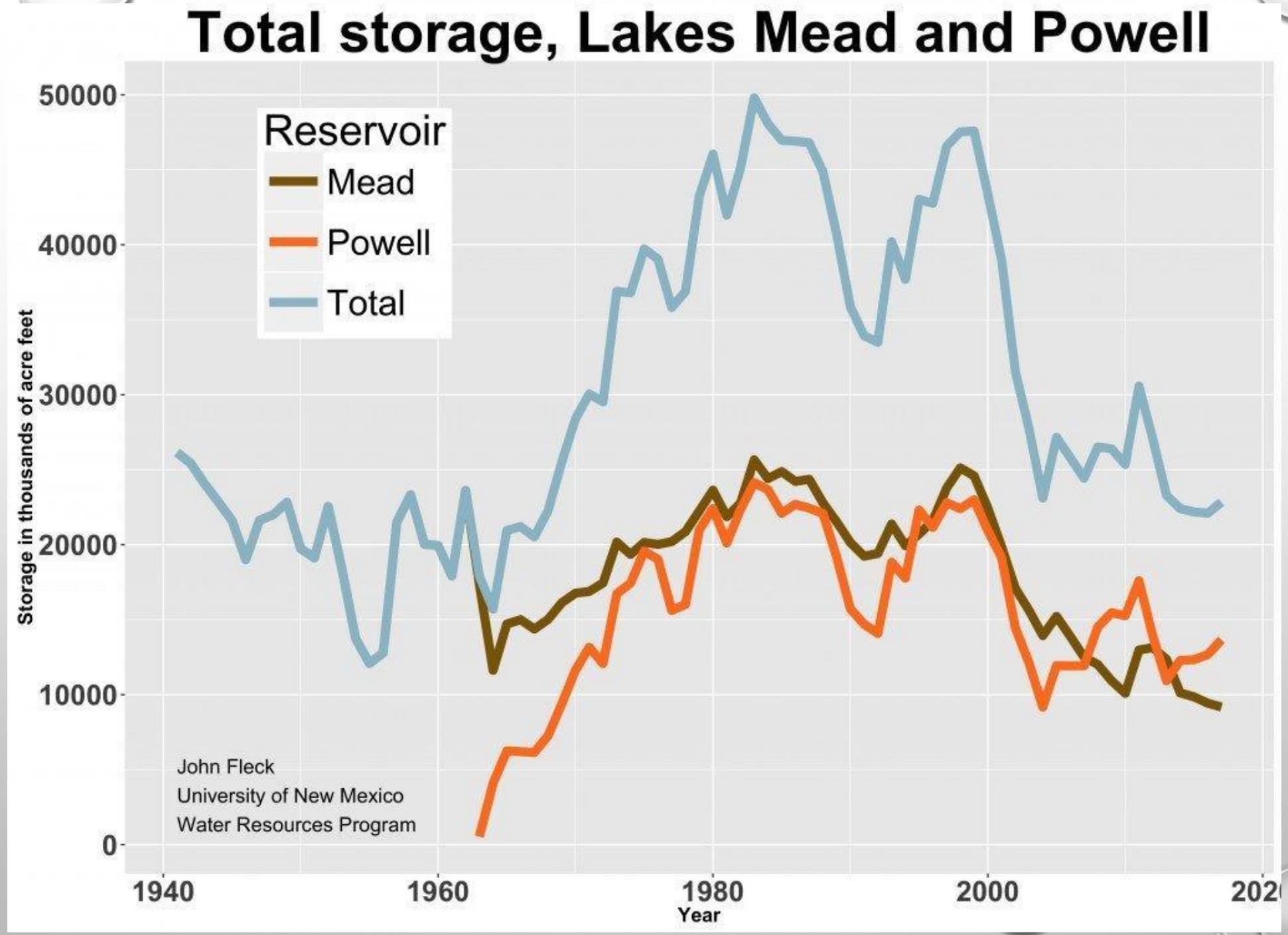
JOINT WEST SLOPE BASIN ROUNDTABLE RISK STUDY

