

Measuring Progress Toward Universal Access to Water and Sanitation in California

Laura Feinstein

Senior Researcher, Pacific Institute



December 4, 2018

Background: Pacific Institute

- **Organization:** Independent non-profit research institute.
- **Mission:** Create and advance solutions to the world's most pressing water challenges.
- **Strategy:** produce research that advances a sustainable environment, healthy economy, and social equity with science-based solutions.

Overview

Part 1: Background

- Policy Context
- The Problem
- Research Objective and Approach

Part 2: Results and Recommendations

Policy Context

- Human Right to Water Statute
- Water Board Resolution Adopting The Human Right To Water As A Core Value
- Department of Water Resources Water Plan Update 2018: sustainability metrics
- Safe and Affordable Drinking Water Fund
SB 623, SB 844, and SB 845 – failed to pass in 2018
Likely to be revisited in 2019

Known Problems: Water Quality

500,000 Californians were served by public water systems out of compliance with the Safe Drinking Water Act in January 2018



Maricela Mares-Alatorre, community organizer and resident of Kettleman City

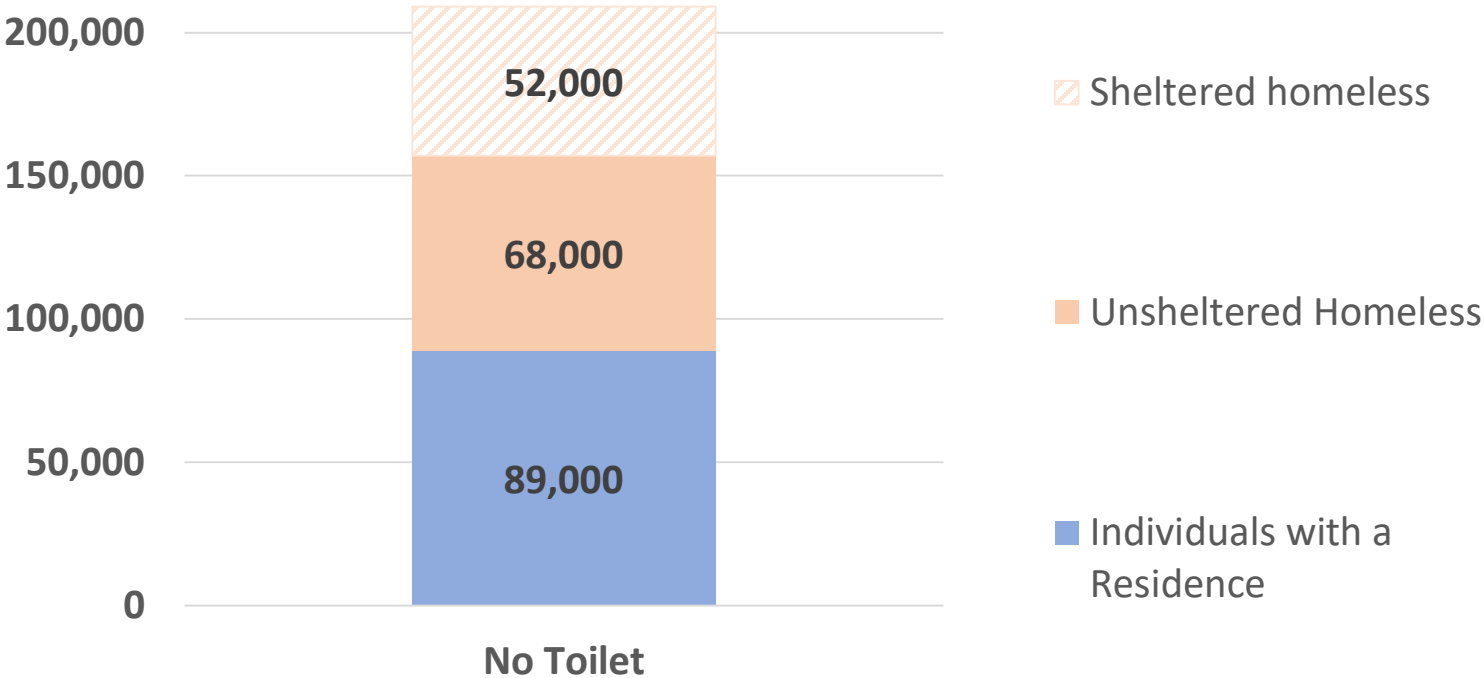
Known Problems: Water Scarcity

- 5,000 private well shortages
- 500,000 people served by drought-impacted public water systems
- Most were members of disadvantaged communities



Known Problems: Sanitation

210,000 lack access to a private indoor toilet



Source: Feinstein, L. Forthcoming publication from Pacific Institute.

