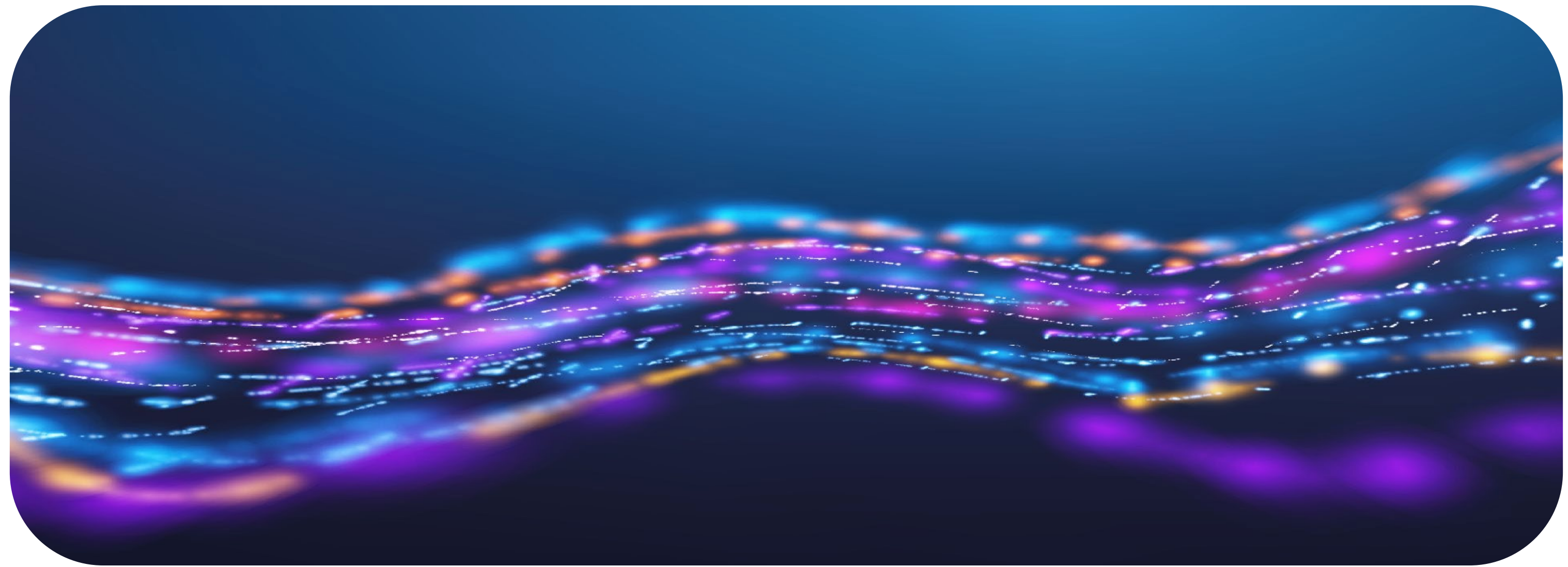




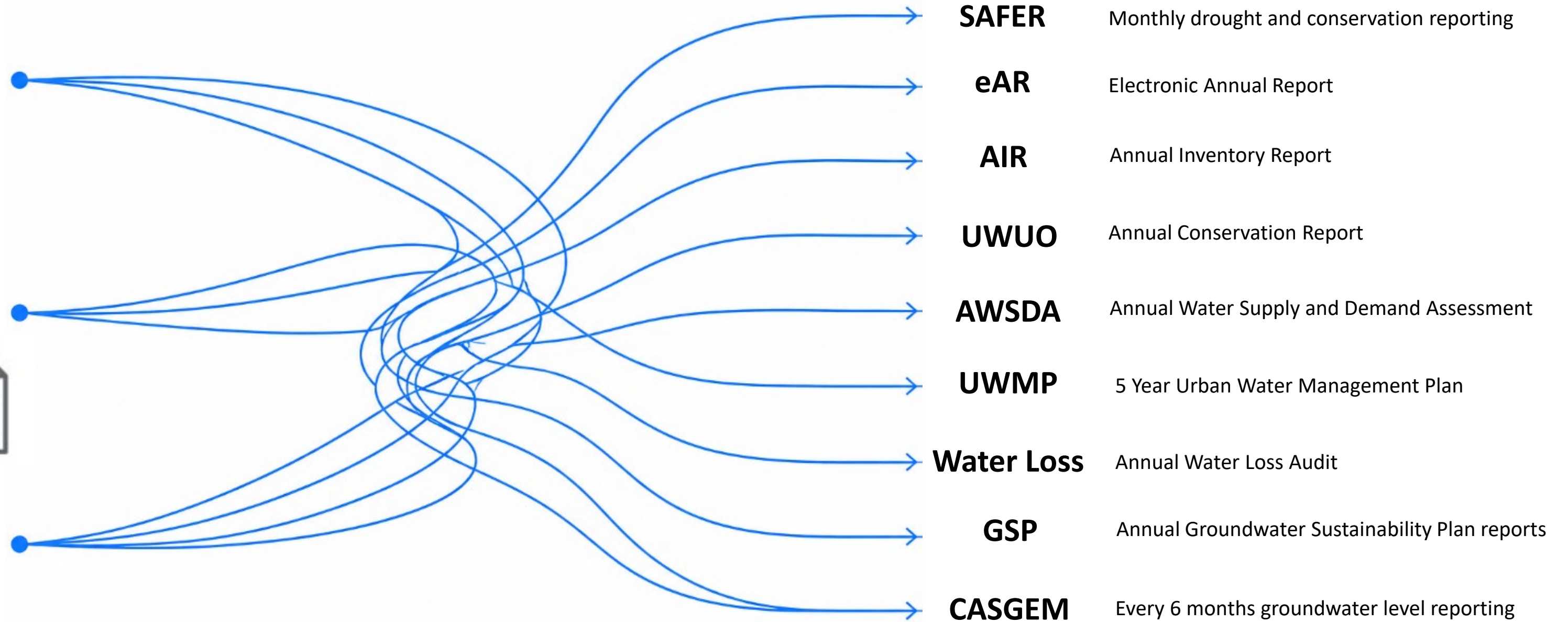
Initiative to Streamline Water Data Reporting in CA

CALIFORNIA'S WATER REPORTING CHALLENGE



Water supply and use data is vital for understanding trends, needs, and future planning. Yet these data are often unavailable in the timeframes or formats needed for real-world management. Inconsistencies in definitions, processing methods, and quality assurance hinder timely interpretation and regional aggregation.

RAW DATA



SAFER Monthly drought and conservation reporting

eAR Electronic Annual Report

AIR Annual Inventory Report

UWUO Annual Conservation Report

AWSDA Annual Water Supply and Demand Assessment

UWMP 5 Year Urban Water Management Plan

Water Loss Annual Water Loss Audit

GSP Annual Groundwater Sustainability Plan reports

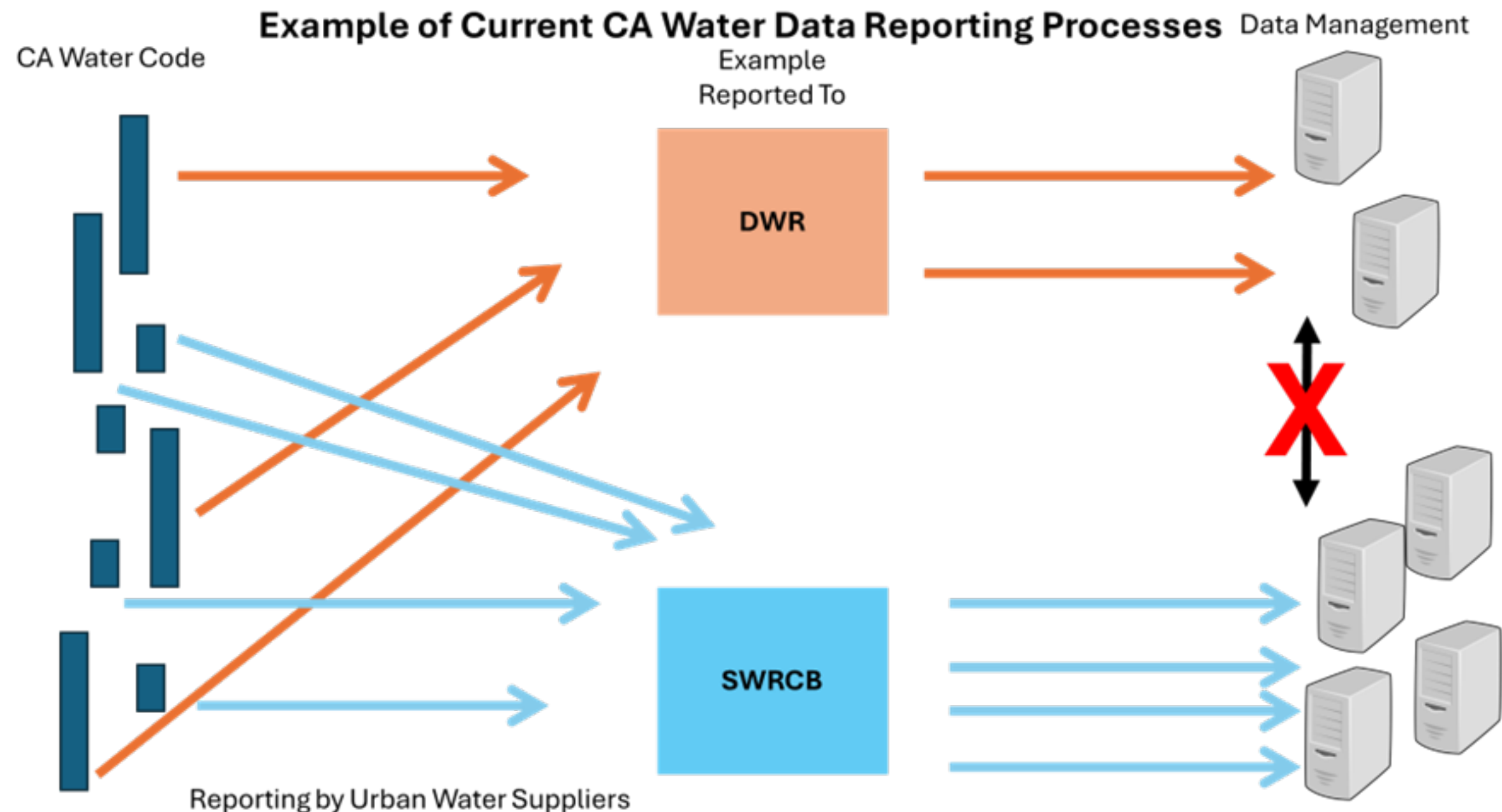
CASGEM Every 6 months groundwater level reporting

