



NARUC

Winter Committee Meetings

Committee On Water



NARUC
Winter Committee Meeting
February 14, 2017

AQUASM

Permanent Water Conservation Efforts

What We Will Cover Today

- **AQUA PA**
 - **Who we are.**
- **Drought Contingency Plan**
- **Drought Operations**
 - **SEPA 2016/2017 REOPERATIONS**
- **Unaccounted for Water – Best Practices**
- **Closing Comments/Lessons Learned**
- **Questions**

U.S. Regulated Water and Wastewater Industry Overview



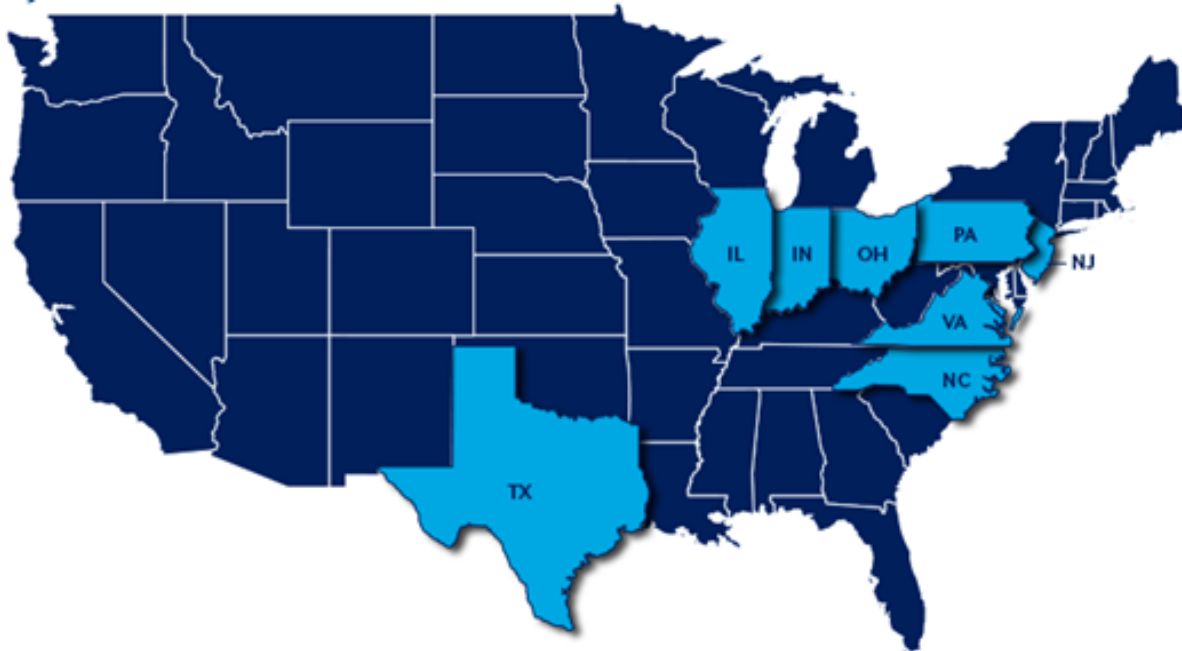
Water

- 53,000 systems
- 85% of population served by municipalities
- Aqua serves 1% of U.S. population

