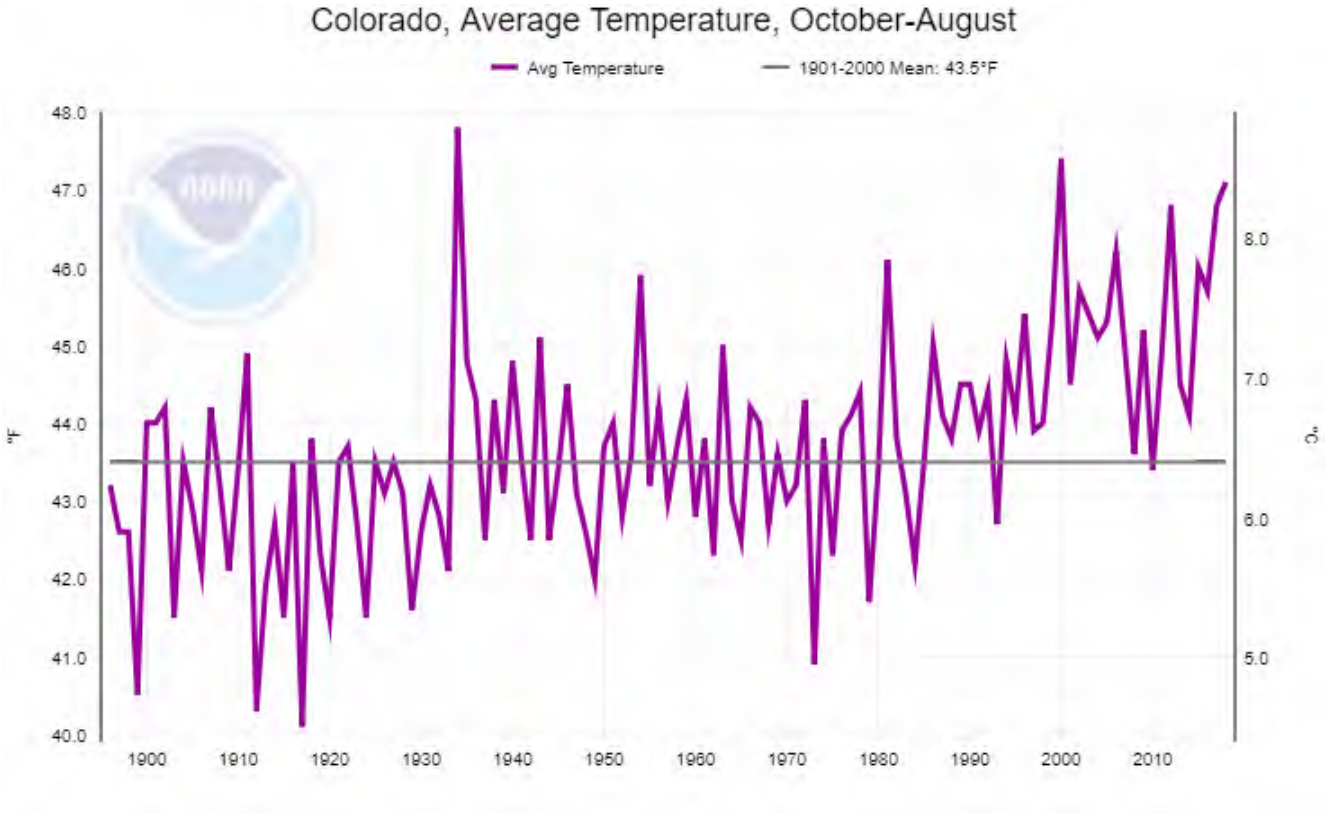
COLORADO'S
WATER PLAN

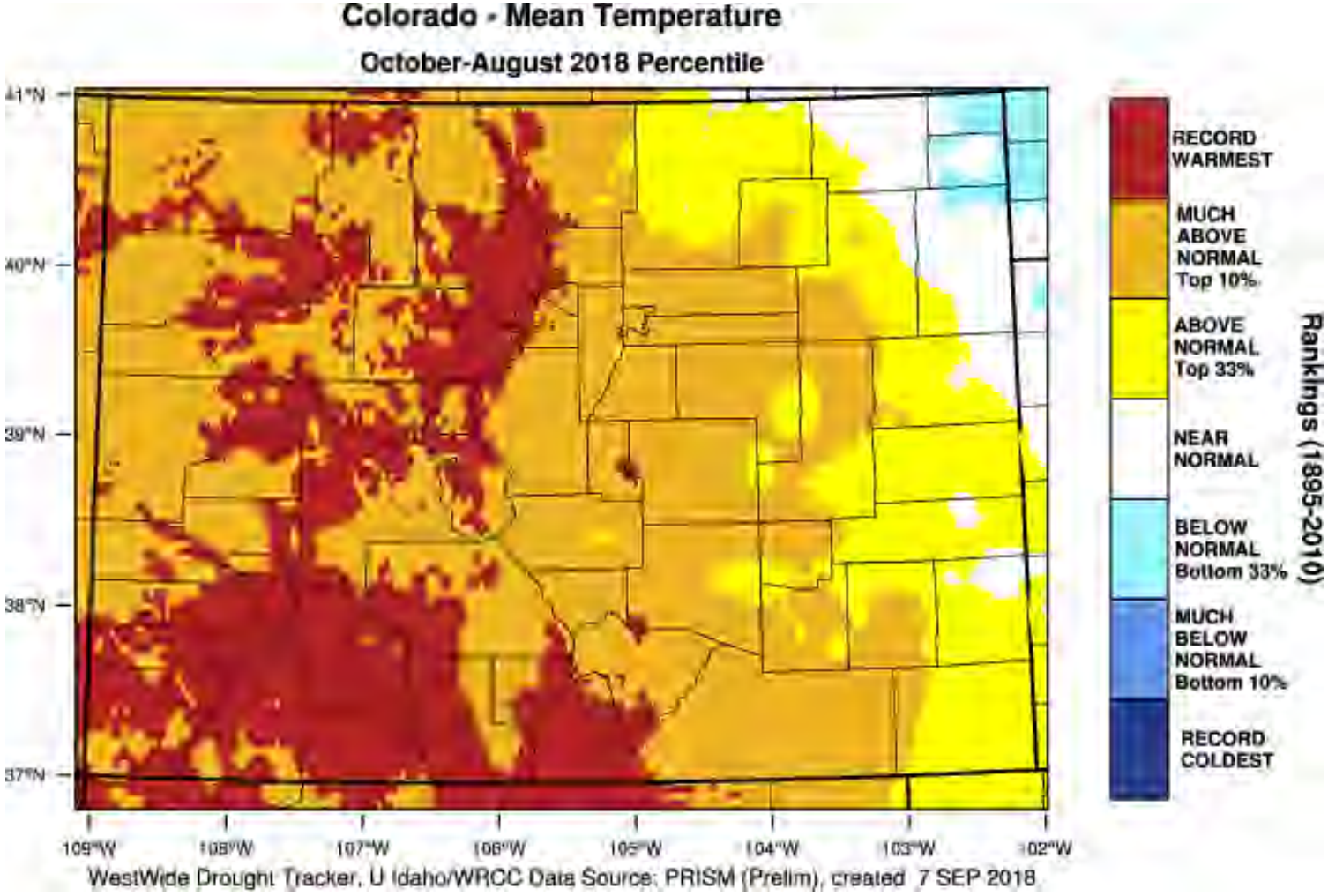
CLIMATE CHANGE AND CO'S WATER PLAN

