REQUEST FOR PROPOSAL (RFP) FOR

Tennessee Valley Authority

Revised Industrial Waste Heat Recovery & Combined Heat and Power Project

August 3, 2015

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REQUEST FOR PROPOSAL (RFP) FOR
Tennessee Valley
Authority (TVA)
Revised Industrial
Waste Heat Project

Background

The Tennessee Valley Authority (TVA), a corporation created and existing by virtue of the Tennessee Valley Authority Act of 1933, as amended (TVA Act) and owned by the U.S. government, provides electricity for nine million people in parts of seven southeastern states. TVA has renewed its vision to lead both the Tennessee Valley region and the nation toward a cleaner and more secure energy future with increased reliance upon cleaner energy sources and energy efficiency.

In April 2011, TVA entered into clean air agreements with the Environmental Protection Agency (EPA), four states and three environmental groups ("EPA Agreements"). These Agreements provide for the implementation of environmental mitigation projects that support cleaner air across the region. TVA chose projects to align with its vision for a cleaner energy future. This Revised Industrial Waste Heat Recovery (WHR) and Combined Heat and Power (CHP) project is one of the environmental mitigation projects to be implemented under the EPA Agreements. More information on the EPA Agreement can be found at: (http://www.epa.gov/compliance/resources/agreements/caa/tva-ffca.pdf).

Purpose

This Project seeks to develop approximately five MW of electricity generation through the use of WHR technologies or CHP technologies through leveraging funds to the greatest extent possible with one or more Direct Serve Industrial (DSI) or Local Power Company (LPC) served five MW or greater industrial customers. Offerors will be responsible for the development, design, engineering, construction, operation and maintenance of WHR or CHP system in which clean energy is generated and consumed on site. Collaboration and engagement with major industrial customers, other organizations and TVA will be key to the success of this initiative. TVA expects the life of the Project to be twelve years during which parameters such as megawatt hours, energy savings, and emission reductions will be documented.

Specific objectives include:

- Increasing TVA's targeted industrial customers' access to clean energy from WHR or CHP
- Providing highly leveraged funding opportunities for new clean energy in the Valley
- Providing a model for future innovative and cost-effective clean energy technologies

Waste Heat Recovery (WHR) to Power

WHR generally refers to the process whereby waste heat already being emitted by an industrial facility is captured and converted into clean electricity. It is a form of distributed energy produced and used at the end-user's facility. WHR is an important resource for providing clean energy without additional emissions, improving industrial energy efficiency, and providing benefits to the electric grid. Benefits of WHR include:

- For electric utilities
  - Reduced energy losses in transmission lines
  - Reduced upstream congestion on transmission lines
  - Deferred Transmission and Distribution infrastructure investments
  - Improved grid reliability
  - Ancillary benefits including voltage support and stability, contingency reserves and black start capability
- For industry
  - Improved energy efficiency
  - Improved power quality and reliability
  - Improved energy cost predictability
  - Business continuity
- For society
  - Cleaner air
  - Energy security
  - Economic development

Waste Heat Recovery Technologies

Generating power from waste heat involves using the waste heat to create mechanical energy that drives an electric generator. The efficiency of waste heat converted to power generation is heavily dependent on the temperature of the waste heat source. In general, power generation from waste heat has been limited to only medium to high temperature waste heat sources. However, advances in alternate power cycles may increase the feasibility of generation at low temperatures. The following are the basic WHR technologies:

Steam Rankine Cycle

The most frequently used system for power generation from waste heat involves using the heat to generate steam, which then drives a steam turbine. The traditional steam Rankine cycle is the most efficient option for waste heat recovery from exhaust streams with temperatures above approximately 700˚F [370˚C].

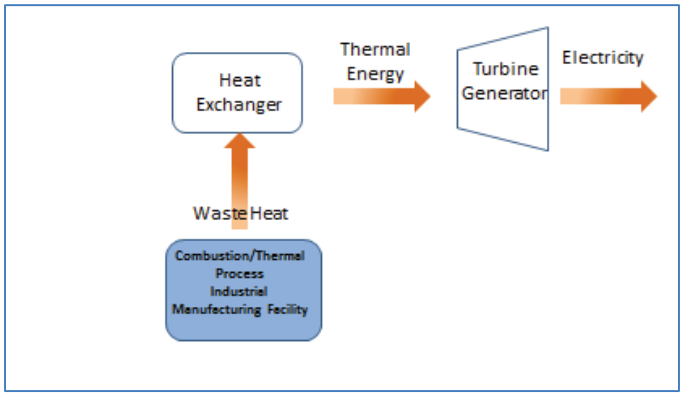
Organic Rankine Cycle

The Organic Rankine Cycle (ORC) operates similar to the steam Rankine cycle, but uses an organic working fluid instead of steam. Options include silicon oil, propane, haloalkanes (e.g., "freons"), isopentane, isobutane, pxylene, and toluene, which have a lower boiling point and higher vapor pressure than water. This allows the Rankine cycle to operate with significantly lower waste heat temperatures — sometimes as low as 150˚F [66˚C].

