

# RECLAMATION

*Managing Water in the West*

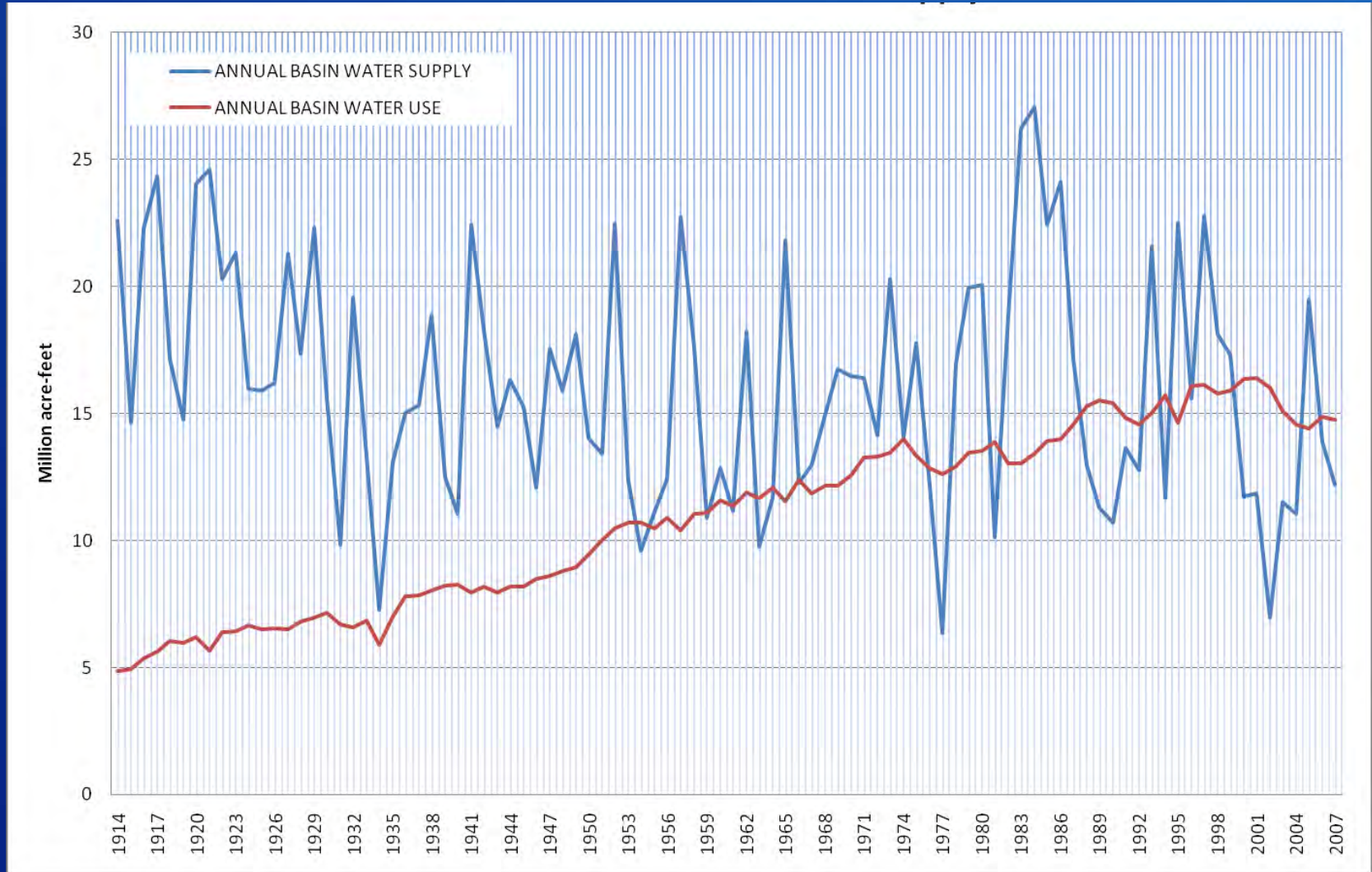
## Colorado River Basin Water Supply and Demand Study

