

WHAT IS THE REAL VALUE OF WATER?



Presented by Jeremy Aguero

September 17, 2015

Utah League of Cities and Towns



UTAH ECONOMY



WHAT IS THE REAL VALUE OF WATER?

General Economic Indicators

	Peak		Present		% Δ	
Population (Millions)	2014	3.1	2014	3.1	0.0%	
Total Nonfarm Employment, S.A. (Millions)	Jul-15	1.4	Jul-15	1.4	0.0%	
Unemployment Rate, S.A.	Mar-07	2.3%	Jul-15	3.6%	1.3%	
Initial Unemployment Claims	Sep-06	3,441	Jul-15	4,932	43.3%	
Avg. Weekly Wages - Private	Dec-09	\$937.16	Jul-15	\$839.69	-10.4%	
Avg. Weekly Hours - Private	Aug-09	36.7	Jul-15	34.9	-4.9%	
Taxable Retail Sales (Billions)	Jun-15	\$48.2	Jun-15	\$48.2	0.0%	
SLC Int'l Airport Passengers (Millions)	2005	22.2	2014	21.1	-4.9%	
Housing Price Index	Q4-07	384.0	Q2-15	368.6	-4.0%	

General Economic Indicators

	Prior Year		Present		% Δ	
Population (Millions)	2013	3.0	2014	3.1	3.5%	
Total Nonfarm Employment, S.A. (Millions)	Jul-14	1.3	Jul-15	1.4	4.4%	
Unemployment Rate, S.A.	Jul-14	3.7%	Jul-15	3.6%	-0.1%	
Initial Unemployment Claims	Jul-14	5,522	Jul-15	4,932	53.3%	
Avg. Weekly Wages - Private	Jul-14	\$826.14	Jul-15	\$839.69	1.6%	
Avg. Weekly Hours - Private	Jul-14	35.2	Jul-15	34.9	-0.9%	
Taxable Retail Sales (Billions)	Jun-14	\$45.9	Jun-15	\$48.2	5.2%	
SLC Int'l Airport Passengers (Millions)	2013	20.2	2014	21.1	4.7%	
Housing Price Index	Q2-14	350.5	Q2-15	368.6	5.2%	

FACT:

Utah was the seventh fastest-growing state in the nation from 2013-2014, down from second fastest the year prior. North Dakota continues to hold the top spot for growth.

Note: Calculations exclude the District of Columbia.

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

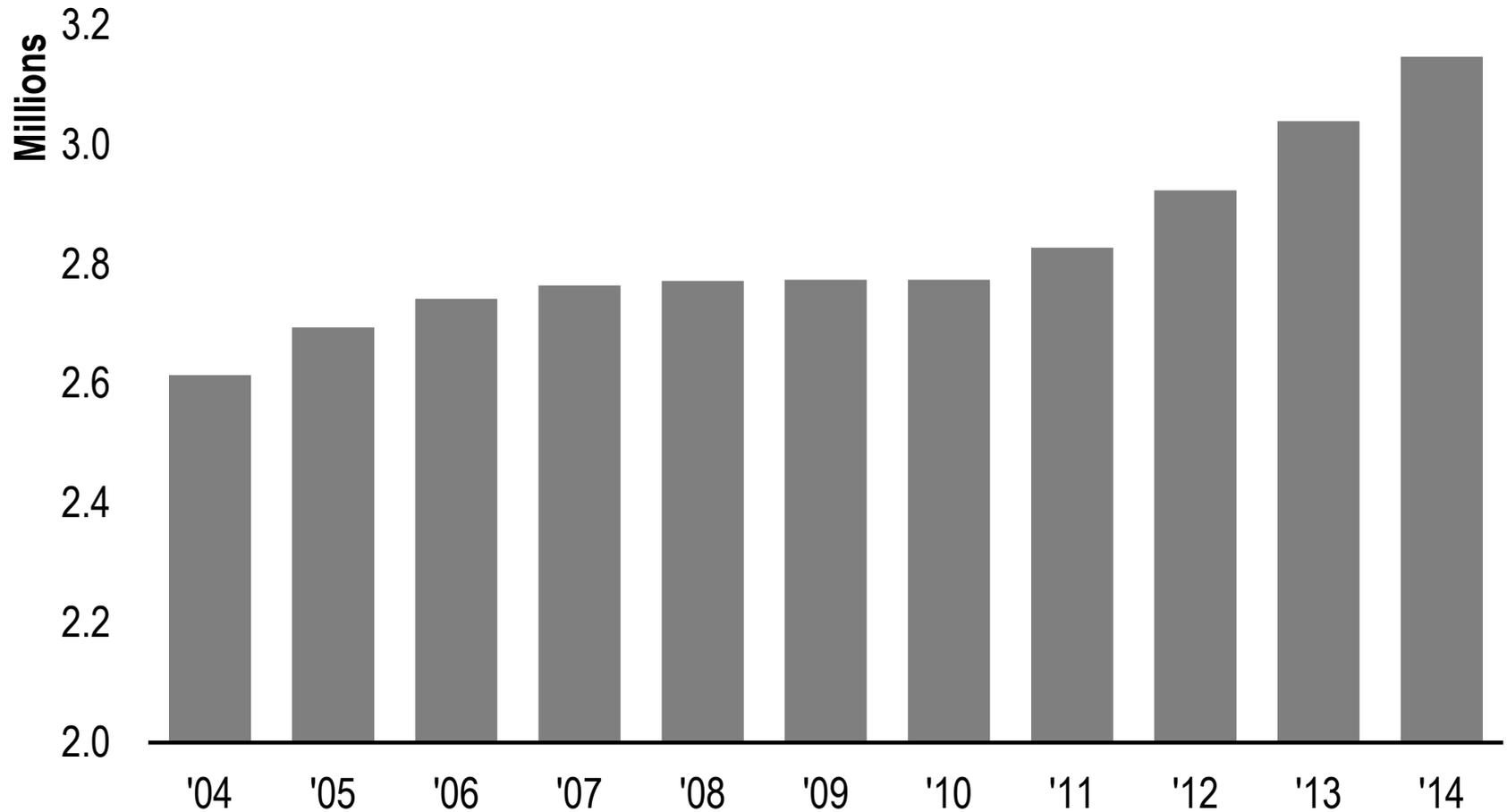


CONSIDER:

Due to the relative size of the state, Utah's incremental population growth from 2013 to 2014 was nearly three times that of North Dakota's.

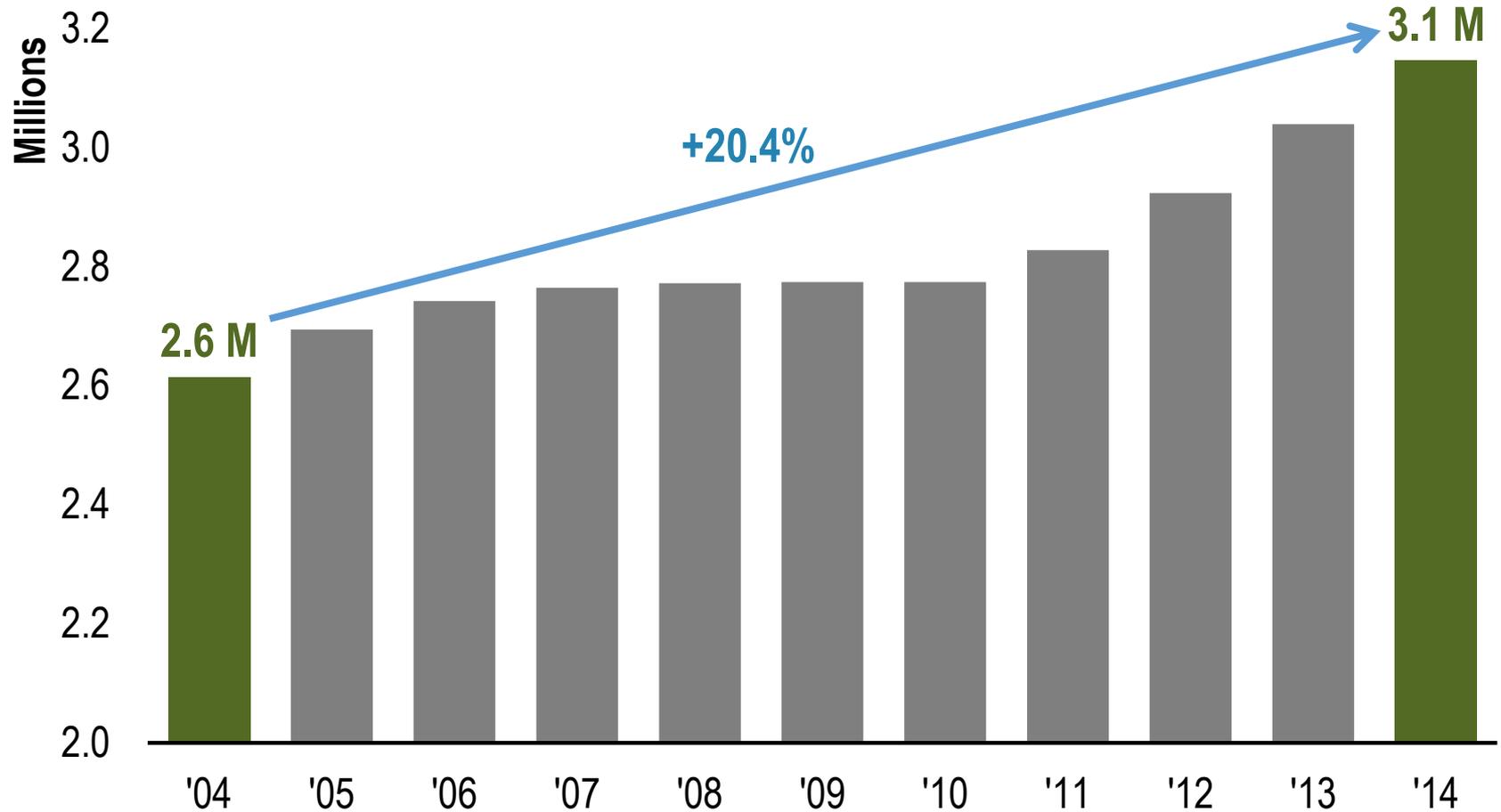
Source: U.S. Census Bureau, population estimates as of July 1 of each year.

Population 2004-2014



Source: Utah Governor's Office of Planning and Budget, Applied Analysis, Intercensal years have been estimated.

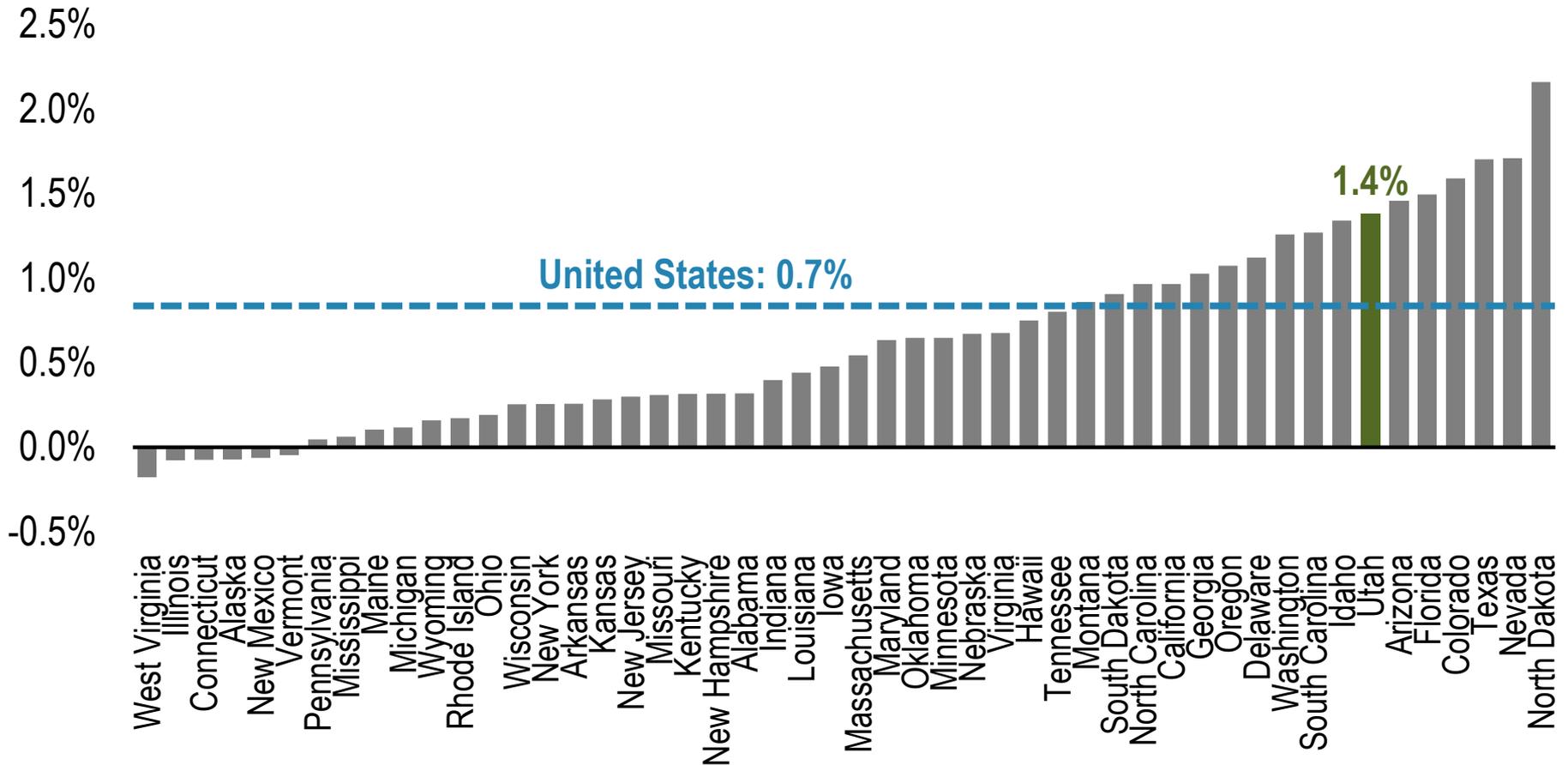
Population 2004-2014



Source: Utah Governor's Office of Planning and Budget, Applied Analysis, Intercensal years have been estimated.

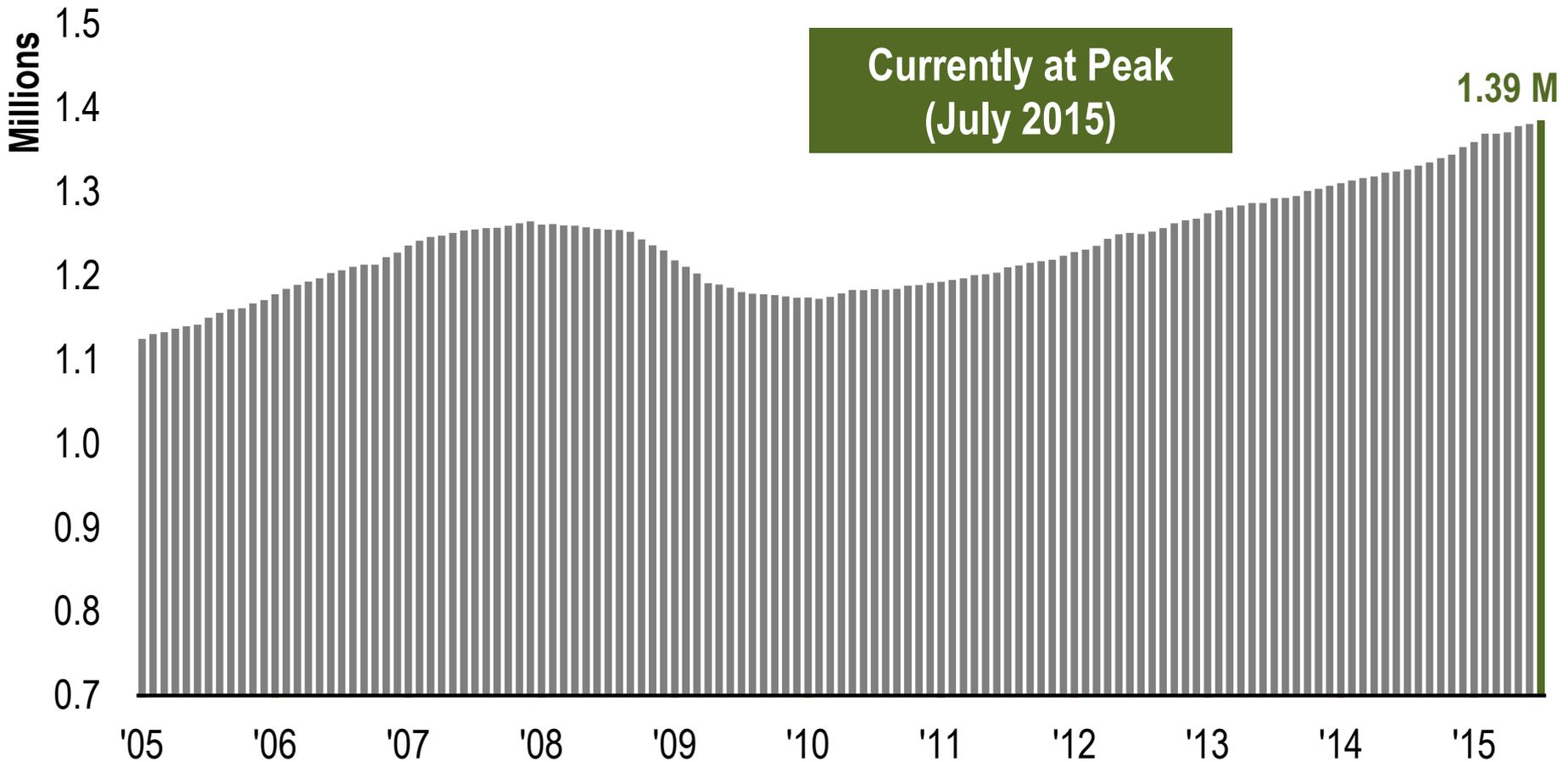
Population Growth

State Comparisons | 2013-2014



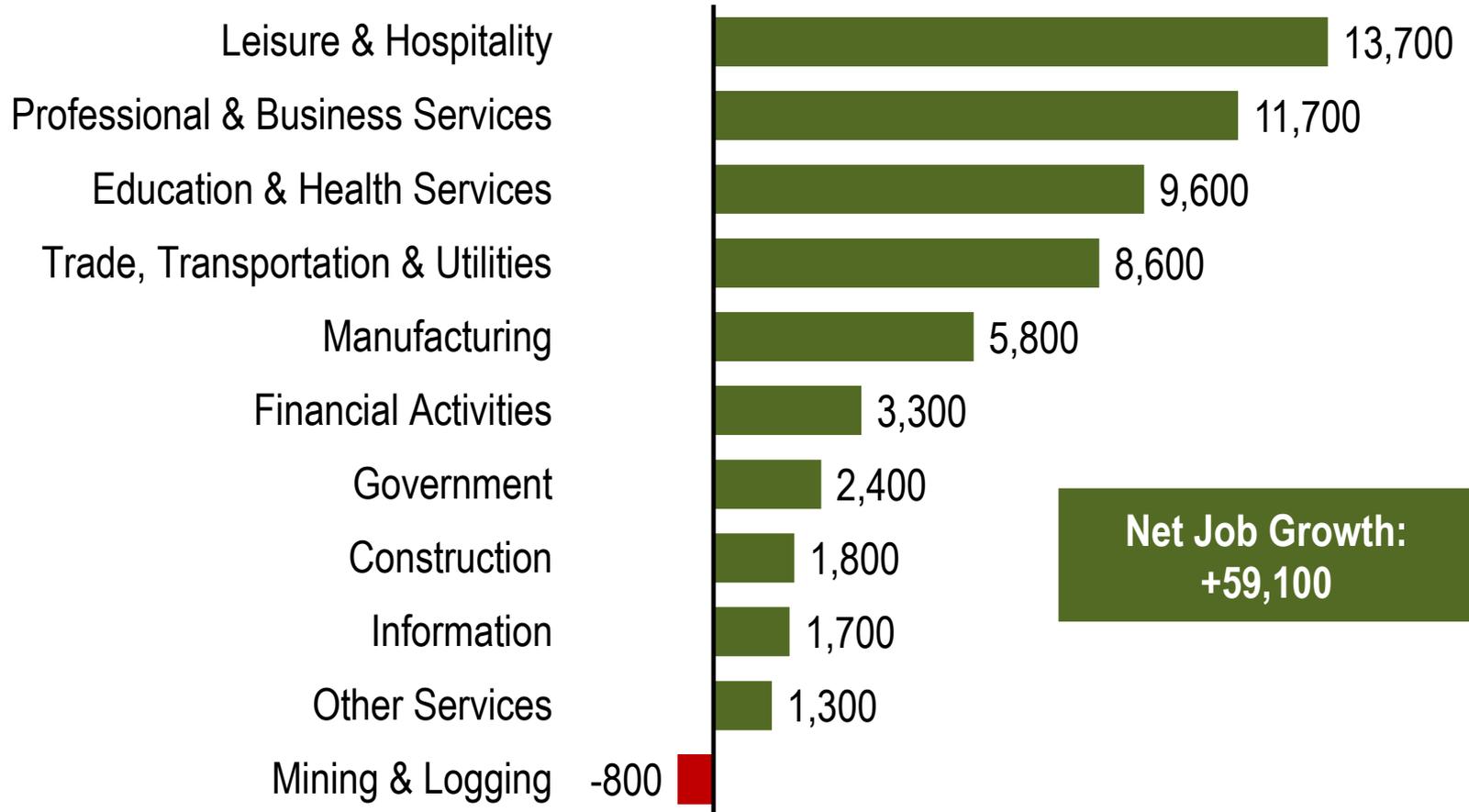
Source: U.S. Census Bureau, population estimates as of July 1 of each year, 2013-2014