CURRENT DATA REPORTING



Across California's water sector, immense effort is spent collecting and reporting the same data in slightly different formats and timelines - each shaped by past legislation, agency priorities, and fragmented systems.

- REDUCED DATA QUALITY DUE TO INCONSISTENT DEFINITIONS
- QUESTIONED VALUE OF SUBMITTED DATA THAT APPEARS UNUSED OR INCONSISTENTLY APPLIED
- LIMITED QUALITY AND VISIBILITY IN REAL-TIME WATER CONDITIONS
- THE PROCESS REMAINS PIECEMEAL AND INEFFICIENT



MISSION



To streamline California's water data to improve efficiency, increase data confidence, and deliver data that matter. By expanding on and align decades of effort by the state, local agencies, and non-profits to bring to life the vision of AB 1755, the Open and Transparent Data Act, to modernize data collection and sharing with high quality, clear, consistent, and accessible data needed for resilient water management.

CALIFORNIA'S WATER REPORTING SYSTEM SHOULD:



**INFORM THE
PUBLIC**



**STRENGTHEN
EMERGENCY RESPONSE**



**PROVIDE ACTIONABLE
INSIGHTS & REPORTING**



**SUPPORT PLANNING &
INVESTMENT**



**STRENGTHEN LOCAL
CAPACITY**



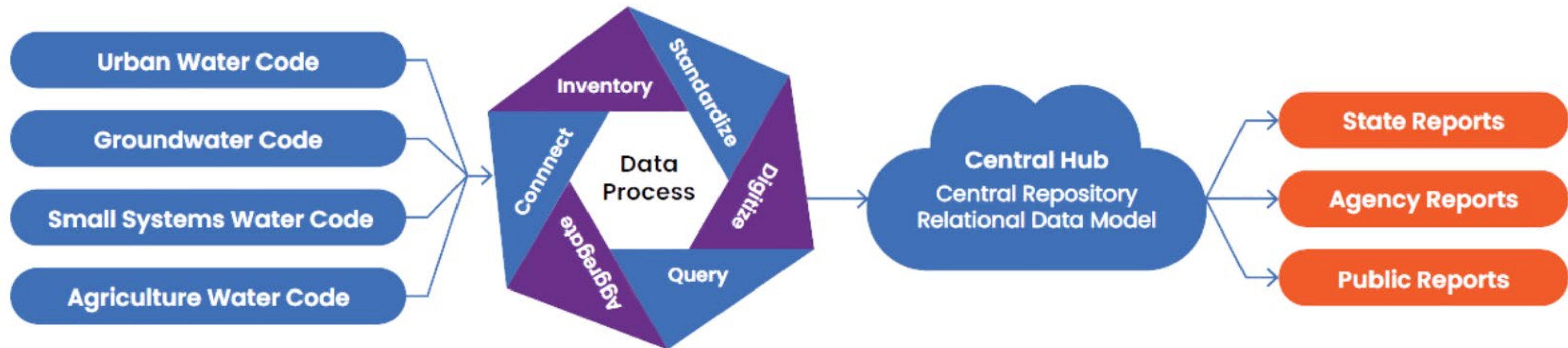
**ENABLE EQUITY &
TRANSPARENCY**

LONG-TERM VISION



Developed through a collaborative listening tour, this Initiative's vision is to create a streamlined data system, a one-stop shop, that is agile, straightforward, and equitable, ensuring the data provided to the State answers legislative questions, strengthens both local and state capacity, and is accessible and transparent.

California's Vision for Streamlined Water Data



WATER AGENCIES



Collect and manage
local water data

STATE AGENCIES

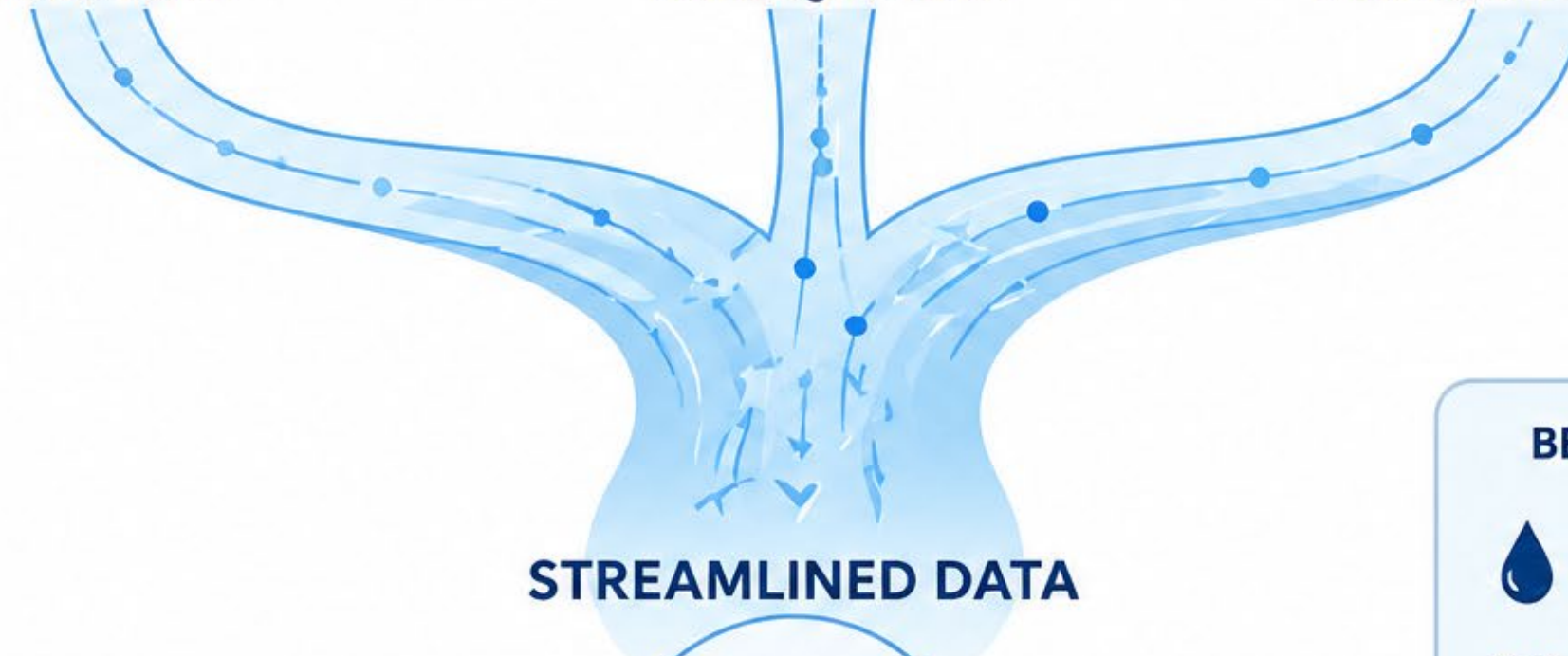


Oversee, standardize,
and integrate data

WATER CODE



Establish requirements
and ensure consistency



STREAMLINED DATA



Accurate. Consistent.
Accessible. Actionable.

BETTER OUTCOMES

-  Improved water management
-  Informed decisions
-  Operational efficiency
-  Stronger compliance

EVERYONE PLAYS A PART IN BETTER DATA.