Colorado River District  
Annual Water Seminar  
September 15, 2011



U.S. Department of the Interior  
Bureau of Reclamation

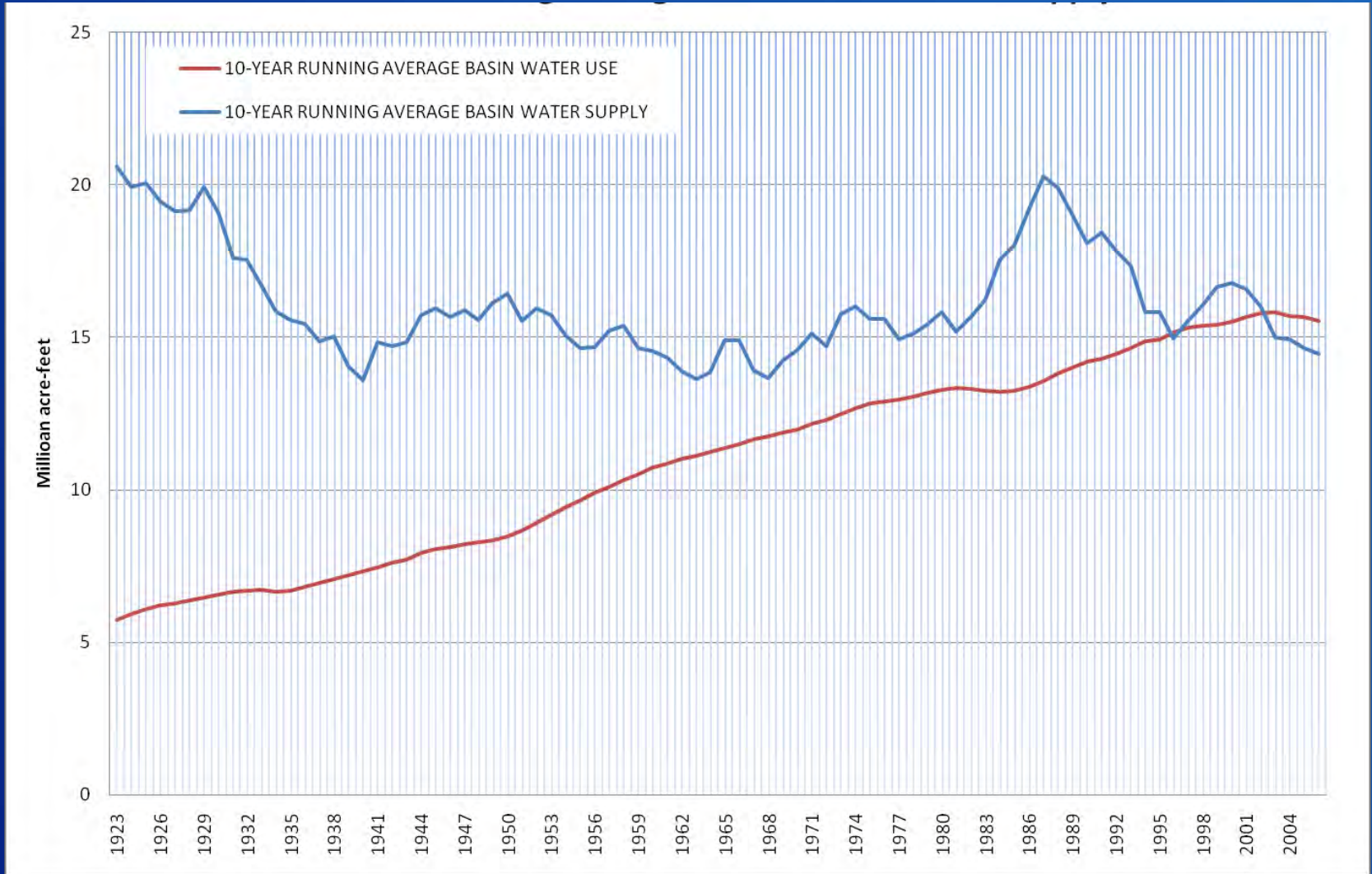
# Historic Colorado River Water Supply & Use (Annual)



# 50 Years of Colorado River Changes

	1960	2010
<b>Demographics / Land Use</b> <ul style="list-style-type: none"> <li>•Population served</li> <li>•Acres irrigated</li> </ul>	12 million < 3 million	30 million 3 million
<b>Physical System</b> <ul style="list-style-type: none"> <li>•Storage capacity</li> <li>•Hydropower generation capacity</li> </ul>	30 maf 6,700 GW	67 maf 12,400 GW
<b>Natural System</b> <ul style="list-style-type: none"> <li>•Annual mean natural flow at L.F.</li> <li>•Lowest 10-yr average flow at L.F.</li> </ul> <small>* 50-year period ending in year shown</small>	15.5 maf 12.5 maf (1931-1940)	14.4 maf 12.0 maf (2001-2010)
<b>Legal</b> <ul style="list-style-type: none"> <li>•Acts, agreements, etc</li> </ul>	Colorado River Compact, Boulder Canyon Project Act, Upper Colorado River Basin Compact	AZ v. CA, NEPA, ESA, QSA, ICS

