CLIMATE CHANGE AND CO'S WATER PLAN

BOB RANDALL, EXECUTIVE DIRECTOR
October through August of this year has been the third warmest and the fourth driest in the 123-year record.
A Land of Extremes

WILDFIRE

FLOOD

DROUGHT
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

LAND USE
CONSERVATION

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.
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.
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 mesa 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 citizen, 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.

STATE OF COLORADO

[Signature]

John W. Hickenlooper
Governor
Colorado First State to Limit Methane Pollution from Oil and Gas Wells
The Colorado Energy Plan

After a solicitation process that attracted a record number of bidders and a range of historically low renewable energy prices, we submitted our 123 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.


Learn how we’re achieving climate targets and keeping Colorado at the forefront of the clean energy transition in our 2017 Corporate Responsibility Report.
### Statewide Water Supply Initiative

#### Drivers

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Business as Usual (A)</th>
<th>Weak Economy (B)</th>
<th>Cooperative Growth (C)</th>
<th>Adaptive Innovation (D)</th>
<th>Hot Growth (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Economy/Population</td>
<td>No change</td>
<td>No change</td>
<td>Higher density</td>
<td>Lower density</td>
<td>Higher density</td>
</tr>
<tr>
<td>B. Urban Land Use</td>
<td>No change</td>
<td>No change</td>
<td>Higher density</td>
<td>Lower density</td>
<td>Higher density</td>
</tr>
<tr>
<td>C. Climate Status/Water Supply</td>
<td>Same as 20th century observed</td>
<td>Same as 20th century observed</td>
<td>Between wet and dry and 21st century observed</td>
<td>Hot and dry</td>
<td>Hot and dry</td>
</tr>
<tr>
<td>D. Energy Water Needs</td>
<td>Low (no oil shale)</td>
<td>Moderate (no oil shale)</td>
<td>Low (no oil shale)</td>
<td>Low (no oil shale)</td>
<td>High oil shale</td>
</tr>
<tr>
<td>E. Agricultural Conditions</td>
<td>Total ag water demands slightly higher</td>
<td>Total ag water demands increase</td>
<td>Total ag water demands slightly higher</td>
<td>Total ag water demands higher</td>
<td>Total ag water demands higher</td>
</tr>
<tr>
<td>F. Availability of New Water Efficiency Technology</td>
<td>M&amp;L: Moderate</td>
<td>M&amp;L: Moderate</td>
<td>M&amp;L: High</td>
<td>M&amp;L: High</td>
<td>M&amp;L: Moderate</td>
</tr>
<tr>
<td>G. Social/Environmental Values</td>
<td>No change</td>
<td>No change</td>
<td>Increased awareness</td>
<td>Increased awareness</td>
<td>Full use of resources</td>
</tr>
<tr>
<td>H. Regulatory Constraints</td>
<td>No change</td>
<td>No change</td>
<td>Increased willingness to protect environment and stream recreation</td>
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<td>Increased willingness to protect environment and stream recreation</td>
</tr>
<tr>
<td>I. M&amp;L Water Demands</td>
<td>Lowest of the five scenarios</td>
<td>Middle of the five scenarios</td>
<td>Second lowest of the five scenarios</td>
<td>Second highest of the five scenarios</td>
<td>Highest of the five scenarios</td>
</tr>
</tbody>
</table>

#### CWP, BIPS, SWSI

- CWP: Cycle of Water Processes
- BIPS: Benefits of Improved Water Supply
- SWSI: Scenario Water Supply Initiative
QUESTIONS

THANK YOU!