SMITH'S FALLS DAM HYDROELECTRIC PROJECT
REQUEST FOR PROPOSALS
SUMMARY OF WORK AND DELIVERY SCHEDULE

1.01 SCOPE OF WORK

A. The Work under this Contract will consist of design, fabrication and delivery to the Smith's Falls Dam Hydroelectric jobsite located near Stowe, VT, USA, One Hydroelectric Turbine, Generator, Controls, Switchgear, Auxiliary Equipment, Commissioning, and Training, covered by the Total Proposal Price, as specified below and as shown on the Drawings. The unit will be installed in an onsite powerhouse constructed by others. The project is located as shown in the following map:

Site Address: 435 Moscow Road, Stowe, VT 05672

1.02 WORK INCLUDED

A. The scope of work includes but shall not be limited to the design, manufacture, and delivery to site, commissioning, start-up and testing, and required training for one turbine generator set and appurtenant equipment to provide a complete "water to wire" generating system as follows:

1. One open flume type, vertical-shaft, axial flow, double regulate turbine rated at adequate horse power to produce **150 kW** at the generator including draft tube. This is the minimum rating we expect, please revise according to your specific equipment's efficiencies. The turbine head and flow ranges shall be as follows:

	Unit 1
Capacity	150 kW
Max Net Head	14 feet
Min Net Head	please provide
Design Flow	150 cfs
Min Flow	please provide

   This turbine and generator will be installed at a non-powered dam that is also undergoing rehabilitation. An inflatable spillway gate will maintain head pond level by adjusting height and bypass flow.

2. One induction generator with the following rating:

   150 kW full load (minimum), 0.9 power factor, 167 kVA, 480 V, 60 Hz, 3 phase.

3. All required anchor bolts and foundation plates for mounting of turbines, valves, generators, and ancillary equipment.

4. Hydraulic System.

5. Generator switchgear assembly controls and protective relays to parallel with the grid, according to the following interconnection guidelines and standards:

a) Coordinate with OWNER on any interconnection reviews or studies required for new generation facilities.

b) Interconnection procedure shall be in accordance with all state of Vermont rules and regulations including:

   i. 30 V.S.A. § 219a amended. Act 99 (Bill H.702) An act relating to self generation and net metering (April, 2014)
   ii. 30 V.S.A. § 248 New gas and electric purchases, investments, and facilities; certificate of public good (May, 2013)
   iii. Rule 5.100 Regulations Pertaining to Construction and Operation of Net Metering Systems. https://puc.vermont.gov/document/commission-rule-5100-rule-pertaining-construction-and-operation-net-metering-systems
   iv. Rule 5.500 Interconnection Procedures for Proposed Electric Generation Resources. https://puc.vermont.gov/document/commission-rule-5500-electric-generation-interconnection-procedures

c) Codes and Standards:
    i. Default New England Bulk System Area Settings Requirement https://greenmountainpower.com/wp-content/uploads/2023/01/Default-IEEE1547-2018-Settings-Requirements-2022_12_13_V2.pdf
    ii. IEEE 1547-2018 (as amended by IEEE 1547a-2020) replaced both 1547-2003 and 1547a-2014 in February 2018
    iii. IEEE 1547.1-2020 superseded IEEE 1547.1a-2015 in May 2020

6. Neutral grounding equipment.

7. Shop set-up and assembly of mechanical components prior to shipping.

8. Factory acceptance testing of turbine, generator and control panel prior to shipment.

9. All other related equipment to provide a complete "water to wire" generating system.

10. Documentation required for the interconnection application, including a detailed one line diagram, installation test plan, major equipment specifications, relaying detail, and test reports.

11. Integration and coordination of all equipment and controls to provide a complete system.

12. On site supervision of installation of all above equipment.

13. Commissioning and start-up services including field testing.

14. Operation and troubleshooting of the completed project during a 2-day test period.

B. The design of the equipment listed in A. above shall include the following design activities:

1. Determination of all equipment weights, loads and stresses due to both normal and possible abnormal operating conditions.

