



Potential Economic Cost of Smallmouth Bass Flows

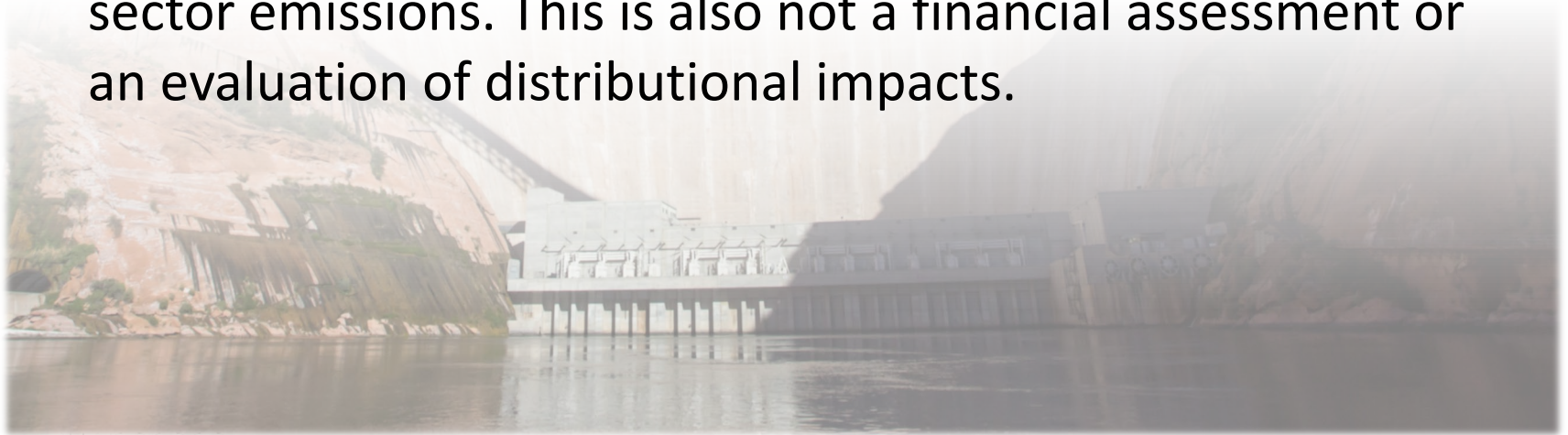
Lucas S. Bair¹, Charles B. Yackulic¹, Drew E. Eppehimer¹

¹ U.S. Geological Survey, Southwest Biological Science Center,
Grand Canyon Monitoring and Research Center

Glen Canyon Dam Adaptive Management Work Group
February 28, 2024, Phoenix, Arizona