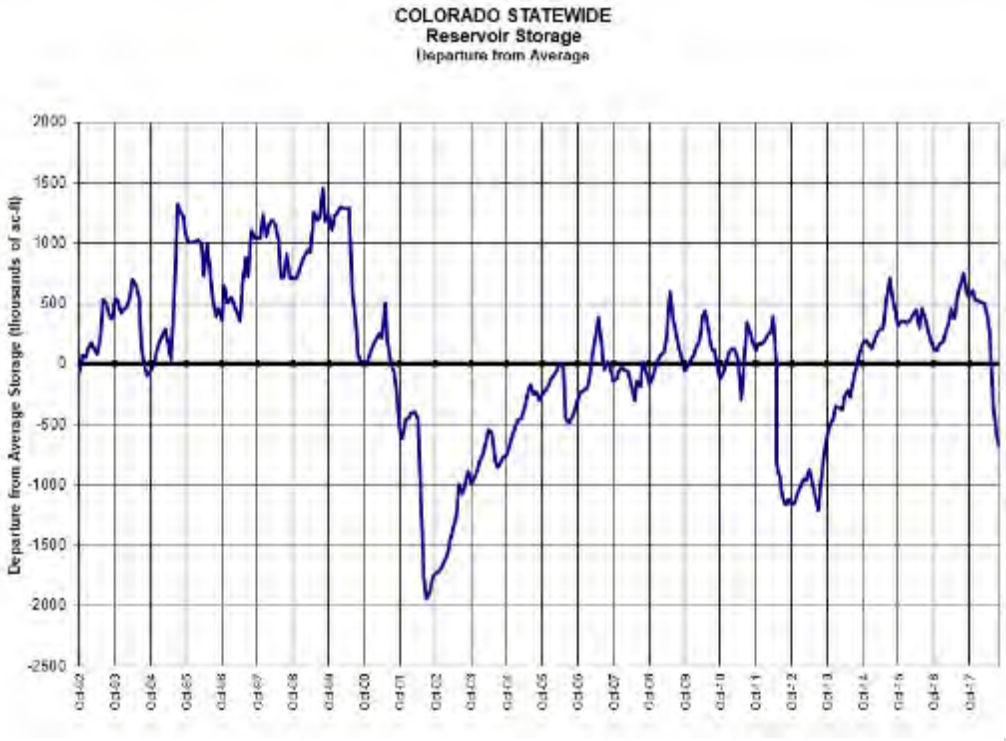
BOB RANDALL, EXECUTIVE DIRECTOR

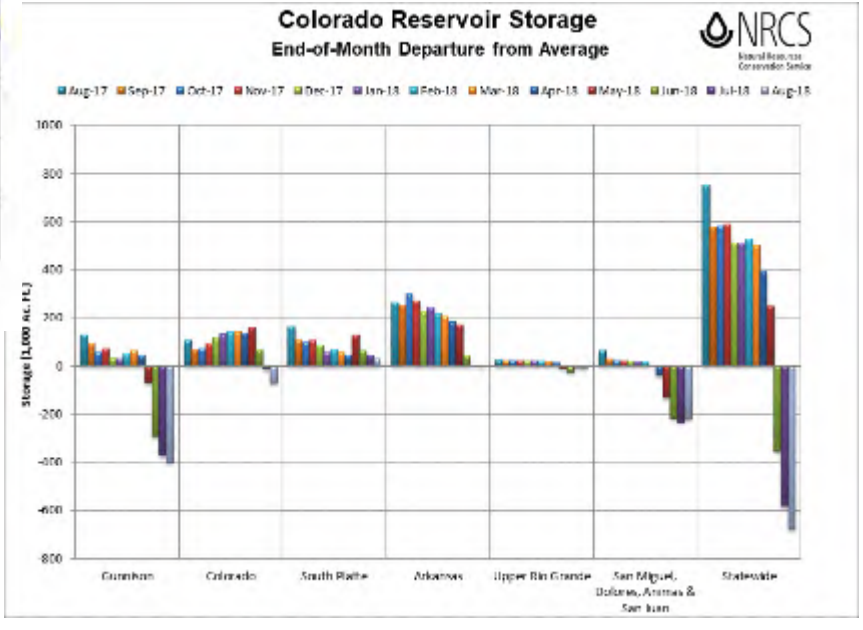
DNR
CO

October through August of this year has been the third warmest and the fourth driest in the 123-year record

