CRWAS Continuation

January 30, 2013

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Agenda

- Review CRWAS Phase I
- Review draft CRWAS Phase II scope
- Summarize Board comments to date
- Receive Board direction on proposed process for soliciting BRT input

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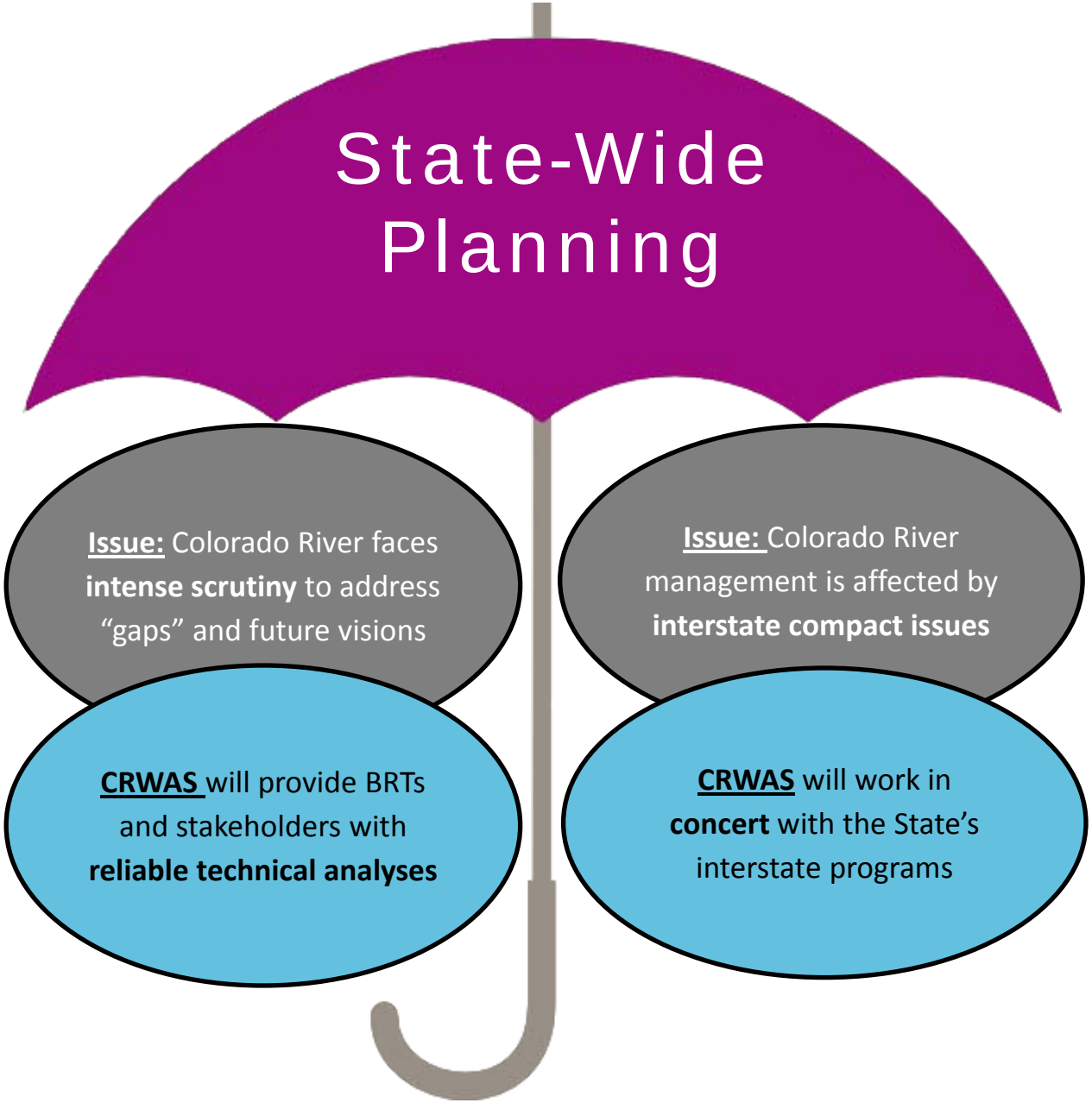
CRWAS Continuation – Support of State Programs



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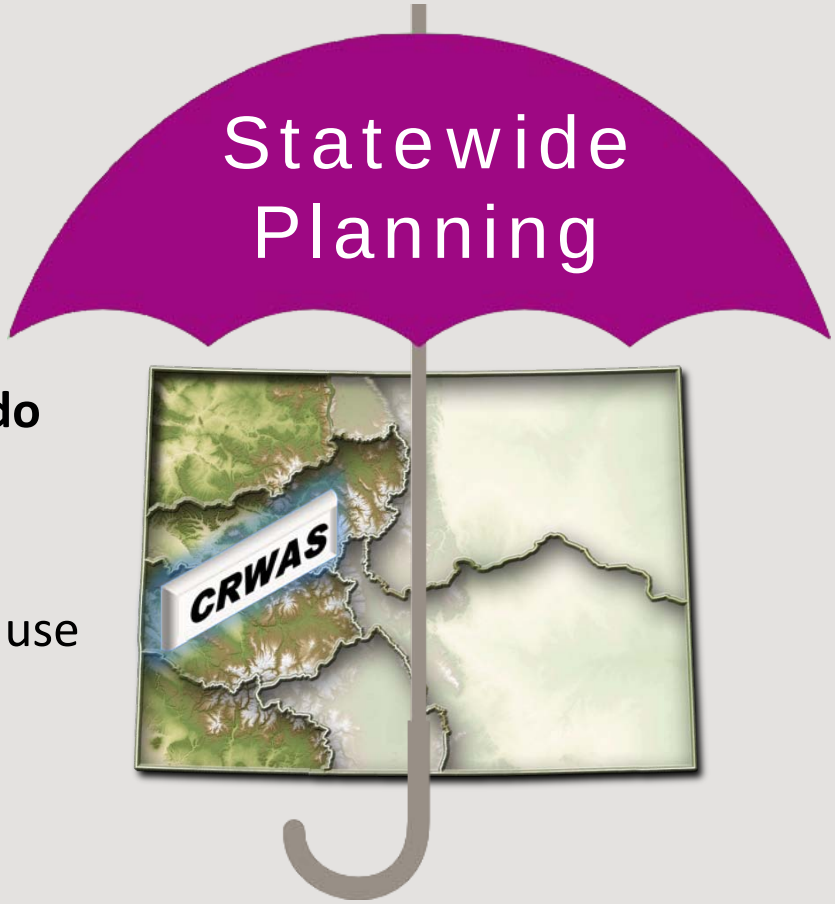
CRWAS Phase I Objectives

