REQUEST FOR PROPOSALS

FOR

RENEWABLE DISPATCHABLE GENERATION

AND

ENERGY STORAGE

ISLAND OF O‘AHU

JANUARY 20, 2023

Docket No. 2017-0352

Appendix B – Proposer’s Response Package / Project Interconnection Data Request

Hawaiian Electric

1.0 GENERAL INSTRUCTIONS TO PROPOSERS

Sourcing Intelligence®, developed by PowerAdvocate®,[1] is the Electronic Procurement Platform that the Company has licensed and will utilize for the RFP process. All Proposals and all relevant information must be submitted via the Electronic Procurement Platform, in the manner described in this RFP.

Proposers must adhere to the response structure and file naming conventions identified in this Appendix for the Proposer's response package. Information submitted in the wrong location/section or submitted though communication means not specifically identified by the Company will not be considered by the Company.

Proposers must provide a response for every item. If input/submission items in the RFP are not applicable to a specific Proposer or Proposal variation, Proposers must clearly mark such items as "N/A" (Not Applicable) and provide a brief explanation.

Proposers must clearly identify all confidential information in their Proposals, as described in more detail in Section 3.12 Confidentiality of the RFP.

All information (including attachments) must be provided in English. All financial information must be provided in U.S. Dollars and using U.S. credit ratings.

It is the Proposer's sole responsibility to notify the Company of any conflicting requirements, ambiguities, omission of information, or the need for clarification prior to submitting a Proposal.

The RFP will be conducted as a "Sealed Bid" event within Sourcing Intelligence, meaning the Company will not be able to see or access any of the Proposer's submitted information until after the event closes.

1.1 ELECTRONIC PROCUREMENT PLATFORM

To access the RFP event, the Proposer must register as a "Supplier"[2] on Sourcing Intelligence. One Proposal may be submitted with each Supplier registration. Minor variations, as defined in Section 1.8.2 and 1.8.3 of this RFP may be submitted along with the Proposal under the same registration.

If a Proposer is already registered on Sourcing Intelligence, the Proposer may use their current login information to submit their first Proposal. Up to three (3) variations of a Proposal, one of which is the base variation of the Proposal, may be submitted together as a Proposal by following the instructions outlined in this Appendix (see Section 3 and 4 below). If the Proposer chooses to submit more than one Proposal, the Proposer must register as a new "Supplier" on Sourcing Intelligence for each additional Proposal.

Each registration will require a unique username, unique Email address, and unique Company name. Proposers that require multiple registrations to submit multiple Proposals should use the Company name field to represent the Company name and Proposal number (ex: CompanyNameP1). Proposers may use shorthand or clear abbreviations. The unique Email address used to create the PowerAdvocate account does not necessarily have to match the Email address specified in Section 2.2.1 below. For example, if the Proposer is submitting multiple

[1] PowerAdvocate became part of Wood Mackenzie in 2021, but web addresses and support email addresses still reference to PowerAdvocate.

[2] The language in Appendix B sometimes refers to "Energy Contract Managers" as "Bid Event Coordinator" and to "Proposers" as "Suppliers" (Bid Event Coordinator and Supplier are terms used by PowerAdvocate).

Proposals, all of the Proposer's Proposals could specify the same primary point of contact Email address if that is what the Proposer requests contact through for all their proposals.

Proposers can register for an account on Sourcing Intelligence by clicking on the "Registration" button (located in the top right corner of the webpage) on the PowerAdvocate website at the following address: **www.poweradvocate.com**

The Proposer's use of the Electronic Procurement Platform is governed by PowerAdvocate's Terms of Use. By registering as a "Supplier" on the Electronic Procurement Platform, the Proposer acknowledges that the Proposer has read these Terms of Use and accepts and agrees that, each time the Proposer uses the Electronic Procurement Platform, the Proposer will be bound by the Terms of Use then accessible through the link(s) on the PowerAdvocate login page.

Once a Proposer has successfully registered as a "Supplier" with PowerAdvocate, the Proposer shall request access to the subject RFP event from the Company Contact via Email through the RFP Email Address set forth in Section 1.6 of the RFP. The Email request must list the Company Name field and username under which the Proposer has registered with PowerAdvocate. If the Proposer plans to submit multiple Proposals and has registered multiple accounts in accordance with the instructions above, the Email request must contain the Company Name field and username for each account that will be used to submit the Proposals. After being added to the event, the Proposer will see the bid event on their dashboard upon logging into Sourcing Intelligence. Once the RFP event opens, the Proposer may begin submitting their Proposal(s).

After registering and prior to the opening of the RFP, Proposers are encouraged to familiarize themselves with the Electronic Procurement Platform, including tabs and dashboard, and the PowerAdvocate Users Guide (RFP Appendix D), etc. Proposers should note that they will not be able to access any bid documents until the event officially opens.

Proposers may contact PowerAdvocate Support for help with registration or modification of registration if desired. Support is available from 8 AM to 8 PM Eastern Time (2 AM to 2 PM Hawai‘i Standard Time when daylight savings is in effect) Monday to Friday, except for Holidays posted on the PowerAdvocate website, both by phone (857-453-5800) and by Email (support@poweradvocate.com).

Contact information for PowerAdvocate Support can also be found on the bottom border of the PowerAdvocate website: **www.poweradvocate.com**

Once the RFP event is opened, registered Proposers will have online access to general notices and RFP-related documents via the Electronic Procurement Platform. Proposers should also monitor the RFP Website throughout the RFP event.

1.2 PROPOSAL SUBMISSION PROCEDURES

An Email notification will be sent to all registered Proposers when the event has been opened to receive Proposals.

After logging onto the Electronic Procurement Platform, the RFP will be visible on the Proposer's dashboard with several tabs, including the following:

- "**1. Download Documents:**" Documents stored under this tab are provided for the Proposer's use and information. All documents can be downloaded and/or printed, as required.
- "**2. Upload Documents:**" Proposal submission documents requested in Appendix B must be uploaded using this tab.
- Note that "3. Commercial Data:", "4. Technical Data:", and "5. Pricing Data:" tabs are NOT USED for this event.

Step-by-step instructions for submitting a complete Proposal are provided below:

1. Proposers must upload their Proposal files, including all required forms and files, to submit a complete Proposal. All files must be uploaded before the respective Proposal Due Date (RFP Section 3.1, Table 2).

2. Submit (upload) one consolidated PDF representing your Proposal via the "2. Upload Documents" tab. That Proposal PDF must abide by the format specified in this Appendix B. A MSWord.docx template that outlines the format of this document is available under the "1. Download Documents" tab for the Proposer's use. **Response information must be provided in the order, format, and manner specified in this Appendix B and must clearly identify and reference the Appendix B section number that the information relates to**.
    a. Proposers shall use a filename denoting: CompanyName_Proposal#.pdf. (example: AceEnergy_P1.pdf)

3. Proposal information that cannot be easily consolidated into the PDF file described in Step 2 (such as large-scale drawing files) or files that must remain in native file format (such as computer models and spreadsheets) shall be **uploaded separately but must be referenced from within the main Proposal PDF file** (e.g., "See AceEnergyP1V2_2.5_SiteControlMap.kmz"). Such additional files must follow the naming convention below:
    a. File names must include, in order, Company Name, Proposal number (if more than one Proposal being submitted per Proposer), Variation (if any variations are being submitted), Appendix B section number, and a file descriptor, as shown in the example file name below:
    AceEnergyP1V2_2.5_SiteControlMap.kmz
    Proposers may use abbreviations if they are clear and easy to follow.

4. Upload files using the "**2. Upload Documents**" tab on the Electronic Procurement Platform.
    a. Select "Choose File..." Navigate to and choose the corresponding file from your computer.
    b. For all documents identify the "Document Type" as "Technical Information." (Do not identify any documents as "Commercial and Administrative" or "Pricing.")
    c. "Reference ID" may be left blank.

    There is no limit to the number or size of files that can be uploaded. Multiple files may be grouped into a .zip archive for upload. (Any zipped files must still adhere to the naming directions in #3 above.) When successfully uploaded, documents will appear under the "Bid Submissions" section on the bottom of the tab's page, organized within the "Technical Information" Document Type. Repeat steps a, b, and c, as required for each file upload.

If a file with the same name is uploaded twice, the Platform will provide notification of the duplication and automatically append a unique numerical extension to the Document Name. To delete a file that has been previously uploaded, click on the "X" button in the "Actions" column. Do not upload any files prior to the issuance of the Final RFP.

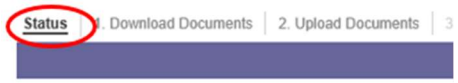
5. The Company will not be responsible for technical problems that interfere with the upload or download of Proposal information. Support is available to answer technical questions about PowerAdvocate's Sourcing Intelligence from 8 AM to 8 PM Eastern Time (2 AM to 2 PM Hawai'i Standard Time when daylight savings is in effect) Monday to Friday, except for Holidays posted on the PowerAdvocate website, both by phone (857-453-5800) and by Email (support@poweradvocate.com).

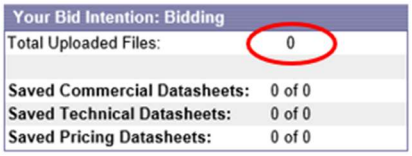
6. Proposers are strongly encouraged to start early and avoid waiting until the last minute to submit the required information. Proposers are allowed to add, modify, and/or delete documents that have been previously submitted any time prior to the event close deadline. It is the Proposer's responsibility to ensure a complete Proposal is uploaded into PowerAdvocate before the Proposal Due Date.

7. Any questions or concerns regarding the RFP may be submitted to the Company Contact via the RFP Email address provided in Section 1.6 of the RFP. Per RFP Section 1.4.2, the Independent Observer will monitor communication within the bid event. Proposers should include the Independent Observer Email Address when submitting questions to the RFP Email Address. Proposers are responsible for following instructions and uploading documents in their appropriate locations. Documents uploaded in the wrong tab will not be considered by the Company.

1.3 PROPOSAL COMPLETION AND CONFIRMATION PROCEDURES

To confirm the submission of all proposal files, in the "Status" tab on the Electronic Procurement Platform, confirm that the "Total Uploaded Files" is the number of expected files to be included in the submission by checking it against your list of submitted files. Example "Status" tab view:





As stated above in Section 1.2, nothing should be uploaded to the Commercial, Technical or Pricing Datasheet tabs. Documents uploaded there will not be included in your Proposal submission.

1.3.1 **Proposal Fee Delivery Information.** Provide the Proposal Fee submission information for this Proposal. Include:

- The Date the Proposal Fee was sent.
- The delivery service used and the tracking number for the parcel.
- The U.S.-chartered bank name that issued the cashier's check and the check number.

2.0 PROPOSAL (BASE VARIATION) SUMMARY TABLE

Base variation Proposal Summary. If proposal variations are submitted, any changes to the summary information for such variations must be specifically identified in a similar table placed in Section 3 of this Appendix, as applicable.

To be filled out in its entirety by IPP or Affiliate Proposers:

1	**Proposer Name (Company Name)**	
2	**Parent Company/Owner/Sponsor/Business Affiliation/etc.**	
3	**Project Name**	
4	**Net Nameplate Capacity** (MW)[3]	
4a	**Installed Nameplate Capacity: the aggregate sum of the net nameplate active power capabilities of all generator and converter equipment (i.e. storage) installed.**	
5	**Proposed Facility Location, Street Address if available, or what City/Area on the island is it near**	
6	**TMK(s) of Facility Location** (use 9 digits TMK format)[4]	
7	**Point of Interconnection's Circuit or Substation Name**	
7a	**Coordinates for Point(s) of Interconnection (use decimal degrees)**[5]	
8	**Proposal Contract Term** (Years)	
9	**Proposal Guaranteed Commercial Operations Date** (MM/DD/YYYY)	
10	**Does the Project include a Generation Component?** (Yes/No)	
10a	If "yes", what is the **Project Generation Technology**	
10b	[PV+BESS, Wind+BESS Projects] **Net Energy Potential (NEP) Projection for the Facility** (MWh)	
10c	[Firm Projects] **Fuel Source for Generation**	
11	**Does the Project include an Energy Storage Component?** (Yes/No)	
11a	If "yes", what is the **Project Energy Storage Technology**	
11b	**Energy Storage Capability for the Facility** (MW and MWh)	
11c	**Does the Proposal include any federal tax credits in its pricing?** (Yes/No)	

[3] A Project's Net Nameplate Capacity is the net maximum output (MWac) of the Facility at the point(s) of interconnection, whether that maximum is based on: nameplate power rating of energy generating equipment sizing; expected losses in delivery of power to the point(s) of interconnection; and/or any project control system involved in managing the delivery of power to the point(s) of interconnection. This value, subject to verification by the Company, will determine how a project is evaluated relative to the terms and requirements of the RFP, including, but not limited to ability to interconnect to a transmission line. In the applicable Stage 3 Contract, this value will be the default Contract Capacity. For example, in the RDG PPA this is used for the validation of the maximum output levels used to calculate the NEP RFP Projection. For the purposes of calculating the NEP RFP Projection it should be assumed all energy is being delivered directly to the point(s) of interconnection from the renewable resource as it is generated and never in excess of the Project's Net Nameplate Capacity, independent of the existence of any storage device.

[4] Island Number (1 digit); Zone Number (1 digit); Section Number (1 digit); Plat Number (3 digits, add leading zeros if less than 3 digits); Parcel Number (3 digits, add leading zeros if less than 3 digits)

[5] Decimal degrees (YY.YYYYYY, -XXX.XXXXXX) latitude and longitude coordinates of the Point of Interconnection for the project. If there is more than one interconnection point, specify each.

11d	**Is the Project capable of being 100% charged from the grid from the GCOD?** (Yes/No)	
12	**Does the Project have grid-forming capabilities?**	
13	**Does the Project have black start capability?**	
14	**The Proposer hereby certifies that the Project meets all performance attributes identified in Section 2.1 of the RFP?** (Yes/No)	
15	**The Proposer hereby certifies that no single point of failure from the Facility shall result in a decrease of active power measured at the Facility point of interconnection greater than 142 MW.** (Yes/No)	
16	**The Proposer hereby certifies that the Proposal (including its pricing elements) is not contingent upon changes to existing County, State or Federal laws or regulations or certain Stage 3 Contract modifications being accepted.** (Yes/No)	
17	**The Proposer hereby certifies under penalties of perjury that this Proposal has been made in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business partnership, corporation, union, committee, club, or organization, entity, or group of individuals.** (Yes/No)	
18	**The Proposer hereby acknowledges that the Company reserves the right to select more or less than the full amount of generation solicited in this RFP in the event that specific Hawaiian Electric system needs are revised during the course of the RFP process.** (Yes/No)	
19	**Does the Proposer accept the contract terms identified in the applicable Model Stage 3 Contract in its entirety?** (Yes/No)	
19a	If the response to #19 is "No", **specify the name of the Microsoft Word red-line file that identifies the proposed modifications to the agreement, provided, however, that such proposed modifications shall be limited to targeted revisions to, and not deletions or waivers of, the agreement's terms, conditions, covenants, requirements or representations.**	
20	**The Proposer hereby agrees to provide Development Period Security and Operating Period Security as set forth in the applicable model Stage 3 Contract for this Project.** (Yes/No)	
21	**The Proposer hereby certifies that the Proposer, its parent company, or any affiliate of the Proposer: (1) has <u>not</u> defaulted on a current contract with the Company, unless such default was cured by the contracting Proposer, parent company, or affiliate in an expeditious manner to the satisfaction of the Company; (2) has not had a contract terminated by the Company, which was not reinstated or otherwise superseded by a subsequent contract; or (3) has <u>no</u> pending litigation in which the Proposer, parent company, or affiliate has made claims against the Company which is not subject of a settlement agreement that is currently in effect?** (Yes/No)	
21a	If the response to #21 is "No", **specify what part or parts of #21 prevents the Proposer from stating Yes.**	
22	**Is the Proposer (or any partner of the Proposer) an Affiliate of the Company?** (Yes/No)	
23	**The Proposer hereby certifies under penalties of perjury that it has not shared this Proposal, or any part thereof, with any other Proposer of a Proposal responsive to this RFP.** (Yes/No)	
24	**Has the Proposer contacted the Company and confirmed the available MW capacity at the proposed POI?** (Yes/No)	

24a	**Identify the date/time and title of the email communication confirming the available MW capacity at the proposed POI.**	

IPP or Affiliate Proposal Pricing:

[For PV+BESS, Wind+BESS, and Standalone Storage Projects]

25	**Lump Sum Payment** ($/Year)	

[For Firm Projects only]

26	**Capacity Charge** payment ($/kW/Month)	
27	**Energy Charge** payment[6]**, if any** ($/kWh)	

[6] Also called Guaranteed Variable O&M Rate ($/kWh).

To be filled out in its entirety by any Hawaiian Electric Proposers:

1	**Proposer Name (Company Name)**	
2	**Parent Company/Owner/Sponsor/Business Affiliation/etc.**	
3	**Project Name**	
4	**Net Nameplate Capacity** (MW)[7]	
4a	**Installed nameplate capacity: the aggregate sum of the net nameplate active power capabilities of all generator and converter equipment (i.e. storage) installed.**	
5	**Proposed Facility Location, Street Address if available, or what City/Area on the island is it near**	
6	**TMK(s) of Facility Location** (use 9 digits TMK format)[8]	
7	**Point of Interconnection's Circuit or Substation Name**	
7a	**Coordinates for Point(s) of Interconnection (use decimal degrees)**[9]	
8	**Proposal Contract Term** (Years)	
9	**Proposal Guaranteed Commercial Operations Date** (MM/DD/YYYY)	
10	**Does the Project include a Generation Component?** (Yes/No)	
10a	If "yes", what is the **Project Generation Technology**	
10b	[PV+BESS, Wind+BESS Projects] **Net Energy Potential (NEP) Projection for the Facility** (MWh)	
10c	[Firm Projects] **Fuel Source for Generation**	
11	**Does the Project include an Energy Storage Component?** (Yes/No)	
11a	If "yes", what is the **Project Energy Storage Technology**	
11b	**Energy Storage Capability for the Facility** (MW and MWh)	
11c	**Does the Proposal include any federal tax credits in its pricing?** (Yes/No)	
11d	**Is the Project capable of being 100% charged from the grid from the GCOD?** (Yes/No)	
12	**Does the Project have grid-forming capabilities?**	
13	**Does the Project have black start capability?**	
14	**The Proposer hereby certifies that the Project meets all performance attributes identified in Section 2.1 of the RFP?** (Yes/No)	
15	**The Proposer hereby certifies that no single point of failure from the Facility shall result in a decrease of active power measured at the Facility point of interconnection greater than 142 MW.** (Yes/No)	
16	**The Proposer hereby certifies that the Proposal (including its pricing elements) is not contingent upon changes to existing County, State or Federal laws or regulations or certain Stage 3 Contract modifications being accepted.** (Yes/No)	
17	**The Proposer hereby certifies under penalties of perjury that this Proposal has been made in good faith and without collusion or fraud with any other person. As used in this**	

[7] See footnote 3 above.

[8] Island Number (1 digit); Zone Number (1 digit); Section Number (1 digit); Plat Number (3 digits, add leading zeros if less than 3 digits); Parcel Number (3 digits, add leading zeros if less than 3 digits)

[9] Decimal degrees (YY.YYYYYY, -XXX.XXXXXX) latitude and longitude coordinates of the Point of Interconnection for the project. If there is more than one interconnection point, specify each.

	certification, the word "person" shall mean any natural person, business partnership, corporation, union, committee, club, or organization, entity, or group of individuals. (Yes/No)	
18	**The Proposer hereby acknowledges that the Company reserves the right to select more or less than the full amount of generation solicited in this RFP in the event that specific Hawaiian Electric system needs are revised during the course of the RFP process.** (Yes/No)	
19	**Does the Proposer accept the contract terms identified in the applicable model Stage 3 Contract in its entirety?** (Yes/No)	
19a	If the response to #19 is "No", **specify the name of the Microsoft Word red-line file that identifies the proposed modifications to the agreement, provided, however, that such proposed modifications shall be limited to targeted revisions to, and not deletions or waivers of, the agreement's terms, conditions, covenants, requirements or representations.**	
20	**The Proposer hereby certifies under penalties of perjury that it has not shared this Proposal, or any part thereof, with any other Proposer of a Proposal responsive to this RFP.** (Yes/No)	
21	**Has the Proposer contacted the Company and confirmed the available MW capacity at the proposed POI?** (Yes/No)	
21a	**Identify the date/time and title of the email communication confirming the available MW capacity at the proposed POI.**	

Hawaiian Electric Cost Information:

22	**Year** (YYYY)	**Project Capital Cost** ($)
23	**Year** (YYYY)	**O&M Cost** ($)
24	**Year** (YYYY)	**Annual Revenue Requirement** ($)

Extend the table for questions 22, 23, and 24 for as many years as needed.

2.1 REQUIRED FORMS ACCOMPANYING PROPOSAL PDF

The following forms must accompany each proposal, attached to the Proposal PDF, and uploaded via the "2. Upload Documents" tab:

- Document signed by an officer or other Proposer representative **authorizing the submission** of the Proposal.
- Fully executed Stage 3 **Mutual Confidentiality and Non-Disclosure Agreement** (Appendix E to the RFP, may be downloaded from the "1. Download Documents" tab in the Electronic Procurement Platform).
- **Certificate of Vendor Compliance** for the Proposer.
    - **Certificate of Good Standing** for the Proposer and **Federal and State tax clearance certificates** for the Proposer may be provided in lieu of the Certificate of Vendor Compliance.
- **Certification of Counsel for Proposer**, if applicable. (See Appendix B Attachment 1.)
- **Email from the Company** verifying the available MW capacity at the POI and/or available substation accommodation for the interconnection of the Project.
- Completed applicable **Project Interconnection Data Request worksheet** for the proposed technology and, **project diagram(s). Models for equipment and controls, list(s)** identifying components and **respective files** (for inverters and power plant controller), and **complete documentation with instructions** as specified in the Data Request worksheet shall be submitted within the respective timeframes specified in Section 5.1 of the RFP.[10] (See Section 2.11.1 below)
- [For Hawaiian Electric Proposals Only] **Hawaiian Electric Proposal Team Certification Form.** See Appendix G Attachment 1.
- [For Hawaiian Electric Proposals Only] **Revenue Requirements Worksheets** that support the annual revenue requirements estimates shall be submitted. A starter revenue requirements template file can be requested by the Hawaiian Electric Proposal Team via email to the RFP Email Address once the RFP event opens. The revenue requirements worksheets submitted will be customized by the Hawaiian Electric Proposal Team to reflect the details of the Project's Proposal. All assumptions used will be reflected in an assumptions input tab.

