

WHAT IS THE REAL VALUE OF WATER?

UPPER COLORADO

RIVER COMMISSION

APPLIED
ANALYSIS



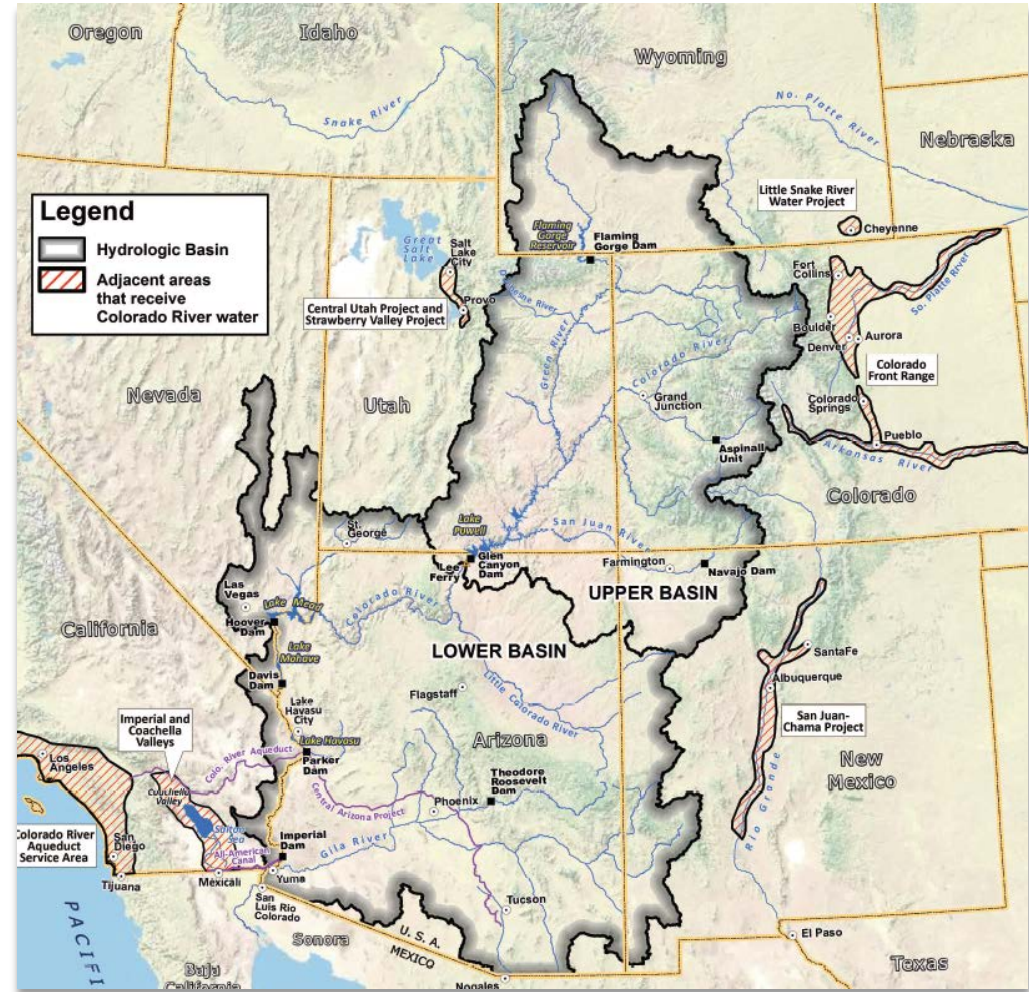
ECONOMY



WHAT IS THE REAL VALUE OF WATER?

Colorado River Basin

“The Colorado River supports a quarter million jobs and produces \$26 billion in economic output from recreational activities alone, drawing revenue from the 5.36 million adults who use the Colorado River for such activities each year.”



Source: U.S. Department of the Interior, Bureau of Reclamation

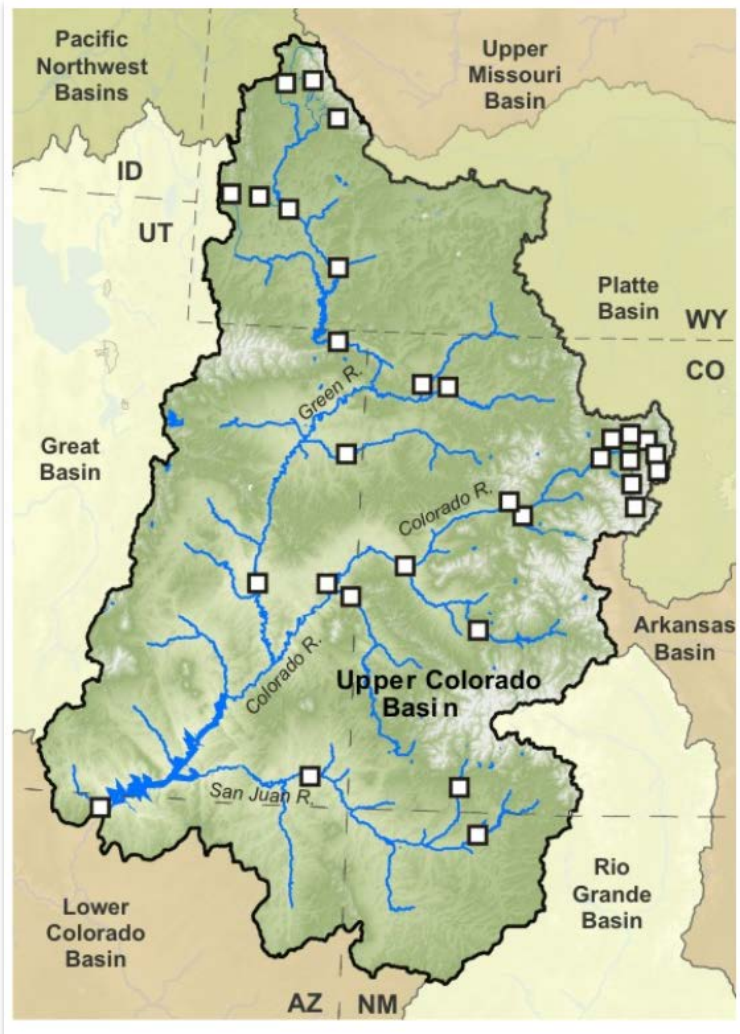
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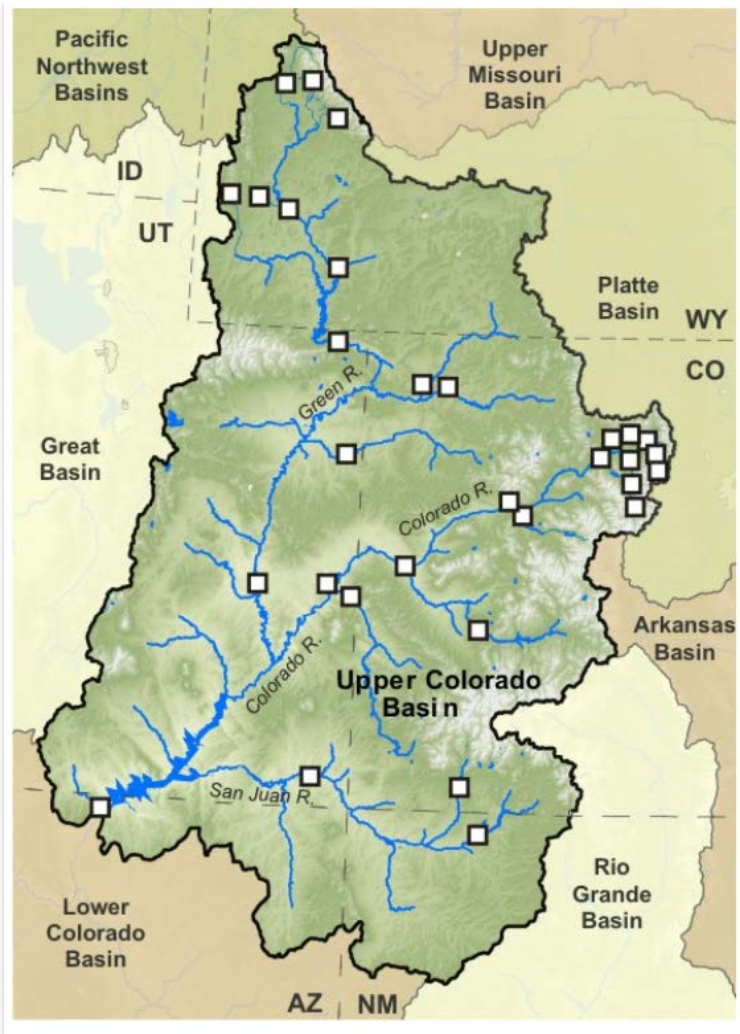
Upper Basin



“The Upper Colorado River Basin is the source of about 90% of the water in the Colorado River System, and is critical to the water supplies of Denver, Las Vegas, Phoenix, Tucson, Los Angeles, and San Diego, as well as to important agricultural areas.”

Source: Colorado Water Conservation Board

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Source: Colorado Water Conservation Board

Increasing Demand

“As water demand for municipal and agricultural purposes increases to serve the needs of growing populations, ensuring the availability of water for non-consumptive uses such as the environment, recreation, and hydropower becomes increasingly challenging.”



Source: Colorado River Basin Water Supply and Demand Study

Increasing Demand

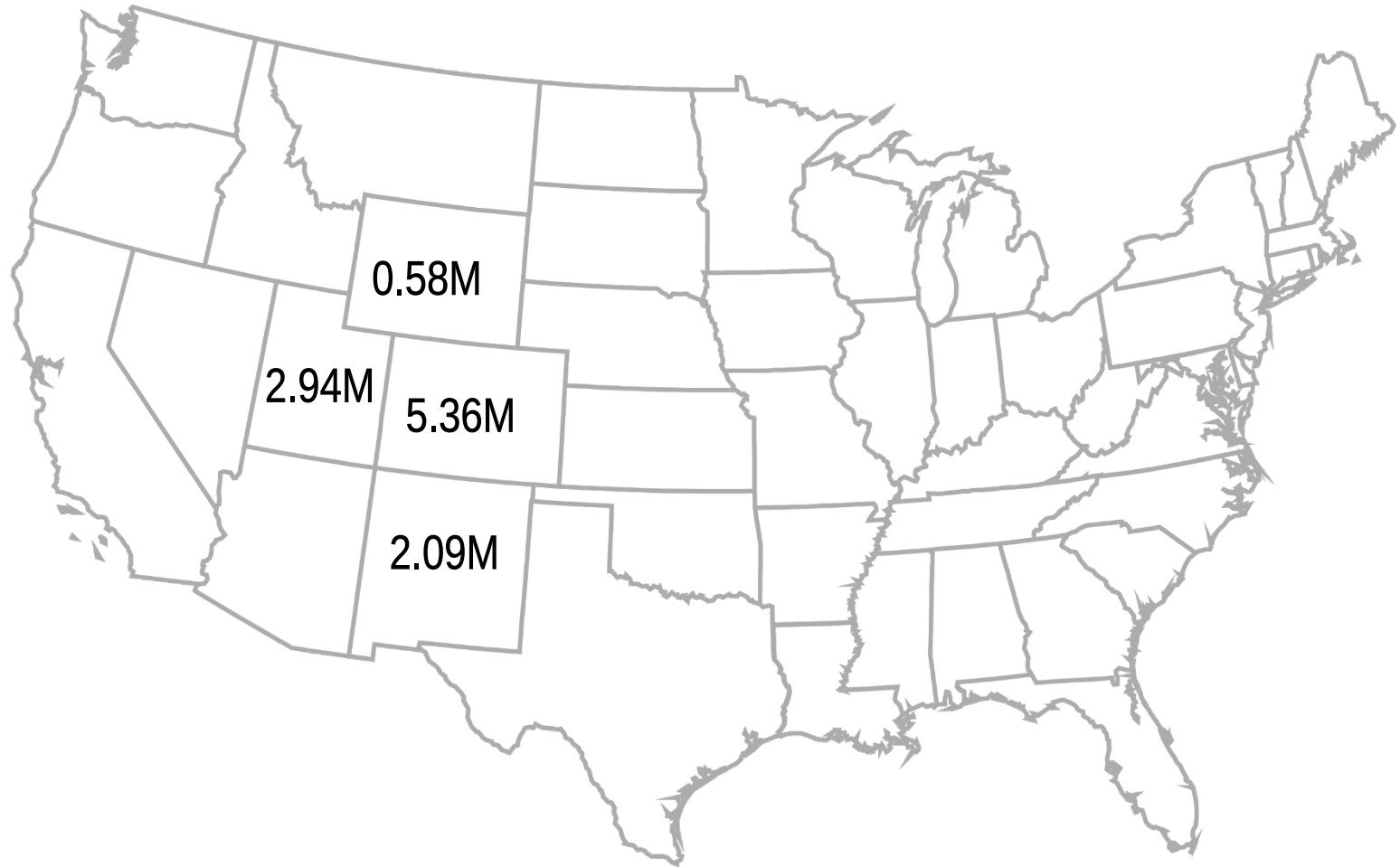
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Population

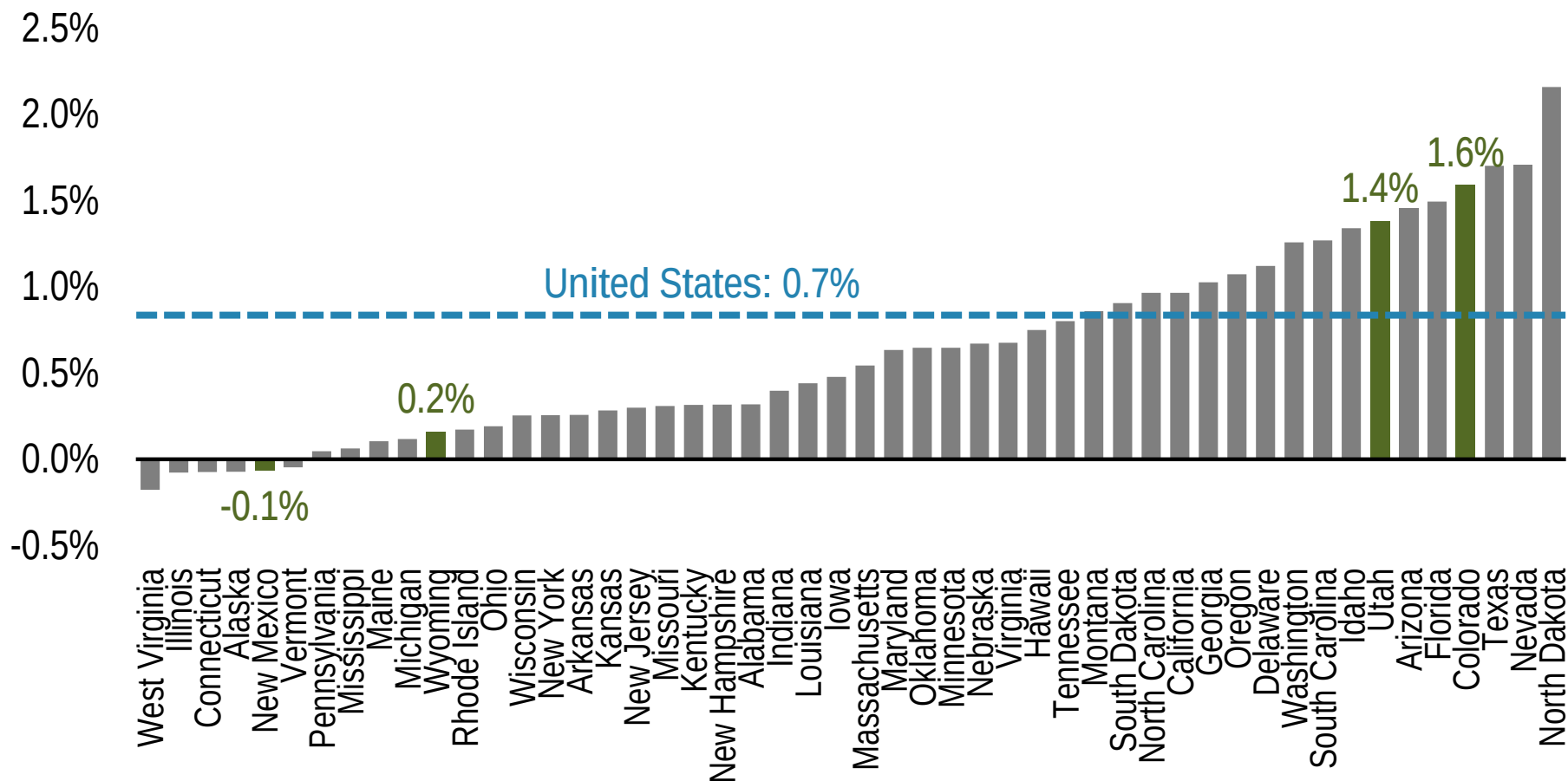
Upper Basin States | 2014



Source: U.S. Census Bureau, population estimates as of July 1 of each year

Population Growth

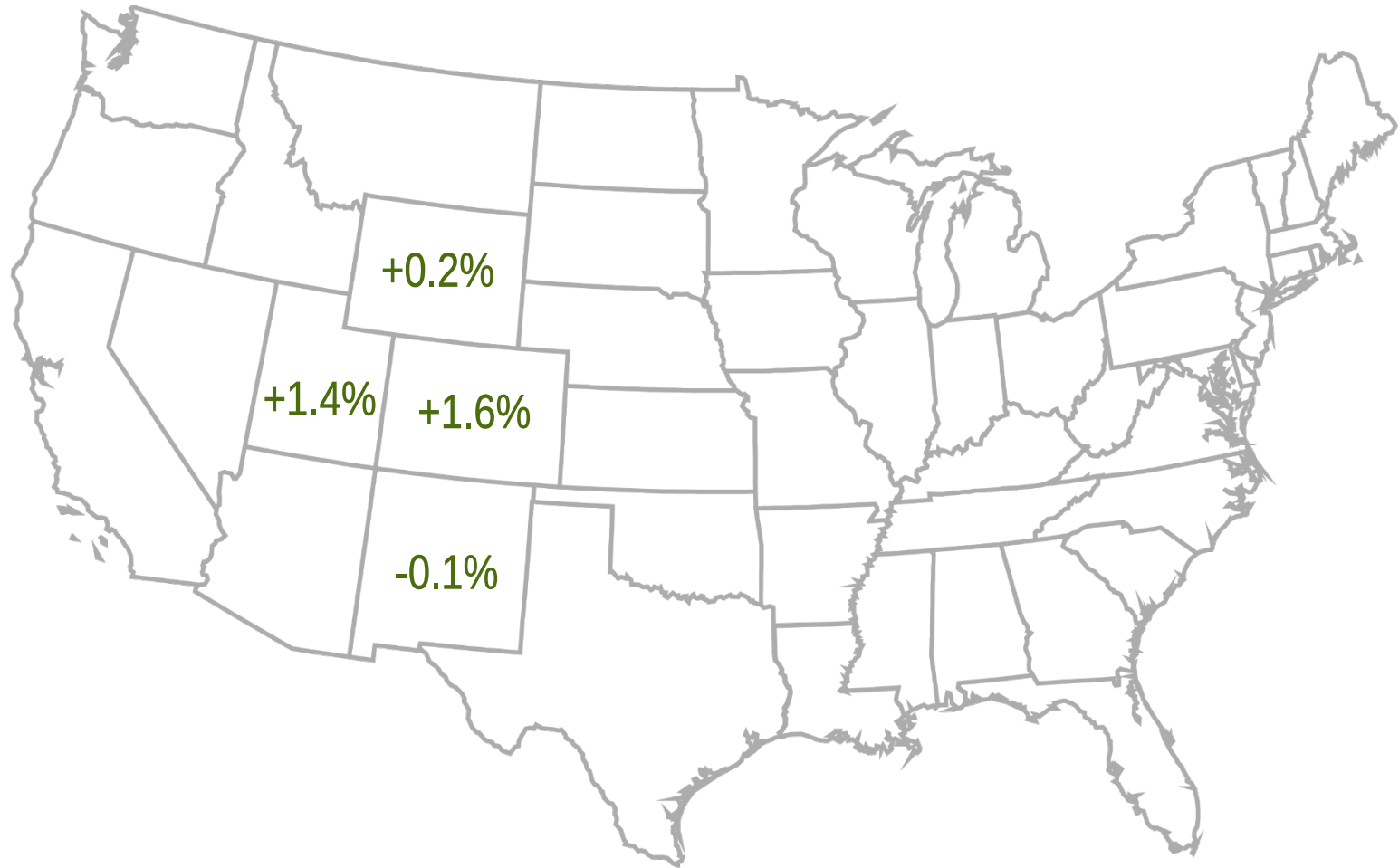
State Comparisons | 2013-2014



Source: U.S. Census Bureau, population estimates as of July 1 of each year, 2013-2014

