

The Future of Water in Arizona

WRRC Conference 2018



Thomas Buschatzke

Director

Arizona Department of Water Resources

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Sources of Water In Arizona

- Groundwater – 41%
- Surface Water – 18%
- Colorado River Water – 38%
- Reclaimed Water – 3%



Arizona's Water Resource Challenges

Driving Forces

- Arizona has had a drought declaration in place since 1998
- Population & economic growth will increase demand for water

Short-term Challenges

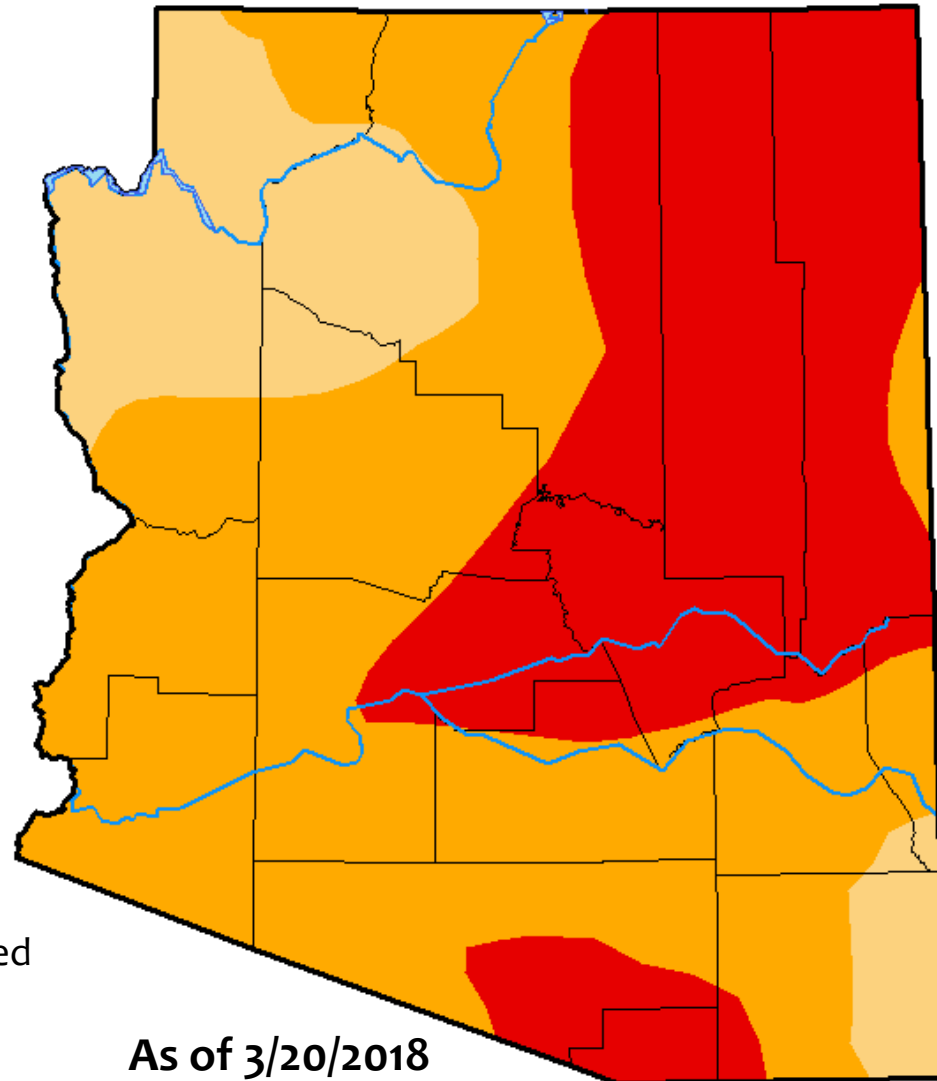
- Risks to Colorado River Supply
 - Shortage on the Colorado River System is likely
 - Recurring Lower Basin Annual Deficit

Medium-term Challenges

- Water resources in rural areas of the state are more stressed
 - Primary water source is groundwater
 - Lack of groundwater regulation
 - Lack of groundwater data
 - Rural areas lack the resources to address their issues

Long-term Challenges

- Growing statewide imbalance between existing water supplies and demand projected in the next 25 years and 50 years