# Historic Colorado River Water Supply & Use (10-year Running Average)



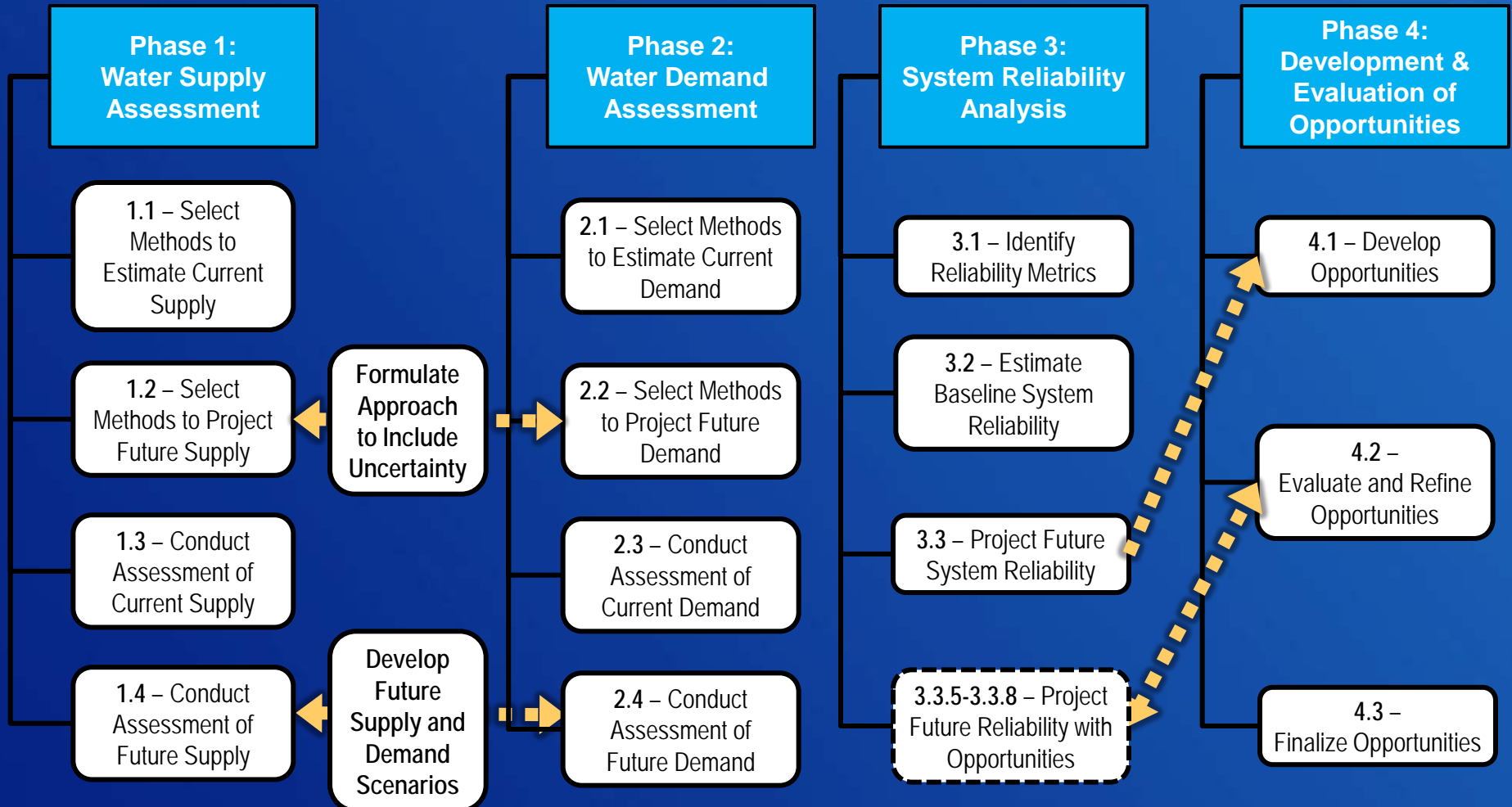




# Options for Participation in the Study (not mutually exclusive)

- Monitor project website, webinars, emails
- Review and comment on products
- Receive periodic updates (formal and/or informal)
- Establish points-of-contact with the “Study Team” (Reclamation and the Basin States representatives)
- Participate in Study working groups (“Sub-Teams”)
- Other