Population Growth

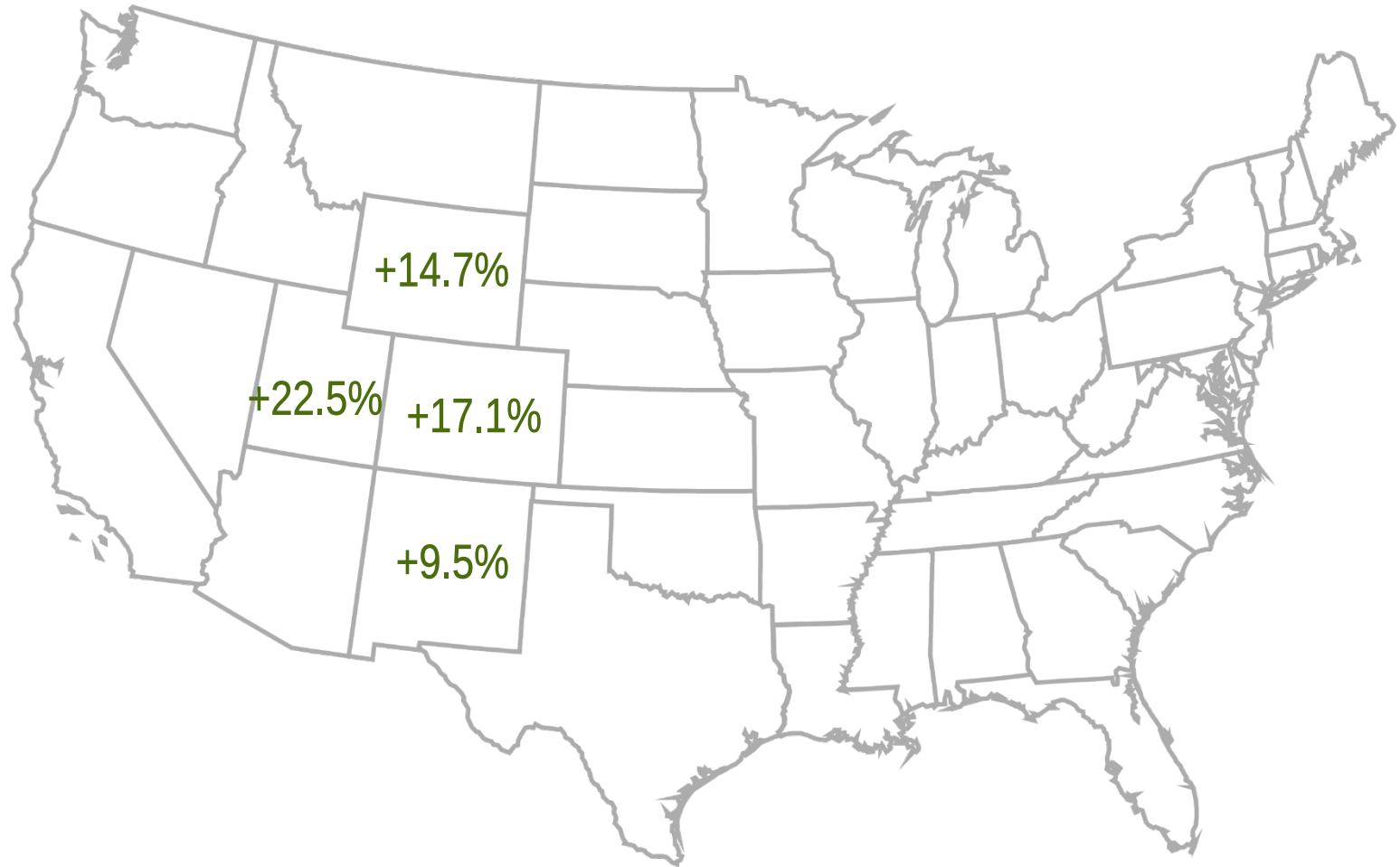
Upper Basin State Comparisons | 2013-2014



Source: U.S. Census Bureau, population estimates as of July 1 of each year, 2013-2014

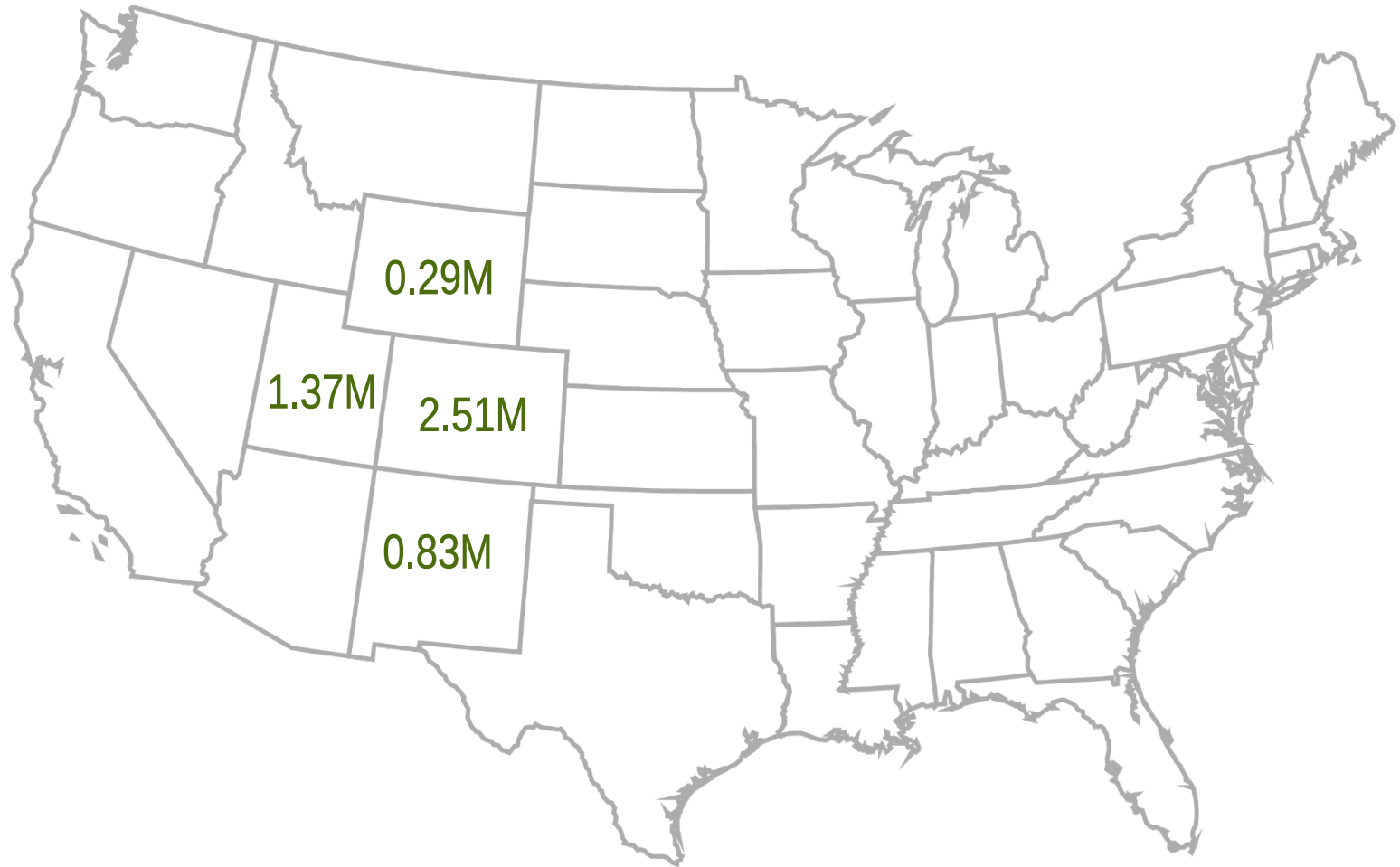
Population Growth

Upper Basin State Comparisons | 2004-2014



Source: U.S. Census Bureau, population estimates as of July 1 of each year, 2004-2014

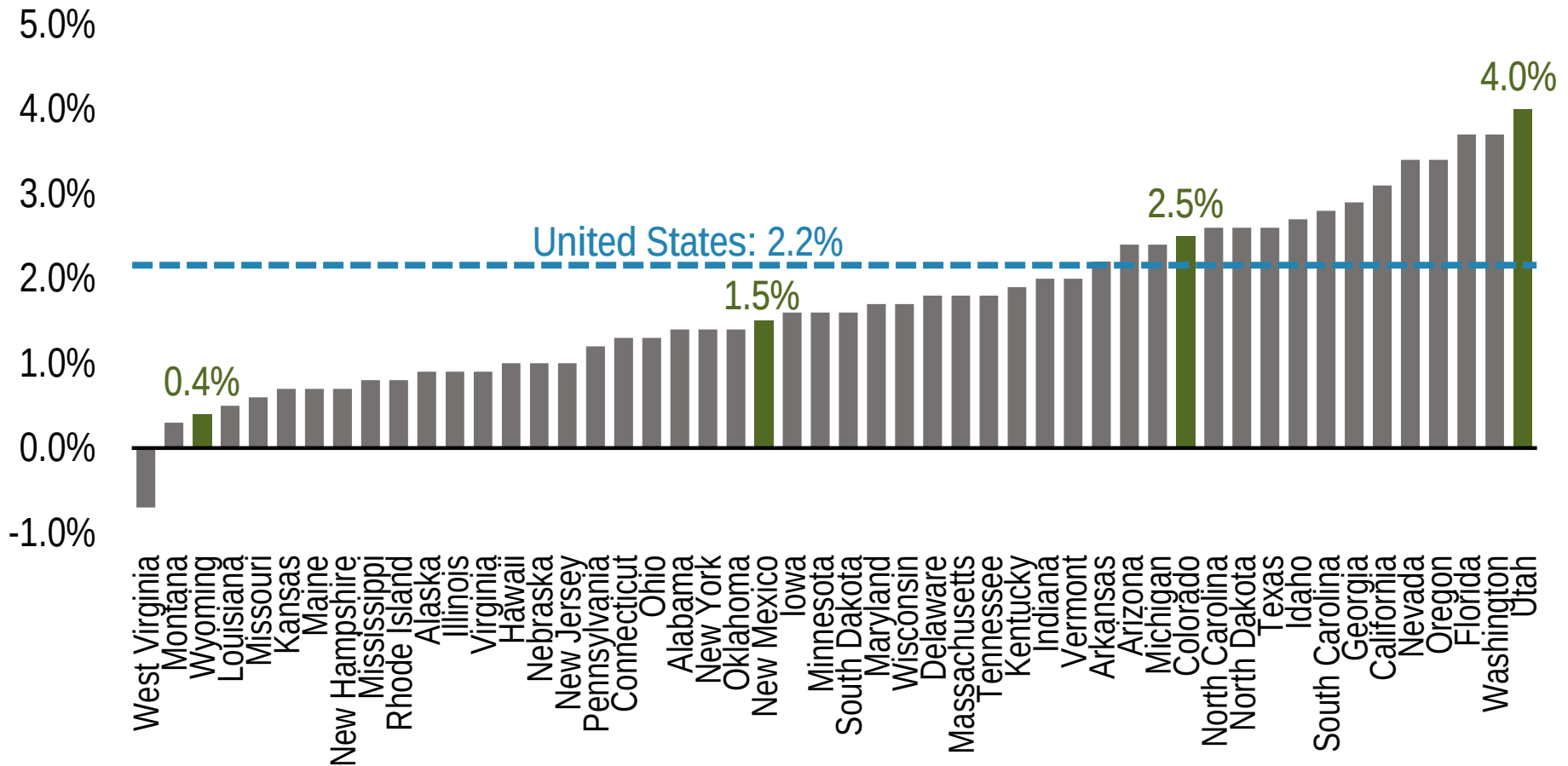
Employment Upper Basin States | 2014



Source: U.S. Bureau of Labor Statistics, estimates as of Q3 2014

Employment Growth

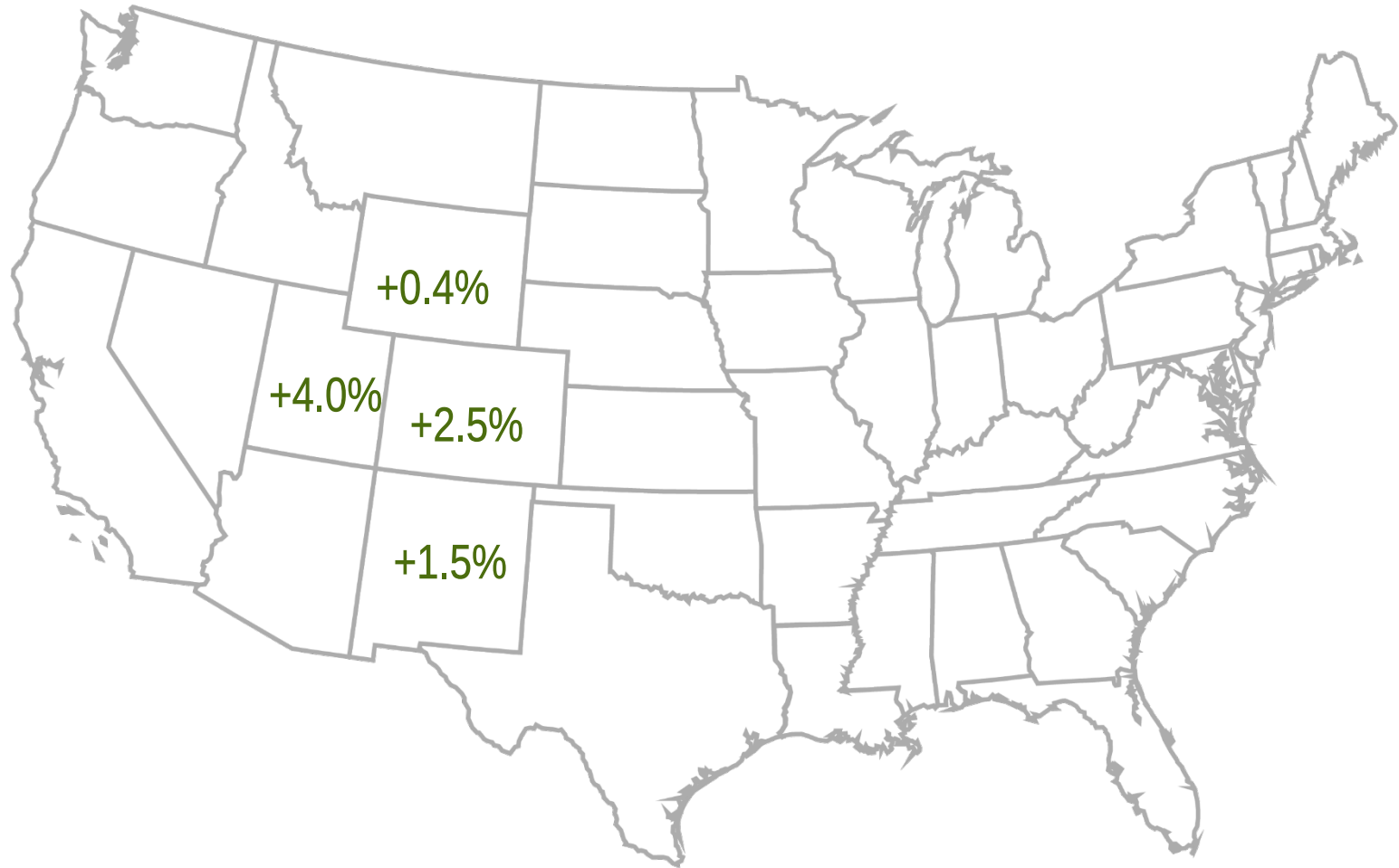
State Comparisons | 2014-2015



Source: U.S. Bureau of Labor Statistics, Establishment-Based Employment Growth, April 2014 vs. April 2015, Not Seasonally Adjusted

Employment Growth

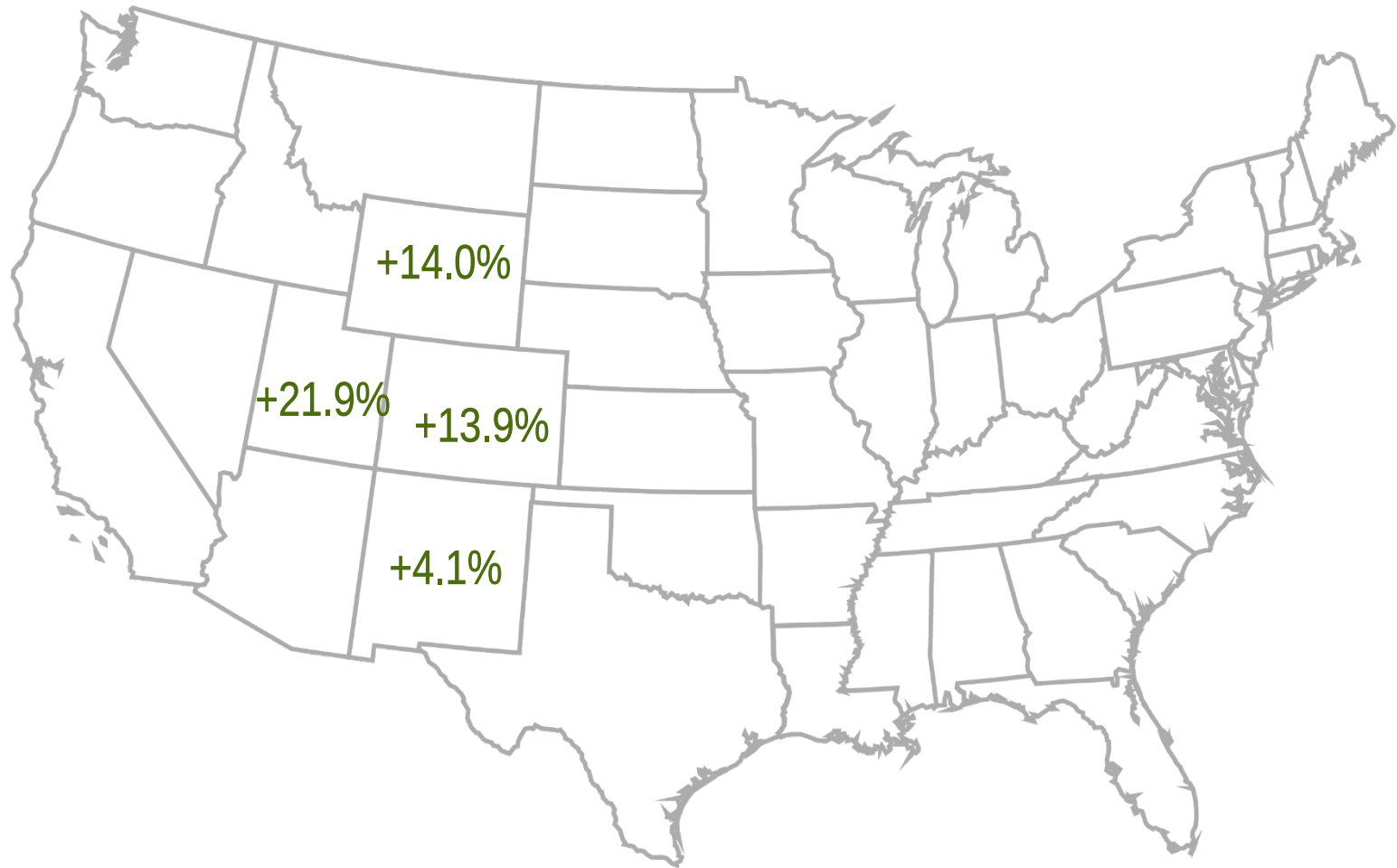
Upper Basin State Comparisons | 2014-2015



Source: U.S. Bureau of Labor Statistics, Establishment-Based Employment Growth, April 2014 vs. April 2015, Not Seasonally Adjusted

