RECLAMATION

*Managing Water in the West*

# Colorado River Basin
# August 2017 Update of Projected Future Conditions

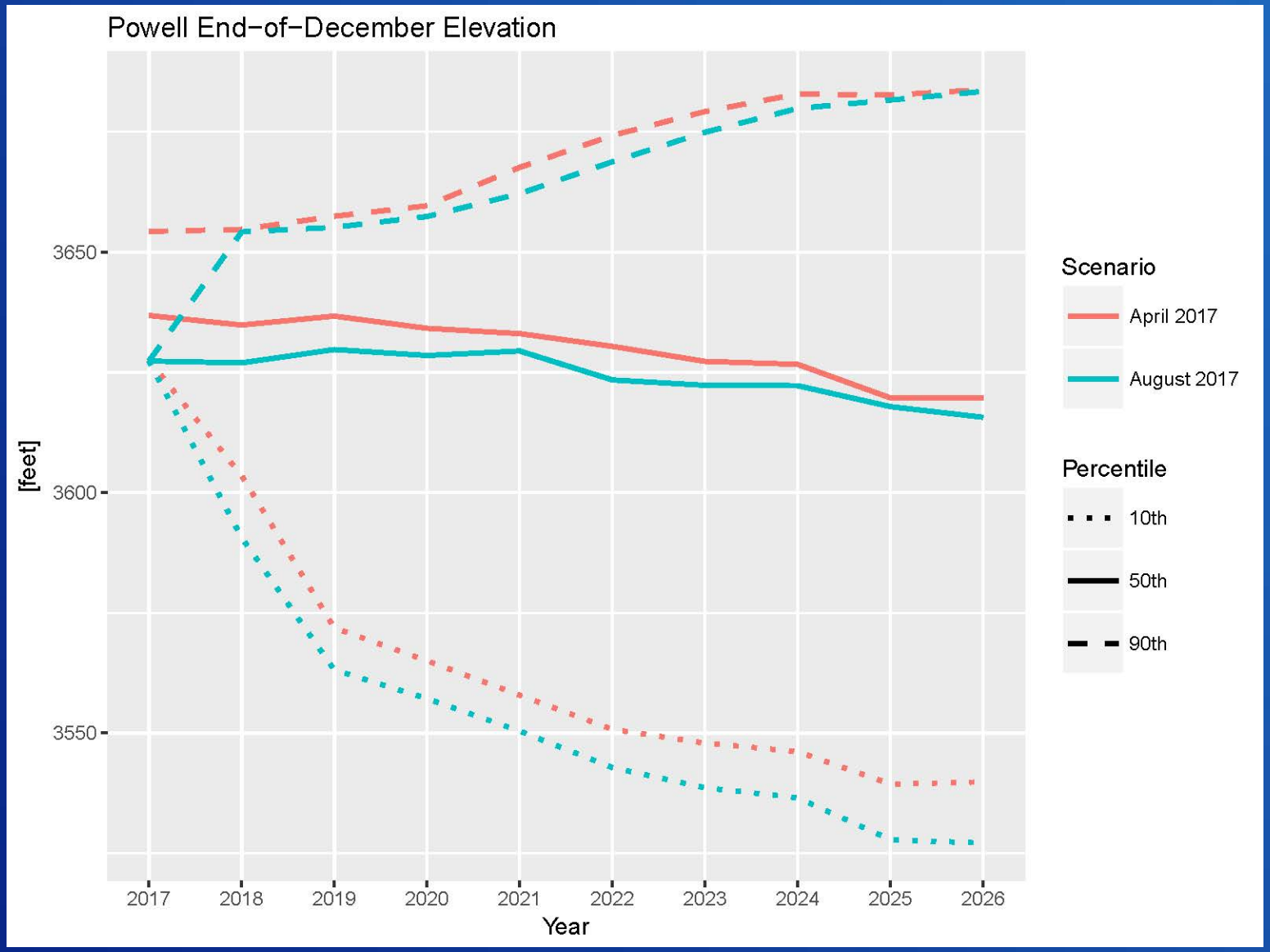
*August 21, 2017*

U.S. Department of the Interior
Bureau of Reclamation

# Approach for August 2017 Probabilistic Modeling

1. Initialize CRSS with end-of-December 2017 reservoir conditions as projected by the August 24-Month Study Most Probable run
2. Use CRSS to project 2018-2026 conditions using 110 hydrologic inflow sequences from the observed natural flow record (1906-2015)
3. Compute probabilities across all future traces

