Recognizing efforts to replace lead service lines

Communities and states aim to reduce lead in drinking water

From 2016-2020, EDF recognized states and communities that had publicly announced a goal of replacing all lead service lines in their jurisdiction through an online tracker. The content below is an archive of that material. Data may be out of date and some links may have been renamed, moved, or deleted and may no longer be available.

Across the United States, 6 to 10 million homes still get their water from lead service lines (LSLs) – pipes connecting the main drinking water line in the street to our homes. These pipes can unpredictably release lead into drinking water. Corrosion control can help manage the risk, but the most effective long-term solution to protect children is full replacement of all lead service lines. The tragedy in Flint, Michigan put a national spotlight on the problem of lead in drinking water – and states and communities across the country are taking steps to tackle the issue.

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State efforts to support LSL replacement

17 states have proactive policies to support community LSL replacement programs

States have three critical roles in helping communities replace lead service lines (LSLs) by:

1. Ensuring compliance with the safe drinking water rules, including the Lead and Copper Rule (LCR).
2. Educating communities, utilities, and the public on health risks posed by lead; the benefits and challenges of replacing LSLs; and, hopefully, the resources offered by EPA and the LSL Replacement Collaborative.
3. Establishing policies that enable or direct communities and utilities to fully replace LSLs.

Regarding the third role, EDF recognizes proactive state policies that support community LSL replacement programs. The table below provides a summary of proactive state policies. Follow the links for more details.

State policies supporting community LSL replacement programs

State	Estimate of LSLs[1]	Set goal	Enable funding[2]	Develop state inventory/ survey[3]	Mandate replacement practices	Require disclosure to homebuyers
California	65,000	--	--	Mandatory (Limited Inventory)	--	Limited
Illinois	677,400 to 1.45 million	--	--	Mandatory	Yes	Good
Indiana	206,000 to 599,000	--	Rates and loans	Voluntary (Full survey)	--	Limited
Louisiana	56,000	--	--	Voluntary (Limited Survey)	--	Limited
Massachusetts	220,000	--	Loans	Voluntary (Full Survey)	--	None
Michigan	460,000	Yes	Rates and grants	Mandatory (Full Survey)	Yes	Good
Minnesota	260,000	--	Grants	--	--	Voluntary
Missouri	330,000	--	Rates	--	--	None
New Jersey	350,000	Yes	Rates and loans	--	---	Voluntary
New York	360,000	--	Grants	--	--	Very good
North Carolina	82,000	--	--	Voluntary (Limited survey)	--	Good
Ohio	650,000	--	Grants	Mandatory (Limited Inventory)	--	Limited
Pennsylvania	160,000	--	Rates	--	--	Very good
Vermont	7,400	--	Grants	--	--	None
Virginia	97,000	--	Grants	--	--	None
Washington	<5,500	Yes	Loans	Voluntary (Limited survey)	--	Limited
Wisconsin	240,000	--	Rates and grants	Mandatory (Full inventory)	--	Good

1. Based on 2016 American Water Works Association (AWWA) Survey except Washington, Illinois and Indiana, which are based on state surveys. Estimate includes lead goosenecks.
2. "Rates" means utility can use rates paid by customers. "Loans" means state provides zero interest loans.
3. State inventory/survey is an estimated number of LSLs based on reporting by community water systems. Limited inventory means the reporting may not have included materials on private property, estimates of unknown materials, or specific counts. See description for state for details.
4. Based on EDF's Grading of State Disclosure Policies for Lead Pipes Report.
5. While California has set a goal of full LSL replacement, the requirement only applies to the LSL on public property.

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Full description of proactive state policies
For each state, we describe their progress on the following five areas, based on publicly available information: setting a statewide goal, providing funding, developing inventories and posting online maps of LSL locations, establishing standards for replacement practices, and requiring disclosure to homebuyers. When referring to ownership of the service line, we use the state's language. We focus the descriptions on Community Water Systems (CWSs) - the public water systems supplying water to the same population year-round.

California
Estimated 65,000 LSLs (AWWA Survey) of 9.52 million service lines by 2,927 CWSs (SDWIS 7/2018)

Primary agency webpage: State Water Resources Control Board (Water Board)

In September 2016, the California State Assembly and Governor Jerry Brown enacted SB1398 and committed the state to replacing all LSLs, including lead goosenecks*, in the state between the water main under the street and the meter. The Mandate does not apply to the portion of the LSL between the meter and the home or building. In 2018, the Assembly enacted SB427 limiting the requirement to the State's 7,500 CWSs and removing the requirement that the water system comply with the Water Board's revised timeline if a compromise cannot be reached.

Under the law, CWSs must identify and replace LSLs and complete work on a "schedule that is commensurate with the risks and costs involved." The CWSs must submit the following to the Water Board:

- By July 2018, an inventory of known LSLs and a timeline for their replacement; and
- By July 2020, an updated inventory of LSLs and a timeline to replace any service lines made of lead.

Additional information:

The Water Board has 30 days to approve the submission or propose a revised timeline. Then the parties have 30 days to agree to a compromised timeline. The state provides a web portal with FAQs for submission.

This two-step approach makes replacing known LSLs the highest priority and, by essentially presuming that a service line is lead unless known otherwise, also creates an incentive for CWSs to develop accurate inventories in the next three years. However, the program would not apply to the portion of the service line between the meter and the house, which is referred to as the "customer side." The Water Board acknowledges that this may result in partial, but not full, replacement of the LSL and "highly recommends" that the CWS notify the customer, and if possible, assist in the replacement. This definition also means that a CWS could report it has no LSLs, even if there are lead pipes on the customer side.

In December 2018, the Water Board released the results of the first round of CWS reporting in an interactive map and posted a new webpage providing background for customers on the inventory requirement. See EDF's blog describing the map and press release for more information.

In addition, California requires sellers to disclose to homebuyers any environmental hazards that they may be aware of. A lead pipe is not one of the examples provided. Therefore, a seller may not consider an LSL to be an environmental hazard.

Illinois
Estimated 686,000 to 1.92 million LSLs of 3.74 million service lines by 1,660 CWSs (IEPA report)

Primary agency webpage: Illinois Environmental Protection Agency (IEPA)

The Illinois General Assembly and Governor Bruce Rauner enacted SB550 in January 2017 regarding lead in drinking water. For LSLs, it directs utilities to 1) create a comprehensive LSL inventory, and 2) provide notice to occupants of residences potentially affected by construction or repair work on water mains, LSLs, or water meters.

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Additional information:

Under the law, CWSs must provide the IEPA with a "water distribution system material inventory" on April 15 of each year, starting in 2018, until the inventory is complete. IEPA also directs CWSs to post their materials inventory, including locations of LSLs, on their public website. If the CWS does not have a public website, IEPA will post their inventory data for them; however, this will not include location information. The inventory must identify the:

- Total number of service lines within or connected to the distribution system, including privately owned service lines;
- Number of all known LSLs within or connected to the distribution system, including privately owned LSLs; and
- Number of LSLs that were added to the inventory after the previous year's submission.

As of June 2020, 1,739 CWSs have reported to the IEPA on 3.83 million service lines (10 CWSs have not yet reported). About 17% of the total service lines were reported as lead and 20% were reported as unknown (seperate from the category unknown- but not lead). By EDF's calculations, Illinois has between 677,359 and 1.45 million lead pipes (including unknowns). IEPA published an online tool to enable customers to determine service line material types in their CWSs. For more information, see our blogs on Illinois' mandatory LSL inventory and the state's newly published online tool.

Utilities must follow specific requirements when performing construction or repair work on a water main, service line or a water meter. With limited exceptions, they must provide individual written notice to residents at least 14 days before work begins. The notice must warn potentially affected residents of the dangers of lead and what practices they should follow to prevent the consumption of any lead in drinking water. The recommended practices must include flushing of water lines during and after the completion of the repair or replacement work and cleaning of faucet aerator screens.

If the utility serves a significant portion of non-English speaking consumers, the notification must contain information in the appropriate language and provide contact information to request assistance. For multi-dwelling buildings, the notice may be posted on the primary entrance to the dwelling.

In addition, Illinois requires sellers to disclose to homebuyers if they are "aware of unsafe concentrations of or unsafe conditions related to lead paint, lead water pipes, lead plumbing pipes, or lead in the soil on the premises." Presumably, sellers could decide that the presence of an LSL alone would not be an unsafe condition.

Indiana

Estimated 206,000 to 599,000 LSLs (EDF's analysis of 2016 Indiana survey) of 1.87 million service lines by 781 CWSs (SDWIS 7/2018)

Primary agency webpages: Indiana Utility Regulatory Commission (IURC), Indiana Finance Authority (IFA), Indiana Department of Environmental Management (IDEM)

In April 2017, the Indiana General Assembly enacted HEA-1519, allowing the Commission to approve an investor-owned utility's request to fold the cost of LSL replacement into the rates paid by customers. To qualify, a utility must submit a plan addressing 10 elements and demonstrate the proposal is reasonable and in the public's interest.

Additional information:

The law was enacted amidst efforts by the IURC and IFA to provide the City of East Chicago with $3 million to fully replace 500 LSLs on private and public property.

Pursuant to HEA-1519, in July 2018, the IURC approved a proposal from Indiana American Water to fully replace its estimated 50,000 LSLs on public and private property using rates paid by customers. For more information, see our blog on the landmark decision.

Also in July 2018, the IFA, which manages the State's Drinking Water State Revolving Loan Fund (SRF), launched a "Lead Line Replacement Incentive" to support full replacement of LSLs and galvanized pipe service lines. Eligible communities receive improved ranking on the priority list and interest rates as low as 0% for the replacement projects. More information about the program is available in a fact sheet. In 2017, IFA was selected by EPA for

funding under the Water Infrastructure Finance Innovation Act (WIFIA) program for a $436 million loan to provide additional support for the SRF.

Indiana also conducted a voluntary survey of CWSs in 2016 to learn more about LSLs in the state. CWS responses are online in a search engine for compliance documents. EDF analyzed the data provided by IDEM. See our blog highlighting the survey as a good model and our webpage mapping CWS responses. We found that 57% of CWSs responded. These responses covered 92% of the state's 1.87 million service lines. We estimated the state has as many as 599,000 LSLs - 32% of total lines based on:

- 206,000 known LSLs (11%)
- 268,000 service lines of unknown material in reporting CWSs (14%); and
- 125,000 service lines in CWSs that did not respond (7%).

In addition, Indiana requires sellers to disclose to homebuyers any known hazardous conditions on the property. A lead pipe is not one of the examples provided. A seller may not consider an LSL to be a hazardous condition.

Louisiana
Estimated 56,000 LSLs (AWWA Survey) of 1.66 million service lines by 974 CWSs (SDWIS 7/2020)

Primary agency webpage: Louisiana Department of Health (LDH)

In June 2019, the Louisiana Legislature passed a resolution establishing the Louisiana Task Force on Lead-Free Water to study the problem of lead contamination in state and local water systems. The Task Force is scheduled to report its findings and make recommendations at least 60 days before the start of the 2021 Regular Session of the Legislature.

Between 2016 and 2019, LDH surveyed the 238 CWSs in the state serving more than 3,300 people, requesting a materials inventory. The agency posted the 124 responses it received from these systems online
Of the 15 CWSs serving more than 50,000 people:

- 7 (47%) did not respond including both that serve New Orleans.
- 6 (40%) reported have no known LSLs.
- 1 (6%) response (from City of Alexandria) did not address issue.
- 1 (7%) estimated that less than 0.5% of their service lines may contain lead.

