WISCONSIN POLICY FORUM

GETTING THE LEAD OUT

Drinking water flows through more than 150,000 lead service lines in Wisconsin, affecting at least 92 communities in the state. Yet due to local, state, and federal efforts to address this public health concern, tens of thousands of pipes have been replaced in the state since 2018, exceeding the total from the previous two decades. Here, we explore how communities made this progress and how much more remains to be done.

Since 1998, Wisconsin water utilities have replaced or taken out of service more than 73,000 lead service lines that connect to homes and businesses, reducing a potential public health risk in communities around the state.

State data show more than 37,000 of these lines have been replaced or turned off since 2018 – more in the last five years than in the previous two decades (see Figure 1). In both 2021 and 2022, more than 9,000 pipes were eliminated from the system. These efforts have occurred statewide: nearly 200 water utilities have shut down at least one lead service line since 1998, and 18 municipalities have eliminated more than 1,000 each. Efforts to remove this concern within our water system are underway in cities such as Wausau, Beaver Dam, and Milwaukee. Others such as Kenosha and Manitowoc have also made notable progress and Stoughton recently finished replacing all its lead lines.

Though this trend represents massive progress from previous decades, these service lines still lurk underground in scores of communities across the state and possibly more. Local governments and the state Public Service Commission (PSC) are working together to locate and report on lead service lines, the first step to removing them. In this report, we use PSC data collected through annual reports filed by water utilities to show the pace of removal and the communities where these pipes are still buried.

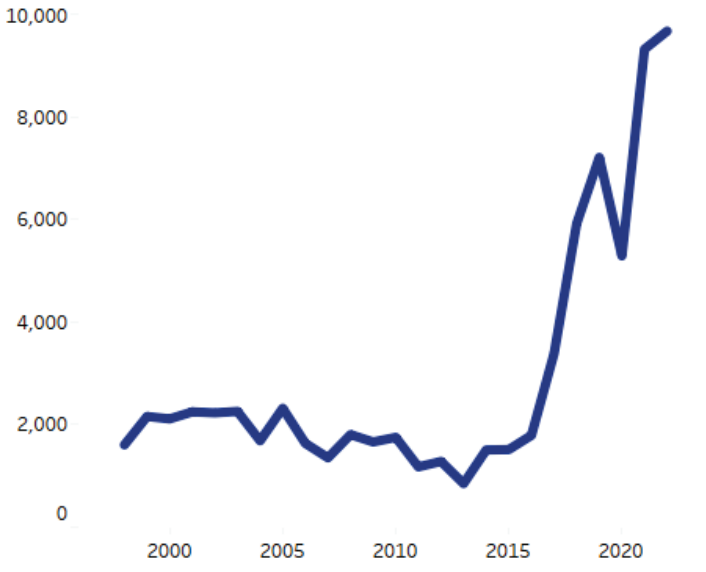
RISK POSED BY LEAD SERVICE LINES

Ingesting lead is harmful to human health and can limit brain development, impact the nervous system, and often lead to diminished intellectual capacity. Experts say the dust and chips from cracked and peeling lead-based paint pose the greatest danger to human health. However, a 2008 study found lead from drinking water still contributed an estimated 10% to 20% of the lead intake of U.S. children, and the figure is higher still for infants fed with baby formula.

State data show essentially none of the publicly owned water supply lines (also known as “water mains”) in Wisconsin that convey water from utilities to neighborhoods are made of lead. In parts of communities built before the 1930s, however, the service lines, or laterals, that link these water mains to homes and businesses often are made from lead. After the 1930s, the use of lead laterals declined, but the practice was not fully halted in some areas until 1986 when the U.S. Environmental Protection Agency (EPA) banned them. Lead can also be contained within the pipes or solder of older plumbing and fixtures located within buildings.

