



A Framework and Tool for Evaluating California's Progress in Achieving the Human Right to Water

Office of Environmental Health Hazard Assessment

January 23, 2019

Public Webinar





Agenda

- Meeting logistics
- Introduction
 - Yana Garcia (Asst. Secretary of Environmental Justice and Tribal Affairs, CalEPA)
- Presentation of the Human Right to Water Framework and Tool
 - Carolina Balazs, Ph.D. (Research Scientist, OEHHA)
- Questions, Comments, and Responses
- Closing
 - John Faust, Ph.D. (Branch Chief, OEHHA)

Meeting Logistics

- **Presentation:**

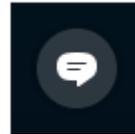
- Slides can be viewed through Skype Webinar *or* downloaded at <https://oehha.ca.gov/water/report/human-right-water-california>

- **Webinar details:**

- All phone and webinar participants will be muted
- Questions and comments can be emailed or chatted in

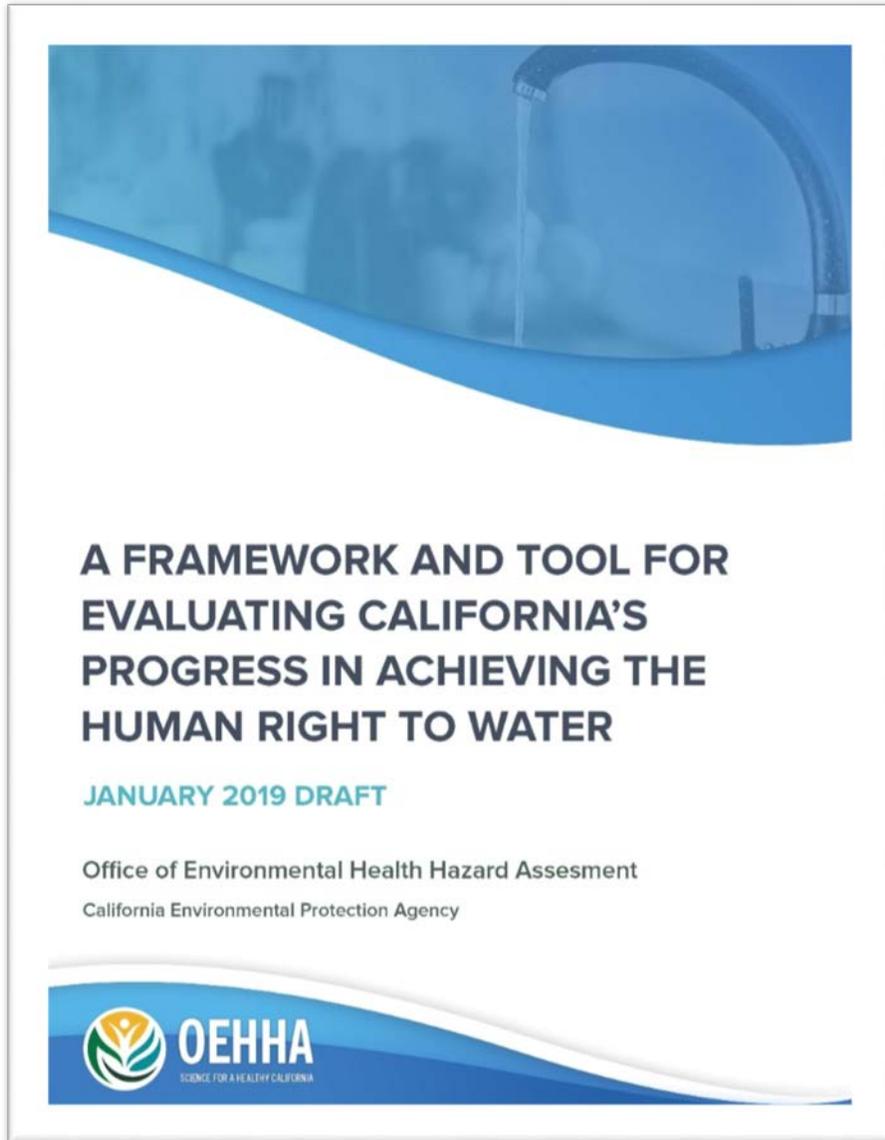
- **How to ask questions or comment:**

- Skype chat box during webinar, *or*
- Email hr2w@oehha.ca.gov



- **Recording:**

- Webinar is being recorded
- Recording to be posted following webinar

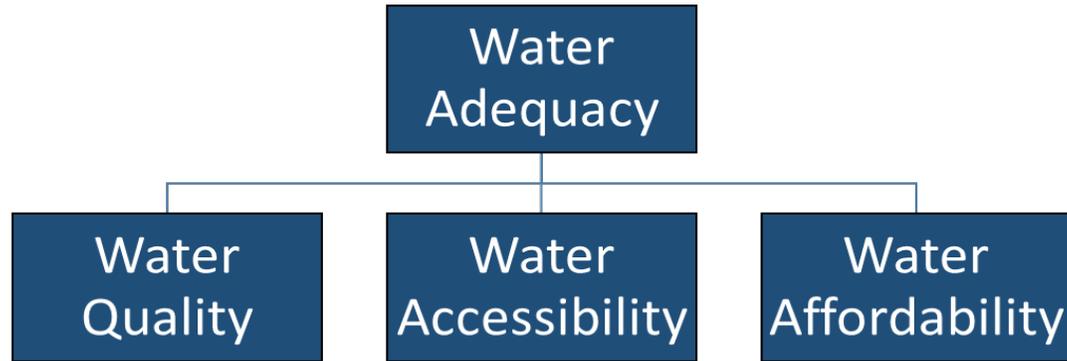


The framework and tool:

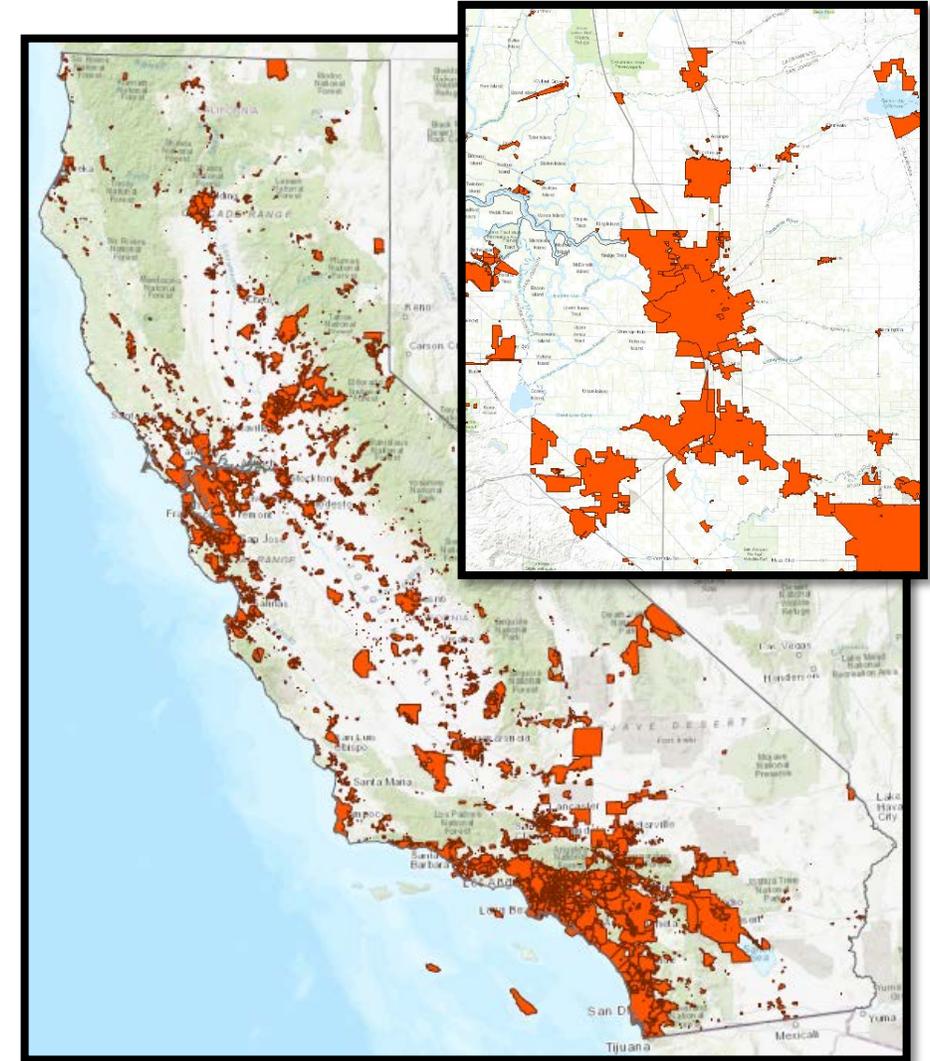
- **Monitors progress** in achieving the human right to water
- **Represents first state-led effort to holistically assess** the quality, accessibility and affordability of drinking water