As of 3/20/2018

Colorado River Challenges

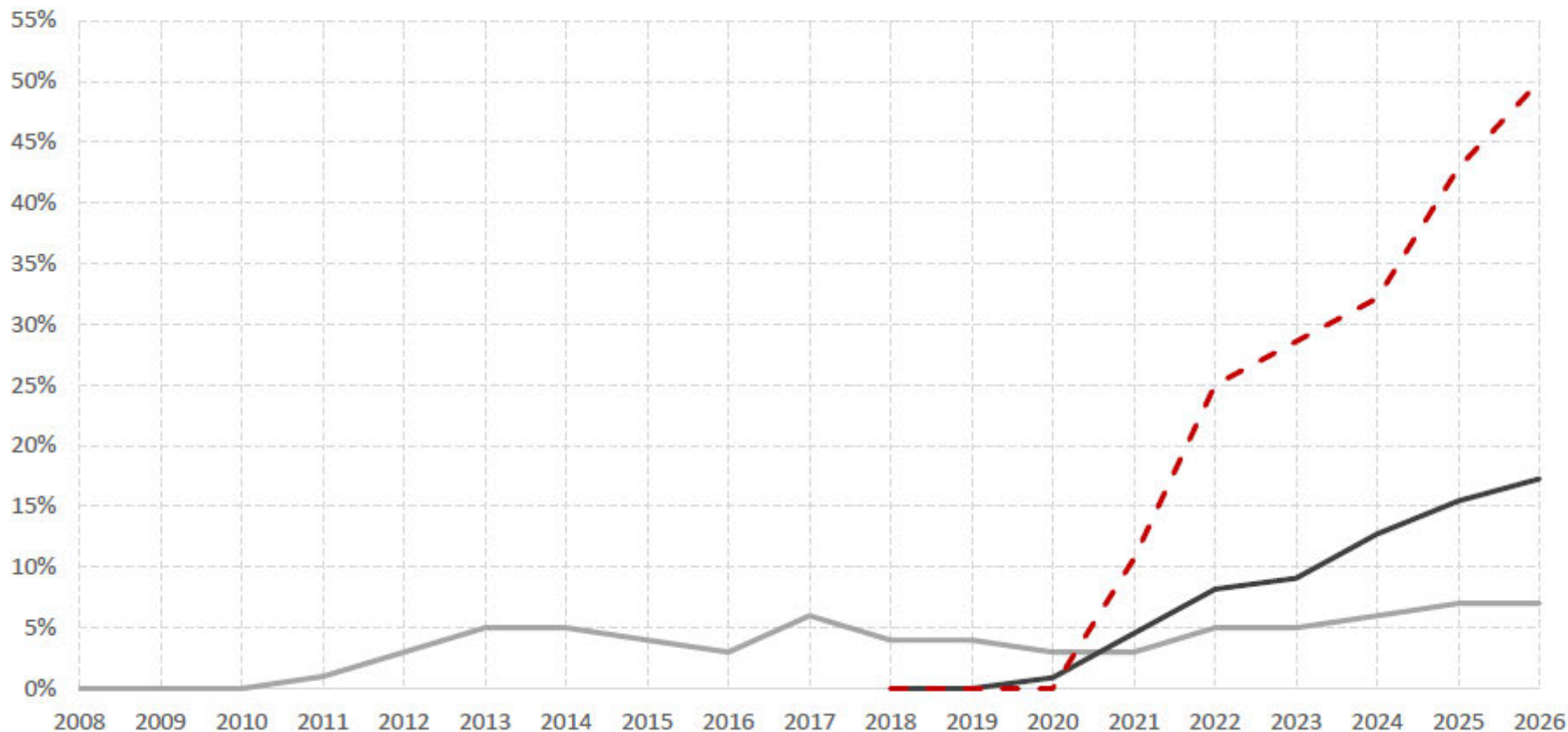
Probabilities of Shortage

	2018	2019	2020	2021	2022
Probability of any level of shortage (Mead \leq 1,075 ft.)	0	17	49	58	63
1 st level shortage (Mead \leq 1,075 and \geq 1,050 ft.)	0	17	48	43	39
2 nd level shortage (Mead $<$ 1,050 and \geq 1,025 ft.)	0	0	1	15	18
3 rd level shortage (Mead $<$ 1,025 ft.)	0	0	0	<1	5

The probability for shortage in 2019 has increased from 15% in the August 2017 to 17% in the January 2018 model. The probabilities of shortage in the following years, 2020-2022, have increased by 7%, 13%, and 11% respectively.

