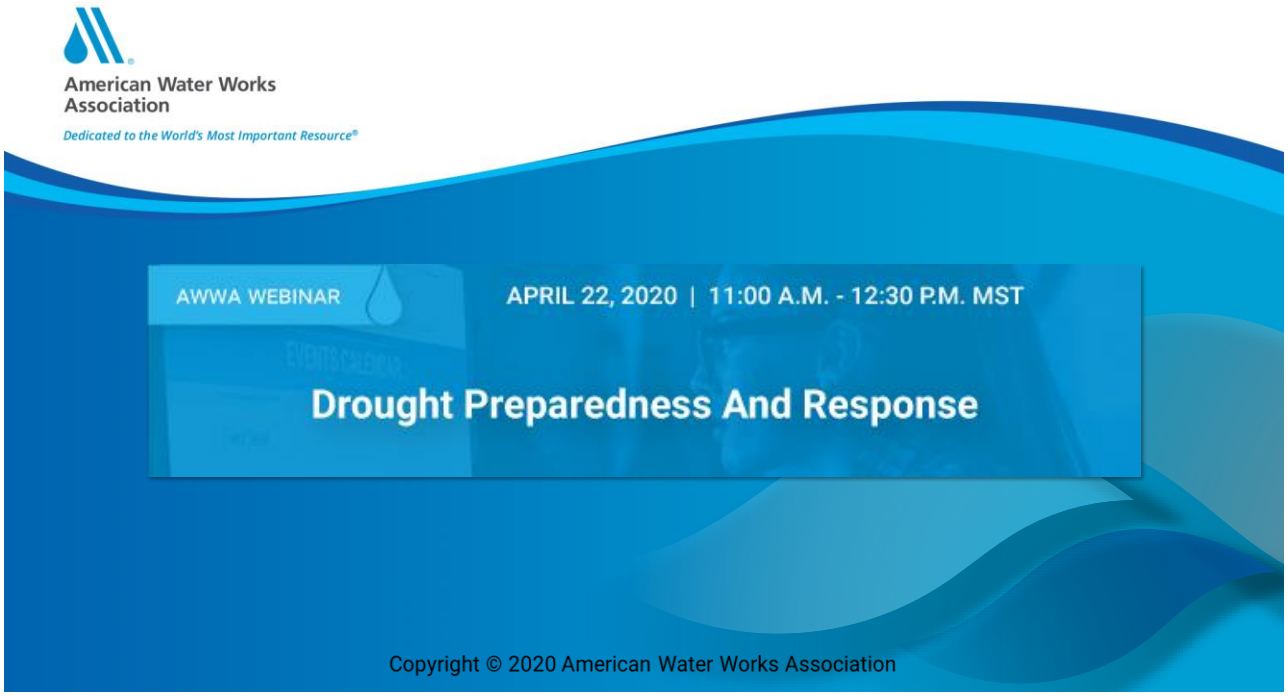

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LOGISTEC ENVIRONMENT
The next-generation technology for
AGING WATER INFRASTRUCTURE

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WEBINAR MODERATOR

Stephanie Passarelli
Benchmarking Engineer
American Water Works Association

Stephanie Passarelli is a Benchmarking Engineer with the American Water Works Association. She is the staff liaison to the Management and Leadership Division and associated management committees. In addition, Stephanie manages the AWWA Utility Benchmarking Survey, and is staff engineer to several Utility Management Standards. She is a Registered Civil Engineer in the State of Colorado with 20 years of experience in the industry including AWWA, environmental consulting, wastewater treatment facility, and the Water Research Foundation.

3

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PANEL OF EXPERTS

Veronica Blette
WaterSense Program Manager
USEPA WaterSense

Veva Deheza
Executive Director
National Integrated Drought Information System (NIDIS), NOAA

Carrie Pollard
Water Efficiency Manager
Marin Water

William Granger
Water Conservation Coordinator
City of Sacramento

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AGENDA

I.	A Tour of the AWWA M60 Manual: Steps 1 and 2	Veronica Blette
II.	Spotlight: National Integrated Drought Information System	Veva Deheza
III.	A Tour of the AWWA M60 Manual: Steps 3 and 4	Veronica Blette
IV.	Spotlight: Taking Another Look at Triggers	Carrie Pollard
V.	A Tour of the AWWA M60 Manual: Steps 5, 6, and 7	Veronica Blette
VI.	Spotlight: Implementing the Water Shortage Plan	William Granger
VII.	Wrap Up	Veronica Blette

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ASK THE EXPERTS

Veronica Blette
USEPA WaterSense

Veva Deheza
NIDIS

Carrie Pollard
Marin Water

William Granger
City of Sacramento

Enter your **question** into the **question pane** at the lower right-hand side of the screen.

Please specify to whom you are addressing the question.

9

9

American Water Works Association
Dedicated to the World's Most Important Resource®

DROUGHT PREPAREDNESS AND RESPONSE WITH AWWA'S M60 MANUAL

April 22, 2020
Earth Day!

10

EPA WaterSense

A TOUR OF THE AWWA M60 MANUAL

Veronica Blette
Program Manager
EPA WaterSense

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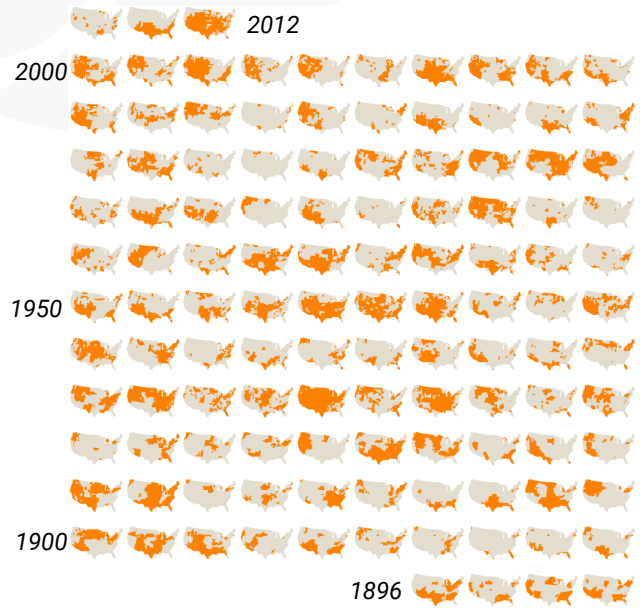
DROUGHT HAPPENS SOMEWHERE EVERY YEAR

Have you updated your plan since the last drought?

Will you be prepared if it comes to your region in 2020?

New York Times – July 19, 2012



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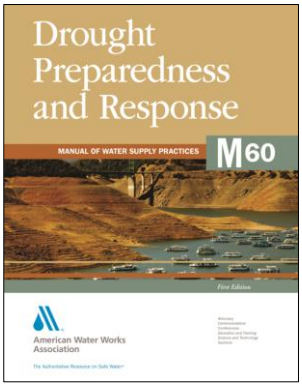
PURPOSE

- *Provide an overview of the Manual*
- *Our advice?*
  - *Get a plan in place before you need it*
  - *Understand your limitations*
  - *Set reductions realistically*
  - *Get educated and educate others*



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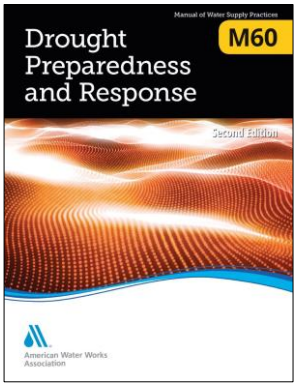

2019

13

13

LEARNING OBJECTIVES

Maybe you are new to your job or just getting started on developing a drought plan for the first time.

Use the manual as a way to help understand the work that will go into a plan. If you are small and the manual is daunting, there are additional resources you can use that will help you take baby steps to improve.

Maybe you have an established plan that you update annually or one that aged on the shelf for a few years because you've had plenty of rainfall.

Use the manual as a way to revisit your plan and confirm that you're doing the right things or to learn about things you might do to improve your plan.