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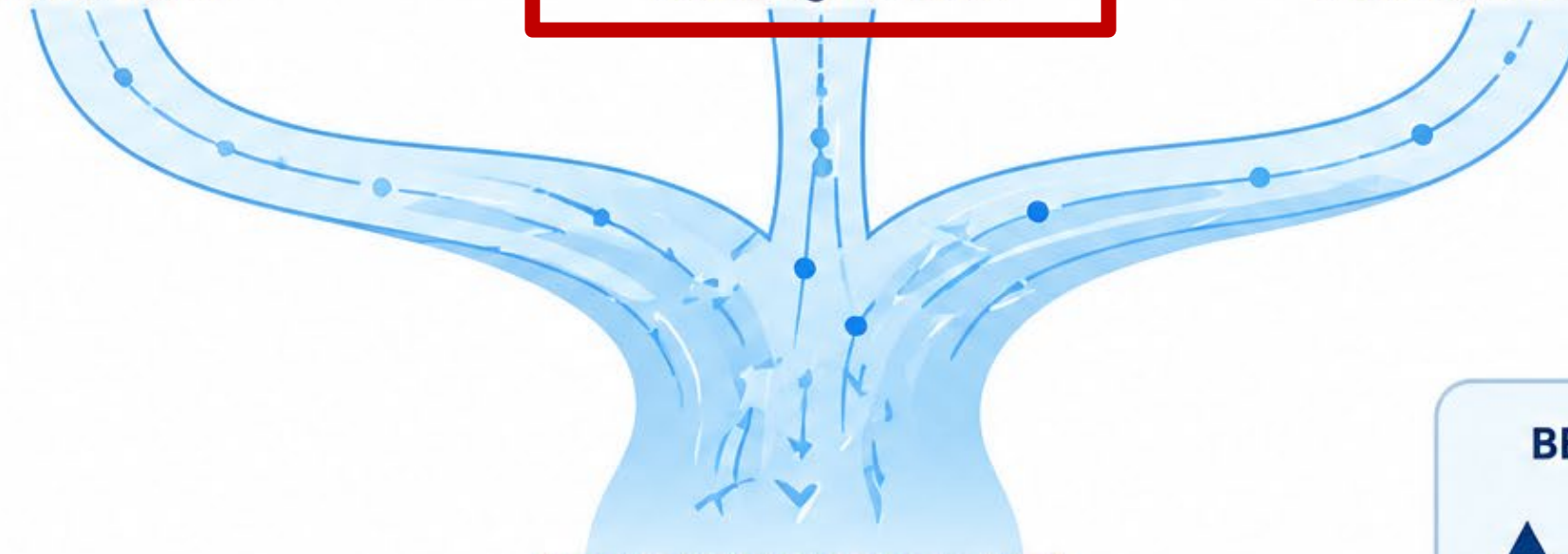


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2022 Regulatory Streamlining Effort



In partnership with DWR, State Water Resources Control Board, and reporting entities, the California Water Data Consortium worked to align urban water supply data to:

- Reduce reporting burden
- Expand data access and reuse
- Improve data quality

2022 Approach



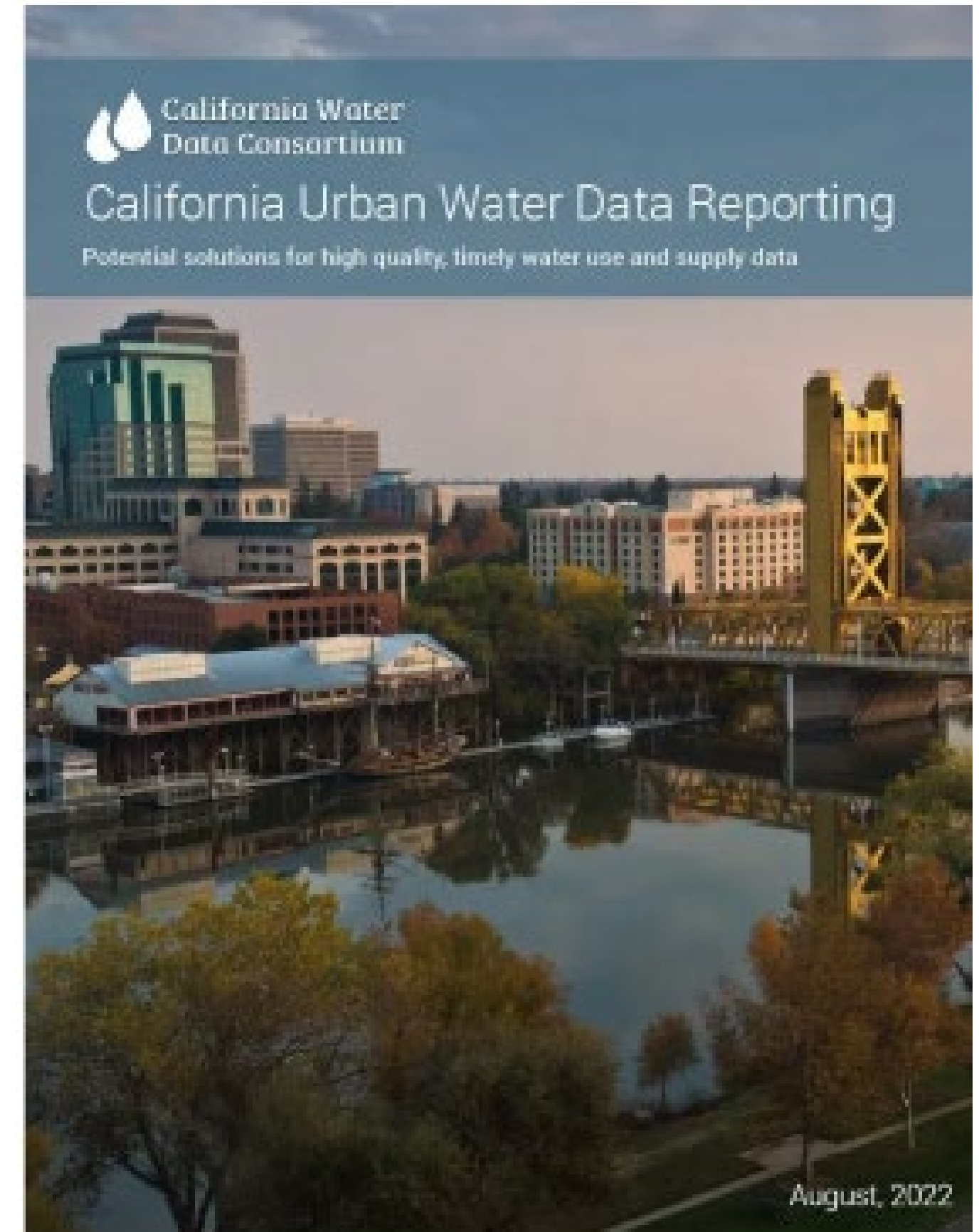
Understand the legal and regulatory reporting requirements



Understand the data reporting challenges



Collaborative solutions



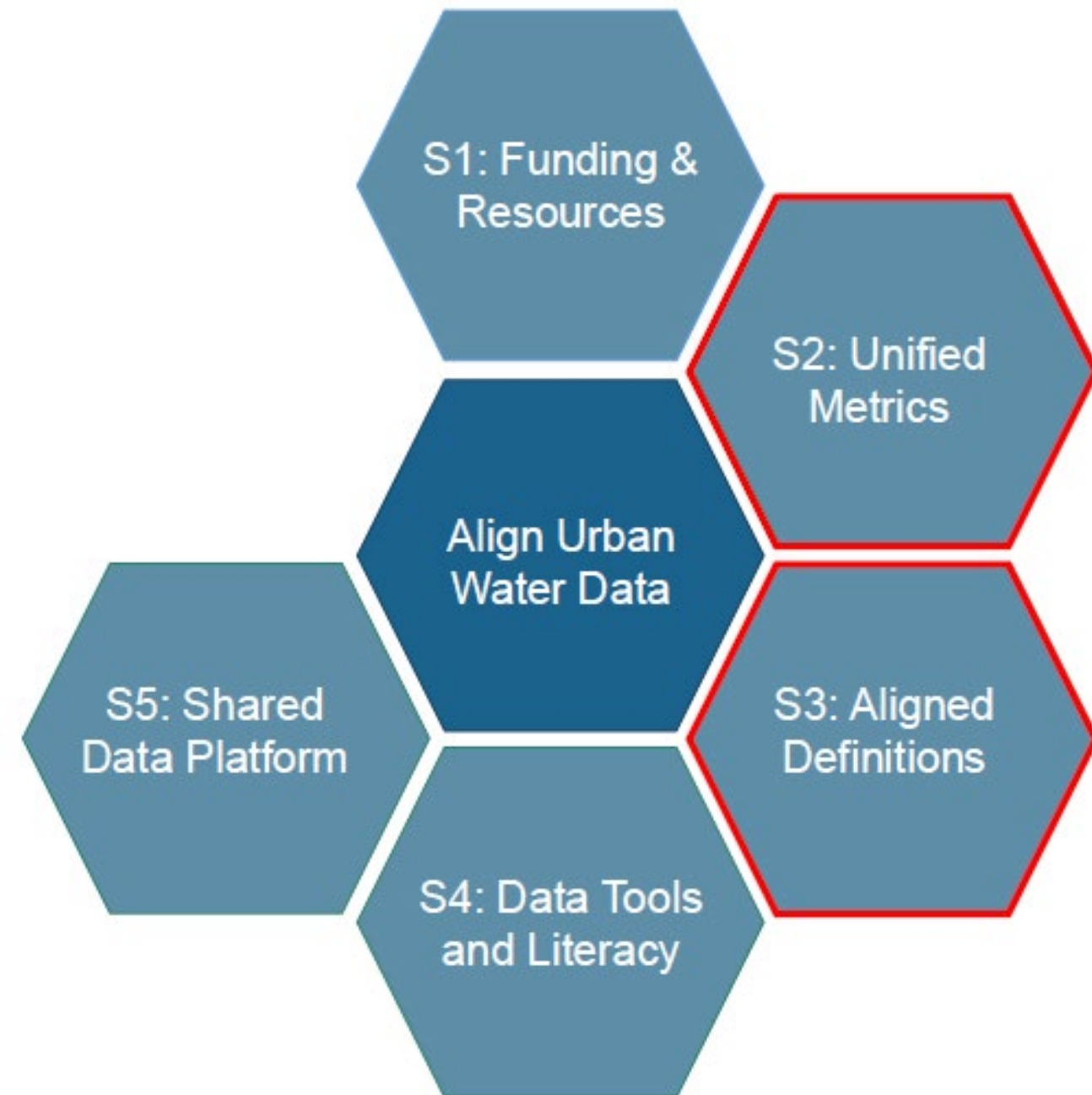
2022 California Urban Water Data Reporting [report](#).