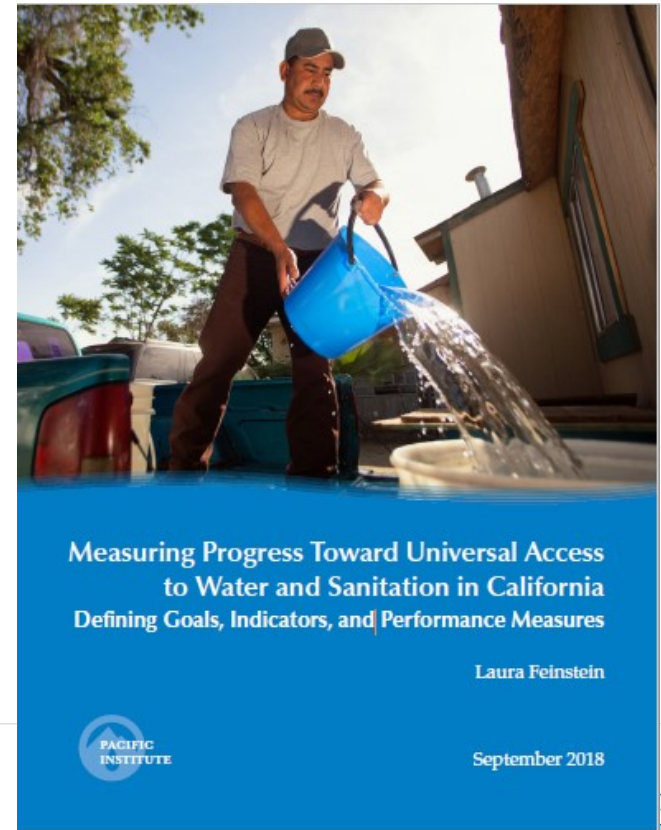
Information Gaps

- **Very Small Water Systems**
State Smalls, local systems, and private wells: little to no oversight
- **Septic Systems: about 1.4 million**
How many cause pollution?
- **Affordability**
No consensus what our objectives are for affordability

Research Objective

What does safe, affordable, and accessible water look like in California, in terms that are:

- Concrete,
- Measurable, and
- Aligned with state's laws and norms?



Approach: Service Ladders

SERVICE LEVEL	DEFINITION
SAFELY MANAGED	Drinking water from an improved water source that is located on premises, available when needed and free from faecal and priority chemical contamination
BASIC	Drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip, including queuing
LIMITED	Drinking water from an improved source for which collection time exceeds 30 minutes for a round trip, including queuing
UNIMPROVED	Drinking water from an unprotected dug well or unprotected spring
SURFACE WATER	Drinking water directly from a river, dam, lake, pond, stream, canal or irrigation canal

From the World Health Organization and UNICEF, 2017

Part 2: Results

California-Specific Service Ladders for:

Safe Water

Affordable Water and Sanitation

Accessible Water

Safe Sanitation

Accessible Sanitation

Customized for prevailing statutes and regulations, aligned with public datasets

Safe Drinking Water

- Drinking water is often described as “safe” or “unsafe,” but these terms aren’t consistently defined
- There are approximately 100 enforceable standards under the Safe Drinking Water Act (e.g., Maximum Contaminant Levels or MCLs)
- Many variables: Does the contaminant have acute or chronic health impacts? Did the contaminant exceed the Maximum Contaminant Level by a small amount, or a lot? Was the quality problem an isolated event, or recurring problem?

Service Ladder: Safe Drinking Water

Goal: Chemicals regulated by state and federal SDWA standards should be consistently below levels that pose a significant risk to health.