Figure 1: Efforts to Remove Lead Pipes Have Ramped Up

Utility-owned lead service lines taken out of service by year in Wisconsin



Source: Water utility annual reports filed with the state Public Service Commission

Water utilities can slow the process of lead accumulating in drinking water by treating the water with phosphates to coat the insides of the pipes. This practice has helped communities to meet current federal health standards for drinking water. But the coating can be compromised by changes to water chemistry or by work on water mains, which can lead to contaminated water. Since even coated lead pipes carry some risk, removal is the safest long-term option.

WHO OWNS LEAD SERVICE LINES?

The ownership of lateral lines is often split, with the water utility owning the line from the main up to and including a shutoff valve and the property owner owning the portion from the valve to their home or business. In some cities, the customer owns the entire line. Both sides of the shutoff valve are often made of the same material, but sometimes one side may be replaced due to new construction or if that pipe leaks or suffers damage. Water utilities have better information on the portion of the laterals they own, since they are responsible for replacing them.

Estimating the number of lead service lines still serving Wisconsin homes and businesses is difficult, because these lines are buried underground, and were installed decades ago. The data collected by the PSC place the estimated number of utility-owned lead lines at more than 158,000 and the number of customer-owned lead lines at more than 141,000.

Using statistical methods to estimate the total lines in each state, the EPA ranks Wisconsin 10th nationally in terms of the number of lead service lines still in use. The EPA is requiring communities to report by next year in greater depth on the number of lead service lines, which should provide better clarity on the challenge.

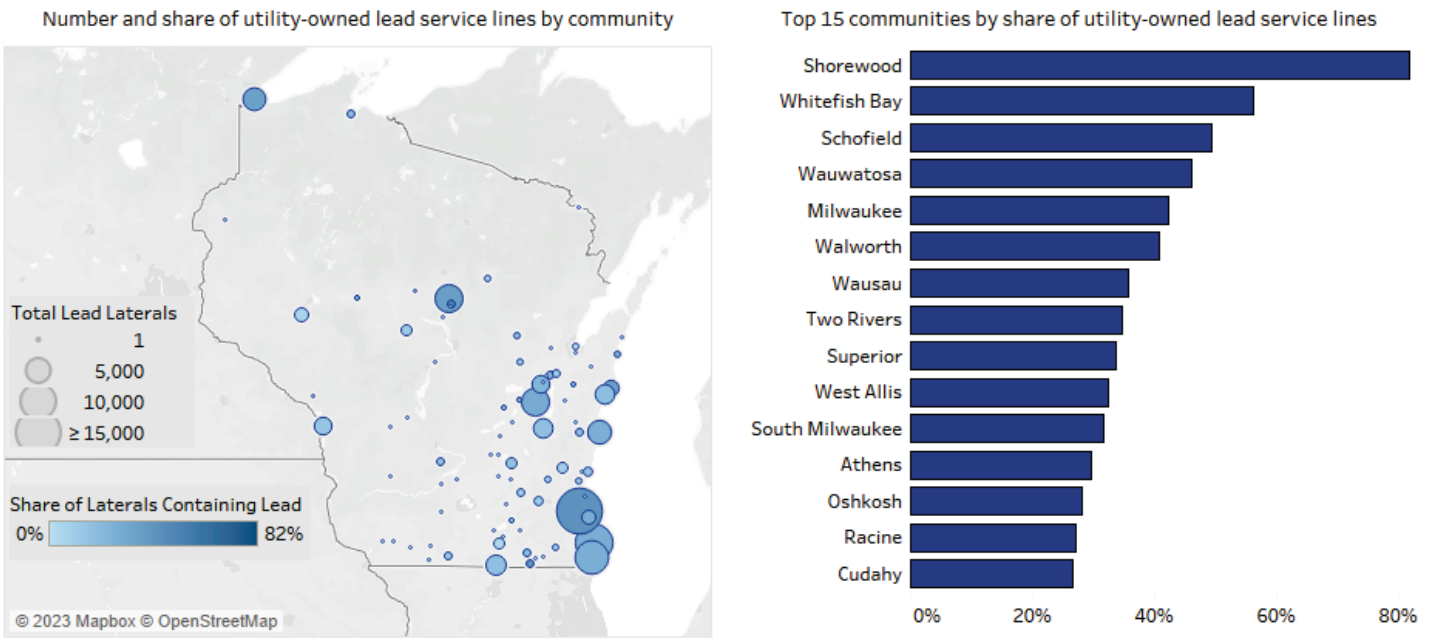
This brief focuses on utility-owned service lines to prevent double-counting the utility and customer segments of a single lateral, and because the data on utility lines are more precise.