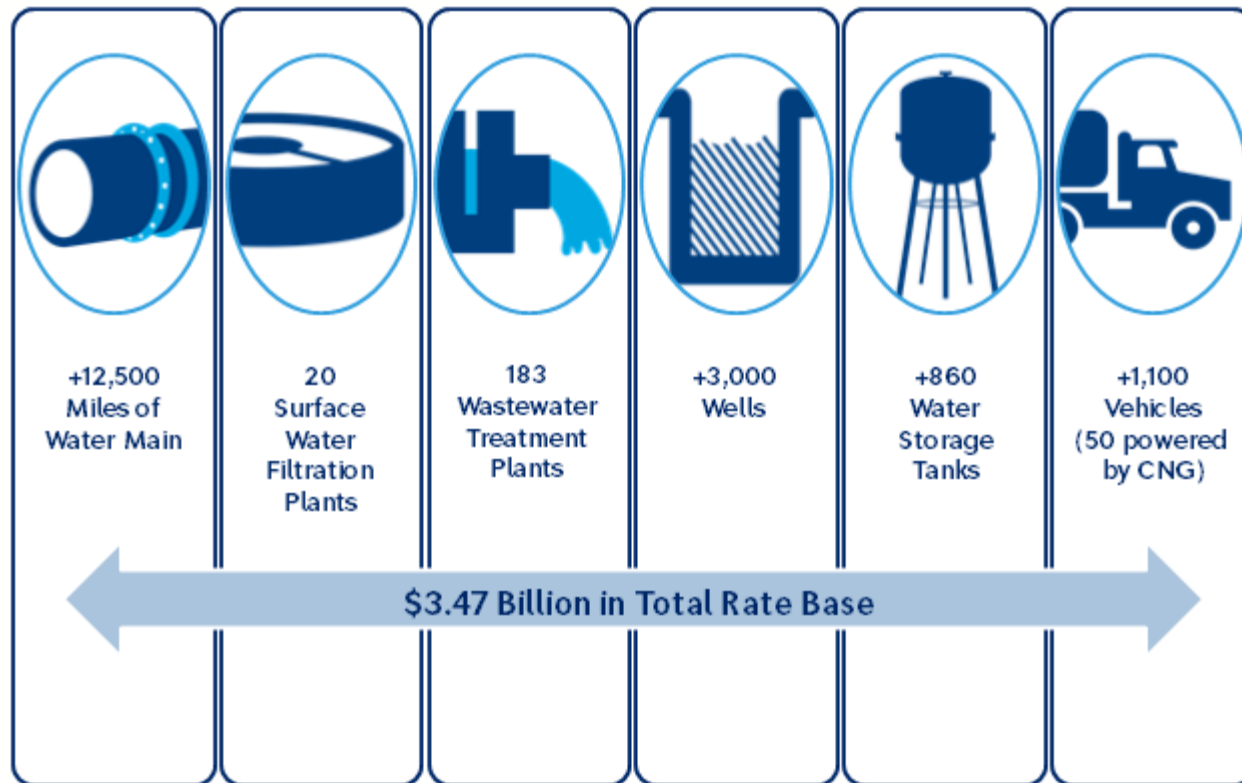


Wastewater

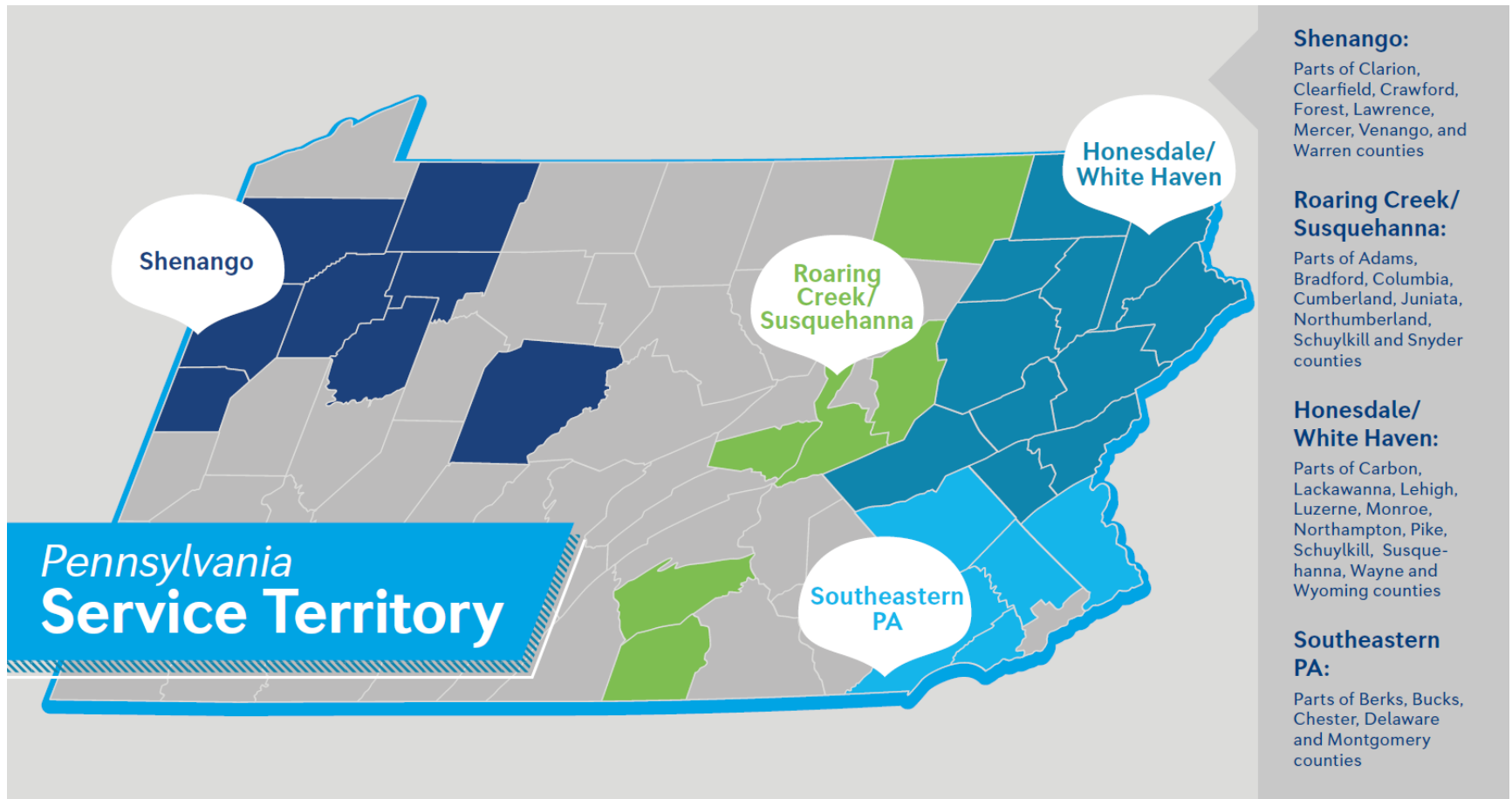
- 16,000 systems
- 97% of population served by municipalities
- Aqua serves 0.1% of U.S. population



Aqua America Infrastructure Footprint



Aqua Pennsylvania Service Territory



Pennsylvania At-A-Glance



450,000

**WATER
CONNECTIONS**



125 **MILLION
GALLONS
DAILY**



200+ **WELLS**



11 **SURFACE
WATER
TREATMENT
PLANTS**



550

EMPLOYEES



32

COUNTIES



1.4 **MILLION
PEOPLE SERVED**



5,623

**MILES
OF PIPE**



270,000+

**LAB TESTS
PERFORMED / YR**



20,000

**WASTEWATER
CONNECTIONS**



87

LIFT STATIONS



31

**WASTEWATER
TREATMENT
PLANTS**

Drought Contingency Plan

- **STAGE I**

- **TRIGGER – Commonwealth declares Drought Watch or Drought Warning for some or all counties in service areas.**

Demand Measures	Supply Measures
Voluntary Restrictions / nonessential water use.	Daily tracking of sendout and storage in Springton & Green Lane;
Increase Leak Detections	Monitor daily USGS drought indicators including Ridley Creek, Chester Creek and Crum Creek
Notices to public and interconnected systems for discussion on system assessment	

Drought Contingency Plan

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- **TRIGGER – Commonwealth declares Drought Watch or Drought Warning for some or all counties in service areas.**

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Drought Contingency Plan

- **STAGE II**

- **Trigger – Governor declares Drought Emergency for some or all counties in service areas.**

Demand Measures	Supply Measures
Mandatory Restrictions on nonessential use	Activate standby sources
Contact customers that could reduce or suspend withdrawals	Increase releases from West Chester Reservoir to Chester Creek
Submit Water Rationing Plan to state Drought Coordinator, if Stage III appears imminent	Contact large water suppliers to assist with meeting demands, e.g., PWD, CWA.

Drought Contingency Plan

- **STAGE III**

- **Trigger – Storage in Springton Reservoir falls below “Drought Emergency” reservoir operating curve for 3 consecutive days**

Demand Measures	Supply Measures
Implement Water Rationing Plan after approval by the state Drought Coordinator	Implement temporary emergency interconnects
	Request relief to meet bypass requirements
	Explore use of non-potable supplies for irrigation & industrial uses; explore emergency permits for portable or temporary treatment of non-potable supplies; explore emergency releases from recreational pools and/or reservoir not fully used/allocated.

Drought Operations

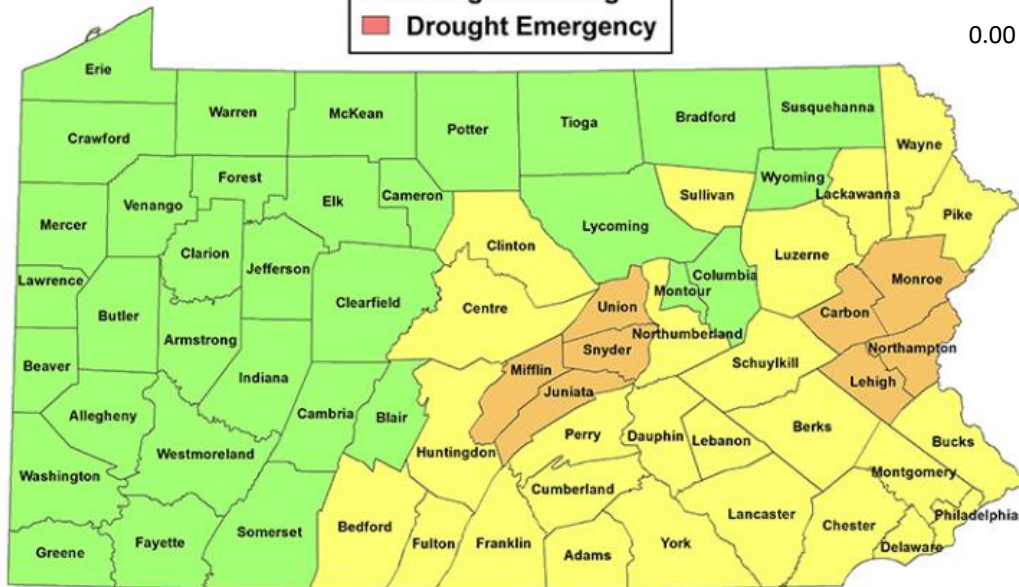
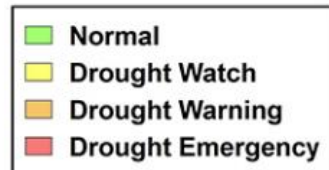
SEPA 2016/2017 Reoperations

