



# LEAD AND COPPER RULE REVISIONS (LCRR)

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Hitting the Ground Running:

Case Study on Lead Service Line Replacement

Presented by:

**Gannett Fleming, Inc.**

- Rachel Lengle Govelovich, PE, Project Manager

November 2, 2023

# Agenda

- **Lead and Copper Rule Revisions**
- **Why a Lead Service Line Replacement Project Now?**
- **SCMA Case Study**
  - System Introduction
  - Service Line Inventory Initial Status
  - Lead Service Line Replacement Project Identification
  - Opinion of Project Cost Development
  - PENNVEST Application & Funding Requirements
  - Planning Decisions & Construction Contracts
- **Summary**

# Lead and Copper Rule Revisions

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## Lead and Copper Rule Revisions

### Action Level & Trigger Level



- AL (Same): P90
- > 15 µg/L lead &
- > 1.3 mg/L copper
- More Actions Required
  
- New TL for Lead
- $10 < P90 \leq 15$  µg/L
- Planning, monitoring, treatment

### Tap Monitoring



- Sample Site Selection greater focus on LSLs
  
- Collection Procedure
  - LSL – 5<sup>th</sup> Liter
  - w/o LSL – 1<sup>st</sup> Liter
  - No cleaning aerators

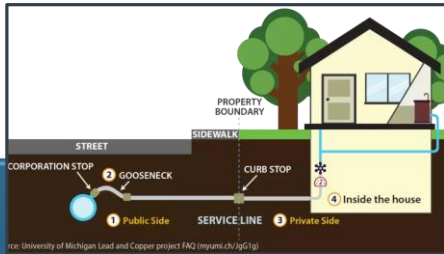
### Corrosion Control



- CCT Requirements for  $10 < P90 \leq 15$  µg/L
  
- CCT Requirements for  $P90 > 15$  µg/L

# Lead and Copper Rule Revisions

## Service Line Inventory



- Categorize as:
  - Lead
  - Non-Lead
  - Galvanized Req. Repl
  - Unknown
- Existing Records

## Deadline & Uses



- **October 16, 2024**
- Public Communication
- Reporting to PADEP
- Update Annually or Triennially

## Other Requirements



- Customer Notifications
- Risk Mitigation Measures

## Lead and Copper Rule Revisions – Service Line Inventory

- ➔ Service Line Category Assignment = worst case of Public and Private Side
- ➔ PADEP Table of Existing Records to Review
- ➔ *Initial Service Line Inventory Sufficient Evidence for Non-lead – Training Aid (Updated – 9/19/2023)*

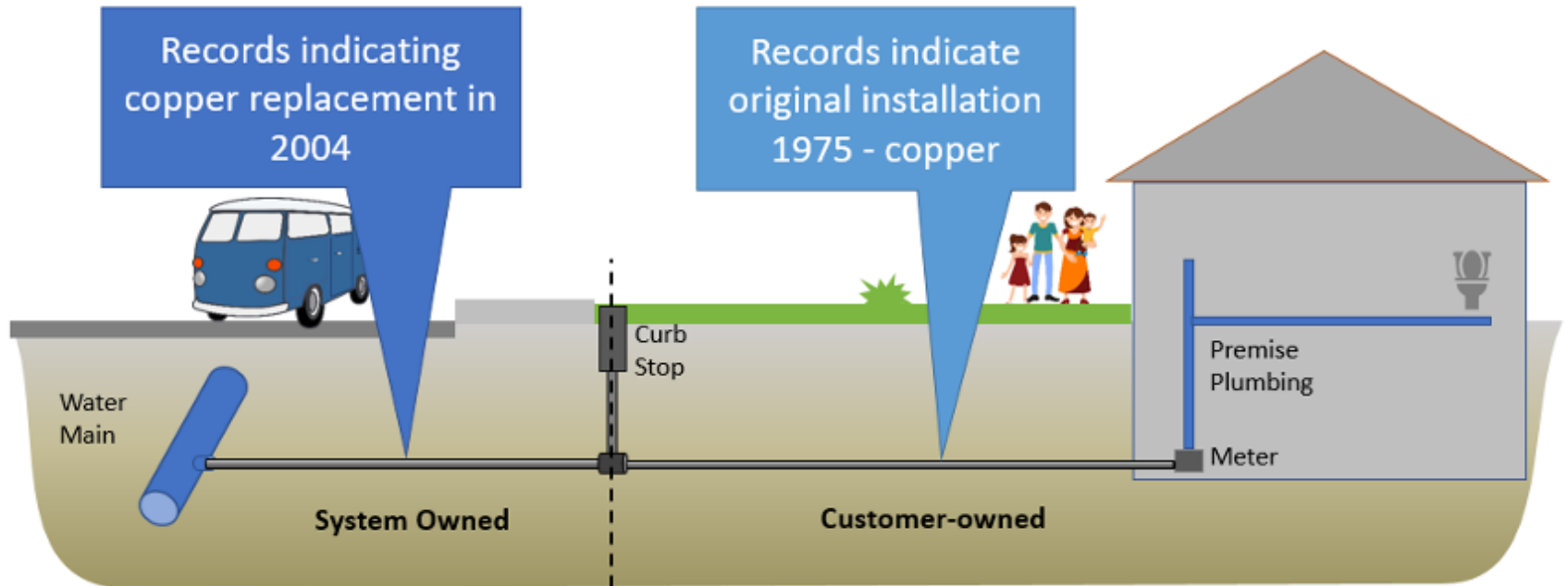
[https://files.dep.state.pa.us/Water/BSDW/DrinkingWaterManagement/Regulations/Sufficient-Evidence-Job\\_9-19-23.pdf](https://files.dep.state.pa.us/Water/BSDW/DrinkingWaterManagement/Regulations/Sufficient-Evidence-Job_9-19-23.pdf)

- Stand-Alone Records (installed/replaced after PA (1/6/1991) or local lead ban)
- Any other Record needs to be verified with one of the following:
  - Field Verification (Visual, CCTV inspection, Mechanical Excavation) (1 for each portion – public/private of service line being verified)
  - Water Quality Sampling
  - Modeling/Statistical Analysis
- No Records – Separate Public & Private Side Rules



# Lead and Copper Rule Revisions – Service Line Inventory

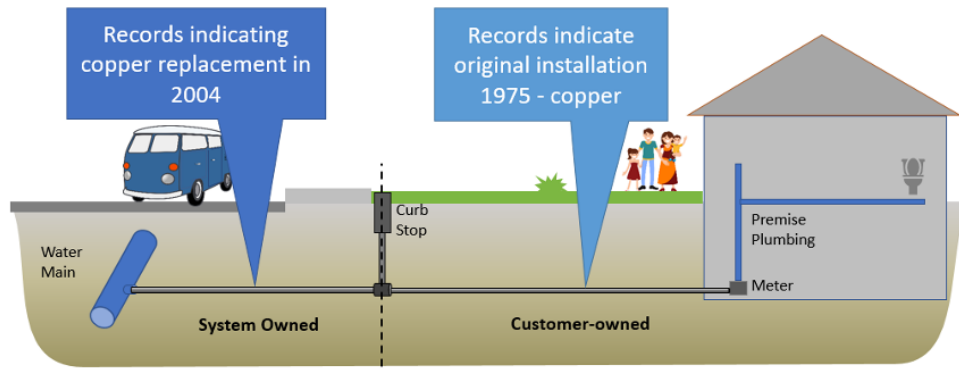
## Example 1: Installation records for both sides



