SAFER: 2021 Drinking Water Needs Assessment Results

April 13, 2021
9:00 am
Remote participation only
Water Board’s Mission Statement

Preserve, enhance, and restore the quality of California’s water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations.
Ways to Participate-

1. **Watch ONLY:** Visit [video.calepa.ca.gov](http://video.calepa.ca.gov)

2. **Email:** Submit a comment or ask a question that will be read aloud, send an email to: [safer@waterboards.ca.gov](mailto:safer@waterboards.ca.gov)

3. **Q&A:** Submit a question using the Q&A feature at the bottom of your Zoom Screen. You can UPVOTE any question you would like answered.

4. **Raise Hand:** Attendees will be given the opportunity to provide verbal comment or ask questions, if you’re interested in this option, please raise your virtual hand when the time is right.

- Please wait for your name to be called.
- Public comments are 3 minutes each.
Needs Assessment Overview
Presentation Outline

• Overview of Needs Assessment
• Failing Water Systems: HR2W List
• Risk Assessment Methodology & Results
• Cost Assessment Methodology & Results
• Affordability Assessment Methodology & Results
• Conclusions and Next Steps
Audience Poll Question 1

Have you participated in any of the last 2020-2021 webinar workshops on the Risk Assessment or Cost Assessment?

- Yes
- No

View recordings and materials here: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/needs

Audience Poll Question 2

Have you read the report: “2021 Drinking Water Needs Assessment”?

• Yes, read the whole thing
• Yes, I skimmed it
• No, but I plan to
• No, I don’t intend to read it


2012 - Human Right to Water (HR2W)

Water Code Section 106.3, the State statutorily recognizes that:

“every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.”
Failing Water Systems: HR2W List

- 7,800 Public Water Systems
- HR2W list is updated quarterly on State Water Board website.
- Currently there are 331 (as of today) failing water systems
- On average, 90% of Violations Occur in Water Systems Serving Less than 500 connections
In 2019, to advance the goals of the Human Right to Water “HR2W”, California passed Senate Bill 200, which enabled the State Water Board to establish the Safe and Affordable Funding for Equity and Resilience (SAFER) Program.
SAFER Program

SAFER PROGRAM

- **Division of Financial Assistance**
  - Fund Expenditure Plan & Executing Funding

- **Division of Drinking Water**
  - Needs Assessment, Data Collection, & Engagement

- **Division of Water Quality**
  - State Smalls & Domestic Well Sourcewater Quality

- **Office of Public Participation**
  - Public Engagement & Meeting Facilitation

**COLLABORATION PARTNERS**

- SAFER Advisory Group
- Department of Water Resources
- CA Public Utilities Commission
- UCLA, Luskin Center for Innovation
- UC Berkeley CEC-WESS
- Office of Env. Health Hazard Assessment
- Environmental Finance Centers: UNC & Sac State
- Pacific Institute
- Corona Environmental
- CA Conference of Directors of Env. Health
Safe and Affordable Drinking Water Fund

Up to $130 million per year through 2030.

The annual Fund Expenditure Plan prioritizes projects for funding, documents past and planned expenditures, and is “based on data and analysis drawn from the drinking water Needs Assessment” (Health and Safety Code §116769).
Needs Assessment Components

- **Risk Assessment**: Systems ≤ 3,300 conn.; K-12 Schools; SWS, & DWs
- **Cost Assessment**: HR2W & At-Risk Systems and Domestic Wells
- **Affordability Assessment**: DAC/SDAC Community Water Systems

[https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/needs.html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/needs.html)
SAFER Program Priority Systems

**FAILING WATER SYSTEMS**
Community water systems and K-12 public schools that meet the Human Right to Water (HR2W) list criteria.

**AT-RISK WATER SYSTEMS & DOMESTIC WELLS**
Public water systems with 3,300 service connections or less, K-12 public schools, state small water systems, tribal water systems, and domestic wells that are at-risk of failing.

**POTENTIALLY AT-RISK WATER SYSTEMS & DOMESTIC WELLS**
Public water systems with 3,300 service connections or less, K-12 public schools, state small water systems, tribal water systems, and domestic wells that are potentially at-risk of failing.

**NOT AT-RISK WATER SYSTEMS & DOMESTIC WELLS**
Public water systems, K-12 public schools, state small water systems, tribal water systems, and domestic wells that are not at-risk of failing.
Needs Assessment Uses

NEEDS ASSESSMENT

- Affordability Assessment
- Risk Assessment
- Cost Assessment

Division of Financial Assistance (DFA)

Annual Fund Expenditure Plan

Funding and TA Prioritization

Engagement Unit Services Rendered
## Needs Assessment Development

<table>
<thead>
<tr>
<th>NEEDS ASSESSMENT COMPONENTS</th>
<th>2019</th>
<th>Q1 2020</th>
<th>Q2 2020</th>
<th>Q3 2020</th>
<th>Q4 2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Assessment*</td>
<td></td>
<td>1.11</td>
<td>5.10</td>
<td>8.28</td>
<td>11.20</td>
<td>2.26</td>
</tr>
<tr>
<td>Affordability Assessment</td>
<td></td>
<td>4.17</td>
<td>7.22</td>
<td>9.11</td>
<td>10.30</td>
<td>4.13</td>
</tr>
</tbody>
</table>

Access workshop recordings, white papers, and presentations here: [https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/needs.html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/needs.html)
Needs Assessment Numbers and Dates

• Different start dates, different data sets.