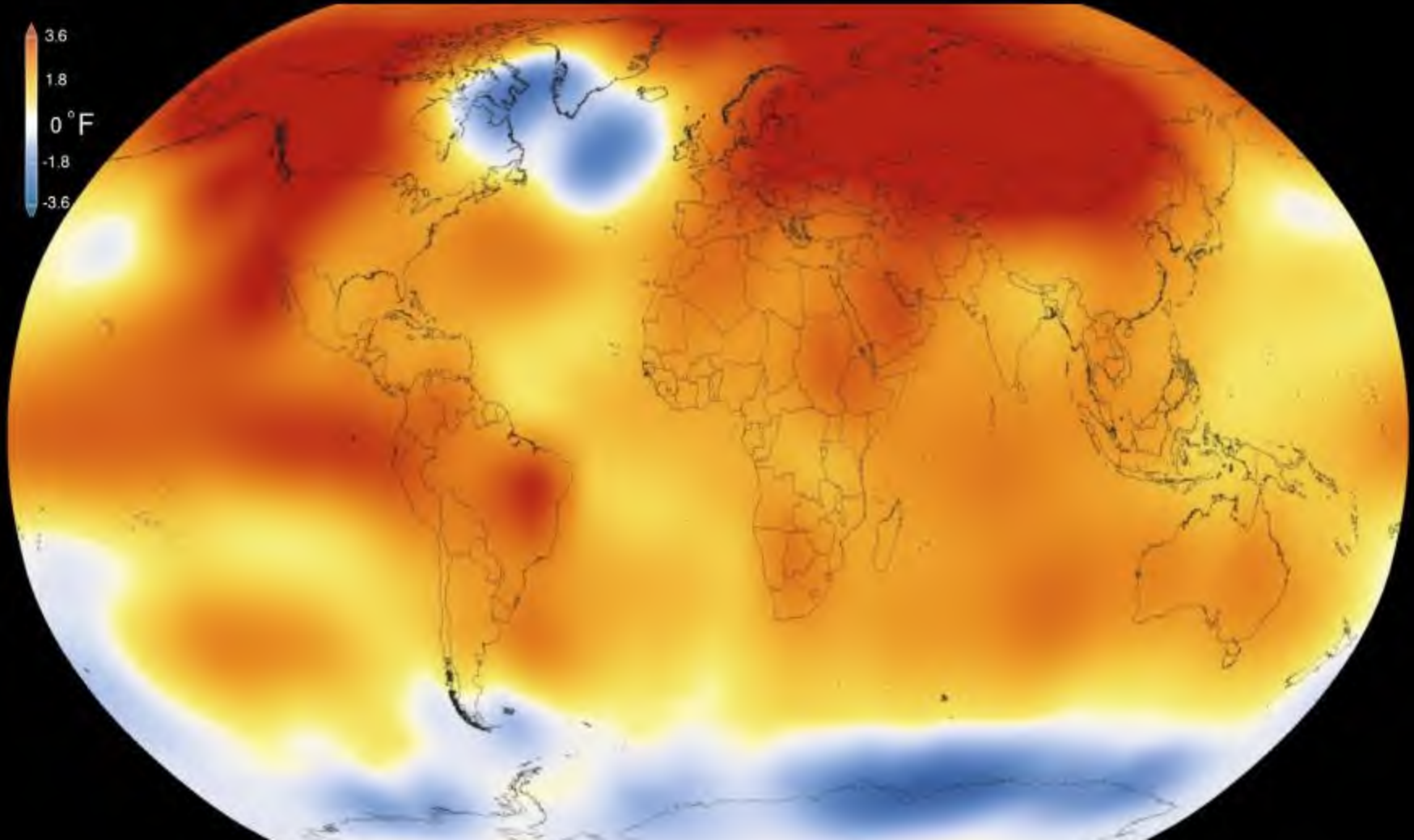



Colorado - Mean Temperature
October-August 2018 Percentile
41°N
40°N
39°N
38°N
37°N
109°W
108°W
107°W
106°W
105°W
104°W
103°W
102°W
RECORD WARMEST
MUCH ABOVE NORMAL Top 10%
ABOVE NORMAL Top 33%
NEAR NORMAL
BELOW NORMAL Bottom 33%
MUCH BELOW NORMAL Bottom 10%
