EQUITY CONSIDERATIONS IN LEAD SERVICE LINE REPLACEMENT PROGRAMS

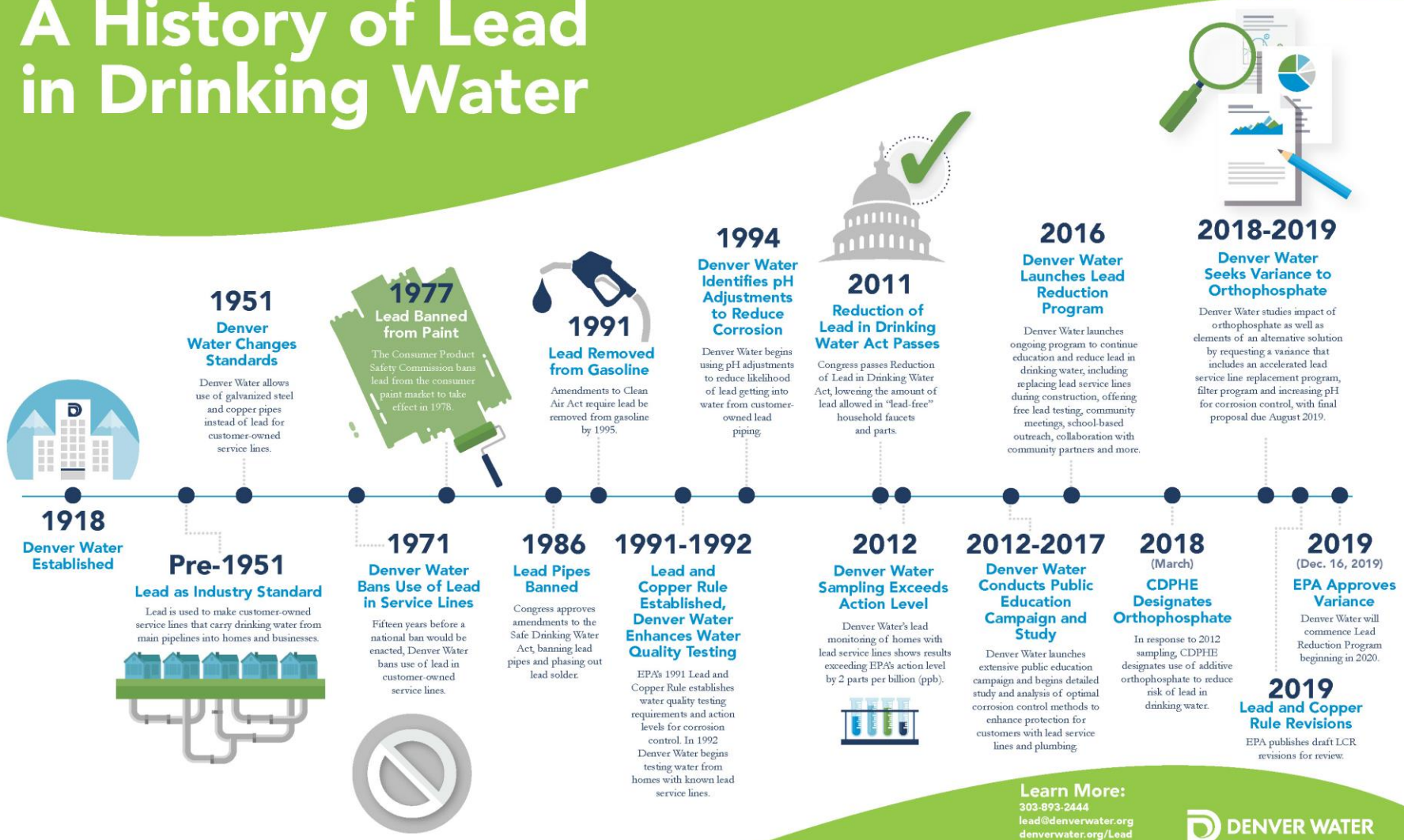Lead Reduction Program

April 22, 2020

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Agenda

- Lead Reduction Program - overview
- Equity and prioritization
- Prioritization model
- Q&A

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A History of Lead in Drinking Water

1951
Denver Water Changes Standards
Denver Water allows use of galvanized steel and copper pipes instead of lead for customer-owned service lines.

1977
Lead Banned from Paint
The Consumer Product Safety Commission bans lead from the consumer paint market to take effect in 1978.