INTRODUCTION AND WORK TO DATE

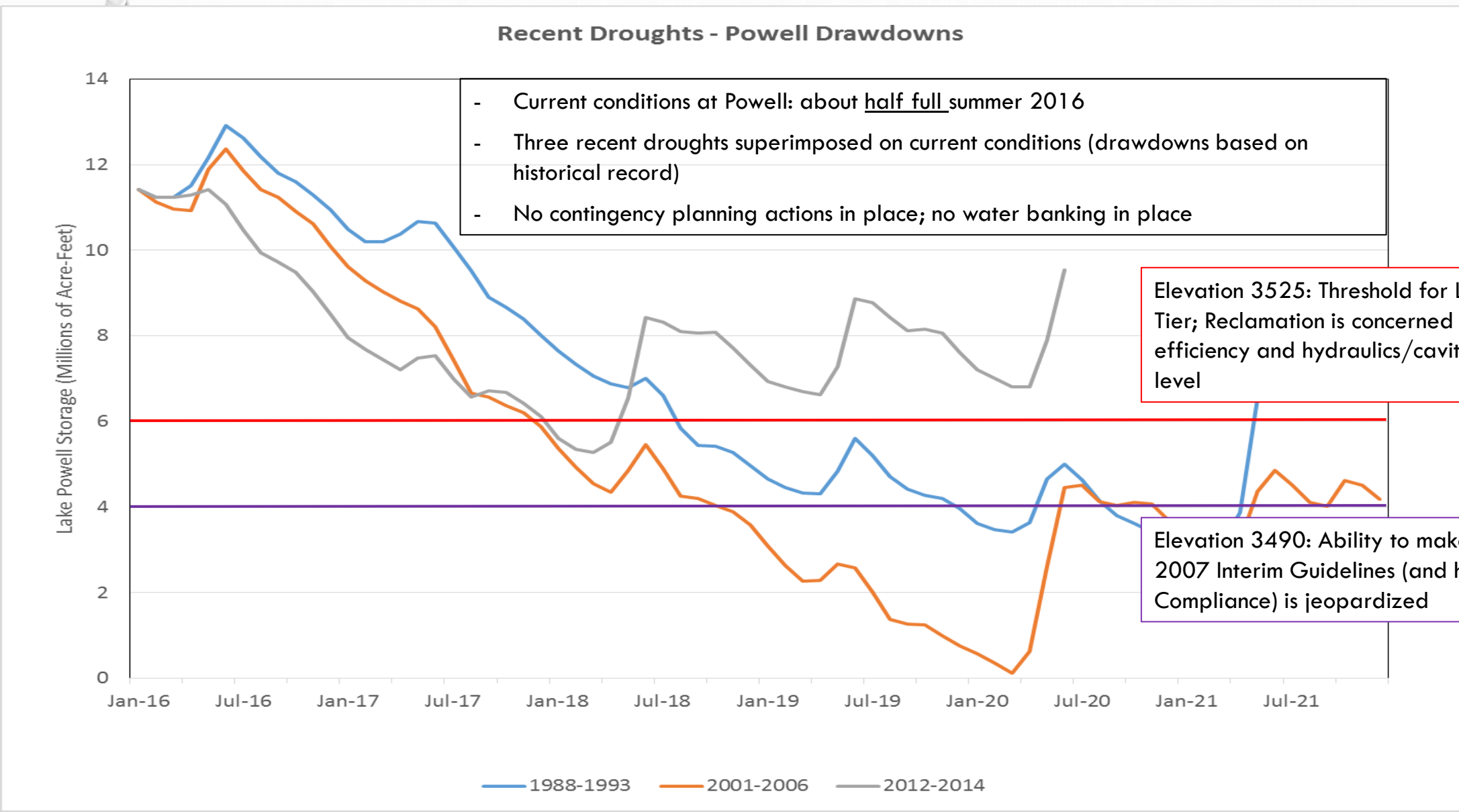
AUGUST 17, 2016

Hydros Consulting


Oregon
Idaho
Wyoming
South
Ne
Nevada
Utah
Colorado
California
Mexico
Texas
New Mexico
Arizona
Salt Lake City
Cheyenne
Flaming Gorge Reservoir
Green River
Yampa River
Upper Colorado
River Basin
Denver Metro Area
San Francisco
Gunnison River
Colorado River
Colorado Springs
Blue Mesa Reservoir
Pueblo
Lake Powell
Las Vegas
Lake Mead
San Juan River
Virgin River
Colorado River
Los Angeles Metro Area
Lower Colorado