Reporting Challenges Identified

1. Lack of clarity in reporting definitions and terminology
2. Redundancies in urban water data reporting requirements
3. Inconsistent reporting deadlines and intervals
4. Resource constraints
5. Limited flexibility in regulatory requirements
6. Low data quality



Potential Solutions Identified



Making Urban Water Data Public and Useful for Understanding Drought Impacts

Ensuring proactive, timely, and locally relevant responses to drought and water scarcity is critical to public health and safety in California. The **Urban Water Data Project** aims to improve how state agencies make existing data available and usable. The **Drought Impacts** portion of this project will show how making urban water data publicly available could improve drought management for Californians.

Background

The California Water Data Consortium works with the Department of Water Resources and the State Water Resources Control Board to support the implementation of the **Open and Transparent Water Data Act (AB 1750)**.

The Urban Water Data Project aims to improve access to and use of urban water data in the face of critical management decisions. These data include water supply and demand information, data needed for drought and water scarcity indicators and the urban water use objectives were identified as priorities for publication.

Current drought messaging is fragmented and confusing. For example, generalized conservation statements by the media or the state about the severity of drought can be at odds with the actual data that local urban water suppliers report and forecast. Such conflicts can lead to frustration and distrust among the public. As a result, customers may not conserve water when it is critical to avoid supply shortages.

Despite the abundance of data that urban water suppliers are required to report, these data are not easily available.

[Making Urban Water Data Public and Useful for Understanding Drought Impacts](#)

OVERVIEW

Urban Water Data Reporting Summary Sheet

California Water Data Consortium

Effective January 1, 2024, California's Open and Transparent Water Data Act (AB 1750) requires the development and reporting of urban water data. This summary sheet provides a high-level overview of the data required to be reported by urban water suppliers (UWSs) and the data that will be made publicly available.

This summary sheet is intended for use by UWSs to understand the data requirements and to identify any data gaps or challenges. It is not intended to be a substitute for the full regulatory requirements or for the data reporting process itself.

The following table provides a summary of the data requirements for public water suppliers and other water suppliers in California, as required by the Open and Transparent Water Data Act (AB 1750). The table is organized by data type and by the reporting requirements for each type of data.

Reporting Requirement	Reporting Entity	Data Requirements	Data to be Reported	Reporting Frequency
Public Water Suppliers (PWSs)	Public Water Suppliers	Water supply and demand data, including water supply, water demand, and water conservation data.	Water supply and demand data, including water supply, water demand, and water conservation data.	Quarterly
Other Water Suppliers (OWSs)	Other Water Suppliers	Water supply and demand data, including water supply, water demand, and water conservation data.	Water supply and demand data, including water supply, water demand, and water conservation data.	Quarterly
Water Conservation Data	Water Conservation Data	Water conservation data, including water conservation measures, water conservation programs, and water conservation results.	Water conservation data, including water conservation measures, water conservation programs, and water conservation results.	Quarterly
Water Quality Data	Water Quality Data	Water quality data, including water quality parameters, water quality monitoring, and water quality results.	Water quality data, including water quality parameters, water quality monitoring, and water quality results.	Quarterly
Water Use Data	Water Use Data	Water use data, including water use parameters, water use monitoring, and water use results.	Water use data, including water use parameters, water use monitoring, and water use results.	Quarterly
Water Conservation Programs	Water Conservation Programs	Water conservation programs, including water conservation measures, water conservation programs, and water conservation results.	Water conservation programs, including water conservation measures, water conservation programs, and water conservation results.	Quarterly
Water Quality Monitoring	Water Quality Monitoring	Water quality monitoring, including water quality parameters, water quality monitoring, and water quality results.	Water quality monitoring, including water quality parameters, water quality monitoring, and water quality results.	Quarterly
Water Use Monitoring	Water Use Monitoring	Water use monitoring, including water use parameters, water use monitoring, and water use results.	Water use monitoring, including water use parameters, water use monitoring, and water use results.	Quarterly

Reporting frequency is based on the type of data. For example, water supply and demand data are reported quarterly, while water conservation data are reported annually. The table is intended to provide a high-level overview of the data requirements and is not intended to be a substitute for the full regulatory requirements or for the data reporting process itself.

[California Urban Water Data Reporting Info Sheet 1: Overview](#)

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WATER CODE



Establish requirements
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STREAMLINED DATA



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BETTER OUTCOMES

-  Improved water management
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-  Stronger compliance

EVERYONE PLAYS A PART IN BETTER DATA.

Digital Analytics Solution

- Smart water engine + modules
- Dashboards for numerous use cases

Clean, Structured Data Core

- Syncs time series & integrates asset data
- SCADA historian for operational data
- Accessible with data science tools

Data Governance Framework

- People, process, & collaboration
- Defines standards & terms
- Manages metadata & SOPs
- Data stewardship & accountability

