Saskatchewan Research Council
Energy Division – Alternative Energy

Request for Expressions of Interest 2011-084

Host Site Locations
micro Combined Heat and Power (mCHP)
Demonstration Project

April 10, 2012

Closing Date and Time:
Responses should be received at the designated Response Delivery Location before 2:00 p.m. Central Time, Tuesday, May 8, 2012

Direct all Inquiries to:
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Note: Respondents downloading this Request for Expressions of Interest (REOI) from www.sasktenders.ca or any other public or private Internet site with the intention of submitting a Response should notify the Saskatchewan Research Council Purchasing Section at least five (5) business days prior to the Response Closing Date and Time by emailing the Response Contact named in the REOI document.
# Table of Contents

1 Instructions to Respondents

1.1 Introduction ........................................................................................................... 1
1.2 Background .............................................................................................................. 1
1.3 Purpose .................................................................................................................... 2
1.4 Host Sites ............................................................................................................... 2
1.5 Closing Date and Time .......................................................................................... 3
1.6 Response Delivery Location ................................................................................. 3
1.7 Response Contact .................................................................................................. 3
1.8 Questions and Clarifications .................................................................................. 4
1.9 Addenda .................................................................................................................. 4
1.10 Response Content and Details .............................................................................. 4
1.11 Response Amendments ....................................................................................... 4
1.12 Opening of Responses ....................................................................................... 4
1.13 Form of Agreement .............................................................................................. 4
1.14 Publicity ................................................................................................................ 5

2 Request for Expressions of Interest Terms and Conditions

2.1 Clarification by SRC ............................................................................................. 5
2.2 Duty to Inform ....................................................................................................... 5
2.3 Rights of Acceptance and Rejection .................................................................... 5
2.4 Incurred Costs/Expenses ..................................................................................... 5
2.5 Full Disclosure ....................................................................................................... 5
2.6 Confidentiality and Proprietary Information ....................................................... 6

3 Scope of Work and Specifications

3.1 Introduction ........................................................................................................... 6
3.2 Scope of Project ..................................................................................................... 6

4 Evaluation Process and Submission Requirements

4.1 Evaluation Committee ........................................................................................... 8
4.2 Evaluation Methodology and Process .................................................................. 8
4.3 Interviews ............................................................................................................... 8
4.4 Host Site Visit ....................................................................................................... 8
4.5 Response Requirements for Evaluation .................................................................. 8
1 Instructions to Respondents

1.1 Introduction

Saskatchewan Research Council (SRC) proudly delivers Smart Science Solutions with unparalleled service to clients and colleagues that grow and strengthen our economy. SRC takes under consideration matters pertaining to research, development, design, consultation, innovation, and investigation in, and commercialization of, the natural and management sciences, pure and applied, as they affect the welfare of the province, and any particular matters that may be brought to its attention by the Lieutenant Governor in Council. SRC creates wealth through the responsible application of science and technology to assist Saskatchewan industry to be globally competitive. Additional information can be viewed on SRC’s website at www.src.sk.ca.

1.2 Background

Electric power generation close to the point of end use is called distributed power generation. Cogeneration, or combined heat and power (CHP), is defined as the simultaneous production of heat and power, two different energy forms, from a single fuel stream. At the industrial level, cogeneration is widely used, and can be upwards of two times more efficient than conventional central power generation. New developments with distributed CHP technology have led to lower equipment costs and increased energy efficiencies to a point where CHP systems for residential and commercial applications are becoming more economically feasible. Much of this development has taken place in countries such as Japan and Germany.

CHP systems utilize the primary energy streams more efficiently: They can have a total system efficiency of 85 to 90% compared to an electrical efficiency of 30% for a coal-fired power plant and 50 to 54% for a gas combined cycle plant. Furthermore, distributed generation reduces transmission losses, which can be in the neighborhood of 9%.

CHP systems are typically installed as a primary heating system in buildings or for processes where a constant level of heating energy is required. Currently, due to both their relatively higher cost and their “newness” compared to traditional heating systems, CHP systems are typically installed such that they provide only partial space or process heating load requirements while traditional heating systems are used to provide peak load requirements. The sizing of CHP systems is very important to ensure enough runtime to maximize return on investment. Based on discussion with various manufacturers, typical CHP systems would be sized to run a minimum of 3,500 to 5,000 hours when installed for space heating requirements alone. In Saskatchewan and across Canada most residential and commercial buildings could likely have a CHP system sized to achieve the desired runtime.