# PADEP Example

	System Side	Customer Side
<b>System has:</b>	Records for an area (e.g., neighborhood) indicating the system-owned side service line (SL) was replaced with copper in 2004 in conjunction with a main replacement program.	Records indicate service line installed in 1975 (copper) when the homes were built in this neighborhood.
<b>Additional Actions Expected:</b>	Nothing	Verify records since pre-'91 install. Choose one of the following: <ol style="list-style-type: none"> <li>Visual observation of the material entering the residence</li> <li>1-point excavation &gt;18" from curb stop for each SL</li> <li>External pipe CCTV inside curb box for each SL</li> <li>Use statistical analysis and/or modeling: Field verify one point at a statistically representative percentage of the service lines for this area (e.g., neighborhood). Field verification can include a, b, or c above.</li> </ol>

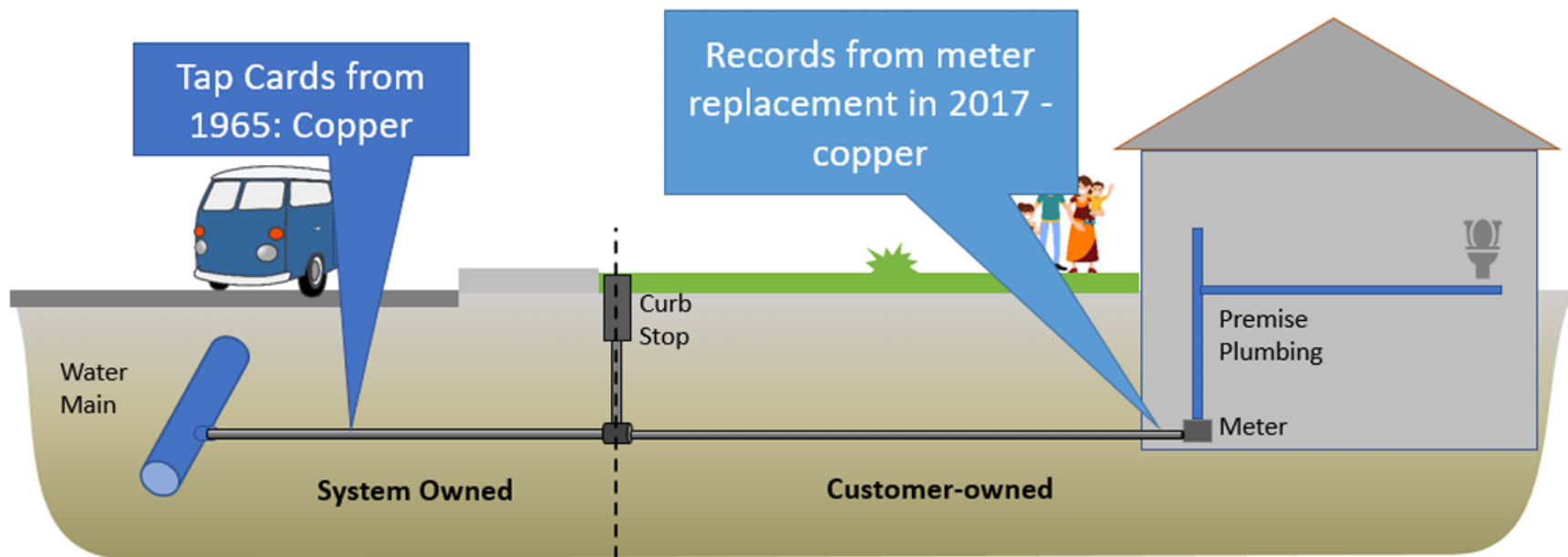
Example 1: Installation records for both sides





# Lead and Copper Rule Revisions – Service Line Inventory

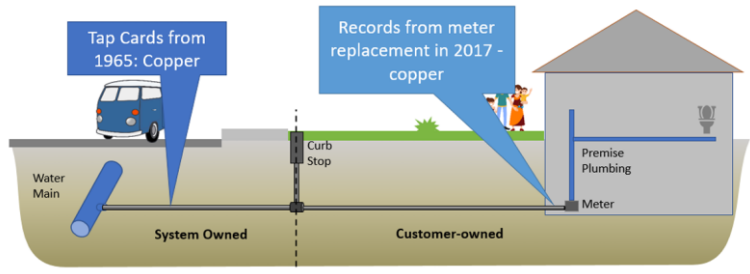
## Example 3: Tap cards and meter replacement records



# PADEP Example

	System Side	Customer Side
<b>System has:</b>	Records from 1965 showing copper from main to curb stop (install records)	House built in 1965 but no records of SL material installed  Records from meter replacements (in house) in 2017 showing connection to copper SL
<b>Additional Actions Expected:</b>	Verify record since it is pre '91. Choose one of the following: <ul style="list-style-type: none"> <li>a) 1-point excavation &gt;18" from curb stop for each SL</li> <li>b) External pipe CCTV inside curb box for each SL</li> <li>c) Use statistical analysis and/or modeling: Field verify one point at a statistically representative percentage of the service lines for this area (e.g., neighborhood). Field verification can include a or b above.</li> </ul>	Verify record of SL material. Choose one of the following: <ul style="list-style-type: none"> <li>a) 1-point excavation &gt;18" from curb stop for each SL</li> <li>b) External pipe CCTV inside curb box</li> <li>c) Use statistical analysis and/or modeling: Field verify one point at a statistically representative percentage of the service lines for this area (e.g., neighborhood). Field verification can include a or b above.</li> </ul>

Example 3: Tap cards and meter replacement records



# Why a Lead Service Line Replacement Project Now?

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## Why a Lead Service Line Replacement Project Now?



### Funding

\$87M/year for PA  
Grant funding  
available now



### EPA Deadline

Dual Purpose  
EPA Inventory  
October 2024 Deadline



### Inventory \$

Use grant funds for  
inventory activities



### Jump In

Small project  
See what works

# SCMA Case Study

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# SCMA Case Study

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## SYSTEM INTRODUCTION



## SCMA – System Introduction

- **Schuykill County Municipal Authority**
- **Sources**
  - Seven (7) Surface Water Reservoirs
  - Seven (7) Ground Water Wells
- **ADD = 5.3 MGD**
- **30,000 Population Served**
- **22 Municipalities in Schuykill County**



# SCMA Case Study

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## SERVICE LINE INVENTORY INITIAL STATUS



## SCMA – Service Line Inventory Initial Status

- **Public Side**

- GIS Data Base updated with public side service line material.

- **Private Side**

- Limited to no data.

