



# From vision to action: how water utilities are building climate resilience (Part 1)

22 January 2019, 16:00 hrs Amsterdam time



# WEBINAR

- Why the webinar series?
  - Climate change is impacting availability and quality of water worldwide
    - Frequent rainfall leads to increased water turbidity and higher numbers of pathogens in the water;
    - Reduced rainfall leads to limited water availability and an increased concentration of contaminants in the water.
  - Demand for water supply in urban areas increasing
  - Push for urban stakeholders (cities, utilities, etc.) to better plan and manage the impacts affecting the water supply system
  - Showcase what water utilities are doing to address climate change
  
- 3 part webinar series
  - Integrating climate information for water utilities (25 October 2018)
  - Climate resilient water safety planning (28 November 2018)
  - From vision to action: how water utilities are building climate resilience (Part 1, 2 and 3)
    - Demonstrate the way in which water utilities across the world are responding to climate change impacts

# AGENDA

Host: *Valerie Jenkinson* (CEO, World Water & Wastewater Solutions Ltd.)



- Tucson's Path to Climate Resiliency: Diversify, Conserve, and Partner

*Tim Thomure, PE, ENV SP*

*Director, Tucson Water*



- Q/A

- Climate Adaptation at Denver Water and The Water Utility Climate Alliance

*Laurina Kaatz*

*Climate Program Director, Denver Water*



- Q/A

# Tucson's Path to Climate Resiliency: Diversify, Conserve, and Partner

**TIM THOMURE, PE, ENV SP**  
DIRECTOR OF TUCSON WATER



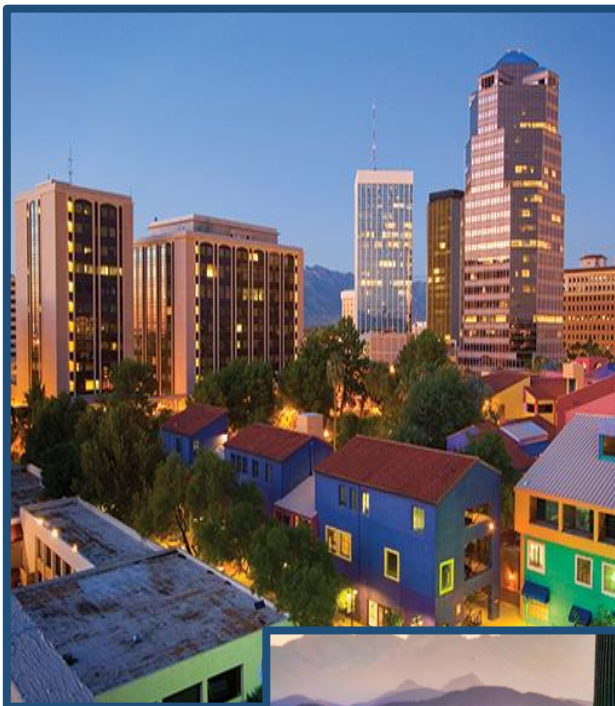
*A proud part of the City of Tucson*



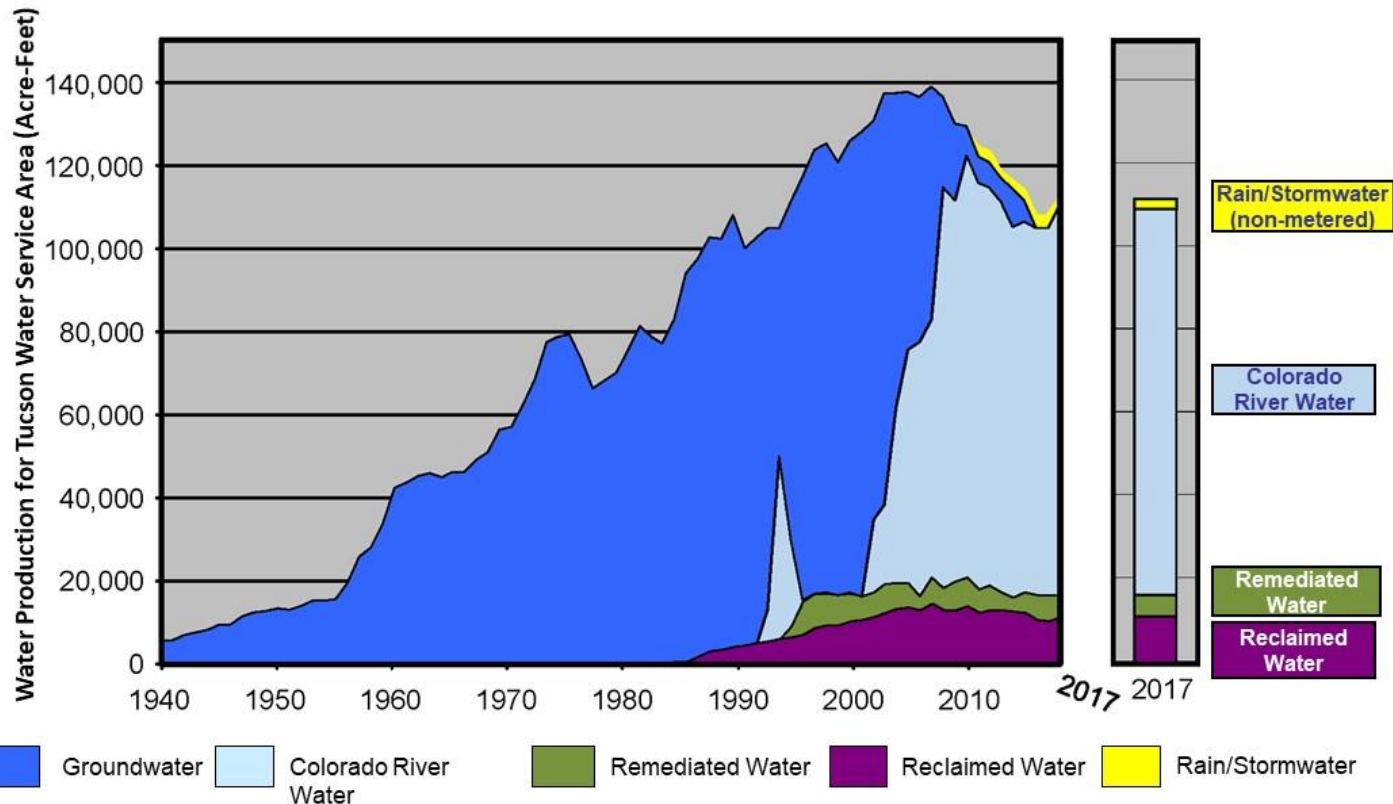


# TUCSON WATER

- Arizona-Sonoran Desert
- 730,000 Potable Customers
- 1,000 Recycled Water Customers
- 585 Staff
- 350 mi<sup>2</sup> (900 km<sup>2</sup>) Service Area
- 4,750 Miles (7,650 km) of Pipelines
- 200+ Active Production Wells
- 124 Booster Stations
- 68 Storage Facilities
- \$200M/yr O&M | \$350M 5-yr CAPx