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AGENDA

- *We will follow the Steps of the M60 – Veronica Blette will be your Guide*
- *Spotlight presentations from experts will share experiences and additional tools*

ONE	Form a Water Shortage Response Team
TWO	Forecast Supply in Relation to Demand
Spotlight	Veva Deheza – Resources from NOAA and NIDIS
THREE	Balance Supply and Demand: Assess Mitigation Options
FOUR	Establish Triggering Levels
Spotlight	Carrie Pollard – Marin Municipal Water District Experiences
FIVE	Develop Staged Demand Reduction Program
SIX	Adopt the Plan
SEVEN	Implement the Plan
Spotlight	William Granger – City of Sacramento Experiences
In Closing	Summary and Q&A

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FORM A WATER SHORTAGE RESPONSE TEAM

STEP 1

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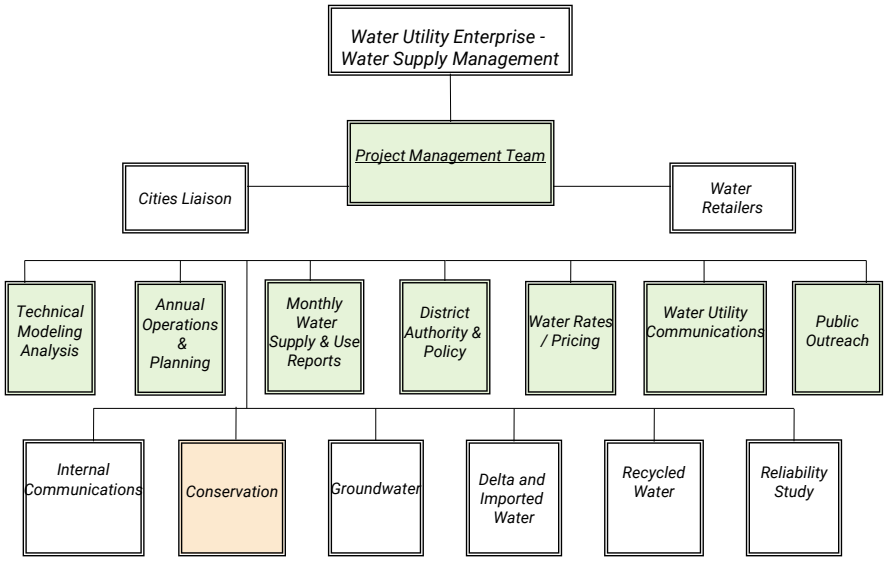
CONTINGENCY & DROUGHT MANAGEMENT TEAM

2008 Example from Santa Clara Valley Water



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SET PRIORITIES

- *Avoid irretrievable loss of natural resources*
- *Restrict less essential uses before essential uses*
- *Affect individuals in small groups before affecting large groups or the public as a whole*
- *Minimize adverse financial effects*
- *Implement extensive public information and media relations programs*

Example of Principles from 2016 Denver Water Drought Response Plan

STEP ONE

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MAINTAIN MOMENTUM

- *Appoint Leader and Team*
- *Start by December 1*
- *Public information campaign*
- *Prepare through winter/spring regardless of precipitation*
- *Supplemental supply agreements*
- *Plan for interconnections*
- *Modify and test computer programming and billing format*
- *New staff and equipment as needed*

COORDINATE, COOPERATE, COMMUNICATE

WITHIN AGENCY

AMONG AGENCIES, TRIBAL ENTITIES

REGIONALLY

COMMUNITY

CATASTROPHIC SUPPLY INTERRUPTIONS

- *Think about direct and indirect effects*
- *Coordinate as needed with the utility Emergency Response Plan*
- *And in a COVID-19 world, think about how pandemic social distancing restrictions may affect your ability to carry out some of the efforts you might plan or have planned*

EARTHQUAKES	FIRES	FLOODS
SYSTEM FAILURES	POWER OUTAGES	WATER CONTAMINATION

STEP TWO

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FORECAST SUPPLY IN RELATION TO DEMAND

STEP 2

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BOTTOM LINE

To be prepared, you need to know:

- *How much water you can expect to have – weather/climate forecast*
- *How much water you have – supply availability*
- *How much water you expect to need – demand forecast*

Carry out analyses of past data to answer the questions

- *How does supply look? What are the sources? How is the infrastructure?*
- *How does demand in a normal year look? Demand in a dry year? Demand by customer type?*
- *Can you meet the demand without supplemental supplies?*
- *How does supply and demand look in a worst case scenario? Including disasters that could affect supply?*

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DATA COLLECTION

Supply

- *Collect supply data (surface, groundwater, recycled, transfers, etc) for past five years or longer and for drought of record*
- *Regularly review agreements that give the supplier the ability to provide or receive supplemental supplies during a shortage*

Demand

- *Collect monthly data by customer class for last five years.*
- *Consider changes in population or uses that might affect demand.*

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DATA ANALYSIS

Supply	• Develop a range of projections for next five years for all supplies • Consider scenarios without augmentation, worst case, increased uncertainty & variability for all supplies
Water Quality	• Analyze impacts of changes in supply on water quality in supplier and customer distribution systems • Consider need for additional treatment or infrastructure for blending • Consider budget impacts
Demand	• Project dry-year demand w/o a demand reduction program in place ▪ Evaluate monthly demand by customer class by month - inside use by low-use month(s) ▪ Consider water demand of special needs customers

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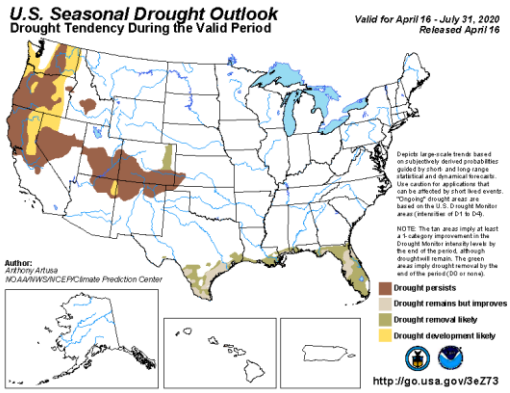
WEATHER/CLIMATE DATA

- There are a wealth of tools available to help provide you with situational awareness on how weather will affect water availability
- Many new tools and resources from federal agencies and states since Version 1 – some aggregate data from multiple sources to provide ease of use

Drought.gov from the National Integrated Drought Information System (NIDIS) is the site you will want to bookmark

Provides access to a range of tools including seasonal drought forecasts from the NOAA Climate Prediction Center >>>>



STEP TWO

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SPOTLIGHT
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM

Veva Deheza

Executive Director

National Integrated Drought Management System (NIDIS)

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NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

OVERVIEW

- What is NIDIS?
- NIDIS in Action - Southern Plains DEWS
- Updates on Activities at the National Level

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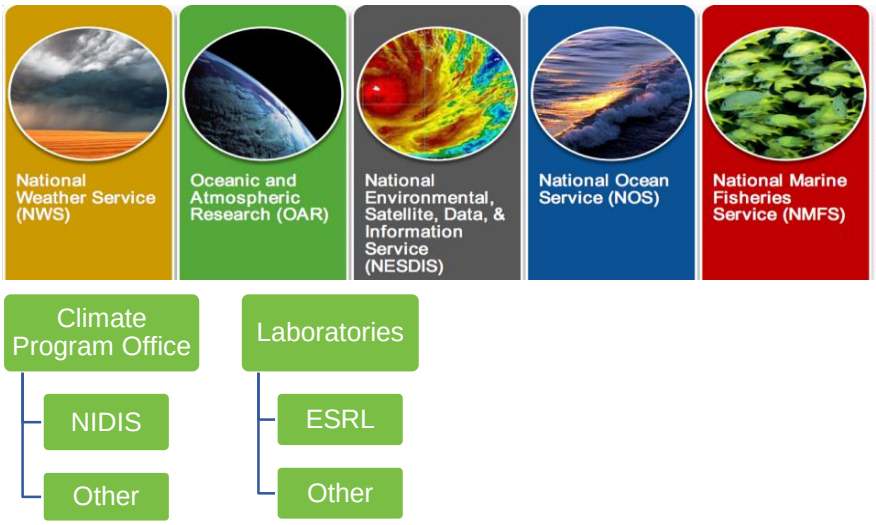

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NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

MISSION + ACTIVITIES

- Regional Drought Early Warning Systems
- Prediction and Forecasting
- Integrated Research and Monitoring
- Drought Planning and Preparedness
- Collaboration with Existing Programs and Partners
- The U.S. Drought Portal (www.drought.gov)

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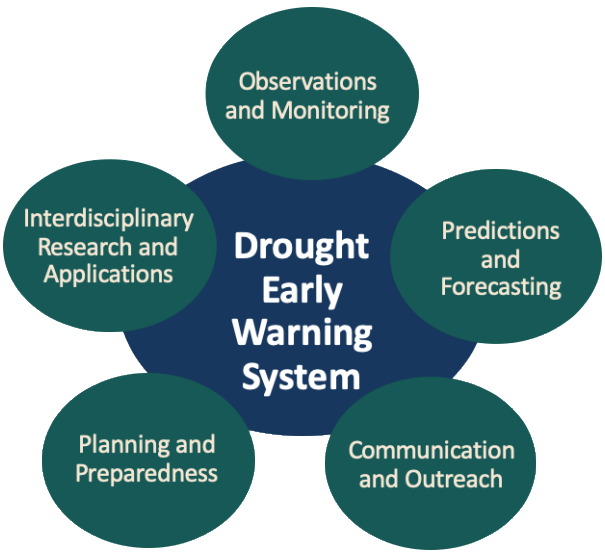
APPROACH

Drought Early Warning

"A system that collects and **integrates information** on the key indicators of drought in order to make usable, reliable, and timely drought forecasts and assessments of drought…..

…and **communicates drought forecasts, conditions, and impacts** on an ongoing basis to decision makers, the private sector, and the public."

