Hz.

(h) Control System Acceptance Test Procedures.

(i) Conditions Precedent. The following conditions precedent must be satisfied prior to conducting the Control System Acceptance Test:

- Successful completion of the Acceptance Test.
- Facility has been successfully energized.
- All of the Facility's generating and storage equipment (as applicable) have been fully commissioned.
- The control system computer has been programmed for normal operations.
- All equipment that is relied upon for normal operations (including ancillary devices such as capacitors/inductors, energy storage device, statcom, etc.) shall have been commissioned and be operating within normal parameters.

(ii) Facility Energy Equipment. In the event that all or any portion of the Facility's energy equipment is not available for the duration of the Control System Acceptance Test, the Control System Acceptance Test will have to be re-run from the beginning unless Seller demonstrates to the satisfaction of the Company that the test results attained are consistent with the results that would have been attained if all of the equipment had been available for the duration of the test.

(iii) Procedures. The Control System Acceptance Test will be conducted on Business Days during normal working hours on a mutually agreed upon schedule. No Control System Acceptance Test will be scheduled during the final 21 Days of a calendar year. No later than thirty (30) Days prior to conducting the Control System Acceptance Test, Company and Seller shall agree on a written protocol setting out the

detailed procedure and criteria for passing the Control System Acceptance Test. Attachment O (Control System Acceptance Test Criteria) provides general criteria to be included in the written protocol for the Control System Acceptance Test. Within fifteen (15) Business Days of completion of the Control System Acceptance Test, Company shall notify Seller in writing whether the Control System Acceptance Test(s) has been passed and, if so, the date upon which such Control System Acceptance Test(s) was passed. If any changes have been made to the technical specifications of the Facility or the design of the Facility in accordance with Section 5(f) of Attachment A (Description of Generation, Conversion and Storage Facility), such changes shall be reflected in an amendment to this Agreement, and the written protocol for the Control Systems Acceptance Test shall be based on the Facility as modified. Such amendment shall be executed prior to conducting the Control System Acceptance Test and Company shall have no obligation for any delay in performing the Control Systems Acceptance Test due to the need to complete and execute such amendment.

- (i) Facility Security and Maintenance. Seller is responsible for securing the Facility. Seller shall have personnel available to respond to all calls related to security incidents and shall take commercially reasonable efforts to prevent any security incidents. Seller is also responsible for maintaining the Facility, including vegetation management, to prevent security breaches. Seller shall comply with all commercially reasonable requests of Company to update security and/or maintenance if required to prevent security breaches.
- (j) Demonstration of Facility. Company shall have the right at any time, other than during maintenance or other special conditions communicated by Seller, to notify Seller in writing of Seller's failure, as observed by Company and set forth in such written notice, to meet the operational and performance requirements specified in Section 1(b)(iii)(I), Section 1(g) (Active Power Control Interface) and Section 3 (Performance Standards) of this Attachment B (Facility Owned by Seller), and to require documentation or testing to verify compliance

with such requirements. Upon receipt of such notice, Seller shall promptly investigate the matter, implement corrective action and provide to Company, within thirty (30) Days of such notice, a written report of both the results of such investigation and the corrective action taken by Seller; provided, that, if thirty (30) Days is not a reasonable time period to investigate the matter, implement corrective action and provide such written report, Seller shall complete the foregoing within such longer commercially reasonable period of time agreed to by the Parties in writing. If the Seller's report does not resolve the issue to Company's reasonable satisfaction, the Parties shall promptly commission a study to be performed by one of the engineering firms then included on the Qualified Independent Third-Party Consultants List attached to the Agreement as Attachment D (Consultants List) to evaluate the cause of the non-compliance and to make recommendations to remedy such non-compliance. Seller shall pay for the cost of the study. The study shall be completed within ninety (90) Days, unless the selected consultant determines such study cannot reasonably be completed within ninety (90) Days, in which case, such longer period of time as the selected consultant determines is necessary to complete such study shall apply. The consultant shall send the study to Company and Seller. Seller (and/or its Third-Party consultants and contractors), at Seller's expense, shall take such action as the study shall recommend with the objective of resolving the non-compliance. Such recommendations shall be implemented by Seller to Company's reasonable satisfaction no later than forty-five (45) Days from the Day the completed study is issued by the consultant, unless such recommendations cannot reasonably be implemented within forty-five (45) Days, in which case, Seller shall implement such recommendations within such longer commercially reasonable period of time agreed to by the Parties in writing. Failure to implement such recommendations within this period shall constitute a material breach of this Agreement. The Company shall have the right to declare the Facility derated and in Seller-Attributable Non-Generation status until the Seller's aforementioned written report has been completed, any subsequent study commissioned by the Parties has been completed and any recommendations to resolve the non-compliance have been implemented to Company's reasonable satisfaction.

2. Operating Procedures. [NOTE: NUMERICAL SPECIFICATIONS IN THIS SECTION 2 MAY VARY DEPENDING ON THE SPECIFIC PROJECT AND THE RESULTS OF THE PROJECT-SPECIFIC INTERCONNECTION REQUIREMENT STUDY.]

- (a) Reviews of the Facility. Company may require periodic reviews of the Facility, maintenance records, available operating procedures and policies, and relay settings, and Seller shall implement changes Company deems necessary for parallel operation or to protect the Company System from damages resulting from the parallel operation of the Facility with the Company System.
- (b) Separation. Seller must separate from Company System whenever requested to do so by the Company System Operator pursuant to Article 8 (Company Dispatch) and Article 9 (Personnel and System Safety) of the Agreement.
- (c) Seller Logs. Logs shall be kept by Seller for information on unit availability including reasons for planned and forced outages, circuit breaker trip operations, relay operations, including target initiation, and other unusual events. Company shall have the right to review these logs, especially in analyzing system disturbances. Seller shall maintain such records for a period of not less than six (6) years.
- (d) Reclosing and Return to Service. Under no circumstances shall Seller, when separated from the Company System for any reason, including tripping during disturbances or due to equipment failure, reclose into the Company System without first obtaining specific approval to do so from the Company System Operator. Ramp rates, behavior and mode of operation upon return to service shall conform to verbal instructions from the System Operator or Active Power control from Company. Following local or system wide outage conditions, the Facility shall not attempt to automatically reconnect to the grid (unless directed by the Company System Operator) so as to not interfere with Company System Operator system restoration procedures.
- (e) Reserved.
- (f) Reserved.

- (g) Critical Infrastructure Protection. Seller shall comply with the critical infrastructure protection requirements set forth in Section 1(b)(iii)(G) of this Attachment B (Facility Owned by Seller).
- (h) Allowed Operations. Facility shall be allowed to export energy to the Company System only when the [\_\_\_\_\_] circuit is in normal operating configuration served by breaker [\_\_\_\_\_] at [\_\_\_\_\_] Substation. **[TO BE DETERMINED BY COMPANY BASED ON THE RESULTS AND REQUIREMENTS OF THE IRS]**

3. Performance Standards.

- (a) Reactive Power Control. Seller shall normally control its reactive power by automatic voltage regulation control. Seller shall automatically regulate voltage at a point, the point of regulation, between the Seller's generator terminal and the Point of Interconnection to be specified by Company, to within 0.5% of a voltage or power factor specified by the Company System Operator to the extent allowed by the Facility reactive power capabilities as defined in Section 3(b) (Reactive Power Characteristics) of this Attachment B (Facility Owned by Seller).
- (b) Reactive Power Characteristics. **[THESE REQUIREMENTS MAY BE CHANGED BY COMPANY UPON COMPLETION OF THE IRS.]**
  - (i) The Facility shall have sufficient equipment so that the Facility will have the ability to deliver or receive, at the Point of Interconnection, reactive power as illustrated in the **[generation and BESS capability]** curve(s) attached to this Agreement as Exhibit B-2, which represents the Facility Composite (Generator and Energy Storage Capability Curve(s)). Facilities with a BESS with grid charging can operate with negative active power. These facilities shall provide automatic voltage control within their reactive capability while acting as a load (charging, negative active power generation). The automatic voltage control aspects of a BESS shall be seamless across the transition from acting as a generating resource to acting as a load. The Facility must be capable of automatically adjusting reactive control to



maintain the bus voltage at the Point of Interconnection to meet the scheduled voltage set point target specified by the Company System Operator and be capable of supplying reactive power in accordance with the **[capability]** curve(s) attached to this Agreement as Exhibit B-2 including capability to continue to provide reactive compensation at all active power outputs down to zero active power. The voltage target will be specified remotely by the Company System Operator through SCADA. The Facility's voltage set point target must reflect the Company voltage set point target controlled from SCADA, without delay. The Facility should not normally operate on a fixed var or fixed power factor unless agreed by Company. The voltage setpoint target and present Facility minimum and maximum reactive power limits based on the Facility Composite capability curve shall be provided to the Company SCADA through Company's Telemetry and Control.

- (ii) The Facility shall contain equipment able to continuously and actively control the output of reactive power under automatic voltage regulation control reacting to system voltage changes. The response requirements are differentiated for large and small signal disturbance performance characteristics. Small signal disturbances are those that reflect normal variations under non-disturbance conditions, the continuous operation range for voltage ride through:  $0.80 \text{ pu} \leq V \leq 1.10 \text{ pu}$  at the point of interconnection. Large disturbance is where the voltage at the point of interconnection falls outside the continuous operating range.
- (iii) For small signal disturbances, reaction time between the step change in voltage and the reactive power change shall be less than 500 msec (no intentional time delay). The automatic voltage regulation response speed at the point of regulation shall be such that at least 90% of the initial voltage correction needed to reach the voltage control target will be achieved within 1 second following a step change. The percentage of rated reactive power output that the resource

can exceed while reaching the settling band shall be less than five percent (5%).

- (iv) Large disturbances: Large disturbances are characterized by voltage falling outside of the continuous operating range. The Facility shall adhere to the following characteristics for large disturbances:

The response of each generating resource over its full operating range and for all expected grid conditions should be stable. The dynamic performance of each resource should be tuned to provide this stable response. Company will work with Seller to ensure during the interconnection process that each resource supports Company System reliability and provides a stable transient response to grid events. **[Note - The performance specifications described here may need to be modified based on studies performed for specific interconnections to provide a stable response.]**

Inverter-based resources shall operate in closed loop automatic voltage control at all times to support voltage regulation and voltage stability. Either the individual inverters or the plant-level closed loop automatic voltage controller must operate with a relatively fast response characteristic to mitigate steady-state voltage issues from causing dynamic voltage collapse. The plant-level controller may send voltage or reactive power set point changes to the individual inverters relatively fast, or the inverters will respond locally (depending on control architecture).

