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Partnering with Wisconsin utilities

**CALL FOR PARTNERSHIPS (CFP) ONLY**

FOCUS ON ENERGY®

Aptim Government Solutions, LLC

Wisconsin's *Focus on Energy* Program Administrator

This CFP is issued solely for information and planning purposes – it does not constitute a Request for Proposals (RFP) or a promise to issue an RFP in the future.

**ISSUE DATE:** February 20, 2020

**CLOSING DATE:** March 13, 2020

**SUBJECT:** Call for Partnerships – Cold Climate Heat Pump (CCHP) Field Demonstration Project

**DESCRIPTION:** Focus on Energy (Focus) is soliciting feedback from public and private sector stakeholders regarding opportunities to enhance the impact of Focus' portfolio of energy efficiency solutions, offerings and products. The objective of this Call for Partnerships (CFP) is to develop a Cold Climate Heat Pump (CCHP) Field Demonstration Project that would be informed by strategic partnerships with industry experts and provide primary energy consumption data from equipment installed in Wisconsin. Primarily, this CFP seeks input on how Focus might structure a Field Demonstration Project for CCHPs, including the design, scope of work, intended deliverables and required data collection to achieve the goals outlined in this CFP.

Specifically, Focus seeks partnerships from CCHP manufacturers, supply channel stakeholders and trade organizations in the form of:

- CCHP products and training materials appropriate to the Wisconsin/Upper Midwest market
- Technical support for product installation, metering and performance verification testing
- Sharing data and findings from completed CCHP projects in Wisconsin/Upper Midwest
- Contractor and consumer guidance on various heat pump source (air-, water-, ground-) and equipment (ducted, ductless mini-split, radiant floor) types
- Direct field demonstration project financial, in-kind or other support
- Post-demonstration technical and market assessment of CCHP potential within the Focus portfolio and customer segments
- Participation in multi-stakeholder engagements seeking input to optimize Focus administration, implementation, evaluation, utility partnerships and customer value

For more information on Focus' Innovation, Research & Development efforts, along with guidelines for submitting responses to this CFP, please see Appendix A.

**BACKGROUND:** Focus strives to identify new products, services and solutions that will help Wisconsin businesses and households achieve cost-effective energy savings and facilitate broader adoption of these solutions.

A heat pump uses outdoor air throughout all seasons to heat or cool a building. By using refrigeration compression cycles, heat pumps (as part of a central or zoned heating and cooling system) can move heat to the desired location, depending on the season and preferred temperature.

Heat pump technology has experienced rapid growth and investment in the past decade. Advancements in inverter-driven compressors, refrigerant improvements and other elements allow units to deliver heating in extremely cold regions, such as New England and the Upper Midwest. A common heat pump system type is the Cold Climate Air Source Heat Pump (ccASHP) which, in some cases, can reduce household energy consumption by up to 40% (HVAC load), with homeowners currently utilizing electric resistance (e.g., baseboard heat) realizing the highest cost savings potential (DOE1).

In response to CCHP technology advancements, existing efforts of energy efficiency programs located in climate zones 6 and 7, and energy savings potential, CCHPs have been identified as a promising technology solution for Focus.

According to the United States Department of Energy: *In the United States, approximately 14.4 million dwellings use electricity for heating in very cold and cold regions, consuming 0.16 quads of energy annually. A high-performance CCHP would result in significant savings over current technologies (greater than 70% compared to strip heating). The CCHP can result in annual primary energy savings of 0.04 quads when fully deployed, which is equivalent to a reduction of 2.4 million tons of annual carbon dioxide emissions.* (DOE2)

After collecting market stakeholder feedback via interviews, common barriers to this technology were identified:

- Higher up-front costs when compared to existing available HVAC technology (central AC, natural gas furnace, etc.)
- Lack of contractor/installer familiarity with CCHP technology
- Concerns related to performance and reliability in Wisconsin's climate (notably, a misperception that CCHPs cannot operate at very cold temperatures)
- Lack of customer interest and awareness of CCHP benefits (for example, many consumers are unaware that CCHP technology can provide both heating and cooling)

To overcome these barriers, Focus intends to identify and collaborate with partners who can support a Field Demonstration Project (5 - 10 installation sites) and associated case-study that would showcase the technology's performance and energy-savings capabilities while meeting Wisconsin ratepayers' heating and cooling needs. The intent is for the results of this Call for Partnerships to shape the development of a Field Demonstration Project for CCHPs, funded and administered through the Environmental & Economic Research & Development (EERD) Program.