RECORD COLDEST
Rankings (1895-2010)
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 7 SEP 2018

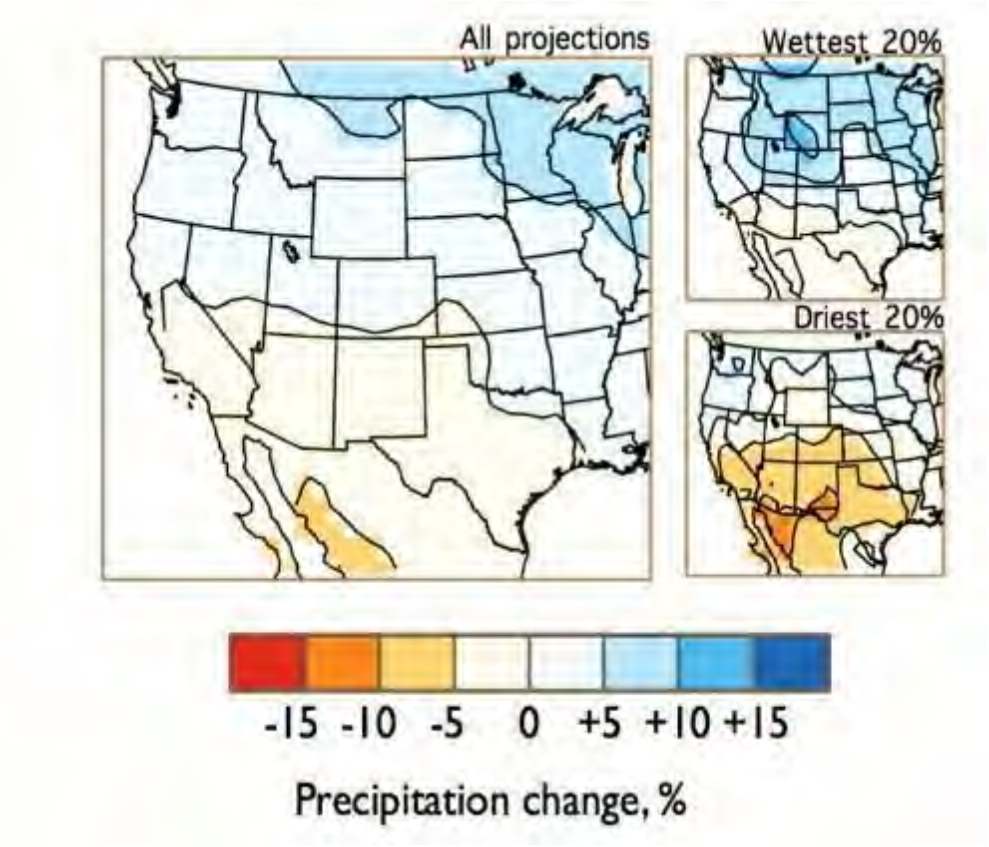

COLORADO STATEWIDE
Reservoir Storage
Departure from Average
Departure from Average Storage (thousands of ac-ft)
2000
1500
1000
500
0
-500
-1000
-1500
-2000
-2500


