

Community Finance Brief

Lead Pipe Removal Costs Will Outpace Budgets, Bonds Step Up



MATT POSNER | COURT STREET GROUP LLC

Ten(ish) years from now, the United States will have replaced one hundred percent of all lead pipes used in the country. With many caveats, the federal government has created a massive mandate for state and local governments but the reality is that the funding mechanisms it offers - direct grants and expanded revolving funds - will fall massively short of what is needed. It would behoove public finance professionals to be proactive and leverage the market to make real impact on communities nationwide on this issue.

Late last month, the U.S. Environmental Protection Agency proposed [Lead and Copper Rule Improvements](#) (LCRI) which is part of an ambitious proposal wherein broad goals are laid out, the use of science in determining how to measure the problem and progress, the construction/deconstruction required in rural and urban areas will be decided upon and financing options are put forth.

Actually, pause that. In the EPA statement, nothing about the cost is noted. Granted, it is not really the EPA's bailiwick, but [the headlines](#) across the nation after the announcement all led with high price tag associated with an ambitious endeavor. There are millions of pipes in remote parts of the country to very complicated underground segments of our oldest cities. The geographies of lead use in pipes varies drastically (**see figures on page 2 and 3** that are from the National Resources Defense Council). The need is quite evident, but there are some complications when it comes to the cost, including the fact that some utility systems that deliver water are privately owned or the land is private where lead pipes exist, financing programs are primarily run through states, not local governments, and that the reality is that many local government's on their own, would pay a high price tag to borrow the money to complete this work.

Large Administration policies such [as this one](#) (that has a [racial equity component](#) to it as well) require big federal

Quick Takes

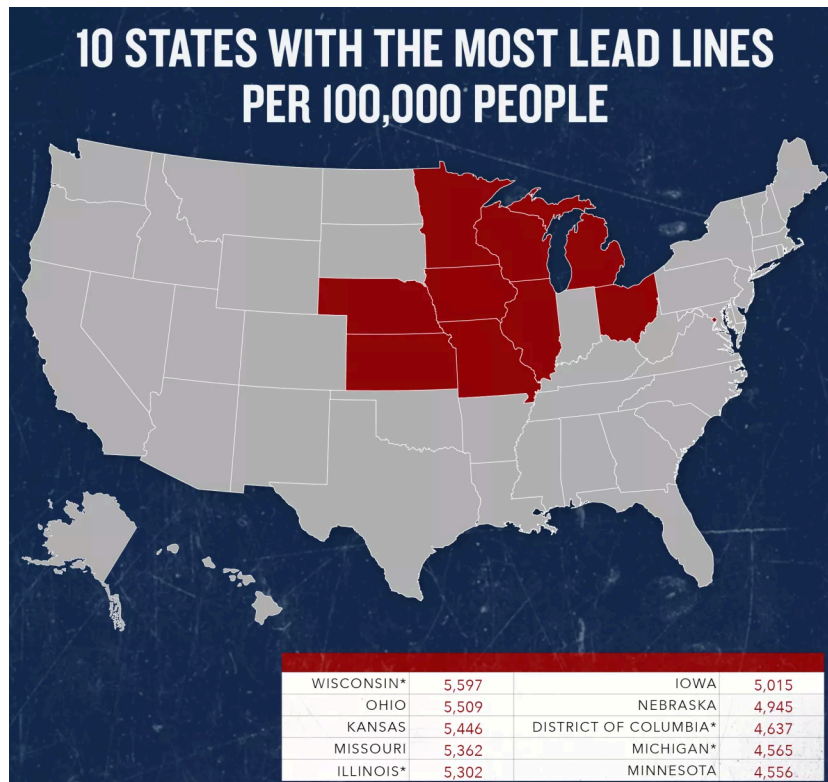
The U.S. drinking water infrastructure is made up of 2.2 million miles of underground pipes, which is the **largest in the world**
- *American Society of Civil Engineers*

It is estimated a total of **9.2 million** of U.S. water pipes that service homes have lead in them (not in miles as previous fact) as of 2021
- Environmental Protection Agency

65% of **Black and Latinx** populations live in municipalities with the most lead service lines
- Metropolitan Planning Council

