**THE BATHTUB RING**

**Shrinking Lake Mead: Impacts on Water Supply, Hydropower, Recreation and the Environment**

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**OVERVIEW OF THE BASIN AND LAKE MEAD**

The Colorado River is the water supply for approximately 40 million people, irrigating over 5.5 million acres of land across seven states and two countries. Virtually every drop of the Colorado River is allocated to a consumptive use. In addition to supplying water, the Colorado River is an important source of hydroelectricity, water recreation, tourism and ecological habitat.

**Increasing demand** combined with prolonged multi-year climatic drought has lead to precipitously low reservoir levels in Lake Mead, which is impounded behind Hoover Dam. If the drought continues, Lake Mead will likely drop below 1075’, triggering the first set of mandated water delivery curtailments set forth in the Interim Guidelines.

**PROJECT OBJECTIVES**

We examined physical and economic impacts to water deliveries, hydropower generation, recreation, and the environment as Lake Mead levels drop to the key elevations identified in the Interim Guidelines: 1075’, 1050’, 1025’, and 1000’.

**KEY FINDINGS**

Vulnerability varies by state due to differences in the magnitude of curtailments and water uses. Although attention is paid to the impacts of water delivery curtailments, there are substantial economic losses associated with changes to recreation, hydropower generation, and downstream ecosystems.

**WATER CURTAILMENT DOESN’T PREDICT VULNERABILITY**

While it is generally assumed that Nevada water users are among the most vulnerable to water supply curtailments, and California users are not vulnerable, there are compelling reasons to conclude that the opposite is true. Impacts to Central Arizona Project users, as expected, will be significant, but will be confined to agricultural users, not municipal or tribal water users.

**ANNUAL VISITATION COULD BE REDUCED BY ALMOST HALF**

Currently, the National Park Service predicts that no access points will be operable below 1060’ despite an additional infrastructure investment of $5 million in 2015. Visitation is projected to drop from:

7 → 4 MILLION

The decrease will be compounded by the inoperability of access points.

**IMPACTS BY ELEVATION**

This analysis does not project when Lake Mead will reach the curtailment elevations, but instead provides both quantitative and qualitative frameworks to support decision-making as shortages occur. The following graphic depicts a handful of impacts by elevation, providing an understanding of potential tradeoffs between stakeholder needs.

**THE GREATEST ENVIRONMENTAL IMPACTS ARE INDIRECT**

Reduced agricultural runoff could threaten the Colorado River Delta since it is the main water source for the Delta’s remaining ecosystems. Funding for the Salinity Control Program will be reduced due to declines in hydropower revenue.

**CROSS SECTOR INTERACTIONS**

Increased costs will be borne by urban residents, farmers, and commercial operators.

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**COST OF HYDROPOWER COULD ROUGHLY QUINTUPLE**

Hydropower rates will exceed spot market rates.

Hydropower generation will decline as Lake Mead shrinks, increasing energy costs. Costs paid by contractors for hydropower and spot market power will roughly double at 1075’, triple at 1050’, quadruple at 1025’ and quintuple at 1000’. Though hydropower rates will surpass spot market rates at lower elevations, Hoover customers are contractually bound to purchase Hoover power until 2067.

With each 25’ drop, total costs increase by roughly 100% compared to a full reservoir.

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