NIDIS Public Law 109-430



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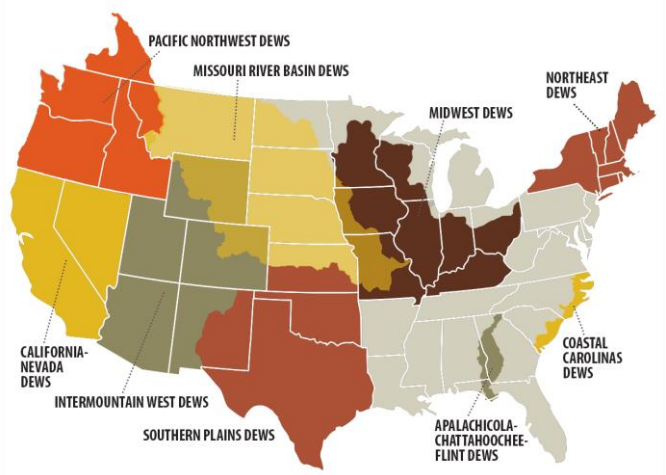
REGIONS

Drought Early Warning



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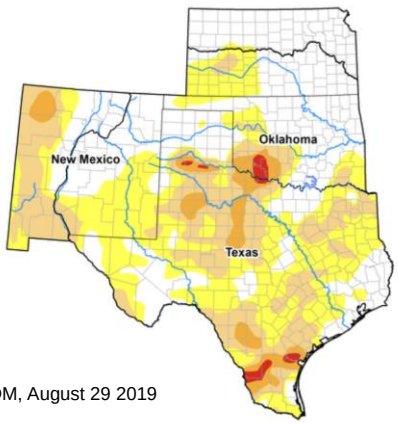
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Southern Plains Drought Early Warning System (DEWS)

- **Southern Plains DEWS Strategic Plan 2017-2018**, with extension through 2019
- **Southern Plains Ten-Year Drought Resilience Vision:** NIDIS is providing support to SCIPP and partners to develop a ten-year drought resilience vision that informs regional strategic long-term drought planning



USDM, August 29 2019

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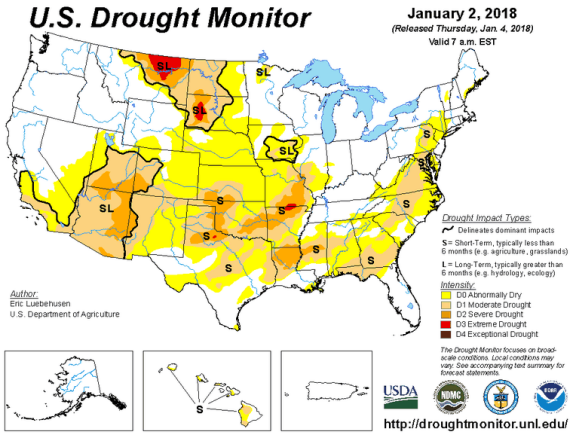
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Southern Plains Drought Early Warning System (DEWS)

2017-2018 NIDIS and Partners Southern Plains Drought Response



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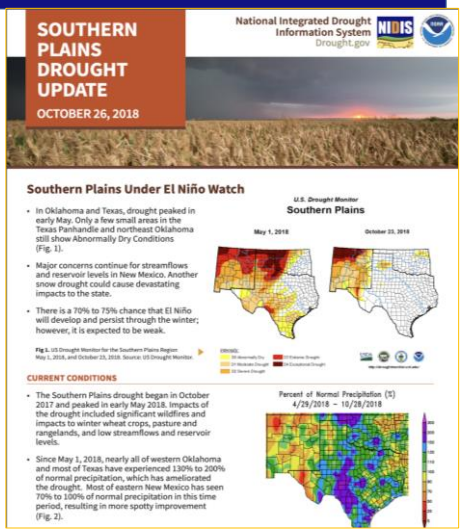
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Southern Plains Drought Early Warning System (DEWS)



2017-2018 Southern Plains Drought Response:

- Monthly webinars and *Southern Plains Drought Updates* to communicate information on drought status, impacts and outlooks (www.drought.gov)
- Wide media coverage, including the New York Times, LA Times, Chicago Tribune, Associated Press and local media outlets in the region
- Meetings with producers and ranchers

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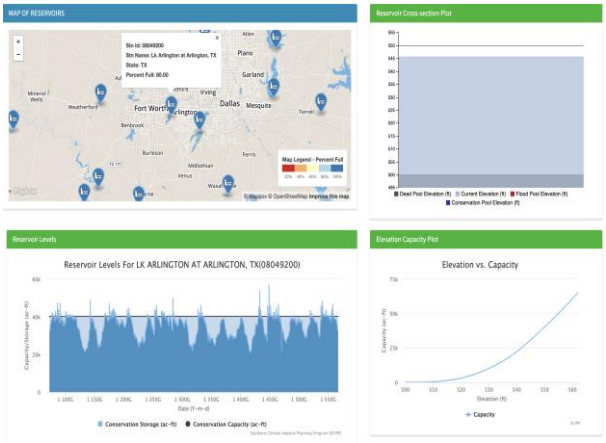
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Southern Plains Drought Early Warning System (DEWS)

Examples of Southern Plains DEWS Activities:

- Water Reservoir Data Visualization Tool (SRCC and SCIPP): Provides information on water storage in reservoirs.
- Mapping farm pond locations and volumes, led by SCIPP in support of the Oklahoma Water Resources Board.



http://reservoir.srcc.lsu.edu

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NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Southern Plains Drought Early Warning System (DEWS)

Examples of Southern Plains DEWS Activities:

- US Drought Monitor workshops in Texas and Oklahoma with USDA Southern Plains Climate Hub, NDMC and NIDIS to strengthen capacity of extension agents and other producer support regarding drought forecasting and impact tools and resources.
- 2018 Southern Plains Wildfire Forum, with USDA Southern Plains Climate Hub, SCIPP, Redlands Community College

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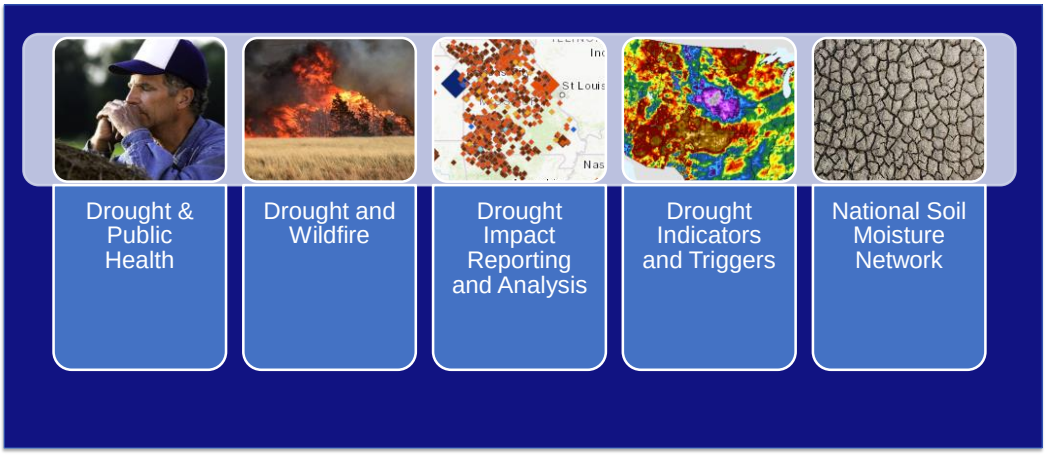
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

NIDIS in Action Across Regions



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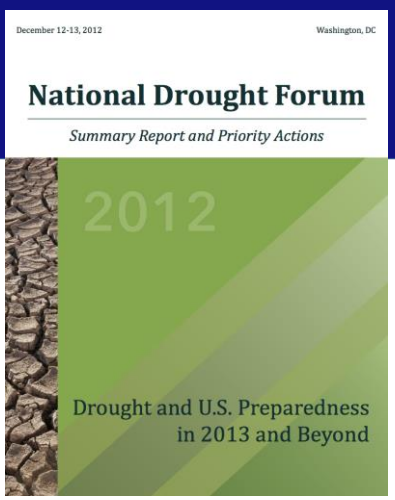
2019 National Drought Forum
July 30-31, 2019 • Washington, D.C.

To assess the status of national drought readiness, to take stock of progress since the 2012 National Drought Forum, and to help provide new information and guidance for coordination to improve the nation's preparedness to drought.



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NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Drought & Public Health Linkages

2018-2020 Activities:

- Form a National Drought & Public Health Working Group
- Host a series of Regional Drought & Public Health Workshops
- Hold a 2019 Public Health Summit **(completed)**
- Support research & communication of linkages
- Create a public health sector space on the U.S. drought portal

- **2020 NIDIS Drought & Public Health Strategy**

+Growing List of Partners

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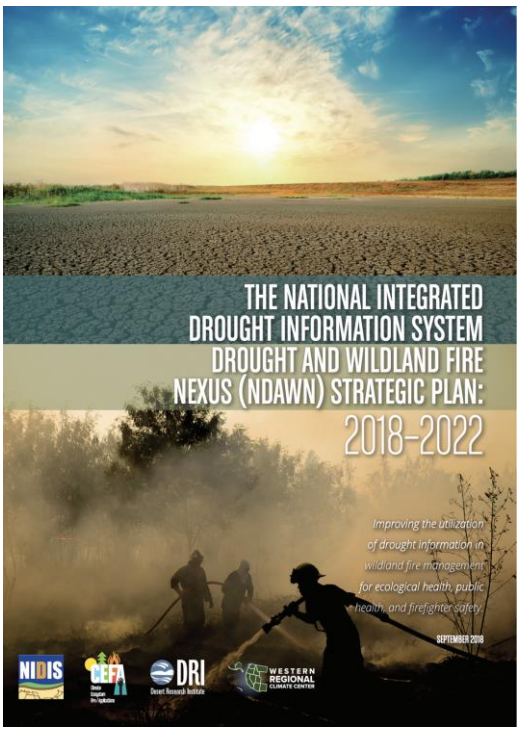

NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

NIDIS and Fire Community Release Drought and Wildland Fire Nexus Strategic Plan: 2018-2022

To improve the utilization of drought information in wildland fire management for ecological health, public health, and firefighter safety.