Service Level		Household-Level Service Indicator	Household-Level Performance Measure
	Satisfactory	Water has met state and federal SDWA standards for Public Water Systems for the past three years.	Household served by Public Water System that has been without an enforcement action during the last three years for state or federal drinking water standards.
	Moderate	Water has met state and federal SDWA standards for Public Water Systems for the vast majority of time in the past three years.	Household served by Public Water System that 1) has been without an enforcement action for an acute drinking water standard during the last three years, and 2) has been without an enforcement action lasting more than one monitoring period during the last three years for state or federal chronic drinking water standards.
	Marginal	Water meets standards set by US Food and Drug Administration, is treated by Point of Use/Entry filter that meets California Title 22 regulations, or meets voluntary domestic well guidelines.	Household uses bottled water regulated by US Food and Drug Administration, or water from a Public Water System that does not have a centralized treatment facility but is treated by a Point of Entry/Use filter that meets State Water Board resolution 2016-0015, or water from well serving fewer than 15 connections that meets voluntary domestic well guidelines.
	Unacceptable	Drinking water quality that is not regularly tested and verified as meeting at least the Marginal standard for safety.	Any one of the characteristics of Marginal access to water is not met.

Accessible Drinking Water

Goal: Accessible water should be available in the home, in sufficient volumes to meet domestic needs, at hot and cold temperatures, twenty-four hours a day.

Rationale:

- California statute legally requires homes to have hot and cold running water
California Civil Code §1941.1(a), California Health and Safety Code §17920.3
- American Community Survey tracks hot and cold indoor piped water
- 43 gallons per capita day (GPCD) is backed up by data on indoor water use, minus leaks, in California

Service Ladder: Accessible Drinking Water

Goal: Water should be available in sufficient volumes to meet domestic needs, at hot and cold temperatures, in a location near home, at the times needed.

		Household-Level Service Indicator	Household-Level Performance Measure
Service Level	Satisfactory	Sufficient hot and cold indoor piped water reliably available 24 hours a day.	At least 43 GPCD hot and cold indoor piped potable water available 24 hours a day.
	Moderate	Sufficient hot and cold water from an improved source available on premises (indoors or outside) and reliably available 24 hours a day; bottled or delivered water acceptable in some circumstances.	At least 43 GPCD hot and cold piped potable water available on the premises 24 hours a day.
	Marginal	Sufficient water from an improved source, including bottled water or tanks of water delivered by truck, provided collection time is not more than 30 minutes round-trip (including waiting time), and reliably available at least 12 hours a day.	Improved, potable water source providing at least 14 GPCD within 30 minutes round-trip of place of residence (including waiting time), available at least 12 hours a day.
	Unacceptable	Water that does not meet at least the Marginal standards for access.	Any one of the characteristics of Marginal access to water is not met.

Affordable Drinking Water

Affordable water has historically been measured as the cost of the average water bill as a percentage of median household income

- Better metric:
 - Essential indoor water use
 - Consider the range of income between households
 - Consider local cost of living
 - Consider cost of both water and wastewater, if possible

Service Ladder: Affordable Drinking Water

Goal: Cost of essential water and sanitation needs should be inexpensive enough that cost does not prevent access, nor interfere with other essential expenditures.

		Household-Level Service Indicator	Household-Level Performance Measure
Service Level	Satisfactory	Household can afford safe, accessible water and sanitation without facing tradeoffs with other essential expenditures.	Household spends $\leq 10\%$ of discretionary income on essential water and sanitation needs.
	Moderate	"	Household spends $> 10\%$ but $\leq 20\%$ of discretionary income on essential water and sanitation needs.
	Marginal	Household occasionally cannot afford safe, accessible water and sanitation without facing tradeoffs with other essential expenditures.	Household spends > 20 but $\leq 30\%$ of discretionary income on essential water and sanitation needs.
	Unacceptable	Household regularly cannot afford safe, accessible water and sanitation without facing tradeoffs with other essential expenditures.	Household spends $> 30\%$ of discretionary income on essential water and sanitation needs.

Part 2: Results

Service Ladders for:

Safe Water

Affordable Water and Sanitation

Accessible Water

 **Safe Sanitation**

Accessible Sanitation

Safe and Accessible Sanitation

A clean, private, flush toilet connected to a well-maintained centralized wastewater facility or septic system.