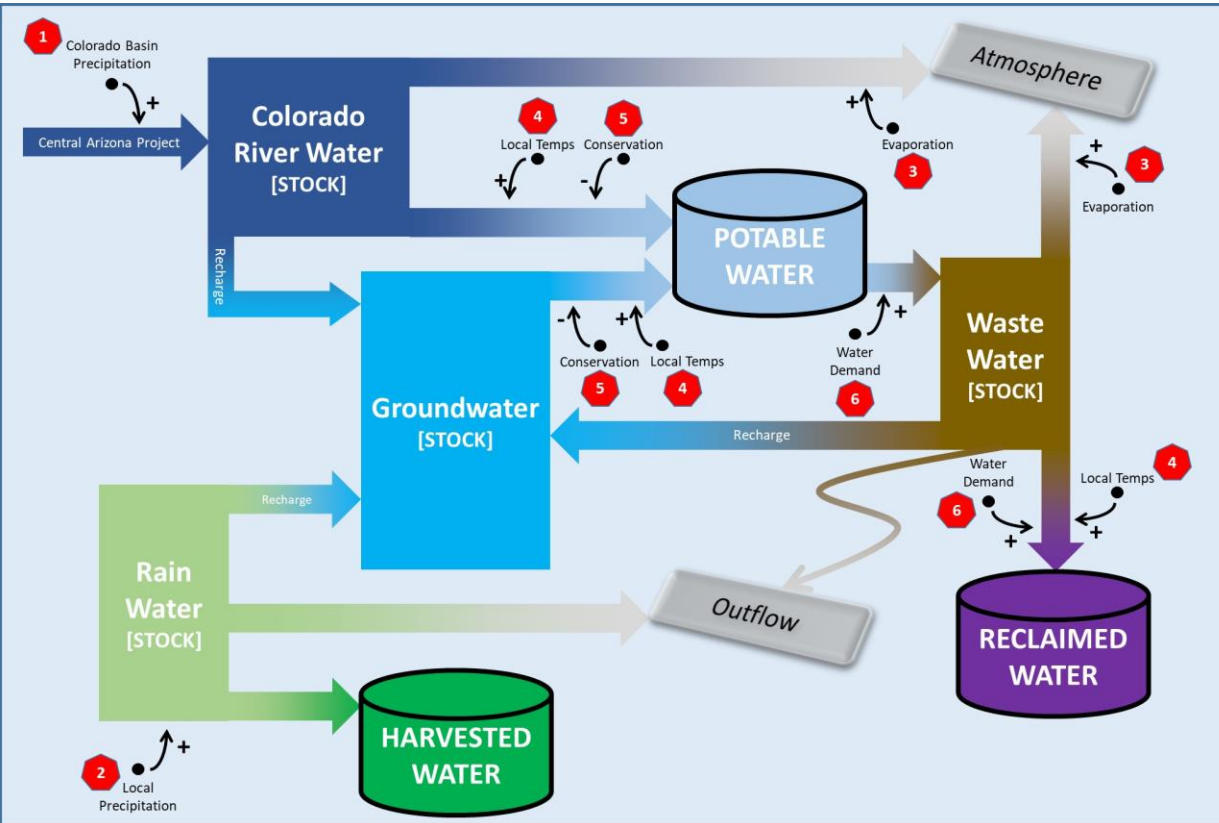


# TUCSON'S WATER HISTORY



- Supply Diversification
- Supply Transitions
- Demand Management

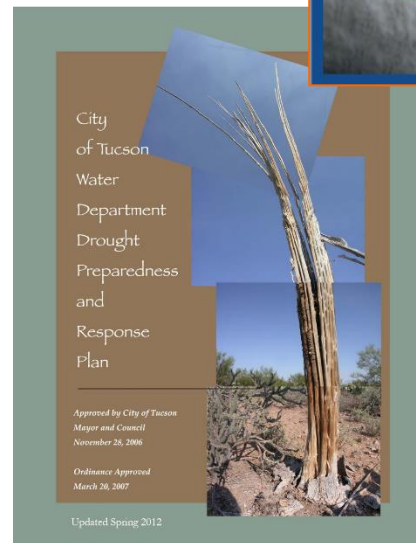
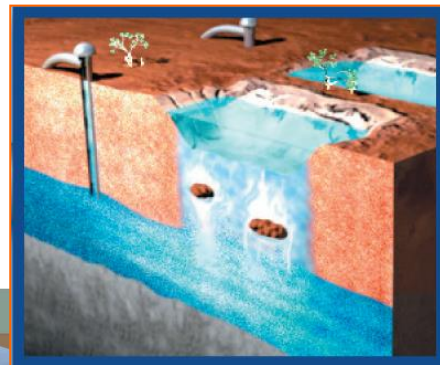
# SYSTEM DYNAMICS OF WATER IN TUCSON



- 1** Decreased Colorado River flows from: increased temperatures, changes to snowmelt / runoff patterns, and drought frequency / severity
- 2** Decreased local precipitation, and less frequent / high intensity events
- 3** Higher evapotranspiration losses from local temperature increases
- 4** Higher potable and reclaimed water demands from local temperature increases
- 5** Increased conservation from both public awareness and more aggressive conservation programming
- 6** Increased water demand from population growth driven by climate migration

# PATHWAYS TO RESILIENCY

- Conservation: Live within our means
- Diversification: Optimize and expand supply
- Banking: Store for the future
- Partnerships: Seek win-wins
- Preparedness: Identify decision points and implement responses
- Quality: Monitor and protect water quality
- Groundwater: Tucson's "back-up plan"





