



## Lead Service Lines

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Within water distribution systems, service lines are the pipes that connect each building to its nearby water main. Historically, these service lines were often constructed from lead owing to the metal's malleability, durability, and affordability. However, this practice has created a public health risk as lead may be introduced to drinking water as pipes corrode. Even at low levels, lead exposure may result in health impacts including cardiovascular effects and reproductive problems. Additional concerns exist for children, for whom lead exposure may result in an array of health effects including behavioral and learning problems, slowed growth, and anemia.<sup>1</sup> Collectively, these concerns have driven efforts to mitigate lead in drinking water, including elimination of lead from water distribution systems through lead service line replacement (LSLR).

### LEAD SERVICE LINE USE AND REGULATION

While the potential health effects of lead piping were recognized as early as the late 1800s, installation of lead piping persisted into the 20<sup>th</sup> century. Indeed, while use of lead in pipes was in decline by the 1920s, national model plumbing codes continued to approve lead into the 1970s and 1980s. The Safe Drinking Water Act Amendments of 1986 ultimately prohibited the installation of lead pipes, though extant lead service lines (LSLs) continue to pose a public health risk.<sup>2</sup>

Lead in drinking water is regulated at the federal level under the Environmental Protection Agency's (EPA's) Lead and Copper Rule (LCR). First promulgated in 1991, the LCR limits the concentration of lead and copper allowed in public drinking water at the consumer tap. This is unique relative to other provisions of the National Primary Drinking Water Regulations as the LCR requires the water supplier to control contaminants that may be introduced in the course of the water's distribution. To this end, the LCR may require water suppliers to implement corrosion control treatment, in order to modify the chemistry of their water supply to prevent lead from leaching from pipes. If such treatment is insufficient for limiting lead levels, the LCR may mandate further remedies which may include requirements to educate consumers on the risks of lead in drinking water and how to mitigate these risks.<sup>3</sup>

If a system containing lead service lines exceeds lead limits even after corrosion control treatment, the system must begin LSLR. LSLs consist of two sections: a "utility side" that extends from the water main to the property line, and a "customer side" that extends from the property line to the house or other structure.<sup>4</sup> This division presents a challenge to LSLR, as the utility does not own the customer side and may not be able to leverage funds for customer-side line replacement. Further, customers may be unwilling or unable to pay for replacement of their portion of service lines, an issue exacerbated by the fact that LSLs are generally more prevalent in low-income communities.<sup>5</sup> In some instances, this has led to partial lead service line replacement (PLSLR), where only the utility side of a line is replaced. However, PLSLR often causes elevated lead levels in the short-term as replacement work can disturb lead-containing scales within pipes and introduce additional lead into the water supply. PLSLR has not been found to reliably reduce lead levels over periods ranging from days to months, and potentially even longer.<sup>6</sup>

### LSLR IN WISCONSIN

While it is challenging to determine the precise number of LSLs in Wisconsin, the Public Service Commission (PSC) maintains an LSL inventory comprised of data collected from municipalities.<sup>7</sup> In 2018, it was estimated that there were a minimum of 202,000 LSLs in Wisconsin. Despite ongoing LSLR efforts, this number has actually increased relative to prior estimates as the PSC improves its estimates. While many of the extant LSLs (approximately 77,000) are located in Milwaukee, LSLs persist statewide

and a significant portion of the state's water utilities continue to report LSLs in their service areas. To address this issue, a number of funding options are available to support LSLR in Wisconsin.

### Ratepayer Funds (2017 Wisconsin Act 137)

With the passage of 2017 Wisconsin Act 137, Wisconsin became one of only three states to authorize the use of ratepayer dollars to support customer-side LSLR.<sup>8</sup> Under the act, a water utility may provide financial assistance to a customer, provided that:

1. The municipality in which the water utility provides financial assistance enacts an ordinance that permits the utility to provide the assistance and requires customers to replace LSLs.
2. The utility side of the service line does not contain lead or is replaced concurrently with the customer side.
3. The PSC approves the utility's LSLR assistance plan.