# Study Phases and Tasks

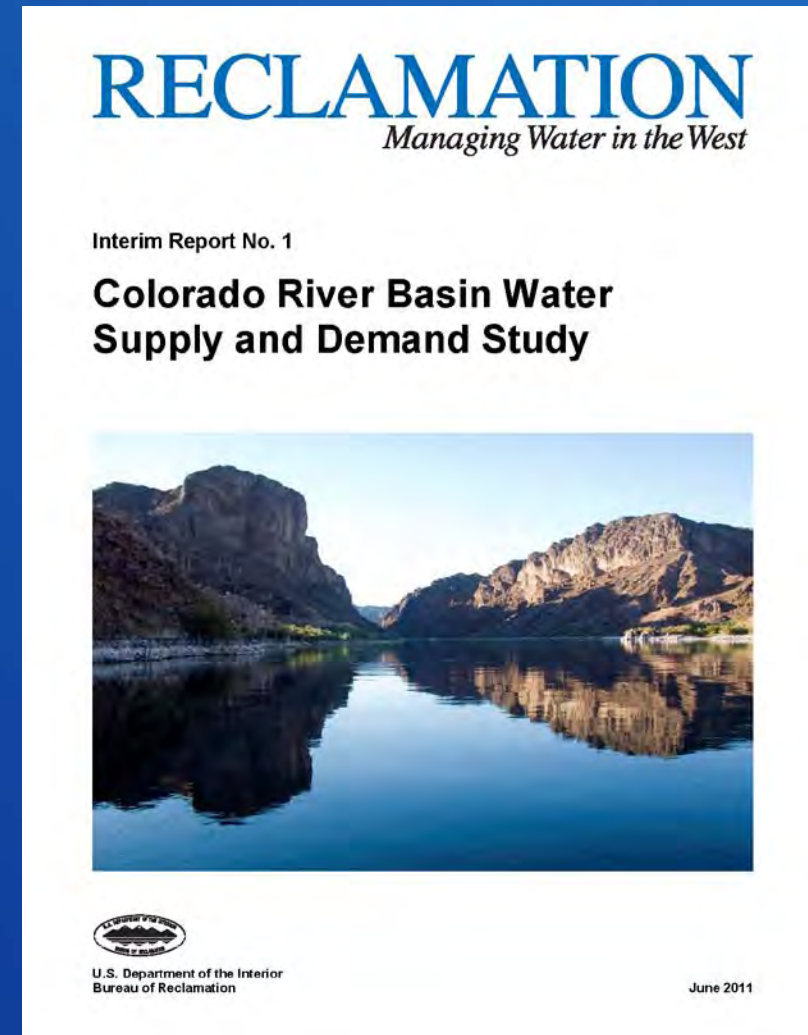


Green denotes essentially complete

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# Interim Report No. 1

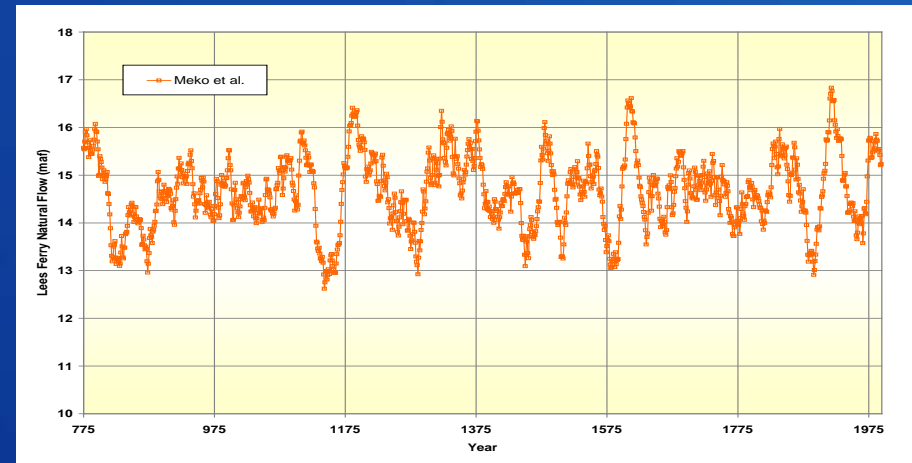
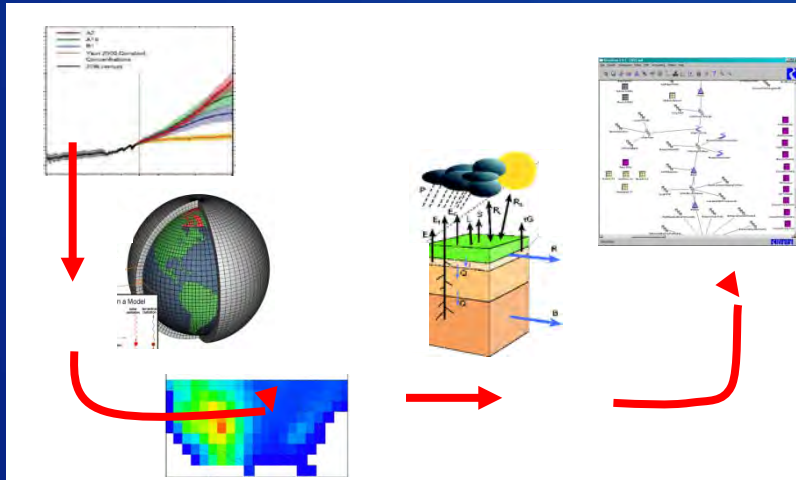
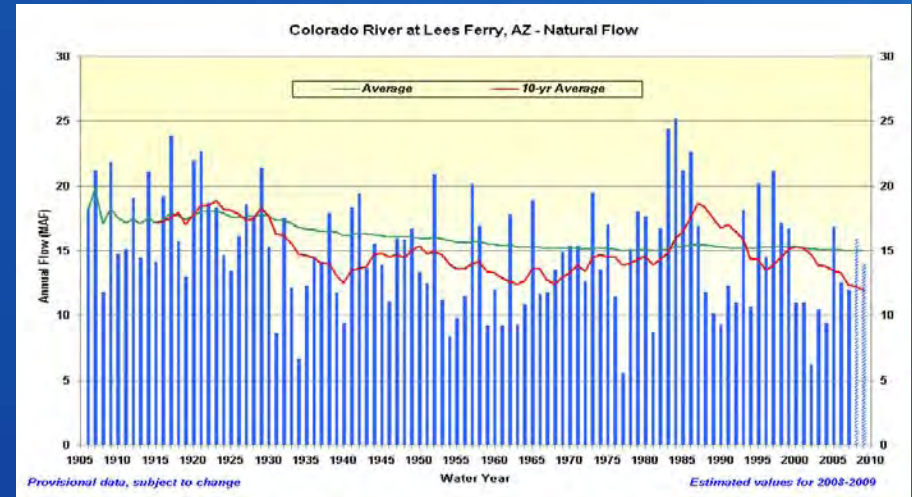
- Interim reports provide a comprehensive “snapshot” of the Study’s progress to date
- Approach facilitates the integration of continuous technical developments and the ongoing input of stakeholders