- **In 2016 Drought Warnings were issued for parts of PA**
- **SEPA experienced sporadic rainfall**
 - **Rainfall was ~85% of normal**
- **Key Reservoirs**
 - **Springton Reservoir, Springfield Delaware County capacity was ~65%.**
- **WTPs serving Delaware County include:**
 - **Nick DeBenedictis WTP:**
 - **Source: Crum Creek from Springton Reservoir** **Capacity: 24 MGD**
 - **Ridley Creek WTP**
 - **Sources: Ridley Creek & Chester Creek** **Capacity: 8 MGD**
- ❖ **These two service areas are interconnect at Farnum Road**

Dryness Continues?

Dryness continues

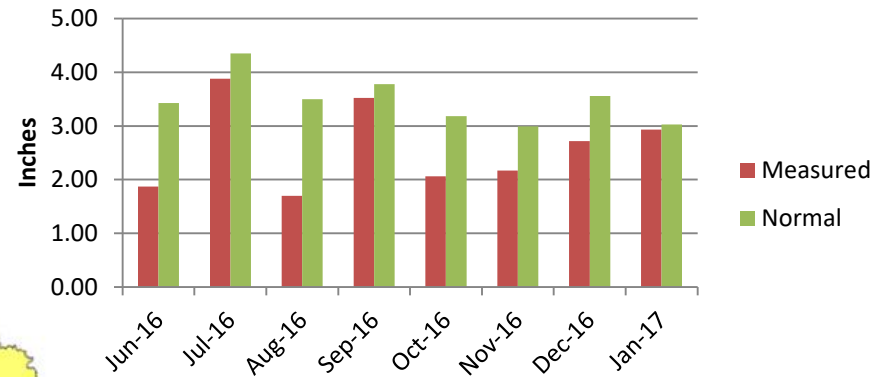
- 7 Inches below normal since Jun 2017 (PHL)
 - ✓ That's 25% below average



PADEP Drought Information Current Drought Declaration Status

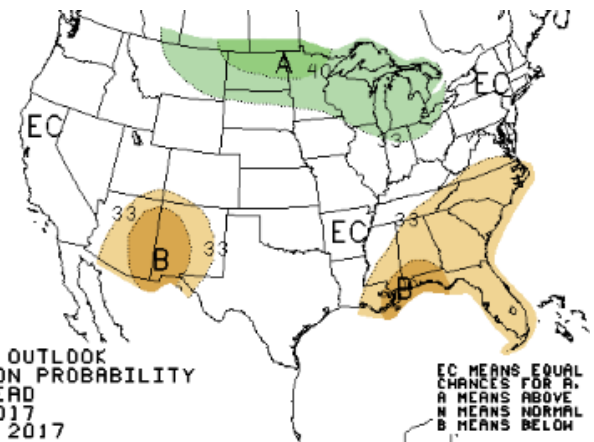
February 10, 2017

Philadelphia Precipitation



Precipitation Outlook Feb – Apr 2017

- Equal Chance of above or below normal



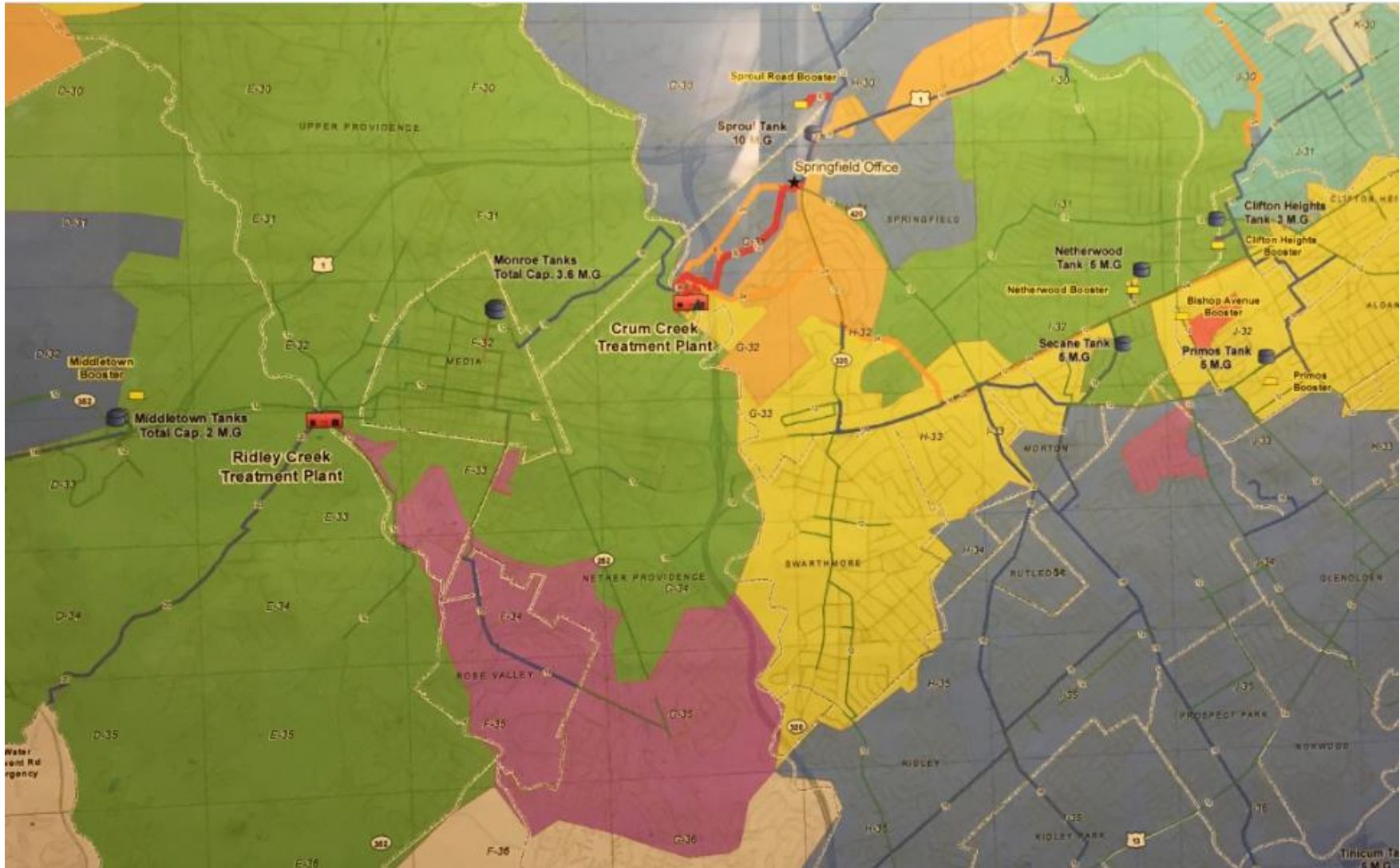
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
1.5 MONTH LEAD
VALID MAR 2017
MADE 19 JAN 2017