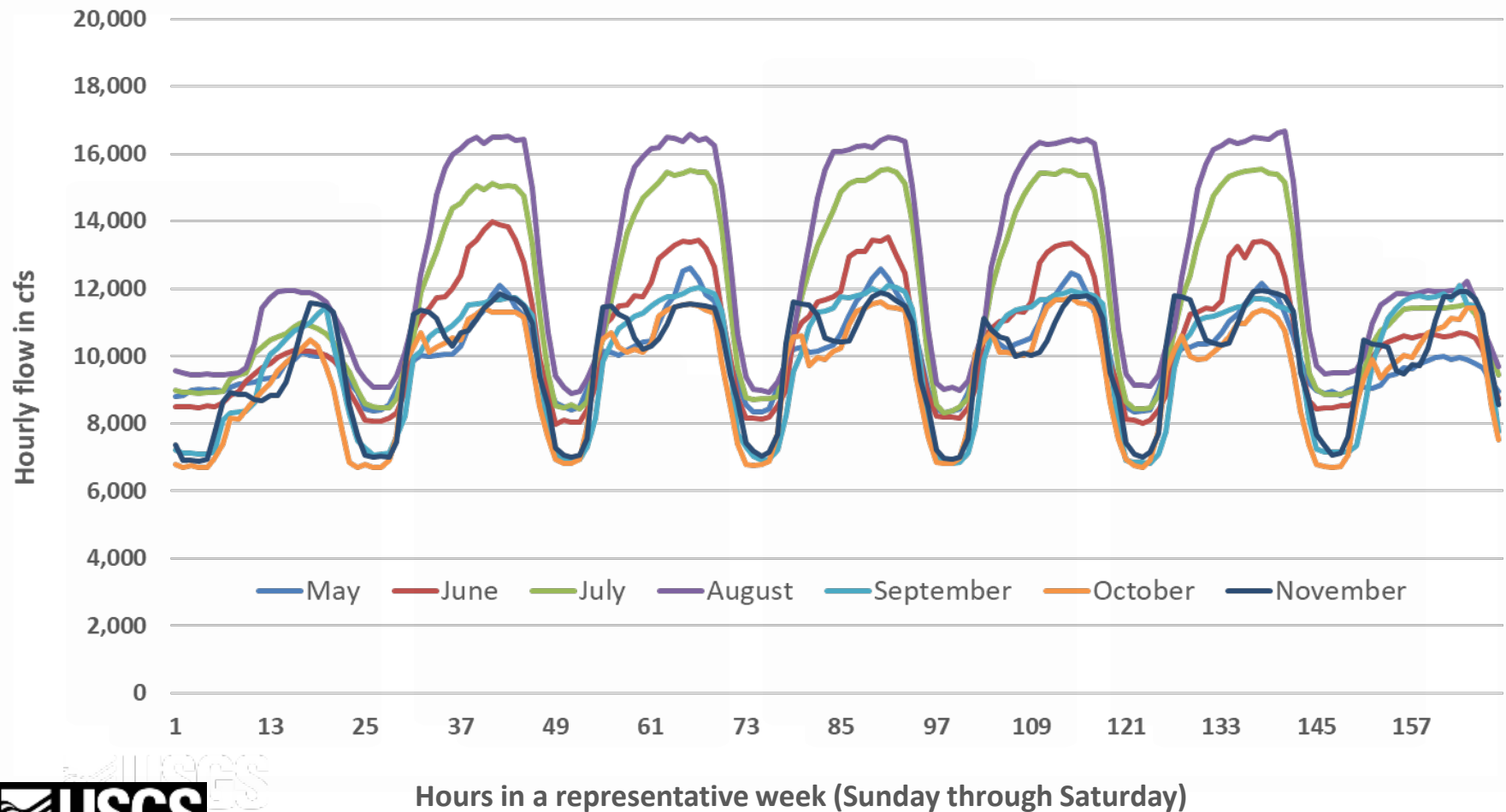
Integrated Model

- Integrated physical, biological and economic models improve the program's capacity to evaluate and prioritize monitoring, research and management alternatives specific to the operation of GCD.
- This is an economic analysis of the energy costs. We are not estimating capacity costs or cost from changes in power sector emissions. This is also not a financial assessment or an evaluation of distributional impacts.