• You will see a different numbers of systems that are on the HR2W list or At-Risk list within different components of the Needs Assessment.

• This was due to the timing of the Needs Assessment in its inaugural year.
## Expanded Criteria for Failing Water Systems: HR2W List

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Before 3.2021</th>
<th>After 4.2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary MCL Violation with an open Enforcement Action</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Secondary MCL Violation with an open Enforcement Action</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>E. Coli Violation with an open Enforcement Action</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Treatment Technique Violations (in lieu of an MCL):</strong></td>
<td>Partially</td>
<td>Expanded</td>
</tr>
<tr>
<td>• One or more Treatment Technique violations (in lieu of an MCL), related to a primary contaminant, with an open enforcement action; and/or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Three or more Treatment Technique violations (in lieu of an MCL), related to a primary contaminant, within the last three years.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Monitoring and Reporting Violations (related to an MCL and TTs):</strong></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>• 3 Monitoring and Reporting violations (related to an MCL) within the last three years where at least one violation has been open for 15 months or greater.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Approximately 29 water systems have been added to the HR2W list with the expanded criteria.
HR2W Map (4.12.2021)

331 water systems on the HR2W list.

29 of these systems meet the new expanded criteria.

The State Water Board maintains a SAFER Program map: https://www.waterboards.ca.gov/safer/safer_data.html

HR2W map: https://www.waterboards.ca.gov/water_issues/programs/hr2w/
Providing Assistance to HR2W List Systems

Approximately 90% of the water systems on the HR2W list are progressing towards long-term solutions.

Reach out to the State Water Board if you’re looking for financial or technical assistance:

The Challenge

Approximately 47 unique water systems come on the HR2W list each year.

To be proactive, the State Water Board needed to develop an early warning approach to identify water systems that are at-risk of failing.
Risk Assessment Results: Public Water Systems

Greg Pierce
Luskin Center for Innovation
University of California, Los Angeles
Public Water Systems Analyzed in the Risk Assessment

<table>
<thead>
<tr>
<th>Water System Type</th>
<th>Number</th>
<th>Water Quality</th>
<th>Accessibility</th>
<th>Affordability</th>
<th>TMF Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Water Systems* (≤ 3,300 connections)</td>
<td>2,241</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>K-12 Schools</td>
<td>383</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Other Public Water Systems**</td>
<td>155</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>TOTAL ANALYZED:</strong></td>
<td><strong>2,779</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Excluded Wholesalers.

** Included Transient Areas, Recreational Facilities, Hotels, Summer Camps, Prisons, Medical Facilities, Military Complexes
### Risk Assessment for Public Water Systems

#### RISK ASSESSMENT METHODOLOGY

<table>
<thead>
<tr>
<th>19 RISK INDICATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantifiable measurements of key data used to assess a water system’s risk of becoming non-compliant with water quality standards.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RISK INDICATOR THRESHOLDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values associated with a risk indicator that designates when a water system is more at-risk of becoming non-compliant with water quality standards.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEIGHTS / SCORES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application of weight to each risk indicator and indicator category – some are more critical than others in contributing to overall risk.</td>
</tr>
</tbody>
</table>
## Risk Indicators

Final list of 19 risk indicators selected from 129 proposed risk indicators through a stakeholder driven process.

<table>
<thead>
<tr>
<th>WATER QUALITY</th>
<th>ACCESSIBILITY</th>
<th>AFFORDABILITY</th>
<th>TMF CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. Coli Presence</td>
<td>Number of Sources</td>
<td>% Median Household Income</td>
<td># of Service Connections</td>
</tr>
<tr>
<td>Increasing Presence of Water Quality Trends Towards MCL</td>
<td>Absence of Interties</td>
<td>Extreme Water Bill</td>
<td>Operator Certification Violations</td>
</tr>
<tr>
<td>Treatment Technique Violations</td>
<td>Water Source Types</td>
<td>% Shut-Offs</td>
<td>Monitoring and Reporting Violations</td>
</tr>
<tr>
<td>Past Presence on the HR2W List</td>
<td>DWR – Drought &amp; Water Shortage Risk Assessment Results</td>
<td></td>
<td>Significant Deficiencies</td>
</tr>
<tr>
<td>Maximum Duration of High Potential Exposure (HPE)</td>
<td>Critically Overdrafted Groundwater Basin</td>
<td></td>
<td>Extensive Treatment Installed</td>
</tr>
<tr>
<td>Percentage of Sources Exceeding an MCL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Aggregated Risk Assessment with Indicator & Category Weights

Risk Indicators

- Water Quality
- Accessibility
- Affordability
- TMF Capacity

Individual risk indicators with **different** weights.

4 risk categories with **different** weights.

Combined Risk Assessment

- Potentially At-Risk
- At-Risk
Risk Indicator Thresholds, Scores, and Weights (pg. 150)

To enable the evaluation and comparison of risk indicators, a standardized **score** range between 0 and 1 was applied to each risk indicator threshold.

