



Planning for Change

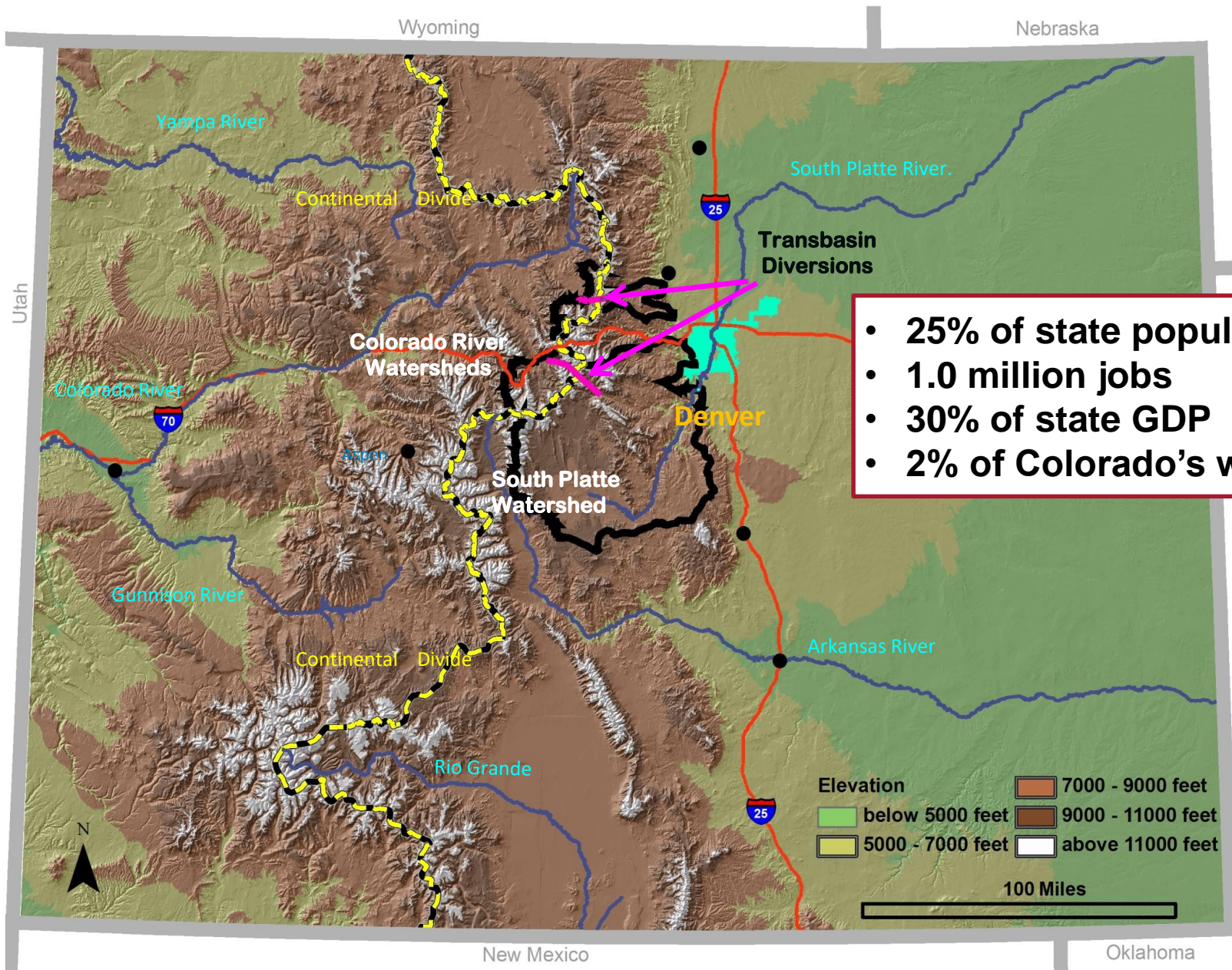
Laurina Kaatz, Climate Program Director, Denver Water