Glen Canyon Dam Operations

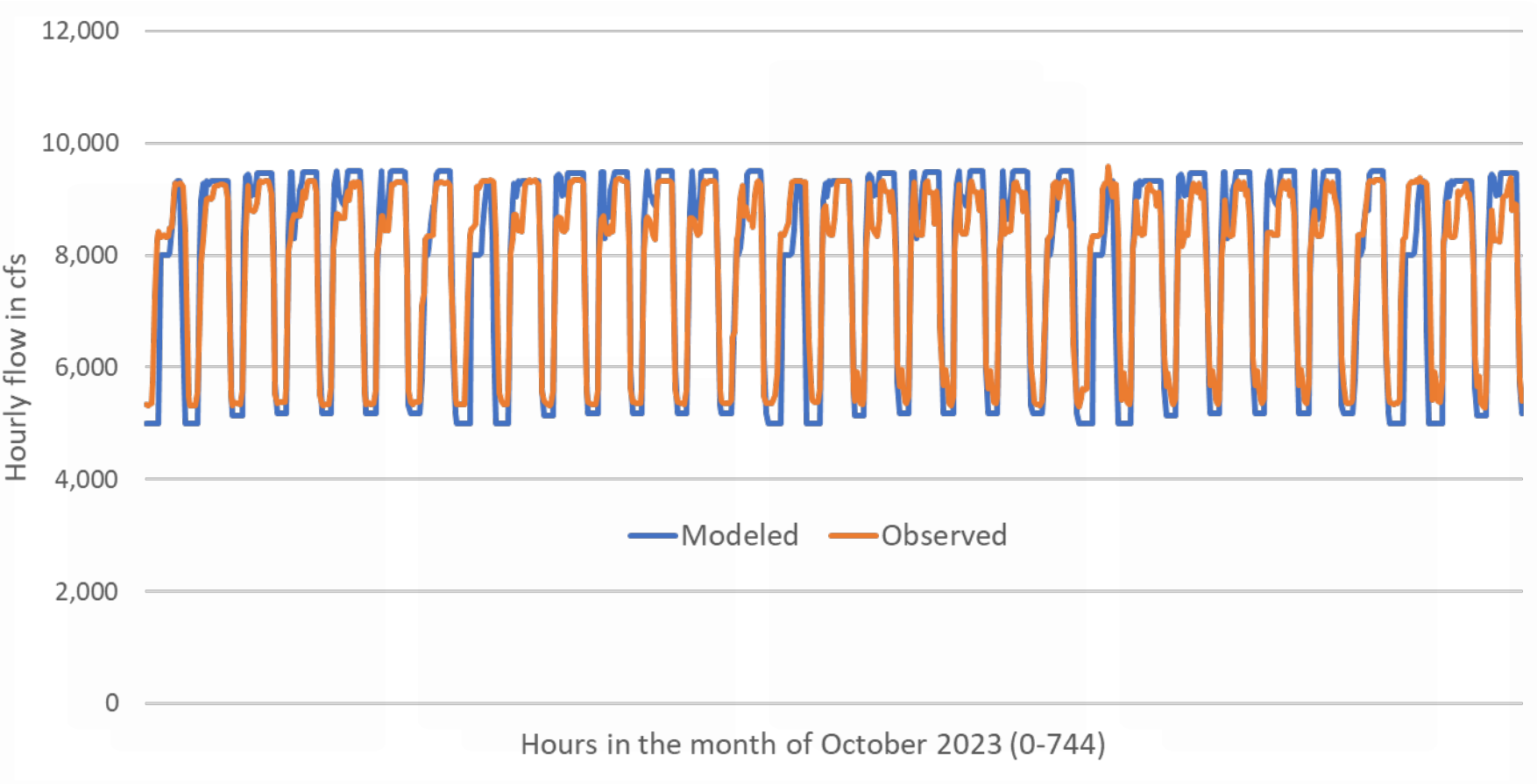
We use recent, May 2020 through November 2022, Glen Canyon Dam release by month, day, and hour of the week to estimate future operation.



Source: U.S. Bureau of Reclamation. https://www.usbr.gov/lc/region/g4000/riverops/_HdbWebQuery.html

