**DRAFT**

**REQUEST FOR PROPOSALS**

**FOR**

**ENERGY STORAGE**

**NORTH KOHALA**

**ISLAND OF HAWAIʻI**

SEPTEMBER 23, 2021

Docket No. TBD

*Appendix H – Interconnection Facilities Cost and Schedule Information*



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The information provided in this document can be used to assist Proposers in estimating costs and schedule of potential projects.

# Section 1 – Cost Responsibilities

For the purposes of this RFP, the Company will be responsible for the costs of Company-Owned Interconnection Facilities (COIF), subject to any limitations, as described in Section 1. The Company will not be responsible for any costs related to work deemed excessive and/or corrective in nature. The information below will help to clarify the responsibilities of the Company and the Proposer for COIF.

## 1.1 – Definitions

* 1. Betterment – Any upgrading to a facility made solely for the benefit of and at the election of the Company and is not required by applicable laws, codes, Company Standards, and the interconnection requirements in accordance with Tariff Rule No. 19.
  2. Company –Hawai‘i Electric Light.
  3. Company-Owned Interconnection Facilities – The equipment and devices owned by Company that are required to permit an energy storage facility to operate in parallel with and deliver electric energy to Company’s system and provide reliable and safe operation of, and power quality on, Company’s system.
  4. Grid Connection Point – The point that the new interconnection facilities associated with the Proposer’s project interconnects to the Company’s existing electrical grid.
  5. Interconnection Agreement – The executed contract between the Company and Proposer (e.g., Power Purchase Agreement, Standard Interconnection Agreement, etc.).
  6. Point of Interconnection – The point of delivery of energy supplied by Proposer to Company, where the Facility owned by the Proposer interconnects with the facilities owned or to be owned by the Company.
  7. Proposer – The developer proposing an energy storage project in response to a Company RFP.

## 1.2 – Abbreviations

* 1. ADSS – All Dielectric Self-Supporting
  2. BESS – Battery Energy Storage System
  3. COIF – Company-Owned Interconnection Facilities
  4. CSAT – Control System Acceptance Test
  5. CT – Current Transformer
  6. DFR – Digital Fault Recorder
  7. DTT – Direct Transfer Trip
  8. FS – Facility Study
  9. GCP – Grid Connection Point
  10. HVAC – Heating, Ventilation, and Air Conditioning
  11. IRS – Interconnection Requirements Study (includes both SIS and FS)
  12. NDA – Non-Disclosure Agreement
  13. OPGW- Optical Ground Wire
  14. POI – Point of Interconnection
  15. PT – Potential Transformer
  16. RTU – Remote Terminal Unit
  17. SCADA – Supervisory Control and Data Acquisition
  18. SIS – System Impact Study
  19. UFLS – Under-Frequency Load Shed

## 1.3 – Facilities At Proposer Site

* 1. Proposer shall be responsible for obtaining all permitting and any land rights required that are not provided by Company.
  2. Except for costs agreed to be paid by Company under Item 3 below, Proposer shall be responsible for the design, procurement, and construction of all facilities at the BESS site. This may include, but is not limited to:
     1. Civil infrastructure and site work (grading, trenching, manholes/handholes, conduits, cable trench, concrete pads/foundations, fencing, roadways/driveways, ground grid, lighting, etc.)
     2. Communications cabinets and infrastructure (poles/towers for antenna/microwave dish, equipment pads, conduits, foundations, HHs, AC power, grounding, etc.)
     3. Security systems/equipment
     4. T&D infrastructure drawings showing the route of OH and UG lines and equipment locations at the project site
        1. Any UG conduits for a T&D line extension that need to extend off the property should stubout at the property line for the Company to connect to
  3. Company shall be responsible for costs related to the design, procurement, construction, and testing of electrical COIF at the project site. This may include, but is not limited to:
     1. Equipment (circuit breakers, transformers, relays, switches, arresters, batteries, HVAC, RTU, DFR, DTT, meters, PTs, CTs, etc.)
     2. Pre-wired control equipment enclosure/cabinet
     3. Communications equipment
     4. Electrical work (bussing, wiring, lightning protection, fiber optic cable, etc.)