**Weights between 1 and 3** were applied to each risk indicator to indicate which risk indicators are comparatively more **critical**.

Example:

<table>
<thead>
<tr>
<th>Risk Indicator</th>
<th>Thresholds</th>
<th>Raw Score</th>
<th>Weight</th>
<th>Total Risk Indicator Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Duration of High Potential Exposure (HPE)</td>
<td><strong>Threshold 0</strong> = 0 years</td>
<td>0</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Threshold 1</strong> = 1 year</td>
<td>0.25</td>
<td>3</td>
<td><strong>0.75</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Threshold 2</strong> = 2 years</td>
<td>0.5</td>
<td>3</td>
<td><strong>1.5</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Threshold 3</strong> = 3 or more years</td>
<td>1</td>
<td>3</td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>
Aggregated Risk Assessment Calculation Methodology

Water Quality Risk Indicators

Accessibility Risk Indicators

Affordability Risk Indicators

TMF Capacity Risk Indicators

\[(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\]

\[(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\]

\[(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\]

\[(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\times(s\text{(w)})\]

\[(\text{Adjusted Category Score}) \times (\text{Category Weight})\]

\[(\text{Adjusted Category Score}) \times (\text{Category Weight})\]

\[(\text{Adjusted Category Score}) \times (\text{Category Weight})\]

\[(\text{Adjusted Category Score}) \times (\text{Category Weight})\]

\[\text{Aggregated Risk Assessment Score}\]
Adjusting for Missing Risk Indicator Data

A system may have failed to report necessary data or the system may not have data to report.

The Risk Assessment removed any value for a missing risk indicator and re-distributed the scores/weights to risk indicators within the same category which did have valid values.

The same approach was used for risk indicator categories as well.

<table>
<thead>
<tr>
<th>Risk Indicator Category With No Missing Indicator</th>
<th>Risk Indicator Category With Missing Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 + 1 + .5 + .25 + 0</td>
<td>1 + 1 + .5 + N/A + 0</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>
At-Risk (≥1)

Potentially At-Risk (0.75 ≤ x <1)

These thresholds were determined based on where the current and expanded HR2W systems started to cluster.
Risk Assessment Results (n=2,779)

- HR2W: 326
- At-Risk: 617
- Potentially At-Risk: 552
- Not At-Risk: 1,284
HR2W List & At-Risk Equivalent Tribal Water Systems

- HR2W: 13
- At-Risk: 22
- Potentially At-Risk: 20
- Not At-Risk: 35

CALIFORNIA WATER BOARDS
SAFER PROGRAM
Risk Assessment Results by County, Proportional to All Systems
Risk Assessment Results by County
Population Served by At-Risk Water Systems
(3,300 service connections or less)*

* The Risk Assessment excluded large water systems that serve the majority of Californians.
All At-Risk systems exceed a threshold of concern for at least 4 risk indicators.

The average At-Risk system exceeded more than 6 risk indicator thresholds.

This means that systems were not designated as At-Risk based on a single or even a handful of risk indicators.
Access the At-Risk List and Raw Data

Download the Risk Assessment Results Spreadsheet to view the list of At-Risk public water systems: https://bit.ly/3d0XxSF

This spreadsheet will be updated periodically with data refreshes.
See something that isn’t right? Water systems can submit a **data change request** here: 
https://bit.ly/3t9XgTg

Requests will be reviewed by State Water Board staff.
Risk Assessment Results:
State Small Water Systems & Domestic Wells

Emily Houlihan
GAMA Unit, Division of Water Quality
State Water Resources Control Board
Summary of Risk Assessment Methodology for State Small Water Systems & Domestic Wells

**Step 1:** Gather Water Quality Point Data From Shallow Wells

**Step 2:** Average Water Quality From Point Data per Square Mile

**Step 3:** One Mile Water Quality Sections are Averaged within Census Block Groups & County Boundaries

**Step 4:** Overlay State Small Water System & Domestic Well Location Data
Data Processing

Water Quality Data

- Publicly-available data from both public and domestic wells
- Filter wells by depth
- Average results by year, well, and square mile section (de-clustering)
- Assess both long-term averages (20 year) and recent results
- Assess all constituents with an MCL, including Hexavalent Chromium

Domestic Well & State Small Water System Locations

- Domestic well density is from the Online System of Well Completion Records, excluding domestic wells drilled prior to 1970
- State small water system locations are from the Rural Community Assistance Corporation
Depth Filter

Groundwater Unit Domestic Wells Depth Interval

"Domestic Top"
Average of shallowest domestic wells
- 3 standard deviations

"Domestic Bottom"
Average of deepest domestic wells
+ 3 standard deviations

"Public Bottom"
Average of deepest public wells
+ 3 standard deviations

CA Groundwater Units
- Public and Domestic different depths
- Public and Domestic same depths
- Insufficient data

CALIFORNIA WATER BOARDS
SAFER PROGRAM
Risk Map Components – Water Quality and Domestic Well/State Small Water System Density
Combines water quality results with density of state small water systems and domestic well users to estimate overall source water risk.
Top Contaminants