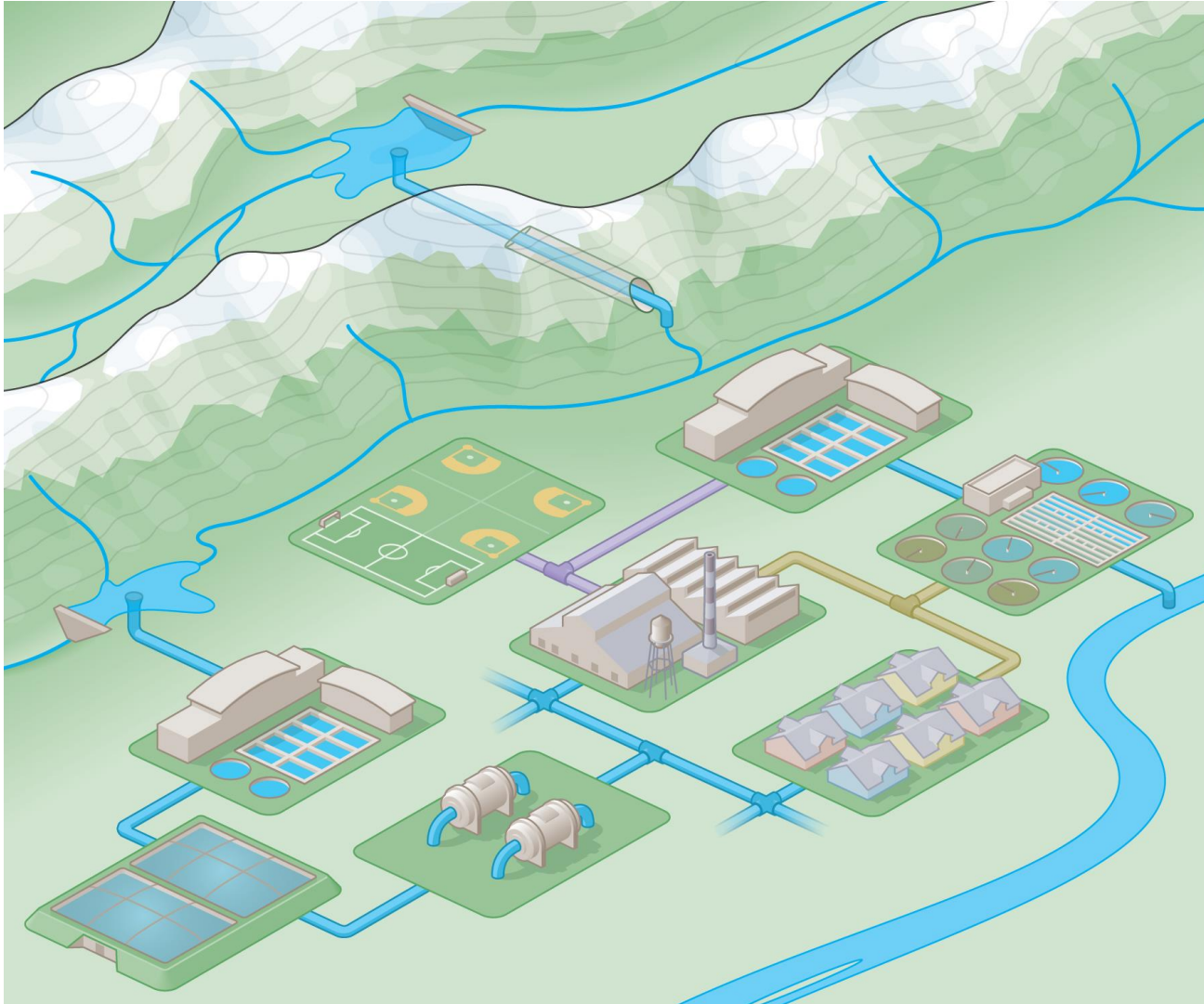
W-SMART 2019
November 6, 2019

Colorful Colorado





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



Projected impacts from climate change

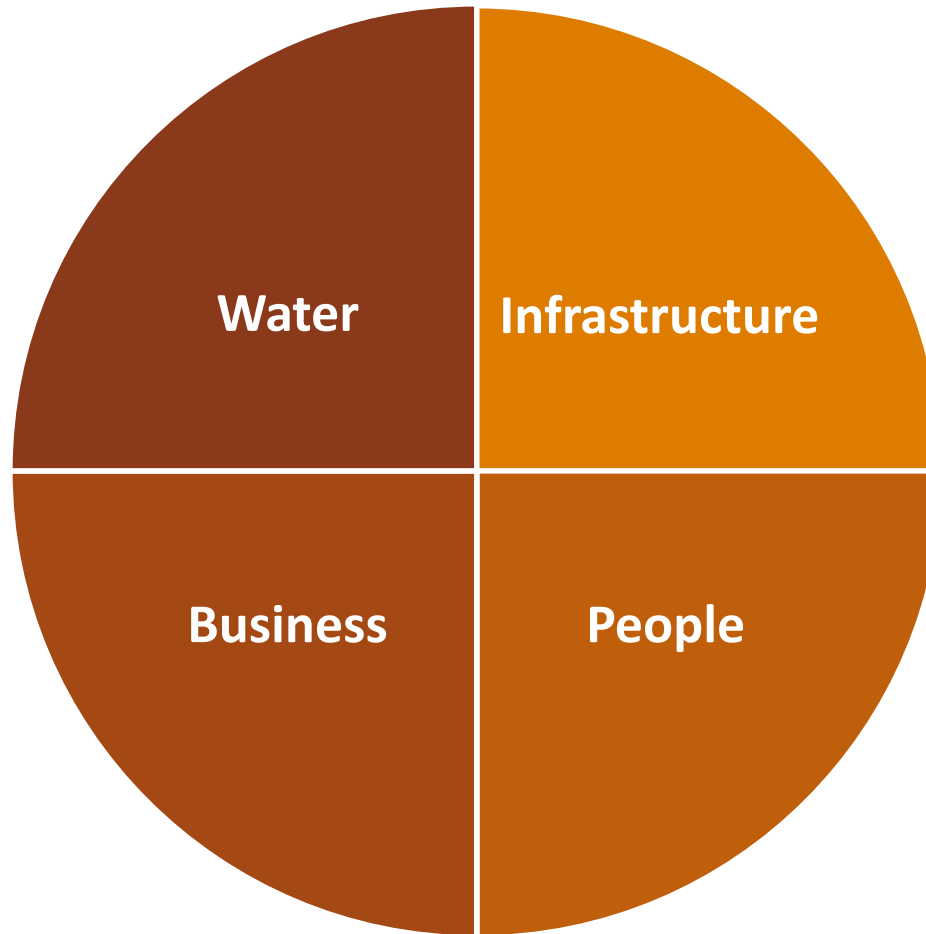
Warming temperatures impact hydrology.

- Snow and Snowpack
- Runoff
- Droughts and Floods
- Evaporation and ET
- Groundwater Recharge
- Soil Moisture
- Wildfires
- Vegetation and Pests
- Dust-on-snow
- Water Quality Degradation
- Demand