Drought Operations

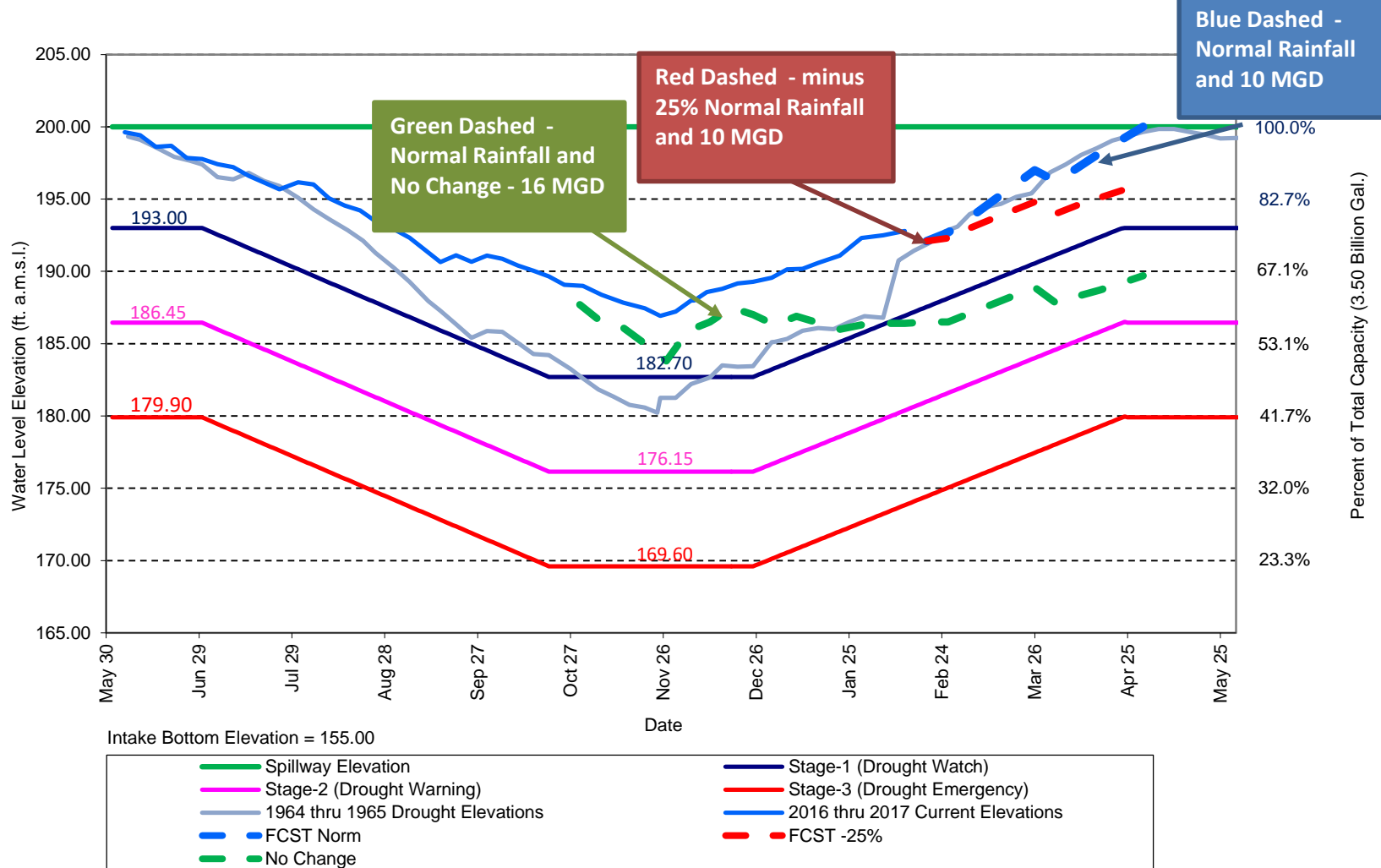
SEPA 2016/2017 Reoperations (CONT.)

	SEPT/OCT	NOV	DEC	JAN
STORAGE	STEEP DECLINE ELEV: ~191 (~82%) TO 184 (53%)		REBOUND (~55%)	REBOUND CONTINUES (~70%)
DEBENNEDICTIS WTP (MGD)	17 to 18	13.5	10	10
RIDLEY WTP (MGD)	4	5 to 6	6	6
RAINFALL	1" < NORMAL	1" < NORMAL	0.75" < NORMAL	NORMAL

Delaware County Operations



Springton Reservoir Drought Operating Curves Projections Based on Sendout & Precipitation