Employment 2005-2015



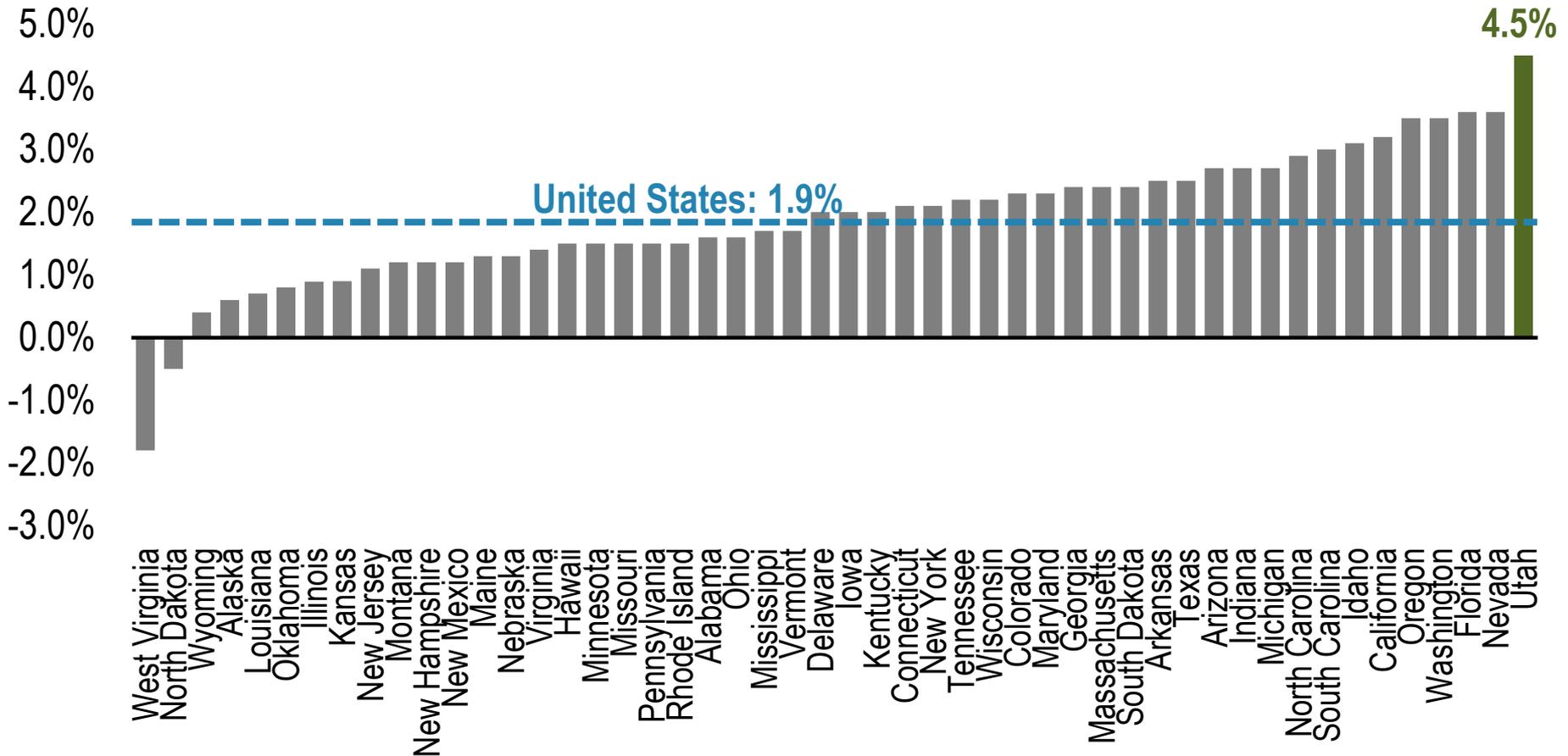
Source: U.S. Bureau of Labor Statistics, Establishment-Based Employment, Seasonally Adjusted

Employment Growth by Sector Year-over-Year



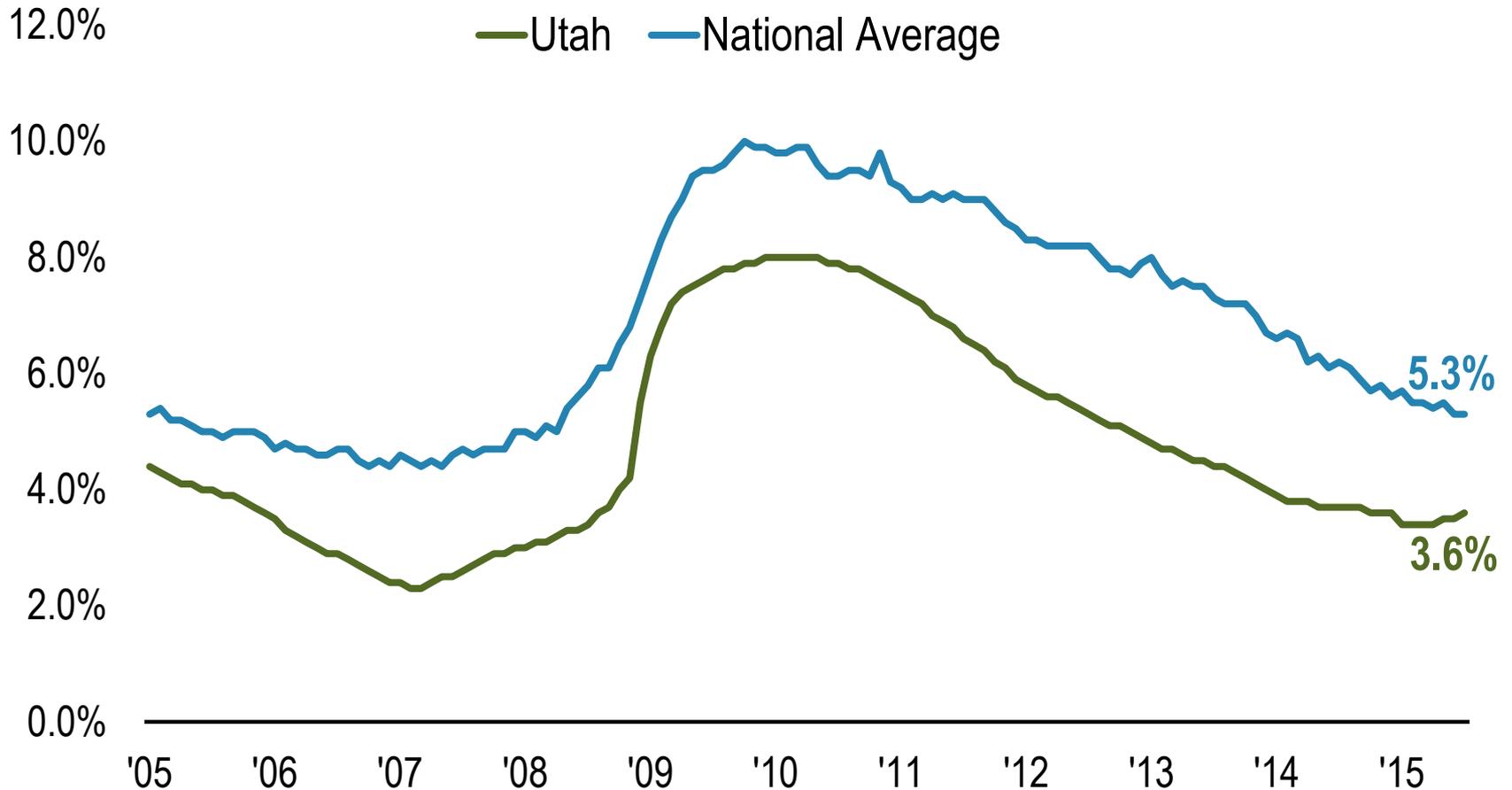
Source: U.S. Bureau of Labor Statistics, July 2014 vs July 2015, Not Seasonally Adjusted

Employment Growth State Comparisons | 2014-2015



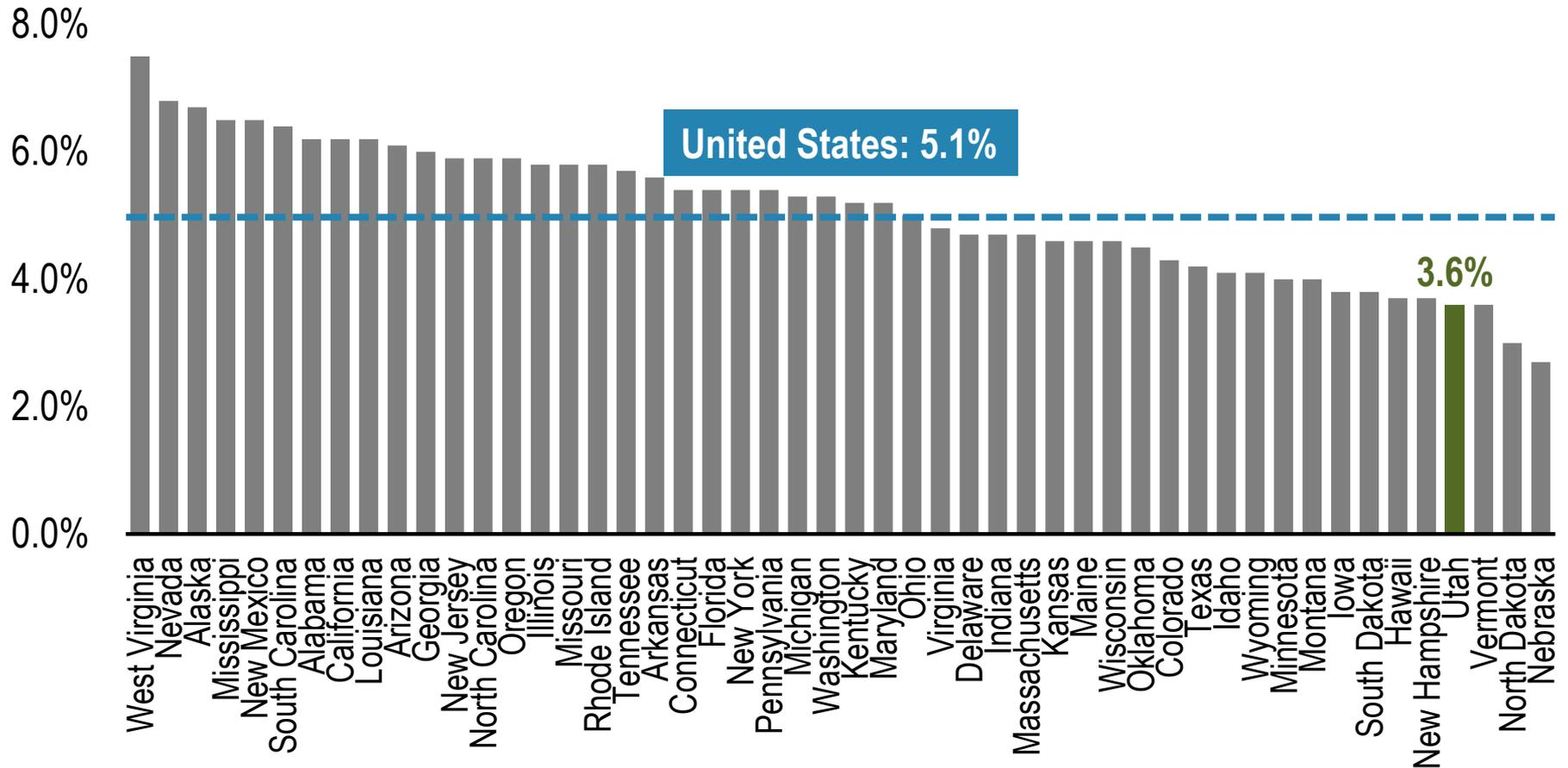
Source: U.S. Bureau of Labor Statistics, Establishment-Based Employment Growth, July 2014 vs. July 2015, Not Seasonally Adjusted

Unemployment Rate 2005-2015



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

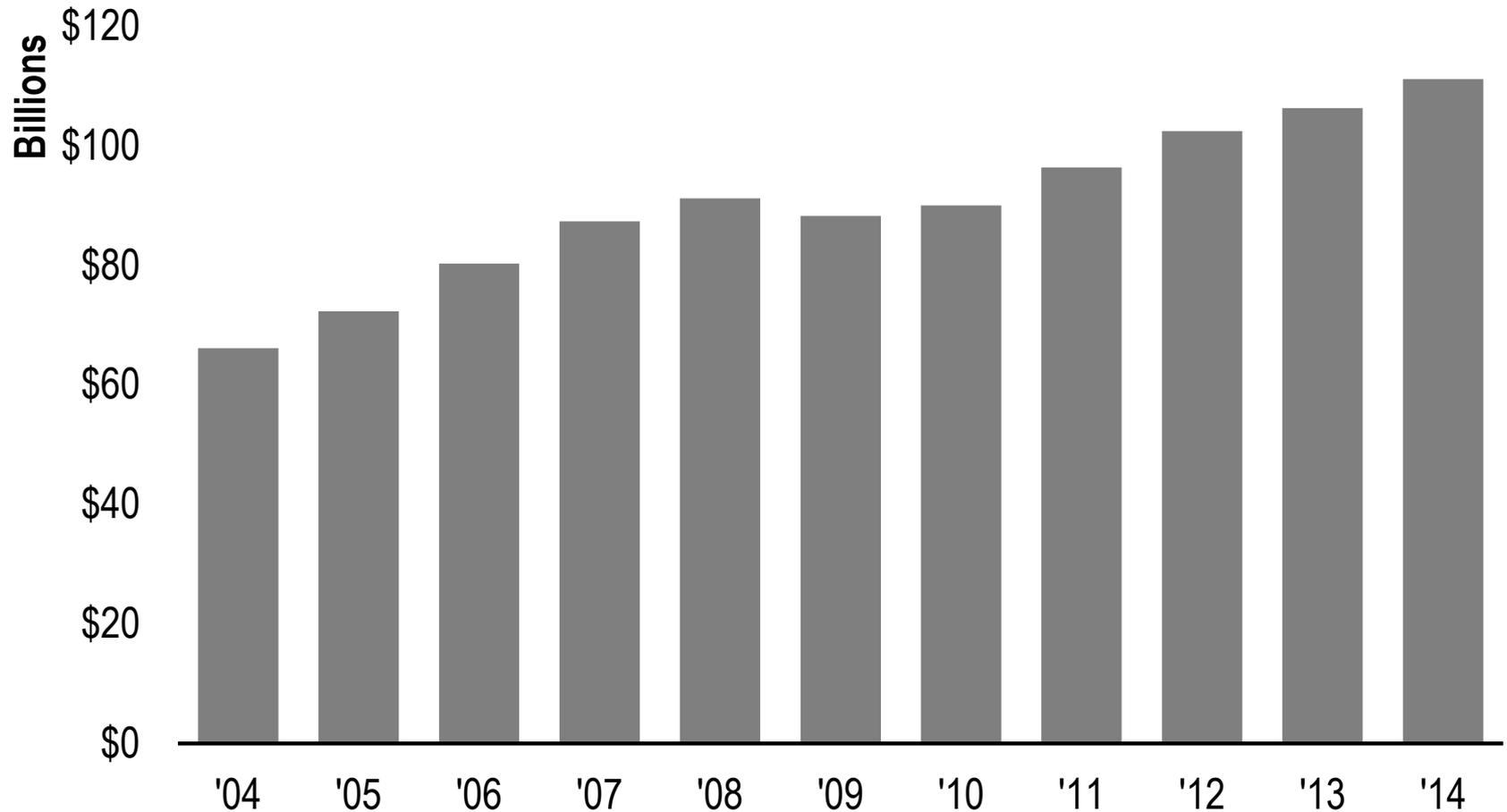
Unemployment Rate State Comparisons | July 2015