Modeled GCD Operations

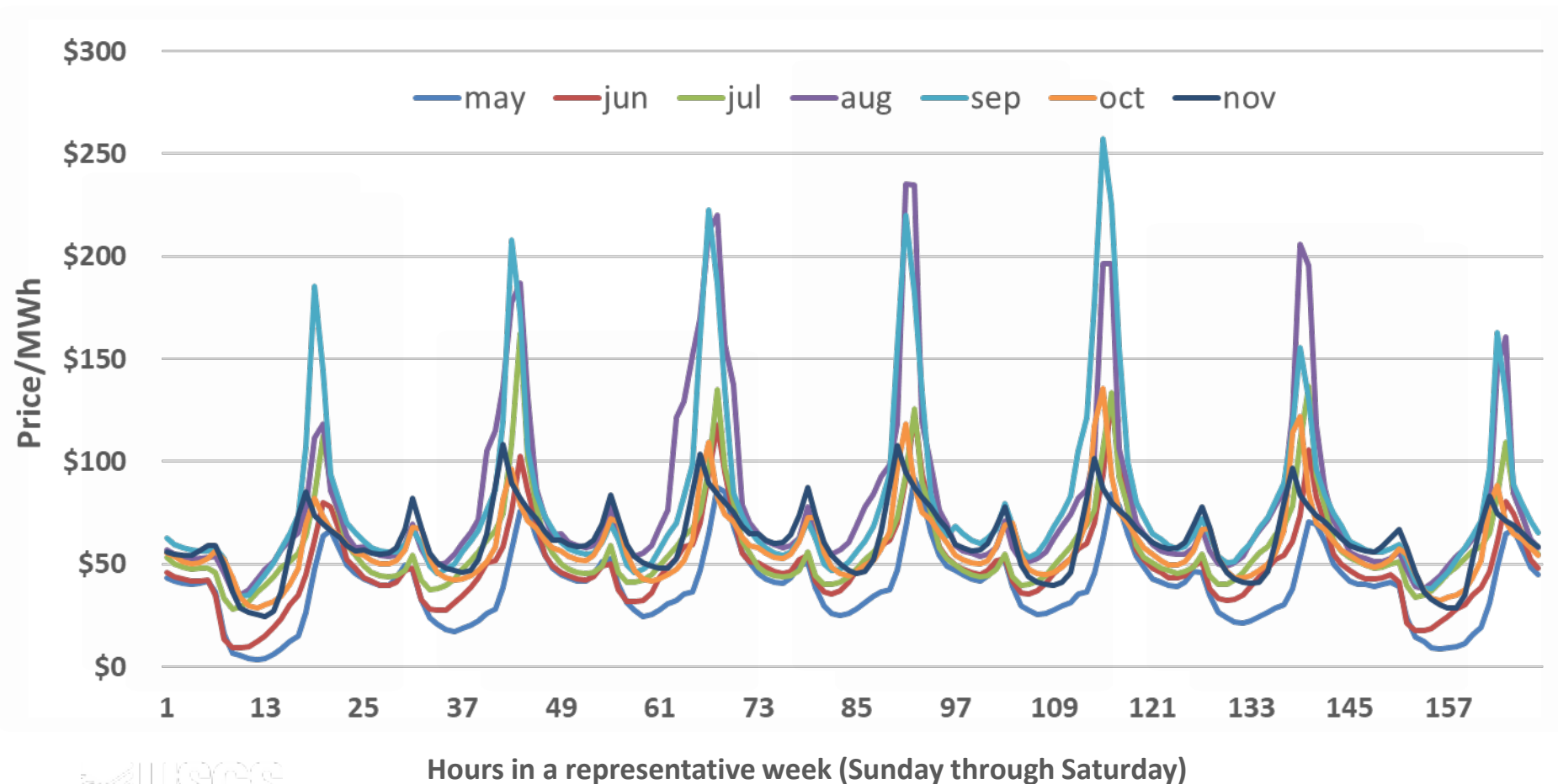
Recent historic operation at GCD is a good predictor of near-term GCD operation.