# QUESTIONS FROM AUDIENCE





# Climate Adaptation at Denver Water and the Water Utility Climate Alliance

**LAURNA KAATZ**

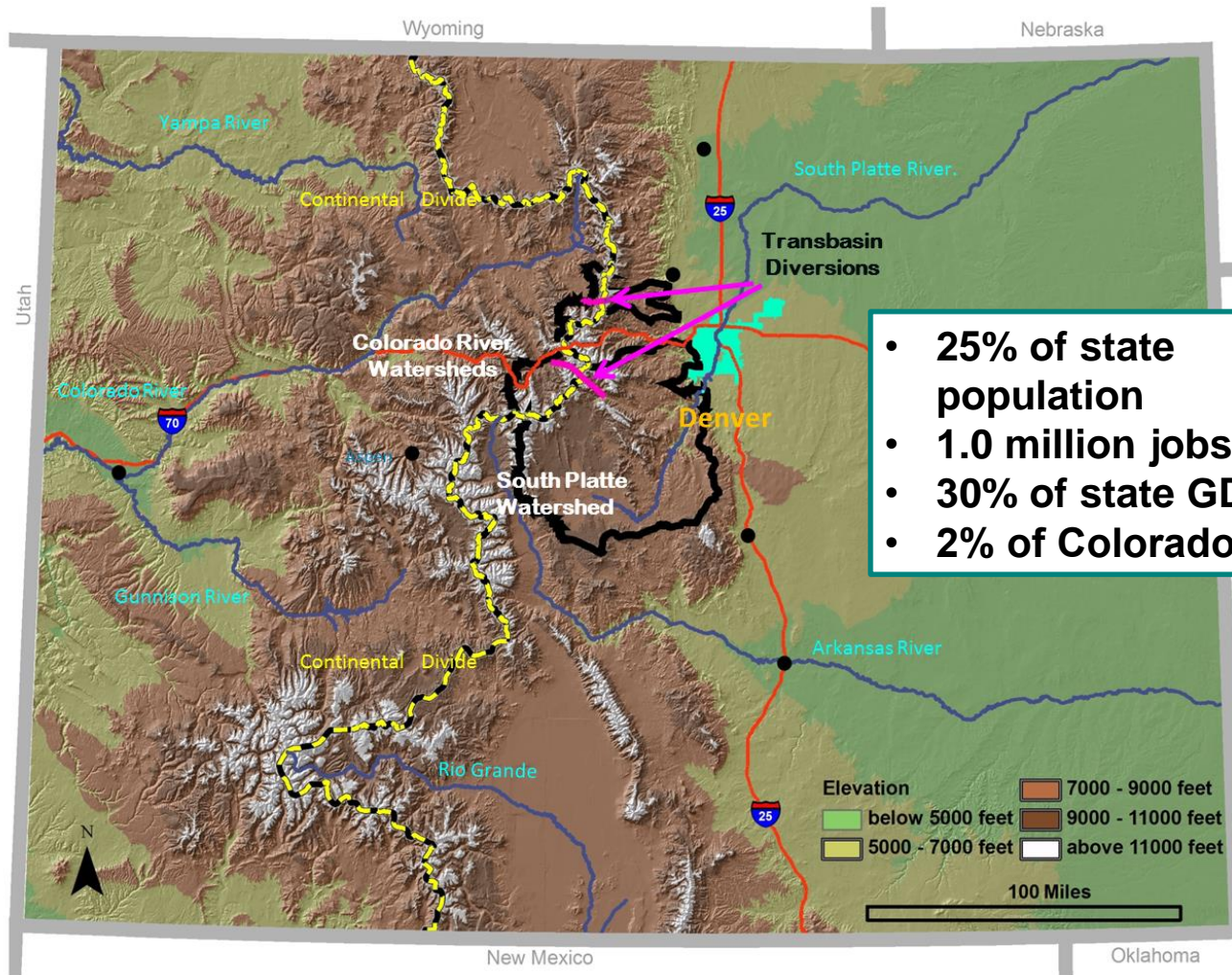
CLIMATE PROGRAM DIRECTOR, DENVER WATER



# COLOURFUL COLORADO







- 25% of state population
- 1.0 million jobs
- 30% of state GDP
- 2% of Colorado's water