For a large disturbance step in voltage, measured at the inverter terminals, where voltage falls outside the continuous operating range, the positive sequence component of the inverter reactive current response must meet the performance specifications set forth below. These parameters may be adjusted following additional study and/or operational testing and performance.

Reaction time: Time between the step change in voltage and when the resource reactive power output begins responding to the change. The reaction time shall be less than 16 msec.

Rise time: Time between a step change in control signal input and when the reactive power output changes by 90 percent of its final value. The rise time shall be less than 100 msec.

Overshoot: Percentage of rated reactive current output that the resource can exceed when reaching the settling band. Overshoot will be determined following the IRS such that any overshoot in reactive power response does not cause Company System voltages to exceed acceptable voltage limits. The magnitude of the dynamic response may be requested to be reduced based on stability studies or actual operational data review.

If the Facility does not operate in accordance with Section 3(b) of this Attachment B (Facility Owned by Seller), Company may disconnect all or a part of Facility from Company System until Seller corrects its operation (such as by installing supplemental reactive power equipment or additional control modifications, at Seller's expense).

(c) Ramp Rates.

Seller shall ensure that the ramp rate of the Facility is less 2 MW a minute for all conditions other than those under control of the Company System Operator and/or those due to desired frequency response, including start up, depletion of storage charge and resource, locally controlled startup and shut down.

(d) Ride-Through.

Ride-Through requires that the resource continues to inject current within the "No Trip" zone of the voltage and frequency ride-through requirements. Unless approved during the Interconnection Requirements Study analysis, resources should not use "momentary cessation" within the ride-through regions for any of the ride-through requirements in this Attachment B (Facility Owned by

Seller). In the "may trip" regions, the Facility shall initiate trip for over/under voltage and frequency conditions only as required for Facility equipment operating limits to avoid damage. Any such limits of operation should be conveyed to the Company and represented in the provided models.

(e) Undervoltage Ride-Through.

The Facility, as a whole, will meet the following undervoltage ride-through requirements during low voltage affecting one or more of the three voltage phases ("V" is the voltage of any three voltage phases at the Point of Interconnection). For alarm conditions the Facility shall not disconnect from the Company System unless the Facility's equipment is at risk of damage. This is necessary in order to coordinate with the existing Company System. **[THESE VALUES MAY BE CHANGED BY COMPANY UPON COMPLETION OF THE IRS. WITHOUT LIMITATION, FOR A DISTRIBUTION-CONNECTED FACILITY, UPON COMPLETION OF THE IRS THE COMPANY MAY SPECIFY REQUIREMENTS FOR A MANDATORY DISCONNECTION FROM THE COMPANY SYSTEM.]**:

$0.80 \text{ pu} \leq V \leq 1.00 \text{ pu}$	The Facility remains connected to the Company System and in continuous operation.
$0.70 \text{ pu} \leq V < 0.80 \text{ pu}$	The Facility remains connected to the Company System and in continuous operation for a minimum of 20 seconds per event (while "V" remains in this range).
$0.40 \text{ pu} \leq V < 0.70 \text{ pu}$	The Facility remains connected to the Company System and in continuous operation for a minimum of 10 seconds per event (while "V" remains in this range).
$0.00 \text{ pu} \leq V < 0.40 \text{ pu}$	The Facility remains connected to the Company System and in continuous operation for a minimum of 600 milliseconds per event (while "V" remains in this range).

The Facility may initiate an alarm if "V" remains in a ride-through range for more than the specified minimum ride-through duration; the duration of the event is measured from the point at which the voltage drops below the upper threshold of a ride-through range and ends when the voltage is at or above the threshold. The 600 milliseconds represents a delayed clearing time of 30 cycles plus breaker opening time.

Protective Undervoltage Relaying (27) shall be set to alarm only to meet the above ride-through requirements, and shall not initiate a disconnect from the Company System unless Seller reasonably determines based upon Good Engineering and Operating Practices that the Facility's equipment is at risk of damage. This is necessary in order to coordinate with the existing Company System.

Seller shall have sufficient capacity to fulfill the above mentioned requirements to ride-through subsequent events 300 cycles or more apart, between which the voltage at the Point of Interconnection recovers above 0.80 pu. **[THE ACTUAL RIDE-THROUGH TIMES WILL BE DETERMINED BY COMPANY IN CONNECTION WITH THE IRS]**

(f) Over Voltage Ride-Through.

The overvoltage protection equipment at the Facility shall be set so that the Facility will meet the following overvoltage ride-through requirements during high voltage affecting one or more of the three voltage phases (as described below) ("V" is the voltage of any of the three voltage phases at the Point of Interconnection). For alarm conditions the Facility should not disconnect from the Company System unless the Facility's equipment is at risk of damage. This is necessary in order to coordinate with the existing Company System. **[THESE VALUES MAY BE CHANGED BY THE COMPANY UPON COMPLETION OF THE IRS. WITHOUT LIMITATION, FOR A DISTRIBUTION-CONNECTED FACILITY, UPON COMPLETION OF THE IRS THE COMPANY MAY SPECIFY REQUIREMENTS FOR A MANDATORY DISCONNECTION FROM THE COMPANY SYSTEM AT  $V > 1.2$  pu. RIDE-THROUGH REQUIREMENTS FOR OTHER SYSTEMS WILL BE DETERMINED IN THE IRS.]**:

1.00 pu < V ≤ 1.10 pu	The Facility remains connected to the Company System and in continuous operation.
1.10 pu < V ≤ 1.20 pu	The Facility remains connected to the Company System and in continuous operation no less than 30 seconds; the duration of the event is measured from the point at which the voltage increases at or above 1.1 pu and ends when voltage is at or below 1.1 pu.
V > 1.20 pu	The Facility remains connected to the Company System and in continuous operation for as long as possible as allowed by the equipment operational limitations.

Protective Overvoltage Relaying (59) shall be set to alarm only to meet the above ride-through requirements, and shall not initiate a disconnect from the Company System unless Seller reasonably determines based upon Good Engineering and Operating Practices that the Facility's equipment is at risk of damage. This is necessary in order to coordinate with the existing Company System.

(g) Transient Stability Ride-Through.

In all modes, the Facility shall be designed such that the transient stability of Company System is maintained for normally cleared and secondarily cleared faults. The Facility will be required to remain connected through anticipated rates of change of frequency. The Facility shall provide the options of being configured as active power priority or reactive power priority during the ride-through. The selection of the appropriate priority of the Facility shall be determined by the Interconnection Requirements Study. **[TO BE PROVIDED UPON COMPLETION OF IRS].**

(h) [RESERVED]

(i) Underfrequency Ride-Through.

The Facility shall meet the following underfrequency ride-through requirements during an underfrequency disturbance, and export of power shall continue with output adjusted as appropriate for Facility droop response consistent with Section 1(g)(xi) (Active Power - Frequency Response (DROOP)), Section 1(g)(xii) (Dynamic Active Power - Frequency Performance), and **[FOR FACILITIES WITH STORAGE]** Section 1(g)(xiii) (Alternate Active Power / Frequency Response Modes) of this Attachment B (Facility Owned by Seller) ("f" is the Company System frequency at the Point of Interconnection):

$57.0 \text{ Hz} \leq f \leq 60.0 \text{ Hz}$

The Facility remains connected to the Company System and in continuous operation.

$56.0 \text{ Hz} \leq f < 57.0 \text{ Hz}$

The Facility remains connected to the Company System and in continuous operation for at least twenty (20) seconds per event. The duration of the event is from the point at which the frequency is below 57 Hz and ends when the frequency is at or above 57 Hz. The Facility may initiate an alarm if frequency remains in this range for more than twenty (20) seconds.

$f < 56.0 \text{ Hz}$

The Facility remains connected to the Company System and in continuous operation for the duration allowed by the equipment operational limitations. The Facility may initiate disconnection from the Company System.

Protective Underfrequency Relaying (81U) shall be set to alarm only to meet the above ride-through requirements, and shall not initiate a disconnect from the Company

System unless Seller reasonably determines based upon Good Engineering and Operating Practices that the Facility's equipment is at risk of damage. This is necessary in order to coordinate with the existing Company System.

Any tripping on calculated frequency should be based on accurately calculated and filtered frequency measurement over a time frame of minimum six cycles, or other period as specified by the Company, and should not use an instantaneously calculated value.

(j) Overfrequency Ride-Through.

The Facility will behave as specified below for overfrequency conditions, and export of power shall continue with output adjusted as appropriate for Facility droop response consistent with Section 1(g)(xi) (Active Power - Frequency Response (DROOP)), Section 1(g)(xii) (Dynamic Active Power - Frequency Performance), and **[FOR FACILITIES WITH STORAGE]** Section 1(g)(xiii) (Alternate Active Power / Frequency Response Modes) ("f" is the Company System frequency at the Point of Interconnection):

60.0 Hz < f ≤ 61.5 Hz	The Facility remains connected to the Company System and in continuous operation.
-----------------------	---

61.5 Hz < f ≤ 63.0 Hz	The Facility remains connected to the Company System for at least ten (10) seconds. After ten seconds the Facility may initiate an alarm and the Facility remains connected and producing power for the duration allowed by the equipment operational limitations. The duration of condition is from the point at which the frequency is above 61.5 Hz and ends when the frequency is at or below 61.5 Hz.
-----------------------	--



f > 63.0 Hz

The Facility remains connected to the Company System for the duration allowed by the equipment operational limitations. The Facility may initiate an alarm immediately.

Protective Overfrequency Relaying (810) shall be set to alarm only to meet the above ride-through requirements, and shall not initiate a disconnect from the Company System unless Seller reasonably determines based upon Good Engineering and Operating Practices that the Facility's equipment is at risk of damage. This is necessary in order to coordinate with the existing Company System.