- Nitrate: 24%
- Arsenic: 21%
- Uranium: 8%
- Hexavalent Chromium: 4%
- Gross Alpha Radioactivity: 10%
- 1,2,3-Trichloro propane: 13%
- Other Contaminants: 20%
Risk Assessment Results for State Small Water Systems & Domestic Wells

**At-Risk = High Risk**: Estimated water quality above Maximum Contaminant Level (MCL)

**Medium Risk**: Estimated water quality between 80 – 100% of MCL

**Low Risk**: Estimated water quality below 80% of MCL

<table>
<thead>
<tr>
<th>Section Water Quality Risk Designation</th>
<th>Domestic Wells</th>
<th>State Small Water Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>At-Risk = High Risk</td>
<td>77,973</td>
<td>611</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>15,791</td>
<td>71</td>
</tr>
<tr>
<td>Low Risk</td>
<td>147,185</td>
<td>554</td>
</tr>
<tr>
<td>No Data</td>
<td>84,800</td>
<td>227</td>
</tr>
</tbody>
</table>
Results by County, State Small Water Systems
Results by County, Domestic Wells
Check out the Aquifer Risk Map Tool

Explore the Aquifer Risk Map online and access the raw data:

Discussion Topic: Risk Assessment

Do you have any questions or comments about the Risk Assessment Methodology and/or Results?

Ways to Participate:

1. Watch ONLY: Visit video.calepa.ca.gov
2. Email: Submit a comment or ask a question that will be read aloud, send an email to: safer@waterboards.ca.gov
3. Q&A: Submit a question using the Q&A feature at the bottom of your Zoom Screen. You can UPVOTE any question you would like answered.
4. Raise Hand: Attendees will be given the opportunity to provide verbal comment or ask questions, if you're interested in this option, please raise your virtual hand when the time is right.

• Please wait for your name to be called.
• Public comments are 3 minutes each.
5 Minute Break
Cost Assessment Model Results

Tarrah Henrie
Corona Environmental Consulting
Cost Assessment Model Process Diagram (pg. 235)
**Cost Assessment Model Process for HR2W List Systems**

**STEP 1**
Identification of HR2W Systems

**STEP 2**
Analyze Identified System Issues

**STEP 3**
Identify Possible Modeled Solutions

**STEP 4.a**
Evaluate Long-Term Sustainability & Resiliency of Solutions

**STEP 4.b**
Develop Cost Estimates for Possible Solutions

**STEP 5**
Select Best Possible Solution for Each System

**STEP 6**
Aggregate Estimated Modeled Costs for All Systems

**STEP 7**
Identify Funding Needs vs. Funding Gaps

**Community & System Data**
Cost Assessment Model Process for At-Risk Public Water Systems

Identification of At-Risk Public Water Systems
Identification of At-Risk public water systems

Identify Possible Modeled Solutions
Can the water system be physically consolidated?

Develop Cost Estimates
For physical consolidation, where possible, and other infrastructure needs for all systems

Funding Gap Analysis
Identify funding needs vs. funding availability

Roll-Up Estimated Costs
Aggregate estimated modeled costs for all systems
Cost Assessment Model Process for At-Risk State Small Water Systems (SSWS) and Domestic Wells

1. Identification of At-Risk SSWS & Domestic Wells

2. Identify Possible Modeled Solutions
   - Is physical consolidation possible?

3. Develop Cost Estimates
   - For physical consolidation, where possible, and other infrastructure needs for all systems

4. Funding Gap Analysis
   - Identify funding needs vs. funding availability

5. Roll-Up Estimated Costs
   - Aggregate estimated modeled costs for all systems
Potential Model Solutions Considered for HR2W List Systems

- Physical Consolidation
- Centralized Treatment
- Point of Use / Point of Entry
- Other Essential Infrastructure (i.e. storage tanks, new wells, upgraded electrical, distribution replacement, etc.)
- Operations & Maintenance (O&M)
- Interim or Emergency Solutions
- Technical Assistance
Feasibility of one-to-one physical consolidation was based on connection to a nearby larger non-HR2W public water system within a maximum of a 3-mile area along public access roads.

SSWSs and domestic wells were analyzed for consolidation costs only if they were along the pipeline path of another HR2W list or an At-Risk consolidation.
Physical consolidation (one-to-one) was considered as a potential solution for 107 HR2W list systems and 234 At-Risk public water systems.

Significant potential cost savings can occur with regionalization as opposed to one-to-one consolidations. However, this analysis was not included in the aggregated cost estimate due to unknowns about boundary challenges and community acceptance.
## Number of Potential Solutions Considered by System Type

<table>
<thead>
<tr>
<th>System Type</th>
<th># of Systems</th>
<th>Treatment</th>
<th>Physical Consolidation</th>
<th>POU/POE</th>
<th>Other Essential Infrastructure &amp; Technical Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR2W List</td>
<td>305</td>
<td>305 (100%)</td>
<td>107 (35%)</td>
<td>194 (64%)</td>
<td>305 (100%)</td>
</tr>
<tr>
<td>At-Risk PWS</td>
<td>630</td>
<td>N/A</td>
<td>234 (37%)</td>
<td>N/A</td>
<td>630 (100%)</td>
</tr>
<tr>
<td>At-Risk SSWS</td>
<td>455</td>
<td>N/A</td>
<td>262 (58%)</td>
<td>455 (100%)</td>
<td>N/A</td>
</tr>
<tr>
<td>At-Risk Domestic Wells</td>
<td>62,607</td>
<td>N/A</td>
<td>25,696 (41%)</td>
<td>62,607 (100%)</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Selecting the Best Potential Model Solution for HR2W List Systems (pg. 270)

Model assessed **BOTH** the long-term sustainability and resiliency of each potential model solution per system and estimated cost.