Preliminary data, do not cite

Electricity Prices at Palo Verde

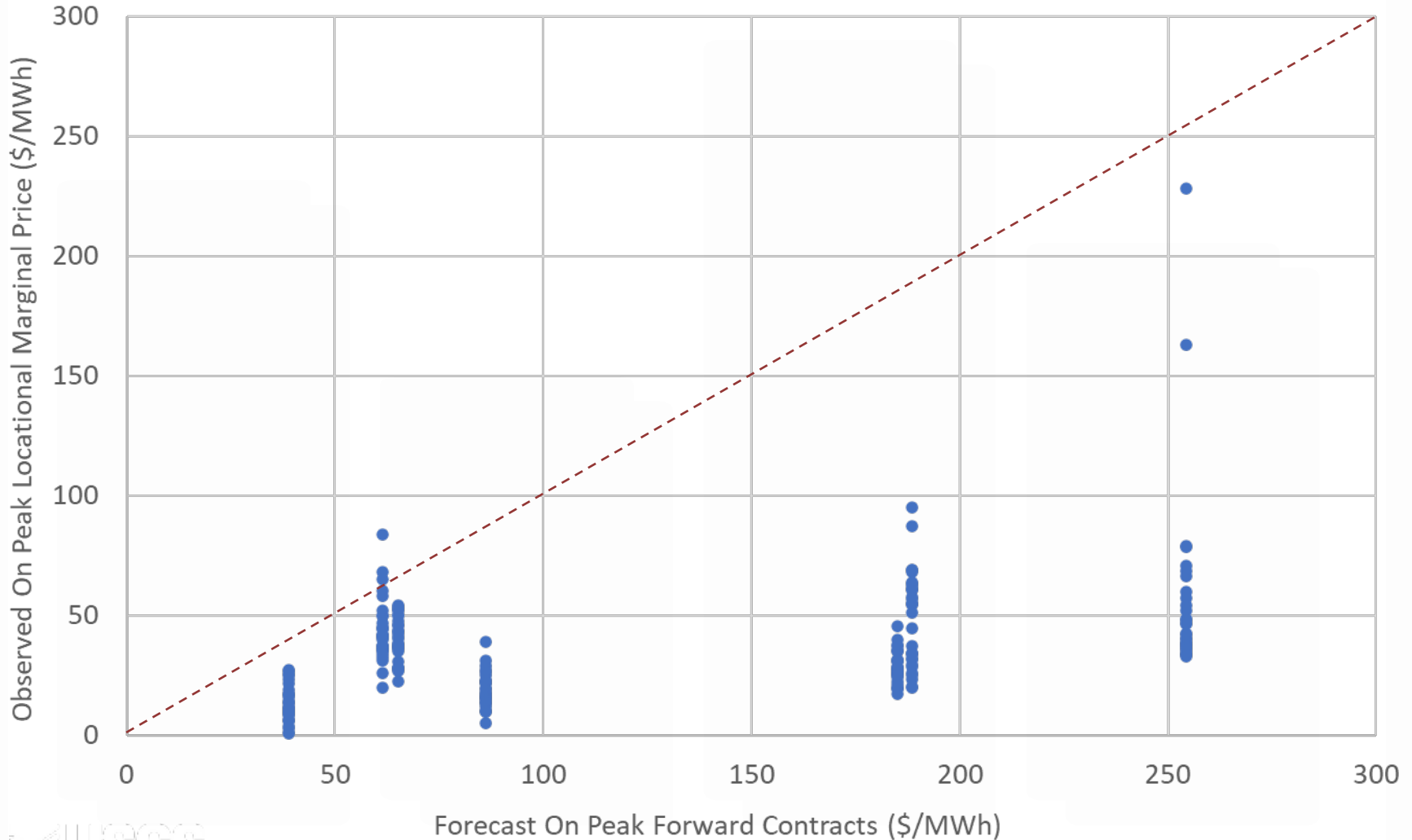
We use recent, May 2020 through September 2022, electricity price by month, day, and hour of the week and corresponding forward contracts (Argus) to estimate future electricity prices.



Source: California ISO Open Access Same-time Information System (OASIS).
<http://oasis.caiso.com/mrioasis/logon.do>