River Basin
Albuquerque
Burro Creek
Little Colorado River
Colorado River Aqueduct
Lake Havasu
Verde River
Salt River
Gila River
Phoenix
San Francisco River
Imperial Reservoir
San Pedro River
Tucson


Total storage, Lakes Mead and Powell
Reservoir
Mead
Powell
Total
Storage in thousands of acre feet
50000
40000
30000
20000
10000
0
1940
1960
1980
2000
Year
John Fleck
University of New Mexico
Water Resources Program

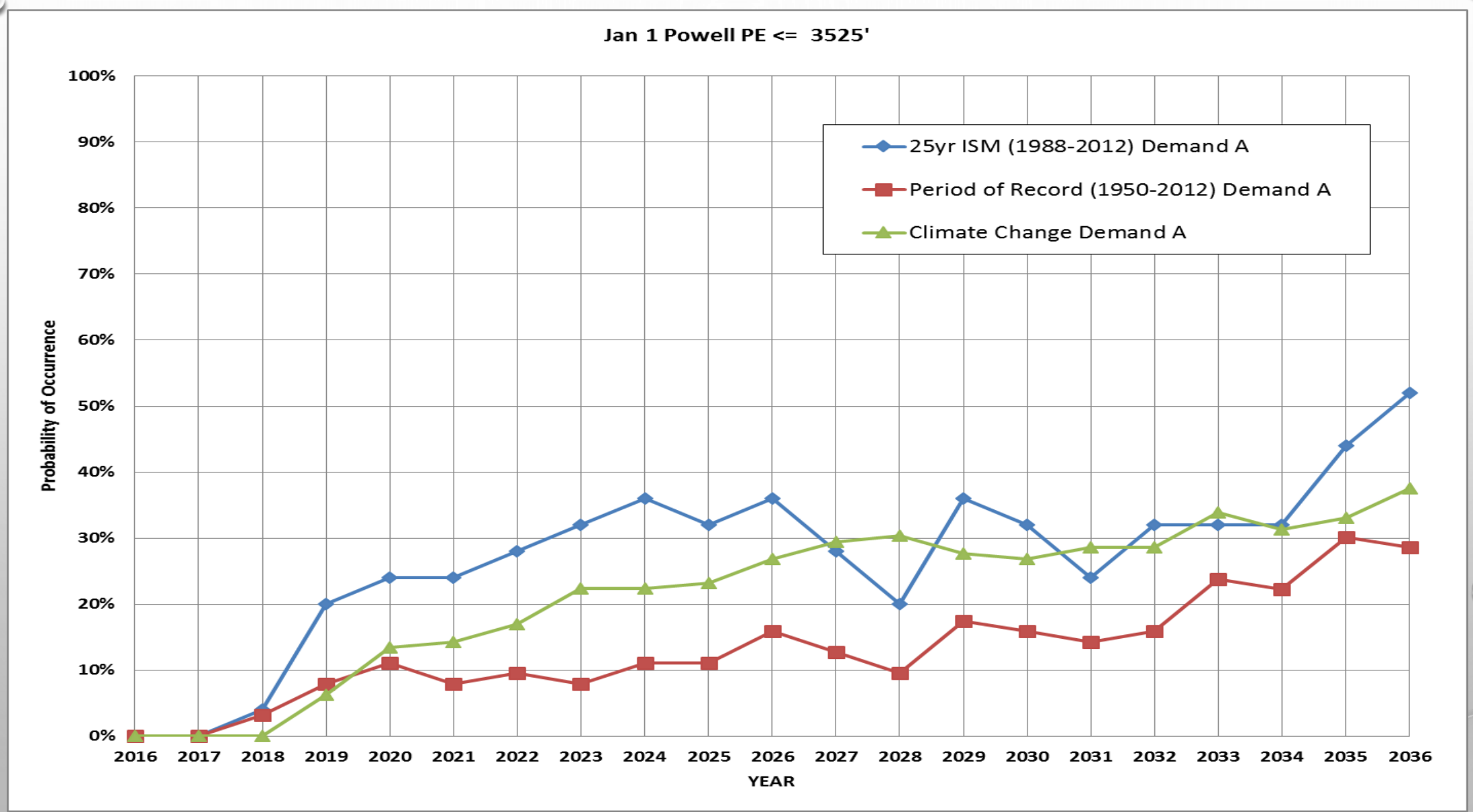
What if drought periods of past 25 years repeated?



