



Green Business Case Memorandum

To: State Revolving Fund Loan Program

From: Bob Huguenard

Date: May 19, 2016

*Subject: Franklin System-Wide SCADA Improvements, CG2 2016-367
Green Business Case*

This memorandum establishes a green business case for the City of Franklin's System-Wide Supervisory Control and Data Acquisition (SCADA) system. The City's SCADA system serves the wastewater collection system, water distribution system, water treatment facility, and the wastewater reclamation facility.

Background

The City of Franklin Collection System currently monitors and controls data from thirty-six remote sites consisting of six water storage tanks, five water booster stations, one metering vault, one stormwater pumping station, and twenty-six wastewater lift stations. One of the wastewater pumping stations also serves as a radio repeater location within the system for signal boosting. The existing SCADA system has analog based RTUs connected to a single supervisory PC workstation, which operates on an antiquated software with little potential for upgrades or support. The RTUs use proprietary equipment and software, which means the equipment and software support must essentially be sole sourced.

The proposed modifications will include replacement of the analog RTUs with non-proprietary digital RTUs with up to date software and modification of antennas and antenna repeater stations to improve the reliability of connections to the remote sites. The improvements will also include addition of back-up cellular modem capability to further improve reliability. The reporting capabilities of the new system will be improved, which will reduce operator time requirements provide more complete data for operating decisions. In addition, we expect the improved SCADA system reliability to reduce the occurrence of potable water tank overfilling and sewage overflows.

Analysis and Conclusions

The proposed new SCADA system will improve reliability significantly. Improved reliability will reduce the number of trips to the remote sites to respond to failure in SCADA information transfer, which will also result in a reduction in operator hours. The new system will also reduce operator

labor associated with searching and manipulating data. The anticipated reduction in mileage and hours is presented in Table 1.

Table 1
Estimated Reduction in Labor and Mileage

	Number of Events (#/yr)			Hours (hrs/yr)			Miles (miles/yr)		
	Est. Current	Anticipated Future	Reduction	Est. Current	Anticipated Future	Reduction	Est. Current	Anticipated Future	Reduction
Site Visits Due to Data Failures	60	2	58	180	6	174	1800	60	1740
Site Visits for Water Tanks Due to Failures	10	1	9	30	3	27	300	30	270
Time Manually Sifting Through Data (hrs/yr)				60	12	48			
Totals	70	3	67	270	21	249	2100	90	2010

We also anticipate that the new system will reduce (if not eliminate) potable water tank overflow events and the sewage overflow events. There are currently about two potable water tank overflows per year with a total overflow volume of about 400,000 gallons. An energy savings will be realized by eliminating the pumping of 400,000 gallons of water. There is approximately one sewer overflow attributable to SCADA failures per year where overflow wastewater could potentially reach surface waters. We anticipate that the new SCADA system will all but eliminate sewage overflows due to SCADA failures.