

**Drinking Water Revolving Fund
Green Project Reserve Qualification Template**

Applicant: City of Burton Project No: Burton DWRF # 7397-01
Project Name: Project System Improvements - Phase 2

Identify by page number from the project plan, or attach excerpts, where water efficiency or energy efficiency improvement justification is provided or discussed to support the need for the recommended green project reserve component: Pages please see attached.

Please ensure all requested information is provided to enable an assessment by the Michigan Department of Environmental Quality (DEQ) of whether the project or project component can qualify for funding from the green project reserve.

Meter Replacements with Conventional Meters

1. Over the last five years, water lost or unaccounted for in the system has averaged _____ gallons per year and is _____ percent of the water produced each year.
2. Identify the source of this information (i.e. water audit, water conservation study, production and billing records): _____
3. Identify the portion of the water loss that is likely due to inaccurate meters: _____
4. The expected reduction in water loss by installing replacement traditional water meters in all or a portion of the system is _____ gallons per year, reducing the water loss percentage to _____.
5. It takes _____ kilowatt hours (kWh) of electricity to produce and distribute 1,000 gallons of water. At a cost of \$ _____ per kWh, the estimated annual electrical cost for the water loss due to inaccurate meters based on the five-year average is \$ _____.
6. Based on the average cost per year for the loss and the estimated cost of _____ for replacing the meters, the project will pay for itself in _____ months/years.
7. Attached all relevant data and calculations that were used to provide answers to these questions.

Water Main Replacement

1. Over the last ten years, 49 water main breaks have occurred on the water mains that are proposed for replacement, an average of 1.42 breaks/mile/year.
2. Identify the length, diameter, age and type of pipe to be replaced: 13,400 feet of 6-inch cast

iron pipe, 70 +/- years old. 4,800 feet of 8-inch cast iron pipe, 70 +/- years old.

3. Each break is estimated to result in the average loss of 105,000 gallons of water, calculated to total 474,000 gallons/year of water lost for those water mains.
4. Present the data indicating how this is a significant source of water loss in the system and how the pipes proposed for replacement are likely to generate the greatest return in leak reduction. The project area has 525 homes, which consume 131,250 gallons per day. The amount of water loss per year is equivalent to over three and a half full days of water consumed by all 525 homes. Replacing 70 year old cast iron pipe with new PVC C909 pipe will nearly eliminate this loss.
5. The energy savings from pumping/delivering water through the new water mains versus the old ones is estimated at 293,000 Kwh/year.
6. Describe the condition of the replaced mains with respect to friction/head loss etc from tuberculation or other deterioration issues. As appropriate, identify if the soils are corrosive and contributing to the deterioration/breaks or leaks in the mains, and how the replacement mains are designed to address future corrosion:
As illustrated in the 2013 City of Burton Water System Improvements Plan, the already undersized existing water main has been made worse by tuberculation. It is estimated that the existing water main has a Hazen-Williams roughness constant of 65-70. New PVC C909 can be assumed to make a roughness constant of 130. The age and material of the existing water main is considered to be the central issues rather than the existing soils.
7. Total projects costs for the water main replacement component of the project are \$ 4.3 million.
8. Identify the source of data used for these calculations: City GIS and City historical records as illustrated in the 2013 City of Burton Water System Improvements Plan.

Submitted by:

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Name

June 10, 2014

Date

Associate

Title