2.2 PROPOSAL SUMMARY/CONTACT INFORMATION

2.2.1 Provide a **primary point of contact** for the Proposal being submitted:

- Name
- Title
- Mailing Address
- Phone Number
- Email Address – this will be the official communication address used during the RFP process

[10] If the Models, lists, respective files and complete documentation are not submitted with the Proposal upload, they shall be submitted via PowerAdvocate's Messaging as attachments within the respective timeframes specified in Section 5.1 of the RFP.

2.2.2 **Executive Summary of Proposal.** The executive summary must include an approach and description of the important elements of the Proposal, including variation descriptions if variations to the base variation are being submitted. Refer to Section 1.8.2 and 1.8.3 of the RFP for an explanation of minor variations allowed.

If variations to the base variation are proposed, a **table summarizing the differences between all variations** shall be created and included in this section.

2.2.3 **Pricing information.** Pricing information must be filled out in the Section 2.0 Proposal Summary Table above. If variations to the base variation are proposed, each variation's pricing summary must be identified in a similar pricing table in Sections 3, 4, and 5 as applicable. Proposers must provide pricing information only in those table sections – do not embed pricing information in any other portion of the Proposal PDF. [**For Hawaiian Electric Proposals Only**] Cost information is allowed in the Revenue Requirements Worksheet that supports the annual revenue requirements estimates.

2.2.4 Provide a **high-level overview of the proposed Facility**, including at a minimum the following information:

- Installed Nameplate Capacity (MW_{AC} and MW_{DC})
- Net Nameplate Capacity of the Facility at the Point(s) of Interconnection (MW_{AC}) (see Section 2.0 for definition)
- Identified available MW capacity at the Point(s) of interconnection (MW_{AC}).
    - Identify the communication from where the available MW capacity value was acquired (e.g., Company's response to Proposer's inquiry on X date/time).
- Identify all System upgrades the Proposal includes to allow Project to interconnect to System above the identified available MW capacity.
    - Identify the communication from where the System upgrade information was acquired (e.g., Company's response to Proposer's inquiry on X date/time).

Projects that include a generation component must specify:

- Technology Type of Generation
- Number of Generators
- Rated Output of each Generator
- Generator Facility Design Characteristics
- Fuel Source for Generation

Generation projects that include a storage component or stand-alone storage projects must specify:

- Technology Type of Storage (e.g., lithium ion battery)
- Interconnection type (AC or DC)
- BESS Contract Capacity (MW / MWh), as defined in the applicable contract
- Operational Limitations, such as, but not limited to: grid charging limits (with respect to ITC), energy throughput limits (daily, monthly, annually), Stage of Charge ("SOC") restrictions (min/max SOC while at rest (not charging/discharging)), etc. Proposed Operational Limits cannot be in conflict with the energy discharge requirement in the RFP's Section 1.2 Scope of the RFP. If such a conflict is identified, the Proposal may be disqualified.

- Round Trip Efficiency ("RTE"). Specify a single value (percentage) that the Facility is required to maintain throughout the term of the applicable contract. The RTE must consider and reflect:
    - the technical requirements of the Facility (as further set forth in the applicable contract);
    - that the measurement location of charging and discharging energy is at the Point of Interconnection;
    - electrical losses associated with the point of interconnection measurement location;
    - any auxiliary and station loads that need to be served by BESS energy during charge and discharge that may not be done at BESS Contract Capacity or over a fixed duration; and
    - that the data used to validate the RTE will be captured during a full charge cycle (0%-100% SOC) directly followed by a full discharge cycle (100%-0% SOC).
- Number of charge/discharge cycles per year the storage component is capable of
- Allowed Losses (kWh/24-hour period)
- Describe any augmentation plans for the storage component to maintain the functionality and characteristics of the storage during the term of the applicable contract. Include any expected interval of augmentation (months/years).
- Estimated useful life of the storage component (including augmentation if used) (years)
- For generation coupled with energy storage, described the Allowed Percentage of Storage Component's charging that can come from the System Grid, if any, and any conditions of charging (when, percentage of annual total energy input, etc.)

Firm generation projects that operate on fuel must:

- Specify if the Proposer agrees to commit to provide the fuel for the entire proposed term of the Firm PPA? (yes/no)
- Provide a guaranteed heat rate curve for the Facility must be provided with your Proposal. The guaranteed heat rate curve must be specified as a three-term second-order polynomial.
- Specify and describe any minimum monthly/quarterly/annual fuel purchases required in your fuel contract, or specify if no minimum fuel purchase is required.
- Specify and describe any minimum loads or minimum up-times that are driven by the technical and operational capabilities of your Facility, or specify if there is no minimum.
- Fuel storage design and fuel storage plan must be provided that will ensure sufficient fuel for unconstrained dispatch and fuel storage.
    - Include Fuel Floor Requirement Calculation (see Section 1.2.3 of the RFP for the calculation)
    - Confirm 30 days of fuel and necessary consumables on island based on normal expected operation.[11] Fuel may be owned or under guaranteed contract and stored onsite or offsite but in all cases must be on island; reserve fuel may be any fuel the developer is permitted to consume.

[11] The Grid Needs Assessment information provided in App. I of the RFPs can be used to estimate the future normal expected operation for initial fuel supply planning purposes. Over the term of the Project, the future normal expected operation shall be based upon (i) the average level of Company Dispatch during the previous six (6) months and (ii) the expected level of Company Dispatch during the following month as indicated by Company.

- Provide a fuel management plan that guarantees fuel and necessary consumables stored offsite will be delivered to the Project site, particularly during an emergency event when fuel is required.

- For all projects other than biofuel, provide evidence that the fuel will be secured for the duration of the Firm PPA term. For biofuel source Projects, provide evidence of a fuel supply for at least the first 3 years of the Firm PPA term.
- Provide an approximate number of days per year of planned maintenance.
- Provide all applicable operational constraints known such as, but not limited to, those for environmental compliance. (e.g. hot/cold start times to full output, start-up fuel requirements, start-up and shut-down sequence, limitation on number of start-ups/shutdowns per day, operational constraints due to noise restrictions, minimum/maximum run hour requirements, minimum up time, minimum down time, etc.)
- Provide your Facility's ramp rate (MW/min) or point to where information is located if provided in another part of your Proposal.
- For Biofuel source Projects provide a biofuel price forecast with your Proposal.

2.3 FINANCIAL

Provide the following financial information identified below. As specified in the General Instructions in Section 1.0 above, all information (including attachments) must be provided in English, be provided in U.S. Dollars and use U. S. credit ratings.

2.3.1 Identification of Equity Participants

2.3.1.1 Who are the **equity participants** in the Project (or the equity partners' other partners)?

2.3.1.2 Provide an **organizational structure** for the Proposer including any general and limited partners and providers of capital that identifies:

- Associated responsibilities from a financial and legal perspective
- Percentage interest of each party

2.3.2 Project Financing

2.3.2.1 **How will the Project be financed** (including construction and term financing)? Address at a minimum:

- The Project's projected financial structure
- Expected source of debt and equity financing

2.3.2.2 [For IPP and Affiliate Proposals] Identify all **estimated development and capital costs** for, at a minimum:

- Equipment
  - Identify the manufacturer and model number for all major equipment
- Construction
  - Identify and breakdown what is included in this category and any assumptions made
- Engineering

- Seller-Owned Interconnection Facilities
    - Identify and breakdown what is included in this category and any assumptions made
- Company-Owned Interconnection Facilities
    - Identify and breakdown what is included in this category and any assumptions made, including:
        - Company costs per Appendix H
        - Proposer's estimated costs (unless identified in another category)
- System upgrades necessary to interconnect Project to existing transmission line/substation
    - Identify and breakdown what is included in this category and any assumptions made, including:
        - Proposer's estimated costs for all System upgrades identified in Company's feedback of upgrades required for Project interconnection.
        - Proposer's estimated costs for all System upgrades beyond what was identified in Company's feedback.
- Land
- Annual O&M
- (For Projects that include a storage component) Specify a percentage of the total project cost that is estimated to be attributed to the storage functionality of the Facility. As the storage functionality is treated as a lease, the Company will use the percentage for its preliminary calculation of the lease liability only. This percentage requested for the Company's accounting purposes does not affect nor alter the liquidated damage provisions of the PPA, as those provisions reflect the benefit the Company seeks from the Project's storage functionality.

[For Self-Build Only] Identify all **estimated development and capital costs** for, at a minimum:

- Facility (including any generation and storage components)
- Outside Services
- Interconnection
- Overhead Costs
- Allowance for Funds Used During Construction
- Annual O&M
- Specify the percentage of the total cost associated with the storage component of the Facility
- (For Projects that include a storage component) Specify a percentage of the total project cost that is estimated to be attributed to the storage functionality of the Facility. As the storage functionality is treated as a lease, the Company will use the percentage for its preliminary calculation of the lease liability only. This percentage requested for the Company's accounting purposes does not affect nor alter the liquidated damage provisions of the PPA, as those provisions reflect the benefit the Company seeks from the Project's storage functionality.

2.3.2.3 Discuss and/or provide **supporting information on any project financing guarantees**.

2.3.2.4 Describe any **written commitments obtained from the equity participants**.

2.3.2.5 Describe any **conditions precedent to project financing**, and the Proposer's plan to address them, other than execution of the Stage 3 Contract or any other applicable project agreements and State of Hawaii Public Utilities Commission approval of the Stage 3 Contract and other agreements.

2.3.2.6 Provide any **additional evidence to demonstrate that the Project is financeable**.

2.3.3 Project Financing Experience of the Proposer

Describe **the project financing experience of the Proposer** in securing financing for projects of a similar size (i.e., no less than two-thirds the size) and technology as the one being proposed including the following information for any referenced projects:

- Project Name
- Project Technology
- Project Size
- Location
- Date of Construction and Permanent Financing
- Commercial Operations Date
- Proposer's Role in Financing of the Project
- Off-taker
- Term of the Interconnection Agreement
- Financing Structure
- Major Pricing Terms
- Name(s) of Finance Team Member(s); Time (i.e., years, months) worked on the project and Role/Responsibilities

2.3.4 Evidence of the Proposer's Financial Strength

2.3.4.1 Provide **copies of the Proposer's audited financial statements** (balance sheet, income statement, and statement of cash flows):

- Legal Entity
  - Three (3) most recent fiscal years
  - Quarterly report for the most recent quarter ended
- Parent Company
  - Three (3) most recent fiscal years
  - Quarterly report for the most recent quarter ended

2.3.4.2 Provide the **current credit ratings** for the Proposer (or Parent Company, if not available for Proposer), affiliates, partners, and credit support provider:

- Standard & Poor's
- Moody's
- Fitch

2.3.4.3 Describe any **current credit issues** regarding the Proposer or affiliate entities raised by rating agencies, banks, or accounting firms.

2.3.4.4 Provide any **additional evidence that the Proposer has the financial resources and financial strength** to complete and operate the Project as proposed.

2.3.5 Provide **evidence** that the Proposer can **provide the required securities**

2.3.5.1 Describe the Proposer's **ability (and/or the ability of its credit support provider) and proposed plans to provide the required securities** including:

- Irrevocable standby letter of credit
- Sources of security
- Description of its credit support provider

2.3.6 Disclosure of Litigation and Disputes

Disclose any **litigation, disputes, and the status of any lawsuits or dispute resolution** related to projects owned or managed by the Proposer or any of its affiliates.

2.3.7 State to the best of the Proposer's knowledge: Will the Project result in **consolidation** of the Developer entity's finances onto the Company's financial statements under FASB 810. **Provide supporting information** to allow the Company to verify such conclusion.

2.4 CONTRACT EXCEPTIONS

2.4.1 **State whether the Proposer accepts the contract terms identified in the model Stage 3 Contract** in its entirety or if modifications to the model agreements are proposed. If Proposers elect to propose modifications to the applicable Stage 3 Contract, **identify the name of the Microsoft Word red-line file** in the proposal submission that offers the proposed modifications to the model language that the Proposer is agreeable to.

2.4.2 Proposers electing to propose modifications must **provide a Microsoft Word red-line version of the applicable Stage 3 Contract** identifying specific proposed modifications to the model language that the Proposer is agreeable to and a detailed explanation and supporting rationale for each modification. General comments, drafting notes and footnotes such as "parties to discuss" are unacceptable and will be considered non-responsive.

Proposers that do not upload redlines of the applicable Stage 3 Contract with their Proposal submission will be deemed to have accepted the Model Stage 3 Contract in its entirety. If no modifications are proposed, please state in this section "no modifications to the Model Stage 3 Contract".

As set forth in RFP Section 3.8.6.1, proposed modifications to the Stage 3 Contract will be subject to negotiation between the Company and the Final Award Group and should not be assumed to have been accepted either as a result of being selected to the Final Award Group or based on any previously executed PPA.

2.5 SITE INFORMATION

2.5.1 The Proposal must demonstrate that the Proposer has Site Control for all real property required for the successful implementation of a specific Proposal at a Site not controlled by the Company, including

any Interconnection Facilities for which the Proposer is responsible. In addition, developmental requirements and restrictions such as zoning of the Site and the status of easements must be identified. **Proposer must provide documentation set forth in RFP Section 4.3 to prove Site Control.**

2.5.2 Provide a **map of the Project site** that clearly identifies:

- Location of the parcel on which the site is located
- Tax map key number (9-digit format: Island Number (1 digit), Zone Number (1 digit), Section Number (1 digit), Plat Number (3 digits, add leading zeros if less than 3 digits), Parcel Number (3 digits, add leading zeros if less than 3 digits)
- Site boundaries (if the site does not cover the entire parcel)
- Total acreage of the site
- Point(s) of Interconnection
- Grid Connection Point(s)
- Relationship of the site to other local infrastructure
- Existing easements encumbering the parcel on which the site is located

2.5.3 Provide a **site layout plan** which illustrates:

- Proposed location of all equipment
- Proposed location of all facilities on the site, including any proposed line extensions

2.5.4 Describe the **Interconnection route** and include:

- Site sketches of how the facility will be interconnected to the Company's System (above-ground and/or underground).
- Identify the approximate latitude and longitude of the proposed Point of Interconnection, in decimal degrees format, to six (6) decimal places.
- Description of the rationale for the interconnection route.

2.5.5 Identify **any rights-of-way or easements** that are required for access to the site or for interconnection route:

- Describe the status of rights-of-way or easement acquisition.
- Describe the detailed plan for securing the necessary rights-of-way or easement, including the proposed timeline and any evidence of any steps taken to date. Proposers must provide a credible and viable plan for obtaining such rights-of-way or easement(s), including the proposed timeline, the identification of all steps necessary to obtain such right-of-way or easement(s), and evidence of any steps taken to date. In addition, developmental requirements and restrictions such as zoning of the Site and the status of easements must be identified.

2.5.6 Provide the following information related to **land use and impervious cover**[12] of the proposed Project:

[12] As defined by the EPA (8 Tools of Watershed Protection in Developing Areas | Watershed Academy Web | US EPA), impervious cover is "the sum total of all hard surfaces within a watershed including rooftops, parking lots, streets, sidewalks, driveways, and surfaces that are impermeable to infiltration of rainfall into underlying soils/groundwater." For purposes of evaluation, PV panels shall be considered impervious.

- **Land use map** including current zoning of the proposed Project site and adjacent properties; indicate percentage of the proposed Project site for each zoning type identified.
- **Map depicting existing impervious cover** of the proposed Project site; must include the current percentage of impervious cover of the utilized area for the proposed Project.
- **Map depicting final impervious cover** of the proposed Project site; must include the proposed percentage of impervious cover of the utilized area for the proposed Project.
    - In calculations, Proposer must use a consistent area as the base (denominator) between percentages for existing and final impervious cover.
- If the proposed Project is on reclaimed land, such as brownfield,[13] included a **complete description of the reclaimed land and any current land use restrictions**.

2.6 ENVIRONMENTAL COMPLIANCE AND PERMITTING PLAN

Scoring of proposals for the non-price evaluation criteria of this section will be based on the completeness and thoroughness of responses to each of the criteria listed below. The Company recommends that each Proposal incorporate the list below as an outline together with complete and thorough responses to each item in the list. Proposals that closely follow this recommendation will typically be awarded higher scores than proposals that do not.

2.6.1 Describe your **overall land use and environmental permits and approvals strategy** and approach to obtaining successful, positive results from the agencies and authorities having jurisdiction, including:

- Explanation of the conceptual plans for siting
- Studies/assessments
- Permits and approvals
- Gantt format schedule which identifies the sequencing of permit application and approval activities and critical path. (Schedule must be in MM/DD/YY format.)

2.6.2 Discuss the **city zoning and state land use classification**:

- Identify present and required zoning and the ability to site the proposed Project within those zoning allowances.
- Identify present and required land use classifications and the ability to site the proposed Project within those classifications.
- Provide evidence of proper zoning and land use classifications for selected site and interconnection route.
- If changes in the above are required for the proposed Project, provide a plan and timeline to secure the necessary approvals.

2.6.3 Identify all required discretionary and non-discretionary **land use, environmental and construction permits, and approvals** required for development, financing, construction, and operation of the proposed Project, including but not limited to zoning changes, Environmental Assessments, and/or Environmental Impacts Statements.

[13] As defined by the EPA (Overview of EPA's Brownfields Program | US EPA), brownfield is "a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."

Provide a **listing of such permits and approvals** indicating:

- Permit Name
- Federal, State, or Local agencies and authorities having jurisdiction over the issuance
- Status of approval and anticipated timeline for seeking and receiving the required permit and/or license
- Explanation of your basis for the assumed timeline
- Explain any situation where a permit or license for one aspect of the Project may influence the timing or permit of another aspect (e.g. a case where one permit is contingent upon completion of another permit or license), if applicable.
- Explain your plans to secure all permits and approvals required for the Project.

2.6.4 Provide a **preliminary environmental assessment of the site** (including any pre-existing environmental conditions) and potential short- and long-term **impacts** associated with, or resulting from, the proposed Project – including direct, indirect, and cumulative impacts associated with development, construction, operation, and maintenance of the proposed Project in every area identified below. Discuss if alternatives have been or will be considered. The assessment shall also include Proposer's short- and long-term plans to mitigate such impacts and explanation of the mitigation strategies for, but not limited to, each of the major environmental areas as presented below:

- Natural Environment
  - Air quality
  - Biology (Natural habitats and ecosystems, flora/fauna/vegetation, and animals, especially if threatened or endangered)
  - Climate
  - Soils
  - Topography and geology
- Land Regulation
  - Land Uses, including any land use restrictions and/or pre-existing environmental conditions/contamination
  - Flood and tsunami hazards (including the site's flood zone based on the Hawaii Department of Land and Natural Resources flood map)
  - Noise
  - Roadways and Traffic
  - Utilities
- Socio-Economic Characteristics
- Aesthetic/Visual Resources
- Solid Waste
- Hazardous Materials
- Water Quality
- Public Safety Services (Police, Fire, Emergency Medical Services)
- Recreation
- Potential Cumulative and Secondary Impacts

2.6.5 Provide a **decommissioning plan**, including:

- Developing and implementing program for recycling to the fullest extent possible, or otherwise properly disposing of installed infrastructure, if any, and
- Demonstrating how restoration of the Site to its original ecological condition is guaranteed in the event of default by the Proposer in the applicable Site Control documentation.

2.7 CULTURAL RESOURCE IMPACTS

2.7.1 Provide a **proposal to ensure cultural sites are identified and carefully protected** as part of a cultural impact plan as it pertains to the Project Site and interconnection route. This proposal must include at a minimum:

- An initial analysis that identifies:
    1) valued cultural, historical, or natural resources in the area in question, including the extent to which traditional and customary native Hawaiian rights are exercised in the area;
    2) the extent to which those resources – including traditional and customary native Hawaiian rights – will be affected or impaired by the proposed action; and
    3) the feasible action, if any, to be taken to reasonably protect any identified cultural, historical, or natural resources in the area in question, and the reasonable protection of traditional and customary native Hawaiian rights in the affected area.
- Proposer's experience with cultural resource impacts on past projects
- Consultant's experience with cultural resource impacts on past projects (name, firm, relevant experience)
- Status of the cultural impact plan (including, but not limited to: Cultural Impact Assessment, Cultural Landscape Study, Cultural Resource Management Plan, Ethnographic Survey, Consultation on Section 106 Process, and/or Traditional Cultural Property Studies)

2.7.2 Archaeological Literature Review of existing cultural documentation filed with the State Historic Preservation Division and a Field Inspection Report which identifies any known archaeological and/or historical sites within the project area. If sites are found, Proposers must provide a plan for mitigation from an archaeologist licensed in the State of Hawaii.

2.8 COMMUNITY OUTREACH

Gaining community support is an important part of a Project's viability and success. An effective Community Outreach Plan will call for early meaningful communications with stakeholders and will reflect a deep understanding and respect for the community's desire for information. The public meeting and comment solicitation process described in Section 5.3 of the RFP is intended to support that premise and the Commission's desire to increase bid transparency within the RFP process. When developers neglect to demonstrate transparency and a willingness to engage in early and frequent communication with Hawaii's communities, costly and timely challenges to their projects have resulted. In some instances, projects have failed. Incorporating transparency during the competitive bidding phase may seem unconventional, but it has become an essential community expectation. Developers must share information and work with communities to address concerns through careful listening, thoughtful responsiveness, and a commitment to respect the environmental and cultural values of Hawai‘i. Comprehensive and proactive community outreach will be imperative in order to compose a Community Benefits Package that is relevant and meaningful to the project's host community.

