

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



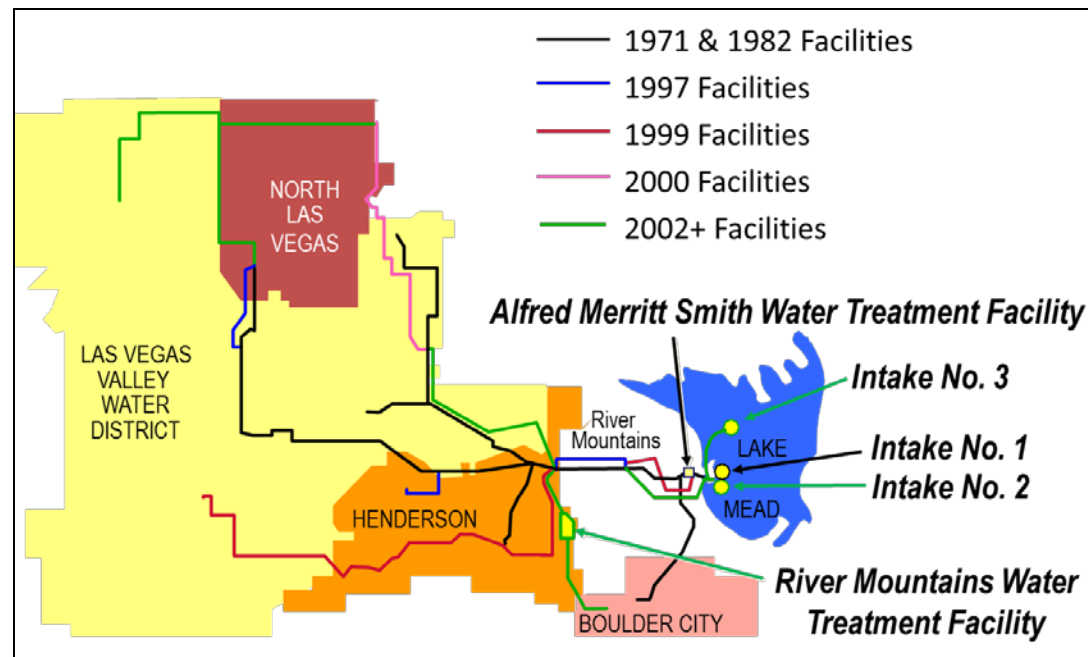
A Path Towards a “Climate Smart” Water Utility

Keely Brooks
Climate Change Policy Analyst
October 10, 2014



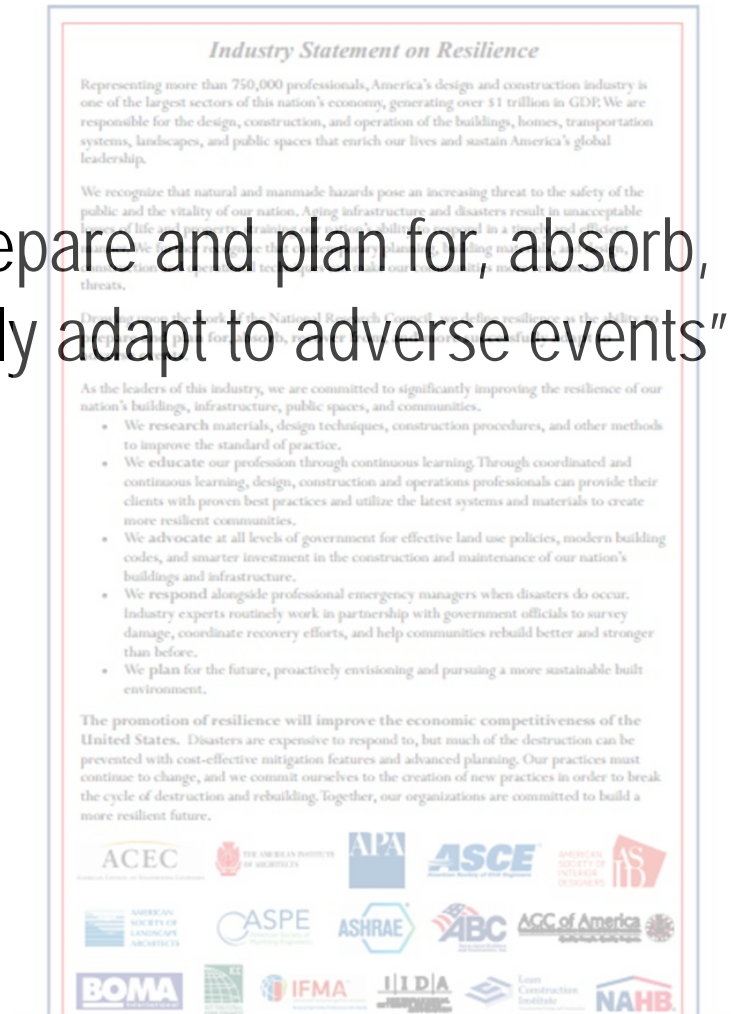
SNWA BASICS

- Seven member agencies
- 90% of supply from Colorado River
- Withdrawal from Lake Mead
- Critical Intakes in Lake Mead



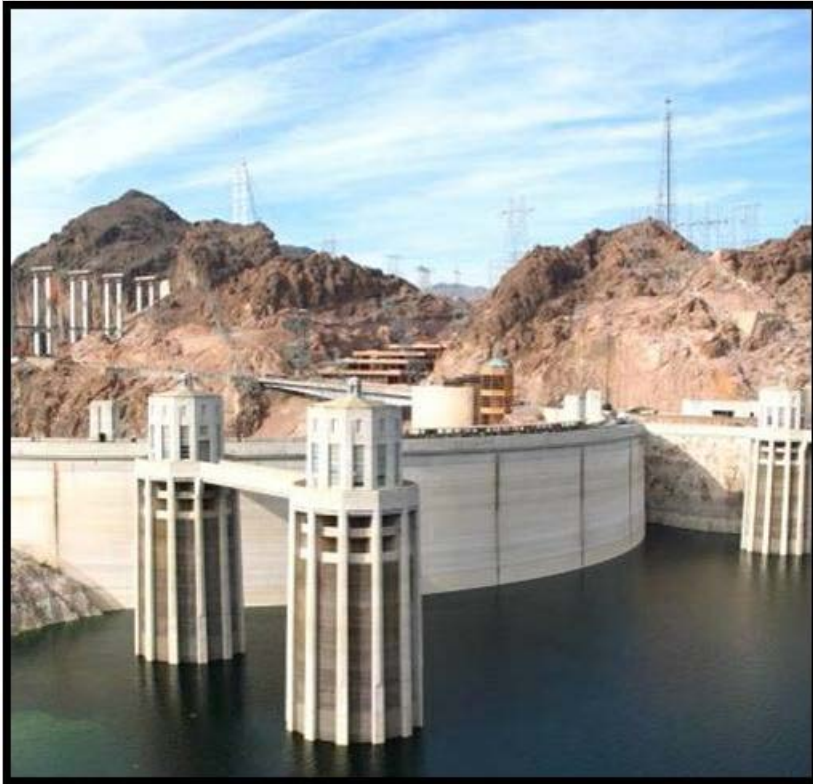
Resilience – Climate or otherwise

“the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events”