Kalina Cycle

The Kalina cycle is a variation of the Rankine cycle, using a mixture of ammonia and water as the working fluid. A key difference between single fluid cycles and cycles that use binary fluids is the temperature profile during boiling and condensation. For single-fluid cycles (e.g., steam or organic Rankine), the temperature remains constant during boiling. As heat is transferred to the working medium (e.g., water), the water temperature slowly increases to boiling temperature, at which point the temperature remains constant until all the water has evaporated. In contrast, a binary mixture of water and ammonia (each of which has a different boiling point) will increase its temperature during evaporation.

Example of a Waste Heat Recovery System



Combined Heat & Power

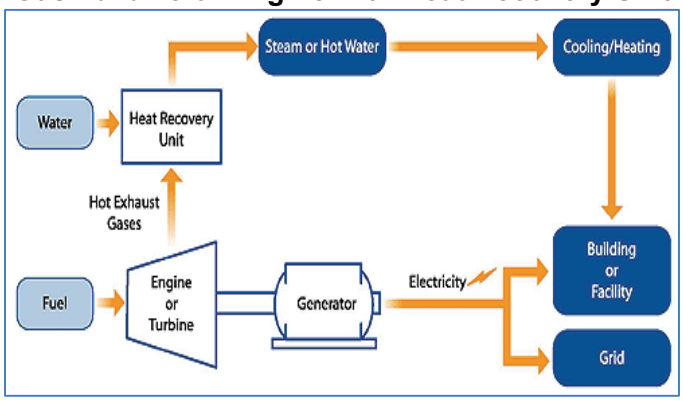
Combined heat and power (CHP)[1] is an efficient and clean approach to generating electric power and useful thermal energy from a single fuel source. CHP places power production at or near the end-user's site so that the heat released from power production can be used to meet the user's thermal requirements while the power generated meets all or a portion of the site electricity needs. Applications with steady demand for electricity and thermal energy are potentially good economic targets for CHP deployment. Industrial applications, particularly in industries with continuous processing and high steam requirements, are very economic and represent a large share of existing CHP capacity today. Examples of CHP fuel sources include natural gas, biomass or biogas. CHP is an integrated energy system that can be modified depending upon the needs of the industrial customer. CHP provides:

- Onsite generation of electrical and/or mechanical power.
- Thermal energy for heating, cooling, dehumidification, or process applications.
- System integration for a variety of technologies, thermal applications, and fuel types into existing building infrastructure.

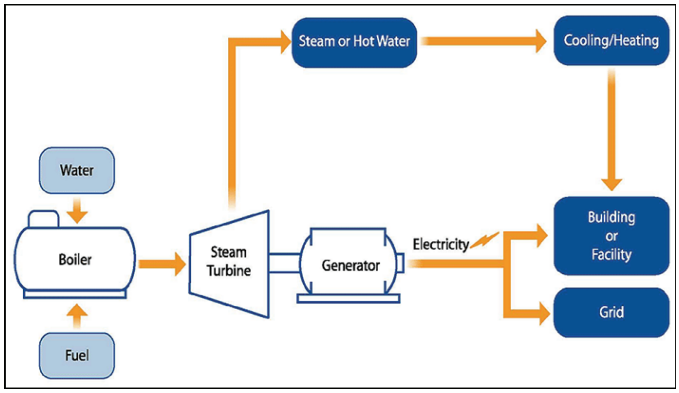
The two most common CHP system configurations are:

- ∞ Gas turbine/engine with heat recovery unit
- ∞ Steam boiler with steam turbine

Gas Turbine or Engine with Heat Recovery Unit



Steam Boiler with Steam Turbine



The direct benefits of CHP for facility operators are:

- **Reduced energy related costs** – providing direct cost savings
- **Increased reliability** and decreased risk of power outages due to the addition of a separate power supply.
- **Increased economic competitiveness** due to lower cost of operations.