Colorado Reservoir Storage
End-of-Month Departure from Average
NRCS
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18
Apr-18
May-18
Jun-18
Jul-18
Aug-18
Storage (1,000 ac. Ft.)
1000
800
600
400
200
0
-200
-400
-600
-800
Gunnison
Colorado
South Platte
Arkansas
Upper Rio Grande
San Miguel, Dolores, Animas & San Juan
Statewide

A Land of Extremes


3.6
1.8
0 °F
-1.8
-3.6

Colorado statewide precipitation change by 2050 uncertain; we're between regions expected to get drier and wetter



Projected climate and hydrology changes

Annual streamflow	Decreases in majority of projections
Peak runoff timing	Earlier in all projections
Crop water use	Increases
April 1 snowpack	Decreases in most projections
Palmer Drought Index	More drought
Heat waves	More frequent
Cold waves	Less frequent
Frost-free season	Longer
Wildfires	More frequent


COLORADO'S
WATER PLAN
SUPPLY
AGRICULTURE
FUNDING
CONSERVATION
LAND USE
STORAGE
EDUCATION
WATERSHED
ADDITIONAL

Supply-Demand Gap

Colorado's Water Plan sets a measurable objective of reducing the projected 2050 municipal and industrial gap from as much as 560,000 acre-feet to zero acre-feet by 2030.

Conservation

Colorado's Water Plan sets a measurable objective to achieve 400,000 acre-feet of municipal and industrial water conservation by 2050.

PREVENTING

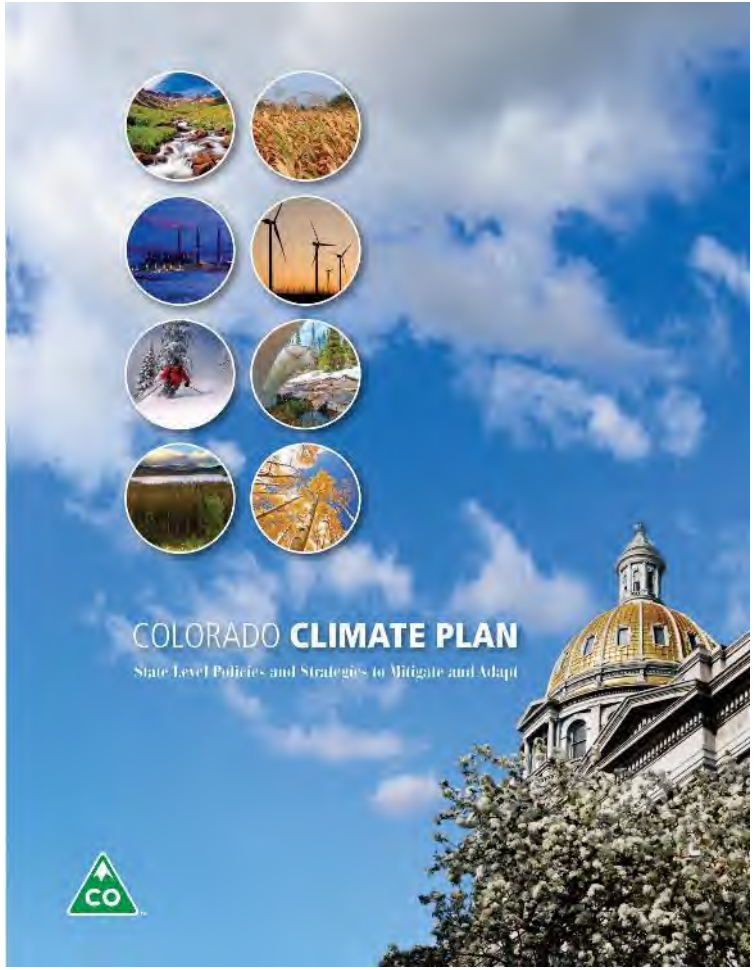
UNINTENDED CONSEQUENCES LIKE

BUY & DRY

NONCONSUMPTIVE NEEDS

The environment and recreation are critical to Colorado's brand, economy and way of life.