## 1.4 – [Not Used]

## 1.5 – Remote Substation Facilities

* 1. Company shall be responsible for all costs. This may include, but is not limited to:
     1. Betterment
     2. System upgrades, changes, or replacement of existing facilities (e.g., breaker replacements, relay upgrade, transformer installs, Under-Frequency Load Shed (UFLS) settings, etc.)
     3. Site work associated with those system upgrades (grading, trenching, manholes/handholes, conduits, cable trench, concrete pads/foundations, fencing, roadways/driveways, ground grid, lighting, etc.)
     4. Substation structures
     5. New control equipment cabinet or existing enclosure expansion
     6. Equipment (circuit breakers, transformers, relays, switches, arresters, batteries, HVAC, DFR, DTT, meters, PTs, CTs, SCADA equipment, telecommunications routers, etc.)
     7. Electrical work (bussing, wiring, lightning protection, fiber optic cable, etc.)
     8. Telecommunications equipment

## 1.6 – Line Extension from Grid Connection Point (GCP) To Proposer Site

* 1. Company shall be responsible for the design, procurement, and construction of the line extension between the GCP and the Proposer site. This may include, but is not limited to:
     1. Overhead electrical facilities (poles, conductor, insulators, crossarms, guy wires, etc.)
     2. Underground electrical facilities (cables, splices, terminations, grounding, transformers, switchgears, etc.)
     3. Civil/structural work (design, survey, grading, trenching, conduits, manholes/handholes, concrete pads, concrete pier foundations, pole hole excavation, etc.)
     4. Vegetation trimming and traffic control
     5. Betterment
  2. Proposer shall be responsible for obtaining all permitting and land rights.

## 1.7 – T&D System Upgrades

* 1. Company shall be responsible for all costs related to system upgrades or changes required to accommodate the Proposer’s project (e.g., reconductoring or recircuiting of existing lines that do not have the required ampacity, re-fusing or re-programming of protective devices upstream of the GCP, etc.)

## 1.8 – Company-Owned Fiber

* 1. If Company-owned fiber is used to satisfy the communications requirements in the IRS, then the Company shall be responsible for all costs related to the design, procurement, construction, and testing of the ADSS fiber or OPGW from the nearest existing splice point to the Proposer site. This may include, but is not limited to:
     1. Company fiber-optic cable (ADSS fiber cable or OPGW shieldwire) and associated equipment/hardware (splice boxes, innerduct, vibration dampers, etc.)
     2. Splicing and Testing of fiber strands
     3. Pole replacements and additional equipment if needed for additional capacity
     4. Civil/structural work outside of Proposer’s project site (design, survey, grading, trenching, conduits, manholes/handholes, concrete pads, concrete pier foundations, pole hole excavation, etc.)
     5. Vegetation trimming and traffic control
     6. Betterment
  2. Proposer shall be responsible for obtaining all permitting and land rights.

## 1.9 – Telecommunication Facilities

* 1. Company shall be responsible for design, procurement, construction, and testing of Company-owned telecommunication facilities. This may include, but is not limited to:
     1. Fiber cable to the “meet point” outside of Proposer’s facility and termination at Company’s nearest point of interconnection.
     2. Microwave radio or wireless radio equipment at the Proposer’s facility and at remote site(s) (e.g., microwave dish/equipment, waveguide, cables, antenna system, etc.).
     3. Telecommunication service equipment required to provide circuits to support various applications at the Proposer’s facility.
  2. Proposer shall be responsible for all costs related to the following:
     1. A telecommunication cabinet required to accommodate the telecommunication equipment at the Proposer’s facility.
     2. Telecommunication power at the Proposer’s facility (e.g., battery racks, banks, fuse panels, and associated power system equipment).
     3. Ordering and installing a 3rd party leased service at the site. This may include, but is not limited to the initial cost to establish leased line(s) required for the project, monthly recurring leased cost of the service(s), and on-going maintenance of the service(s).
  3. Proposer shall be responsible for obtaining all permitting and land rights.