CHP Technologies

All of the technologies described convert a fuel into electric power. The energy in the fuel that is not converted to electricity is released as heat. All of the technologies, except fuel cells, are a class of technologies known as *heat engines*. Heat engines combust the fuel to produce heat, and a portion of that heat is utilized to produce electricity while the remaining heat is exhausted from the process. Fuel cells convert the energy in the fuel to electricity electrochemically; however, there are still inefficiencies in the conversion process that produce heat that can be utilized for CHP. Included is a short introduction of each provided here:

Reciprocating engines

Reciprocating engines make up over half of the CHP systems in place, though, because of the generally smaller system sizes, less than three percent of total capacity. The technology is common place – used in automobiles, trucks, trains, emergency power systems, portable power systems, farm and garden equipment. Reciprocating engines can range in size from small hand-held equipment to giant marine engines standing over five-stories tall and producing the equivalent power to serve 18,000 homes. The technology has been around for more than 100 years. The maturity and high production levels make reciprocating engines a low-cost reliable option. Technology improvements over the last 30 years have allowed this technology to keep pace with the higher efficiency and lower emissions needs of today's CHP applications. The exhaust heat characteristics of reciprocating engines make them ideal for producing hot water.

Steam turbine

These systems represent 32 percent of U.S. installed CHP capacity; however, the median age of these installations is 45 years old. Today, steam turbines are mainly used for systems matched to solid fuel boilers, industrial waste heat, or the waste heat from a gas turbine (making it a combined cycle). Steam turbines offer a wide array of designs and complexity to match the desired application and/or performance specifications ranging from single stage backpressure or condensing turbines for low power ranges to complex multi-stage turbines for higher power ranges. Steam turbines for utility service may have several pressure casings and elaborate design features, all designed to maximize the efficiency of the system. For industrial applications, steam turbines are generally of simpler single casing design and less complicated for reliability and cost reasons. CHP can be adapted to both utility and industrial steam turbine designs.

Gas turbines

Gas turbines make up over 60 percent of CHP system capacity. It is the same technology that is used in jet aircraft and many *aeroderivative* gas turbines used in stationary applications are versions of the same engines. Gas turbines can be made in a wide range of sizes from microturbines (to be described separately) to very large *frame* turbines used for central station power generation. For CHP applications, their most economic application range is in sizes greater than five MW with sizes ranging into the hundreds of megawatts. The high temperature heat from the turbine exhaust can be used to produce high pressure steam, making gas turbine CHP systems very attractive for process industries.

Microturbines

Microturbines are very small gas turbines. They were developed as stationary and transportation power sources within the last 30 years. They were originally based on the

truck turbocharger technology that captures the energy in engine exhaust heat to compress the engine's inlet air. Microturbines are clean-burning, mechanically simple, and very compact. There were a large number of competing systems under development throughout the 1990s. Today, following a period of market consolidation, there are two manufacturers in the United States providing commercial systems for CHP use with capacities ranging from 30-250 kW for single turbine systems with multiple turbine packages available up to 1,000 kW.

Fuel cells

Fuel cells use an electrochemical or battery-like process to convert the chemical energy of hydrogen into water and electricity. In CHP applications, heat is generally recovered in the form of hot water or low-pressure steam (<30 psig) and the quality of heat is dependent on the type of fuel cell and its operating temperature. Fuel cells use hydrogen, which can be obtained from natural gas, coal gas, methanol, and other hydrocarbon fuels. Fuel cells are characterized by the type of electrochemical process utilized, and there are several competing types, phosphoric acid (PAFC), proton exchange membrane (PEMFC), molten carbonate (MCFC), solid oxide (SOFC), and alkaline (AFC). PAFC systems are commercially available in two sizes, 200 kW and 400 kW, and two MCFC systems are commercially available, 300 kW and 1200 kW. Fuel cell capital costs remain high due to low-volume custom production methods, but they remain in demand for CHP applications because of their low air emissions, low-noise, and generous market subsidies.

Combined heat and power (CHP) offers many benefits over separate heat and power for a wide variety of applications and users, such as:

- Industrial manufacturers
- Institutions
- Commercial buildings
- Municipalities
- Residential structures

The above sectors are well-suited to consider the use of CHP because:

1. CHP technology is a strong technical fit for these facilities' needs; and
2. CHP systems can potentially generate significant bottom-line cost savings for these industries and organizations

CHP - Utilization of Waste Steam

A heat recovery steam generator (HRSG) is an energy recovery heat exchanger that recovers heat from a hot gas stream. It produces steam that can be used in a process (cogeneration) or used to drive a steam turbine (combined cycle). HRSGs consist of four major components: the economizer, evaporator, superheater and water preheater. The different components are put together to meet the operating requirements of the unit. HRSGs can be categorized by a number of ways such as direction of exhaust gases flow or number of pressure levels. Based on the flow of exhaust gases, HRSGs are categorized into vertical and horizontal types. In horizontal type HRSGs, exhaust gas flows horizontally over vertical tubes whereas in vertical type HRSGs, exhaust gas flow vertically over horizontal tubes. Based on pressure levels, HRSGs can be categorized into single pressure and multi pressure. Single pressure HRSGs have only one steam drum and steam is generated at single pressure level whereas multi pressure HRSGs employ two (double pressure) or three (triple pressure) steam drums. As such triple pressure HRSGs consist of three sections: an LP (low pressure) section, a reheat/IP (intermediate pressure) section, and an HP (high pressure) section. Each section has a steam drum and an evaporator section where water is

converted to steam. This steam then passes through superheaters to raise the temperature beyond the one at the saturation point.