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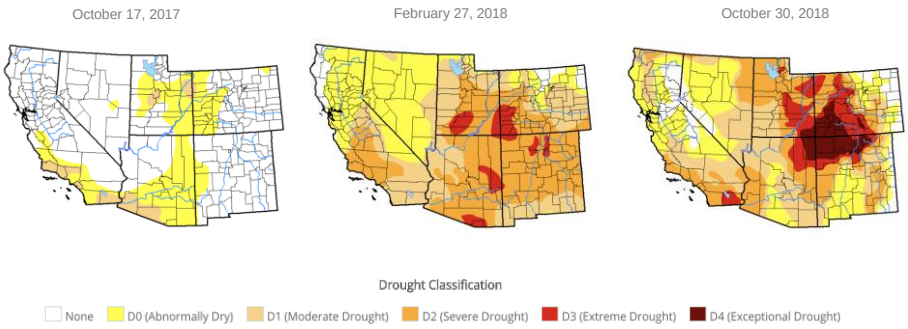
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Drought Impact Assessments: The Southwest

An analysis of the scope and severity of the 2017-2018 drought to understand whether conditions influenced economic, health, and crime outcomes in individual states and in the regional as a whole.



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NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Drought Impact Assessments: The Northern Plains Drought of 2017

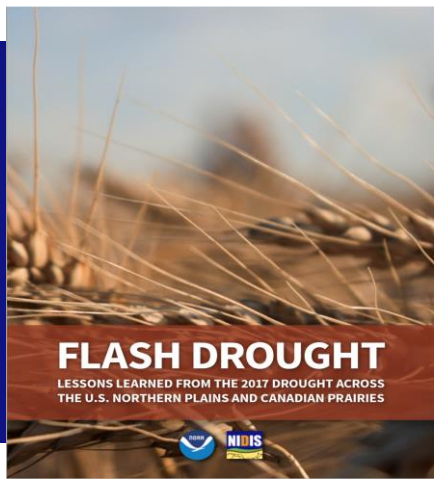
U.S. agricultural losses of over $2.6 billion.

Livestock production was especially hard-hit due to the widespread scarcity of feed and water.

4,837,599 acres burned across the U.S. Northern Plains and Canadian Prairies.

Despite near-normal stream flows for the entire 2017 season, water supply to rural water providers was reduced in some areas.

Tribal cultural resources were impacted, putting these resources at risk for future generations.



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NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

National Soil Moisture Monitoring Network

- **National, multi-platform soil moisture gridded products** from existing soil moisture data sources across federal and state in-situ monitoring networks, satellite remove sensing missions, and numerical modeling capabilities
- **Consistent methodology** for data collection and installation of in-situ probes including metadata standards
- Improve **collaboration and identify funding** opportunities to build the national network

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NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Coping with Drought FY20 Grant Program

Research to improve our understanding and use of drought indicators, thresholds, and triggers, and drought impacts.

- $1.2 million per year
- 2-year cooperative agreements of up to $650,000 total

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Drought.gov Redesign

Improved site navigation

Enhanced mobile experience

New sector pages

New up-to-date drought statistics

Updated content

U.S. Web Design Standards

Anticipated Launch in 2020

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BALANCE SUPPLY AND DEMAND: ASSESS MITIGATION OPTIONS

STEP 3

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WHEN THERE IS A SHORTAGE, THE OPTIONS ARE TO….

Augment Supply

- *Leverage existing assets (via flexibility or infrastructure upgrades)*
- *Increase supplier side efficiency*
- *Expand portfolio with new sources*
- *Seek opportunities to collaborate with other agencies*

Reduce Demand

- *Provide public information and education*
- *Enact restrictions (e.g., water waste ordinance, landscape irrigation)*
- *Modify pricing*
- *Consider rationing and allocation*

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DEMAND REDUCTION

Allocation Methods

- Percent Reduction Allotment *all account types*

+	useful for non-residential *vary based on efficiency*
+	easy to determine and administer
+	establish minimum/maximum amounts to limit extremes
–	penalizes conservers
–	rewards "above average" users
–	promotes water use during non-shortage periods

DEMAND REDUCTION

Allocation Methods

- Per Capita Allotment *residential*

+	suitable for extreme shortages
+	equitable *base allotment, sewer charges on number of residents*
–	must determine and update per account occupancy
–	water for essential inside use only
–	doesn't recognize historic use

DEMAND REDUCTION

Allocation Methods

- Hybrid Per Capita / Percentage *residential*

+	equitable *recognizes variety of uses*
+	flexibility *suitable to all stages*
+	provides customers greatest control
+	recognizes factors like lot size, historic use and economics
–	additional staff / computer work to determine allotments
–	requires more public education

ENFORCEMENT

Water Cops and Community

- Primarily educational
- Citations occur after first or second warning
- Community support

Fines *billing based*

- Repeat offenders require action
- Excess use charge

Flow Restrictors

- Repeat offenders undermine equity
- Provide health and safety flow

Santa Cruz Water School

LANDSCAPE ORDINANCE VIOLATIONS
WATER COP VISITS

YEARLY	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
No violation found	28	41	33	46	230	764	**1124**
Wasting water	6	11	11	18	47	98	**191**
Prohibited watering	2	4	2	8	126	67	**219**
Owner's leak	11	3	6	11	22	31	**84**
Charity car wash	0	1	7	2	4	2	**16**
TOTAL	**47**	**60**	**59**	**95**	**429**	**962**	**1652**

San Antonio, Texas

STEP THREE

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ESTABLISH TRIGGERING LEVELS

STEP 4

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EXAMPLES OF TRIGGERS

- Projected supply at a pre-defined level
- Water quality changes
- Supply interruption
- Environmental changes
- Regional agreements

Consider Triggers by Source

- Groundwater
- River Supplies
- Surface Water Storage
- Combined Sources of Supply

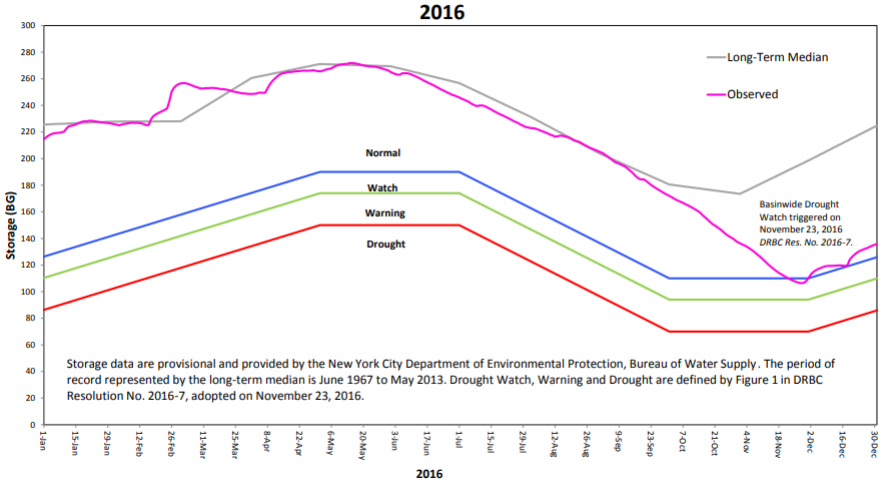
SUPPLY BASED TRIGGER

- **Example of triggers at a one-source agency**

Reservoir storage less than	Drought Stage	Water Use Reduction Goal
80%	Stage 1	10-15%
65%	Stage 2	15-25%
40%	Stage 3	25-40%
25%	Stage 4	40%+

SURFACE WATER STORAGE

FIGURE 6: NEW YORK CITY DELAWARE RIVER BASIN STORAGE 2016



STEP FOUR

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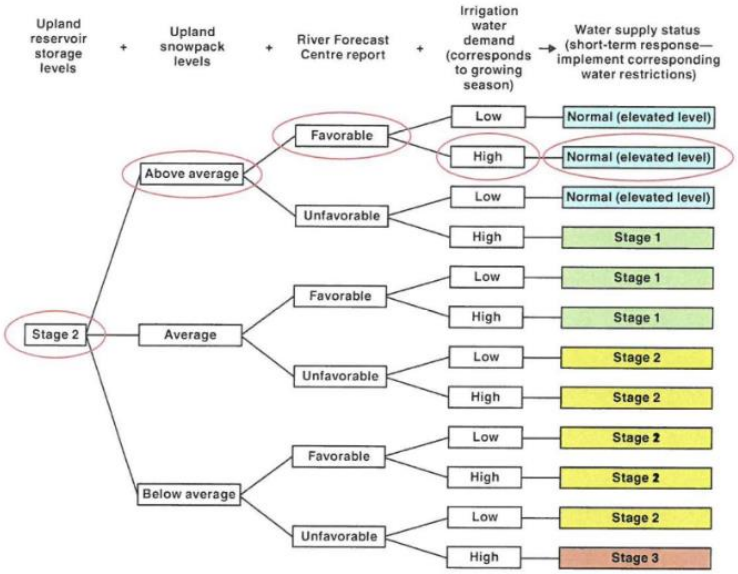
MULTIPLE SOURCE DECISION TREE



Greater Vernon Water Utility (BC)

