

EPA's Final Lead and Copper Rule Improvements Technical Fact Sheet: Service Line Inventory and Replacement Requirements

October 2024

This fact sheet provides an overview of the final Lead and Copper Rule Improvements (LCRI) requirements for the (1) service line inventory, (2) service line replacement plan, (3) mandatory service line replacement, and (4) notification and risk mitigation measures. Throughout this fact sheet, links are provided to other EPA fact sheets for more detail. Table 1 provides some important service line-related definitions and descriptions.

Table 1: Service Line-Related Definitions/Descriptions

Term	Definition/Description
Service line	A portion of pipe that connects the water main (or other conduit for distributing water to individual consumers or groups of consumers) to the building inlet. Where a building is not present, the service line connects the water main (or other conduit for distributing water to individual consumers or groups of consumers) to the outlet.
Lead service line	A service line that is made of lead or where a portion of the service line is made of lead. A lead-lined galvanized service line is defined as a lead service line.
Galvanized service line	A service line that is made of iron or steel that has been dipped in zinc to prevent corrosion and rusting.
Galvanized requiring replacement (GRR) Service Line	A galvanized service line that currently is or ever was downstream of a lead service line; or is currently downstream of a lead status unknown service line. For this definition, downstream means in the direction of flow through the service line. If the water system is unable to demonstrate that the galvanized service line was never downstream of a lead service line, it is a GRR service line.
Non-lead service line	A service line that is determined through an evidence-based record, method, or technique to not be a lead or GRR service line.
Lead status unknown service line (Unknown service line)	A service line whose pipe material has not been demonstrated to be a lead, GRR, or a non-lead service line.
Connector	Also referred to as a gooseneck or pigtail, a short segment of piping not exceeding 3 feet that can be bent and is used for connections between service piping, typically connecting the service line to the water main.
Partial service line replacement	Replacement of any portion of a lead or GRR service lines that leaves in service any length of lead or GRR service line upon completion of the work.
Cumulative average annual replacement rate	Systems must meet a cumulative average annual replacement rate of 10 percent that is first assessed in program year 3 and is assessed annually thereafter. For more details on how to comply with the replacement rate, see EPA's Fact Sheet: Calculating Service Line Replacements .
Program year	The first program year runs from November 1, 2027 to the end of the next calendar year (December 31, 2028). Every program year thereafter is a calendar year (January 1 to December 31). For example, program year 2 is January 1, 2029, to December 31, 2029.

1. Service Line Inventory Requirements under the LCRI

The service line inventory provides a foundation for water systems to address a significant source of lead in drinking water, lead and galvanized requiring replacement (GRR) service lines. Table 2 provides a summary of the service line inventory-related requirements under the LCRI.

Table 2: LCRI Service Line Inventory Requirements

Requirement	Description
2021 LCRR Initial inventory	<ul style="list-style-type: none"> The LCRI retains the requirements from the 2021 Lead and Copper Rule Revisions (LCRR) to develop and submit an initial inventory by October 16, 2024. This inventory must include all service lines, regardless of ownership status. Service lines must be categorized as lead, non-lead, GRR, or unknown.
Baseline inventory	<ul style="list-style-type: none"> The baseline inventory builds on the initial inventory and is due by November 1, 2027. It must include information identified on connectors as well as any updated or new information on service line materials and locations. Systems must review specified sources of information for connector materials and categorize them as “Lead”, “Non-lead”, “Unknown”, or “No connector present” where there is no connector at the location.
Updated inventory	<ul style="list-style-type: none"> The inventory is a living dataset that should be continually revised over time as systems replace lead and GRR service lines and identify the material of unknown service lines. After the end of the program year 1 (by January 30, 2029), and every January 30th thereafter, water systems must submit an inventory update and post it online, including total counts for each service line material, total counts for known lead connectors and connectors of unknown material, and total number of full and partial replacements that occurred in the past year. Systems with all non-lead service lines are not required to submit or post inventory updates (unless lead or GRR service lines are discovered during the inventory validation process).
Identification of unknown service lines	<ul style="list-style-type: none"> Water systems must identify the material of all unknown service lines in their inventory by their mandatory service line replacement deadline.
Validation of non-lead service lines	<ul style="list-style-type: none"> To assess inventory accuracy, water systems must validate a subset of their non-lead service lines no later than December 31, 2034, or on a schedule specified by the State. Water systems that completed validation efforts before November 1, 2027 that are at least as stringent as the LCRI requirements can request a waiver from the State. <p>See the LCRI validation fact sheet for more information.</p>