- Interim Report No. 1 is a “snapshot” as of January 31, 2011 and is available at:  
<http://www.usbr.gov/lc/region/programs/crbstudy.html>
- Submit comments by July 8, 2011
- Further instructions available on website



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# Water Supply Scenarios\*

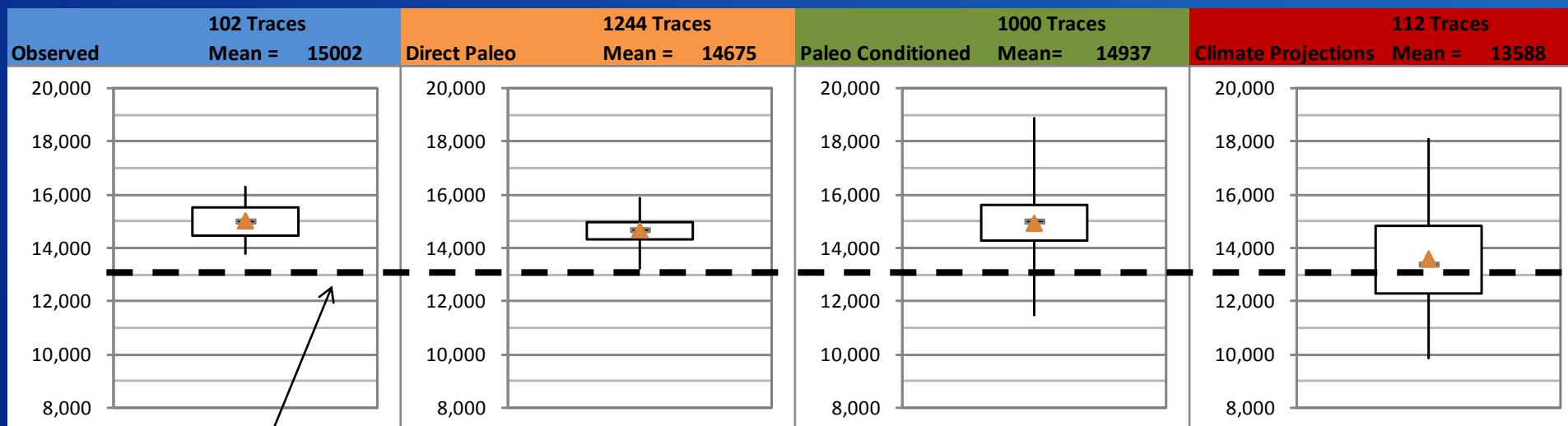
- Observed Resampled
- Paleo Resampled
- Paleo Conditioned
- Downscaled GCM Projected