Scope of Work

This Project will provide no more than $7,000,000 to large industrial customer(s) to help offset the cost of the development, design, engineering, construction and operation of WHR or CHP project(s) that produce approximately five MW. All electricity generated from the WHR or CHP system will be consumed on site at the industrial customer's facility. The selected WHR or CHP project(s) will have a useful operating life (EUL) of at least twelve years. Any funding or costs required in an amount greater than $7,000,000 in order to complete the WHR or CHP system will be the responsibility of the industrial customer (Contractor) and shall not relieve Contractor from completing the system on agreed upon schedule(s) set forth in applicable Work Releases. These costs include all costs associated with the WHR or CHP system equipment and associated components and any other costs required to complete construction, receive all necessary approvals, and commence generation. These costs also include the Operations and Maintenance ("O&M") agreement to maintain the system for a minimum of twelve years.

TVA will provide general technical oversight and financial assistance, not to exceed $7,000,000, by issuing progress-based payments during the design, construction and commissioning period. TVA will also conduct appropriate measurement and verification activities to determine the performance of the WHR or CHP system including amount of electricity generated, energy efficiency and emissions avoidance.

As a result of this Project being part of the EPA Compliance projects, Offerors should be advised that the proposing entity shall preserve all data related to implementation of the Project (including records and documents in electronic form) in its possession and/or control until six years after the completion of the Project (twelve years post commissioning) and shall be able to produce such records for TVA upon not more than ten days' notice and should state agreement to that data and records retention requirement within their response.

All organizations intending or considering submitting bids to this RFP are asked to remit by September 4, 2015 an "Intent to Bid" form (See Appendix II) to the designated RFP Contact Person, Brad Wagner at brwagner0@tva.gov. Only those submitting this form will receive updates to the RFP.

The Scope of this Project shall include the following activities to be conducted by Project awardee(s) (Contractor):

Preliminary Assessment

The purpose of the preliminary assessment is to provide enough information on project economics to make decisions regarding investment in WHR or CHP, while minimizing the amount of upfront time and money spent. The primary tasks are to identify a preliminary WHR or CHP system size, to calculate simple payback, and to determine the general cost range of system installation and maintenance.

Selection of Technology

Based on the results of the preliminary assessment, the Offeror will select the WHR or CHP technology, power block technology, primary equipment and configuration, and will contact vendors to assess price, performance, schedules, and guarantees.

Permitting

The Offeror will obtain all environmental permits, site permits/licenses and other required approvals for the Project.

Environmental Review and Acceptability

A. All interested parties are urged to consult TVA's National Environmental Policy Act (NEPA) Compliance procedures prior to submitting an Application to determine the likelihood that, and the timeline in which, their project can be reviewed for environmental acceptability. This process typically involves preliminary determinations by TVA of:
   a) whether or not provisions of the NEPA and related laws apply to the decision; and,
   b) if so, which of three levels of review would be initiated. TVA's implementing procedures for NEPA are available at www.tva.com/environment/reports/pdf/tvanepa_procedures.pdf.

B. The Offeror is responsible for all costs associated with the conduct of, and preparation of documentation for, the appropriate level of environmental review. If the provisions of NEPA apply, Offerors may:
   a. use TVA as the preparer;
   b. use a TVA pre-qualified contractor; or,
   c. propose a contractor for the Project by submitting the contractor's qualifications for evaluation and determination of acceptability by TVA

Neither the Application nor TVA's Revised Industrial WHR or CHP Project covers any aspect of the NEPA review. These reviews must be arranged separately.

Detailed Front End Engineering Design (FEED)

FEED will include size and location of the WHR or CHP equipment, design drawings that include process flow diagrams, equipment specifications, monitoring and control specification, piping and wiring, and tie-in to existing systems. Project schedule will also be developed.

Economic Evaluation

The Offeror will develop a project economic evaluation that should include at a minimum cash flows, capital requirements, net present value, payback schedule, depreciation, and rate of return. Projects that have a payback of less than three years are not eligible for funding. Consumption of Generated Output Responses that include total consumption of all energy produced by the industrial waste heat utilization system will be evaluated as having an advantage over responses that have excess generation not consumed on-site. Responses will not be disqualified if excess electricity is produced. Requirements for exporting excess electricity can be found in Appendix I at the end of this document.