STEP FOUR

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MARIN MUNICIPAL WATER DISTRICT

SPOTLIGHT
TAKING ANOTHER LOOK AT TRIGGERS

Carrie Pollard
Water Efficiency Manager
Marin Municipal Water District

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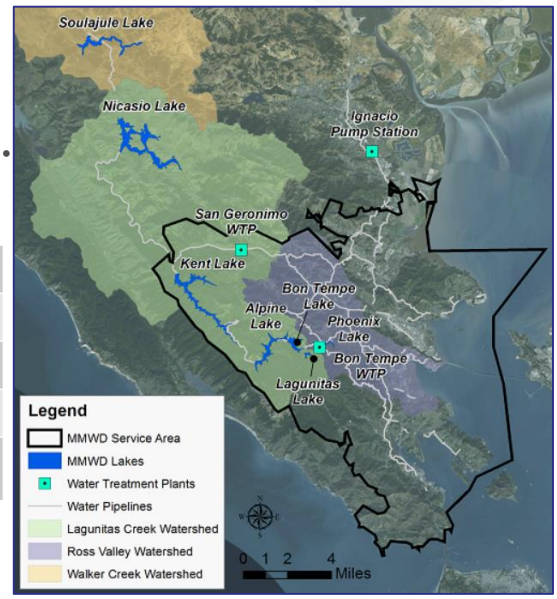
MARIN MUNICIPAL WATER DISTRICT

SERVICE AREA & STATS

Average Annual Precip.	30 in
Population Served	190,000
Current Production	25,000 AFY
Reservoir Storage	80,000 AF
Imported Supply	5,000–14,000 AFY

California's first municipal water district.



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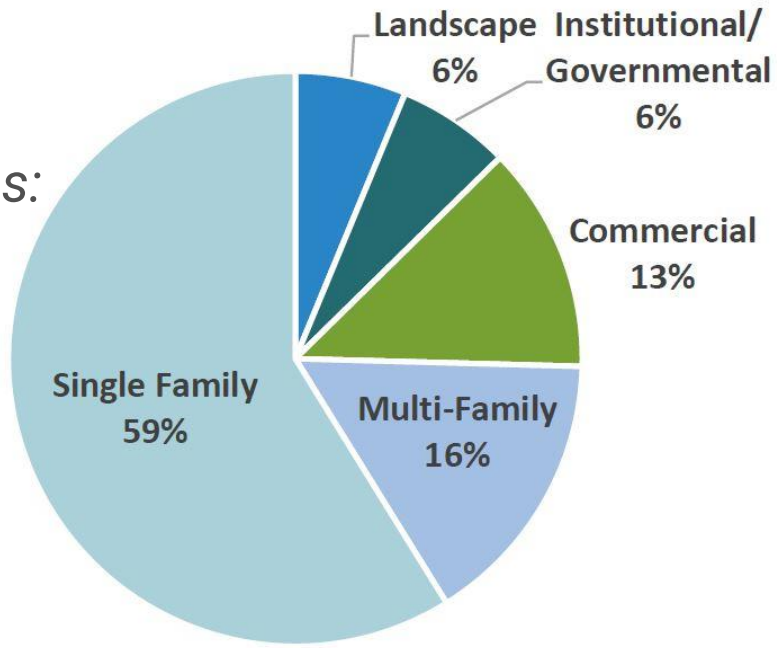
WATER DEMANDS

Total Deliveries: ~23,000 AFY



MARIN MUNICIPAL WATER DISTRICT

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ENVIRONMENTAL FLOWS

- Releases water for instream flows
- The amount of water released varies by season and type of water year.
- Approximately 11,000 AFY for Normal Water Supply Year

Walker Creek

Lagunitas Creek

MARIN MUNICIPAL WATER DISTRICT

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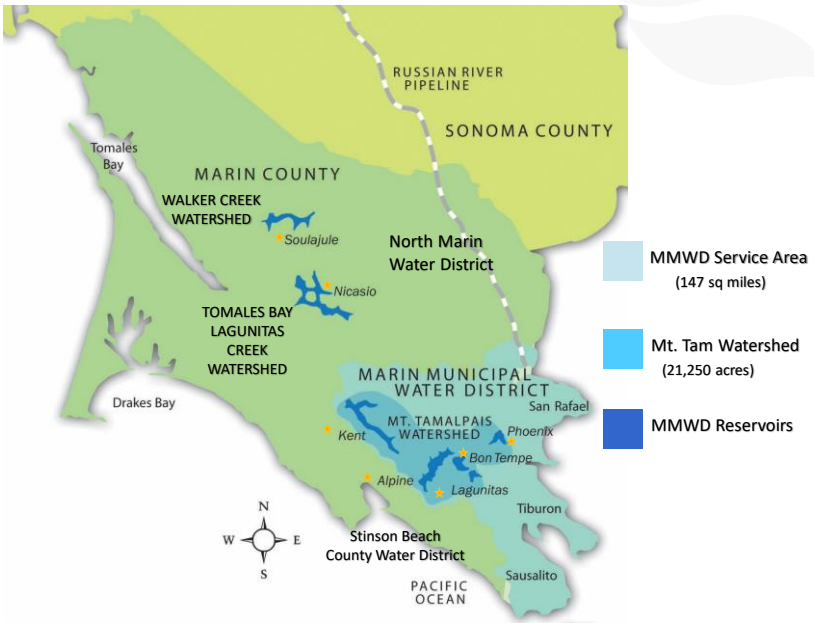
WHERE OUR WATER COMES FROM



MARIN MUNICIPAL WATER DISTRICT

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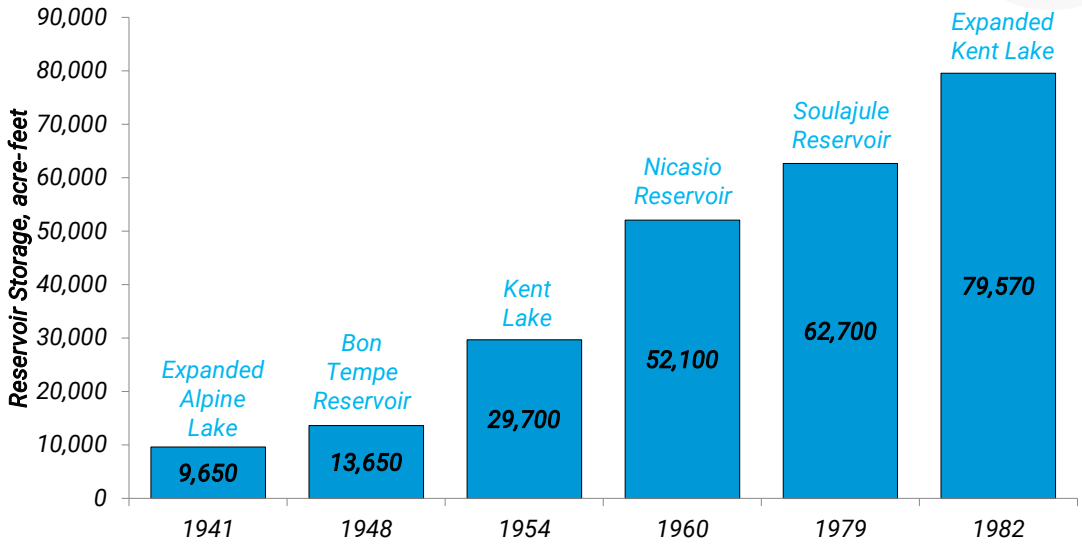
INCREASED STORAGE CAPACITY



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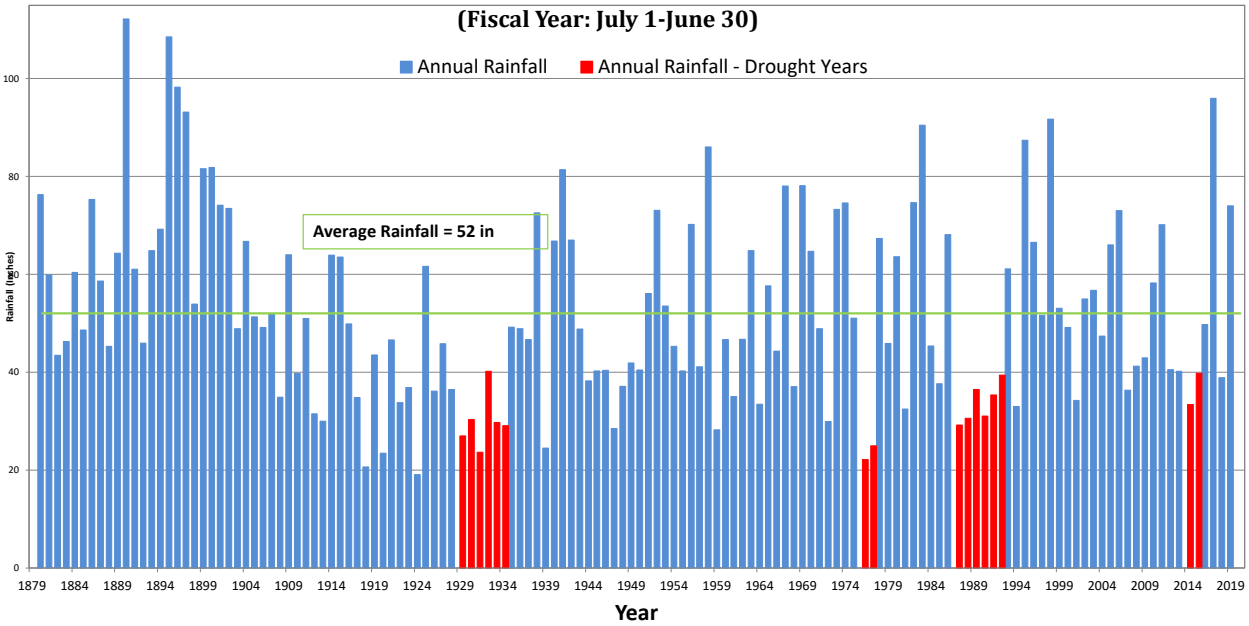
LAKE LAGUNITAS ANNUAL RAINFALL