### **CCHP FIELD DEMONSTRATION PROJECT: PARTNER QUESTIONS**

In Wisconsin, CCHP technology has seen limited uptake in the market and Focus offerings to date. As referenced in the description section, this CFP intends to address market barriers for CCHP technology by facilitating 5 - 10 customer field demonstrations and the associated installation, data collection, performance monitoring and reporting activities.

Although electricity and natural gas savings are the ultimate objectives of Focus activities and a likely metric for project performance (if an RFP is issued), increased customer engagement and satisfaction is another priority. Resource constraints will initially limit the scale of the project to approximately 5 - 10 customer installation sites, but this could expand as resources and partners are identified and developed.

To demonstrate the success of this project, Monitoring and Verification (M&V) (ex. sub-metering equipment) will be a priority. It is anticipated that other measures of impact will be necessary for and used to gain insights on the outcomes and performance of the project; for example, CCHP system control (thermostat) and configuration.

Focus seeks information and resources to assist in accelerating the adoption of CCHP technology in Wisconsin, along with a better understanding of CCHP equipment that is or would be incentivized by Focus. We request that respondents provide answers to sections 1 - 7 below, which are intended to highlight areas of potential support. Guidelines for submission can be found in Appendix A (electronic responses or phone interview).

1. CCHP technology and training materials specific to the Wisconsin/Upper Midwest market

1.1. Does your organization/company have any of the following relevant to Wisconsin/Upper Midwest that it would be willing to share?

- Technology manuals
- Training materials
- Product resources
- Other

1.2. Would your organization/company be willing to coordinate with the Focus Program to develop technology briefs or training materials? For example, this could be in the form of Trade Ally trainings or promoting Focus via media channels.

1.3. Would your organization/company be willing to advise and inform recipients of equipment on any of the following for CCHP systems:

- Proper operations
- Maintenance
- Controls/Scheduling
- Maximizing energy savings

2. Technical support for product installation, metering, and performance verification testing

2.1. Have you developed any installation or product support resources that would supplement the above examples for CCHP technology?

2.2. How do you address backup heating system design and installation?

2.3. Does your organization/company have any examples of partnering with utility programs to implement demonstration projects?

2.4. Does your organization/company have any resources or data related to:

- The development of energy savings algorithms
- Technical reference manuals
- Other research related to Wisconsin, the Midwest region or the nation?
- Ex. NEEP [Guide](#) to Sizing & Selecting Air-Source Heat Pumps in Cold Climates
- Ex. NEEP [Guide](#) to Installing Air-Source Heat Pumps in Cold Climates