# August vs. April 2017 CRSS Results

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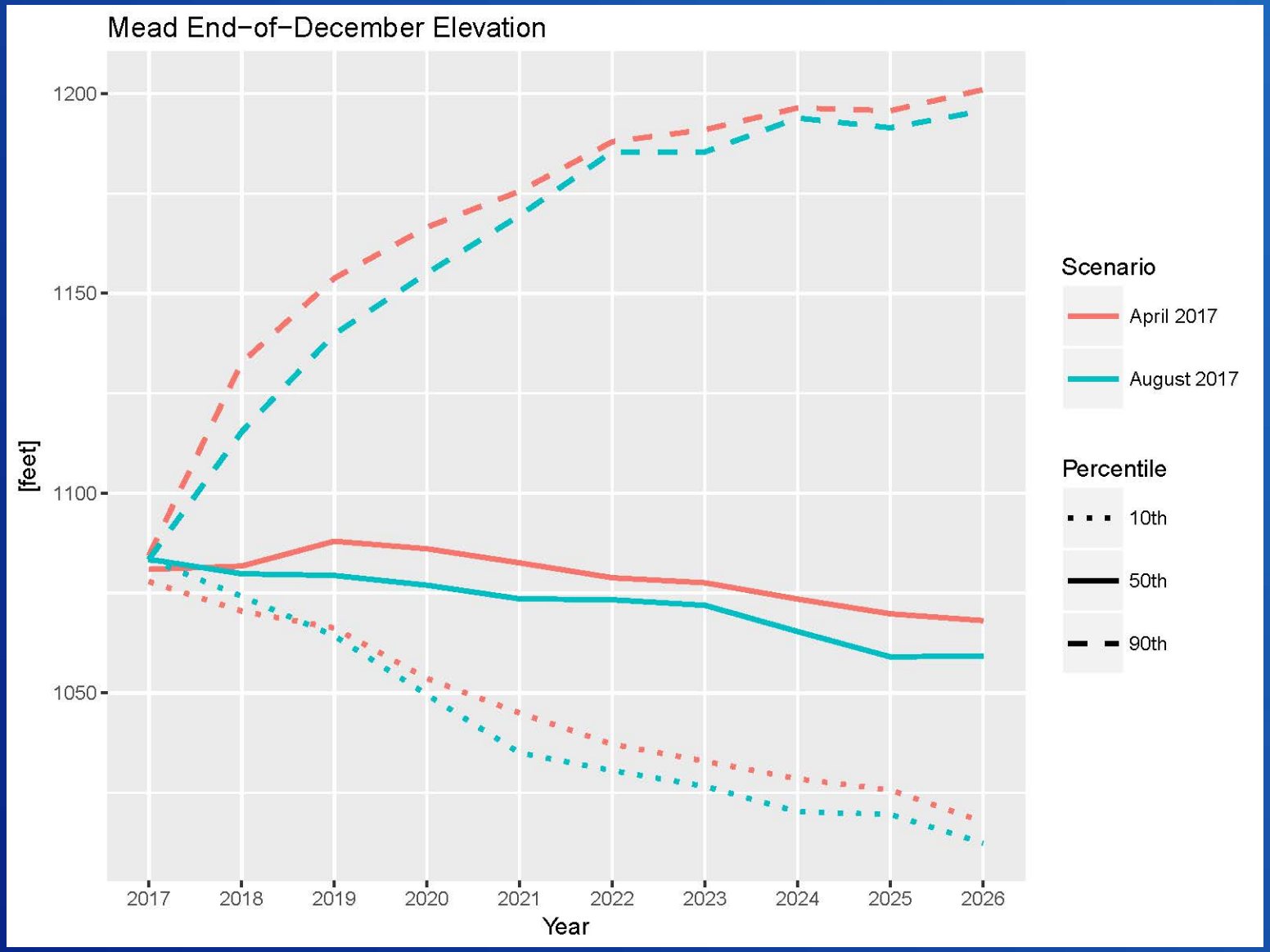
# August vs. April 2017 CRSS Results