WHERE ARE WISCONSIN'S LEAD LINES?

While 44% of the state's estimated lead water service lines are in Milwaukee – an issue the Forum has documented – the rest are distributed across Wisconsin (see left panel of Figure 2). Though Milwaukee has the most lead lines, a few communities have an even greater share of lead lines, such as the village of Shorewood at 82%. Shorewood officials currently plan to replace their lead service lines over the next two decades, though that plan could still be adjusted. The right panel of Figure 2 shows the top 15 cities in Wisconsin by the share of known lead service lines.

The certainty of these numbers also varies, with some communities reporting relatively precise counts and

Figure 2: Lead Laterals Found Across Wisconsin, Not Just in Milwaukee



Source: Water utility annual reports filed with the state Public Service Commission

other communities providing rough estimates. For example, a Whitefish Bay official indicated village staff listed unknown lines as containing lead, which may have inflated the number of reported lines.

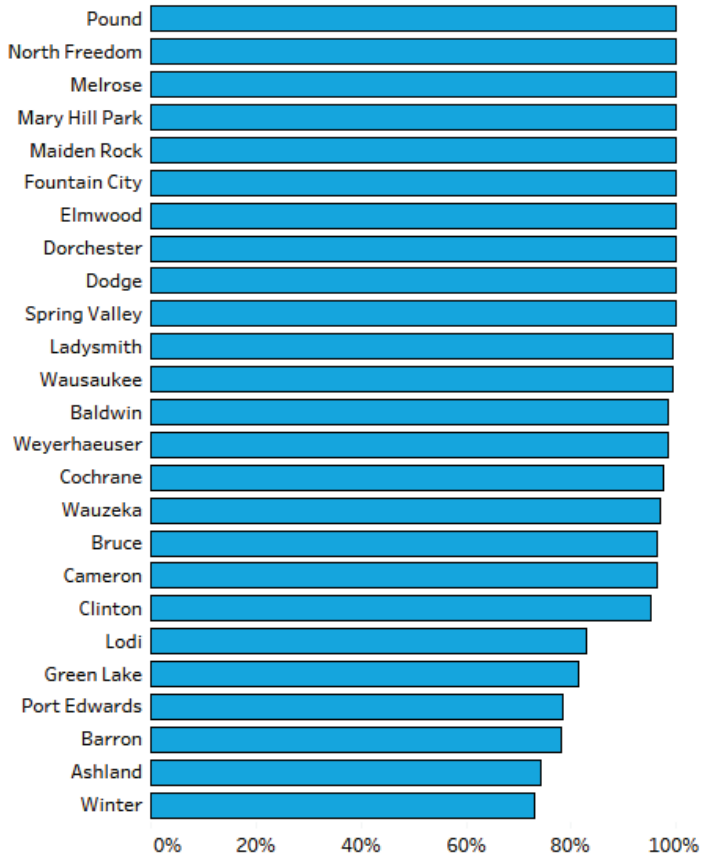
A number of other communities also reported to the state that they were uncertain about how many lead lines may be buried in their municipality. Figure 3 shows the top 25 communities by the percentage of unknown service lines. While it's unlikely that all of the unknown pipes are made of lead, it shows the amount of work that is needed in some communities simply to establish the scope of the potential lead pipe problem.

STATEWIDE LEAD LINE REPLACEMENT

While lead pipes have been associated with health issues since the 1800s, only a few cities around the country have replaced all known lead service lines. First, replacing lines is expensive and utilities seek to limit costs, since most of their expenses must be passed on to customers in the form of fees – the main source of revenue for utilities. In addition, municipal officials have felt the risks could be managed through water treatments and split ownership complicates the replacement of customers' lead lines.