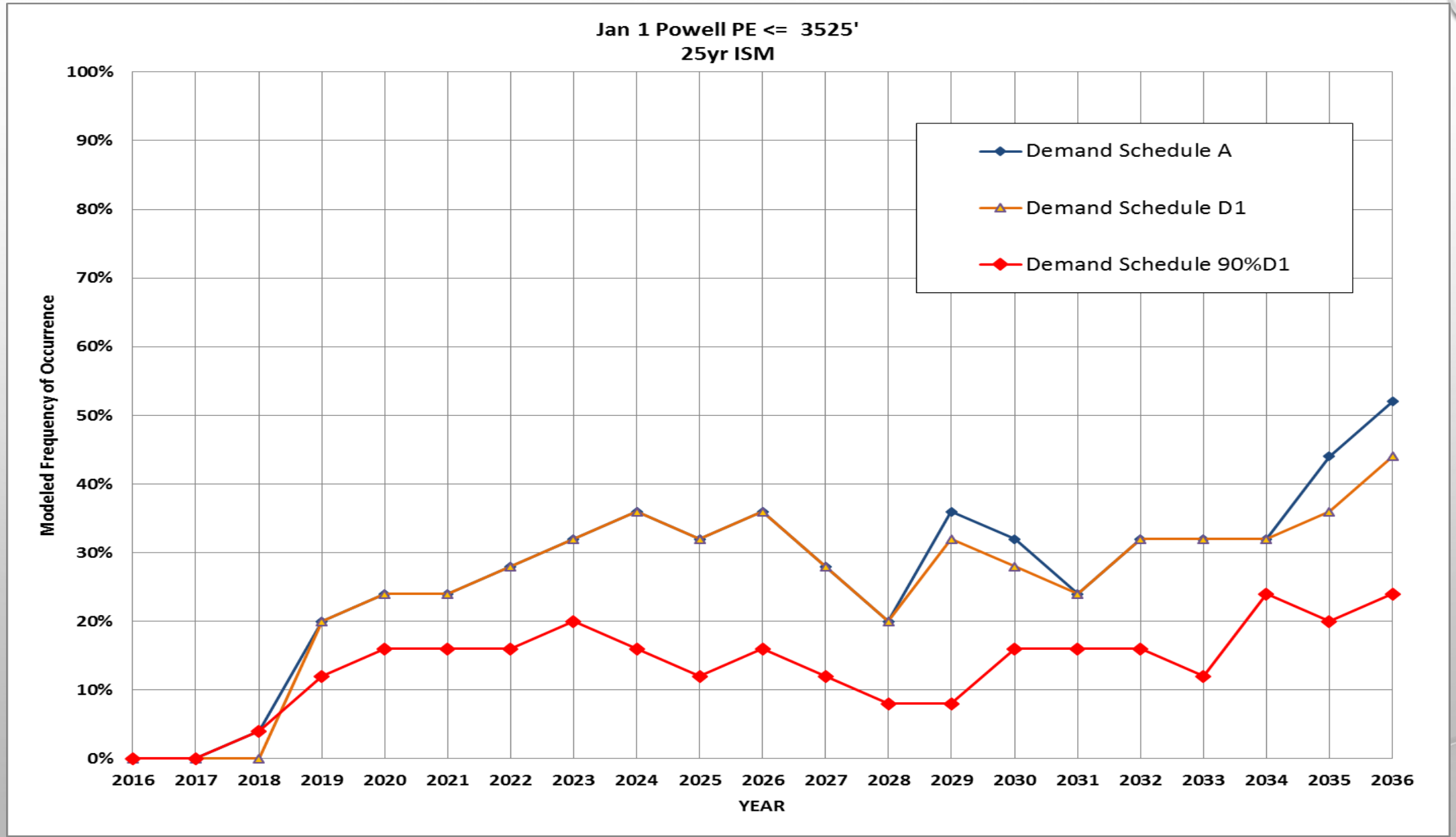
DROUGHT CONTINGENCY PLANNING

- Objectives:
  - (Upper Basin) Identify actions that can reduce the risk of either losing power production at Powell or lose ability to meet our compact obligations
  - Why 3525'? Maintains power production, and by always keeping some water in Powell, we avoid a compact "hole" where we can't deliver minimum required amount downstream (hydraulics).
- Possible Solutions:
  - Drought Operation of CRSP reservoirs (Upper Basin)
  - Demand Management (Lower Basin and Upper Basin)
  - Continue Augmentation (Cloud Seeding) Activities (Upper Basin only)
- Best solutions involve a coordinated effort between basins, because Powell and Mead operations are closely linked through the 2007 Interim Guidelines
- Lower Basin has proposed a plan whereby they begin additional conservation measures at Mead El. 1090', with as much as 1.2MAF conservation as Mead approaches El. 1020'