Employment Growth

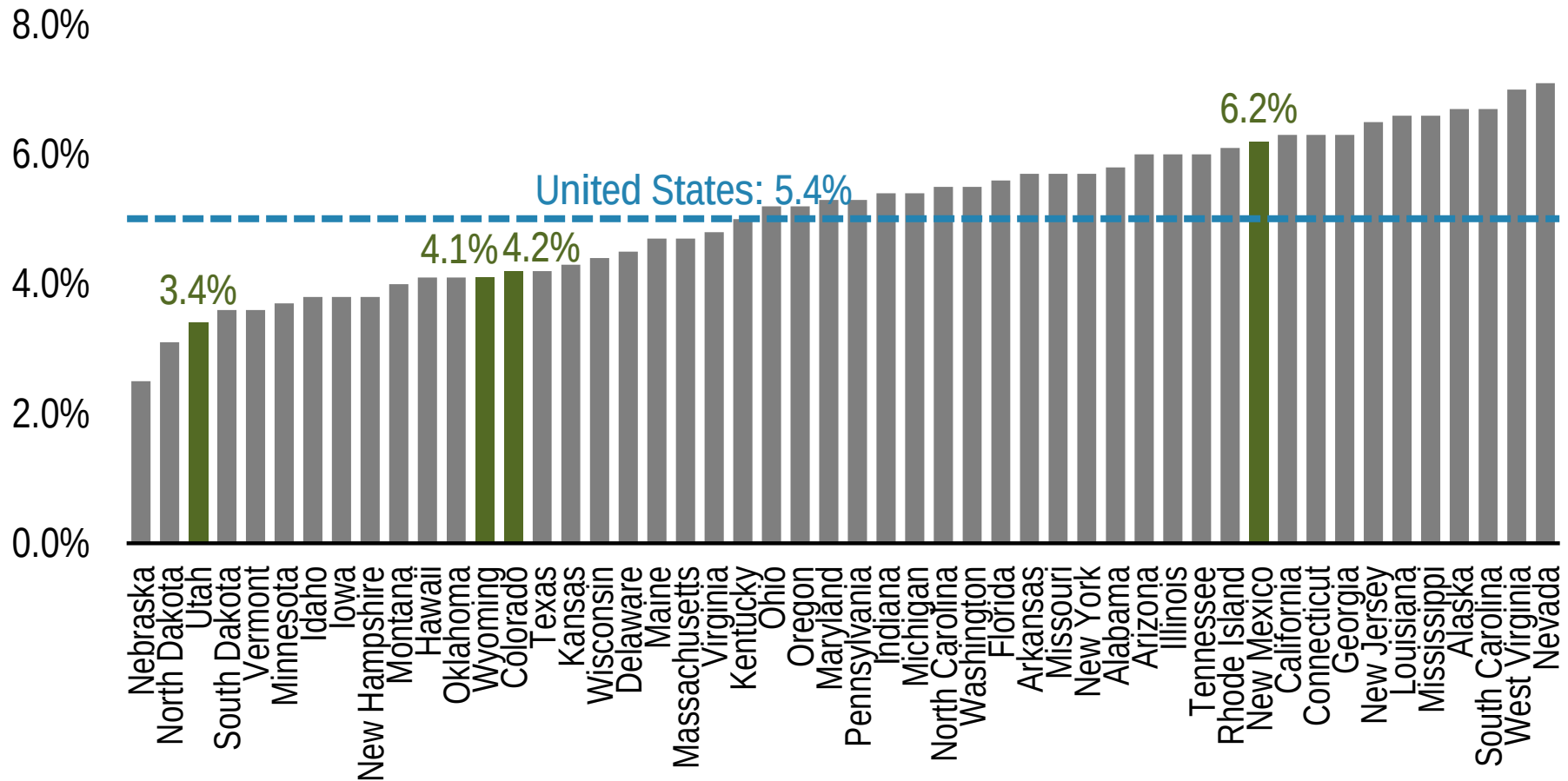
Upper Basin State Comparisons | 2005-2015



Source: U.S. Bureau of Labor Statistics, Establishment-Based Employment Growth, April 2005 vs. April 2015, Not Seasonally Adjusted

Unemployment Rate

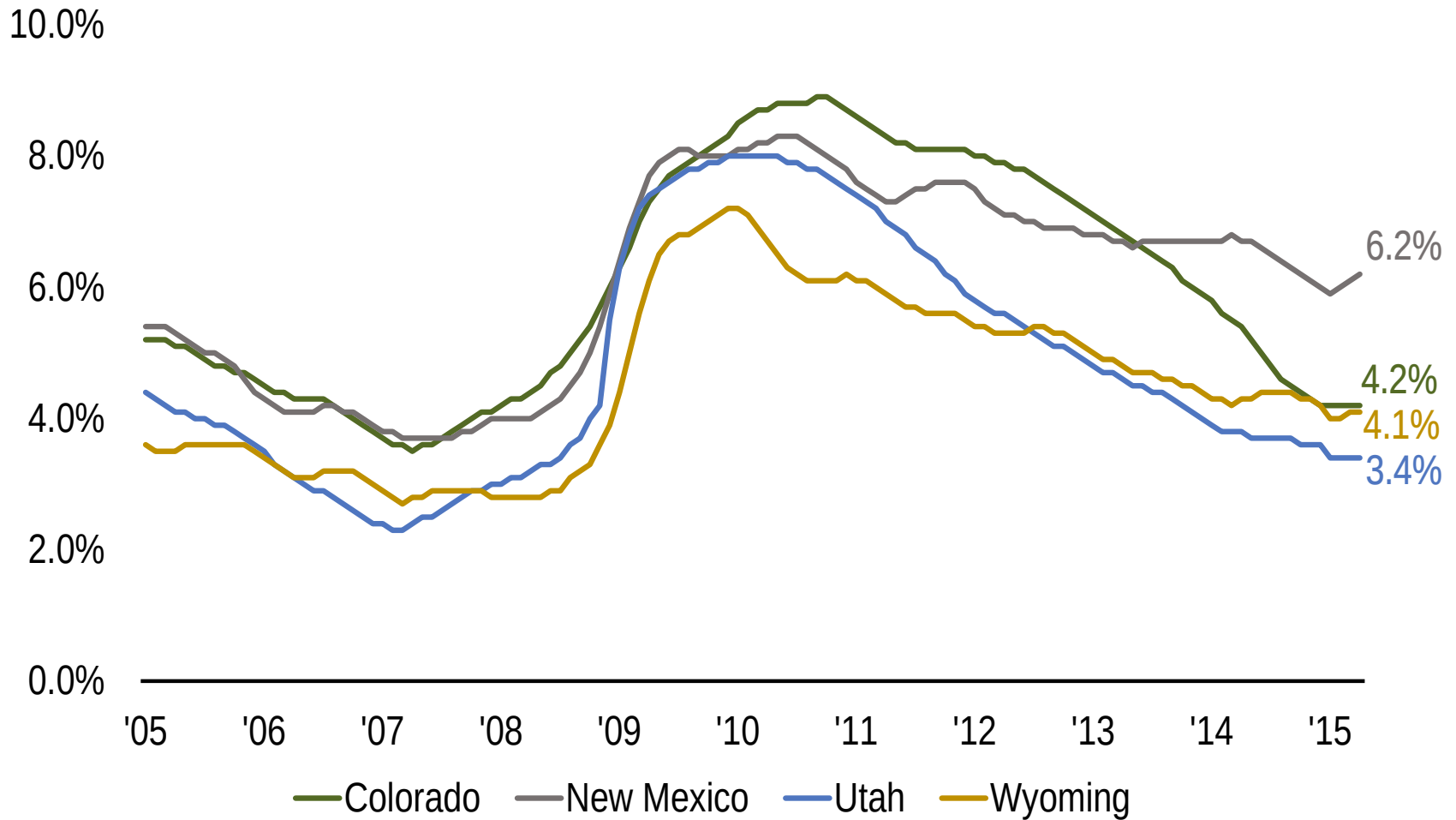
State Comparisons | April 2015



Source: U.S. Bureau of Labor Statistics, Seasonally Adjusted

Unemployment Rate

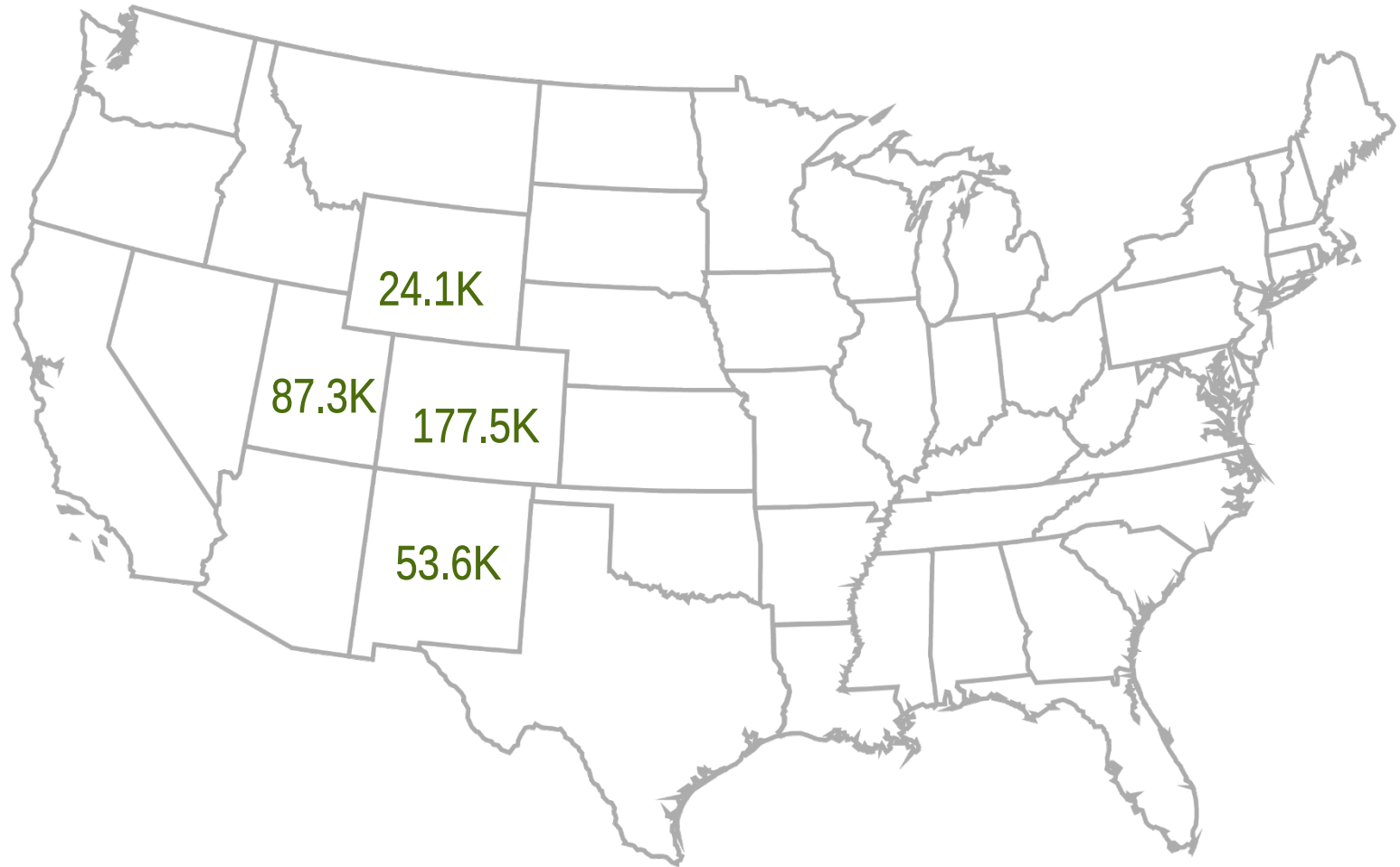
2005-2015



Source: U.S. Bureau of Labor Statistics, Seasonally Adjusted

Private Businesses

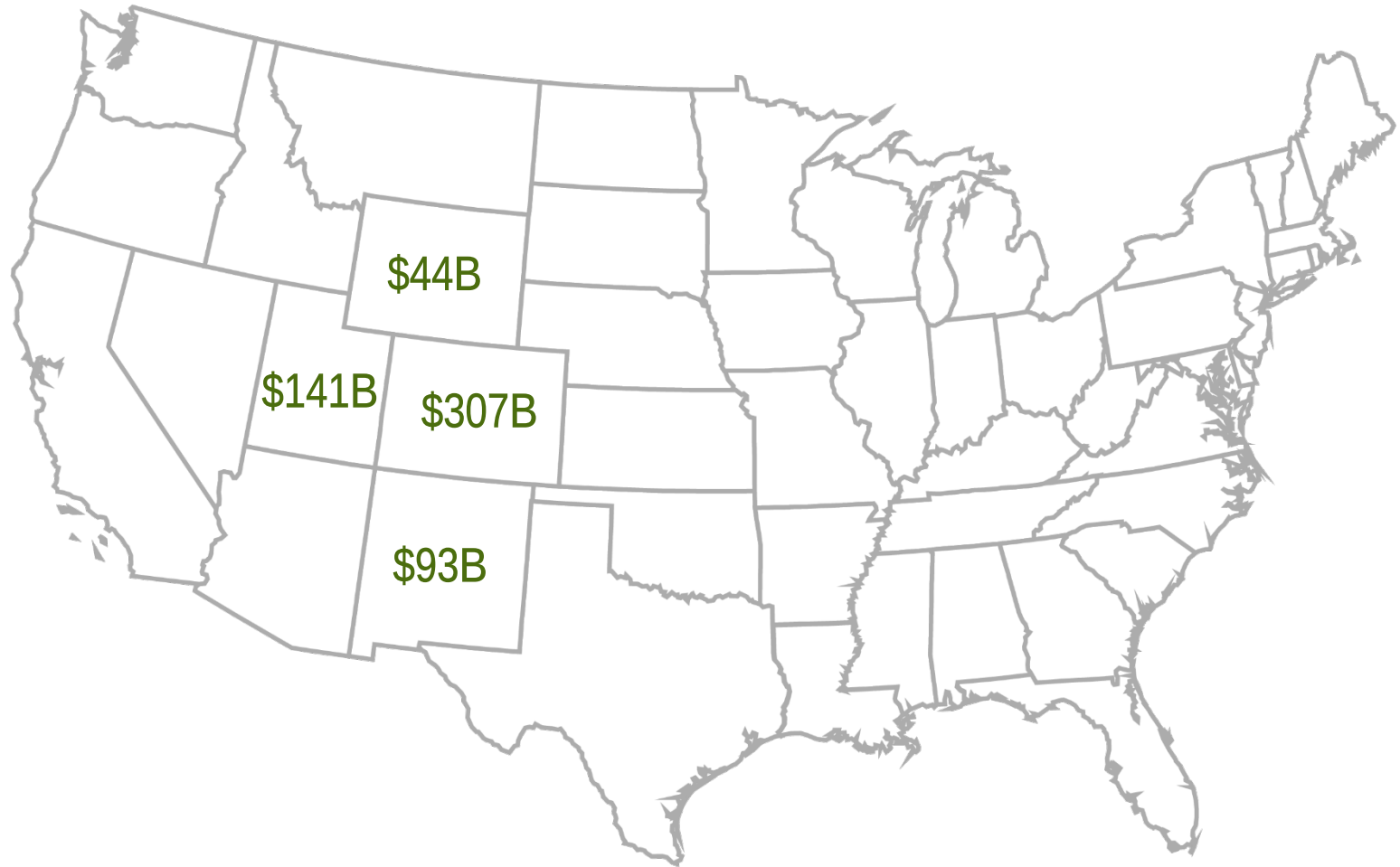
Upper Basin States | 2014



Source: U.S. Bureau of Labor Statistics, estimates as of Q3 2014

Gross Domestic Product

Upper Basin States | 2014



Source: U.S. Department of Commerce, Bureau of Economic Analysis

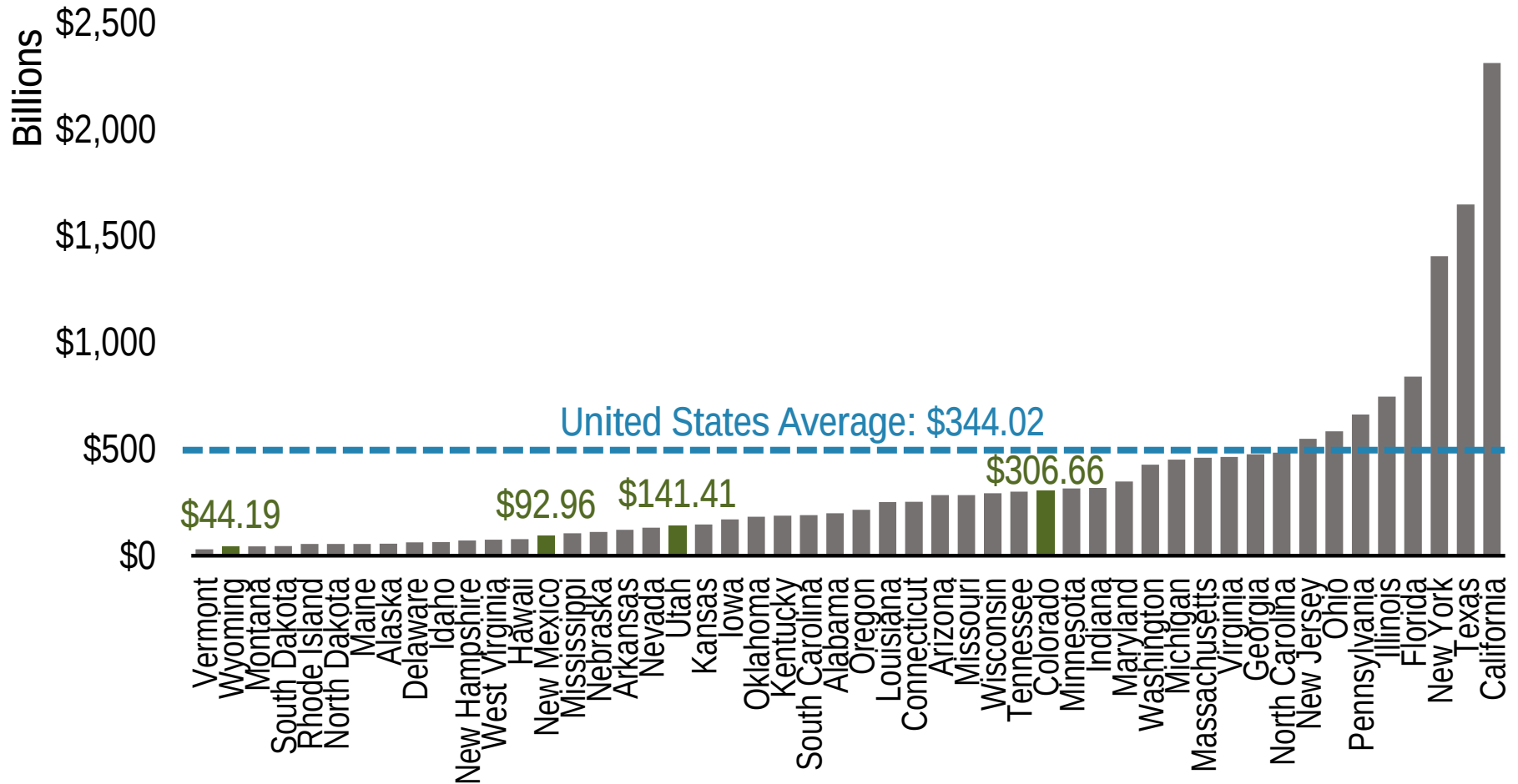
ANNUAL GROSS STATE PRODUCT (\$2014)

DEPENDENT ON THE COLORADO RIVER

IN BILLIONS	ARIZONA.....	\$185.01
	CALIFORNIA.....	\$657.45
	COLORADO.....	\$188.95
	NEVADA	\$115.39
	NEW MEXICO.....	\$59.76
	UTAH.....	\$69.79
	WYOMING.....	\$21.67

Source: Arizona State University, Study on Economics of the River

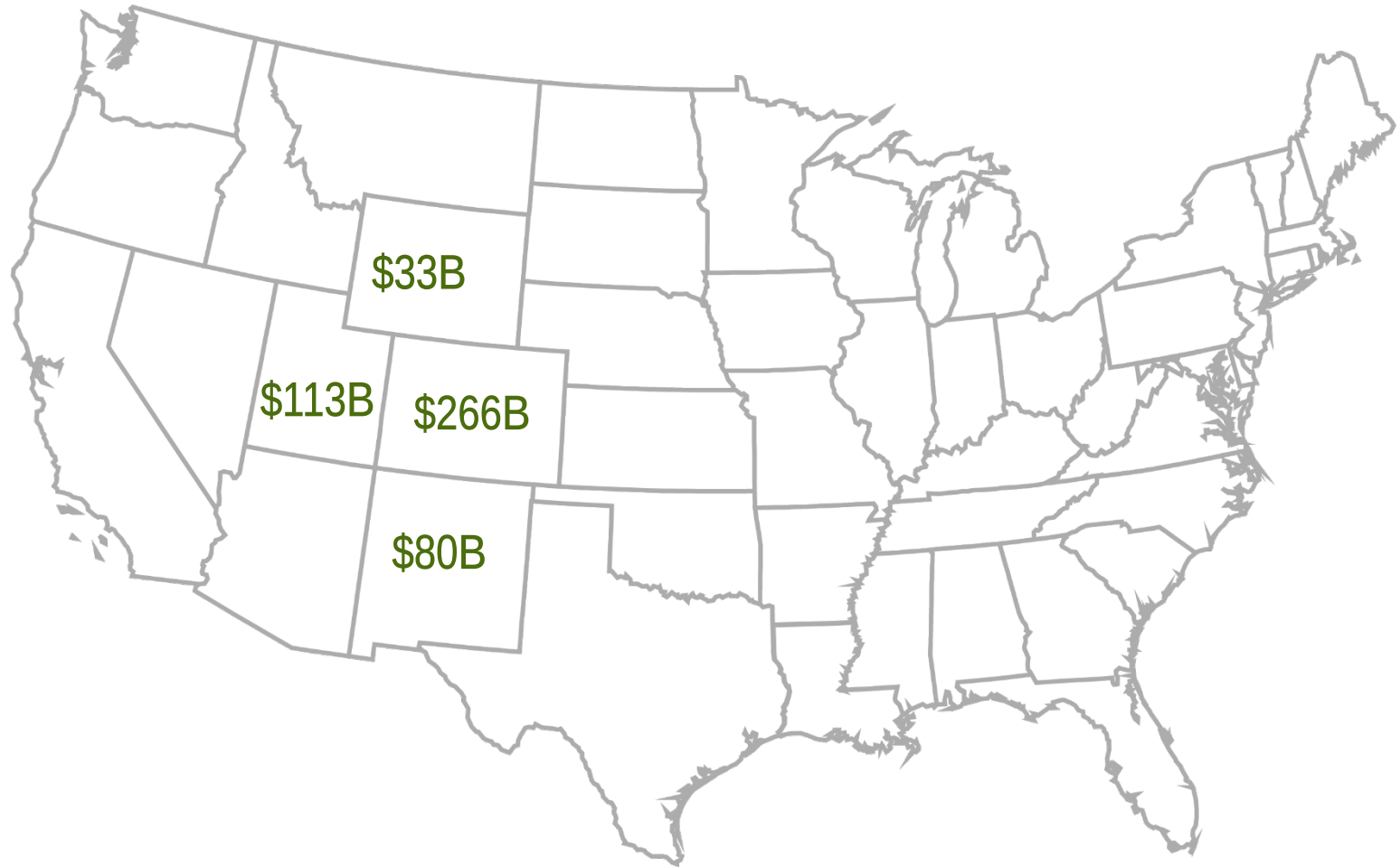
Gross Domestic Product State Comparisons | 2014