Additional information:

Of the 56 CWSs serving between 10,000 and 50,000 people:

- 19 (34%) did not respond.
- 30 (54%) reported have no known LSLs.
- 4 (7%) reports did not address issue.
- 3 (5%) reported a total of 151 LSLs.

Of the 167 CWSs serving between 3,301 and 10,000 people:

- 89 (53%) did not respond.
- 73 (44%) reported have no known LSLs.
- 3 (1.8%) indicated that lead goosenecks may be present at some locations.
- 1 (0.6%) report did not address issue.
- 1 (0.6%) estimated that less than 0.5% of their service lines may contain lead.

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In addition, Louisiana requires sellers to disclose to homebuyers any known defects with water quality or the presence of hazardous waste on the property. Lead in drinking water or lead service lines are not mentioned as potential defects or hazardous material.

Massachusetts
Estimated 220,000 LSLs (AWWA Survey) of 1.8 million service lines by 523 CWSs (SDWIS 7/2018)

Primary agency webpages: Massachusetts Clean Water Trust (MCWT) and Massachusetts Department of Environmental Protection (MassDEP)

In July 2018, the MCTW, in coordination with the MassDEP, announced the development of an Incentivized Lead Service Line Replacement Program. Through the program, communities that appear on the 2019 Drinking Water Intended Use Plan for LSL or water main replacement projects can replace LSLs on private property at no extra cost to the community or homeowner. The program reduces the interest rate to as low as zero percent so the funds normally used for interest payment can be used instead for LSL replacement on private property. Applications are due in mid August each year to the ongoing MCWT program.

Additional information:

The state is also working to implement the Water Infrastructure Fund Transfer Act that would allow a one-time transfer of $30 million from the Clean Water State Revolving Fund to the Drinking Water State Revolving Fund to provide loan forgiveness to disadvantaged communities to address lead in water systems during planning or capital projects.

Additionally, in response to EPA's 2016 letter to states about increasing transparency in Lead and Copper Rule implementation, the MassDEP conducted a voluntary survey of public water systems in the state. The state sent a Survey Monkey poll to 523 active CWSs and 259 non-transient, non-community public water systems with the goal of identifying technical needs and best practices related to LSL program implementation.

In DEP's October 2016 summary of the survey results, 547 systems (69%) responded. Survey respondents reported having 22,023 LSLs and 15,809 lead goosenecks in the system, only 17% of AWWA's estimate of 220,000.

On August 15, 2018 MassDEP followed up on the voluntary Lead Service Line (LSL) survey and sent out two notices: 1) A reminder notice was sent to the 316 CWSs and Non-Transient Non-Community Water systems that did not respond to the 2016 survey. The reminder notice offered the systems another opportunity to complete the LSL survey, and informed them of available technical assistance and funding opportunities for PWSs and 2) a notice was sent to all systems that responded to the initial survey to informed them of available assistance and funding opportunities and to encouraged them to share any new information since their initial response.

As of December 1, 2018, 590 systems responded to the reminder notices, 240 systems indicated that they did not have any LSLs and 304 systems indicated that they were not aware of the exact number of LSL they have to date. Raw data of the initial and reminder survey is available upon request to MassDEP Drinking Water Program.

MassDEP has also incorporated scanning of public water systems (PWS) 'tie" or service card into an on-going Geographic Information System (GIS) mapping program for PWS distribution systems.

Additionally, the Massachusetts Water Resources Authority (MWRA) has a $100 million program offering 10-year, interest free loans to the communities who receive the wholesaler's water for efforts to fully replace LSLs. MWRA is the state's largest wholesaler, serving 40% of the state's customers, and 45 of its water communities are eligible for funds under the program.

Michigan
Estimated 460,000 LSLs (AWWA Survey) of 2.7 million service lines by 1387 CWSs (SDWIS 7/2018)

Primary agency webpage: Michigan Department of Environmental, Great Lakes, and Energy (EGLE)

In October 2020, Michigan Governor Gretchen Whitmer announced a bipartisan water infrastructure plan that included over 102 million for lead service line (LSL) replacement in disadvantaged communities. This funding is the

result of a one-time transfer from the Clean Water State Revolving Fund to the Drinking Water State Revolving Fund, under the federal Water Infrastructure Funding Transfer Act. Eligible communities that apply will receive funds in the form of principal forgiveness, with the amount based on the population served.

In June 2018, Michigan Governor Rick Snyder followed through on his promise to overhaul the state's version of EPA's Lead and Copper Rule to address shortcomings revealed by the tragedy in Flint. The key LSL-related provisions are at 325.11604 and 325.11604f.

Additional information:

The new standards accelerate LSL replacement by requiring CWSs to:

- **Conduct a materials inventory:** Provide EGLE with: 1) a preliminary distribution system materials inventory of service lines based on a thorough assessment of existing sources of information due by January 1, 2020; 2) a complete inventory, including methodology used to verify its accuracy, by January 1, 2025; and 3) a comprehensive update of the inventory every 5 years starting in 2030. The inventory must include materials in the portion of the service line on private property.
- **Replace the entire LSL:** Replace entire LSLs, including goosenecks, on public and private property as well as galvanized steel service lines that are or were downstream of a lead pipe. There are special provisions for emergency repairs. Use of techniques that coat or line lead or galvanized steel service lines to comply with the replacement requirements is prohibited.
- **Meet a 15- or 20-year LSL replacement schedule:** Achieve a replacement schedule average 5% per year starting in 2021 totaling not more than 20 years for replacement of all LSLs, unless the system has an alternative plan approved by the state EGLE. For CWSs that exceed the Lead Action Level (LAL) after installing corrosion control, the rate shall be 7% per year. In 2025, the LAL drops from 15 to 12ppb. An annual summary of service line repairs and replacements is required.
- **Pay for replacement unless no control:** Replace the entire LSL, gooseneck, or galvanized steel line at CWS's expense unless it can show that it has no control of the service line. Control includes the authority to replace, repair, or maintain service lines or to set standards for construction, repair, or replacement of the service lines.
- **Notify customers:** If system has LSLs or service lines of unknown material: 1) include in annual Consumer Confidence Report the number of LSLs, the number of service lines of unknown material, and the total number of service lines in the supply and 2) notify owner and occupant of property: a) within 30 days of determining a service line contains or is presumed to contain lead; and b) when new water account is opened if premises has known or presumed LSLs.

In August 2018, the state EGLE provided $9.5 million in grants to 18 communities to update materials inventories and asset management plans and for development of full LSL replacement projects. The department intends to evaluate projects conducted by the grantees for the pilot to determine future recommendations for community LSL replacement.

In addition, Michigan requires sellers to disclose to homebuyers the type of materials (copper, galvanized or other) used in the plumbing system and if there are any known problems. The seller is not prompted to identify lead as a plumbing material and may not consider an LSL to be a known problem.

Minnesota

Estimated 260,000 LSLs (source: AWWA Survey) of 1.39 million service lines by 966 active community water systems (CWSs) (source: SDWIS).

Primary agency webpage: Minnesota Department of Health and Minnesota Public Facilities Authority

In May 2020, Minnesota Governor Tim Walz signed legislation that allows the Minnesota Department of Health and the Public Facilities Authority to modify the existing Drinking Water Revolving Fund Program to allow for principal forgiveness grants for LSL replacement on private property (See SF 13, section 14).

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Missouri
Estimated 330,000 LSLs (AWWA Survey) of 1.9 million service lines by 1428 CWSs (SDWIS 7/2018)

Primary agency webpage: Missouri Public Service Commission (PSC)

In May 2018, Missouri's Public Service Commission determined the Missouri American Water Company (MAWC) could continue its LSL Replacement program and approved a rate increase for the purpose of infrastructure improvements – including LSL replacement. For MAWC's program, the water utility replaces LSLs (owned by MAWC and by customers) when discovered during a water main replacement. MAWC serves more than 150 communities in the state.

New Jersey
Estimated 350,000 LSLs (AWWA Survey) of 2.4 million service lines by 582 CWSs (SDWIS 7/2018)

Primary agency webpages: New Jersey Department of Environmental Protection (DEP), New Jersey Infrastructure Bank (NJIB)

In October 2019, New Jersey's Governor announced a new statewide plan to address lead exposure from paint, water, and soil that included a goal of fully replacing the state's LSLs within 10 years. The plan implemented key recommendations put forward by a collaborative task force, and includes: proposing a $500 million bond to support LSL replacement and remediation of lead-based paint; enabling utilities to use rates paid by customers to support LSL replacement on private property; and improving the state's inventory of LSLs. See EDF's blog for more information.

Additional information:

In January 2020, the Governor signed legislation allowing municipalities to adopt ordinances allowing water utilities to enter private property to replace LSLs. This can be done without the property owner's permission, after providing notice to the resident.

In August 2018, the state enacted legislation authorizing municipalities to replace lead contaminated services (including LSLs) on private property if the work is: 1) an environmental infrastructure project; and 2) funded by loans from either the NJDEP or the NJIB (formerly NJ Environmental Infrastructure Trust).

Additionally, for the State Fiscal Year 2018 and 2019, NJDEP and NJIB used state revolving loan funds to establish a $30 million Lead Service Line Replacement funding package. Eligible applicant projects can receive up to $1,000,000 per year, 90% in principal forgiveness and 10% DEP interest-free loans. Projects must result in full LSL replacement – partial replacements are not eligible. For the State Fiscal Year 2019 and 2020, the program was modified to cap loans at $1 million, $5 million, and $10 million per system based on population served.

To receive the funds applicants must serve communities with a median household income less than the median for the county and either publicly owned nonprofit non-community water systems or public community water systems that are owned by water commissions, supply authorities, or districts.

In addition, New Jersey has a voluntary disclosure form that home sellers can provide information about known conditions affecting water quality of the presence of toxic substances on the property to potential homebuyers. Lead pipes are not provided as an example.

New York
Estimated 360,000 LSLs (AWWA Survey) of 3.6 million service lines by 2310 CWSs (SDWIS 7/2018)

Primary agency webpages: New York Department of Health (DOH)

In April 2017, through the state budget for fiscal year 2017-2018, Governor Andrew Cuomo and the New York State Legislature created an LSL replacement grant program and allocated $20 million to support it. The New York State DOH developed the Lead Service Line Replacement Program and is required to allocate the funds equitably among the regions of the state and within a region by 1) prioritizing municipalities with a high percentage of elevated blood lead levels, and 2) considering whether the community is low income and the number of LSLs in need of

replacement. In November 2017, the Governor announced the municipal awardees of the funding; 26 municipalities were awarded a combined $20 million to facilitate the replacement of LSLs. The grant funds are used to replace residential LSLs from the main to the home, including the portion on private property. In July 2019, the Governor announced a second round of funding – 18 communities awarded a combined $10 million – as part of the state's Clean Water Infrastructure Act of 2017.

Additional information:

In April 2018, the Governor signed legislation requiring the development of a plan for statewide LSL replacement. The plan must include a report on the LSL replacement grant program, resources for the identification of LSLs, the cost of replacement, and guidance for municipalities.

In addition, New York requires sellers to disclose to homebuyers if lead plumbing is present and are given the options of yes, no, unknown or not applicable. The seller may not consider an LSL to be part of the plumbing.

North Carolina

Estimated 82,000 LSLs (AWWA Survey) of 3.1 million service lines by 1995 CWSs (SDWIS 7/2018)

Primary agency webpage: North Carolina Department of Environmental Quality (DEQ)

North Carolina conducted a voluntary materials inventory survey of water utilities in 2016. Utilities that reported having LSLs were not required to provide an estimate of the number of LSLs. The state provided the reported results of the survey on their webpage. The file contains system-reported data, which may be incomplete, as some systems have yet to complete all the associated forms. The state also requests that new water systems complete the forms and on-line reporting process.

