Colorado River Basin Supply and Demand Study

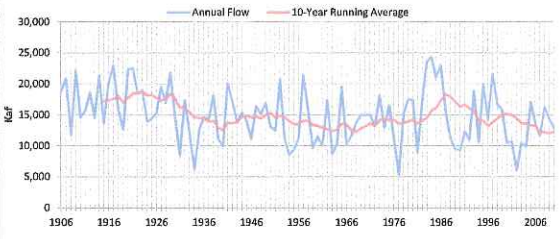
What Did We Learn?

Colorado River Basin Study Purpose

- Define future imbalances in the water supply and demand for Colorado River water
- Analyze adaptation and mitigation strategies to resolve those imbalances
- Define Next Steps to continue to **work together** to shore up assumptions and verify analyses

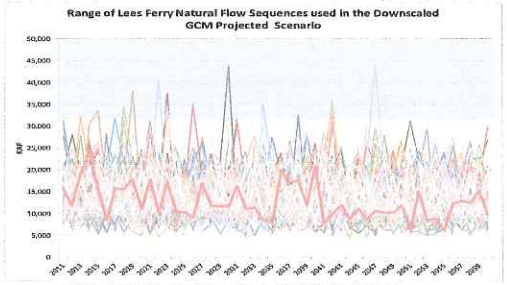
- **NOT A DECISIONAL DOCUMENT**

Annual Observed Natural Flow Colorado River at Lees Ferry



Ranges from Annual Flow of 5.5 MAF to 25 MAF
Mean Annual Flow (1906 to 2008) = 15 MAF
Mean Annual Flow (1991 to 2010) = 13.7 MAF
Mean Annual Flow (1951 to 1970) = 13.2 MAF

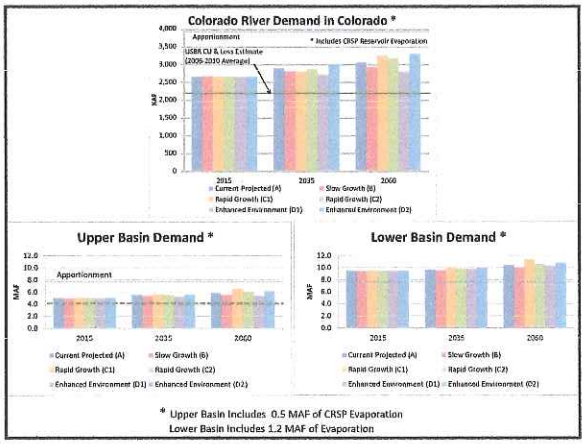
Annual Climate Projected Natural Flow Colorado River at Lees Ferry



GCMs Annual Flows Range from 4.2 MAF to 44 MAF
Average Mean Annual Flow for all 112 GCMs = 13.7 MAF
25% of GCMs predict Mean Annual Flow > 15.0 MAF
25% of GCMs predict Mean Annual Flow < 12.5 MAF

Supply "Lessons"

- Colorado River Natural Flow will continue to be highly variable, with potential periods of much higher and much lower flows
- Colorado River Storage Project reservoirs will continue to be critical to allow any future Upper Basin development



* Upper Basin Includes 0.5 MAF of CRSP Evaporation
Lower Basin Includes 1.2 MAF of Evaporation

Demand "Lessons"

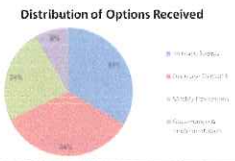
- Historically, Upper Basin States projected higher demands to "protect" their apportionment
- Higher demands have been used in Decisional Documents – resistance to more realistic values
- Basin Study demands additionally inflated to reflect that ALL future adjacent area demands would be met from the Colorado River

Imbalance "Lessons"

- Imbalance in Basin Study is 3.2 MAF by 2060
- Imbalance assumes all Adjacent Area demand must be met from the Colorado River
- Imbalance does not include current planned move towards conservation
- Future imbalances cannot be ignored, but could be refined based on more realistic assumptions

Options to Mitigate Imbalances

- Options and Strategies investigated
  - Increase Supply (Desalination, Pipelines, Weather Modification)
  - Reduce Demand (Agricultural and Municipal Conservation w/ or w/o Water Banking, Agricultural Transfers)
  - Modify Operations (Reservoirs Operations, Evaporation Control)



Options and Strategy "Lessons"

- Potential Compact Curtailment will be seen in advance
- Opportunities and potential legal/technical conservation issues need to be investigated now
- New supply options need to go/no go soon due to permitting issues
- Options that reduce several vulnerabilities should move to the head of the line (Reduce Compact Curtailment *and* provide environmental flows)

Cooperation "Lessons"

- Basin States have long history of working together to resolve pending issues and avoid litigation
  - Interim Guidelines and Lower Basin overuse
  - Minute 319 and shortage sharing
  - Hydrologic Determination in Upper Basin States
  - Environmental Flows through the Grand Canyon
- Precedent for Basin Study Next Steps to pave the way for agreements to avoid Compact Curtailment