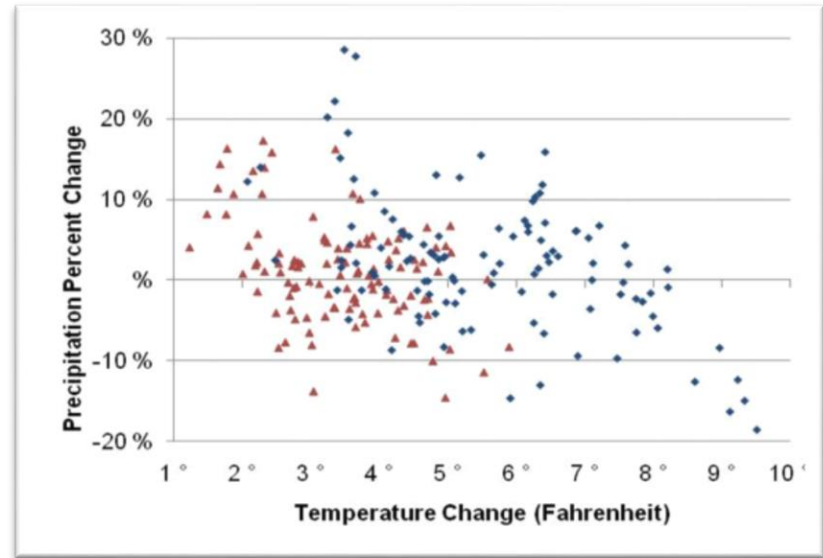
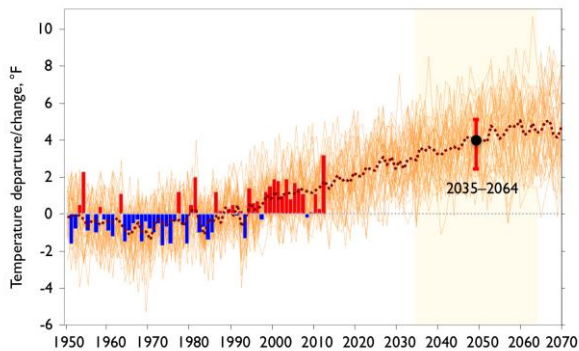
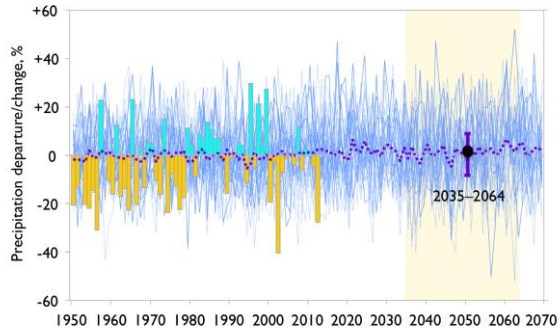
Many projections are now observations