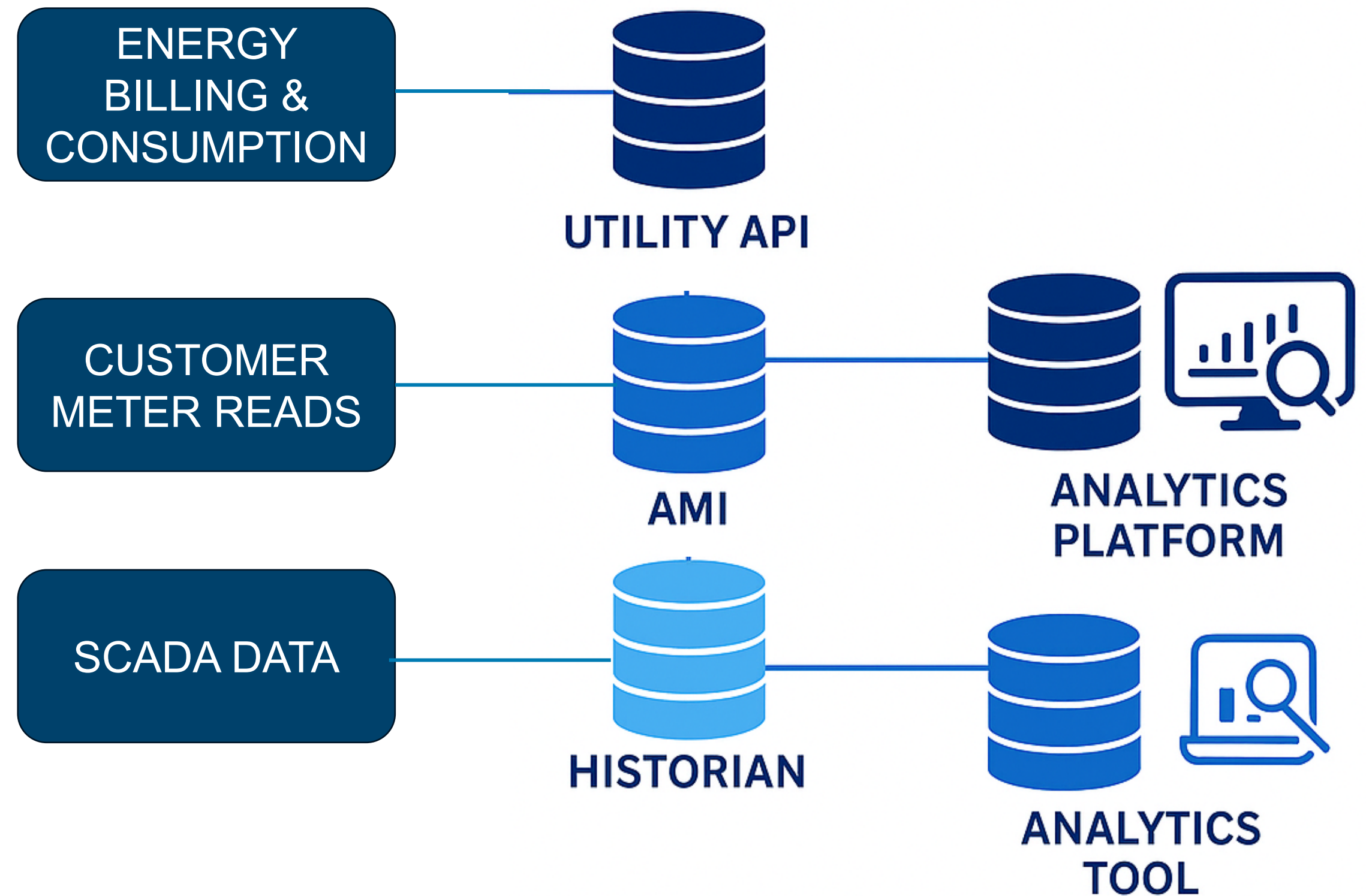
Foundational Data Governance

Governance provides the *foundational framework* of a modern digital ecosystem

- Data Governance Framework & Principles
- Data Ownership, Stewardship, & Accountability Model
- Data Sensitivity & Classification Levels
- PRA Alignment & Internal Handling Rules
- Access, Use, & Sharing Guidelines (incl. analytics & AI)
- Change management & active data governance

System & Architecture Documentation

- Enterprise system inventory
- System of record definitions
- Architecture diagrams (as-is/to be)
- Integrations & connectors
- Data storage locations



Key Stewardship Roles

- **Outcome:** Shared accountability across the lifecycle.
- **BLUE Connection:** Defines the *People* pillar—roles, accountability, and upskilling.



Data Originators / Producers:
Field crews, operators, E&I staff



Data Owners:
System-level responsibility (AMI, SCADA, GIS, CMMS, Energy)



Data Stewards:
Ensure system workflows, metadata, governance compliance



Data Consumers:
Operations, engineering, compliance, finance, management



Data Scientists / Analysts:
Build dashboards, models, QA pipelines

Standardized Naming

Business Glossary

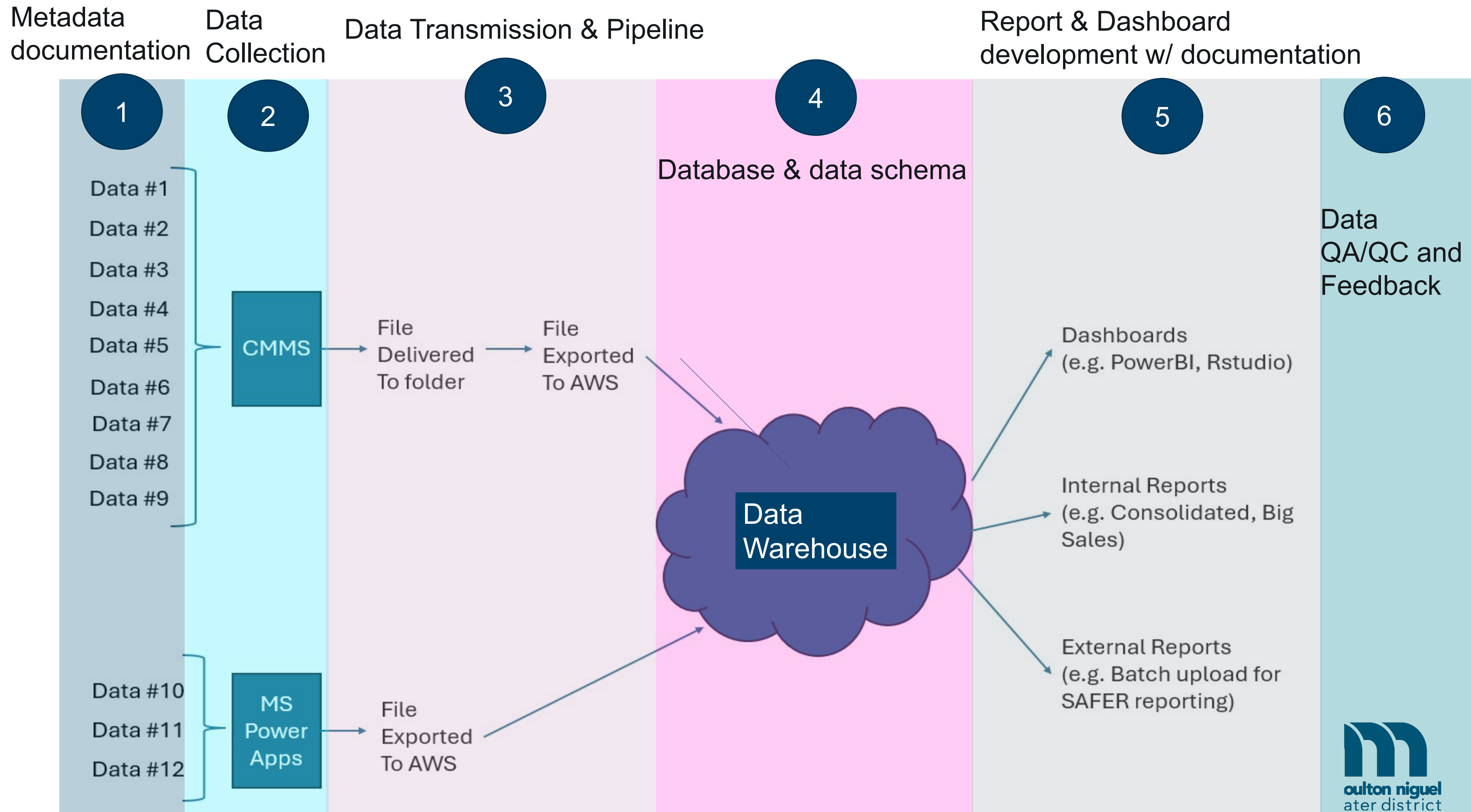
“What We Mean When We Say...”

- Defines business terms used across the organization
- Establishes a single definition & identifies aliases
- Enables cross-department alignment
- Business-facing

Data Dictionary

“What It Means in the Data Sheet”

- Documents how business concepts appears in systems
- Connects fields, units, data types, & sources systems
- Enables high quality analytics
- Technical-facing



Applying this all to ISWDR

How can we help local agencies help themselves to streamline reporting?

Increase local capacity through:

- Education
- Documenting best practices
- Technical assistance

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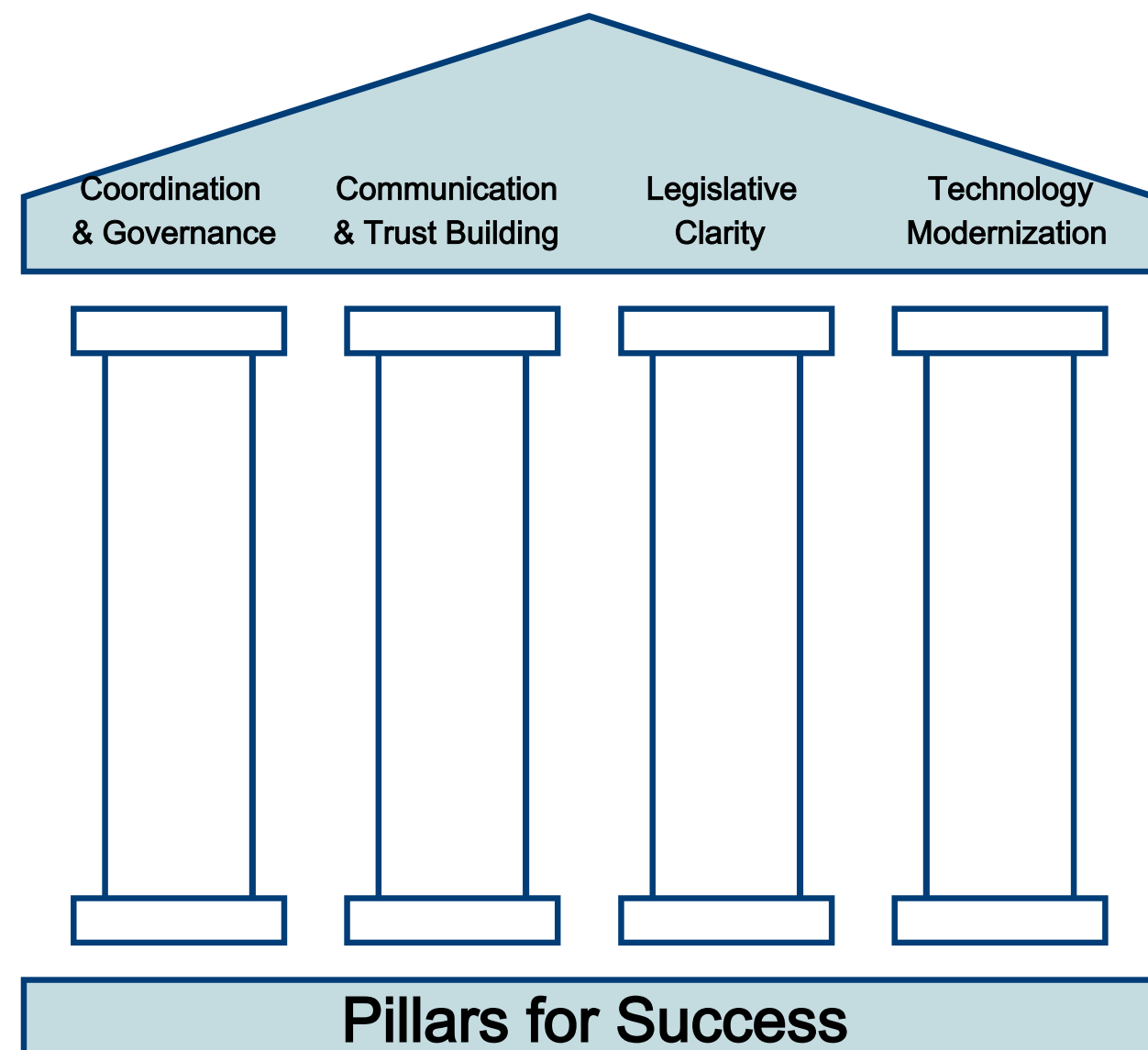
-  Improved water management
-  Informed decisions
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EVERYONE PLAYS A PART IN BETTER DATA.