2.8.1 Provide a **detailed Community Outreach Plan** to work with and inform neighboring communities and stakeholders and to provide them timely information during all phases of the Project. The plan shall address, but not be limited to, the following items:

- Project description
- Community scoping
- Project benefits
- Government approvals
- Development process
- Identification of communities and other stakeholders that may be affected by the proposed Project:
  - How will they be affected?
  - What mitigation strategies will the Proposer implement?
- Community benefits package (documentation):
  - A documented community benefits package highlighting the distribution of funds must be developed by Proposers for Hawaiian Electric's review and approval.
    - This document will be made public on each Proposer's website and must demonstrate how funds will directly address needs in the host community to benefit community members.
    - The community benefits package must include documentation of each Proposer's community consultation and input collection process to define host community needs and selection of non-profit(s) to address needs through community-based programs.
    - Preference will be given to Proposers that commit to setting aside a larger amount or commit to providing other benefits (including but not limited to creating local jobs, payment of prevailing wages, or improving community infrastructure).
  - Specify the amount of funds ($) that the Proposer will commit on an annual basis to provide as community benefits. As described in Section 4.4.2 of the RFP, at a minimum, Proposers should commit to setting aside at least $3,000 per MW per year for community benefits.
  - These shall be donated to address specific needs identified by the host community, or to a 501(c)(3) not-for-profit community-based organization(s) to directly address host community-identified needs.
  - Provide details regarding the intended beneficiaries of the funds, including recipients, and the area(s) in which the funds will be directed.
  - Proposers may choose to identify and select an eligible non-profit organization to serve as the administrator responsible for ensuring the project's community benefit is appropriately disbursed for the duration of the contract term. Should a Proposer need an example of the use of a community benefit funding host, the Company will provide such example(s) upon request.
    - If Proposers opt to work with a 501(c)(3) non-profit organization(s) to host and distribute community benefit funding, the names of the organization(s) must be provided with documentation 90 calendar days upon signing of the applicable Stage 3 Contract.
      - Name of non-profit organization(s)
      - Letter from non-profit organization, signed by organization's executive and Board Chair agreeing to serve as community benefit fund administrator for the duration of the contract term
      - Relevant experience of non-profit
      - Years of existence of non-profit

    - Any other community benefits (in addition to community funding) that will provide direct benefit to the Project's host community
- Comprehensive Communications Plan, including a detailed community outreach schedule, with affected communities and the general public regarding the proposed Project:
    - Describe frequency of communication with identified stakeholders
    - Provide timeline
    - Provide source of information
    - Identify communication outlets
    - Describe opportunities, if any, for affected communities and general public to provide the developer with feedback and comments on the proposed Project
    - Describe how community feedback and comments, as well as responses to community questions and concerns, will be documented and shared with the community.
    - Project schedule
    - Name of individual designated to implement the Project's Community Outreach Plan
- Construction related updates
    - Plan for reporting construction schedules and activities, including resulting impacts (ex. traffic, noise, and dust) and proper mitigation plans beginning at least one month prior to the start of scheduled work
- Local labor and prevailing wage commitment (if any)
- Outreach experience

Proposers are reminded of RFP Section 3.4.2 including the provision of Proposals must provide all referenced material if it is to be considered during the Proposal evaluation.

2.8.2 Provide any **documentation of local community support or opposition** including any letters from local organizations, newspaper articles, or communications from local officials.

2.8.3 Provide a **description of community outreach efforts** already taken or currently underway, including the names of organizations and stakeholders contacted about the proposed Project and indicate if contact was successful.

2.8.4 Describe any anticipated or negotiated investment in the community and other **community benefits** that the Proposer proposes to provide in connection with the Project, along with an estimated value of the community benefits in dollars (including the cost to Proposers providing the benefits and supporting details on how those costs and benefits were derived).

2.8.5 All Proposers selected to the Final Award Group must display the below table of information on their website as described in Section 5.3 of the RFP to provide communities Project information that is of interest to them in a standard format. All information in this table must be included in all community presentations in addition to the Proposer's project website.

PROJECT SUMMARY

*	Proposer Name (Company name)	
*	Parent Company/Owner/Sponsor/Business Affiliation/etc.	
*	Project Name	
*	Project Capacity (MW) (must match Proposal information)	

*	Proposed Facility Location, Street Address if available, or what City/Area on the island it is near	
*	TMK(s) of Facility Location (must match Proposal information)	
*	Point of Interconnection's Circuit (must match Proposal information)	
*	Project Description (in 200 words or less)	*(A description that includes information about the project that will enable the community to understand the impact that the Project might have on the community.)*
*	Project site map	*(provide a map similar to what was provided in Section 2.5.2)*
*	Site layout plan	*(provide a layout similar to what was provided in Section 2.5.3)*
*	Interconnection route	*(provide a map of the route similar to what was provided in Section 2.5.4)*
Environmental Compliance and Permitting Plan		
*	Overall land use and environmental permits and approvals strategy	*(provide information in level of detail as provided in Section 2.6.1)*
*	Gantt format schedule which identifies the sequencing of permit applications and approval activities and critical path. Schedule must be in MM/DD/YY format)	*(provide information in level of detail as provided in Section 2.6.1)*
*	City Zoning and Land Use Classification	*(provide information in level of detail as provided in Section 2.6.2)*
*	Discretionary and non-discretionary Land use, environmental and construction permits and approvals	(*provide information in level of detail as provided in* Section 2.6.3)
*	Listing of Permits and approvals	(*provide information in level of detail as provided in* Section 2.6.3)
*	Preliminary environmental assessment of the Site (including any pre-existing environmental conditions)	(*provide information in level of detail as provided in* Section 2.6.4)
Cultural Resource Impacts		
*	Proposer's updated Community Outreach Plan must include a plan that (1) identifies any cultural, historic or natural resources that will be impacted by the Project (2) describes the potential impacts on these resources and (3) identifies measures to mitigate such impacts.	(*provide information in level of detail as provided in* Section 2.7)
Community Outreach		

*	Detailed Community Outreach Plan	*(provide key information from Community Outreach Plan as specified in Section 2.8.1 or provide a link to updated comprehensive Community Outreach Plan)*
*	Local community support or opposition	*(provide latest comprehensive information)*
*	Community outreach efforts	*(provide latest comprehensive information)*
*	Community benefits	*(provide latest comprehensive information)*

2.9 OPERATIONS AND MAINTENANCE (O&M)

2.9.1 To demonstrate the long-term operational viability of the proposed Project, describe the **planned operations and maintenance**, including:

- Operations and maintenance funding levels, annually, throughout the term of the contract.
- Description of the operational requirements by frequency (daily, weekly, monthly, yearly, as-necessary, run hour interval) and maintenance requirements by frequency (daily, weekly, monthly, yearly, as-necessary, run hour interval).
- A discussion of the staffing levels proposed for the Project and location of such staff. If such staff is offsite, describe response time and ability to control the Project remotely.
- Technology specific maintenance experience records.
- Identification of any O&M providers.
- The expected role of the Proposer (Owner) or outside contractor.
- Scheduling of major maintenance activity.
- Plan for testing equipment.
- Estimated life of Generation and/or Storage Facilities and associated Interconnection Facilities.
- Safety plan, including historical safety records with environmental history records, violations, and compliance plans.
- Security plan.
- Site maintenance plan.
- Substation equipment maintenance plan.

2.9.2 State whether the Proposer would **consider 24-hour staffing**. Explain how this would be done.

2.9.3 Describe the **Proposer's contingency plan**, including the Proposer's mitigation plans to address failures. Such information should be described in the Proposal to demonstrate the Project's reliability with regard to potential operational issues.

2.9.4 Describe if the Proposer will **coordinate their maintenance schedule** for the Project with the Company's annual planned generation maintenance. See Article 5 of the Model Stage 3 Contract.

2.9.5 Describe the **status of any O&M agreements or contracts** that the Proposer is required to secure. Include a discussion of the Proposer's plan for securing a long-term O&M contract.

2.9.6 Provide **examples of the Proposer's experience with O&M services** for other similar projects.

2.10 PERFORMANCE STANDARDS

2.10.1 Design and operating information. Provide a **description of the project design**. Description shall include:

- Configuration description, including conceptual or schematic diagrams
- Overview of the Facility Control Systems – central control and inverter- or resource-level control
- Diagrams approved by a Professional Electrical Engineer registered in the State of Hawai‘i, indicated by the presence of the Engineer’s Professional seal on all drawings and documents. Including but not limited to:
    - A single-line diagram, relay list, trip scheme and settings of the generating facility, which identifies the Point of Interconnection, circuit breakers, relays, switches, synchronizing equipment, monitoring equipment, and control and protective devices and schemes.
    - A three-line diagram which shows the Point of Interconnection, potential transformer (PT) and current transformer (CT) ratios, and details of the generating facility configuration, including relays, meters and test switches.

2.10.1.1 For Generation Facilities, provide the projected **hourly annual energy potential production profile of the Facility[14] (24 hours x 365 days, 8760 generation profile)** for the provided RFP NEP Projection.

2.10.1.2 Provide the **sample rate of critical telemetry** (i.e. frequency and voltage) based on inputs to the facility control systems.

2.10.1.3 Provide a description of the Facility’s **capability to be grid-forming and have black start capability**.

2.10.1.4 Provide the explanation of the methodology and underlying **information used to derive the Project’s NEP RFP Projection**, including the preliminary design of the Facility and the typical meteorological year file used to estimate the Renewable Resource Baseline, as required in Article 6.6 of the applicable model Stage 3 Contract. The explanation of the methodology should include, but not be limited to, the long-term resource data used, the gross and net generation MWh, and assumptions (loss factors, uncertainty values, any grid or project constraints).

2.10.2 **Capability of Meeting Performance Standards**. The proposed Facility must meet the performance attributes identified in this RFP and the Performance Standards identified in the applicable Stage 3 Contract. Provide **confirmation that the proposed Facility will meet the requirements identified in the model Stage 3 Contract** or provide clarification or comments about the Facility’s ability to meet the performance standards. Proposals should include sufficient documentation to support the stated claim that the Facility will be able to meet the Performance Standards. The Proposal should include information required to make such a determination in an organized manner to ensure this evaluation can be completed within the evaluation review period.

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[14] The projected hourly annual energy production profile is the projected output from the generating facility without curtailment and before any energy is directed to an energy storage component, if one will be provided.

2.10.3 **Reactive Power Control**: Provide the facility's ability to meet the Reactive Power Control capabilities, including Voltage Regulation at the point of interconnection, required in the Performance Standards, including contribution from the inverters of generation and/or storage and means of coordinating the response. Provide the inverter capability curve(s). Confirm ability to provide reactive power at zero active power.

2.10.4 **Ramp Rate** for Generation Facilities: Confirm the ability to meet the ramp rate requirement specified in the Model Stage 3 Contract.

2.10.5 **Undervoltage ride-through**: Provide the facility's terminal voltage level(s) and elapsed time at which the facility will disconnect from the utility system during the disturbance, if any. Confirm the ability to meet ride-through requirements and include supporting documentation regarding inverter design, control parameters, etc.

2.10.6 **Overvoltage ride-through**: Provide the facility's terminal voltage level(s) and elapsed time at which the facility will disconnect from the utility system during the disturbance, if any. Confirm the ability to meet ride-through requirements and include supporting documentation regarding inverter design, control parameters, etc.

2.10.7 **Transient stability ride-through**: Provide the facility's ability to stay online during Company System: (1) three-phase fault located anywhere on the Company System and lasting up to__ cycles; and (2) a single line to ground fault located anywhere on the Company System and lasting up to__ cycles. Provide the Facility's ability to withstand subsequent events.

2.10.8 **Short-Term Over-Current**: Provide the facility's short-term over-current capability to supply inrush currents during energizing of transformers and distribution feeders and starting auxiliary motors of conventional power plants.

2.10.9 **Underfrequency ride-through**: Provide the facility's terminal frequency level(s) and elapsed time at which the facility will disconnect from the utility system during the disturbance, if any. Confirm the ability to meet ride-through requirements and include supporting documentation regarding inverter design, control parameters, etc.

2.10.10 **Overfrequency ride-through**: Provide the facility's terminal frequency level(s) and elapsed time at which the facility will disconnect from the utility system during the disturbance, if any. Confirm the ability to meet ride-through requirements and include supporting documentation regarding inverter design, control parameters, etc.

2.10.11 **Frequency Response**: Provide the facility's frequency response characteristics as required by the model Stage 3 Contract, including time of response, tunable parameters, alternate frequency response modes and means of implementing such features.

2.10.12 **Auxiliary Power Information**: Proposer must provide the maximum auxiliary power requirements for:

- Start-up
- Normal Operations (from generator)
- Normal Operating Shutdown

- Forced Emergency Shutdown
- Maintenance Outage

2.10.13 **Coordination of Operations**: Provide a description of the control facilities required to coordinate generator operation with and between the Company's System Operator and the Company's System.

- Include a description of the equipment and technology used to facilitate dispatch to the Company and communicate with the Company.
- Include a description of the control and protection requirements of the generator and the Company's System.

2.10.14 **Cycling Capability**: Describe the Facility's ability to cycle on/off and provide limitations.

2.10.15 **Active Power Control Interface**: Describe the means of implementing active power control and the Power Possible, including the contribution to the dispatch signal from paired storage, if any. Provide the Proposer's **experience** dealing with active power control, dispatch, frequency response, and ride-through.

2.10.16 Provide the details of the **major equipment** (e.g., batteries, inverters, battery management system), including, but not limited to, name of manufacturer, models, key metrics, characteristics of the equipment, and performance specifications.

2.10.17 **Energy Storage performance standards**: For stand-alone storage projects or generation projects that include a storage component, provide additional performance standard descriptions as follows:

- MWh storage output for a full year
- Ramp Rate: Provide the Facility's ramp rate, which should be no more than 2 MW/minute for all conditions other than those under control of the Company System Operator and/or those due to desired frequency response.
- System Response Time – Idle to Design Maximum (minutes)
- Discharge Start-up time (minutes from notification)
- Charge Start-up time (minutes from notification)
- Start and run-time limitations, if any
- Ancillary Services provided, if any (i.e. Spinning Reserves, Non-Spinning Reserves, Regulation Up, Regulation Down, Black Start capability, other)

2.10.18 Provide the description and details of the **grid-charging capabilities of the Facility**. Include a description on the ability to control the charging source.

2.11 INTERCONNECTION REQUIREMENT STUDY

2.11.1 Provide the appropriate completed **Project Interconnection Data Request worksheets** for the proposed technology with the Proposal submission. (The worksheets can be found in the Electronic Procurement Platform's "1. Download Documents" tab as S3 HI Appx B - Att 2a Data Request (PV_BESS) 2021-09-13.xls, S3 HI Appx B - Att 2b Data Request (Wind) 2020-08-28.xls or S3 HI Appx B - Att 2c Data Request (Sync Gen) 2021-03-17.xls MSExcel files.) Standalone Storage Projects will use the S3 HI Appx B - Att 2a Data Request (PV_BESS) 2021-09-13.xls worksheet and omit the PV sections.

2.11.2 Also provide all **project single line and three line diagram(s)** with the Proposal submission**.**

2.11.3 **Models for equipment and controls** (see Appendix B Attachment 4)**, complete documentation and user manuals for all technical models** (for inverters and power plant controller)**, generation unit manufacturer datasheet(s), generation unit reactive power capability curve(s), overlaid generation facility technical model output data for three-phase fault and single-phase fault,** and a **report, with plots, documenting that Proposers have tested their models under all scenarios prescribed** shall be submitted within the timeframes specified in Section 5.1 of the RFP. Proposers may also download the **Facility Technical Model Requirements and Review Process** documentation labelled as S3 HI Appx B - Att 3 IRS Model Req Review Process.pdf from the "1. Download Documents" tab.

2.11.4 See Appendix B Attachment 4 for a summary of the model requirements and IRS task scope.

2.12 PROVEN TECHNOLOGY

2.12.1 Provide all supporting information for the Company to assess the **commercial and financial maturity of the technology** being proposed. Provide any supporting documentation that shows examples of projects that:

- Use the technology at the scale being proposed
- Have successfully reached commercial operations (for example, by submitting a PPA)
- Demonstrate experience in providing Active Power dispatch

2.13 EXPERIENCE AND QUALIFICATIONS

Proposers, its affiliated companies, partners, and/or contractors and consultants are required to demonstrate project experience and management capability to successfully develop and operate the proposed Project.

2.13.1 Provide a hierarchical **organizational/management chart** for the Project that lists all key personnel and project participants dedicated to the Project and identifies the management structure and responsibilities. In addition to the chart, Proposers must provide biographies/resumes of the key personnel, including position, years of relevant experience and similar project experience. Proposers must provide specifics on each participants' area of expertise in renewable energy projects. Identify architects and engineers or provision to provide same that are licensed to practice in the State of Hawai'i. Proposers must also provide a completed table:

- For each of the project participants (including the Proposer, partners, and proposed contractors), **fill out the table below** and provide statements that list the specific experience of the individual in: financing, designing, constructing, interconnecting, owning, operating, and maintaining renewable energy generating or storage facilities, or other projects of similar size and technology, and
- Provide any evidence that the project participants have worked jointly on other projects.

	EXPERIENCE: In the applicable columns below, include project details (i.e., project name, location, technology, size) and relevant job duties (role/responsibilities) and time (in years/months) spent on the project. List multiple projects if applicable.

Participant Name:	Financing	Designing	Constructing	Interconnecting	Owning	Operating	Maintaining
1.							
2.							
3.							
…							

2.13.2 Identify those **members of the team** the Proposer is submitting in the Experience Table above to meet the experience and qualifications requirement, included in the Threshold Requirement. Identify those **members of the team with the experience and qualifications,** including affiliates, and their principal personnel who will be involved in the project. If the Proposer consists of multiple parties, such as joint ventures or partnerships, demonstrate each member(s) firm commitment to provide services to the project (e.g., letter of intent); provide this information for each party, clearly indicating the proposed role of each party, including an ownership chart indicating direct and indirect ownership, and percentage interests in the partnership or joint venture.

2.13.3 Provide a **listing in the table format below, of all renewable energy generation or energy storage projects** the Proposer has successfully developed or that are currently under construction. Describe the Proposer's role and responsibilities associated with these projects (lead developer, owner, investor, etc.). Provide the following information as part of the response:

Project Name	Location (City, State)	Technology (wind, PV, hydro, plus storage, etc.)	Size (MW/ MWh)	Commercial Operation Date	Offtaker (if applicable)	Role & Responsibilities
1.						
2.						
3.						
…						

2.14 STATE OF PROJECT DEVELOPMENT AND SCHEDULE

2.14.1 Provide a **project schedule in GANTT chart format** with complete **critical path activities** identified for the Proposal from the Notice of Selection of the Proposal to the start of Commercial Operations.

- The **schedule** must include:
  - Interconnection Requirement Study (IRS) assumptions
  - Anticipated contract negotiation period assumptions
  - Regulatory assumptions
  - Anticipated submittal and approval dates for permitting (including but not limited to environmental and archaeological compliance)
  - Siting and land acquisition
  - Cultural Resource implications and mitigation activities
  - Community outreach and engagement activities
  - Energy resource assessment
  - Financing

- Engineering
- Procurement
- Facility construction including construction management events
- Applicable reporting milestone events specified in the Model Stage 3 Contract
- Testing
- Interconnection (including engineering, procurement, and construction)
- Commercial Operations Date
- All other important elements outside of the direct construction of the Project

- The project schedule must be created in Microsoft Project and submitted in a .mpp file format.
- For each project element, list the start and end date (must be in MM/DD/YY format), and include predecessors to clearly illustrate schedule dependencies and durations.
- Proposers must also list and describe critical path activities and milestone events, particularly as they relate to the integration and coordination of the project components and the Company's Electric System. Proposers must ensure that the schedule provided in this section is consistent with the milestone events contained in the Stage 3 Contract and/or other agreements.

2.14.2 Describe the **construction execution strategy** including:

- Identification of contracting/subcontracting plans
- Modular construction
- Safety plans[15]
- Quality control and assurance plan
- Labor availability
- Likely manufacturing sites and procurement plans
- Similar projects where these construction methods have been used by the Proposer

2.14.3 Provide a description of any **project activities that have been performed to date**.

2.14.4 Explain how you plan to reach **safe harbor milestones** (if applicable) and **guaranteed commercial operations**, including durations and dependencies which support this achievement.

2.15 CARBON EMISSION QUESTIONNAIRE

2.15.1 Answer the following Carbon Criteria questions. To mitigate the possibility of providing responses to questions that are optimistic or would result in a better score for the Carbon Criteria questions, please provide conservative answers where answers are unknown or uncertain. Guidance for providing conservative answers has been provided for each question. If a question or Category's questions are not applicable to the Project, please leave blank. For instance, if the Project generation technology does not include solar, leave questions in Category "3e. Procurement – Solar" blank.

Category	**#**	**Question**	***Answer Choices***

[15] A document that describes the various safety procedures and practices that will be implemented on the Project and how applicable safety regulations, standards, and work practices will be enforced on the Project.

