

ITEM#: 25
DATE: 08-22-23
DEPT: ELECTRIC

COUNCIL ACTION FORM

SUBJECT: UNIT 7 AIR HEATER BASKET REPLACEMENT FOR POWER PLANT

BACKGROUND:

The Unit 7 Boiler utilizes an air preheater to capture the heat from the exhaust gas and transfer the energy to the incoming combustion air to warm it to the temperature needed for efficient combustion of the fuel. The air heater is made of multiple baskets filled with sandwiched layers of steel that rotate between the exhaust and inlet air ducts. The rotation cools the exhaust and warms the incoming air.

There are three sections of baskets in the air heater; cold, intermediate, and hot. The Unit 7 cold and intermediate baskets were last replaced about 10 years ago and the hot-end baskets are over 20 years old. Over time the basket material corrodes, deteriorates, and loses thermal efficiency. All the baskets have deteriorated extensively since they were last replaced. Corrosion of the cold and intermediate baskets are likely accelerated due to the combustion of natural gas and RDF (chloride gases), combined with the temperature of the gases at the cold end.

Black & Veatch, an engineering firm that works extensively within the electric industry, has recommended that the City negotiate directly with the Air Preheater Original Equipment Manufacturer (OEM), Arvos Ljunstrom LLC. This letter of recommendation is attached.

Arvos Ljunstrom, LLC (OEM) has recommended using an enameled coating on the cold-end baskets, which would inhibit the corrosion resulting from the natural gas and RDF combustion.

Arvos Ljunstrom, LLC is the most practical and cost-effective provider for the needed replacement baskets. This requires a single source purchasing arrangement with Arvos Ljunstrom, LLC, which is why a waiver of the City's purchasing policy requirement for formal bidding procedures is also needed. Based on the expertise of Arvos Ljunstrom, LLC with this type of repair, the technicality of the work, and the unique modification being made to the baskets, both Black & Veatch and staff believe the quoted price of \$338,141.40 (inclusive of sales tax) to be reasonable.

Funding for these baskets is available from the approved FY 2022/23 Capital Improvement Plan. This currently contains \$350,000 to cover this purchase.

The installation of these baskets will require a construction permit issued by the Iowa Department of Natural Resources (IDNR). Gaining a permit is standard practice for this type of project. The application for this permit is currently being assembled by staff, but it is anticipated the application will take a couple months for the IDNR to review and issue the permit. The lead time for the baskets is 28 weeks. Staff would like to purchase the baskets now so that they are available to be installed in April of next year. If the baskets arrive before the permit is issued and/or ready before replacement is planned, the baskets will be stored onsite until ready to be installed. It is staff's assessment that the risk of purchasing the baskets and not receiving a permit from the DNR is minimal.

ALTERNATIVES:

1. Waive the City's purchasing policy requirement for formal bidding procedures for Unit 7 Air Heater Basket Replacement for Power Plant and award a contract to Arvos Ljunstrom, LLC, Wellsville, New York, in the amount of \$338,141.40 (inclusive of sales tax).
2. Do not approve and direct staff to solicit bids for these repairs.

CITY MANAGER'S RECOMMENDED ACTION:

The replacement of the heater baskets is imperative for the thermal performance of the Power Plant. By not replacing the baskets, the Power Plant's efficiency to produce electricity is inhibited. Additionally, the currently corroded baskets create a maintenance burden by requiring periodic cleaning and unplugging to maintain flue gas exhaust flows to maintain plant performance and continuous operation. Therefore, it is the recommendation of the City Manager that the City Council adopt Alternative No. 1 as stated above.



August 2, 2020

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Black & Veatch Project No. 405478
B&V File 14.4000

Subject: Unit 7 Air Preheater Basket Replacement Approach Recommendation

Dear Kristin Evans:

This letter is in response to The City of Ames' (CoA) request for guidance regarding Unit 7 air preheater basket replacement activities. Black & Veatch (B&V) understands that CoA needs to replace the baskets in Unit 7 air preheater and is seeking guidance on the implementation.

B&V's recommendation is to negotiate directly with the Air Preheater OEM with the following justifications.

- 1) The commercial availability of companies who can support effective analysis and perform the complete work of air preheater basket replacement is limited. (The efficacy of competitive bid relies on the premise that several companies are available to make the bid process competitive. Due to the limited number of companies, the efficacy of the competitive bid process is severely reduced.)
- 2) Air preheater baskets and related appurtenances are highly specified components affecting the efficiency, performance, and reliability of Unit 7. Design of these components requires integral knowledge of original manufactured parts – already available to the OEM.
- 3) An effective competitive bid process requires developing and issuing full specifications, including detail manufacturing drawings (which at times are proprietary to the OEM), bid issuance, analysis, and award. Resulting in substantial time to project award as well as cost.
- 4) The potential cost difference in a competitive bid process does not offset the full design and plant understanding of the OEM as well as the ability to deliver a reliable system in a timely manner.

In B&V's opinion, there is limited value in developing a specification for an open bid activity. B&V recommends that CoA contract directly with Ljungstrom for the replacement baskets (supply only). B&V can review the technical proposal from Ljungstrom and provide CoA feedback, which is significantly less time and cost than those related to competitive bidding.

Further, in your case, we understand that CoA has discussed the replacement project with the OEM resulting in recommended enameled basket upgrades. This is a standard approach to fight corrosion, and we generally agree with the recommendation.

Thank you for allowing Black & Veatch to assist City of Ames with this important project. If you have any questions, or require any additional information regarding this recommendation, please contact Melissa Womack (Tel: 913-458-7097, email: womackmj@bv.com).

Very truly yours,

BLACK & VEATCH CORPORATION



Mark Steutermann
Project Manager

cc: M. Womack
K. Whitehead