Keep In Mind:

- Water systems must make the service line inventory **publicly accessible**.
 - Systems serving more than 50,000 people must post it online.
 - All other water systems can elect to post it online or use another method to make it accessible to the public (e.g., by mail, available at the water system's office).
- Starting with the Baseline Inventory, the publicly accessible inventory must include the **street address** of each service line and identified connector. Where a street address is not available, a unique locational identifier (e.g., block, GPS coordinates, intersection, or landmark) may be used.
- Water systems with no lead, GRR, or unknown service lines, no known lead connectors, and no connectors of unknown material:
 - Must complete the inventory validation process described above and in the [LCRI validation fact sheet](#).
 - May provide (1) a written statement that their system has no lead, GRR, or unknown service lines, no known lead connectors, and no connectors of unknown material and (2) a general description of the methods used to make this determination.
 - Are not required to submit annual updates; however, if they later discover a lead or GRR service line or lead connector, they must notify the State within 60 days, comply with any additional actions required by the State, and prepare an updated inventory.

2. Service Line Replacement Plan Requirements under the LCRI

What information must be included in the Service Line Replacement Plan?

A service line replacement plan is required for any water systems with at least one lead, GRR, or unknown service line. This plan can help the water system implement their service line replacement program effectively. It is due to the State by November 1, 2027 and must include:

- ① A description of a strategy to identify the material composition of all unknown service lines in the inventory.
- ② A standard operating procedure for conducting full service line replacement.
- ③ A communication strategy for informing consumers and customers before a full or partial lead or GRR service line replacement.
- ④ A procedure for consumers and customers to flush service lines and premise plumbing of particulate lead following a disturbance of a lead, GRR, or unknown service lines or following full or partial replacement.
- ⑤ A strategy to prioritize service line replacement based on factors such as known lead and GRR service lines and community-specific factors.
- ⑥ A funding strategy for conducting service line replacement that includes ways to accommodate customers that are unable to pay to replace the portion of the service line they own.
- ⑦ A communication strategy to inform both consumers and customers served by the water system about the replacement plan and program.
- ⑧ Identification of any laws, regulations, and/or water tariff agreements that affect the water system's ability to gain access to conduct full replacement.
- ⑨ For water systems that identify any lead-lined galvanized service lines in the inventory, a strategy to determine the extent of their use in the distribution system.

What additional information must be included in the plan related to Deferred Deadlines?

The final LCRI includes a [deferred deadline](#) option for systems with a high proportion of lead and GRR service lines compared to the number of total service connections. Systems that are using a deferred deadline must include additional elements in their service line replacement plan, as summarized in Table 3.

Table 3: Additional Service Line Replacement Plan Elements for a Deferred Deadline

Description	
Initial Replacement Rate and Deferred Deadline	<p>The following elements are required as part of the initial service line replacement plan that is due by November 1, 2027:</p> <ul style="list-style-type: none">• Documentation to support the system's determination that it is eligible for a deferred deadline by showing that 10 percent of the total number of known lead and GRR service lines in the replacement pool exceeds 39 annual replacements per 1,000 service connections. Systems may not include unknown service lines in this determination.• Identification of the deferred deadline and the associated cumulative average annual replacement rate¹ that the system considers to be the fastest feasible, but no slower than a deadline and replacement rate corresponding to 39 annual replacements per 1,000 service connections.• The annual number of replacements required, the length of time (in years and months), and the date of completion for the deadline and rate.• Information supporting the system's determination that replacing lead and GRR service lines at a rate faster than 39 replacements per 1,000 service connections is not feasible.
Continued Evaluation of Replacement Rate and Deferred Deadline	<p>Every three years after the initial submission of the plan, the system must provide updated information to support the State's evaluation of why it continues to need the deferred deadline.</p>

¹ See EPA's fact sheets on [deferred deadline](#) and on [calculating the service line](#) replacement rate for additional information.