1. Siting	1	Please provide the Project's expected annual production capacity per developed Site area in units of MWh/yr/m^2. *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected annual production capacity per developed Site area in units of MWh/yr/m^2.*	*Numerical write in*
	2	What is the expected distance from the Project's generation/storage location to the point of interconnection? *If the answer to this question is unknown or if there are multiple possibilities, please conservatively provide the furthest expected distance from the Project's generation/storage location to the point of interconnection*	*Numerical write in*
	3	What fraction of the Project's Site is a "greenfield", e.g. has not been previously developed? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum expected "greenfield" fraction.*	*Numerical write in*
	4	What fraction of the Project's Site requires grading? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum expected fraction.*	*Numerical write in*
	5	What is the expected fraction (in terms of CAPEX) of infrastructure being reused (includes roads, buildings, trenches, pads) for the Project? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Numerical write in*
2. Procurement	6	What fraction of concrete, fencing, gravel and other roadway materials used for the Project will be locally sourced on island? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Numerical write in*
	7	If available, please provide manufacturer-specific carbon footprint for major components and feedstock, along with supporting documentation. For power generating components, such as solar panels/wind turbines/biomass combustor, please provide the carbon footprint in units of kg CO_2e/kWh. For carbon feedstock, please provide in units of kg CO_2e/MMBtu energy content. *If this information is unavailable, please answer "Not available at this time".*	*Numerical write-in and supporting documentation*
	8	What fraction of roadway materials and gravel used for the Project will be made from recycled materials? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Numerical write in*

3a. Procurement – Biofuels ***please answer only if the project includes biofuels-based generation***	9	What fraction of the biofuel feedstock used for the Project is also a food or animal feedstock? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum expected fraction.*	*Numerical write in*
	10	What fraction of the biofuel feedstock used for the Project is a waste product? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Numerical write in*
	11	What fraction of the harvested biofuel feedstock used for the Project will be replaced and regrown within one year of harvesting? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum fraction.*	*Numerical write in*
	12	How much hydrogen will be used in the biofuel production process for hydroprocessing (kg hydrogen/kg biofuel produced)? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum expected amount in units of kg hydrogen/kg biofuel produced.*	*Numerical write in*
	13	How much fossil fuel energy will be consumed per electricity generated by the Project (kg fossil fuel/kWh)? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum expected amount in units of kg fossil fuel/kWh.*	*Numerical write in*
3b. Procurement – Biomass ***please answer only if the project includes biomass-based generation***	14	What is the expected overall efficiency of the Project's biomass conversion to electricity (electricity generated by the Project divided by the energy in the biomass combusted)? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected overall efficiency.*	*Numerical write in*
	15	What is the expected biomass combustion efficiency of the biomass used for the Project (actual heat produced by combustion divided by the total heat potential of the biomass combusted)? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected biomass combustion efficiency.*	*Numerical write in*
	16	What fraction of the harvested biomass feedstock used for the Project will be replaced and regrown within one year of harvesting? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum fraction.*	*Numerical write in*

3c. Procurement – Energy Storage ***please answer only if the project includes energy storage***	17	What is the expected return efficiency of the Project's energy storage system (MWh returned to the grid/MWh stored)? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected return efficiency.*	*Numerical write in*
	18	How many cycles will the batteries used for the Project's energy storage system undergo annually? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum expected number of cycles.*	*Numerical write in*
	19	What is the expected battery lifetime before degradation of the Project's energy storage efficiency below 80%? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected lifetime.*	*Numerical write in*
3d. Procurement – Geothermal ***please answer only if the project includes geothermal generation***	20	Will the Project's geothermal process be an enhanced geothermal system (EGS), flash/dry steam, or binary steam power plant? *If the answer to this question is unknown or uncertain, please conservatively answer "Not known at this time".*	*Text write in*
	21	Will the Project's geothermal process be closed loop? *If the answer to this question is unknown or uncertain, please conservatively answer "No".*	*Yes / No*
	22	What percentage of mass of fluid will be cascaded compared to total extracted fluid mass? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected percentage.*	*Numerical write in*
	23	Will new geothermal wells need to be drilled for the Project? *If the answer to this question is unknown or uncertain, please conservatively answer "Yes".*	*Yes / No*
3e. Procurement – Solar ***please answer only if the project includes solar generation***	24	What is the expected solar irradiance for the Project (kW/m^2)? *If the answer to this question is unknown or uncertain, please conservatively answer "Not known at this time".*	*Numerical write in*
	25	Which type of solar panels will be installed for the Project? a. Cadmium Telluride b. Single Crystalline Silicon c. Multicrystalline Silicon d. Other, if yes, please provide details regarding solar panel technology type. *If the answer to this question is unknown or uncertain, please conservatively answer "Not known at this time".*	*Yes/No* *If "Other", include write-in*

	26	What is the solar conversion efficiency of the solar panels (solar kW/m^2 / kW/m^2 produced) used for the Project? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum solar conversion efficiency.*	*Numerical write in*
3f. Procurement – Waste-to-Energy ***please answer only if the project includes Waste-to-Energy generation***	27	What fraction of the waste feedstock used for the Project will be organic waste (food, waste paper, green (i.e. compostable) waste, etc.)? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Numerical write in*
	28	What fraction of the fleet used to transport the waste feedstock to the Facility will consume renewable diesel or be electric? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Numerical write in*
	29	If the Waste-to-Energy process used for the Project will emit greenhouse gases, what fraction of the greenhouse gases will be captured? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Yes / No* *If "Yes", include numerical write in*
	30	What is the expected overall electrical efficiency of the Project process (electricity produced divided by the energy utilized for the waste-to-energy process) (kWh produced/kWh utilized for processing)? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum overall electrical efficiency expected.*	*Numerical write in*
3g. Procurement – Wind ***please answer only if the project includes wind generation***	31	What fraction of the rotors used for the Project will be made from recycled materials? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Numerical write in*
	32	Please provide the expected wind energy availability for the Project's location as it is related to the available wind speed (MW). *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected wind energy availability.*	*Numerical write in*
	33	Please provide the expected power generation ratio of the Project. *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected power generation ratio.*	*Numerical write in*

	34	Please provide the expected power coefficient of the Project. *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected power coefficient of the Project.*	*Numerical write in*
	35	What percentage by weight of the turbine tower will be steel? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum expected percentage.*	*Numerical write in*
4. Construction	36	What fraction of the equipment used during the construction phase of the Project will consume renewable fuel? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Numerical write in*
	37	Will the Site have an anti-idle policy for the equipment used during the construction phase of the Project? *If the answer to this question is unknown or uncertain, please conservatively answer "No".*	*Yes / No*
	38	How many hours of helicopter use will be required for construction phase of the Project? *If the answer to this question is unknown or uncertain, please conservatively answer "Yes".*	*Numerical write in*
	39	What fraction of construction workers traveling to the Site during the construction phase of the Project will be local to Hawai'i? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum fraction of construction workers traveling to the Site during the construction phase of the Project may be local to Hawai'i.*	*Numerical write in*
5. Operations & Maintenance	40	What fraction of Project equipment and materials will need to be replaced during the Project's proposed Contract Term (e.g., Project lifetime) as a percentage of capital cost? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum expected fraction of Project equipment and materials may need to be replaced during the Project's proposed Contract Term by using an above-average scenario for number of equipment failures and wear-and-tear on project materials.*	*Numerical write in*
	41	Will any equipment containing high global warming potential gases (such as sulfur hexafluoride (SF_6) or hydrofluorocarbons (HFCs)) be installed or used during operation? If yes, please provide the type of equipment and high global warming potential greenhouse gas and approximate quantity (kg) leaked per year.	*Yes / No* *If "Yes", include numerical write in*

		If the answer to this question is unknown or uncertain, please conservatively assume "Yes" and provide a maximum expected quantity(kg) leaked per year.	
	42	What is the expected electricity load from the grid over the Project's proposed Contract Term as a percentage of the Project's total electricity production? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum electricity load from the grid as a percentage of the Project's total electricity production.*	*Numerical write in*
	43	What is the expected onsite electricity use over the Project's proposed Contract Term as a percentage of the Project's total electricity production? *If the answer to this question is unknown or uncertain, please conservatively provide the maximum expected onsite electricity use over the Project's proposed Contract Term as a percentage of the Project's total electricity production.*	*Numerical write in*
	44	What fraction of the equipment used for the Operations & Maintenance of the Project will consume renewable fuel or be electric? *If the answer to this question is unknown or uncertain, please conservatively provide the minimum expected fraction.*	*Numerical write in*
6. General	45	Please provide any additional information available likely to impact the Project's lifecycle (i.e., including raw materials and extraction, transportation, construction, operations & maintenance, and decommissioning & disposal) greenhouse gas emissions.	*Text write in*
	46	Please describe any additional actions that will be taken to reduce the Project's lifecycle greenhouse gas emissions, if not already captured in above responses. If no actions are intended at this time, please state that.	*Text write in*

(OPTIONAL) MINOR PROPOSAL VARIATIONS

Proposers submitting minor variations to their base variation (as allowed in RFP Section 1.8.2 and 1.8.3) must provide the **details of each variation in the below section(s)**. In the proposal variation section below, Proposers must (1) provide a completed Proposal Summary Table identical to Section 2.0 of this Appendix B in Section 3 and in Section 4 (if applicable). The information in these tables must reflect the information for the variation being proposed. Additionally, Proposers must (2) identify all changes to the information provided in response to Sections 2.2.4 through 2.14 of this Appendix B for the proposal variation. If differences from any section in Sections 2.2.4 through 2.14 are not identified, the Company will assume that the information contained in the base variation (Sections 2.2.4 through 2.14) also applies to the proposal variation.

Note: Section 2.2.2 above requires the inclusion of a table summarizing the differences among the variations, if variations are proposed.

(AS NECESSARY)

3.1 VARIATION A SUMMARY TABLE
3.2 VARIATION A SUMMARY
3.3 VARIATION A FINANCIALS
3.4 VARIATION A CONTRACT EXCEPTIONS
3.5 VARIATION A SITE CONTROL
3.6 VARIATION A ENVIRONMENTAL COMPLIANCE AND PERMITTING PLAN
3.7 VARIATION A CULTURAL RESOURCE IMPACTS
3.8 VARIATION A COMMUNITY OUTREACH
3.9 VARIATION A O&M
3.10 VARIATION A PERFORMANCE STANDARDS
3.11 VARIATION A INTERCONNECTION SUBMITTAL REQUIREMENTS
3.12 VARIATION A PROVEN TECHNOLOGY
3.13 VARIATION A EXPERIENCE AND QUALIFICATIONS
3.14 VARIATION A STATE OF PROJECT DEVELOPMENT AND SCHEDULE
3.15 VARIATION A CARBON EMISSION QUESTIONNAIRE

(AS NECESSARY)

4.1 VARIATION B SUMMARY TABLE
4.2 VARIATION B SUMMARY
4.3 VARIATION B FINANCIALS
4.4 VARIATION B CONTRACT EXCEPTIONS
4.5 VARIATION B SITE CONTROL
4.6 VARIATION B ENVIRONMENTAL COMPLIANCE AND PERMITTING PLAN
4.7 VARIATION B CULTURAL RESOURCE IMPACTS
4.8 VARIATION B COMMUNITY OUTREACH
4.9 VARIATION B O&M
4.10 VARIATION B PERFORMANCE STANDARDS
4.11 VARIATION B INTERCONNECTION SUBMITTAL REQUIREMENTS
4.12 VARIATION B PROVEN TECHNOLOGY
4.13 VARIATION B EXPERIENCE AND QUALIFICATIONS
4.14 VARIATION B STATE OF PROJECT DEVELOPMENT AND SCHEDULE

4.15 VARIATION B CARBON EMISSION QUESTIONNAIRE

Certification of Counsel for Proposer
Hawaiian Electric Company, Ltd.

Pursuant to Section 1.7.4 of Hawaiian Electric Company, Ltd.'s ("Company") Request For Proposals for Renewable Dispatchable Generation and Energy Storage ("RFP"), the Company may require legal counsel who represent multiple unaffiliated proposers to sign a certification that they have not shared confidential information obtained through the representation of one proposer with any other unafilliated proposer.

Accordingly, by signing below, I hereby acknowledge, agree and certify that:

(1) in connection with the RFP, I represent the following company that has submitted a proposal(s) for the RFP: _____ ("Proposer");

(2) irrespective of any proposer's direction, waiver or request to the contrary, I will not share a proposer's confidential information or the Company's confidential information associated with such proposer, including, but not limited to, a proposer's or Company's negotiating positions, with third parties unaffiliated with Proposer (by contract or organizational structure), including other proposers responding to the RFP;

(3) the Company may rely on this certification for purposes of the RFP; and

(4) at the conclusion of power purchase agreement negotiations, if any, the Company may require me to sign a certicate certifying that I have not shared a proposer's confidential information or the Company's confidential information associated with such proposer, including, but not limited to, a proposer's or Company's negotiating positions, with third parties unaffiliated with Proposer (by contract or organizational structure), including other proposers responding to the RFP.

_____
Name (print)

_____
Law Firm (if applicable)

_____ _____
Signature Date

Section 1.7.4 of the RFP provides in relevant part that:

In submitting a Proposal in response to this RFP, each Proposer certifies that the Proposal has been submitted in good faith and without fraud or collusion with any other unaffiliated person or entity. The Proposer shall acknowledge this in the Response Package submitted with its Proposal. Furthermore, in executing the NDA provided as Appendix E, the Proposer agrees on behalf of its Representatives (as defined in the NDA) that the Company's negotiating positions will not be shared with other Proposers or their respective Representatives.

In addition, in submitting a Proposal, a Proposer will be required to provide Company with its legal counsel's written certification in the form attached as Appendix B, Attachment 1 certifying in relevant part, that irrespective of any Proposer's direction, waiver, or request to the contrary, the attorney will not share a Proposer's confidential information associated with such Proposer with others, including, but not limited to, such information such as a Proposer's or Company's negotiating positions. If legal counsel represents multiple unaffiliated Proposers whose Proposals are selected for the Final Award Group, such counsel will also be required to submit a similar certification at the conclusion of contract negotiations that he or she has not shared a Proposer's confidential information or the Company's confidential information associated with

such Proposer with others, including but not limited to, such information as a Proposer's or Company's negotiating positions.

Project Interconnection - Data Request **Updated 9/13/2021**

FOR PV/BESS GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
1)	**Please provide a plan map of the Renewable Generation facility. Please indicate the interconnection point to the HECO system.**	
2)	**Please provide the following generation and load information for the Renewable Generation facility:**	
	a. Gross and net output of the facility	
	b. Expected KW and KVAR loads including, but not limited to, generators' auxiliary load curve, process load(s) profile(s), etc.	
	c. Expected minimum and maximum MW and MVAR "import from" AND "export to" HECO.	
3)	**Please provide Single-Line Diagram(s), Three-Line Diagram(s), and Protective Relay List & Trip Schedule for the generation and interconnection facilities:**	
	a. The Single-line diagram(s) and Three-line diagram (s) should include: i. For main and generator step up transformer(s), please show: • Transformer voltage and MVA ratings.	
	• Transformer impedance(s).	
	• Transformer winding connections and grounding. If neutrals are grounded through impedance, please show the impedance value.	
	ii. The protective relaying and metering for the generators, transformers, buses, and all other main substation equipment.	
	iii. For the potential transformers, please indicate the type, quantity, ratio, and accuracy rating.	
	iv. For the current transformers, please indicate the type, quantity, ratio, and accuracy rating, and thermal rating factor.	
	v. Auxiliary power devices (e.g. capacitors, reactors, storage systems, etc.) and their rating(s); additional inquiries may be made to obtain technical data for these devices.	
	vi. For the interconnection / tie lines (overhead or underground) and the plant's generation system, please provide the following, as applicable: • Installation details such as cross-section(s), plan and profiles, etc.	
	• Conductor data such as size, insulation, length etc.	
	• Continuous and emergency current ratings.	
	• Voltage rating (nominal and maximum KV).	
	• BIL rating.	
	• Positive, negative, and zero-sequence impedances (resistance, reactance, and susceptance)	
	• Capacitance or charging current.	
	• Short-circuit current capability.	
	vii. Include station power for facility and all applicable details.	
	viii. All applicable notes pertaining to the design and operation of the facility.	
	b. The Protective relay list & trip schedule should list the protected equipment; the relay description, type, style number, quantity, ANSI Device No., and range; and the breaker(s)/switching device(s) tripped, for both the generator protection and the interconnection facilities protection.	
	c. Please provide both a paper and an electronic version (e.g. dgn, dxf, or pdf) of the single-line diagram(s) and the protective relay list & trip schedule.	
	d. Single-line diagrams should be provided for both the generation plant and the interconnection substation.	

Project Interconnection - Data Request **Updated 9/13/2021**

FOR PV/BESS GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
4)	**For the PV Inverter Based Generating Faciltiy, please provide the following data, as applicable:**	
	a. Inverter manufacturer, Type, Size, Impedances. Attach copy of inverter data sheet.	
	b. Power Factor Range Capability	
	c. Inverter Reactive Power Capability Curve	
	d. Auxillary loads (P, Q, Power Factor)	
	e. Inverter's Internal Isolation Transformer Grounding Method, if used (i.e. effectively grounded, resonant grounded, low inductance grounded, high-resistance grounded, low-resistance grounded, ungrounded). If the transformer is not solidly grounded , provide the impedance value for the grounding neutral and the impedance for the isolation transformer.	
	f. Diagram for Inverter's internal isolation transformer	
	g. Switching and service restoration practice	
	h. Protection data (voltage ride-through and trip settings, frequency ride-through and trip settings etc.). Include setpoint and clearing time ranges for voltage and frequency settings.	
	i. Description of harmonic spectrum of inverter injection (order, magnitude)	

5)	**For the BESS Inverter Based Generating Faciltiy, please provide the following data (if system is DC coupled, please note DC coupling and reference to 4).**	
	a. Inverter manufacturer, Type, Size, Impedances. Attach copy of inverter data sheet.	
	b. Power Factor Range Capability	
	c. Inverter Reactive Power Capability Curve	
	d. Auxillary loads (P, Q, Power Factor)	
	e. Inverter's Internal Isolation Transformer Grounding Method, if used (i.e. effectively grounded, resonant grounded, low inductance grounded, high-resistance grounded, low-resistance grounded, ungrounded). If the transformer is not solidly grounded , provide the impedance value for the grounding neutral and the impedance for the isolation transformer.	
	f. Diagram for Inverter's internal isolation transformer	
	g. Switching and service restoration practice	
	h. Protection data (voltage ride-through and trip settings, frequency ride-through and trip settings etc.). Include setpoint and clearing time ranges for voltage and frequency settings.	
	i. Description of harmonic spectrum of inverter injection (order, magnitude)	

6)	**Energy Storage System, if applicable**	
	a. Operation characteristics	
	b. Voltage level	
	c. Capacity (how long and how much can the battery support)	
	d. Deployment strategy/schedule	
	e. Energy storage system data sheet	

7)	**For the PV plant's collector system, please provide the following, as applicable:**	
	a. Conductor data such as size, insulation, etc.	
	b. Continuous and emergency current ratings.	
	c. Voltage rating (nominal and maximum kV).	
	d. BIL rating.	
	e. Positive, negative, and zero-sequence impedances (resistance, reactance, and susceptance).	
	f. Capacitance or charging current.	

Project Interconnection - Data Request

Updated 9/13/2021

FOR PV/BESS GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

	Response
g. Short-circuit current capability.	

8)

For the BESS plant's collector system, please provide the following, as applicable (if system is DC coupled, please note DC coupling and reference to 7):	
a. Conductor data such as size, insulation, etc.	
b. Continuous and emergency current ratings.	
c. Voltage rating (nominal and maximum kV).	
d. BIL rating.	
e. Positive, negative, and zero-sequence impedances (resistance, reactance, and susceptance).	
f. Capacitance or charging current.	
g. Short-circuit current capability.	

Project Interconnection - Data Request **Updated 9/13/2021**

FOR PV/BESS GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
9)	**Please provide the following software models that accurately represent the Facility, as applicable:** (For model requirements, refer to the HECO Facility Technical Model Requirements and Review Process)	
	a. Validated PSS/E load flow model up to the point of interconnection. The PSS/E model shall include the main transformer, collection system, generator step-up transformers, inverter systems, and any other components including capacitor banks, energy storage systems, DVAR, etc. An equivalent respresentation of the collection system, generator step-up transformers, and inverter systems is acceptable. Documentation on the model shall be provided.	
	b. Validated PSS/E dynamic model for the inverter; and other components including energy storage system, DVAR, etc. if applicable. The inverter model shall include the generator/converter, electrical controls, plant-level controller, and protection relays. Generic and Detailed models shall be provided. Documentation on the model(s) shall be provided, including the PSS/E dyre file with model parameters.	
	i. Generic models shall parameterize models available within the PSS/E standard model library.	
	ii. Detailed models shall be supplied by the vendor/manufacturer as user-written models. The uncompiled source code for the user-written model shall be provided to ensure compatability with future versions of PSS/E. In lieu of the uncompiled source code, a compiled object file and applicable library files shall be provided in PSS/E versions 33 AND 34 format. Updates of the object file compatible with future PSS/E versions must be provided as requested for the life of the project as written in the power purchase agreement. Documentation shall include the characteristics of the model, including block diagrams, values, names for all model parameters, and a list of all state variables.	
	c. Validated PSCAD model of the inverter; and other components including energy storage system, DVAR, auxiliary plant controllers, etc. if applicable. Documentation on the model(s) shall be provided. Refer to PSCAD Model Requirements Memo for model requirements.	
	d. Overlayed plots validating the performance of the three dynamic models for a three-phase fault. Plots shall include voltage, real and reactive power, real and reactive current.	
	e. Validated Aspen Oneliner short circuit model that accurately represents the facility (including energy storage system if applicable), and is valid for all faults conditions anywhere on the Utility system. Documentation on the model(s) shall be provided. (OTHERWISE SEE ADDITIONAL TABS FOR REQUIRED INFORMATION TO MODEL INVERTER AS A GENERATOR OR A VOLTAGE CONTROLLED CURRENT SOURCE)	
10)	**For the main transformer and generator step-up transformers, please provide:**	
	a. Transformer voltage and MVA ratings, and available taps. Attach copy of transformer test report or data sheet	
	b. The tap settings used.	
	c. The LTC Control Scheme.	
	d. Transformer winding connections and grounding used. If the transformer is not solidly grounded, provide the impedance value for the grounding method.	
	e. Positive, negative, and zero sequence impedance values.	
11)	**For the circuit breakers and fault-clearing switching devices, including the generator breakers, please provide:**	
	a. The voltage, continuous current and interrupting capability ratings.	
	b. The trip speed (time to open).	

Project Interconnection - Data Request

Updated 9/13/2021

FOR PV/BESS GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
12)	**For the power fuses, please provide:**	
	a. The manufacturer, type, size, and interrupting capability.	
	b. The minimum melt and total clearing curves.	

13)	**For the protective relaying, please provide:**	
	a. Data for the CTs used with the relaying including the manufacturer, type of CT, accuracy class, and thermal rating factor.	
	b. Data for the PTs used with the relaying including the manufacturer, type of PT, voltage ratings, and quantity.	