In addition, North Carolina requires sellers to disclose the type of water pipe material to potential home buyers. Lead is not provided as an option.

Ohio

Estimated 650,000 LSLs (AWWA Survey) of 3.6 million service lines by 1194 CWSs (SDWIS 7/2018)

Primary agency webpage: Ohio Environmental Protection Agency (Ohio EPA)

The Ohio EPA is providing up to $20 million in principal forgiveness funding to eligible LSL replacement projects through the state's Drinking Water Assistance Fund for 2021 and 2022. Individual applicants can receive up to $1 million per year, with loan financing available at no interest in following years if the project is not completed. Eligibility requirements include that the water system has: an updated LSL inventory, the authority to access private property, and an outreach plan to educate consumers. Additionally, if the community has both public and private LSLs, the project must include replacement of both sides.

Additional information:

In May 2016, the Ohio General Assembly enacted HB512 to reduce lead in drinking water, primarily through improved communications to customers and residents. The law requires community and non-transient, non-community water systems to 1) identify and map areas of the system that are known or are likely to contain LSLs, and 2) identify characteristics of the buildings served by the system that may contain lead piping, solder, or fixtures.

The systems were required to submit the map by December 2016, and update the information every five years.

The Ohio EPA provided guidance to water systems and posted PDF versions of more than 1,800 maps of LSL locations on its website. Several cities went beyond these requirements and posted interactive maps or search engines. See Cincinnati, Columbus, and Cleveland for examples.

In May 2018, Ohio EPA updated the state's Lead and Copper Rule to require specific work practices when performing field work that could disturb LSLs beginning October 1, 2018. CWSs conducting a water main replacement in an area with either known LSLs or one likely to contain LSLs must:

- Offer and provide NSF/ANSI 53 certified drinking water filters up to a period of 3 months to impacted customers

- Notify customers at least 45 days in advance of replacement unless work is an emergency repair. The notice must 1) explain that the work may cause a temporary increase in lead levels in drinking water; and 2) provide instruction of filter use offered by utility; and 3) provide guidance on measures consumers can take to reduce lead levels at their tap.

If a CWS is replacing any portion of a LSL, it must:

- Replace the utility-owned portion of the LSL and offer to replace the privately-owned portion. The utility is expressly not required to bear the cost of replacing the privately-owned portion where the property owner chooses not to pay the cost or where replacement is precluded by state, local, or common law. In this situation, the utility may conduct a partial replacement but must maintain records of the decision and location for at least 12 years.
- Notify consumers at least 45 days in advance of replacement unless the work is an emergency repair. The notice must 1) explain that the work may cause a temporary increase in lead levels in drinking water; and 2) provide instruction of filter use offered by utility; and 3) provide guidance on measures consumers can take to reduce lead levels at their tap.
- If the LSL is partially replaced:
- Offer and provide NSF/ANSI 53 certified filters up to a period of 3 months to impacted customers.
- Offer to collect a representative sample from each partially-replaced LSL within 72 hours of completing the work. The utility must mail or otherwise provide the owner and resident with the lab results within two business days.
- Provide notice to all residents of all buildings served by the line similar to the notice described above. In multi-family housing, the notice may be posted at a conspicuous location. In schools, child cares, nursing homes, or correctional institutions, the parents or guardians must be directly notified. In other buildings, only the building administrator must be notified.

In addition, Ohio requires sellers to disclose to homebuyers the presence of hazardous materials. Lead-based paint is provided as an example, but not lead pipes. A seller may not consider an LSL to be a hazardous material.

Pennsylvania
Estimated 160,000 LSLs (AWWA Survey) of 3.8 million service lines by 1951 CWSs (SDWIS 7/2018)

Primary agency webpages: Pennsylvania Department of Environmental Protection (DEP) and Pennsylvania Public Utility Commission (PUC)

Pennsylvania has passed laws expressly describing the conditions under which rate funds paid by customers can be used to replace LSLs on private property for both municipal-owned and investor-owned CWSs. For municipal utilities, in October 2017, the state enacted P.L. 2017-44, which included a provision giving municipalities the authority to replace or remediate private water and sewer laterals using public funds and municipal employees if they determine the work "will benefit the public health."

Additional information:

Municipalities must first consider the availability of and competing demands on public funds, equipment, personnel, and facilities. The law makes clear that replacing the LSL does not make a municipality the owner of the private lateral or obligate it to perform other duties: although the municipality is given the option to do so.

In October 2018, the state enacted P.L. 2018-120 (HB-2075) to establish a framework for investor-owned utilities to recoup the costs of replacing LSLs on private property from rates paid by all customers. It allows that cost to be considered "other related capitalized costs that are part of the public utility's distribution system" and allowed recovery an "equity return rate." However, the utility must first obtain prior approval from the PUC. The PUC must establish standards, processes, and procedures to: ensure the work is accompanied by a warranty and ensure the utility has access to the property during the warranty.

The 2018 law builds on a March 2017, the PUC decision approving a proposal from the York Water System to use rates paid by customers to fund full LSL replacement. The utility had exceeded the lead action level and was required by the LCR to replace LSLs. The PUC allowed rates to fund replacement on private property because it was in the

public interest to avoid both the public health threat posed by partial replacements and the haphazard approach of relying on property owners to replace their portion.

The Commission gave the utility four years to replace LSLs on private property when already replacing lines on public property and nine years to replace LSLs on private property whenever they are discovered. Funds for replacing customer-owned LSLs must be tracked separately, and the utility is not permitted to capitalize the investment.

In addition, Pennsylvania requires sellers to disclose to homebuyers the type of plumbing materials used in the plumbing system, and lead and unknown are options. The seller may not consider an LSL to be part of the plumbing.

Vermont
Estimated 7,400 LSLs (AWWA Survey) of 200,000 service lines by 417CWSs (SDWIS 7/2018)

Primary agency webpage: Vermont Department of Environmental Conservation (DEC)

Vermont DEC used state revolving loan funds to establish a $125,000 grant program to address LSLs. The agency provided 2 grants, the maximum of which was $80,000.

These grants are intended to aid utilities to:

- Find, map, and inventory lead or lead-containing water distribution and customer service lines;
- Establish a proactive, full LSL replacement program;
- Educate the public about the risks of exposure to lead in drinking water and how to reduce risks; and
- Develop a plan to replace LSLs on public and private property.

Virginia
Estimated 97,000 (AWWA Survey) of 2.2 million service lines by 1106 CWSs (SDWIS 7/2018)

Primary agency webpage: Virginia Department of Health (DOH)

The Virginia DOH used state revolving loan funds to establish an LSL Replacement Rebate Program for full replacement of LSLs. Under the program, the utility rebates property owners or authorized third parties the cost of replacing the LSL (or galvanized pipe) on the property owner's side of the meter.

Additional information:

The program is limited to $5,000 per service line and may include up to $500 as an administrative fee. The utility can participate for one year with an option for a one-year renewal under the program. Residences, apartments, daycares, private schools, and other facilities where sensitive populations may be present are eligible for replacement. Eligible waterworks may apply for funding by April 1 every year.

Washington
Estimated fewer than 5,500 LSLs, including lead goosenecks* (state survey) of 2.5 million service lines by 2272 CWSs (SDWIS 7/2018)

Primary agency webpage: Washington Department of Health (DOH)

In May 2016, Governor Jay Inslee announced a directive to the DOH and partner agencies to take actions to reduce lead exposure from paint and water and improve child blood lead testing and follow-up. Governor Inslee set a goal of eliminating LSLs and other lead components, such as goosenecks, within 15 years. The agencies were tasked with developing policy and budgetary proposals to achieve this goal. The DOH was given two years to work with utilities to identify all LSLs and lead components.

Additional information:

In October 2016, DOH released its overall recommendations and undertook a comprehensive survey of all public water systems (PWSs) in the state. It released a summary of its findings in February and updated it in June 2017 and

updated it in July 2018. The DOH received responses from 686 water systems that serve more than 2.2 million service connections of CWSs (called Group A water systems in the state), more than 90 percent of such connections in the state.

Based on the original survey results, DOH extrapolated to estimate state-wide totals of 1,000 to 2,000 LSLs and 6,800 lead goosenecks. Lead goosenecks are technically not LSLs under the current EPA definition. Since that time, DOH conducted follow-up phone interviews with water utilities. As a result of those interviews, DOH refined their original estimates and now conclude there are fewer than 500 LSLs and 5,000 lead goosenecks still in service. DOH will prioritize DWSRF funding until all utilities replace their lead components.

The DOH also modified the eligibility criteria for drinking water state revolving fund loans starting in August 2016 so that systems that can document the presence of lead service lines and other lead components will be given higher priority. The agency also said it will seek additional federal assistance.

In addition, Washington real estate laws require sellers to disclose to homebuyers substances or materials that may be an environmental concern. A lead pipe is not one of the examples provided. Therefore, a seller may not consider an LSL to be an environmental concern.

See a case example on Washington's work for more information.

Wisconsin
Estimated 240,000 LSLs (AWWA Survey) of 1.5 million service lines by 1050 CWSs (SDWIS 7/2018)

Primary agency webpage: Wisconsin Department of Natural Resources (DNR) and Public Service Commission of Wisconsin (PSC)

In 2020, the state DNR established a new Private LSL Replacement Program to provide at least $63 million in funding to eligible communities with private lead or galvanized service lines. Factors determining award amounts will include: the number of LSLs the municipality can replace in a season, the average cost and whether property owners share the cost. The funding can be used for replacement of LSLs, lead goosenecks and galvanized lines (if the line is/ was downstream of lead) at residential properties, schools, and daycares.

This program builds on previous efforts from the state fiscal years 2017 and 2018, when the DNR used $26.8 million in state revolving loan funds to establish a two-year program to provide funding for disadvantaged municipalities to replace LSLs on private property. Forty two municipalities were awarded funding through the program.

Additional information:

In February 2018, Wisconsin Governor Scott Walker signed legislation that allows municipalities and water utilities to provide financial assistance to property owners to replace LSLs on private property. The law enables a utility or municipality to seek approval from the state PSC to provide customers with financial assistance if the following conditions are met:

- The city, town or village has passed an ordinance:
- Authorizing the assistance; and
- Requiring each owner to replace customer-side water service lines that contain lead; and
- The utility-side water service line either does not contain lead or will be replaced at the same time as the customer-side; and
- The financial assistance is limited as follows:
- Grant funding is not more than 1/2 of the total cost to property owners, though loans can cover the remainder or the full cost;
- Loans to property owners are not forgivable; and
- Each owner in a class of customers are treated equally with respect to financial assistance.

The PSC has a webpage describing the approval process and, since August 2018, the commission has approved eight utility programs.

The PSC also requires more than 500 public- and investor-owned utilities it regulates to report annually on the number of service lines for each material type (grouped by diameter) in their system. The requirement has been in place since 2004 for the portion of the lines on public property and since 2018 for the portion on private property. The PSC provides reporting guidance to utilities and makes the information available through separate webpages for municipal/sanitary districts and investor-owned utilities. DNR staff use PSC data to help inform DNR activities related to Federal Lead and Copper Rule compliance.

In addition, Wisconsin requires sellers to disclose to homebuyers if they are "aware of a defect caused by unsafe concentrations of or unsafe conditions relating to . . . lead in water supplies or plumbing system . . ." Sellers may decide that the presence of an LSL alone is not a defect or unsafe condition.

See a case example on Wisconsin DNR's work for more information.

Community and utility efforts to replace lead service lines

115 communities have publicly set a goal of eliminating lead service lines on public and private property. Communities aim to replace over 399,000 lead pipes in their water systems

EDF has identified communities that have publicly set a goal of fully replacing all lead service lines (LSLs) in their jurisdictions. The table below provides a summary of those who have stated the goal in an official source. Follow the links in the first column for more details below.