Any tripping on calculated frequency should be based on accurately calculated and filtered frequency measurement over a time frame of minimum six cycles, or other period as specified by the Company, and should not use an instantaneously calculated value.

(k) Successive Faults.

If the resource necessitates tripping to protect from the cumulative effects of those successive faults, in a period of time to ensure safety and equipment integrity, the constraint and time periods should be provided for inclusion in the interconnection study. For all cases, at a minimum, the ride-through requirements shall be met for two ride-through events within two seconds to allow for the Company's transmission automatic reclosing attempt. **[Note - this requirement may be modified based on the results of the IRS.]**

(l) Rate of Change of Frequency ("ROCOF").

At minimum, the Facility shall ride through and shall not trip for frequency excursions having an absolute rate of change of frequency ("ROCOF") magnitude that is less than or equal to 5.0 Hz/s. To the extent the Facility inverter-based resources are capable, the Facility shall not use rate-of-change-of-frequency protection unless an equipment limitation exists that requires the inverter to trip on ROCOF magnitude greater than 5.0 Hz/s. Company should be informed by Seller

about the equipment limitation of the ROCOF. Any ROCOF tripping must be approved by Company.

(m) Voltage Phase Angle Change Ride-Through.

(i) The Facility equipment shall ride through positive-sequence phase angle changes within a sub-cycle-to-cycle time frame of the voltage at the Point of Interconnection of less than or equal to 30 electrical degrees. In addition, the Facility shall remain in operation for any change in phase angle of individual phases caused by occurrence and clearance of unbalanced faults, provided that the positive-sequence angle change does not exceed the forestated criterion. Active and reactive current oscillations in the post-disturbance period that are positively damped shall be acceptable in response to phase angle changes. Momentary cessation in the post-disturbance period shall not be permitted.

(ii) Inverter phase lock loop (PLL) loss of synchronism shall not cause the inverter to trip or enter momentary cessation within the voltage and frequency ride-through region. Inverters must be capable of riding through temporary loss of synchronism, and regain synchronism, without causing a trip or momentary cessation of the resource.

(n) DC Protection.

If the Facility requires DC reverse current protection, such protection must be coordinated with the inverter equipment module ratings and set to operate for short circuits on the DC side. DC reverse current protection shall not operate for transient overvoltage or for AC-side faults.

(o) Voltage Flicker.

Any voltage flicker on the Company System caused by the Facility shall not exceed the limits stated in IEEE Standard 1453-2011, or latest version "Recommended Practice - Adoption of IEC 61000-4-15:2010, Electromagnetic compatibility (EMC) - Testing and measurement techniques - Flickermeter - Functional and design specifications".

(p) Harmonics.

Harmonic distortion at the Point of Interconnection caused by the Facility shall not exceed the limits stated in IEEE Standard 519-1992, or latest version "Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems". Seller shall be responsible for the installation of any necessary controls or hardware to limit the voltage and current harmonics generated from the Facility to defined levels.

(q) Grid Forming ("GFM") Capabilities. [ **FOR FACILITIES WITH STORAGE**]

GFM control sets an internal voltage waveform reference such that and inverter with the GFM control shall be able to synchronize with the grid and regulate active and reactive power generation appropriately, regardless of the grid's strength, or operate independently of other generation. An inverter with GFM control shall immediately respond to grid disturbances to support stability of the grid and maintain its own control stability during the system disturbance.

Seller Facility inverters shall be designed with GFM control and capable of operating in GFM mode supporting system operation under normal and emergency conditions without relying on the characteristics of synchronous machines. While in GFM mode, the inverters will support grid operation, consistent with tariff requirements, as a continuous ac voltage source during normal and transient conditions (as long as no limits are reached within the inverter) and the ability to synchronize to other voltage sources and operate autonomously if a grid reference is unavailable, and should be able to share active and reactive power burden with other voltage sources without impacts on system stability.

Seller should provide information to the Company regarding control design, capabilities, characteristics, etc. of the GFM control of the Facility for Company review and approval. Additional specifics of the GFM control may be defined during the IRS.

**Specifically, the GFM controls shall have the following functions and characteristics:**

- (i) Allow Seller Facility to operate in stable manner on low system strength grids (e.g. low short

circuit ratio, low inertia, inertia-less system, etc.)

- (ii) Sets an internal voltage waveform reference and is able to synchronize with the grid or operate independently of other generation.
- (iii) Responds to system condition changes (i.e. frequency change and voltage change) beyond the control deadband in a timely manner by contributing towards the subsequent recovery of system frequency and voltage to the pre-disturbance value, assuming energy and power margins are available.
- (iv) Provide damping control function which damps oscillation within the interconnection and other adverse interactions among GFM and Grid Following ("GFL") Inverter Based Resources and other power electronic devices on the grid.
- (v) Upon the loss of the last synchronous machine in the power system, GFM will have the ability to operate autonomously if a grid reference is unavailable and be able to share active and reactive power burden with other voltage sources without impacts on system stability.
- (vi) Ability to transition from an electrical island to a grid-connect configuration without an impact to system stability.
- (vii) Provide active low-order harmonics cancellation (as applicable).
- (viii) Provide black-start capability (as applicable).
- (ix) Seller shall operate the Facility in GFM mode only as directed by the Company System Operator, in its sole discretion. The Facility shall be required to communicate to the Company its parameters and settings pertaining to GFM mode.
- (x) The grid forming control block diagram shall be submitted to the Company for review. The design shall be approved in writing by the Company and implemented by the Seller prior to control system

testing. This shall include initial settings for tunable controls parameters based on modeling. The initial control parameters may be modified by Seller on Company request; based on field data and performance, subsequent system resource changes, etc. to achieve acceptable system stability.

- (r) Black Start Capability. **[NOTE - APPLICABILITY BASED ON RESOURCE TYPE AND DESIGN, FOR INVERTER BASED RESOURCES PAIRED WITH STORAGE]** [For synchronous machines, require capability to operate in isochronous control and black start.] The BESS inverter shall be capable of grid forming "GFM" inverter control capability in accordance with Section (q) (Grid Forming "GFM" Capabilities) of this Attachment B. Further, inverter-based resources shall ensure they have sufficient energy storage to maintain power injection to the grid during system restoration (i.e., have power available when and if called upon). **[TO BE SPECIFIED DURING THE IRS]** Inverter based facilities shall be capable of support as a black start cranking path to start synchronous generators for restoration when sufficient energy and storage state of charge is available.

The Facility shall have sufficient short-term over-current capability to supply inrush currents during energizing of transformers and distribution feeders and starting auxiliary motors of conventional power plants. Other inrush-current mitigating solutions can be accepted as well based upon results of the IRS.

The Facility for black start shall be configured to provide a ground reference for a black start path during the black start procedure (avoid energizing delta-delta transformer connected paths, use switchable grounding transformers or use wye-grounded transformers with dedicated black start units).

- (s) Generator Step-Up Transformer Impedance.

The generator step-up transformer impedance shall be between [ ] percent and [ ] percent, inclusive, on transformer OA rating. **[NOTE: THESE VALUES WILL BE BASED ON THE RESULTS OF THE IRS.]**

(i) Self-Energization. Seller's Facility shall be able to self energize, i.e. start and energize itself without connecting with the Company System. The process of interconnecting the energized Facility with the Company System shall be seamless and bumpless using an auto-synchronizing circuit breaker. Immediately upon connecting to the Company System, the Facility shall transition to the normal operating mode. The self-energization control mode status shall be telemetered to the Company through SCADA.

(t) Control Systems and Auxiliary Equipment.

The power source for control systems and auxiliary equipment required for normal operation of the Facility shall be designed to be immune from system transients in accordance with the Public Utilities Commission of the State of Hawai'i tariff for Hawai'i Electric Light Company, Inc. Rule No. 2, Character of Service (Revised Sheet No. 5, effective Oct. 20, 1991) and Section 3.2(A)(6) (Facility Protection and Control Equipment) to meet the performance during under/over voltage and under/over frequency conditions pursuant to Section 3(e), (Undervoltage Ride-Through), Section 3(f), ((Over Voltage Ride-Through), Section 3(i) (Underfrequency Ride-Through) and Section 3(j) (Overfrequency Ride-Through) of this Attachment B (Facility Owned by Seller).

(u) Frequency Response

Seller shall comply with the requirements of Section 1(g)(xi) (Frequency Response (DROOP)), Section 1(g)(xii) (Dynamic Active Power - Frequency Performance), and **[FOR FACILITIES WITH STORAGE]** Section 1(g)(xiii) (Alternate Active Power / Frequency Response Modes) of this Attachment B (Facility Owned by Seller).

(v) Unintentional Islanding.

A Facility may be required to have protection against unintentional islanding based on IRS results. Ride through requirements specified herein shall not inhibit the islanding detection performance where a valid unintentional islanding condition exists.

(w) BOP Efficiency Ratio. [FOR WIND FACILITIES] Wind Facilities must achieve a satisfactory BOP Efficiency Ratio. Both the BOP Benchmark and the process for determining the BOP Efficiency Ratio will be determined upon completion of the NEP IE Estimate or Company-Designated NEP Estimate in accordance with Section 1(c) (NEP IE Estimate and Company-Designated NEP Estimate) of Attachment U (Calculation and Adjustment of Net Energy Potential) to this Agreement. The BOP Benchmark will be re-evaluated as part of the OEPR process under Attachment U (Calculation and Adjustment of Net Energy Potential).