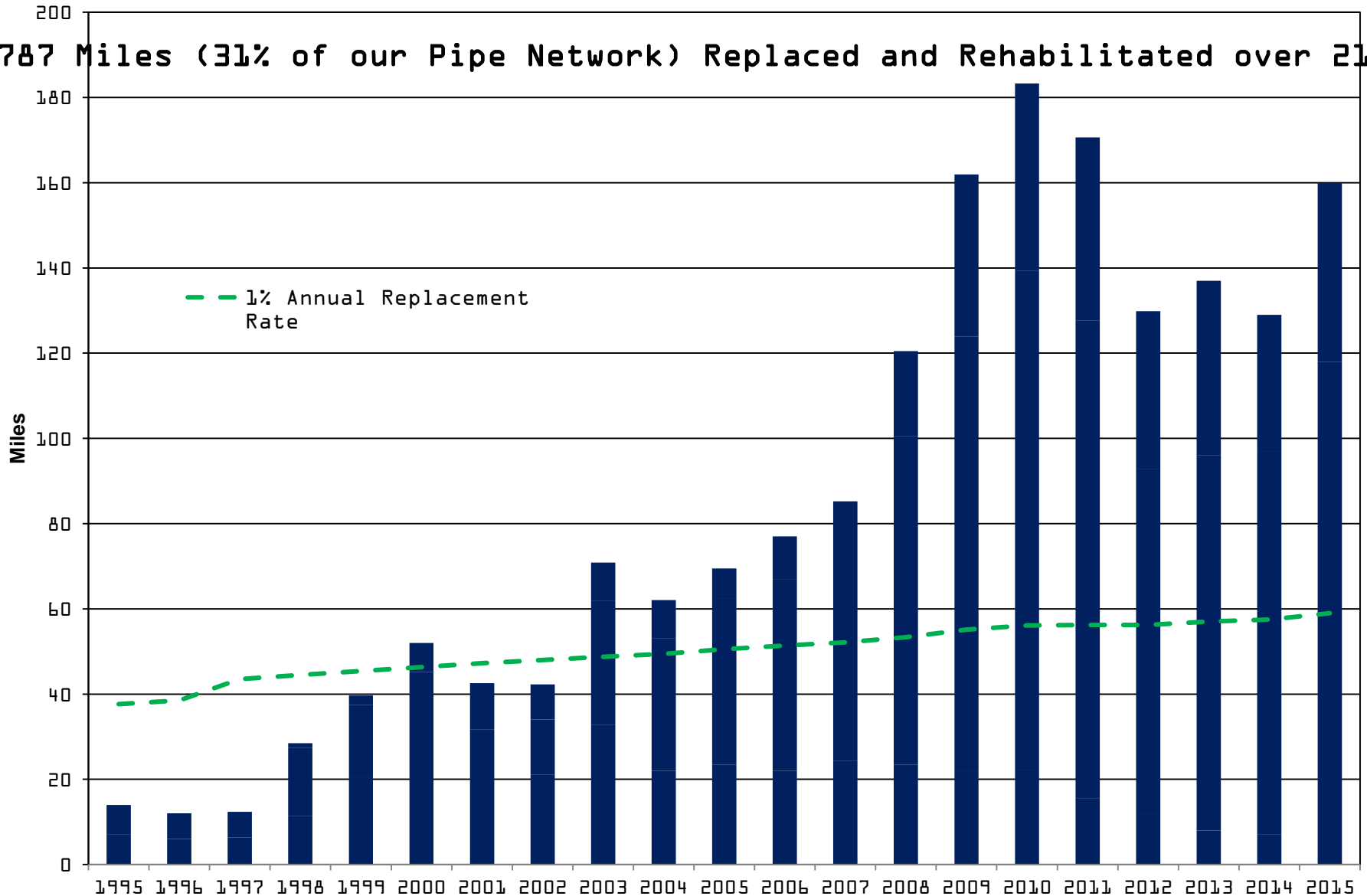
Unaccounted for Water

Best Practices

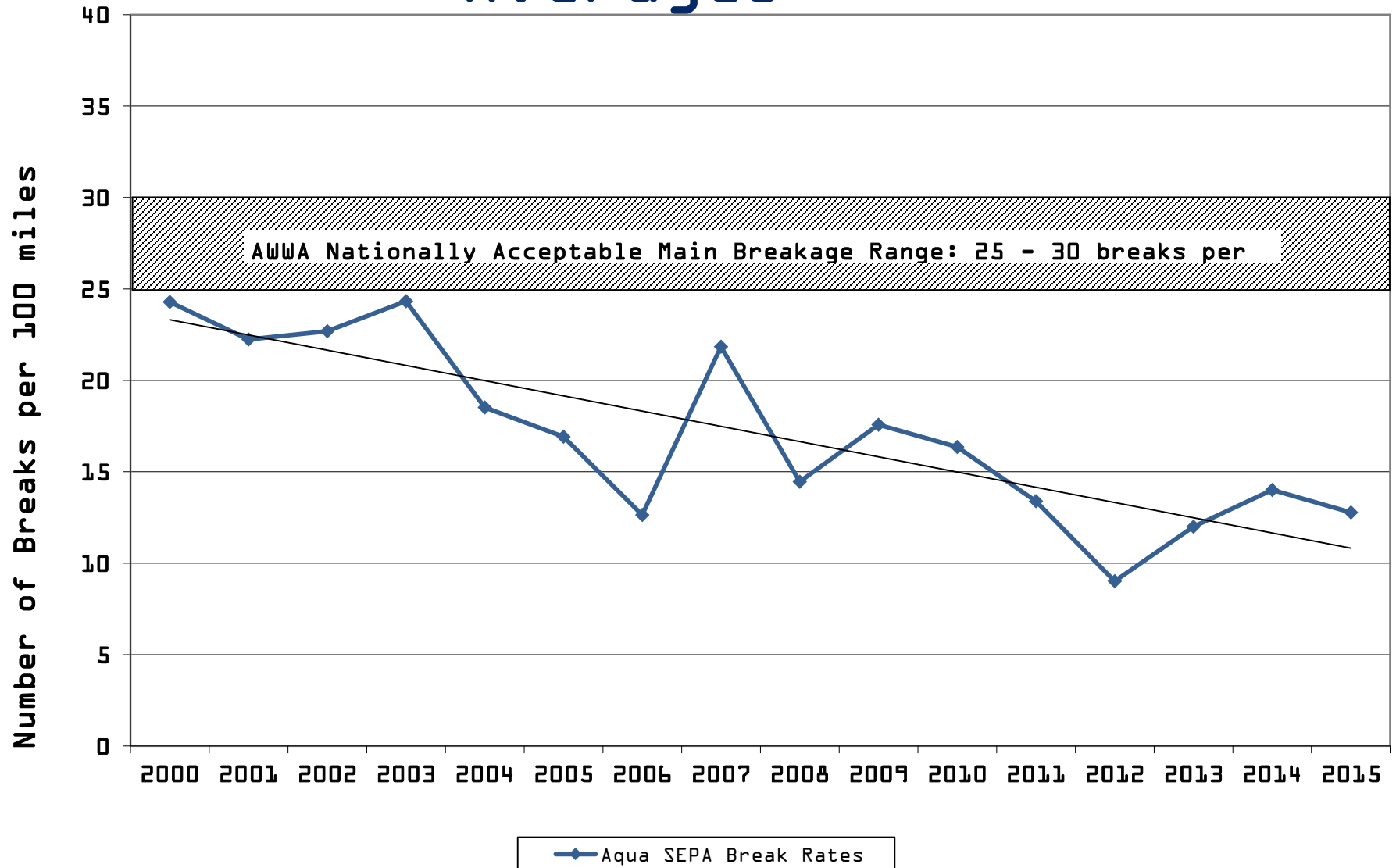
- **1995 – AQUA STARTED AN AGGRESSIVE MAIN REPLACEMENT PROGRAM.**
 - 130 TO 150-MILES OF PIPE REPLACED / YEAR (10-YR)
- **2013- AQUA STARTED AN AGGRESSIVE STUDY TO REDUCE UAW.**
 - STUDY IDENTIFIED 12 BUSINESS CASES INCLUDING:
 - LEAK DETECTION PRACTICES;
 - CUSTOMER METER TESTING & THEFT ANALYSIS; AND
 - DISTRICT METERING.
- **AT START OF STUDY, UAW IN SEPA WAS ~ 20%. IT HAS SINCE BEEN REDUCED TO ~18% OR ABOUT 1 BILLION GALLONS / YEAR.**

Aqua PA - Miles of Pipe Replaced and Rehabilitated

1787 Miles (31% of our Pipe Network) Replaced and Rehabilitated over 21



Aqua SE PA Main Break Averages



Closing Comments/Lessons Learned

- CONTINUE EACH YEAR TO CLOSELY MONITOR RESERVOIR LEVELS, STREAM FLOWS;
 - INCLUDE ALL DEPT'S IN DECISION MAKING.
- EVALUATE INSTALLATION OF A SMALLER PUMP(S) AT DEBENNEDICTIS WTP;
- EVALUATE SYSTEM BOOSTER PUMP SIZES OR USE OF VFDs.
- BENEFITS OF INTERCONNECTED SYSTEMS
 - EVALUATE CURRENT INTERCONNECTS WITH OTHER UTILITIES AND INTERNAL TO AQUA.



Thank You.