APPROACH & SCOPE



Connecting people, policy, and technology, this effort works to reimagine how California's water data is shared and used. Through coordinated engagement with state agencies, local suppliers, consultants, and partners, **we are moving from recommendations* to action:**



- **Engaging with all users:** Coordinating with state agencies, local suppliers, and partners to build trust, transparency, and long-term collaboration.
- **Developing aligned metrics:** Understanding data fields collected across all reports and identify avenues for consolidation;
- **Aligning reporting definitions & terminology** : Creating one unified data dictionary across all water-related reports;
- **Supporting data literacy & tools:** Providing technical assistance, training, and resources to improve internal data management;
- **Developing a shared data portal:** Piloting streamlined reporting recommendations in partnership with state and local agencies

*Building from the California Water Data Consortium's 2022 California Urban Water Data Reporting [report](#).

ANALYZING THE WATER CODE



Using an AI Tool that analyzes Legislation, developed by Caldera, the **ISWDR CA** examined over **30,500 provisions** across the California Code (statutes) and the California Code of Regulations (CCR), identifying **4,113 distinct water reporting requirements drawn from 2,673 unique statutory and regulatory provisions**.

The search used intentionally broad keyword filters requiring each provision to mention at least one **water-related term** (water, wastewater, groundwater, stormwater, discharge, effluent, sewage, irrigation, flood, NPDES, TMDL, etc.) AND at least one **reporting-related term** (report, submit, transmit, notify, monitoring, compliance, annual, quarterly, etc.). This produced ~30,380 candidate provisions.

An LLM processor then evaluated each provision against strict criteria, requiring:

- 1. **A substantive water nexus** — the reporting requirement must relate to water in a meaningful way (not just incidentally)
- 2. **A mandatory reporting obligation** — the provision must actually require submission of a report, data, notification, or disclosure to an external recipient
- 3. **An identifiable reporter and recipient** — the provision must specify who reports and who receives it

Metric	Value
Total reporting requirements identified	4,113
Unique source provisions	2,673
From California Code (statutes)	1,651 entries
From California Code of Regulations	2,462 entries
Provisions with sunset/expiration	176 (4.3%)
Provisions without sunset	3,933 (95.6%)



ANALYZING THE WATER CODE

ISWDR CA's Analysis:

- Identified 4,113 distinct water reporting requirements
- Drawn from 2,673 unique statutory and regulatory provisions.

Report Type	Count	Share
Plan or Assessment	1,030	25.0%
Event Notification	837	20.4%
Data Submission	710	17.3%
Compliance	471	11.5%
Monitoring	353	8.6%
Legislative Report	340	8.3%
Public Disclosure	311	7.6%
Other	61	1.5%

ANALYZING THE WATER CODE



ISWDR CA’s Analysis

Frequency	Count	Share
Event-Triggered	2,023	49.2%
One-Time	861	20.9%
Periodic (Other)	500	12.2%
Annual	489	11.9%
Monthly	68	1.7%
Not Specified	70	1.7%
Quarterly	62	1.5%
Biennial	40	1.0%

Water Topic	Count
Water Quality	2,519
Water Infrastructure	1,020
Groundwater	1,014
Drinking Water	743
Wastewater / Sewage	660
Water Supply / Conservation	598
Coastal / Ocean	532
Other	511
Wetlands / Habitat	343
Flood Control	285
Stormwater / Runoff	282
Water Rights / Diversion	271
Recycled Water	266
Dams / Reservoirs	141
Irrigation / Agriculture	140

ANALYZING THE WATER CODE



ISWDR CA's Analysis

Recipient	Count
State Water Resources Control Board (various name forms)	~381
Department of Water Resources	~160
Regional Water Quality Control Board	~149
Legislature	~89
Department of Toxic Substances Control	~80
Public (website posting, public disclosure)	~48
Administrator, Office of Spill Prevention and Response	~25
State Lands Commission	~21
Division of Oil, Gas, and Geothermal Resources	~20
Office of Operator Certification	~20
Central Valley Flood Protection Board	~19

Reporting Entity	Count
Department of Water Resources	~106
State Water Resources Control Board	~68
Public water systems	~39
Direct Potable Reuse Responsible Agency	~39
Regional Water Quality Control Board	~19
Urban water suppliers	~31
GRRP project sponsors	~41
Department of Fish and Wildlife	~14
Groundwater Sustainability Agencies	~12
Department of Forestry and Fire Protection	~12

ANALYZING THE WATER CODE

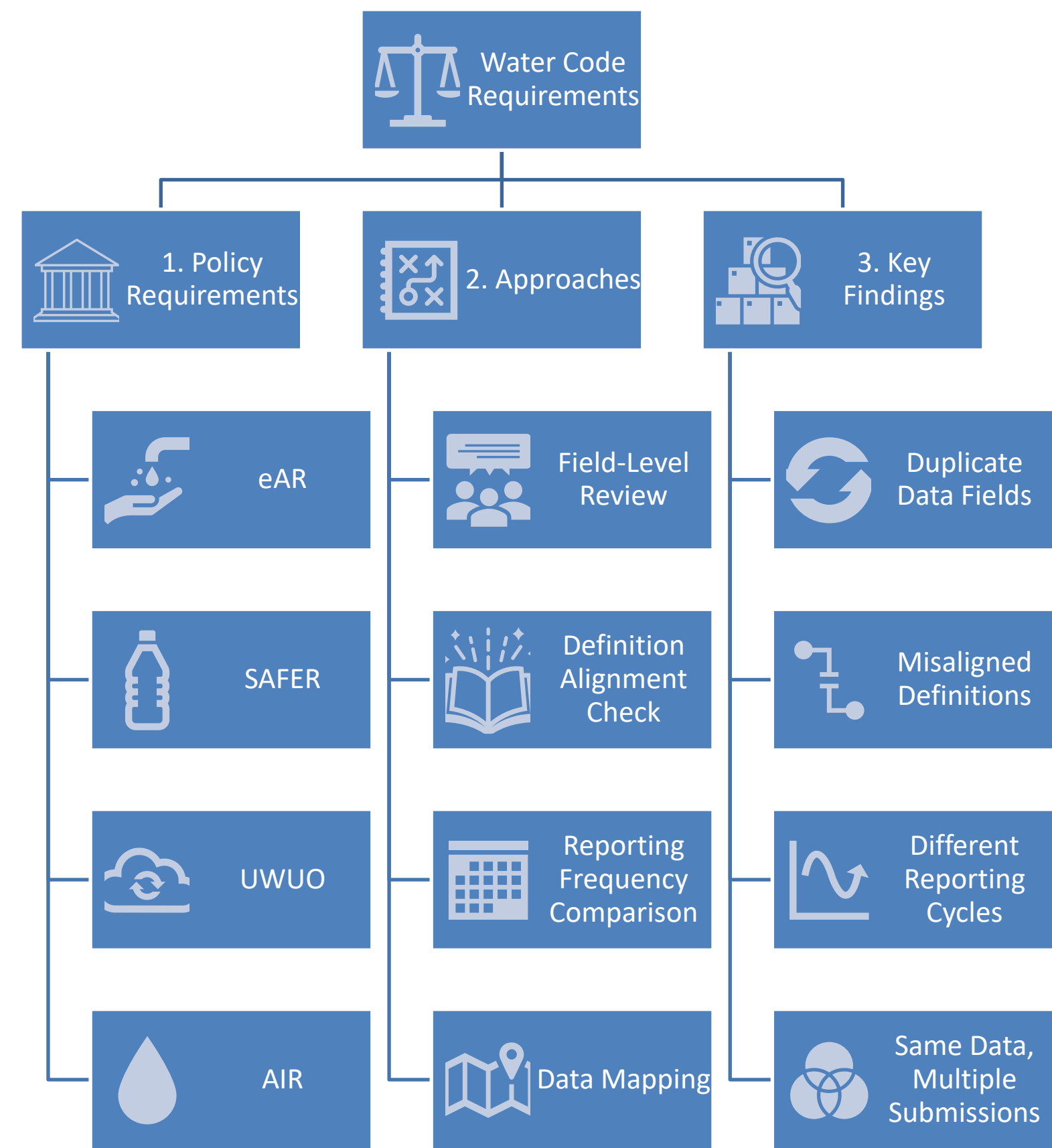


Key Observations in Water Code:

1. **Water reporting is pervasive across California law.** Requirements were found in 21 of 29 statutory codes and across nearly every CCR title. Any effort to catalog or streamline water reporting must look well beyond the Water Code and Title 23.
2. **Nearly half of all requirements are event-triggered.** These are driven by incidents, applications, or threshold events rather than fixed schedules — making them harder to track systematically but no less important for compliance.
3. **The State Water Resources Control Board is the central hub.** It is both the largest recipient of water reports and one of the largest reporters itself, reflecting its dual role as regulator and implementer.
4. **Very few requirements sunset.** Only 4.3% of identified requirements have explicit expiration dates, suggesting that the body of water reporting obligations has grown steadily over time with limited pruning.
5. **Plans and assessments are the largest category.** One in four requirements involves submitting a plan, assessment, or study — reflecting California's planning-oriented approach to water management.
6. **Regulations generate more reporting requirements than statutes.** The CCR contributes 60% of all identified requirements, underscoring that much of the operational reporting burden is defined at the regulatory rather than statutory level.

FROM WATER CODE TO REPORTING REALITY

Exploring Duplicative Reporting:



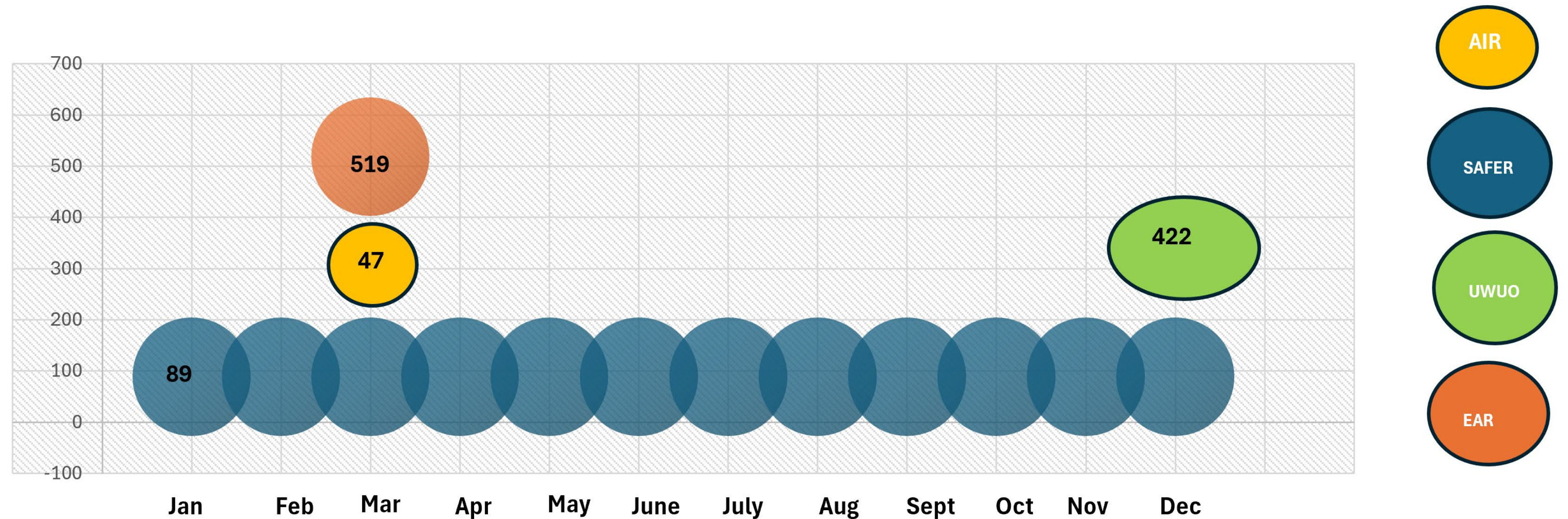
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DEVELOPING A REPORTING MATRIX



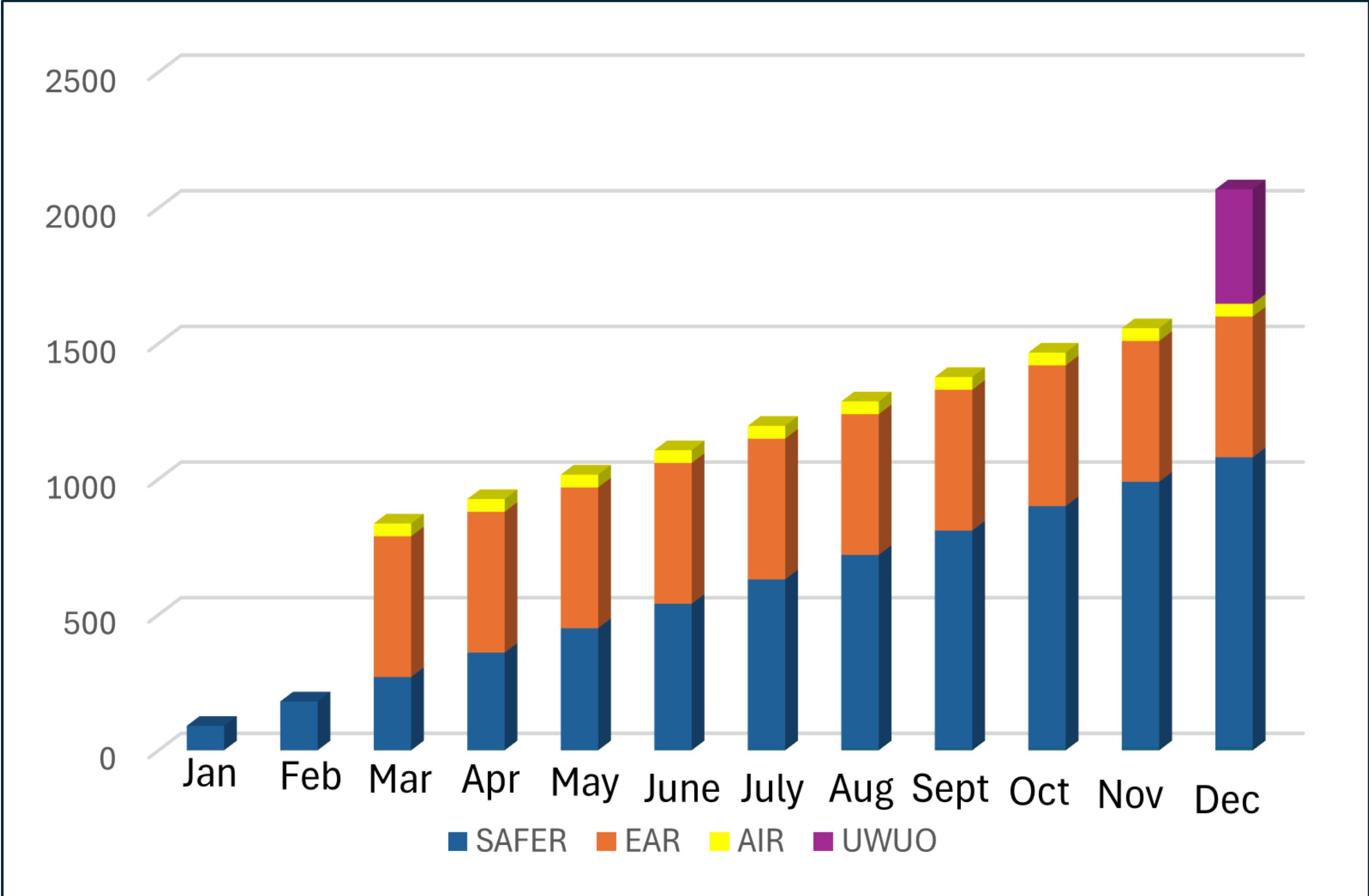
Category Name	Definition	Classifications
Field Type	The primary thematic domain of the reporting question; what the question is about.	Supply, Demand, Loss / Water Loss Control, Connections, Financial & Billing, Resilience & Emergency Preparedness, Climate Adaptation, Operational Management, Population, System ID/Characteristics, Other
Water Type	The type of water relevant to the reporting question.	Potable, Non-Potable, Recycled, Wastewater, Groundwater, Surface Water, Mixed, Raw, All, Other, N/A
Customer / Use Type	The customer class, land use sector, or end use category to which the data refers.	Residential, SF Residential, MF Residential, Commercial, Industrial, Institutional, Landscape/Irrigation, Agriculture, Mixed, All, Other
Data Type	The structural format or nature of the data expected.	Numeric — Count, Numeric — Volume, Numeric — Financial, Numeric — Identifier (Tag or ID name), Text (Descriptive), Alpha-Numeric, Date, Boolean (yes/no), UOM Metadata, Other
Unit of Measure (UOM)	The physical or administrative unit used for quantifying the data.	Gallons, Acre-Feet, Million Gallons, CCF / HCF, Square Feet, Dollars (\$), Miles, Percent (%), Chose UOM, Miles, inches/year, Other
Reporting Period	The time interval the value represents; all reporting questions must align with an established reporting cycle.	Calendar Year, State Fiscal Year, Federal Fiscal Year, Monthly, Seasonal, Multi-Year, Point-in-Time (static identifiers, addresses, names, etc.), Other
Question/Entry Type	The input structure or format used to capture the response.	MC (Multiple Choice), ME (Manual Entry), CF (Calculated Field), P (Paragraph / Long Text), SATA (Select All That Apply), Boolean (Yes/No), Other
Required / Optional	Whether the reporting requirement is mandatory, optional, or conditional.	Mandatory, Optional, Conditionally Required, Unclear/Unspecified
Administrative Attributes	Questions that describe who is reporting (identifiers, contacts, facility names, classifications, system descriptors).	System Identifier (WSID, PWSID, WSFID), System Name, Facility Identifier, Contact Information, Geographic / Service Area Descriptor, Document / Plan Reference, Classification / System Type, Website / Public Information, Other, N/A
Stability	How frequently the reported value is expected to change.	Static (never / rarely changes), Periodic (annual or seasonal), Dynamic (monthly or more frequent)