While many communities are diligently working on LSL replacement, they may not yet be ready or willing to set a goal of full replacement. We recognize these communities who are taking steps below as well.

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Summary of community full lead service line replacement goals

Community or utility	Estimate of LSLs	Date of goal	Timeframe to achieve	Type of commitment	Notes
Ann Arbor, MI	100	2016	None set	City's goal	Began removing lead goosenecks 25 years ago
Bozeman, MT	85	May 2016	None set	City's goal	Full replacement at the city cost
Central Arkansas Water, AR	Unknown	2016	December 2018	Utility's goal	Program includes robust customer service outreach
Chelsea, MA	Unknown	2018	None set	City's goal	Replacement at no cost to resident
Cincinnati, OH	43,500	October 2016	15 years	Ordinance	Cost sharing and low-income assistance program available
Denver, CO	64,000 - 84,000	2020	15 years	Utility's goal	Full replacement at the utility's cost
Detroit, MI	125,000	Spring 2017	None set	Utility's goal	Plan being developed
Eau Claire, WI	1,266	April 2017	None set	Utility's goal	Funding available for private side replacement
Escanaba, MI	3,500	January 2019	20 years	Utility goal	Rate increase implemented
Flint, MI	20,000	February 2016	3 years	Mayor's goal	State and federal government providing portion of funding
Grand Rapids, MI	Unknown	Unknown	Not set	City's goal	Full replacement at no cost to resident
Indiana American Water, IN 27 communities	50,000	January 2018	10 - 24 years	Filing plan	Plan must be approved by Indiana Utility Regulatory Commission
Jefferson, WI	Unknown	April 2017	None set	Ordinance	Funding available for private side replacement
Kalamazoo, MI	Unknown	2016	None set	City's goal	City own the entire service line
Kaukauna, WI	Unknown	Unknown	None set	Ordinance	Property owner finances replacement on the private side
Kenosha, WI	9,000	April 2018	10-30 years	City's and Utility's Goal	First plan approved by WI Public Service Commission
Kewaunee, WI	Unknown	June 2015	None set	Ordinance	Replacement at property owner's cost
Marlborough, MA	1,200	Unknown	5 years	Utility's goal	Funding available for property owners
Menasha, WI	437	October 2018	10 years	City's and Utility's Goal	Plan awaits approval by state Public Service Commission
Missouri American Water, MO 34 communities	30,000	May 2018	10 years	Filing plan	Plan approved by state Public Service Commission
Mosinee, WI	Unknown	2019	None set	Ordinance	Funding available for private replacement
Needham, MA	1,200	2019	None set	City's goal	Replacement at no cost to resident
Newark, NJ	15,000	2019	2.5 years	Mayor's goal	Funding provided by county loan
Northwestern Water & Sewer District, OH	322	June 2018	None set	Utility's goal	Interactive map with LSL locations

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Oakland County, MI 2 communities with LSLs	8,700	Unknown	Unknown	State requirement	Replacement funded through rates
Pennsylvania American Water, PA 19 communities	18,000	May 2017	10 years	Filing plan	Plan must be reviewed by state Public Utility Commission
Platteville, WI	400	April 2017	None set	Utility's goal	Funding available for private side replacement
Pueblo, CO	Unknown	Unknown	None set	Utility's goal	Plan being developed
Somerville, MA	450	2019	None set	City's goal	Replacement at no cost to resident
Stoughton, WI	1074	June 2020	1 year	Ordinance	Funding available for private side replacement
Sun Prairie, WI	250	August 2018	5 years	Ordinance	Funding available for private side replacement
Tacoma, WA	1,200	May 2016	5 years	Utility's goal	Program addresses lead goosenecks
Tucson, AZ	530	2017	December 2018	Utility's goal	City covers cost on private property
Two Rivers, WI	2,600	Unknown	None set	Ordinance	Funding available for private side replacement
York, PA	1,660	November 2016	9 years	Utility's goal	Cost of replacement in customer rates
Quincy, MA	150	Unknown	None set	Utility's goal	Replacement at no cost to homeowners
Waterloo, WI	Unknown	December 2016	None set	Ordinance	Funding available for private side replacement
Total	**>399,624-419,624***				

*Estimate of the total LSLs for which communities have set a goal to replace. This number is likely an underestimate, as most communities do not know where all of the LSLs are located.

Full descriptions of community programs
For each community, we describe their progress on the following four areas, based on publicly available information: avoiding partial replacement; providing economical and equitable replacement options; developing a robust, public inventory; and providing guidance to property owners. When referring to ownership of the service line, we use the community's language.

Goals of full lead service line replacement
The 115 communities below have set a goal of full LSL replacement in the form of an ordinance, utility goal, or other statement on the municipality or utility website. Programs differ in what progress they have made, funding mechanisms, and approaches to disclosing LSL location information to the public.

While setting a goal of replacing LSLs is commendable, community members should follow closely to ensure that progress is made towards these goals.

Ann Arbor, Michigan
While Ann Arbor has completed removal of lead goosenecks** in its system, the City is still working to replace galvanized service lines that were connected to the goosenecks. The lead gooseneck removal process began in 1991, and the city announced its plan to remove all goosenecks in 2016. The City also has developed an interactive map to display locations where service lines have been removed, and where service lines eligible or potentially eligible for city replacement remain.

Bozeman, Montana
The City of Bozeman announced an LSL Replacement Project in May 2016 with the goal of identifying and replacing all LSLs in the water system. For the project, the City identified homes with LSLs and offered water testing to establish a replacement schedule. The Bozeman Water and Sewer Department plans to replace the identified lines over the next several years and fully replace LSLs when discovered during maintenance activities. The city estimates 85 LSLs remain in the water system.

Central Arkansas Water, Arkansas
Central Arkansas Water (CAW) – which services Little Rock, North Little Rock, and surrounding areas – and predecessor utilities started conducting LSL replacements in the 1980s. The utility began a more aggressive program in 2016 to verify unknown service material and review previous records to identify remaining LSLs. CAW has a goal of replacing all remaining LSLs.

Chelsea, Massachusetts
In 2018, the city of Chelsea began a multi-year program to replace the remaining LSLs in the water system, at no cost to homeowners. The city has replaced LSLs on public property for many years and began replacing lines on private property more recently during water main work. For its new program, the city is engaging with residents to check their service line material to identify remaining LSLs. To help fund the initiative, Chelsea received loans through the Massachusetts Water Resources Authority. See a case study on Chelsea from the LSL Replacement Collaborative for more.

Cincinnati, Ohio
In October 2016, the Cincinnati City Council passed an ordinance directing the Greater Cincinnati Water Works (GCWW) to develop a program to replace the remaining 16,500 LSLs on public property and 43,500 LSLs on private property in the City within 15 years. In June 2017, the City Council passed three ordinances to implement the replacement program. The ordinances prohibited existing LSLs (with an automatic grace period for residents), and required residents to choose whether to replace an LSL at their own cost or contract with GCWW to do so once the utility notifies the resident of the need to replace an LSL. Additionally, landlords must notify prospective tenants if a unit is serviced by an LSL. Through GCWW's Enhanced Lead Program, the utility offers cost-sharing for residents and additional assistance to qualified residents through the "Help Eliminate Lead Pipes" program" (HELP) which is a one-time cost benefit applied as a credit on the LSL Replacement final bill. GCWW also offers 10 year interest free payback on the balance of private side replacements for residents inside of the city of Cincinnati and some surrounding areas. The utility is working with other political jurisdictions in its service area to expand this repayment option. GCWW provides extensive resources and educational materials about lead in water on its website, including a detailed interactive map for the public to search an address and learn if the service line material is lead.

Denver, Colorado
In December 2019, Denver Water received approval for its Lead Reduction Program to fully replace the estimated 64,000-84,000 LSLs in its system within 15 years. The plan involves accelerating the utility's already-existing LSL replacement, while increasing pH adjustment corrosion control and providing filters to protect residents before their LSLs are replaced. The utility is funding the program through water rates, bonds, and sales of new connections to the system, hydropower production and other sources. To educate residents and coordinate with relevant stakeholders about the process, Denver Water is conducting robust outreach efforts and disseminating a wide range of educational materials. The utility is building and maintaining an inventory of LSLs, accessible through an interactive map that displays whether an address has a confirmed, likely, unlikely, or no LSL. Confirmed and likely LSLs are included in the replacement program. Learn more about the initial announcement of the plan from the EDF Health blog. And learn about the utility's efforts with child care facilities and schools with the LSL Replacement Collaborative's case example.

Detroit, Michigan
Detroit is developing a program to replace all of the city's estimated 125,000 LSLs. The Detroit Water and Sewerage Department has identified three phases in the replacement program. Phase one, which launched in June 2017, covers improving the city's inventory and sampling protocol. In May 2017, DWSD began phase two to determine the protocol for eliminating partial replacements and completing full LSL replacements for planned water main replacement projects. Phase three includes prioritization of replacement in neighborhoods with high density LSLs and

children with elevated blood lead levels. The third phase is expected to launch in spring 2018 pending finalization of the legal, financial, and technical aspects.

Eau Claire, Wisconsin
Eau Claire has stated a goal of removing the remaining LSLs in the city's system and avoiding partial LSL replacements. Using Wisconsin Department of Natural Resources (DNR) funding, the city will reimburse property owners up to $2,000 for private side LSL replacement. Eau Claire estimates it has 1,266 LSLs remaining.

Escanaba, Michigan
In May 2018, Escanaba adopted a resolution authorizing a Pilot Drinking Water grant from the state Department of Environmental Quality for water system improvements and determining it necessary to identify and replace LSLs and galvanized services in the city's water system. As part of the replacement program, homeowners enter into an agreement with the city to have the water department perform an inspection of the service line, replace any lead or galvanized service hooked to a lead gooseneck on the public side, and coordinate with a private contractor to perform replacement on private property. The city has increased water rates to prepare for replacing approximately 3,500 services connected to lead goosenecks.

Flint, Michigan
Following the crisis with Flint's water supply, Mayor Karen Weaver launched the FAST Start Initiative in February 2016 to replace all LSLs in the city. The goal of the program is to remove all 20,000 LSLs by 2020, with 6,000 replaced annually over the next 3 years. Updates on the program can be found on the City of Flint website. The city has received both federal and state funds to finish the inventorying and replacement process.

Grand Rapids, Michigan
The City of Grant Rapids has a goal of replacing all LSLs remaining in the water system, and it has replaced over 1,500 LSLs since 2017. Through the LSL Replacement program, eligible property owners can have their LSL fully replaced at zero cost. Those that do not meet the requirements can use a program to spread the cost of replacement over 10 years. The city received an EPA Water Infrastructure Improvement for its Nation Act grant in October 2020, which will help fund the work. Additionally, the water department has an interactive map displaying whether an address has an LSL, inspection is needed, or if no action is required.

Indiana American Water, Indiana
Pursuant to a state law enacted in 2017, Indiana American Water voluntarily submitted a plan on January 29, 2018 to the Indiana Utility Regulatory Commission to fully replace 50,000 LSLs for over 305,000 customers in 27 community water systems across the state. The plan calls for the private utility to use rates paid by customers to fund the replacement of LSLs on customers' property. Customers would have to agree to the improvements and pay for unusual costs – typically those above $7,000 per line. In May 2018, Indiana American Water received approval for its LSL replacement plan. The 27 systems (21 districts) are: Crawfordsville, Waveland, Kokomo, Russiaville, Muncie, Richmond, Somerset, Summitville, Wabash, Warsaw, West Lafayette, Westwood, Winchester, Mooresville, Noblesville, Shelbyville, Terre Haute, Farmersburg, Mecca, Sullivan, Merom, Southern Indiana, Georgetown, Newburgh, Yankeetown, Seymour, and Northwest Indiana.

