

DROUGHT PREPAREDNESS IN COLORADO

Missouri Basin Drought Early Warning & Scoping
Workshop

February 26, 2014





Drought Preparedness History in Colorado

- ▶ 1981- First Drought Plan
- ▶ 2004- Drought and Water Supply Assessment
- ▶ 2010- Comprehensive Revision
 - ▶ Mitigation focused
 - ▶ Quantitative and Qualitative Vulnerability Assessment
 - ▶ Climate Change
 - ▶ Streamline communications
 - ▶ Local tools & resources
- ▶ 2011-Present Activation of Drought Plan
- ▶ 2013- Drought Plan Updated
- ▶ 2013 forward- Integration of Drought planning into long term water supply planning & the Colorado Water Plan



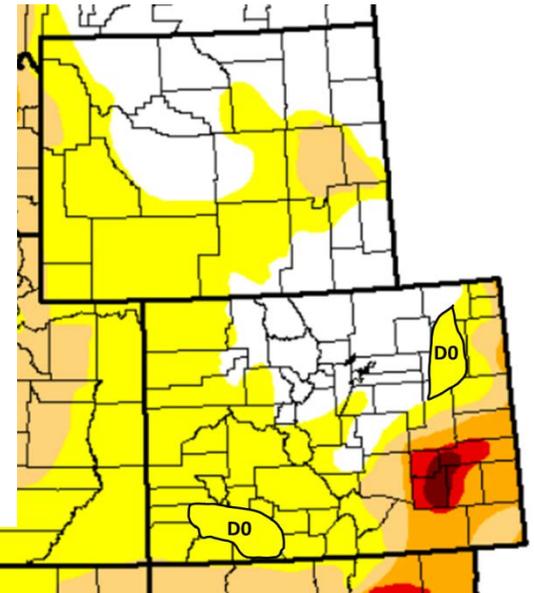
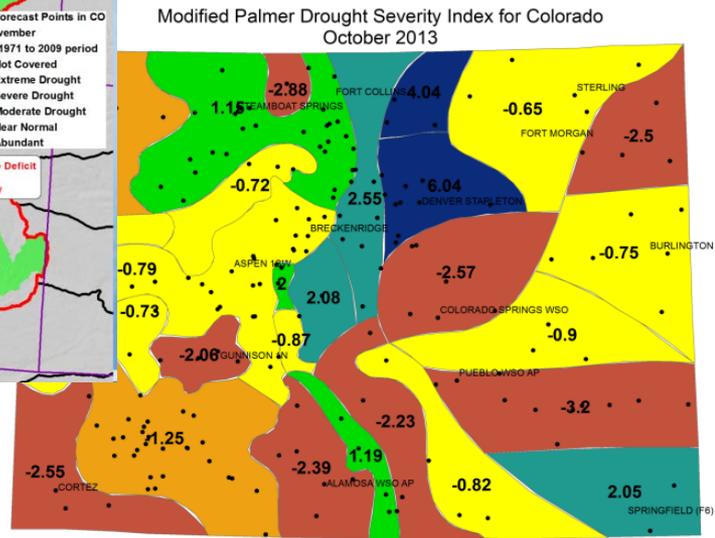
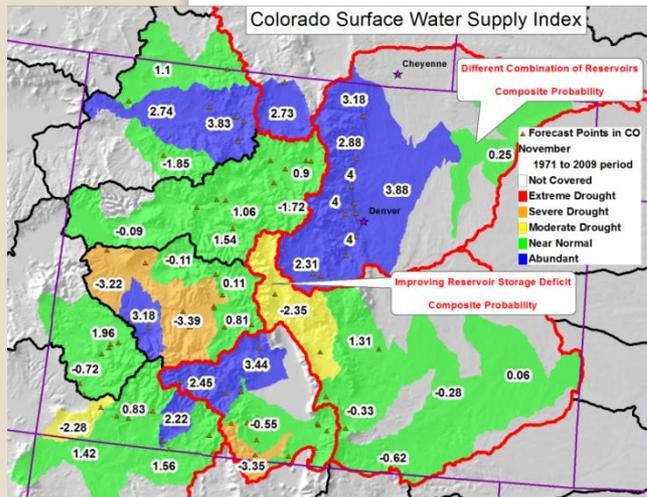
What is Colorado Doing?