Framework Overview

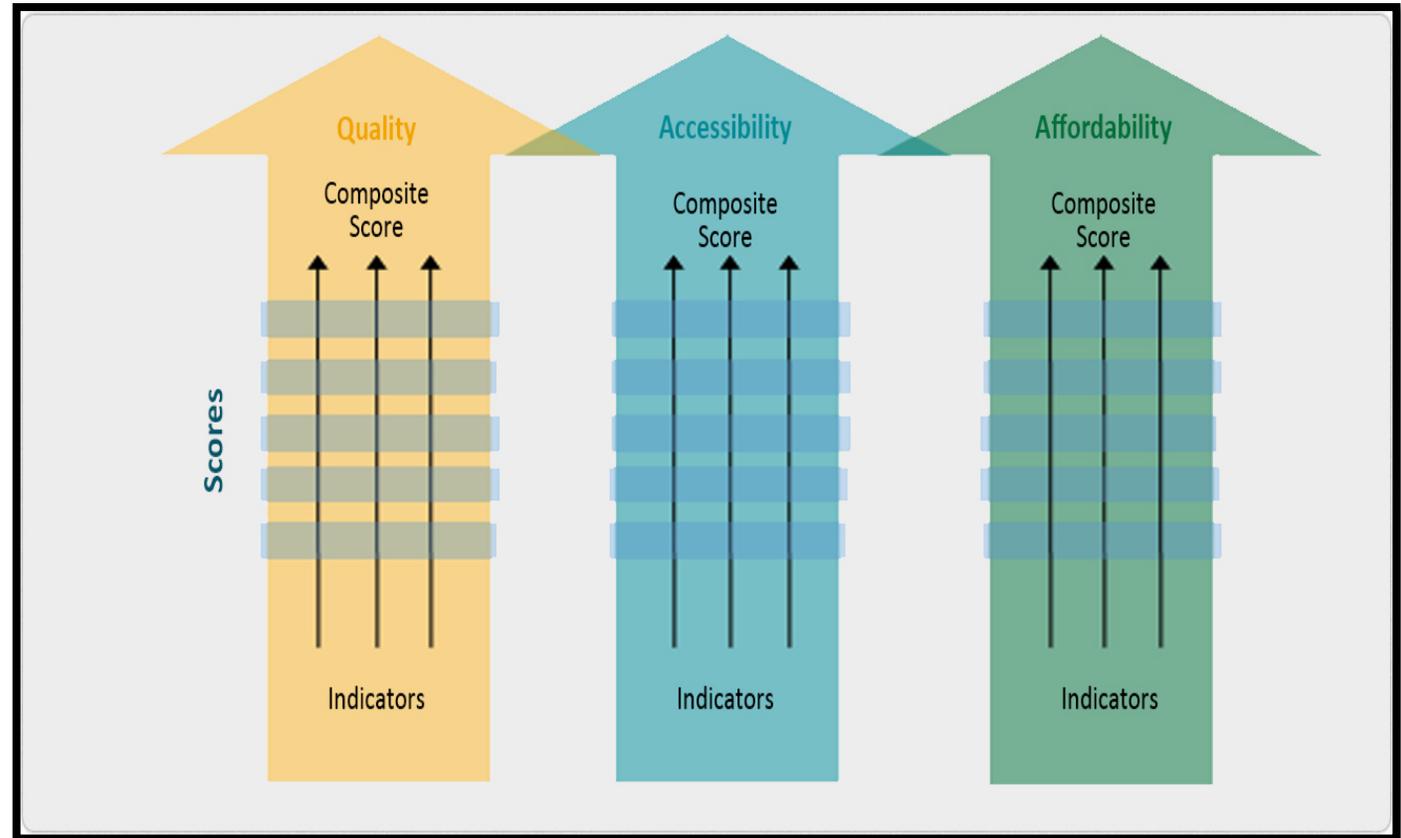


- **13 indicators:** relevance, data quality, coverage, and public availability
- **Unit of analysis:** Community Water System
- **Time period:** 2008-2016
- **Statewide application**

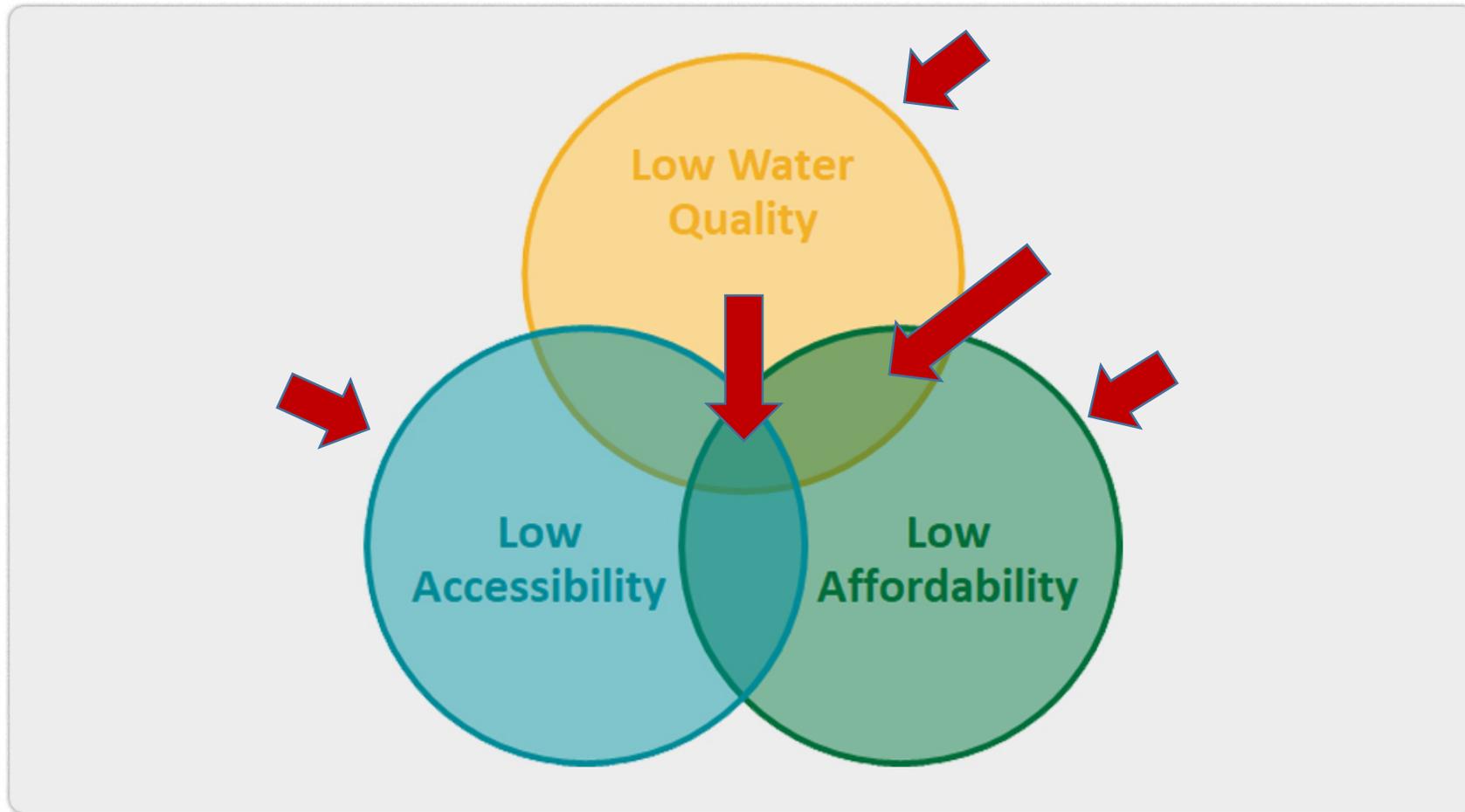


Scoring approach to highlight overall status

- The framework proposes to:
 - Score indicators
 - Create component scores
- This would result in:
 - Information for each indicator
 - Component scores that summarize overall information