4. Maintenance of Seller-Owned Interconnection Facilities.

- (a) Seller must address any Disconnection Event (as defined below) according to the requirements of this Section 4 (Maintenance of Seller-Owned Interconnection Facilities) of Attachment B (Facility Owned by Seller). For the purposes of this Section 4 (Maintenance of Seller-Owned Interconnection Facilities), a "Disconnection Event" is the removal of 7.5 MW\_\_\_ of capacity or more from Company System and/or disconnection of the Facility from the Company's System (i) that is not the result of Company dispatch, frequency droop response, or isolation of the Facility resulting from designed protection fault clearing, and (ii) for which Company does not issue the written notice for failure to meet operational and performance requirements as set forth in Section 1(j) (Demonstration of Facility) of this Attachment B (Facility Owned by Seller). Company's election to exercise its rights under Section 1(j) (Demonstration of Facility) shall not relieve Seller of its obligation to comply with the requirements of this Section 4 (Maintenance of Seller-Owned Interconnection Facilities) for any future Disconnection Event during the pendency of such election or thereafter.
- (b) For every Disconnection Event, Seller shall investigate the cause. Within three (3) Business Days of the Disconnection Event, Seller shall provide, in writing to Company, an incident report that summarizes the sequence of events and probable cause.
- (c) Within forty-five (45) Days of a Disconnection Event, Seller shall provide, in writing to Company, Seller's

findings, data relied upon for such findings, and proposed actions to prevent reoccurrence of a Disconnection Event ("Proposed Actions"). Company may assist Seller in determining the causes of and recommendations to remedy or prevent a Disconnection Event ("Company's Recommendations"). Seller shall implement such Proposed Actions (as modified to incorporate the Company's Recommendations, if any) and Company's Recommendations (if any) in accordance with the time period agreed to by the Parties.

- (d) In the event Seller and Company disagree as to (i) whether a Disconnection Event occurred, (ii) the sequence of events and/or probable cause of the Disconnection Event, (iii) the Proposed Actions, (iv) Company's Recommendations, and/or (v) the time period to implement the Proposed Actions and/or Company's Recommendations, then the Parties shall follow the procedure set forth in Section 5 (Expedited Dispute Resolution) of this Attachment B (Facility Owned by Seller).
- (e) Upon the fourth (4th) Disconnection Event (and each subsequent Disconnection Event) within any Contract Year, the Parties shall follow the procedures set forth in Section 4(a) and Section 4(d) of Attachment B (Facility Owned by Seller), to the extent applicable. If after following the procedures set forth in this Section 4 (Maintenance of Seller-Owned Interconnection Facilities) of Attachment B (Facility Owned by Seller), Seller and Company continue to have a disagreement as to (1) the probable cause of the Disconnection Event, (2) the Proposed Actions, (3) the Company's Recommendations, and/or (4) the time period to implement the Proposed Actions and/or the Company's Recommendations, then the Parties shall commission a study to be performed by a qualified independent Third-Party consultant ("Qualified Consultant") chosen from the Qualified Independent Third-Party Consultants List ("Consultants List") attached to the Agreement as Attachment D (Consultants List). Such study shall review the design of, review the operating and maintenance procedures dealing with, recommend modifications to, and determine the type of maintenance that should be performed on Seller-Owned Interconnection Facilities ("Study"). Seller and Company shall each pay for one-half of the total cost of



the Study. The Study shall be completed within ninety (90) Days from such fourth Disconnection Event (and each subsequent Disconnection Event) within any Contract Year, unless the Qualified Consultant determines the Study cannot reasonably be completed within ninety (90) Days, in which case, such longer period of time as the Qualified Consultant determines is necessary to complete the Study shall apply. The Qualified Consultant shall send the Study to Company and Seller. Seller (and/or its Third-Party consultants and contractors), at Seller's expense, shall change the design of, change the operating and maintenance procedures dealing with, implement modifications to, and/or perform the maintenance on Seller-Owned Interconnection Facilities recommended by the Study. Such design changes, operating and maintenance procedure changes, modifications, and/or maintenance shall be completed no later than forty-five (45) Days from the Day the completed Study is issued by the Qualified Consultant, unless such design changes, operating and maintenance procedure changes, modifications, and/or maintenance cannot reasonably be completed within forty-five (45) Days, in which case, Seller shall complete the foregoing within such longer commercially reasonable period of time agreed to by the Parties in writing. The Company shall have the right to derate the Facility to a level that maintains reliable operations in accordance with Good Engineering and Operating Practices, and the Facility shall be deemed to be in Seller-Attributable Non-Generation status, until the study has been completed and the study's recommendations have been implemented by Seller to Company's reasonable satisfaction. Nothing in this provision shall affect Company's right to dispatch the Facility as provided for in this Agreement.

- (f) The Consultants List attached to the Agreement as Attachment D (Consultants List) contains the names of engineering firms which both Parties agree are fully qualified to perform the Study. At any time, except when a Study is being conducted, either Party may remove a particular consultant from the Consultants List by giving written notice of such removal to the other Party. However, neither Party may remove a name or names from the Consultants List without approval of the other Party if such removal would leave the list without

any names. Intended deletions shall be effective upon receipt of notice by the other Party, provided that such deletions do not leave the Consultants List without any names. Proposed additions to the Consultants List shall automatically become effective thirty (30) Days after notice is received by the other Party unless written objection is made by such other Party within said thirty (30) Day period. By mutual agreement between the Parties, a new name or names may be added to the Consultants List at any time.

5. Expedited Dispute Resolution.

If there is a disagreement between Company and Seller regarding (i) whether a Disconnection Event occurred, (ii) the sequence of events and/or probable cause of the Disconnection Event, (iii) the Proposed Actions, (iv) the Company's Recommendations, and (v) the time period to implement the Proposed Actions and/or the Company's Recommendations, then authorized representatives from Company and Seller, having full authority to settle the disagreement, shall meet in Hawai'i (or by telephone conference) and attempt in good faith to settle the disagreement. Unless otherwise agreed in writing by the Parties, the Parties shall devote no more than five (5) Business Days to settle the disagreement in good faith. In the event the Parties are unable to settle the disagreement after the expiration of the time period, then such disagreement shall constitute a Dispute for which either Party may pursue the dispute resolution procedure set forth in Section 28.2 (Dispute Resolution Procedures, Mediation) of this Agreement.

6. Modeling.

- (a) Seller's Obligation to Provide Models. Within 30 Days of Company's written request, but no later than the Commercial Operations Date, Seller shall provide detailed data regarding the design and location of the Facility, in a form reasonably satisfactory to Company, to allow the modeling of the inverters and any other equipment within the Facility identified in the IRS which utilizes Source Code (such as energy storage system, STATCOM or DVAR equipment), including, but not limited to, integrated and validated power flow and transient stability models (such as PSS/E models), a short circuit model (such as an ASPEN model), and an

electro-magnetic transient model (such as a PSCAD model) of the inverters and any additional equipment identified in the IRS as set forth above, applied assumptions, and pertinent data sets (each a "Required Model" and collectively, the "Required Models"). Thereafter, during the Term, Seller shall provide working updates of any Required Model within 30 Days of (i) Company's written request, or (ii) Seller obtaining knowledge or notice that any Required Model has been modified, updated or superseded by the Source Code Owner.

(b) Escrow Establishment. If, pursuant to Section 6(a) (Seller's Obligation to Provide Models) of this Attachment B (Facility Owned by Seller), the Required Models are provided to the Company in a form other than Source Code, Seller shall arrange for and ensure that the Source Code for the relevant Required Model is deposited into the Source Code Escrow as set forth below in Section 6(b)(i) (Source Code Escrow) of this Attachment B (Facility Owned by Seller) no later than the time periods set forth in Section 6(a) (Seller's Obligation to Provide Models) of this Attachment B (Facility Owned by Seller) for delivery of the Required Models. Seller shall be responsible for all costs associated with establishing and maintaining the Source Code Escrow. If, however, Seller is unable to deposit the required Source Code into the Source Code Escrow within the time periods set forth in Section 6(a) (Seller's Obligation to Provide Models), Seller shall, no later than such time periods, instead establish a monetary escrow as set forth below in Section 6(b)(ii) (Monetary Escrow) of this Attachment B (Facility Owned by Seller).

(i) Source Code Escrow.

A. Establishment of Source Code Escrow. If the Required Models are not provided to the Company in the form of Source Code pursuant to Section 6(a) of this Attachment B (Facility Owned by Seller), Seller shall: (a) arrange for and ensure the deposit of a copy of the current version of the Source Code and relevant documentation for all Required Models with the Source Code Escrow Agent under the terms and conditions of the Source Code Escrow

Agreement, and (b) arrange for and ensure the update of the deposited Source Code and relevant documentation for Major Releases and Minor Releases of the Required Models as soon as reasonably possible after they are made generally available.

B. Release Conditions. Company shall have the right to obtain from the Source Code Escrow Agent one copy of the escrowed Source Code for the Required Models, under the following conditions upon Company's request:

- (i) A receiver, trustee, or similar officer is appointed, pursuant to federal, state or applicable foreign law, for the Source Code Owner;
- (ii) Any voluntary or involuntary petition or proceeding is instituted, under (x) U.S. bankruptcy laws or (y) any other bankruptcy, insolvency or similar proceeding outside of the United States, by or against the Source Code Owner; or
- (iii) Failure of the Source Code Owner to function as a going concern or operate in the ordinary course; or
- (iv) Seller and the Source Code Owner fail to provide to Company the Required Models or updated Required Models, or, alternatively, fail to issue a Source Code LC, within the time periods set forth in Section 6(a) (Seller's Obligation to Provide Models) of this Attachment B (Facility Owned by Seller), Company gives written notice of such failure to Seller and the Source Code Owner, and Seller and Source Code Owner fail to remedy such breach within five (5) Days following receipt of such notice.

C. Remedies. If Company has the right to obtain from the Source Code Escrow Agent one copy of the escrowed Source Code for the Required

Models pursuant to Section 6(b)(i)(B) (Release Conditions) of Attachment B (Facility Owned by Seller), and Company finds that Seller failed to arrange for and ensure the update the Source Code Escrow with the modified and/or updated Source Code and relevant documentation for Major Releases and Minor Releases of the Required Models as provided in Section 6(b)(i) (Establishment of Source Code Escrow) of Attachment B (Facility Owned by Seller) or that the Source Code for the Required Models is incomplete or otherwise unusable, Seller shall be liable to Company for liquidated damages in the amount of \$500 per Day for each Day Seller fails to provide such Source Code to Company or such update to the Source Code to Company from the date such Major Release or Minor Release was first made available by the Source Code Owner to customers of the Source Code Owner. Failure to provide the updated Source Code of the Required Models within 30 Days' notice from Company of a breach of Section 6(b)(i)(A) (Establishment of Source Code Escrow) of Attachment B (Facility Owned by Seller); provided, that Seller has also failed to provide a satisfactory Source Code LC as set forth in Section 6(b)(ii) (Source Code Security) of this Attachment B (Facility Owned by Seller) shall constitute an Event of Default pursuant to Section 15.2(f) under the Agreement.