COLORADO'S
WATER PLAN
A
SUPPLY & DEMAND GAP
B
CONSERVATION
C
LAND USE
D
AGRICULTURE
E
STORAGE
F
WATERSHED HEALTH, ENVIRONMENT, & RECREATION
G
FUNDING
H
EDUCATION, OUTREACH & INNOVATION
I
ADDITIONAL


COLORADO CLIMATE PLAN
State Level Policies and Strategies to Mitigate and Adapt
CO

Land Use

Colorado's Water Plan sets a measurable objective that by 2025, 75 percent of Coloradans will live in communities that have incorporated water-saving actions into land-use planning.

Watershed Health, Environment, and Recreation

Colorado's Water Plan sets a measurable objective to cover 80 percent of the locally prioritized lists of rivers with stream management plan.

Storage

Colorado's Water Plan sets a measurable objective of attaining 400,000 acre-feet of water storage.

STATE OF COLORADO

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Denver, Colorado 80203
Phone (303) 866-2471
Fax (303) 866-2003

John W. Hickenlooper
Governor

D 2017-015

EXECUTIVE ORDER

Supporting Colorado's Clean Energy Transition

Pursuant to the authority vested in the Governor of the State of Colorado and, in particular, pursuant to Article IV, Section 2 of the Colorado Constitution, I, John W. Hickenlooper, Governor of the State of Colorado hereby issue this Executive Order in support of Colorado's transition to cleaner energy resources.

I. Background, Need and Purpose

As a state, we recognize that clean air is essential to a strong Colorado. Clean air enhances the wondrous Eastern Plains and the great Colorado Rockies, and the basins and mesas beyond. It is essential to our brand, our identity. It helps attract the entrepreneurs, global companies and talented workforce that drive our resurgent economy. Clean air facilitates a healthy and productive citizenry, bolsters our outdoor recreational activities, and helps diversify our economy.

Colorado has a long history of taking steps to improve our air. From the debates in the 1970s and 1980s about how best to address our "brown cloud," to passage of the nation's first voter-passed renewable energy standard in 2004, to issuing the nation's first methane regulations for the oil and gas production sector, we do not shrink from challenges. Most importantly, we have accomplished this progress while preserving reliable, low-cost electric service for consumers and recognizing the role fossil fuel industries play in our economy. Coloradans' total average monthly energy costs remain one of the lowest in the nation. Keeping energy costs competitive and affordable is a key component of a strong and healthy economy.

E&E NEWS

CLEAN AIR POLICY

Colorado First State to Limit Methane Pollution from Oil and Gas Wells

npr set station news arts & life music programs

ENVIRONMENT

Colorado Leads U.S. In Control Of Methane Gas Emissions

3:10

+ QUEUE

May 13, 2016 · 4:25 PM ET

Heard on All Things Considered

The Colorado Energy Plan

After a solicitation process that attracted a record number of bidders and a range of historically low clean energy prices, we submitted our 120 day report to regulators on June 8, 2018. The report offers portfolio options that build wind and solar capacity, invest in Colorado's economy, reduces emissions, and ensures reliable, affordable electricity into the future.

Get updates on the Electric Resource Plan process on the Colorado Energy Plan page.