- **Year Built Information**



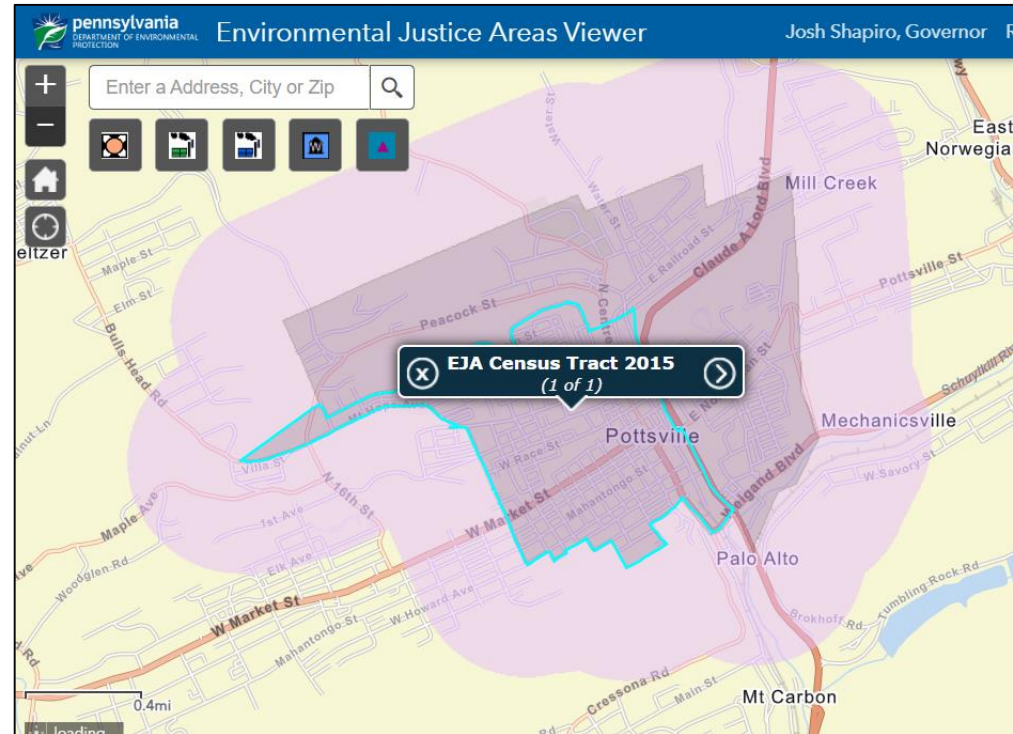
# SCMA Case Study

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## LEAD SERVICE LINE REPLACEMENT PROJECT IDENTIFICATION

## SCMA – Lead Service Line Replacement Project Identification

- Starting Points
  - Environmental Justice Areas
    - Federal/State Emphasis
    - Census Tract Block Group
    - $\geq 20\%$  Poverty and/or
    - $\geq 30\%$  Minority
    - EJ Area of Concern
  - Pipeline Replacement Prioritization Projects
    - Replace main at same time
  - General Project Size



<https://padep-1.maps.arcgis.com/apps/webappviewer/index.html?id=f31a188de122467691cae93c3339469c>

# SCMA – Lead Service Line Replacement Project Identification

- Next Step
  - Overlay
    - EJ Area
    - Priority Main Replacements
  - Considered
    - Main Replacement Priority Rank
    - Age of Main (late 1800s)
    - Break History
    - # Services
    - Residential vs. Commercial/Indus.

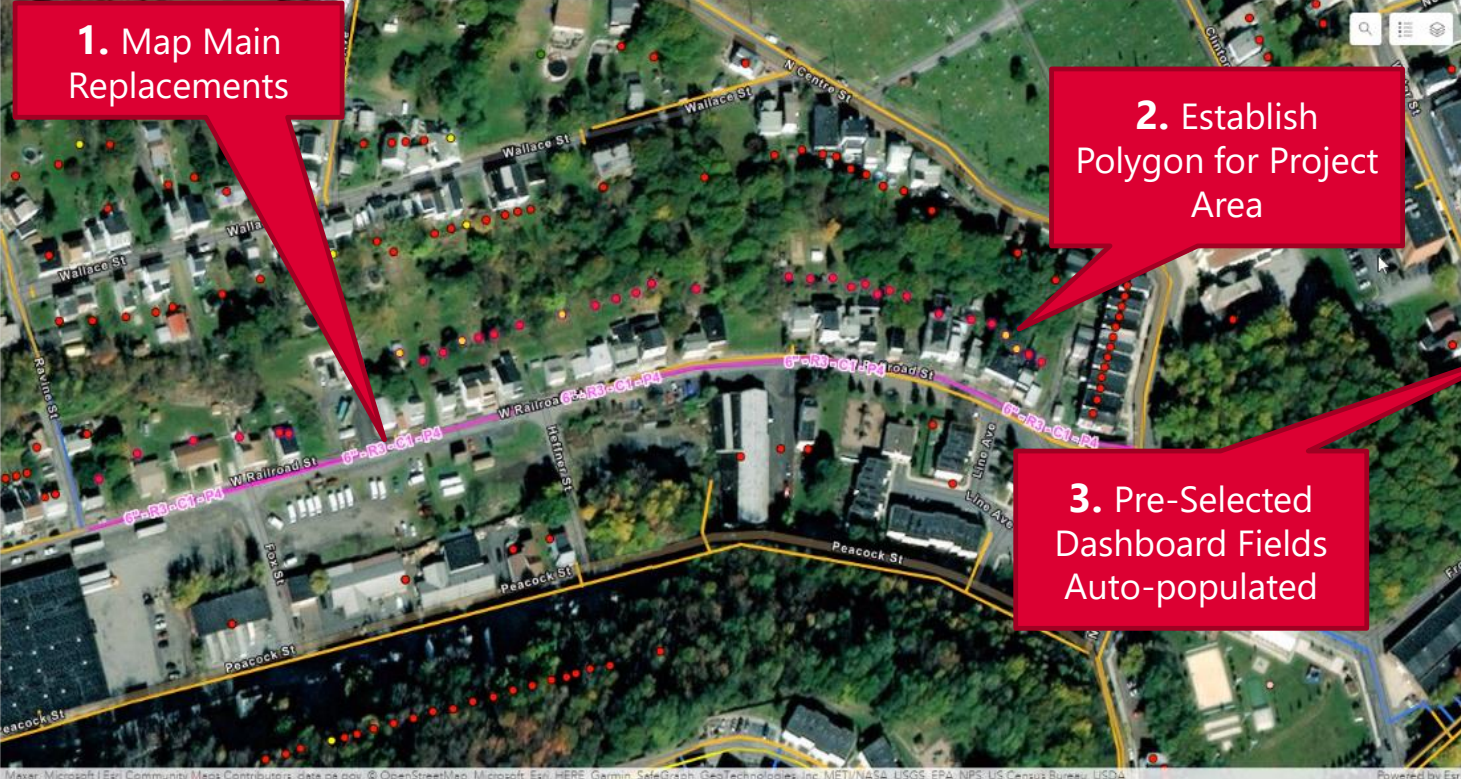




1. Map Main Replacements

2. Establish Polygon for Project Area

3. Pre-Selected Dashboard Fields Auto-populated



Properties

41

Public Cost

\$533k

41 Properties

Assumes a \$13,000 public side replacement cost per property.