1. **Selection of consultant for Phase I and II under State procurement process**

2. **Quantify water availability in the Colorado River and its Colorado tributaries under:**

- Current consumptive / non-consumptive use
- Current water supply infrastructure
- Currently perfected water rights
- Alternate hydrology



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CRWAS Phase I Accomplishments

Analysis

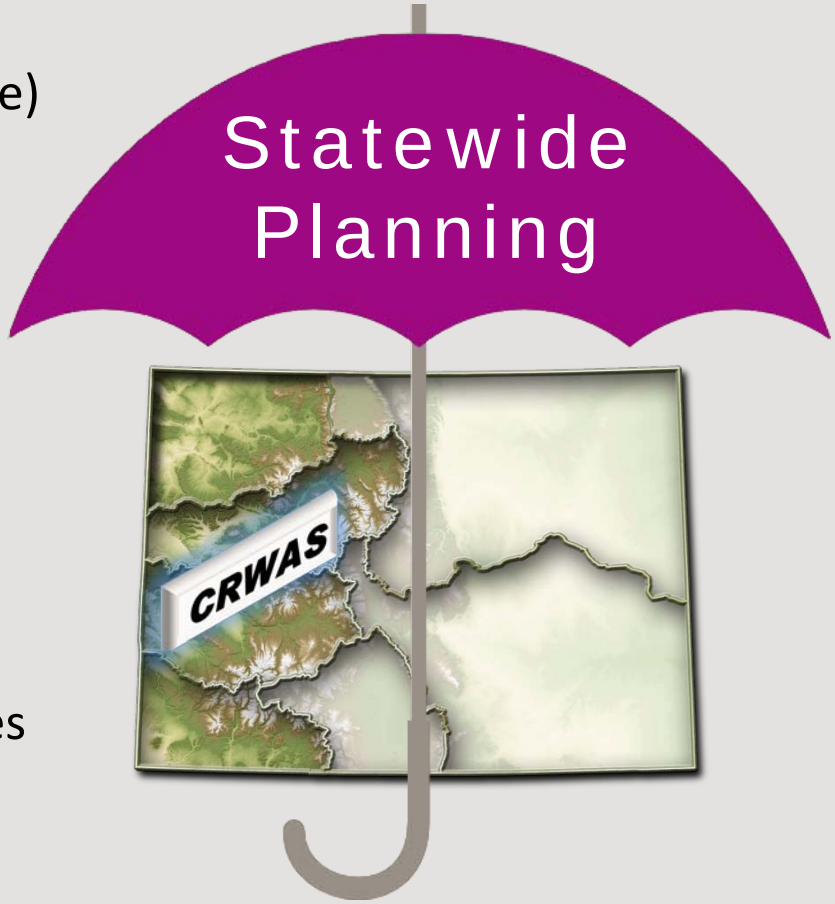
- Hydrology Types (historical, paleo, climate)
- Modeling Tools (CDSS, VIC)
- Online Data Viewer (2000 model nodes)

Outreach

- State-Sponsored Programs
- Public Workshops in 7 Basins
- Public Comment Matrix

Documentation

- CDSS User Manual / Basin Report Updates
- Technical Memoranda
- Draft Phase I Report



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CRWAS Phase I Outcomes

- Developed hydrology not previously completed for Colorado (paleo, climate)
- Developed tools that are appropriate for continued State scenario planning (CDSS)
- Developed range of water availability for thousands of west slope model locations

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CRWAS Continuation
Support of State Programs

Support CWCB's umbrella role of statewide water planning through:

- **Reliable technical analyses** using the
- **Best possible tools** and
- **Coordination** w/BRTs/other State programs to
- **Minimize unnecessary technical overlap**