Source: U.S. Department of Commerce, Bureau of Economic Analysis

Personal Income

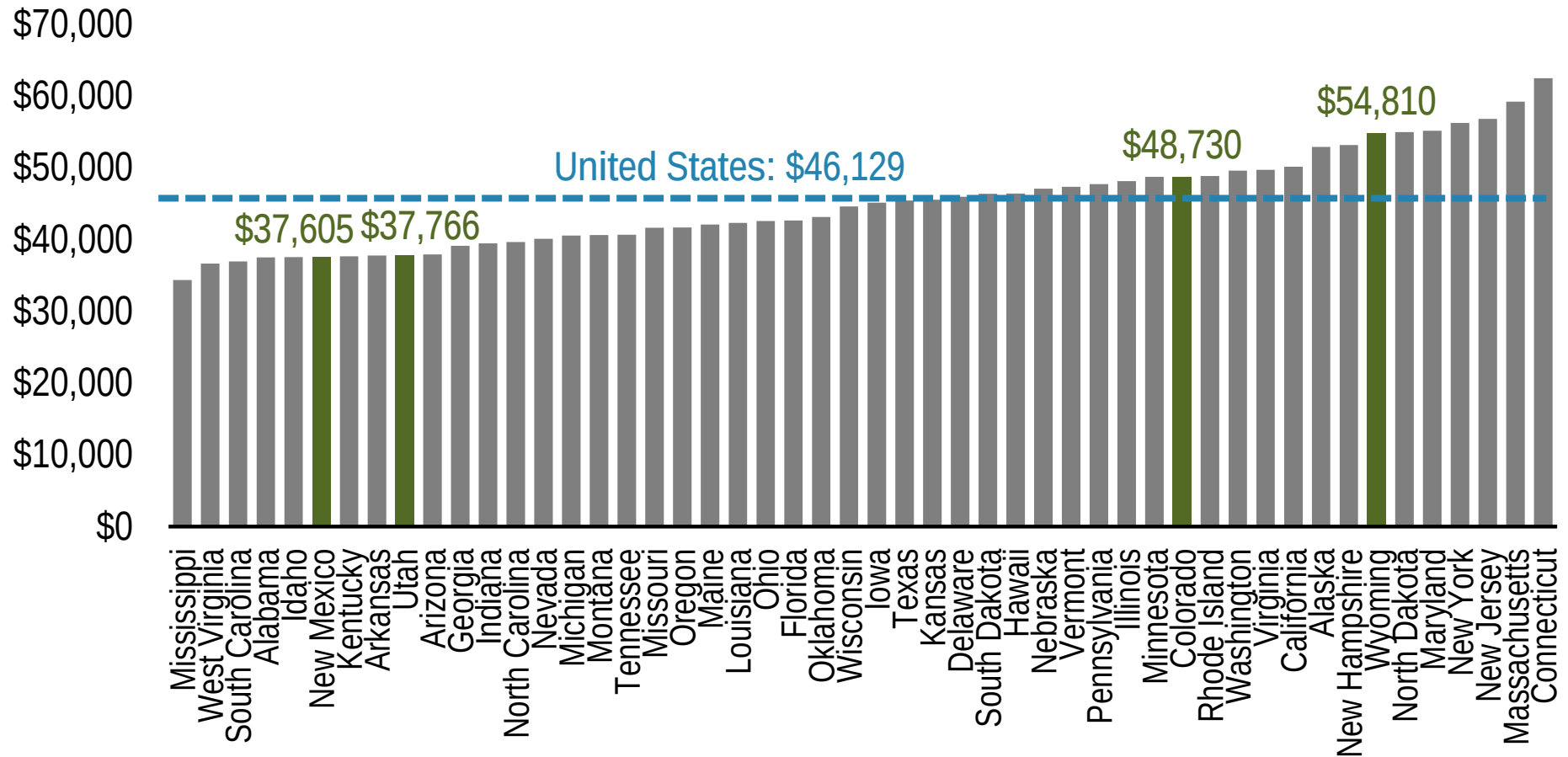
Upper Basin States | 2014



Source: U.S. Bureau of Economic Analysis

Personal Income Per Capita

State Comparisons | 2014



Source: U.S. Bureau of Economic Analysis

THE
COLORADO
RIVER GENERATES
\$1.4 TRILLION
IN ECONOMIC BENEFITS ANNUALLY



Source: Arizona State University, Study on Economics of the River

WHAT IS THE REAL VALUE OF WATER?

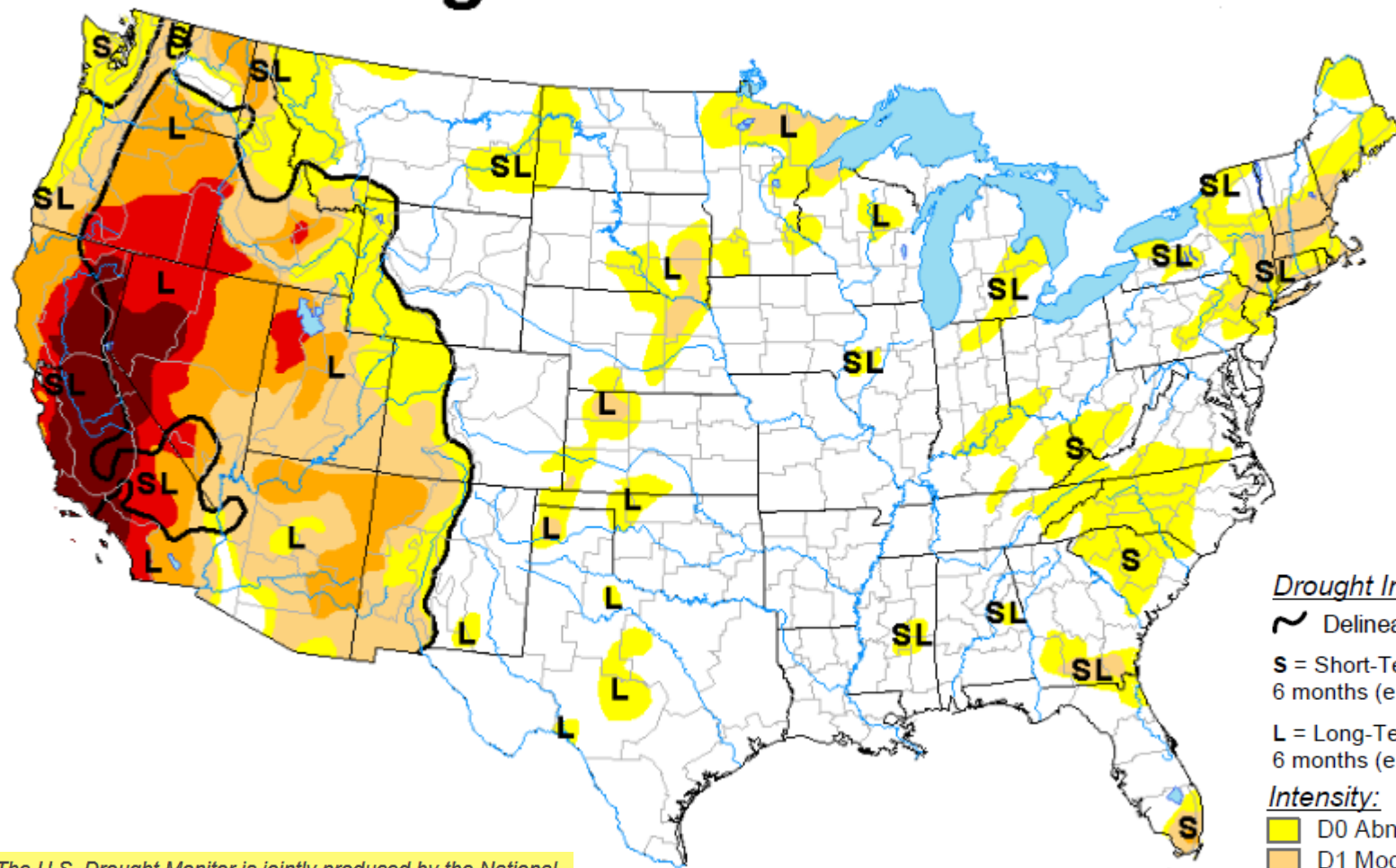
WATER RESOURCE RISKS



WHAT IS THE REAL VALUE OF WATER?

U.S. Drought Monitor

June 2, 2015



The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC-UNL.

Drought Impact Types:

~ Delineates dominant impacts

S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

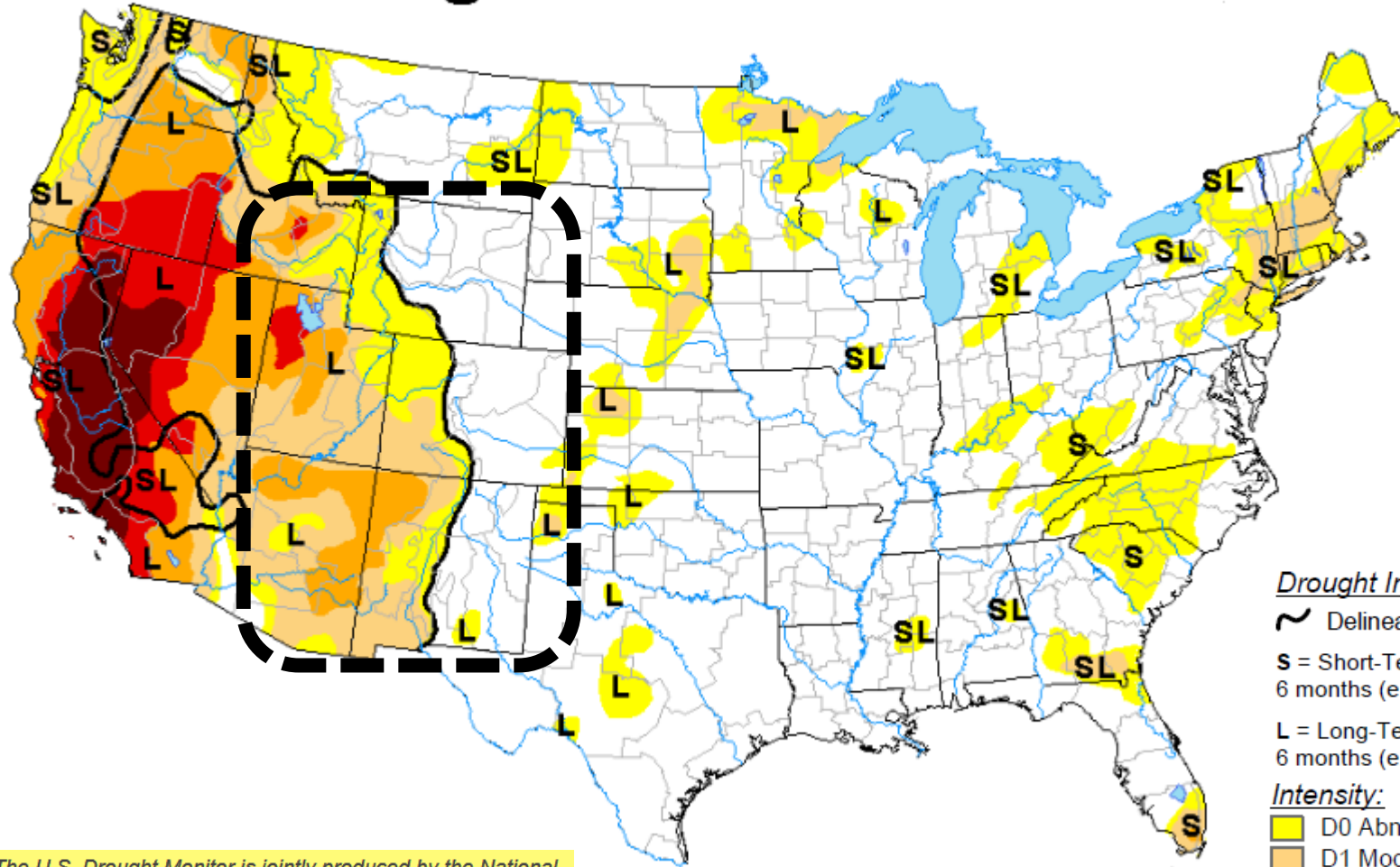
Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

WHAT IS THE REAL VALUE OF WATER?

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Drought's Economic Consequences



The Colorado River generates \$871 billion in wages and labor income in the Basin Region every year. All business sectors risk economic losses if we mismanage this valuable resource.

Source: Arizona State University, Study on Economics of the River

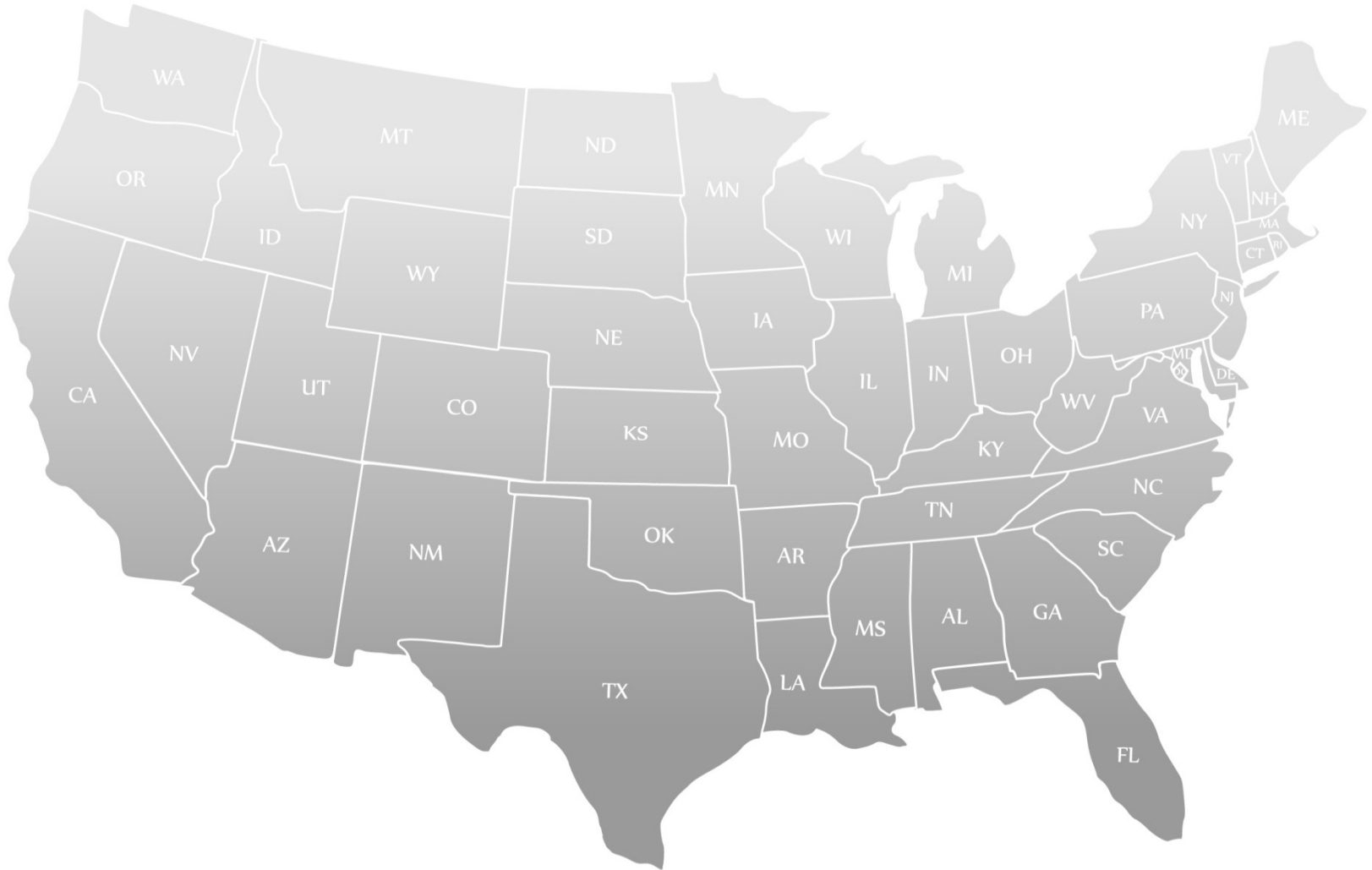
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Water Shortage Impacts

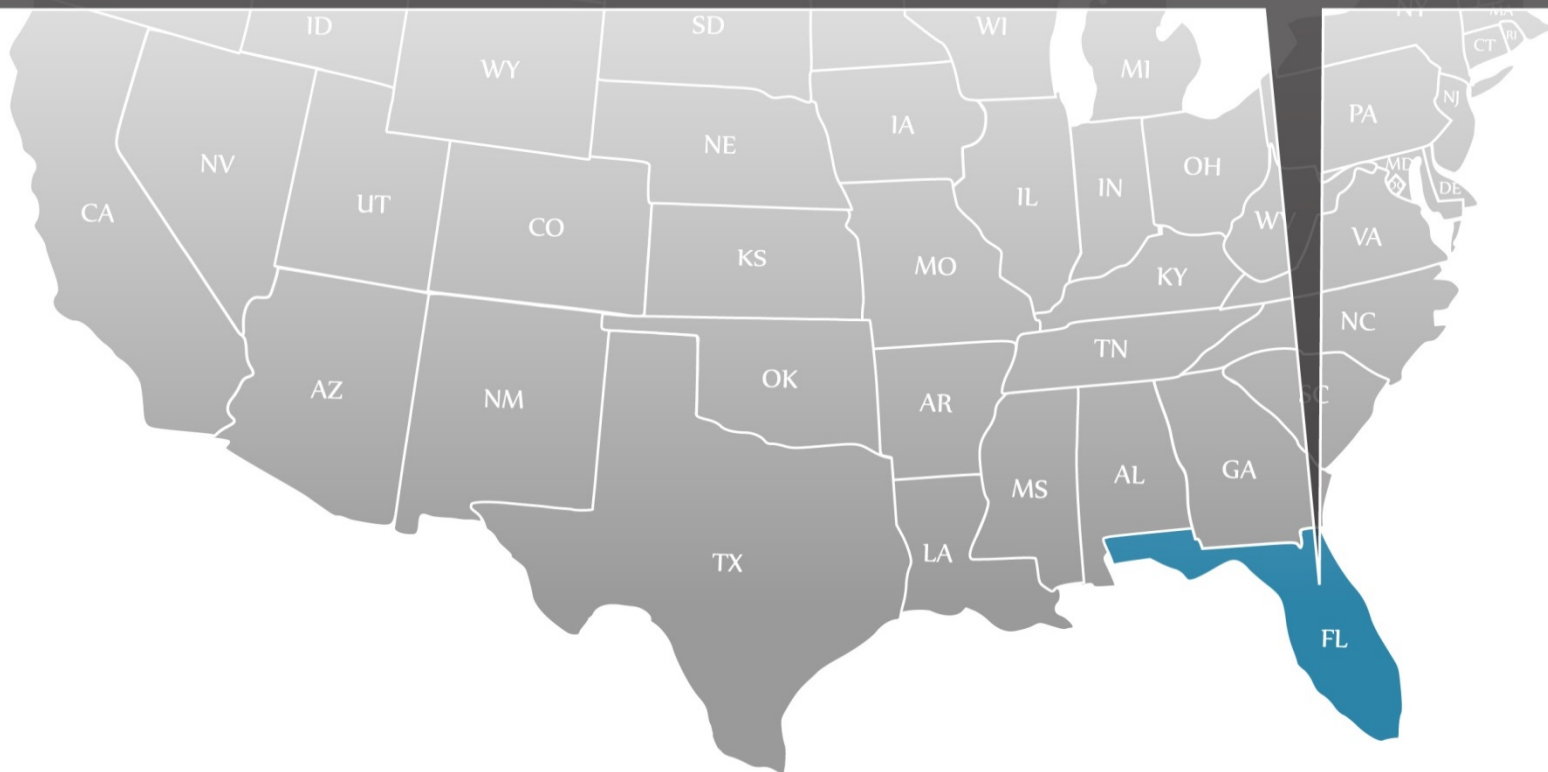


WHAT IS THE REAL VALUE OF WATER?

