Teton Reserve HOA Drinking Water Project
SRF Loan #DW 1701 (pop. 820)
$1,390,000

Final Green Project Reserve Justification

Business Case GPR Documentation

INSTALLS NEW WELL PUMPS WITH VFDs (Energy Efficiency). Business Case GPR per 3.5-1: Energy efficient ...new pumping systems... including variable frequency drives ($31,500).
NEW WELL PUMP VFD

Summary

- Two new wells (Well #2 and #3) will be installed and equipped with pumps with a variable frequency drives (VFDs).
- Loan amount = $1,390,000
- Energy savings (green) portion of loan = 2.3% ($31,500) (Installed costs)
- Simple pay-back period = 1.75 years (VFD) for 125 HP motor, 1.2 years (VFD) for 50 HP motor

Background

- At full buildout, the HOA water system will provide water to 384 residential connections and the golf course service buildings.
- Well #1 currently supplies all water to the residential connections. Construction of the proposed Wells #2 and #3 will enable development to proceed for lots already purchased by individual owners.
- Construction of the water system will occur in phases. The 400 gpm pump for Well #3 and the 1000 gpm pump for Well #2 are projected to provide sufficient domestic and fire water for approximately 190 connections. As growth and demand increase, a larger well pump will replace the 400 gpm pump.

Calculated Cost Effectiveness of Improvements

VFD Analysis:

Well #2
- WITHOUT A VFD: New 125-HP pump without VFD; Annual MWH utilized for this new system = 285; energy cost approximately = $28,500.
- WITH A VFD: New 125-HP pump with a VFD; Annual MWH utilized for this new system is = 171; energy cost approximately = $17,100.
- Therefore, using a VFD for the new pump provides a decrease in energy consumption of 114 MWH for a savings = $11,400 annually. At a typical VFD cost of $20,000, the pay-back period = 1.75 years.

Well #3
- WITHOUT A VFD: New 50-HP pump without VFD; Annual MWH utilized for this new system = 300; energy cost approximately = $30,000.
- WITH A VFD: New 50-HP pump with a VFD; Annual MWH utilized for this new system is = 195; energy cost approximately = $19,500.
- Therefore, using a VFD for the new pumps provides a decrease in energy consumption of 105 MWH for a savings = $10,500 annually. At a typical VFD cost of $12,000, the pay-back period = 1.2 years.

Conclusion

- GRP Costs Identified: VFD = $12,000 + 20,000 = $31,500 (Installed costs)
- GPR Justification: The VFD Business Case GPR-eligible (Energy Efficiency) per Section 3.5-1: Energy efficient retrofits, upgrades, or new pumping systems and treatment processes (including variable frequency drives (VFDs).

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1 WEG Electric Motor Payback Tool, energy cost @ $0.10/kWh. [http://old.weg.net/us/Products-Services/Drives/Payback-VFD-Calculator#ctrl]