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CURRENT TRIGGERS

Current triggers established in 1999

- *2 levels based on total lake level on April 1st*
  - *At or below 37% reservoir capacity- 10% reduction*
  - *At or below 50% reservoir capacity- 25% reduction*
- *1 level based on total lake level on December 1st*
  - *At or below 62% reservoir capacity- 50% reduction*

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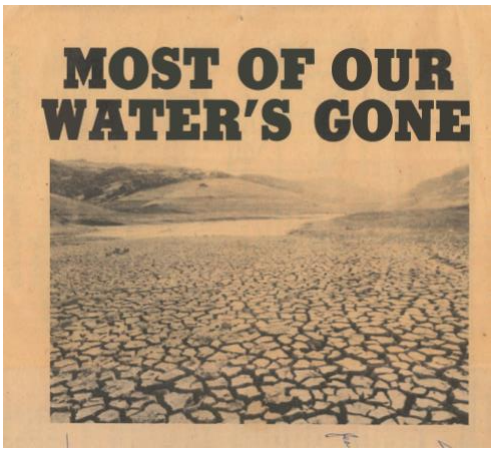
DROUGHT RESPONSE EVALUATION UNDERWAY

- *0" Rainfall in February 2020*
- *Are current triggers appropriate to mitigate the probability of water shortage based on our system?*
- *CA State leg may require additional response levels/stages*
- *2040 Water Resource Plan proposed updates*
  - *Answered questions about MMWD's current supply system reliability*
  - *Determined how MMWD's supply system would react under a variety of future events*
  - *Recommended a supply option alternative to improve resiliency*
  - *Created model for use in future decisions and operations optimization*



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DEVELOP A STAGED DEMAND REDUCTION PROGRAM

STEP 5

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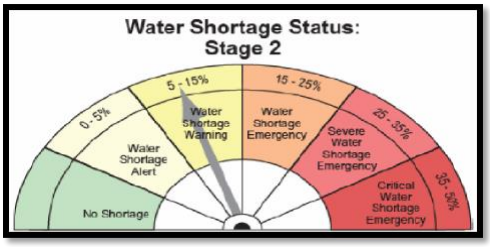
ESTABLISH STAGES

- Example Stages with demand reduction goals

Stage	Water Shortage	Demand reduction goal
1	Minimum	10 - 15%
2	Moderate	15 - 25%
3	Severe	25 - 40%
4	Critical	40+%



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CRITERIA FOR DEMAND REDUCTION DURING A WATER SHORTAGE

Timing: can the measures/actions produce results in time?

Magnitude of savings: Will enough water be saved?

Season: are the actions/measures relevant to the time of year?

Costs: How severe are the cost implications of the measures to the customer, relative to the need for action?

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EVALUATE DEMAND REDUCTION MEASURES

Methods that reduce demand: supported by demand reduction actions

Public Information Campaign
Restrictions
Pricing
Allocations

Prioritize methods:

Water savings
Lead time required to activate measure
Direct and indirect costs
Legal or procedural requirements for implementation

EXAMPLE ACTIONS

Stage 1 - Voluntary

Initiate public information campaign
Advertise toilet, appliance, equipment rebate programs
Request 20 gallon-a-day per person reduction
Suggest shorter showers, no hosing of hard surfaces

Stage 2 - Restrictions with enforcement

Intensify public information, assistance programs
Restrict irrigation to morning and evening
No run-off, three times per week watering
Water by request in restaurants
Increase rates

EXAMPLE ACTIONS

Stage 3 - Mandatory + Customer Outreach

Limit days of irrigation

Tiered pricing with significant price jumps

Establish allocations

Provide customer on-site assistance

Provide multiple demand reduction programs

Provide customer / business training programs

Stage 4 - Mandatory

Mandatory/critical

Intensify all efforts

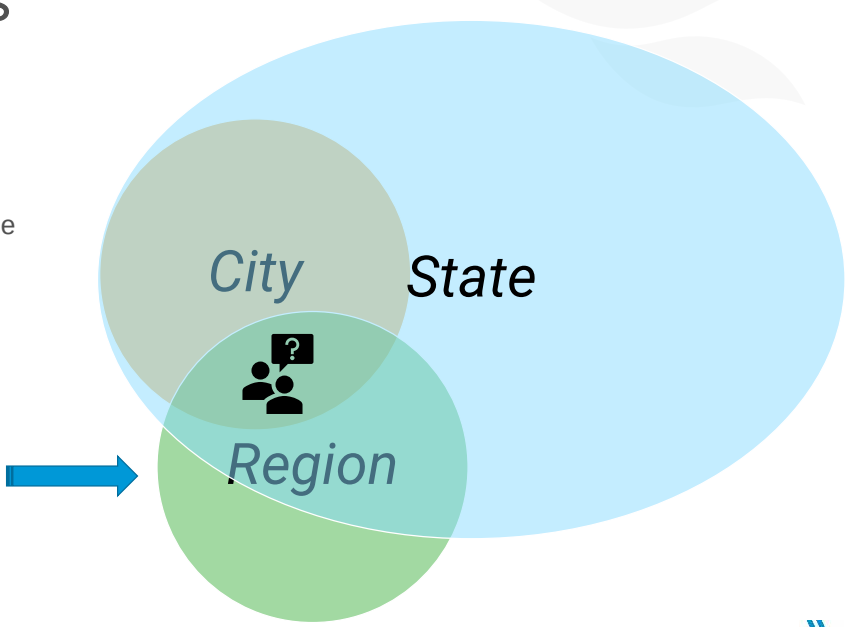
Manage consumption to stay within water allotments

Landscape irrigation restrictions

Fines

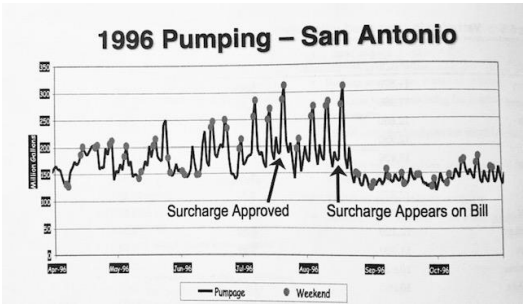
CONSIDERATIONS

- Savings vary from month to month, difficult to predict
- Savings can be scaled to the normal year demand curve
- Supplier enter Stage before customers implement
- Cooperate with local and regional water suppliers to avoid inconsistent drought messages



LAG TIME ISSUES

- Customer awareness reduced by bi-monthly billing
- Build lag time in triggers
- Leap-frog Stage if lag time is long or not recognized
- Lag time could result in draw down of next year's reserves and unnecessary economic losses



STEP FIVE

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ADOPT THE PLAN

STEP 6

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PROCESS

INVOLVE THE COMMUNITY

PREPARE REVENUE PLAN

FORMALIZE COOPERATION WITH LOCAL AGENCIES

ADOPT THE PLAN

STEP SIX

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PREPARE REVENUE PLAN

Evaluate Revenue by Water Shortage Stage

- *Estimate the amount of water use reduction that will be achieved and the associated lost revenue*
- *Estimate revenue needs – include funds for new water supplies, increased water quality monitoring, and extended multi-year rationing*
- *Design a rate adjustment or water shortage surcharge that will cover the expected revenue deficit if reserves are not available*
- *Monitor actual revenue and compare with forecasted; adjust water shortage surcharges as needed, but not too often*

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IMPLEMENT THE PLAN

STEP 7

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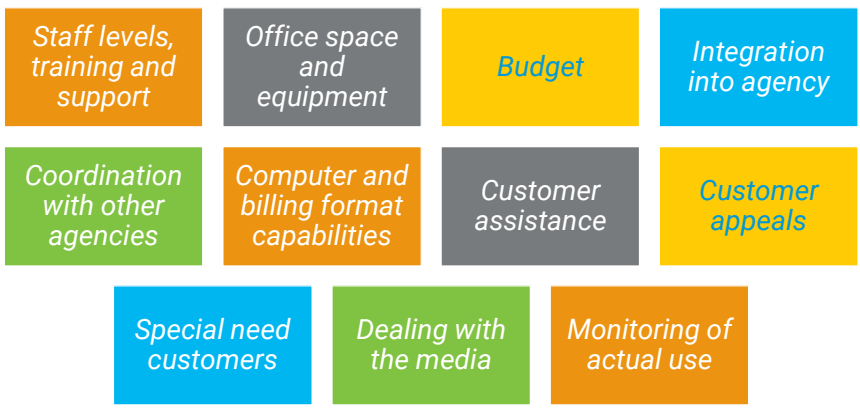
IMPLEMENT THE PLAN