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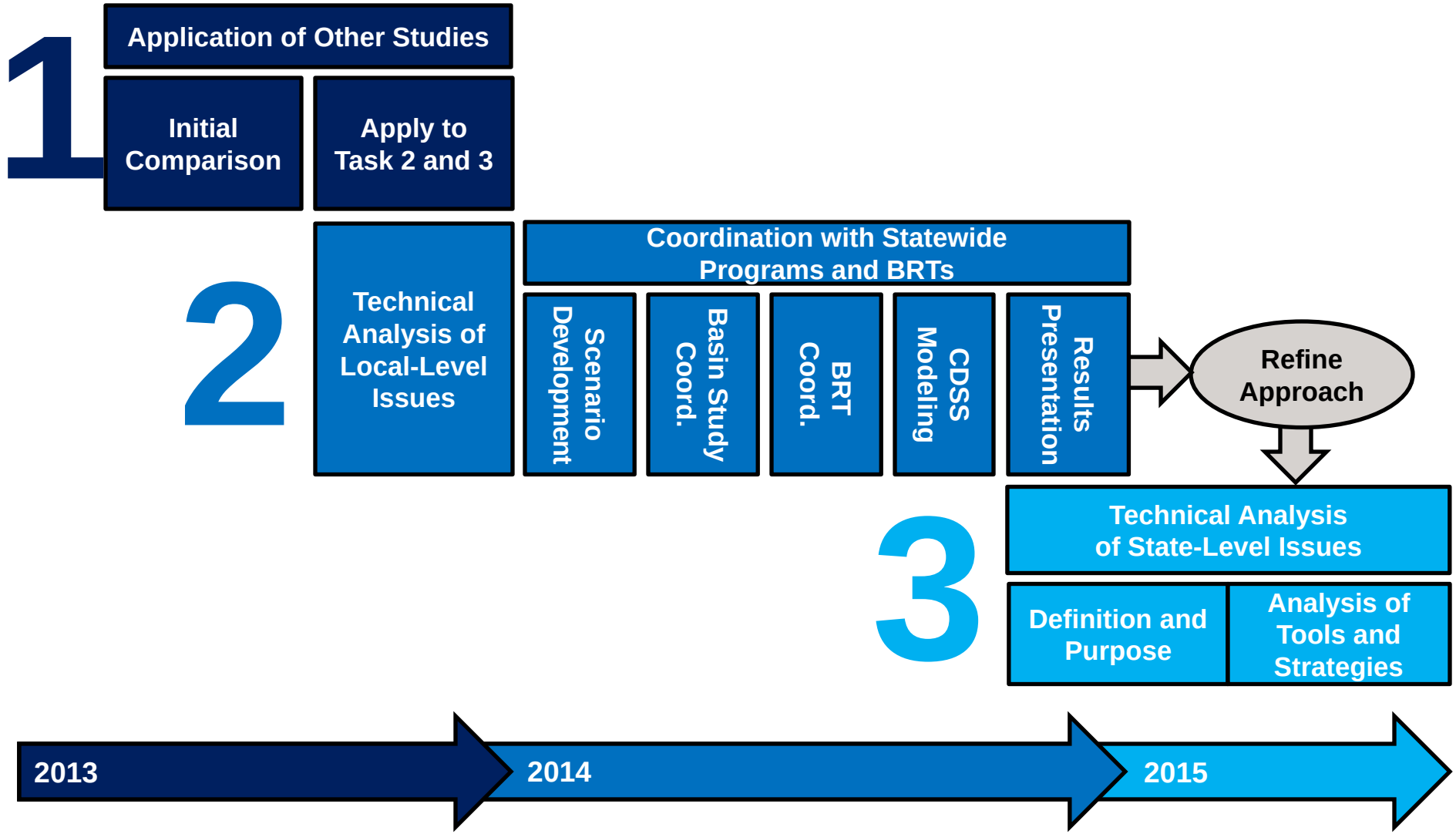
Approach



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Task 1 – Application of Local, State, and Interstate Studies

1

Application of Other Studies

Initial Comparison

Apply to Task 2 and 3

Interstate
Reclamation: Colorado River Water Supply and Demand Study
Upper Basin: Demand Management Study
Upper Basin: Agricultural Consumptive Water Use Study

State
CWCB: Colorado River Water Availability Study Phase I
CWCB: Colorado River Water Availability Study Continuation
CWCB: Colorado River Compact Compliance Study
IBCC: Scenario Planning and Adaptive Management
IBCC: Water Supply Subcommittee efforts

Local
BRTs: Flaming Gorge Project Exploration
BRTs: Aspinall Reservoir Operations Study
BRTs: Project and Methods Study
BRTs: Other Studies
CRWCD: Various Modeling Efforts
FRWC: Water Supply Planning efforts
Other: Colorado River Water Bank Study

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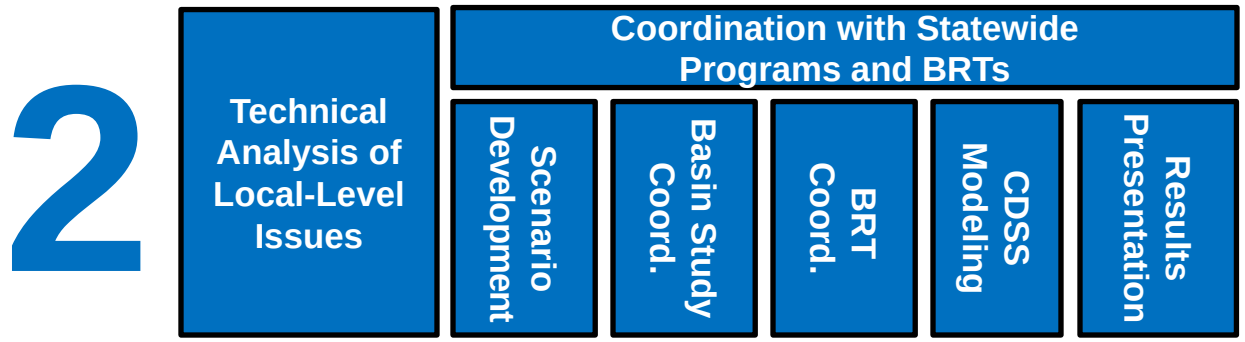
Task 2 – Technical Analysis of Local-Level Issues



Near-Term	Mid-Term	Long-Term
Coordinate with BRTs and CWCB WSP Section	Coordinate with BRTs and CWCB WSP Section	Coordinate with BRTs and CWCB WSP Section
Reconcile supply, demand water rights alternatives	Implement CDSS refinements	Run CDSS to identify local imbalances / future strategies
Translate BRT scenarios into CDSS model criteria		Present results online (CRWAS Data Viewer & CRBS Tableau Tool)