Instructions:

Please fill in the data in the green blanks below

(Note: This does not include the internal isolation transformer, if used)

[1] Maximum rated output power = _____ kVA

[2] Impedances in **Per Unit** based on kVA from [1]

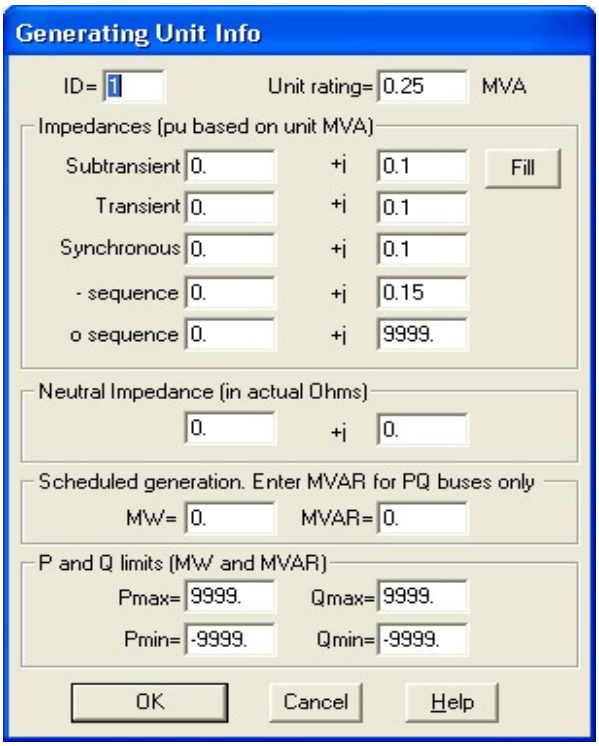
	R	X
Subtransient =		
Transient =		
Synchronous =		
Negative Sequence =		
Zero Sequence =		

[3] Neutral impedance (if any) in actual **Ohms**:

R	X

NOTE: These parameters should reflect the inverter response for all types of faults at any point on the electrical system to which the inverter is connected. This includes faults at the inverter output terminals, and also on the 138 kV transmission system. If the stated parameters do not cover this range, please state the adjustments needed to these parameters to accurately represent the inverter response across this range.

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Instructions:
Please fill in the data in the green blanks below

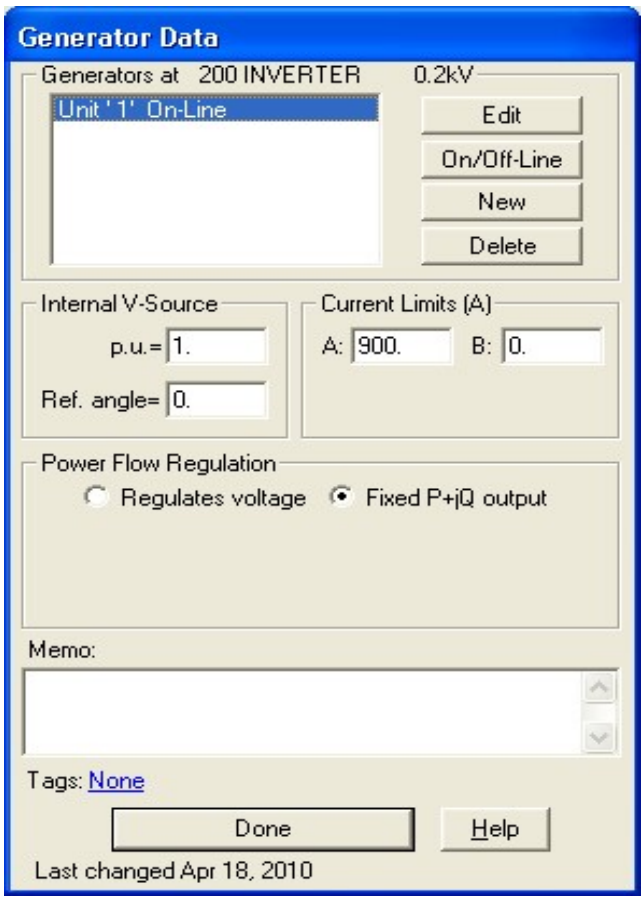
[1] Internal open circuit voltage

Magnitude = _____ Per Unit
Angle = _____ Degrees

[2] AC Output Current Limit = _____ Amps

NOTE: These parameters should reflect the inverter response for all types of faults at any point on the electrical system to which the inverter is connected. This includes faults at the inverter output terminals, and also on the 138 kV transmission system. If the stated parameters do not cover this range, please state the adjustments needed to these parameters to accurately represent the inverter response across this range.

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Instructions:
Please fill in the data in the green blanks below

[1] Inverter MVA Rating: _____ MVA

[2] Voltage-Current Characteristics:

Voltage PU	Current (A)	PF Angle (deg)

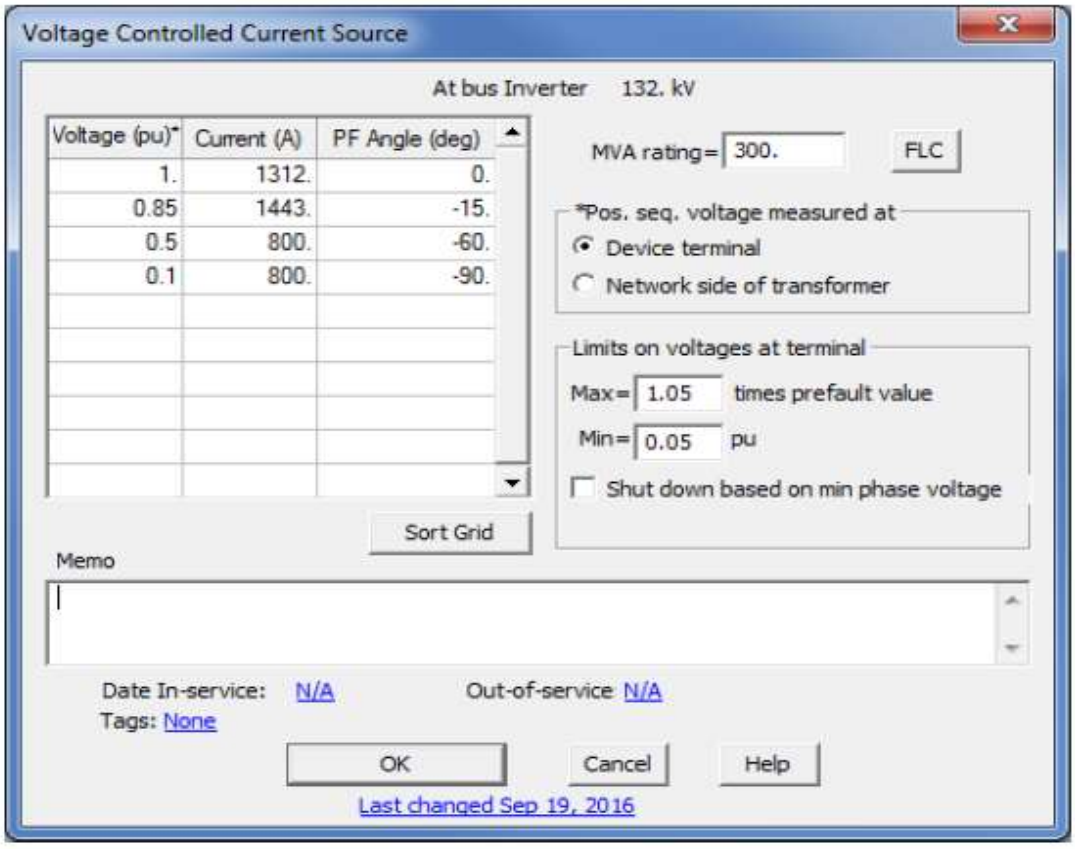
[3] Location of Voltage Measurement:

_____ Device Terminal OR
_____ Network side of Transformer

[4] Maximum Voltage: _____ Times prefault value

[5] Minimum Voltage _____ Per Unit

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Instructions:
Please fill in the data in the green blanks below
(Note: This is not required if an internal isolation transformer is not used)

[1] Transformer rated power = kVA

[2] Winding Configuration

Inverter Side = Delta/Wye
Customer Side = Delta/Wye

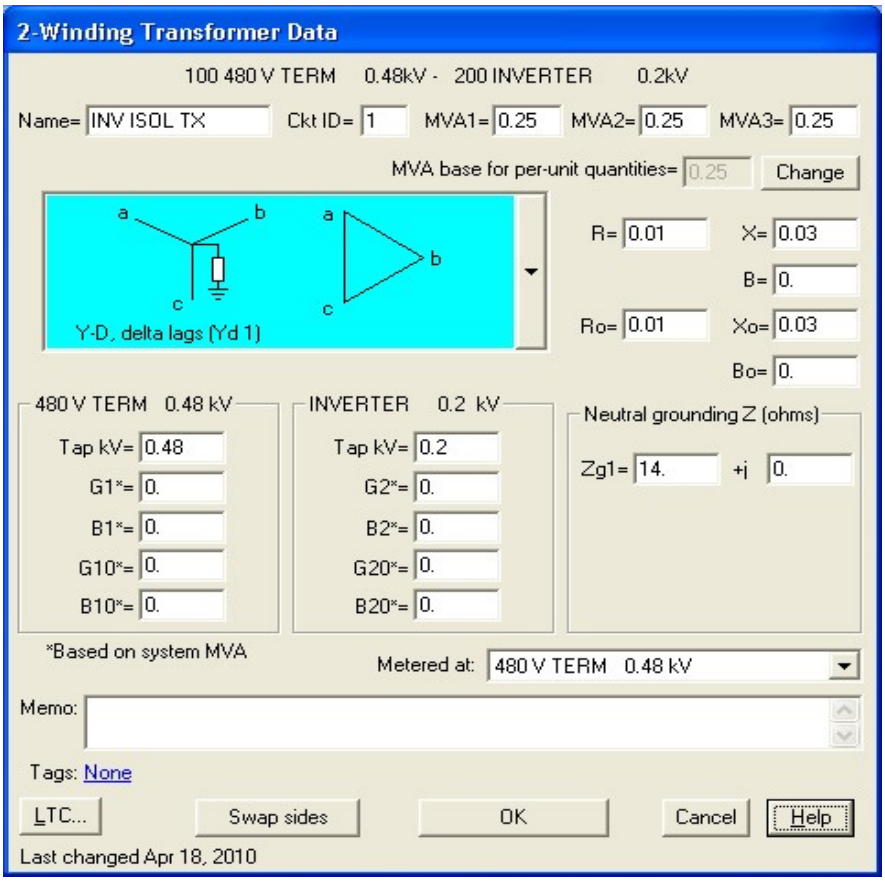
[2] Impedances in **Per Unit** based on kVA

	R	X
Positive Sequence =		
Zero Sequence =		

[3] Neutral impedance (if any) in actual **Ohms**:

R	X

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Project Interconnection - Data Request **Updated 8/28/2020**

FOR WIND GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
1)	**Please provide a plan map of the Non-Utility Generation (NUG) facility. Please indicate the interconnection point to the HECO system.**	
2)	**Please provide the following generation and load information for the NUG facility:**	
	a. Gross and net output of the facility	
	b. Expected KW and KVAR loads including, but not limited to, generators' auxiliary load curve, process load(s) profile(s), etc.	
	c. Expected minimum and maximum MW and MVAR "import from" AND "export to" HECO.	
3)	**Please provide Single-Line Diagram(s), Three-Line Diagram(s), and Protective Relay List & Trip Schedule for the generation and interconnection facilities:**	
	a. The Single-line diagram(s) and Three-line diagram (s) should include: i. For main and generator step up transformer(s), please show: • Transformer voltage and MVA ratings.	
	• Transformer impedance(s).	
	• Transformer winding connections and grounding. If neutrals are grounded through impedance, please show the impedance value.	
	ii. The protective relaying and metering for the generators, transformers, buses, and all other main substation equipment.	
	iii. For the potential transformers, please indicate the type, quantity, ratio, and accuracy rating.	
	iv. For the current transformers, please indicate the type, quantity, ratio, and accuracy rating, and thermal rating factor.	
	v. Auxiliary power devices (e.g. capacitors, reactors, storage systems, etc.) and their rating(s); additional inquiries may be made to obtain technical data for these devices.	
	vi. For the interconnection / tie lines (overhead or underground) and the plant's generation system, please provide the following, as applicable: • Installation details such as cross-section(s), plan and profiles, etc.	
	• Conductor data such as size, insulation, length etc.	
	• Continuous and emergency current ratings.	
	• Voltage rating (nominal and maximum KV).	
	• BIL rating.	
	• Positive, negative, and zero-sequence impedances (resistance, reactance, and susceptance)	
	• Capacitance or charging current.	
	• Short-circuit current capability.	
	vii. Include station power for facility and all applicable details.	
	viii. All applicable notes pertaining to the design and operation of the facility.	
	b. The Protective relay list & trip schedule should list the protected equipment; the relay description, type, style number, quantity, ANSI Device No., and range; and the breaker(s)/switching device(s) tripped, for both the generator protection and the interconnection facilities protection.	
	c. Please provide both a paper and an electronic version (e.g. dgn, dxf, or pdf) of the single-line diagram(s) and the protective relay list & trip schedule.	
	d. Single-line diagrams should be provided for both the generation plant and the interconnection substation.	

Project Interconnection - Data Request **Updated 8/28/2020**

FOR WIND GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
4)	**For the Wind Generating Faciltiy, please provide the following data:**	
	a. Turbine manufacturer, Type, Size, Impedances. Attach copy of turbine data sheet.	
	b. Power Factor Range Capability	
	c. Turbine Reactive Power Capability Curve	
	d. Auxillary loads (P, Q, Power Factor)	
	e. Grounding Method (i.e. effectively grounded, resonant grounded, low inductance grounded, high-resistance grounded, low-resistance grounded, ungrounded). If the transformer is not solidly grounded or ungrounded, provide the impedance value for the grounding neutral, if applicable.	
	f. Provide grounding diagram.	
	g. Switching and service restoration practice	
	h. Protection data (voltage ride-through and trip settings, frequency ride-through and trip settings etc.). Include setpoint and clearing time ranges for voltage and frequency settings.	
	k. Description of harmonic spectrum of inverter injection (order, magnitude)	

5)	**Energy Storage System, if applicable**	
	a. Operation characteristics	
	b. Voltage level	
	c. Capacity (how long and how much can the battery support)	
	d. Deployment strategy/schedule	
	e. Energy storage system data sheet	

6)	**For the Wind plant's collector system, please provide the following, as applicable:**	
	a. Conductor data such as size, insulation, etc.	
	b. Continuous and emergency current ratings.	
	c. Voltage rating (nominal and maximum kV).	
	d. BIL rating.	
	e. Positive, negative, and zero-sequence impedances (resistance, reactance, and susceptance).	
	f. Capacitance or charging current.	
	g. Short-circuit current capability.	

Project Interconnection - Data Request **Updated 8/28/2020**

FOR WIND GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
7)	**Please provide the following software models that accurately represent the Facility:** (For model requirements, refer to the HECO Facility Technical Model Requirements and Review Process and PSCAD Model Requirements Rev.9)	
	a. Validated PSS/E load flow model up to the point of interconnection. The PSS/E model shall include the main transformer, collection system, generator step-up transformers, wind turbines, and any other components including capacitor banks, energy storage systems, DVAR, etc. An equivalent respresentation of the collection system, generator step-up transformers, and turbines is acceptable. Documentation on the model shall be provided.	
	b. Validated PSS/E dynamic model for the wind turbine; and other components including energy storage system, DVAR, etc. if applicable. The wind turbine model shall include the generator/converter, electrical controls, plant-level controller, protection relays, and mechanical systems that impact its electrical performance. Generic and Detailed models shall be provided. Documentation on the model(s) shall be provided, including the PSS/E dyre file with model parameters.	
	i. Generic models shall parameterize models available within the PSS/E standard model library.	
	ii. Detailed models shall be supplied by the vendor/manufacturer as user-written models. The uncompiled source code for the user-written model shall be provided to ensure compatability with future versions of PSS/E. In lieu of the uncompiled source code, a compiled object file and applicable library files shall be provided in PSS/E versions 33 AND 34 format. Updates of the object file compatible with future PSS/E versions must be provided as requested for the life of the project as written in the power purchase agreement. Documentation shall include the characteristics of the model, including block diagrams, values, names for all model parameters, and a list of all state variables.	
	c. Validated PSCAD model of the wind turbine; and other components including energy storage system, DVAR, etc, if applicable. Documentation on the model(s) shall be provided. Refer to PSCAD Technical Memo for model requirements.	
	d. Overlayed plots validating the performance of the three dynamic models for a three-phase fault. Plots shall include voltage, real and reactive power, real and reactive current.	
	e. Validated Aspen Oneliner short circuit model that accurately represents the facility (including energy storage system if applicable), and is valid for all faults conditions anywhere on the Utility system. Documentation on the model(s) shall be provided. (OTHERWISE SEE ADDITIONAL TABS FOR REQUIRED INFORMATION TO MODEL INVERTER)	

8)	**For the main transformer and generator step-up transformers, please provide:**	
	a. Transformer voltage and MVA ratings, and available taps. Attach copy of transformer test report or data sheet	
	b. The tap settings used.	
	c. The LTC Control Scheme.	
	d. Transformer winding connections and grounding used. If the transformer is not solidly grounded, provide the impedance value for the grounding method.	
	e. Positive, negative, and zero sequence impedance values.	

9)	**For the circuit breakers and fault-clearing switching devices, including the generator breakers, please provide:**	
	a. The voltage, continuous current and interrupting capability ratings.	
	b. The trip speed (time to open).	

Project Interconnection - Data Request **Updated 8/28/2020**

FOR WIND GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
10)	**For the power fuses, please provide:**	
	a. The manufacturer, type, size, and interrupting capability.	
	b. The minimum melt and total clearing curves.	

11)	**For the protective relaying, please provide:**	
	a. Data for the CTs used with the relaying including the manufacturer, type of CT, accuracy class, and thermal rating factor.	
	b. Data for the PTs used with the relaying including the manufacturer, type of PT, voltage ratings, and quantity.	

Instructions:

Updated 8/28/20

Please fill in the data in the green blanks below

(Note: This does not include the internal isolation transformer, if used)

[1] Maximum rated output power = _____ kVA

[2] Impedances in **Per Unit** based on kVA from [1]

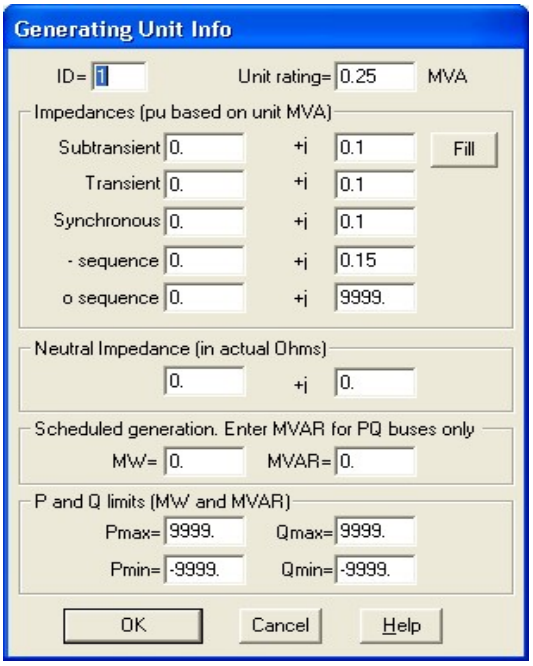
	R	X
Subtransient =		
Transient =		
Synchronous =		
Negative Sequence =		
Zero Sequence =		

[3] Neutral impedance (if any) in actual **Ohms**:

R	X

NOTE: These parameters should reflect the inverter response for all types of faults at any point on the electrical system to which the inverter is connected. This includes faults at the inverter output terminals, and also on the 138 kV transmission system. If the stated parameters do not cover this range, please state the adjustments needed to these parameters to accurately represent the inverter response across this range.

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Instructions: Updated 8/28/20

Please fill in the data in the green blanks below

[1] Internal open circuit voltage

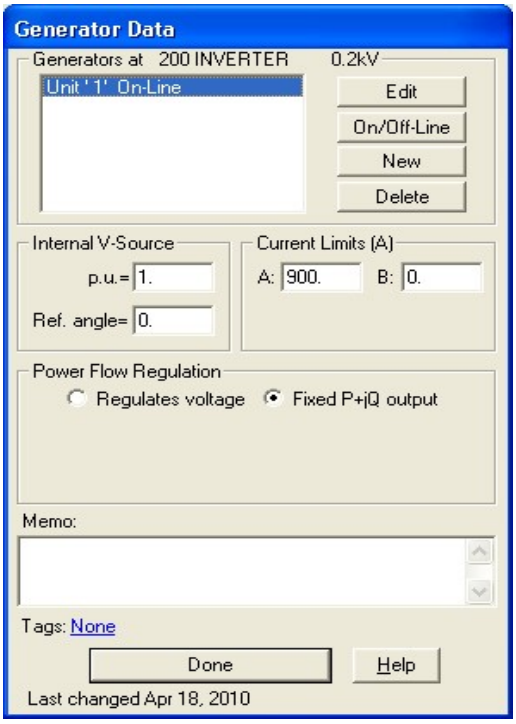
Magnitude = _____ Per Unit

Angle = _____ Degrees

[2] AC Output Current Limit = _____ Amps

NOTE: These parameters should reflect the inverter response for all types of faults at any point on the electrical system to which the inverter is connected. This includes faults at the inverter output terminals, and also on the 138 kV transmission system. If the stated parameters do not cover this range, please state the adjustments needed to these parameters to accurately represent the inverter response across this range.