Wide use of distributed CHP systems that use natural gas to produce both heat and power can have environmental benefits through mitigation of air pollution and greenhouse gases. Saskatchewan relies heavily on coal-fired electrical power. The type of coal used in the process of electrical power generation – lignite – produces relatively high emissions
compared to other thermal electrical production systems. Natural gas is a cleaner burning fuel, producing fewer emissions per unit of energy. Secondly, if power is produced close to its end use, overall system efficiency is improved, since transmission losses are reduced. In addition to improving energy efficiency and energy cost savings, CHP systems have the potential to improve reliability. Some applications are specifically designed for emergency power backup. In rural and remote areas, CHP systems are ideal since they greatly reduce risks associated with service interruptions, reduce demand “spikes” by providing a more uniform demand profile, and can potentially defer large investment in future mega-power projects. In addition, increased natural gas demand optimizes the economic use of the distribution system for natural gas in remote areas.

An important term used in the industry is “spark spread,” which indicates the cost margin of a gas-fired power plant selling a unit of electricity, having bought the fuel to produce that electricity. If the power plant is supplying heating and electricity at a combined cycle of 85 to 90%, the spark spread will be higher than that of a power plant providing electrical power, at only 30 to 50% efficiency, which will benefit the system owner any time the system is in operation.

SRC plans to demonstrate a 10kW electric output and a 25kW electric output micro Combined Heat and Power (mCHP) system in Saskatchewan and is looking for eligible host building sites (Host Sites) in Saskatchewan to perform a field trials. SRC is managing the Project on behalf of SaskEnergy, SaskPower, and Natural Resources Canada through the Market Development Incentive Payment Fund (MDIP).

The goal is to gain a better understanding of the benefits and barriers of this technology. The Project’s site-specific design and installation process will begin once qualified Host Sites can be identified.

1.3 Purpose

SRC is conducting a Request for Expressions of Interest (REOI) to identify two commercial Host Sites in Saskatoon (preferred) or Regina to trial one 10kW and one 25kW mCHP system (the “Project”). The purpose of this REOI is to identify Host Sites able to meet SRC’s requirements and to identify a Host Site organization(s) with whom an Agreement(s) can be negotiated.

SRC may, at its sole discretion, choose to award one or more Agreements based on the REOI Responses received.

1.4 Host Sites

The Host Site will likely need to be larger than 20,000 ft$^2$ in size or use more than 40,000 m$^3$ of natural gas for heating on an annual basis, with at least 600 m$^3$/month of natural gas used for heating during the period May to September.

Host Sites require availability of space in the mechanical room to accept the mCHP system – provide sketch of mechanical room with dimensions.
Hydronic space heating or large domestic hot water heating load or process load is preferred. Saskatoon locations (or in close proximity) will be preferred, but other locations can still apply.

The proposed existing facility needs to be already heated with a boiler system and needs to have a heating large enough to obtain optimum runtime for the mCHP system. Suggested facilities include buildings heated with in slab floor piping, warehouse/shop, commercial buildings, hotels, laundromats, carwashes, greenhouses, or any facility that has a heating demand such that it will maximize mCHP system runtime. Note that the Host Sites that best matches the mCHP heating requirements will be preferred when selecting the Host Sites.

SRC is performing a study, which will involve site-specific design, the purchase of a 10 kW or 25 kW mCHP system, installation into the Host Site organization’s existing building heating system, and ongoing monitoring. The Project is being carried out with a view to demonstrating the use of the mCHP System to determine and identify its overall efficiency, costs, benefits, issues, regulatory concerns, and other relevant matters.

1.5 Closing Date and Time
REOI Responses should be received at the REOI Response Delivery Location before 2:00 p.m. Central Standard Time, on Tuesday, May 8, 2012. SRC may, at its sole discretion, accept or reject REOI Responses received after the Closing Date and Time but before transmittal of the summary of REOI Responses to the Evaluation Committee Chair. REOI Responses received after transmittal of the summary of REOI Responses to the Evaluation Committee Chair will be rejected.

1.6 Response Delivery Location
Respondents should submit one (1) electronic copy of their REOI Response via email (preferred), or one (1) hard copy, and one (1) electronic copy of their Response on a compact memory device, labelled and delivered to.

Saskatchewan Research Council
Attention: Purchasing – REOI 2011-084
Room 125 – 15 Innovation Boulevard
Saskatoon, SK S7N 2X8
purchasing@src.sk.ca

Responses become the property of SRC and will not be returned to Respondents.

1.7 Response Contact
All inquiries and questions relating to this REOI should be directed, in writing only, to the Response Contact indicated below. Information obtained from any other source is not official and should not be relied upon.