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Committee On Water

“Making Water Conservation a California Way of Life”

Implementing Executive Order B-37-16

Jack Hawks

NARUC Committee on Water

February 14, 2017

Washington, DC



- 108 Regulated IOWCs
 - 9 Class A water utilities (> 10,000 connections)
 - 5 Class B water utilities (>2,000)
 - 23 Class C water utilities (> 500)
 - 71 Class D water utilities (< 500)
- 1.5 Million Customers
- \$1.7 billion annual revenues
- 6 Million Served



Executive Order B-37-16

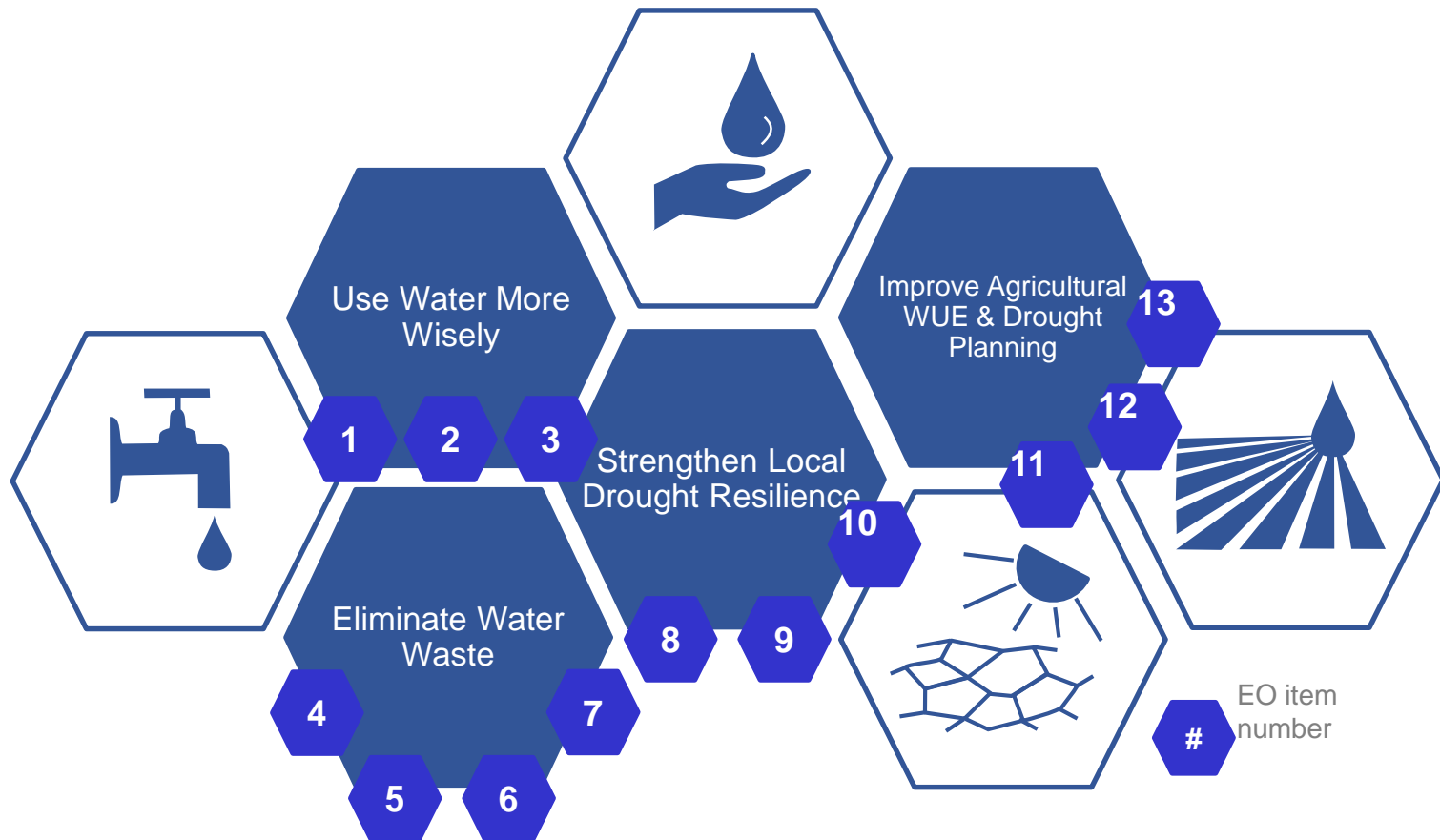
- Governor Brown Issues on May 9, 2016
 - Pressure has been building throughout the five-year drought to undertake permanent conservation regulations
 - Collaborative effort by five state agencies:



- Four Components; 13 Utility Directives
 - Use Water More Wisely
 - Eliminate Water Waste
 - Strengthen Local Drought Resilience
 - Improve Agricultural Water Use Efficiency, Drought Planning



EO B-37-16 Directives



Implementation: Strengthen Local Drought Resilience

- Water Shortage Contingency Plans (WSCPs)
 - Five-Year Supply-Demand Assessment
 - Fully activated during five-year drought
- Improve Drought Planning for small water suppliers and rural communities



Implementation: Strengthen Local Drought Resilience

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Urban Water Suppliers' WSCPs

- Defines Annual Assessment Schedule and Procedures
- Defines Annual Assessment Methodology
 - Annual Water Budget Forecast (WBF)
 - 5-year Drought Risk Assessment (5-DRA)
- Defines Evaluation Criteria – a set of Evaluation Criteria used to conduct the WBF and the 5-DRA
- Defines Shortage Response Actions (SRAs) to mitigate actual or potential shortage
 - Supply management and augmentation
 - Voluntary and mandatory demand reduction
- Defines Shortage Thresholds to enable definitive grouping of defined SRAs



WSCP elements (cont.)

- Defines Staged Mandatory Demand Reduction Actions as a subset of SRAs focused only on demand reduction
- Establishes a Communications Plan describing approach, potential budget needs, and probably actions to quickly implement SRAs
- Details Customer Compliance, Enforcement mechanisms and exemption process
- Demonstrates Implementation Authorities to assure consistent and timely implementation of the WSCP to maintain desired water supply reliability



WSCP elements (cont.)

- Defines a Financial Plan for Drought Conditions to accommodate and manage financial affects when SRAs are triggered
- Defines Monitoring and Reporting Requirements and Procedures
 - Internally (e.g. to elected board/council)
 - Externally to customers and neighboring suppliers or counties
 - To State agencies
- Establishes a Re-evaluation and Improvement Process to monitor and systematically evaluate the WSCP's functionality to manage risk



WSCP-State Agency Role

- Monitor regional and statewide conditions
- Review WSCPs and data
- Provide increased Technical and Financial Assistance for preparing and implementing WSCPs and related response actions
- Develop *Reporting, Compliance, and Enforcement* protocols to ensure suppliers are adequately prepared for more severe and frequent drought conditions



Implementation: Eliminate Water Waste

■ Permanent Water Use Prohibitions

- Using potable water to hose down driveways, sidewalks
- Watering lawns in a manner that causes runoff
- Using hoses with no shutoff nozzles to wash cars
- Using potable water for decorative features w/out recirculation
- Using potable water to irrigate ornamental turf (street medians)
- Watering lawns within 48 hours of measurable precipitation

■ Minimizing Water Loss

- Implementation of Senate Bill 555 (2015)
- New water loss audit regulations
- Accelerate data collection and monthly water usage reporting

