

COUNCIL ACTION FORM

SUBJECT: **PURCHASE AND INSTALLATION OF VARIABLE FREQUENCY DRIVES FOR POWER PLANT UNIT 8 COOLING TOWER**

BACKGROUND:

The primary purpose of the Power Plant cooling tower is to remove the heat absorbed in the circulating cooling water. Depending on the weather conditions outside, the Power Plant Operator will regularly change the speeds of the cooling tower fans to create the desired water temperature. If the weather is warm, the fans operate at high speeds to encourage evaporation, causing the water to cool. If the temperatures are below freezing, the fans must be cycled in reverse, pushing air down into the tower, picking up heat from the hot water dropping from the top and then melting any ice on the outside louvers as the air exits.

The current equipment on Unit 8 cooling tower fan motors is old and outdated. Plant staff have also struggled with the reliability of the equipment on Unit 7, which was the only operational unit in the past year. This past winter the starter assembly feeding one of the Unit 7 cooling tower fans failed. Plant staff was unable to find replacement parts and the safety and equipment risk of fabricating a new part was too high. Later in the winter, the power cubicle feeding the second Unit 7 cooling tower fan failed. Plant staff had to reduce load on the unit and perform manual de-icing until outside conditions improved.

The FY 2024/25 CIP contains a project that was to replace both Unit 7 and Unit 8 cooling tower fan equipment with Variable Frequency Drives (VFDs). VFDs provide control over a range of speeds, improving reliability and efficiency. **Due to the issues experienced this past winter with Unit 7, staff realized it was critical to accelerate the installation of the VFDs on the Unit 7 colling towers to maintain reliability. Therefore, the VFDs for Unit 7 were installed in summer 2021 at the cost of \$72,565.** Since Unit 8 was returned to service in August 2021, staff has already experienced issues with the Unit 8 cooling tower fan motor equipment. Internal timers have not operated as required and sourcing spare parts has been very challenging.

Due to the issues outlined above, the project to replace the drives on Unit 8 needs to be performed as soon as possible to avoid future operational issues, particularly as extreme cold temperatures approach this winter. Installing them now will complete the existing FY 2024/25 CIP project in the current year rather than as scheduled. The installation of these VFDs can be completed one at a time while the unit remains operational.

Bid documents were issued through the City's electronic bidding system to 132 firms. On July 30, 2021, three bids were received from two bidders as shown below:

Bidder	Lead Time	Total
Baker Group, Ankeny, IA	12-14 weeks	\$158,467
Tri-City Electric Company, Davenport, IA	10-12 weeks	\$161,415
Baker Group**, Ankeny, IA	5-6 weeks	\$168,707

** Alternate bid with a different VFD manufacturer, Schneider Electric

Staff reviewed the bids and concluded that the apparent low bid submitted by Baker Group, Ankeny, IA in the amount of \$158,467 (inclusive of Iowa sales tax) is acceptable.

Funding for these repairs is available from the approved FY 2021/22 operating budget under the Unit 8 and Unit 7 Steam Turbine and Generator Maintenance account. This account contains \$160,000 for cleaning or replacing piping and equipment associated with the cooling tower circulating water. The cleaning or piping and equipment replacement can be deferred to future years in order to cover this project.

By funding the project through this year's operating budget, the planned capital improvement project in FY 2024/25 will be eliminated.

ALTERNATIVES:

1. Award a contract to Baker Group, Ankeny, Iowa for the purchase and installation of the VFDs for Unit 8 Cooling Tower in the amount of \$158,467 (inclusive of sales tax).
2. Award a contract to one of the other bidders.
3. Reject the bids and delay this project.

CITY MANAGER'S RECOMMENDED ACTION:

The replacement of the VFDs for the Unit 8 cooling tower needs to be performed in order to avoid operational issues and maintain reliability. Therefore, it is the recommendation of the City Manager that the City Council adopt Alternative No. 1 as stated above.