Jefferson, Wisconsin
In April 2017, the Jefferson Common Council adopted an ordinance to establish a comprehensive, voluntary program to replace LSLs on the utility side and private property. The ordinance requires inspection of the service line material on the private side before or during replacement of the water main and notification of the property owner if the line contains lead. Through Jefferson Utilities' Lead Service Lateral Program, qualified property owners are eligible for full reimbursement for the cost of replacement – while funds are available.

Kalamazoo, Michigan
The City of Kalamazoo has conducted LSL replacements as part of annual capital improvements since the 1990s but began a more aggressive program with a long-term plan to get lead out of the water system in 2016. The Public Services Department continues to explore additional funding sources to accelerate the program and replace all remaining LSLs in the city's water system. Additionally, Kalamazoo offers free water testing to customers.

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Kaukauna, Wisconsin
Kaukauna, Wisconsin's Common Council adopted an ordinance to require the development of a comprehensive LSL replacement program in the city, which includes inspecting the material of the private side LSL when construction occurs on the public side and replacement if an LSL is discovered. In May 2020, the state Public Service Commission approved the city's LSL replacement plan to assist property owners with the cost of replacement on private property.

Kenosha, Wisconsin
In April 2018, Kenosha's city council adopted Rule 06-06 requiring the replacement of all existing LSLs in the water system, banning partial LSL replacements, and creating a financial assistance program for customer-side LSL replacements – subject to approval by the Wisconsin Public Service Commission (PSC). The ordinance also provides for inspection of services lines to determine material and create an inventory. In August 2018, the PSC approved the city's application to establish a financial assistance program under which the utility provides eligible property owners with a grant up to 50% off the cost of replacement on the private side up to $2,000 combined with a 10-year low interest loan. Kenosha was the first Wisconsin community to apply for and undergo PSC review of a financial assistance program for LSL replacement. The city completed its first LSL replacement under the program in September 2018.

Kewaunee, Wisconsin
The city of Kewaunee adopted an ordinance in June 2015 requiring the establishment of a comprehensive LSL replacement program and replacement of LSLs when reconstructing a main under the street. The property owner must pay for the costs of LSL replacement on the owner's property.

Marlborough, Massachusetts
The Marlborough Water and Sewer Division announced a 5 year Lead Service Replacement Program to replace all LSLs in the City. To fund the cost of replacement, the City has partnered with the Massachusetts Water Resources Authority, which is providing a 10 year no-interest loan to Marlborough. The Water and Sewer Division estimates 1,200 LSLs remain in the system, and property owners are able to see suspected LSL locations on a list of addresses provided by the City.

Menasha, Wisconsin
In October 2018, the Menasha Common Council and Menasha Utilities approved a joint resolution recommending a goal of replacing all lead and galvanized service lines remaining in the city within 10 years. The resolution advised the City and the Menasha Utility to develop an LSL replacement program in which both the city and utility fund 1/3 the cost of private-side replacement up to $1,000, and property owners are eligible to receive a 5-year low-interest loan to finance the remaining 1/3 of the cost. Now, the program awaits approval by the Wisconsin Public Service Commission. The program expands upon previous work already undertaken by Menasha to reduce exposure to lead in water: including identification of homes with LSLs, a Lead Service Program that covers 95% of the cost of service line replacement on the private side, and providing low cost filters and technical assistance to interested residents. Additionally, in 2018, the City enacted an ordinance banning partial LSL replacement by requiring replacement of the privately-owned side of an LSL when the street main is replaced.

Missouri American Water, Missouri
In May 2018, Missouri American Water received approval from the state's Public Service Commission to continue its program to fully replace the estimated 30,000 LSLs in its 34 community water systems that serve 450,000 customers across the state. The program is funded by rates paid by customers to replace LSLs on private property and the costs are spread over 10 years. The utility earns a long-term debt return between rate cases, and must file annual reports with the Commission on the program's progress. The 34 communities are Anna Meadows, Brunswick, Emerald Point, Hickory Hills, Jaxson Estates, Jefferson City (District and North), Joplin, Lake Carmel, Lake Taneycomo, Lakewood Manor, Lawson, Maplewood, Mexico, Ozark Mountain, Pevely Farms, Platte County, Rankin Acres, Red Field, Riverside, Saddlebrooke, Spokane Highlands, Spring Valley, St. Joseph, St. Louis County, St. Charles County, Stonebridge. Tri-States, Wardsville, Warren County, Warrensburg, Whitebranch, and Woodland Manor.

In addition, in 2018, American Water Capital Corporation applied for $84 million in Water Infrastructure Finance and Innovation Act (WIFIA) loans from EPA to provide new pipes and service lines to over 20,000 customers in the St.

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Louis, MO area. The project includes replacing adjacent customer-owner LSLs. EPA selected the project for further evaluation.

Mosinee, Wisconsin
In April 2019, Mosinee enacted an ordinance requiring replacement of all remaining LSLs on public and private property in the City. Using funding from the state Department of Natural Resources, Mosinee created a program that enables eligible property owners to receive up to $2,500 towards the cost of replacement. The City estimates that 100 LSLs remain on public property.

Needham, Massachusetts
In June 2018, Needham received a loan from the Massachusetts Water Resource Authority to fund replacement of lead service lines and goosenecks on both public and private property. The city's goal is replacement of 154 LSLs and 1,047 lead goosenecks. Needham conducted replacements through 2019 and is scheduled to continue in 2020.

Newark, New Jersey
Newark was required to being replacing LSLs in 2017. In August 2019, the Mayor and the state's Governor announced an expedited program to replace all LSLs, at no cost to homeowners, through a $120 million loan provided by the county. Additionally, the City has an interactive map on its website where users can look up their address and click on an icon to learn what available records indicate about the service line material.

Northwestern Water & Sewer District, Ohio
The Northwestern Water and Sewer District, serving customers in Wood, Sandusky, and Hancock counties, announced it was moving forward with its LSL Replacement Project in June 2018 with the goal of replacing the remaining 322 LSLs in the water system. The utility conducted outreach to affected homeowners, located in the City of Northwood and Rossford, and will perform replacements over the course of summer 2018. Northwestern Water & Sewer District has an interactive map on its website where property owners can see the location of known LSLs.

Oakland County, Michigan
Oakland County Water Resources is working to fully replace all LSLs within its service area. The department operates and maintains water systems within 13 communities, two of which have known or likely LSLs or service lines of unknown material. Pontiac has an estimated 8,000 of such lines, and Royal Oak Township has approximately 700. The replacements are funded through water rates, and Water Resources is working to obtain additional funding to locate and replace LSLs. Water Resources staff are in the process of verifying service line materials, coordinating with property owners, and providing educational materials.

Pennsylvania American Water, Pennsylvania
In May 2017, Pennsylvania American Water sought the approval of the state Public Utility Commission (PUC) to revise the utility's rules to permit it to replace customer-owned LSLs and to recover associated costs. In October 2018, while the proceeding was pending, the state legislature enacted a law providing for the replacement of LSLs on private property and recovery of the associated costs. Pennsylvania American Water's program was approved by the state PUC in October 2019.

Platteville, Wisconsin
Platteville Public Works announced a goal in April 2017 of removing the LSLs that remain in the city. Using funds from Wisconsin DNR, the city is replacing LSLs at licensed childcare facilities and reimbursing property owners up to $1,140 for the cost of private side LSL replacement. The city also has a map detailing parcel, zoning, voting, and other information, including known LSL locations.

Pueblo, Colorado
The Board of Water Works of Pueblo, Colorado announced its "Get the Lead Out" program to eliminate LSLs in the community. Under this program, property owners do not have the financial responsibility for replacement. While

replacement will begin with known LSLs in older buildings, Pueblo Water will also take a physical inventory of service lines of unknown material and replace any additional LSLs found at no charge to the resident.

Quincy, Massachusetts
The City of Quincy committed to the goal of replacing the estimated 150 LSLs remaining in its system. The City plans to use a $1.5 million loan from the Massachusetts Water Resources Authority to replace the lines at no cost to property owners. A list of buildings with identified LSLs is provided on the city's website.

Somerville, Massachusetts
In 2019, the City of Somerville launched a Lead Service Line Replacement Program with the goal of eliminating all non-copper services from the water system. Using funding from the Massachusetts Water Resources Authority, Somerville provides residents with an opportunity to replace the entire LSL or other non-copper water service line at no charge. In Phase One, the City is focusing on known LSLs and is prioritizing replacement in households where children are present, in vulnerable locations – including hospitals and daycares – and in areas planned for future construction projects. In future phases, the City plans to replace all remaining lead or non-copper service lines as well as verify the service line material where it currently is unknown. Somerville has a comprehensive searchable list of addresses and the material of the pipes at each address. From available records, the City estimates there are 450 known LSLs.

Stoughton, Wisconsin
In June 2020, Stoughton adopted an ordinance to facilitate the successful completion of a comprehensive program to replace all LSLs in the city. The water utility estimates 409 lead services remain on public property and 665 on private, and residents can explore an interactive map to check whether their home has a presumed lead service. The city has applied for funding from the state DNR to assist with the cost of LSL replacement for property owners, and anticipates the program will finish in 2021 if funding is secured.

Sun Prairie, Wisconsin
In August 2018, the Sun Prairie City Council adopted an ordinance requiring replacement of all remaining LSLs on public and private property in the water system. It also authorized the water utility to provide financial assistance to property owners to replace LSLs on private property. In June 2020, the state Public Service Commission approved the city's LSL replacement program that included providing a grant to pay up to 50% of the cost of replacement up to $2,000 to eligible property owners. Property owners also can receive a 60-month, 0% loan for the remaining cost of replacement. The utility estimates approximately 250 LSLs remain in the water system at residential and commercial properties.

Tacoma, Washington
Tacoma Water has a goal of eliminating all remaining 1,200 lead goosenecks**, connecting the water main to the service line, the service system within 5 years. The utility provides a static map of possible gooseneck locations for interested residents.

Tucson, Arizona
Tucson Water has conducted LSL replacements and community outreach around lead in drinking water for decades but initiated a proactive approach, the Lead Public Health Goal 2019 Program, in 2016 with the goal of removing all LSLs in the system. The Lead Line Investigative team began the initiative by reviewing historical information and utility records to identify LSL locations. Replacements were first prioritized at facilities serving at-risk groups, including day cares, healthcare facilities, schools, and other public buildings. Tucson Water provides an interactive map on its website so users can view the location of parcels with known LSLs. Updates on the program's progress are provided on the utility's website.

Two Rivers, Wisconsin
Two Rivers adopted Ordinance 5-1-8 in January 2017 establishing the need for a comprehensive replacement program and requiring replacement if an LSL is discovered on the private side during water system reconstruction. The city is using funding in the form of principal forgiveness from Wisconsin DNR to aid eligible residents with the

cost of LSL replacement on the private side. Two Rivers estimates that approximately half (2,600) of its 5,100 water services contain lead.

Waterloo, Wisconsin
Waterloo adopted Ordinance 2016-4 in December 2016 establishing the need for a comprehensive LSL replacement plan and requiring replacement of private side LSLs. The city offers residents a grant equal to 75% of the cost of private side LSL replacement, up to $2,300.

York, Pennsylvania
In November 2016, York Water announced a commitment to replace the 1,660 LSLs in its service area. The utility received approval from the Pennsylvania Public Utility Commission in March 2017 to replace privately owned LSLs at little to no cost for residents. York Water has distributed outreach materials to residents to inform homeowners about the program and to seek additional information about LSLs in the system.