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

Personal Income

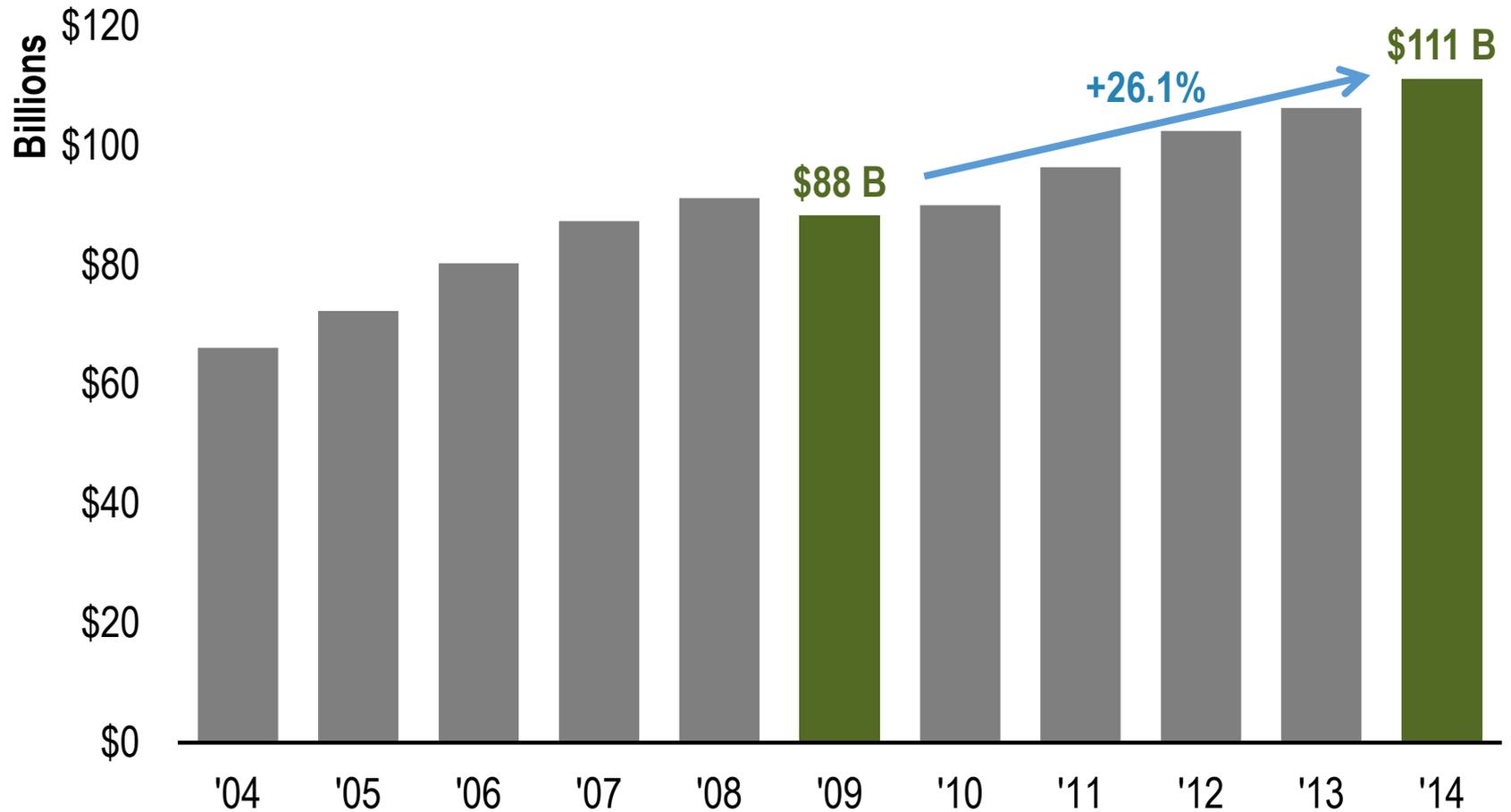
2004-2014



Source: U.S. Bureau of Economic Analysis

Personal Income

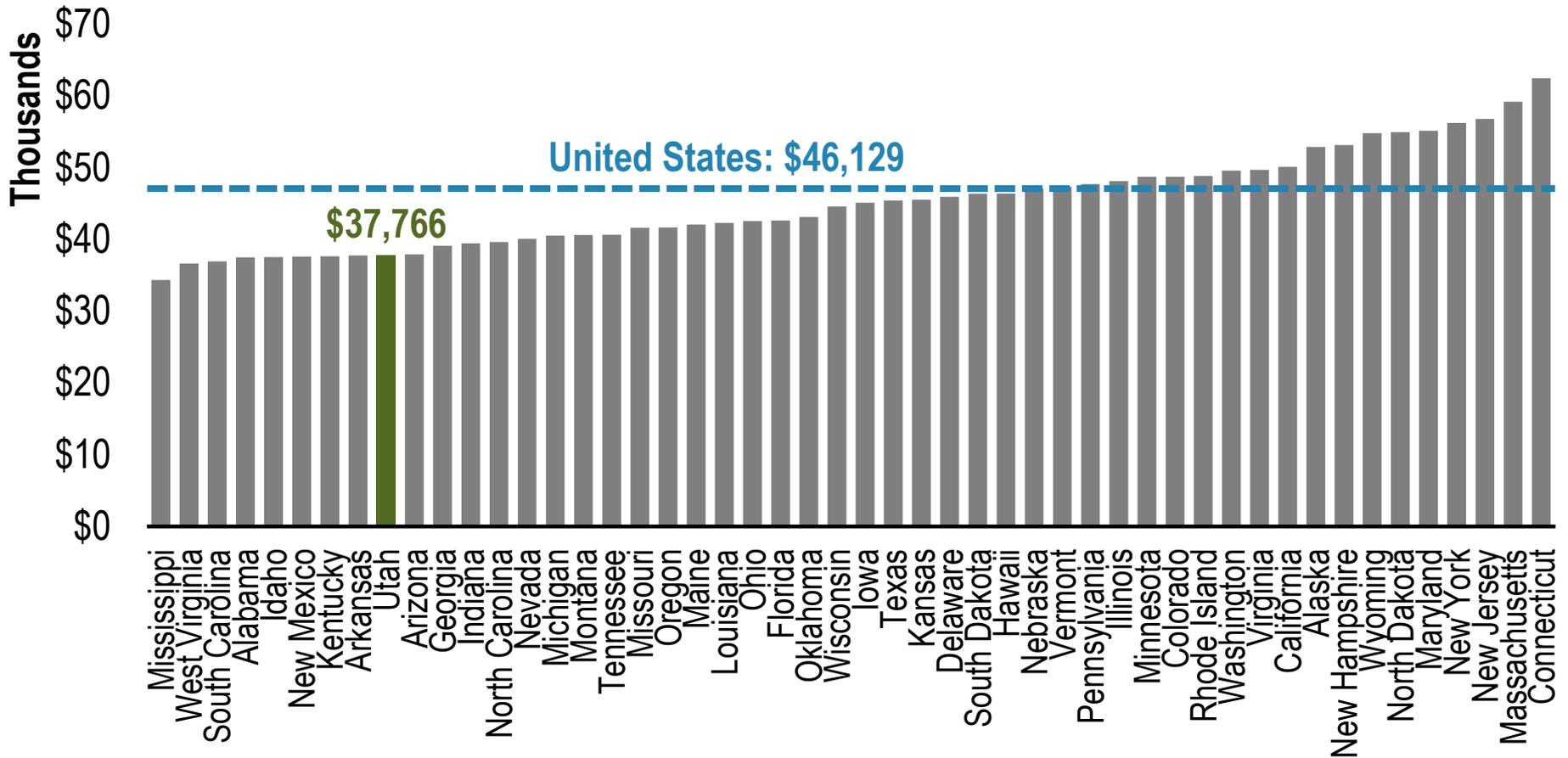
2004-2014



Source: U.S. Bureau of Economic Analysis

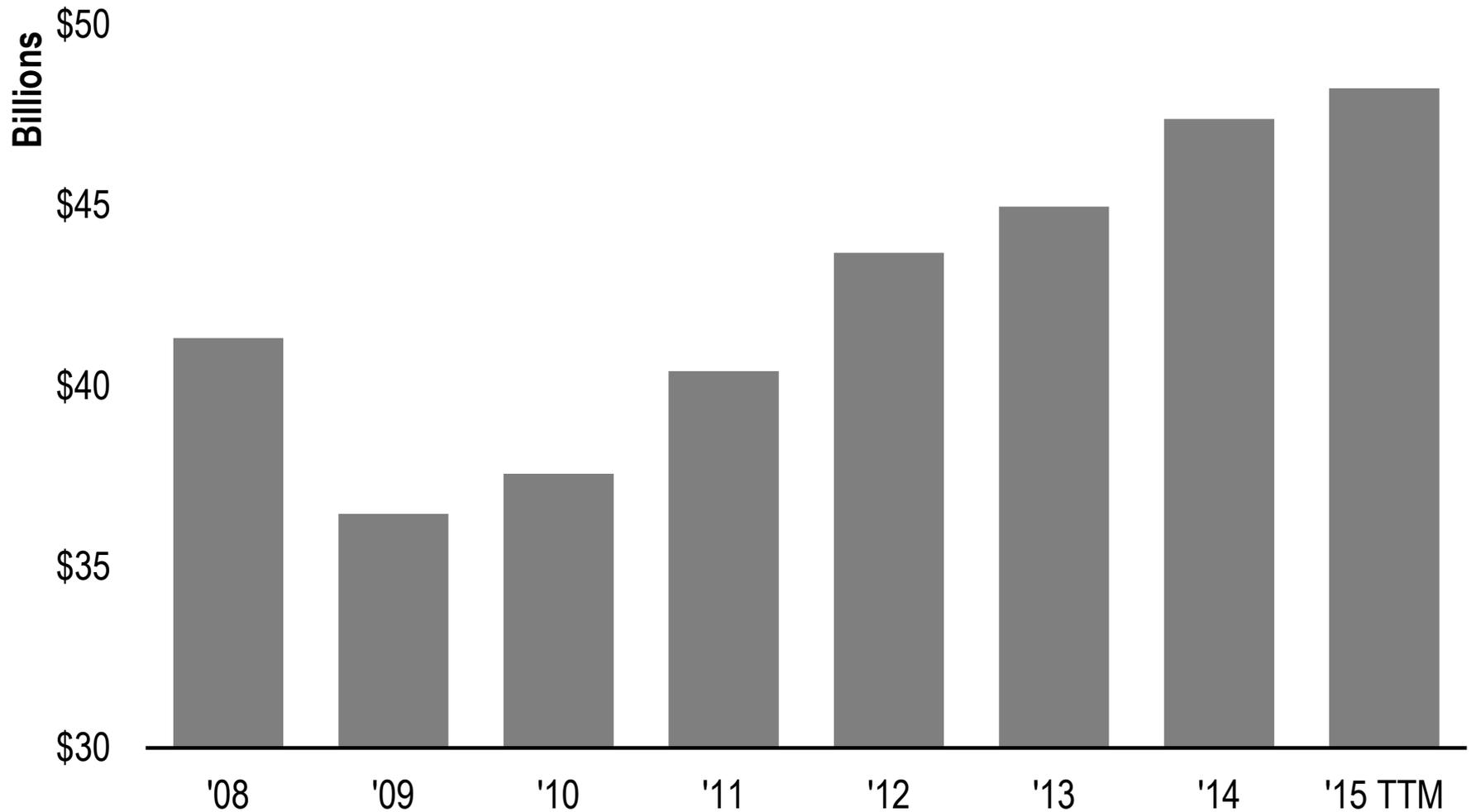
Personal Income Per Capita

State Comparisons | 2014



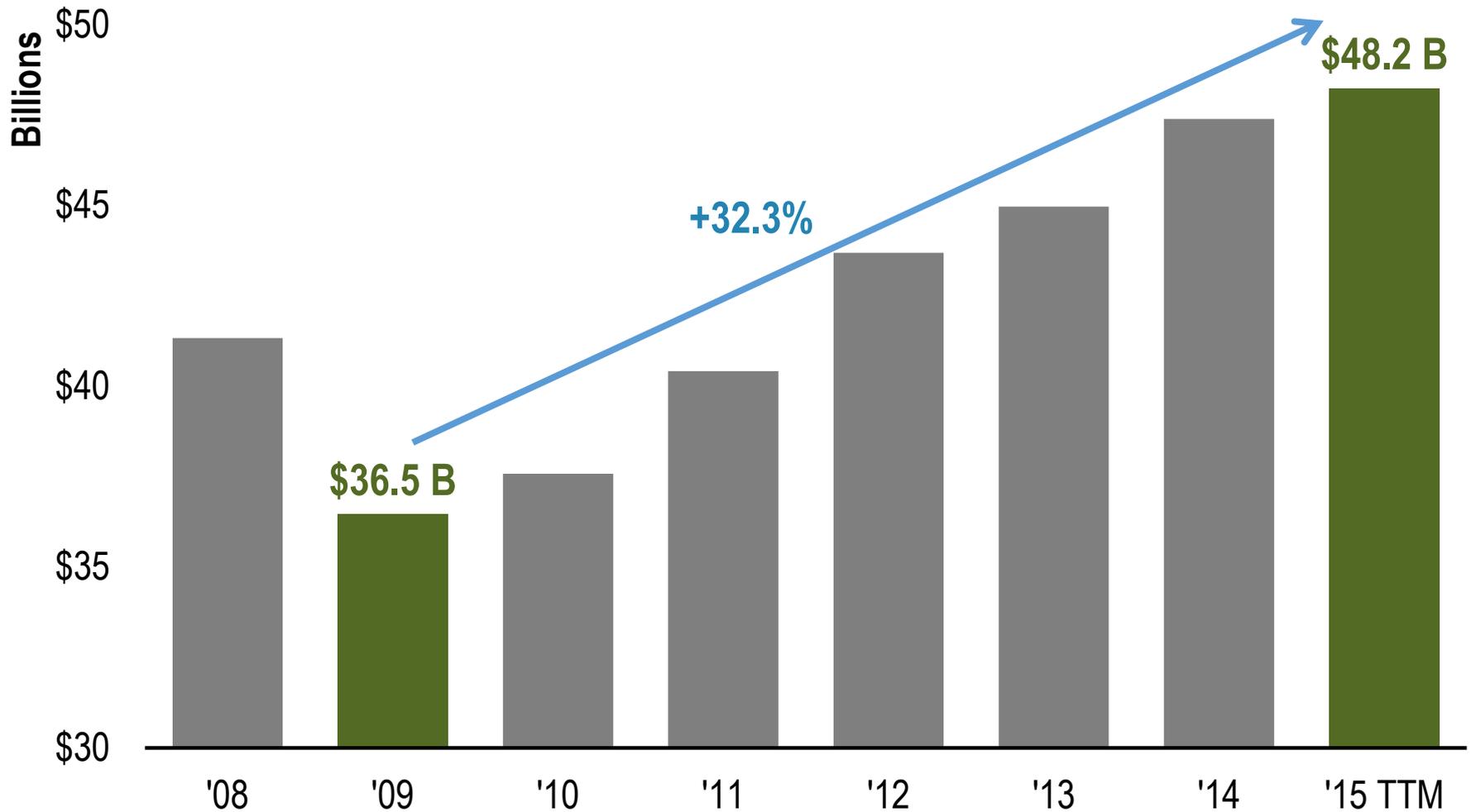
Source: U.S. Bureau of Economic Analysis

Taxable Retail Sales



Source: Utah State Tax Commission

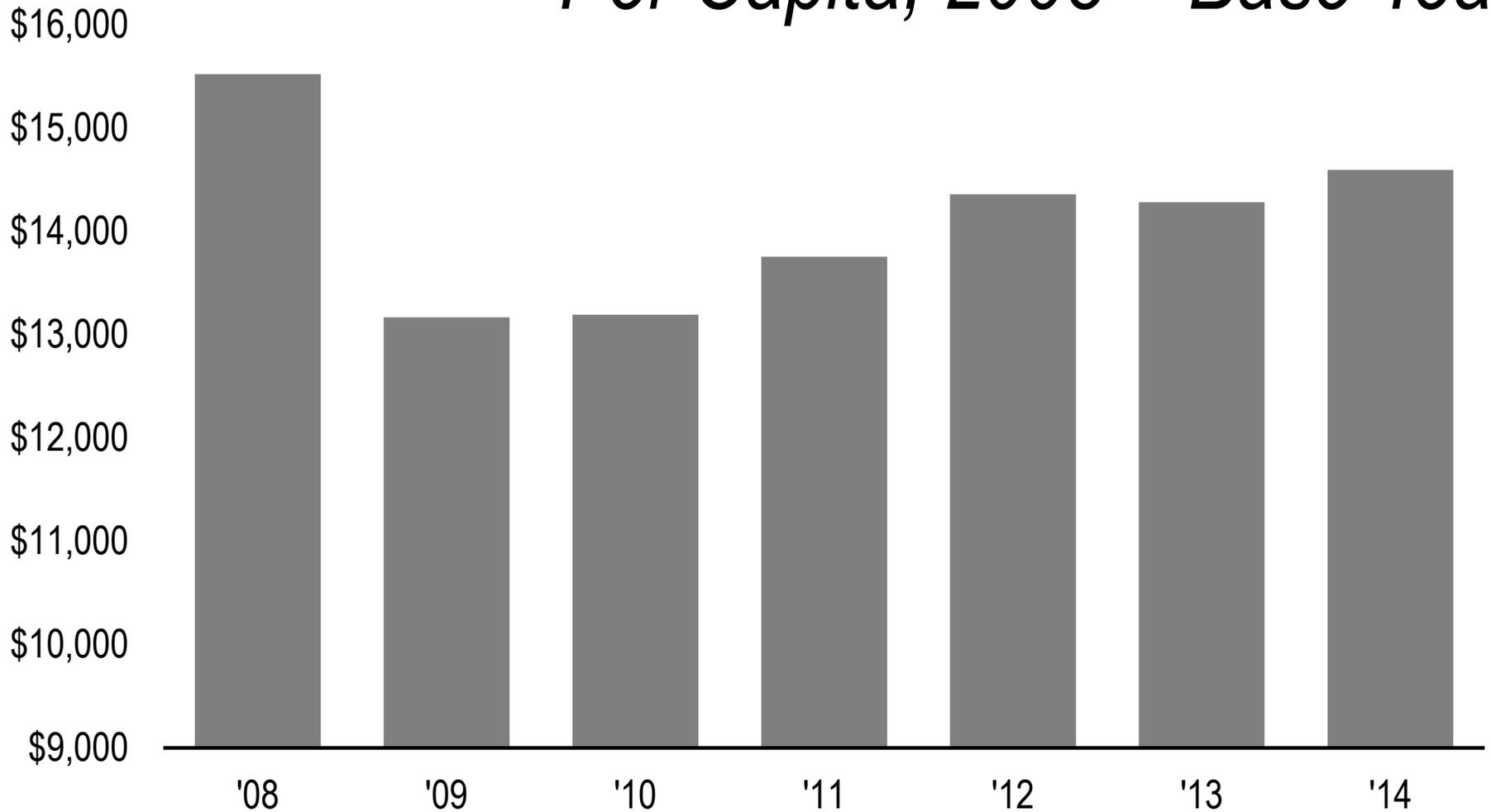
Taxable Retail Sales



Source: Utah State Tax Commission

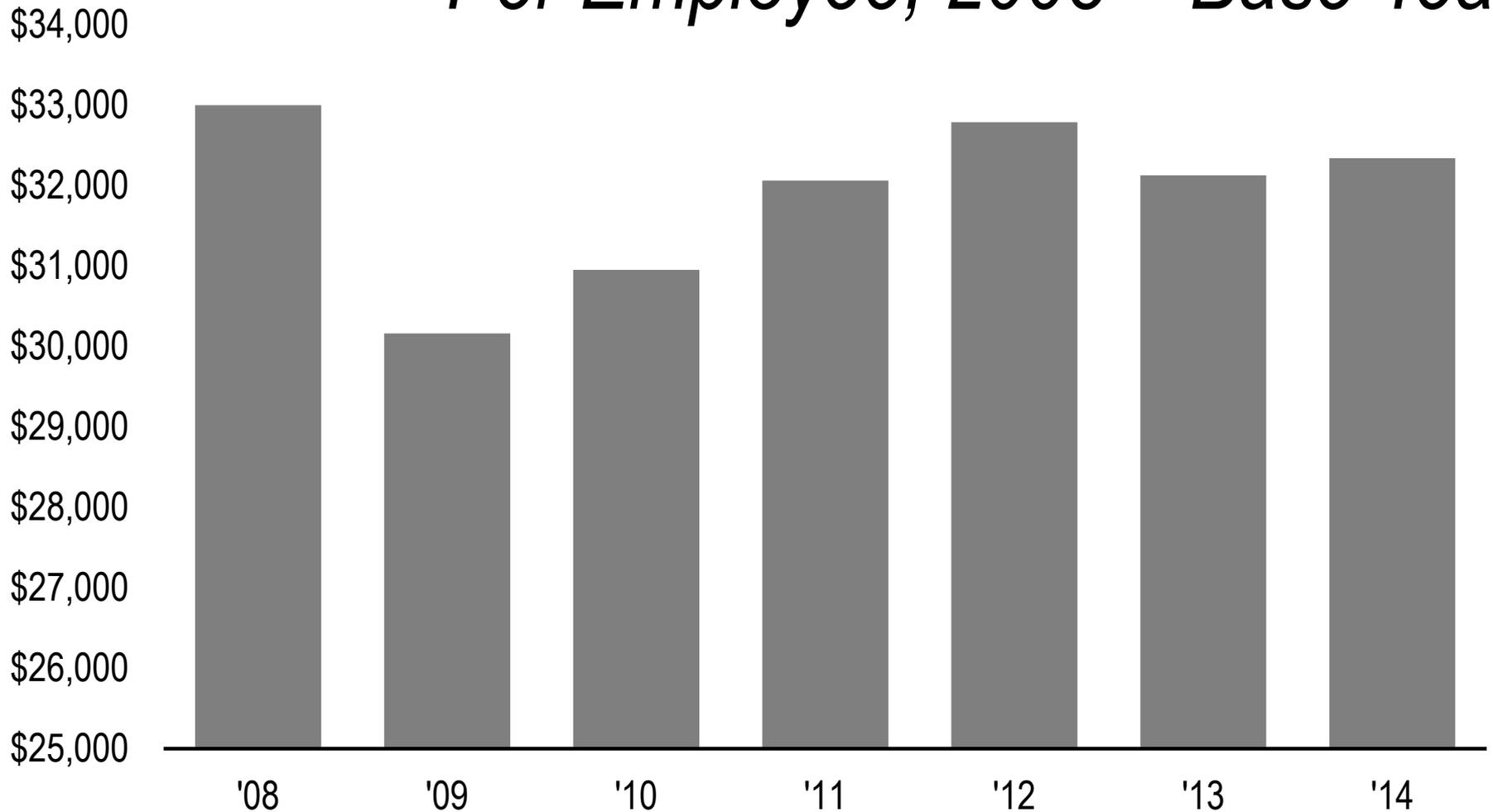
Inflation Adjusted Taxable Retail Sales

Per Capita; 2008 = Base Year



Source: Utah State Tax Commission

Inflation Adjusted Taxable Retail Sales *Per Employee; 2008 = Base Year*



Source: Utah State Tax Commission

Utah Heads the Best States for Business 2014

“Leading the way is Utah, which previously ranked first between 2010 and 2012 before dropping to third last year...Utah’s economy expanded 2.4% a year over the past five years—fifth best in the U.S. It is the only state to rank in the top 10 in five of the six main categories we used to determine the Best States.”