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Instructions:
Please fill in the data in the green blanks below

Updated 8/28/20

[1] Inverter MVA Rating: _____ MVA

[2] Voltage-Current Characteristics:

Voltage PU	Current (A)	PF Angle (deg)

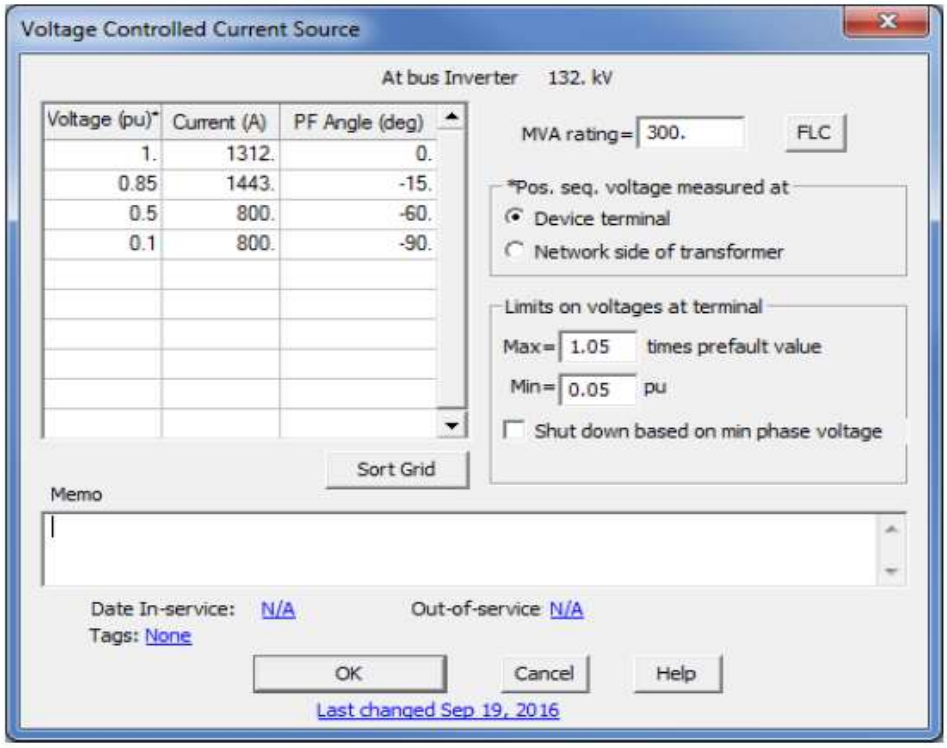
[3] Location of Voltage Measurement:

_____ Device Terminal OR
_____ Network side of Transformer

[4] Maximum Voltage: _____ Times prefault value

[5] Minimum Voltage _____ Per Unit

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Instructions:

Updated 8/28/20

Please fill in the data in the green blanks below

(Note: This is not required if an internal isolation transformer is not used)

[1] Transformer rated power = _____ kVA

[2] Winding Configuration

Inverter Side = _____ Delta/Wye

Customer Side = _____ Delta/Wye

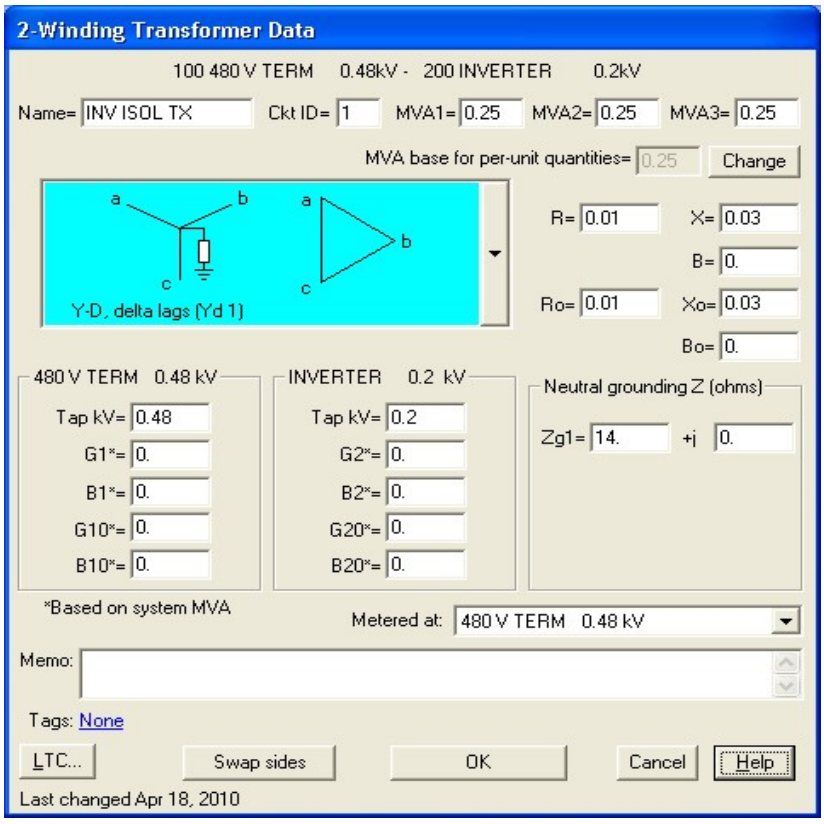
[2] Impedances in **Per Unit** based on kVA

	R	X
Positive Sequence =		
Zero Sequence =		

[3] Neutral impedance (if any) in actual **Ohms**:

R	X

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Project Interconnection - Data Request

Updated 3/17/2021

FOR SYNCHRONOUS GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
1)	**Please provide a plan map of the Non-Utility Generation (NUG) facility. Please indicate the interconnection point to the HECO system.**	
2)	**Please provide the following generation and load information for the NUG facility:**	
	a. Gross and net output of the facility	
	b. Expected KW and KVAR loads including, but not limited to, generators' auxiliary load curve, process load(s) profile(s), etc.	
	c. Expected minimum and maximum MW and MVAR "import from" AND "export to" HECO.	
3)	**Please provide Single-Line Diagram(s), Three-Line Diagram(s), and Protective Relay List & Trip Schedule for the generation and interconnection facilities:**	
	a. The Single-line diagram(s) and Three-line diagram (s) should include: i. For main and generator step up transformer(s), please show: • Transformer voltage and MVA ratings.	
	• Transformer impedance(s).	
	• Transformer winding connections and grounding. If neutrals are grounded through impedance, please show the impedance value.	
	ii. The protective relaying and metering for the generators, transformers, buses, and all other main substation equipment.	
	iii. For the potential transformers, please indicate the type, quantity, ratio, and accuracy rating.	
	iv. For the current transformers, please indicate the type, quantity, ratio, and accuracy rating, and thermal rating factor.	
	v. Auxiliary power devices (e.g. capacitors, reactors, storage systems, etc.) and their rating(s); additional inquiries may be made to obtain technical data for these devices.	
	vi. For the interconnection / tie lines (overhead or underground) and the plant's generation system, please provide the following, as applicable: • Installation details such as cross-section(s), plan and profiles, etc.	
	• Conductor data such as size, insulation, length etc.	
	• Continuous and emergency current ratings.	
	• Voltage rating (nominal and maximum KV).	
	• BIL rating.	
	• Positive, negative, and zero-sequence impedances (resistance, reactance, and susceptance)	
	• Capacitance or charging current.	
	• Short-circuit current capability.	
	vii. Include station power for facility and all applicable details.	
	viii. All applicable notes pertaining to the design and operation of the facility.	
	b. The Protective relay list & trip schedule should list the protected equipment; the relay description, type, style number, quantity, ANSI Device No., and range; and the breaker(s)/switching device(s) tripped, for both the generator protection and the interconnection facilities protection.	
	c. Please provide both a paper and an electronic version (e.g. dgn, dxf, or pdf) of the single-line diagram(s) and the protective relay list & trip schedule.	
	d. Single-line diagrams should be provided for both the generation plant and the interconnection substation.	

Project Interconnection - Data Request **Updated 3/17/2021**

FOR SYNCHRONOUS GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
4)	**For the Synchronous Generating Faciltiy, please provide the following data:**	
	a. Generator manufacturer, Model, Type. Attach copy of genertor data sheet.	
	b. Generator Characteristics (SEE "GENERATOR DATA" TAB)	
	c. Auxillary loads (P, Q, Power Factor)	
	d. Switching and service restoration practice	
	e. Protection data (voltage ride-through and trip settings, frequency ride-through and trip settings etc.). Include setpoint and clearing time ranges for voltage and frequency settings.	
	f. Description of harmonic spectrum of generator injection (order, magnitude)	

5)	**Energy Storage System, if applicable**	
	a. Operation characteristics	
	b. Voltage level	
	c. Capacity (how long and how much can the battery support)	
	d. Deployment strategy/schedule	
	e. Energy storage system data sheet	

6)	**Please provide the following software models that accurately represent the Facility:**	
	a. Validated PSS/E load flow model up to the point of interconnection. The PSS/E model shall include the main transformer, collection system (if applicable), generator step-up transformers (if applicable), generator, and any other components including capacitor banks, energy storage systems, DVAR, etc. Documentation on the model shall be provided.	
	b. Validated PSS/E dynamic model for the generator; and other components including energy storage system, DVAR, etc. if applicable. The generator model shall include the generator/converter, excitation system, governor system, power system stabilizer (if applicable), and protection relays that impact its electrical performance. Generic models shall be provided. Detailed Models shall be provided for inverter-based systems (energy storage, DVAR, etc). Documentation on the model(s) shall be provided, including the PSS/E dyre file with model parameters.	
	i. Generic models shall parameterize models available within the PSS/E standard model library. Exciter model shall conform to IEEE Std 421.5. Generic models shall be selected from NERC "Acceptable_Models_list_2017-08-19.xlsx"	
	ii. Detailed models shall be supplied by the vendor/manufacturer as user-written models. The uncompiled source code for the user-written model shall be provided to ensure compatability with future versions of PSS/E. In lieu of the uncompiled source code, a compiled object file and applicable library files shall be provided in PSS/E versions 33 AND 34 format. Updates of the object file compatible with future PSS/E versions must be provided as requested for the life of the project as written in the power purchase agreement. Documentation shall include the characteristics of the model, including block diagrams, values, names for all model parameters, and a list of all state variables.	
	c. Validated PSCAD model of the generator; and other components including energy storage system, DVAR, etc, if applicable. Documentation on the model(s) shall be provided. Refer to PSCAD Technical Memo for model requirements.	
	d. Overlayed plots validating the performance of the three dynamic models for a three-phase fault. Plots shall include voltage, real and reactive power, real and reactive current.	
	e. Validated Aspen Oneliner short circuit model that accurately represents the facility (including energy storage system if applicable), and is valid for all faults conditions anywhere on the Utility system. Documentation on the model(s) shall be provided. (OTHERWISE SEE ADDITIONAL TABS FOR REQUIRED INFORMATION TO MODEL INVERTER)	

Project Interconnection - Data Request **Updated 3/17/2021**

FOR SYNCHRONOUS GENERATION

PROJECT: _____

DATE: _____

(Nonexclusive Preliminary List)

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

		Response
7)	**For the main transformer and generator step-up transformers, please provide:**	
	a. Transformer voltage and MVA ratings, and available taps. Attach copy of transformer test report or data sheet	
	b. The tap settings used.	
	c. The LTC Control Scheme.	
	d. Transformer winding connections and grounding used. If the transformer is not solidly grounded, provide the impedance value for the grounding method.	
	e. Positive, negative, and zero sequence impedance values.	
8)	**For the circuit breakers and fault-clearing switching devices, including the generator breakers, please provide:**	
	a. The voltage, continuous current and interrupting capability ratings.	
	b. The trip speed (time to open).	
9)	**For the power fuses, please provide:**	
	a. The manufacturer, type, size, and interrupting capability.	
	b. The minimum melt and total clearing curves.	
10)	**For the protective relaying, please provide:**	
	a. Data for the CTs used with the relaying including the manufacturer, type of CT, accuracy class, and thermal rating factor.	
	b. Data for the PTs used with the relaying including the manufacturer, type of PT, voltage ratings, and quantity.	

Interconnection Requirement Study - Data Request **Updated 3/17/21**

FOR SYNCHRONOUS GENERATION

PROJECT: _____

DATE: _____

*****ALL ITEMS ARE REQUIRED AND ALL RESPONSES MUST BE FILLED UNLESS NOT APPLICABLE.*****

A)

Please provide the following generator machine information:	**Response**
a. Generator Base MVA	
b. Generator Rated Terminal Voltage (kV)	
c. Power Factor Range Capability	
d. Generator Reactive Power Capability Curve	
e. Generator impedance in per unit	
i. Positive sequence	
ii. Negative sequence	
iii. Zero sequence:	
f. Combined Turbine-Generator Inertia Constant, H (kW-sec / KVA)	
g. Speed damping factor (D)	
h. Generator Open-Circuit Saturation Factors. Attach Generator Saturation Curves.	
i. S(1.0):	
ii. S(1.2):	
i. Generator V-curve	

B)

Please provide the following generator reactance data (in per unit on Machine MVA Base):	**Response**		**Response**
Direct Axis		**Quadrature Axis**	
a. Synchronous - Saturated (Xdv)		a. Synchronous - Saturated (Xqv)	
b. Synchronous - Unsaturated (Xdi)		b. Synchronous - Unsaturated (Xqi)	
c. Transient - Saturated (X'dv)		c. Transient - Saturated (X'qv)	
d. Transient - Unsaturated (X'di)		d. Transient - Unsaturated (X'qi)	
e. Subtransient - Saturated (X"dv)		e. Subtransient - Saturated (X"qv)	
f. Subtransient - Unsaturated (X"di)		f. Subtransient - Unsaturated (X"qi)	
g. Negative Sequence - Saturated (X2v)			
h. Negative Sequence - Unsaturated (X2i)			
i. Zero Sequence - Saturated (X0v)			
j. Zero Sequence - Unsaturated (X0i)			
k. Leakage Reactance (Xlm)			

C)

Please provide the following generator time constants (in seconds):	**Response**		**Response**
Direct Axis		**Quadrature Axis**	
a. Transient Open Circuit (T'do)		a. Transient Open Circuit (T'qo)	
b. Subtransient Open Circuit (T"do)		b. Subtransient Open Circuit (T"qo)	
c. Transient Short Circuit (T'd)		c. Transient Short Circuit (T'q)	
d. Subtransient Short Circuit (T"d)		d. Subtransient Short Circuit (T"q)	

Instructions:

Please fill in the data in the green blanks below

(Note: This does not include the internal isolation transformer, if used)

[1] Maximum rated output power = _____ kVA

[2] Impedances in **Per Unit** based on kVA from [1]

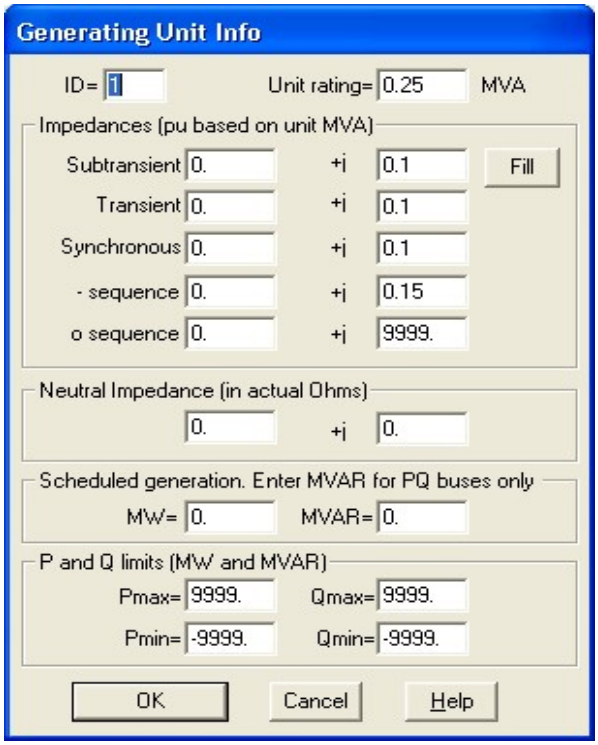
	R	X
Subtransient =		
Transient =		
Synchronous =		
Negative Sequence =		
Zero Sequence =		

[3] Neutral impedance (if any) in actual **Ohms**:

R	X

NOTE: These parameters should reflect the inverter response for all types of faults at any point on the electrical system to which the inverter is connected. This includes faults at the inverter output terminals, and also on the 138 kV transmission system. If the stated parameters do not cover this range, please state the adjustments needed to these parameters to accurately represent the inverter response across this range.

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Instructions:

Please fill in the data in the green blanks below

(Note: This is not required if an internal isolation transformer is not used)

[1] Transformer rated power = _____ kVA

[2] Winding Configuration

Inverter Side = _____ Delta/Wye

Customer Side = _____ Delta/Wye

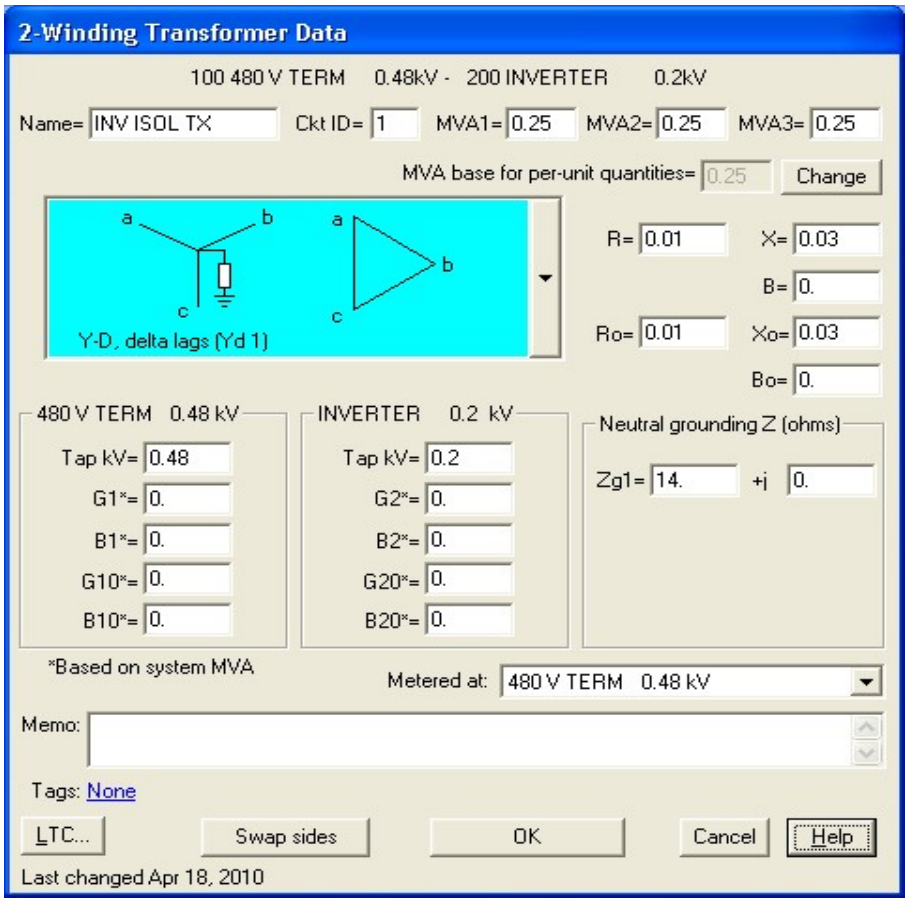
[2] Impedances in **Per Unit** based on kVA

	R	X
Positive Sequence =		
Zero Sequence =		

[3] Neutral impedance (if any) in actual **Ohms**:

R	X

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



Instructions:
Please fill in the data in the green blanks below

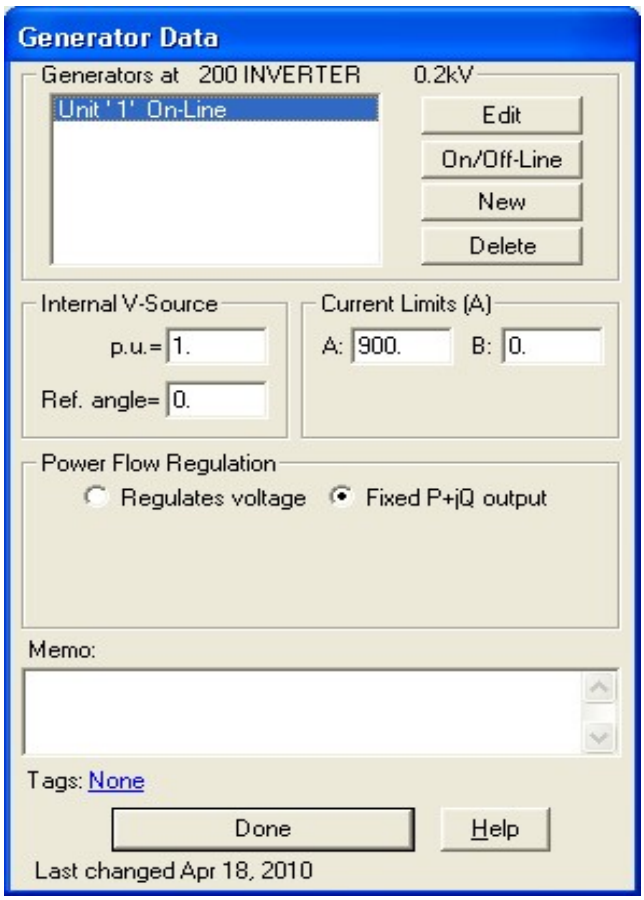
[1] Internal open circuit voltage

Magnitude = _____ Per Unit
Angle = _____ Degrees

[2] AC Output Current Limit = _____ Amps

NOTE: These parameters should reflect the inverter response for all types of faults at any point on the electrical system to which the inverter is connected. This includes faults at the inverter output terminals, and also on the 138 kV transmission system. If the stated parameters do not cover this range, please state the adjustments needed to these parameters to accurately represent the inverter response across this range.

These parameters will be used to model the inverter in the Aspen Oneliner program as shown in the sample dialog box below:



HAWAIIAN ELECTRIC GENERATION FACILITY TECHNICAL MODEL REQUIREMENTS AND REVIEW PROCESS

August 23, 2021

Table of Contents

1 INTRODUCTION

This document summarizes requirements of generation facility technical model submittals for request for proposals for variable renewable dispatchable generation and energy storage and describes the review process for model submittals. The requirements and examples provided are based on the Company's current information as of the date of this document and are subject to change.

2 FACILITY TECHNICAL MODEL REQUIREMENTS

To fully investigate impacts of the proposed generation facility on Hawaiian Electric's system and correctly identify any mitigation measures, the proposed generation facility technical model, along with related technical documents, will need to be submitted for review prior to System Impact Study (SIS).