3. Sharing data and findings from completed CCHP projects in Wisconsin/Upper Midwest

- 3.1. Does your organization/company have any CCHP products installed in Wisconsin/Upper Midwest?
- 3.2. Would your organization/company be willing to share performance data and/or other CCHP project details?
- 3.3. Would your organization/company be able to supply a list and/or staff contact information for projects that are pending, under construction or recently completed?
- 3.4. Would your organization/company be able to broadly characterize what existing HVAC systems CCHP technology is replacing, based on market feedback?
4. Contractor and consumer guidance on various heat pump source (air-, water-, ground-) and equipment (ducted, ductless mini-split, radiant floor) types
  - 4.1. Would your organization/company be willing to share any data related to the market characterization of CCHP applications in Wisconsin/Upper Midwest? For example, the percentages of installs by product/equipment type.
  - 4.2. In your experience, are any of these applications not well suited for the WI market? For example, weather and price would be factors for each source and equipment type.
5. Direct field demonstration project financial, in-kind or other support
  - 5.1. Would your organization/company be willing to provide financial, in-kind or other support for this demonstration project? Examples include:
    - Direct financial support
    - Discounted equipment or materials
    - Technical support (component selection, sizing, performance verification testing)
    - Installation, monitoring and data collection activities
    - Collaboration on data needs to maximize the value of demonstration projects
  - 5.2. If utility data isn't available for recipients of field demonstrations, would you be able to support metering or data collection efforts associated with understanding site-specific heating/cooling loads and energy consumption of the CCHP equipment, as compared to existing installed equipment? This could be in the form of data logging, sub-metering, weather normalization, etc.
6. Post-demonstration technical and market assessment of CCHP potential within the Focus on Energy portfolio and customer segments
  - 6.1. Would your organization/company be willing to coordinate on technical reports and assessments that would result from this field demonstration project?
  - 6.2. Would your organization/company be interested in learning more about how Focus on Energy determines energy savings and characterizes energy efficiency "measures"?
  - 6.3. Would your organization/company be willing to provide any data or resources that effectively demonstrate energy savings of this technology via primary research, M&V studies, metering, etc.?
  - 6.4. Would your organization/company be willing to share market data related to CCHP sales and/or market potential?
7. Participation in multi-stakeholder engagements to optimize Focus on Energy administration, implementation, evaluation, utility partnerships and customer value
  - 7.1. Would your organization/company be willing to participate in multi-stakeholder design, planning, execution and reporting of this project?
  - 7.2. Would your organization/company be willing to participate in the scoping, budgeting and design of the Field Demonstration Project and associated RFP? For example, identifying anticipated cost per participant, data collection needs/costs, synthesis with broader research efforts, etc.

- 7.3. Would your organization/company be willing to support addressing participant concerns related to equipment performance or impacts to their facility and occupants?
- 7.4. If an RFP for this field demonstration project is released, would your organization/company be interested in bidding?

*Note to Potential Partners:* This CCHP Field Demonstration Project effort is separate (but related) to the recent Midstream Distributor Offering supply channel outreach and engagement. For questions regarding this distinction, please contact Scott Semroc (scott.semroc@focusonenergy.com).

**Please feel free to provide any additional feedback you may have on this concept as well. Thank you for your time.**

## **Appendix A:**

### **Focus Forward & EERD BACKGROUND:**

The Program Administrator for Focus (Focus) launched a new product development process in Quad III (2019-2022) called Focus Forward. The Focus Forward Program targets research and/or development projects that will benefit the design and delivery of Focus. The Focus Forward Program has issued this CFP to identify partners that would inform development of a future Request for Proposals (RFP) to select an implementer for the CCHP Field Demonstration Project. This and other research projects are funded by the Environmental & Economic Research & Development (EERD) program. More information on EERD can be found at <http://www.focusonenergy.com/about/research>.

Focus is funded by Wisconsin's investor-owned energy utilities, as required under Wis. Stat. § 196.374(2)(a) and participating municipal and electric cooperative utilities. Since 2001, Focus has been:

- Educating customers about natural gas and electric energy savings opportunities
- Installing cost-effective energy efficiency and renewable energy projects
- Capturing achieved energy savings through incentives
- Providing energy use and efficiency information
- Offering skilled technical customer and market support for energy-efficient measures
- Eliminating energy waste by reducing the need to purchase coal and natural gas from other states, lessening the need to build additional power plants
- Creating Wisconsin jobs, upgrading local infrastructure and improving the environment
- Delivering more than \$1 billion worth of net economic benefits to Wisconsin

With Focus resources and financial incentives, customers can participate in an offering to complete projects that otherwise would not have been completed. The Program Administrator works with Implementers who, in turn, work with Trade Allies to bring Focus benefits to Residential and Business Customers.