...bouncing forward

CLIMATE IMPACTS ARE HAPPENING TODAY



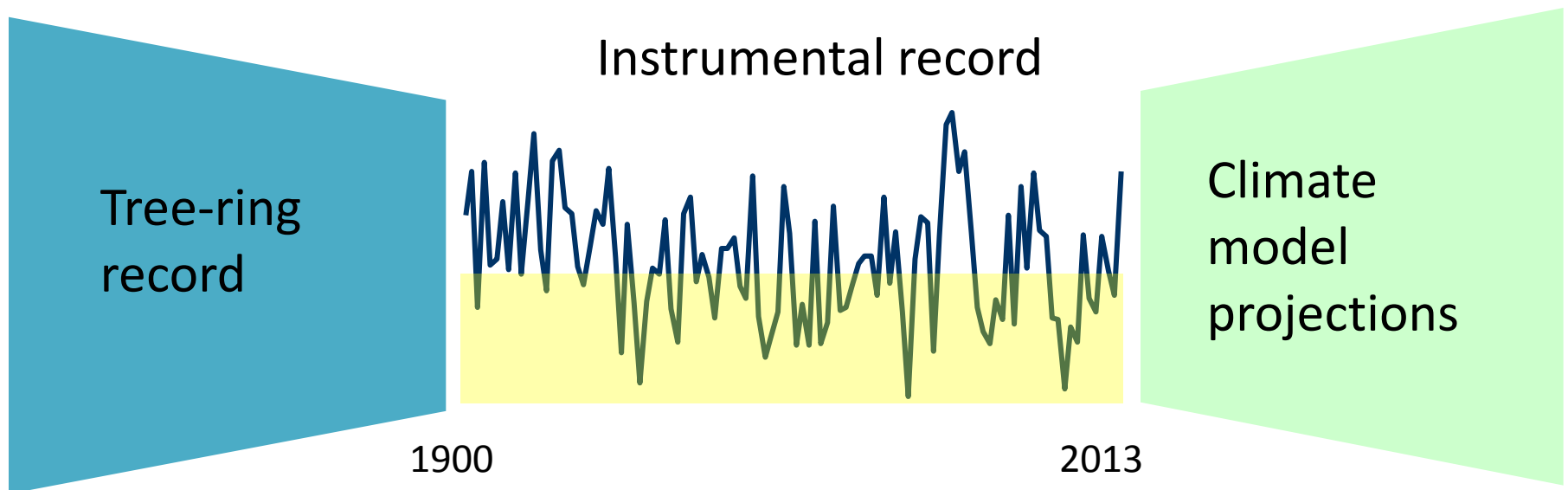
Hoover Dam, Lake Mead

2014

The Colorado River Basin is in a severe drought.

Lake Mead is at its lowest elevation since the reservoir was filled in the 1930s.

Understand and Assess risk

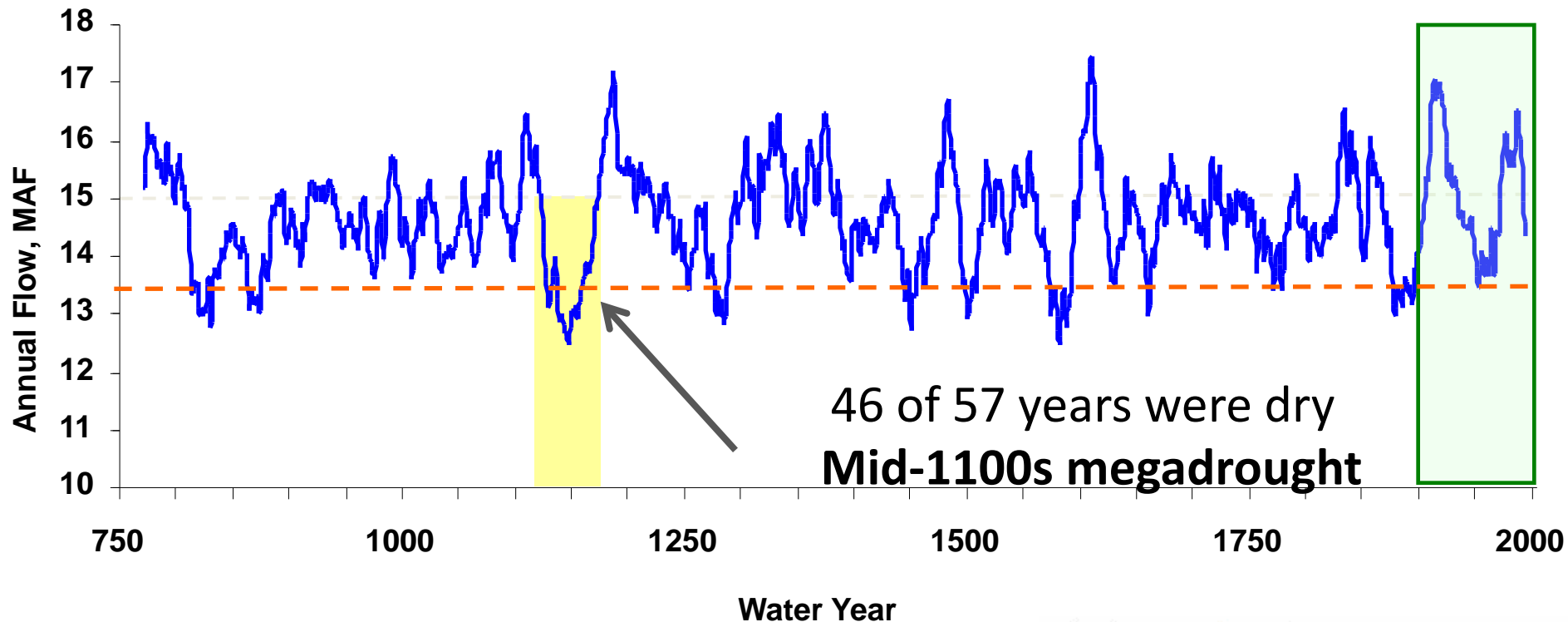


Need to look back and forwards to assess future drought risk

TREE RING RECORD – IT COULD GET WORSE

Tree-ring reconstructed annual flows, Colorado River at Lees Ferry, 762-2005, with **20-year** running mean