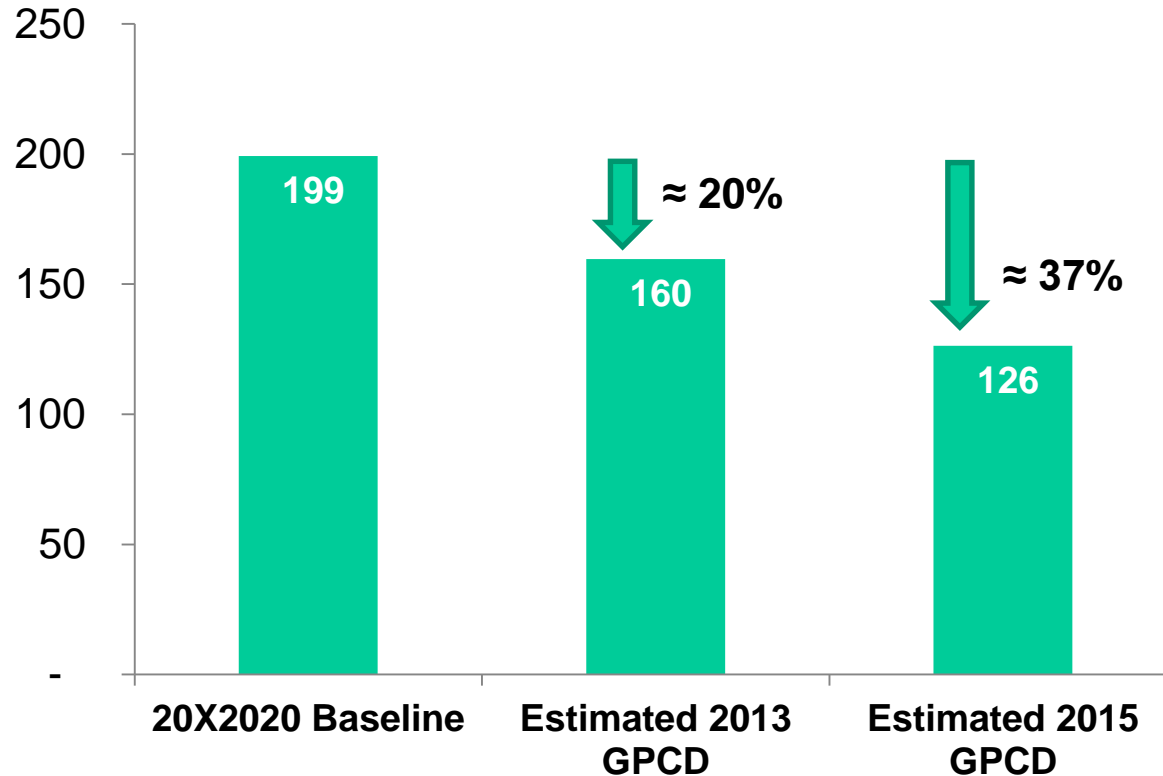


Implementation: Use Water More Wisely

- Emergency Regulations
- Water Use Targets and Standards
- Reporting Requirements



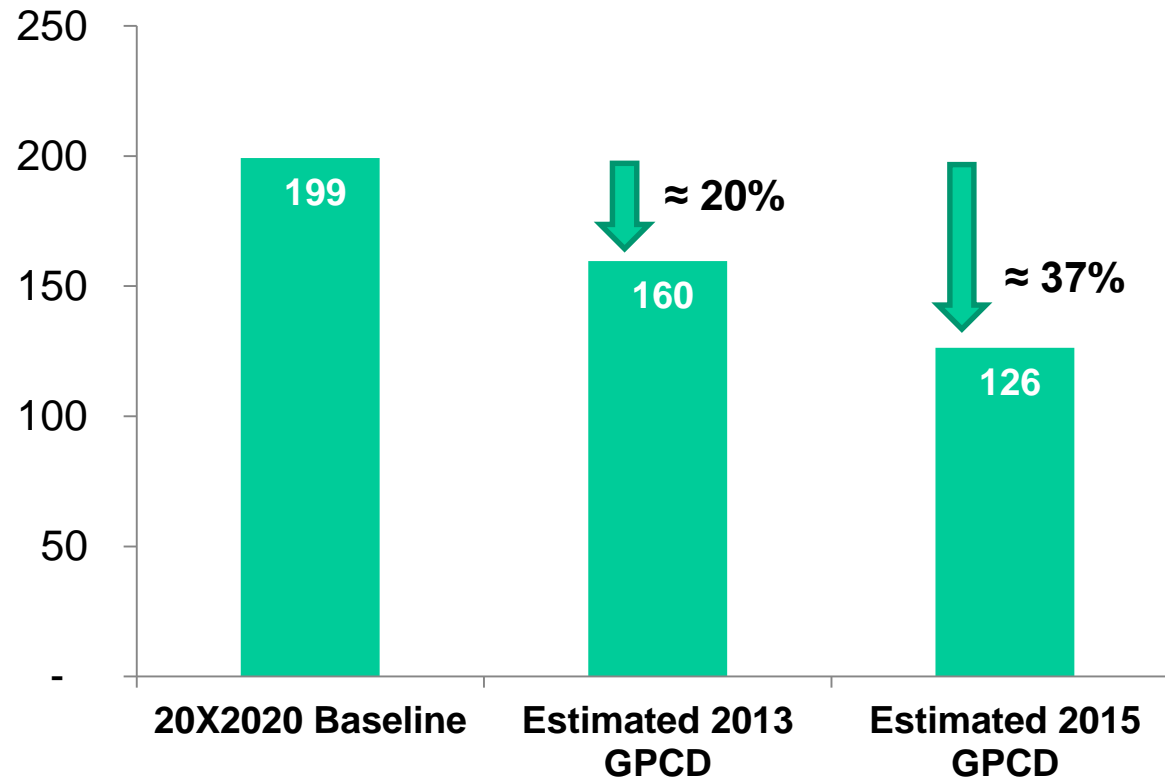
20 X 2020 Progress



Baseline based on a subset of 363 suppliers, population weighted averages using 2010 population
2013 and 2015 GPCD estimates based water use data reported under emergency regulation



20 X 2020 Progress



Baseline based on a subset of 363 suppliers, population weighted averages using 2010 population
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Implementation: Emergency Regulations

- Adjust Existing Emergency Conservation Regulation
 - In recognition of differing water supply conditions across the state
 - Develop a proposal to achieve a mandatory reduction in potable water usage that builds off the mandatory 25% drought reductions from 2015 and lessons learned in 2016
 - Well ...



Emergency Regulations Extended

- California Has Moved from a Drought Emergency to a Flood Emergency in Six Weeks
- Water Conservation Remains Strong – Latest Report Shows State Achieved a 20.6% Reduction in urban Water Use Compared With Same Period in 2013
- Cumulative Savings from June 2015 thru December 2016 Was 2.43 Million Acre-Feet (22.5% decrease), Enough to Supply 12 Million People for a Year
- Still, the State Water Resources Control Board Extended the Regulation, at Least Through May on Feb. 8th
 - Drought conditions remain in Central Valley, Santa Barbara regions
 - Groundwater aquifers remain depleted in many areas



Emergency Regulation Extended

- Main Components of the Extended Emergency Regulation Include:
 - Continued “stress test” approach (i.e., utility self-certified three-year supply assessment, meaning there is no mandatory percentage reduction in customers’ water use, unless needed locally)
 - Continued monthly reporting of water production
 - Continued prohibitions on wasteful uses of water
 - Will revisit in May 2017



Implementation: Utility Water Use Targets and Standards

- State agencies to establish a long term framework for new water use targets based on water budgets calculated from standards for four sectors
 - Indoor residential
 - Outdoor irrigation
 - Commercial, Industrial, Institutional (CII)
 - Distribution system loss



Efficiency Standards: Indoor Residential

- Indoor Standard:
 - Provisional standard of 55 GPCD
 - Revise downward in 2018, based on additional studies, to be achieved by 2025.