It is estimated that **90% to 95%** of financing for drinking water infrastructure comes from municipal bonds.
- *Fundamentals of Water Finance, Michael Curley, 2017*

In total, 75 of the 97 drinking water utility systems in the U.S. have revenues to operating ratios at 1.0 or more, making it **very difficult to accelerate** new capital investments
- *Brookings Metro*



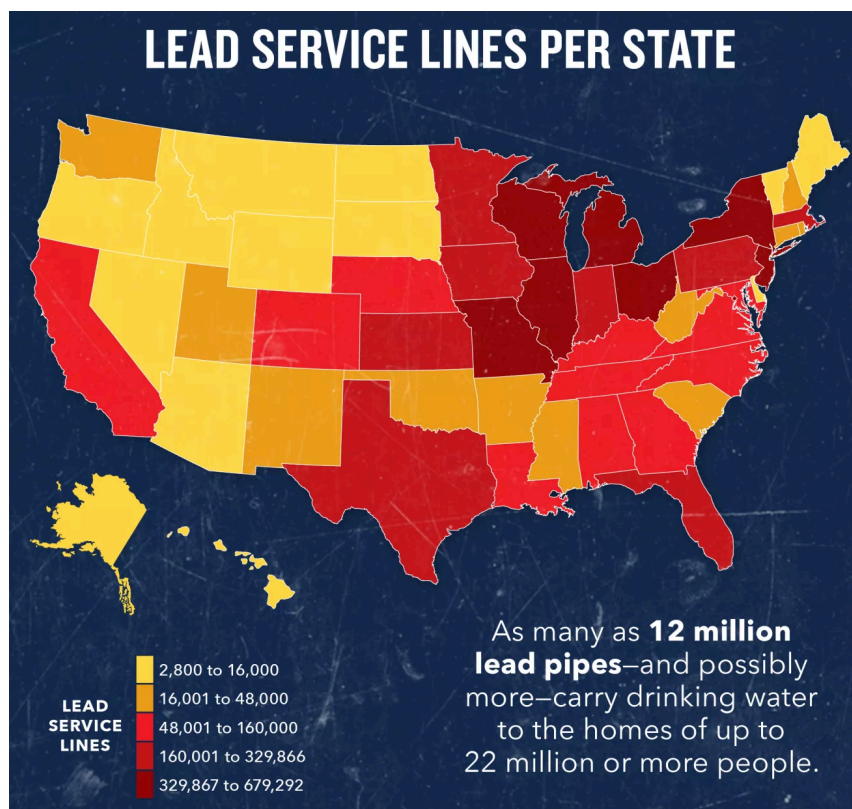
dollars. LCRI takes bits and pieces from various existing programs to provide some upfront costs but the reality is that these mandates will require local government to lean in to be compliant. Big upfront costs tend to require municipal bonds in some capacity and this is to be expected but first let's review the issues, its hurdles and two novel ideas that communities could have at their disposal that would help lower the cost burden and enhance impactful finance concepts.

ANCIENT CIVILIZATIONS UTILIZED LEAD AS DID WE

The [oldest lead-containing object](#) made by humans dates back to 6,500 B.C.E. and was found in Turkey. Babylonians fortified structures with lead. High-born Romans drank out of, and cooked with, vessels laced with lead. Lead is a chemical element found all over the world as it is part of this planet's crust. It is malleable and strengthens load bearing structures well and does not corrode easily. It has been known to be poisonous for over 2,000 years as well.

Use of lead pipes in U.S. water systems dates back to the early 1800s when they were a popular choice because of their durability and resistance of corrosion. It was known as early as the late 1800s that lead could leach into drinking water and cause lead poisoning - a serious health condition that can damage the brain and nervous system. Despite these concerns, lead pipes continued to be used in many U.S. cities until the 1970s and 1980s when they were finally banned by a series of federal actions that [began in 1974](#). Millions of

“No doubt as years go by people forget which engineer did it, even if they ever knew. Or some politician puts [their] name on it. Or they credit it to some promoter who used other people's money with which to finance it. But the engineer [them]self looks back at the unending stream of goodness that flows from [their] successes with satisfactions that few professions may know. And the verdict of [their] fellow professionals is all the accolade [they] want.”- [Herbert Hoover wrote this](#). (Does not pertain to Hoovervilles or lead pipes.)



lead pipes remain in service today and they are a major source of lead exposure for children and other vulnerable populations.