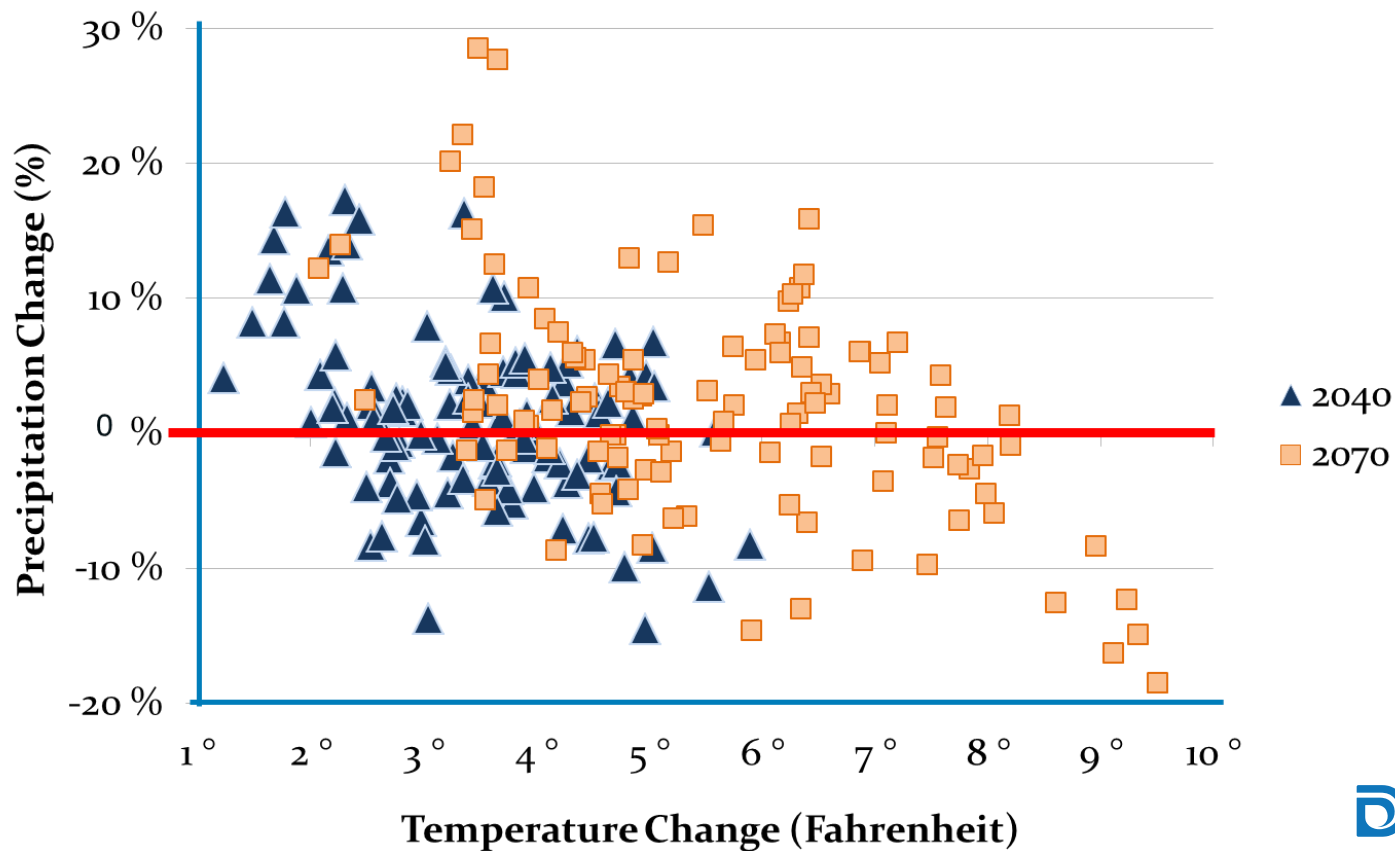


# UNPRECEDENTED SIMULTANEOUS NATURAL DISASTERS

## - 2002



# PROJECTED CHANGES FOR CENTRAL MOUNTAINS IN COLORADO



# DENVER WATER'S SIMPLE ASSESSMENTS

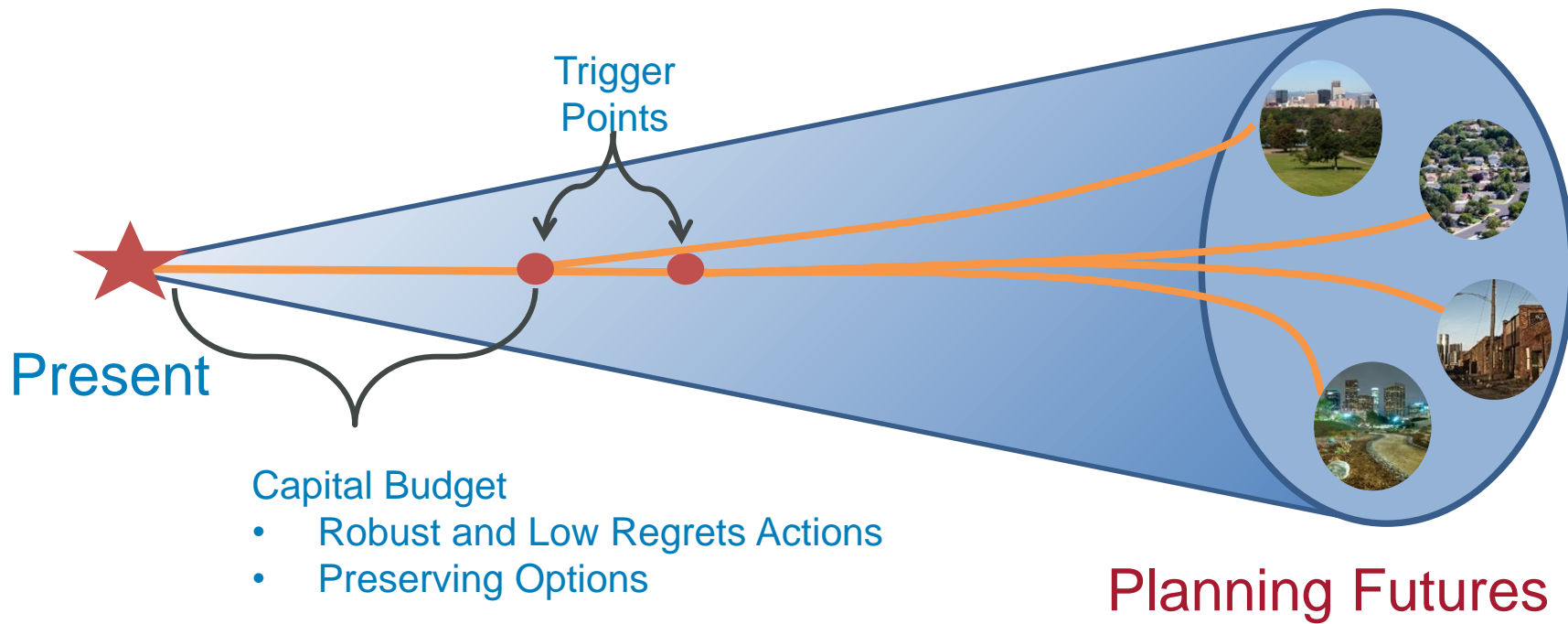