STEP SEVEN

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BUDGET

Salaries
including overtime

Equipment
cars, phones, computers, audit materials

Training
professional trainers for customer contact, computer databases, conservation audits and assistance

Materials
program brochures, conservation info, water waste educational info and door hangers

Media
TV, radio and print advertising budget, graphic and recording studio support, events, direct mail

Programs
rebates, hand-outs, contests, awards, training for customers & green industry

CUSTOMER ASSISTANCE

- Phone hot-line, including evenings and weekends
- Email distribution list, blogs
- House calls, surveys
- Plumbing and landscaping referrals
- Irrigation system management training and assistance
- Plumbing fixture and appliance recommendations
- Assistance to excess-use customers
- Assistance to disadvantaged communities

DEALING WITH THE MEDIA

- *Establish good relations with reporters local print, radio and television*
- *Rationing response manager available for questions and interviews*
- *Consistent message talking points, sound bites*
- *Free media and community support resources*
- *In response to possible negative media reports, demonstrate how the agency solves customers problems*

STEP SEVEN

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City of SACRAMENTO
Department of Utilities

SPOTLIGHT
IMPLEMENTING THE WATER SHORTAGE PLAN

William Granger

Water Conservation Coordinator

City of Sacramento

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AGENDA

- *City of Sacramento's water supply*
- *How did we achieve 20-28% water use reduction while only being 50-65% metered*
  - *Doubling of fines*
  - *Expanded patrolling*
  - *Leading by example-Parks and Streetscapes*
- *What would we do differently?*

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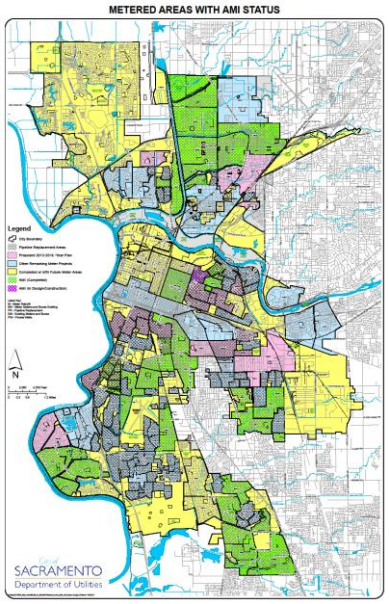
CITY OF SACRAMENTO:

- **141,435** Service Connections
- 95% of City Metered; 100% AMI
- 90,000 AFY demand in 2019
- 85% surface water, 15% groundwater
- Average rainfall: 20"
- Average No. of 100-degree days: 23



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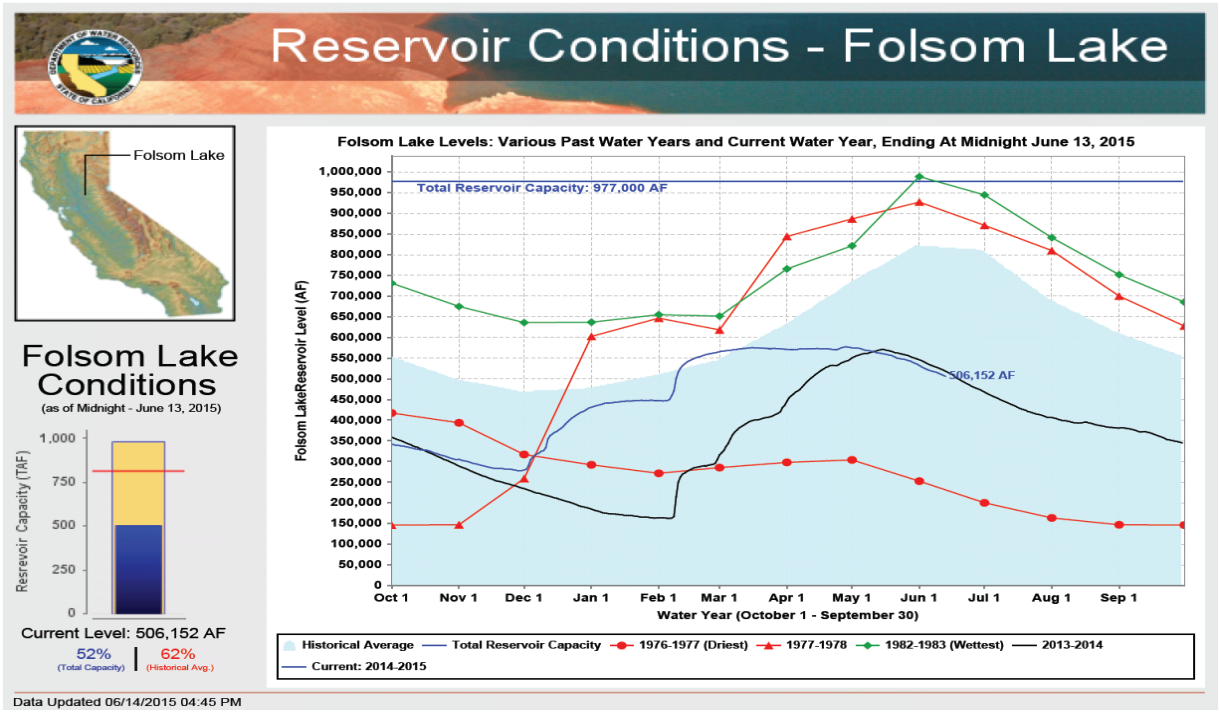

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STAGE 2 DROUGHT DECLARATION

- January 14, 2014: City of Sacramento declares a Stage 2 Water Shortage: mandatory 20% reduction.
- January 17, 2014: California declares a Drought.
- April 1, 2015: Governor mandates a 25% urban water use reduction
  - 28% Reduction for City of Sacramento

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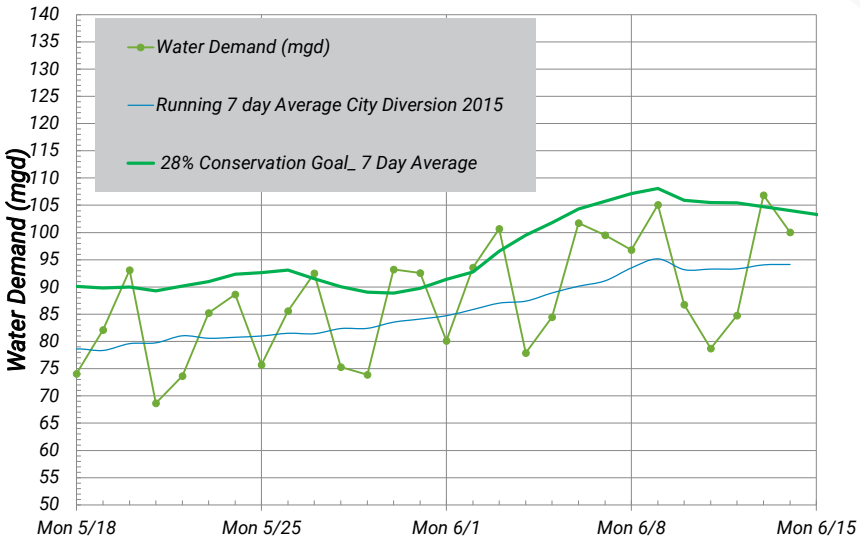
CITY OF SACRAMENTO WATER PRODUCTION



City of SACRAMENTO Department of Utilities

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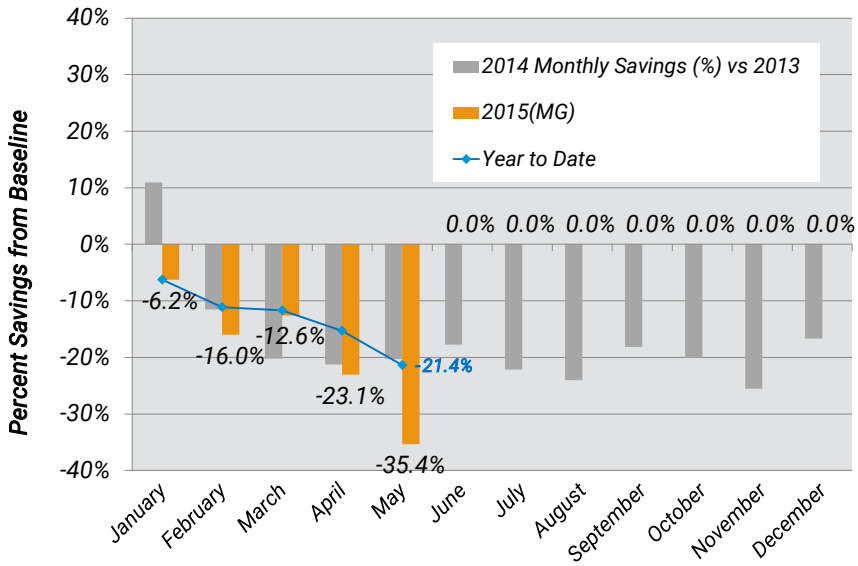
MONTHLY CITYWIDE SAVINGS VS. BASELINE