2007

FLORIDA

A STUDY WAS DONE
DETAILING THE
IMPACTS OF THE
2007 DROUGHT

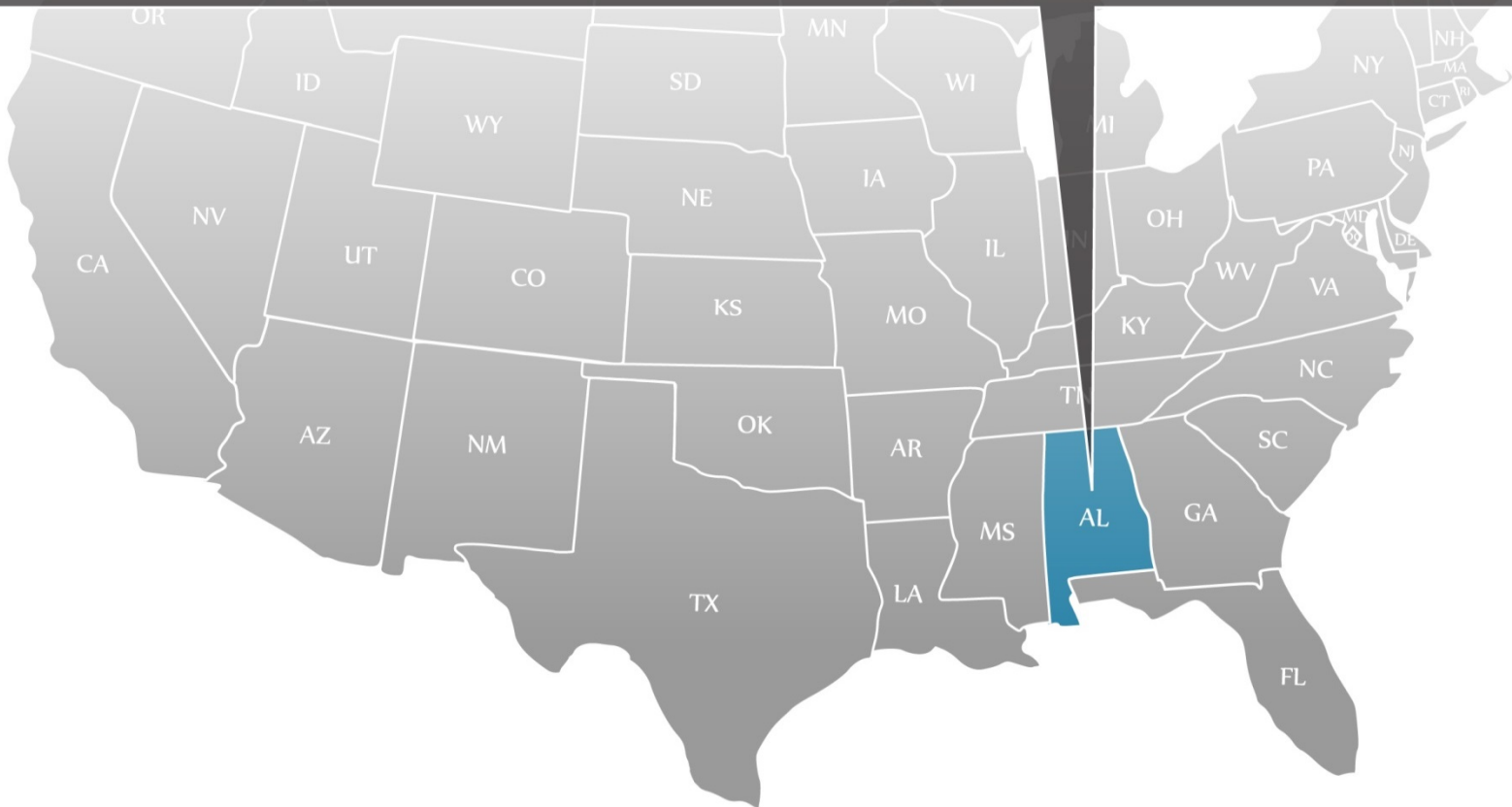


WHAT IS THE REAL VALUE OF WATER?

2007

ALABAMA

TEMPERATURES WERE HIGHER THAN THOSE
WITNESSED IN MORE THAN 50 YEARS



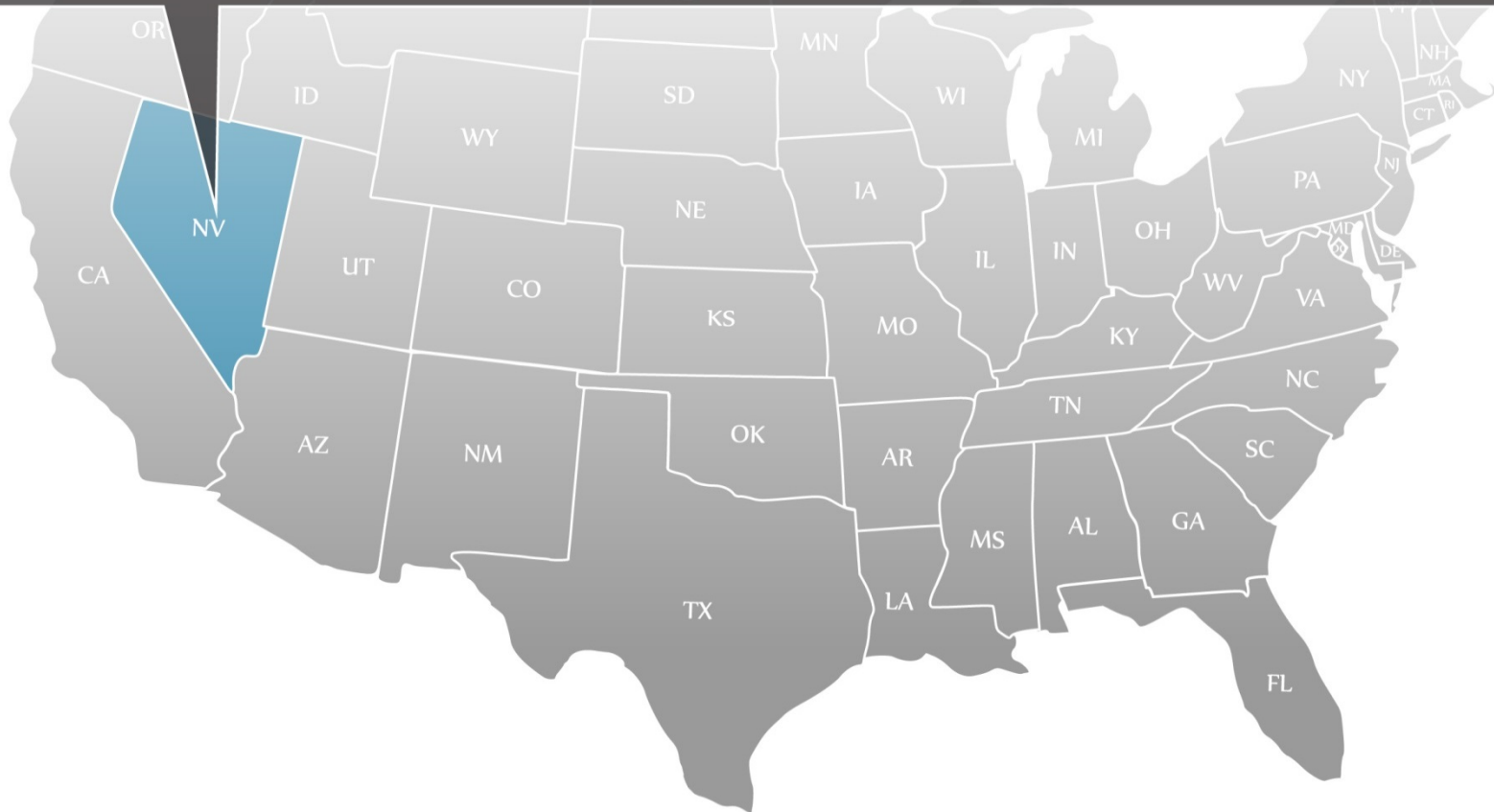
WHAT IS THE REAL VALUE OF WATER?

APPLIED
ANALYSIS



2008
NEVADA

POTENTIAL WATER SHORTAGES
COULD NEGATIVELY AFFECT NEVADA



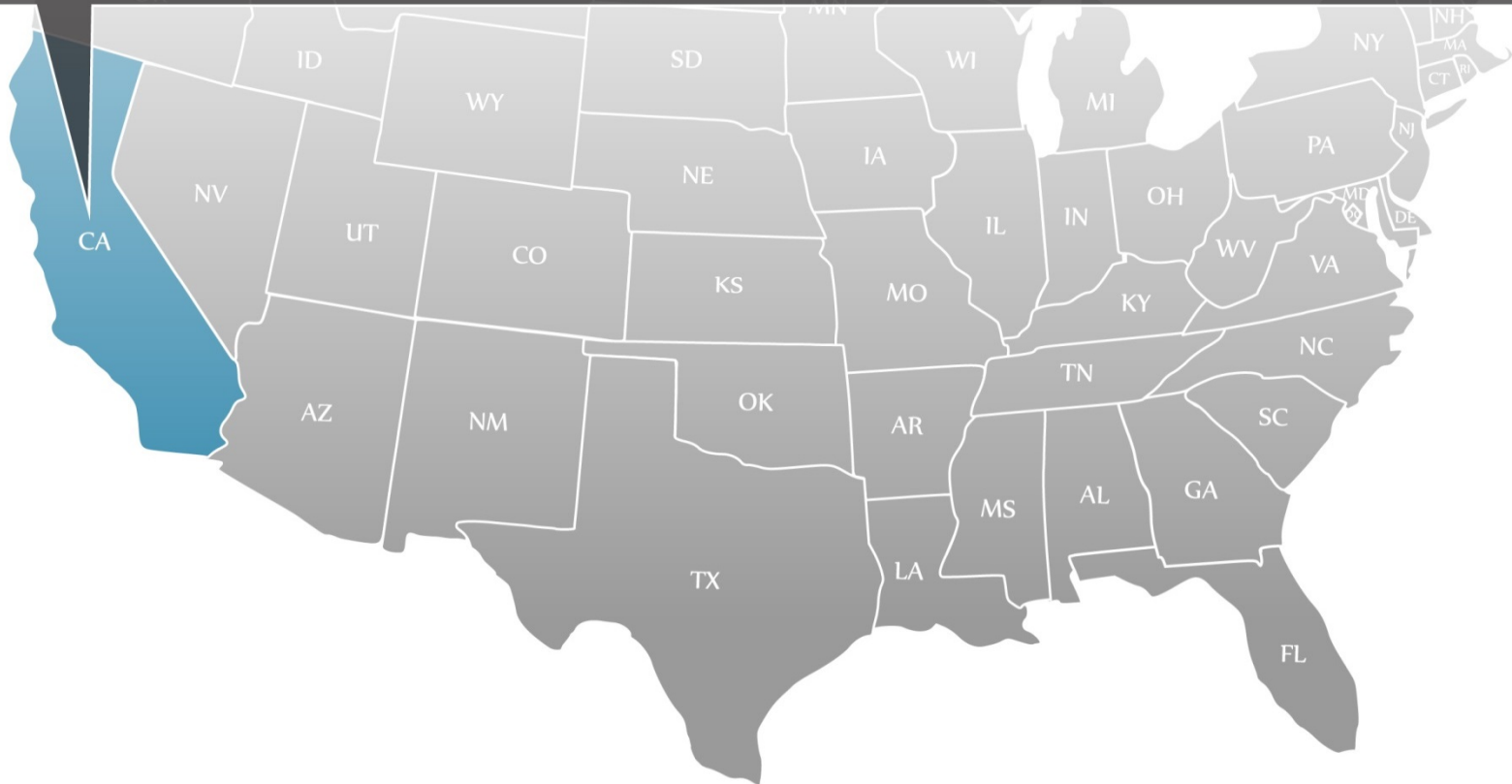
WHAT IS THE REAL VALUE OF WATER?

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2009
CALIFORNIA

STATE OF EMERGENCY
DECLARED DUE TO
DROUGHT CONDITIONS

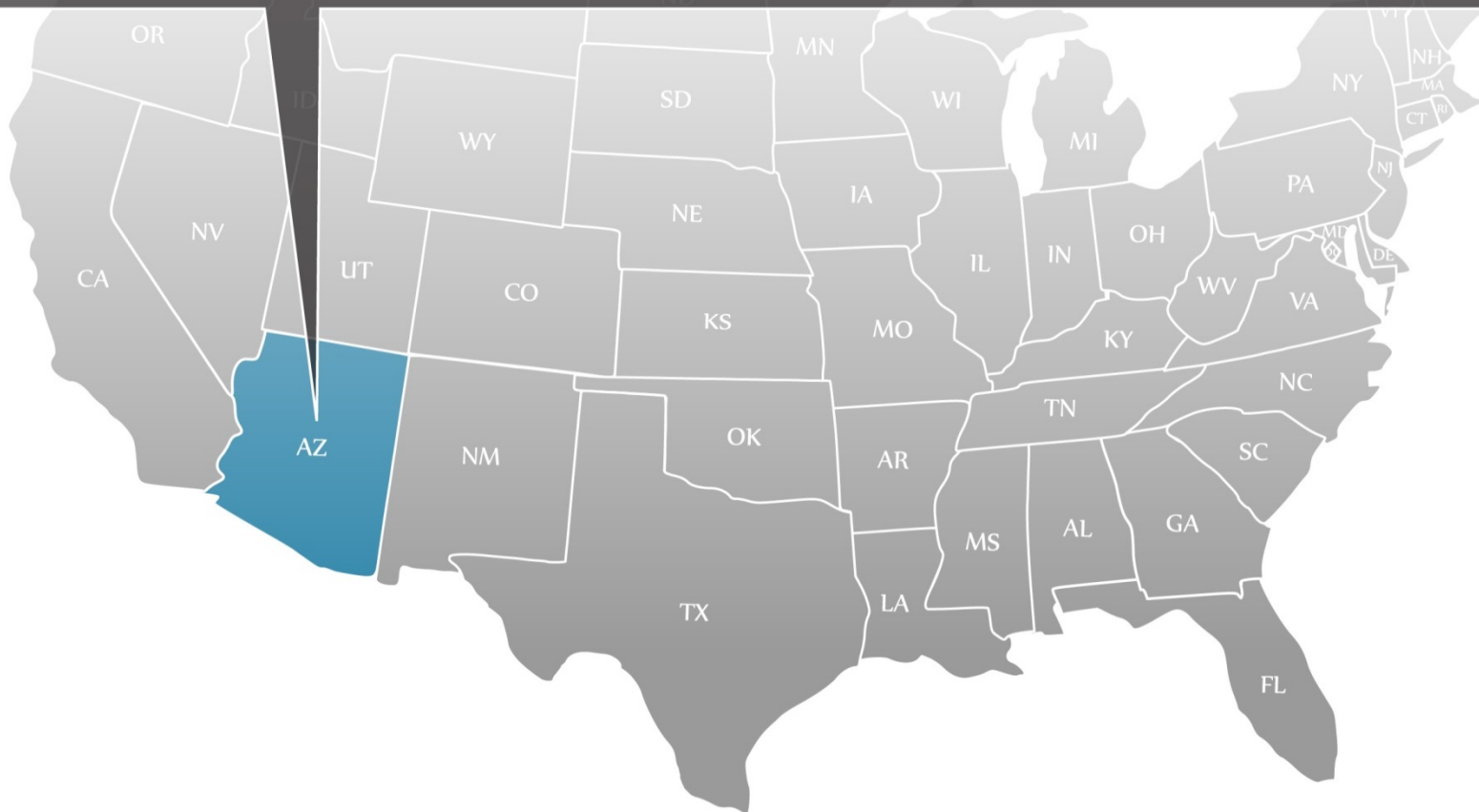


WHAT IS THE REAL VALUE OF WATER?

2010

ARIZONA

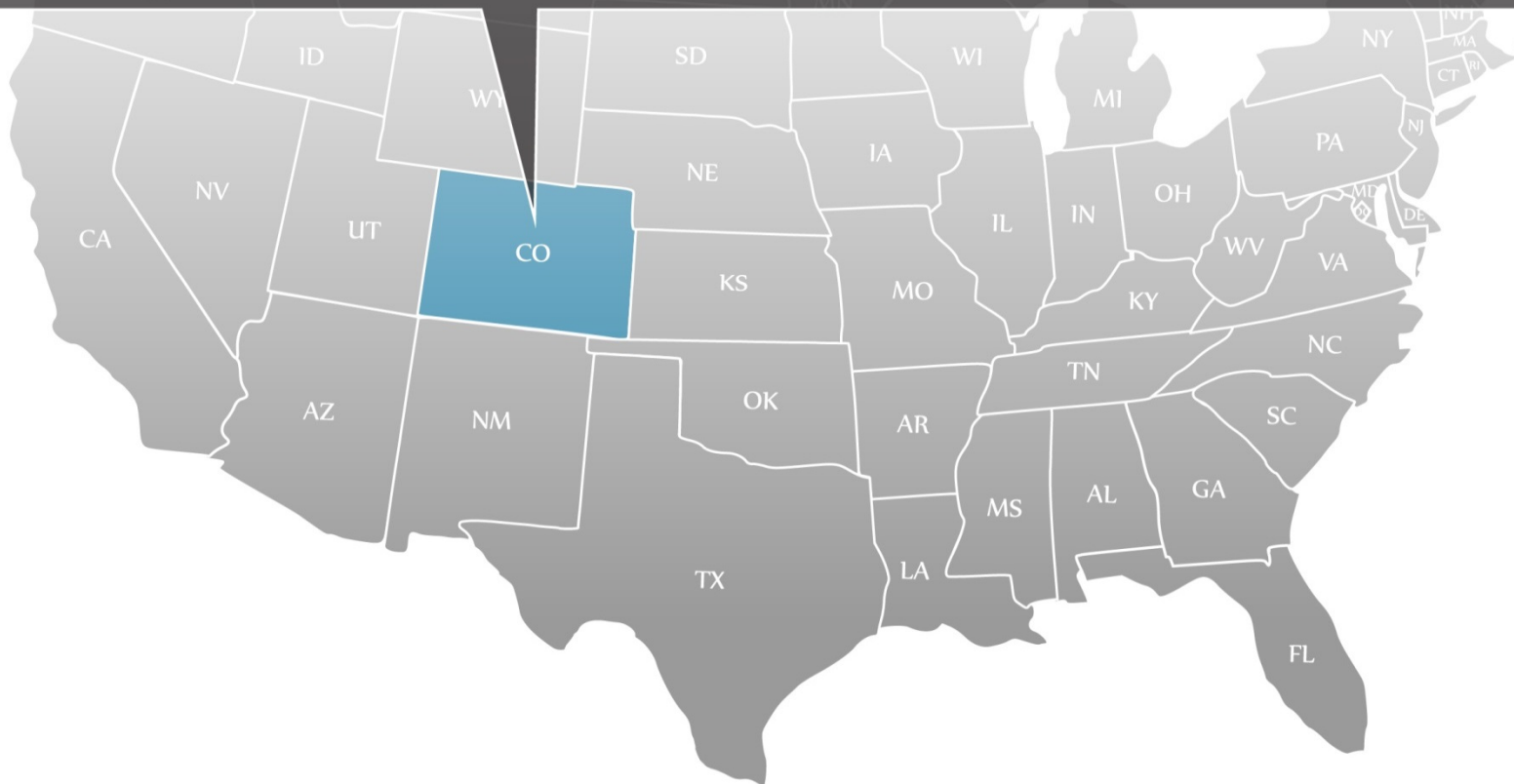
DROUGHT CAUSED LOW LEVELS
ALONG THE COLORADO RIVER



WHAT IS THE REAL VALUE OF WATER?