Figure 3: Some Communities Lack Data on Lead Pipes

Percent of utility-owned laterals made of unknown material



Source: Water utility annual reports filed with the state Public Service Commission

Madison was a national leader in this effort, replacing all of its 8,000 remaining lead service lines between 2000 and 2012. The city's water utility paid $15.5 million to replace its portion of the lines, and the city covered half of the cost to replace the customer's portion. Customers paid the remaining costs.

More cities have taken action following the 2014 water crisis in Flint, Michigan. A change to the city's water supply and chemistry corroded Flint's lead service lines, resulting in the contamination of its drinking water. The health impacts on Flint residents drew attention to the risk in other communities.

In one response, costs associated with replacing privately-owned lines have become eligible for federal funding, allowing Wisconsin to institute a pilot program beginning in 2016. Under this program, water utilities in communities designated as disadvantaged were eligible for forgivable loans to cover the costs of replacing the customer portion of lead lines connected to homes, schools or daycares.

Congress passed further changes and allocated additional funding for lead line replacement starting in 2021. Since 2016, the pilot program and congressional action together have provided $90.6 million to Wisconsin water utilities through forgivable loans to replace the customer portion of lead laterals.

The federal government has also committed to fund lead service line replacement through the Bipartisan Infrastructure Law of 2021. Wisconsin can expect to receive $373 million in funding over the next several years for lead line replacement, for both utility and customer-owned service lines. The state recently announced $74.1 million in statewide funding to utilities through forgivable and low-interest loans for fiscal year 2024, including $5.8 million for Wausau and $10.0 million for Manitowoc.

While these amounts are large, replacing service lines is expensive. Madison's efforts many years ago averaged $2,315 per utility-owned line plus an additional $1,340 for the customer's line that was split between the city and each property owner. Currently, Milwaukee averages $3,184 for their portion of lateral replacement costs. Using these per-pipe amounts, and adjusting

Madison's experience for inflation, it could cost water utilities between $500 million and $600 million in today's dollars to replace every lead lateral they own in the state. Customers would typically pay additional costs for their part of the service line, though changes in policy may eliminate that requirement.

EFFORTS ON LEAD PIPES IN MILWAUKEE

Since 2018, Milwaukee has replaced 6,321 lead service lines as part of the city's ongoing plan to eliminate its nearly 70,000 known lead lines over the next 20 years. Milwaukee officials have set goals of replacing 1,200 laterals in 2023, 2,200 in 2024, and 2,700 in 2025. The pace will have to increase even more in future years to meet the 20-year timetable.

Milwaukee expects to receive $30 million of the state's $74.1 million of lead service line replacement in 2024 from the Bipartisan Infrastructure Law. Financial limitations are not the only factor in play, as the city also faces challenges in administering and overseeing this large volume of projects.

Under the program, the city replaces laterals when water main replacements and certain paving projects are carried out, when new child care centers are licensed, and when laterals leak or are damaged. The property owner is currently responsible for up to $1,592 of the total cost, which can be repaid to the city through a special assessment on the property over 10 years.

The plan also prioritizes efforts based on socio-economic factors, the presence of elevated lead levels among residents, and the area's density of lead service lines. Water Works officials indicate that 1,000 laterals in these priority areas will be replaced in 2024 as part of their 2,200 total replacements. To speed replacements, Water Works officials indicate that ordinance changes are under consideration to end customer charges for service line replacement and allow occupants of rental housing to consent to the replacement in addition to property owners.

CONCLUSION

Lead pipes in Wisconsin are being replaced more rapidly now than at any point on record and this pace may even accelerate in the years to come. This rapid change is happening in response to concerted local, state, and federal efforts to address this longstanding public health risk.

At the current pace, Wisconsin's water utilities could replace all of their lead laterals over the next two decades. Some have argued that, given the public health risk, these replacements should happen even faster, while others will argue that cities should simply replace lead service lines at the same time as aging water mains. Either way, the data from the past five years show the progress in lead lateral replacements that has resulted from greater attention and collaboration leaders at every level of government.