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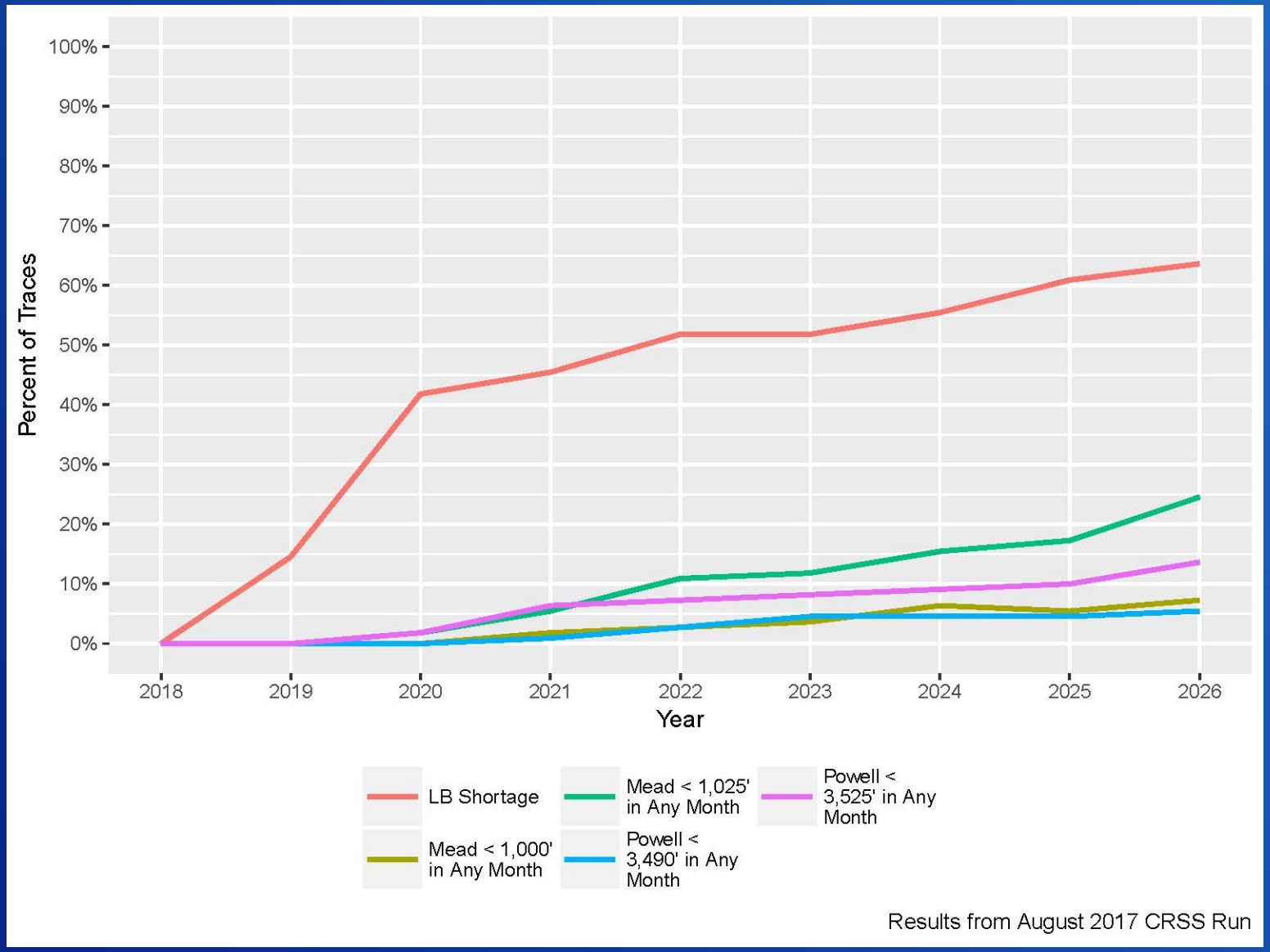
# August 2017 CRSS Results