The Best And Worst States For Business 2014



#1 Utah

2013 Rank: 3

Gross State Product: \$141 billion

5-yr annual GSP growth: 2.4%

Governor: Gary Hebert

Utah moves back to the top spot where it ranked for three straight years from 2010 through 2012. The state has a very pro-business climate and companies benefit from energy costs that are 26% below the national average and third lowest in the U.S.

Source: Forbes Magazine, Online Edition 11/12/2014

BUSINESS

Utah giving Colorado a run for the money

By Aldo Svaldi
The Denver Post

5 COMMENTS

POSTED: 10/19/2014 12:01:00 AM MDT
UPDATED: 10/10/2014 12:08:24 AM MDT

Colorado and Utah have long competed with each other for jobs and corporate relocations, along with things that are more fun, such as skier visits.

But since the 2007 recession, Utah has moved from the kind of challenger that state economic development officials had to turn their heads back to see to one that they hear coming up fast on the outside.

"Twelve years ago, we didn't see Utah as a competitor at all," says Tom Clark, CEO of the Metro Denver Economic Development Corp.

That changed about five years ago, when Utah staged one of the strongest rebounds of any state out of the recession. Clark visited Utah three years ago to understand what was going on, and he has kept a close eye on things since.

Of the 59 measures his office compares the two states on, Colorado is still leading on 33, including key ones tied to innovation. But Utah is winning on 26, including exports and education funding.

And when it comes to the central question of which economy is getting people back to work faster, Utah is clearly ahead.

Utah's unemployment rate in August was 3.6 percent, the lowest of any state after North Dakota. Colorado, by contrast, is still at 5.1 percent — respectable but 15th among states.

Through the 12 months ended in August, Utah's economy was adding jobs at a 3.5 percent clip, the second-fastest rate of any state and nearly double the U.S. average, according to [Arizona State](#)



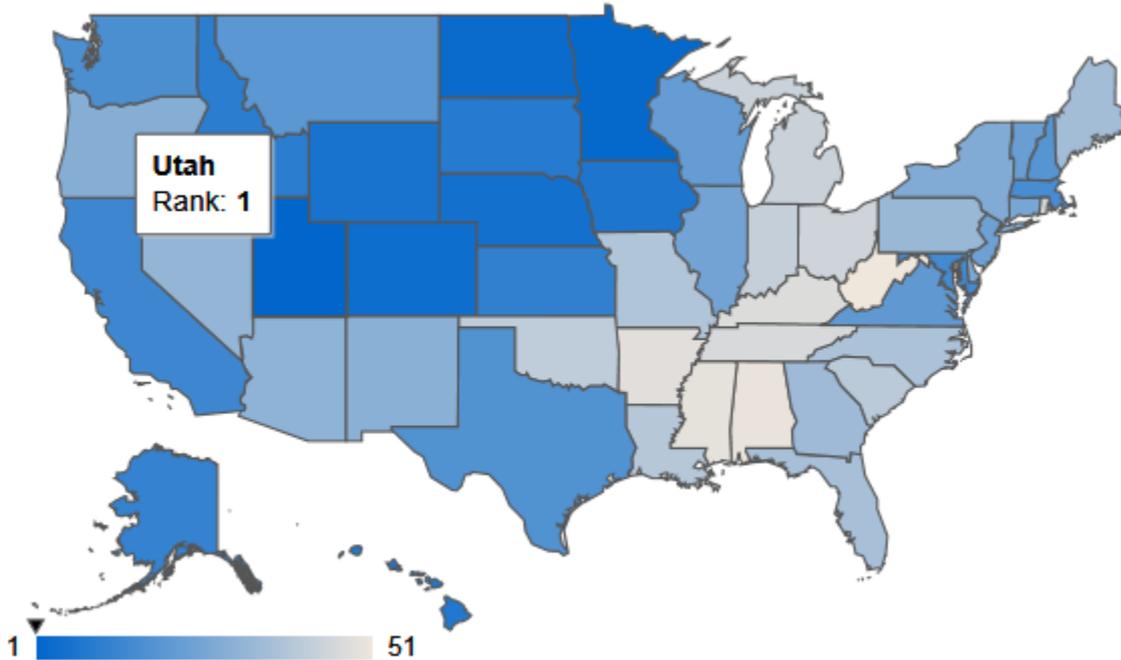
Ken Lund, head of the Colorado Office of Economic Development and International Trade, during a sneak peak of the state's new economic development plan at the World Trade Center in downtown Denver on July 10, 2011. (Denver Post file)

“Twelve years ago, we didn’t see Utah as a competitor at all.”

- Tom Clark, CEO, Metro Denver Economic Development Corp.

Source: The Denver Post, Online Edition 10/19/2014

Utah is the Happiest State in the Country



- #1 in job satisfaction
- #1 in lowest median number of hours worked per week
- #1 for volunteerism
- #1 for lowest divorce rate

Source: WalletHub.com, 9/23/2014

Utah Economy 'Running on All Cylinders,' expert says

"The Zions Bank Utah Consumer Attitude Index rose 5.9 points from 105.3 in July to 111.2 in August. In comparison, the national Consumer Confidence Index increased 10.5 points to 101.5. "Utah is running on all cylinders economically, an index of 110 or greater connotes a particularly robust economy."

*-Randy Shumway,
Zions Bank Economic Adviser*

Source: Deseret News, Online Edition 8/25/2015

Utah economy 'running on all cylinders,' expert says

By [Jason Lee](#), Deseret News
Follow @JasonLee1

Published: Tuesday, Aug. 25 2015 3:45 p.m. MDT
Updated: Tuesday, Aug. 25 2015 3:52 p.m. MDT

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Summary

The Zions Bank Utah Consumer Attitude Index rose 5.8 points from 105.3 in July to 111.2 in August. In comparison, the national Consumer Confidence Index increased 10.5 points to 101.5.

SALT LAKE CITY — Utah consumers are particularly optimistic about the current state of the local economy, a new survey indicates.

The Zions Bank Utah Consumer Attitude Index rose 5.9 points from 105.3 in July to 111.2 in August. In comparison, the national Consumer Confidence Index increased 10.5 points to 101.5.

"Utah is running on all cylinders economically," said Zions Bank economic adviser Randy Shumway, adding that an index of 110 or greater connotes a particularly robust economy.

Zions Bank Consumer Attitude Index

Month	Utah	U.S.
Sept. 2014	105.3	98.5
Oct. 2014	106.5	99.5
Nov. 2014	107.5	100.5
Dec. 2014	108.5	101.5
Jan. 2015	109.5	102.5
Feb. 2015	110.5	103.5
March 2015	111.5	104.5
April 2015	112.5	105.5
May 2015	113.5	106.5
June 2015	114.5	107.5
July 2015	105.3	101.5
Aug. 2015	111.2	107.0

Hachman (Diversity) Index

2001-2015



Utah's Competitive Advantage

- Among the strongest economies in the United States
- The most diversified economy of its size in the United States
- Strong cluster development and commercialization of research, with universities being a major driver
- High rates of population growth, but more importantly, population retention

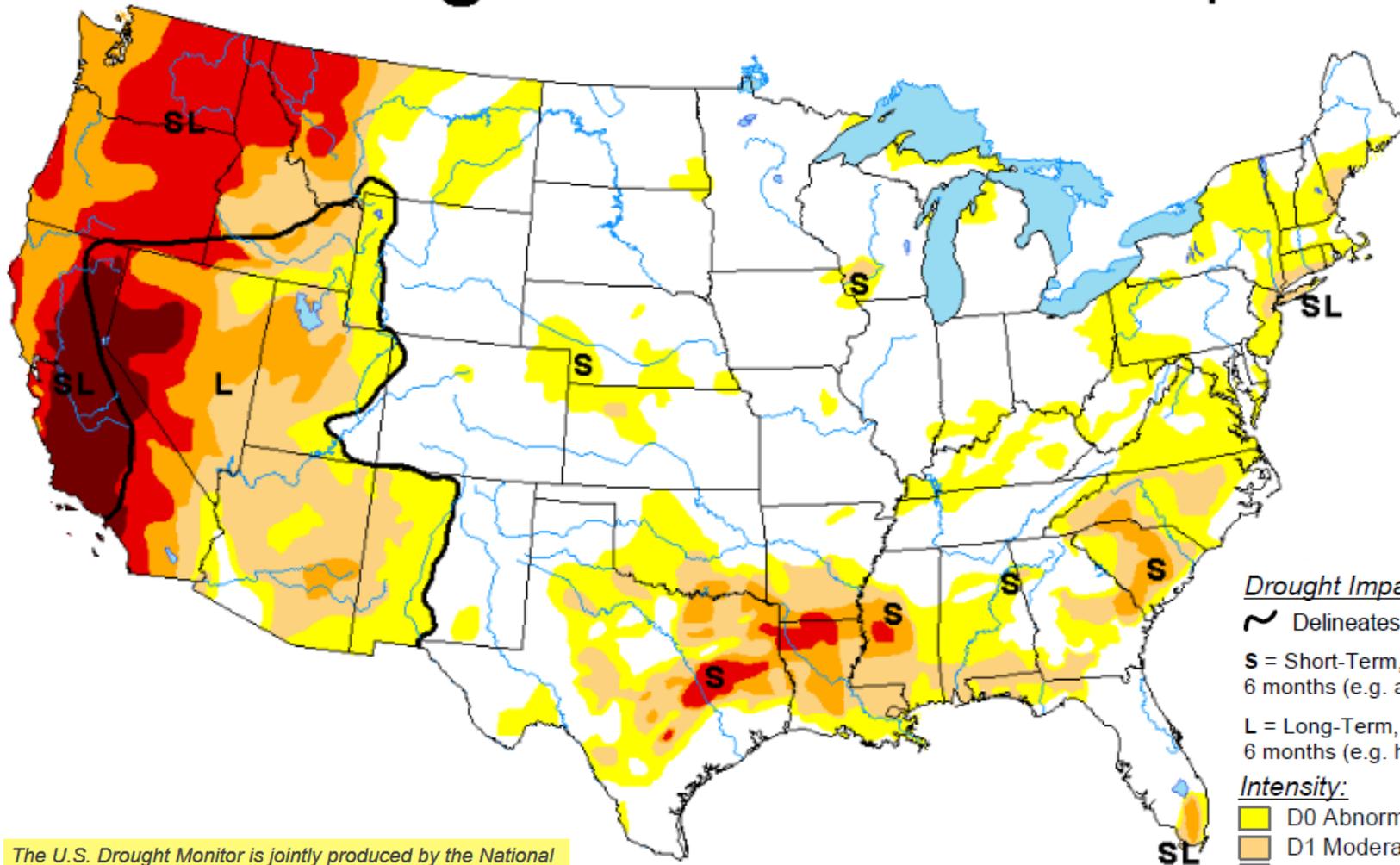
WATER RESOURCE RISKS



WHAT IS THE REAL VALUE OF WATER?

U.S. Drought Monitor

September 15, 2015



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:

Yellow D0 Abnormally Dry

Light Orange D1 Moderate Drought

Dark Orange D2 Severe Drought

Red D3 Extreme Drought

Dark Red D4 Exceptional Drought

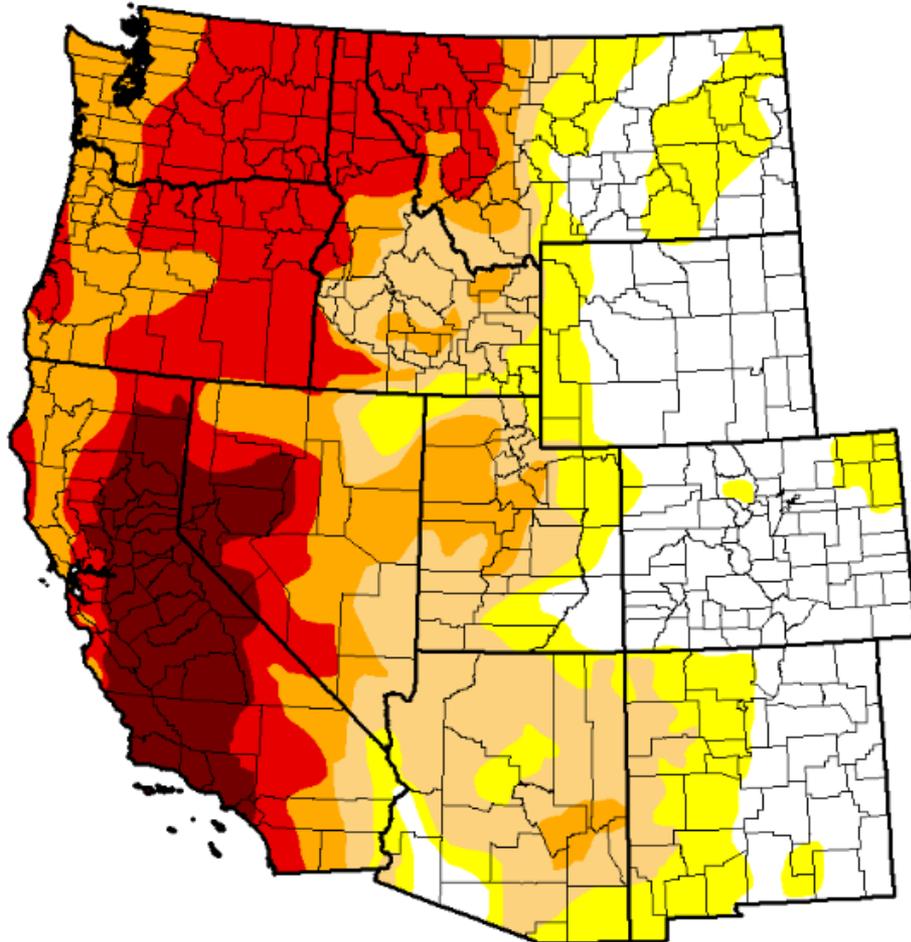
The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC-UNL.

WHAT IS THE REAL VALUE OF WATER?

U.S. Drought Monitor

West

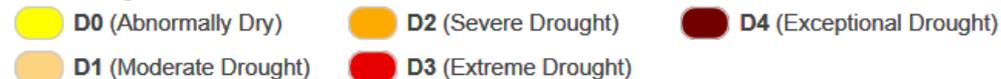
September 15, 2015



Categorical Percent Area

Week	None	D0	D1	D2	D3	D4
Current 2015-09-15	24.68	15.66	16.97	15.96	19.12	7.62
Last Week 2015-09-08	24.68	15.65	16.97	15.96	19.12	7.62
3 Months Ago 2015-06-16	27.93	15.90	21.69	17.34	9.87	7.26
Start of Calendar Year 2014-12-30	34.76	10.76	20.99	14.82	13.27	5.40
Start of Water Year 2014-09-30	31.48	12.95	19.92	15.70	11.06	8.90
One Year Ago 2014-09-16	29.74	13.02	18.55	18.81	10.98	8.90

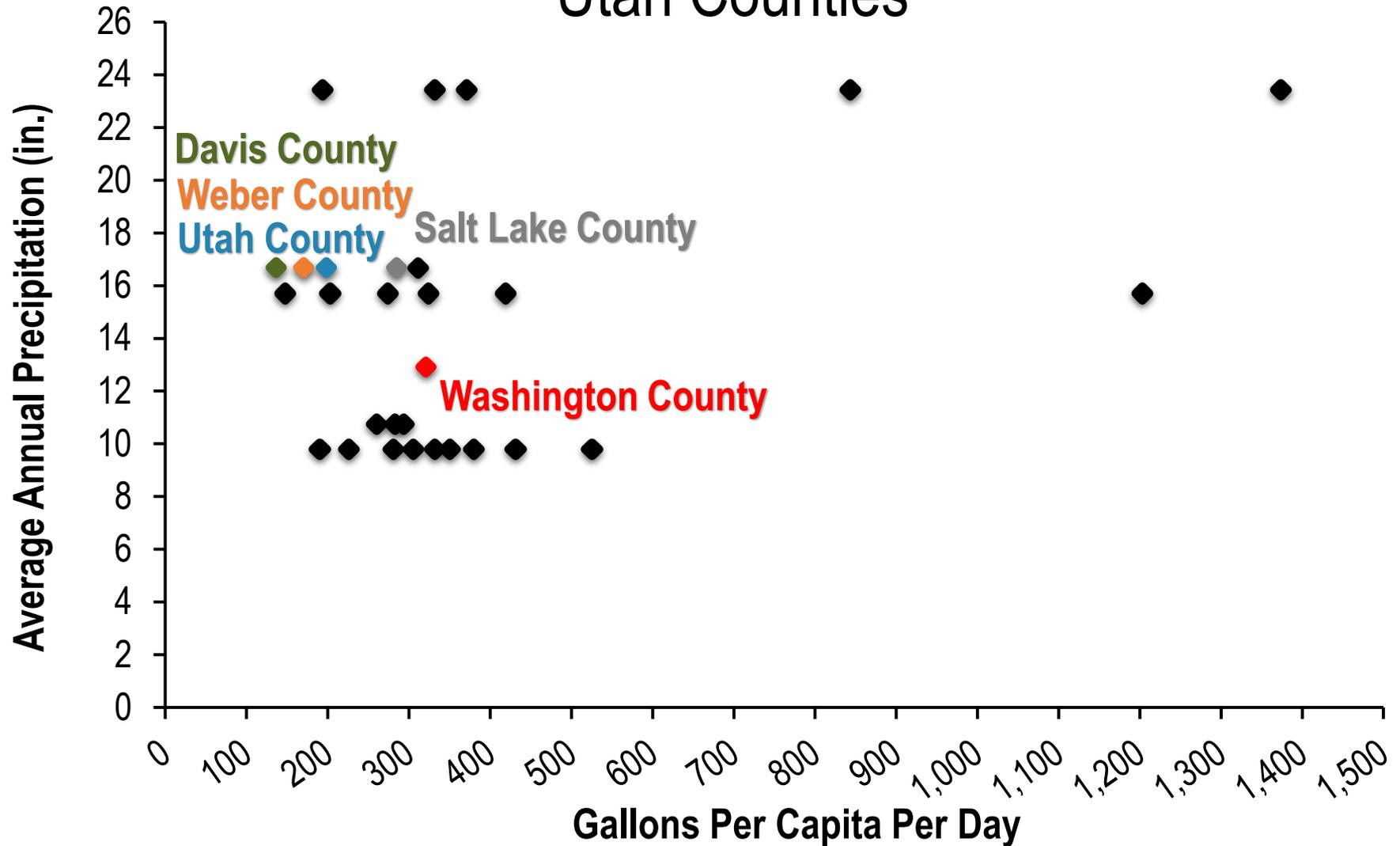
Intensity:



Estimated Population in Drought Areas: **58,709,382**

Water Consumption (Public Supply) vs. Precipitation

Utah Counties

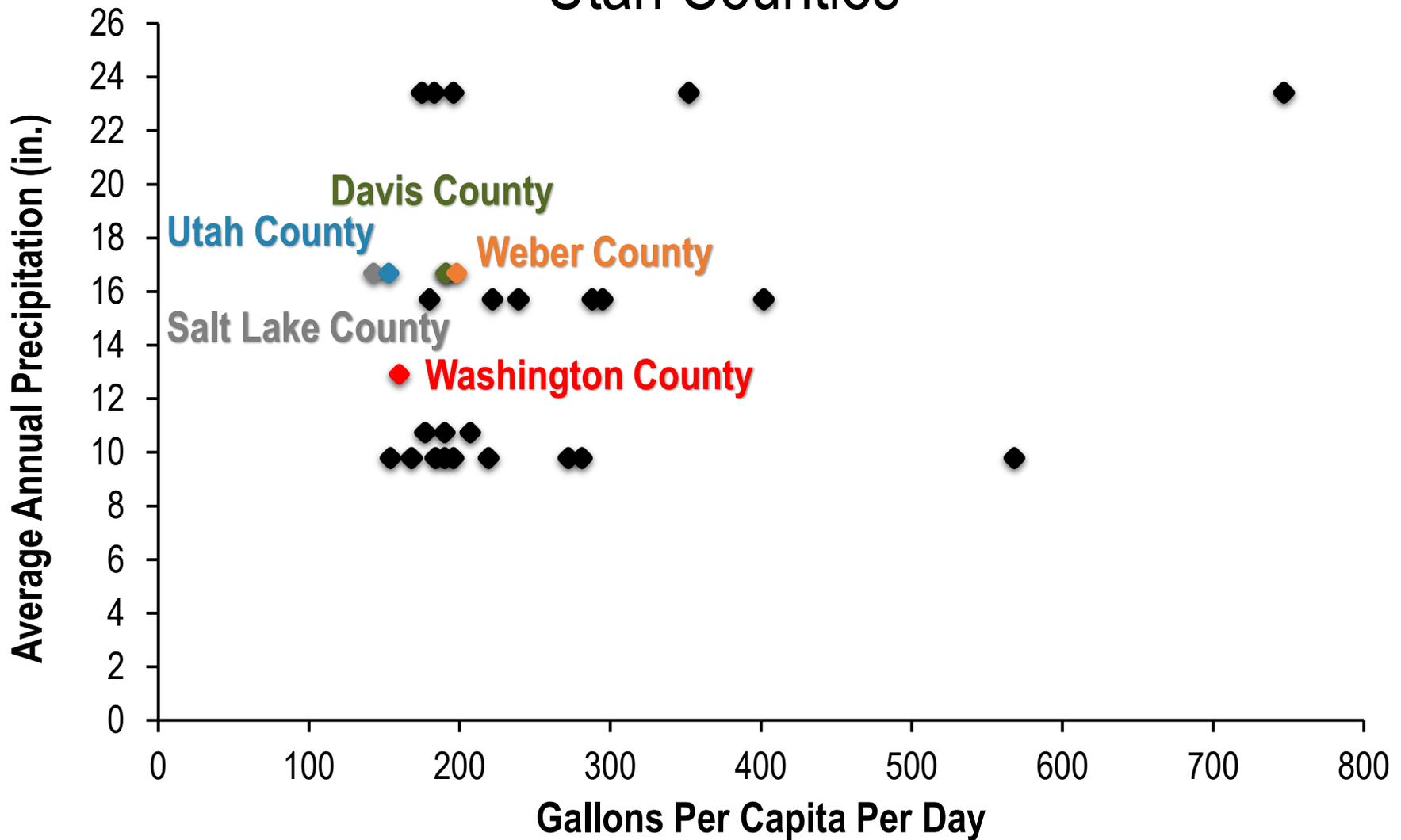


Source: USGS and NOAA's National Climatic Data Center

WHAT IS THE REAL VALUE OF WATER?