DATA POINTS



*SAFER and AIR assume one entry for each supply. Example – groundwater assumes one well entry. If an agency has more supply sources, reporting values will increase.

CUMULATIVE DATA POINTS



ANALYZING QUESTION TYPE



Data Type	Definitions
Quantitative	Any data field that is numeric
Non-Quantitative	Any data field that is non-numeric
Administrative	Questions that describe who is reporting (identifiers, contacts, facility names, classifications, system descriptors).
Non-Administrative	Any data field that is not an administrative question

ANALYZING QUESTION TYPE



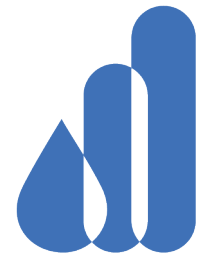
Data Type	Percentage
Quantitative - Administrative	1%
Quantitative -Non- Administrative	63%
Non-Quantitative - Administrative	30%
Non-Quantitative - Non-Administrative	6%

ANALYZING QUESTION TYPE



Stability	Profile	Verify	Validation	API	Notes
Stable	✓				utility profile
Semi-stable		✓	✓		Pre-population with annual confirmation
Dynamic			✓	✓	integration

ANALYZING QUESTION TYPE



Stability	Non-Quantitative	Quantitative	Total	Modernization Opportunity
Stable	200	158	358	Profile auto-fill
Semi-Stable	136	269	405	Pre-fill + verify
Dynamic	39	232	271	Integration/API
Total	375	659	1034	

ISWDR CA PHASED APPROACH



➤ PHASE 1: BUILDING THE CASE



Establish the foundation for statewide data streamlining by aligning partners, documenting the case for change, and securing broad support across all levels of staff and agencies.

➤ PHASE 3: FORMAL TOOLS

Transform pilot results into lasting solutions by finalizing the recommendations and developing standardized tools and training.

➤ PHASE 2: PILOT RECOMMENDATIONS

Demonstrate what streamlined reporting looks like in practice by testing unified data submissions, validating definitions and timing, and providing hands-on support to agencies to refine and scale effective solutions.

➤ PHASE 4: POLICY CHANGE

Advance policy and legislative updates to embed data streamlining into statewide practice.

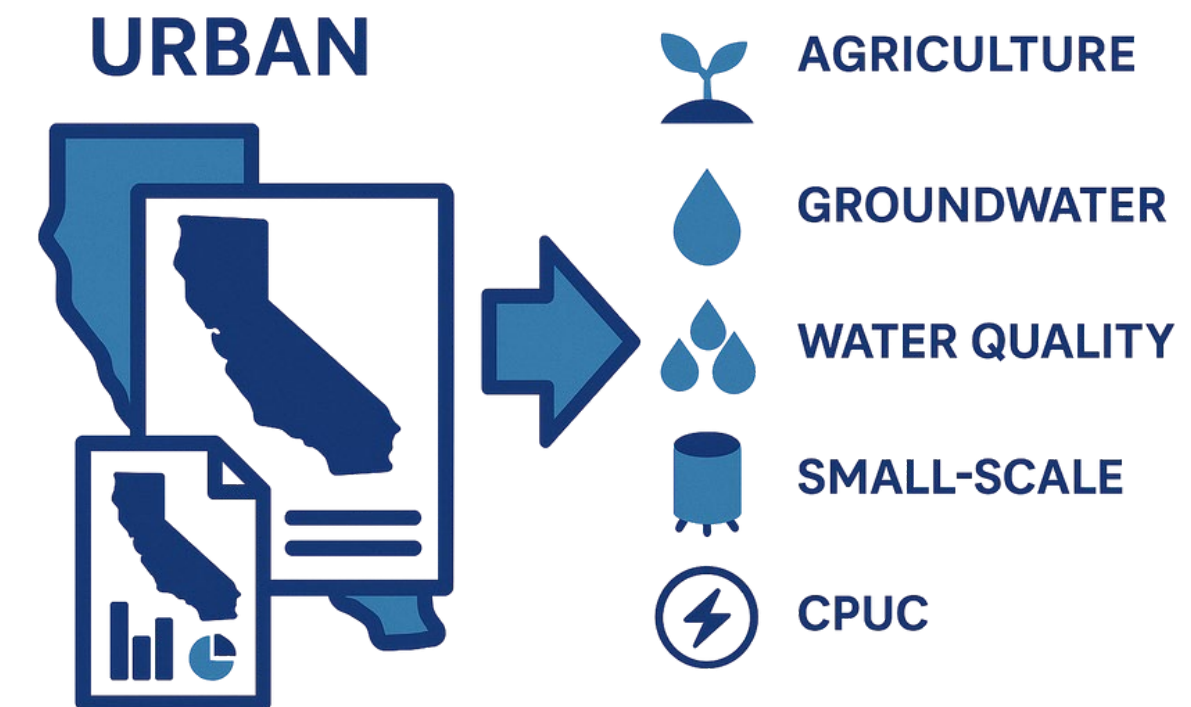
WHERE ISWDR CA IS NOW



We've built a strong foundation of collaboration, alignment, and shared understanding, we've collectively defined the problem and are now actively designing solutions that connect water reporting across all sectors.

Expected Outcomes*:

- | | |
|------------------------|---------------------------|
| ➤ DATA DICTIONARY | ➤ STATE ENGAGEMENT |
| ➤ PROCESS & DATA RULES | ➤ REPORTER OUTREACH |
| ➤ PROOF OF CONCEPT | ➤ CONSULTANT EXPERTISE |
| ➤ CAPACITY BUILDING | ➤ WHITE PAPER ON FINDINGS |



*Timing of effort and deliverables are dependent on external funding

HOW TO GET INVOLVED



STATE AGENCY

- Highlight the efforts your agency has done to streamline reporting in the past.
- Share data needs, challenges, and limitations on reporting requirements.
- Participate in working groups to engage on definitions, timing, and pilot design.
- Bring the initiative to your legislative affairs teams, senior managers, and data analysts to build internal alignment.
- Join upcoming coordination and visioning workshops.

REPORTING AGENCY & CONSULTANTS

- Volunteer to participate in technical work, recommendations, pilot projects and testing efforts.
- Provide feedback on current reporting pain points and what you'd like to see improved.
- Sign our support letter to demonstrate your agency's commitment to streamlining.
- Share this initiative with leadership, analysts, and partners to build awareness and engagement.
- Support financially or in-kind to help advance statewide data coordination.

HELP SHAPE WHAT A STREAMLINED WATER DATA AND REPORTING FUTURE LOOKS LIKE.

LEARN MORE



WEBINAR:

May 20th

10:30 am – 12 pm



HELP SHAPE WHAT A STREAMLINED WATER DATA AND REPORTING FUTURE LOOKS LIKE.



Initiative to Streamline Water Data Reporting in CA

THANK YOU

If you have any questions or would like further discussion, please feel
free to contact:

Melissa Matlock
Deputy Director, CalWEP
melissa@calwep.org