Informing Pittsburgh's Options to Address Lead in Water: One Year Later

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RAND

Acknowledgements

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What we'll discuss today

- Use of lead in Pittsburgh's water system
- Policy options for reducing exposure to lead in water
- Costs, regulatory barriers, and feasibility of various options under consideration

Today, PWSA serves roughly 80,000 households in Pittsburgh

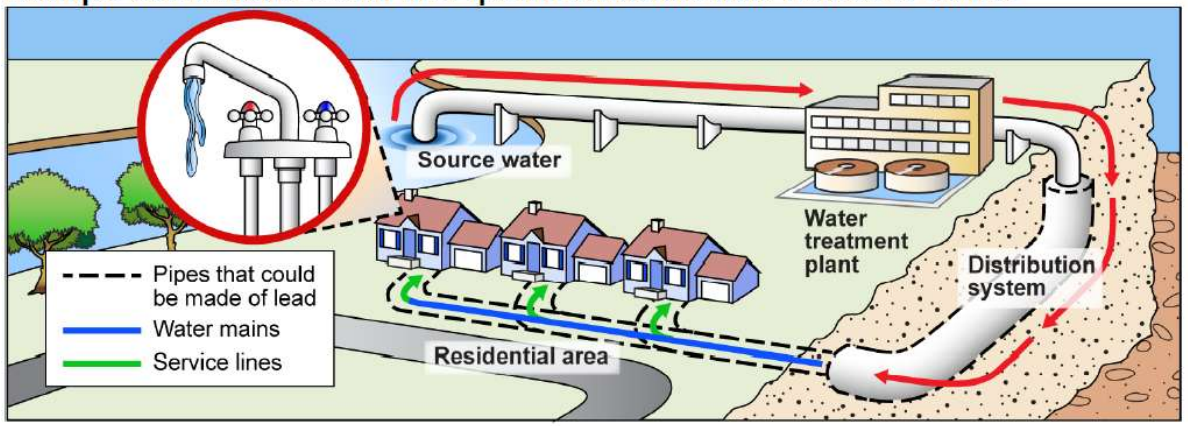
Service provider	Area (sq ft)	Percent of city
PWSA	1,129,202,372	69.5%
PAW	466,673,851	28.7%
Westview	5,379,578	0.3%
Wilkinsburg Penn	23,612,038	1.5%
Total in City of Pittsburgh	1,624,867,840	

A brief history of lead

- Lead was ubiquitous in infrastructure in the early 1900s
- Regulations enacted between 1969 and 1991 banned use of lead in pipes and paint
  - 88 percent of the houses in Pittsburgh were built before 1970
  - ~25% of PWSA customers (~20,000) may have lead pipes
- EPA's Lead and Copper Rule
  - WLL <15 ppb in 90% of homes
  - Corrosion control, public education, partial line replacement

Public and private responsibility for lead mitigation

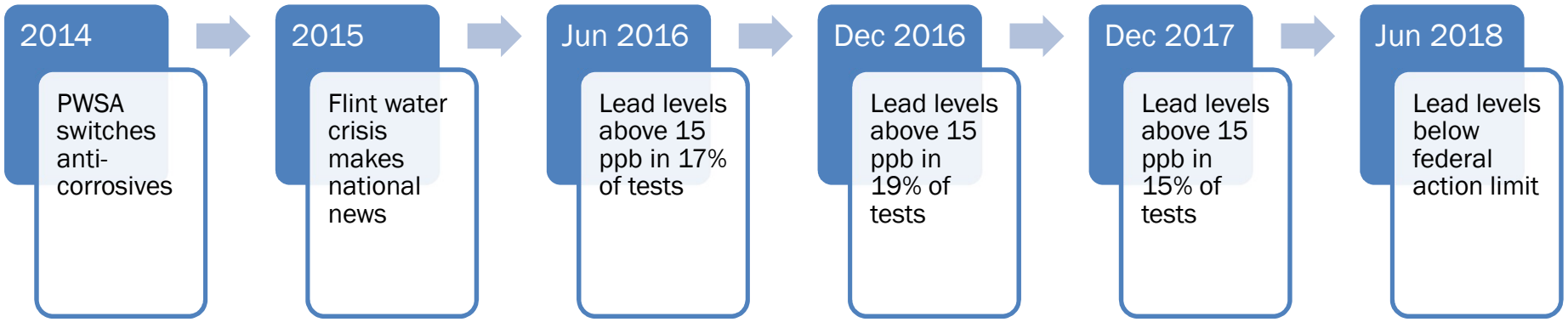
Example of Potential Lead in the Pipe Infrastructure from Source to Homes