Keep In Mind:

- Water systems must make their plan **publicly accessible**, and those serving more than 50,000 people must post their plan online.

3. Mandatory Service Line Replacement

The LCRI requires all community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) to fully replace all lead and GRR service lines under their *control* **within 10 years**, unless the system is eligible for a deferred deadline or the State sets a shortened deadline. The LCRI service line replacement requirements are summarized in Table 4.

A service line is under the control of the water system wherever the system has access (e.g., legal access, physical access) to conduct full service line replacement.

Table 4: LCRI Service Line Replacement Requirements

Requirement	Description
Replace all lead and GRR service lines	Water systems must fully replace all lead and GRR service lines under their control within 10 years, unless they are required by the State to replace them sooner or have a deferred deadline .
Cumulative average annual replacement rate	<p>Water systems must assess the cumulative average annual replacement rate of 10 percent beginning at the end of program year 3 (December 31, 2030) and annually thereafter. See EPA's Calculating Service Line Replacements Fact Sheet for detailed requirements and guidance.</p> <ul style="list-style-type: none"> A lead or GRR service line counts as fully replaced only when the entire length of the service line (both customer side and system side) is non-lead.
Obtaining property owner consent (if required)	<ul style="list-style-type: none"> Where a water system has legal access to conduct full service line replacement only if property owner consent is obtained, water systems must make a "reasonable effort" to obtain consent. Under the LCRI a "reasonable effort" is at least 4 attempts to engage the property owner using at least 2 different communication methods (e.g., in-person conversation, phone call, text message, email, written letter, postcard, or door hanger). The water system must continue annual notification of service lines known or potentially containing lead regardless of whether access is obtained after making a "reasonable effort" as described above.
Change in ownership	<ul style="list-style-type: none"> Within 6 months of a change in property ownership, water systems must offer full service line replacement to the new property owner. Within one year of any change in ownership of the property, the system must make a "reasonable effort" to obtain the property owner's consent.
Partial replacements	<ul style="list-style-type: none"> Partial replacements are prohibited unless conducted as part of an emergency repair or in coordination with planned infrastructure work that impacts the service line (e.g., water main replacement, meter replacement). Infrastructure work does not include projects solely to replace lead and GRR service lines as part of a service line replacement program. Additional requirements to mitigate the impact of a partial replacement are required following partial service line replacement. During partial replacements, systems must install a dielectric coupling separating the remaining portion of the service line and the replaced portion of the service line (i.e., newly installed line) to prevent galvanic corrosion, unless the replaced service line is made of plastic. Partial replacements do not count towards the system's mandatory replacement rate.
Replacing lead connectors	Water systems must replace lead connectors under their control when encountered during planned or unplanned water system infrastructure work. Replacing lead connectors does not count towards the mandatory replacement rate.

4. Notification and Risk Mitigation Requirements

Lead service line replacement activities can break apart corrosion scales and cause temporary increases in lead in drinking water. To protect public health, the LCRI requires water systems to conduct notification and risk mitigation measures following full and partial lead and GRR service line replacements. Specifically, water systems must provide consumers with the following:

- Notification that explains that the consumer may experience a temporary increase of lead levels in their drinking water due to the replacement and contact information for the water system;
- Written information about a procedure for the consumer to flush service lines and premise plumbing of particulate lead following replacement; and
- A pitcher filter or point-of-use device that is certified by an American National Standards Institute (ANSI) accredited certifier to reduce lead along with six months' worth of replacement cartridges and instructions for use.

For any service line replacement, notification and risk mitigation measures must occur before the affected line is returned to service. Additionally, the water system must offer to collect a follow-up tap sample between three months and six months after the completion of the replacement and test for lead.

Disclaimer: This document is being provided for informational purposes only to assist members of the public, States, Tribes, and/or public water systems in understanding the Lead and Copper Rule Improvements (LCRI). It includes descriptions of regulatory requirements. In the event that there are any differences, conflicts, or errors between this document and the LCRI, States, Tribes, and/or public water systems should refer to the LCRI. This document does not impose any legally binding requirements on the EPA, States, Tribes, or the regulated community. Further, this document does not confer legal rights or impose legal obligations on any member of the public. In the event of a conflict between the discussion in this fact sheet and any statute or promulgated regulation, the statute and any promulgated regulations are controlling.