Water Consumption (Domestic Supply) vs. Precipitation

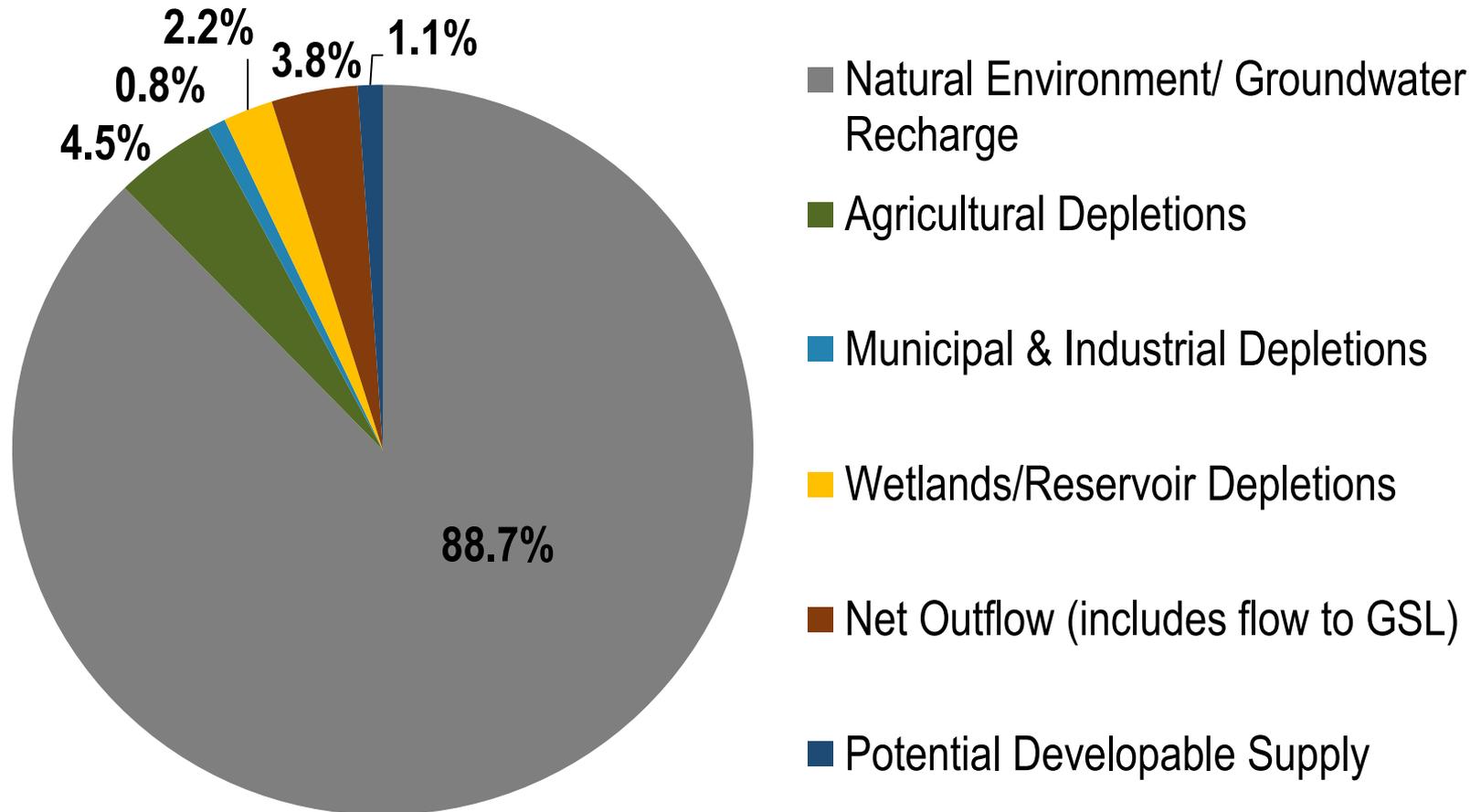
Utah Counties



Source: USGS and NOAA's National Climatic Data Center

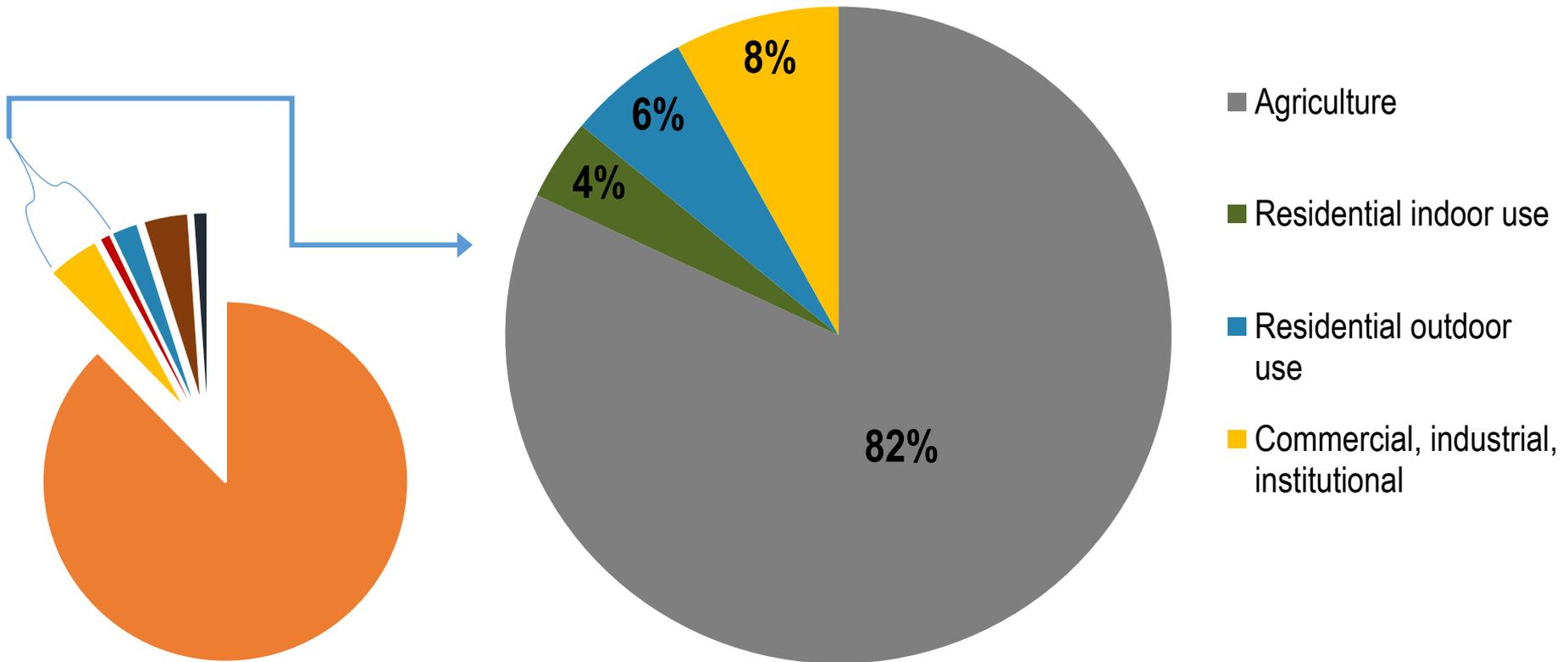
WHAT IS THE REAL VALUE OF WATER?

Major Uses of the State's Total Precipitation



Source: Utah Division of Water Resources

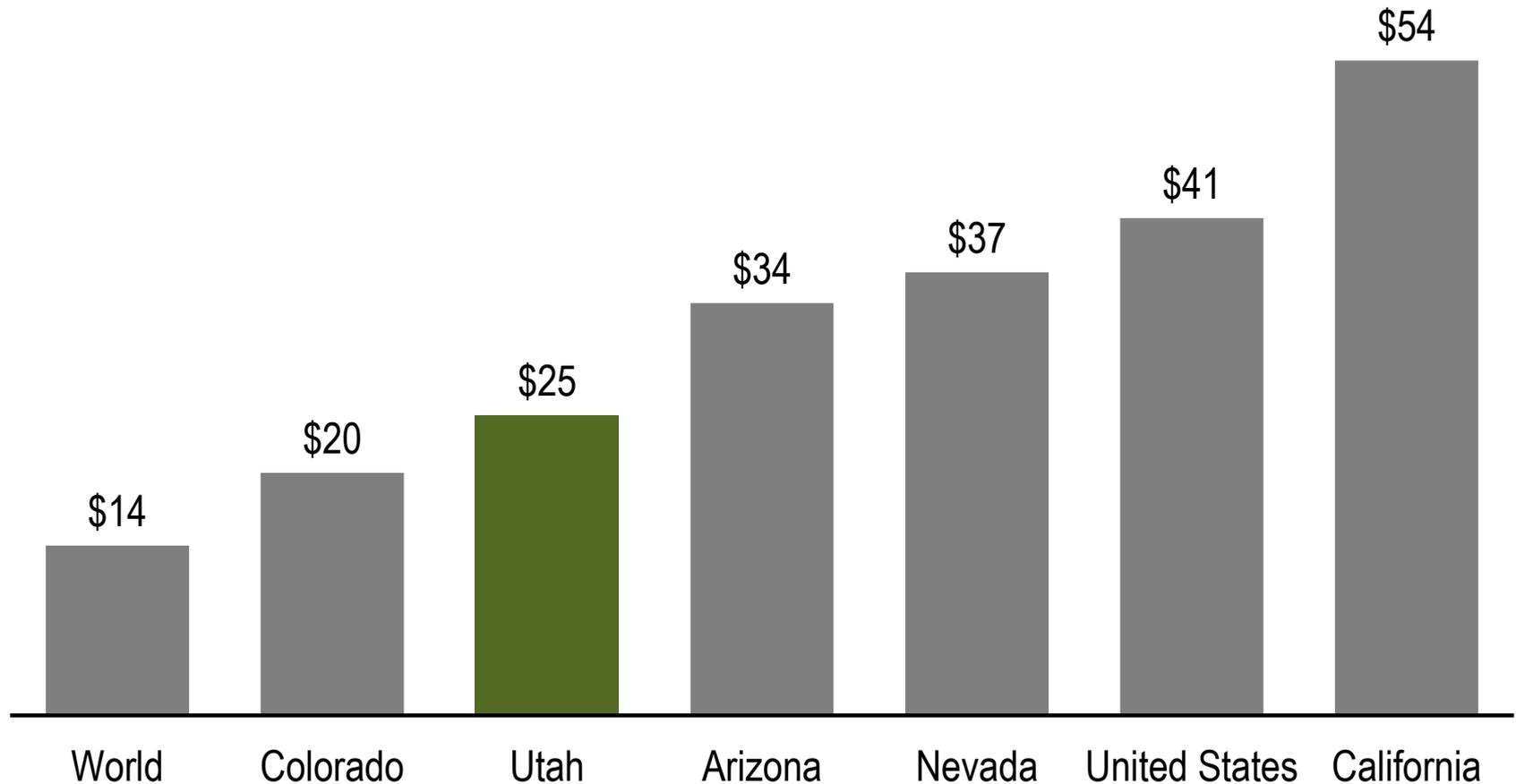
Use of Diverted Water



Source: Utah Division of Water Resources

Water Productivity

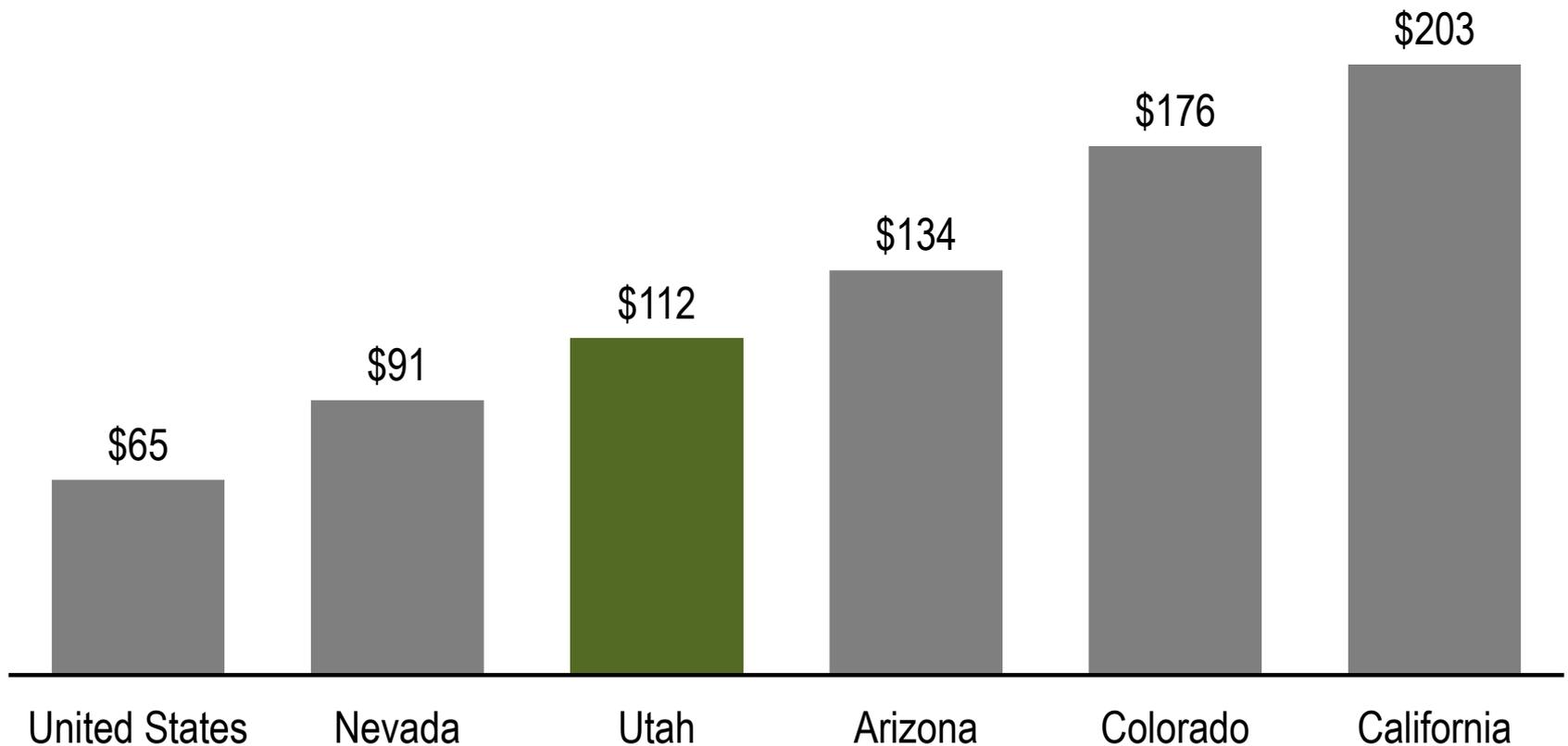
(in GDP Per Cubic Meter of Freshwater)



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

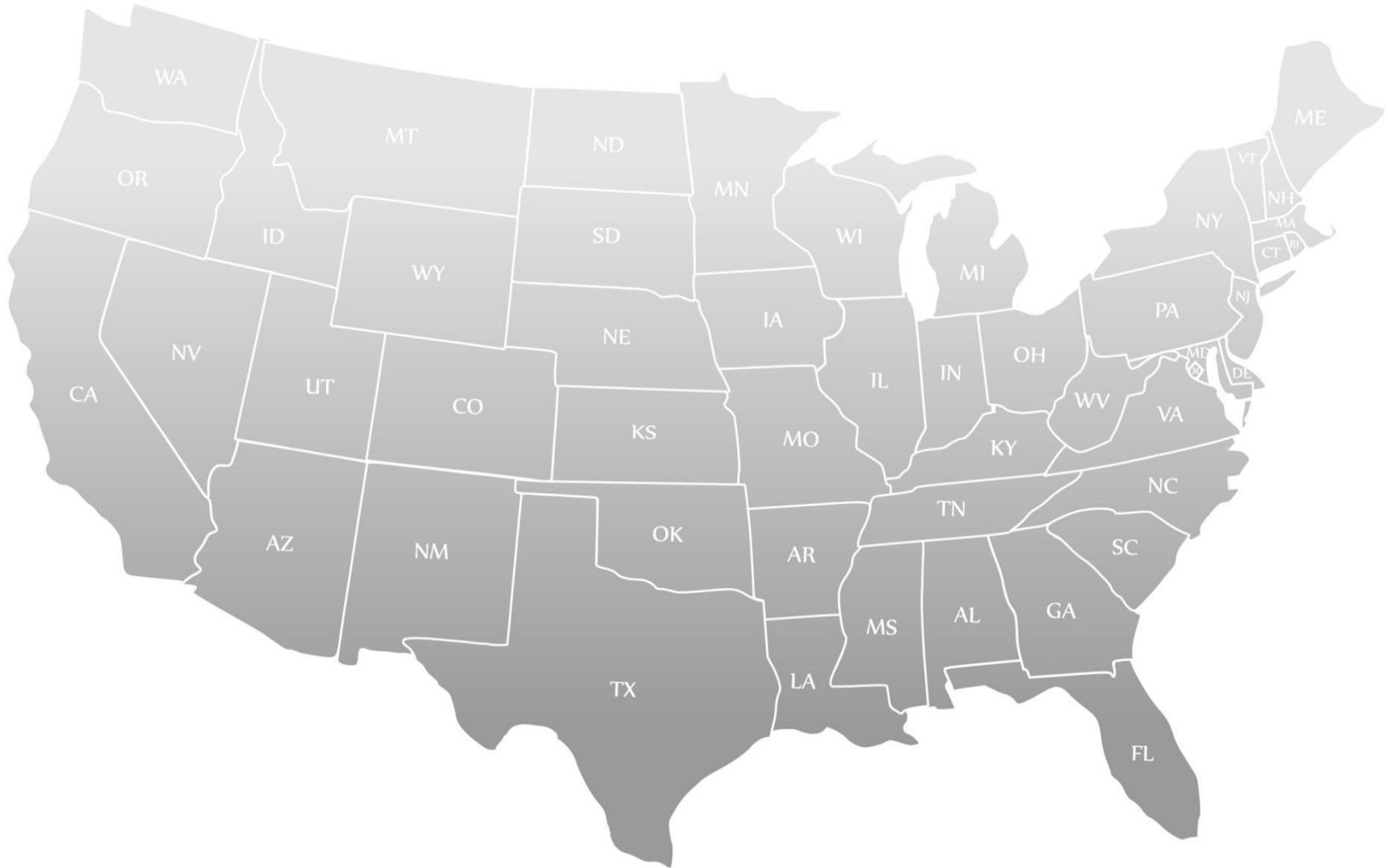
Water Productivity – Exc. Irrigation

(in GDP Per Cubic Meter of Freshwater)