\* Multiple realizations for each scenario

# Projections of Natural Flow at Lees Ferry

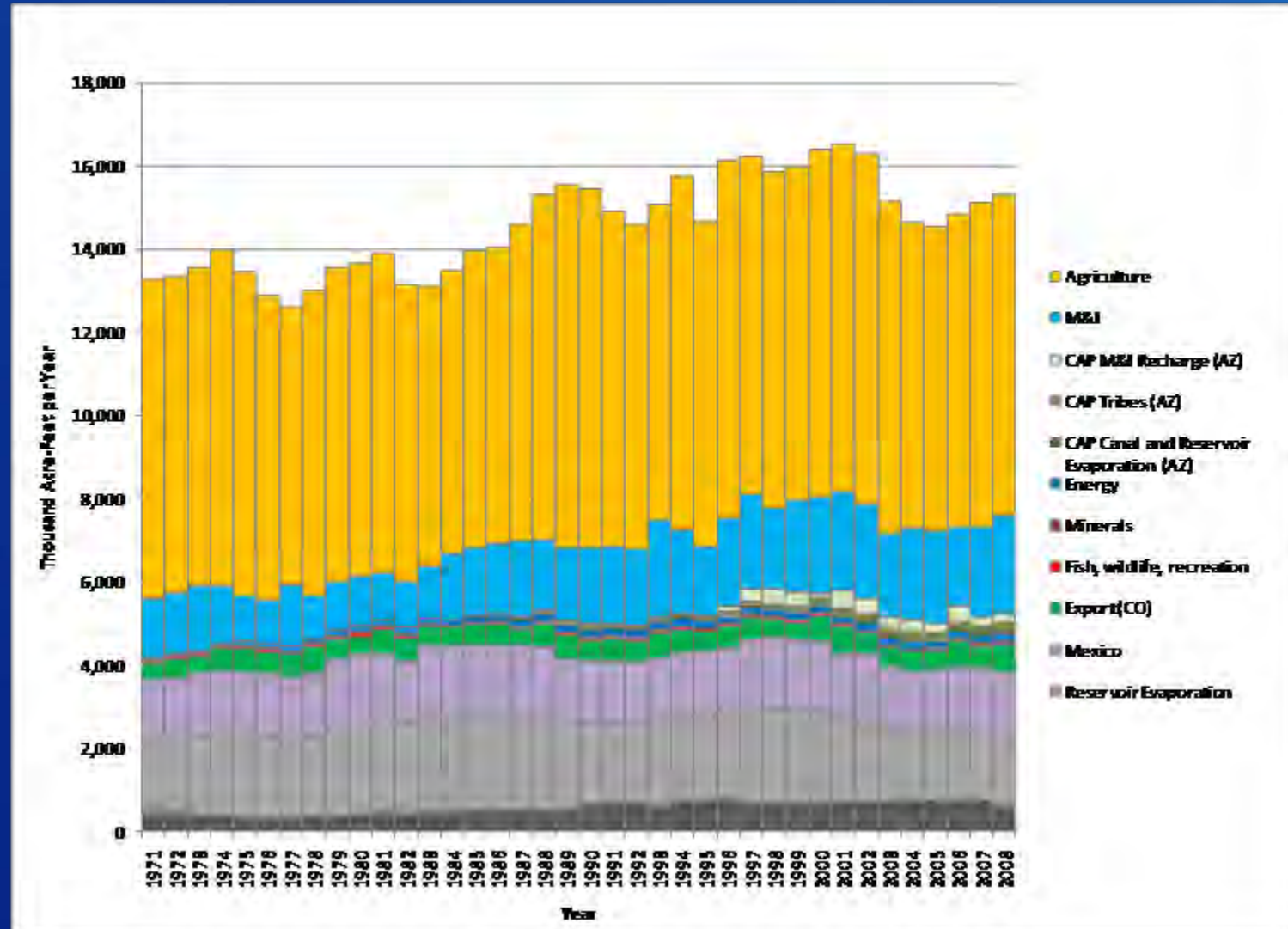
2011 – 2060 Period Mean Annual Flows



1988 – 2007 period mean

Box represents 25<sup>th</sup> – 75<sup>th</sup> percentile, whiskers represent min and max, and triangle represents mean of all traces

