

Drinking Water State Revolving Fund Green Project Reserve  
- Final -



**West Bonner W&SD FY13 Drinking Water Project**  
**SRF Loan #DW 1301 (pop. 415)**  
**\$3,848,201**

**Final Green Project Reserve Justification**

**Business Case GPR Documentation**

1. INSTALLS SCADA FOR REMOTE MONITORING (ENERGY Efficiency). GPR Business Case per 3.5-7: *automated and remote control systems (SCADA) that achieve substantial energy savings.* (\$7,160).
2. INSTALLS ADVANCED FLUORESCENT LIGHTING AND LED LIGHTING (Energy Efficiency). GPR Business Case per 3.5-6: *Upgrade of lighting to energy efficient sources (such as...compact fluorescent, light emitting (LED) diode, etc).* (\$3,936)
3. INSTALLS VFD CONTROLLERS FOR NEW WELL PUMPS (Energy Efficiency). Business Case GPR per 3.5-1: *Energy efficient ...new pumping systems...including VFDs* (\$15,650).

# 1. SCADA CONTROL TECHNOLOGY

## Summary

- Energy efficiency from the installation of a SCADA system for remote electronic sensing of the water storage tank and master water usage meters.
- Loan amount = \$3,848,201
- Estimated energy efficiency (green) portion of loan < 1% (\$7,160)
- Estimated annual energy and labor savings = \$12,000 per year.

## Background/ Results<sup>1</sup>

- The SCADA system is part of the project at the well site pump house building.

## Energy Efficiency Improvements

- Remote SCADA monitoring saves labor costs = 2 people 1 hour per day = \$12,000/yr in labor costs.

## Conclusion

- Total SCADA savings would be approximately \$12,000 per year in labor costs = payback of .6 years, therefore SCADA costs are GPR-eligible by 3.5-7.
- **GPR Costs:**  
SCADA = \$7,160  
Total = \$7,160
- **GPR Justification:** SCADA system costs are GPR-eligible by a Business Case per 3.5-7<sup>2</sup>: *automated and remote control systems (SCADA) that achieve substantial energy savings.*

<sup>1</sup> 6-22-15 Correspondence with Project Manager Eric Eldenburg P.E., James Sewell & Associates

<sup>2</sup> Attachment 1, April 21, 2012 EPA Guidance for Determining Project Eligibility

## 2. Energy Efficient LIGHTING

### Summary

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- Energy efficiency from the installation of advanced fluorescent lighting in the interior of the well site pump house building.
- Energy efficiency from the installation of light emitting diode (LED) lighting at the exterior of the well site pump house building.
- Loan amount = \$3,848,201
- Estimated energy efficiency (green) portion of loan < 1% (\$3,936)
- Estimated annual energy savings = \$150 per year.

### Background/ Results<sup>3</sup>

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- The lighting system is part of the project at the well site pump house building.

### Energy Efficiency Improvements

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- Energy efficient T-8 magnetic fluorescent lighting is approximately 28% more energy efficient than standard T-12 magnetic fluorescent lighting for relatively the same light output.<sup>3</sup>
- LED lighting is approximately 58% more energy efficient than typical high pressure sodium lighting for relatively the same light output.<sup>4</sup>

### Conclusion

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- **GPR Costs:**  
Advanced Fluorescent Lighting = \$ 700  
LED Lighting = \$3,236  
Total = \$ 3,936
- **GPR Justification:** Advanced fluorescent lighting and LED lighting is GPR-eligible by a Business Case per 3.5-7<sup>5</sup>: *Upgrade of Control Building lighting to energy efficient sources such as.....compact fluorescent, light emitting diode (LED).*

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<sup>3</sup> 6-22-15 Correspondence with Project Manager Eric Eldenburg P.E., James Sewell & Associates

### 3. PUMPING SYSTEM VFDs

#### Summary

- The District will purchase and install variable frequency drives (VFDs) for the two new 60hp submersible pumps in the City's wells to provide water to the Albeni area in the City of Old Town.
- Estimated loan amount = \$3,848,201
- Estimated energy efficiency (green) portion of loan = <1% (\$15,650)

#### Background<sup>4</sup>

- The project will develop a secondary water source and storage reservoir for the District's water system. The existing system is served water via springs and a reservoir. The proposed secondary source will provide a backup water supply in the event the mainline from the springs fails.
- Analysis shows VFDs should be installed on the two new well 60hp submersible pumps. The VFD contributes to energy efficiency as it allows the pump to operate at a reduced horse power or drive frequency, requiring less energy than a standard drive which operates at a set frequency independent of flow requirements.
- Provision of VFDs on the pumps will provide a much tighter range for pressure fluctuation. The VFD will save energy by assisting in maintaining constant system pressure; it will also reduce electrical consumption at times of pump start-up.

#### GPR Justification

##### VFD Analysis:

- The VFD specified is VLT Aqua Drive FC202 Model P55K T4 E66, 3ph/60ch/380-480v, 75hp NEMA 4X/IP66 enclosure<sup>5</sup>.
- Two (2) VFDs cost = \$15,650; estimate pump operation = 7,300 hr/yr (normal distribution duty cycle), motor efficiency = 95.8%, and energy costs = \$0.12/kWh;
- Annual cost savings of the VFDs over standard drive = \$1,000/year<sup>6</sup> with a payback period of 15.6 years<sup>6</sup>.



#### Conclusion

- By installing VFDs on the new 60hp submersible well pumps the City can save up to \$1,000/yr. in energy costs
- The VFDs are cost effective as the payback period is less than the life of the equipment.
- **GPR Costs** (2) VFDs = **\$15,650**
- **GPR Justification:** The VFD systems are Business Case GPR-eligible, qualifying per Sect. 3.5-1 (Energy Efficiency)<sup>7</sup>: “Energy efficient... new pumping systems... (including variable frequency drives (VFDs))” which are cost-effective.

<sup>4</sup> Final Facility Plan, Aspen Engineering, August 2010

<sup>5</sup> MVWC project specifications, 4-14-14 email W Teucher P.E.

<sup>6</sup> 6-23-15 Correspondence with Project Manager Eric Eldenburg P.E., James Sewell & Associates

<sup>7</sup> 2012 EPA Guidelines for Determining Project GPR-Eligibility. Attachment 2