Subcontractor Selection

Offeror will determine which project tasks will be subcontracted. Review the capabilities of individual subcontractors; consider previous project experience and track records.

Equipment Specification and Procurement

The Offeror will prepare WHR or CHP equipment specifications for procurement. Specifications will define the performance requirements of the equipment, materials of construction, fabrication methods and procedures, and test and inspection requirements. Proper definition of these items will ensure that the equipment supplied will meet the performance requirements of the plant.

Construction

The Offeror will be responsible for all design, engineering, and construction activities necessary to properly and safely build and install the WHR or CHP system, the associated power generation system, and balance of plant.

System Prove Out and Commissioning

The Offeror will be responsible for conducting subsystem shakedown and the WHR or CHP system test-runs to verify proper system design and installation for safe commercial operation. Upon completion of any electric system upgrades required to interconnect the WHR or CHP system to the industrial facility's electric system, and after the WHR or CHP system has been verified as operational per design specifications and proven to be safe, then the Offeror will commission the system on the commercial operation date.

Operations and Maintenance (O&M)

The Offeror will be responsible for the safe O&M of the WHR or CHP system so that it provides expected energy savings and reduces emissions as detailed in the proposal by running reliably and efficiently. Proposals must include a detailed maintenance plan as a part of their submittal, as well as examples of how they have successfully maintained other processes within their organizational facilities. Offeror's O&M plan should detail how it will ensure long term operations of the system to meet /or exceed the EUL of the equipment of 12 years.

Award and Negotiation

Award

Any award resulting from this solicitation will be made to the Offeror(s) whose proposal is determined to be most advantageous to TVA. TVA may make an award based on initial offers, and without discussion, or after limited discussions or negotiations. It is therefore emphasized that all proposals should be submitted with the most favorable terms to TVA that the Offeror can provide. TVA reserves the right to make multiple or no awards and to award all or a portion of the work scope set forth in this solicitation. Contract provisions are dependent on multiple factors, including, but not limited to, the type of entities party to the contract, any alterations in investment structure, and the proposed location. The Contract

will be designed to comply with existing laws, regulations and any existing contractual obligations with TVA, if applicable.

Informalities

TVA reserves the right to waive informalities and minor irregularities in proposals received.

Separate Negotiations

TVA reserves the right to negotiate separately with any Offeror.

Reject Proposals and Cancel Solicitation

TVA reserves the right to reject any or all proposals received as a result of this solicitation and to cancel this solicitation at any time.

Proposal Content

Cover Letter

- Offeror (Primary Contact) Name
- Organization
- Mailing address
- WHR or CHP Facility address
- Email address
- Phone number
- Project rated output, MW
- Estimated net annual electric generation, MWh
- Total cost of Project
- Total funds provided by Offeror
- List of all team members
- Experience of team members with WHR or CHP system installation and maintenance
- Project name
- Brief project executive summary

Project Narrative

The Offeror will write a clear and concise description of the overall project approach, including specific activities that will take place. Particular attention should be paid to description of plans, strategies, methods and activities that enable the team to be successful in meeting the WHR or CHP Project goals.

Team Qualifications and Experience

The proposal shall demonstrate the strength of the collaborative partnership by providing a brief biography for each key person and/or subcontractor on the project team, detailing experience on relevant projects.

Technical Information

- Offeror shall supply documents, drawings, calculations, etc., sufficient to provide:
    - System description

- WHR or CHP core technology
- Power block technology
- Process flow diagram and heat/material balance
- Capacity rating, MW Estimated net annual electric generation, MW Facility nominal load, MW
- Facility operating schedule
- Estimated annual operational availability of WHR or CHP system, (%)
- Site/location
- Site arrangement/equipment layout
- Estimated annual generation
- Project WHR or CHP system life, Years
- Equipment details & description
- Vessels (feedwater, steam drum, etc.)
- Heat exchangers (economizers, evaporators, etc.)
- Pumps
- Valves
- Ducts
- Insulation
- Turbine
- Generator
- Environmental controls (baghouse, etc.)
- Expanders
- Instrumentation, controls, electrical
- Electrical equipment schedule and layout, including interconnection

Budget Information

The proposal will include the estimated cost to perform the work. The template below is suggested, but alternative methods of representing the project budget are acceptable. The Offeror shall also disclose the both amount and sources of additional funds that is intended to use towards the project. These additional funds may be funds made available by the proposing entity itself, but could also include money allocated under other EPA Agreements to the states or under government incentive programs.