Source: GAO. | GAO-17-424

Public agencies	Private property owners
• Treating and distributing water • Public portion of service lines	• Private portion of service lines • Lead paint/soil remediation

Lead in water has reemerged as an urgent policy concern



RAND reviewed the policy options for mitigating lead in drinking water

- Status quo: Public education and pipe flushing
- Provide residential water filters: Pitchers, point-of-use, or point-of-entry
- Establish improved oversight to ensure optimal corrosion control
- Partial replacement of LSLs by PWSA
- Full replacement of LSLs by PWSA

Summary of costs by policy option

Policy Option	Estimated Total Cost	Estimated Cost Per Residence	Share of Per-Residence Cost	
			Private Entities	Public Entities
Status quo[a]	$0.52–$0.86 million per year; $5.2–$8.6 million over ten years	$26–$43 per year; $260–$430 over ten years	$26–$43 per year	
Filters	$1.5–$25.9 million in the first year; $11.7–$48 million over ten years	$80–$1,290 in the first year; $580–$2,400 over ten years	People's Gas: $20[b] Households in the first year: Pitcher filters: $50–$90 Point-of-use filters: $50–$330 Point-of-entry filters: $400–$1,250	City: $10 PWSA: $10
Optimal corrosion control[c]	$15,000	–	–	–
Partial replacement of service lines by PWSA[d]	$22.5–$254.4 million	$1,125–$12,720 one-time cost	Households via fee or rate increase: $30–$250 per year over ten years Households, private portion replacement cost: $1,300–$7,500 one-time cost	PWSA: $1,125–$12,720 one-time cost
Full replacement of service lines by PWSA[e]	$48.5–$413 million	$2,425–$20,650 one-time cost	Households via fee or rate increase: $60–$520 per year over ten years	PWSA: $2,425–$20,650 one-time cost

Social and economic benefits of lead remediation

- Social and economic costs of lead poisoning
- ROI of lead mitigation: $1 → $17 - $221 in savings
- Some policy interventions work to achieve health equity

Summary of the options and tradeoffs

...as of June 2017

Policy option	Impact on lead remediation	Cost per residence	Technical feasibility	Legal or regulatory barriers	Time frame
Status quo					
Filters					
Optimal corrosion control					
Partial LSL replacement (PWSA)					
Full LSL replacement (PWSA)					

High Medium-high Medium-low Low

Summary of the options and tradeoffs

...as of Summer 2018

Policy option	Impact on lead remediation	Cost per residence	Technical feasibility	Legal or regulatory barriers	Time frame
Status quo					
Filters					
Optimal corrosion control					
Partial LSL replacement (PWSA)					
Full LSL replacement (PWSA)					

High Medium-high Medium-low Low

So, what are the best near- and long-term options?

Near-term, “no regrets” option

- Improved corrosion control + publicly supported filter distribution

Long-term solution

- Full-pipe replacement city-wide
- Other innovations – pipe coating *(not assessed)*