Taking steps on replacing lead service lines

The 81 communities below have made important progress, but have not yet set a goal of replacing all LSLs. While each community differs, the programs are generally focused on replacing LSLs only when the main under the street is being reconstructed or are voluntary programs that help homeowners finance LSL replacement on the private side.

Albany, New York
In 2017, Albany received state funding for the purposes of facilitation of full LSL replacement. The City is using the grant to conduct replacements in the course of capital improvements, and is working to develop a program for full LSL replacement.

Ames, Iowa
Ames, Iowa passed two ordinances in November 2017 requiring full LSL replacement when a service line containing lead develops a leak (at the cost of the property owner) and when discovered during water main replacement (at the cost of the water utility). The City has reached out to property owners and residents at locations with possible lead service lines and offered to conduct free water testing and follow up. Additionally, Ames has developed and posted an interactive map showing potential lead service line locations.

Ashland, Wisconsin
Using funding from the Wisconsin Department of Natural Resources, Ashland began a program in 2017 to replace LSLs in the city based on a priority scale. The program involves replacement of the privately-owned portion of the LSL at no cost to the homeowner. The program has continued into 2019 and is available to eligible property owners on a first-come-first-served basis.

Auburn, New York
In 2017, Auburn received funding from the state Department of Health for the purposes of LSL replacement. As part of its water infrastructure improvement work, the city conducted LSL replacements from the water main to the curb stop at no expense to property owners.

Aurora, Colorado
Aurora Water has an LSL replacement program to identify and remove remaining LSLs in the water system. To determine service line material, homeowners are required to sign a form, allow a city contractor to assess the line and perform a hydro-excavation. If the service line is lead, Aurora recommends replacement and provides options for funding the work – including rebates and a low-income program. Additionally, if the city identifies an LSL on public property, it replaces it and notifies the property owner to recommend material identification and, if necessary, replacement if the service is lead on the private side.

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Baraboo, Wisconsin
The city of Baraboo received funding from the state to replace LSLs throughout the city in 2017. At the beginning of 2019, the city announced that their Annual Maintenance activities will include upgrading the City's Water system by replacing LSLs with those made of copper.

Barrington, Illinois
The Village of Barrington, Illinois has an interactive map, updated annually, displaying service line material at addresses. For each property, a marker indicates whether the service line is possibly lead on the resident-owned side, possibly lead on the village-owned side, not lead, or copper on either side. The Village estimates that 2,653 copper lines and 2,112 lines that are a combination of copper and/or lead remain in the water system.

Bennington, Vermont
Bennington is in the process of developing an LSL replacement program, starting with identifying locations that still have lead services. The Water Department has conducted outreach to homeowners listed as having an LSL, but response rate to the outreach has been low, and all homeowners are encouraged to request a service line inspection. The Town has published an interactive map displaying service line information on public and private property. As detailed records are only available up to 1983, approximately 50% of the listed LSLs likely have already been replaced.

Benton Harbor, Michigan
In 2018, Benton Harbor received a Pilot Drinking Water Grant from the state that the city has used to conduct full LSL replacements and inspect for additional LSLs in the water system. Thus far, the City has replaced approximately 20 LSLs or galvanized lines.

Binghamton, New York
In 2017, Binghamton received state funding for LSL replacement on private property. To start the process, the City's Water Department committed to helping to identify properties to target for replacement.

Birmingham, Michigan
In response to Michigan's revised Lead and Copper Rule, the City of Birmingham has developed an Action Plan to reduce lead in drinking water that includes steps beyond the state rules. The City's inventory indicates that approximately 780 properties have LSLs, and property owners with LSLs will be informed and offered a water filter. Additionally, residents can search an interactive online map to learn the material of the service line on public and private property at any address. The City plans to test water at all properties with LSLs and expedite replacements based on results.

Bismark, North Dakota
Bismarck will coordinate full LSL replacement when a property owner wants to replace the portion of the LSL line on private property. Additionally, the property owner can receive a special assessment on their property to pay for the cost of private-side replacement. The replacement on public property is funded through the city's Service Line Repair Fund.

Boston, Massachusetts
In April 2016, Mayor Marty Walsh announced an expansion of the city's lead replacement incentive program, which was initiated in 2005. The Boston Water and Sewer Commission (BWSC) has committed resources to educate their customers on lead issues and allows eligible property owners to participate in the voluntary program. Participants can qualify for up to $2,000 off the cost of replacement of the part on private property with the remaining cost paid over 48 months at zero interest on their water bill. The utility provides a dedicated phone line for affected ratepayers. Additionally, BWSC has an interactive map available on its website that identifies properties with lead services with a red "L" icon.

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Chicago, Illinois
Chicago is working on a plan to replace all of its 400,000 LSLs. In September 2020, Mayor Lori Lightfoot announced Chicago's new Lead Service Line Replacement Program to begin the process. Phase I of the program, set to begin in late 2020, consists of three elements:

- **Equity LSL Replacement Program:** Full LSL replacement for eligible low-income residents (below 80% of the area median income), paid for by up to $15 million in Community Development Block Grant funds.
- **Homeowner-Initiated LSL Replacement Program:** City waives permitting fees, connects the new service line to the water main, and installs a free water meter for homeowners who hire and pay a contractor to replace the full line. The homeowner would be responsible for the cost of replacement of the entire line – including that on public property.
- **A Block-Level Water Main project:** City conducts full replacement as part of a main replacement in a single city block in a low- to moderate-income area with a variety of building types.

During Phase II, the City plans to replace LSLs on public property during water/sewer main replacements and service line breaks and encourage homeowners to replace the private side at the same time. The City has also commissioned a report to understand additional options for funding and implementing LSL replacement. Learn more about the announcement of the program from the EDF Health blog.

Claremont, New Hampshire
In 2016, the Claremont Water Department began a "Get the Lead Out" program to replace LSLs in the city's distribution system. The City investigated service line material and replaced LSLs found on public property. If the side of the line on private property was also found to be lead, the Public Works Department notified the property owner and encouraged them to coordinate with a contractor to replace the line.

Cleveland, Ohio
Cleveland Water replaces city-owned LSLs during water infrastructure projects and emergency repairs, and it offers to replace the customer-owned portion if it is also made of lead and is disturbed by construction. If a customer wants to replace the LSL on private property, the utility will coordinate replacement of the city-owned portion. The utility has an online lookup tool for residents to check if the city-owned service line is made of lead. Additionally, Cleveland Water has a Lead Awareness Campaign to educate customers about the risks of lead in drinking water and ways to reduce exposure.

Columbus, Ohio
Columbus has an interactive map displaying possible locations of LSLs on public property and locations where the LSL has been removed or is not in use. Users must accept a disclaimer before viewing the map. The city also has a static PDF map showing potential locations of LSLs on public property.

Concord, Massachusetts
In May 2017, the Concord Public Works Commission approved a pilot program to accelerate LSL replacement in the town. Under the program, the cost of private-side LSL replacement for eligible property owners does not exceed $1,500. The payment is invoiced to the homeowner's water service bill, and it can be paid in a lump sum or interest-free over 1 year. The Water and Sewer Division estimates that 5% of the town's 5,600 water services are lead. The Public Works staff is continually updating its water service records and actively reaching out to customers that may have LSLs. Customers with inquiries are encouraged to reach out directly to the Water and Sewer Division.

Crystal Lake, Illinois
The City of Crystal Lake will coordinate LSL replacement on the public side if the property owner chooses to replace the LSL located on the private side. The City has instructional materials to help residents evaluate their service line material.

Downer's Grove, Illinois
Downer's Grove has an interactive map where residents can search an address and view whether the service line material is lead, non-lead, or unknown on the public and private side. The map has different icons to represent the public and private side and different colors to signify service line material.

East Lansing, Michigan
As a result of changes to the state Lead and Copper Rule, the city of East Lansing announced its plans for replacing all LSLs in the community. To assist in identifying service line material, the City encourages residents to take an online survey or have a Public Works staff member conduct an assessment. The City has sent initial notifications to residents with known LSLs and will continue to prioritize replacements as identified by location assessments.

Elgin, Illinois
In December 2018, Elgin City Council passed an ordinance amending the City's Water Regulations to provide for the development of a voluntary LSL replacement program. Under the program, property owners are provided water filters and must select from three options if they have a private-side LSL and the city will be conducting infrastructure work or emergency repair work that will disrupt the line. The resident can:

- Hire a plumber to replace the line at their own cost.
- Use a city approved plumber and receive a loan up to $4,800 from the city, paid back over 5 years or 10 years for low to moderate income residents.
- Sign a waiver and commit to using filtered water or drinking bottled water for two years, with additional conditions.

Elkhart Lake, Wisconsin
Elkhart Lake announced a program in February 2017 to assist residents with the cost of replacing LSLs on private property. Using Wisconsin Department of Natural Resources funding, the Village reimburses property owners up to $6,000. The Village began replacement work in November 2017 at residences with identified LSLs.

Evanston, Illinois
The City of Evanston has an LSL replacement program to help coordinate the process and assist homeowners with the cost of replacement. Under the program, eligible homeowners can apply for a loan up to $4,800 towards the cost of replacement on private property, which can be paid back to the city over 48 months through the property owner's utility bill. This loan is only applicable when water main replacement work is being conducted on a resident's block. The City also will coordinate to replace the portion of the line owned by the City after the property owner replaces the portion on private property. Additionally, Evanston has developed an interactive map on its website where users can search the map using their address or account number, select an icon on the address of interest, and learn the service line material on the public and private side of the line.

Evart, Michigan
In 2018, Evart received a Pilot Drinking Water Infrastructure Grant from the state Department of Environmental Quality for updating the distribution system material inventory and replacing LSLs. The City is using existing information and field investigations to update its inventory and has provided a map of expected LSL replacement locations. Under the program, property owners can have their LSL replaced at no cost after entering into an agreement with the City. The City provided an information packet to property owners to ensure they are aware of and understand the program.

Fond du Lac, Wisconsin
As part of their "Get the Lead Out" program, the City of Fond du Lac announced that it is necessary to replace LSLs in the community. In February 2017, the city council passed Ordinance 3629 prohibiting partial LSL replacements and mandating replacement if an LSL is found during construction. Approximately 2,986 LSLs remain on the public side, which can be viewed on an interactive map. The city does not have an estimate for the number of privately owned LSLs. Wisconsin DNR provided funds to the city to help alleviate residents' financial burden of replacing LSLs on the

private side. Homeowners who use a City Prequalified Plumber to replace the private side of the LSL are eligible for a subsidy of the costs up to a maximum of $3,000 per property.

Fort Worth, Texas
For 20 years, Fort Worth has removed LSLs when found in the course of maintenance activities and water rehabilitation projects, and the city has recently set a goal of replacing all LSLs by the end of 2021. The City estimates that between 4,000 and 8,000 LSLs remain in the water system, though it has replaced over 4,000 in the course of maintenance activities. As part of its asset management, the City has worked to identify and document LSL locations and areas where LSLs has been replaced using ArcGIS technology.

Galesburg, Illinois
In January 2017, Galesburg announced it would replace LSLs in the city using funds from the Drinking Water State Revolving Loan Fund administered by the Illinois EPA. The city provides a lookup tool for residents to search their address and check the service line material. In total, the city has 4,700 LSLs.

Geneva, New York
In February 2018, the City of Geneva announced it had received grant funding from the state Department of Health to develop and implement an LSL replacement program. Eligible residents that apply and are accepted into the program can have their LSL replaced at no charge by a contractor obtained by the City. The City has worked to ensure property owners are aware of the program and the dangers of lead in drinking water through several rounds and types of outreach to residents, including a press release, website information, social media, and water bill notices.