2011
COLORADO

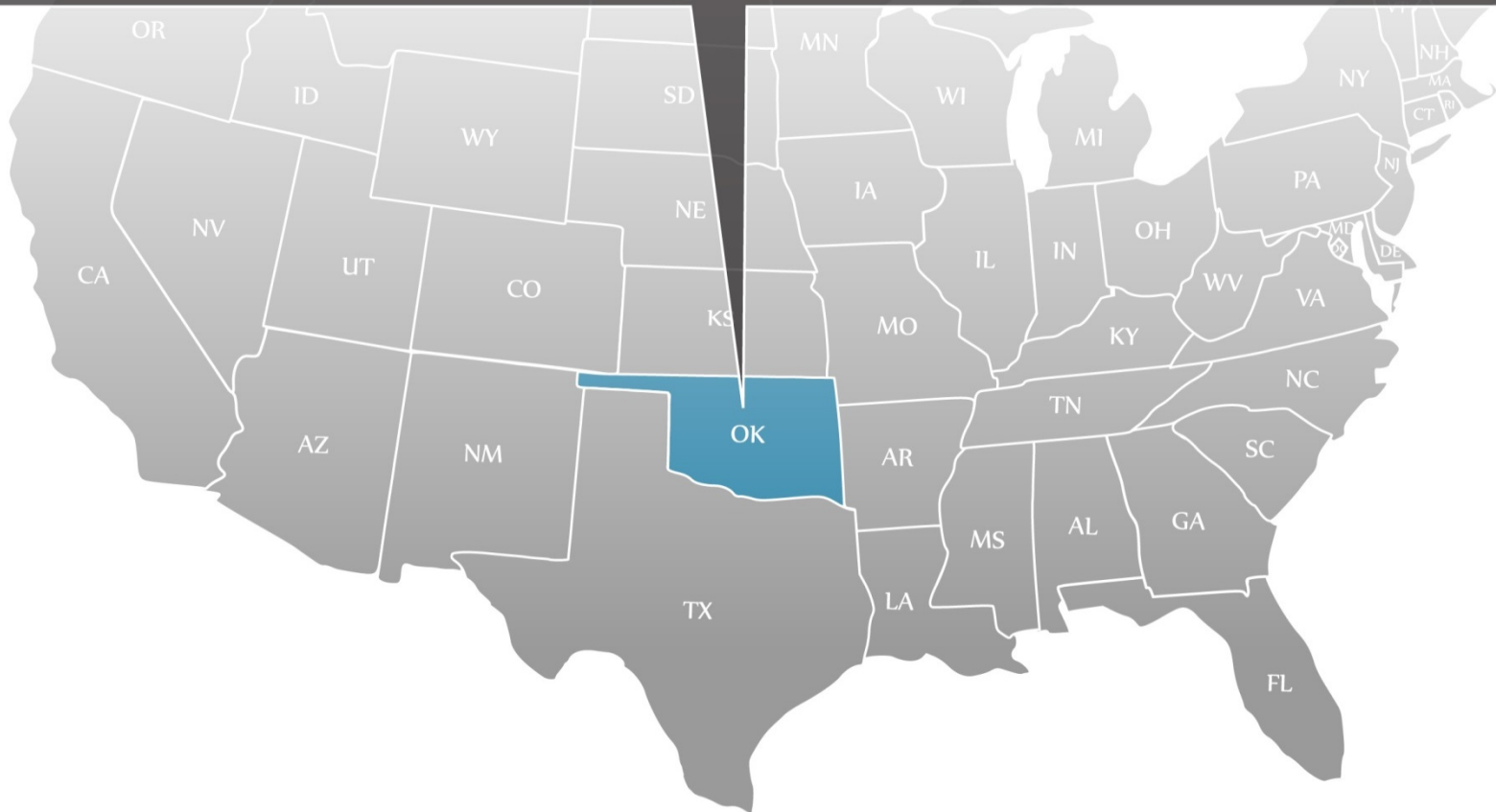
DROUGHT PLAGUED AGRICULTURAL
PRODUCERS THROUGHOUT
SOUTHERN COLORADO



WHAT IS THE REAL VALUE OF WATER?

2011
OKLAHOMA

LOW LAKE LEVELS IMPACTED
RECREATIONAL ACTIVITIES

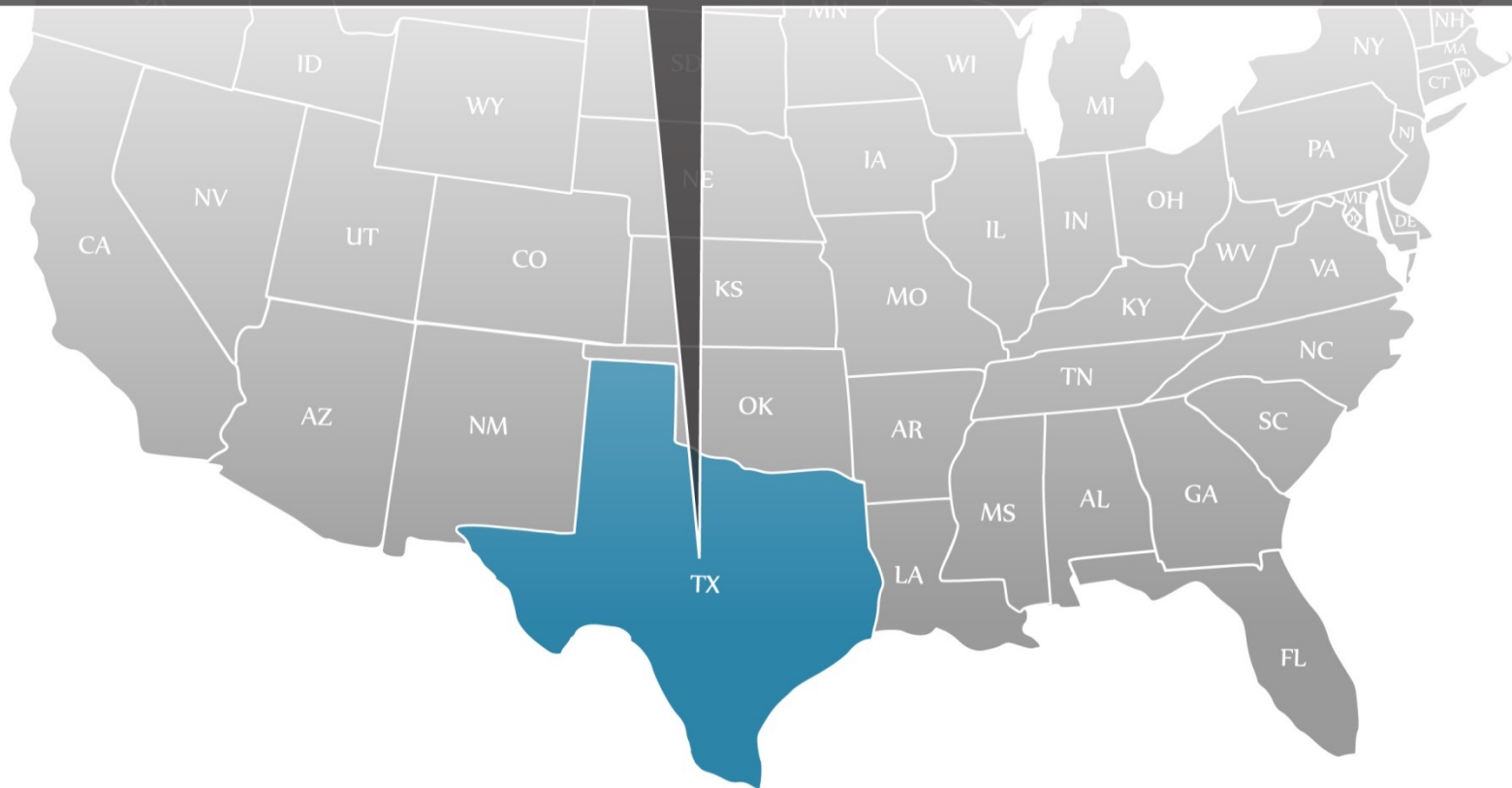


WHAT IS THE REAL VALUE OF WATER?

2011

TEXAS

OUTDOOR WATERING
RESTRICTIONS ADVISED
DUE TO DROUGHT
CONDITIONS

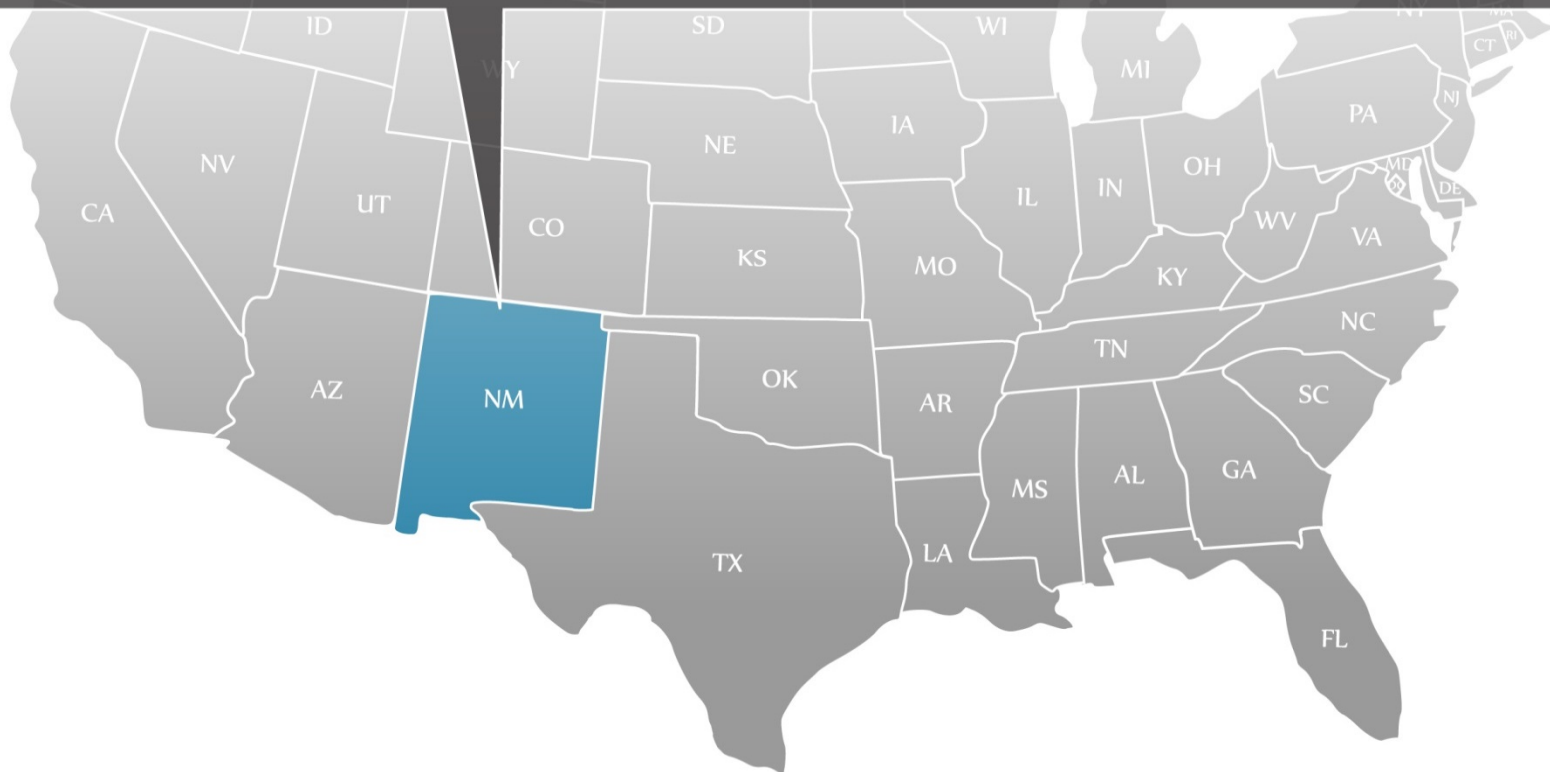


WHAT IS THE REAL VALUE OF WATER?

2011

LAS VEGAS, NEW MEXICO

AFTER EIGHT YEARS OF
WATER RESTRICTIONS,
AN EMERGENCY WAS
DECLARED

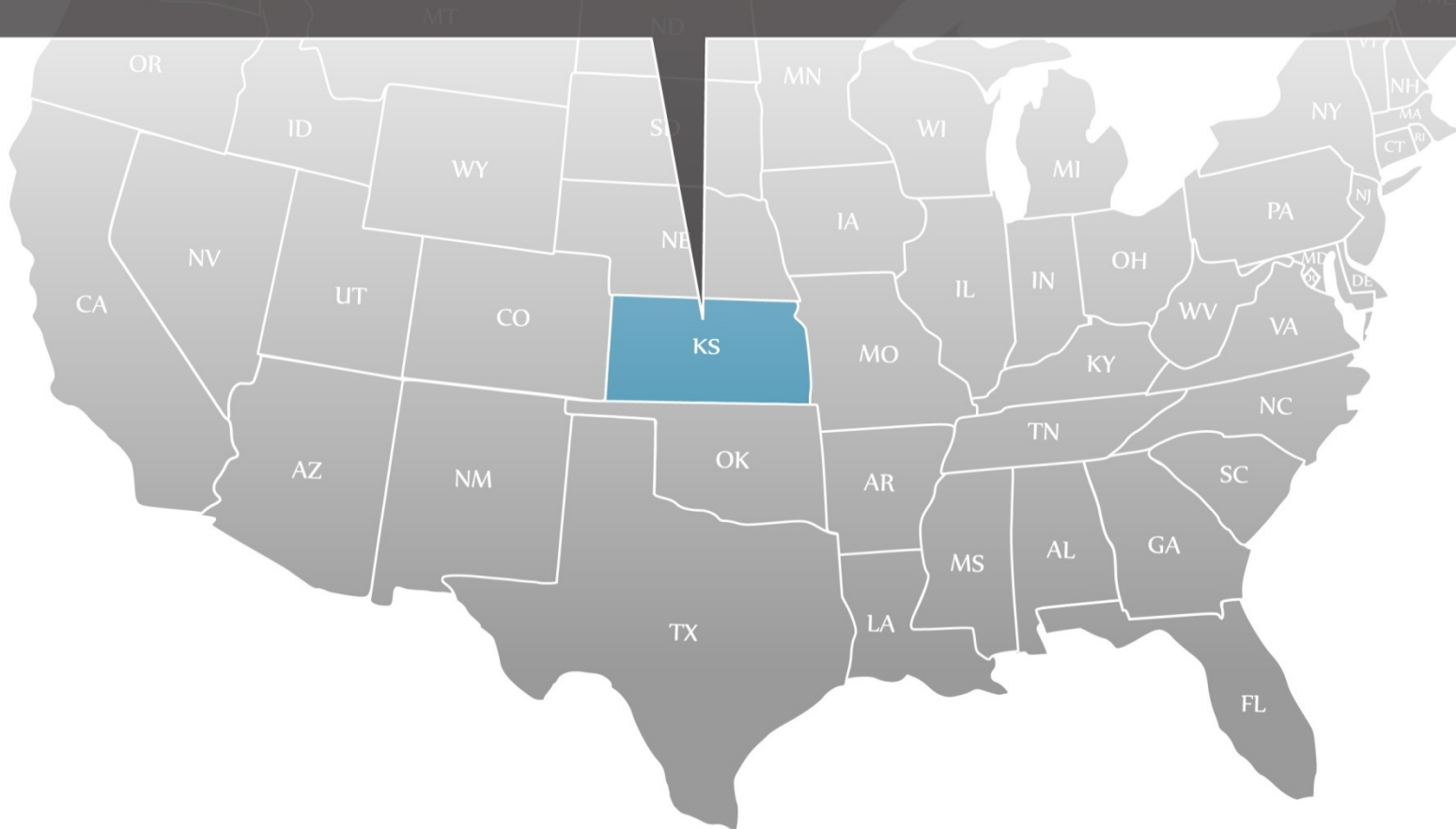
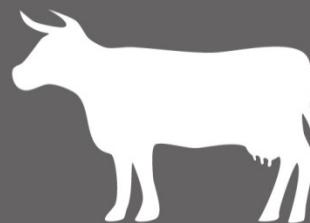


WHAT IS THE REAL VALUE OF WATER?

2012

KANSAS

CROPS WERE DESTROYED
DUE TO SEVERE DROUGHT

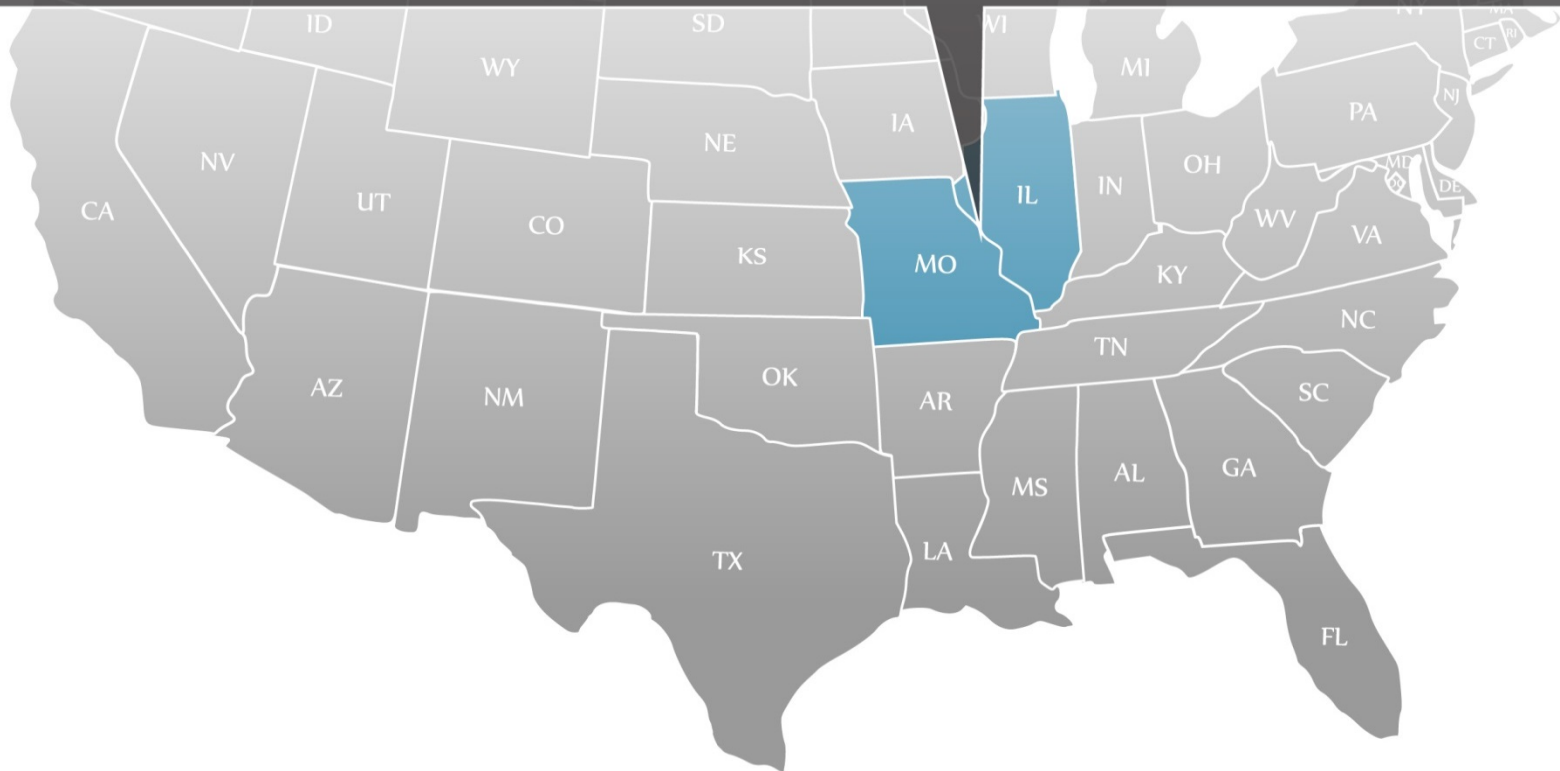


WHAT IS THE REAL VALUE OF WATER?