2005	2° F Warming	5° F Warming
Reduced Supply	7%	14%
Increased Demand	6%	-

2011	5° F Warming Means
Reduced Supply	20%
Increased Demand	7%

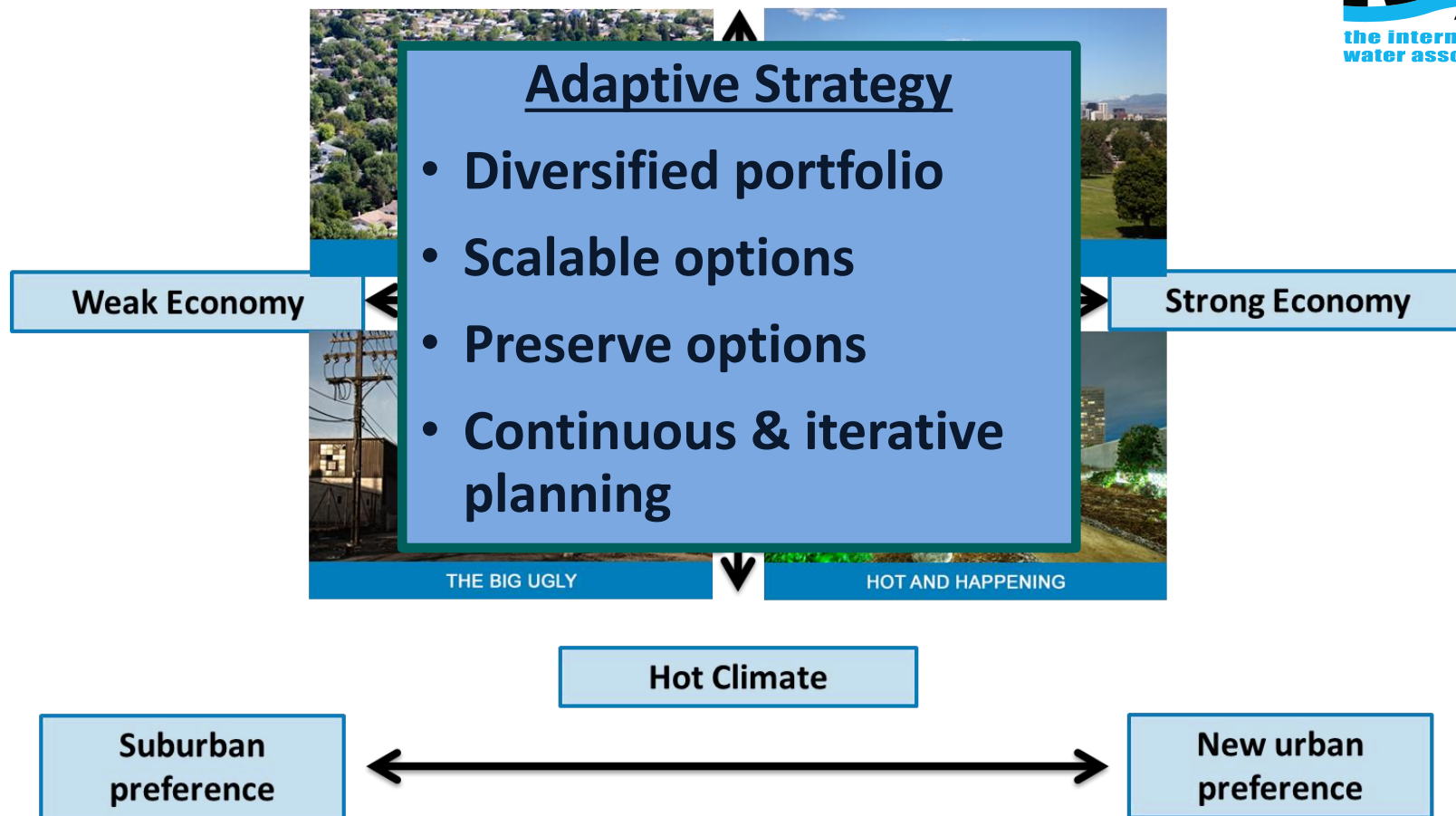
Additional precipitation needed to offset warming	10%
---	-----