Additional information on the Focus offerings can be found at [www.focusonenergy.com](http://www.focusonenergy.com).

**DISCLAIMER AND IMPORTANT NOTES:** The CFP is not currently a funding opportunity and Focus is not accepting applications for this work. It's possible that Focus will release a Request for Proposals (RFP). However, there is no guarantee that an RFP will be issued because of this CFP. This is a Call for Partnerships only. Neither Focus nor the Program Administrator will pay for information provided under this CFP. This CFP is not a solicitation for application for financial assistance or incentives.

**PROPRIETARY INFORMATION:** Because information received in response to this CFP may be used to structure future offerings and RFPs and/or otherwise be made public, **respondents must NOT include any information in their responses that might be considered business sensitive, proprietary or otherwise confidential.** Responses must be submitted with the understanding that the contents may be publicly disclosed, and in the event of a public disclosure, Focus will NOT notify respondents or provide any opportunity to revise or redact submitted information. During the CFP stage, responses will not be shared with other market actors during the review process. The CFP intends to characterize partners' willingness to support at a high level while avoiding the collection of sensitive or proprietary data.

**RESPONSE GUIDELINES:** All responses to the CFP can be submitted electronically to [rfp@focusonenergy.com](mailto:rfp@focusonenergy.com) with the subject line "Cold Climate Heat Pump Field Demonstration Project CFP Response" no later than March 13, 2020. Respondents also have the option to provide answers through a phone interview, which can be requested via email to [scott.semroc@focusonenergy.com](mailto:scott.semroc@focusonenergy.com) or by phone at (608)-293-1376. Phone calls may be recorded to accurately reflect responses when transcribed. If requesting the phone interview option, please submit request by EOD Friday, March 6th.

Respondents must provide the following information on page one of their response to this CFP (or verbally if conducting a phone interview):

- Company/organization name
- Company/organization contact
- Contact's address, phone number, email address

#### Appendix B:

#### ADDITIONAL RESOURCES:

"CcASHP Specification & Product List | NEEP." Northeast Energy Efficiency Partnerships (NEEP), [neep.org/ASHP-Specification](http://neep.org/ASHP-Specification). Accessed 4 Feb. 2020.

"Cold Climate Air Source Heat Pump." Minnesota Commerce Department - Energy Resources, Nov. 2017, [www.mncee.org/MNCEE/media/PDFs/86417-Cold-Climate-Air-Source-Heat-Pump-%28CARD-Final-Report-2018%29.pdf](http://www.mncee.org/MNCEE/media/PDFs/86417-Cold-Climate-Air-Source-Heat-Pump-%28CARD-Final-Report-2018%29.pdf).

(DOE1) Department of Energy. "Cold Climate Air-Source Heat Pumps: An Innovative Technology to Stay Warm in Winter and Cool in Summer." Energy.Gov, 14 Apr. 2017, [www.energy.gov/eere/buildings/articles/cold-climate-air-source-heat-pumps-innovative-technology-stay-warm-winter](http://www.energy.gov/eere/buildings/articles/cold-climate-air-source-heat-pumps-innovative-technology-stay-warm-winter).

(DOE2) Department of Energy. "Split-System Cold Climate Heat Pump." Energy.Gov, [www.energy.gov/eere/buildings/downloads/split-system-cold-climate-heat-pump](http://www.energy.gov/eere/buildings/downloads/split-system-cold-climate-heat-pump). Accessed 4 Feb. 2020.

Department of Energy. "Field Performance of Inverter-Driven Heat Pumps in Cold Climates ." Energy Efficiency & Renewable Energy (EERE), Sept. 2015, [www.energy.gov/sites/prod/files/2015/09/f26/ba-case-study-inverter-driven-heat-pumps-cold.pdf](http://www.energy.gov/sites/prod/files/2015/09/f26/ba-case-study-inverter-driven-heat-pumps-cold.pdf).