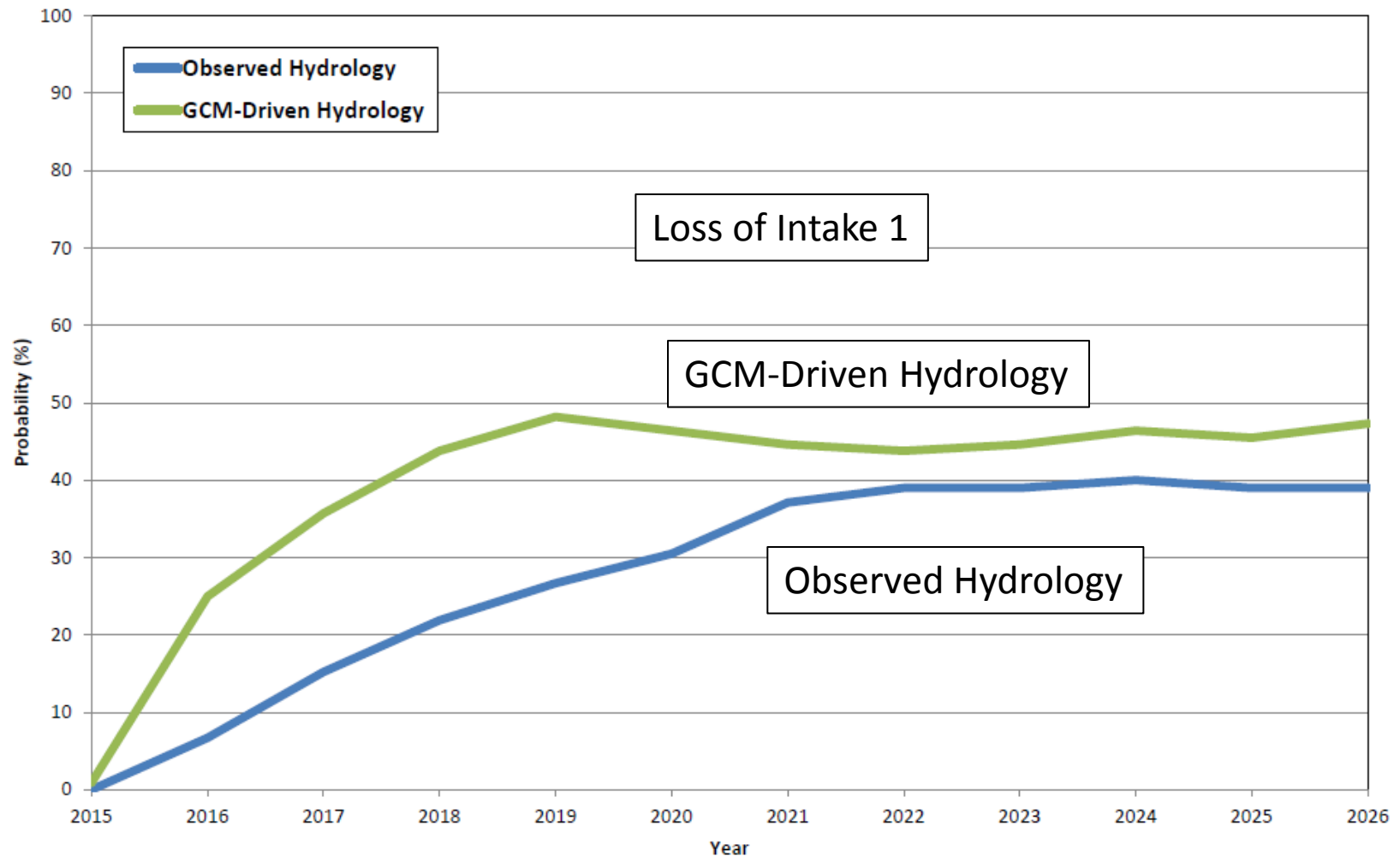
Instrumental
record



Source: Jeff Lukas, Western Water Assessment

Plan for Multiple Uncertain Futures

Probability Mead < 1050' at least once in a Certain Year



Projected using April, 2014 CRSS

What We Are Doing – Adaptation

**Reducing
Demands**

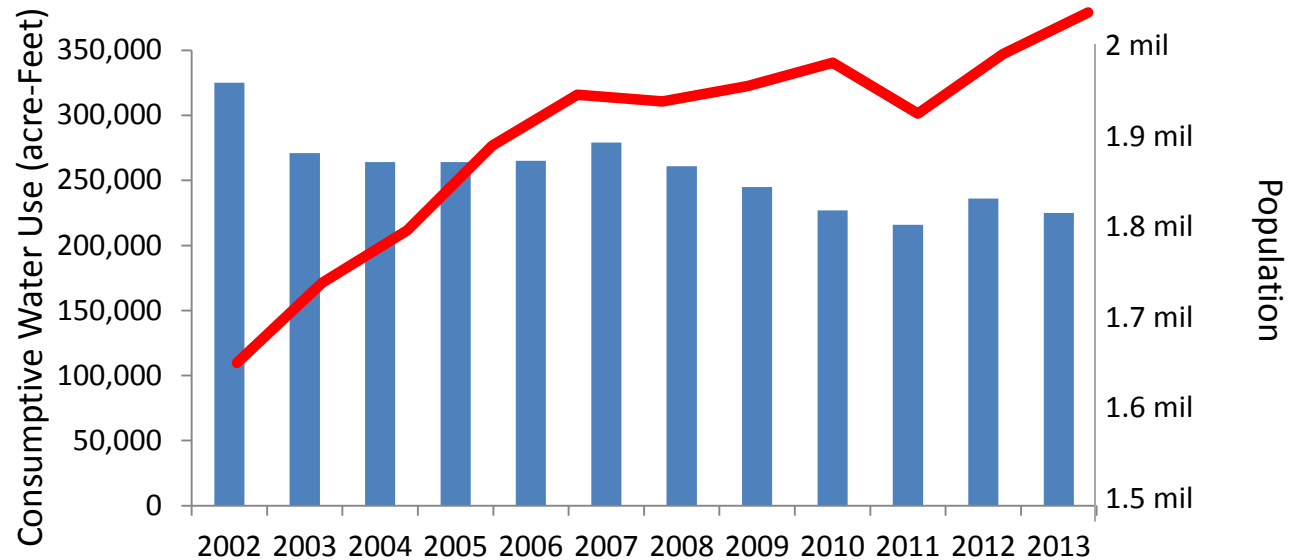
**Safe -
guarding
Access**

**Securing
temporary
and long-term
supplies**

**Working with
Colorado
River
partners**

Reducing Demands

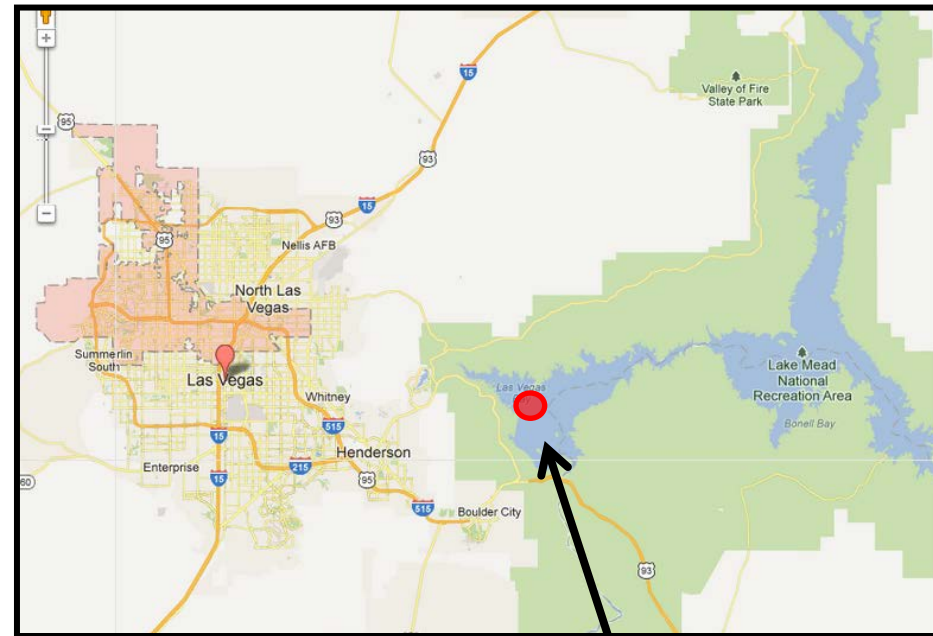
Thanks to these efforts, Southern Nevada consumptively used about 32 billion gallons less water in 2013 than in 2002, despite adding 480,000 new residents and serving nearly 40 million annual visitors.



Safeguarding access

Intake No. 3

- The SNWA is investing more than \$800 million to protect the community's access to Lake Mead
- Replaces capacity in the event declining lake levels render Lake Mead Intake No. 1 inoperable
- Accesses water of best quality (deepest part of lake)
- Construction began in 2008; scheduled for completion in 2015



New Intake Site

Temporary / Interim Supplies



Virgin River, Nevada

Temporary water supplies will meet interim demands until more permanent supplies are developed.

Arizona Water Bank

California Water Bank

Southern Nevada Water Bank

Virgin and Muddy River Tributary
Conservation and Imported ICS

Brock Reservoir ICS

Yuma Desalting Plant

Extraordinary Conservation ICS

Binational ICS

Long Term Supplies



A water supply separate from the drought-stricken Colorado River will be necessary if drought conditions worsen.

Southern Nevada currently uses less than 15 percent of the state's permitted water rights to support 70 percent of its population and economy.

Maintaining the ability to draw upon this available, unallocated resource is critical to protecting 2 million residents and sustaining Nevada's economy.

This resource would only be utilized if necessary, and would be managed in accordance with state and federal law.

Groundwater Development Project alignment

Working Together

Since the onset of the drought, the seven Colorado River Basin states have been cooperatively addressing river issues:

- Coordinated operations of the system's two major reservoirs
- Shortages (timing and quantity)
- River augmentation
- Environmental issues



Water Utility Climate Alliance

www.wucaonline.org

43 million drinking water customers



Seattle
Public Utilities

Portland
Water Bureau

San Francisco
Public Utilities
Commission

Southern Nevada
Water Authority

Denver
Water

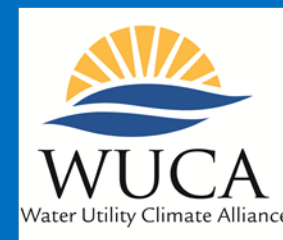
New York City
Department of
Environmental Protection

Metropolitan
Water
District of
So. California

Central Arizona
Project

San Diego
County Water Authority

Tampa Bay
Water



Mission Statement

The Water Utility Climate Alliance provides leadership in assessing and adapting to the potential effects of climate change through collaborative action. We seek to enhance the usefulness of climate science for the adaptation community and improve water management decision-making in the face of climate uncertainty.