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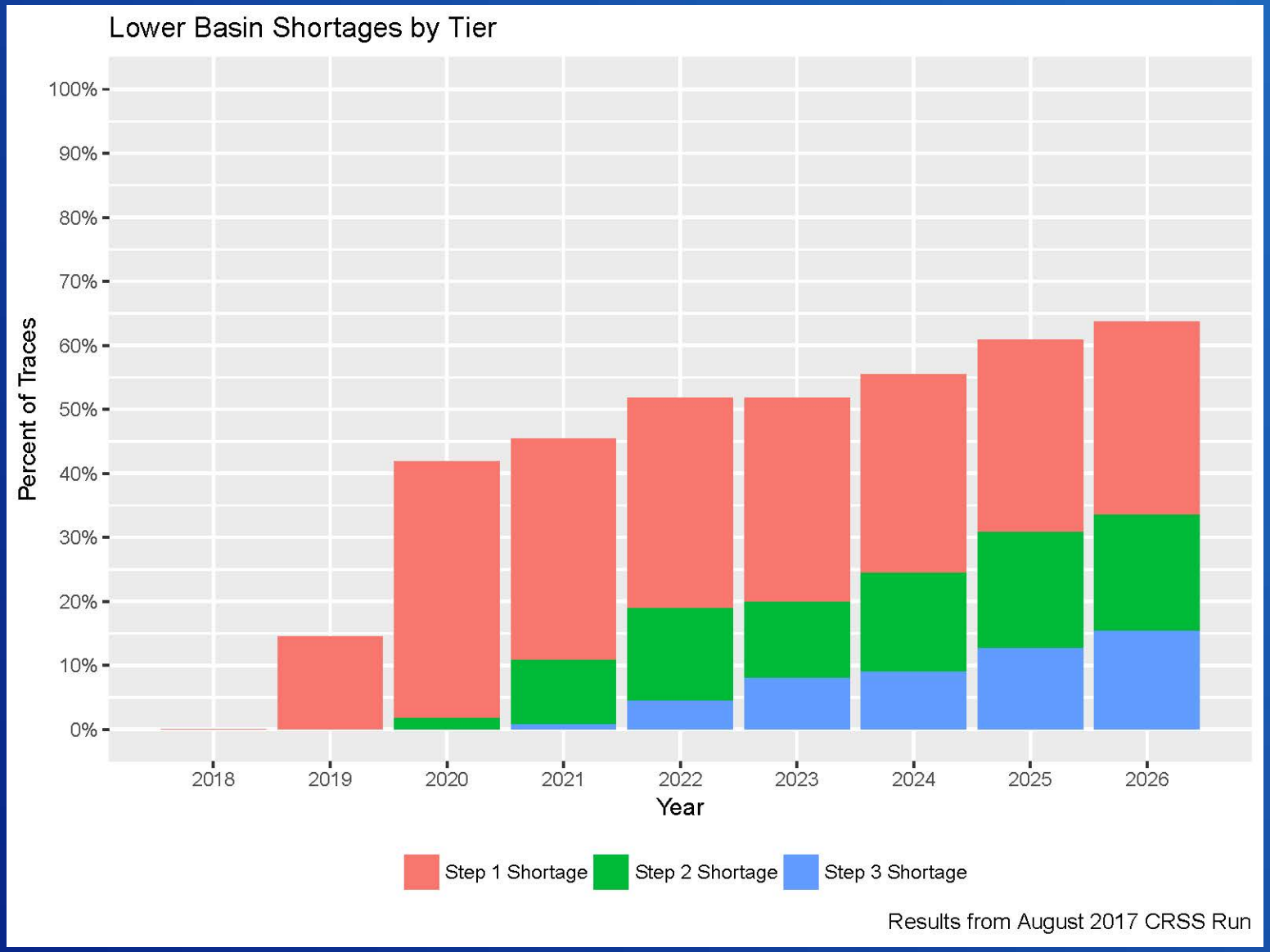
# August 2017 CRSS Results

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## Percent of Traces with Event or System Condition
### Results from August 2017 CRSS[1,2,3,4] (values in percent)

| | Event or System Condition | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|
| Upper Basin – Lake Powell | **Equalization Tier** | **20** | **29** | **27** | **29** | **31** |
| | *Equalization – annual release > 8.23 maf* | *20* | *29* | *27* | *28* | *30* |
| | *Equalization – annual release = 8.23 maf* | *0* | *0* | *0* | *1* | *1* |
| | **Upper Elevation Balancing Tier** | **80** | **68** | **55** | **52** | **52** |
| | *Upper Elevation Balancing – annual release > 8.23 maf* | *75* | *52* | *41* | *35* | *37* |
| | *Upper Elevation Balancing – annual release = 8.23 maf* | *5* | *15* | *15* | *17* | *14* |
| | *Upper Elevation Balancing – annual release < 8.23 maf* | *0* | *1* | *0* | *0* | *1* |
| | **Mid-Elevation Release Tier** | **0** | **3** | **17** | **15** | **12** |
| | *Mid-Elevation Release – annual release = 8.23 maf* | *0* | *0* | *0* | *0* | *2* |
| | *Mid-Elevation Release – annual release = 7.48 maf* | *0* | *3* | *17* | *15* | *10* |
| | **Lower Elevation Balancing Tier** | **0** | **0** | **0** | **4** | **5** |
| Lower Basin – Lake Mead | **Shortage Condition – any amount (Mead ≤ 1,075 ft)** | **0** | **15** | **42** | **45** | **52** |
| | *Shortage – 1st level (Mead ≤ 1,075 and ≥ 1,050)* | *0* | *15* | *40* | *35* | *33* |
| | *Shortage – 2nd level (Mead < 1,050 and ≥ 1,025)* | *0* | *0* | *2* | *10* | *15* |
| | *Shortage – 3rd level (Mead < 1,025)* | *0* | *0* | *0* | *1* | *5* |
| | **Surplus Condition – any amount (Mead ≥ 1,145 ft)** | **0** | **0** | **7** | **12** | **17** |
| | *Surplus – Flood Control* | *0* | *0* | *1* | *2* | *3* |
| | **Normal or ICS Surplus Condition** | **100** | **85** | **51** | **43** | **31** |

[1] Reservoir initial conditions based on results from the August 2017 most-probable 24-Month Study.
[2] Percentages computed from 110 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2015 for a total of 110 traces analyzed.
[3] Percentages shown may not sum to 100% due to rounding to the nearest percent.
[4] Percentages shown may not be representative of the full range of future possibilities that could occur with different modeling assumptions.