Lianne Carpenter, Procurement Specialist
Email: purchasing@src.sk.ca
1.8 Questions and Clarifications
It is the Respondent’s responsibility to clarify interpretation of any item in this REOI, including issues relating to specifications; discrepancies; errors or omissions; or any apparent ambiguities, at least five (5) business days before the Closing Date and Time, by contacting the Response Contact in writing.

SRC will review all questions and will issue and addendum to all Respondents where appropriate. A Respondent that submits a question will not be identified in the addendum.

1.9 Addenda
All addenda issued during this REOI will become part of this REOI. Receipt of all addenda issued should be acknowledged by the Respondent in the space provided in the Response Summary Form. It is the Respondent’s responsibility to register their interest in submitting a Response with SRC and to obtain any additional information that may be provided via addendum.

1.10 Response Content and Details
Response content should include the REOI Response Form provided and all other documentation requested throughout the REOI or deemed relevant by the Respondent. Responses should be signed and dated, and should clearly identify the name of the Respondent, the REOI number and title, and the Closing Date and Time.

1.11 Response Amendments
Where a Response has been received by SRC before the Closing Date and Time, amendments are acceptable provided that such amendments are received at the Response Delivery Location before the Closing Date and Time. Amendments to a Response should clearly state the REOI title and number, and the name and address of the Respondent. Any amendment should be signed by an authorized signatory of the Respondent.

1.12 Opening of Responses
Opening of Responses will be closed to the public. Notwithstanding any other provision of this REOI, Respondents’ names may be released to the other Respondents and/or published at the sole discretion of SRC. Release of information, if any, will only take place after Responses are opened and evaluated, and an Agreement(s) is awarded to the successful Respondent(s).

1.13 Form of Agreement
It is the intention of SRC to enter into an Agreement with the successful Respondent(s), substantially the same as the Sample Agreement provided with this REOI. Respondents are requested to review the Sample Agreement and indicate any terms and conditions to which they cannot agree.
1.14 Publicity

The Respondent should not issue any press release or make any public announcement or disclosure concerning the REOI process, subsequent negotiations, or the entering into of an Agreement without the prior written consent of SRC.

2 Request for Expressions of Interest Terms and Conditions

2.1 Clarification by SRC

SRC reserves the right at any time to seek clarifications of, or any additional information in connection with, or modifications of, any Response from any one or more Respondent(s), but not necessarily all Respondents, either serially or concurrently, and in any manner including through written correspondence, interviews or presentations by a Respondent.

Any clarifications, additional information or modifications received may form part of a Response and may be considered by SRC in its sole discretion in its evaluation and decisions, including without limitation as to acceptance, rejection, negotiation or award, and SRC will be entitled to accept any Response as clarified, supplemented or amended through this process.

2.2 Duty to Inform

It shall be the Respondent's sole responsibility to fully inform itself of all aspects of the Project before submitting a Response. SRC, and its directors, officers, employees, agents and consultants shall not be liable, and the Respondent shall have no claim against one or more of them, for damages, losses, costs or expenses of any nature whatsoever, incurred by the Respondent in respect of the provision of labour, services, or materials relating to the Project, resulting from any misunderstanding by the Respondent as to the nature and scope of, and the risks and conditions relating to, the Project.

2.3 Rights of Acceptance and Rejection

SRC, in its sole discretion, reserves the right to accept or reject in whole or in part any or all Responses it has received, to withdraw any portion of this REOI, to obtain additional Responses, to modify or vary any aspect of this REOI’s technical, commercial, or contractual requirements, and/or to cancel this REOI in its entirety. SRC is not bound to enter into an Agreement with any Respondent, nor is SRC bound to enter into an Agreement with the Respondent that submits the lowest price and/or fee structure.

2.4 Incurred Costs/Expenses

The Respondent is solely responsible for its own costs and expenses in preparing and submitting a Response and for subsequent negotiation costs and expenses with SRC, if any.

2.5 Full Disclosure

The Respondent is to provide a written statement of full disclosure as outlined in the REOI Response Form.
2.6 Confidentiality and Proprietary Information
This REOI and any resulting Agreement are the property of the SRC. Respondents and/or any persons who have obtained a copy of this REOI and associated documents shall keep confidential and shall not use, reproduce or distribute any information, drawings or specifications included in or provided with this REOI except for the purpose of preparing a Response.

SRC shall comply with all applicable privacy laws, including but not limited to The Freedom of Information and Protection of Privacy Act, in respect of any Response received pursuant to this REOI. Each Respondent should clearly identify any information and/or records that it is providing in its Response that constitutes confidential information that is supplied in strict confidence and/or the release of which could significantly harm them.