1991
Lead Removed from Gasoline
Amendments to Clean Air Act require lead be removed from gasoline by 1995.

1994
Denver Water Identifies pH Adjustments to Reduce Corrosion
Denver Water begins using pH adjustments to reduce likelihood of lead getting into water from customer-owned lead piping.

2011
Reduction of Lead in Drinking Water Act Passes
Congress passes Reduction of Lead in Drinking Water Act, lowering the amount of lead allowed in "lead-free" household faucets and parts.

2016
Denver Water Launches Lead Reduction Program
Denver Water launches ongoing program to continue education and reduce lead in drinking water, including replacing lead service lines during construction, offering free lead testing, community meetings, school-based outreach, collaboration with community partners and more.

2018-2019
Denver Water Seeks Variance to Orthophosphate
Denver Water studies impact of orthophosphate as well as elements of an alternative solution by requesting a variance that includes an accelerated lead service line replacement program, filter program and increasing pH for corrosion control, with final proposal due August 2019.

1918
Denver Water Established

Pre-1951
Lead as Industry Standard
Lead is used to make customer-owned service lines that carry drinking water from main pipelines into homes and businesses.

1971
Denver Water Bans Use of Lead in Service Lines
Fifteen years before a national ban would be enacted, Denver Water bans use of lead in customer-owned service lines.

1986
Lead Pipes Banned
Congress approves amendments to the Safe Drinking Water Act, banning lead pipes and phasing out lead solder.

1991-1992
Lead and Copper Rule Established, Denver Water Enhances Water Quality Testing
EPA's 1991 Lead and Copper Rule establishes water quality testing requirements and action levels for corrosion control. In 1992 Denver Water begins testing water from homes with known lead service lines.

2012
Denver Water Sampling Exceeds Action Level
Denver Water's lead monitoring of homes with lead service lines shows results exceeding EPA's action level by 2 parts per billion (ppb).

2012-2017
Denver Water Conducts Public Education Campaign and Study
Denver Water launches extensive public education campaign and begins detailed study and analysis of optimal corrosion control methods to enhance protection for customers with lead service lines and plumbing.

2018
(March)
CDPHE Designates Orthophosphate
In response to 2012 sampling, CDPHE designates use of additive orthophosphate to reduce risk of lead in drinking water.

2019
(Dec. 16, 2019)
EPA Approves Variance
Denver Water will commence Lead Reduction Program beginning in 2020.

2019
Lead and Copper Rule Revisions
EPA publishes draft LCR revisions for review.

Learn More:
303-893-2444
lead@denverwater.org
denverwater.org/Lead

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Lead Reduction Program Elements