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

Water Shortage Impacts

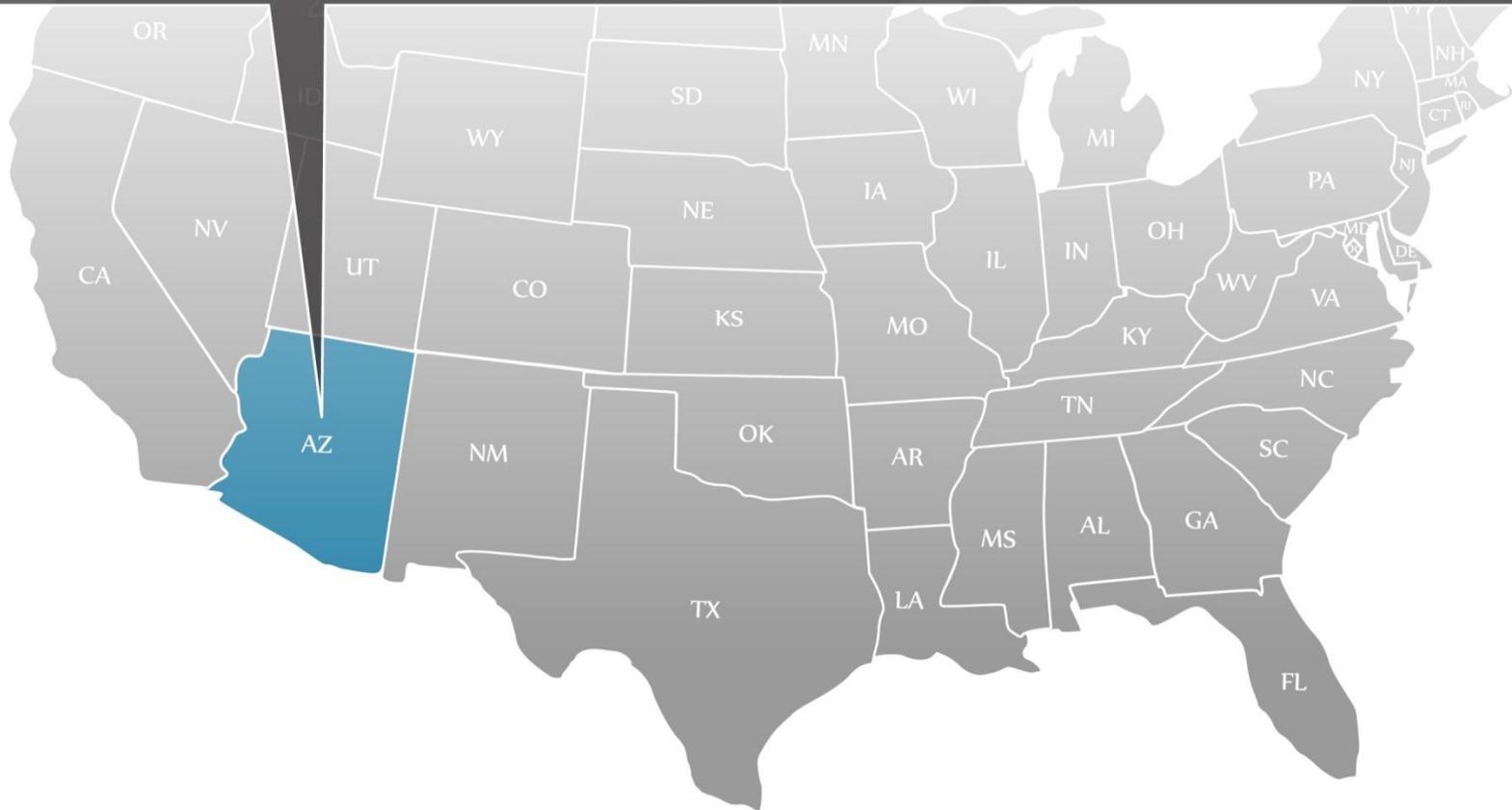


WHAT IS THE REAL VALUE OF WATER?

2010

ARIZONA

DROUGHT CAUSED LOW LEVELS
ALONG THE COLORADO RIVER

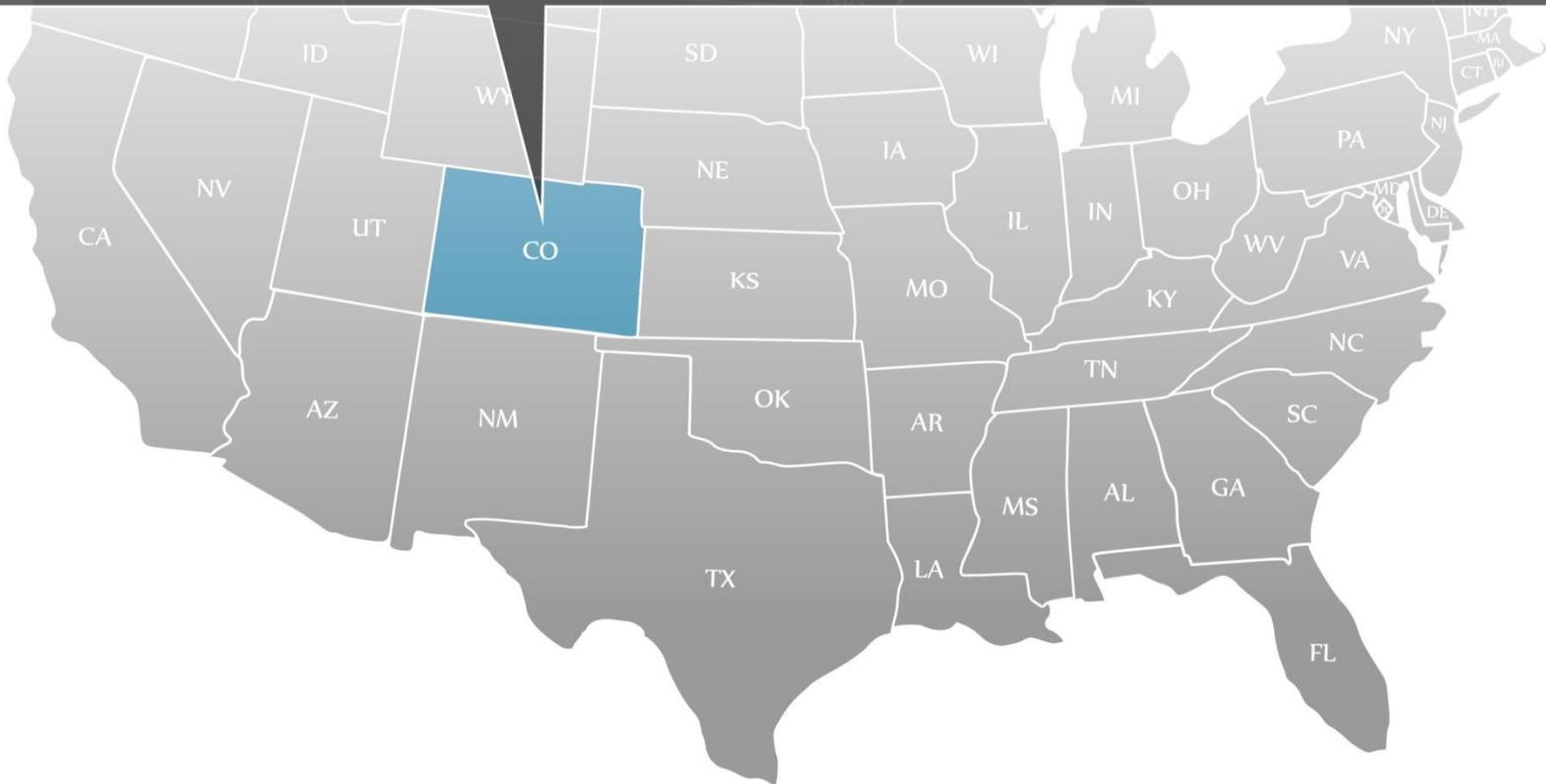
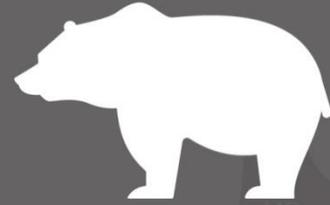


WHAT IS THE REAL VALUE OF WATER?

2011

COLORADO

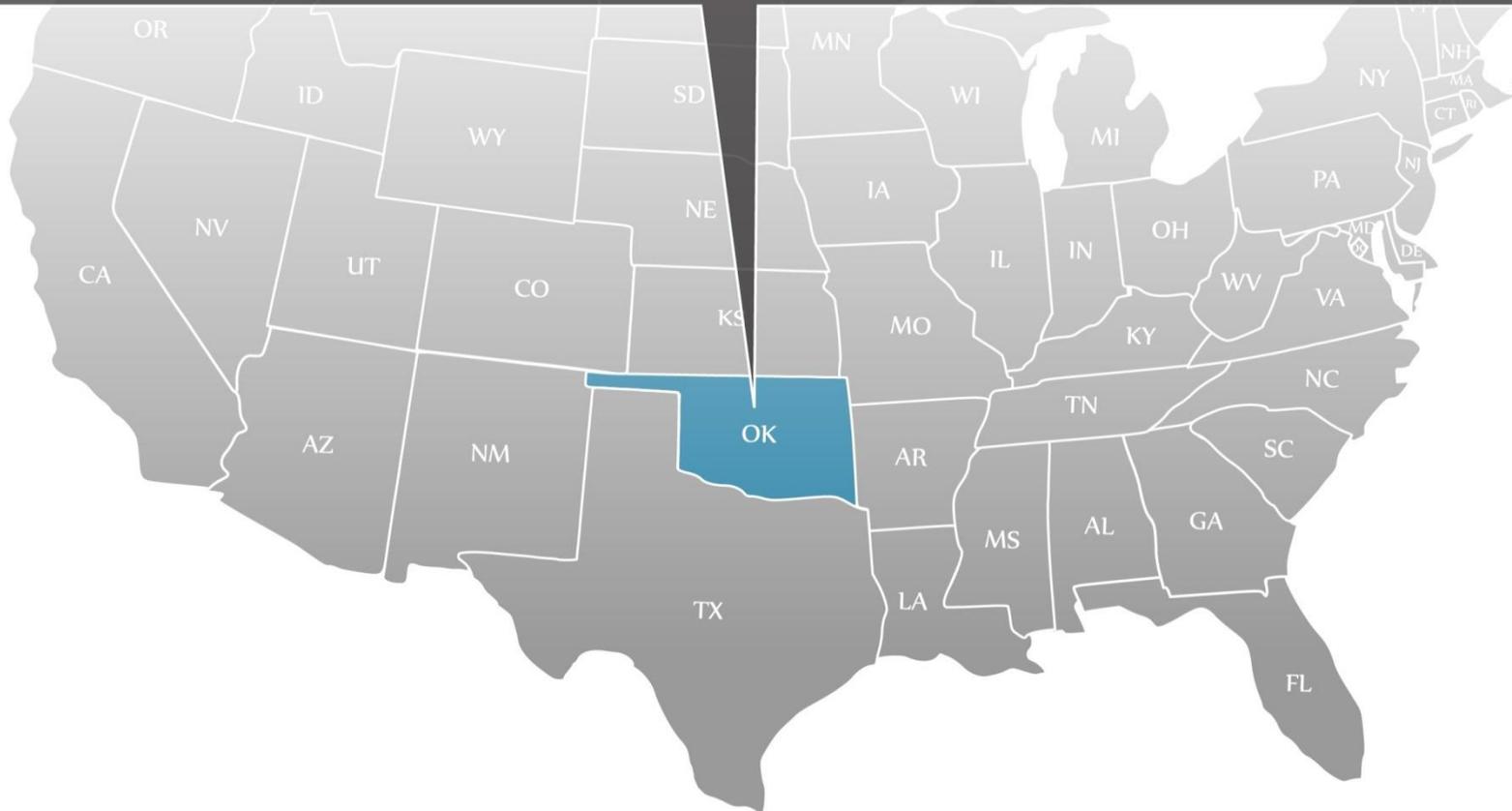
DROUGHT PLAGUED AGRICULTURAL PRODUCERS THROUGHOUT SOUTHERN COLORADO



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

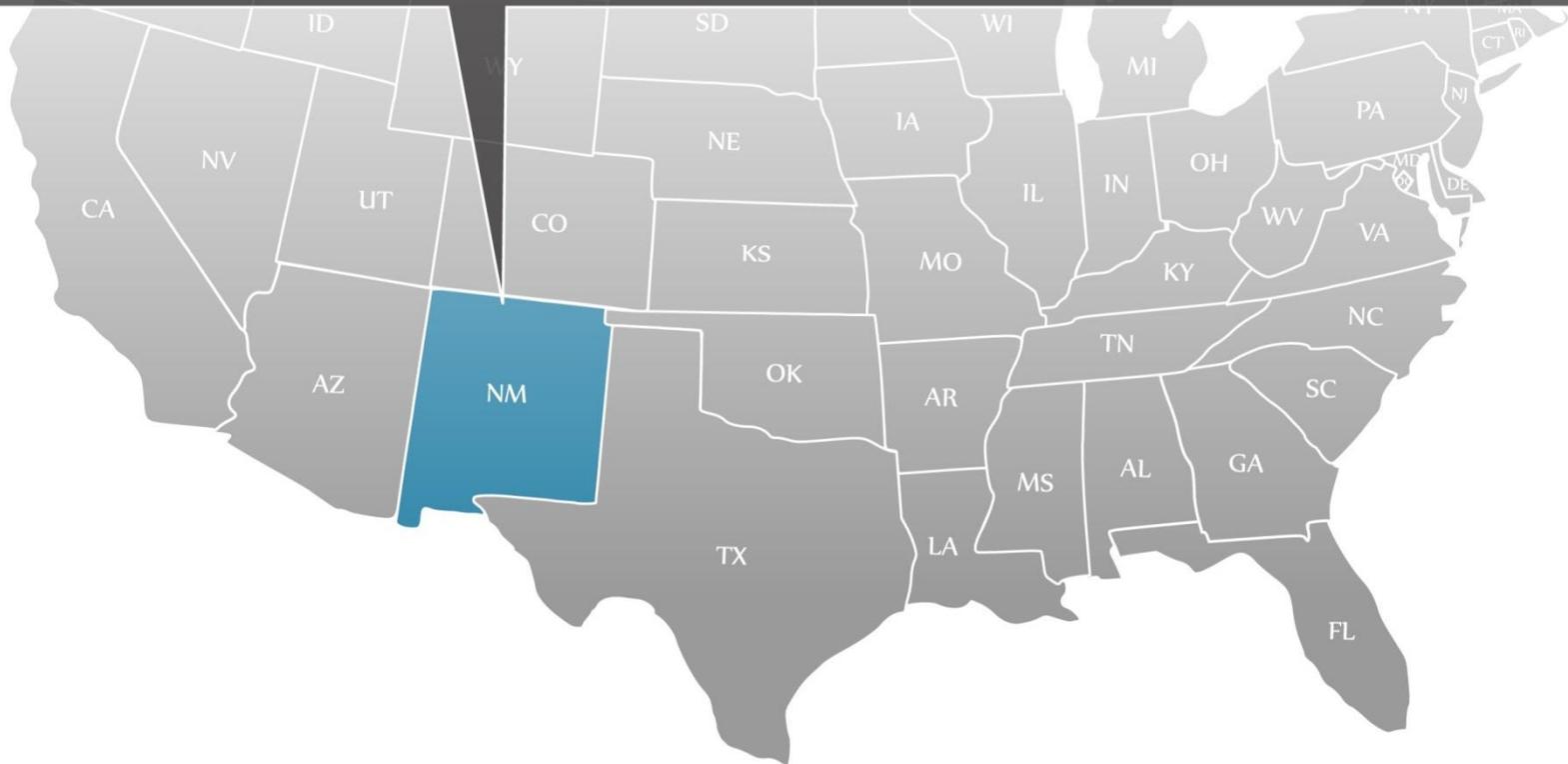


WHAT IS THE REAL VALUE OF WATER?

2011

LAS VEGAS, NEW MEXICO

AFTER EIGHT YEARS OF
WATER RESTRICTIONS,
AN EMERGENCY WAS
DECLARED

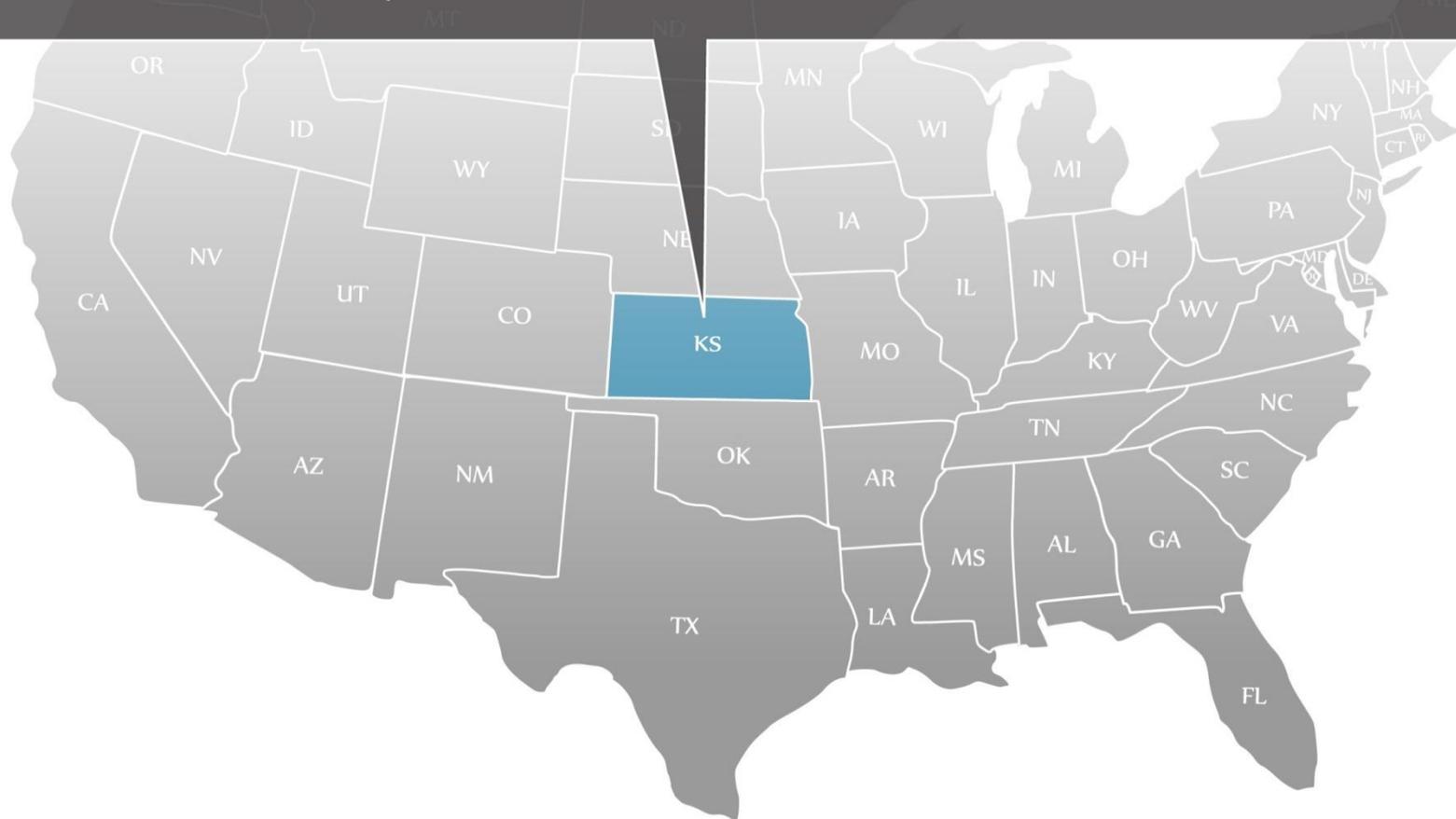
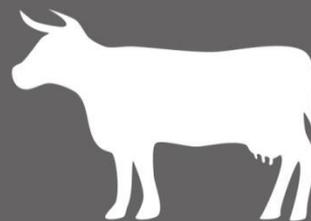


WHAT IS THE REAL VALUE OF WATER?