To Bounce Forward – Climate Smart

- Recognize climate impacts are happening today
- Plan for uncertainty – multiple scenarios
- Invest in adaptation, while maintaining flexibility
- Collaboration is a path to success

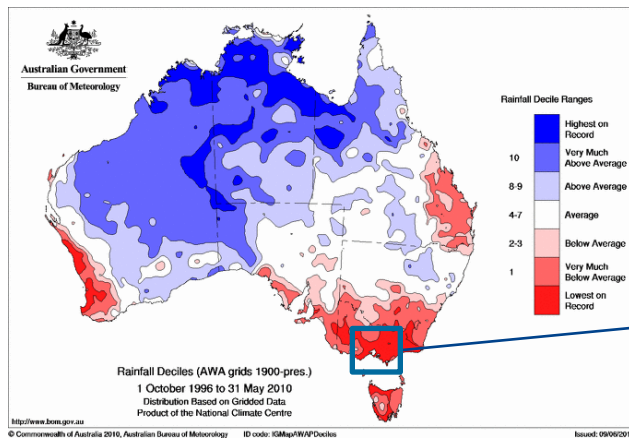




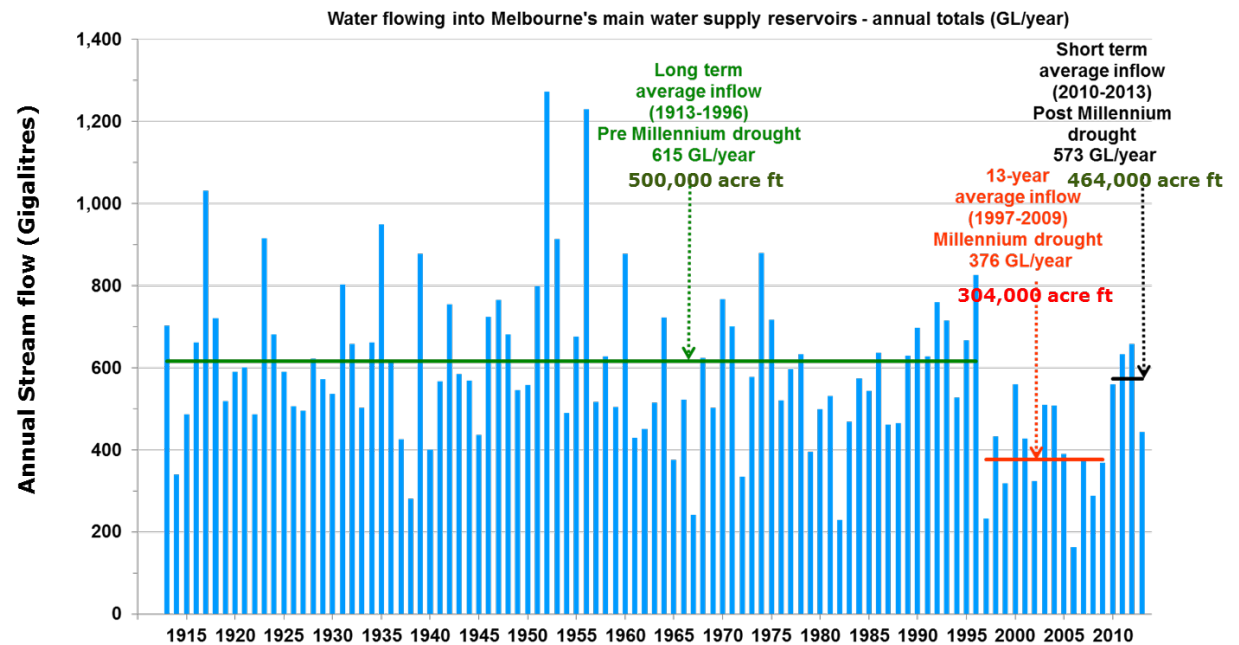
Managing in a changing climate

Bruce Rhodes
Manager, Water Resources Management

The Millennium Drought

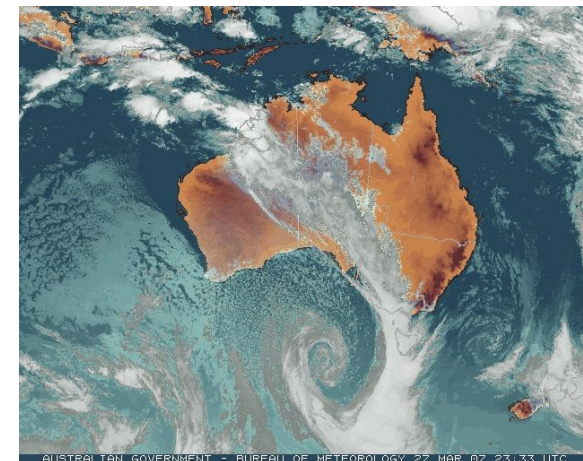
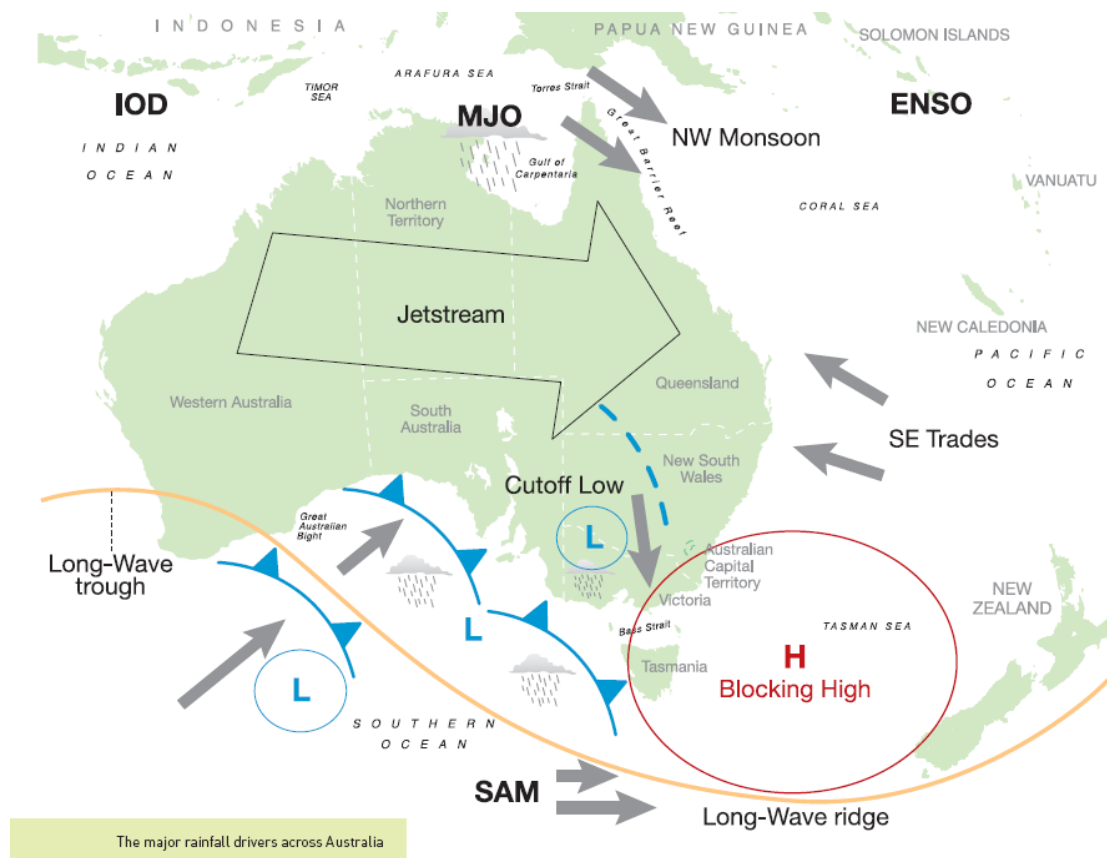


Rainfall Deficiency
Oct 1996 – May 2010,
Source: Bureau of
Meteorology

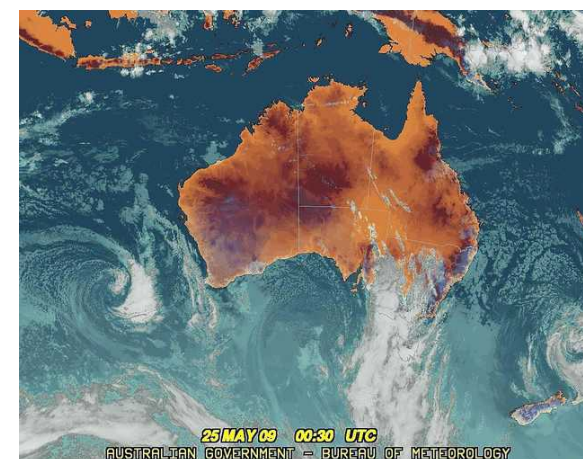


Climate Drivers – Australia:

Source: Land and Water Australia



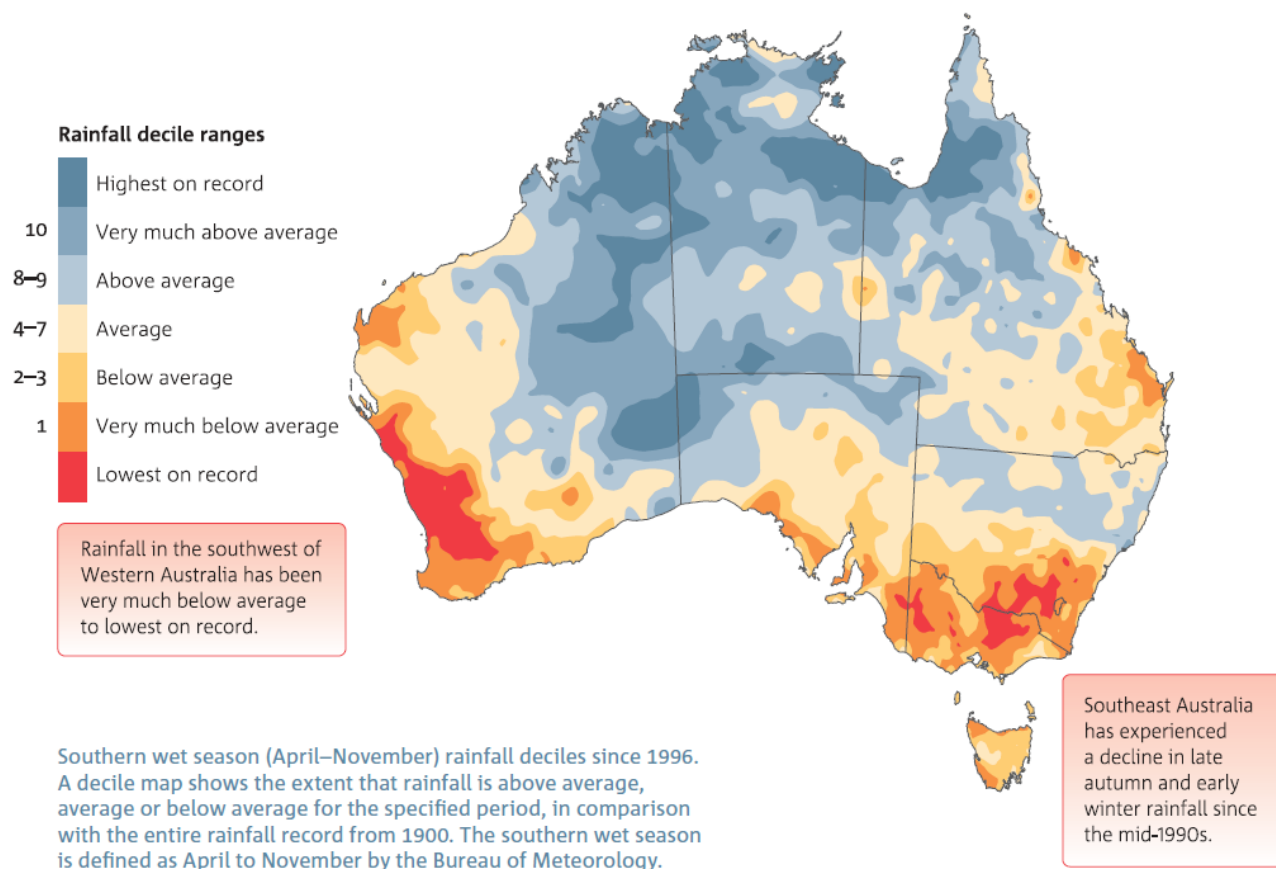
NW Band, Front and Low Pressure
22 March 2007 (Av Rain 21mm)



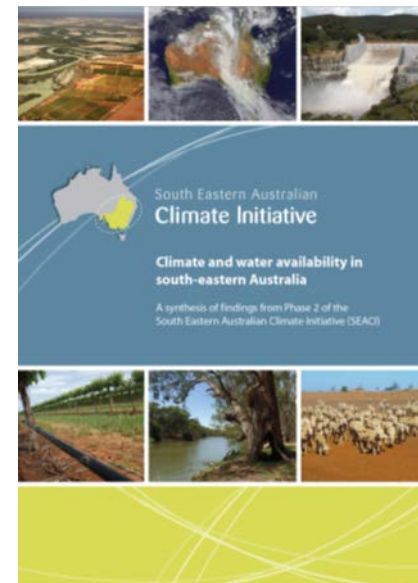
Frontal rain
25 May 2009 (Av rain 11mm)

Rainfall Deciles (April – November)

