Colorado Springs
Integrated Water Resource Plan
Presented by Kevin Lusk
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Agenda

• Community and Water System Overview
• 2017 Integrated Water Resource Plan (IWRP)
  • Purpose
  • Process
  • Policy Questions
• Next Steps
Colorado Springs Overview

- State’s second largest city founded in 1871
- Elevation - 6,035 ft.
- Population
  - City: 439,886
  - Metro Area: 655,044
- Average Annual Precip: 17.4”
- Average Annual Snowfall: 37”
Colorado Springs Water System

- Collects water from 3 major River Basins
  - Arkansas, Colorado, South Platte
- About half of our water comes from west of Continental Divide (Colorado River)
- Significant Reuse
  - 1 out of 5 gallons
  - Exchange, Nonpotable, Augmentation
- Delivered by 4 transmission pipelines
- Water travels up to 100 miles to the city
- 25 raw water reservoirs
- 6 water treatment plants
- Over 2100 miles of distribution pipe
- Serves a population of 460,000 people
Colorado Springs Water System

CSU System Diversions 1994-2017

- Average Potable Deliveries
  - 75,000 AF
- Average Nonpotable Deliveries
  - 10,000 AF
- Average Total Deliveries
  - 85,000 AF
IWRP

• Previous Plan (WRP) - 1996
• Current Plan Completed 2017
• Rolled up and expanded upon previous work
• Road map for the future
• Long-range plan for buildout – ~ 50± years
• Examining supply, demand, quality, infrastructure, energy, regulatory, legal issues, and public opinion
IWRP: State-of-the-Art Planning

Traditional Planning - Backwards Looking

Most Likely Future

One Solution

MORDM Planning – Forward Looking

Possible Futures

- Hot and Dry
- No climate change
- High Population
- Hot and Dry with High Population

Potential Solutions

- Storage
- Reuse
- Demand Management
- Complete TMD’s
- Ag Transfers

Range of Preferred Solutions

Solution 1 | Solution 2 | Solution 3 | Solution 4 | Solution 5 | Solution 6 | Solution 7 | Solution 8
Analytical Process Supporting IWRP

Risks and Uncertainties
- 60 Risks Identified
- 3 Key Risks

Options and Strategies
- Over 60 Options
- 5 Key Strategies

Portfolios and Adaptive Plan
- Over 10,000 Portfolios
- 12 Themed Portfolios

Preferred Portfolio
With options for adaptation
Basic Analysis Assumptions

What Colorado Springs looks like at Buildout

3°F Warming  
0% Change in Mean Precipitation

- 180 Years of Simulated Hydrology  
- Sequencing of Droughts

Buildout Population of ~720,000 anticipated around 2070

1 Year Major Delivery system Outage  
20% Reduction in Colorado River Yields for 10 Years  
25% Reduction in Exchange Potential
IWRP Policy Questions

• What is an acceptable level of risk and Level of Service (LOS) in addressing future water demands?
• What role do different supply options contribute to achieving a balanced water supply portfolio?
• How do we ensure a proper level of investment in Utilities’ existing and future water system to maintain an acceptable level of risk?
• What is an appropriate approach for Utilities to follow in meeting regional water needs within the Pikes Peak Region?
More Water in Storage = Greater Ability to Manage Risk

- More projects necessary to keep more water in storage
- Need to determine acceptable level of risks balanced against costs (monetary and other)
- Correlates to frequency of watering restrictions, i.e., customer impact
Historical Performance - Storage

Monthly Storage
Years Of Demand in Storage

Years of Demand

1970 - 2016 Average is 2.1

Monthly Storage
### Risk Mitigation – Policy

<table>
<thead>
<tr>
<th>Previous</th>
<th>Approved in 2017 IWRP</th>
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</thead>
<tbody>
<tr>
<td>Trigger watering restriction analysis at 1.5 years of demand in storage</td>
<td>Trigger water restriction analysis at 1.5 years of demand in storage</td>
</tr>
<tr>
<td>Reliability Goal: 100%</td>
<td>Planning Criteria Reliability: 90%</td>
</tr>
<tr>
<td>• Never go into watering restrictions</td>
<td>• Watering restrictions 1 in 10 years</td>
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<tr>
<td>• Historic Reliability: 85%</td>
<td></td>
</tr>
<tr>
<td>Preference to maintain 1.0 years of demand in storage at all times</td>
<td>Formalize policy to maintain 1.0 years of demand in storage at all times</td>
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IWRP Supply Options

Risks We Can Plan Against
- Climate Variability
- Uncertain Demand
- Aging Infrastructure
- Water Quality Threats
- Regulatory Changes
- Wildfire

Projects We Can Do to Minimize Risks
- Demand Management
- Finish TMD Projects
- Storage
- Reuse
- Ag Transfers

Desired Level of Service
IWRP Supply Options

• Water Use Efficiency
  – Demand Management
  – Enact programs and policies to manage demands on system

• Storage
  – Build new storage reservoirs or expand existing ones
  – Multiple geographic locations

• Reuse
  – Expand existing non-potable system
  – Use either direct potable reuse (DPR) or indirect potable reuse (IPR)
IWRP Supply Options

• Finish Colorado River Projects
  – Complete existing projects for additional reusable water supply

• Agricultural Transfers
  – Utilize agricultural water rights
    • permanent or temporary
  – Lower Arkansas River Valley
Example Analysis of Options, Risk, and Performance
All components are necessary to assure sufficient water supply for Colorado Springs.
The Utilities Board directed staff to pursue a consistent and incremental investment to implement a Balanced Portfolio which balances costs and risks.

Adaptive Management

Possible signposts

• Customer demands
• Temperature / precipitation trends
• Streamflow data
• Windows of opportunity

Possible actions

• Modify planning criteria
• Modify policy
• Modify portfolios or projects
Policy Question - Regionalization:
What is an appropriate approach for Utilities to follow in meeting regional water needs within the Pikes Peak Region?

(Regionalization – Proactive or Reactive)
Regional Water Approach

• How should we approach water needs in the Pikes Peak Region?
• The region is facing a serious supply gap in the future
  – Reliance on Non-renewable Denver Basin Groundwater
• Proactively addressing regional water supply issues is the responsible course – reactive approach is a risk
• Colorado Springs Utilities’ infrastructure plays a key role in the region’s water supply
• Utilities understands the need for a sustainable water supply and cares about the economic health of the region
Regionalization Policy

2017 IWRP Adopted Policy:
The Utilities Board gave direction to proactively pursue Regionalization in a manner that assists in meeting regional water demands, while protecting ratepayer interests and water system investments and providing a benefit to Colorado Springs Utilities ratepayers and citizen owners.
IWRP Summary and Next Steps

• Robust, multifaceted Public engagement throughout the entire process
• Board Approval on Feb. 22, 2017
• Implementation of Policy Direction
• Ongoing Planning and Evaluation

We never stop planning.