Safeguards the health of the user, the community, and the environment.



Service Ladder: Safe Sanitation

Goal: A sanitation system should separate waste from human contact until it can be safely treated and released to the environment or reused.

		Household-Level Service Indicator	Household-Level Performance Measure
Service Level	Satisfactory	Flush toilet connected to a system that hygienically separates waste from human contact, where waste is safely disposed of on-site, or transported and treated off-site.	Flush toilet connected to a well-maintained sewage system or an onsite wastewater treatment system.
	Moderate	An improved facility that hygienically separates waste from human contact, where waste is safely disposed of on-site, or transported and treated off-site.	Pit latrine, improved pit latrine (pit latrine with a slab or ventilated pit latrine), or composting toilets connected to a sewage system or an onsite wastewater treatment system.
	Marginal	An improved facility that hygienically separates waste from human contact.	Flush toilet, pit latrine, improved pit latrine, or composting toilet not connected to a functional sewage system or an onsite wastewater treatment system.
	Unacceptable	Use of unimproved facilities or open defecation.	Pit latrines without a seat, hanging latrines, bucket latrines, or open defecation.

Service Ladder: Accessible Sanitation

Goal: Toilets should be private, located in the home, safe to visit, and available when needed.

		Household-Level Service Indicator	Household-Level Performance Measure
Service Level	Satisfactory	Private, secure, well-maintained, in-home facility, not shared with other households, available 24 hours a day.	Household has 24-hour access to a functioning toilet not shared with other households.
	Moderate	Private, secure, well-maintained, on-site facility, possibly shared with other households, available 24 hours a day.	Household has 24-hour access to a functioning toilet either in the structure (not necessarily in their unit for multi-unit buildings) or on the property, with at least one toilet per 10 male residents plus one toilet per 8 female residents.
	Marginal	Private, secure, well-maintained facility, possibly shared with other households, no more than 50 meters from home, available 24 hours a day.	Household has 24-hour access to a functioning toilet shared with no more than 20 people, within 50 meters of their usual place of residence.
	Unacceptable	Facility is more than 50 meters from home, not available 24 hours a day, or use of the facility compromises personal safety or privacy.	Any one of the characteristics of Marginal access to sanitation is not met.

Next Steps

- Develop a shared understanding of what is safe, affordable, accessible water and sanitation
- The service ladders are customizable
- Use existing public datasets to fill in numbers for the performance measures
- Identify problems proactively
- Adaptive management: track the impact of funded projects and change course as necessary

Additional Information

Visit Report Web Page:

<http://pacinst.org/publication/measuring-progress/>

- Report With Full Service Ladders
- Data Sources for Informing Performance Indicators

Also see: *A Survey of Efforts to Achieve Universal Access to Water and Sanitation in California*

Coming Soon: *Californians with Incomplete Plumbing*

On California's Human Right to Water:

“If there isn't a way to apply the law, if there aren't financial and human resources dedicated to making it a reality, the law isn't meaningful. It's dormant, just sitting there.”

*- Horacio Amezquita,
General Manager,
San Jerardo
Cooperativa*



Questions?

Acknowledgements

Funded By: Conrad N. Hilton Foundation

Reviewers: Carolina Balazs (OEHHA); Jessica Goddard (UC Berkeley); Gregory Pierce (UCLA); Heather Cooley and Peter Gleick (Pacific Institute); Larry Levine (NRDC); Angélica Salceda and Kena Cador (ACLU-NC); Max Gomberg and Elizabeth Haven (CA Water Board)

Community Interviews: Theodora Simon

Endless Support: Staff of Pacific Institute

Contact: Laura Feinstein, lfeinstein@pacinst.org

Panel

Moderator: Joaquin Esquivel, Member, State Water Board

Panelists:

Carolina Balazs, Research Scientist, Office of Environmental Health Hazard Assessment

Michael Claiborne, Attorney, Leadership Counsel for Justice and Accountability

Alesandra Najera, Program Officer, Water Foundation

Gregory Pierce, Associate Director of Research, Luskin Center for Innovation

Darrin Polhemus, Deputy Director, Division of Drinking Water, State Water Board

Katie Porter, Staff Engineer, California Urban Water Agencies