# Historical Consumptive Use and Loss 1971-2008



# Water Demand Scenarios \*

- **Current Trends:** growth, development patterns, and institutions continue along recent trends
- **Economic Slowdown:** low growth with emphasis on economic efficiency
- **Expansive Growth:** economic resurgence (population and energy) and current preferences toward human and environmental values \*\*
- **Enhanced Environment and Healthy Economy:** expanded environmental awareness and stewardship with growing economy \*\*

\* Preliminary – Subject to change

\*\* Additional “branches” possible depending upon assumed trajectory of specific socio-economic factors

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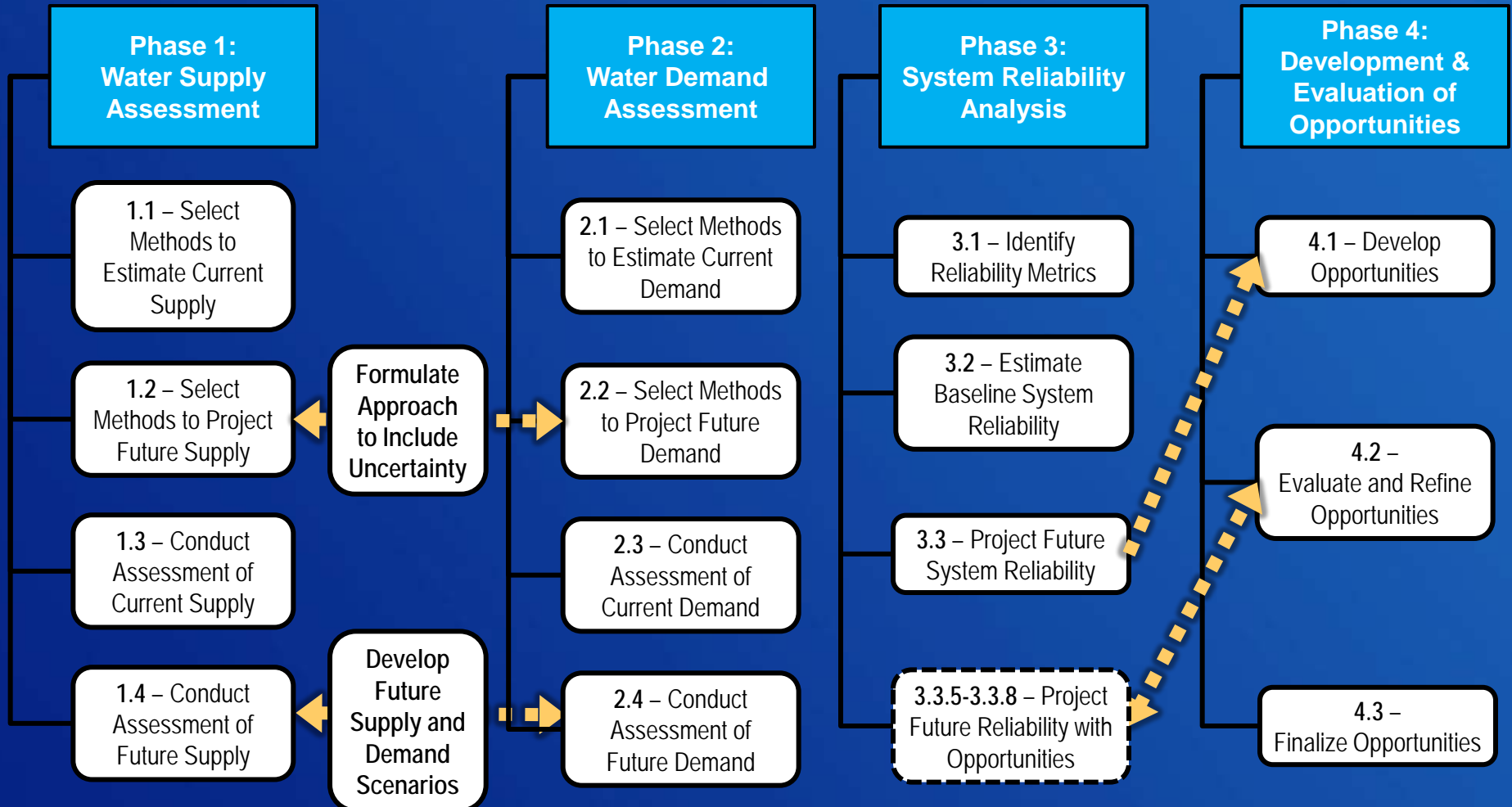
# System Reliability Metrics (Metrics)

- Metrics are measures that indicate the ability of the system to meet the needs of Basin resources
- Metrics will be used to quantify the impacts to Basin resources from future supply and demand imbalances
- Interim Report No. 1 includes metrics defined as of January 31, 2011
- Additional metrics are being considered
  - Flow-based indicator for ecosystem health

