Drinking Water State Revolving Fund Green Project Reserve

- Interim -

Hayden Lake Irrigation District Drinking Water Project

SRF Loan #DW2004 (pop. 8,200)

$6,500,000

Green Project Reserve Interim GPR Justification

Categorical GPR Documentation

INSTALLS ELEVATED WATER STORAGE (Energy Efficiency). GPR Business Case 3.2-2: use of improved practice to reduce the overall energy consumption of water system by using energy in a more efficient way. ($5,600,000).

1. Install Elevated Storage

Summary

- As part of the upgrade project, the District will install one 2.0 million gallons of elevated water storage tank.
- Loan amount = $6,500,000
- Estimated energy efficient (green) portion of loan (Tank Constructions with options) = 86% ($5.6M) (design cost estimate).

Background

- The water system currently includes one elevated steel reservoir with a capacity of 75,000 gallons. The water storage volume does not currently meet IDAPA storage requirements by approximately 600,000 gallons.
- In order to overcome the storage deficit, the District operates the system to produce water with its well pumps matching the rapidly changing system demands during max day and peak hour. The system pumps operate on/off throughout the day in response to the changing tank level.
- The District has three timeframes in which different pump operation patterns occur. The three timeframes are as follows: Morning Peak (3:00 a.m. to 9:00 a.m.); Evening Peak (9:00 a.m. to 6:00 p.m.); Night Operations (6:00 p.m. to 3:00 a.m.)
- The District adjusts each timeframe pump operation pattern to account for the large fluctuation of water use throughout the day. The goal for the District's operating pattern is to run no more than four pumps at a time while keeping the tank level around 17.0 feet. Because the demand in the District is highly volatile and storage is minimal, the District has the ability to adjust pump start and stop levels easily.
- The addition of 2.0 million gallons of elevated storage will result in a significant reduction in HLID's largest operations cost, pumping costs. The elevated storage will significantly reduce energy consumption by reducing pump duration and cycling, and allow more consistent pump operations over the 24-hour period.

GPR Justification

Improved Practice with Elevated Storage:
To determine the GPR-eligibility of elevated storage, the current system energy consumption (Baseline Standard Practice [BSP]) is compared to providing elevated storage.

System Energy Consumption in Kilowatt Hours (KW-hr)

- **2021 BSP**
  Annual Usage = 1.8M KW-hr/year
- **2021 Improved Practice with Elevated Storage**
  Annual Usage = 1.4M KW-hr/year
- **2021 Energy Reduction**
  Energy reduction with Improved Practice with Elevated Storage = 0.4M kW-hr or a 20% energy reduction for year 2021 = year 2021 savings = $55,000
- **20-year Energy Reduction**
  - Approximately 28M kW-hr
  - 22% energy reduction
  - $3.5M in savings

Therefore, installing elevated storage is categorically GPR-eligible as the elevated storage results in a 20% reduction in energy consumption.

Conclusion

- Elevated storage is categorically GPR-eligible as the cost savings with energy reduction as compared to the BSP result in a 20% reduction in energy consumption.

- **GRP Costs Identified:**
  One 2.0 MG Elevated Water Tank = $5.6 (Engineering Design estimate).

- **GPR Justification**: The Water Tank system is Categorically GPR eligible (Energy Efficiency) per Section 3.2-2 page 9[1]: *Projects that achieve a 20% reduction in energy consumption; are categorically eligible for GPR; if a project achieves less than a 20% reduction in energy efficiency, then it may be justified using a business case…*

[1] Attachment 2. April 21, 2010 EPA Guidance for Determining Project Eligibility