Principles for Lead Service Line Replacements

As discussed in NRDC's survey of lead service line (LSL) occurrence across the country, these risky lead pipes supply water to between 9 and 12 million homes in every state, serving tens of millions of residents. Because at any time they can leach or flake off small particles of lead, they are dangerous, especially for children. Since there is no safe level of lead exposure, NRDC and our partners strongly urge that every lead service line in the nation be removed as soon as possible, but no later than 10 years from now. Replacement is necessary whether a there is a full lead line, a galvanized steel line previously connected to a lead line, or a partial lead service line (where part of the pipe is lead and part is some other material), since every lead pipe in contact with drinking water presents a significant risk. Lead connectors such as pigtails or goosenecks—lead pipes often several feet long that connect the water main to a long straight pipe—also must be replaced, since they can contribute significant lead to tap water.

To be equitable, efficient, and protective of health, we urge that the following principles guide any lead service line replacement (LSLR) program:

Community Involvement & Communication

1. Provide community involvement in identifying LSLs and in program planning, prioritization strategies, and neighborhood sequencing for LSL replacement, and build in time to incorporate feedback.
2. Proactively engage with the community to advertise and celebrate the LSLR program and develop community support to minimize the number of residents who have concerns about the program or object to lead line replacements.
3. Provide consumer education on the risk of lead service lines, reducing risk during and after LSLR, and how to install and maintain filters.
4. Provide a map of where the full and partial LSLs are in the community and where they have been replaced so residents can learn if there has been action to replace their lead service line. Also disclose on the map if the material of the service line is unknown.
5. Provide notice to people prior to and after LSL replacement.
6. Provide demonstrations showing that high quality work causes minimal disruption to property.
7. Provide accessible notices that are language and literacy rate appropriate. This should include support that has answers to the common questions.
8. Provide targeted materials for high-risk residents, such as pregnant people and families with infants or young children.
9. Provide, and well-publicize, contact info (website, phone number, etc.) if someone has a question. The utility should have the capacity and be prepared to promptly find and communicate answers to any questions.

Prioritization for At-Risk Communities

10. Carry out the program equitably, prioritizing homes in areas already burdened by lead (such as lower-income Black communities with older housing where children tend to have a much higher chance of elevated blood lead from all sources).
11. Provide a systematic program that prioritizes vulnerable neighborhoods because it will be most cost effective when replacements are completed street by street rather than doing one-off replacements.

Fully Funded by Government or the Utility

12. Require that the government/utility fully fund complete LSL replacement, including connectors (e.g., goosenecks or pigtails) and any portion of the LSL that may be under private property, from the water main to where the service line comes in through the wall of the basement and connects to indoor plumbing.

Economic Justice, Prevailing Wages, and Immigrant Justice

13. LSL replacements should be conducted by union labor, pay prevailing wage, and where possible utilize apprenticeship programs to open employment opportunities to local community members.
14. To protect undocumented residents, no personal documentation should be required during the LSL replacement process.