- D. Certification. The Source Code Escrow Agent shall release the Source Code of the Required Models to Company upon receipt of a signed statement by a representative of Company that reads substantially as follows:

The undersigned hereby certifies that (i) I am duly authorized to execute this document on behalf of **[Maui Electric Company, Limited] [Hawai'i Electric Light Company, Inc.]** ("Company"), and (ii) Company is entitled to a copy of the Source Code of the Required Models Pursuant to Section 6(b)(i)(B) (Release

Conditions) of Attachment B (Facility Owned by Seller) of the Power Purchase Agreement dated as of \_\_\_\_\_, between \_\_\_\_\_, and Company.

- E. Authorized Use. If Company becomes entitled to a release of the Source Code of the Required Models from escrow, Company may thereafter correct, modify, update and enhance the Required Models for the sole purpose of providing itself the support and maintenance it otherwise would have been entitled to if it had been provided the Required Models by Seller under Section 6(a) (Seller's Obligation to Provide Models) of this Attachment B (Facility Owned By Seller) (the "Source Code Authorized Use").
- F. Confidentiality Obligations. Company shall keep the Source Code of the Required Models confidential pursuant to the confidentiality obligations of the Source Code Escrow Agreement. Company shall restrict access to the Source Code of the Required Models to those employees, independent contractors and consultants of Company who have agreed in writing to be bound by confidentiality and use obligations consistent with those specified in the Escrow Agreement, and who have a need to access the Source Code of the Required Models on behalf of Company to carry out their duties for the Source Code Authorized Use. Promptly upon Seller's request, Company shall provide Seller with the names and contact information of all individuals who have accessed the Source Code of the Required Models, and shall take all reasonable actions required to recover any such Source Code in the event of loss or misappropriation, or to otherwise prevent their unauthorized disclosure or use.

(ii) Source Code Security.

- (A) Establishment of Source Code Security. If the Required Models and their relevant Source Code are not provided to the

Company in the form of Source Code pursuant to Section 6(a) (Seller's Obligation to Provide Models) of this Attachment B (Facility Owned by Seller) and if the Seller is unable to arrange for and ensure the deposit of the Source Code into the Source Code Escrow established for the benefit of the Company pursuant to Section 6(b)(i) (Source Code Escrow) of this Attachment B (Facility Owned by Seller) then, no later than the time periods set forth in Section 6(a) (Seller's Obligation to Provide Models) of this Attachment B (Facility Owned by Seller) for delivery of the Required Models and Source Code, Seller shall provide an irrevocable standby letter of credit (the "Source Code LC") with no documentation requirement in the amount of Two Hundred Fifty Thousand Dollars (\$250,000) per Required Model (and its relevant Source Code) substantially in the form attached to this Agreement as Attachment M (Form of Letter of Credit) from a bank chartered in the United States with a credit rating of "A-" or better from Standard & Poor's or A3 or better from Moody's. Such letter of credit shall be issued for a minimum term of one (1) year. Furthermore, at the end of each year the security shall be renewed for an additional one (1) year term so that at the time of such renewal, the remaining term of any such security shall not be less than one (1) year. The letter of credit shall include a provision for at least thirty (30) Days' advance notice to Company of any expiration or earlier termination of the letter of credit so as to allow Company sufficient time to exercise its rights under said security if Seller fails to extend or replace the security. In all cases, the reasonable costs and expenses of establishing, renewing, substituting, canceling, increasing, reducing, or otherwise

administering the letter of credit shall be borne by Seller.

- (B) Release Conditions. Company shall have the right to draw on the letter of credit the funds necessary to develop and recreate the Required Model or Required Models upon Company's request if Seller fails to provide the Company the Required Models or updated Required Models within the time periods set forth in Section 6(a) (Seller's Obligation to Provide Models) or Section 6(b)(i)(C) (Remedies) of this Attachment B (Facility Owned by Seller), Company gives written notice of such failure to Seller, and Seller fails to remedy such breach within five (5) Days following receipt of such notice for a breach under Section 6(a) (Seller's Obligation to Provide Models), or within thirty (30) Days following receipt of such notice for a breach under Section 6(b)(i)(C) (Remedies).
  
- (C) Extend Letter of Credit. If the letter of credit is not renewed or extended no later than thirty (30) Days prior to its expiration or earlier termination, Company shall have the right to draw immediately upon the full amount of the letter of credit and to place the proceeds of such draw (the "Proceeds"), at Seller's cost, in an escrow account in accordance with Section 6(b)(ii)(D) (Proceeds Escrow), until and unless Seller provides a substitute form of letter of credit meeting the requirements of this Section 6(b)(ii) (Source Code Security) of this Attachment B (Facility Owned by Seller).
  
- (D) Proceeds Escrow. If Company draws on the letter of credit pursuant to Section 6(b)(ii)(C) (Extend Letter of Credit) of this Attachment B (Facility Owned by Seller), Company shall, in order to avoid comingling the Proceeds, have the right



but not the obligation to place the Proceeds in an escrow account as provided in this Section 6(b)(ii)(D) (Proceeds Escrow) of this Attachment B (Facility Owned by Seller) with a reputable escrow agent acceptable to Company ("Proceeds Escrow Agent") subject to an escrow agreement acceptable to Company ("Proceeds Escrow Agreement"). Without limitation to the generality of the foregoing, a federally-insured bank shall be deemed to be a "reputable escrow agent." Company shall have the right to apply the Proceeds as necessary to recover amounts Company is owed pursuant to this Section 6 (Modeling) of this Attachment B (Facility Owned by Seller). To that end, the Proceeds Escrow Agreement governing such escrow account shall give Company the sole authority to draw from the account. Seller shall not be a party to such Proceeds Escrow Agreement and shall have no rights to the Proceeds. Upon full satisfaction of Seller's obligations under Section 6 (Modeling) of this Attachment B (Facility Owned by Seller), Company shall instruct the Proceeds Escrow Agent to remit to the bank that issued the letter of credit that was the source of the Proceeds the remaining balance (if any) of the Proceeds. If there is more than one escrow account with Proceeds, Company may, in its sole discretion, draw on such accounts in any sequence Company may select. Any failure to draw upon the Proceeds for any damages or other amounts due Company shall not prejudice Company's rights to recover such damages or amounts in any other manner.

- (E) Seller's Obligation. If the letter of credit is not sufficient to cover Company's associated consultant fees, costs and expenses to develop and recreate the Required Models, Seller shall pay to Company the difference within ten (10)

Days of Company's written notice to Seller.

- (F) Model Verification. Seller shall work with the Company to validate the new Required Models developed by or on behalf of Company within sixty (60) Days of receiving such new Required Models. Seller shall also arrange for and ensure that Company may obtain new Required Models directly from the Source Code Owner in the event that Seller ceases to operate as a going concern or is subject to voluntary or involuntary bankruptcy and is unable or unwilling to obtain the new Required Models from the Source Code Owner.
- (G) Certification. The terms of the letter of credit shall provide for a release of the funds, or in the event the funds have been placed into a Proceeds Escrow, the Escrow Agent shall release the necessary funds to Company upon receipt of a signed statement by a representative of Company that reads substantially as follows:

The undersigned hereby certifies that (i) I am duly authorized to execute this document on behalf of **[Maui Electric Company] [Hawai'i Electric Light Company, Inc.]** ("Company"), and (ii) Company is entitled to \$\_\_\_\_\_, pursuant to Section 6(b)(ii)(B) (Release Conditions) of Attachment B (Facility Owned by Seller) of the Power Purchase Agreement dated as of \_\_\_\_\_, between \_\_\_\_\_, and Company.

- (H) Authorized Use. If Company becomes entitled to a draw of funds from the Source Code Security or a release of funds from the Proceeds Escrow, Company may thereafter use such funds to develop, recreate, correct, modify, update and enhance the Required Models for the sole

purpose of providing itself the support and maintenance it otherwise would have been entitled to if it had been provided the Required Models by Seller under Section 6(a) (Seller's Obligation to Provide Models) of this Attachment B (Facility Owned by Seller) (the "Monetary Authorized Use").

(iii) Supplementary Agreement. The parties stipulate and agree that the escrow provisions in this Section 6(b) (Escrow Establishment) of Attachment B (Facility Owned by Seller), and the Source Code Escrow Agreement and Proceeds Escrow Agreement are "supplementary agreements" as contemplated in Section 365(n)(1)(B) of the Code. In any voluntary or involuntary bankruptcy proceeding involving Seller, failure by Company to assert its rights to "retain its rights" to the intellectual property encompassed by the Source Code or the funds in the Proceeds Escrow, pursuant to Section 365(n)(1)(B) of the Code, under an executory contract rejected in a bankruptcy proceeding, shall not be construed as an election to terminate the contract by Company under Section 365(n)(1)(A) of the Code.

7. Testing Requirements.

- (a) Testing Requirements. Once the Control System Acceptance Test has been successfully passed, Seller shall not replace and/or change the configuration of the Facility Control, inverter control settings and/or ancillary device controls, without prior written notice to Company. In the event of any such replacement and/or change, the relevant test(s) of the Control System Acceptance Test shall be redone and must be successfully passed before the replacement or altered equipment is allowed to be placed in normal operations. In the event that Company reasonably determines that such replacement and/or change of controls makes it inadvisable for the Facility to continue in normal operations without a further Control Systems Acceptance Test, the Facility shall be deemed to be in Seller-Attributable Non-Generation status until the new relevant tests of the Control System Acceptance Test have been successfully passed.
- (b) Periodic Testing. Seller shall coordinate periodic testing of the Facility with Company to ensure that the

Facility is meeting the performance standards specified under this Agreement.

8. Data and Forecasting.

Seller shall provide Site, meteorological and production data in accordance with the terms of Article 6 (Forecasting) of this Agreement and the following requirements:

(i) Physical Site Data: Seller shall provide Company with an accurate description of the physical Site, including but not limited to the following, **[as appropriate to Facility resource type(s) and use of storage]** which may not be changed during the Term without Company's prior written consent:

A. Location Facility Map showing the layout of the Facility (coverage area or footprint) and the coordinates (latitude and longitude) of generating equipment:

Solar PV: elevation (above ground), orientation angle and direction (north-east-south-west plane) of arrays/concentrators.

