Co-Production of Applied Climate Knowledge

Denver Water and NCAR

Laurna Kaatz, Denver Water
David Yates, NCAR
Colorado Water Geography

West Slope:
- 80% of the Water
- 20% of the Population
- Irrigated Acres: 918,000

East Slope:
- 20% of the Water
- 80% of the Population
- Irrigated Acres: 2,548,000

Source: Colorado Water Plan 2015
- Service area <1% of land area
- 25% of state population
- 1.4 million people
- 1.0 million jobs
- 30% of state GDP
- 2% of Colorado’s water
This story begins in 2002

Deterministic thinking

- Observed hydrology and extrapolation of past trends

Cylinder of Certainty

Present

Unprecedented Simultaneous Natural Disasters

Future

- Integrated Resources Plan (IRP):
  - Conservation-Supply-Reuse
  - Excess resources?
  - Regional role?
Building a climate adaptation program

- Capacity: Hired staff to build and maintain understanding
- Partnerships: Looked for regionally and nationally collaboration
- Research: Dove into science and co-production
- Planning: Started bringing climate change into long-range planning
Climate Change Evaluations in the West

Global Climate Data → GAP → Impacts to Natural Streamflow
Front Range Climate Change Vulnerability Study

Collaborative Approach
– Sophisticated regional assessment
– Provided political coverage
– NCAR and Riverside
Important outcomes

- Informed DWs philosophy on climate adaptation and planning
- Informed DWs work with WUCA
- Climate change in CO report
- CRWAS I, II – State climate modeling of CO river
- State bringing climate change and scenario planning into supply and demand analysis – SWSI
- FRCCG – quarterly meetings still!
- Ongoing collaborations with NCAR, WWA, Riverside (Rti), others
A Decade of Co-production

- Shoshone relaxation agreement
- Climate diagnostics for water management decisions
- Using IRI forecasts to inform seasonal and annual operations
- Decadal predictions
- “Simple” planning model?
Summary of Lessons: For scientists (and their science) to be relevant for decision-makers:

1. TRUST
2. UNDERSTANDING
3. PROOF
4. CAPACITY
THANK YOU
Drought mitigation measure - Shoshone Call Relaxation Agreement (SCRA)

Key features

- Reduces the Call from 1408 to 704 cfs March 14 to May 20 during drought years (defined as forecast July 1 storage ≤ 80% and April-July flow forecast ≤ 85%)

- Colorado River Cooperative Agreement allows call relaxation to begin Nov 11 (severe drought & lawn water ban)

- Purpose is to increase Upper Basin Storage

Shoshone Senior Rights:
- 1250 CFS (1902);
- 158 CFS (1929) (Xcel Energy)

40% Woford (1995);
Williams Fork (1959)

Grn Mtn (1935)
First Fill Right

Blue River

Colorado River

Granby

Moffat Tunnel (1921)

Dillon (1946) ‘Paper fill’ out of priority

Continental Divide

Grand River Ditch; Adams Tunnel