Electricity Prices at Palo Verde

May 2023 – November 2023

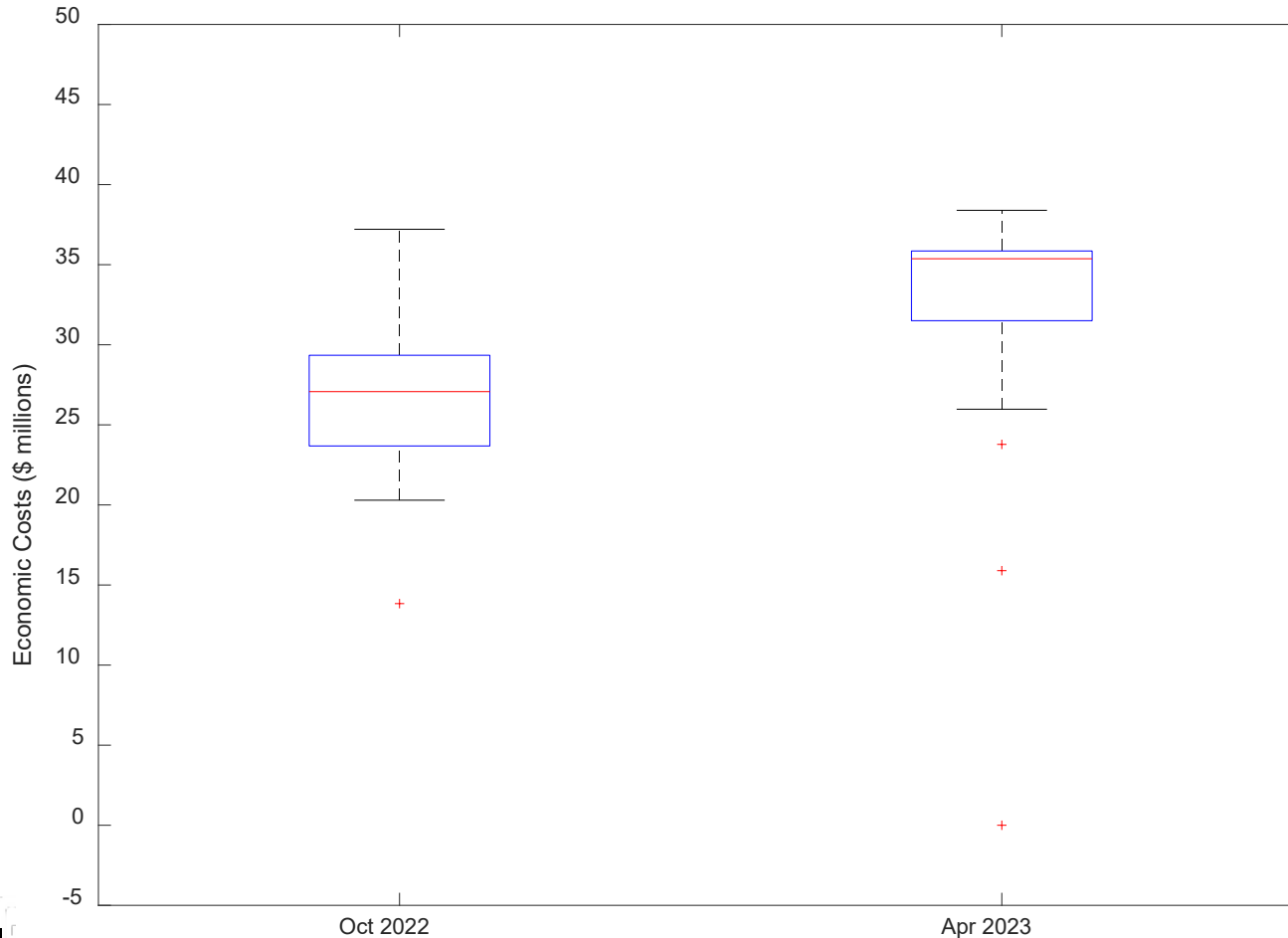


Source: California ISO Open Access Same-time Information System (OASIS).
<http://oasis.caiso.com/mrioasis/logon.do>. ARGUS Direct. <https://direct.argusmedia.com/>