A Holistic View of Water System Challenges





Water Quality: Indicators rely on data for 19 contaminants

Contaminant	Measure Used in Water Quality Indicators	
	Exposure	Compliance
Arsenic	Yes	Yes
Barium	Yes	Yes
Benzene	Yes	Yes
Cadmium	Yes	Yes
Carbon tetrachloride	Yes	Yes
Dibromochloropropane (DBCP)	Yes	Yes
Lead [†]	Yes	No
Mercury	Yes	Yes
Methyl tertiary butyl ether (MTBE)	Yes	Yes
Nitrate	Yes	Yes
Perchloroethylene (PCE)	Yes	Yes
Perchlorate	Yes	Yes
Trichloroethylene (TCE)	Yes	Yes
1,2,3-Trichloropropane (1,2,3-TCP) [†]	Yes	No
Toluene	Yes	Yes
Total Coliform [†]	Yes	Yes
Total Trihalomethanes (TTHM)	Yes	Yes
Uranium	Yes	Yes
Xylene	Yes	Yes

Contaminants were selected based on the criteria:

- **Significant coverage** of water quality data:

≥ 80% of systems report at least one sample

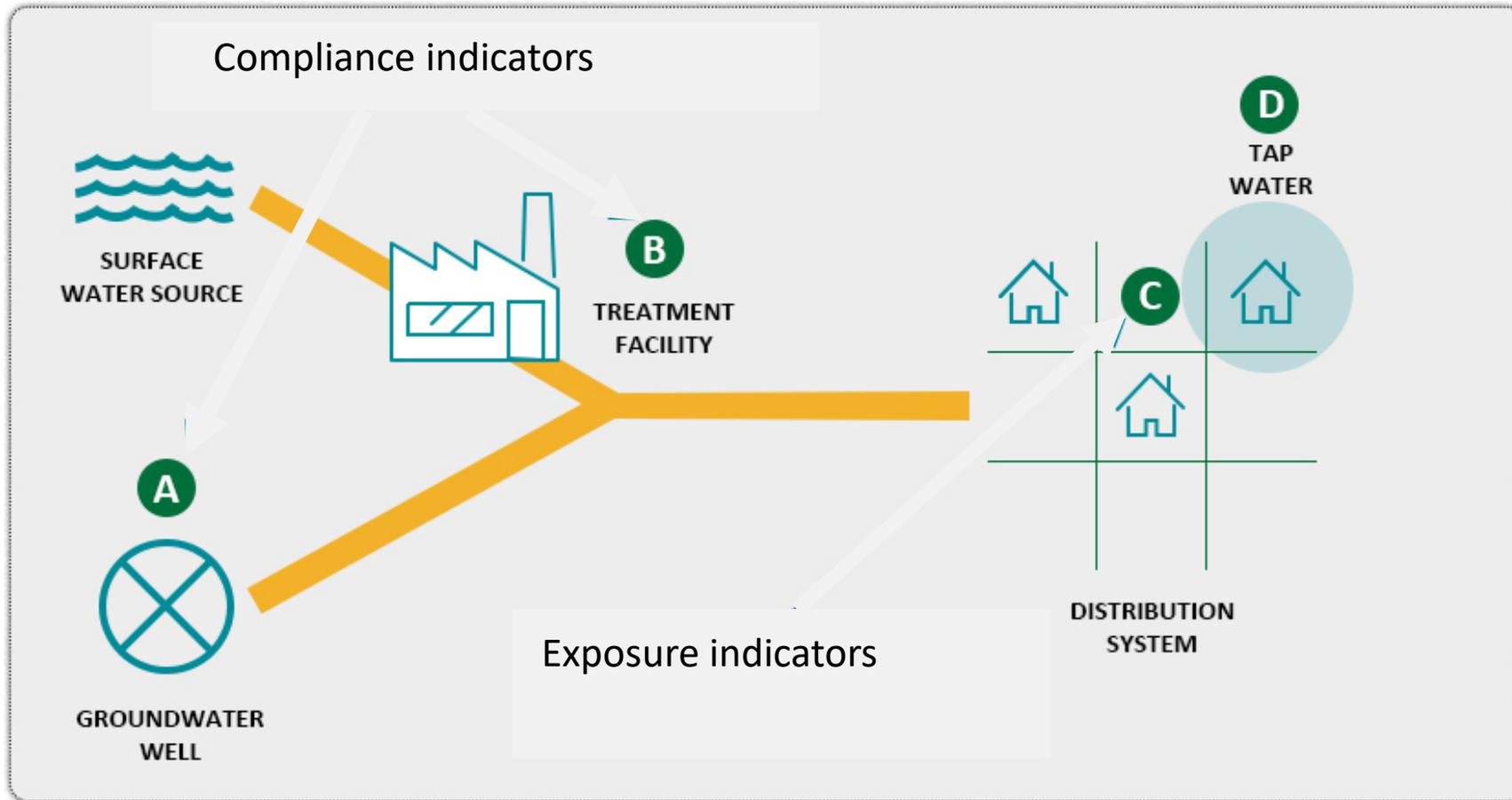
Or

- **High priority:**

significant number of MCL violations



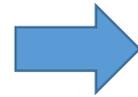
Two types of water quality indicators: Compliance vs Exposure





Water Quality: Four **exposure** indicators

**Annual average
contaminant
concentration in
delivered water**



Potential high exposure

How many contaminants' annual average concentration exceeded the MCL?



Presence of acute contaminants

Are the above contaminants associated with health effects from short term exposure?
(nitrate, perchlorate, fecal/E. coli)



Maximum duration of potential high exposure

How long did exposure last?