2017	Reduced Supply
3°F with wet winters	5%
6°F + more daily variability	24%

# EMBRACING *DEEP* UNCERTAINTY







# BUILDING ADAPTIVE CAPACITY



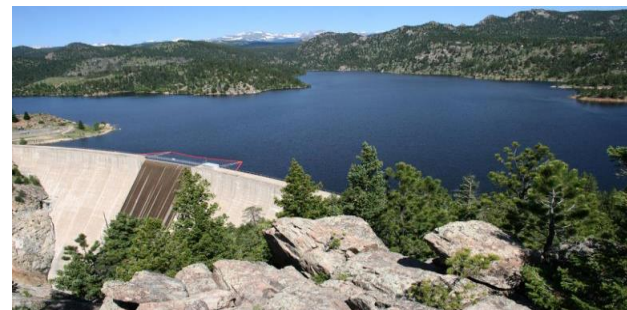
Foothills Bifurcation



From Forest to Faucets



Northwater Treatment Plant



Gross Expansion

# DENVER WATER'S CLIMATE ADAPTATION PROGRAM



- Knowledge
  - Sustain informed and engaged staff
  - Create a climate smart organization
- Science
  - Coproduce science to better meet our needs and bring good science home
- Planning
  - Develop and apply better water utility planning techniques
  - Mainstream climate adaptation across organizational practices
- Partnerships
  - Seek regional and national collaborations
- Communication
  - Continuously message internally and externally