Source: State of the Climate 2014, CSIRO, Bureau of Meteorology



Source: Bureau of Meteorology

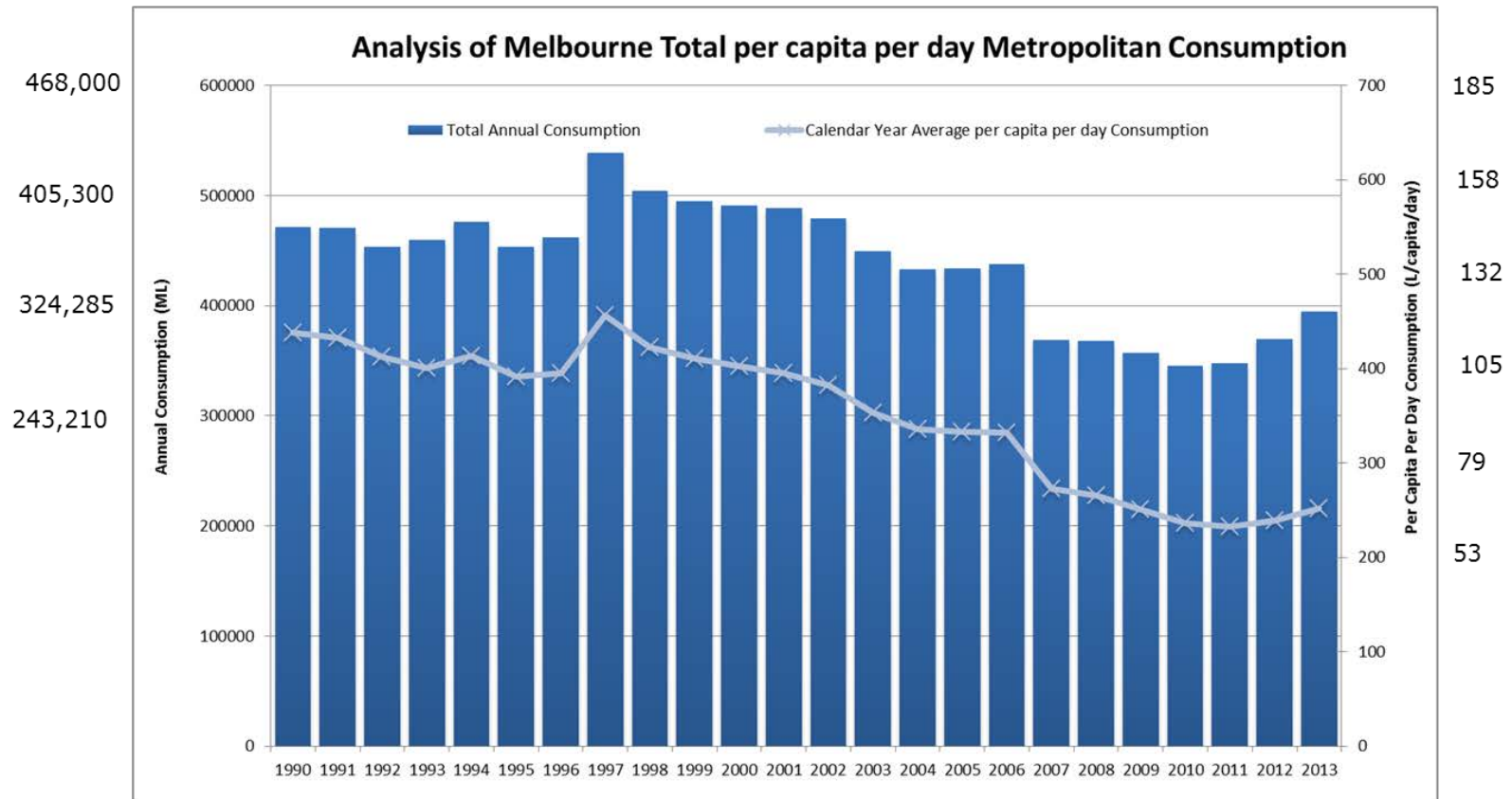


Source: <http://www.seaci.org/>

Changing trends in demand

Acre-ft

g/p/d



Changing Context

Water Restrictions 2002 to 2010

Permanent Water Savings Measures

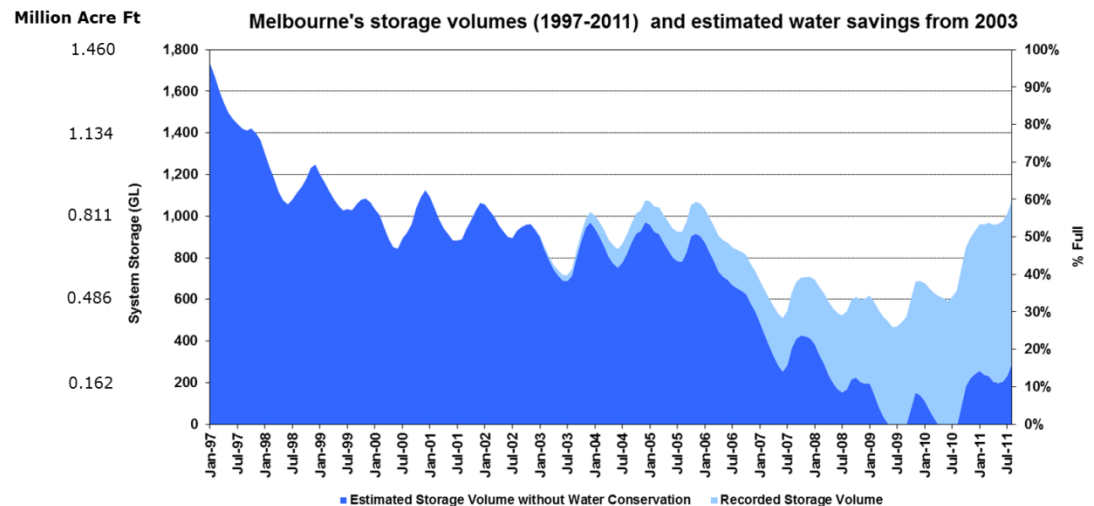
Change and in water use behaviours

Variable and changing climate

Integrated water cycle management (IWCM)

Liveability and affordability

475,000 ML or 384,750 Acre-ft
Estimated volume conserved in storage
between Nov 02 – July 09



The percentages shown are based on a storage capacity of 1810.5GL including Tarago Reservoir.

Climate Resilience Plan – Melbourne Water

Understand and manage risks

- We are continually improving our identification and management of climate risks to delivery of core services

Share and consolidate knowledge

- We are engaging internally and externally to enhance business, industry and community understanding of the science, risks and opportunities

Enhance response capability

- We are ensuring our decision frameworks, planning processes and recovery responses are robust against future climate uncertainty

Evaluate success

- We are reviewing our activities and incorporating our experience into future planning cycles

Melbourne's Water Future – Whole of Cycle Water Planning

State Government of Victoria – Victorian Dept of Primary Industries, Office of Living Victoria 2014

A vision for Melbourne's water future

An integrated and resilient water system, which is planned and managed to support liveable and sustainable communities, protect the environmental health of urban waterways and bays, provide secure water supplies efficiently, protect public health and deliver affordable essential water services

See http://www.livingvictoria.vic.gov.au/PDFs/MWF/MWF_complete.pdf

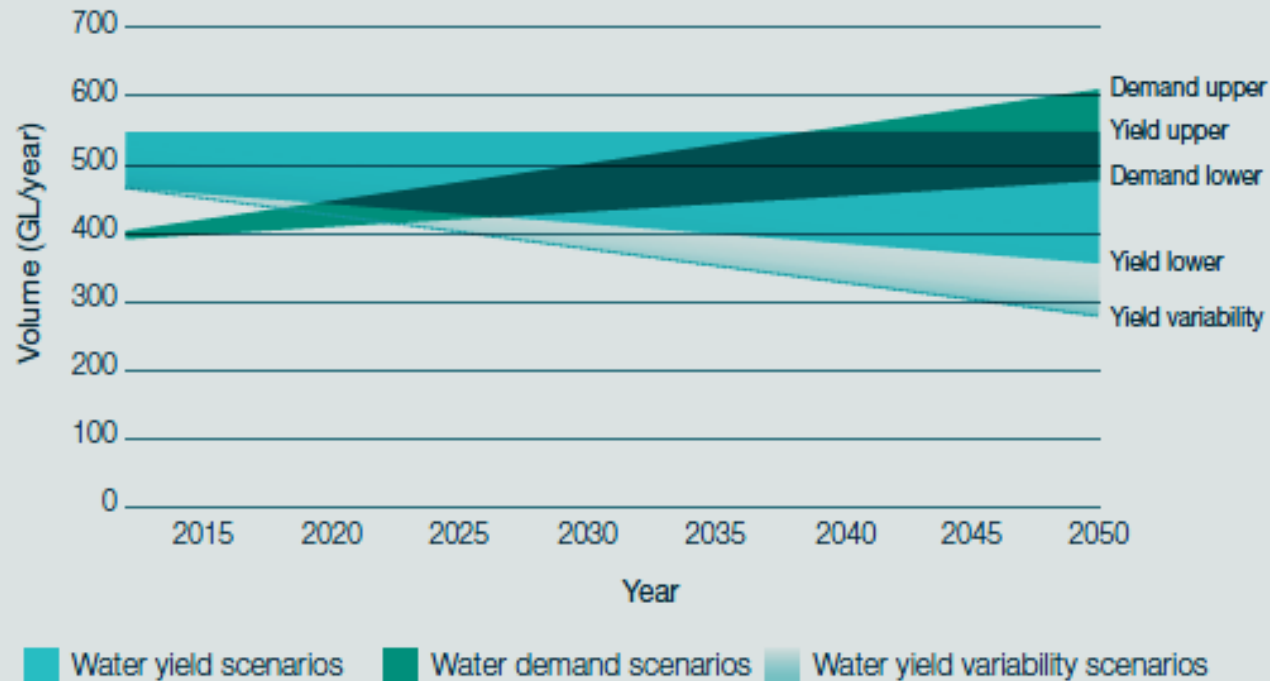


Scenario based planning Supply – Demand

Source: Melbourne's Water Future 2014, Office Of Living Victoria

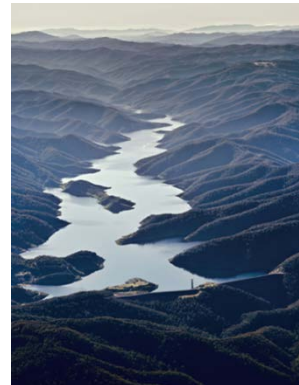
Uncertainty and variability in water use and supply

FIGURE 3



Climate considerations and water management

- Climate variability, change, extreme events and baselines
- Scenarios for planning
- Hydrologic 'stationarity' and water supply demand balance
- Drought Response and water conservation in a changing climate
- Changes in other 'systems' (e.g. eco-systems, sewerage, drainage)
- Planning uncertainty (e.g. economic, demand, demographic)
- Managing Cumulative risks





American Water Works
Association

Dedicated to the World's Most Important Resource™

Climate Change: Federal Actions and Association Perspective

October 10, 2014, WaterSmart Innovations

Adam Carpenter, Regulatory Analyst
Government Affairs Office – Washington, DC

acarpenter@awwa.org 202-326-6126

Federal Climate Change Overview

- Federal climate policy / mitigation
- Federal adaptation efforts
- Federal scientific efforts
- What does it mean for utilities now?