Data availability

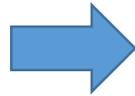
Was water quality data available?

(data source: Water Quality Monitoring database)



Water Quality: Three **compliance** indicators

Count of MCL Violations



Non-compliance with primary drinking standards

How many contaminants received at least one MCL violation in study period?



Presence of acute contaminants

Are the above contaminants associated with health effects from short term exposure?
(nitrate, perchlorate, fecal/E. coli)



Maximum duration of non-compliance

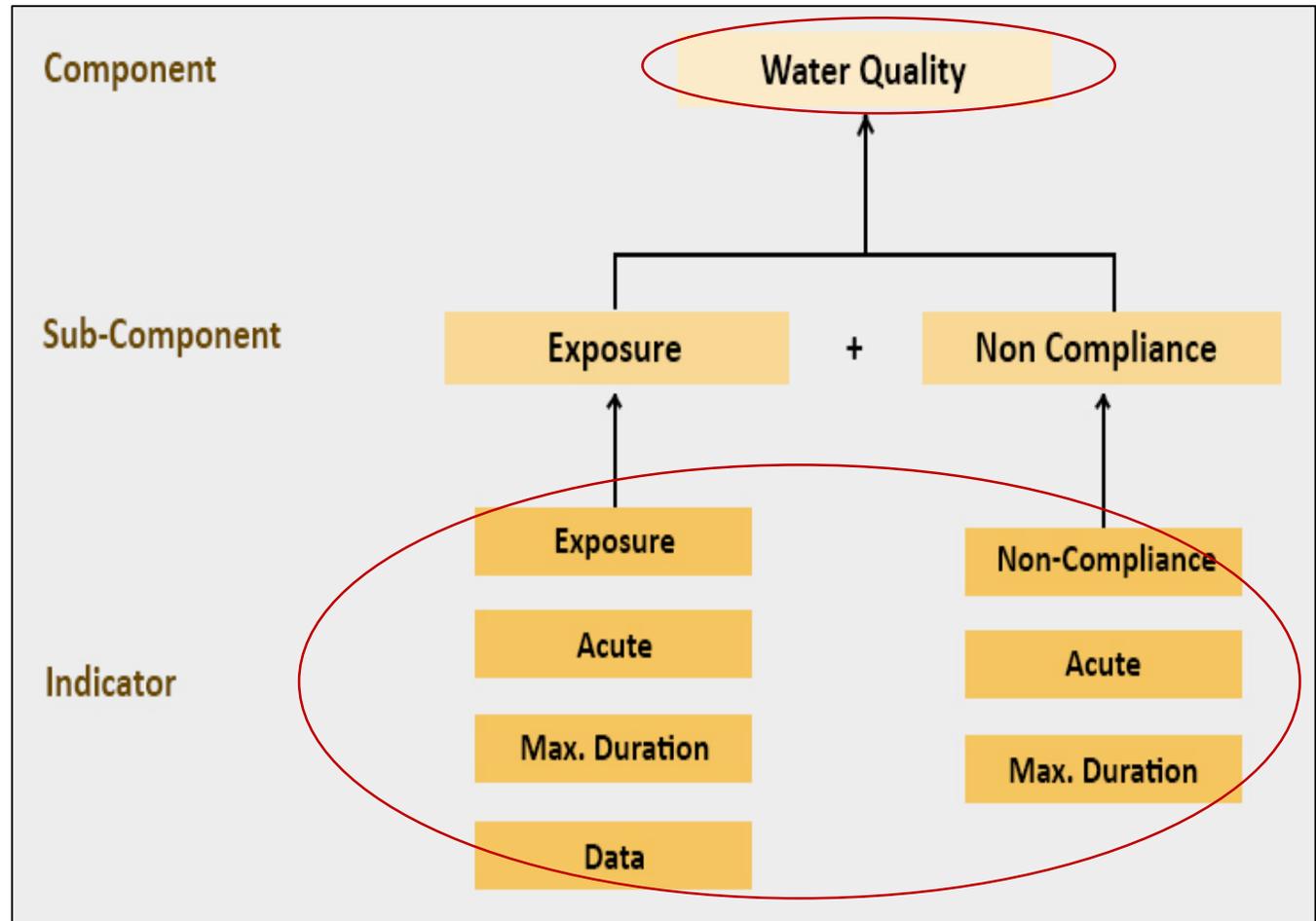
How long did non-compliance last?

(data source: SDWIS database)



Composite View of Water Quality

- Individual indicators highlight specific outcomes
- Composite component score highlights outcomes across multiple indicators





Water quality: Hypothetical example

Exposure



Potential high exposure

Result: **Arsenic**



Presence of acute contaminants

Result: No



Maximum duration of potential high exposure

Result: **9 years of arsenic at 20-30 ppb**



Data availability

Result: Had all data required

Compliance



Non-compliance with primary drinking standards

Result: **Arsenic**



Presence of acute contaminants

Result: No



Maximum duration of non-compliance

Result: **5 years of MCL violations**

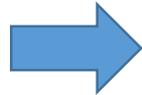


Water accessibility



Entails:

- Physical quantity
- Availability and reliability of supply (sufficient and continuous)
- Source type and collection time



OEHHA's current focus: system-related characteristics that can impede access

- **Physical vulnerability:**
 - factors that may interfere with the availability and reliability of an adequate supply
- **Institutional vulnerability:**
 - technical, managerial and financial capacity of a water system to conduct operations and maintenance



Water Accessibility: Three indicators

Physical Vulnerability



Physical vulnerability to water outages

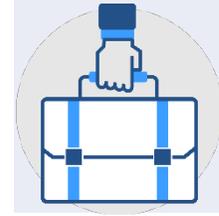
What is the source type and how many sources?