Corrosion Control Treatment

Optimize corrosion treatment

Lead Service Line Inventory

Identify and track all the probability of service line compositions

Filter Program

Provide a filter to each dwelling unit in the program

Accelerated Lead Service Line Replacement

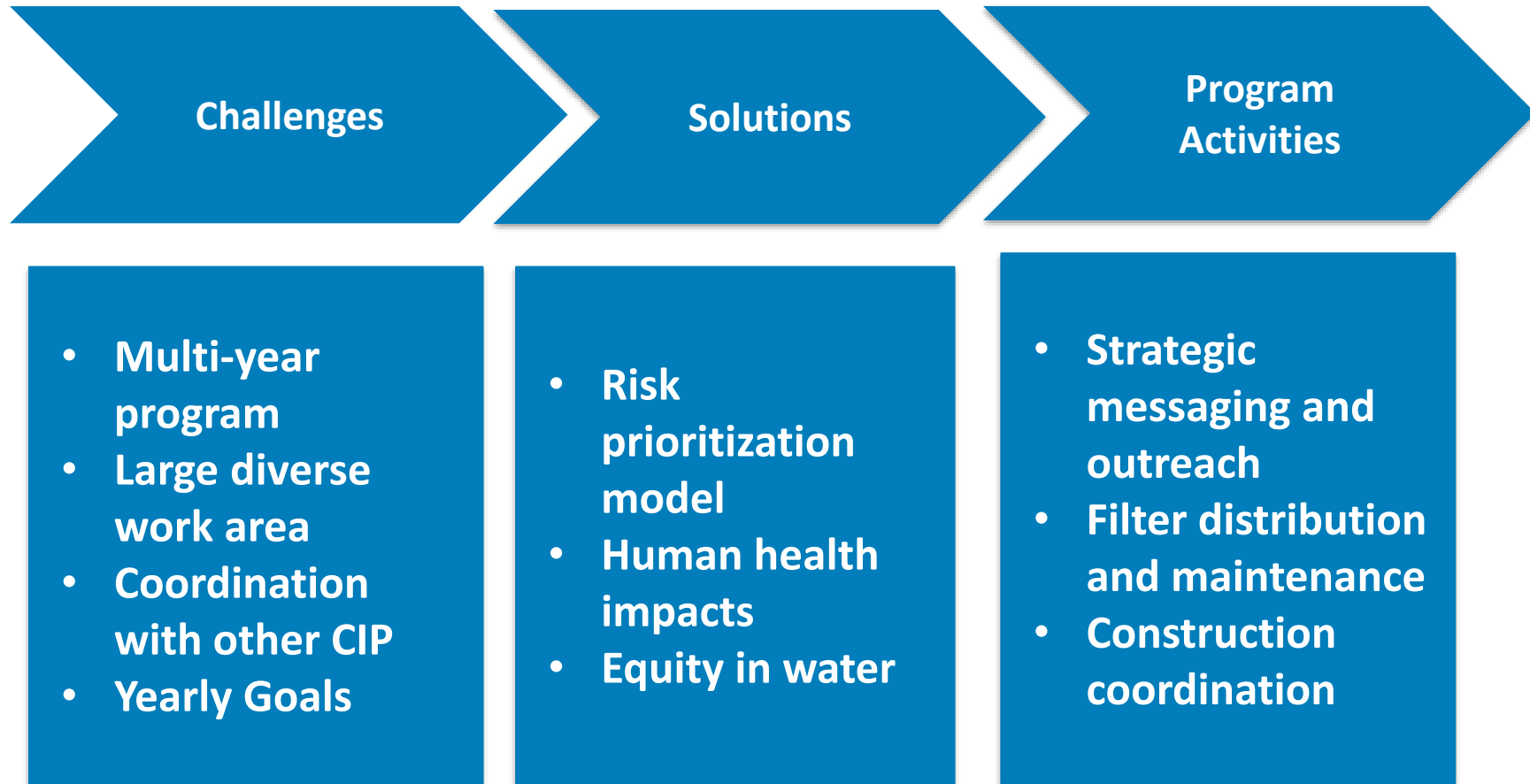Full replacement of non-copper service lines (paid for by Denver Water)

Communications, outreach and education

Provide strategic information to promote understanding and adoption

Community Outreach and Education (COE)

- Public initiative to understand the program
  - The importance of the program and capital expenditures for long term health benefits
  - How to be part of the program filter / flush / replace
- Requires a broad COE implementation strategy
  - Multi-cultural resources (translation and interpretation, training of staff)
- Local partners
  - Trusted community groups
  - Provide focused outreach to diverse populations to increase program success
  - Coordinate efforts with construction aspects

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Program Prioritization

Challenges	Solutions	Program Activities
• Multi-year program • Large diverse work area • Coordination with other CIP • Yearly Goals	• Risk prioritization model • Human health impacts • Equity in water	• Strategic messaging and outreach • Filter distribution and maintenance • Construction coordination

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Prioritization Model

- Risk of exposure "focus driven"
- Identification of the critical lead exposure customers
- Risk analysis (likelihood of lead and consequence (equity)
  - Odds ratio for elevated childhood blood lead levels
  - Income distribution statistics
  - Proportion of Population of Minority Status
  - Neighborhoods with high density of young children
  - Woman Infant Children (WIC) Participation