Efficiency Standards: Outdoor Residential

- Outdoor Standard:
 - Provisional standards based on Model Water Efficient Landscape Ordinance:
 - 0.8 reference Evapotranspiration (Et) (pre-2010)
 - 0.7 reference Et (2010-2015)
 - 0.55 (residential) or 0.45 (commercial) post 2015
 - 1.0 for special landscapes (including landscapes irrigated with recycled water)
 - Revise downward in 2018 based on analysis of existing data and pilot project with 30 water utilities



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Water Use Target Example

Sector	Budget ¹ (GPCD)	Budget Volume	
		(acre-feet)	(CCF)
Residential Indoor Water Use	55	10,492	4,570,315
Outdoor Irrigation Water Use	45	8,584	3,739,190
Water Loss	6	1,144	498,326
Target	106	20,220	8,830,380

Notes: ¹Budget calculations based on the following: Service area population = 170,319; Days per year = 365



Compliance Volume Calculation

Supplier's Water Use:

Total Water Production:	26,136 acre-feet
CII Deliveries:	7,240 acre-feet
Target (prior example):	20,220 acre-feet

Compliance Volume = Total Production – CII deliveries

$$= 26,136 - 7,240 = 18,896 \text{ acre-feet}$$

****** The supplier is in compliance because the compliance volume of 18,896 acre-feet is less than the water use target of 20,220 acre-feet



Efficiency Standards: CII

- Proposed approach: establish performance measures
 - All dedicated irrigation accounts will be on a budget using outdoor standards
 - Require NAICS classification by 2021, develop benchmarks.
 - Require all mixed meter accounts to split off landscape greater than a size threshold to dedicated irrigation accounts (or equivalent technology) by 2021.
 - Audits and water management plans for reporting efficiency in CII water use. Audits and plans for subset of CII customers, based on volume, percentage, or number.
- Because of the high variation and diversity in the CII sector, the decision was made to adopt performance measures rather than volumetric standards or targets



Efficiency Standards: Water Loss

■ Water Loss

- SB 555 Standards
 - State Water Board rulemaking to commence in 2019 with standards set in 2020
- Will include real and apparent losses



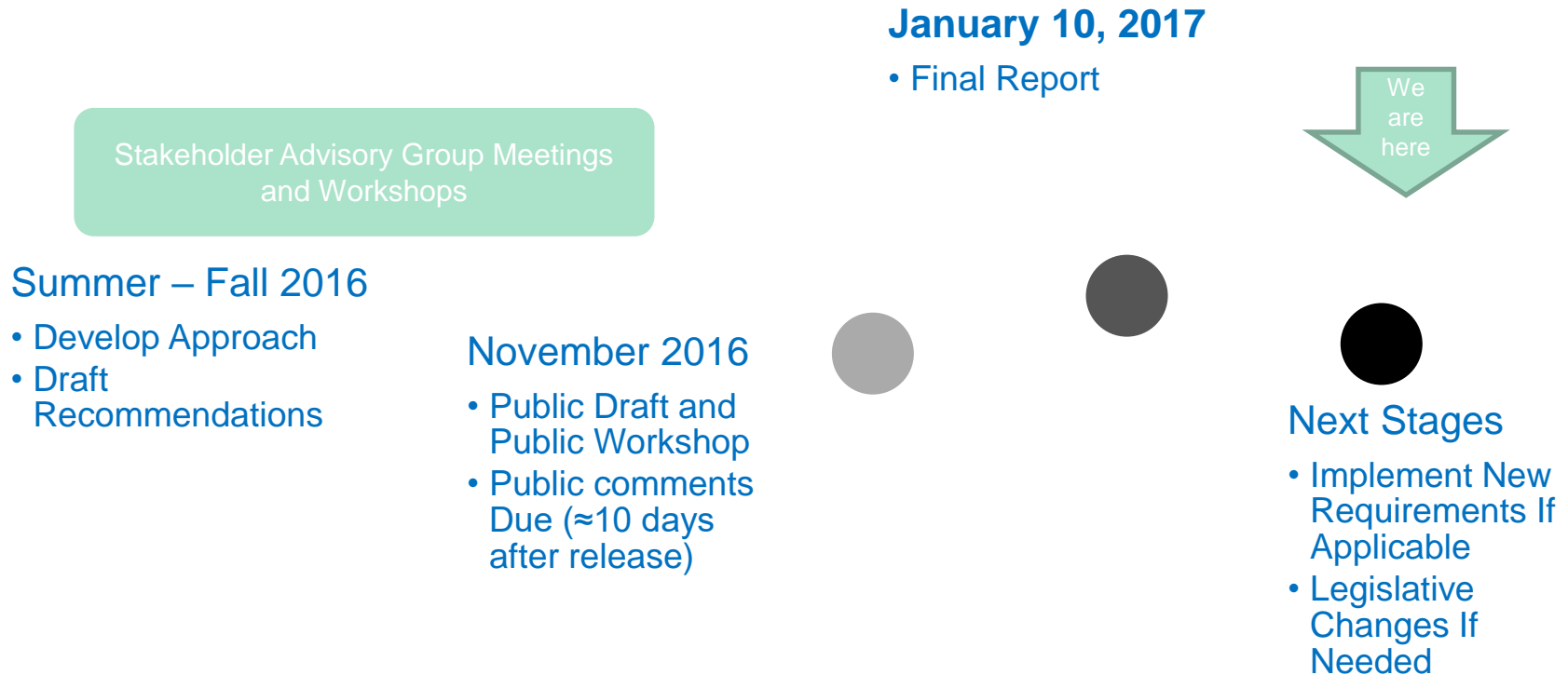
Implementation: Use Water More Wisely (cont.)

■ Reporting Requirements

- Monthly water production reports will continue
- Provisional indoor and outdoor targets developed by DWR; water utilities set interim targets (2018)
- Limited annual progress reports toward meeting interim and final water use targets (2019)
- Urban Water Management Plans adopt final indoor, outdoor and water loss targets (2020)
- Annual progress reports begin (2022)



EO B-37-16 | Timeline



Existing and New Authorities

- Actions That Can Be Achieved Through Existing Statutory Authority
 - Emergency conservation regulations
 - Permanent prohibition of wasteful practices
 - Reduced water supplier leaks and water loss standards
 - Certification of innovative technologies for water conservation and energy efficiency



Existing and New Authorities

- Actions That Require New Statutory Authority
 - New utility water use targets
 - Strengthened standards in *Water Shortage Contingency Plans*
 - Drought planning for small systems and rural communities
 - Agricultural water management plans



Questions?

Thank You

Jack Hawks

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