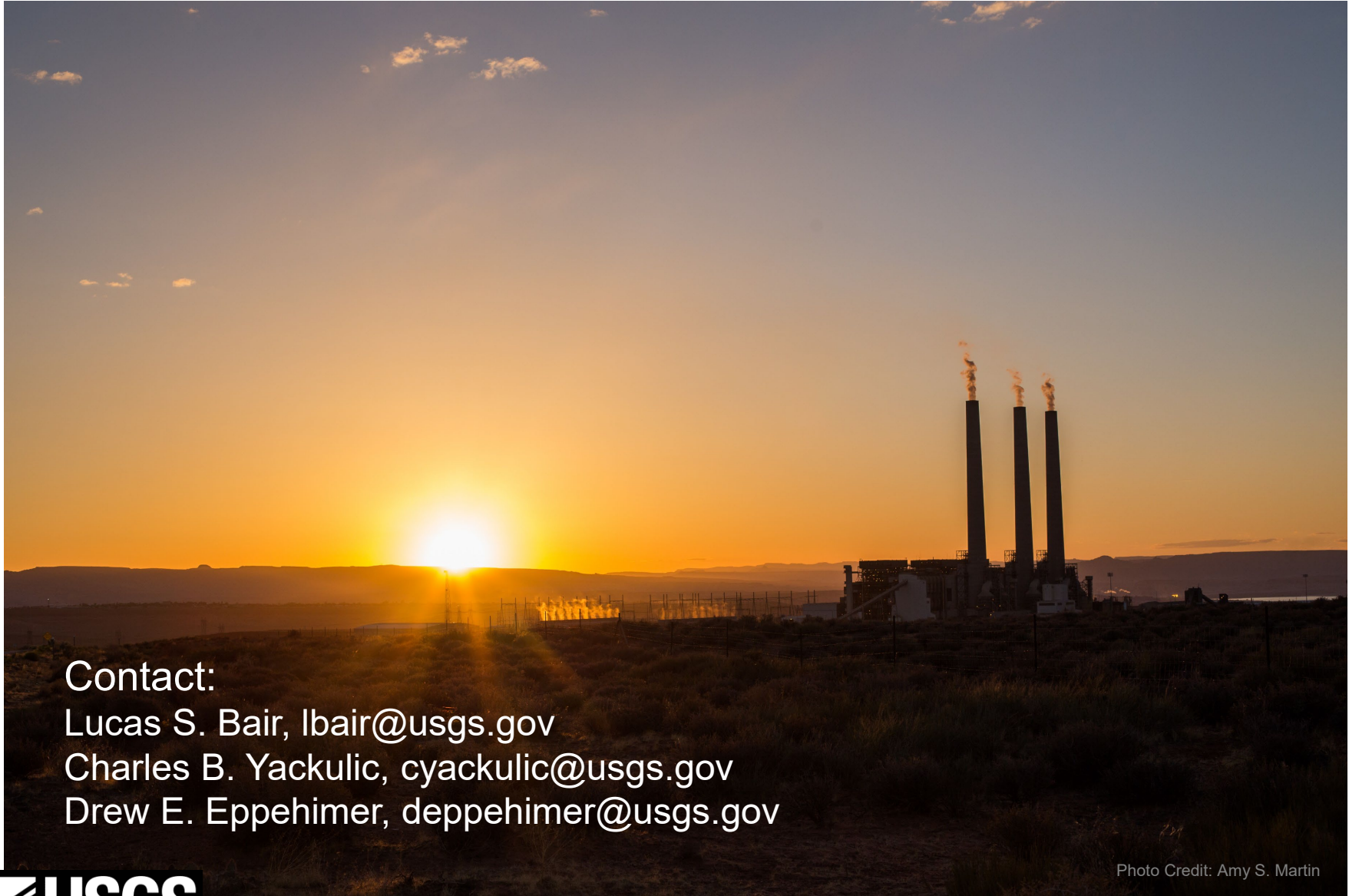


Modeled Results

October 2022 and April 2023 forecast economic cost of SMB flows at the Little Colorado River for 2023 calendar year with hydrologic uncertainty and GCMRC modeled energy prices



Preliminary data, do not cite



Contact:

Lucas S. Bair, lbair@usgs.gov

Charles B. Yackulic, cyackulic@usgs.gov

Drew E. Eppehimer, deppehimer@usgs.gov

Photo Credit: Amy S. Martin