Private Cost

\$246k

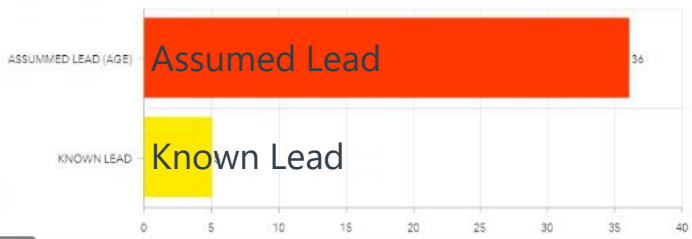
41 Properties

Assumes a \$6,000 private side replacement cost per property.

Combined Cost

\$779k

Assumes a \$6,000 private and \$13,000 public replacement cost per property.



● ASSUMED LEAD (AGE) 87.8%  
● KNOWN LEAD 12.2%



# SCMA – Lead Service Line Replacement Project Identification

- Final Project
  - Water Main Replacement
    - 6,600 LF new 8-inch DIP
    - 6-inch Cast Iron Mains w/ Lead Joints
    - Installed 1886-1923
    - West Railroad Street and North Centre Street; Fairview Street; West Race Street; and Pierce Street
  - Lead Service Line Replacements
    - 354 Services
    - ¾-inch Residential Service Lines
    - 8,730 LF of Service Line



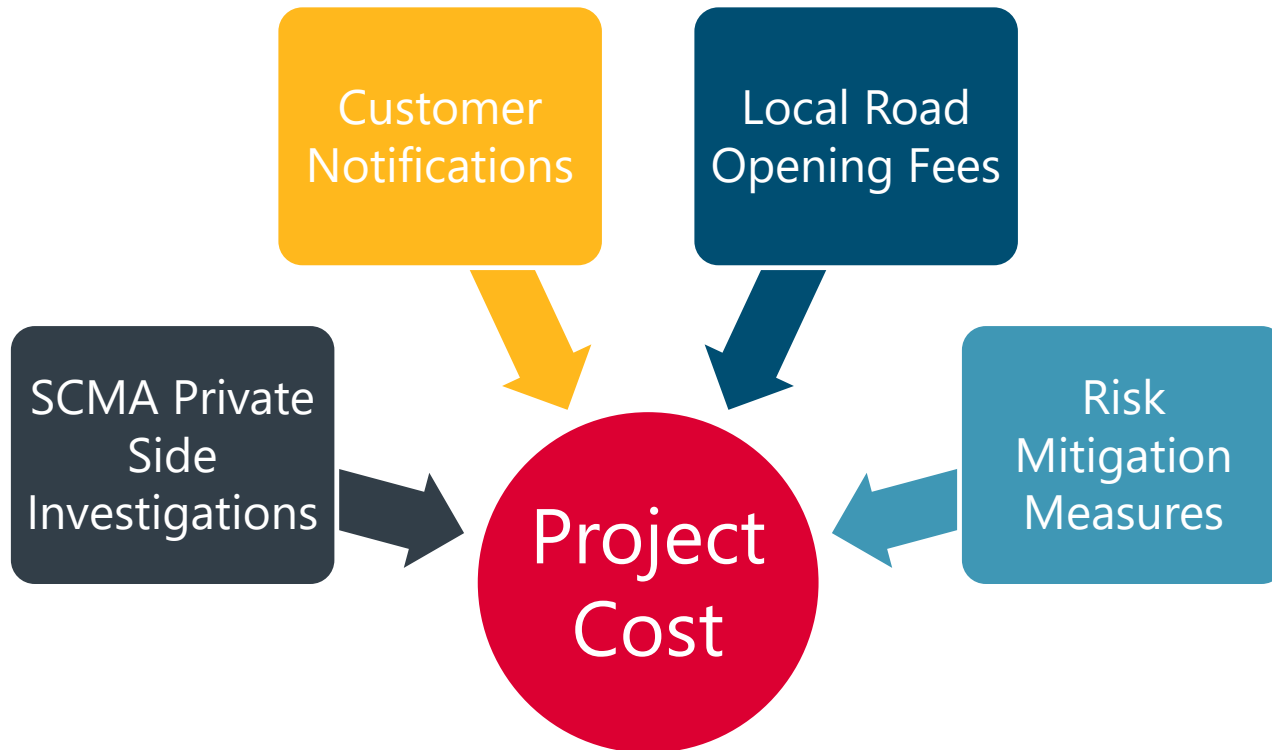
# SCMA Case Study

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## OPINION OF PROJECT COST DEVELOPMENT

## SCMA – Opinion of Project Cost Development

- Unique Project Cost Considerations for Lead Service Line Project





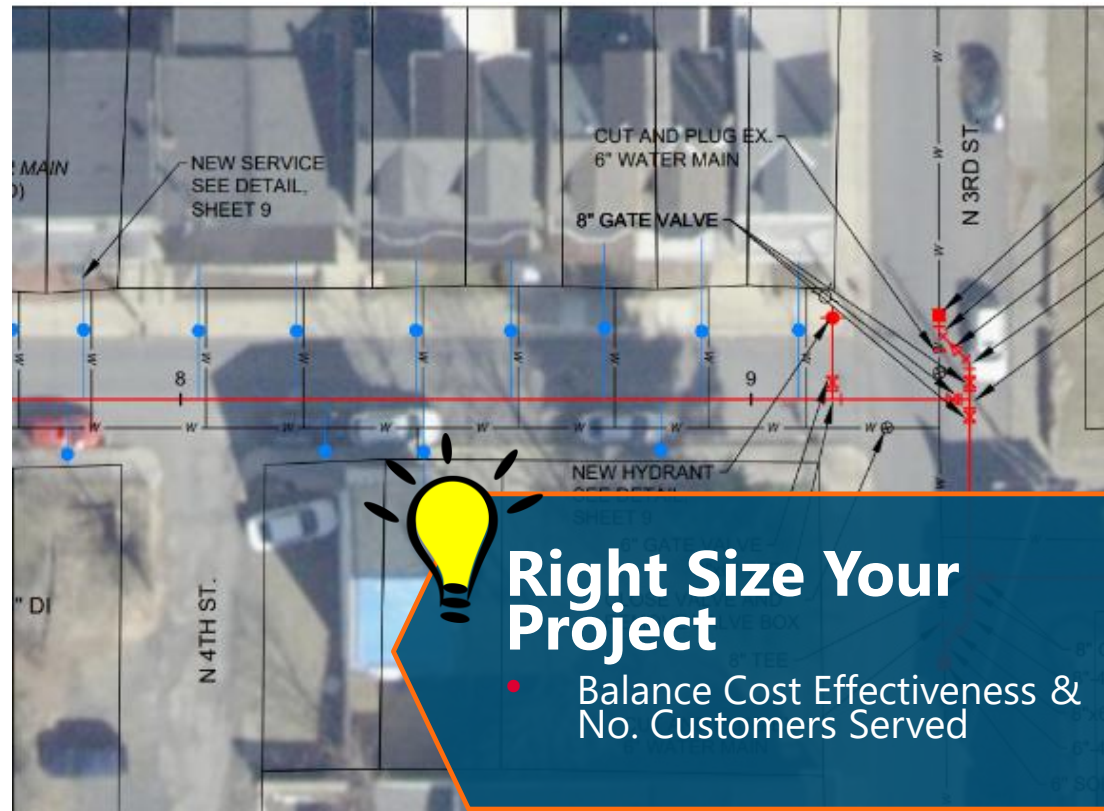
# SCMA Case Study

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PENNVEST FUNDING

## SCMA – PENNVEST Funding

- PENNVEST Lead Line Funding
- Public or Private Systems
- October 19, 2022 Board Mtg
- 49% of allotment to state to be issued as grants
  - Disadvantaged Communities (12% - 35%)
- **Affordability Calc UNIQUE**
  - **Normal: Entire Rate Base**
  - **Lead Service: Only Project Area**