Climate Impacts All Organizational Functions

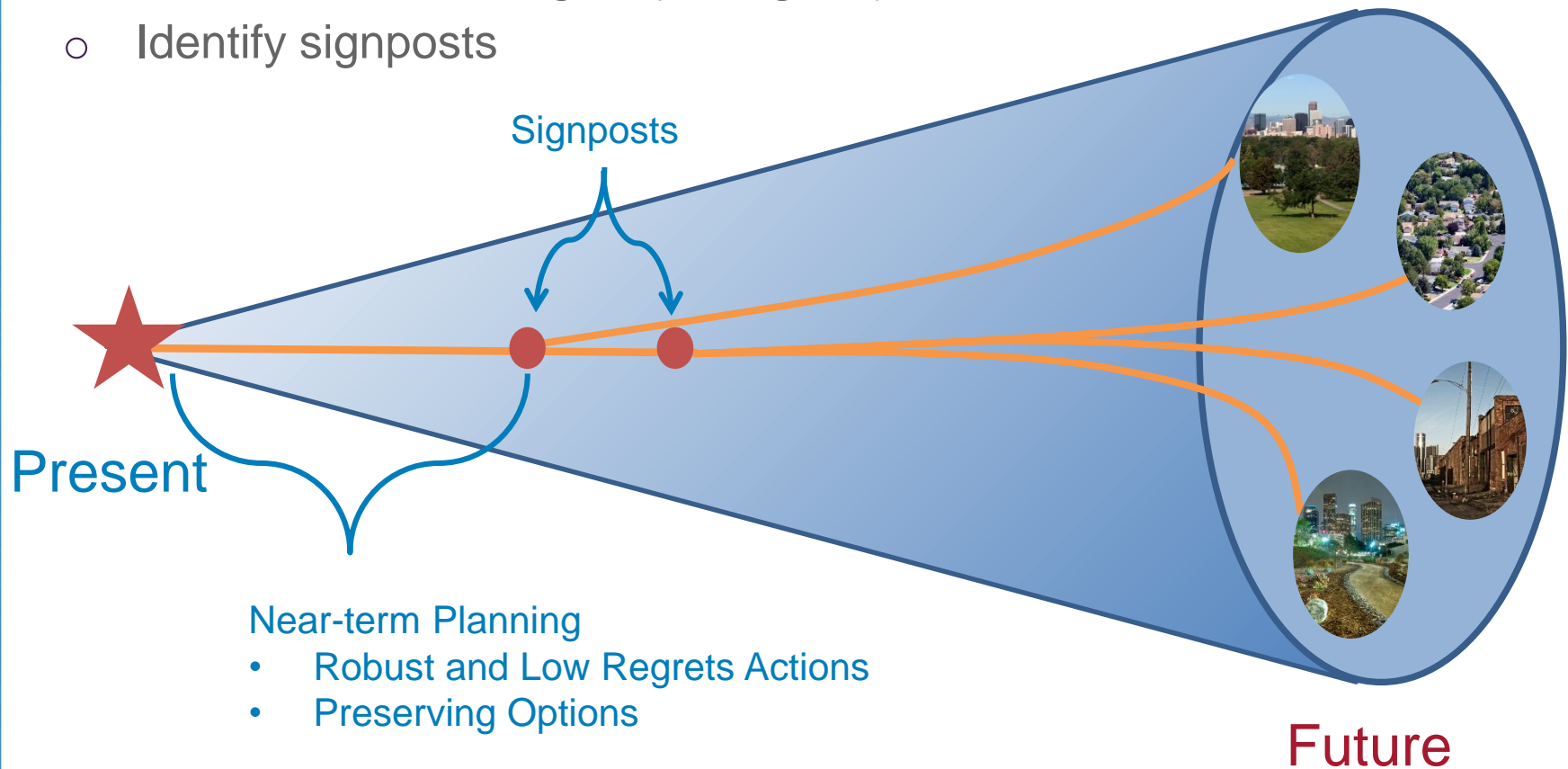


Projected Changes for Central Mountains in Colorado



Embracing *Deep Uncertainty*

- Systematically develop a small number of scenarios
- Treat futures as equally likely to occur
- Find common strategies (no regrets)
- Identify signposts



Warmer Climate

Adaptive Strategy

- Diversified portfolio
- Scalable options
- Preserve options
- Continuous & iterative planning