Sustainability and Resiliency Assessment (SRA) analyzed:
- O&M Costs per Connection
- Relative Operational Difficulty
- Operator Training Requirements
- Waste Stream Generation
## Number of Selected Model Solutions by System Type

<table>
<thead>
<tr>
<th>System Type</th>
<th># of Systems</th>
<th>Treatment</th>
<th>Physical Consolidation</th>
<th>POU/POE</th>
<th>Other Essential Infrastructure &amp; Technical Assistance</th>
<th>No Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR2W List</td>
<td>305</td>
<td>138 (45%)</td>
<td>61 (20%)</td>
<td>106 (35%)</td>
<td>305 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>At-Risk PWS</td>
<td>630</td>
<td>N/A</td>
<td>145 (23%)</td>
<td>N/A</td>
<td>630 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>At-Risk SSWS</td>
<td>455</td>
<td>N/A</td>
<td>142 (31%)</td>
<td>303 (67%)</td>
<td>N/A</td>
<td>10 (2%)</td>
</tr>
<tr>
<td>At-Risk Domestic Wells</td>
<td>62,607</td>
<td>N/A</td>
<td>25,696 (41%)</td>
<td>36,911 (59%)</td>
<td>N/A</td>
<td>0</td>
</tr>
</tbody>
</table>
## Estimated Capital Costs by System Type

<table>
<thead>
<tr>
<th>System Type</th>
<th># of Systems</th>
<th>Total Capital Cost Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR2W List</td>
<td>305</td>
<td>$887 M - $3,550 M</td>
</tr>
<tr>
<td>At-Risk PWS</td>
<td>630</td>
<td>$819 M - $3,280 M</td>
</tr>
<tr>
<td>At-Risk SSWS</td>
<td>445</td>
<td>$27 M - $106 M</td>
</tr>
<tr>
<td>At-Risk Domestic Wells</td>
<td>62,607</td>
<td>$548 M - $2,190 M</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td><strong>$2,280 M - $9,120 M</strong></td>
</tr>
</tbody>
</table>
### Estimated HR2W Capital Costs by System Size (number of service connections)

<table>
<thead>
<tr>
<th>System Type</th>
<th>3,300+</th>
<th>3,300 – 1,001</th>
<th>1,000 – 501</th>
<th>500 – 101</th>
<th>100 or less</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR2W List</td>
<td>$4,900</td>
<td>$6,800</td>
<td>$11,700</td>
<td>$18,200</td>
<td>$86,900</td>
</tr>
<tr>
<td>HR2W List Annual O&amp;M</td>
<td>$230</td>
<td>$320</td>
<td>$560</td>
<td>$300</td>
<td>$910</td>
</tr>
</tbody>
</table>
Total Long-Term Capital Costs by County
# Annual Long-Term O&M for HR2W List Systems

<table>
<thead>
<tr>
<th>Cost Type</th>
<th>Treatment</th>
<th>POU/ POE</th>
<th>O&amp;M Point Estimate Total</th>
<th>O&amp;M Range Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>$52.4 M</td>
<td>$1.60 M</td>
<td>$54.1 M</td>
<td>$24.0 M - $108 M</td>
</tr>
<tr>
<td>Average Cost Per Connection</td>
<td>$780</td>
<td>$1,500</td>
<td>$2,280</td>
<td>$1,140 - $4,560</td>
</tr>
</tbody>
</table>
### Estimated Interim Assistance Costs

<table>
<thead>
<tr>
<th>System Type</th>
<th>Total Systems Analyzed</th>
<th>Total First Year Cost Estimate</th>
<th>NPW Cost of Duration* of Interim Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR2W list</td>
<td>343</td>
<td>$216 M</td>
<td>$1,000 M</td>
</tr>
<tr>
<td>At-Risk SSWS</td>
<td>496</td>
<td>$18 M</td>
<td>$35 M</td>
</tr>
<tr>
<td>At-Risk Domestic Wells</td>
<td>59,370</td>
<td>$280 M</td>
<td>$547 M</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>514 M</strong></td>
<td><strong>$514 M</strong></td>
<td><strong>$1,580 M</strong></td>
</tr>
</tbody>
</table>

* 6 years for HR2W list systems and 9 years for At-Risk SSWS and domestic wells
Tribal Water System Cost Estimate

The total estimated capital costs to address both the tribal equivalent HR2W list and At-Risk is $98.3 million.

The estimated O&M cost for the three tribal water systems associated with a treatment solution for equivalent HR2W list systems is $152,000 per year, or $10 million dollars for 20 years.