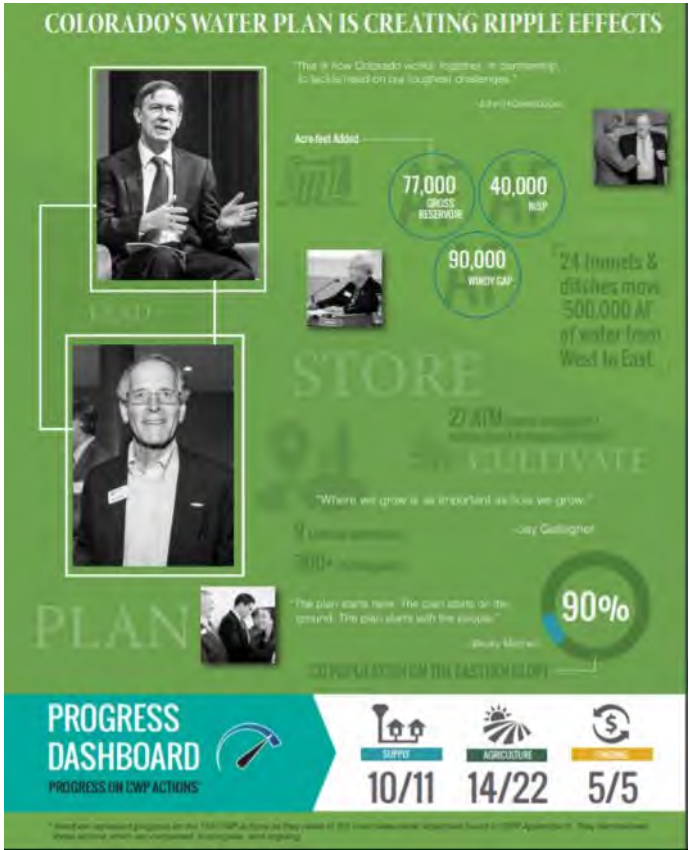
Learn how we're exceeding climate targets and keeping Colorado at the forefront of the clean energy transition in our 2017 Corporate Responsibility Report.

Statewide Water Supply Initiative

Drivers	A Business as Usual	B Weak Economy	C Cooperative Growth	D Adaptive Innovation	E Hot Growth
A. Economy/ Reputation					
B. Urban Land use	No change	No change	Higher density	Higher density	Lower density
C. Climate Status/ Water Supply	Same as 20th century observed	Same as 20th century observed	Between hot and dry and 20th century observed	Hot and dry	Hot and dry
D. Energy Water Needs	Low (no oil shale)	Moderate (no oil shale)	Low (no oil shale)	Low (no oil shale)	High (oil shale)
E. Agricultural Conditions	Total ag water demands slightly higher • Decrease in irrigated acres due to urbanization • Ag exports and demands lower • Ag is less able to compete with urban areas for water	Total ag water demands decrease • Decrease in irrigated acres due to urbanization • Ag exports and demands constant • Ag is less able to compete with urban areas for water	Total ag water demands slightly higher • Slight decrease in irrigated acres due to urbanization • Ag exports down and local demands up • Ag is better able to compete with urban areas for water • Increased ET due to climate change	Total ag water demands slightly higher • Slight decrease in irrigated acres due to urbanization • Ag exports down and local demands up • Ag is better able to compete with urban areas for water • Increased ET due to climate change	Total ag water demands higher • Significant decrease in irrigated acres due to urbanization • Ag exports and demands high • Ag is better able to compete with urban areas for water • Increased ET due to climate change
F. Availability of New Water Efficiency Technology	• M&I Moderate • Ag: Efficiencies are increased	• M&I Moderate • Ag: Efficiencies are increased	• M&I: High • Ag: Efficiencies are increased	• M&I: High • Ag: Much higher efficiencies are implemented	• M&I: Moderate • Ag: Efficiencies are increased
G. Social/ Environmental Values	No change	No change	• Increased awareness • Increased willingness to protect environment and stream recreation	• Increased awareness • Increased willingness to protect environment and stream recreation	• Full use of resources • Low willingness to protect environment and stream recreation
H. Regulatory Constraints	No change	No change	Increased	Increased but supported	Reduced
I. M&I Water Demands	Lowest of the five scenarios	Middle of the five scenarios	Second lowest of the five scenarios	Second highest of the five scenarios	Highest of the five scenarios

COLORADO'S WATER PLAN

COLLABORATING ON COLORADO'S WATER FUTURE



END

QUESTIONS

THANK YOU!