SITE DEVELOPMENT	**Cost**
Design	
Permits	
PROJECT DEVELOPMENT	
Consulting	
Proposal development	
Project Management	
CHP SYSTEM	
Vessels	
Heat Exchangers	
Pumps	
Construction	
Balance of Plant	

POWER BLOCK	
Turbine	
Generator	
CONSTRUCTION	
ANNUAL OPERATING EXPENSES	

OTHER FUNDING SOURCES	**AMT**
Estimated revenue DPP*	
Federal, state or local funding	

* Dispersed Power Production

Maintenance Plan

The proposal shall include a proposed maintenance plan for the successful operation of the WHR or CHP facility and equipment that details how the organization will meet and/or exceed the EUL of the equipment of twelve years.

Legal Authority

Please identify the proposing entity's (1) legal authority for accepting the funds TVA would provide for this Project, and (2) legal authority to conduct the project.

Agreement for Data and Records Retention

Please state your formal agreement to preserve all data related to implementation of the WHR or CHP project (including records and documents in electronic form) in its possession and/or control until six years after the completion of the project (twelve years post commissioning) and shall be able to produce such records for TVA upon not more than ten days' notice.

Letters of Support (optional)

Please include a signed letter of support from a representative of each member organization, as applicable, comprising the proposal team.

Schedule (subject to adjustment at TVA's option)

Milestone	Date
RFP	August 3, 2015
Submission of questions	August 3 - 30, 2015
Intent to Bid form due	September 4, 2015
Responses to questions posted to Online Connections	September 11, 2015
Conduct WHR or CHP Webinar Workshop	September 16, 2015
Proposals Due	December 7, 2015
Contract award(s)	March, 2016
Environmental permitting and reviews	August, 2016

Detailed design and engineering package	December, 2016
Design review and approval	May, 2017
Equipment procurement	December, 2017
Begin site preparation	June, 2018
Begin construction, development of operating procedures	October, 2018
Construction complete	September, 2019
System prove-out, operations training	December, 2019
Commercial Operation	April, 2020

Evaluation

This RFP does not commit TVA to make an award. TVA reserves the right to select the proposal(s) considered to be in the overall best interest of TVA. TVA reserves the right to reject any or all proposals if such action is in the best interest of TVA.

In comparing proposals and making awards, TVA may consider various factors in addition to cost, such as the benefit to the TVA power system, relative quality and adaptability of supplies or services, financial responsibility, safety history, skill, experience, past performance, record of integrity in dealing, technical capability, and time of delivery.

Evaluation Factors

TVA will make an award based on the best overall value to TVA. This may include, but not be limited to:

- ∞ Capital cost contribution from Offeror
- ∞ Ability to meet stated emissions reductions
- ∞ Ability to meet TVA schedule
- ∞ Technology readiness
- ∞ Experience and past performance
- ∞ Expected performance of the WHR or CHP system
- ∞ Ability to meet TVA technical requirements and specifications
- ∞ Quality of products or services offered
- ∞ Agreement to terms and conditions acceptable to TVA

Financial Capability

As part of its evaluation, TVA may investigate the qualifications, references, and facilities of an Offeror, including an inspection of an Offeror's offices, distribution, and manufacturing facilities. By submitting a proposal, the Offeror hereby agrees to cooperate with TVA in conducting any such investigation. Further, Offeror agrees that TVA may perform survey or visit to the Offeror's facilities, and Pre-award cost audit.

Acceptable Proposals

Offerors must contain the information requested and shall be in sufficient form and detail to enable a comprehensive understanding and analysis. Prior to evaluation, the Contracting Officer may review proposals to determine compliance with preparation instructions, terms and conditions, and other administrative conditions. Failure to comply the requirements of this solicitation may cause a proposal to be rejected without further consideration.

In addition to any other evaluation criteria, Offerors may be evaluated on their financial condition and strength to support TVA's requirements. This evaluation may be done on a pass/fail basis.
Proposals which, in TVA's sole judgment, do not have the financial capabilities to support TVA's requirements will not be considered for award.

Evaluation Process and Discussions

TVA will evaluate the proposals using numeric scoring and a total score will be computed for each proposal. Using these scores, TVA will establish a competitive range.

TVA may, in its discretion, request clarifications or conduct discussions with any or all Offerors , or only those Offerors in the competitive range.

Inquiries, Information, or Questions

Inquiries or questions concerning this solicitation are to be submitted in writing and only to the Contracting Officer. Any information furnished to an Offeror concerning this solicitation will be furnished promptly to all other Offerors as an amendment to the solicitation if that information is necessary or if the lack of the information would be materially prejudicial to any other Offeror. Any oral explanations or instructions given by TVA will not be binding.