2012

KANSAS

CROPS WERE DESTROYED
DUE TO SEVERE DROUGHT

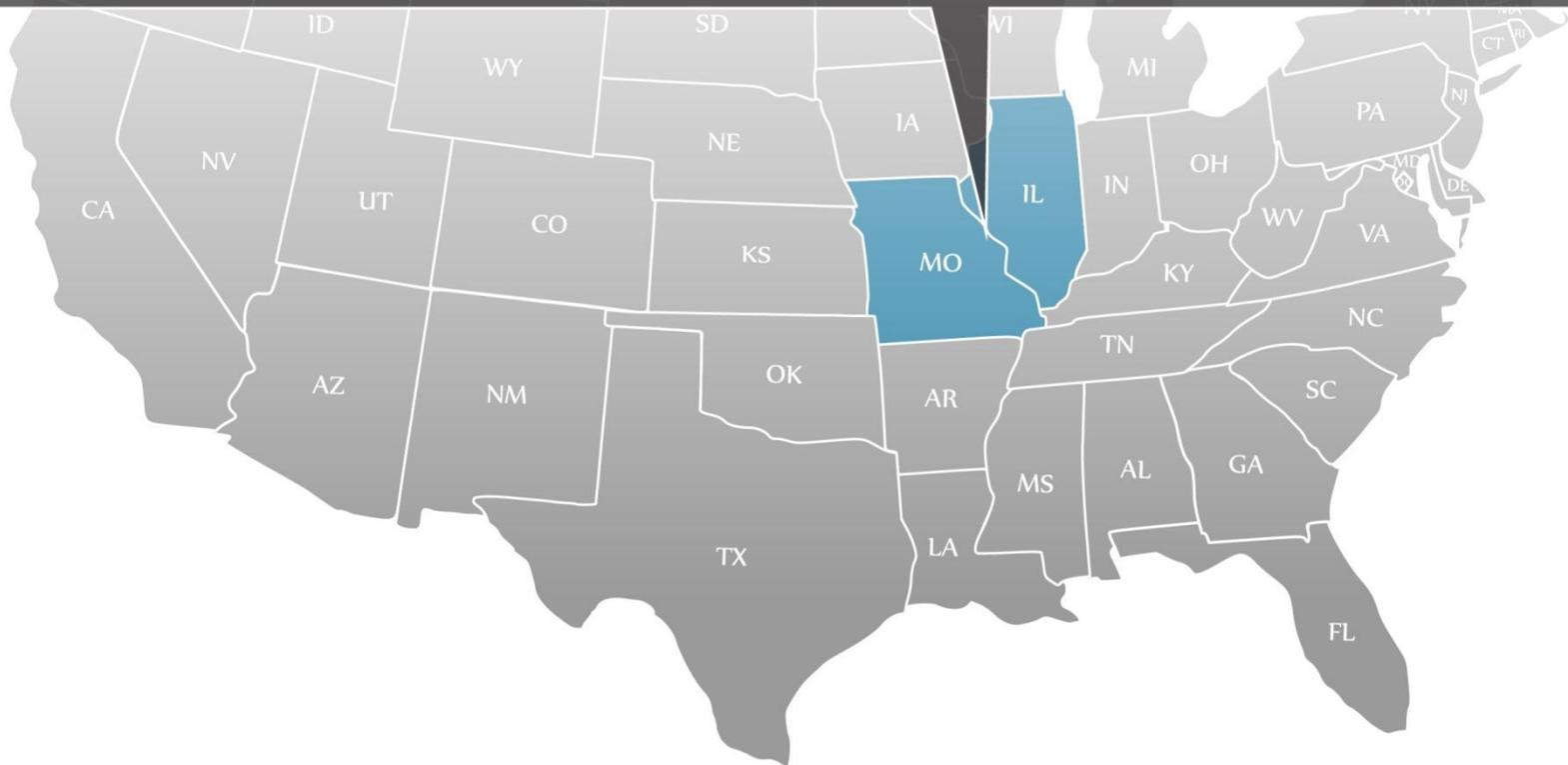


WHAT IS THE REAL VALUE OF WATER?

2013

MIDDLE MISSISSIPPI RIVER

THE MIDDLE MISSISSIPPI IS SUFFERING ITS WORST DROUGHT IN 50 YEARS

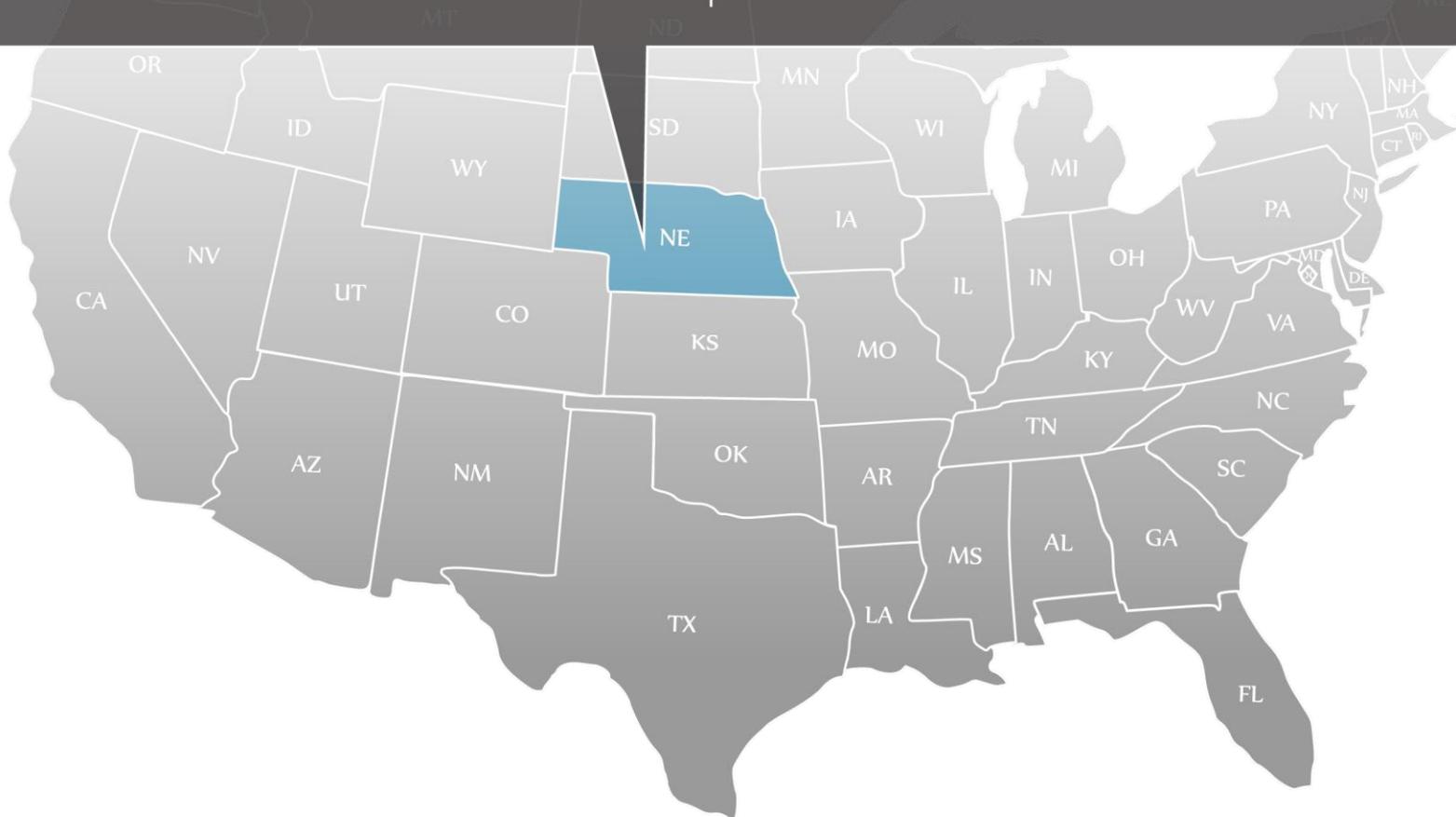
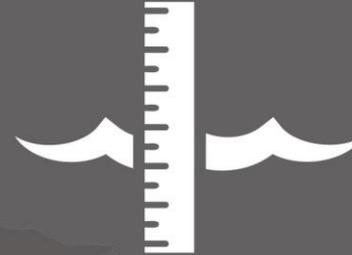


WHAT IS THE REAL VALUE OF WATER?

2013

NEBRASKA

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

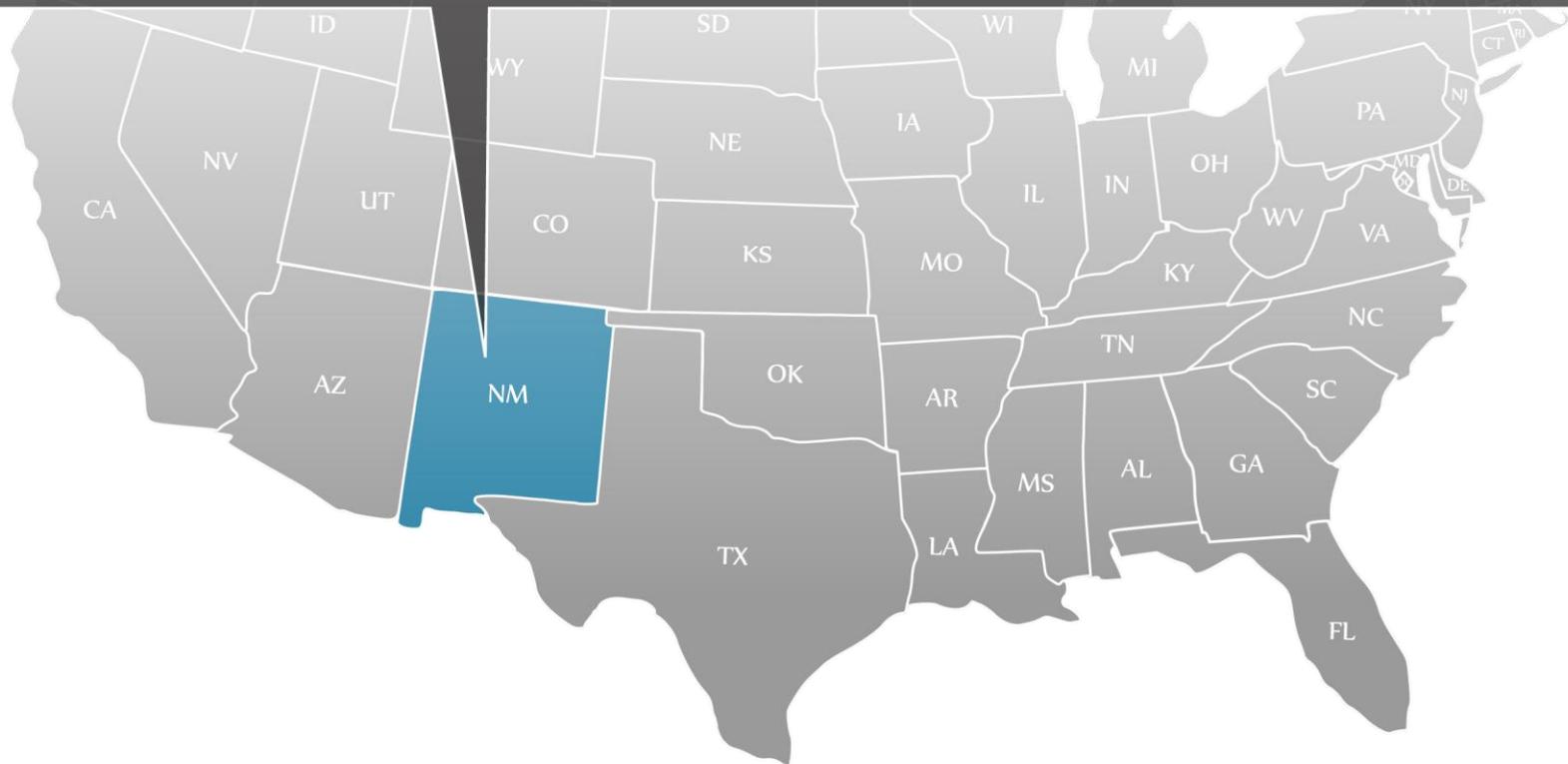
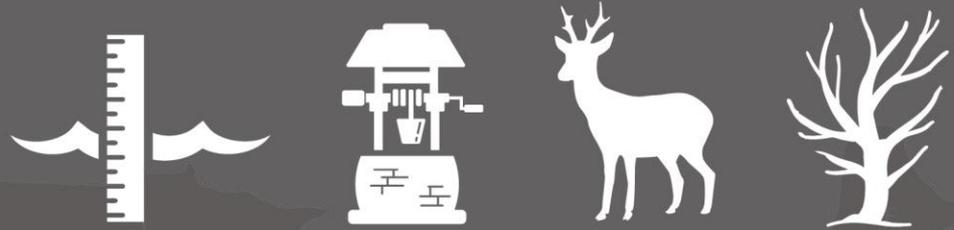


WHAT IS THE REAL VALUE OF WATER?

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.

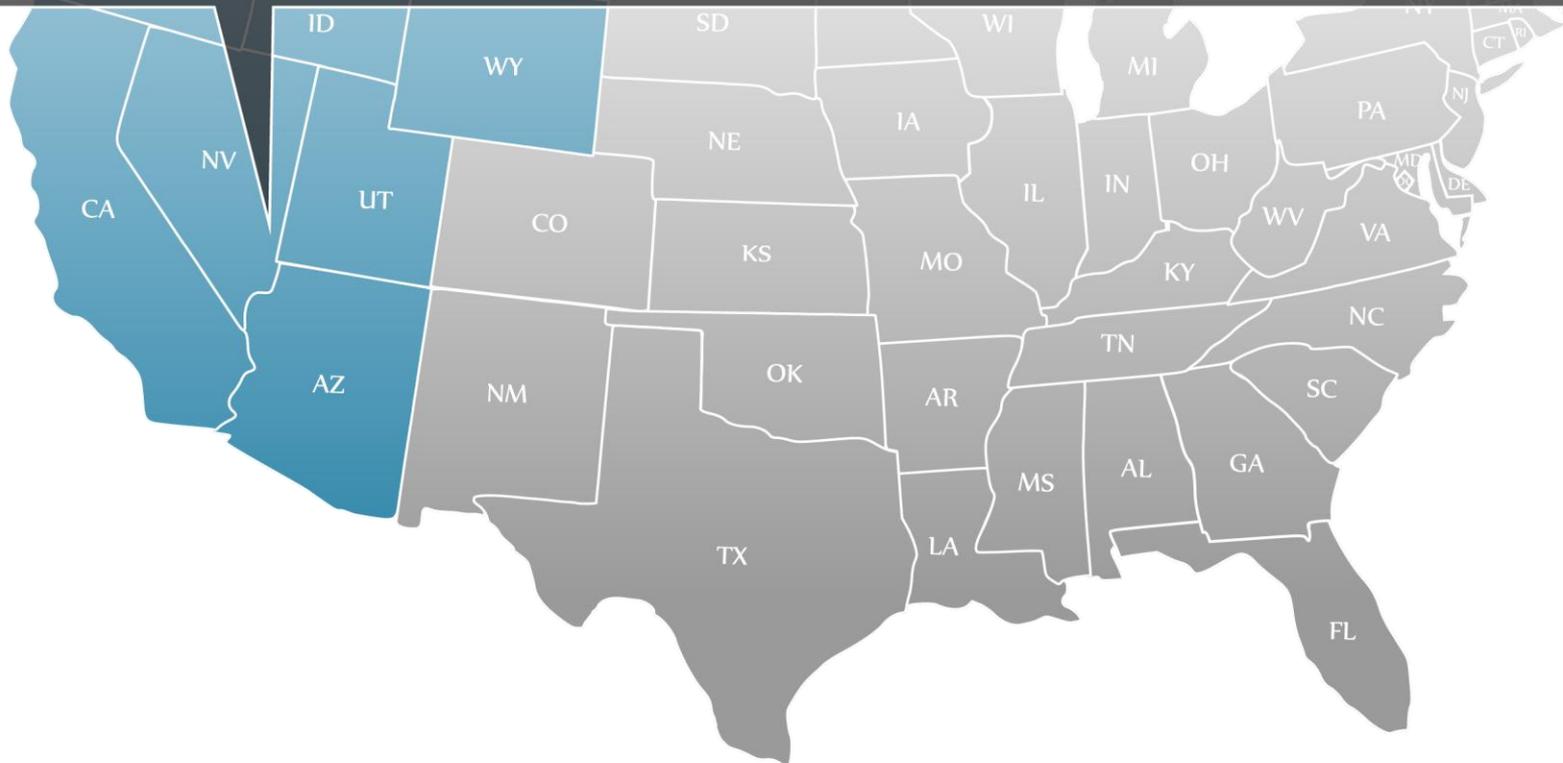


WHAT IS THE REAL VALUE OF WATER?

2013

WESTERN U.S.

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



WHAT IS THE REAL VALUE OF WATER?

2014

TEXAS

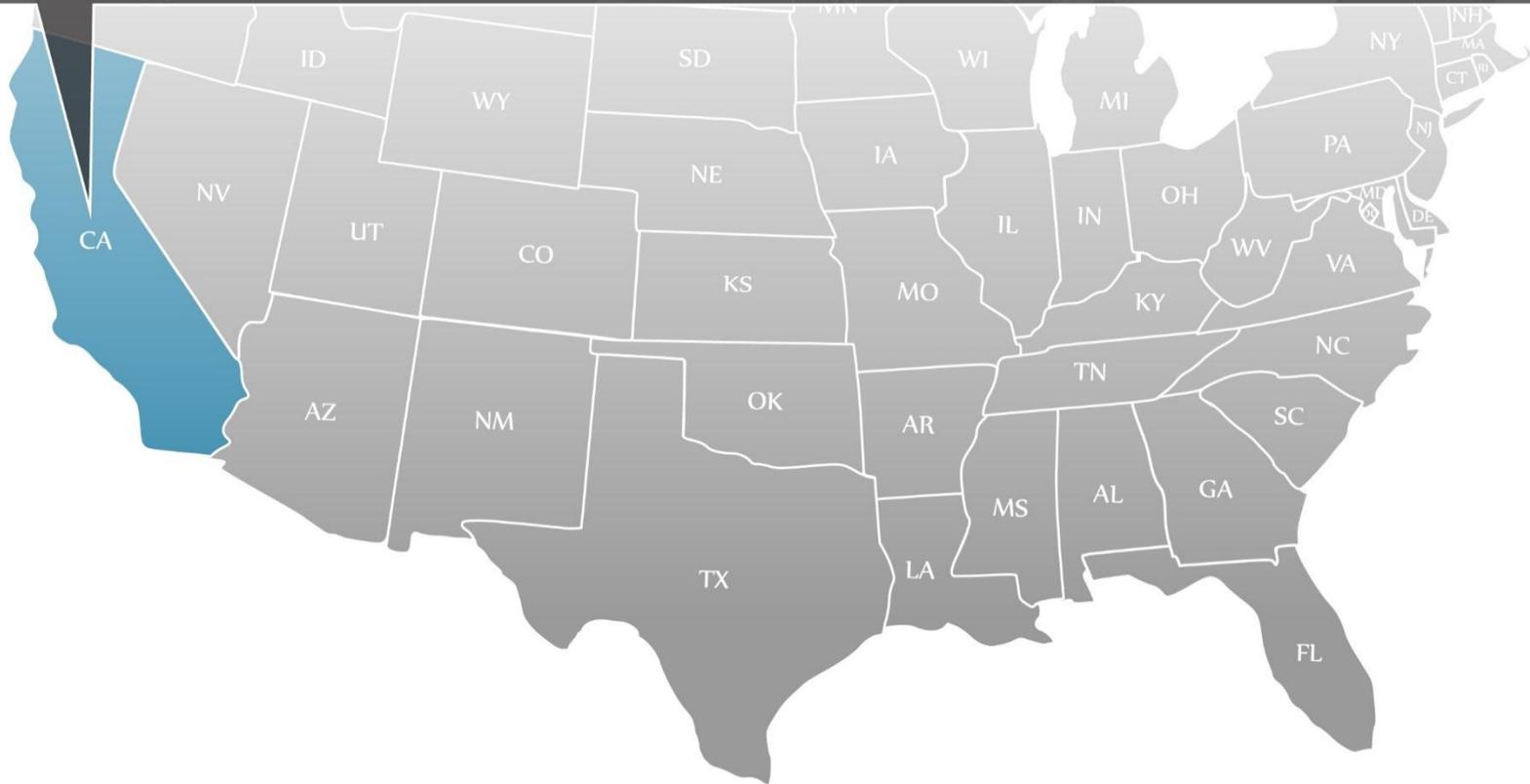
TEXAS FACING UNQUENCHABLE WATER DEMAND DUE TO CYCLICAL DROUGHT ALONG POPULATION AND ECONOMIC GROWTH.



