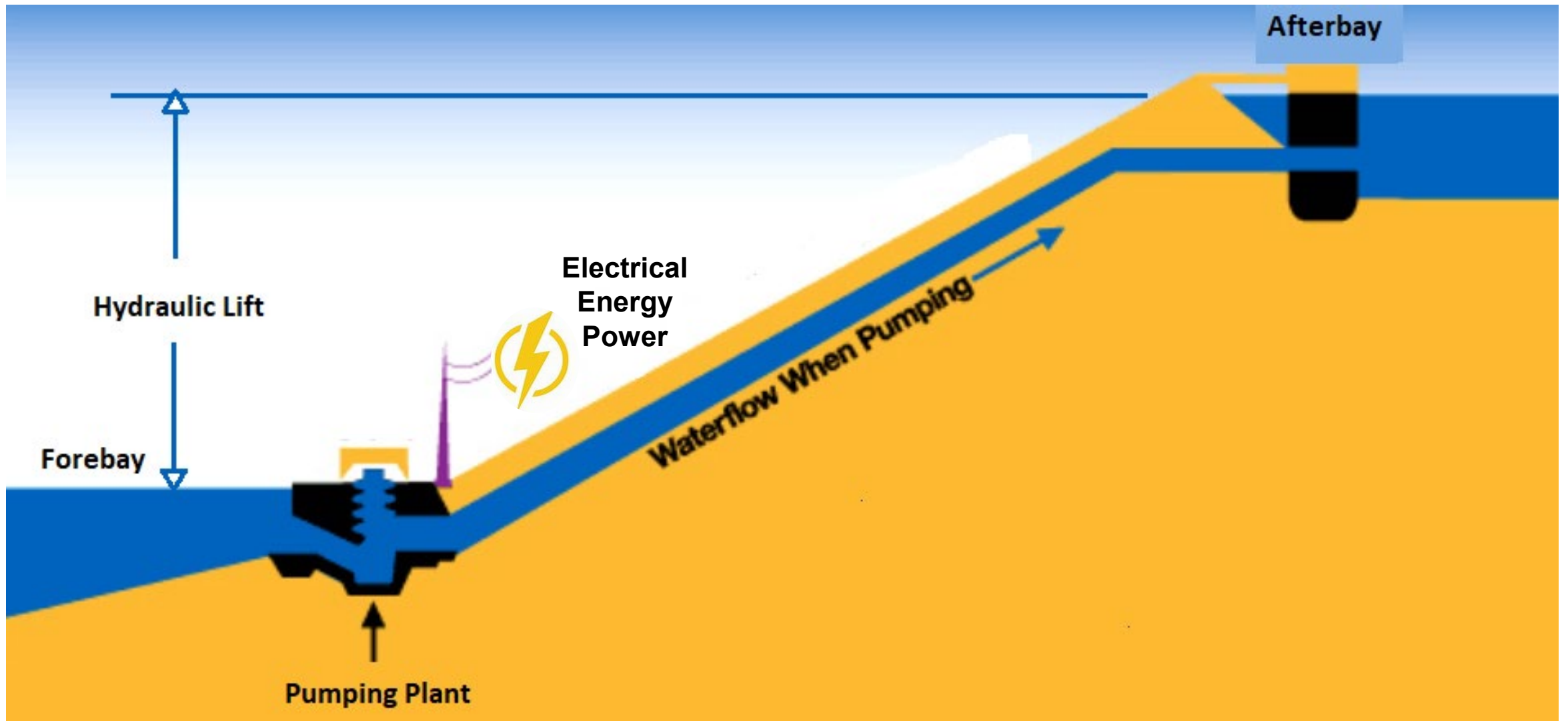




Not all pumps are equal

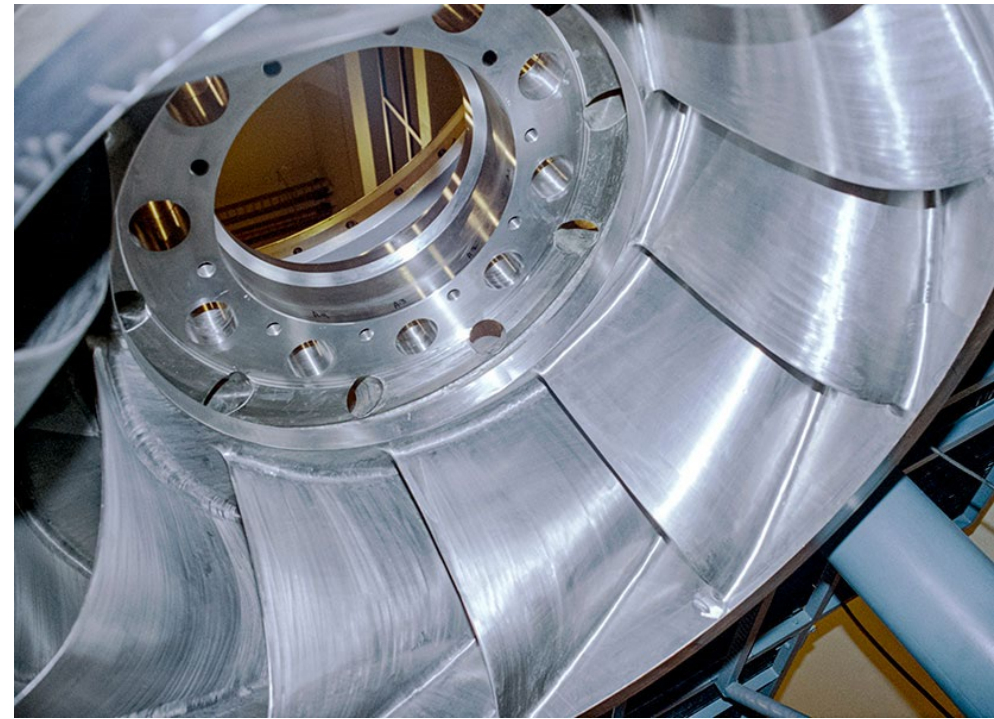
April Pinger-Tornquist, CAWCD Board Member
Don Crandall, Water Control Manager