## SCMA – PENNVEST Funding

- Service Line Inventory
- LSL Replacement Plan
- Customer Notices
- Pitcher Specification
- Flushing Procedures
- E&S Plan, if req'd
- Traditional App Items (Plans/Specs/Location Map)

3900-PM-B SDW0005 Rev. 4/2023		COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF SAFE DRINKING WATER	
<b>LEAD SERVICE LINE REPLACEMENT ENGINEER CHECKLIST</b>			
Lead Service Line (LSL) replacement projects should meet all items in this checklist, at a minimum. These projects may not require a Public Water Supply Construction or Operation Permit, however, they shall still follow requirements of the <i>PUBLIC WATER SUPPLY MANUAL, PART II: COMMUNITY SYSTEM DESIGN STANDARDS (383-2125-108)</i> and of all other Federal, State, and Local regulations, statutes, and ordinances.			
PWS Name:	Easton Suburban Water Authority	PWSID No.	3480050
<b>A. REQUIRED ITEMS</b>			
1. Provide an estimate of the total number of service lines to be replaced.			300
2. Provide the most current version of the Service Line Inventory (SLI).			<input checked="" type="checkbox"/> Included
3. Provide the LSL Replacement Plan (refer to ANSI/AWWA C-810 4.1.2.3).			<input type="checkbox"/> Included
4. Verify all LSL replacements will adhere to the latest AWWA Standards (i.e. ANSI/AWWA C-810).	<input checked="" type="checkbox"/>	Yes, replacements follow AWWA C-810.	
5. Verify all LSL replacements will be FULL replacements (i.e. both the PWS side and the customer side of the service line replaced).	<input checked="" type="checkbox"/>	Yes, all are full LSLR.	
6. Verify <i>RISK MITIGATION MEASURES FOR WATER SYSTEMS CONDUCTING LEAD SERVICE LINE REPLACEMENT (3930-FS-DEP5528)</i> will be followed.	<input checked="" type="checkbox"/>	Yes, all measures will be followed.	
7. Provide the following in accordance with the <i>RISK MITIGATION MEASURES FOR WATER SYSTEMS CONDUCTING LEAD SERVICE LINE REPLACEMENT (3930-FS-DEP5528)</i> :			
a. The notice to be given to the owner of the affected service line, or the owner's authorized agent, as well as non-owner resident(s) served by the affected service line before the affected service line is returned to service. Use DEP form <i>LEAD SERVICE LINE REPLACEMENT CUSTOMER NOTIFICATION (3930-FM-BSDW0089)</i> .	<input checked="" type="checkbox"/>	Included	
b. The specs of the pitcher filter or point-of-use device to be given to the consumers that is NSF/ANSI 53 certified to reduce lead in drinking water.	<input checked="" type="checkbox"/>	Included	

## SCMA – PENNVEST Federal Funding Requirements

DBE

AIS

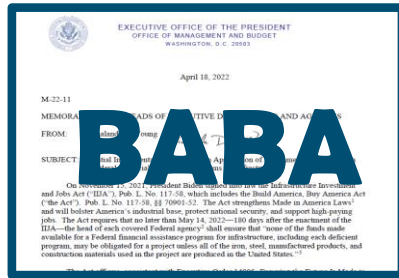
BABA

Davis  
Bacon



# Funding Requirements – Made in PA/US

- Depending on funding source – **all 3** may be needed.



## Build America, Buy America

- Effective May 14, 2022
- All Federal Infrastructure Financial Assistance (Equivalency)
- Compliance Made in America Office of OMB
- Documentation

## American Iron & Steel Act

- Effective January 17, 2014
- CW & DW Federal \$ (Equivalency)
- Compliance EPA
- Documentation

## PA Steel Products Procurement

- Effective 1978
- PA Public Works Projects
- Self – Compliance
- Can rely on PA DGS exemptions
- Documentation

## Funding Requirements – Made in PA/US: AIS

- **“iron and steel products”**

- products made primarily of iron or steel:
- lined or unlined pipes and fittings,

- Manhole covers and other municipal castings,
- hydrants,
- tanks,
- flanges,
- pipe clamps and

- restraints,
- valves,
- structural steel,
- reinforced precast concrete, and
- construction materials

- **Project Specific Waivers**

- Public Interest – required for compatibility
- Availability – in sufficient quantities or quality
- Cost – increase project cost >25%

- **National Waivers**

- **Deminimus List**

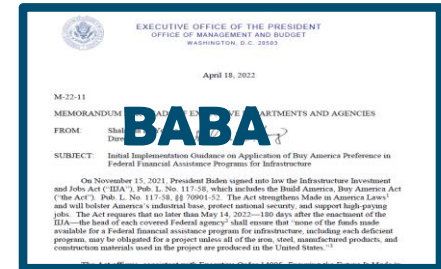
- Use of foreign-made/undetermined source up to 5% of total construction material costs





## Funding Requirements – Made in PA/US: BABA

- all **iron and steel** used in the project are produced in the United States
- all **manufactured products** used in the project are produced in the United States
  - >55% of total cost of all components in US
- all **construction materials** are manufactured in the United States
- **Generally – everything but cement, cementitious materials and aggregates**



### Bid Document Considerations

- Not Practical to check every vendor specified (2 plus or equal for EVERYTHING), changes happen from design to ordering
- DO CHECK Major Equipment