Institutional Vulnerability



Institutional capacity

What is the size and disadvantaged community (DAC) status?



Managerial constraints

How many monitoring and reporting violations?

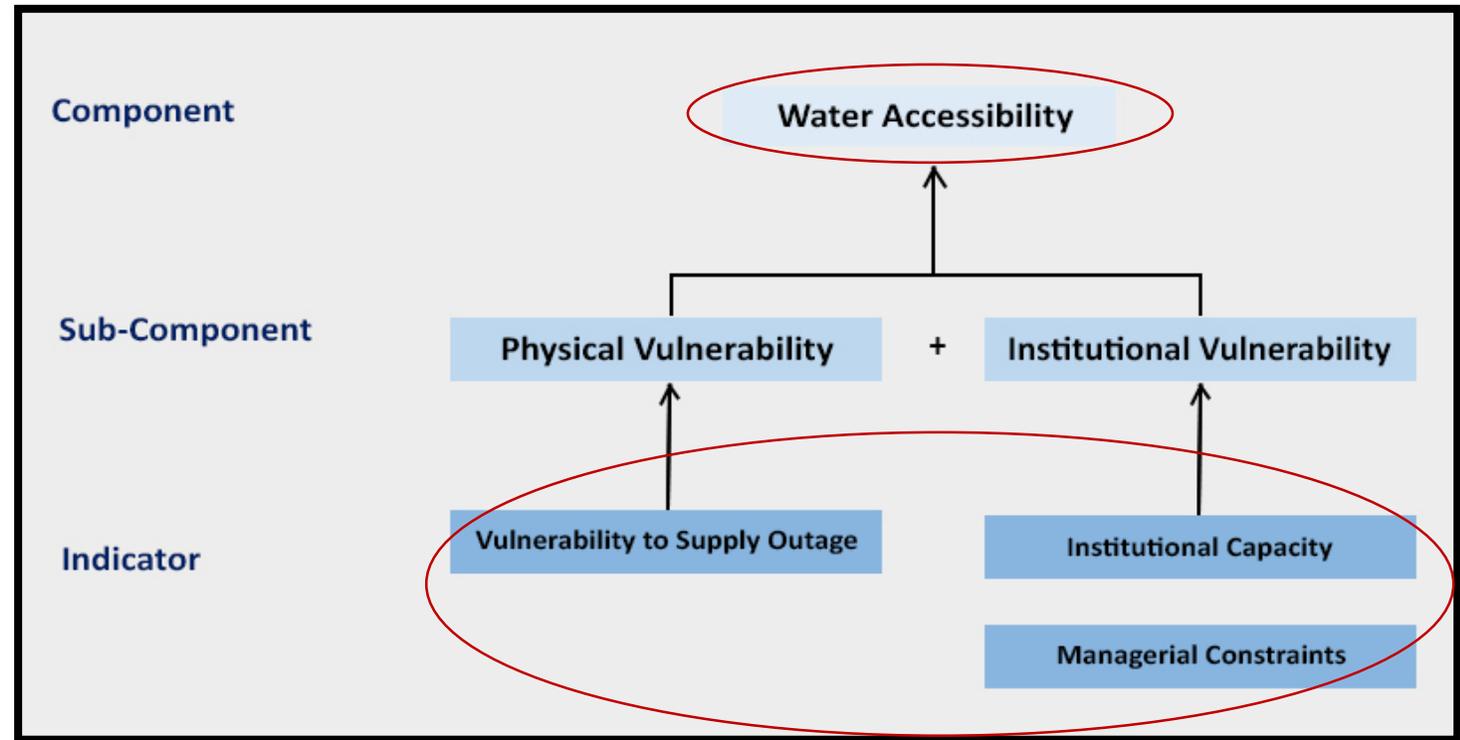
Data sources: SDWIS and U.S. census data

Future steps: Additional indicators to address other aspects of accessibility



Composite View of Water Accessibility

- Individual indicators highlight specific outcomes
- Composite component score highlights outcomes across multiple indicators





Water Accessibility: Hypothetical example

Physical Vulnerability



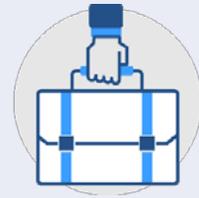
Physical vulnerability to water outages
Result: **1 groundwater well**

Institutional Vulnerability



Institutional vulnerability

Result: **50 connections**
Median Household Income: **\$42,271 (DAC)**



Managerial constraints

Result: **10 Monitoring & Reporting Violations**



Water Affordability: Three indicators

Proposed Affordability Ratio =

$$\frac{\text{Monthly Water Bill @ 6 Hundred Cubic Feet}}{\text{Income of Water System}} \geq \text{Multiple ratios}$$

Data sources: electronic Annual Report, census data, poverty threshold calculations from Public Policy Institute of California