Upon receipt of this solicitation, Offerors are not to contact any other TVA personnel than the Contracting Officer designated in this solicitation for information, questions, explanation, or detail.

Cost of Proposal Preparation

TVA assumes no liability to pay any Offeror direct or indirect costs incurred in the development, submission, evaluation, or negotiation of its proposal.

TVA Contact Information

The designated RFP Contact Person is:

Brad Wagner
Tennessee Valley Authority Contract Manager
1101 Market Street, LP 4T Chattanooga, TN 37402
brwagner0@tva.gov Email
(423) 751-2315 Telephone

By submission of a proposal, Offeror agrees with TVA's method of conducting competition and TVA's evaluation criteria.

Offerors are responsible for submitting proposals, as well as any modifications or withdrawals, by the Proposal Due date and time set forth above. Any proposal, modification, or withdrawal received by the Contracting Officer after the Proposal Due date and time set forth above is "late" and will not be considered. If a proposal, modification, or withdrawal is transmitted electronically and it was received at the initial point of entry into the TVA infrastructure not later than the Proposal Due date

and time set forth above it will be considered. Proposals may be withdrawn by written notice provided the written notice is received before the Proposal Due date and time.

The proposal must be signed by an official authorized to bind the Offeror. The individual who is authorized to conduct negotiations on behalf of the Offeror must be identified in the proposal.

Brad Wagner is the only TVA representative authorized to provide an explanation or interpretation of this solicitation. Upon receipt of this solicitation, you are to immediately cease contact with all other technical organizations either on site or in a corporate office with regard to this solicitation. Any violation of this direction will be basis for disqualification.

APPENDIX I

Consumption of Generated Output

Responses that include total consumption of all energy produced by the combined heat and power system will be evaluated as having an advantage over responses that have excess generation not consumed on-site, but responses will not be disqualified if excess electricity is produced. The Offeror will be required to comply with the requirements for exporting excess electricity to the grid and will be required to comply with the requirements of the Dispersed Power Production (DPP) Guidelines, including execution of a power purchase agreement with TVA. Information on the DPP can be found at http://www.tva.gov/abouttva/pdf/dispersed.pdf. Further, the Offeror will include any earned revenue from the DPP Contract within the Budget Information.

Interconnection

While the preference is for all generation to be utilized on site, the Offeror shall comply with TVA Small Generator Interconnection Procedures (SGIP), applicable standards, and local building codes. Current TVA SGIP guidelines for WHR and CHP systems connected directly to the TVA system are available at http://www.oatioasis.com/tva/tvadocs/TVASGIP.pdf. For an Offeror connecting to a local power company's distribution system, Offeror should consult with the local power company (distribution utility) regarding requirements for interconnection on that system. Offerors are responsible for all costs, whether through TVA or a local power company, for interconnection studies and electric system upgrades required to interconnect waste heat recovery generated electricity systems to the electric system.

APPENDIX II – Intent to Bid

INTENT TO BID FORM

_____
(Company/Organization) intends to submit a response to the

Tennessee Valley Authority **Industrial Waste Heat Recovery & Combined Heat and Power Project**

_____
Corporation/Company Name

_____
Legal Signatory for Corporation/Company (print name)

_____
Signature

_____
Date

_____
Contact Telephone Number

_____
Contact Email Address

Remit by email to: brwagner0@tva.gov

APPENDIX III – Frequently Asked Questions

Frequently Asked Questions

Environmental Mitigation Projects

August 2015

Clean/Renewable Energy Projects

Waste Heat Recovery (WHR)/Combined Heat and Power (CHP)

Q: What is the WHR or CHP Project and what are the objectives for the project?

A: In April 2011, TVA entered into clean air agreements with the Environmental Protection Agency (EPA), four states and three environmental groups ("EPA Agreements"). These Agreements provide for the implementation of environmental mitigation projects that support cleaner air across the region. The WHR or CHP project is one of the selected projects.

Specific objectives include:

- ∞ Increasing TVA's industrial customers' access to clean energy..
- ∞ Providing highly leveraged funding opportunities for new clean energy in the Valley.
- ∞ Providing a model for future innovative and cost-effective clean energy technologies.

Q: What is TVA's role in this project?

A: TVA will provide general technical oversight and financial assistance with the project's capital funding by issuing progress-based payments during the design, construction and commissioning period. TVA will also conduct appropriate measurement and verification activities to determine the emissions reductions benefits of the WHR or CHP installation.

Q: When will TVA issue the Request for Proposal (RFP) and who will receive it?