## 1.10 – Control System Acceptance Test (CSAT)

* 1. Proposer shall be responsible for all costs related to the CSAT, including all Company costs in support of the Proposer’s CSAT.

# Section 2 – Interconnection Requirements

Section 2 will provide information on the interconnection requirements and responsibilities.

## 2.1 – COIF Requirements

Please see Attachment 1 for single-line diagram showing the interconnection requirements. Proposers should do their own due diligence for costs to meet the technical requirements and bring the project to commercial operations. Company costs will be the same for all proposed projects.

Company will build COIF up to the switch on the Seller side of the demarcation shown on Attachment 1. Proposer to build facilities to meet at that point.

## 2.2 – Telecommunications Requirements

Please refer to the RFP for functional requirements for the project. Company will install a fiber-optic cable between Hawi Substation and the project site. Proposer will need to provide/install a patch panel in a communications cabinet at the project site for Company to terminate the fiber cables.

## 2.3 – Typical Security Requirements

Security requirements can vary based on many factors including, but not limited to, location, crime rate, environment, aspects of the surrounding area, terrain, accessibility, layout of the facility, etc. The specific requirements for each facility will be subject to final review during the design and engineering phase. Additional information, including the Company’s Physical Security Strategy, is available upon request after execution of an NDA with the Company.

### Proposer Responsibilities at Proposer Facility

The Proposer shall be responsible to incorporate security components and systems for **their facilities** that consider the Security Guidelines for the Electricity Sector (CIP-014-2): Physical Security, as published by the North American Electric Reliability Corporation (NERC) and that at a minimum, meet the requirements below.

For Company-owned facilities within the Proposerʻs Facility, Company requires:

1. Standard 8ft high security fence with 3-strand barbed wire V-top.
2. Interior mounted 4ʻ high cattle fencing.
3. All gates will be secured using a proprietary padlock system.
4. Proposer-owned cabinets/enclosures housing Company equipment shall be secured with a lock provided by Company.
5. Company requires 24/7 access to Company facilities within the Proposer facility.

# Section 3 – Typical Company Durations for Interconnection Projects

The tables below in Section 4 are to be used as a reference when developing an overall project schedule to assist Proposers in setting realistic durations and deadlines for critical milestones. These tables represent typical durations for the Company to complete the listed critical milestones that assist in moving the project through the IRS, Engineering, Procurement, and Construction phases. The durations below do not include time for Proposer to complete items they are responsible for. These high-level typical durations are for planning purposes only and is not intended to cover all project specific requirements. Specific project details can increase or decrease these durations. The detailed project schedule will be determined after the IRS is completed.

| **Milestone** | **Company-Build Duration** | **Notes** |
| --- | --- | --- |
| **IRS Phase** | | |
| Model Validation | 2-3 months | May increase depending on # of iterations |
| System Impact Study (SIS) | 150 calendar days | Following Model Acceptance |
| **Engineering Phase** | | |
| 30% Design & Review | 40 business days |  |
| 60% Design & Review | 50 business days | Following 30% Design acceptance. |
| 90% Design & Review | 50 business days | Following 60% Design acceptance |
| Issued for Construction (IFC) Design & Review | 30 business days | Following 90% Design acceptance. |
| **Procurement Phase** | | |
| Procurement | 9 months | Procurement of materials typically happens at 60% design completion |
| **Construction Phase** | | |
| Construction | 10-12 months | Based on scope/complexity of work |
| Acceptance Testing | 30 business days | Approximately 3 weeks after construction completion |
| CSAT | 30 business days | To occur after commissioning of Proposer's Facility. Duration depends on Proposer's ability to meet the Performance Standards. |
| **Notes** | | |
| For Company-Build projects, the Engineering Phase includes Company design & review of Company-Owned Interconnection Facilities (COIF) & reviews of Proposer-Owned Interconnection Facilities (SOIF) supporting/impacting COIF. | | |