



Department Source: City Utilities - Water and Light

To: City Council

From: City Manager & Staff

Council Meeting Date: April 3, 2017

Re: Appropriating an additional \$1,000,000 to upgrade boiler number 8 at the Municipal Power Plant.

Executive Summary

Staff has prepared for Council consideration an ordinance appropriating \$1,000,000 from Electric's retained earnings to fund the remaining activities to complete Capital Improvement Project E0183 to upgrade boiler number 8 at the Municipal Power Plant to comply with increased environmental regulation.

Discussion

Water & Light owns and operates a 35 MW steam boiler and turbine at the Municipal Power Plant, Boiler 8 - Turbine 8, which began operation in 1970. The boiler was originally designed to burn either fuel oil or natural gas. Water & Light recognized an opportunity with the recent availability of economically priced natural gas and conducted a preliminary study regarding upgrading Boiler 8 to reduce NOx emissions.

The study, delivered in April 2012, determined that upgrades could be made at reasonable cost, thus allowing W&L to improve the utility of the boiler in the new low priced natural gas environment. W&L established a Capital Improvement Project, EL0183 as part of the FY2014 budget. The Boiler 8 - Turbine 8 system has the capability of being used as either a base-load or peak-load power generation asset. The initial estimated cost for the upgrades was \$2,900,000 and was appropriated to CIP Project E0183.

An interested parties meeting was held on February 3, 2014 at City Hall. Following that a public hearing was held on March 3, 2014 after which, Council authorized preparation of plans and specifications for the project. In June 2015 the City's design consultant SEGA engineering issued plans for low NOx burners.

On January 4, 2016 Council authorized the construction of upgrades to Boiler 8 at the Municipal Power Plant. Water and Light proceeded with construction of these improvements utilizing a combination of City employees and existing Term and Supply contracts for the labor portion of this project and bid materials through the City's Purchasing Department.

On May 16, 2016 the First Addendum to Agreement for professional engineering services with SEGA, Inc. for the Boiler 8 nitrogen oxide (NOx) reduction project at the Municipal Power Plant was approved by City Council. The increased project budget was necessary to complete the Scope of Services set forth in Original Agreement due to additional, unforeseen regulatory requirements on permit applicants which required expanded support services and additional project coordination. These additional engineering and permitting



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support services were required for the City in obtaining the required MDNR permit. The total for this addendum was not to exceed \$656,961.46. Additional funds were not appropriated at that time as E0183 had sufficient funds to cover the addendum until a cost estimate for additional funds required for the completion of the project could be determined.

The project has reached a point that all of the additional expenses can be estimated. The following is a list of these additional expenses:

1. Change order for engineering services as described above. - \$650,000.
2. Additional air permitting work due to MDNR requirements for air pollutant modeling and other additional analysis. - \$45,000.
3. Enhanced NOx reduction technology with significantly better NOx control than originally planned (.02 vs.08 #/mmbtu). - \$165,000
4. Contractual issues with the Boilermakers causing delay in project and increased labor cost. - \$25,000.
5. The existing single loop Yokogawa combustion control system was determined to be out-of-date, obsolete and unsupported. - \$35,000.
6. Various unforeseen issues encountered during the construction phase requiring modifications in building structural systems, piping systems for natural gas, clearances, and upgrades in boiler safety systems recommended by insurance company. - \$50,000
7. MDNR air permit required the installation of a CO CEMS system for Boiler 8. - \$30,000

The latest construction schedule update shows the completion of project to be about August 1st.

Fiscal Impact

Short-Term Impact: \$1,000,000 to fund the remaining activities to complete Capital Improvement Project E0183.

Long-Term Impact: None

Vision & Strategic Plan Impact

Vision Impacts:

Primary Impact: Environment, Secondary Impact: Not Applicable, Tertiary Impact: Not Applicable



Strategic Plan Impacts:

Primary Impact: Infrastructure, Secondary Impact: Not Applicable, Tertiary Impact: Not Applicable

Comprehensive Plan Impacts:

Primary Impact: Infrastructure, Secondary Impact: Not applicable, Tertiary Impact: Not Applicable

Legislative History

Date	Action
March 3, 2014	Public Hearing - Construction of upgrades to Boiler 8 at the Municipal Power Plant to reduce nitrogen oxide (NOx) emissions.
March 3, 2014	R38-14 Authorizing an agreement for professional engineering services with SEGA, Inc. for the Boiler 8 nitrogen oxide (NOx) reduction project at the Municipal Power Plant.
January 4, 2016	B375-15 Authorizing construction of upgrades to Boiler 8 at the Municipal Power Plant to reduce nitrogen oxide (NOx) emissions; calling for bids for a portion of the project through the Purchasing Division.
May 16, 2016	R55-16 Authorizing the First Addendum to Agreement for professional engineering services with SEGA, Inc. for the Boiler 8 nitrogen oxide (NOx) reduction project at the Municipal Power Plant.

Suggested Council Action

Staff recommends that Council adopt an ordinance appropriating \$1,000,000 from Electric's retained earnings to fund the remaining activities to complete Capital Improvement Project E0183 to upgrade boiler number 8 at the Municipal Power Plant to comply with increased environmental regulation.