



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 a 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 Improvements¹

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)).*

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