Gaps: Additional effort needed to fill in water cost data gaps

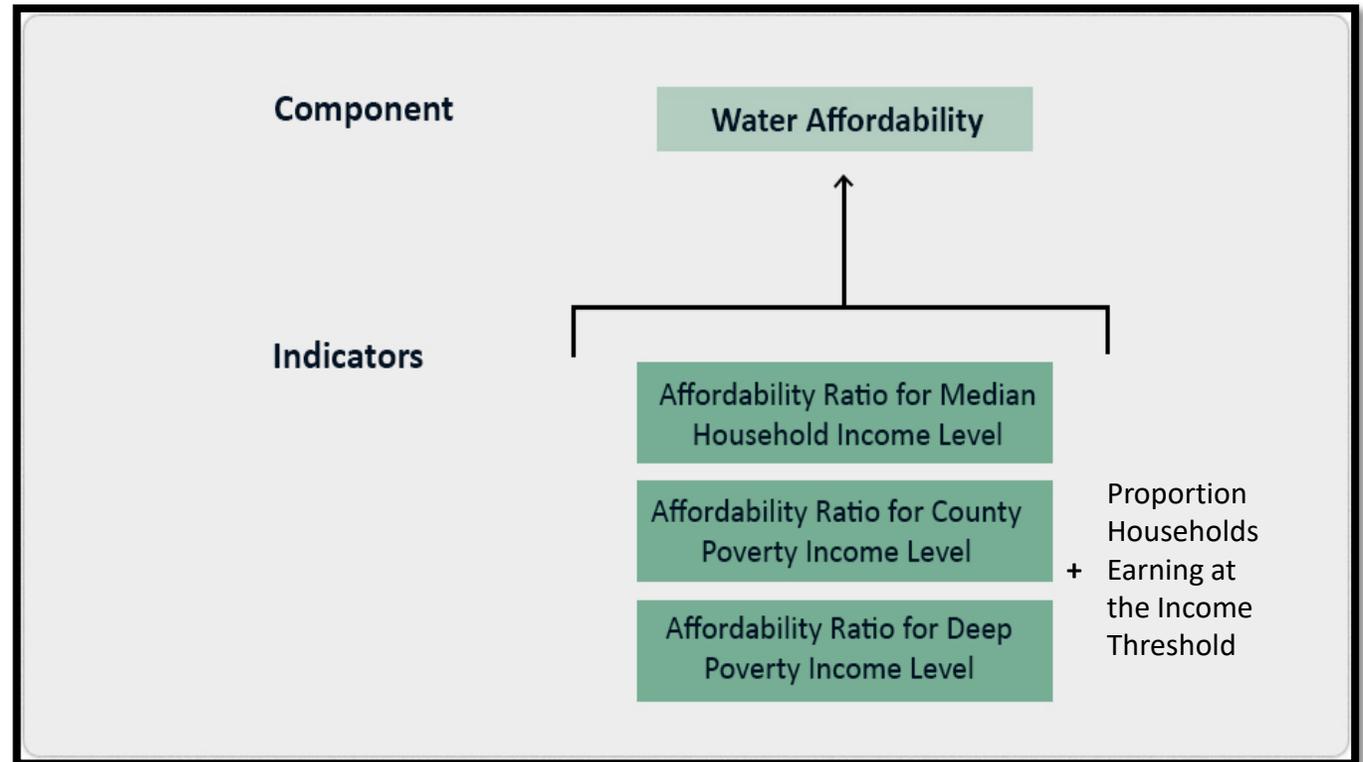
	Affordability ratio at the <u>median household income</u> level
	Affordability ratio at the <u>county poverty threshold</u> level
	Affordability ratio at the <u>deep poverty threshold</u> level

+ Proportion Households Earning at the Income Threshold



Composite View of Water Affordability

- Individual indicator scores provide affordability information for specific income levels
- Composite score provides overall affordability burden:
 - Factors in economic vulnerability and proportion of households facing different burdens





Water Affordability: Hypothetical Example

Monthly water bill: \$72

Median Household Income: \$42,279

County Poverty: \$25,717

Deep Poverty: \$12,858

	Affordability ratio at the <u>median household income</u> level Result: 2.1%
	Affordability ratio at the <u>county poverty threshold</u> level Result: 3.4% ; 30% of households
	Affordability ratio at the <u>deep poverty threshold</u> level Result: 6.8% ; 5% of households

Framework and tool allow for an assessment of the status of water systems...

	Water Quality							Accessibility			Affordability		
Indicator													
	1	2	3	4	5	6	7	1	2	3	1	2	3
System A	Dark Blue	Light Blue	Dark Blue	Light Blue	Dark Blue	Light Blue	Dark Blue	Light Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue
System B	Dark Blue	Dark Blue	Dark Blue	Light Blue	Dark Blue	Dark Blue	Dark Blue	Light Blue	Dark Blue	Light Blue	Light Blue	Dark Blue	Dark Blue
System C	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Light Blue	Dark Blue	Dark Blue	Dark Blue



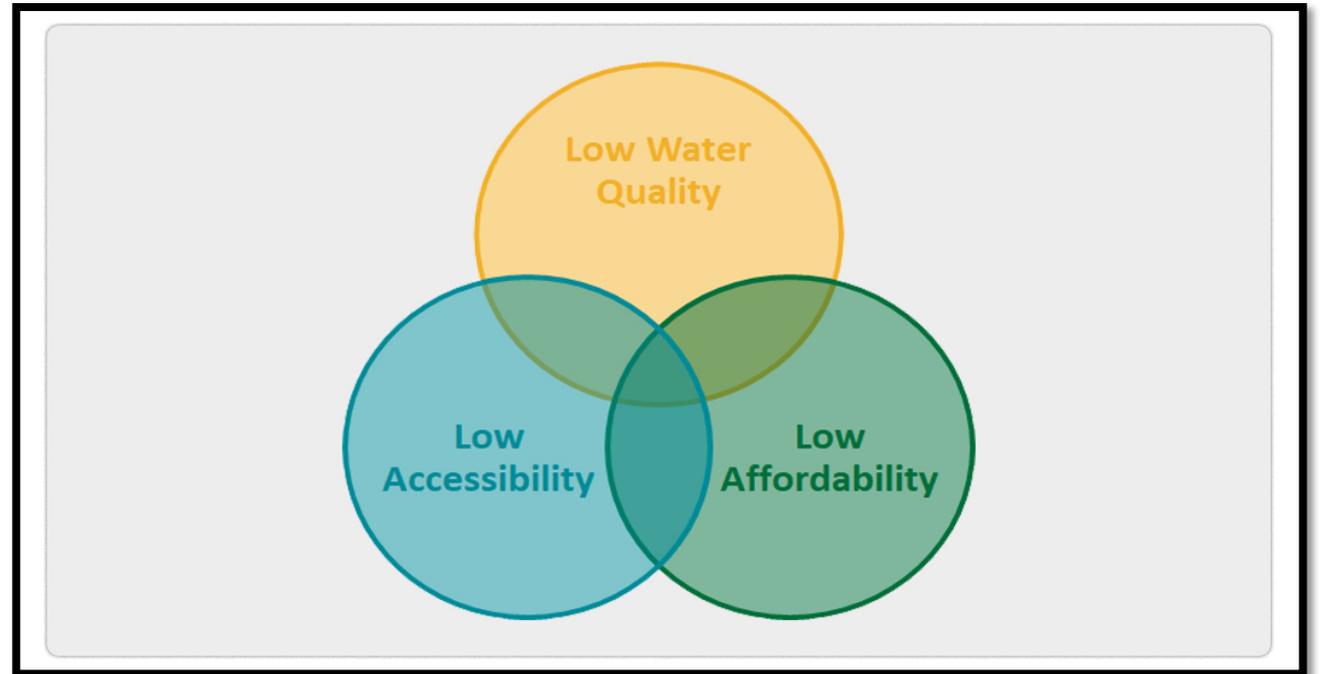
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Conclusion