*Based on Bureau of Reclamation CRSS Model Run – January 2018

Risk of Lake Mead Reaching Critically Low Elevations (1,025')



- Risk as assessed when 2007 Interim Guidelines were adopted
- Comparative current risk assessment as of August 2017 based on full historical hydrologic record
- - Adjusted current risk assessment as of August 2017 based on the last 28 years of historical hydrology (i.e., assuming last 28 years are representative of future hydrology)

Colorado River: The Future of the State

- Drought Contingency Plan
- Drought Contingency Plan – Plus
- Arizona Conservation Plan
- Speaking with ONE VOICE
- Mexico as a partner



Colorado River within the Grand Canyon

LBDCP Water Use Reductions

Lake Mead Elevation	AZ [2007]	AZ [Plan]	AZ TOTAL	NV [2007]	NV [Plan]	NV TOTAL	CA [2007]	CA [Plan]	CA TOTAL	BOR	TOTAL
1090-1075	0	192K	192K	0	8K	8K	0	0	0	100k	300k
1075-1050	320K	192K	512K	13K	8K	21K	0	0	0	100k	633k
1050-1045	400K	192K	592K	17K	8K	25K	0	0	0	100k	717k
1045-1040	400K	240K	640K	17K	10K	27K	0	200K	200K	100k	967k
1040-1035	400K	240K	640K	17K	10K	27K	0	250K	250K	100k	1,017k
1035-1030	400K	240K	640K	17K	10K	27K	0	300K	300K	100k	1,067k
1030-1025	400K	240K	640K	17K	10K	27K	0	350K	350K	100k	1,117k
<1025	480K	240K	720K	20K	10K	30K	0	350K	350K	100k	1,200k

Drought Contingency Plan Plus

The Need:

To partially mitigate the impact on Arizona water users from the additional reductions resulting from the inter-state DCP

The Goal:

Reduce Probability of First Tier Lake Mead Shortage

The Strategy:

- Targets a buffer at elevation 1,080 feet
- Makes projections of Lake Mead's end of year elevations using 24-Month study data
- Determines required conservation (based on August 24-Month Study)
- Achieves conservation through Arizona system conservation & ICS
- Continues to monitor hydrologic conditions & adjust as necessary

Arizona Conservation Plan

- Non-tribal ICS
- Tribal ICS
- System Conservation
- Forbearance for ADWR Director



Collaboration with Mexico

Minute 323

- Extends the provisions of Minute 319 through 2026
- Scarcity Plan for Mexico contains additional flexibilities for Mexico on par with the flexibility that the Lower Basin Drought Contingency Plan contains
- Executed entry into force (September 27, 2017)
- Potential opportunities for binational desalination



One Voice

- No 11th Amendment Sovereign Immunity for CAWCD
- ADWR Director to sign off on all “interstate” Colorado River agreements involving CAWCD
- Transfers of mainstem Colorado River water to CAWCD Service Area – sovereignty



Colorado River within the Grand Canyon

Rural Arizona Groundwater Challenges

La Paz County

Average water levels are declining in most index wells measured in the Ranegras Plain Basin between 2014 and 2017. Between 2016-2017, the average change in index wells was

-3.4 feet

Mohave County

Average water levels are declining in most index wells measured in the Hualapai Basin between 2014 and 2017. Between 2016-2017, the average change in index wells was

-1.4 feet

Cochise County

Average water levels are declining in most index wells measured in the Willcox Basin between 2014 and 2017. Between 2016-2017, the average change in index wells was

-3.5 feet



New Tools for Rural Areas

- Incentivizing efficiency
- Reporting water use to ADWR
- Robust groundwater modeling to test local solutions



Groundwater Management Act Plus

- Extension of management plans for multiple 10-year periods
- Stakeholder process to review conservation requirements in all sectors
- Stakeholder process to review management goals
- AWBA to have recovery authority



Water Supply Opportunities

- Tribal water settlements
- Tribal ICS
- Colorado River Indian Tribes in-state transfers
- Long-term storage credits