The LCRI proposal would update regulations under the 1991 Safe Drinking Act and would require water systems to:

- Develop a plan to inventory and locate all lead service lines in their system within 2-years;
- Replace lead service lines within 10-years, with a goal of replacing at least 10% of lead service lines each year;
- Provide financial assistance to customers to help them pay for the replacement of lead service lines;
- Implement corrosion control measure to reduce lead levels in drinking water; and
- Test for lead in water more frequently.

This announcement last month comes with a comment period and is expected to be final in fall of 2024. All in all, it's a comprehensive plan designed for a long-dated and very complicated problem. Estimates on the cost range from \$20 to \$30 billion by the EPA to \$90 billion, according to the [American Water Work Association](#). As this is a federal government mandate, the biggest financial support will come from said body.

“Lead in drinking water is a generational public health issue, and EPA’s proposal will accelerate progress towards President Biden’s goal of replacing every lead pipe across America once and for all,” said EPA Administrator **Michael S. Regan**. “With collaboration and the focused actions proposed today, EPA is delivering on our charge to protect all Americans, especially communities of color, that are disproportionately harmed by lead in drinking water systems.”

FEDERAL FUNDING PLAN AND FOCUS

The Infrastructure and Jobs act of 2021 (IIJA) made significant investments to address lead pipes and waste water initiatives in the U.S. and [represents the largest federal investment in clean water in U.S. history](#). IIJA addresses lead pipe removal in several ways:

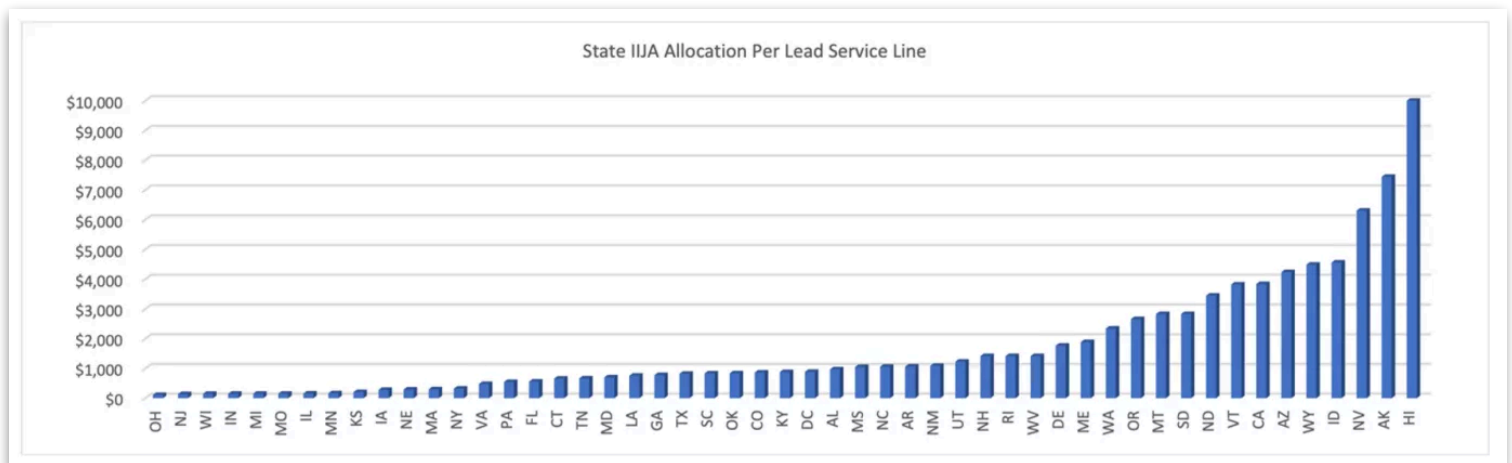
- **Dedicated funding:** \$15 billion in direct funding from the EPA for lead pipe replacement. It is earmarked for removal of lead pipes from drinking water systems and includes identification, replacement and outreach.
- **Bonding assistance:** EPA's State Revolving Fund and Drinking Water Revolving Fund programs, which provide low-interest loans to states and communities for water infrastructure projects. These programs have supported lead pipe replacement efforts and the IIJA's increased funding will significantly enhance their ability to address them.
- **Environmental justice prioritization:** the legislation emphasizes justice principles in allocating funding and directs the EPA to prioritize communities that have been historically marginalized and impacted by lead exposure.
- **Lead poisoning prevention:** funds will go towards public health programs focused on preventing and mitigating lead poisoning including efforts to raise awareness, provide lead testing and education and support victims.