WHAT IS THE REAL VALUE OF WATER?

2015
CALIFORNIA

CALIFORNIA ENTERS ITS
FOURTH YEAR OF SEVERE
DROUGHT



WHAT IS THE REAL VALUE OF WATER?

Sierra Nevada's "Snow Fail"

"This year's snowpack is the driest it has been in at least 500 years, according to new research that examined cores from the long-lived oaks to calculate the water content of each year's snowpack and found no other year was even close to as dry as 2015."



An Epic, 500-Year Snow Fail in California's Iconic Mountains

The Sierra Nevada's snowpack is at a 500-year low. No wonder why skiers, hikers, farmers, forests, and virtually every other living thing in California are feeling the effects.

The Sierra Nevada, which John Muir called the Range of Light, stretches 400 miles long, encompassing the highest peak (Mount Whitney) and largest alpine lake (Lake Tahoe) in the contiguous United States, as well as Yosemite National Park and other world-renowned landmarks. New research says the Sierra snowpack, vital to water and recreation in California, reached a 500-year low this year. This photo was shot in March, 2014.

PHOTOGRAPH BY PETER ESBICK, NATIONAL GEOGRAPHIC CREATIVE

By Cheryl Katz, National Geographic
PUBLISHED SEPTEMBER 14, 2015

From frustrated snowboarders to migrating birds arriving at shriveled wetlands to wildfires raging through national parks, the Sierra Nevada's lack of snow has transformed just about every aspect of life in California. Farmers, fish, forests, gardeners, hikers, boaters, and more depend on Sierra snow for water.

But now it's clear that the "snow fail" in the 400-mile long mountain range has reached epic proportions: This year's snowpack is the driest it's been in at least 500 years, according to new research published Monday.



NATIONAL GEOGRAPHIC AIR NEW ZEALAND

Source: National Geographic, Online Edition 9/14/2015

WHAT IS THE REAL VALUE OF WATER?

WATER RESOURCE STABILITY



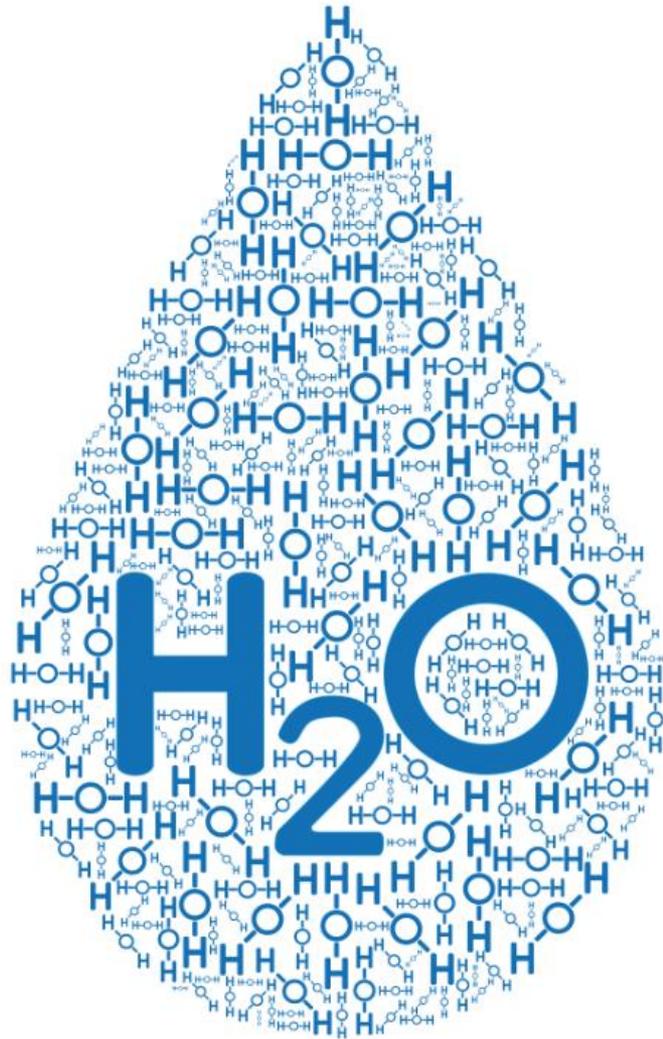
WHAT IS THE REAL VALUE OF WATER?



FACT:

Utah is one of the driest states in the nation and currently consumes 253 billion gallons of water each year.

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



CONSIDER:

With the state's population expected to grow by another 2.9 million people by 2060, the state will need to be able to deliver an additional 244 billion gallons of water.

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

Future Water Demand In Billions of Gallons



253

**CURRENT
CONSUMPTION**



484

**DEMAND
BY 2060**



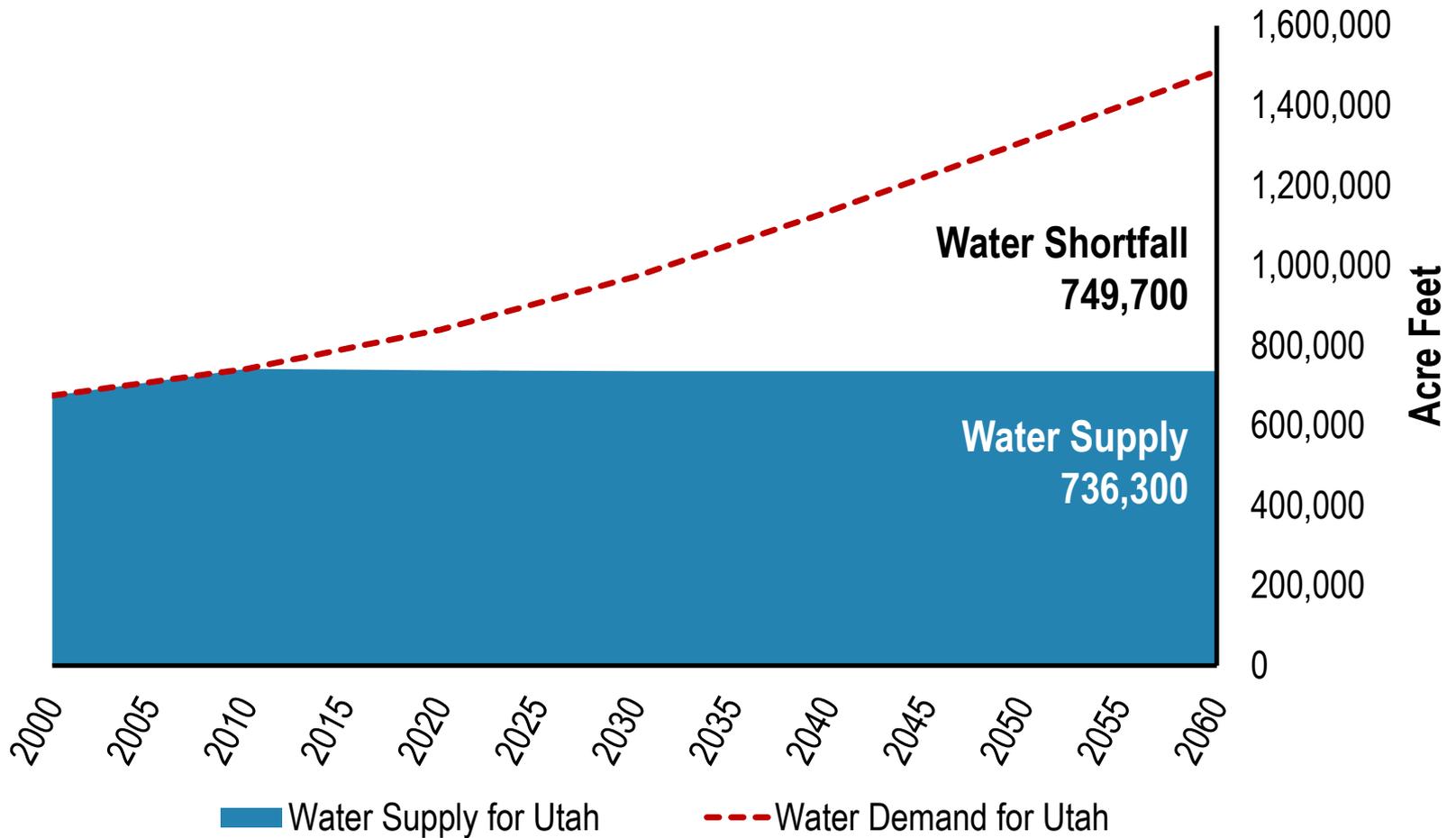
244

**INCREMENTAL
WATER REQUIRED**

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

Forecasted Water Shortfall

2000 - 2060



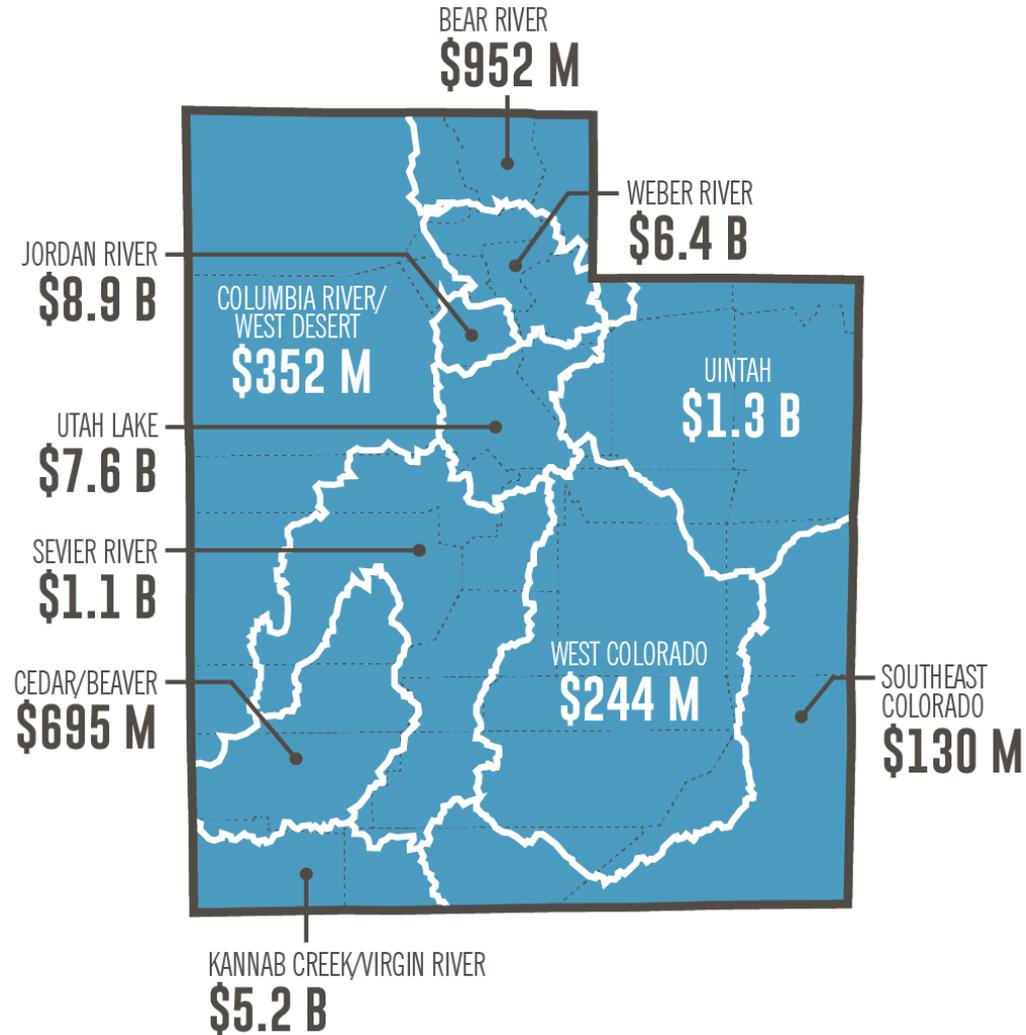
Source: The Utah Governor's Office of Planning and Budget and Applied Analysis

Required Water Resource Investment

\$14.7 Billion
New Resource Development

\$17.9 Billion
Repair and Replacement

\$32.7 Billion
Required Investment



Note: Totals may not sum due to rounding.

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

WHAT IS THE REAL VALUE OF WATER?

Utah's Economic Potential

Potential With Comprehensive Water Resource Development and Conservation in 2060

	Current Values <i>(253 BILLION GALLONS)</i>	Potential in 2060 <i>(WITH ONLY EXISTING WATER RESOURCES)</i>	Conservative Scenario <i>(10% CONSERVATION)</i>	Mid-Case Scenario <i>(25% CONSERVATION)</i>	Aggressive Scenario <i>(35% CONSERVATION)</i>
Gross State Product	\$136 Billion	\$202 Billion	\$355 Billion	\$407 Billion	\$492 Billion
Population	3.1 Million	3.3 Million	5.2 Million	6.0 Million	7.2 Million
Households	701,281	1,039,745	1,830,279	2,098,412	2,534,233
Personal Income	\$112.1 Billion	\$166.1 Billion	\$292.3 Billion	\$355.1 Billion	\$404.7 Billion
Private Businesses	86,402	128,102	225,501	258,536	312,233
Employment	1.4 Million	2.1 Million	3.7 Million	4.2 Million	5.1 Million
Visitation	11.3 Million	16.3 Million	28.7 Million	32.9 Million	39.8 Million

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

WHAT IS THE REAL VALUE OF WATER?

Mid-Case Scenario (25% Conservation)

\$6.27 : \$1
GROSS PRODUCT

- Growth in Utah's Total Economic Output for Every \$1 Spent on Water Infrastructure

\$5.17 : \$1
PERSONAL INCOME

- Growth in Utah's Personal Income for Every \$1 Spent on Water Infrastructure

\$15,472
COST PER JOB

- Estimated Cost per Permanent Job Created by Additional Water Supply

\$0.41 : \$1
STATE TAXES

- State and Local Tax Collections For Every \$1 Spent on Water Infrastructure

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

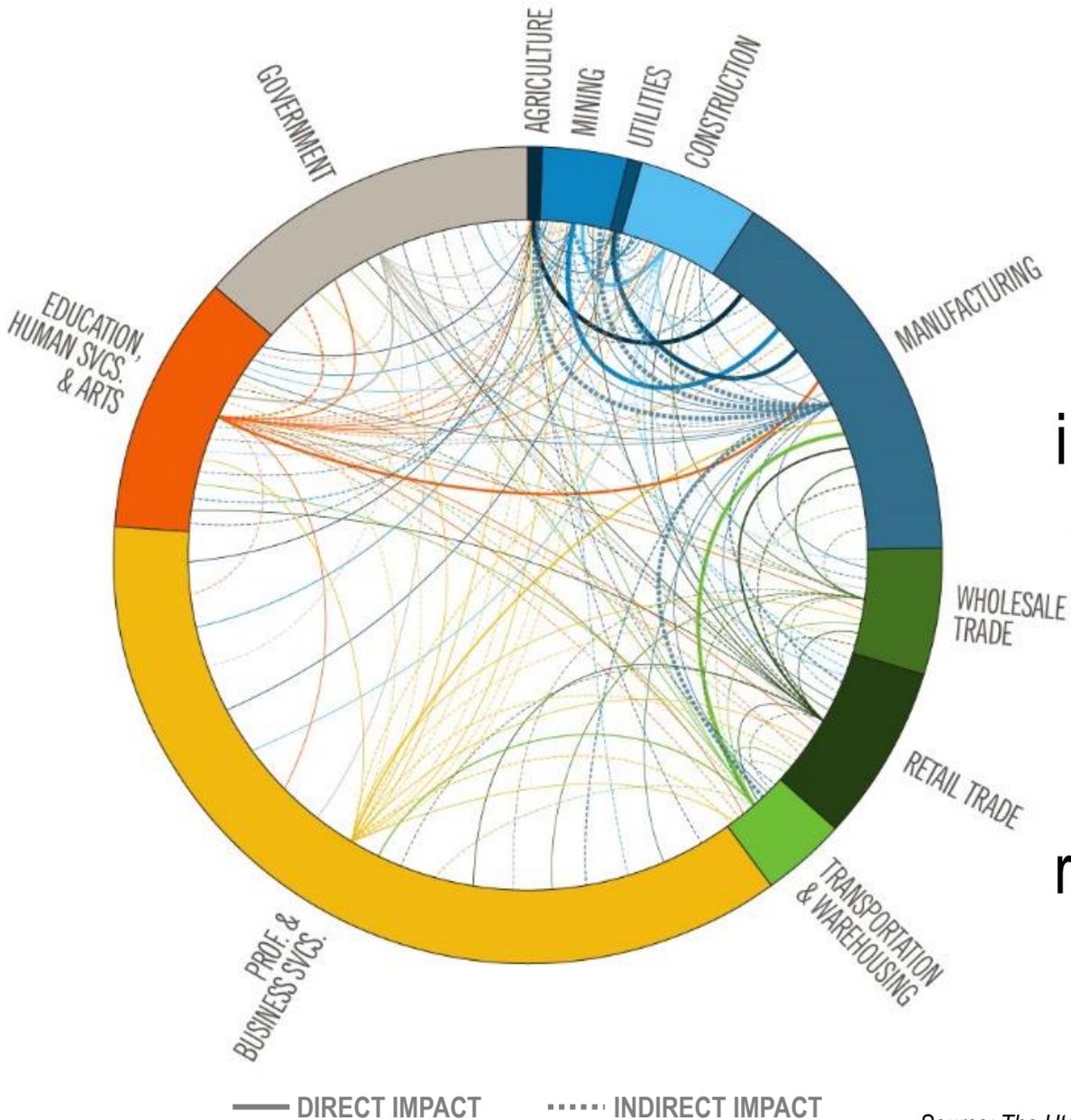
One-Time Construction Benefits (Mid-Case Scenario)

One-time benefits to the state from implementing a \$32.7 billion statewide water resource stability master plan will create jobs for Utah families, and stimulate economic activity statewide by relying on in-state vendors for materials, goods and services.

	Person Years of Employment (Thousands)	Labor Income	Output	Additional State Tax
Direct	194	\$12.5B	\$32.7B	\$547M
Indirect	103	\$4.9B	\$16.6B	\$812M
Induced	118	\$4.7B	\$15.3B	\$795M
TOTAL	415	\$22.1B	\$64.5B	\$2.1B

Note: Totals may not sum due to rounding.

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



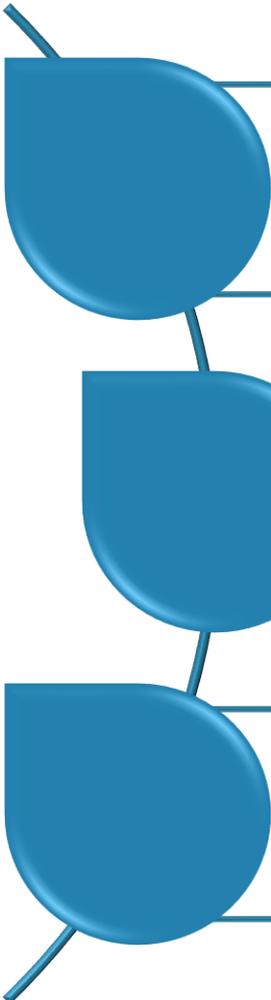
Utah's \$136 billion economy is remarkably complex and interwoven. The outputs of one industry become the inputs of another. Water resource instability in one sector runs the very real risk of destabilizing others.

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

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 state's economy.

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

WHAT IS THE REAL VALUE OF WATER?



Presented by Jeremy Aguero

September 17, 2015

Utah League of Cities and Towns