### “Produced”



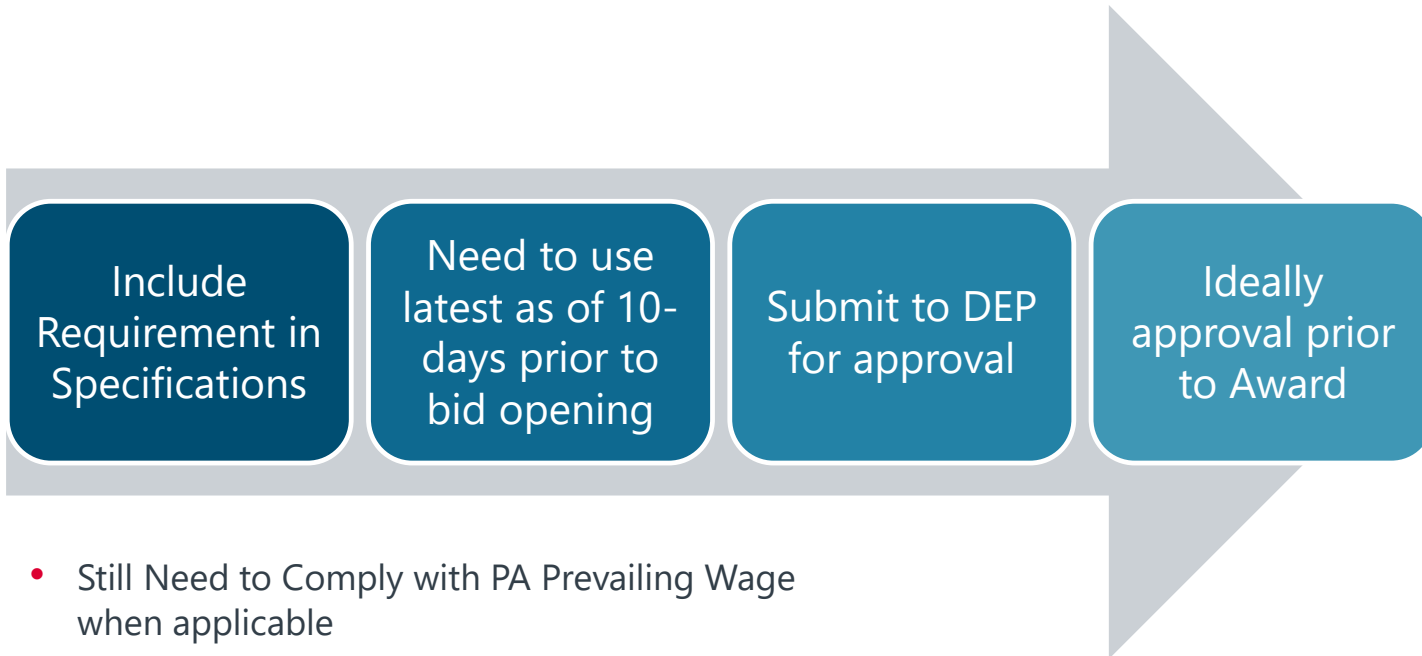
- all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States

### Project Specific Waivers (Similar to AIS) National Waivers

- Projects initiated project design planning prior to May 14, 2022



## Funding Requirements – Davis Bacon Wages



- Still Need to Comply with PA Prevailing Wage when applicable
  - Not always one w/ consistently higher rates
  - Mix and Match to determine minimum rate required

## SCMA – PENNVEST Funding

### Application Items: Shared

Planning Consultation

Resolutions

Categorical Exclusion

Land Use Approvals

Basis for Financials

Plans & Specifications

### Application Items: Separated

Online Application  
Forms

Cost Effectiveness  
Evaluation

Project Costs

Narratives

## SCMA – PENNVEST Funding

### Pipeline Replacement

- \$3,441,200
- Awarded low interest loan @1%/1.743% for 20 years

### Lead Service Line Replacement

- \$5,240,100
- Grant Funds through IJA

# SCMA Case Study

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PLANNING DECISIONS & CONSTRUCTION CONTRACTS

# SCMA - Planning Decisions



## Home Investigations

SCMA  
Prior to Bid  
100% of lines



## RMM

Pitchers-SCMA & Contractor  
Sampling & Lab-SCMA



## Onsite Representative

SCMA Rep  
SCMA Point of Contact  
GF Rep



## Other Investigations

Contractor  
Soft Digs  
100% of lines



## Temp Easements/ Agreements

Start Prior to Bid  
Based on Home Investigations

## SCMA - Construction Contracts

- One Construction Contract
- Part A – Water Main Replacement
- Part B – Service Line Replacement
  - Public Side Replacements (main to and including curb stop)
  - Private Side Replacements (after curb stop to meter inside house)



### Consider

- Separate PENNVEST Funding
- SCMA Tracking
- Fair Pricing

## SCMA - Construction Contracts



### Watch Local Requirements

- Municipalities can require Certified Plumber for Private Side Work
- Sometimes there is a list of specific plumbers approved.

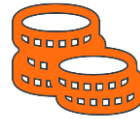


# SCMA – Construction Contracts



## Paving

PV Covers Portion  
Cost Sharing w City  
Same Contract



## Funding Requirements

DBE  
Davis Bacon Wages  
AIS  
BABA or Waiver



## Contract Time

Allowance for  
SCMA Activities



## Construction Sequence

Critical  
Placing on Drawings



## Sidewalk Restoration

Length of Time as Temporary  
Full Panel Replacement



## SCMA – Planning Decisions & Construction Contracts

- Where are we now?
  - SCMA is performing in home investigations in advance of advertisement.
  - Anticipate April 2024 Bid Opening



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# Summary

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## Take Aways



- **Consider if Implementing a Project Now is for you.**
- **When Identifying Project...**
  - Consider Existing Inventory, EJ Areas, Pipeline Projects, Size of Project, Residential Areas, Paving, etc.
- **Submit for Funding While its Here**
- **Project Planning**
  - Determine your system's role in process and when you want to perform it.
- **Construction Contracts**
  - Develop carefully to reflect your Project Planning Decisions and for Ability to Handle Changes during Construction

# Questions

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# LCA Case Study

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# LCA Case Study

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## SYSTEM INTRODUCTION



## LCA – System Introduction

- Lehigh County Authority
  - **Water** & Wastewater
  - Operates 14 Water Systems
  - Lehigh & Northampton Counties
  - 14 Municipalities
  - Sources – wells, springs, Little Lehigh Creek & Lehigh River
  - Approx. 25 MGD



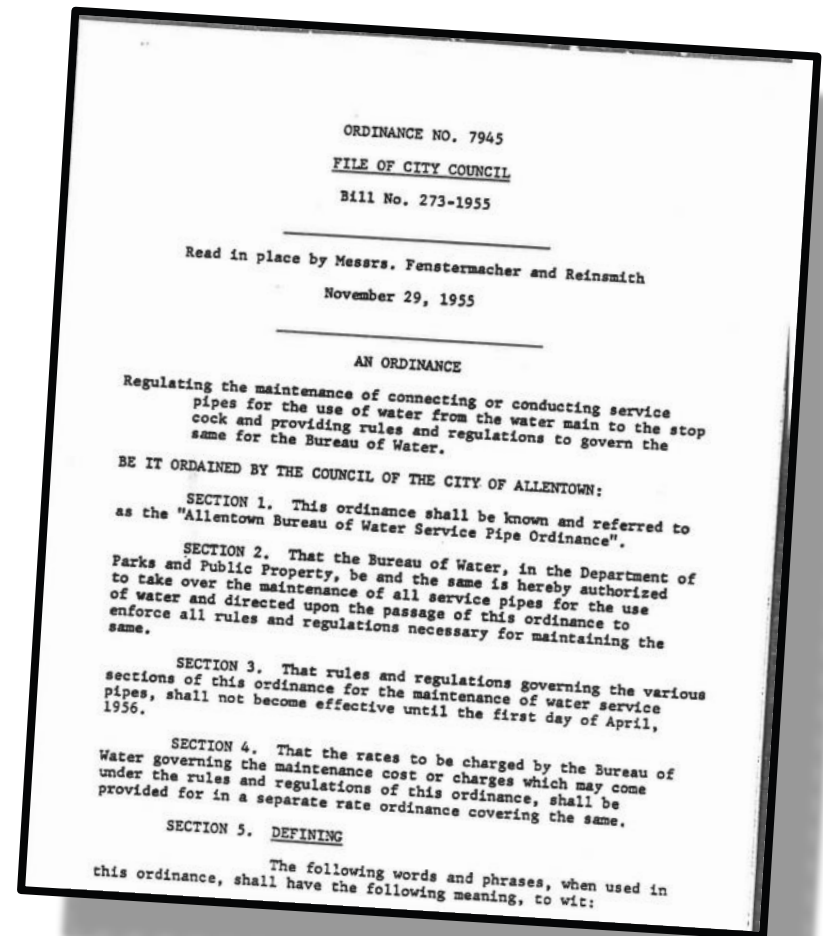
# LCA Case Study

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## SERVICE LINE INVENTORY INITIAL STATUS