2013

MIDDLE MISSISSIPPI RIVER

THE MIDDLE MISSISSIPPI
IS SUFFERING ITS WORST
DROUGHT IN 50 YEARS

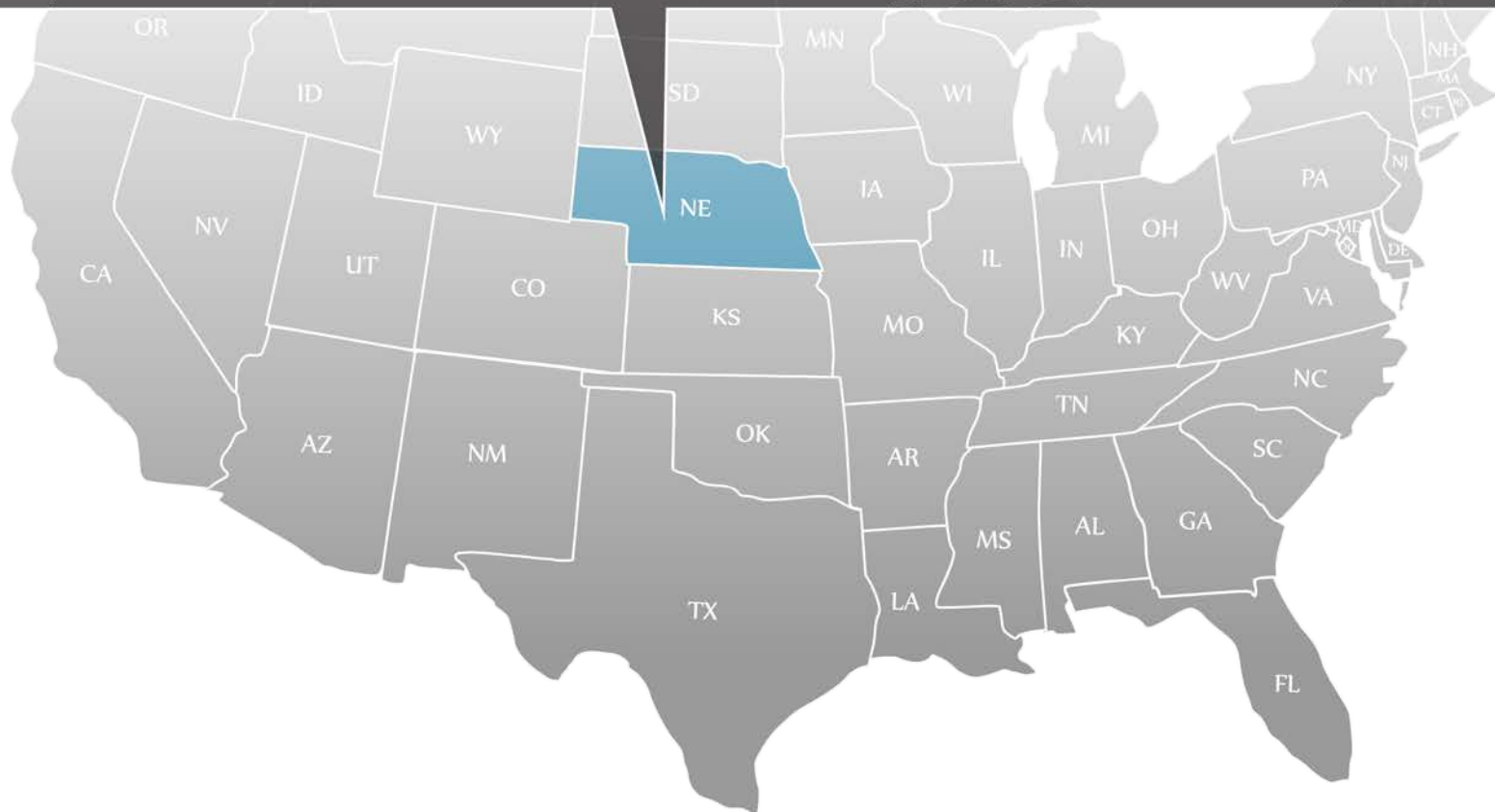
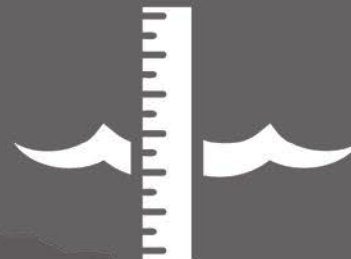


WHAT IS THE REAL VALUE OF WATER?

2013

NEBRASKA

DUE TO DROUGHT CONDITIONS, LAKE MCCONAUGHY
IS JUST 51 PERCENT FULL.

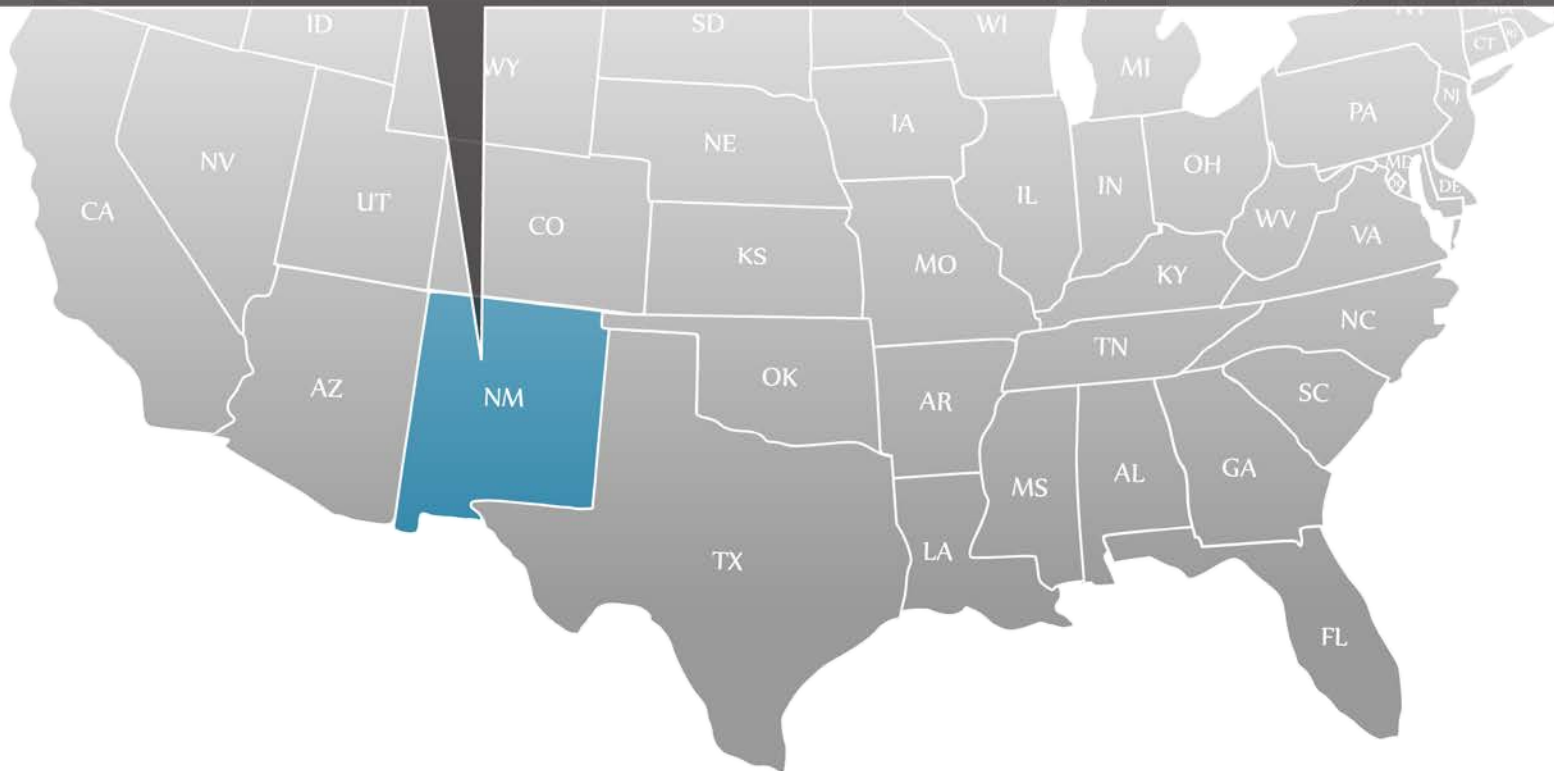
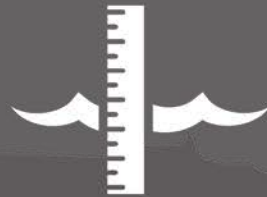


WHAT IS THE REAL VALUE OF WATER?

2013

NEW MEXICO

NEW MEXICO IS FACING THE WORST DROUGHT IN THE U.S., WITH THREE-QUARTERS OF THE STATE CATEGORIZED AS SEVERE OR EXCEPTIONAL.

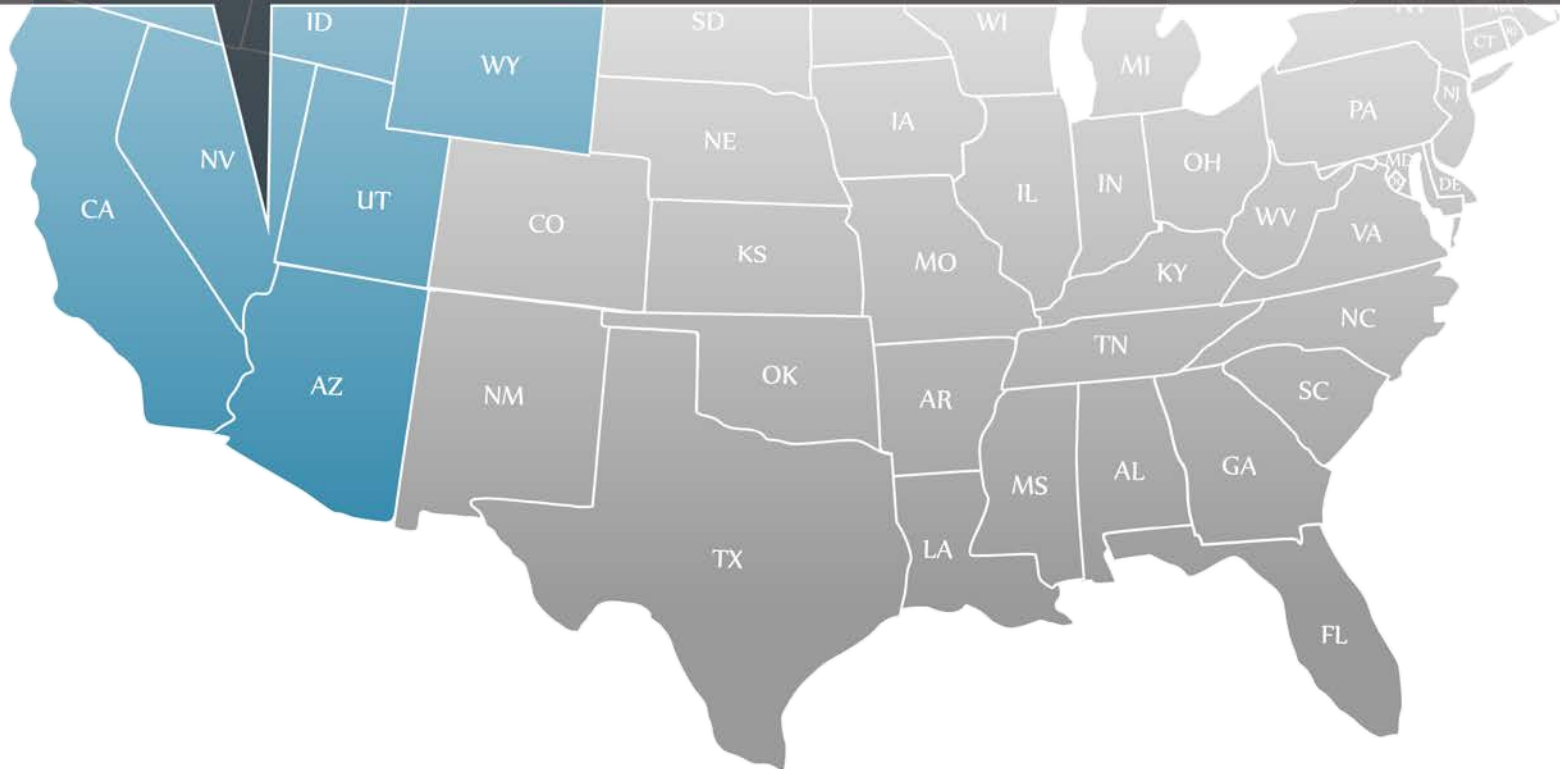


WHAT IS THE REAL VALUE OF WATER?

2013

WESTERN U.S.

FIFTY-ONE MAJOR UNCONTAINED WILDFIRES ARE BURNING THROUGHOUT THE WEST.

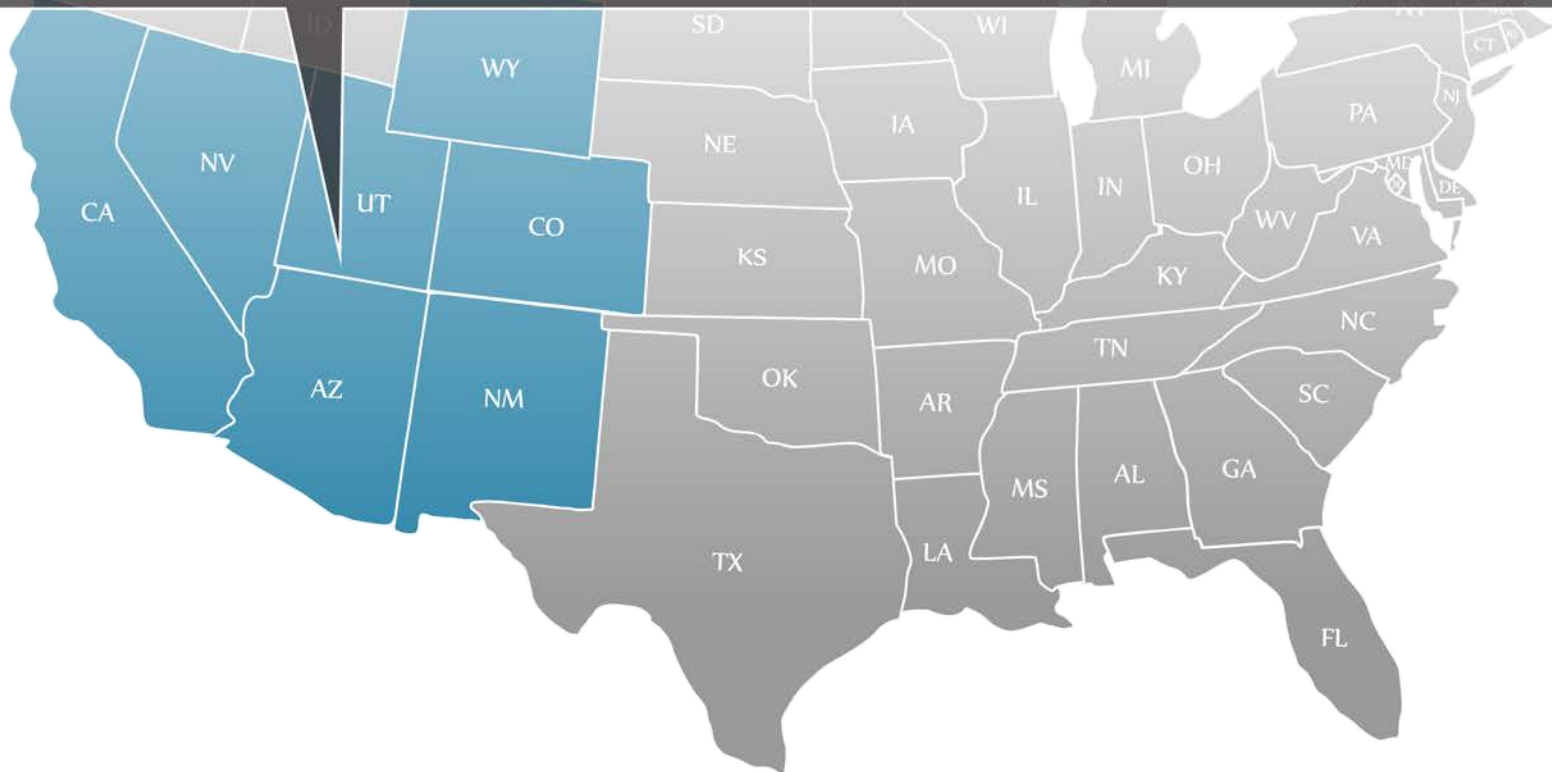


WHAT IS THE REAL VALUE OF WATER?

2013

COLORADO RIVER

THE COLORADO RIVER IS
FACING ITS WORST
DROUGHT IN A CENTURY.



WHAT IS THE REAL VALUE OF WATER?

2014

TEXAS

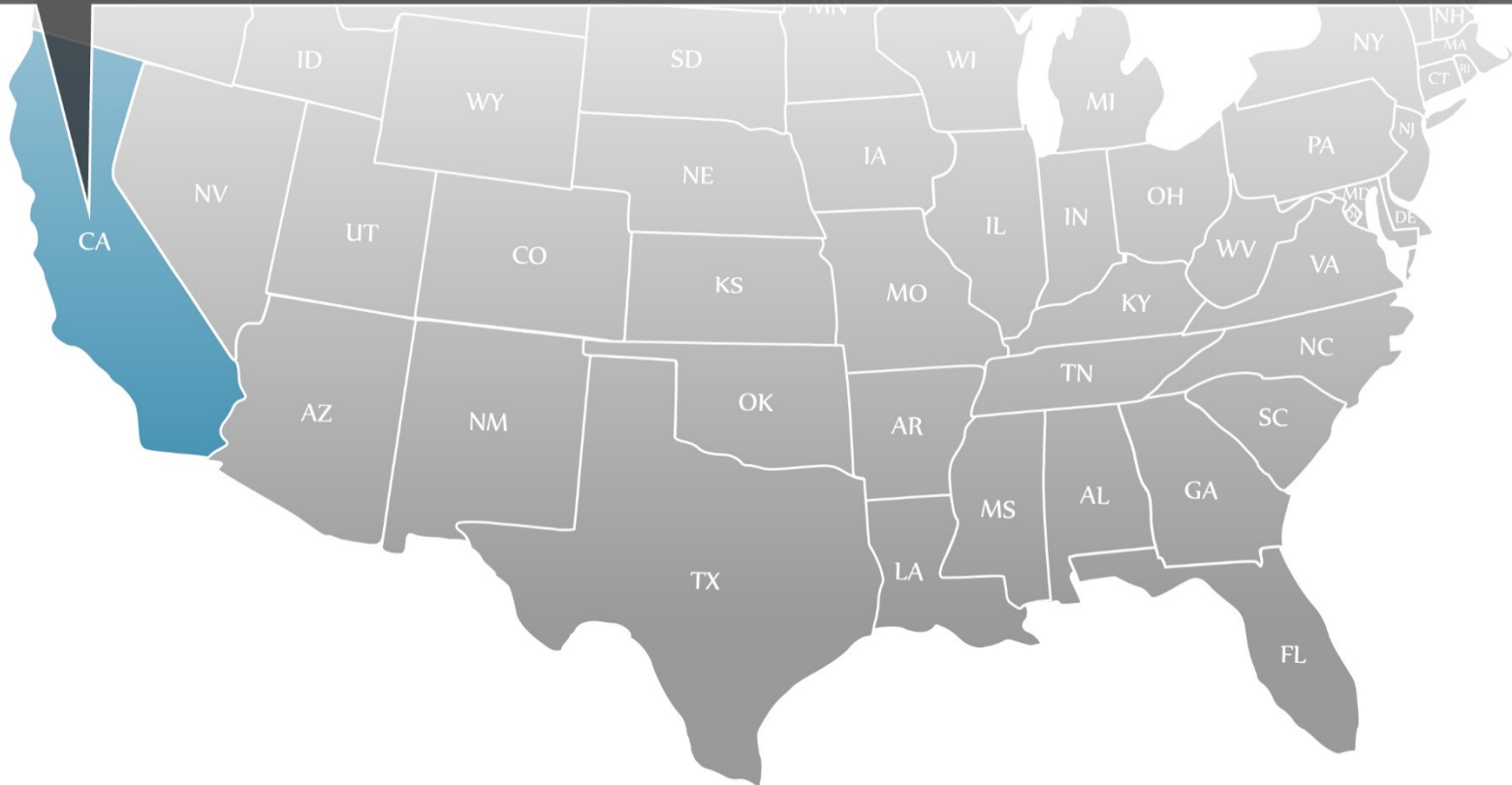
TEXAS FACING UNQUENCHABLE
WATER DEMAND DUE TO CYCLICAL
DROUGHT ALONG POPULATION
AND ECONOMIC GROWTH.



WHAT IS THE REAL VALUE OF WATER?

2015
CALIFORNIA

CALIFORNIA ENTERS ITS
FOURTH YEAR OF SEVERE
DROUGHT



WHAT IS THE REAL VALUE OF WATER?

WATER RESOURCE STABILITY



WHAT IS THE REAL VALUE OF WATER?



FACT:
The Colorado River
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miles and supplies
water to more than
40 million people.

Source: USGS, National Water Census



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WHAT IS THE REAL VALUE OF WATER?

FACT:

The Colorado River
irrigates nearly 5.5
million acres of crops,
and supplies
hydropower that
generates more than
10 billion kilowatt-
hours annually.