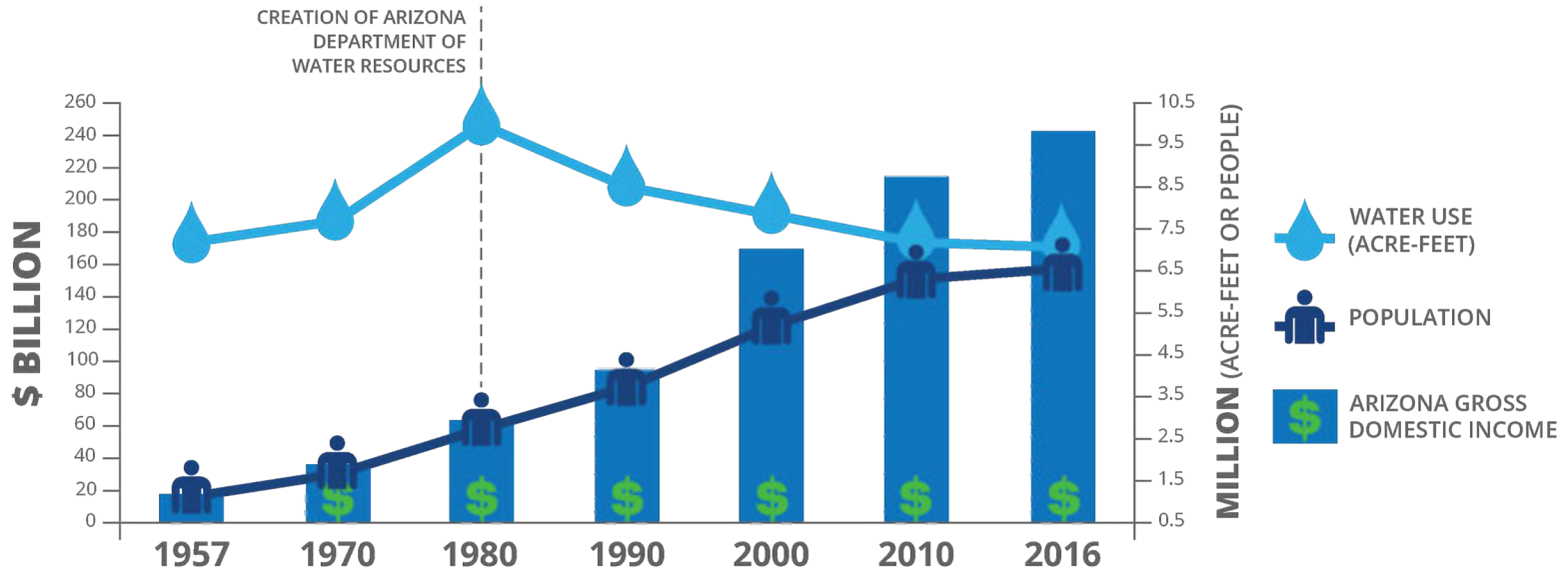


Augmentation

- **Long-Term Water Augmentation Committee (GWAC)**
 - Tasked with investigating weather modification, watershed management, recharge, storage, and other types of augmentation.
 - Working on a project to assist planning areas with the greatest water demand imbalances.
- **Desalination Committee (GWAC)**
 - Tasked with researching and identifying potential locations for brackish groundwater desalination projects.
- **Recycled Water Committee (GWAC)**
 - Increase use of treated effluent
 - Indirect potable reuse
 - Direct potable reuse

ARIZONA'S WATER MANAGEMENT SUCCESS

ARIZONA WATER USE, POPULATION, AND ECONOMIC GROWTH (1957 - 2016)



TOTAL WATER USE (IN MILLIONS ACRE/FEET)

1957 7.1 MAF
 2016 7 MAF

-2% CHANGE FROM 1957-2016

POPULATION (IN MILLIONS)

1957 1.1
 2016 6.8

504% CHANGE FROM 1957-2016

GROSS DOMESTIC INCOME (IN BILLIONS)

1957 \$ 13.4
 2016 \$ 251.4

1,778% CHANGE FROM 1957-2016

Questions?

Thomas Buschatzke
Director

Phone: 602.771.8426

Email: tbuschatzke@azwater.gov

Website: www.azwater.gov

Twitter: @azwater



PROTECTING
ARIZONA'S WATER SUPPLIES
for **CURRENT & FUTURE GENERATIONS**