Wind Generators: coordinates (latitude and longitude) and height above ground of each WTG hub.

Seller shall provide a map and key for each inverter or WTG sufficient to allow Company to correlate the data received through Company's data historian system to each individual resource.

B. Location (latitude and longitude) and elevation (above ground) of each MMS and elevation (above ground) of each field measurement device for, e.g., air density, ambient air pressure and ambient air temperature, located at each MMS or each field measurement device located on such MMS.

C. For solar resource inverters: Inverter type, power rating, array configuration to inverters and DC rating of the Facility at the following standard test conditions: irradiance of 1000

W/m<sup>2</sup>, air mass 1.5, and cell temperature 25° C.

- D. Solar generation technology employed at the Facility with temperature dependence, mounting and module type.
- E. Wind generation technology employed at the Facility with representative power curve(s).
- F. BESS technology and related auxiliary equipment, location and type.

(i) Meteorological and Production Data.

- A. Seller shall install and maintain a minimum of one MMS for facilities with a Contract Capacity of less than 5 MW and a coverage area of not more than one square kilometer.
  - (i) Seller shall install and maintain a minimum of two MMS for facilities that have either (i) a Contract Capacity of 5 MW or greater or (ii) a coverage area greater than one square kilometer.
  - (ii) Placement of each MMS should account for the microclimate of the area and Facility coverage area and shall be oriented with respect to the primary wind direction.
  - (iii) Seller shall provide to Company, via SCADA communication and protocol acceptable to Company to support operations and forecasting needs at a continuous scan, all meteorological and production data required under this Agreement updated every 2 seconds.
  - (iv) Seller shall arrange for a dedicated distribution voltage line to provide separate service from Company, or for such other independent, backup power source as approved by Company in writing, to temporarily store and record the meteorological data from the field measuring devices at the MMS(s). Any such backup power source must be capable of providing power for the field measurement devices for a reasonable period of time until primary power

is restored. The same backup power source can serve multiple MMS(s) as needed by the Facility.

(ii) Units and Accuracy:

A. [For Solar] The Table below shows minimum required solar irradiance measurements for various types of solar generation technology. This value may not be derived.

Solar Technology	Direct Normal Irradiance	Global Irradiance (GHI)	Plane of Array Irradiance (POA)
<b>Flat Plate</b> (fixed horizontal, fixed angle, tracking, roof mounted)		X	X
<b>Flat Panel Solar Thermal</b> (fixed angle, roof mounted, tracking)	X		X
<b>Concentrated PV</b> (flat, trough, tracking)	X	X	X

B. Units and accuracy of measured parameters to be provided to Company in real time shall be as shown in the Table below. These represent the minimum required accuracies.

**Table of Units and Accuracy of Meteorological and Production Data (PV)**

Parameter	Data Source	Unit	Range	Accuracy
Global Horizontal Irradiance at MMS	Pyranometer or equivalent	W/m <sup>2</sup>	0 to 1500 W/m <sup>2</sup>	Secondary standard per ISO 9060 or <= 3% from 100 W/m <sup>2</sup> to 1500 W/m <sup>2</sup> if using a PV

Parameter	Data Source	Unit	Range	Accuracy
				Reference Cell
Plane of Array Irradiance on same axis as array	Pyranometer or equivalent	W/m <sup>2</sup>	0 to 1500 W/m <sup>2</sup>	Secondary standard per ISO 9060 or <= 3% from 100 W/m <sup>2</sup> to 1500 W/m <sup>2</sup> if using a PV Reference Cell
Back of Panel temperature at array height	Temperature probe	°C	-20 to +50 °C	+/-1 °C
Ambient air temperature at MMS	Temperature probe	°C	-20 to +50 °C	+/-1 °C
Wind speed at MMS	Anemometer, sonic device or equivalent	mph	0 to 134 mph	+/-1 mph
Set point for each inverter	Reported by Seller	MW	0 to inverter name plate	Not applicable
Power production of Facility	Measured at POI	MW	Up to Net Nameplate Capacity	+/-0.1 MW
BESS Charging Power	Measured at BESS Charging Interface	MW	Up to Net Nameplate Capacity	+/-0.1 MW
Facility power production ratio	Ratio of Facility's power production (MW) / Net Nameplate (MW)	%	0 to 100%	+/-0.1 %
Inverters Available	Seller's system	digital	Up to the number of installed inverters	

Parameter	Data Source	Unit	Range	Accuracy
Facility Inverter Availability	Ratio of inverters online/number of inverters	%	0 to 100%	
Power Possible	Seller's Model	MW	0 to Net Nameplate Capacity	+/-0.1 MW

**Table of Units and Accuracy of Meteorological and Production Data (Wind)**

Parameter	Data Source	Unit	Range	Accuracy
Wind speed at MMT (hub height)	Cup or sonic anemometer	Mph	0 to 134 mph	+/-1 mph
Wind direction at MMT (hub height)	Vane, sonic device or equivalent	Degrees (from True North)	360°	+/-5°
Ambient air temperature at MMT (hub height)	Temperature probe	°C	-20 to +50 °C	+/-1 °C
Ambient air pressure at MMT (hub height)	Piezoresistive transducer, barometer or equivalent	Mbar	150 to 1150 mbar	+/-60 mbar (0 to +50°C)
Power production of Facility	Measured at POI	MW	0 to Net Nameplate Capacity	+/- 0.1 mw
Power production of each WTG	Measured at each WTG meter	MW		+/- 0.1 mw
Wind speed at each WTG (WTG Nacelle)	Cup or sonic anemometer	Mph	0 to 134 mph	+/-1 mph
WTGs Available	Seller's system	digital	Up to the number of installed WTGs	



BESS Power	Measured at BESS Interface	MW	+ & - BESS Contract Capacity (MW)	+/-0.1 MW
Power Possible	Seller's Model	MW	0 to 120% of Net Nameplate Capacity	+/-0.1 MW

(iv) [RESERVED]

(v) Data Collection.

**[NOTE COMPANY TO UPDATE REQUIREMENTS; WILL BE SPECIFIC TO FACILITY EQUIPMENT AND RESOURCE TYPE]**

**Plant Data: [Note: specific requirements below are representative of variable energy resources and will be tailored to the Facility resource type(s) and geographic arrangement]**

At least two months prior to the Commercial Operation Date, Seller shall deliver to Company a report showing (i) manufacturer, model and year of all energy equipment (panels, inverters, energy storage devices), and meteorological instrumentation, and (ii) the latitude and longitude of the center of the energy equipment (i.e., solar panels for every inverter, wind turbines) and every meteorological tower. Beginning upon COD, Seller shall transmit and provide to Company the real-time data set forth in Section 8(i) through (iii) of this Attachment B.

9. Technology Specific Requirements.

(a) [RESERVED].

(b) [RESERVED].

(c) Inverter Systems.

- (i) Direct current generators and non-power (i.e., other than 60 Hertz) alternating current generators can only be installed in parallel with the Company System using a non-islanding synchronous inverter unless alternate designs are approved by the Company. The design shall comply with the requirements of IEEE Std 1547-2018 (or latest version), except as described in Section 3 (Performance Standards) of this Attachment B (Facility Owned by Seller).
  - (ii) Self-commutated inverters of the Company-interactive type shall synchronize to the Company System. Line-commutated, thyristor-based inverters are not recommended and will require additional technical study to determine harmonic and reactive power requirements. All interconnected inverter systems shall comply with the harmonic current limits of IEEE Std 519-1992 (or latest version).
- (d) Battery Energy Storage System. The operating parameters of the BESS for facilities with paired storage shall be as follows:
- (i) For facilities with variable energy and paired storage: The BESS shall directly charge storage from the variable resource when the Company Active Power Dispatch is for less than the available resource energy.
  - (ii) No more than [ ]% of the BESS energy capacity can be charged from the grid prior to the fifth anniversary of the Commercial Operations Date. Thereafter, 100% of the BESS energy capacity can be charged from the grid. **[DRAFTING NOTE: 5-YEAR LIMITATION ON GRID CHARGING WILL BE DELETED IF ITC RECAPTURE IS NOT APPLICABLE TO THE BESS.]**
  - (iii) The BESS will not be required to discharge more energy than available relative to the available state of charge.
  - (iv) For storage used primarily for energy shifting, the BESS shall be designed for an average annual use of 365 cycle(s) (a cycle is a discharge equal the BESS Contract Capacity and sufficient charging to return the BESS to 100% State of Charge). Facilities with

variable energy generation and paired energy storage shall be able to charge the storage from the variable energy resource while disconnected from the Company System. The Seller shall charge the storage while disconnected from the Company System only as directed by the Company up to the operating limits of the Facility.

- (v) The BESS energy capacity shall be sized above the BESS Contract Capacity to provide sufficient energy to self energize the Facility in accordance with Section 3(s)(i) (Self-Energization) of this Attachment B (Facility Owned by Seller). The BESS shall maintain sufficient energy to self energize the Facility at all times except when discharged for such purpose. Upon discharging to self energize the Facility, the BESS must restore the self-energization energy as soon as possible.

EXHIBIT B-1  
REQUIRED MODELS

To be completed based on the Project's characteristics. The Required Models are listed in the RFP Appendix B, Attachment 4 -Model and Interconnection Requirements (IRS) Scope of the RFP.

Modeling requirements are set forth in the RFP Appendix B, Attachment 3 Hawaiian Electric Facility Technical Model Requirements and Review Process of the RFP.

***[EXHIBIT B-2 WILL BE PREPARED TO REFLECT  
THE RESULTS OF IRS]***

EXHIBIT B-2  
GENERATOR AND ENERGY STORAGE CAPABILITY CURVE(S)

ATTACHMENT D  
CONSULTANTS LIST

(To be completed as per Section 25.4 of the Agreement)

Model RDG PPA (PV+BESS or Wind+BESS )  
Maui Electric Company, Limited  
Hawai'i Electric Light Company, Inc.