2.1 Overview of Submission

For all generation facility types, the technical model submittal shall include:

1. PSCAD model[1]
2. PSS/E power flow model
3. Standard Library PSS/E dynamic model
4. User defined PSS/E dynamic model, and
5. ASPEN Oneliner model

For generation facilities categorized as inverter-based resources, both Grid Following (GFL) and Grid Forming (GFM) Mode capability may be required from the project. In this case, for each project, two sets of models shall be submitted: one with the project in GFL mode, and the other with the project in GFM mode. The GFL mode technical model submittal shall follow the list above. The GFM mode technical model submittal shall include:

6. GFM PSCAD model
7. GFM User defined PSS/E dynamic model
8. GFM ASPEN Oneliner model if it differs from the GFL model

Subject to Hawaiian Electric's approval, if the manufacturer can certify current standard library dynamic models accurately represent their equipment, standard library dynamic models may be provided and used in lieu of user defined dynamic models. As an example, if the generation facility is a traditional synchronous machine, of which the technology is standardized and widely understood across the industry, it can generally be accurately represented with current standard library dynamic models and thus a user defined dynamic model will not be required.

Along with the technical models, the following documents shall also be submitted for review:

9. User manual for all technical models, including a description of GFM functionality if GFM is used.
10. Generation facility one-line diagram
11. Generation unit manufacturer datasheet(s)
12. Generation unit reactive power capability curve(s)
13. Overlaid generation facility technical model output data for three-phase fault and single-phase fault. (Sample plots are shown in Appendix A)

[1] For specific PSCAD model requirements, refer to http://www.electranix.com/wp-content/uploads/2021/02/Requirements-Rev.-10-Feb-3-2021.pdf

2.2 Background Functional Description of GFM and GFL

Grid Following and Grid Forming are terms with some ambiguity in current industrial usage. For the purpose of this document, the following definitions are provided as high level functional descriptions. For more detailed descriptions of what is required for each of these control modes, it is recommended to carefully review descriptions of the functional tests which will be performed.

Grid Following (GFL) Mode:

Grid Following is defined as follows: An inverter-based resource that relies on fast synchronization with the external grid in order to tightly control the inverter's active and reactive current outputs. If these inverters are unable to remain synchronized effectively during grid events or under challenging network conditions, they are unable to maintain controlled, stable output. Advanced versions of these devices (Advanced Inverters) can provide grid supporting functions such as: voltage and frequency ride-through, volt-VAR, frequency-Watt, volt-watt, etc.; when they are able to remain synchronized.

Grid Forming (GFM) Mode:

Grid Forming is defined as follows: GFM controls set an internal voltage waveform reference such that an 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 disturbances.

2.3 General requirements for all technical models

All technical models need to represent the whole generation facility, not only a generation unit such as one inverter or as separate files representing pieces of the facility. At minimum, the following equipment shall be included in the single whole generation facility model:

1. Generation unit, such as inverter with DC side model, or a rotating machine with model of exciter and governor.
2. Step up transformer, with correct impedances and winding configuration
3. Collection system, aggregated per WECC guidance[2]
4. Main interconnection transformer, or GSU, with its tap changer if applicable, including correct impedances and winding configuration
5. Grounding transformer if used
6. VAR compensation device, such as cap bank or STATCOM, if applicable
7. Power plant controller (not for ASPEN model)
8. Documentation
9. Gen-tie line (as applicable)

[2] https://www.wecc.org/Reliability/WECCWindPlantPowerFlowModelingGuide.pdf

Equivalent or aggregated representations of the collection system, generator step-up transformers, and inverter systems are acceptable if it can accurately represent the generation facility and its response characteristics.

2.4 Requirements for generation facility PSCAD model

In addition to the general requirements mentioned above, the generation facility PSCAD model shall satisfy requirements as described in the latest version of the PSCAD Model Requirements document from Electranix Corporation (https://www.electranix.com/the-electranix-library/) and provided by Hawaiian Electric.

The control implementation (e.g., turbine controls, inverter controls, protection and measurement algorithms, and plant-level controller) in the generation facility PSCAD model shall implement the actual control code from the equipment. The PSCAD model shall provide output channel of voltage and frequency measured by the Facility and used for Facility's control and protection.

For the generation facility with grid-forming control, a document which describes the general mechanism and implementation of the grid-forming control is required.

2.5 Requirements for generation facility PSS/E power flow model

The generation facility PSS/E power flow model shall be provided for PSS/E versions 33, 34 and 35 . Besides the general requirements mentioned above, the following modeling data shall be provided in the model:

1. Conductor
    a. Impedance, both positive sequence and zero sequence
    b. Rating: Rating A – normal rating, and Rating B – emergency rating
2. Transformer
    a. Nominal voltages of windings
    b. Impedance data: specified R and X
    c. Tap ratios
    d. Min and Max tap position limits
    e. Number of tap positions
    f. Regulated bus
    g. Ratings: Rate A – normal rating; Rate B – emergency rating
    h. Winding configuration
3. Reactive power compensation, if applicable
    a. Fixed Shunts: G-Shunt (MW), B-Shunt (MVAr)
    b. Switched Shunts: Voltage limits (Vhi and Vlow), mode of operation (fixed, discrete, continuous), regulated bus, Binit (MVAr), steps and step size (MVAr)
4. Generation unit
    a. Pmax
    b. Pmin
    c. Qmax
    d. Qmin
    e. Name plate MVA

f. Transformer data: R Tran, X Tran, and Gentap.
g. Voltage control point

2.6 Requirements for generation facility user defined PSS/E dynamic model

The submitted user defined PSS/E dynamic model shall meet the following requirements:

1. The generation facility PSS/E dynamic model shall be provided for PSS/E versions 33, 34 and 35.
2. The project shall be modeled at full output per the project's Interconnection Request.
3. User defined dynamic models must accurately model all the relevant control modes and characteristics of the equipment, such as:
    a. All available voltage/reactive power control modes
    b. Frequency/governor response control modes
    c. Voltage and frequency ride-through characteristics
    d. Power plant controller or group supervisory functionality
    e. Appropriate aggregate modeling capability
    f. Charging mode if applicable (e.g., for a battery energy storage device)
4. Dynamic model source code (.flx, .for, .f90, .f, etc.), or dynamic linked library (.dll), and PSS/E dyr file shall be provided.
5. User defined dynamic model plant-specific settings shall comply with requirements listed in the Power Purchase Agreement, including ride-through thresholds and other specified control settings if applicable.
6. User defined dynamic models related to individual units shall be editable in the PSS/E graphic user interface. All model parameters (CONS, ICONS, and VARS) shall be accessible and shall match the description in the model's accompanying documentation.
7. User defined dynamic models shall have all their data reportable in the "DOCU" listing of dynamics model data, including the range of CONS, ICONS, and VARS numbers. Models that apply to multiple elements (e.g., park controllers) shall also be fully formatted and reportable in DOCU.
8. User defined dynamic models shall be capable of correctly initializing and run through the simulation throughout the range of expected steady state starting conditions without additional manual adjustments.
9. User defined dynamic models shall be capable of allowing all documented (in the model documentation) modes of operation without error.
10. User defined dynamic model shall be accompanied by the following documentation:
    a. A user's guide for each model
    b. Appropriate procedures and considerations for using the model in dynamic simulations
    c. Technical description of characteristics of the model
    d. Block diagram for the model, including overall modular structure and block diagrams of any sub-modules
    e. List of plant-specific settings, which may include:
        i. Ride-through thresholds and parameters
        ii. Plant-level voltage controller settings
        iii. Power ramp rate settings
        iv. ICON flag parameters for specific control modes

v. Deadbands
vi. Initial State of Charge (SOC)

f. Values, names and detailed explanation for all model parameters
g. List of all state variables, including expected ranges of values for each variable

2.7 Requirements for generation facility generic PSS/E dynamic model

The submitted generic PSS/E dynamic model should meet the following requirements:

1. All generic PSS/E dynamic models must be standard library models in PSS/E.
2. The generation facility PSS/E dynamic model shall be provided for PSS/E versions 33, 34 and 35.
3. The project shall be modeled at full output per the project's Interconnection Request.
4. Generic dynamic models must accurately model all the relevant control modes and characteristics of the equipment, such as:
    a. All available voltage/reactive power control modes
    b. Frequency/governor response control modes
    c. Voltage and frequency ride-through characteristics
    d. Power plant controller or group supervisory functionality
    e. Appropriate aggregate modeling capability
    f. Charging mode if applicable (e.g., for a battery energy storage device)
5. PSS/E dyr file shall be provided.
6. Generic dynamic models' plant-specific settings should comply with requirements listed in the Power Purchase Agreement, including ride-through thresholds and other specified control settings if applicable.
7. Generic dynamic models shall be capable of correctly initializing and run through the simulation throughout the range of expected steady state starting conditions without additional manual adjustments.
8. Generic dynamic models shall be accompanied by the following documentation:
    a. A user's guide for each model
    b. Appropriate procedures and considerations for using the model in dynamic simulations
    c. Technical description of characteristics of the model
    d. List of plant-specific settings, which may include:
        i. Ride-through thresholds and parameters
        ii. Plant-level voltage controller settings
        iii. Power ramp rate settings
        iv. ICON flag parameters for specific control modes
        v. Deadbands
        vi. Initial State of Charge (SOC)

2.8 Requirements for generation facility ASPEN model

Besides the general requirements, validation results of three-phase fault current from the generation unit represented in the generation facility ASPEN Oneliner model shall be provided.

3 GENERATION FACILITY TECHNICAL MODEL REVIEW PROCESS

To review the generation facility technical model, the following procedures are performed in the PSCAD and PSS/E environment. A review of the results will be documented and provided to the Customer for confirmation of model acceptance or further model updates.

3.1 Model review in PSCAD

1) Review model data against latest version of the PSCAD Model Requirements document from Electranix Corporation (https://www.electranix.com/the-electranix-library/) provided by Hawaiian Electric. In this step, it will be determined whether the model is complete, generation facility settings are according to the Power Purchase Agreement, and if the model can be compiled and run without any error. Checklists are provided in this document which are useful for both preparing a model submission, and for reviewing a model submission.
2) Initialization test:
   In this step, the generation facility PSCAD model will be determined whether the model initialization is acceptable. Hawaiian Electric requires that:
   1) The PSCAD model shall initialize as quickly as possible (e.g. <1-3 seconds) to user defined terminal conditions.
   2) Project PSCAD model shall initialize properly and that the same power flow and voltage conditions shall be observed between the PSCAD and PSS/E models after initialization.
3) Voltage and frequency ride-through tests:
   In this step, the generation facility PSCAD model ride-through performance will be reviewed by performing voltage and frequency ride-through simulations in PSCAD. The review will focus on the generation facility model dynamic response during and after ride-through and generation facility trip time.
4) Fault simulation tests:
   Two types of fault tested at the Point of Interconnection bus of the generation facility will be performed in this step.
   i) 3-phase to ground fault with 6-cycle clearing time (same as the PSS/E ring down model test described in the following section).
   ii) 1-phase to ground fault simulation with 6-cycle clearing time.

   In this test, fault current contribution from the generation facility observed in the simulation will be reviewed by comparing it against the generation facility technical document.

3.2 Model review in PSS/E

1) Model data review:

Review model data based on the requirements for PSS/E power flow and dynamic model provided by Hawaiian Electric. In this step, the review determines whether the model is complete, generation facility settings is according to the PPA, and model can be compiled and run without any error.

a. Steady State Model Data Review

Review the ratings and impedances of all equipment in the ASPEN Oneliner, PSS/E and PSCAD models and check for discrepancies.

Table 1. Steady State Model Data Review

Equipment	Comments
Gen-Tie Line	PSS/E, PSCAD and ASPEN models should match
Main Power Transformer Impedance	PSS/E, PSCAD and ASPEN models should match
Main Power Transformer Impedance	PSCAD and ASPEN models should match
PV Collector System Data	PSS/E, PSCAD and ASPEN models should match
BESS Collector System Data	PSS/E, PSCAD and ASPEN models should match
Inverter Pad Mount Transformer Impedance	PSS/E, PSCAD and ASPEN models should match
Inverter Pad Mount Transformer Configuration	PSCAD and ASPEN models should match
Inverter Power Flow Data	PSS/E and PSCAD models should match
Voltage Control Point	PSS/E and PSCAD models should match

b. Dynamic Data Review

Compare the various dynamic model parameters and note any discrepancies.

Table 2. Dynamic Model Data Review

Equipment	Comments
Power Plant Controller (PPC)	Review number of PPCs. Should represent actual setup of plant when in service.
Control Flags	PSS/E and PSCAD control flags should match.
Control Bus/Point of Measurement	Control buses should match in PSS/E and PSCAD models.
Frequency Control Dead Band	The frequency thresholds for primary and secondary control should match in the PSCAD and PSS/E models.
Initial State of Charge (SOC)	Make sure the initial state of charge is set up correctly to prevent initialization issues.
Voltage and Frequency Ride Through	The voltage and frequency ride through settings should match in the PSS/E user-written, PSS/E generic and PSCAD models.
P/Q priority data	The P/Q priority flags should match in the PSS/E user-written, PSS/E generic and PSCAD models

2) Flat start test:

PSS/E models shall initialize correctly and be capable of successful “flat start” testing using the 20 Second No-Fault simulation: This test consists of a 20 second simulation with no disturbance applied. Flat run in a two-machine system (one machine is a synchronous machine, e.g., GENCLS model, and the other machine is a project’s model.)

3) Ring down test:

PSS/E models shall initialize correctly and be capable of successful "ring down" testing using the 60 Second Disturbance Simulation: This test consists of the application of a 3-phase fault for 6 cycles at POI bus, followed by removal of the fault without any lines being tripped. The simulation is run for 60 seconds to allow the dynamics to settle.

4) Voltage and frequency ride-through tests:

In this step, the generation facility PSS/E model ride-through performance will be reviewed by performing voltage and frequency ride-through simulation in PSS/E. The review will focus on the generation facility model dynamic response during and after ride-through and generation facility trip time. **The procedures and values listed in this section are illustrative and serve as examples only; ride-through durations shall be tested against the minimum requirements outlined in the respective PPA.**

a. Voltage Ride-Through

- In these simulations, the POI voltage is varied to test the facility's ride-through capabilities and responses to POI voltage excursions. In the PSS/E simulations, two sets of tests are performed: one for testing the ride-through capabilities and the other for testing the responses to voltage excursions. These two sets of tests are similar, except that the grid equivalent representation is different. For the ride-through tests, the grid equivalent is represented by a generator with a very large MVA, which connects to the POI bus directly.
    - *As an example, for the voltage excursion response tests, the grid equivalent may be represented by a 200 MVA generator (actual MVA rating dependent on POI, please consult the Company for representative values) which connects to the POI through a branch with a reactance of 0.1 p.u.*
- In the PSCAD simulations, the focus is on testing the facility's reactive power responses to POI voltage excursions, and not on testing the voltage ride-through capability.

Table 3 shows the voltage excursions that will be simulated in the PSCAD tests.

Table 3. Voltage	**Duration (s)**
1.20	0.8
1.10	2.0
0.88	2.0
0.70	2.0

Each of the above discussed tests were performed for the following three generation dispatches:

i. PV output only: In this dispatch, the PV unit is at maximum output and the BESS unit is online at 0 MW.

ii. BESS output only: In this dispatch, the BESS unit is discharging at maximum output and the PV unit is online at 0 MW.

iii. PV charging BESS: In this dispatch, the PV unit is at its maximum output and is charging the BESS at its minimum level.

b. Frequency Ride-Through

- In these simulations, the system frequency is varied to test the facility's responses to grid's frequency excursions. In the PSS/E tests, high and low frequency excursions are simulated to mimic the frequency ride through thresholds specified in the PPA and the response of the facility is observed. Both the frequency ride-through capability of the facility and its active power response to frequency excursions are tested in the PSS/E simulations.
- In the PSCAD simulations, the focus is on testing the facility's active power responses to frequency excursions, and not on testing the frequency ride-through capability. Table 4 and Table 5 show example frequency excursions that are simulated in the PSCAD tests.

Table 4. Frequency Excursions for PSCAD High Frequency Response Test

Frequency Level (Hz)	Duration (s)
60.1	2.0
63.0	2.0

Table 5. Frequency Excursions for PSCAD Low Frequency Response Test

Frequency Level (Hz)	Duration (s)
59.9	2.0
56.0	2.0

5) Expected Model Performance

a. Matching steady-state model parameters between the PSS/E user-written, generic models and the PSCAD model.
b. Matching control options between the three types of models.
c. Matching voltage and frequency ride-though parameters between the three types of models. The settings should meet the ride-through requirements specified in the PPA.
d. Flat run results do not show any movement for any of the three models.
e. Ring-down simulation results show stable and proper responses, and the responses from the three models should show reasonable matches.
f. Ride-through simulation results should show stable and proper responses, and the responses should show reasonable matches. The ride through performance should meet the PPA requirements.

3.3 GFM Model review in PSCAD and PSS/E

The tests described below will be performed in addition to the GFL model tests described in section 3.1.

Test notes:

- Applicable for generation facilities which have grid-forming control capability
- Assumption is that BESS has available energy and is dispatched suitably for the tests
- Each test will be repeated with three initial operating conditions, as applicable (PV output only, BESS output only, PV charging BESS)
- The project should be configured to be in GFM mode throughout these tests

1) **Able to black start and operate in an electrical island (applicable if project is providing black start capability):**
   Test sequence: energize main power transformer from project side, then connect project to a load, then apply a bus fault at the POI, then remove the fault. Expected results: voltage and frequency should be stable and settle back to close to their nominal values after the disturbances.
2) **Loss of the last synchronous machine:**
   Test system will be a three-machine system including: a synchronous machine modeled by GENROU with a simple excitation system model (e.g., SCRX) and a simple governor model (e.g., TGOV1), a load with both real and reactive components, and duplicates of a project's model. Duplicates of a project's model are utilized here to check if the project is able to share real and reactive power properly with other generators. Test event: trip the synchronous generator. Expected results: voltage and frequency should be stable and settle back to close to their nominal values after the disturbance, within the tolerance of the droop and deadband settings.
3) **Weak grid operation:**
   Test system is the project plant model and an equivalent voltage source behind an impedance connected at the POI. The test will be to gradually decrease MVA of the equivalent voltage source within a range and check if the project's model is able to work with the studied MVA range.
4) **Able to operate in harmony with other converter resources and synchronous machines:**
   Test system is the three-machine system including: a synchronous machine modeled by GENROU with a simple excitation system model and a simple governor model, a load with both real and reactive components, and duplicates of a project's model. Simulation tests to be performed may include load step up/down, ringdown, voltage ride through and frequency ride-through tests. Expected results: voltage and frequency should be stable and settle back to close to their nominal values after the disturbances.
   Particularly related to frequency control characteristics, we will test for configurable frequency droop control and configurable deadband characteristics. The frequency deadband should be settable in the range from +/- 0.01 Hz to +/- 1.0 Hz and the frequency droop shall be settable in the range of 0.1% to 10% with a typical value of 4%. A sample characteristic of frequency droop control with deadband is shown in Figure 1.

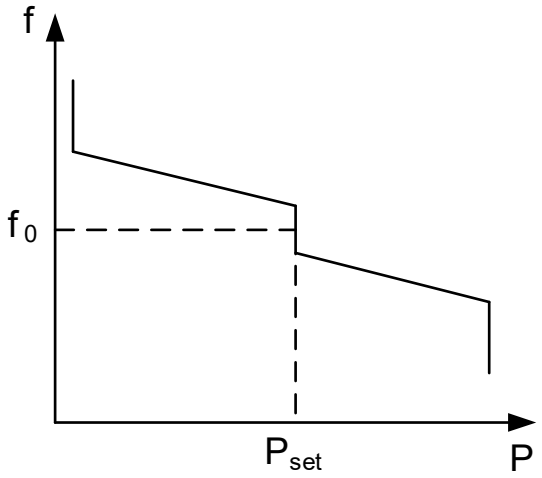


Figure 1 – Frequency Droop Control Characteristic with Deadband

5) **Switching from an electrical island to a grid-connected configuration while in GFM mode (dependent on specific project technology and controls)**
Test system is the two-machine system. Test sequence: energize main power transformer from project side, then connect project to a load (if project model does not have black-start capability, the plant will be initialized using a voltage source which will be switched out after initialization). At this point, the project will be operating in an island. Then switch in the synchronous generator. Expected results: voltage and frequency should be stable and settle back to close to their nominal values after the disturbances.

Tests to be performed for PSS/E models only

6) **Reduction in frequency deviation in GFM mode**
Test system will be a relevant HECO island system model. Test event is loss of a large generator. Project model will be in GFL mode and GFM mode. Result: less degree of frequency deviation is expected when project is in GFM mode than when the project is in GFL mode.

ASPEN Model Check

7) **A review of the ASPEN Oneliner generation models will be performed.**
As mentioned above, two models are expected for each project: one model for GFL mode, and the other for GFM mode. Documentation associated with the models should be provided. The model review will check if the components of a project are modeled properly, such as transformers, equivalent collector system, equivalent generator, etc., and that the model data are consistent to the PSS/E and PSCAD model data. A fault simulation test will also be performed in a two-machine system. Total current at the fault location and contribution from each machine will be reviewed and documented.

4 TYPICAL ISSUES IDENTIFIED FROM THE FACILITY MODEL SUBMITTALS DURING THE PAST RFP PROCESS

1. **Missing documentation**
   Only generation technical facility models are submitted, but no model user manual or any other documentation. Without model documentation, it is very difficult to know the correct procedures of using the technical models and identifying issues during the review.
2. **Model incompleteness**
   Often, the model of a single generation unit, such as an inverter, is submitted instead of model of the whole generation facility, which is insufficient. The model of the generation facility should include models for all equipment listed in the section of "General requirements for all technical models".
3. **Settings in the model**
   Type issues in this category are:
   - The PSCAD (GFL and/or GFM) and PSS/E model ride-through settings are not consistent with the minimum settings defined in the Power Purchase Agreement.
   - Generation MW is not set as defined.
   - Model is set for 50 Hz instead of 60 Hz
4. **Model function issues**
   Some models do not function as expected during different test scenarios. For example:
   - Fault current contribution from the generation facility is higher than what is described in the generation facility datasheet
   - Generation level is not stable with provided settings during the initialization test
   - Inadequately damped oscillations observed in the ringdown test
   - Ride-through performance does not reach minimum requirements defined in the Power Purchase Agreement
5. **Power Plant Controller (PPC)**
   Often, the PPC control had not yet been fully considered when models are submitted, which results in improperly configured PPC controls, or model submissions missing the PPC altogether. The PPC(s) included in the facility model should include coordination functionality between the plant components, and should represent the actual planned implementation.