Failed federal legislative attempts

- Cap and trade
- Carbon tax (with or without “dividend”)
- Other meaningful emissions reductions



Climate Action Plan

— PRESIDENT OBAMA'S PLAN TO — **ADDRESS CLIMATE CHANGE**

- ✓ **Reduce carbon pollution from power plants and build cars that burn less fuel.**
- ✓ **Cut energy waste from our homes and businesses.**
- ✓ **Help states and cities prepare for the impacts of climate change.**
- ✓ **Lead global efforts to address climate change.**



EPA Clean Air Act CO₂ Authority

Massachusetts v. EPA (2007)

CO₂ Endangerment Finding (2009)

Transportation authority (ongoing)

Power plants

- Proposed rule for new facilities (2013)
- Proposed rule for existing facilities (2014)
 - Also known as the Clean Power Plan



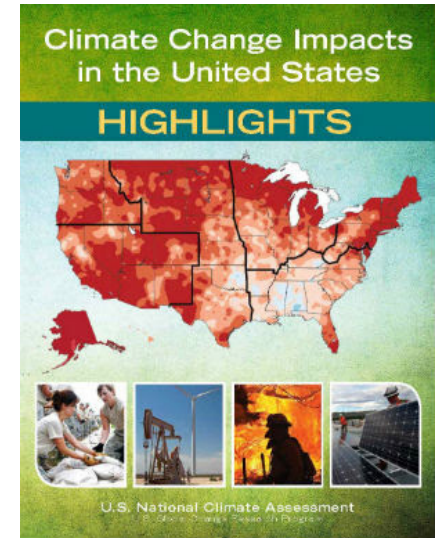
Federal Policy - Adaptation

- Clean Water and Drinking Water State Revolving Loan Funds
- Updating flood maps
- Possible resiliency standards
- Interagency task force
- Agency adaptation plans



Federal Scientific Efforts

- National Climate Assessment provides an overall consensus picture
- Many specialized research and development projects elsewhere on resilience, impacts, and developing tools



What does it mean for utilities now?

- The Clean Power Plan is a big deal!
 - Potential cost >\$230 million / year just to water utilities!
 - AWWA will be leading advocacy efforts to help direct energy efficiency funds towards water utilities to help offset up to \$100 million / year



What does it mean for utilities now?

- Climate Mitigation:
 - Many of your customers are thinking about this. Know what you are doing, know what to tell them
- Climate Adaptation:
 - Start thinking about risk assessments and how you will incorporate climate into your long term planning, if you haven't already



Summary

- Numerous federal efforts underway
- Expect changes in initiatives, regulations, and priorities
- Federal efforts only go so far

EPA climate regulatory initiatives:

<http://www.epa.gov/climatechange/EPAactivities/regulatory-initiatives.html>



Clean Power Plan Process

- EPA sets reductions of GHG emissions from power plants for each state for 2020 and 2030
- States have some flexibility to choose policies to meet these EPA goals
- Reduce GHG emissions from EGUs
(30% reduction by 2030, from 2005 levels)



Building Blocks

- EPA offers States 4 Building Blocks
 1. Increase efficiency at power plants
 2. Use lower-emitting power plants more frequently
 3. Expand use of renewable energy sources
 4. Increase energy efficiency throughout the grid
- States can choose some or all of these for its plan, EPA projected optimal mix