- Monitoring
- Vulnerability Assessment
- Response
- Climate Change & Drought
- Statewide Planning

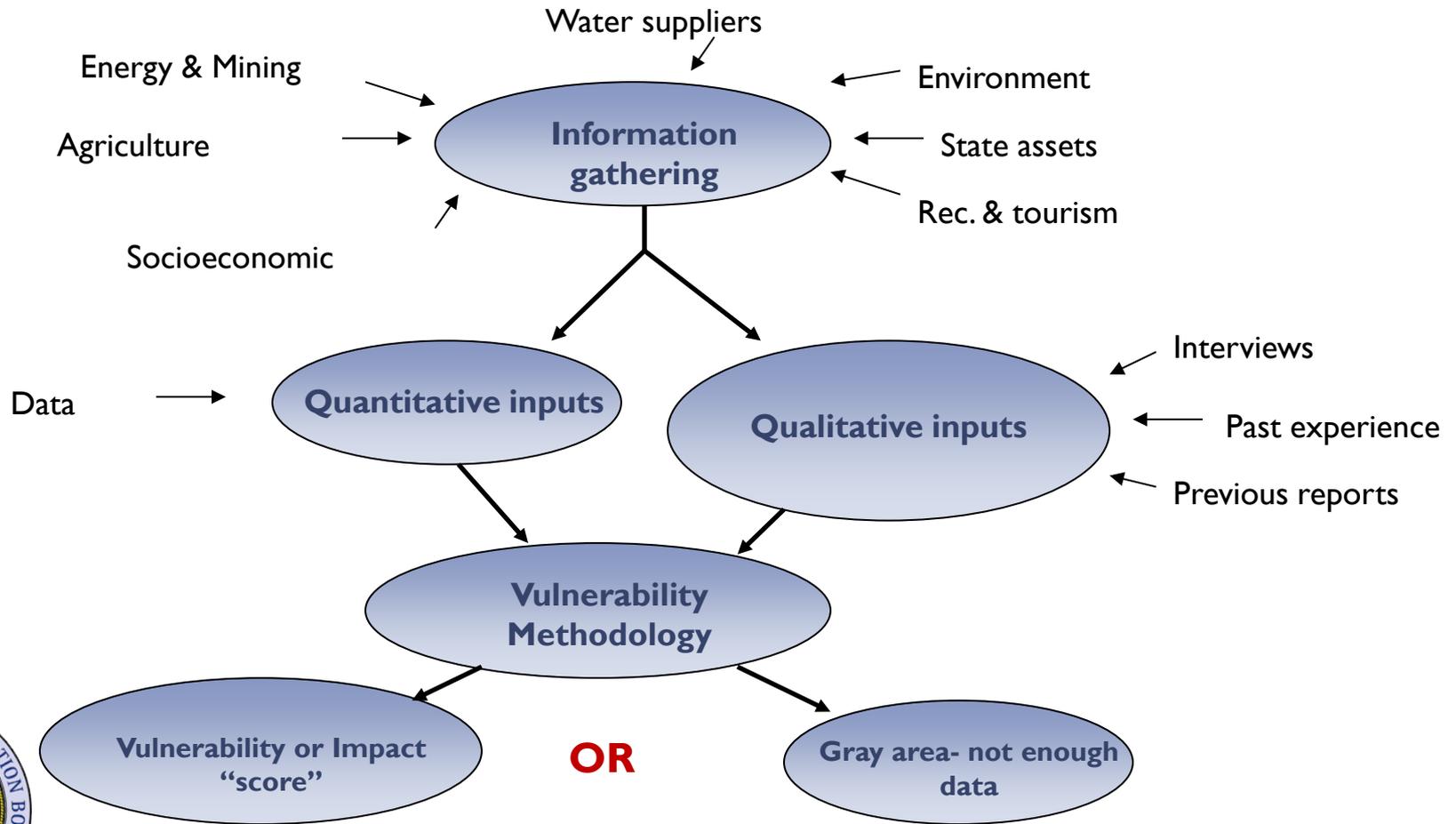


Drought Monitoring

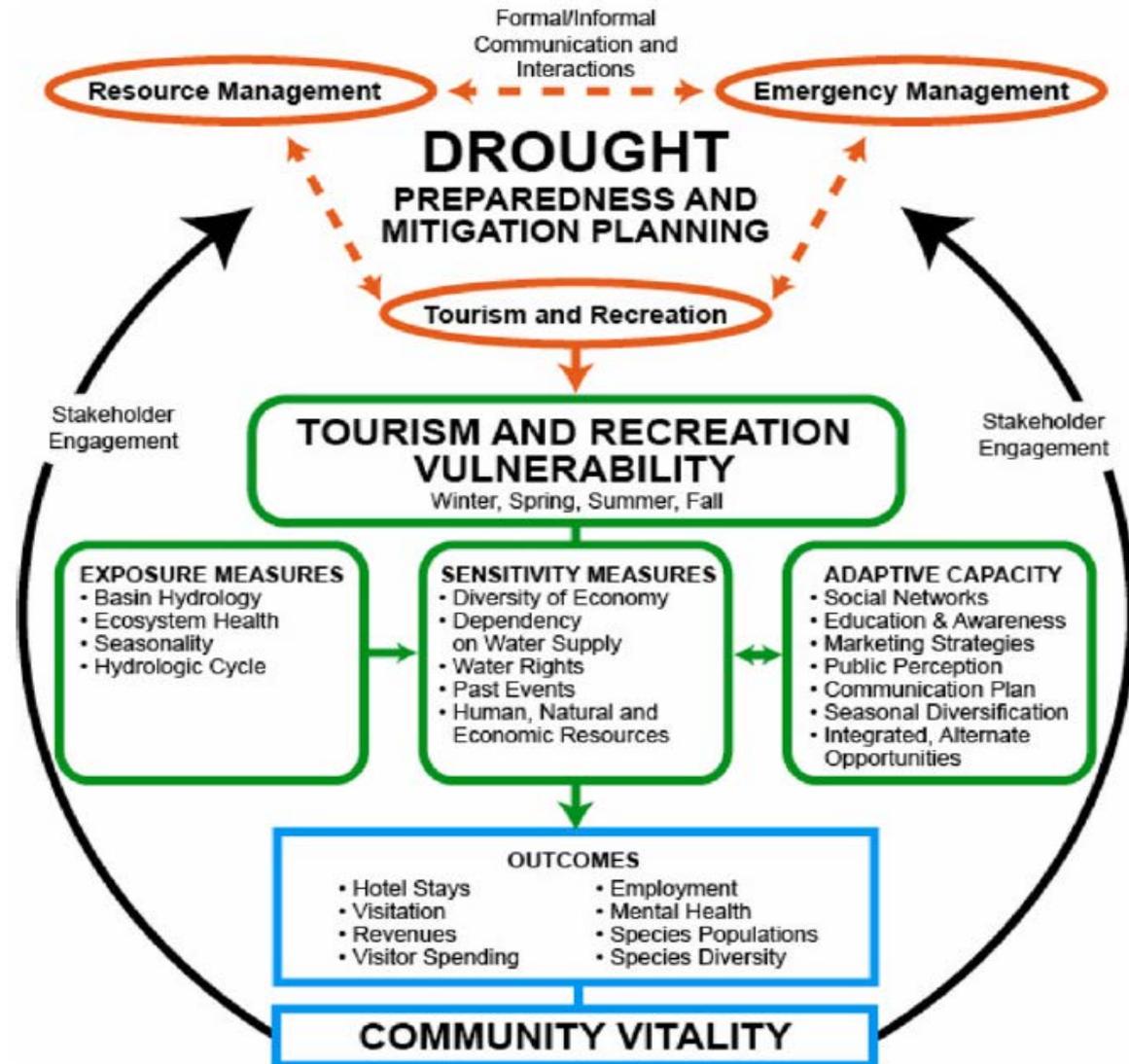
- Surface Water Supply Index Improvements
- Palmer Drought Severity Index Analysis
- US Drought Monitor - added as an official index in the 2013 CO State Drought Plan