ATTACHMENT E  
SINGLE-LINE DRAWING AND INTERFACE BLOCK DIAGRAM

(To be attached as per Section 1(a) Attachment B)

ATTACHMENT F  
RELAY LIST AND TRIP SCHEME

(To be attached as per Section 1(a) of Attachment B)



**[ATTACHMENT G SHALL BE REVISED TO REFLECT  
THE RESULTS OF IRS]**

ATTACHMENT G  
COMPANY-OWNED INTERCONNECTION FACILITIES

1. Description of Company-Owned Interconnection Facilities.

- (a) General. Company shall furnish or construct (or may have Seller furnish or construct, in whole or in part), own, operate and maintain all Interconnection Facilities required to interconnect Company System with Facility at [REDACTED] volts, up to the Point of Interconnection (collectively, the "Company-Owned Interconnection Facilities").
- (b) Site. Where any Company-Owned Interconnection Facilities are to be located on the Site, Seller shall provide, at no expense to Company, a location and access acceptable to Company for all such Company-Owned Interconnection Facilities, as well as an easement, license or right of entry to access such Company-Owned Interconnection Facilities. If power sources (120/240VAC) are required, Seller shall provide such sources, at no expense to Company.
- (c) IRS. An IRS addressing Facility requirements was completed for the Project in accordance with the IRS Letter Agreements, and the results have been incorporated in Attachment B (Facility Owned by Seller) and this Attachment G (Company-Owned Interconnection Facilities) as appropriate.
- (d) Seller's Payment Obligations. Company-Owned Interconnection Facilities, for which Seller has agreed to pay, whether designed, engineered and constructed by Seller or Company, include **[ADD LIST OF COMPANY-OWNED INTERCONNECTION FACILITIES THAT ARE REQUIRED PURSUANT TO THE RESULTS OF THE IRS. THE FOLLOWING IS AN EXAMPLE OF THE TYPES OF FACILITIES THAT COULD BE LISTED]:**

(i) [Line extension];

(ii) A manually operated, lockable, group operated switch located on a pole prior to the Facility

switching station. Company will install a \_\_\_\_ kV drop into Seller-provided deadend structure.

- (iii) Substation additions and/or modifications of Company's existing structures as necessary. This would include but not be limited to protective relaying and setting changes;
  - (iv) Supervisory control and communications equipment (including but not limited to, SCADA/Telemetry and Control, microwave, satellite, dedicated phone line(s) and/or any other acceptable communications means (determined by Company), fiber optics, copper cabling, installation of batteries and charger system, etc.);
  - (v) Revenue Metering Package as provided in Section 10.1 (Meters) of the Agreement;
  - (vi) Any additional Interconnection Facilities needed to be installed as a result of final determination of Facility switching station site, final design of Facility to enable Company to complete the Interconnection Facilities and be compatible with Good Engineering and Operating Practices.
  - (vii) If equipment that is not standard to Company is utilized, Seller shall, at the discretion of Company, provide adequate spares.
- (e) Revisions to Costs. The list of Company-Owned Interconnection Facilities, and engineering and testing costs for Company-Owned Interconnection Facilities, for which Seller agrees to pay in accordance with this Attachment G (Company-Owned Interconnection Facilities), are subject to revision if (i) before approving this Agreement, the PUC approves a power purchase agreement for another non-Company owned electric generating facility ("Second NUG Contract") to supply electric energy to Company using the same line to which Facility is to be connected or (ii) the line to which Facility is to be connected and/or the related transformer(s) need(s) to be upgraded and/or replaced as a result of this Agreement and a Second NUG Contract, and the PUC, in approving this Agreement, determines that Seller should pay for all or part of the cost of such upgrade and/or replacement.

- (f) Review of the Listing and Costs. If the Commercial Operations Date is not achieved by the Guaranteed Commercial Operations Date, as such date may be extended as provided in Section 13.3 (Guaranteed Project and Reporting Milestone Dates), the listing of the Company-Owned Interconnection Facilities required in this Agreement and the cost-estimates for such Company-Owned Interconnection Facilities are subject to review and revision. Such revision may include, but not be limited to, such items as reconductoring an existing transmission or distribution line, construction of a new line, increase transformer capacity, and alternative relay specifications. In addition, such review and revision may require that the Company re-perform or update the IRS at the Seller's expense.
- (g) Responsibility of Seller and Company. The general responsibilities of Seller and Company for the design, procurement, installation, programming/testing, and maintenance/ownership of equipment at the Facility and the Company-Owned Interconnection Facilities is specified in Matrix G-1 (Substation Responsibilities) and Matrix G-2 (Telecom Responsibilities). **[DRAFTING IRS.]**

2. Construction and Support Services By Seller.

(a) Construction and Support Services By Seller.

- (i) Seller (and/or its Third Party consultants or contractors (collectively, "Contractors")) will design, engineer, construct, test and place in service, at Seller's expense:
- A. The items identified in Matrix G-1 (Substation Responsibilities) and Matrix G-2 (Telecom Responsibilities) as being the responsibility of Seller to construct; and
- B. **[ANY OTHER COMPANY-OWNED INTERCONNECTION FACILITIES TO BE CONSTRUCTED BY SELLER].**  
**[NOTE: SUBPARTS "A" AND "B" BETWEEN THEM SHOULD GENERALLY INCLUDE A SUBSET OF THE LIST IN SECTION 1(d) ABOVE]**

All design, engineering and construction performed by Seller (and/or its Contractors) shall, without limitation, satisfy the wind load and seismic load requirements of the International Building Code and any more stringent requirements imposed under applicable Laws.

(ii) Seller shall provide the necessary support for the Company's [REDACTED] kV overhead line extension work, which may include, but not limited to:

- A. Furnish surveyed topographical drawing including contour lines of project areas and beyond as needed in State Plane coordinates with overlay of the Facility and Company pole line route(s) indicating pole locations and anchors in CADD format acceptable to Company.
- B. Staking of Company proposed poles and anchors by surveyor.
- C. Graded access roads including gravel if required by Company to provide sufficient vehicle access to Company poles and anchors by Company trucks and cranes.
- D. Graded level pads to provide vehicle working areas around all Company poles and anchors.
- E. Grading of the areas beneath the Company's overhead lines as needed to provide required ground clearance.
- F. Grubbing and clearing of vegetation within Company's easement area or as required.

(b) Coordination of Construction. Prior to Seller engaging the Contractors, Seller shall obtain Company's written approval, which approval shall not be unreasonably withheld. Prior to Seller and/or its Contractors first starting to work on the construction plans for Company-Owned Interconnection Facilities to be constructed by Seller (and/or its Contractors), such as the civil, structural, and construction drawings, specifications to vendors, vendor approved final drawings and materials lists (collectively, the "Plans"), Seller and/or its Contractors shall meet with Company to discuss the construction of such Company-Owned Interconnection

Facilities, including but not limited to subjects concerning coordination of construction milestone dates, agreement on areas of interface design, and Company's design/drawing layout and symbols standards, equipment specifications and construction specifications and standards. Company will provide the equipment specifications and construction specifications and standards information so Seller can incorporate such information in its bid documents.

- (c) Plans. Seller shall provide Company its complete Plans at 30%, 60% and 90% and final issue for construction. No later than sixty (60) Days before Seller and/or its Contractors first start to order materials and equipment for Company-Owned Interconnection Facilities to be constructed by Seller and/or its Contractors, Seller shall provide Company with the final Plans. The Plans for Company-Owned Interconnection Facilities to be constructed by Seller (and/or its Contractors) shall comply with (i) all applicable Laws; (ii) Company's design/drawing layout and symbol standards, equipment specifications, and construction specifications and standards; and (iii) Good Engineering and Operating Practices (collectively, the "Standards"). Seller shall submit design drawings in MicroStation format per Company standards.
- (d) Company's Review of the Plans. Unless otherwise agreed to by the Parties, Company shall have twenty (20) Business Days following receipt of the complete Plans at each stage (30%, 60%, 90% and final issue for construction) for it to review and comment on the Plans, and verify in writing to Seller that the Plans comply with the Standards, which verification shall not be unreasonably withheld. If Company reasonably determines that the Plans are not in accordance with the Standards, then it may request in writing a response from Seller to its comments and Seller shall respond in writing within twenty (20) Business Days of such request by providing (i) its justification for why its Plans conform to the Standards or (ii) changes in the Plans responsive to Company's comments and in accordance with the Standards.
- (a) Company Inspection. Construction work will be subject to Company inspections to ensure that construction is done in accordance with the Standards. Company inspectors will be allowed access to the construction sites for

inspections and to monitor construction work. The inspector shall have the authority to work with the appropriate construction supervisor to stop any work that does not meet the Standards. All equipment and materials used in Company-Owned Interconnection Facilities to be constructed by Seller and/or its Contractors shall meet the Standards.

(b) Acceptance Test Procedures.

(i) Seller acknowledges that: (aa) Company has multiple on-going projects with other developers as well as its own capital improvement projects and on-going system work; (bb) Company has limited resources to provide engineering oversight (such as review of plans) to such projects and to participate in the testing of such projects; (cc) in order for Company to accommodate such oversight and testing, it is necessary for Company to sequentially allocate its resources for each project a year or more in advance; (dd) the result is a queue of such projects that reflects the scheduling commitments of Company's resources to conduct such oversight and to participate in such testing; (ee) if a project is behind the schedule on which Company's resources have been scheduled for the oversight of such project, or if a project is not ready for testing at the time Company's resources have been scheduled for the testing of such project, or if a project does not complete testing within the period for which Company's resources have been scheduled for such testing, the progress of projects later in the queue may be adversely affected; (ff) the Test Ready Deadline that is set forth in Attachment K-1 (Seller's Conditions Precedent and Company Milestones) reflects the scheduling commitment of Company's resources to (i) conduct the oversight necessary to facilitate Seller's achievement of that Test Ready Deadline, (ii) commence the Acceptance Test on the Acceptance Testing Milestone Date that is set forth in Attachment K-1 (Seller's Conditions Precedent and Company Milestones) and (iii) thereafter participate in the Control System Acceptance Test; and (gg) in the Company's sole discretion based on its assessment of Company's resources and overall schedule of projects at the time, the Project may lose its place in the queue

and may be assigned a new Acceptance Testing Milestone Date for commencement of the Acceptance Test that may be behind the other projects then in the queue if (i) the Seller fails to satisfy any of the conditions precedent set forth in Section 2(f)(ii) of this Attachment G (Company-Owned Interconnection Facilities) within the time period specified therein for the task in question or, if no time period is specified therein, by the Test Ready Deadline, (ii) the Seller fails to satisfy any of the Seller's Conditions Precedent set forth in Attachment K-1 (Seller's Conditions Precedent and Company Milestones) and/or (iii) the Acceptance Test and the Control System Acceptance Test are not satisfactorily completed within the time allotted to complete such testing.