Source: USGS, National Water Census

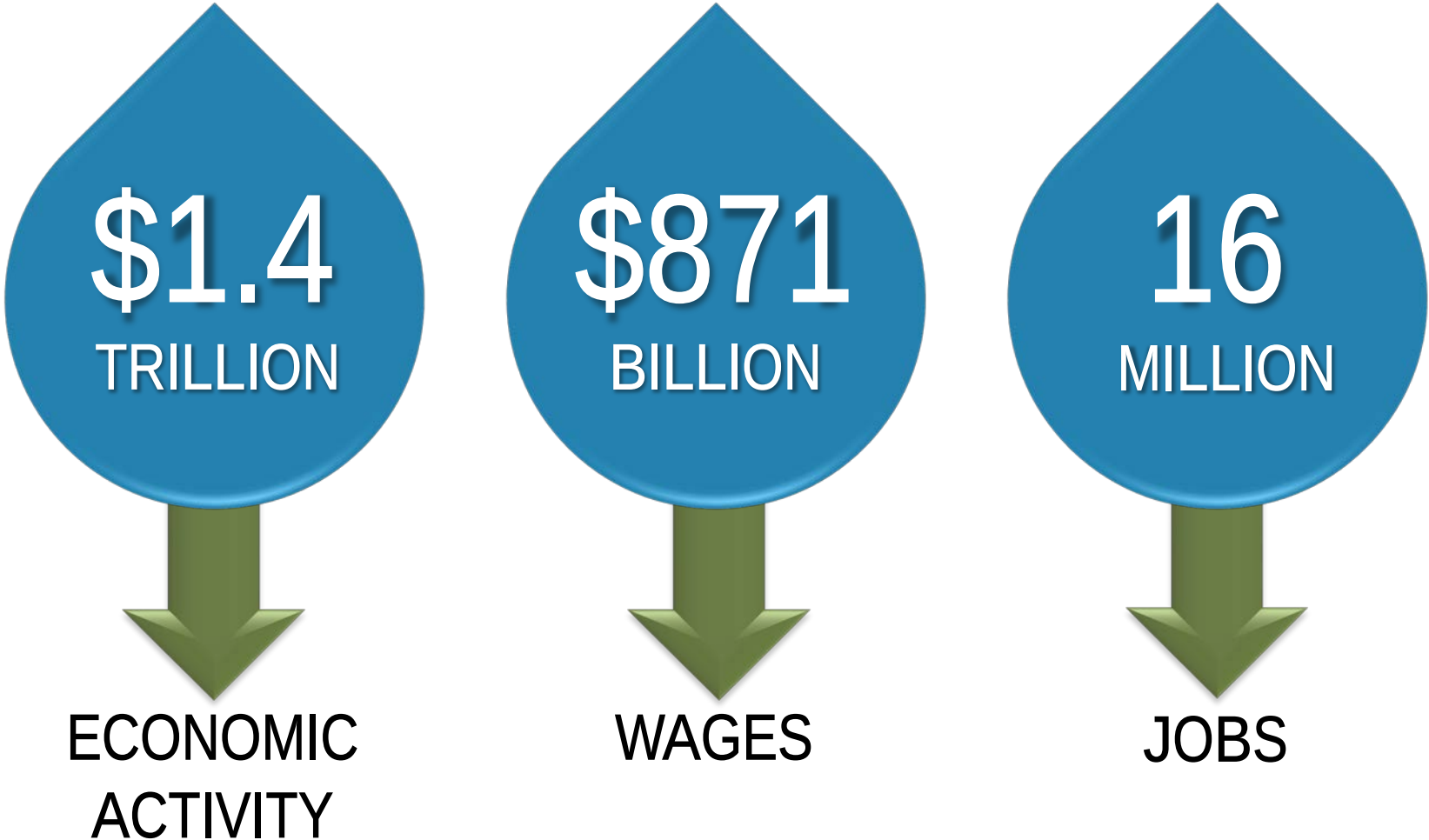
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Source: USGS, National Water Census

Protecting More Than Just Water



\$1.4
TRILLION

**ECONOMIC
ACTIVITY**

\$871
BILLION

WAGES

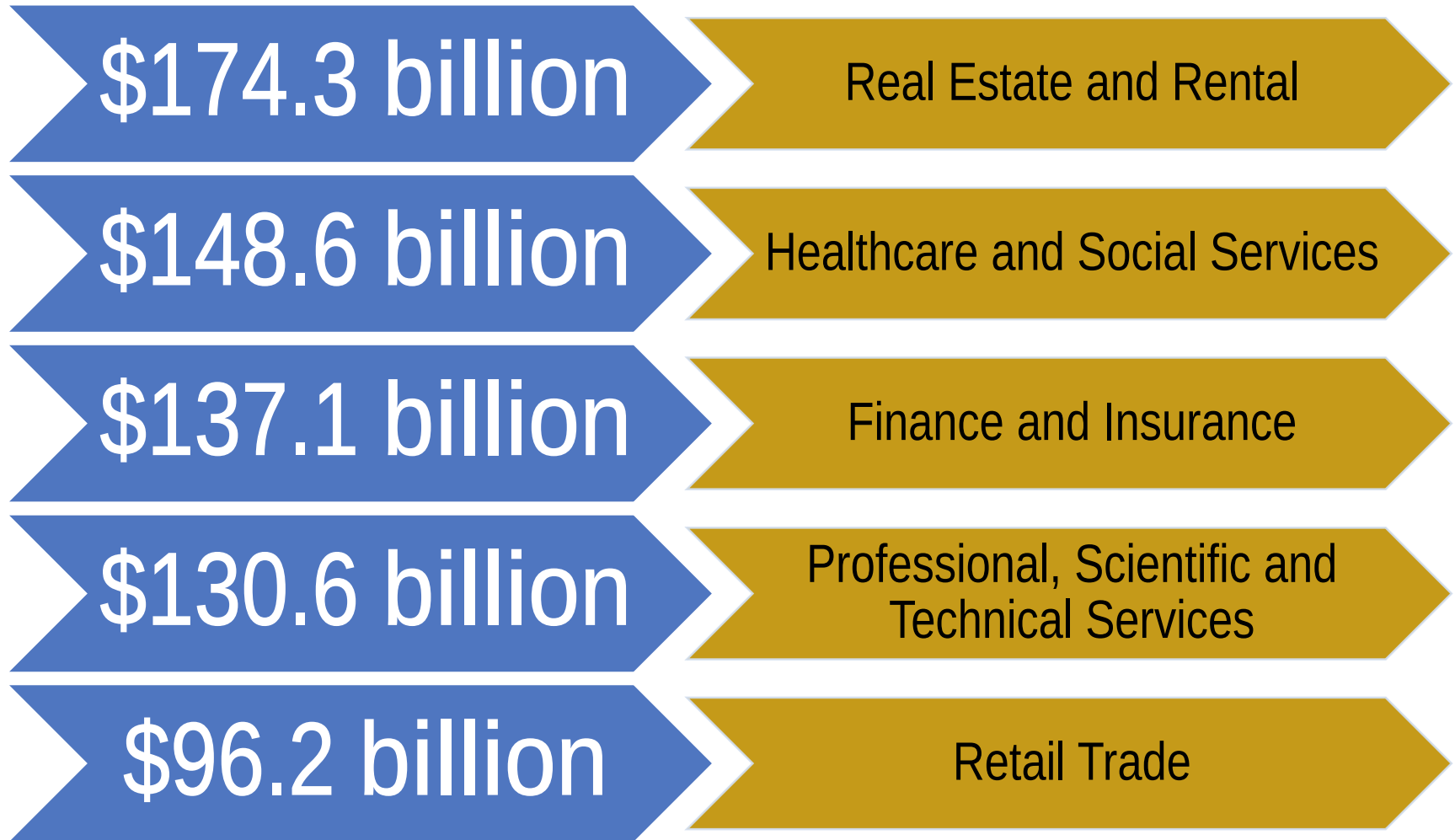
16
MILLION

JOBS

Source: Arizona State University, Study on Economics of the River

WHAT IS THE REAL VALUE OF WATER?

Top 5 Private Sectors Affected By Water Shortfall For One Year



Source: Arizona State University, Study on Economics of the River

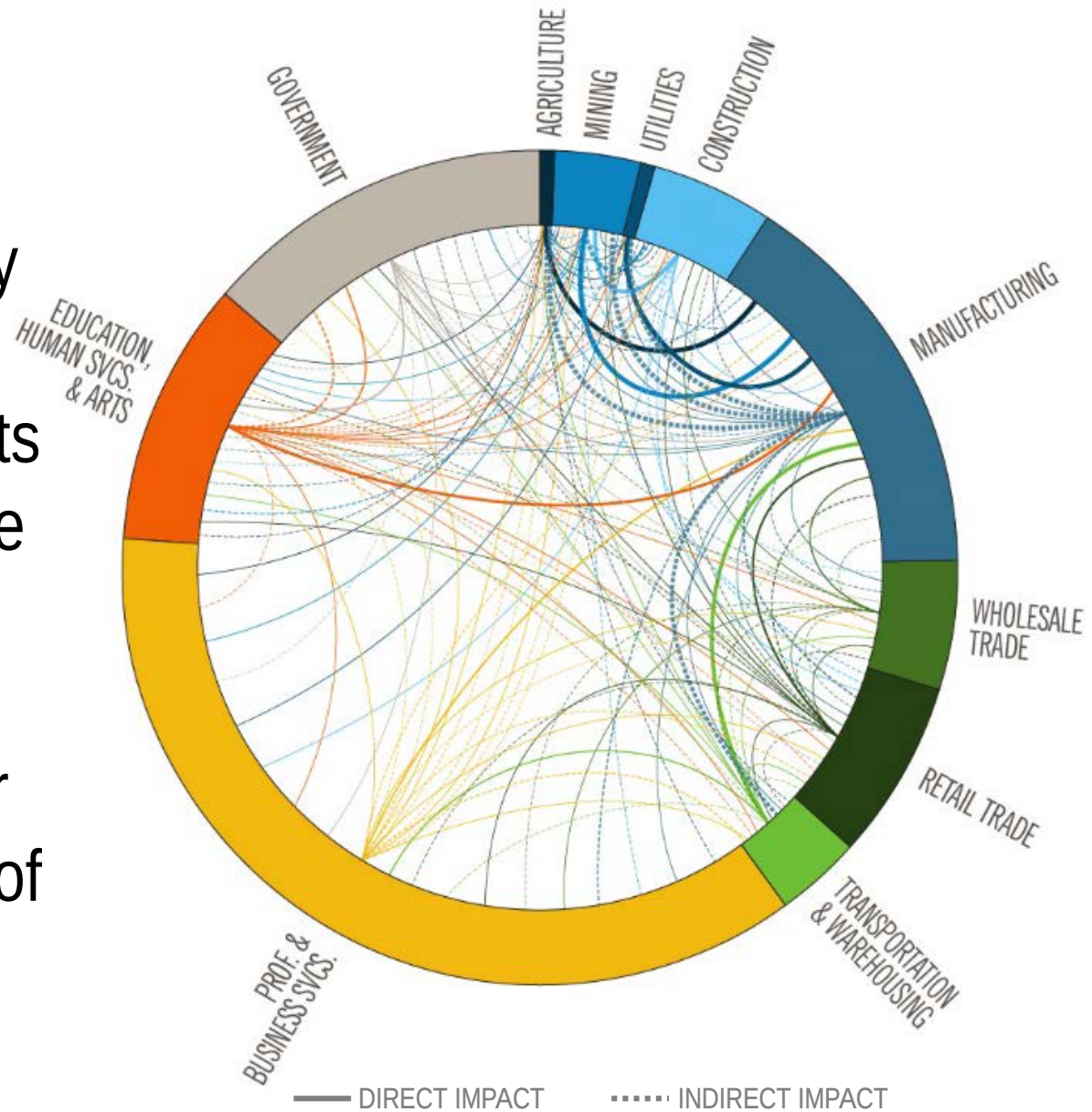
Estimates of Total Economic Impacts Based on Future Water Loss

PERCENT DECLINE IN AVAILABILITY OF COLORADO RIVER WATER	GROSS STATE PRODUCT <i>Billions 2014 \$</i>	EMPLOYMENT <i>Millions Job Years</i>	LABOR INCOME <i>Billions 2014 \$</i>
10%	143.4	1.6	87.1
15%	215.1	2.4	130.7
20%	286.8	3.2	174.3
25%	358.5	4.0	217.9
30%	430.2	4.8	261.4
40%	573.6	6.4	348.6
50%	717.1	8.0	435.7
75%	1,075.6	12.0	653.6

Source: Arizona State University, Study on Economics of the River

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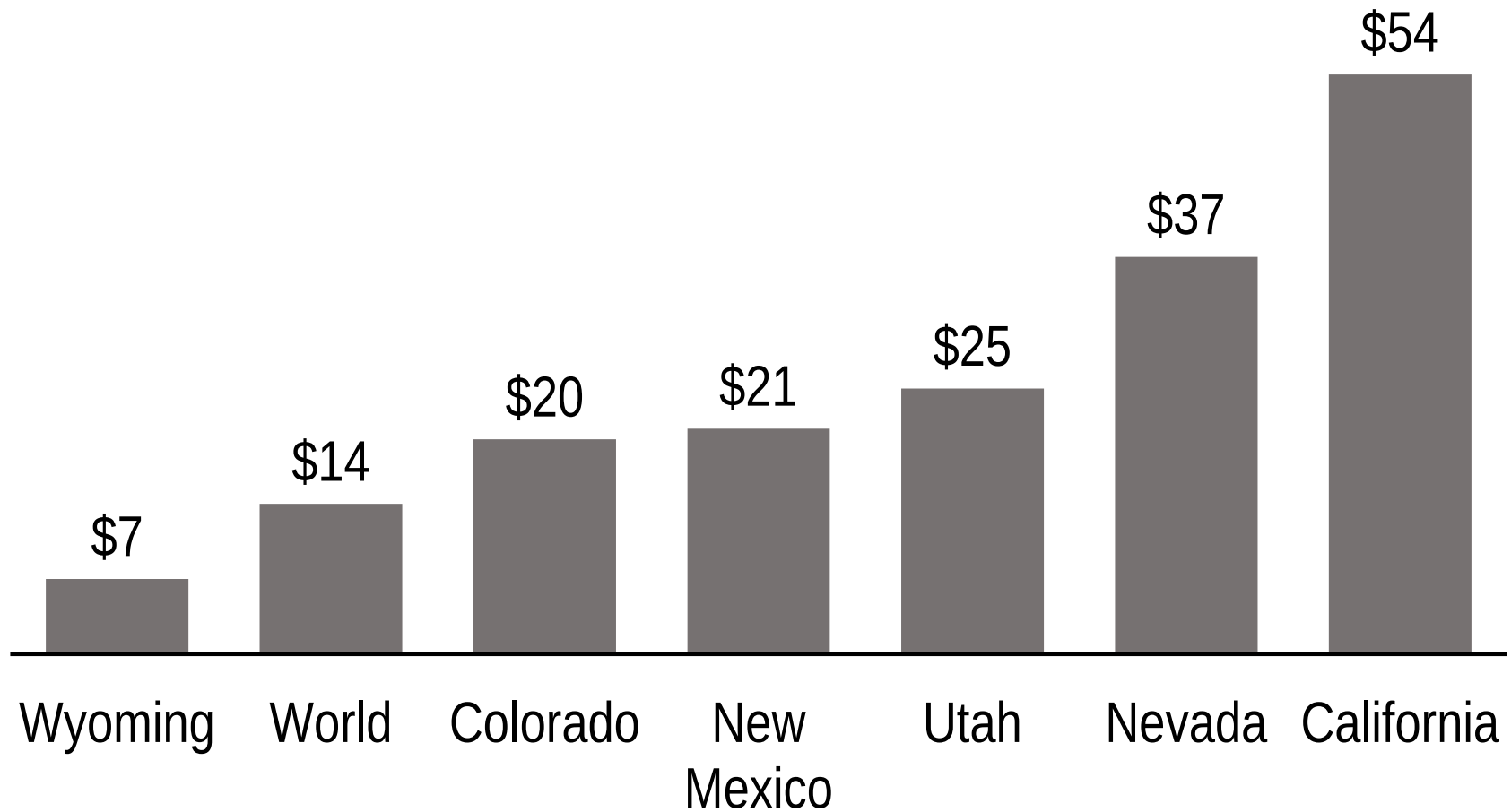
Utah's \$136 billion economy is remarkably complex and interwoven. The outputs of one industry become the inputs of another. Water resource instability in one sector runs the very real risk of destabilizing others.



Source: The Utah Governor's Office of Planning and Budget and Applied Analysis

Water Productivity

(in GDP Per Cubic Meter of Freshwater)

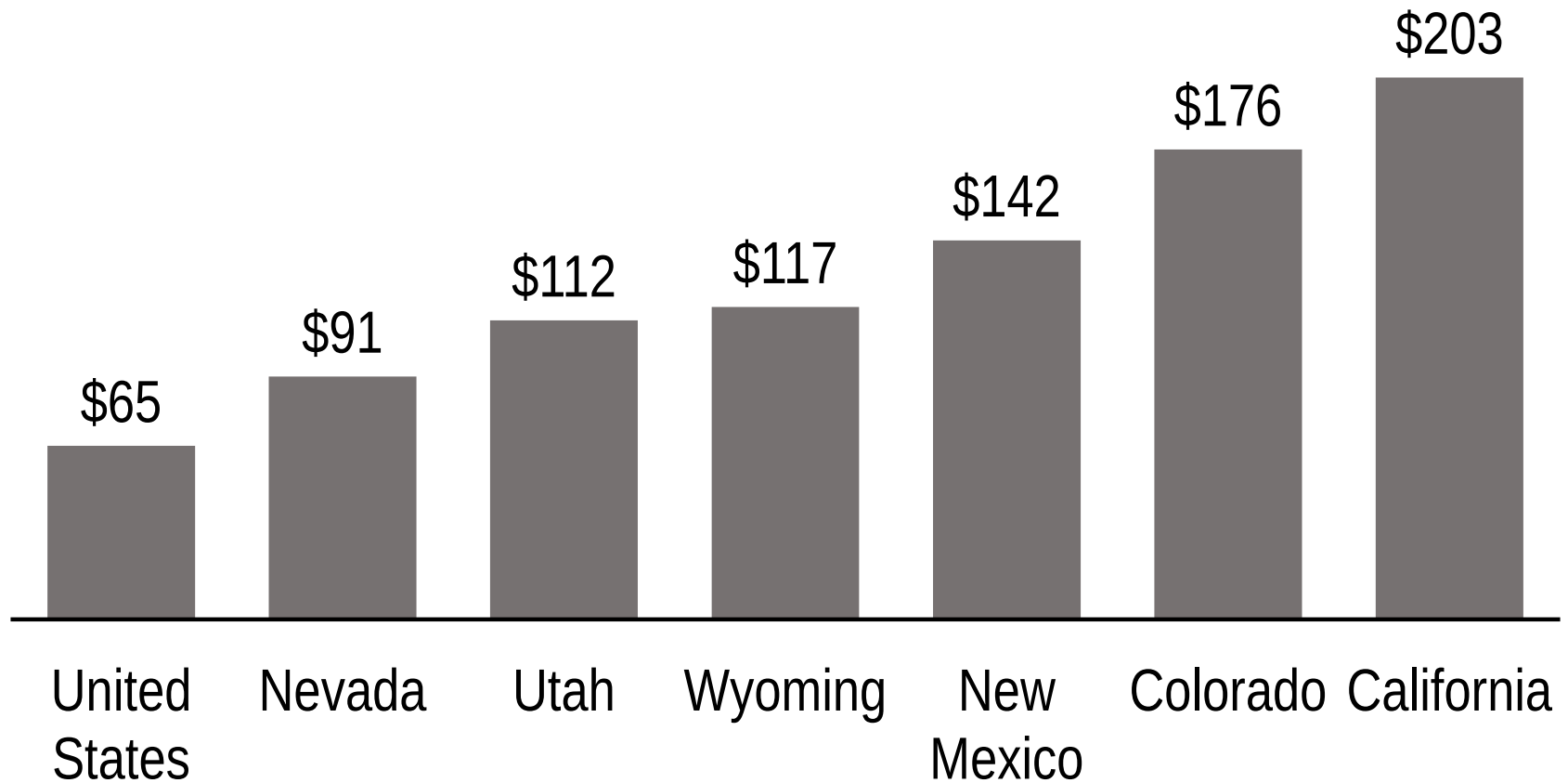


Source: The World Bank, U.S. Bureau of Economic Analysis, U.S. Geological Survey, Applied Analysis

WHAT IS THE REAL VALUE OF WATER?

Water Productivity – Exc. Irrigation

(in GDP Per Cubic Meter of Freshwater)



Source: U.S. Bureau of Economic Analysis, U.S. Geological Survey, Applied Analysis

THE BOTTOM LINE



WHAT IS THE REAL VALUE OF WATER?



Water resources are an essential element of economic development and diversification.

Ensuring water resources is critical to protecting the Basin Region's economies.

A comprehensive, master-planned approach is necessary and appropriate.

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