

# Grand Rapids, Michigan

CITY SAVES \$800K+ THROUGH LARGE VALVE ASSESSMENT THAT LED TO REHABILITATING 8 LARGE VALVES INSTEAD OF REPLACING

The City of Grand Rapids is the second largest water system in Michigan and delivers clean drinking water to the Grand Rapids area using Lake Michigan as its water source. The Grand Rapids Water System operates about 1,250 miles of pipelines, 31,000 system valves, and over 1,300 large system valves (16 inches and larger).

Over the last few years, the operation and maintenance of the large valves had declined due to focus being placed on other critical priorities. Without a consistent exercise routine for critical valves, the utility found that many of these valves were inoperable and, as a result, began to seek funding for valve replacements.

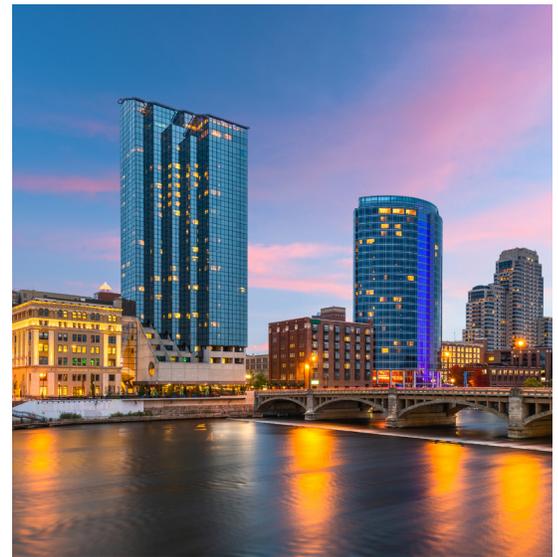
## Challenge

Grand Rapids was aware of a long segment of transmission line that could not be isolated due to inoperable valves. To regain control of the line, the City replaced five large valves at an average cost of \$125,000 per valve, each taking an average of one week to replace. This amount of work and cost was a wake-up call that compelled Grand Rapids to find alternate methods of rehabilitating their valve assets.

**“Rehabilitating valves as opposed to replacing valves is a no-brainer when you look at the cost in addition to the time and operational capability benefits...”**

Alex Fleet, Project Engineer, Grand Rapids Water System

Xylem's experience has shown that on average, 60 percent of valves in a water system are operable, meaning that 40 percent are either inoperable, not locatable, or in the wrong position. Statistically, this meant that with 1,300 valves in Grand Rapids' system, around 500 of them could have some sort of issue. With limited information on which ones required attention and a limited capital budget for asset replacement, the City would need a more focused approach to help them make repair or remediation decisions.



## PROGRAM HIGHLIGHTS

- 8 critical valves restored to full operability for less than the cost of replacing just one valve
- 60% of the assessed valves were working properly, allowing operational expenditures to be allocated elsewhere.
- The City saved more than \$800k by assessing and repairing infrastructure rather than replacing – a cost savings of over 90%

## SERVICES PROVIDED

- Valve assessment – assessed 20 large valves in the transmission system
- Valve repair – repaired and restored eight critical valves to full operability
- Valve rehabilitation – rehabilitated one inoperable 36" gate valve

## Solution

In accordance with the City's asset management plan, the first step was to determine the status of these valves. Based on age (80+ years), the City doubted that any of the valves selected for assessment would work properly.

In October of 2017, Grand Rapids partnered with Xylem to assess and evaluate 20 large valves in their transmission system as part of a pilot maintenance, operation and rehabilitation program. The results would then guide the City in determining next steps to improve performance across the system.

## Outcome

The results defied expectations. In conducting their evaluation, Xylem found that 12 of the 20 valves worked quite well. Although the findings surprised the City's staff, the numbers lined up with the national average of 60% valve operability.

Xylem repaired and restored the 8 remaining valves assessed, bringing them back to full operability. This included designing and manufacturing the necessary replacement parts for each valve as well as rehabilitating one inoperable 36" gate valve by fabricating and replacing a disintegrated bull gear.

**"Not only did Grand Rapids find that 12 of the 20 valves assessed were operationally sound, but the remaining 8 valves were repaired and restored for less than the cost of replacing just one, for a total savings to the City of over \$800,000."**

Once Xylem completed the initial assessment, the City immediately updated their asset information, allowing them to identify which control valves to operate in the event of an emergency during the rehabilitation phase.

This rehabilitation work took approximately one to two days per valve, and only one main had to be taken out of service. **Rehabilitation restored 8 critical valves to full operability for less than the cost of replacing just one valve.** In addition to the cost savings, Grand Rapids obtained critical information (physical, locational, and operational data) for their asset inventory and avoided the inconvenience associated with valve replacements, all while improving the city's resilience to water-related disasters.

**That's the power of decision intelligence.**



A post-rehabilitation shot of a 36" critical division valve that was inoperable for over 30 years.



Xylem was successful in quickly rehabilitating this inoperable 87-year old Clow Gate valve.