2. Design and preparation of shop drawings detailing all interconnecting electrical wiring between equipment components supplied under this Contract. Interconnecting wiring drawings shall include conductor type and size, terminal strip and conductor connection details and designations. A conduit routing drawing and schedule shall be provided that shows all required conduits, their size, starting and ending points, and number and size

of conductors required in each conduit. All wiring inside all CONTRACTOR supplied equipment shall be by CONTRACTOR. Actual installation of the equipment and the wire and wiring between them will be provided and installed by others in raceways and conduit installed by others. Drawings shall be prepared using, no earlier version than AutoCAD 2005. A complete instrument list with function, control wiring, and set-points shall be provided. Detailed logic diagrams illustrating the control logic of plant start-up, operation and shutdown logic shall be provided.

3. Programming of all plant control, PLC, and remote communications systems.

4. Testing of PLC programming and remote system operation prior to shipment.

5. Calculation of protective relay settings through performance of a relay coordination study. All protective relays shall then be pre-set at the factory before shipment. All protective relays shall be double-checked for proper setting and operation in the field by CONTRACTOR prior to plant start-up using test equipment supplied by CONTRACTOR. STOWE ELECTRIC DEPARTMENT may also perform a duplicate relay coordination study and recommend relay settings to CONTRACTOR, but this shall not relieve CONTRACTOR from responsibility for all relay settings.

1.03 WORK BY OTHERS

A. The following work will be performed under separate contract(s) by others:

1. Powerhouse construction, including:
   a. The foundation, structure, and building envelope, including first and second stage concrete as required. This includes the powerhouse building and the inlet and discharge canals into the powerhouse.
   b. HVAC system.
   c. Powerhouse lighting and drainage systems.
   d. General site work.

B. A separate installation contractor will install all equipment furnished under this Contract, under the supervision of the erection supervisor(s) provided under this Contract.

C. It shall be the responsibility of the CONTRACTOR to supervise the installation of the turbine-generator and associated electrical, control, and mechanical equipment. Should it be necessary to modify or reinstall any part of the equipment after initial installation due to CONTRACTOR'S design errors or deficient materials, the cost of all such modifications shall be borne by the CONTRACTOR.

1.04 DELIVERY SCHEDULE

A. CONTRACTOR shall complete designated portions of the Work required under these Contract Documents within the number of days as stated in the Proposal Schedule. Time shall be computed starting with the effective date of the Notice to Proceed.

B. Submit Shop Drawings, Product Data, schedules, storage and handling information, interconnection application documentation and other specified data. Foundation data and equipment loads are critical to the powerhouse foundation design being performed by others and shall be submitted as soon as practical.

C. Point of delivery shall be the designated Project site. A 4 week advance notice of shipping from the factory and a 48-hour confirming notice of arrival at site shall be given.

D. Spare parts and maintenance materials shipped after equipment deliveries shall be delivered to the job site prior to start of start-up and commissioning.

E. Submittals of Manufacturer's Instructions, Operation and Maintenance Manuals, and Record Drawings shall be provided to meet the following schedule. Each submittal shall be complete; partial submittals are not acceptable.

1. Manufacturer's instructions for erection and installation: Submit not later than forty five (45) days before the scheduled date for delivery.
2. Operation and Maintenance Manuals: Submit not later than the scheduled date for delivery of turbine stationary parts.
3. Record Drawings: Submit not later than the scheduled date for delivery of spare parts and maintenance materials.

1.05 COORDINATION MEETINGS

A. CONTRACTOR shall attend, by phone, up to four (4) coordination meetings with the Owner to discuss problem areas and to review progress. A kick-off meeting at the start of the project will also be held.

1.06 SYSTEM INTEGRATION

A. The integration of all equipment being supplied under this Contract to provide a complete and smoothly functioning package shall be performed by a single person designated by the CONTRACTOR, who is part of the CONTRACTOR'S team. The system integrator shall have successful experience with at least 3 hydroelectric projects within the past five years.

B. The system integrator shall be given authority on behalf of the CONTRACTOR to communicate directly with the Engineer, Owner and all subcontractors in all matters concerning approvals, coordination, start-up, testing and final acceptance,

and shall have the authority to speak for and make commitments on behalf of the CONTRACTOR.

Attachments: (1) Electronic Flow and Head Data
(2) Preliminary Site Plan and Design Drawings