# WATER UTILITY CLIMATE ALLIANCE



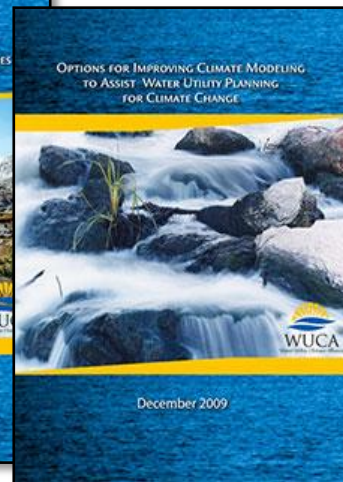
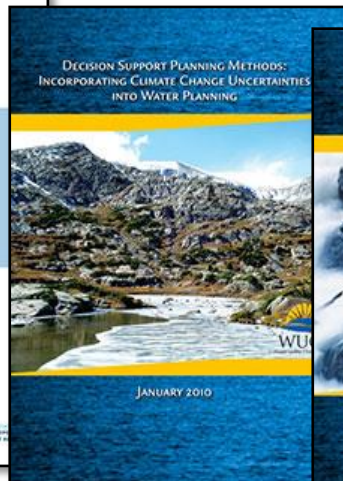
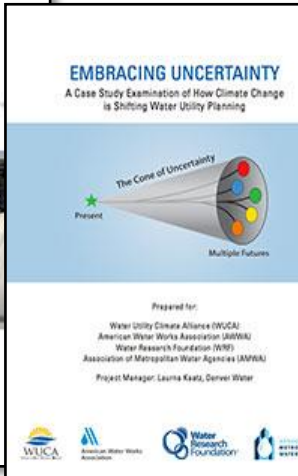
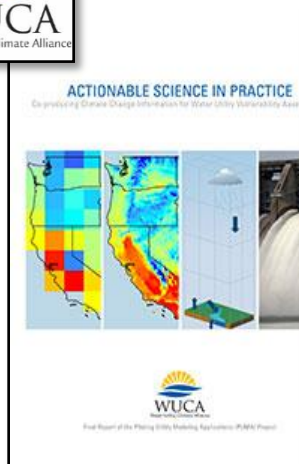
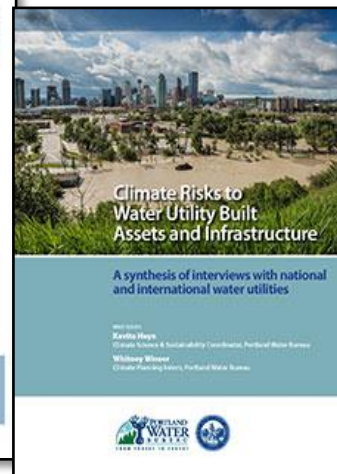
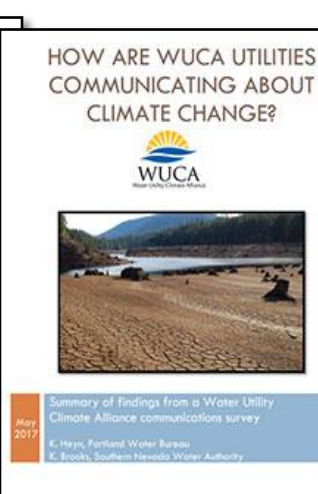
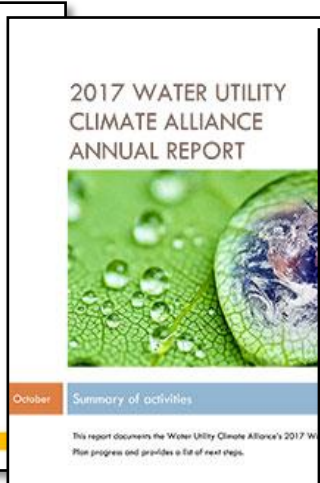
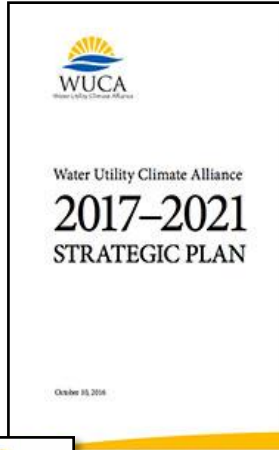
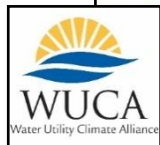
***Vision: Climate-resilient water utilities, thriving communities***

***Mission: Collaboratively advance water utility climate change adaptation***

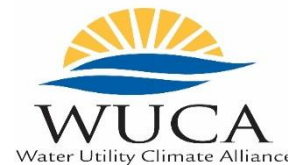
<http://www.wucaonline.org/>







# 2019 WUCA HIGHLIGHTS



- Best Practices in Climate Adaptation
  - Defining aspects of climate adaptation
  - Strategies and examples
- Business Function Mapping
  - Funding from WRF
  - Link to best practices
- Climate Resilience Training
  - Smart users and consumers of climate information
  - Plan for multiple futures
  - Effectively communicate about climate
  - Motivate action on climate adaptation
- Climate Communications

# THANK YOU

[Laurna.Kaatz@denverwater.org](mailto:Laurna.Kaatz@denverwater.org)

303-628-6424

# QUESTIONS FROM AUDIENCE







## From vision to action: how water utilities are building climate resilience (Part 2)

March 2019 (date and time tbc)



# WEBINAR



## From vision to action: how water utilities are building climate resilience (Part 3)

May 2019 (date and time tbc)



# WEBINAR

Join us for Part 2 and Part 3 of the 'From Vision to Action: how water utilities are building climate resilience' webinar

Find out more at

<http://www.iwa-network.org/iwa-learn-webinars/>