Gloversville, New York
In May 2018, Gloversville Water announced in its newsletter that the City had been awarded a grant from the state Department of Health for replacing LSLs on private property. The Water Department began replacing LSLs in September 2018. All residents are encouraged to contact the City to ask if they are eligible for the program and if they have an LSL.

Janesville, Wisconsin
The city of Janesville is reimbursing homeowners up to $5,000 for LSL replacement on the private side, which will fund approximately 100 LSL replacements.

Hudson, Michigan
In Spring 2018, Hudson received funds through the Michigan Department of Environmental Quality's Pilot Drinking Water Infrastructure Grant program for various water infrastructure projects; including finding and replacing lead service lines. The LSL replacement work will entail: updating the city's materials inventory, verifying material, notifying property owners about the process, obtaining consent from property owners for replacement of the private side of the LSLs, and performing full replacements.

Joliet, Illinois
In 2019, the city of Joliet, Illinois began a program to inventory and replace LSLs in the water system. Homeowners with confirmed LSLs can participate in a cost share – in which the city coordinates all work with a contractor to replace the LSL on public property when the owner replaces the portion on private property. Additionally, no interest loans, with negotiable terms, are available to the property owners.

Kingston, New York
The City of Kingston launched its LSL Replacement Program in April 2018. Using a grant from the NYS Department of Health, the City is identifying and replacing LSLs, starting in high priority areas. Under the program, the City will cover the cost of replacement for most owner occupied properties and non-owner occupied rental properties will be required to contribute $750 for replacement.

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Lombard, Illinois
The Village of Lombard has a Lead Water Service Line Replacement Reimbursement Program to assist homeowners with the cost of service line replacement on the private side. Property owners may qualify for a 50% cost sharing up to $1,500 under the program. For eligibility, property owners must: have a confirmed LSL; receive water from the Village; not have already started the replacement process; have current, paid property taxes; and not have any delinquent fees to the Village.

Louisville, Kentucky
While Louisville Water has been replacing LSLs for the last several decades, the utility recently began an aggressive program and set a goal of replacing the 4,600 lead services remaining on public property by 2020. When a lead service is replaced on the public side, the utility offers funding to assist property owners with replacement if the private side is also made of lead. Louisville Water has developed robust outreach materials to assist customers during the replacement process, including an informative video on flushing. Additionally, the utility has an online lead service lookup where customers can enter their account number to check if the public side of their service line is made of lead.

Malden, Massachusetts
Malden is in the process of developing an LSL replacement program. The city estimates it has 3,000 LSLs and provides a map on its website that shows the service line material of the public and private sides. The city works to coordinate public side replacement if a homeowner removes the private side. Homeowners that want to replace their service line may be eligible to receive no-interest loans through the Malden Redevelopment Authority.

Manitowoc, Wisconsin
Manitowoc Public Utilities is developing a program to disburse limited funds awarded by Wisconsin DNR to residents who replace LSLs on their property. The utility estimates 6,500 LSLs remain on the public side, which are detailed on an interactive map on the utility's website. Qualified residents will be eligible for reimbursement for LSL replacement, the full details of which are still being finalized.

Marshfield, Wisconsin
Using a $300,000 grant from Wisconsin DNR, Marshfield Utilities is reimbursing residents – on a first come first serve basis – for LSL replacement on the private side.

Memphis, Tennessee
Memphis Gas, Water, and Light has an interactive map of the city that identifies whether the service line material is lead, non-lead, or unknown at each address. To develop the map, the utility started with a database of early service line records and also performed city-wide inspections of service lines.

Middletown, New York
Middletown is using funding from the New York Department of Health's LSLR Program to replace LSLs in the water system at no cost to the property owner. Property owners that may have a lead, galvanized, or brass service line or are unsure of the material are advised to have the Public Works department verify the service line material.

Milwaukee, Wisconsin
A Milwaukee ordinance signed in December 2016 created a plan to begin replacing LSLs in the city. Milwaukee Water Works (MWW) is replacing the full service line when any leaking or damaged LSLs are found during construction or when there is planned or emergency replacement of the utility-owned portion of the line. In addition, LSLs at 385 childcare facilities and eight private schools will be replaced. Residential property owners of 1-4 family dwellings who use the city contractor are eligible for special assessment financing or a city cost share. MWW estimates that 70,000 residential properties and 6,000 commercial properties have LSLs. The city provides a list of building addresses with an LSL on the public side.

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Moline, Illinois
The City of Moline has an interactive map where users can search for an address or pan the map to find an address, click on an icon on the property, and learn the service line material from the water main to the curb valve and from the curb valve to the house. Additionally, the City provides a list of addresses with known LSLs and a summary of the water system's service pipe material inventory.

Montgomery, Illinois
In November 2019, the Village of Montgomery began a program to replace all LSLs in the water system. The Village is conducting the work using funding from the Illinois EPA's Drinking Water State Revolving Fund.

Muskegon, Michigan
Muskegon received funding from the state Department of Environmental Quality in 2018 for the purposes of water infrastructure improvements, including LSL replacement. The City aims to eliminate LSLs to customers' homes, and is conducting replacements during the course of other system construction throughout 2019 and 2020.

Naperville, Illinois
The City of Naperville has a rebate program to assist property owners with LSL replacement. The rebate for replacement ranges from $2,550 to $4,250, depending on the length of the service line. Naperville also has an interactive map where property parcels are shaded to represent whether the service line material is unknown, not made of lead, or verified lead. The Water Department has identified approximately 345 parcels with LSLs, and is working on a program and plan for replacement.

Newburgh, New York
In June 2018, the City of Newburgh announced the launch of its Lead Service Line Replacement Program. The program uses a $544,000 grant from the state Department of Health to replace LSLs from the city's water main to the property owner's meter at no cost to the property owner – up to $10,000. The City anticipates replacing approximately 68 LSLs between 2018 and 2019. Eligible property owners in single family properties or rental properties may apply.

Newton, Massachusetts
The City of Newton announced a program in July 2016 to replace LSLs in the water distribution system. Through a record review and inspection process, the Department of Public Works identified homes with LSLs. Property owners with LSLs are able to enroll in the Massachusetts Water Resources Authority's home service line program, and the City participates in a cost-share with the property owner to finance replacement on the private side of the line.

New York City, New York
In 2019 using funding from the state, the New York City Department of Environmental Protection developed a program to provide assistance to eligible low-income homeowners for LSL replacement on private property at no cost to the homeowner. The City has also developed an interactive map where users can search for a specific address and learn if the service line material is non-lead, lead, or unknown.

North Hempstead, New York
In November 2018, North Hempstead announced it had received a $611,300 grant from the state Department of Health (NYSDOH) for LSL replacement. The Town's Community Development Agency (CDA) is coordinating with the Town Planning and Building departments to administer the grant and implement the replacement program. To participate in the program, residents must test their water for lead using NYSDOH free lead testing kits and submit the results to the CDA along with other materials. Program priorities include assisting households with pregnant women, young children, children with disabilities, and households with 150% area median income (AMI) adjusted gross household income. CDA reviews applications for eligibility, confirms the presence of an LSL, helps hire a contractor, and ensures the work is performed. Eligible residents can receive up to $7,000 towards the cost of replacement.

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Oshkosh, Wisconsin
Oshkosh Public Works Department – Water Utility is in the process of developing a plan for full LSL replacement of the estimated 7,500-9,700 lines on the public side and 11,000 on the private side. In March 2017 the city updated its Municipal Code with Section 20-13, finding it necessary to establish a program for replacement of public and private side LSLs, and provided information to residents about the program. Currently, the project is funded through a Wisconsin DNR award; the city reimburses 50% (up to $1,500) of the cost of private side LSL replacement for eligible homeowners.

Owosso, Michigan
In August 2018, Owosso received a Pilot Drinking Water Infrastructure Grant from the Michigan Department of Environmental Quality for system improvements including LSL investigation and replacement. The City is in the process of identifying potential lead and galvanized steel services to create an inventory – starting with contacting property owners and receiving consent for investigation. In future stages, the city will plan for removal and conduct full replacements with available funding. Areas targeted for replacement will include locations with planned street construction, Lead & Copper Sampling Sites, known lead/ galvanized service locations, and other locations based on neighborhood age.

Passaic Valley Water Company, New Jersey
The Passaic Valley Water Company, which serves Paterson, Clifton, Passaic and Prospect Park, has a program to provide low-cost zero interest loans to property owners to assist with the cost of replacing LSLs. The utility has educational materials to assist residents with identifying service line material and offers water testing.

Philadelphia, Pennsylvania
The Philadelphia Water Department replaces the full service line, at no cost to the resident, when an LSL is discovered during water main replacements. The city has determined that the entire service line, including the portion on public property, is owned by the property owner. The department also provides interest free loans for residents interested in replacing their LSL if main replacement is not scheduled. Additionally, in March 2017, the Philadelphia Mayor signed a bill amending the City's Health Code to expand required disclosures for lead paint hazards to include lead plumbing components and LSLs for rental owners.

Pittsburgh, Pennsylvania
Pittsburgh Water and Sewer Authority (PWSA) was required to begin replacing LSLs on the public side in June 2016. The utility began development of a Lead Water Service Line Program in October 2016; the program includes identifying LSLs and assisting property owners that want to coordinate private and public side replacement. The Pittsburgh Urban Redevelopment Authority offers property owners loans up to $10,000 at 3% interest to assist with the cost of private side replacement. Property owners can search an interactive map on PWSA's website to check service line material on the public and private side. In May 2017, PWSA halted partial replacements.

Princeton, Wisconsin
In 2017, the City of Princeton launched a Lead Water Service Replacement Program to identify and replace LSLs in the water system. To begin, the utility staff inventoried publicly and privately owned service lines. After determining service line material, the city contacted residents with lead lines and informed the property owner of Princeton's program that assists with replacement.

Providence, Rhode Island
In August 2017, Providence Water launched a program to assist homeowners with the cost of LSL replacement on the private side. For the pilot program, the utility is offering 3-year, 0% interest loans for homeowners. Providence Water will automatically replace the public portion of the line when the private side is replaced. Additionally, the utility has an interactive map where users can search an address or account number and learn if the side of the service line on public property is made of lead.

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Racine, Wisconsin
Racine Water Utility instituted a private lead service lateral rebate program to replace the full LSL, partly funded by Wisconsin DNR. Eligible homeowners can receive up to $3,000 towards the cost of replacement. The city estimates 11,000 LSLs remain in the system.

Revere, Massachusetts
Revere received a loan from the Massachusetts Water Resources Authority in November 2017 to assist with design of an LSL replacement program. Additionally, the City received SRF funding to fully fund replacement of nearly 300 LSLs on public and private property. Revere began replacements under the program in 2018 and is continuing in 2019.

Richmond, Virginia
Richmond Department of Public Utilities has an LSL Replacement Grant Program that provides financial assistance to property owners to replace LSLs on private property in coordination with replacement on the public side. Eligible homeowners can receive up to $2,500 toward the cost of the replacement.

Rochester, New York
Rochester has an interactive map that provides property information, including property assessment, zoning, tax, and water billing information, about addresses in the city. Interested users can learn the inside and outside service line material of an address by selecting a property on the map or searching for the address, owner, or SBL (section, block, and lot) and clicking on a tab for "water" information. The City also has a webpage that provides drinking water safety tips.

Rockford, Illinois
The Rockford Water Division encourages eligible property owners with an LSL to coordinate with the Water Division to replace the LSL on public and private property at the same time. Additionally, the City launched an interactive map to provide information about the location of LSLs to residents and business owners. The map displays if the service line materials is lead, non-lead, or if there is no information for the public and private side of the line.