The total estimated 6-year tribal emergency/interim equivalent estimated costs were $6.7 million.

These cost estimates were NOT included in the Funding and Financing Gap Analysis.
**Cost Assessment Model Process for HR2W Systems: Step 7**

**STEP 1**
Identification of HR2W Systems

**STEP 2**
Analyze Identified System Issues

**STEP 3**
Identify Possible Modeled Solutions

**STEP 4.a**
Evaluate Long-Term Sustainability & Resiliency of Solutions

**STEP 4.b**
Develop Cost Estimates for Possible Solutions

**STEP 5**
Select Best Possible Solution for Each System

**STEP 6**
Aggregate Estimated Modeled Costs for All Systems

**STEP 7**
Identify Funding Needs vs. Funding Gaps

*Community & System Data*
Funding Gap Analysis Objectives

Refine the estimated funding needed for modeled solutions for HR2W and At-Risk systems; and

Estimate the gap between the estimated needs and funding/financing availability.

These results help the State Water Board inform the broader demands of the SAFER Program as well as the annual funding needs for the Safe and Affordable Drinking Water Fund.
Overview of the Funding Gap Analysis Methodology

STEP 1
Determine Estimated Funding Needs and Funding Availability

Estimated Funding Needs
Estimated Funding Availability

STEP 2
Match Estimated Funding Needs to Funding Programs

- Physical Consolidation $
- Treatment $
- O&M $
- Interim & Emergency $
- Technical Assistance $

STEP 3
Determine Funding Gaps & Estimate Time to Meet Funding Needs

Tier 1 Priorities
Tier 2 Priorities

CALIFORNIA WATER BOARDS
SAFER PROGRAM
**Funding Gap Analysis Methodology: Step 1**

**STEP 1**

**Determine Estimated Funding Needs & Funding Availability**

1. **Cost Assessment** modeled solution estimates for HR2W & At-Risk systems
2. Remove needs that have already been addressed & may be covered by local cost share
3. Estimate potential funding needs over 1 yr. & 5 yr. time periods

4. Identify potential State & Federal funding programs
5. Determine potential funding program eligibilities to support modeled solutions
6. Estimate potential funding availability over 1 yr. & 5 yr. time periods
## Cumulative Projected Number of Systems

### 5-Year Inventory of Projected Projects

<table>
<thead>
<tr>
<th>System Type</th>
<th>2021</th>
<th>Projected* 5-Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR2W list</td>
<td>326</td>
<td>540 (47 new/yr.)</td>
</tr>
<tr>
<td>At-Risk PWS</td>
<td>617</td>
<td>1,200 (95 new/yr.)</td>
</tr>
<tr>
<td>At-Risk SSWSs</td>
<td>611</td>
<td>611 (no change)</td>
</tr>
<tr>
<td>At-Risk domestic wells</td>
<td>78,000</td>
<td>78,000 (no change)</td>
</tr>
</tbody>
</table>

* Projected “new” HR2W list and At-Risk systems are assigned the same proportion of modeled cost needs and community economic status.
Grant eligibilities are based on established State Water Board policies that examine project needs, community size, and community economic status (DAC/SDAC).

Developing Refined 5-Year Cost Estimates (1/4)

- Grant Eligible
- Not Grant Eligible (Local Cost Share)

Total Long-Term Solution Cost (Capital and O&M)
Developing Refined 5-Year Cost Estimates (2/4)

Loan eligibilities are based on established State Water Board policies that examine project needs, community size, and community economic status (DAC/SDAC).

Total Long-Term Solution Costs

NOT GRANT ELIGIBLE
(Local Cost Share)

STATE WATER BOARD (SWB) LOAN ELIGIBLE

NOT SWB LOAN ELIGIBLE
Developing Refined 5-Year Cost Estimates (3/4)

Additional Solution Implementation Costs:

- Capital costs met by a SWB or private loan will have interest payment costs.
- O&M costs (not covered by grant)

Total Long-Term Solution Costs NOT GRANT ELIGIBLE → Local Cost Share → Additional Solution Implementation Costs (Local Cost Share)
Developing Refined 5-Year Cost Estimates (4/4)

Total 5-Year Unrefined Long-Term & Interim Solution Costs

$10.25 Billion

Grant Eligible Costs: $3.25 Billion
Solutions implementation costs potentially covered by SWB.

Local Cost Share = $7 Billion
Solution implementation costs borne by water system customers or private well owners.

