



# MEMORANDUM

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## LEGISLATIVE REFERENCE BUREAU

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**To:** Ald. Jim Bohl  
**From:** Aaron Cadle – Legislative Fiscal Analyst  
**Date:** October 10, 2016  
**Subject:** Lead Drinking Water Service Line Replacement Programs

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The communities of Madison, WI, and Lansing, MI, are often cited as being in a class by themselves as civic models when it comes to dealing with lead in the drinking water resulting from lead service water supply lines. This memo summarizes the programs in these 2 communities to proactively remove all lead service lines from their drinking water systems as a solution to elevated concentrations of lead in their drinking water.

### **Madison, WI**

The Madison lead service line replacement program was implemented in 2001 after the city failed to meet EPA lead concentrations limits in 1992, and spent many years searching, without success, for an acceptable chemical additive to reduce lead concentrations in the drinking water system. At the time, there were approximately 8,000 lead service lines in the Madison system, roughly 5,600 jointly-owned by the utility and the property owner. When the city decided in 2000 that full replacement of every lead service line connecting a customer to the water main was the only reliable way to significantly reduce lead concentrations in the water to meet EPA limits, it passed an ordinance requiring every property owner to replace his/her portion of a lead service line when the city replaced its portion of the line. The city replaced its portion of the line, while private plumbing contractors replaced the customer-owned portion. The city worked with the customer-engaged contractors to coordinate replacements to keep costs down for property owners by saving the cost of contractors re-digging access trenches, and in some cases bundling replacement projects.

The replacement of the 8,000 lead service lines took 11 years (2001 to 2011), although approximately 80% were completed by 2006. According to the utility, the cost was \$15.5 million.

Madison provided rebates (not to exceed \$1,000) for 50% of the customer's costs of replacement. The average rebate was \$670. This suggests the average customer cost for service-line replacement was \$1,340, but because rebates were capped at \$1,000, and it is unknown how many replacements cost customers more than \$2,000, this cost estimate may be low. The utility did not track how many property owners spent more than \$2,000 to replace their lines,

but has the sense it was “only a handful.” While the utility maintains \$2,000 was a reasonable estimate of the total property-owner cost for line replacement back in 2001-2006, Madison is considering increasing the maximum rebate to \$1,500 for the one or 2 lead service line replacements still being done annually to reflect higher 2016 replacement costs.

Average cost of the utility-owned portion of lead service line replacements was \$1,997.

Initially, the utility petitioned the Wisconsin Public Service Commission to include the cost of the rebates in its rate base. When the PSC denied the request, the common council increased sewer rates to pay for the rebates, arguing the cost avoided by not adding phosphates to prevent lead leaching into the drinking water, and then the costs avoided by not needing to remove these phosphates later during wastewater treatment justified using sewer fees to fund the replacement of lead service lines.

In the end, funding from sewer fees failed to materialize (sources at the utility are not clear why) and the utility used revenues from renting space on water towers for cell phone antennas to fund rebates to property owners.

Madison made no attempt to make its lead service line replacement program a “jobs program.” No RFP was issued. Existing utility personnel were used to replace the utility-owned portion of service lines. A private plumbing contractor chosen by the property owner replaced the portion owned by the property owner. Other than to require a licensed plumbing contractor to complete a safety certification issued by Madison Gas and Electric, and to have a permit to work in the public right-of-way, the utility made no efforts to influence property owners’ plumbing contractor selection. There were no EBE, LBE or MBE requirements for private contractors.

Service line removal was initiated by the utility, which required all customers to complete a survey indicating if their service lines were lead before the replacement program began. The utility then mapped a replacement schedule for the 8,000 lines to be replaced, starting with daycares, schools and other priority replacements. As the utility moved through its replacement schedule year by year, multiple notices were sent to property owners whose services lines were coming up for replacement, notifying them that they were required to replace their portion of lead service lines at the same time the utility replaced its portion. In the typical scenario, the utility would move from property to property down a block replacing its portion of the service lines, temporarily connecting the copper lines to the customers’ existing lead service lines, leaving trenches open for private plumbing contractors. The next week, private contractors would move from trench to trench replacing the property owners’ lead service lines, connecting the customers’ new copper lines to the utility’s new copper lines. The

utility then circled back to inspect the plumbing contractors' work, and to refill the trenches.

The utility indicates only a few customers failed to comply with the requirement to replace their portion of lead service lines replaced. Fines for non-compliance, which ranged from \$50 to \$1,000 per day, helped gain compliance. Occasionally, a property owner would refuse to comply when the utility replaced its portion of the service line. In these cases, the service line remained copper on the utility's side and lead on the property owners' side, the replacement trench was refilled, and the matter was turned over to the Madison City Attorney for legal action. If the property owner then dug out and replaced his/her portion of the service line in a reasonable amount of time (usually one year), he/she would still be eligible for a rebate.

The utility has no plans to address the possibility of lead pipes used for interior plumbing in the private property of customers.

### **Lansing, MI**

The Lansing, MI, Board of Water and Light (BWL) is unique in 2 aspects. The utility owns, and has owned since 1927, all drinking water service lines. In addition, BWL sets its own water rates and is not overseen by a state public service commission. As a consequence, BWL has no ownership hurdles to clear if it wants to replace service lines, and is free to raise water rates to fund service line replacements.

In 2004, BWL's Board of Commissioners (11 local residents appointed by the mayor) approved a lead service line replacement program, despite the fact the utility was in full compliance with EPA lead concentration limits. As of March, 2016, 12 years into the program, the utility had replaced 13,500 lead service lines. Only 600 lead service lines remain to be replaced, and the utility expects to replace the last lead service line in its system by June 30, 2017.

Total costs to replace the 13,500 lead service lines were \$42 million, or approximately \$3,000 per service line replacement from the main to the customer's meter. All replacements are performed by utility personnel, and are considered infrastructure upgrades and routine capital improvements projects.

Funding for BWL's lead service line replacement program comes exclusively from water use rate increases, implemented by the BWL Board of Commissioners.

Using a special tool developed by utility engineers, BWL has developed a unique method for replacing lead service lines the utility claims has cut the cost of service line replacements in half. Rather than digging a trench to expose the length of the service line, BWL digs 2 holes approximately 4' X 4', one in the

street above the main, and another as near as possible to the customer's meter. The service line is cut at each end, and the copper replacement pipe is threaded into place, pushing out the old lead pipe. From time to time the lead pipe splits forming a partial conduit for the copper pipe, and is left buried. Less frequently, the lead service line does not move, and a trench must be dug to remove it. Flint, MI has used this method with limited success. BWL believes Flint service lines may be bent between the meter and the main, or have kinks that prevent the method from working.

BWL has not sought easements to gain access to its service lines, but prefers to work cooperatively with customers, and depends on good customer relations to enter customer properties to make its service line replacements.

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