Vulnerability Assessments - Methodology



Vulnerability Assessment - Sector by Sector



Drought Response

- Task Forces – DTF, ITFs, WATF
- Economic Studies
- Drought Tours
- Gaming Exercise



Ag Economic Studies 2011-12

Table 1. 2012 and Average Revenues for Selected Colorado Crops

	2012 Revenues	2000 - 2010 Average Revenue	What Might Have Been Revenues ^a	Difference Between 2012 Revenues and What Might Have Been
Crops				
<i>Barley</i>	\$45,663,750	\$29,513,530	\$46,967,828	-\$1,304,078
<i>Corn Grain</i>	\$947,026,500	\$514,752,255	\$1,201,519,061	-\$254,492,561
<i>Corn Silage</i>	\$166,400,000	\$62,668,182	\$183,040,000	-\$16,640,000
<i>Dry Beans</i>	\$32,457,600	\$26,968,564	\$30,009,411	\$2,448,189
<i>Hay (alfalfa & other)</i>	\$885,198,000	\$473,898,618	\$960,408,099	-\$75,210,099
<i>Millet</i>	\$22,848,000	\$20,393,591	\$63,542,169	-\$40,694,169
<i>Potatoes</i>	\$150,678,450	\$188,995,952	\$145,700,620	\$4,977,830
<i>Sorghum</i>	\$20,328,000	\$14,940,581	\$34,285,537	-\$13,957,537
<i>Sunflower</i>	\$18,313,120	\$22,091,421	\$28,005,838	-\$9,692,718
<i>Wheat</i>	\$602,482,930	\$301,562,112	\$606,979,514	-\$4,496,584
Total	\$2,891,396,350	\$1,655,784,805	\$3,300,458,076	-\$409,061,726

^a What Might Have Been Revenues are 2012 prices multiplied by historical average yields multiplied by 2012 planted acres multiplied by the historical ratio of harvested acres to planted acres.



Drought Tours

- Yampa Basin – August 2012
- Arkansas Basin – August 2013



Drought Gaming Exercise

- 5 teams represented by 19 different organizations
- Engage multi-sectors & disciplines
- Encourage collaboration



Climate Change & Drought

- Drought Spell Statistics

09095500 Colorado River near Cameo

	Observed Spells			
	Length of Spell (years)		Intensity of Spell (% of mean)	
	Drought	Surplus	Drought	Surplus
	6	5	-19%	46%

Case	Alternative Hydrology Spells			
	Return Interval of historic spell length (years)		Average Annual Deficit/Surplus (% of mean)	
	Drought	Surplus	Drought	Surplus
Alternative Historical	31	19	-24%	27%
2040 Climate A	6	933	-30%	23%
2040 Climate B	27	47	-29%	19%
2040 Climate C	22	49	-28%	18%
2040 Climate D	53	20	-25%	29%
2040 Climate E	800	6	-19%	36%
2070 Climate F	6	5600	-31%	24%
2070 Climate G	12	267	-31%	18%
2070 Climate H	27	66	-32%	17%
2070 Climate I	30	22	-23%	27%
2070 Climate J	127	13	-19%	38%