## LCA – Service Line Inventory Initial Status

- County Assessment Data
  - Year Home Built
- 1955 City Ordinance for non-lead
  - used buffer when implementing
- CityWorks Work Orders
  - Material Type, Status
- Meter Replacement Program
  - Photos collected for meter replacement purposes only



## LCA – Service Line Inventory Initial Status

- Home Owner Survey Results – limited/trial of 600 responses
  - Lessons Learned
    - Restrict entry responses
    - Use address recognition – could not geo-locate info automatically
    - Validate information
- Hard Copy Paper Trail of Service Line Records
  - In consistent formats/responses (limits auto-read capabilities)
  - Uncertain reliability
  - Some info entered over the years into GIS



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## LCA – Service Line Inventory Initial Status

- City “Lead Properties Data” – NOT USED
- lead paint based not water lines
- Installed ESRI Lead Service Line Solution
  - Hub Site
  - Info Graphics for Compliance
  - Public Outreach template



Photo from: ESRI.com



# LCA Case Study

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## LEAD SERVICE LINE REPLACEMENT PROJECT IDENTIFICATION

# LCA – Lead Service Line Replacement Project Identification

- Starting Points
  - Environmental Justice Areas



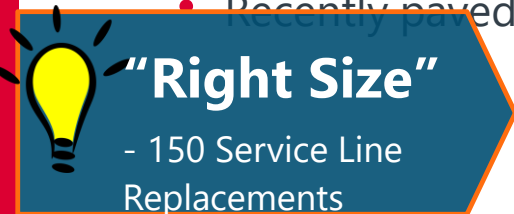
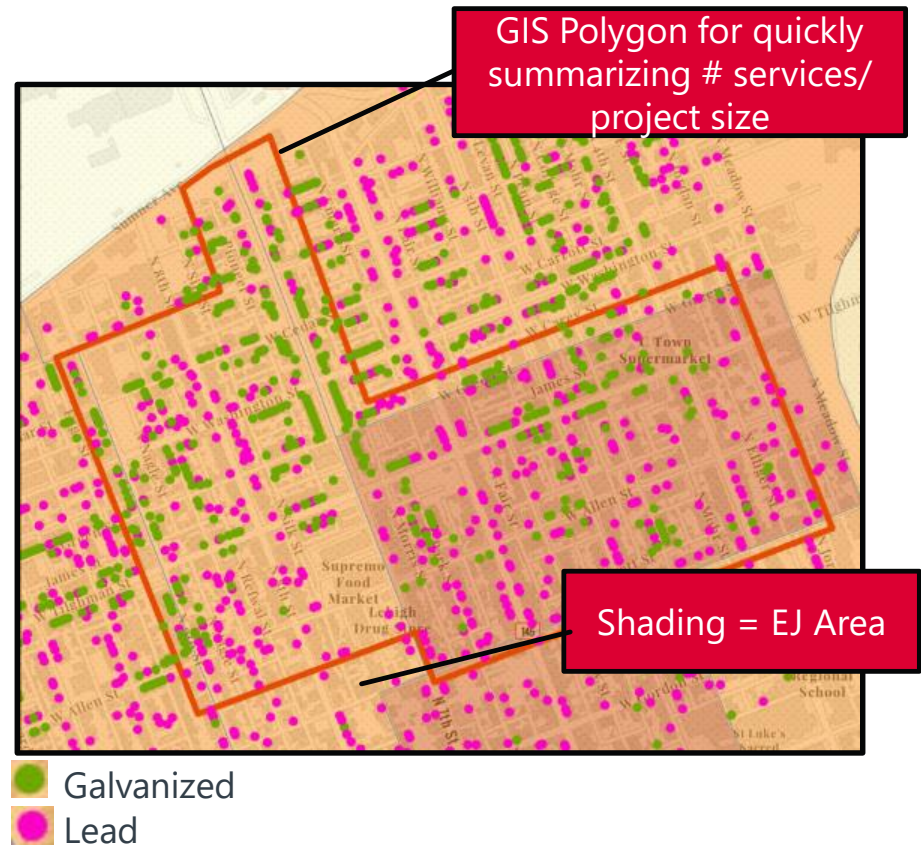
<https://padep-1.maps.arcgis.com/apps/webappviewer/index.html?id=f31a188de122467691cae93c3339469c>



## LCA – Lead Service Line Replacement Project Identification

- Next Step

- Project Size/# Services
  - Manageable as initial project
  - Cushion for Data & Field Conditions not matching
- Project Area Location
  - Density of Lead Services
  - PennDOT Roads – avoid
  - Recently paved roads - avoid



# LCA – Lead Service Line Replacement Project Identification

- Next Step
  - Prioritize Specific Streets within Project Area in Priority Order
- Final Project Streets
  - North Penn, West Washington, West Cedar, Park & North 9th Streets



