CITY OF FLAGSTAFF

STAFF SUMMARY REPORT

To:	The Honorable Mayor and Council
From:	Justin Emerick, Project Manager, Water Services
Co-Submitter:	Ryan Roberts
Date:	02/27/2019
Meeting Date:	03/05/2019

TITLE:

Consideration and Approval of Contract: Approve the construction contract with PCL Construction, Inc. in the amount of $1,067,535.00 for the Wildcat Hill Water Reclamation Plant Digester Gas Conveyance System Improvements Project.

STAFF RECOMMENDED ACTION:

1. Approval of contract with PCL Construction, Inc.("Contractor") in the amount of $1,067,535.00, which includes a contract allowance of $50,835.00 and a contract time of 365 calendar days.
2. Authorize the City Manager to execute the necessary documents.

Executive Summary:

This is the first phase of a two-phase project. This initial phase is to replace the existing digester gas compressor and piping system. The second phase of this project will be to replace the Co-Generation engine in FY 2021. This project will provide piping materials and construction services to replace components and install new components that will result in significant upgrades to the digester gas piping conveyance system, including components that will treat the methane gas to remove numerous contaminants from the matrix resulting in a much cleaner gas for efficient combustion in the electrical co-generation engine for the generation of electrical power for use within the wastewater plant.

This project is in support of the City Council Climate and Adaptation Plan by reducing greenhouse gas emissions, reducing energy purchased from Arizona Public Service (APS), and expand renewable energy generation energy.

Financial Impact:

This system is capable of generating approximately 290 kilowatts of electrical energy for sustained periods of time (not factoring downtime for regular maintenance and repairs). At 11 cents per kilowatt hour, this system could potentially generate $765.00 per day of electricity that would have otherwise been purchased from APS the electrical utility provider. Based on the system being operational 100% of the time, these improvements could generate approximately $279,000 electrical savings per year.

The City will not realize any energy savings until both phases of this project are completed in FY2021.

Water Services has this project budgeted in the capital improvement plan for FY 2019, $920,000, and FY

2020, $150,000, under account number 203-08-375-3366-0-4466.

Policy Impact:

This project is in support of the City Council Climate and Adaptation Plan by reducing greenhouse gas emissions, reducing energy purchased from Arizona Public Service (APS), and expand renewable energy generation energy.

Connection to Council Goal, Regional Plan and/or Team Flagstaff Strategic Plan:

Council Goals:
Goal E&C.2. - Reduce Greenhouse Gas Emissions
- This project will reduce greenhouse gas emissions by taking advantage of generating electricity for use within the plant which will reduce the amount of electricity purchased from APS

Goal E.2. – Expand production and use of renewable energy
- This project will take advantage of a by-product of the wastewater treatment process (methane gas) by combusting it in an electrical generator engine. This gas would otherwise be flared off for safe disposal.

Goal E.1. – Increase energy efficiency
- This project capitalizes on a by-product of the wastewater treatment process and takes advantage of the BTU value found in combustible gases by generating electricity.

Has There Been Previous Council Decision on This:

No.

Options and Alternatives:

1. Approve contract with PCL to perform this work which will result in necessary repairs and upgrades to the Digester Gas Conveyance System. After the Co-Generation engine is replaced in FY2021 the plant will be able to utilize digester gas for on-site electrical demand.

2. Reject all bids and continue to flare digester gas. By accepting this option, the City may not be in compliance with City's goal of reducing Greenhouse Gas Emissions, will not lower future electrical energy costs .

Background and History:

The existing digester gas recovery and delivery system suffers from numerous problems that have limited the ability to generate electricity from this by-product of the wastewater treatment process. This project will address and remedy all of the problems with this system resulting in a clean methane gas under adequate pressure for the generation of approximately 290 kilowatts of electrical generation for use within the plant. The major components of this project include:

- A new Biogas dehumidification system to clean, dry the Biogas and filter out Siloxane, H2S gas
- Install a new 5 psig gas compressor to deliver the gas under pressure to its point of combustion and electrical generation approximately 300 meters away from the source
- A hydrogen sulfide removal vessel with replaceable media
- A water vapor removal system capable of removing the water vapor suspended in the gas matrix significantly increasing the BTU value of the gas
- A siloxane removal system for the removal of compounds capable of destroying the internal components of the internal combustion engine

- Gas flow meters to accurately measure the volume of gas treated and delivered to the engine

The Purchasing section posted the Invitation for Bids (IFB) solicitation for construction on November 2, 2018, on the Purchasing electronic bidding website, and advertised it in the AZ Daily Sun on November 4 and 11, 2018. There were five bids received on the opening date of December 3, 2018, and staff determined that PCL Construction, Inc. is the lowest responsive responsible bidder

Bids Received

PCL Construction, Inc.	$1,067,535.00
Summa Mechanical	$1,307,831.70
Hunter Contracting	$1,582,035.00
Kinney Construction	$1,586,091.15
Kear Civil Corp.	$1,673,805.00

Key Considerations:

This project will repair and upgrade only the gas conveyance and delivery system. The co-generation engine also requires repair or replacement which is not part of this project and will be addressed at a future time.

To realize the energy savings both phases of this project must be completed. Phase II is expected to be complete in FY21.

Community Benefits and Considerations:

This system is capable of generating approximately 290 kilowatts of electrical energy for sustained periods of time (not factoring downtime for regular maintenance and repairs). At 11 cents per kilowatt hour, this system could potentially generate $765.00 per day of electricity that would have otherwise been purchased from the utility provider (APS).

Community Involvement:

The energy savings developed by this system have a direct impact on lowering the cost of the wastewater treatment process and reducing the plant's electrical usage which benefits the wastewater customers and the Community.

Expanded Options and Alternatives:

N/A

Attachments: Construction Contract
Contract Exhibit A
Contract Exhibit B
Presentation