The dollar figures are significant and the focus on equity in water safety is novel. On the latter, there is a staggering body of evidence on the correlation of potable water and income and race in this county. Historically marginalized communities have often been targeting for the placement of polluting industries and [hazardous waste sites](#), the [legacy of redlining](#) that has led to water disinvestment in these communities and the lack of political power to bolster these communities are all well documented. [Flint, Michigan](#) is the poster child but there are thousands of Flints in this country. This subject matter will be reviewed in the near future but today we focus on financing.

PROBLEMS WITH FEDERAL GRANT FUNDING

Replacing lead pipes is a massive and expensive undertaking and state and local governments face several challenges in carrying out the EPA-mandated set of tasks. The dedicated funding portion mentioned above will be administered by the EPA. And, in part because IIJA was passed two years prior to the LCRI, the money is [distributed to states on a](#)

Using EPA's published allotments for the first round of lead service line replacement funding, [Elin Warn Betanzo of Safe Water Engineering](#) determined that the states with the most lead service lines—like Illinois, Michigan, Missouri, New Jersey, New York, and Ohio—will receive far less per lead line than states with fewer lead service lines. For example, the states of Michigan and Missouri will receive an estimated \$151 per lead service line, while some states with fewer lines will receive an estimated \$7,441 and \$10,098 per line, respectively. **The graphic on page 5** illustrates these differences. [The full data set can be found here.](#)



[formula that is linked to state drinking needs](#). It is anticipated to be adjusted for need and environmental justice but to-date this is not part of the formula. This is problematic (**see quote, previous page**).

Another issue to be aware of is the history of federal grants and so-called [‘super user’ states](#). The critique, which has been leveled mostly on the Federal Emergency Management Agency, is that some states have the infrastructure in place to position themselves to be larger recipients of federal grants. This problem is exacerbated when one considered marginalized communities and the grant writing resources they have. We have yet to see how the environmental justice component of the rules play out in reality but the history isn’t stellar.

Finally, [as discussed last week](#), state preemption is an issue that many urban communities are struggling with in the current political climate. Already [some states](#) have declined funding based on politics or their process of relies on the contaminant being found in drinking water before they can address it. It would not be surprising to see other states accepting funding and use the dollars as bargaining chips for other items on the state legislature or governors agenda.

These issues should and hopefully will be addressed but in some cases this large amount of funds will not be used effectively. This is the reality of taking the federal knife to a problem that requires a community scalpel. As such, bonding efforts through state-revolving funds (SRF) is expected to be largely leveraged as this route allows a community to take more agency over the remediation process.

LOAN PROGRAMS

An extremely successful program in this country has been SRFs, which balance the needs of local governments well with state- and federal-level economies of scale. These are loan programs administered by states to provide financial assistance to local governments and water utilities for drinking water projects. These funds are capitalized by federal grants from the EPA and states match a portion of federal funding. They offer low-interest (or no-interest)

loans for a variety of projects and the IIJA expands the size and the use of projects they can be used for.

For those not well versed in these programs, they have existed in various iterations for over 30-years. Instead of an outright grant to state or locality, the federal government loans the money with a guaranteed state-level match wherein local governments can apply to. As interest is paid on the loans over time, the program recycles the funds back into the SRF making it available to more projects in the future.