REFERENCE

[1] New England Iso Planning procedure – Interconnection planning procedure for generation and elective transmission upgrades
[2] ERCOT Planning Guide, 2019
[3] PJM MOD-032 Steady State, Dynamics, and Short Circuit Modeling Data Requirements and Reporting Procedures Document

APPENDIX A: SAMPLE OVERLAID GENERATION FACILITY TECHNICAL MODEL OUTPUT PLOT FOR THREE-PHASE FAULT

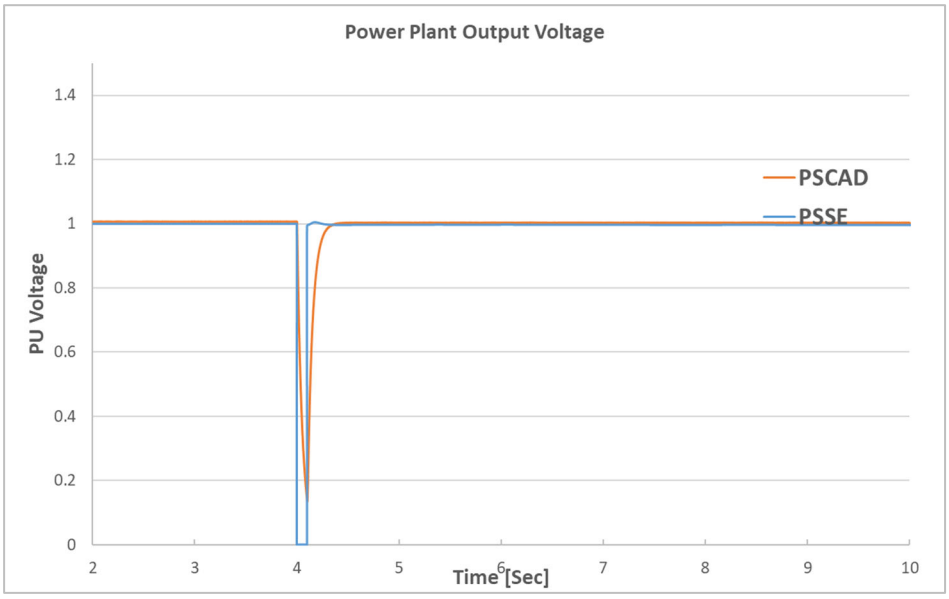


Figure 1: Overlaid plot for power plant voltage

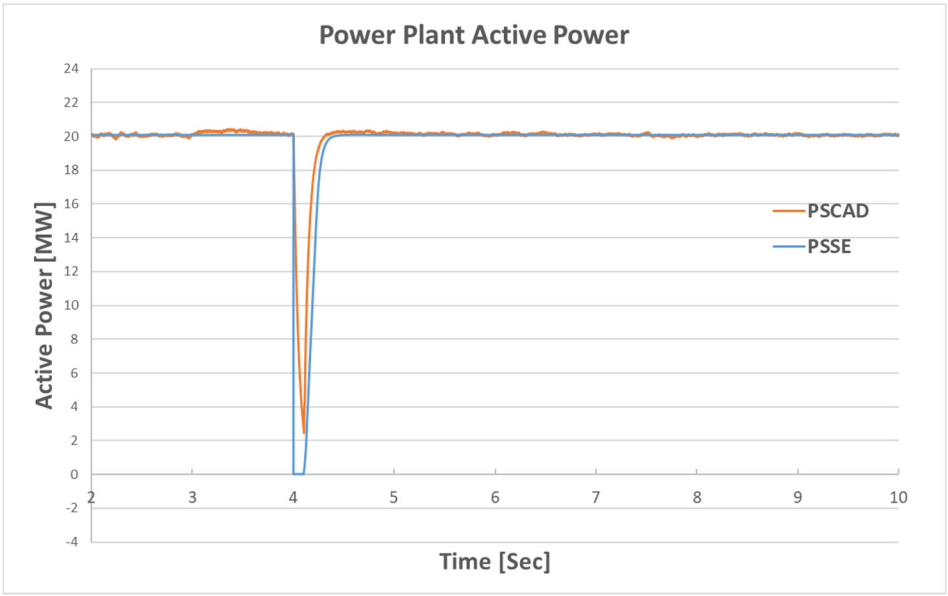


Figure 2: Overlaid plot for power plant active power generation

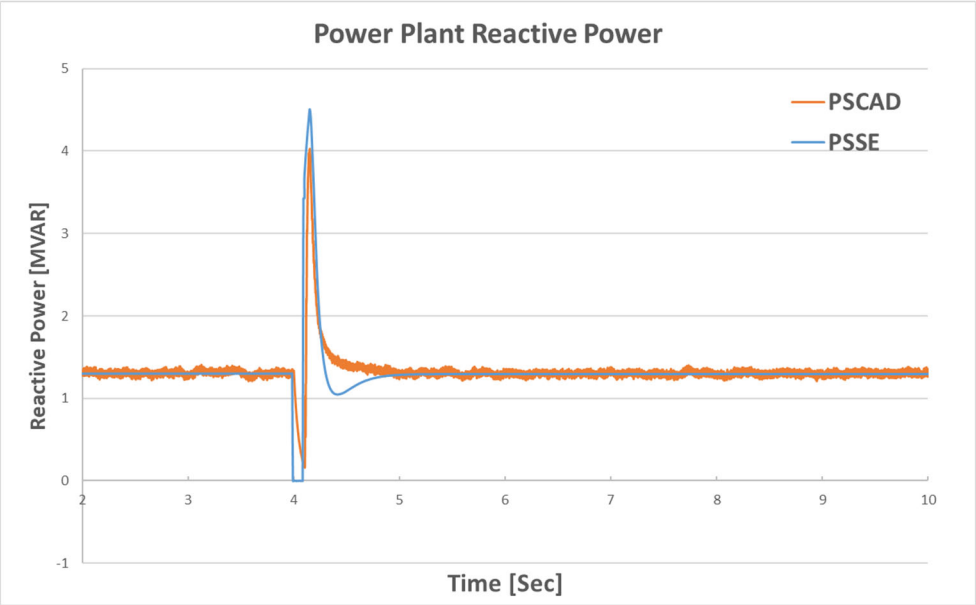


Figure 3: Overlaid plot for power plant reactive power generation

APPENDIX B: SAMPLE TEST SYSTEM TOPOLOGYINFORMATION

On weak grids such as island systems, it is important to test the models using a representative high Thevenin equivalent impedance.

A typical topology of testing circuit which represents Hawaiian Electric system for 46 kV project is shown in Figure 4. Sample 46 kV Thevenin equivalent impedance is available upon request for model testing.

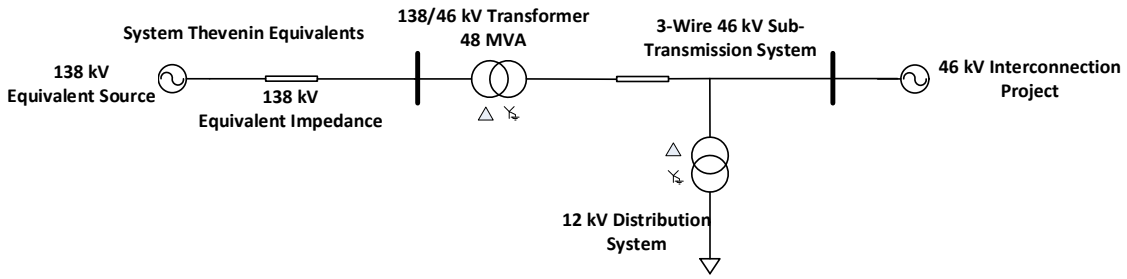


Figure 4: Testing circuit single line diagram for 46 kV project

A typical topology of testing circuit which represents Hawaiian Electric system for 138 kV project is shown in Figure 5. Sample 138 kV Thevenin equivalent impedance is available upon request for model testing.

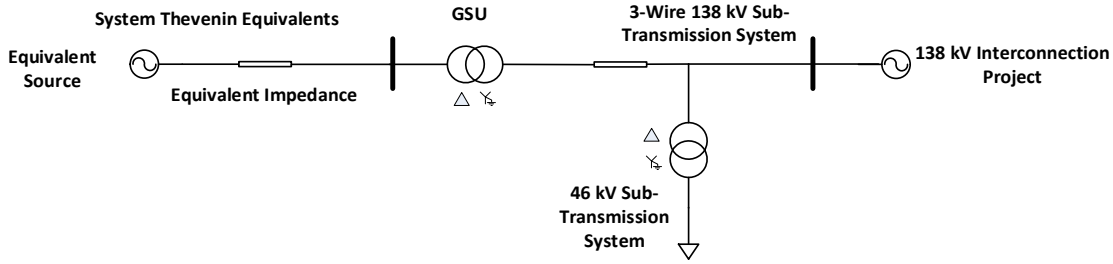


Figure 5: Testing circuit single line diagram for 138 kV project

Appendix B Attachment 4
Stage 3 Model and Interconnection Requirements Study (IRS) Scope

Island	Oahu	Oahu	Oahu
Size	Connecting to 138kV Wind	Connecting to 138kV PV+ESS, Wind+ESS, or Standalone ESS	Connecting to 138kV Synchronous Generation
Models	PSS®E Generic, PSS®E User Defined, PSCAD, and ASPEN.	Grid Forming Models • PSS®E Generic, PSS®E User Defined, PSCAD, and ASPEN.	PSS®E Generic, PSCAD, and ASPEN.
Interconnection Requirement Study Scope	**Tasks** (Include selected tasks in the IRS. Exclude tasks that are unselected)	**Tasks** (Include selected tasks in the IRS. Exclude tasks that are unselected)	**Tasks** (Include selected tasks in the IRS. Exclude tasks that are unselected)
	☒ Project Data Requirements and Facility Technical Model Review	☒ Project Data Requirements and Facility Technical Model Review	☒ Project Data Requirements and Facility Technical Model Review
	☒ Review of Existing System Performance (Base-Case)	☒ Review of Existing System Performance (Base-Case)	☒ Review of Existing System Performance (Base-Case)
	☒ Develop Project Model (IRS Case)	☒ Develop Project Model (IRS Case)	☒ Develop Project Model (IRS Case)
	☒ Steady-State Power Flows ☒ Reverse Power Flow ☒ Reactive Power Requirements	☒ Steady-State Power Flows ☒ Reverse Power Flow ☒ Reactive Power Requirements	☒ Steady-State Power Flows ☒ Reverse Power Flow ☒ Reactive Power Requirements
	☒ Protection Review	☒ Protection Review	☒ Protection Review
	☒ Voltage Flicker	☒ Voltage Flicker	☐ Voltage Flicker
	☒ Voltage Transients (In-Rush Current)	☐ Voltage Transients (In-Rush Current)	☐ Voltage Transients (In-Rush Current)
	☒ System Stability ☒ PSSE Analyses ☒ PSCAD Analyses for Weak Grid Conditions ☐ Grid Forming Analyses	☒ System Stability ☒ PSSE Analyses ☒ PSCAD Analyses for Weak Grid Conditions ☒ Grid Forming Analyses	☒ System Stability ☒ PSSE Analyses ☒ PSCAD Analyses for Weak Grid Conditions ☐ Grid Forming Analyses
	☒ Ride-Through Requirements	☒ Ride-Through Requirements	☒ Ride-Through Requirements
	☒ Unintended Islands ☒ Transient Overvoltage (TrOV) ☒ Unintended Islands Fault Overvoltage (GFOV)	☒ Unintended Islands ☒ Transient Overvoltage (TrOV) ☒ Unintended Islands Fault Overvoltage (GFOV)	☒ Unintended Islands ☒ Transient Overvoltage (TrOV) ☒ Unintended Islands Fault Overvoltage (GFOV)
	☐ Harmonics ☐ Harmonics Model Analysis ☐ Harmonics Monitoring Assessment	☐ Harmonics ☐ Harmonics Model Analysis ☐ Harmonics Monitoring Assessment	☐ Harmonics ☐ Harmonics Model Analysis ☐ Harmonics Monitoring Assessment
Reference Single Line Diagram	See Appendix H	See Appendix H	See Appendix H

Appendix B Attachment 4
Stage 3 Model and Interconnection Requirements Study (IRS) Scope

Island	O`ahu	O`ahu	O`ahu
Size	Connecting to 46kV Wind	Connecting to 46kV PV+ESS, Wind+ESS, or Standalone ESS	Connecting to 46kV Synchronous Generation
Models	PSS®E Generic, PSS®E User Defined, PSCAD, and ASPEN.	Grid Forming Models ○ PSS®E Generic, PSS®E User Defined, PSCAD, and ASPEN.	PSS®E Generic, PSCAD, and ASPEN.
Interconnection Requirement Study Scope	**Tasks** (Include selected tasks in the IRS. Exclude tasks that are unselected)	**Tasks** (Include selected tasks in the IRS. Exclude tasks that are unselected)	**Tasks** (Include selected tasks in the IRS. Exclude tasks that are unselected)
	☒ Project Data Requirements and Facility Technical Model Review	☒ Project Data Requirements and Facility Technical Model Review	☒ Project Data Requirements and Facility Technical Model Review
	☒ Review of Existing System Performance (Base-Case)	☒ Review of Existing System Performance (Base-Case)	☒ Review of Existing System Performance (Base-Case)
	☒ Develop Project Model (IRS Case)	☒ Develop Project Model (IRS Case)	☒ Develop Project Model (IRS Case)
	☒ Steady-State Power Flows ☒ Reverse Power Flow ☒ Reactive Power Requirements	☒ Steady-State Power Flows ☒ Reverse Power Flow ☒ Reactive Power Requirements	☒ Steady-State Power Flows ☒ Reverse Power Flow ☒ Reactive Power Requirements
	☒ Protection Review	☒ Protection Review	☒ Protection Review
	☒ Voltage Flicker	☒ Voltage Flicker	☐ Voltage Flicker
	☒ Voltage Transients (In-Rush Current)	☐ Voltage Transients (In-Rush Current)	☐ Voltage Transients (In-Rush Current)
	☒ System Stability ☒ PSSE Analyses ☒ PSCAD Analyses for Weak Grid Conditions ☐ Grid Forming Analyses	☒ System Stability ☒ PSSE Analyses ☒ PSCAD Analyses for Weak Grid Conditions ☒ Grid Forming Analyses	☒ System Stability ☒ PSSE Analyses ☒ PSCAD Analyses for Weak Grid Conditions ☐ Grid Forming Analyses
	☒ Ride-Through Requirements	☒ Ride-Through Requirements	☒ Ride-Through Requirements
	☒ Unintended Islands ☒ Transient Overvoltage (TrOV) ☒ Unintended Islands Fault Overvoltage (GFOV)	☒ Unintended Islands ☒ Transient Overvoltage (TrOV) ☒ Unintended Islands Fault Overvoltage (GFOV)	☒ Unintended Islands ☒ Transient Overvoltage (TrOV) ☒ Unintended Islands Fault Overvoltage (GFOV)
	☐ Harmonics ☐ Harmonics Model Analysis ☐ Harmonics Monitoring Assessment	☐ Harmonics ☐ Harmonics Model Analysis ☐ Harmonics Monitoring Assessment	☐ Harmonics ☐ Harmonics Model Analysis ☐ Harmonics Monitoring Assessment
Reference Single Line Diagram	See Appendix H	See Appendix H	See Appendix H

DETAILED INSTRUCTIONS FOR COMMUNITY OUTREACH PLAN

- The Community Outreach Plan should be as current and explanatory as possible.
    - The Community Outreach Plan information must be included in the information Proposers selected to the Final Award Group make available on their website when the website is posted publicly.
    - The Company will also require (monthly/bi-monthly) project status updates from Proposers to verify the implementation of the COP and will ensure Proposers provide accessible opportunities for community members and stakeholders to provide public comment as required by the RFP.
- Proposers selected to the Final Award Group must develop a public Project website, which shall include all the information on the Community Outreach Plan table for their Project.
- Proposers must develop Project presentations that include all the information on the Community Outreach Plan table (sample template provided).
- Due to the uncertainty of the duration of the COVID-19 pandemic, all Proposers are required to plan for both in-person and virtual community meetings. As we near the dates that community meetings are scheduled, in the interest of public health and safety, the conditions at the time will determine if in-person meetings or virtual meetings will be required.
    - Virtual community meetings can either be community televised, or online, but must incorporate technology that allows for live engagement and interaction between the Proposer and community participants.
- Proposers must communicate important information about the Project with stakeholders in advance of community meetings.
- Proposers must perform media outreach (earned media) and advertising (paid media) to raise community awareness of any public meeting. Media advisories (sample attached) must be issued to the following media and organizations a minimum of 30 days prior to a public meeting. Media advisories do not need to be reviewed and approved by Hawaiian Electric, but must be shared with Hawaiian Electric for awareness.
    - For Oahu Projects
        - Star Advertiser
        - Civil Beat
        - Hawaii News Now
        - KHON2 News
        - KITV4 News
        - Neighborhood Boards
    - For Maui Projects
        - Maui News
        - Maui Now
        - Civil Beat
        - Hawaii News Now
        - KHON2 News
        - KITV4 News
    - For Hawaii Island Projects
        - Hawaii Tribune Herald
        - West Hawaii Today
        - Civil Beat
        - Hawaii News Now
        - KHON2 News
        - KITV4 News

- Advertisements must be placed in area community publications.
    - Guidance from the Company can be provided upon request
    - Information in the ads must be consistent with the media advisory
- Public comments in support and in opposition to the proposed Project must be compiled and filed verbatim with the Public Utilities Commission.
- Proposers must work with and inform neighboring communities and stakeholders to provide community members timely information during ALL phases of the project, which must include, but not be limited to the Power Purchase Agreement negotiation period, the permitting process periods, and throughout construction.
- A documented community benefits package highlighting the distribution of funds must be developed by Proposers for Hawaiian Electric's review. This document will be made public on each Proposer's website and must demonstrate how funds will directly address needs in the host community to benefit community members.
    - The community benefits package must include documentation of each Proposer's community consultation and input collection process to define host community needs, along with community-supported actions and/or programs aimed at addressing those needs.
    - Preference will be given to Proposers that commit to setting aside a larger amount or commit to providing other benefits (including but not limited to creating local jobs, payment of prevailing wages, or improving community infrastructure).
    - Specify the amount of funds ($) that the Proposer will commit on an annual basis to provide as community benefits. As described in Section 4.4.2 of the RFP, at a minimum, Proposers should commit to setting aside $3,000 per MW, up to $200,000 per year, for community benefits.
    - The Proposer may choose to identify and select an eligible non-profit organization to serve as the administrator for the duration of the contract term responsible for ensuring the project's community benefit is appropriately disbursed. Should a Proposer need an example of the use of a community benefit funding host, the Company will provide such example(s) upon request.
        - If Proposers opt to work with a 501(c)(3) non-profit organization(s) to host and/or distribute community benefit funding, the names of the organization(s) must be provided with documentation 90 calendar days upon signing of the appropriate Stage 3 Contract.
            - Name of non-profit organization(s)
            - Letter from non-profit organization, signed by organization's executive and Board Chair agreeing to serve as community benefit fund administrator for the duration of the contract term
            - Relevant experience of non-profit
            - Years of existence of non-profit
    - Any other community benefits (in addition to community funding) that will provide direct benefit to the Project's host community
- Should any COVID-19 related events interfere with the Proposer's ability to perform the listed actions, Proposer should inform the Company immediately of such effects for Company's consideration and guidance, and possible proposal of alternate actions.

CONTACT: NAME, 808.XXX.XXXX **FOR IMMEDIATE RELEASE**

Email address Date

Media Advisory: Title

Project description to be drafted by developer. Description must include the location of proposed project and supporting background information.

Date: TBD

Time: TBD

Location: TBD

Purpose: To share information about a TYPE (e. g. CBRE solar, etc.) renewable energy project proposed to be developed in COMMUNITY near AREA REFERENCE and to solicit public comments to be filed with the Public Utilities Commission.

Contact: For more information, call 808.XXX.XXXX or visit (website/social media)

# # #

Project Name

Proposer Name

Project Benefits

- Details

Community Benefits

- Details

Proposed Facility Location in/near what City/Area

- Map
- Dimensions of proposed project
- Include all project components

Project Description

- Details

Site Layout Plan

- Project Layout
- Project Visual Simulations
  - Multiple public vantage points

Interconnection Route

- Map

Required Government Permits and Approvals

- Preliminary Schedule
- Opportunities for public comment

Environmental Impacts

- Preliminary environmental assessment of the site (including any pre-existing environmental conditions)

Cultural Impacts

- Identify any cultural, historic or natural resources that will be impacted by the project
- Describe the potential impacts on these resources
- Identify measures to mitigate such impacts.

Construction Related Updates

- Plan for reporting construction schedules and activities
  - Including resulting impacts (ex. traffic, noise, and dust) and mitigation plans
  - Begins at least one month prior to the start of scheduled work
    - To extend throughout the construction and development of the project

Local Labor and Prevailing Wage Commitment (if any)

- Detailing Proposer's commitment, if any, that 80% of non-supervisory construction and operations workers' hours associated with the construction or repowering of a Project will be paid at the prevailing wage equivalent under HRS Chapter 104 during all periods of construction.
- Describing commitment, if any, to hire qualified construction, operations, and maintenance works who reside in the county where the Project is being constructed, and the State of Hawaii, in that order, before hiring non-resident labor.

Community Benefits Package

- Specify the amount of funds ($) that the Proposer will commit on an annual basis to provide as community benefits. As described in Section 4.4.2 of the RFP, at a minimum, Proposers should commit to setting aside $3,000 per MW, up to $200,000 per year, for community benefits.
- Detailing how community benefits funds will directly address needs in the host community to benefit community members.
- Explanation of community consultation and input collection process to define host community needs, along with community-supported actions and/or programs to address those needs.
  - If Proposers opt to work with a 501(c)(3) non-profit organization(s) to host and/or distribute community benefit funding, the names of the organization(s) must be provided with documentation 90 calendar days upon signing of the appropriate Stage 3 Contract.
- Any other community benefits (in addition to community funding) that will provide direct benefit to the Project's host community

Where to Find More Information

- Project website
- Proposer email and contact information

How to Provide Comments