Approach, Method, and Material Used

15. Develop a comprehensive community lead service line replacement plan, with robust community input.
16. Replace all the service lines on a street or in a neighborhood at once, rather than doing "one-offs" which are expensive, inefficient, and slow down progress.
17. Replace the entire service line at the same time/same day – not doing the public side one day and the private side (if any) another day.
18. Have a plan for systematically determining what service lines of "unknown" material are made of (using, for example, hydrovacing to detect LSLs) and how they will be replaced. Rather than touching a service line twice, if hydrovacing or other methods find a partial or full LSL, the line should be removed immediately. Otherwise, multiple touches of the line are inefficient and expensive, and the digging or hydrovacing can disturb lead particles in the service line and release lead into tap water.
19. Use the best available records and information, as well as predictive modeling to identify LSLs or potential LSLs. Unknown service lines should be evaluated based on the best available information, random sampling, and predictive modeling to maximize the accuracy of the inventory and LSL replacement program.
20. Address restoration/clean up after excavations (yards, sidewalks, streets).
21. Turn off water to the house prior to beginning any work on site. The utility employee or contractor should complete whole house flushing for the customer, and the utility should waive the costs of water from flushing. The household plumbing post replacement flushing should be completed consistent with AWWA's Full lead service line replacement standard ANSI/AWWA C810-17.
22. Use "pull through" method if possible (or other trenchless methods, such as directional drilling, if necessary) when replacing the LSL to minimize costs, disruption, and need for yard restoration.
23. Use copper, not plastic replacement service lines. While plastic is cheaper, there are significant questions about plastic pipes including whether they will leach chemicals, whether they will allow permeation of toxic chemicals into the water from contaminated groundwater, and how long they will last; plastic pipes also are vulnerable to melting and contamination of the distribution system with toxic chemicals in the event of fires. The Healthy Building Network recommends "copper pipes without solder, fluxes or other filler metals." The International Association of Fire Fighters and United Association (plumbers & pipefitters union) have raised major concerns with plastic pipes including emission of toxic gasses in fires, leaching of chemicals into drinking water, and off-gassing of chemicals during construction posing health risks to workers.
24. The entire lead service line, including connectors such as lead pigtails and goosenecks, must be removed, as should any galvanized steel or iron service line that is or ever was downstream of lead pipe.

Reducing Cost & Risk

25. Reduce the number of future visits to a property by replacing curb stops and meters at the same time as the LSLR, reducing overall maintenance costs if the utility knows that curb stop and meter replacements are planned (i.e., touch it once).
26. Consider whether the water system is doing an inventory and has the resources to do LSLRs at the same time it digs up and confirms an LSL on a given property. This way it only increases exposure risk during a single excavation, not twice during the inventory excavation and again during the actual replacement.
27. If the inventory work identifies a lead line or a galvanized line that is not immediately replaced, notify the resident and note in the property record that a lead line or galvanized line was identified so that any new person buying the property can be on notice of the potential hazardous service line.
28. Replace LSLs in coordination with water main upgrades/repairs and when responding to a service line leak or breakage. This coordination, however, shall not drive lead service line replacements. Thus, for example, LSL replacement plans should be driven by equity and public health considerations, and replacements in high-risk areas not delayed in order to prioritize other non-health related infrastructure projects.

Lead Testing

29. Conduct water lead testing after LSL replacement, using testing techniques that most accurately gauge the risk of lead in drinking water.

Providing Safe Drinking Water during LSLR Construction

The LSL replacement process can increase lead levels because the construction activity itself may dislodge more lead from lead service lines. Hence, the municipality/utility will need to provide certified filters to deliver safe drinking water within residences or provide an alternative water source, including (1) water buffaloes (large tanks that have multiple taps for residents to fill containers) and/or (2) bottled water.

For filters:

30. Provide point-of-use or pitcher filters certified for lead removal for homes served by known or possible lead service lines, unless there are microbiological violations at the water system that could rule out the use of filters. If filters are not appropriate, or while water is out of service for replacement of the lead service line or during whole house flushing, water buffaloes or bottled water should be provided.
31. Provide widespread education and publicity (such as social media, automated calls) on the importance of using filters, and proper use of filters, for at least 6 months after LSL replacement (per recent Lead and Copper Rule revisions).
32. Promptly provide filters and replacement cartridges for at least 6 months after LSL replacement.
33. Provide in-home instruction for filter installation and maintenance.

For water buffaloes or bottled water:

34. Water buffaloes should be conveniently placed in the community where the LSLR construction is occurring.
35. If bottled water is distributed as a backup to water buffaloes, the municipality/water utility should develop a recycling plan.
36. People who deliver bottled water should be fairly compensated for their work by the municipality/utility.

Speed of Construction

37. Complete replacement program as quickly as possible, but in no case should it take more than 10 years.

Consent of Property Owner Not Needed

38. Do not require consent of property owner to replace the LSL (especially since many landlords may be absent and difficult to reach for consent). Adopt an ordinance/law similar to that of Newark, NJ that allows utility crews access to replace a lead service line without requiring consent of the property owner (or at a minimum require immediate written objection to LSLR upon notification of plans to replace the lead line, and record in property records that the property has an LSL and the property owner refused to have it replaced and require LSLR at seller's expense when the property is sold).