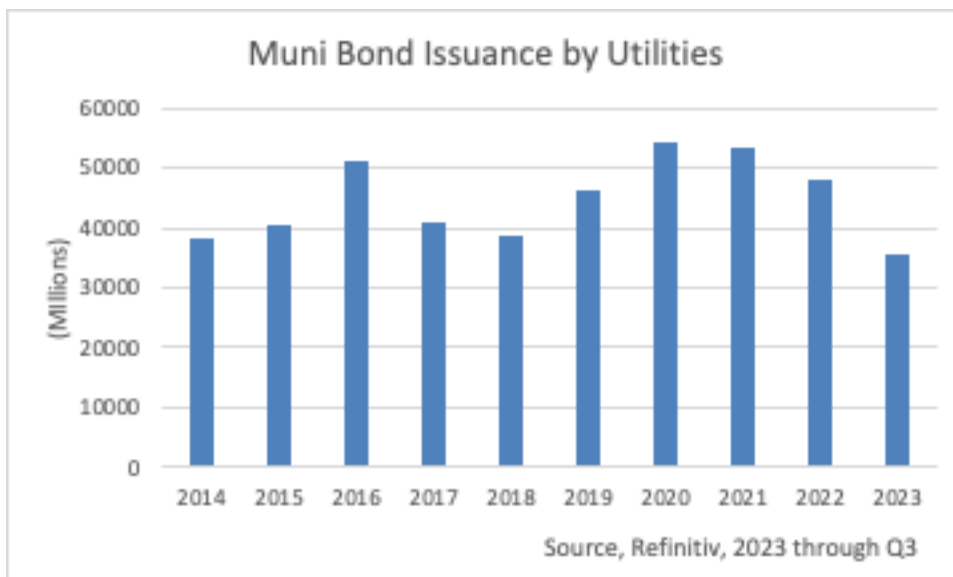
As for using SRFs to lower the cost of lead replacement, the current program has funding needs that far [outweigh availability](#). Further, the latest budget out of Congress guts the SRF program by [67% for fiscal year 2024](#). While this is political in nature, it underscores a lack of certainty from SRFs in the future.

This leaves the two largest funding opportunities with some rather large question marks and threatens to leave lead pipe removal as an unfunded mandate.

MUNICIPAL BONDS WILL PAY FOR LEAD REMOVAL

With noted questions about federal capital addressing the lead problem, water systems will turn to municipal bonds. This marketplace allows for any local government, or public utility system (with strings if it is private) to borrow and take advantage of tax-exempt interest rates. Utilities, as providers of water, sewer, gas and for flood control projects, have issued anywhere from \$35 to \$55 billion annually in the last decade (**see figure, below**). It is estimated that [90% to 95%](#) of financing for drinking water infrastructure comes from municipal bonds.

The private business use test (PBUT) is a law that applies to all muni bond issuers: an issuer must demonstrate that no more than 10% of bond proceeds are used for private business in



order to qualify for tax-exempt. The law makes sense given that the tax-exemption is a right granted for projects with a public purpose. This becomes tricky for water systems in the U.S. as some (~10%) are privately owned, water systems are complex and may

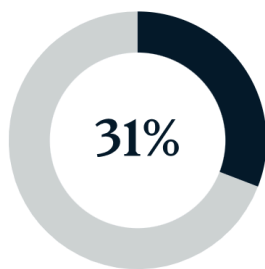
involve private entities that benefit from them and for the removal of lead pipes, proceeds could be used to finance the removal of privately owned lead lines.

There is bi-partisan support for The Financing Lead out of Water (FLOW) Act that would allow public utilities to bypass the PBUT and it currently sits in relevant committees in the House of Representatives and the Senate.

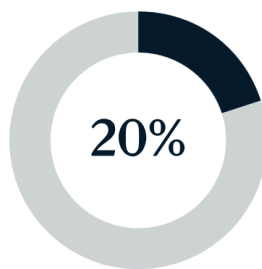
WATER SYSTEMS UNDER PRESSURE

With water systems relying heavily on the municipal bond market, the lead mandate will likely spur an uptick in water bond issuance in the municipal bond market in the next decade. The water infrastructure sector in this country has been under pressure in the last decade as the commodity itself has become more expensive. Much of that pressure resulted in more governments looking at privatizing water systems in order to fill a funding gap, improve efficiency and open communities to private innovation. This is a longstanding debate: overall, Americans like the concept of water as a public resource while they generally [are willing to see it privatized if it meant lower water bills](#). The McKinsey poll **below**, summarizes the issue well.