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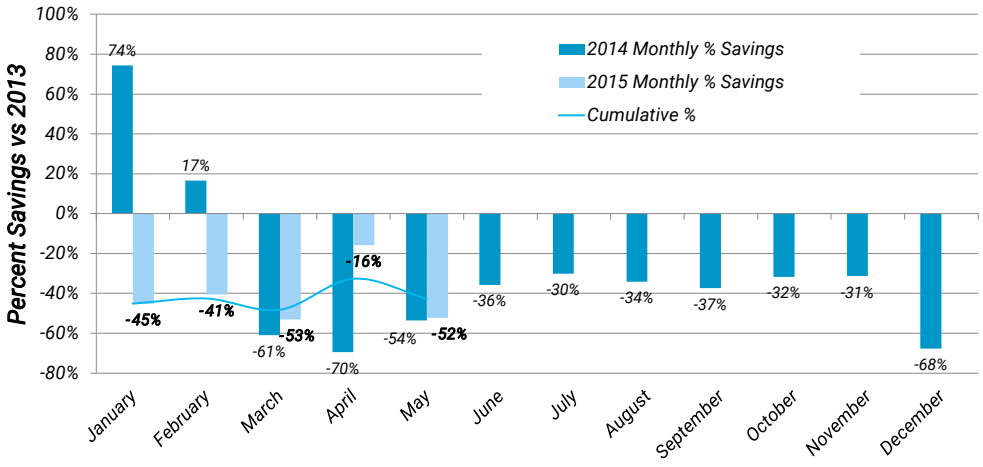
2015 PERCENT SAVING VS. 2013 CITY DEPTS ONLY



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ENFORCING THE CITY'S WATERING SCHEDULE

March-November: 2 days/week

- Water before 10 a.m. or after 7 p.m.
- ODD number addresses (1, 3, 5, 7, 9) may water on Tuesday and Saturday
- EVEN number addresses (0, 2, 4, 6, 8) may water on Wednesdays and Sundays

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DAWN PATROLS ON NO WATER DAYS

6-8 PEOPLE

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IMPLEMENT THE PLAN

- Staff levels, training and support
- Office space and equipment
- Budget
- Integration into agency
- Coordination with other agencies
- Computer and billing format capabilities
- Customer assistance
- Customer appeals
- Special need customers
- Dealing with the media
- Monitoring of actual use

STEP SEVEN

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NOTICES OF VIOLATIONS (NOVS) IN 2016 VS 2013-15:

Description	Jan 1 - Sep 21, 2016	Previous Week	Same Time Frame in bench mark 2013	Same Time Frame 2014	Same Time Frame 2015
Water Use Complaints/Proactive Patrols	7,623	7,300	951	13,828	19,904
First Notice of Violation (NOV)	3,859	3,677	77	6,487	9,105
2nd NOV	755	723	5	270	1,287
3rd NOV	139	137	2	25	166
4th NOV	23	21	0	1	16

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CUSTOMER APPEALS

- *Develop a process and expect to get calls*
- *2014:119*
- *2015: 592*
- *2016: 243*
- *2017: 56*
- *Attend a class once every two years for get 2nd NOV removed, or send in appeal letter to our Director.*

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SIGNIFICANT LOCAL, REGIONAL AND STATEWIDE MESSAGING

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HOW WILL WE DO THINGS DIFFERENTLY NEXT TIME?

- *Use AMI data*
- *Patrol more on Mondays and watering days*
- *Drought/water shortage surcharge needed: we are nearly metered*
- *Staffing*

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WRAP UP

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WHEN THE DROUGHT ENDS!

Thank	Publicize gratitude for the community's cooperation
Restore	Restore utility operations, organization, and services to pre-event levels
Document	Document the event and compile records for future reference
Continue	Continue to maintain liaisons with external agencies
Update	Update the water shortage plan as needed while the event is fresh in your mind!

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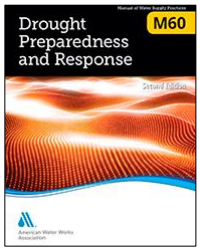
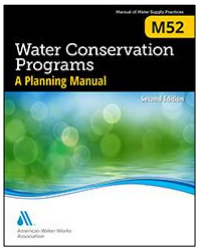
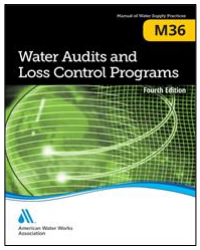
AWWA RESOURCES THAT MAY HELP

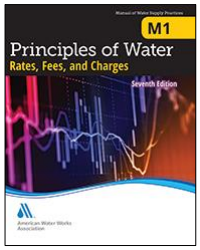


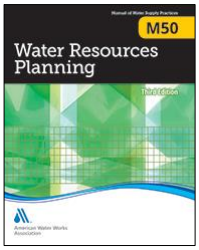


primary resources

secondary resources







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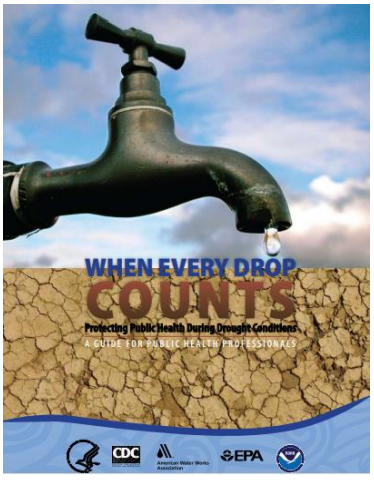
OTHER RESOURCES

EPA Resources for Water Utilities
https://www.epa.gov/waterutilityresponse/drought-response-and-recovery-water-utilities

EPA WaterSense Resources for Partners
https://www.epa.gov/watersense/join-watersense



CDC Guides
https://www.cdc.gov/healthywater/emergency/extreme-weather/drought.html

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DROUGHT AND WEATHER/CLIMATE RESOURCES
(A SAMPLING)

- *NIDIS - https://www.drought.gov/drought/*
- *National Drought Mitigation Center - https://drought.unl.edu/*

- *NOAA Regional Climate Centers - https://www.ncdc.noaa.gov/customer-support/partnerships/regional-climate-centers*
- *NOAA RISA (Regional Integrated Sciences and Assessments) - https://cpo.noaa.gov/Meet-the-Divisions/Climate-and-Societal-Interactions/RISA/RISA-Teams*

- *USGS Climate Adaptation Centers - https://www.usgs.gov/land-resources/climate-adaptation-science-centers*
- *USDA Climate Hubs - https://www.climatehubs.usda.gov/*

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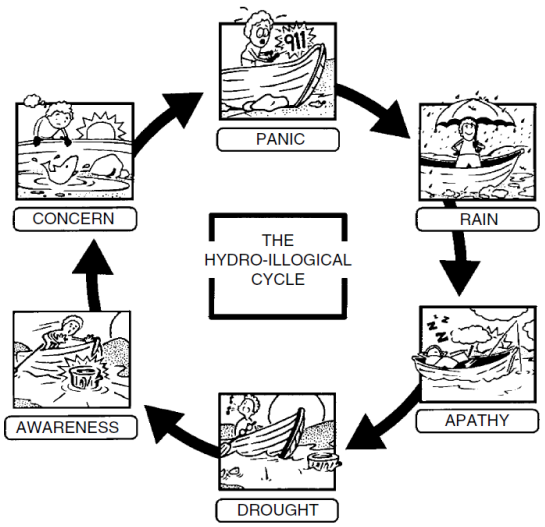
THANK YOU!

- *Questions?*

REMEMBER, THE GOAL IS TO AVOID THIS!



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ASK THE EXPERTS

Veronica Blette
USEPA WaterSense

Veva Deheza
NIDIS

Carrie Pollard
Marin Water

William Granger
City of Sacramento

Enter your **question** into the **question pane** at the lower right-hand side of the screen.

Please specify to whom you are addressing the question.

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UPCOMING WEBINARS

April 24 - FREE Webinar: COVID-19 Implications to Operations, Compliance & Training

April 30 - FREE Webinar from GE Digital: How to Create Your Digital Plant

May 6 - What's New with Cyanobacteria and Cyanotoxins: A Review of Leading Research

Register for a 2020 Webinar Bundle

View the full 2020 schedule at awwa.org/webinars

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THANK YOU FOR JOINING TODAY'S WEBINAR

- As part of your registration, you are entitled to an additional 30-day archive access of today's program.
- Until next time, keep the water safe and secure.

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PRESENTER BIOGRAPHY INFORMATION

Veronica Blette manages the WaterSense program in the U.S. Environmental Protection Agency's Office of Water. She has been with the EPA since 1997 and previously served as special assistant to the director of the national drinking water program and led EPA's drinking water infrastructure financing program. She is currently vice-chair of the AWWA Water Conservation Division.

Veva Deheza is responsible for the implementation of the National Integrated Drought Information System (NIDIS) and is a NOAA/NIDIS co-lead on the National Drought Resilience Partnership (NDRP). For 20 years, her career has focused on bridging the gap between government, the science community, and the public to distribute essential information on water resource conditions and management.

Carrie Pollard manages the Water Efficiency Program at Marin Municipal Water District. She has over 18 years of experience in the field of water efficiency and water conservation and started with Marin Water in August 2019. Carrie serves on the Board for the California Water Efficiency Partnership, the Qualified Water Efficient Landscaper Program and the California Irrigation Institute.

William Granger serves as the Water Conservation Administrator for the City of Sacramento. He has more than 24 years experience working for public agencies designing, implementing and analyzing effective water conservation programs, with a primary focus in water wise landscape transformation. He has been an active member of AWWA water conservation committees and is a newly appointed trustee of the Water Conservation Division.

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