## ***Metrics Resource Categories***

- Depletions
- Electrical Power Resources
- Water Quality
- Flood Control
- Recreational Resources
- Ecological Resources

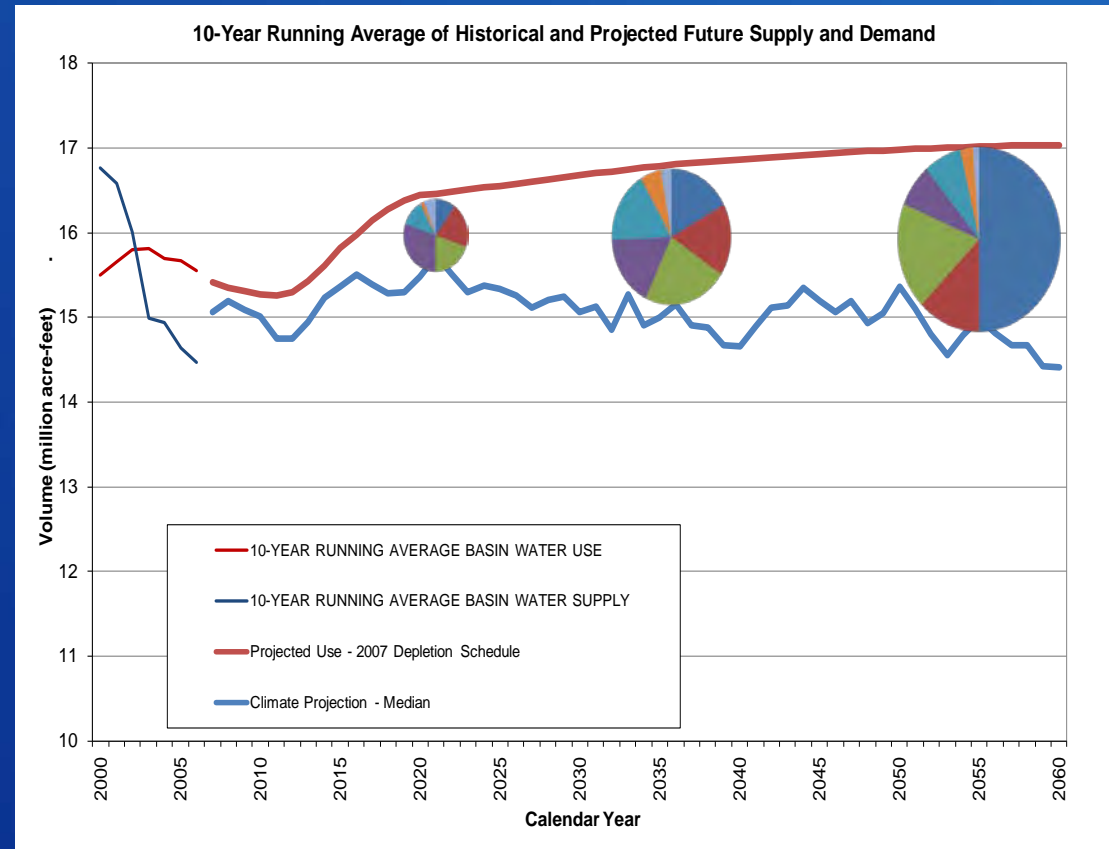
# Study Phases and Tasks



Yellow denotes current and future steps

# Phase 4: Development and Evaluation of Opportunities (Options and Strategies)

- Will look at a wide range of opportunities with input from all stakeholders
- “Kick-off” in October 2011
- “Portfolios” of unique combinations of options



# Timeline for Completing Study

**Feb – Oct 2011**

**Quantify Water Demand Scenarios**

**Sep – Dec 2011**

**Perform “Baseline” System Reliability Analysis**

**Oct–Jan 2012**

**Develop Options and Strategies**

**Feb-Apr 2012**

**Perform System Reliability Analysis with Options and Strategies**

**Apr – Jun 2012**

**Finalize and Evaluate Options and Strategies**

**July 2012**

**Publish Final Study Report**

# Colorado River Basin Water Supply and Demand Study

A scenic view of a reservoir in a canyon, with a small boat in the water and a dam visible in the distance. The water is a deep blue-green color, and the surrounding hills are brown and rocky. The sky is clear and blue.

## Study Contact Information

- Website: <http://www.usbr.gov/lc/region/programs/crbstudy.html>
- Email: [ColoradoRiverBasinStudy@usbr.gov](mailto:ColoradoRiverBasinStudy@usbr.gov)
- Telephone: 702-293-8500; Fax: 702-293-8148

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