Saginaw, Michigan
In 2018, the city of Saginaw received a Pilot Water Infrastructure Grant from the state Department of Environmental Quality to develop an inventory of LSLs in the water system and replace the lines. The city is determining service line through a preliminary records review followed by onsite investigations. For replacements, Saginaw is starting in areas with planned construction projects and is moving towards establishing a schedule for replacement of all LSLs per the state Lead and Copper Rule.

St. Clair Shores, Michigan
St. Clair Shores is in the process of developing an LSL replacement program in response to the state's revised Lead and Copper Rule. The city is starting by conducting outreach and will move to increase sampling, provide filters to residents, and build its inventory in later stages of the program, with the goal of replacing all remaining LSLs in "the shortest amount of time as possible." City staff estimates approximately 650 customers have LSLs.

St. Francis, Wisconsin
St. Francis received funding from the state Department of Natural Resources to replace LSLs on private property. Though Milwaukee Water Works owns and operates the water system in the city – and has a separate LSL replacement program for the public side – this program allows property owners to be reimbursed for the cost of replacement on private property. Eligible property owners who use an approved plumber can be reimbursed up to $5,000. The City estimates it can perform approximately 90 replacements with the funding.

St. Joseph, Michigan
In April 2018, St. Joseph received a grant from the state Department of Environmental Quality's Pilot Drinking Program for updating the distribution system material inventory and replacing LSLs. To update the inventory, city staff conducted inspections in various areas in the city, collected data, and created a GIS map. The City then identified

and prioritized eligible locations for LSL and galvanized service replacements. Completed, planned, and potential replacement locations are marked on a static map on the city's website.

St. Paul, Minnesota
The St. Paul Regional Water Services (SPRWS) replaces hundreds of LSLs annually in the water supply system, and has an assessment program to assist homeowners with replacement on the private side. The program allows residents to have the cost of replacement collected through property taxes and assessed over several years. Additionally, SPRWS has an interactive map displaying if service line material is lead, not-lead, or unknown on public and private property. The utility also provides free water testing to residents.

Sheboygan, Wisconsin
Sheboygan Water Utility is using Wisconsin DNR funding to target specific projects, including replacing LSLs at schools and licensed day care centers and replacing failing or disturbed LSLs. Homeowners who are eligible for rebates can receive up to $2,500 for the cost of private side LSL replacement. The city estimates 7,500 LSLs remain in the system.

Springfield, Illinois
The City of Springfield has developed a Lead Water Service Line Replacement Project to replace LSLs in low-income and high-risk areas and during emergency work. The project is financed through the Public Water Supply Loan Program State Revolving Fund. Springfield also has an interactive map displaying service line material for public property at addresses throughout the city. The City Water, Light, and Power encourages residents to fill out a survey to update records for service line material on the private side. The water utility estimates 10,000 LSLs remain in the system.

Springfield, Ohio
Springfield, Ohio passed city Ordinance No. 19-104 in April 2019 to authorize a program to assist property owners with the cost of LSL replacement on private property. Through the LSL Replacement and Financial Assistance Program, the city will pay for up to 50% of the cost of LSL replacement on private property, with a maximum of $1,500. The city also has a Lead Water Service Information Map where residents can check if their address has a known lead service on the public side and the building characteristics of the area.

Springfield, Vermont
Springfield is working to identify and replace lead goosenecks remaining in the town's water system. The Water Department has inventoried service lines and conducted additional research and excavation to verify any lead material. The Town has publicly identified areas of concern where addresses could have lead goosenecks. When lead goosenecks are found, the property owner is notified and the gooseneck is replaced by the Town authority.
Syracuse, New York
Syracuse Water Department has a Residential Lead Service Replacement Program whereby the city hires a plumber for eligible homeowners, and the property owner has the choice of adding the cost of replacement to their tax bill in a lump sum or over a ten-year period at 7% interest. Additionally, in 2017, Syracuse received a grant from the state Department of Health's LSLR Program for full replacement of LSLs.

Toledo, Ohio
Toledo, Ohio has replaced LSLs on public property as part of its water main replacement program since 1999, and will coordinate replacement if a property owner also replaces the portion on private property. Beginning in 2020, the City began a dedicated initiative to replace LSLs, which includes offering residents zero interest loans to assist with the cost of replacement on the private side. Additionally, the City has an interactive map displaying if the service line material is copper, iron, unknown, or lead on public and private property.

Trenton Water Works, New Jersey
Trenton Water Works (TWW) was required to begin replacing LSLs on the public side in 2018. The utility developed a Lead Service Line Replacement Program to assist property owners with the cost of LSL replacement on the private side. Under the program, up to 2,600 residents can have their LSL replaced for $1,000. TWW estimates that there

are 19,000 LSLs in the water system (the utility serves the City of Trenton, Hamilton Township, Hopewell Township, Lawrence Township, and parts of Ewing Township.)

Viroqua, Wisconsin
The City of Viroqua is in the process of identifying and replacing lead goosenecks and galvanized services in the water system. Using funds from the Wisconsin Department of Natural Resources, the City will provide grants to eligible property owners to assist with the cost of replacement.

Washington, DC
In December 2018, the District Council passed legislation that takes several important steps on lead in water by redressing past partial LSL replacements and requiring property owners to disclose the presence of an LSL to potential homebuyers and renters. For partial replacements, the legislation provides financial support to homeowners who did not replace the portion of the LSL on private property previously when they were expected to shoulder the entire cost. The District will pay eligible property owners between 50 and 100% of the cost of replacement up to $2,500 – with additional assistance provided for low-income residents. The law also updates two existing DC Water programs – for customer-initiated and utility-initiated replacement. Under the utility's voluntary LSL replacement program, when a property owner requests replacement, the utility will coordinate the work and pay for replacing the portion on public property. And, when DC Water is conducting a main or LSL replacement on public property, the utility will use appropriated funds to fully finance private side replacement (with the resident's consent). For more information on this legislation see EDF's blog. In October, 2019, DC Mayor Muriel Bowser appropriated $1.8 million in her Fiscal Year 2020 budget to fund the Lead Pipe Replacement Assistance Program, which is designed to replace legacy partial LSLs remaining on private property.

Additionally, DC Water also provides an interactive map on its website that allows users to search any address and see what is known about the service line material on the public and private side.

Wausau, Wisconsin
The City of Wausau received funding from the state Department of Natural Resources to replace LSLs on private property. Wausau Waterworks Commission prioritized replacement of LSLs as follows: 1) schools and daycares, (2) locations along street reconstruction project, (3) locations where the utility will be performing replacement on the public side due to a leak, (4) locations where the utility previously replaced the LSL on public property, and (5) other locations with private side LSLs. Funding-permitting, the utility can offer up to $3,000 for each replacement site.

Wheaton, Illinois
The City of Wheaton has an interactive map displaying the water service material on the public and private side of the line. Users must click on an icon on the address of interest to learn the material from the main to curb valve and from the curb valve to the house.

Winthrop, Massachusetts
Winthrop received a loan from the Massachusetts Water Resources Authority (MWRA) in December 2017 to fully fund replacement of 20 LSLs on public and private property and 17 LSLs on private property. The Town anticipates expanding the program using future funding.

Winchester, Massachusetts
In March 2017, Winchester received a loan from the Massachusetts Water Resources Authority (MWRA) to replace LSLs and lead goosenecks in the city's water system. The loan fully funded replacement on public property and provided participating homeowners with $1,500 to assist with the cost of replacement on private property.

Wisconsin Rapids, Wisconsin
Wisconsin Rapids received funding from the state Department of Natural Resources to replace LSLs on private property. Eligible property owners that use an approved plumber can receive up to $4,000 to reimburse the cost of LSL replacement. The utility posted a map on its website to identify approved areas.

**Though the Lead and Copper Rule does not define a lead service line to include service lines that only have lead pipe in a gooseneck or pigtail, we consider them to be a lead service line. This approach is consistent with EPA's Advisory Committee's recommendations.

Completed programs

Nine communities have taken the lead in developing and implementing successful replacement programs by fully removing LSLs in their communities.

Framingham, Massachusetts
Framingham Water Department launched a comprehensive Lead Service Replacement Program in 2005 and replaced their final LSL in April 2016. For the program, the Town investigated service line material and coordinated with property owners to conduct full LSL replacements.

Green Bay, Wisconsin
In October 2020, the Green Bay Water Utility completed replacement of the 1,782 lead services lines on public and 247 on private property in the city. The utility has been replacing publicly-owned service lines since about 1990, but it initiated a concerted effort to accelerate replacements beginning in January 2016. The city passed an ordinance establishing the need to create a comprehensive LSL replacement program and requiring property owners to replace private side lead services within a year of their discovery. The city utilized funding from the Wisconsin DNR and the City of Green Bay through the Lambeau tax refund. Using this funding, the utility was able to complete LSL replacements at no cost to customers.

Lansing, Michigan
The Lansing Board of Water & Light launched a program in 2004 to remove all LSLs in its water system. In December 2016, the BWL removed the last of 12,150 lead service lines at a total cost of $44.5million. The water utility owns the service line, from the main to the meter, in Lansing.

Madison, Wisconsin
Madison launched a lead service replacement program in 2001 and finished the removal of 8,000 lines by 2011. To ensure full replacement, the council passed an ordinance mandating homeowners replace privately-owned LSLs. Madison Water Utility offered to pay residents half the cost of replacement – up to $1,500 – to ease the financial burden.

Medford, Oregon
In June 2016, the Medford Water Commission (MWC) began investigations to locate any remaining lead "pigtails"a static map available to show locations where the water mains are older than 1946. At such locations, MWC checks if the meter box is serviced by a galvanized pipe, which could indicate a high likelihood that there is a lead gooseneck. Where MWC does find a galvanized pipe, it alerts the customer, investigates further to confirm the presence of a leaded line, and replaces it with a copper line. As of January 2017, MWC had investigated over 4,700 meter boxes and removed all 27 lead goosenecks. The utility has removed all known lead goosenecks and will continue to remove any discovered.

Parchment, Michigan
The City of Parchment was required to begin replacing LSLs after changing its source water supply in 2018. The governments of Parchment and Kalamazoo released a map of potential LSLs within Parchment in 2018. The cities identified roughly 240 LSLs within Parchment and the City of Kalamazoo replaced the LSLs using state funding. The project was finished on April 1, 2020.

Sioux Falls, South Dakota
Sioux Falls, South Dakota began a proactive approach to replacing LSLs in the community in 2016. Previously, the Public Works Water Division had replaced LSLs during water main reconstruction activities. Between 2016 and 2017, the utility removed 230 LSLs and removed the final lead service in August 2017.

For more information, please contact Roya Alkafaji, Manager, Healthy Communities, ralkafaji@edf.org

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Springfield, Massachusetts
In 1992, the Springfield Water and Sewer Commission began a proactive program to remove all LSLs from the water system. By November 2005, the Commission had successfully replaced all known LSLs.

Spokane, Washington
In July 2018, the City of Spokane announced that it had replaced the remaining LSLs in the water system, at an approximate cost of $3 million. The program began in May 2016 with the goal of replacing the remaining 486 LSLs with copper pipes – at no cost to homeowners. The Water Department performed replacements as part of other reconstruction projects and sent letters to property owners and tenants to coordinate water meter access for full replacement. Additionally, the City provides an interactive map where interested users can see property information, including service line material information, by searching or selecting addresses and clicking on various layers.

Appendix

For more information, please contact Roya Alkafaji, Manager, Healthy Communities, ralkafaji@edf.org

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