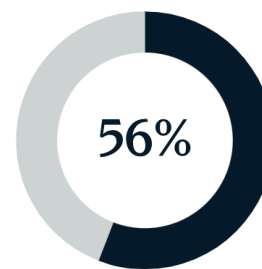
Regardless of where one falls on this debate, water distribution in the country faces challenges and this lead mandate will increase pressure moving forward. User fees and tax revenues along with grants may not be enough to cover expenses. And, this comes at a time when local governments are seeing a widening gap in bond credit rating discrepancy with states. Pensions, taxes, economic inequality, unfunded mandates have together, all else being equal, meant local borrowers are seeing net lower ratings compared to states. In the paradigm of the lead issue, local governments may have to literally carry the water when it comes to funding the EPA mandate.



Percentage of US utilities surveyed in 2019 that expressed difficulty in covering the full cost of providing services (survey responses, n = 648)



Percentage of US households with unaffordable water bills pre-pandemic¹



Percentage of US water utilities surveyed in 2018 that reported problems with customer nonpayment of bills (survey responses, n = 761)

¹The EPA defines "unaffordable water bills" as when more than 4.5% of the household income goes toward paying water and wastewater services. Source: American Water Works Association State of water industry reports from 2019, 2020, and 2021; Bluefield Research's 2021 U.S. Municipal Water & Wastewater Utility Rate Index; Current Population Survey, average annual family income; Global Water Intelligence Tariff Survey; US Environmental Protection Agency

One recent example of how this played out recently was in Newark, New Jersey. In the summer of 2019, the EPA announced that two homes in the city had levels that exceeded federal lead standards and the community was drinking out of [water bottles shortly thereafter](#). Bonds were issued to expedite the funding to replace the city's pipes but its Baa2 rating made the borrowing very expensive. In a Moody's Investors Service conference that year, the Essex County Executive announced that through issuing the bonds via triple-A rated Essex County, the issuer would [save \\$15 to \\$20 million](#) on the \$120 million transaction.

LOOKING AT STATE-LEVEL FINANCING OPTIONS

The story of Newark is not unique in it being a problem that can be solved by looking for the sovereign governmental entity for help. While not every city has a county willing and able to step in as was the case with Essex County, at least 20 states, by our count, have state-level financing entities that could step into a support role. Bond banks, climate banks, financing authorities, are all state-level entities that issue bonds on behalf of local communities.

Already, most state bond banks are administering the clean water revolving loan funds and are very familiar with their state's water infrastructure. These loans can be pledged with water and/or sewer revenue, a general obligation, moral obligation or backed by a state intercept if state-law applies and can be as competitive as a SRF-type structure. In every case, a state bond bank enhances a local government credit, it improves access to capital by pooling projects together to benefit from economies of scale and provides technical support to local governments that may not have the expertise to navigate the capital markets.

Taking it further, these state-level financing authorities could pool these local loans together into an impact bond, which Essex County did not do, and probably should have. With federal funds supporting testing, mapping out of pipe infrastructure and public health education, a thoughtful impact security could be put together at the state level to inform its constituents of its activities, disclose a significant body of lead removal information to investors and support healthier communities. One could even envision a variable coupon linked to the 10% quota of pipe removal mandated by the EPA annually.

NEW CREDIT ENHANCEMENT OPPORTUNITIES

Outside of bond banks et al, the momentum in the impact and community benefit space as it pertains to municipal bonds is moving forward in a variety of interesting ways. Novel reviews of [public-private partnerships](#), [racial equity assessments](#) and now, credit enhancement discussions have made their way into the municipal bond space.

There are philanthropic entities that are looking to leverage triple-A credit through an enhancement in the municipal bond space if impact criterion are met. Local governments looking at elevating the impact of public finance, municipal bonds, and potable water for future generations should be open to thinking outside the box.