

Drinking Water State Revolving Fund Green Project Reserve  
– Interim –



**City of New Meadows Drinking Water Project**  
**SRF Loan #DW1809 (pop. 475)**  
**\$2,845,500**

**Interim Green Project Reserve Justification**

**Business Case GPR Documentation**

1. UPDATE BOOSTER PUMP STATION WITH PREMIUM ENERGY-EFFICIENT PUMPS AND VFDs (Energy Efficiency). Categorical per GPR 3.2-2: *projects that achieve a 20% reduction in energy consumption; if a project achieves less than a 20% reduction in energy efficiency, then it may be justified using a business case*; also, per 3.5-9: *VFDs can be justified based upon substantial energy savings (\$18,500)*.
2. INSTALLS NEW SCADA SYSTEM TO ENHANCE REMOTE MONITORING (ENERGY Efficiency). GPR Business Case per 3.5-7: *automated and remote control systems (SCADA) that achieve substantial energy savings. (\$100,000)*.

# 1. VARIABLE SPEED PUMPING SYSTEMS

## Summary

- As part of the upgrade project, the City of New Meadows will replace the water system's existing undersized booster station with a new booster station equipped with premium energy-efficiency motors and variable frequency drives to meet demand without using hydropneumatic tanks or elevated gravity storage.
- Total Loan amount = \$2,845,500
- Estimated energy efficient (green) portion of loan = <1% (\$18,500) (design cost estimate)

## Background

- The water system currently includes two municipal wells and a ground-level water storage tank. A booster pump station includes a 15 HP booster pump, and a 10 HP jockey pump. There is one pressure zone, directly pressurized by the booster station.
- The system does not have gravity storage. The New Meadows water system is located in a flat valley area, and it would be expensive and impractical to pressurize the system using elevated gravity storage
- The booster pumps are undersized and have reached the end of their useful life.



## GPR Justification

### *Motors/VFDs:*

To determine the GPR-eligibility of the new premium pumps with VFD controllers, they are compared to the Baseline Standard Practice (BSP), which is a standard Epact motor without VFD (valve throttle).

### 10 hp Pump

- **Proposed Pumps - no VFD, standard Epact efficiency motor**  
Motor = 10 hp; Motor type = Epact efficient (89.5%<sup>1</sup>)  
Annual Usage = 8600 hours/year  
Energy usage = 50,880 kW
- **Proposed Pumps - VFD, with premium efficiency motor**  
Motor = 10 hp; Motor type = premium efficient = (91.7%)  
Annual Usage = 8600 hours/year  
Energy usage = 15,417 kW
- **Energy Reduction - comparing with VFD to without VFD<sup>2</sup>**  
Energy savings with VFD = 35,463 kW = annual savings = \$3,546  
= pay-back period of 1 year

### 25 hp Pump

- **Proposed Pumps – no VFD standard Epact efficiency motor**  
Motor = 25 hp; Motor type = standard efficiency (91.0)  
Annual Usage = 1500 hours/year  
Energy usage = 21,736 kW

<sup>1</sup> NEMA

<sup>2</sup> WEG Energy Savings Calculator

- **Proposed Pumps - VFD operation with premium efficiency motor**  
 Motor = 25 hp; Motor type = premium efficiency (92.4)  
 Annual Usage = 1500 hours/year  
 Energy usage = 6,586 kW-hr
- **Energy Reduction - comparing with VFD to without VFD**  
 Energy savings with VFD = 15,150 kW = annual savings = \$1,515  
 = pay-back period of 1.85 years

Therefore, for both pumping systems, the premium motors with VFDs are GPR-eligible as the energy savings result in pay-back periods for the system which are less than the useful life of the equipment.