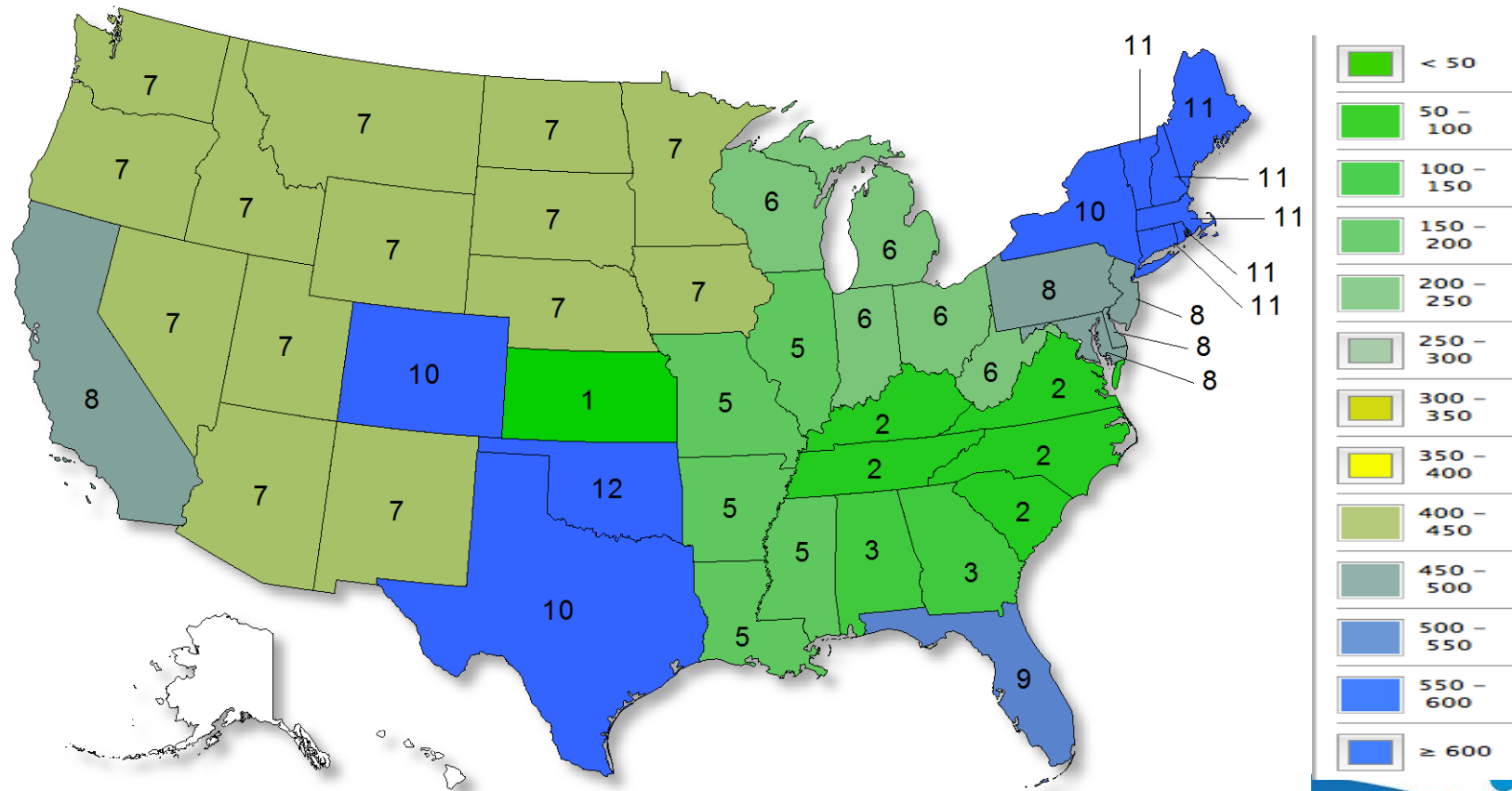


Timing – Very fast

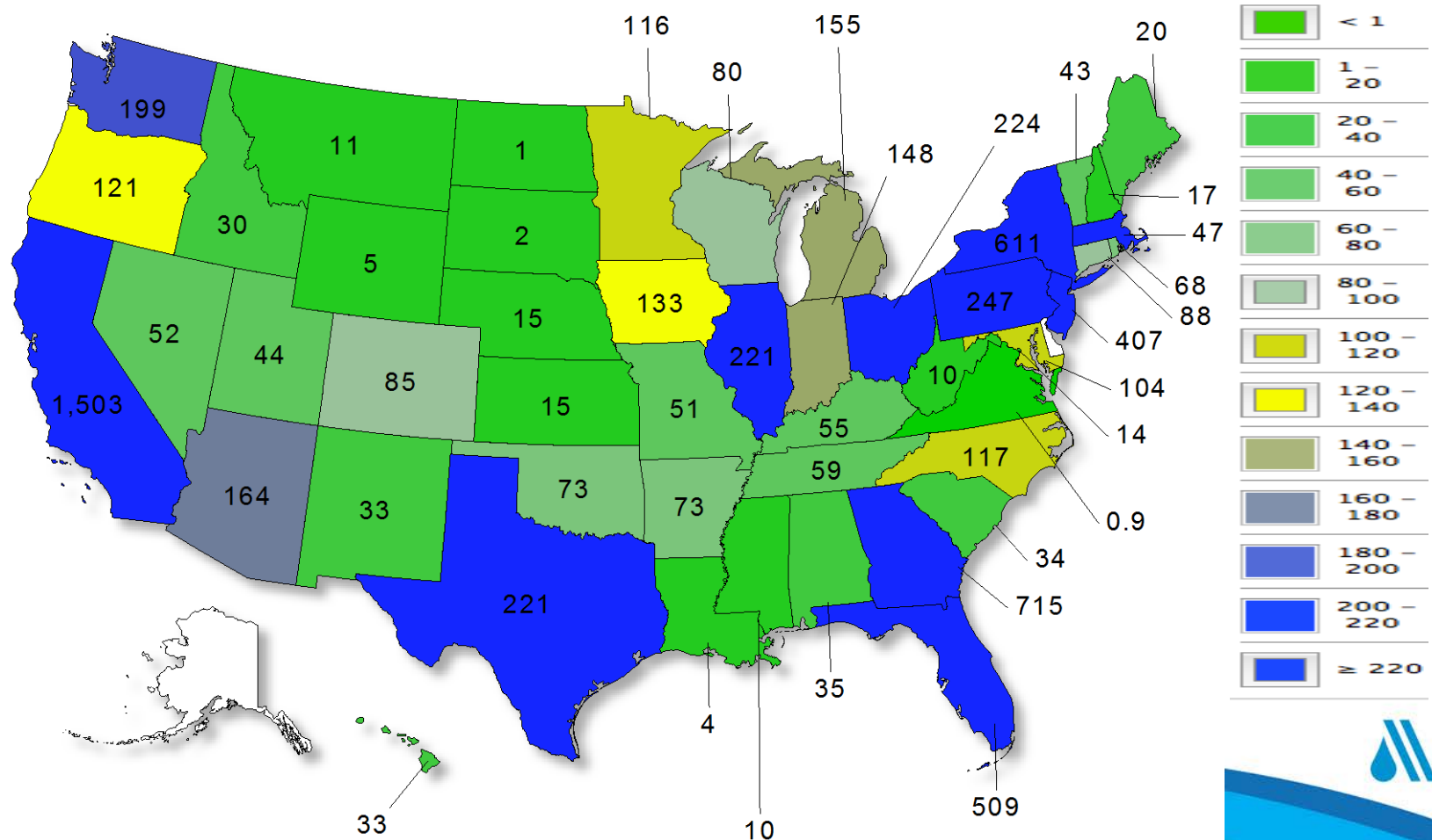
- June 1, 2015—EPA to finalize rule
- June 30, 2016—States to submit individual state plans, unless 1 year extension is granted for multi-state plans
- By January 2017, key state and Federal plans approved
- 2020—Interim CO₂ emissions performance goal met
- 2030 – Final CO₂ emissions goals met



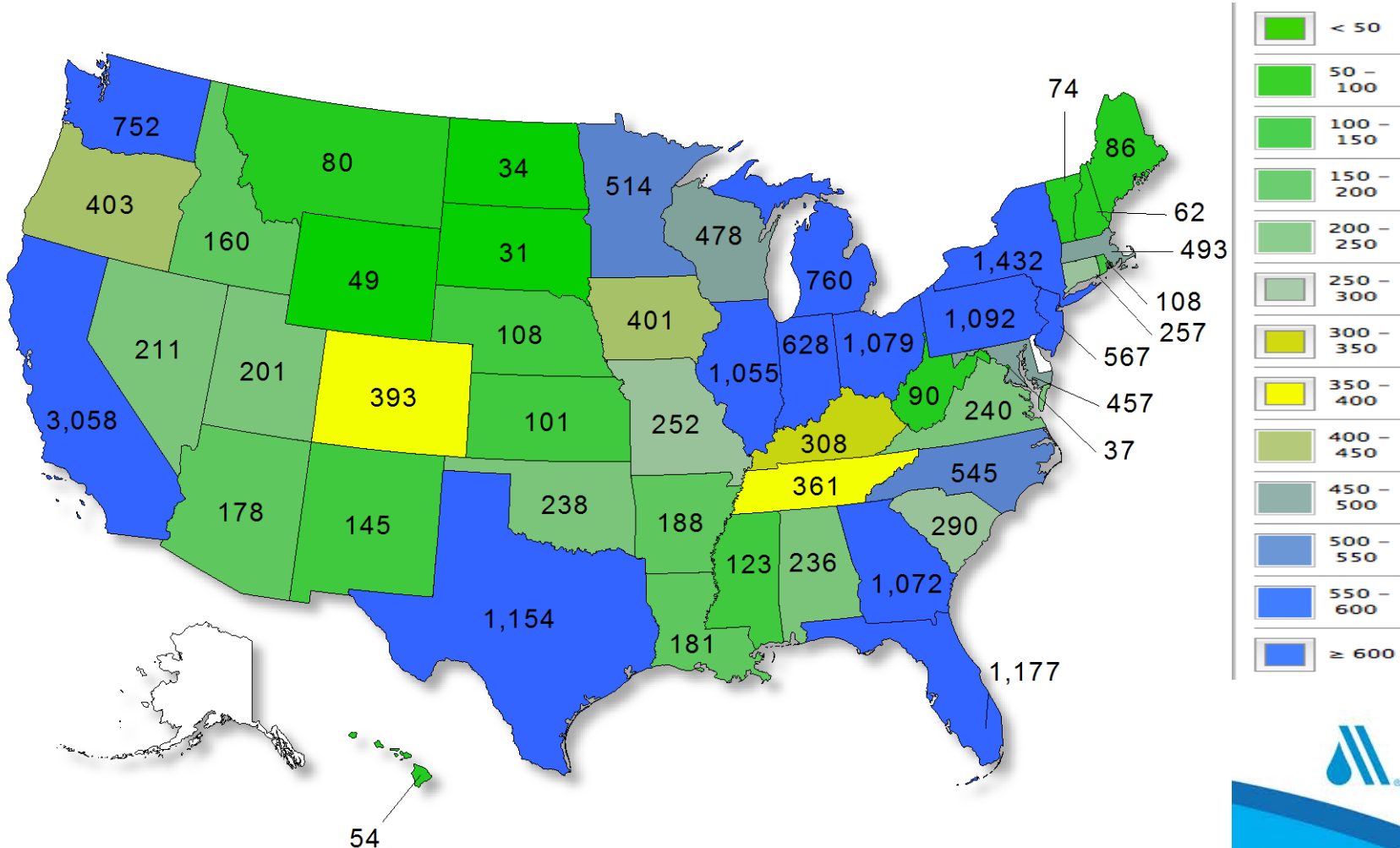
Projected Contiguous US and Regional Retail Electricity Rates under EPA Clean Power Plan Option 1 (% Change from Base Case)



Current state EE funding (all sectors)



Projection for 2020



Opportunity

- Opportunity to gain back some costs through directed spending on energy efficiency (EE)
- **\$10 billion** annual increase in spending for EE by 2020
- Builds on existing state rate-payer EE funds
- Just 1% (equal to electricity use) would be \$100 million for water utilities, plus the chance to do the right thing



Why Water Utilities?

- Use a **lot of Electricity**
- Routine Operations Maintenance and capital projects **reduce energy use or energy intensity**
- Utilities offer “gold standard” for energy efficiency projects:
 - **Monitored** by trained staff
 - Often capital projects that are **permanent**
 - Operate **24/7**



Next Steps

- AWWA will be conducting federal and state outreach and advocacy in priority states, with materials available to AWWA members in all states
- In addition to policy challenges, need to reinforce:
 - Availability of internal efficiency opportunities
 - Electricity savings of water loss, conservation, and other water utility programs



QUESTIONS?

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American Water Works Association

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I want to be here for you.

If only our water infrastructure could talk to us. The corner hydrant might remind us that only tap water protects us against the threat of fire, and that the pipes below our streets need constant attention to keep life-saving water flowing at the right pressure, 24/7, without fail.

We are all stewards of the water infrastructure generations before handed down to us, and our water bills keep that system strong and reliable. For more



Only Tap Water **Delivers**™

