Adapting to Change: Declining Flows and the Impacts of Wastewater Quality on AWT Facilities

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CUWA is a leading voice of CA urban water

Population Served 26 million

Retail Agencies:
- Alameda County Water District (ACWD)
- East Bay Municipal Utility District (EBMUD)
- Los Angeles Department of Water and Power (LADWP)
- City of Fresno

Retail/Wholesale Agencies:
- Contra Costa Water District (CCWD)
- City of San Diego (San Diego)
- San Francisco Public Utilities Commission (SFPUC)

Wholesale Agencies:
- Metropolitan Water District of Southern California (MWDSC)
- Santa Clara Valley Water District (SCVWD)
- San Diego County Water Authority (SDCWA)
- Zone 7 Water Agency (Zone 7)
Timeline

2015-16
• Governors’ emergency conservation mandate

2017
• CUWA survey of 270 agencies

2018
• AB 1668 indoor water use standard

2019
• Analysis of R-GPCD data and survey results
In 2015, Governor issued emergency conservation Executive Order

- Californians **reduced water use by an average of 25%** during the 2015-16 drought.
- Significant reduction in water demands **revealed some impacts** from declining flows.
- Observations **offer a preview** into the potential impact of establishing permanent indoor water use targets.
In 2017, half of CUWA survey respondents reported impacts from drought declining flows.

- **Drinking Water System (Sample Size: 158)**
- **Wastewater Conveyance System (Sample Size: 164)**
- **Wastewater Treatment System (Sample Size: 159)**
- **Recycled Water Project (Sample Size: 120)**

The chart shows the percentage of respondents who responded 'Yes' (green) and 'No' (blue) to the impact of drought on their systems.
In 2018, the State enacted legislation that set a provisional standard for indoor water use.

Assembly Bill No. 1668

Defines the current interim standard as 55 R-GPCD

Standard may reduce to as low as 50 R-GPCD in 2030

Requires studies by DWR and State Board to analyze how the changing standard will impact water and wastewater management.
In 2019, CUWA revisited 2017 survey to examine relationship between water use and impacts

Surveyed Agencies
270 water, wastewater, recycled water respondents to 2017 CUWA survey

Water Suppliers
400+ urban suppliers under 2015-16 conservation mandate

Issue Brief Analysis

Provided contact information:
51 SURVEYED AGENCIES

52 WATER SUPPLIERS*

shared service area
Water use of analyzed suppliers aligned with the State’s drought emergency goals

![Graph showing water use of analyzed suppliers aligned with State’s drought emergency goals](image-url)
Research shows declining flows have impacts on the interconnected urban water cycle.

**Recycled Water**
Influent water quality, recycled water production, effluent water quality, ability to offset potable use

**Wastewater Treatment**
Influent water quality, permit requirements

**Wastewater Conveyance**
Odor production, corrosion, blockages, and O&M work orders

**Drinking Water Distribution**
Water quality, flushing, and nitrification
Impacts on recycled water systems include changes in production and water quality.
OCSD & OCWD have invested $60M to segregate high-salinity influent flows

Orange County Sanitation District & Orange County Water District

Background:
- 2.6 million people
- 2 wastewater treatment plants
- 100 mgd of highly purified water

Impacts Experienced:
- Reduced flows at the WWTPs
- Increasing salinity from discharge effluent from upstream utilities

Adaptation Strategies & Financial Impacts:
- Supplementing GW replenishment system feed water flows with Plant 2 effluent
- Investing $60 million to segregate non-reclaimable, high-salinity flows
Insufficient wastewater flow could limit San Diego’s ability to meet Pure Water goals

City of San Diego

Background:
- 1.3 million water customers
- 2.4 million wastewater customers
- 3 wastewater treatment plants
- Multi-phased recycled water program to ultimately provide 83 mgd of pure water

Potential Impacts:
- Insufficient influent flow into the wastewater treatment plant
  - limit ability to meet supply goals and commitments
  - partially strand new asset
  - reduce regional drought resilience capabilities
Lower than expected wastewater flows led to impacts on wastewater treatment systems
Victor Valley adjusted treatment operations to address increased ammonia concentrations

Victor Valley Water Reclamation Authority (Wastewater Treatment)

Impacts Experienced:
- Increased ammonia concentrations in wastewater influent
- Declining wastewater influent reduces recycled water volumes

Adaptation Strategies & Financial Impacts:
- Changed operations of the aeration basins to achieve the appropriate nitrification and denitrification
- Less recycled water available for reuse increases reliance on potable resources (groundwater)
SFPUC invests in proactive planning for Citywide onsite reuse program

Summary:
- Extensive modeling and application of tools to ensure no negative impacts of reduced flow
- Partnership and collaboration between departments to identify and support operational and business needs
- Proactive planning with external stakeholders, including developers
Key Takeaways and Recommendations
A wide range of water and wastewater systems experienced impacts from reduced flows

- Reported issues carry direct and indirect operational, financial, and physical consequences.
- Many challenges are caused by a combination of system-specific characteristics.
- This makes it difficult to define a specific R-GPCD threshold that triggers impacts.
Systems with large, unexpected flow reductions may experience significant operational challenges

- Water demands supporting the basis of designs have changed.
- Large reductions in flow may lead to systems operational well below design capacity.
- **Systems designed with greater flexibility may have more of an ability to adapt.**
Given time and resources, utilities can and will adapt to declining flows

- Agencies need time, investment, and coordinated planning across the service area to adjust.
- They are sometimes adjusting to competing goals.
- This emphasizes the importance of a holistic, integrated, One Water planning and management approach.
Working together to inform water use efficiency requirements – recommendations

Actions for the State

✓ Account for system-specific characteristics when evaluating appropriate indoor water use standards.

✓ Ensure that state policies for water use efficiency and reuse are complementary.
Actions for utilities

✓ Strengthen planning, coordination, and collaboration between water and wastewater agencies.

✓ Assess vulnerabilities and potential impacts throughout the system.
Questions?

The 2019 Issue Brief and 2017 White Paper are available for download at the CUWA website (www.cuwa.org).