## Conclusion

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- The VFD premium pumps are GPR-eligible as the cost savings as compared to the BSP result in pay-back periods which are less than the useful life of the equipment.
- **GRP Costs Identified:**
  - 10-HP VFD pump = \$3,500 ea x 1 = \$ 3,500
  - 25-HP VFD pump @ \$15,000 ea x 1 = \$15,000
  - Total = \$18,500**
- **GPR Justification:** The Pump/VFD system is Categorically GPR eligible (Energy Efficiency) per Section 3.2-2 page 9<sup>3</sup>: *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; also, per 3.5-9: VFDs can be justified based upon substantial energy savings.*

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<sup>3</sup> Attachment 2. April 21, 2010 EPA Guidance for Determining Project Eligibility  
 State of Idaho SRF Loan Program

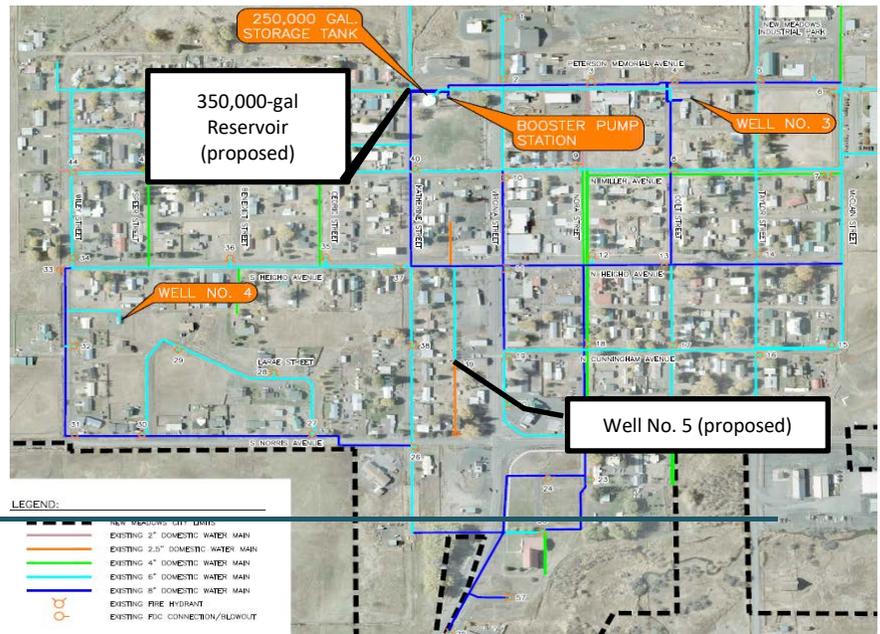
# 1. SCADA SYSTEM UPGRADES

## Summary

- The City of New Meadows will install a new SCADA system to allow centralized monitoring and control of all water system components, including three wells, the booster station, and storage reservoir. The City’s wastewater treatment system will be incorporated into the system as well to allow operations staff to monitor and control both systems using a single interface.
- Major water system parameters monitored include, pumps/wells in operation, system pressure, flow rates, operating setpoints, totalized water production, storage level and volume, well pumping level, and equipment and intrusion alarms.
- System will allow plotting operating trends, data collection/recording, and remote operator control and monitoring.
- Loan amount = \$2,845,500
- Estimated energy efficiency (green) portion of loan = 3.5% (\$100,000) (engineers estimate)
- Estimated annual energy and labor savings = \$10,950 per year.

## Background<sup>4</sup>

- The current electrical controls are insufficient to meet the monitoring and operational requirements of the water system.
- The SCADA system will allow centralized control of local PLCs at the booster station, Well 4, and the new Well 5.
- The central SCADA computer will be located at the City’s maintenance shop/wastewater treatment plant area.



## GPR Justification

- Remote SCADA monitoring saves labor costs: 1 man-hour per day, \$30/hour = \$10,950 per year in labor costs.
- Useful life of system = 10 - 15 years
- Payback period = 9 years

## Conclusion

- Total SCADA savings would be approximately \$10,950 per year in labor and energy costs = payback of 9 years, which is less than the useful life of the system. Therefore SCADA costs are GPR-eligible by 3.5-7.
- **GPR Costs Identified:** SCADA = \$100,000 (engineering estimate)
- **GPR Justification:** SCADA system costs are GPR-eligible by a Business Case per 3.5-7: *automated and remote control systems (SCADA) that achieve substantial energy savings.*

<sup>4</sup> City of New Meadows Water Facilities Planning Study, Crestline and Mountain Waterworks, May 2018  
State of Idaho SRF Loan Program