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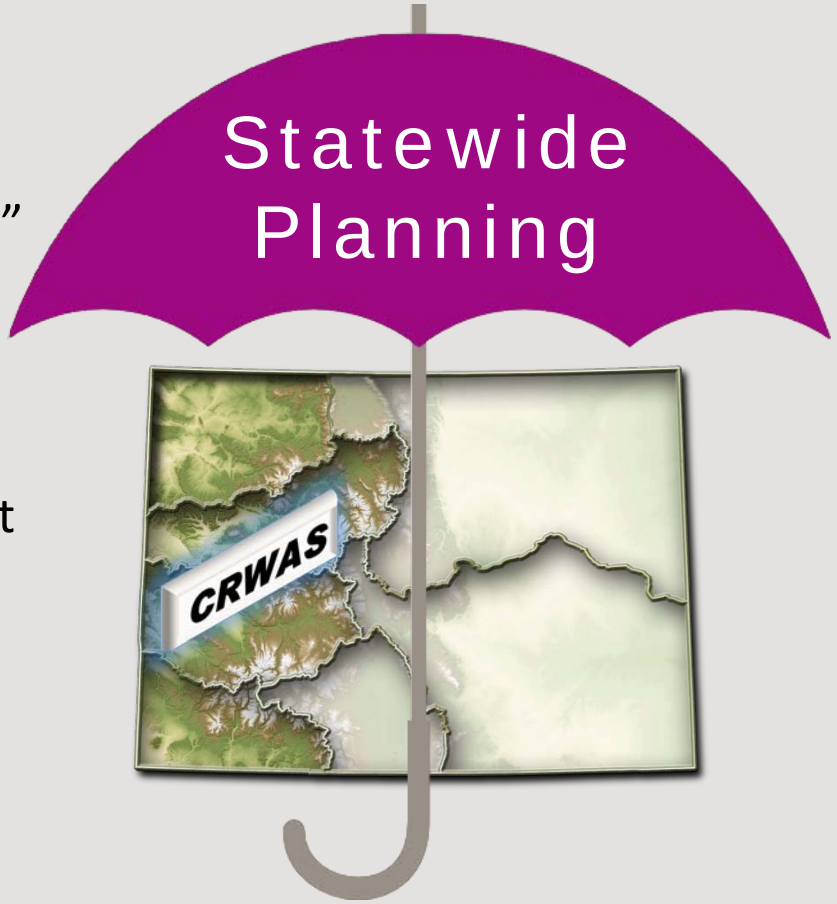
Task 3 Introduction
CRWAS / CRBS Coordination

- **Goal:** Take advantage of established CRBS signposts to change focus in "risk management" of Compact issues

- **Previous Studies:** Ranges and probabilities
- **Proposed:** Signposts to foresee Lee Ferry deficit
- **Then:** Develop and implement risk mgt actions