3 Scope of Work and Specifications

3.1 Introduction
The Scope of Work included in this REOI is provided to give Respondents an understanding of the complete Project requirements. Respondents are not expected to respond to the Project Description and/or Scope of Work requirements at a detailed level in their Response.

3.2 Scope of Project
3.2.1 Overall scope of the Project
3.2.1.1 SRC purchase of a 10 kW and a 25kW mCHP system
3.2.1.2 Identify potential Host Sites for the Project
3.2.1.3 Evaluate site selection and award Project to allow installation based upon REOI Responses
3.2.1.4 Carry out site-specific design and installation (anticipated installation by 4th quarter of 2012 to 1st quarter 2013) of the mCHP units at the successful Host Site facility(ies) in a net metering configuration
3.2.1.5 Demonstrate the technology within the Host Site buildings for a minimum one-year period (monitoring period may be extended)

3.2.2 Key Advantages
3.2.2.1 Reduction of overall utility costs (the installation will result in reduced electrical utility costs and increased natural gas utility costs but resulting in overall utility costs savings
3.2.2.2 Reduction of Green House Gas (GHG) emissions and reduction of carbon footprint
3.2.2.3 Potential reduction of electrical demand charges

3.2.3 Demonstration Project Objectives
3.2.3.1 Evaluate the overall efficiency of the mCHP system in a commercial application
3.2.3.2 Determine the cost/benefit to the consumer, including energy savings and the potential for improved electrical supply reliability

3.2.3.3 Connect the system in a net metering or small power producers configuration, allowing the unit to feed excess power back to the grid

3.2.3.4 Acquire electrical and natural gas energy load profiles associated with mCHP systems

3.2.3.5 Provide first year of preventative and manufacturer suggested maintenance at the cost of the Project

3.2.3.6 Estimate the environmental benefits of the mCHP system for Saskatchewan customers through lower emissions from the reduction in burning of fossil fuels due to overall system efficiency improvements

3.2.3.7 Identify regulatory issues including the need for further development of existing gas and electrical codes and standards, and the enforcement of these codes and standards

3.2.3.8 Identify advantages of and/or barriers to maintenance of the system

3.2.3.9 Identify training needs for industry stakeholders including engineers, contractors and maintenance personnel

3.2.3.10 Identify marketing opportunities and develop information on the advantages and disadvantages of mCHP systems for the purpose of technical transfer

3.2.4 Incentives to the Host Site

3.2.4.1 The Host Site organization will receive one of the mCHP units and have design costs and associated construction costs paid for up to the point of connection into an existing hydronic heating system and into an existing electrical distribution system

3.2.4.2 The Host Site organization will derive economic and environmental benefits of the combined heat and power system

3.2.5 Successful Respondent Obligations

3.2.5.1 Attend design meetings

3.2.5.2 Make all necessary arrangements to facilitate all required construction

3.2.5.3 Make available the required space to install the mCHP unit and associated peripheral equipment

3.2.5.4 Participate in completing the interconnections agreement with the electrical utility

3.2.5.5 Cover all utility costs required to operate the unit from date of installation

3.2.5.6 Allow the mCHP system to be configured such that it is first stage of heating to maximize runtime
3.2.5.7 Accept the Sample Agreement Key Terms and Conditions and inform SRC of terms and conditions not agreeable to Respondent
3.2.5.8 Allow SRC to perform monitoring and provide access to utility records for the facility
3.2.5.9 Allow tours of the mCHP system installation to showcase the technology

4 Evaluation Process and Submission Requirements

4.1 Evaluation Committee
A committee comprised of SRC employees and other representatives, as deemed appropriate, will evaluate all Responses received.

4.2 Evaluation Methodology and Process
Responses will be evaluated based on the information received in the Respondent’s Response. SRC may at its sole discretion, conduct further evaluation based on any clarifications or additional information requested, and/or subsequent interviews, meetings, or presentations with one or more Respondents.

4.3 Interviews
SRC reserves the right to conduct interviews as part of the REOI evaluation process. The Respondent(s) selected for interviews will be determined at the sole discretion of SRC. Any Respondent selected for an interview in a Saskatoon location chosen by SRC will be required to participate at their own expense.

4.4 Host Site Visit
SRC may require an on-site visit at the Respondent’s Host Site location to confirm the site’s technical and functional characteristics for SRC’s intended application.

4.5 Response Requirements for Evaluation
Respondents should complete and submit the REOI Response Form accompanying this document.