(ii) The Conduct of the Acceptance Test is subject to the satisfaction of the following conditions precedent within the time period specified below for the task in question or, if no time period is specified, by the Test Ready Deadline that is set forth in Attachment K-1 (Seller's Conditions Precedent and Company Milestones):

- Final Single-Line Drawing, and notes, has received Company's written consent pursuant to Section 1(a)(i) (Single-Line Drawing, Interface Block Diagram, Relay List, Relay Settings and Trip Scheme) of Attachment B (Facility Owned by Seller) to this Agreement.
- Final Relay List and Trip Scheme have received Company's written consent pursuant to Section 1(a)(i) (Single-Line Drawing, Interface Block Diagram, Relay List, Relay Settings and Trip Scheme) of Attachment B (Facility Owned by Seller) to this Agreement.
- Final Interface Block Diagram has received Company consent pursuant to Section 1(a)(i) (Single-Line Drawing, Interface Block Diagram, Relay List, Relay Settings and Trip Scheme) of Attachment B (Facility Owned by Seller) to this Agreement.
- Final Control System Telemetry and Control List has received Company consent.

- Final phasor measurement unit (PMU) devices, if applicable, have received Company consent.
- Control system design and tunable parameters reviewed and mutually agreed upon as needed to meet the Company requirements in accordance with Attachment B (Facility Owned by Seller) Performance Standards.
- Agreement on Active Power Control Interface.
- No later than 14 Days prior to commencement of the Acceptance Test:
  - Seller shall have certified to Company that Seller-Owned Interconnection Facilities have been installed and commissioned and such certification has not, prior to the commencement of the Acceptance Test, been subsequently challenged by Company on the basis of on-site observations made by the Company's representatives following the walk-through to be conducted pursuant to Section 2(f)(iii) of this Attachment G (Company-Owned Interconnection Facilities).
  - Seller shall have certified to Company that any Company-Owned Interconnection Facilities built by Seller (and/or its Contractors) have been installed and commissioned and such certification has not, prior to the commencement of the Acceptance Test, been subsequently challenged by Company on the basis of on-site observations made by the Company's representatives following the walk-through to be conducted pursuant to Section 2(f)(iii) of this Attachment G (Company-Owned Interconnection Facilities).
- Any Company-Owned Interconnection Facilities not built by or on behalf of Seller have been installed and commissioned.
- No later than seven (7) Days prior to the commencement of the Acceptance Test, Seller and Company shall have participated in walk-through of fully constructed Interconnection Facilities.
- Redlined as-built drawings of the Seller-Owned Interconnection Facilities and any of the



Company-Owned Interconnection Facilities built by Seller (and/or its Contractors) shall have been provided to Company.

- Continuous power is being supplied to Company's protection and SCADA equipment.
- Not less than four (4) weeks prior to the commencement of the Acceptance Test, the high speed communication lines required under this Agreement have been commissioned and are ready for use.
- Not less than two (2) weeks prior to the commencement of the Acceptance Test, Seller and Company have participated in an on-Site Acceptance Test coordination meeting.

(iii) Seller shall provide Company with at least fourteen (14) Days advance written notice of the commencement of the Acceptance Test. The Acceptance Test will be conducted on Business Days during normal business hours and may take a minimum of thirty (30) Days to complete. No electric energy will be delivered from Seller to Company during the Acceptance Test. No later than thirty (30) Days prior to conducting the Acceptance Test, Company and Seller shall agree on a written protocol setting out the detailed procedure and criteria for passing the Acceptance Test. Attachment N (Acceptance Test General Criteria) provides general criteria to be included in the written protocol for the Acceptance Test. At the time that Seller provides its 14-Day notice of the Acceptance Test to Company, Seller shall concurrently schedule a site walk-through of the Facility with Company to occur no later than seven (7) Days prior to the Acceptance Test. Seller's 14-Day notice to Company of the Acceptance Test shall constitute its certification that (i) the completion of the installation and commissioning of the Seller-Owned Interconnection Facilities and the Company-Owned Interconnection Facilities built by Seller (and/or its Contractors) and (ii) a walk-through by Company shall demonstrate, to Company's reasonable satisfaction, Seller's readiness to commence with the Acceptance Test. If, after the site walk-through, Company representatives

reasonably determine that Seller is not ready to commence with the Acceptance Test, in the Company's sole discretion based on its assessment of the nature of Seller's lack of readiness and Company's resources and overall schedule of projects at the time, Company may assign Seller a new Test Ready Deadline and a new Acceptance Testing Milestone Date, which may be behind the other projects then in the queue, coinciding with the estimated time it would take Seller to become test-ready and Company's ability to commence the Acceptance Test. If prior to the new Test Ready Deadline established by Company, Seller becomes ready for the performance of the Acceptance Test, i.e., Seller provides Company with its fourteen (14) Day advance written notice of the commencement of the Acceptance Test (the "Seller Accelerated Test Ready Deadline"), and Company confirms, in its site walk-through of the Facility (which site walk-through the Company may waive in its sole discretion), that Seller is ready for the Acceptance Test, but Company is unable to perform the Acceptance Test within [REDACTED] Days<sup>4</sup> (the "Seller Accelerated Acceptance Testing Milestone Date") and Company's inability to commence the Acceptance Test is solely due to the conditions set forth in Section 2(f)(i)(aa) and (bb) of this Attachment G, then, for up to the period of time from the Seller Accelerated Acceptance Testing Milestone Date to the date that Company commences performance of the Acceptance Test, Seller shall be entitled to a waiver of Daily Delay Damages that would otherwise be accruing if Seller ultimately fails to meet the Guaranteed Commercial Operations Date due to its failure to meet the original Test Ready Deadline specified in Attachment K-1. For clarity, and to explain the limited waiver of Daily Delay Damages provided for in the preceding sentence, if Seller misses its Test Ready Deadline by 45 Days and subsequently misses its Guaranteed Commercial Operations Date for that reason by 60 Days and the

---

<sup>4</sup> This would be the number of Days between the Test Ready Deadline and the Acceptance Testing Milestone Date stated in the Company Milestones of Attachment K-1.  
Model RDG PPA (PV+BESS or Wind+BESS)  
Maui Electric Company, Limited  
Hawai'i Electric Light Company, Inc.

period of time between the Seller Accelerated Acceptance Testing Milestone Date and the commencement date of the Acceptance Test is 15 Days (and such delay is solely due to the conditions set forth in Section 2(f)(i)(aa) and (bb) of this Attachment G), then Seller shall be entitled to a waiver of 15 Days of Daily Delay Damages otherwise accruing for Seller's failure to meet the Guaranteed Commercial Operations Date. If the above time periods remain the same but Seller only misses the Guaranteed Commercial Operations Date by 30 Days, Seller shall not be entitled to any Daily Delay Damages waiver as the 30 Day failure to meet the Guaranteed Commercial Operations Date would be attributable to the initial 45 Days that Seller missed the Test Ready Deadline. Finally, if the above time periods remain the same but Seller misses its Guaranteed Commercial Operations Date by 50 Days, Seller shall be entitled to only a 5 Day waiver of Daily Delay Damages. In the meantime, Seller shall remediate the deficiencies identified by Company, and the process described in this Section 1(f) (Acceptance Test Procedures) of Attachment G (Company-Owned Interconnection Facilities), shall commence again until Seller's readiness for the Acceptance Test is demonstrated to Company's reasonable satisfaction. Successful completion of the Acceptance Test requires successful completion of each of the individual tests that comprise the Acceptance Test. Retesting of any individual test constitutes a restart of the Acceptance Test if such retesting is required because of a prior failure of such individual test or because of a prior test could not be completed because of a problem with the Facility. Within fifteen (15) Business Days of completion of the Acceptance Test and Company's receipt of the final report setting forth the results of the Acceptance Test, Company shall notify Seller in writing whether the Acceptance Test has been passed and, if so, the date upon which the Acceptance Test was passed.

- (iv) Company will be present when the Acceptance Test is conducted, and Seller shall promptly correct any deficiencies identified during the Acceptance Test.

Seller will be responsible for the cost of Company personnel (and/or Company contractors) performing the duties (such as reviewing the Plans and reviewing the construction) necessary for Company-Owned Interconnection Facilities to be constructed by Seller (and/or its Contractors). If Company (aa) does not make any inspection or test, (bb) does not discover defective workmanship, materials or equipment, or (cc) accepts Company-Owned Interconnection Facilities (that were constructed by Seller and or its Contractors), such action or inaction shall not relieve Seller from its obligation to do and complete the work in accordance with the Plans approved by Company.

- (g) As-Built Drawings. Within thirty (30) Days of the successful completion of the Acceptance Test, Seller shall provide for Company review a set of the proposed as-built drawings for the Company-Owned Interconnection Facilities constructed by Seller (and/or its Contractors). Within thirty (30) Days of Company's receipt of the proposed as-built drawings, Company shall provide Seller with either (i) its comments on the proposed as-built drawings or (ii) notice of acceptance of the proposed as-built drawings as final as-built drawings. If Company provides comments on the proposed as-built drawings, Seller shall incorporate such comments into a final set of as-built drawings and provide such final as-built drawings to Company within twenty (20) Days of Seller's receipt of Company's comments.

3. Seller Payment To Company for Company-Owned Interconnection Facilities and Review Of Facility.

(a) Seller Payment to Company.

- (i) Seller shall pay the Total Estimated Interconnection Cost, which is comprised of the estimated costs of (aa) acquiring, constructing and installing the Company-Owned Interconnection Facilities to be designed, engineered and constructed by Company, (bb) the engineering and design work (including but not limited to Company, affiliated Company and contracted engineering and design work) associated with (i) the application process for the PUC Approval Order, (ii) developing such Company-Owned Interconnection Facilities and (iii) reviewing and specifying those portions of





















