The framework and tool:

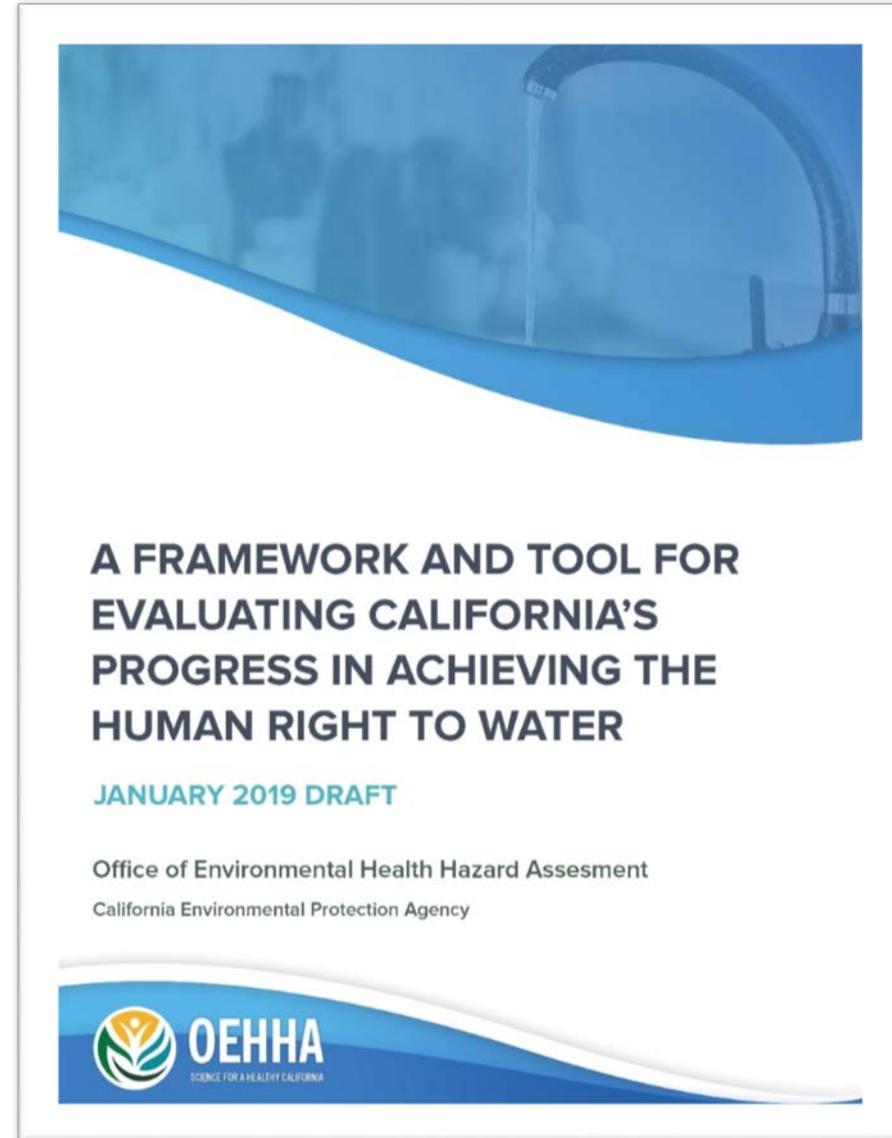
- Summarize 3 components and 13 indicators
- Offers holistic view that can help show interrelationships
- Provides a view of big-picture trends across water systems and regions, statewide
- Helps capture how those trends might change over time





Next Steps

- Public comment until *February 4, 2019*
- Post comments via website link
- Next steps:
 - OEHHA review of comments
 - Revisions to framework
 - Release of next draft document explaining the tool in detail



Questions & Answers

...We'll be back momentarily...



Questions & Answers

For More Information

<i>Program website:</i>	https://oehha.ca.gov/water/report/human-right-water-california
<i>OEHHA listserv:</i>	https://oehha.ca.gov/about/listserv
<i>Public comments:</i>	Online upload or by mail: HR2W Attn: Carolina Balazs Office of Environmental Health Hazard Assessment 1515 Clay Street, 16th Floor Oakland, CA 94612
<i>Program email:</i>	hr2w@oehha.ca.gov
<i>Comments due:</i>	February 4, 2019