- Next slides provide context on CRBS process



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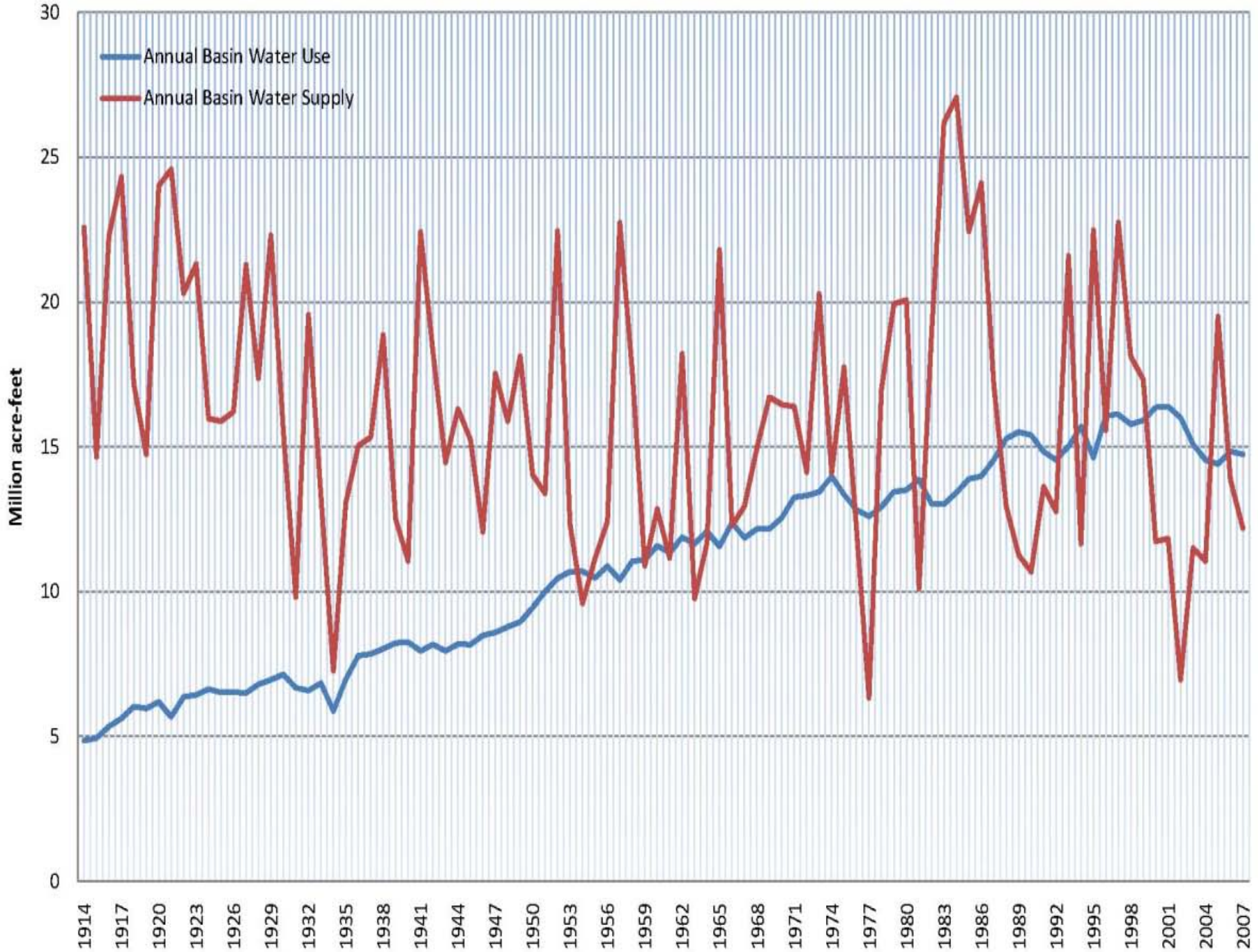
Annual Basin Water Use
Annual Basin Water Supply
Million acre-feet
30
25
20
15
10
5
0
1914
1917
1920
1923
1926
1929
1932
1935
1938
1941
1944
1947
1950
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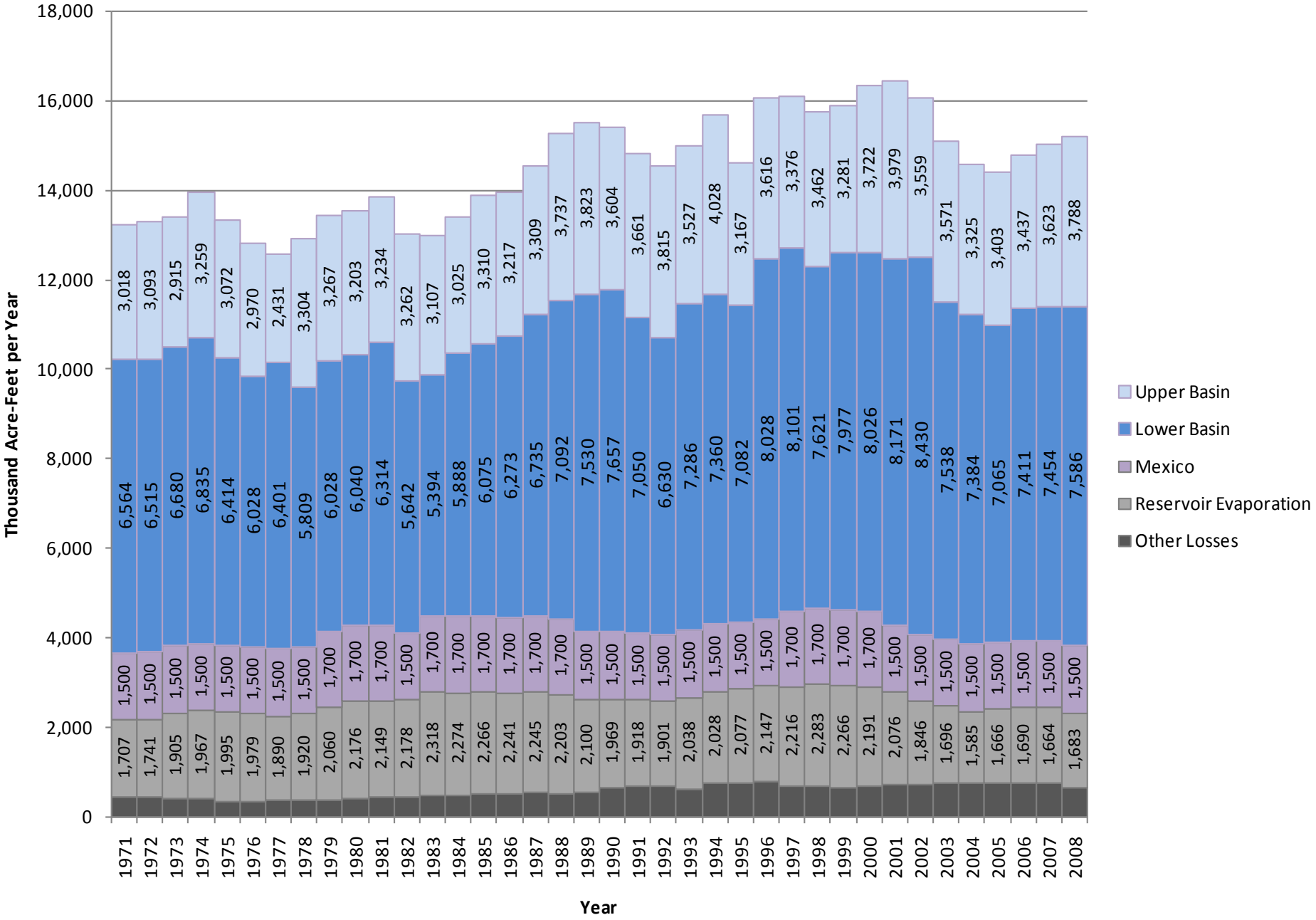
2007


Thousand Acre-Feet per Year
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Year
1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008
3,018 3,093 2,915 3,259 3,072 2,970 2,431 3,304 3,267 3,203 3,234 3,262 3,107 3,025 3,310 3,217 3,309 3,737 3,823 3,604 3,661 3,815 3,527 4,028 3,167 3,616 3,376 3,462 3,281 3,722 3,979 3,559 3,571 3,325 3,403 3,437 3,623 3,788
6,564 6,515 6,680 6,835 6,414 6,028 6,401 5,809 6,028 6,040 6,314 5,642 5,394 5,888 6,075 6,273 6,735 7,092 7,530 7,657 7,050 6,630 7,286 7,360 7,082 8,028 8,101 7,621 7,977 8,026 8,171 8,430 7,538 7,384 7,065 7,411 7,454 7,586
1,500 1,500 1,500 1,500 1,500 1,500 1,500 1,500 1,700 1,700 1,700 1,500 1,700 1,700 1,700 1,700 1,700 1,700 1,500 1,500 1,500 1,500 1,500 1,500 1,500 1,500 1,700 1,700 1,700 1,700 1,500 1,500 1,500 1,500 1,500 1,500 1,500 1,500
1,707 1,741 1,905 1,967 1,995 1,979 1,890 1,920 2,060 2,176 2,149 2,178 2,318 2,274 2,266 2,241 2,245 2,203 2,100 1,969 1,918 1,901 2,038 2,028 2,077 2,147 2,216 2,283 2,266 2,191 2,076 1,846 1,696 1,585 1,666 1,690 1,664 1,683
Upper Basin
Lower Basin
Mexico
Reservoir Evaporation
Other Losses