- Galvanized
- Lead

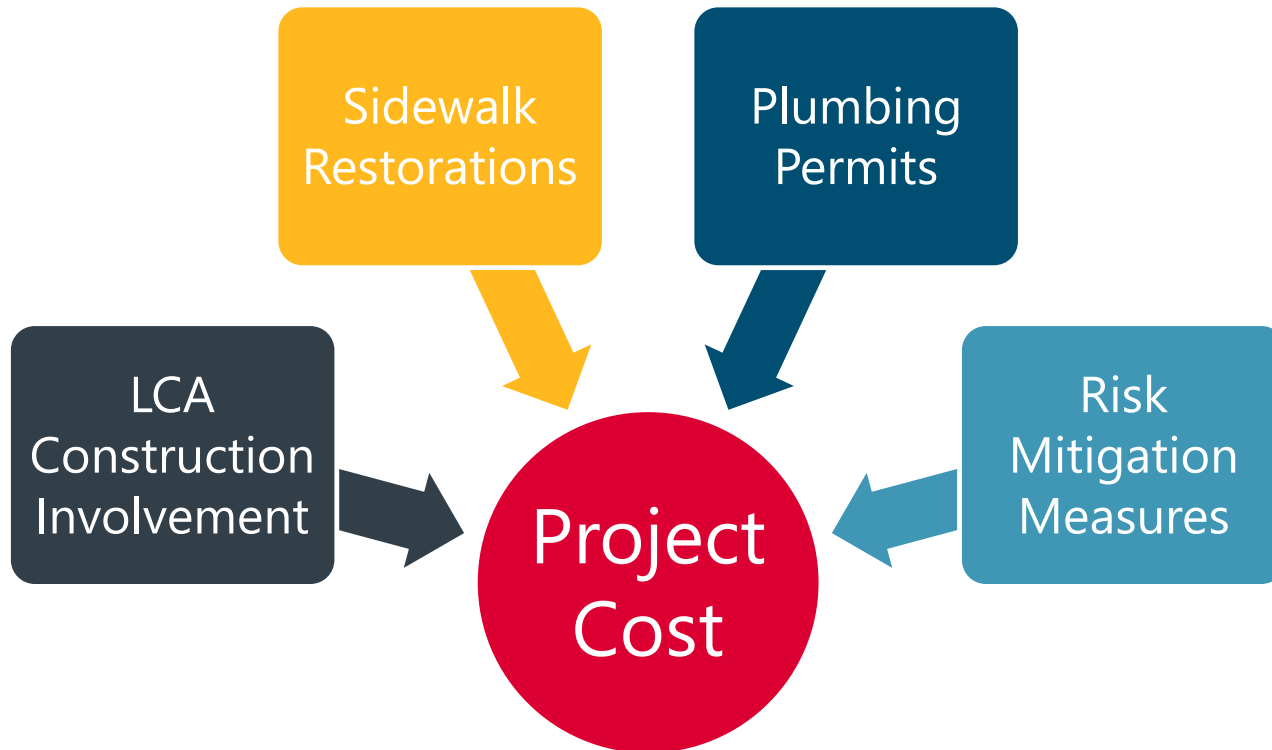
# LCA Case Study

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## OPINION OF PROJECT COST DEVELOPMENT

## LCA – Opinion of Project Cost Development

- Unique Project Cost Considerations for Lead Service Line Project



# LCA Case Study

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PENNVEST FUNDING

## LCA – PENNVEST Funding

### Project Area



**413**

Lead/  
Galvanized  
Service  
Lines

### Refined Project



**5**

Streets



**401**

Total  
Services



**149**

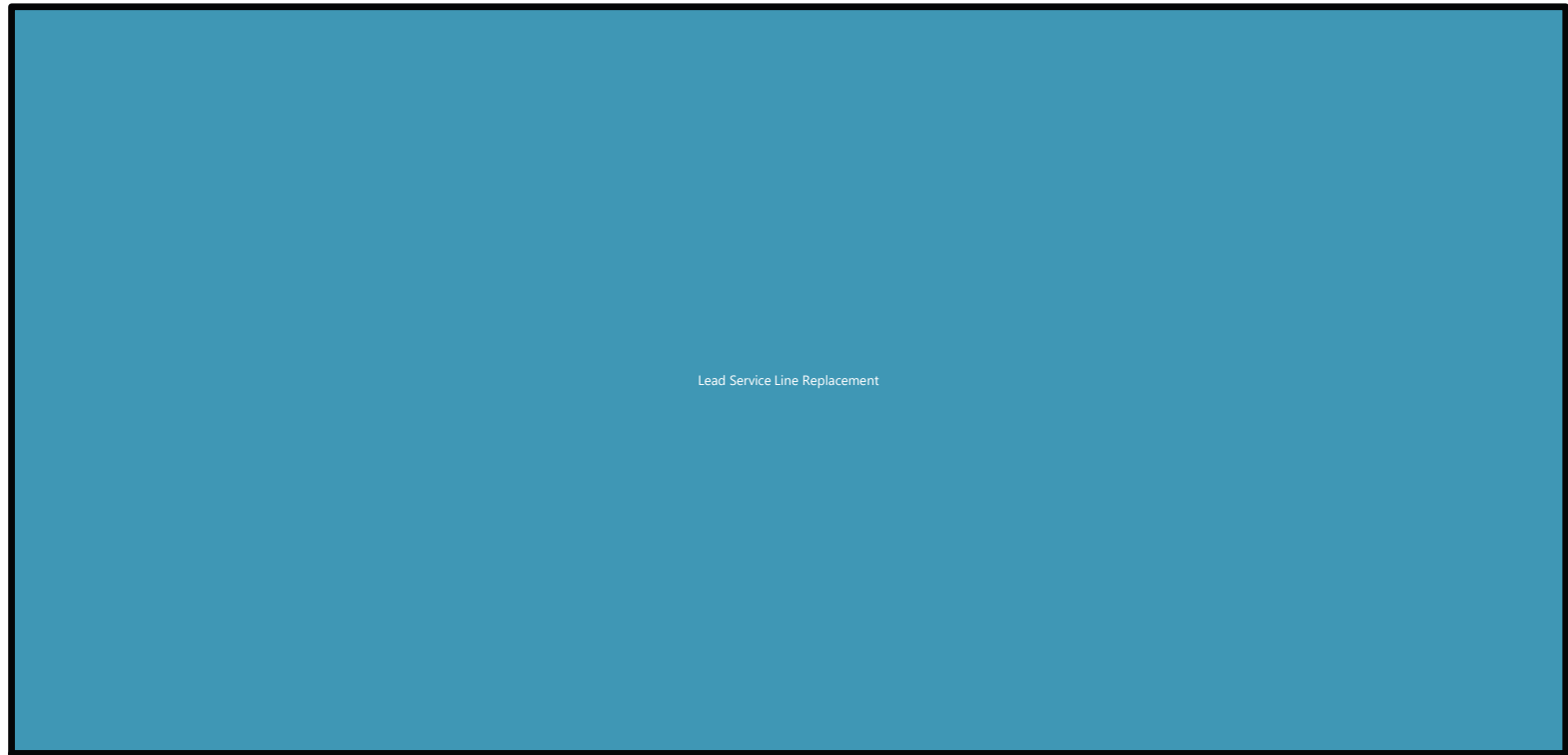
Residential  
Lead/Galv.  
Replacement  
s



**1**

Commercial  
Lead/Galv.  
Replacement

## LCA – PENNVEST Funding



- \$4,939,400 Total PENNVEST Funding



# LCA Case Study

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## PLANNING DECISIONS & CONSTRUCTION CONTRACTS

# LCA - Planning Decisions



## Home Investigations

LCA  
Prior to & Early Bid



## RMM

Pitchers-LCA & Contractor  
Storage  
Sampling & Lab-LCA



## Onsite Representative

\*LCA Rep  
\*LCA Point of Contact  
GF Rep



## Other Investigations

Contractor  
Soft Digs  
\*MINIMIZE w/ Decision Tree



## Temp Easements/ Agreements

Start Prior to Bid  
Based on Home Investigations

## LCA - Construction Contracts

- One Construction Contract
  - Public Side Replacements (main to and including curb stop)
  - Private Side Replacements (after curb stop to meter inside house)



### Special City Item

- Requires Certified Plumber for Private Side Work
- Sometimes there is a list of specific plumbers approved.

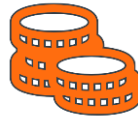


# LCA – Construction Contracts



## Paving

PV Covers Portion  
Coordination w City  
Same Contract



## Funding Requirements

DBE  
Davis Bacon Wages  
AIS  
BABA or Waiver



## Contract Time

Allowance for  
LCA Activities



## Pre-Construction Conditions

Critical for Private Side  
Document with Photos, Videos



## Sidewalk Restoration

Length of Time as Temporary  
Full Panel Replacement

## LCA – Planning Decisions & Construction Contracts

- Where are we now?
  - LCA has expanded the Project Team in house to involve more departments (communications, etc.)
  - Steering Committee Developed
  - Beginning Public Outreach