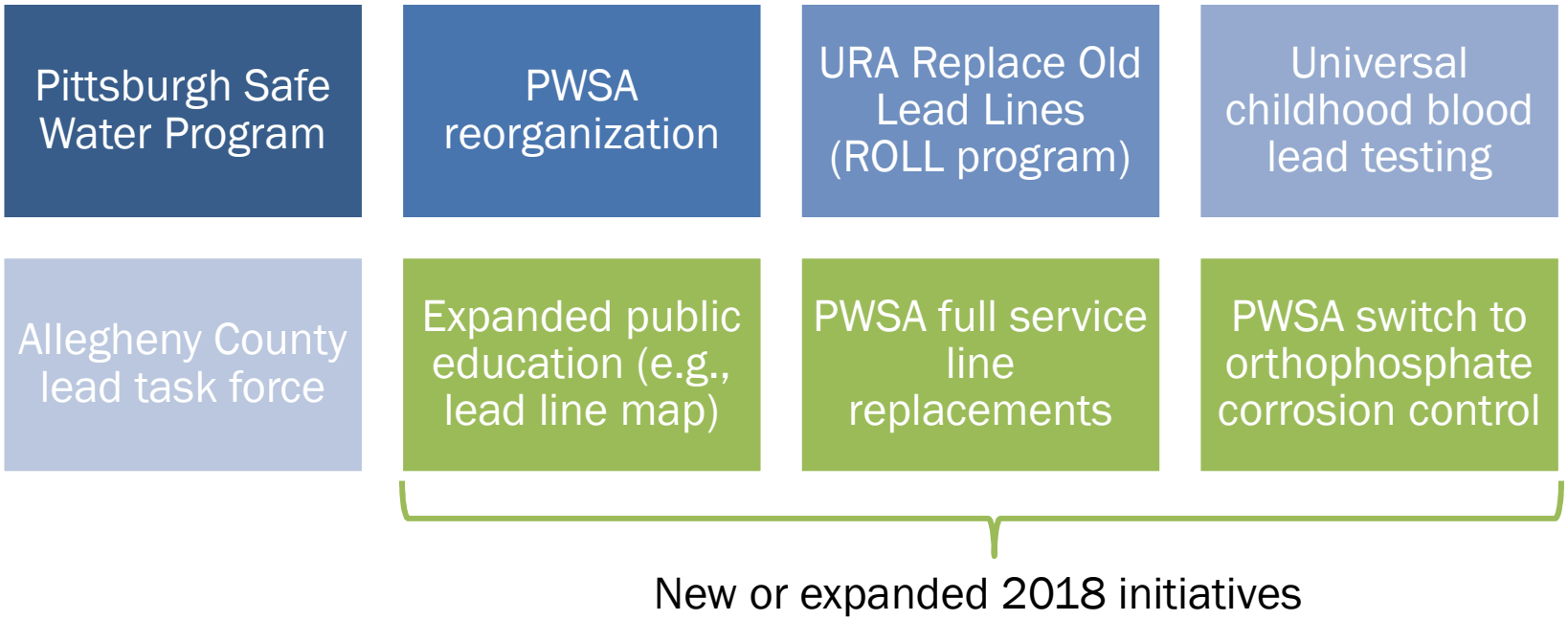
Local actions taken in response to lead in water challenge

- Pittsburgh Safe Water Program
- PWSA reorganization
- URA Replace Old Lead Lines (ROLL program)
- Universal childhood blood lead testing
- Allegheny County lead task force
- Public education campaigns

Next steps for decisionmakers

PWSA infrastructure and water-management decisions	Research, outreach, and education activities to support near- and long-term decisions
1. Incentivize adoption and use of filters 2. Ensure optimal corrosion control 3. Clarify/change laws that prevent full replacement of LSLs 4. Identify lower-cost/financing opportunities for full LSL replacement 5. Identify and conduct full LSL replacement	1. Public education about the dangers of lead 2. Collect systematic data about lead risks and exposures 3. Engage public and private players in the lead task force 4. Conduct a full cost analysis and determine ROI for various efforts

Local actions taken in response to lead in water challenge



For more detailed information

RAND Perspective available online:

May, Linnea Warren, Jordan R. Fischbach and Michele Abbott. *Informing Pittsburgh's Options to Address Lead in Water*. Santa Monica, CA: RAND Corporation, 2017. https://www.rand.org/pubs/perspectives/PE247.html.

THANK YOU!

Water and Climate Resilience Center