Colorado River Basin Study

- Vulnerability-performance below desired level
- Indicator metrics
  - Lake Mead below elevation 1000
  - Lee Ferry Deficit (flows <75 MAF / 10 years)
  - Vulnerable Condition: Low long-term average natural flow (< 13.8 MAF) & 8-year drought below 11.2 MAFY
- Signpost / Trigger
  - Conditions that will exist in anticipation of threshold exceedance

Lees Ferry Deficit-Vulnerability

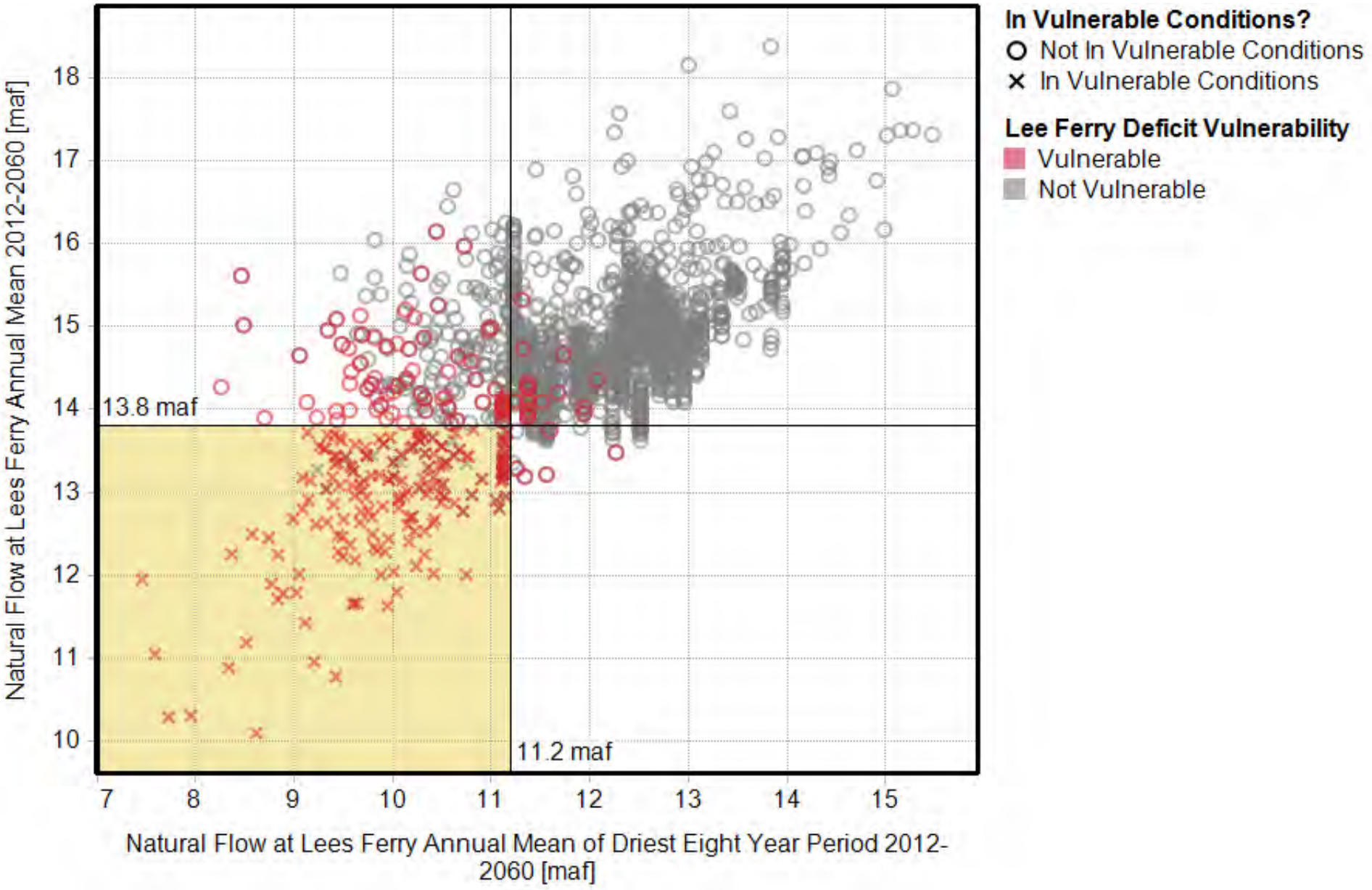
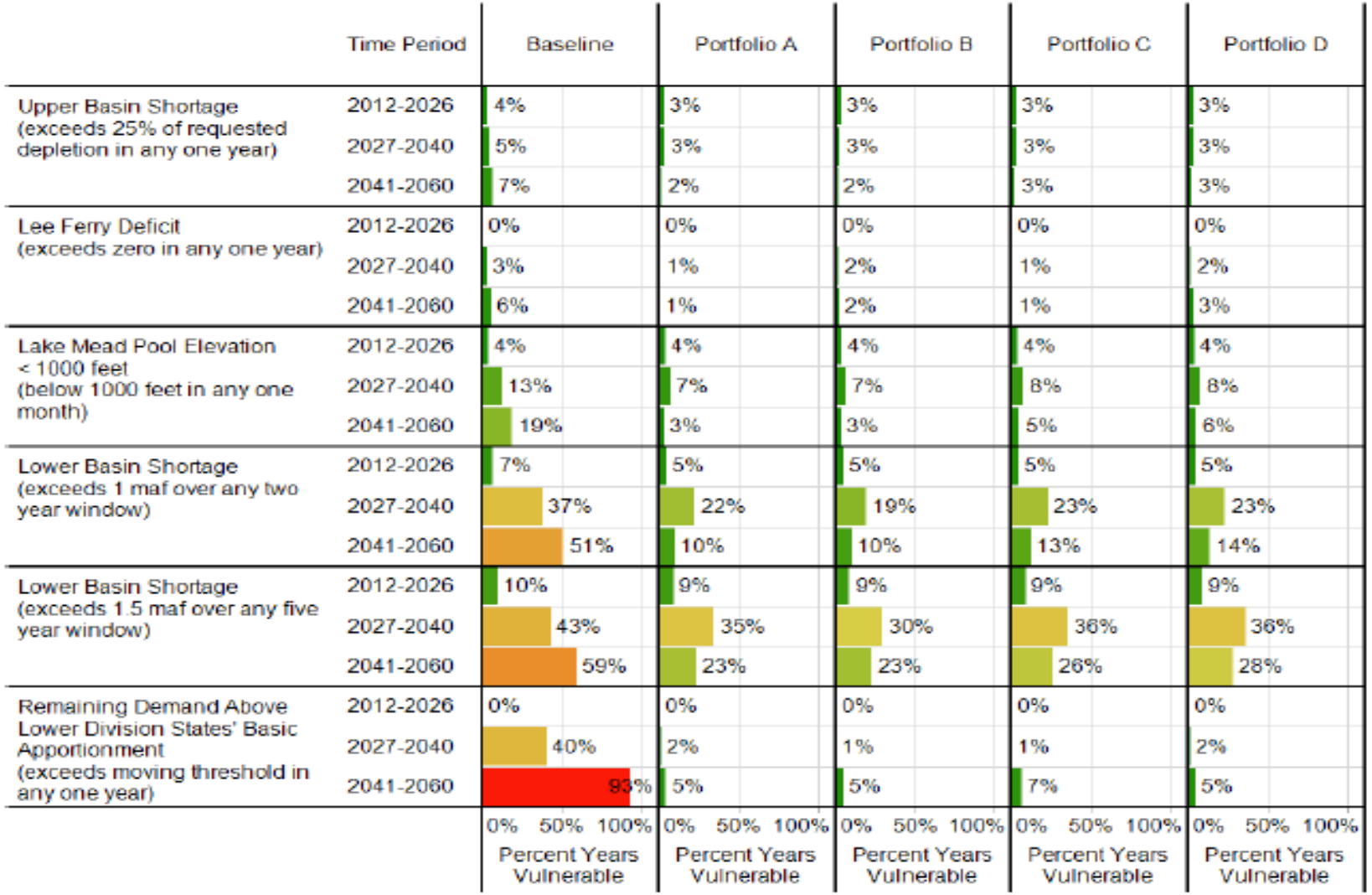
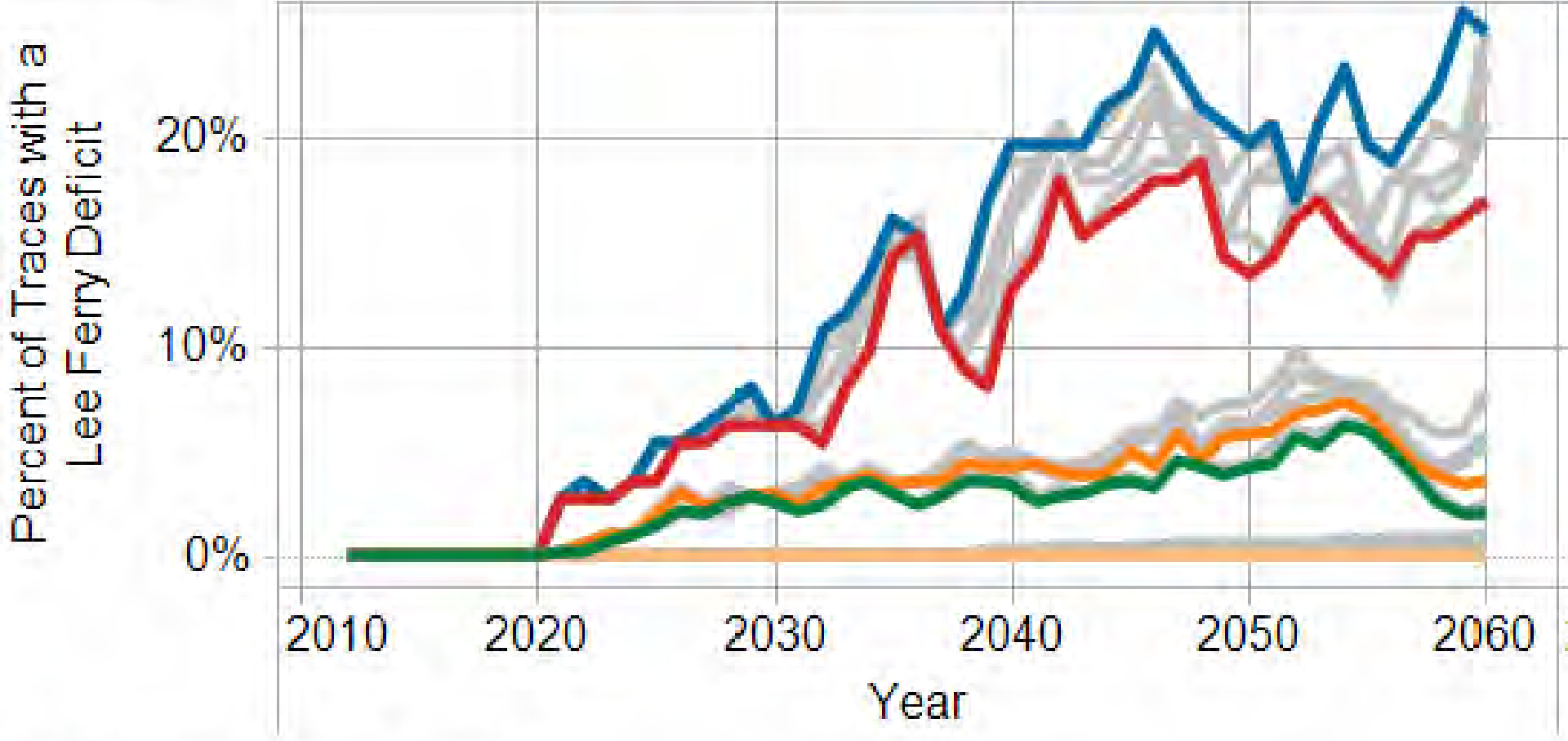