- $4.05 Billion Eligible for SWB Loans
- $2.95 Billion Not Eligible for SWB Loans (capital costs, includes O&M, interest payments)
## 5-Year Funding and Financing Availability ($ in Millions)

<table>
<thead>
<tr>
<th>State Water Board Fund</th>
<th>Yr. 1 Est. Fund Size</th>
<th>Cumulative Est. 5-Yr. Fund Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe and Affordable Drinking Water Fund (SADWF) (Grant)</td>
<td>$137</td>
<td>$593</td>
</tr>
<tr>
<td>Drinking Water State Revolving Fund (DWSRF) (Grant)</td>
<td>$120</td>
<td>$320</td>
</tr>
<tr>
<td><strong>DWSRF Loan Capacity</strong></td>
<td><strong>$ 300</strong></td>
<td><strong>$ 1,500</strong></td>
</tr>
<tr>
<td>Small Community Drinking Water Funding Program (Grant)</td>
<td>$275</td>
<td>$275</td>
</tr>
<tr>
<td>Emergency Drinking Water/Cleanup &amp; Abatement Account Programs – Urgent Drinking Water Needs Projects (Grant)</td>
<td>$9</td>
<td>$9</td>
</tr>
<tr>
<td>Water Board Household &amp; Small Water System Drought Assistance Program; CAA – DW Well Replacement Program (Grant)</td>
<td>$0.861</td>
<td>$0.861</td>
</tr>
<tr>
<td>Water System Administrator Program (Grant)</td>
<td>$8</td>
<td>$8</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>$850 M</strong></td>
<td><strong>$2,710 M</strong></td>
</tr>
</tbody>
</table>
Estimating Funding Availability: Non-SWRCB Funds

Non-SWRCB loan and grant programs that may be available to support SAFER projects have been identified (pg. 293)

A rough estimate of the aggregate, non-SWRCB funds potentially available to leverage with SWRCB funding in the future is provided.

Non-SWRCB funds were not incorporated into the Gap Analysis.
## Funding Gap Analysis Methodology: Step 2

### Match Estimated Funding Needs to Funding Programs

#### HR2W & At-Risk
- Physical Consolidation
- Treatment
- O&M
- Interim & Emergency
- Technical Assistance

#### DAC/SDAC: HR2W
- DAC/SDAC: At-Risk

#### HR2W & At-Risk
- Physical Consolidation
- Treatment

#### DAC/SDAC: At-Risk
- Interim & Emergency

#### DWSRF

#### Emergency DW Account
Funding Gap Analysis Methodology: Step 3

STEP 3

Determine Funding Gaps & Estimate Time to Meet Funding Needs

Funding Gap Based on SAFER Program Priorities

**Tier 1 Priorities**
- HR2W: Primary Violations $`
- HR2W & At-Risk: Consolidation $`
- Interim & Emergency $`

**Tier 2 Priorities**
- HR2W: Secondary Violations $`
- At-Risk Non-Consolidation $`
- Technical Assistance & O&M $`
5-Year Cumulative **Grant** Funding Needs & Funding Availability

- **Year 1**: $2,500 (Grant Funding Needs (Unmet Carry-Over))
- **Year 2**: $2,000 (Grant Funding Needs (Unmet Carry-Over))
- **Year 3**: $2,000 (Grant Funding Needs (Unmet Carry-Over))
- **Year 4**: $2,000 (Grant Funding Needs (Unmet Carry-Over))
- **Year 5**: $2,000 (Grant Funding Needs (Unmet Carry-Over))

**Legend**:
- **Grant Funding Needs (Unmet Carry-Over)**
- **New Annual Grant Needs**
- **Annual Grant Funding Availability**
Funding and Financing Gap Analysis Results Summary

When compared to the 5-year State Water Board grant and loan funds availability ($2.7 billion), there is a:

- Grant funding gap of $2.05 billion; and
- Financing (loan) gap of $2.55 billion.

$2.95 billion is not eligible for State Water Board loan or grant.

However, it is important to highlight that some of these needs may be met by other State and Federal funding programs. These programs have their own eligibility requirements and are outside the control of the State Water Board.
Discussion Topic: Cost Assessment & Gap Analysis

Do you have any questions or comments about the Cost Assessment & Gap Analysis Methodology and/or Results?

Ways to Participate:

1. Watch ONLY: Visit video.calepa.ca.gov
2. Email: Submit a comment or ask a question that will be read aloud, send an email to: safer@waterboards.ca.gov
3. Q&A: Submit a question using the Q&A feature at the bottom of your Zoom Screen. You can UPVOTE any question you would like answered.
4. Raise Hand: Attendees will be given the opportunity to provide verbal comment or ask questions, if you're interested in this option, please raise your virtual hand when the time is right.

- Please wait for your name to be called.
- Public comments are 3 minutes each.
Affordability Assessment Purpose

Identify disadvantaged community water systems, that have instituted customer charges that exceed the "Affordability Threshold" established by the State Water Board in order to provide drinking water that meets State and Federal standards.

Legislation does not define what the Affordability Threshold should be. Nor is there specific guidance on the perspective in which the State Water Board should be assessing the Affordability Threshold.
(1) **Household Affordability**: The ability of individual households to pay for an adequate supply of water.

(2) **Community Affordability**: The ability of households within a community to pay for water services to financially support a resilient water system.

(3) & (4) **Water System Financial Capacity**: The ability of the water system to financially meet current and future operations and infrastructure needs to deliver safe drinking water. The financial capacity of water systems affects future rate impacts on households.
Affordability Indicators and Thresholds

% Median Household Income: average residential customer charges for 6 hundred cubic feet per month meet or exceed 1.5% (min. thresholds) or 2.5% (max. threshold) of the annual Median Household Income within a water system’s service area.

Extreme Water Bill: customer charges that meet or exceed 150% (min. threshold) or 200% (max. threshold) of statewide average drinking water customer charges at the 6 hundred cubic feet level.