Under the act, a utility may not provide a grant that exceeds half of the total cost of replacing a customer's portion of an LSL. However, a utility may also support customer-side LSLR through nonforgivable loans.<sup>9</sup>

### Safe Drinking Water Loan Program (SDWLP)

The SDWLP is a revolving loan program combining state and federal funds that is administered jointly by the Department of Natural Resources (DNR) and the Department of Administration. The program provides financial assistance to municipalities for drinking water infrastructure projects, which may include replacement of LSLs controlled by the municipality.<sup>10</sup>

Through the SDWLP, DNR also established the Private LSL Replacement Funding Program. This two-year program (fiscal years 2017 and 2018) provided municipalities with forgivable loans to support customer-side LSLR. No new funding is available through the program at this time, though municipalities may still have unspent funding received through the program available for homeowners.<sup>11</sup>

### Community Development Block Grant (CDBG)

Through the CDBG program, the U.S. Department of Housing and Urban Development may provide financial assistance to support a variety of community development needs. While the program is not specifically targeted to LSLR, a community may include LSLR as part of a CDBG request.<sup>12</sup>

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<sup>1</sup> U.S. EPA, *Basic Information about Lead in Drinking Water* (March 2019), <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>.

<sup>2</sup> Richard Rabin, *The Lead Industry and Lead Water Pipes "A MODEST CAMPAIGN,"* American Journal of Public Health, 98 (9) (September 2008), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2509614/>.

<sup>3</sup> U.S. EPA, *Lead and Copper Rule Revisions: White Paper* (October 2016),

[https://www.epa.gov/sites/production/files/2016-10/documents/508\\_lcr\\_revisions\\_white\\_paper\\_final\\_10.26.16.pdf](https://www.epa.gov/sites/production/files/2016-10/documents/508_lcr_revisions_white_paper_final_10.26.16.pdf).

<sup>4</sup> A diagram illustrating the sections of an LSL may be found at: <https://www.lslr-collaborative.org/intro-to-lsl-replacement.html>.

<sup>5</sup> U.S. EPA, *Lead and Copper Rule Revisions: White Paper* (October 2016), [https://www.epa.gov/sites/production/files/2016-10/documents/508\\_lcr\\_revisions\\_white\\_paper\\_final\\_10.26.16.pdf](https://www.epa.gov/sites/production/files/2016-10/documents/508_lcr_revisions_white_paper_final_10.26.16.pdf).

<sup>6</sup> U.S. EPA Science Advisory Board, *SAB Evaluation of the Effectiveness of Partial Lead Service Line Replacements* (September 2011), [https://www.epa.gov/sites/production/files/2015-09/documents/sab\\_evaluation\\_partial\\_lead\\_service\\_lines\\_epa-sab-11-015.pdf](https://www.epa.gov/sites/production/files/2015-09/documents/sab_evaluation_partial_lead_service_lines_epa-sab-11-015.pdf).

<sup>7</sup> PSC of Wisconsin, *E-Services Portal*, (n.d.), <http://apps.psc.wi.gov/vs2015/WEGS/default.aspx>.

<sup>8</sup> National Conference of State Legislatures (NCSL), *Lead Water Service Lines* (2018), <http://www.ncsl.org/research/environment-and-natural-resources/lead-water-service-lines.aspx>.

<sup>9</sup> Wisconsin Legislative Council, *2017 Wisconsin Act 137 Act Memo* (2018),

<https://docs.legis.wisconsin.gov/2017/related/lcactmemo/act137.pdf>.

<sup>10</sup> DNR, *Environmental Loans (EL)* (December 2019), <https://dnr.wi.gov/Aid/EIF.html>; s. 281.61, Stats.

<sup>11</sup> DNR, *Private Lead Service Line (LSL) Replacement Funding Program* (July 2019),

<https://dnr.wi.gov/Aid/documents/EIF/privateLSLreplacementFundingProgram.html>.

<sup>12</sup> NCSL, *Lead Water Service Lines* (2018), <http://www.ncsl.org/research/environment-and-natural-resources/lead-water-service-lines.aspx>.