Climate Change Scenarios

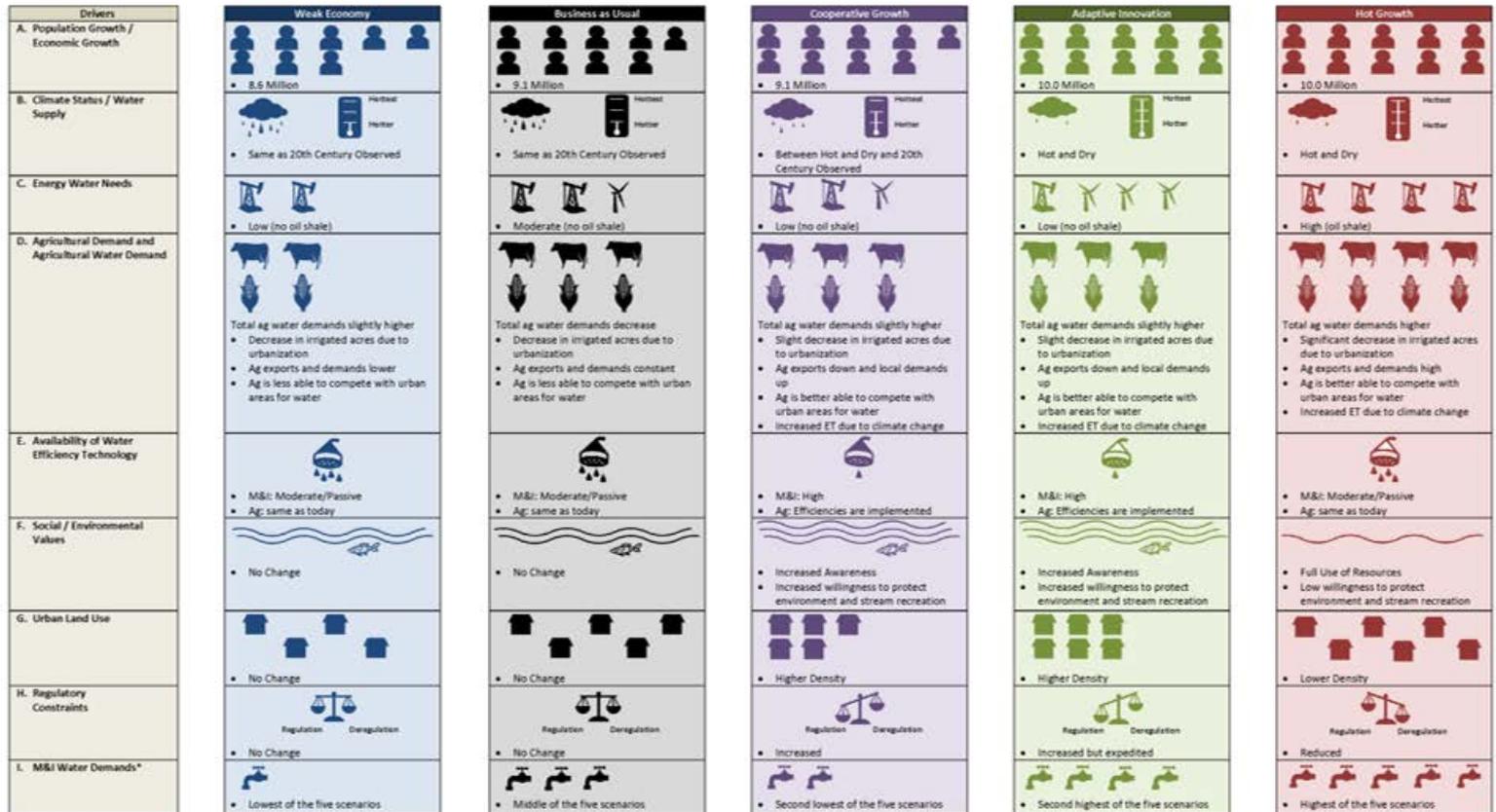


Figure 1. State of Colorado Future Water Supply Scenarios



COLORADO'S WATER PLAN

COLLABORATING
ON COLORADO'S
WATER FUTURE

- Integrating CO Drought Mitigation Plan in Colorado Water Plan
 - Scenario Planning including factoring in Climate Change
 - Year to year variability with qualitative impact on gaps
 - Look at range of variability with drought & floods

- Draft due to Governor in December 2014



Questions?

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Water Supply Planning

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