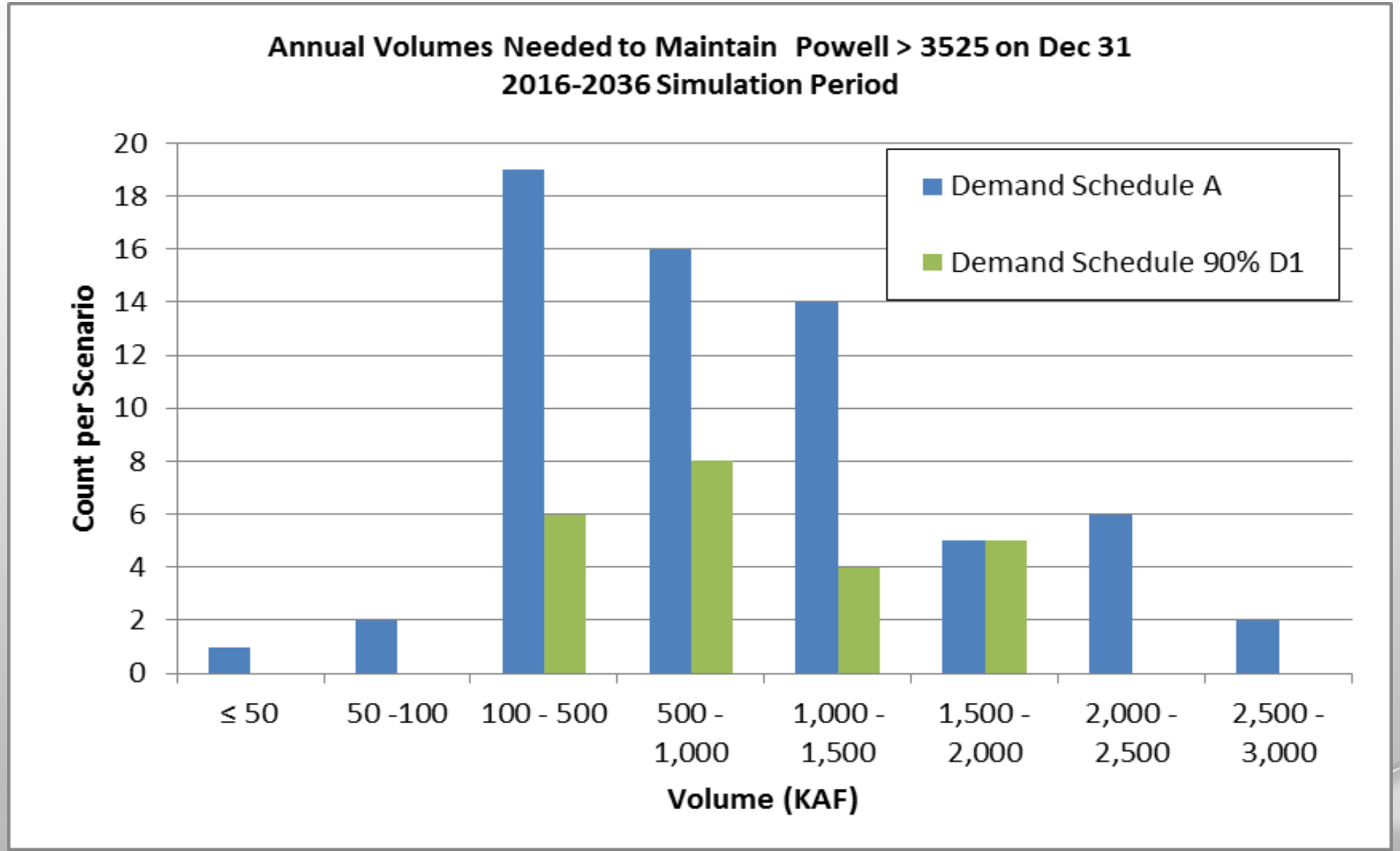
RISK IS A FUNCTION OF HYDROLOGY



RISK IS ALSO A FUNCTION OF DEMAND



WHAT WOULD IT TAKE TO COMPLETELY ELIMINATE RISK?