% Shut-Offs: 10% or more of a water system’s residential customer base experienced service shut-offs due to non-payment in 2019.
Water Systems Assessed: Community Water Systems

<table>
<thead>
<tr>
<th>SAFER Program Status</th>
<th>Risk Assessment</th>
<th>Affordability Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR2W List System</td>
<td>326</td>
<td>276</td>
</tr>
<tr>
<td>At-Risk Public Water System</td>
<td>617</td>
<td>467</td>
</tr>
<tr>
<td>Not HR2W or At-Risk System</td>
<td>1,836</td>
<td>2,134</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>2,779</strong></td>
<td><strong>2,877</strong></td>
</tr>
</tbody>
</table>

State Small Water Systems and Domestic Wells were NOT included in the Affordability Assessment.
Results per Affordability Indicator, Exceeding Min. Affordability Threshold

Number of Water Systems Exceeding Min. Threshold

- %MHI: 121 DAC, 313 SDAC, 0 Non-DAC
- Extreme Water Bill: 113 DAC, 122 SDAC, 0 Non-DAC
- % Shut-Offs: 35 DAC, 62 SDAC, 0 Non-DAC
Access the Affordability Assessment Results and Raw Data

Download the Affordability Assessment Results Spreadsheet:

This spreadsheet will be updated periodically with data refreshes.
Water System Data Change Request

See something that isn’t right? Water systems can submit a data change request here: https://bit.ly/3t9XgTg

Requests will be reviewed by State Water Board staff.
Conclusions
The Needs Assessment is designed to be conducted annually. The methodologies will be further refined as the SAFER Program develops and additional data becomes available.
Needs Assessment Refinement Opportunities

- Improved data
- Better alignment across Needs Assessment components
- Focused scope
- Expanded outreach to Tribal water systems
- Alignment with other State efforts
- Refinement of Affordability Assessment
- Learning by doing and continued public engagement
Next Steps and Announcements
# SAFER Timeline*

<table>
<thead>
<tr>
<th>Month</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>April - June</td>
<td>4/20 Board Update: Needs Assessment</td>
</tr>
<tr>
<td></td>
<td>4/22 Advisory Group Mtg.</td>
</tr>
<tr>
<td></td>
<td>5/27 SAFER Summer Series Kick-Off</td>
</tr>
<tr>
<td></td>
<td>6/TBD Draft FEP Released</td>
</tr>
<tr>
<td></td>
<td>6/8 Tribal Workshop: Central CA</td>
</tr>
<tr>
<td></td>
<td>6/10 Advisory Group Mtg.</td>
</tr>
<tr>
<td></td>
<td>6/17 Tribal Workshop: North. CA</td>
</tr>
<tr>
<td></td>
<td>6/17 Community Workshop</td>
</tr>
<tr>
<td></td>
<td>6/22 Tribal Workshop: South. CA</td>
</tr>
<tr>
<td>July - September</td>
<td>7/TBD FEP Finalized</td>
</tr>
<tr>
<td></td>
<td>7/6 Advisory Group Application Window Opens</td>
</tr>
<tr>
<td></td>
<td>8/4 Advisory Group Application Workshop</td>
</tr>
<tr>
<td></td>
<td>8/17 Board Considers Adoption of FEP</td>
</tr>
<tr>
<td></td>
<td>9/16 Advisory Group Mtg.</td>
</tr>
<tr>
<td></td>
<td>9/30 Advisory Group Application Window Closes</td>
</tr>
<tr>
<td>October - December</td>
<td>10/TBD Stakeholder Affordability Discussions</td>
</tr>
<tr>
<td></td>
<td>11/18 Advisory Group Mtg.</td>
</tr>
<tr>
<td></td>
<td>12/TBD Advisory Group Members Selected</td>
</tr>
</tbody>
</table>

* Timeline does not include future Needs Assessment refinement workshops. Scheduling coming soon.
Immediate Next Steps

• Water system data change requests:
  • https://bit.ly/3t9XgTg

• General feedback on the Needs Assessment results and methodologies:
  • Submit feedback to: SAFER@waterboards.ca.gov
  • Please submit feedback on the report by **07.01.2021**
  • Respond to survey questions here: https://bit.ly/2OH58wm
Audience Poll Question 3

Would you be interested in training sessions on how to navigate the Risk Assessment and Affordability Assessment assessment spreadsheets?

• Yes
• No
• Maybe, I haven’t looked at them yet

Risk Assessment Results Spreadsheet: https://bit.ly/3d0XxSF

Affordability Assessment Results Spreadsheet: https://bit.ly/3d3jmkC
Discussion Topic: Open Q&A

Do you have any questions or comments about the Needs Assessment?

Ways to Participate:

1. Watch ONLY: Visit video.calepa.ca.gov
2. Email: Submit a comment or ask a question that will be read aloud, send an email to: safer@waterboards.ca.gov
3. Q&A: Submit a question using the Q&A feature at the bottom of your Zoom Screen. You can UPVOTE any question you would like answered.
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• Please wait for your name to be called.
• Public comments are 3 minutes each.
THANK YOU