Weak Economy

Strong Economy

Hot Climate

Suburban
preference

New urban
preference

System Resilience



Foothills Bifurcation



Northwater Treatment Plant



From Forest to Faucets



Gross Expansion

From Forests to Faucets

2007



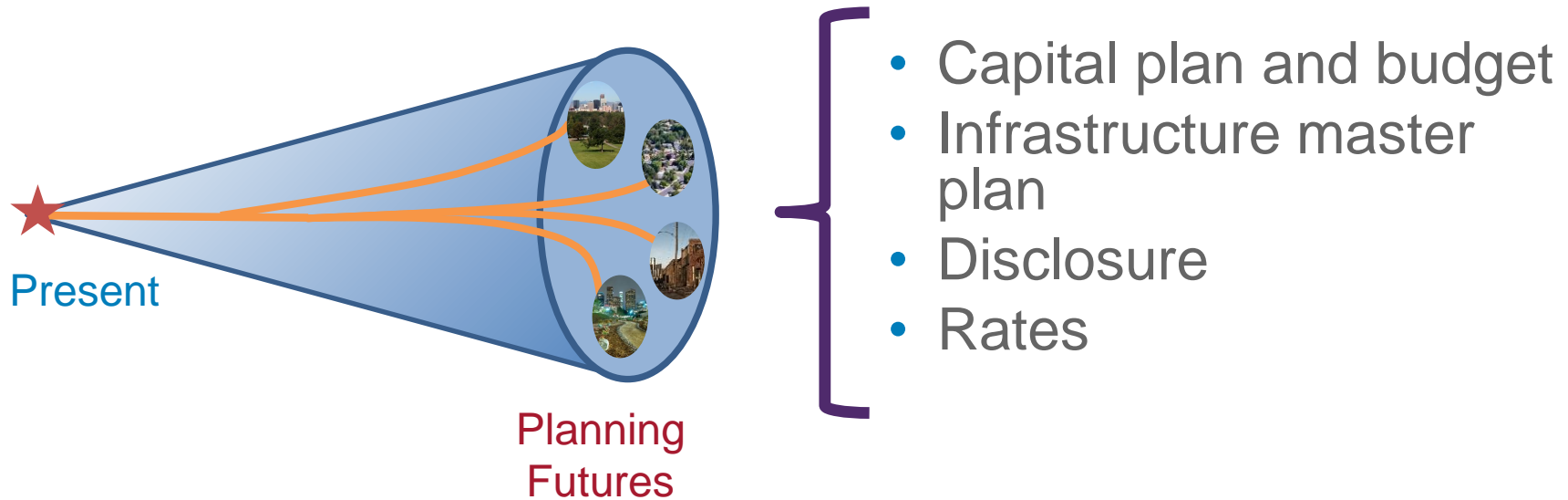
2018



2013



Embedding Climate Change from the Top Down



Addressing climate change risk is multifaceted

- Climate Adaptation Manager for over a decade, Sustainability Manager within last five years
- Sustainability and adaptation thinking embedded in major projects
- Denver Water is considered a leader in water conservation
- Drought Response Plan establishes a progressive response to worsening drought conditions
- Strategic water reserve of 200,000 acre-feet to alleviate unforeseen water supply issues
- Forest to Faucet partnership with US Forest Service to improve forest health
- Colorado River Cooperative Agreement (CRCA) resolves a long-standing legal dispute and provides greater certainty on continued use of Western Slope water
- Water Infrastructure Supply Efficiency (WISE) cooperative agreement provides supply in emergencies
- Colorado River System Conservation pilot program is considered a landmark water conservation agreement

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 and Preparation

- Develop and apply better water utility planning techniques
- Mainstream climate adaptation across organizational practices

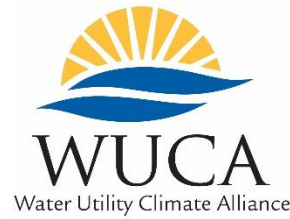
Partnerships

- 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/>



Water Utility Climate Alliance 2017-2021 STRATEGIC PLAN

October 15, 2016

2017 WATER UTILITY CLIMATE ALLIANCE ANNUAL REPORT



October

Summary of activities

This report documents the Water Utility Climate Alliance's 2017 Plan progress and provides a list of next steps.

HOW ARE WUCA UTILITIES COMMUNICATING ABOUT CLIMATE CHANGE?



May 2017

Summary of findings from a Water Utility Climate Alliance communications survey

K. Heyn, Portland Water Bureau
K. Brooks, Southern Nevada Water Authority



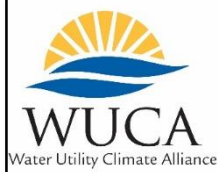
Climate Risks to Water Utility Built Assets and Infrastructure

A synthesis of interviews with national and international water utilities

With thanks to:

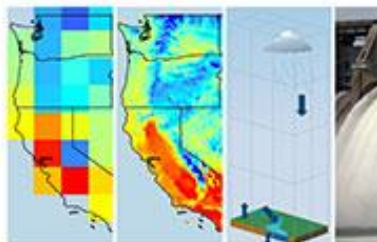
Kerstin Heyn
Climate Science & Sustainability Coordinator, Portland Water Bureau

Whitney Winsor
Climate Planning Manager, Portland Water Bureau



ACTIONABLE SCIENCE IN PRACTICE

Co-producing Climate Change Information for Water Utility Vulnerability Assessments



Final Report of the Planning Utility Modeling Applications (PUMA) Project

EMBRACING UNCERTAINTY

A Case Study Examination of How Climate Change
is Shifting Water Utility Planning



Prepared for:

Water Utility Climate Alliance (WUCA)
American Water Works Association (AWWA)
Water Research Foundation (WRF)
Association of Metropolitan Water Agencies (AMWA)
Project Manager: Laura Klatz, Denver Water



DECISION SUPPORT PLANNING METHODS: INCORPORATING CLIMATE CHANGE UNCERTAINTIES INTO WATER PLANNING



JANUARY 2010

OPTIONS FOR IMPROVING CLIMATE MODELING TO ASSIST WATER UTILITY PLANNING FOR CLIMATE CHANGE



December 2009

Available at: WUCAonline.org

Spectrum of Climate Adaptation