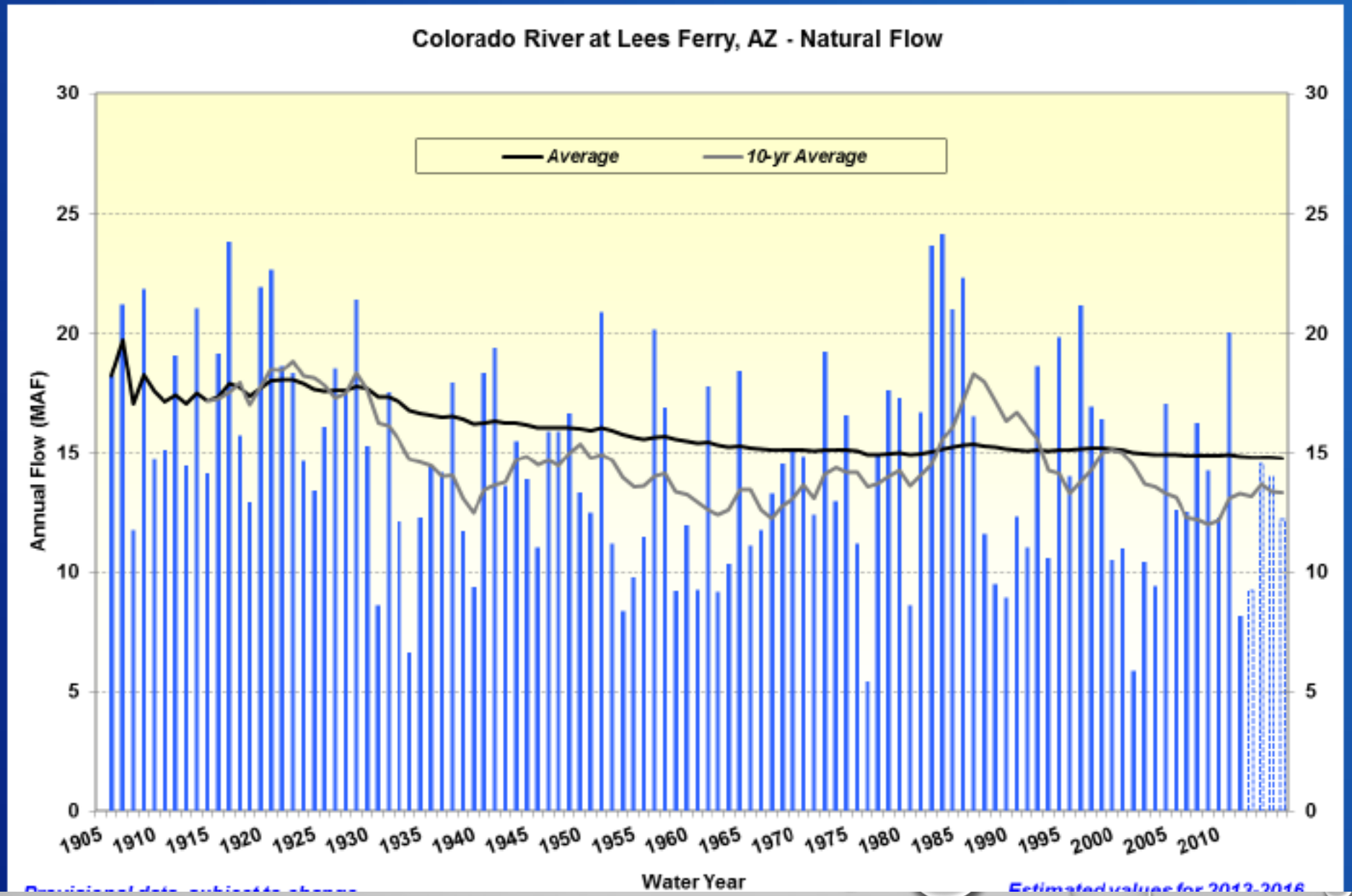
CONCLUSIONS

- Hydrology, Demands and Future Development levels matter, the higher the consumptive use in the UB the higher the risk to all users.
- Contingency Planning is Essential, CRSP reservoir drought operations reduces the risk, but in more severe droughts (e.g., 1988-1993 & 2001-2005), demand management is also required
- Some of the demand management volumes we are seeing in the model are very large and may not be feasible, so we need to consider the "trade-offs" and alternative strategies
- Example: Demand Management Combined with a Water Bank:
  - Could limit the Annual impact to CU by spreading Conservation over many years
  - Would provide greater control over conserved water

ONGOING / UPCOMING WORK

- This Project:
  - Evaluate different demand and hydrology data sets
  - Draft report of results for discussion/distribution to BRTs
  - Set the Stage for Colorado-specific and basin-specific analyses.
- Recommendations for future work: Look at sub-basin specifics
  - Statemod coupled with CRSS
  - What would voluntary demand management look like? With or w/o a Bank?
  - What would a compact call (mandatory reductions) look like?
  - How do these impacts vary across sub-basins?
- What are reasonable actions to prepare for?
  - Need to examine cost of acting vs not acting
  - Identify thresholds and “signposts”
  - How much can a water bank help?
  - Economic cost-benefit: Hydropower vs Ag/M&I use?

Natural Flow
Colorado River at Lees Ferry Gaging Station, Arizona



END

WHAT ARE "CRITICAL ELEVATIONS" AT POWELL?

- To minimize risk of a Compact Call, keep Powell above 3525'
- At 3490 it is impossible to meet deliveries under the Interim Guidelines.