



ADVANCE CONTRACT AWARD NOTICE (ACAN)

1. Title

On-site Performance Monitoring of River Hydrokinetic Energy Systems on Winnipeg River

2. Definition

An Advance Contract Award Notice (ACAN) allows departments and agencies to post a notice, for no less than fifteen (15) calendar days, indicating to the supplier community that it intends to award a good, service or construction contract to a pre-identified contractor. If no other supplier submits, on or before the closing date, a Statement of Capabilities that meets the requirements set out in the ACAN, the competitive requirements of the government's contracting policy have been met. Following notification to suppliers not successful in demonstrating that their Statement of Capabilities meets the requirements set out in the ACAN, the contract may then be awarded using the Treasury Board's electronic bidding authorities.

If other potential suppliers submit Statement of Capabilities during the fifteen calendar day posting period, and meet the requirements set out in the ACAN, the department or agency must proceed to a full tendering process on either the government's electronic tendering service or through traditional means, in order to award the contract.

3. Background

River Hydrokinetic Energy (RHE) is non-emitting renewable source of electricity that extracts energy from flowing water in rivers. It does not require dams or diversion of water from the river. Canada has a vast potential estimated in excess of 340 GW all across Canada, with highest potential located in BC, Quebec and north (Yukon is at 55 GW, Nunavut 9.9GW and NWT 44GW). Canadian technology developers are seen as leader in the RHE sector internationally, however, Canada needs to speed up the RHE development to keep the leading position and its international competitiveness. There is a need to demonstrate long-term RHE turbine performance that will help gain external confidence, establish industry-wide standards, reduce risks and cost, support techniques and equipment needed for future projects, and help promote Canadian RHE technology.

Presently, there is a lack of data on how RHE turbines perform in actual river conditions over multiples seasons, which is considered as major barriers that hinder the wider deployment of the RHE Canadian technology. Performance monitoring data over several seasons demonstrating turbine performance and energy production will contribute to accelerate RHE technology deployment in Canada and worldwide. Majority of the northern and remote communities are using diesel to generate electricity with high power generating cost and high GHG gas emission have been identified as a niche market for this type of generation. The performance monitoring data from this activity will feed into standards being developed by IEC/TC114/TS 62600-300: Electricity Producing River Energy Converters- Power Performance Assessments, in which Canadian RHE industry are actively involved. Performance monitoring will be conducted at the Sagkeeng First Nation Community on Winnipeg River. The 25kW rated systems by New Energy Corporation that will be installed is supported under the Built in Canada Innovation Program. The faculty of Mechanical Engineering at the University of Manitoba is a leading research institution in renewable energy systems. The research team led by Professor Eric Bibeau, Associate Professor and the team has significant experience on the research and design of RHE systems. He managed the setting up the Canadian hydrokinetic Turbine Test Centre (CHTTC) and currently is also its Director. The CHTTC site is pre-approved site for prototype turbine testing and has been in operation since 2013. It is located downstream of the Seven Sisters Generating Station.



4. Objective

The objective of this work is to plan and carry out performance monitoring of the 25kW RHE systems in Sagkeeng First Nation Community on Winnipeg River. The performance data will be used to evaluate RHE turbine performance energy production and to validate numerical model.

5. Project Requirements

5.1 Tasks, Deliverables, Milestones and Schedule

Main scope of this work is to develop a plan for monitoring of a 25 kW RHE system that is being installed in Sagkeeng First Nation Community on Winnipeg River. The RHE systems and its deployment had been funded by Built in Canada Program. The monitoring is planned to cover at least a season (12 month period), to collect data on how well the turbine will perform with varying velocity with seasonal changes in water flow rate. There will be number of instruments that will be used for this work that are already with CHTTC. The task does not include installation of the turbine on site.

Following tasks are scheduled to be carried out:

Task 1: Design and procurement of instrumentation for monitoring

Develop the required instrumentation to monitor the performance of the 25kW turbine installed at Sagkeeng.

Design to measure following parameters of interest:

- Flow: velocity upstream of turbine, flow direction, static pressure and water temperature
- Power: current 3-phase, voltage 3-phase and frequency
- Vibrations sensors: 3-D accelerations of pontoon and turbine
- Camera/microphone: sound and visual inspection of turbine
- GPS location: movement of pontoon
- Power supply for the instruments on the RHE system pontoon

To record the data waterproof computer will be located on pontoon and another one on shore where the power converter for the will be located. The power supply for the computers will be from a battery bank that will be kept charged from the power generated from the RHE turbine. The instrumentation and computer power requirement will be 150W. The data will be transmitted from the pontoon to the shore using point-to-point wireless link and Rocket hubs. The data will be made available on-line.

Deliverables 1: Brief report outlining monitoring plan, equipment specification and costing - by 24 Dec, 2016

Task 2: Perform detailed turbine performance tests

Carry out detailed measurement using ADCP to characterize river flow around the proposed 25 kW RHE turbine for Sagkeeng installation.

- Measure flow using horizontal ADCP and vertical ADCP upstream and downstream of the turbine
- Conduct data processing and analysis to evaluate turbine's performance and to validate numerical modelling

Deliverables 2: Technical report with processed detailed river flow data and turbine performance data - by June 2017



Task 3: 25 kW turbine monitoring in Sagkeeng

- Installation of monitoring equipment for flow and power measurements
- Collection of data from the turbine at regular basis; the duration up to 12 months of operation.
- Conduct data analysis of turbine performance, energy production and other parameters to be used for evaluating the performance and numerical model validation

Deliverables 3:

- i. Brief update on turbine performance on monthly basis once the turbine is operating – once a month from April 2017
- ii. Technical report with processed detailed river flow data and turbine performance data - once a month from April 2017

5.2 Data Reporting

Prepare flow and characterization data into a usable database, and make it available to project stakeholder. The data will be placed at CHTTC server and access provided to stakeholders that includes NRCan and New Energy Corporation.

The provider must meet the following criteria:

1. Must be is the only RHE testing lab in Canada that is a fully permitted site and fully equipped facility to carry out field testing of RHE turbines.
2. Must be positioned to coordinate with New Energy and Sagkeeng First Nation Community during deployment and during the normal operation of the RHE system.
3. Must be familiar not only with deployment and setting up to monitor parameter of interest of the RHE; but also familiar with Winnipeg River where the turbine is being deployed.
4. Must be able to provide services with minimum travel costs

6. Estimated Cost

The estimated maximum value of the contract is \$48,590.00, including all applicable taxes.

7. Trade Agreements

There are no trade agreements applicable to this requirement.

8. Exception to the Government Contracts Regulations and applicable trade agreements

Sole Source Justification - Exception of the Government Contract Regulations (GCR):

(d) Only one person or firm is capable of performing the contract

There are no alternative sources offered for the same service offered



9. Name and Address of the Proposed Contractor

University of Manitoba
Mechanical and Manufacturing
EITC Building, Room E2-327
Winnipeg, Manitoba
R3T 5V6

10. Inquiries on Submission of Statement of Capabilities

Suppliers who consider themselves fully qualified and available to provide the services/goods described herein, may submit a Statement of Capabilities in writing, preferably by e-mail, to the contact person identified in this Notice on or before the closing date and time of this Notice. The Statement of Capabilities must clearly demonstrate how the supplier meets the advertised requirements.

11. Closing Date

Closing Date: 21 December 2016
Closing Time: 2:00 p.m. EST

12. Contract Authority

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