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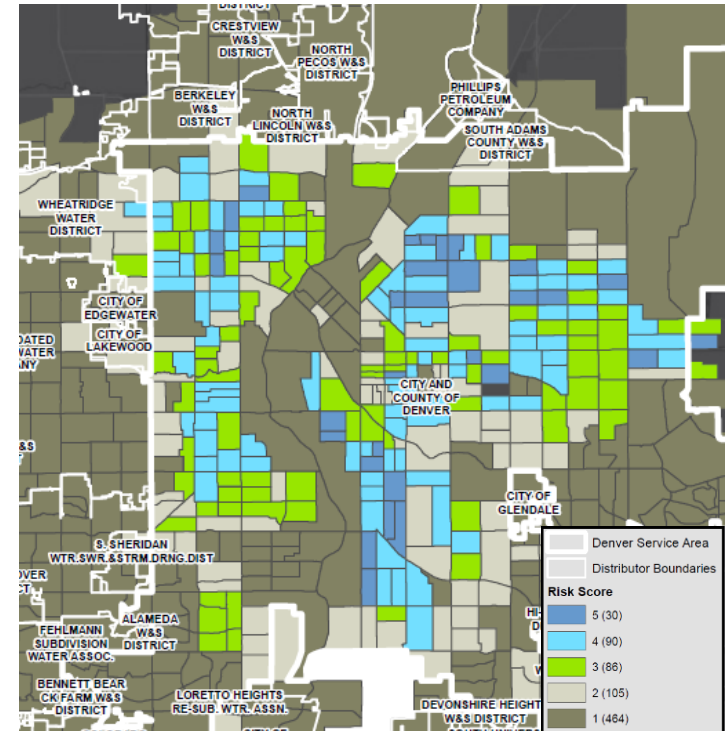
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Evaluate Model Plan

- Evaluate results for meaningful decisions
- Apply local knowledge
- Interpret the results

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Construction Implementation

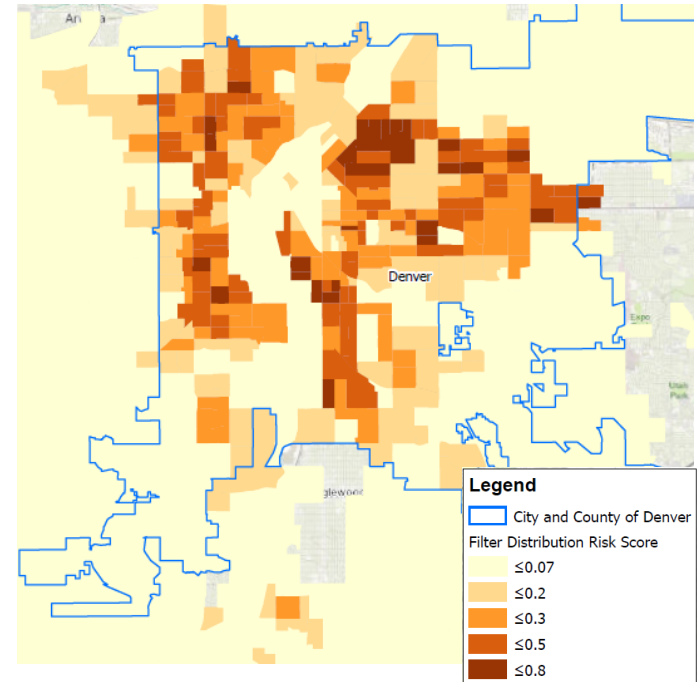| Work Types	Description
Individual	Individual scores are considered for properties defined as high consequence but are geographically isolated.
Geographic Area	Combined scores are considered for properties where the categories of known and possible lead scores define an area.
Identification	Gather more information where necessary to produce refine the inventory

Legend
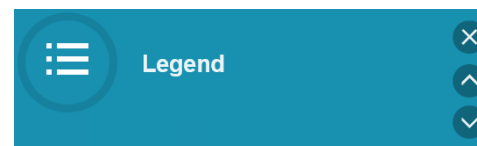
Category

- ■ Confirmed lead service line; included in replacement program.
- □ Likely to have a lead service line; included in replacement program.
- △ Unlikely to have lead service line; free water quality test available.
- ○ No lead service line.

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Filter Program

- Distribution of filters
  - Sequences based on prioritization model
  - Aggregation of the risk model to support the distribution numbers (how many can fit in a truck in a week)
  - Accompanied with an outreach strategy to educate on the importance of use.
- Assess filter adoption
- Direct outreach for informal data capture

Legend
- City and County of Denver
- Filter Distribution Risk Score
  - ≤0.07
  - ≤0.2
  - ≤0.3
  - ≤0.5
  - ≤0.8

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Key Points

Funding
- Denver Water is paying for LSL replacements

Define Metrics
- Define an approach to measure the success
- Collect the necessary data

Learn by Doing
- Collect data to evaluate and adjust
- Develop an adaptable program

Provide knowledge for success
- Getting to know the community (vulnerable populations, renters, language barriers, and cultural needs)
- Provide the greatest benefit to public health
- Evaluate / Assess / Adjust

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QUESTIONS?

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