FIGURE G-29
Percent of Vulnerable Years for Each Water Delivery Indicator Metric Across Three Time Periods for the Baseline And Four Simulated Portfolios

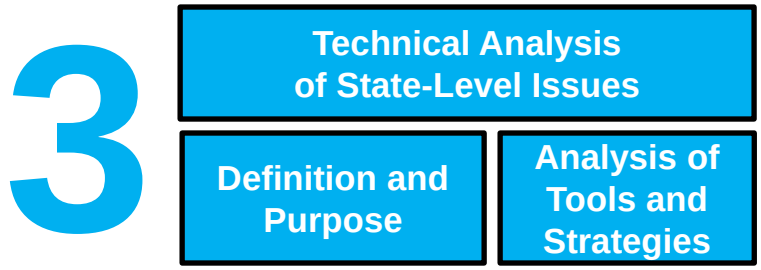




Highlighted Scenario Names

- Paleo Conditioned, Enhanced Environment (D1)
- Paleo Conditioned, Current Projected (A)
- Observed Resampled, Rapid Growth (C1)
- Downscaled GCM Projected, Enhanced Environment (D1)
- Downscaled GCM Projected, Rapid Growth (C1)
- All Other Scenarios

Task 3 – Technical Analysis of State-Level Issues



A. Identify Signposts	
B. Identify Potential Risks	**C. Identify Potential Risk Management Actions**
• Reliability of conservation and reuse • Reliability of municipal supplies • Interference or harm by new transbasin projects • Harm to west slope economies/environment/ culture	• Development of new storage • Re-operation of existing storage • Water rights acquisition • Acquisition with lease-back provisions • Water conservation • Water re-use • Water banks • Interruptible supply arrangements • Insurance or related approaches • Land and water trusts • NGO or local government acquisition • Other concepts

CRWAS “End-game”

What needs will the scope fill?

Coordinated technical analysis for BRTs to expand specificity in identifying local supply/demand gaps and solutions and to minimize statewide risks associated with Compact issues

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CRWAS “End-game”

How does the scope fit into the State Water Plan?

Technical basis, tools, and expertise to support SWP completion

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CRWAS “End-game”

How will the State act differently with results from this scope?

- Hold more confidence in policy decisions based on solid technical foundation
- Proactively address risk associated with future development through solutions that have local support and understanding

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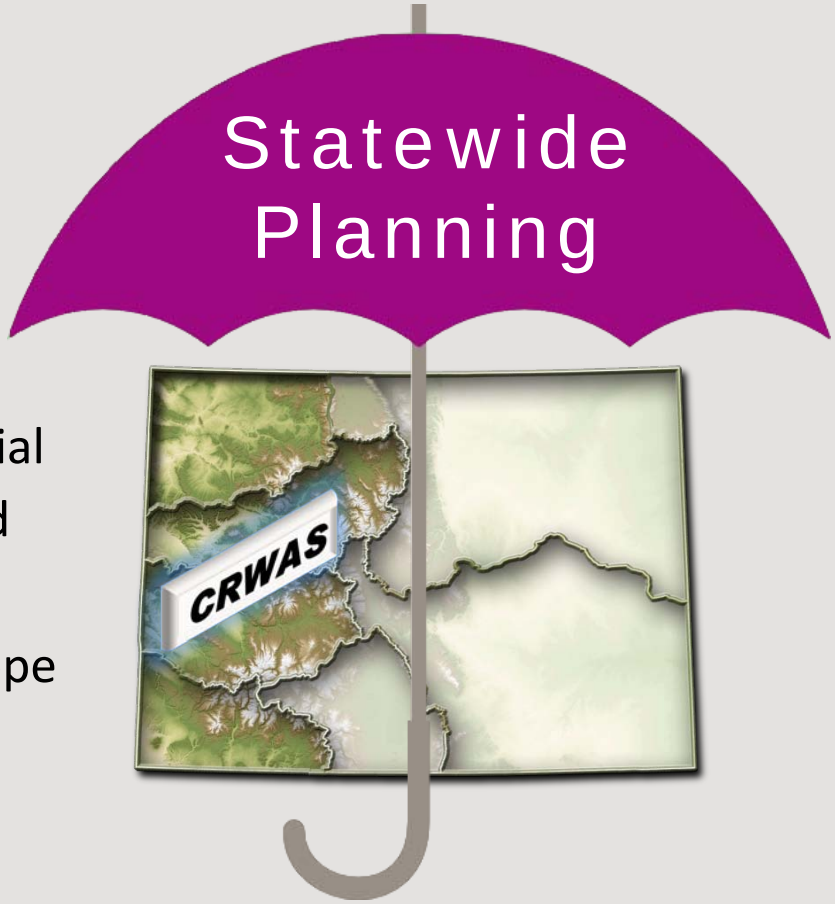
Proposed Scoping Steps

1. Meet with BRTs and IBCC and solicit scope feedback (combined w/CRBS outreach)

2. Report BRT and IBCC feedback and potential corresponding scope refinements to Board

3. Receive CWCB Board direction on final scope



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Questions and Comments?

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