A: TVA will send out the RFP on August 3, 2015. And it will be sent to all TVA's industrial customers as well as the local power companies to help identify possible candidates in their service areas who would be able to participate. The RFP will also be posted on TVA's website at: http://www.tva.gov/environment/epa_mitigation/waste_heat_recovery.htm

Q: How will TVA ensure a fair bidding process for the project(s)?

A: First, all eligible parties will be given the same information to help them create their proposals. In evaluation of the proposals, TVA will use a common, numeric scoring system so that each project is evaluated on the same criteria and a total score will be computed for each proposal. Using these scores, TVA will establish a competitive range. TVA may, in its discretion, request clarifications or conduct discussions with any or all Offerors, or only those Offerors in the competitive range. Refer to the RFP for further information.

Q: Will energy generated from the WHR or CHP project have to be consumed onsite?

A: It is preferred but not required that the generated energy be consumed on site. Responses that include total consumption of all energy will be evaluated as having an advantage over responses that have excess generation not consumed on-site. If any energy is not consumed by the host, a separate Dispersed Power Production agreement between TVA and the host site would need to be negotiated as a separate, stand-alone agreement not related to this solicitation.

Q: Is this available to all industrial customers, whether distributor or direct-serve?

A: Yes, all direct served industrial and LPC-served industrial customer five MW or greater are eligible.

Q: Will the generated energy be purchased by TVA, and if so, at what rate?

A: Only if not consumed by the host and exported to a third party (see question above). The rate will be determined by Dispersed Power Production Agreement negotiations.

Q: Can customers participating in the Project also qualify for participation in the Energy Right Solutions for Industry >5MW (ERSI >5MW) and be offered assessments to identify potential savings?

A: Qualified industrial customers participating in the EPA Revised Waste Heat Recovery Project can also participate in the ERSI >5MW program for potential energy saving projects outside of the Project, but cannot use the ERSI funds to assess their participation in the Revised Waste Heat Recovery Project.

Q: Are directly-served customers eligible to receive an assessment to identify opportunity for WHR or CHP projects, similar to other process assessments TVA provides?

A: No - Customers choosing to participate in the EPA Revised WHR or CHP Project will not receive an initial engineering assessment.

Q: Will the EPA Revised WHR or CHP Project incentives be in addition to ERSI >5MW incentives? If yes, can they receive both or will it be limited to an overall cap of 70 percent?

A: This Project is a standalone project separate from the ERSI >5MW program; therefore, all project funding, resources, and benefits are accounted for under the EPA Mitigation Project.

Q: The fact sheet states TVA is looking for 5 MW and is budgeting $7 million over five years. Does that mean an incentive of 7 / 5 = $1.4 million per MW incentive?

A: The $7,000,000 committed to the project is to cover aspects or portions of the project requirements such as engineering design, equipment purchase, installation, and commissioning. The five MW is identified an approximate target goal for the total of Project (s); if the project or projects selected exceed the five MW goal then the funds will be used in the most cost-effective approach to reach the goal.

Q: How many customers or how many projects will receive an incentive award?

A: It is yet to be determined - the selection of the project or projects will be determined during the proposal review process; the project is not set by the number of customers or projects. The project could be a single five MW project and consume the full amount of $7,000,000 or it could be multiple projects of varying size with the share of $7,000,000 as necessary by the project host to develop and complete the project.

Q: Is it okay for a project to reach completion prior to the five-year deadline?

A: Yes - the April 2020 date is the latest date that the project must be completed and in operation – earlier completion is acceptable and encouraged. Projects will have an EUL of at least twelve years. Measurement, evaluation and reporting may go beyond the April 2020 date for TVA to file a final report with EPA.

Q: Will Direct Serve Industrial selected be required to enter into any contracts or agreements?

A: Yes, a contract will be required between the customer and TVA before any funds can be allocated. Also, if not all the electricity is consumed onsite and excess electricity is sold back to TVA or the Local Power Company, the industrial customer must agree to a Dispersed Power Production Agreement and an Interconnection Agreement. Potential also exists for a Standby Rate contract depending upon the size of the project and the impact on TVA. More information regarding contractual terms and conditions will be provided throughout the RFP process.

Q: How will TVA evaluate the Request for Proposal responses?

A: TVA will evaluate the proposals using numeric scoring and a total score will be computed for each proposal. Using these scores, TVA will establish a competitive range. TVA may, at its discretion, request clarifications or conduct discussions with any or all Offerors, or only those Offerors in the competitive range. Refer to the RFP for further information.

Q: **How can I learn more information about the project?**

A: TVA has information about the project on its website at: http://www.tva.gov/environment/epa_mitigation/waste_heat_recovery.htm In addition, those who are interested in having specific questions answered or want to receive information, may e-mail brwagner0@tva.gov with questions.