Pumps: Electricity to Hydraulic Lift



Normal Operations

- Flow – Cubic Feet per Second (cfs)
- Volume – Million Cubic Feet (mcf)
- Power – Megawatt (mw)
- Pumping Plant – Different Pump Curves for Each Pumping Plant
- Pump Unit Size – Determined by Individual Pumping Plant Requirements



MARK WILMER

Pumping Plant

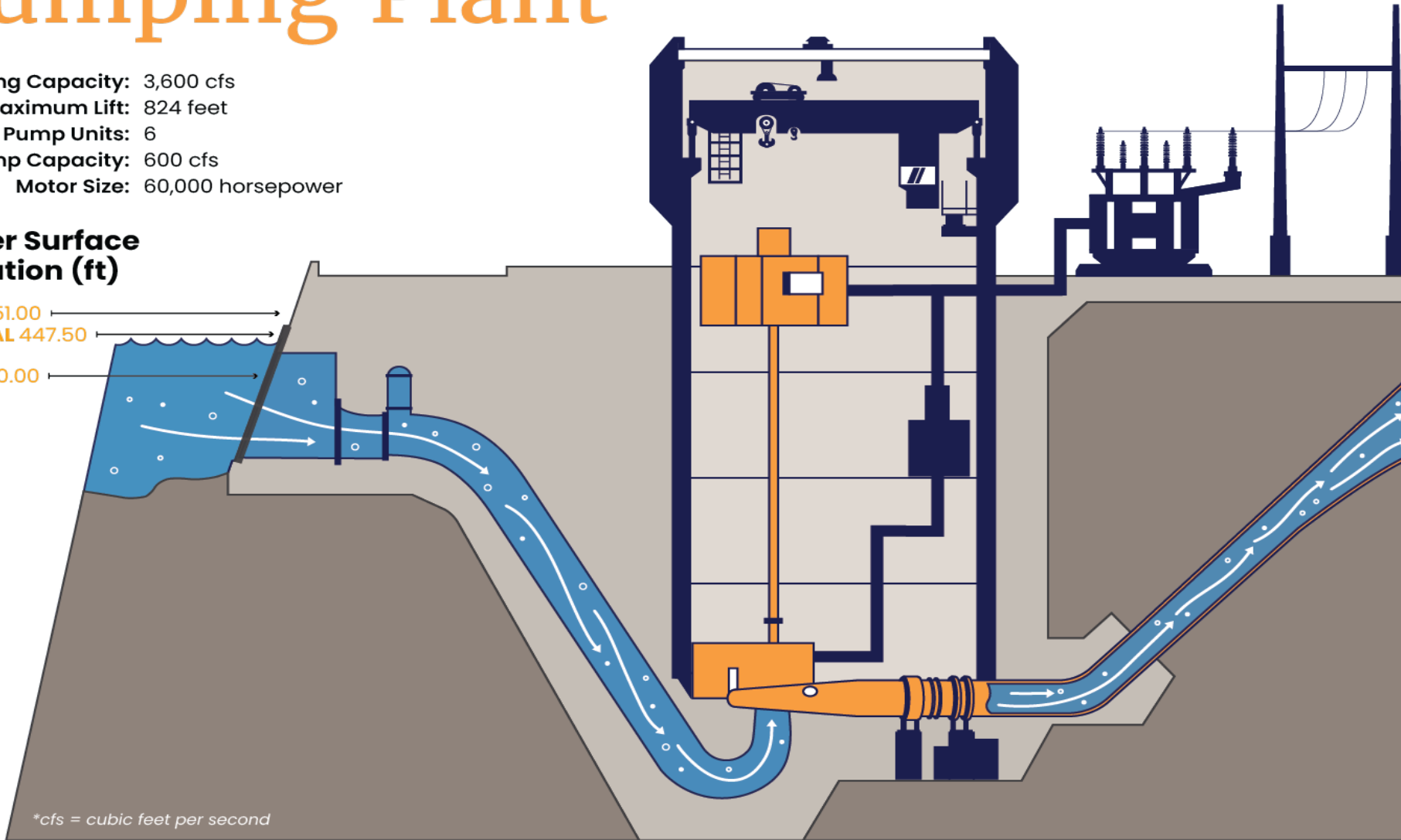
Pumping Capacity: 3,600 cfs
Maximum Lift: 824 feet
Pump Units: 6
Pump Capacity: 600 cfs
Motor Size: 60,000 horsepower

Water Surface Elevation (ft)

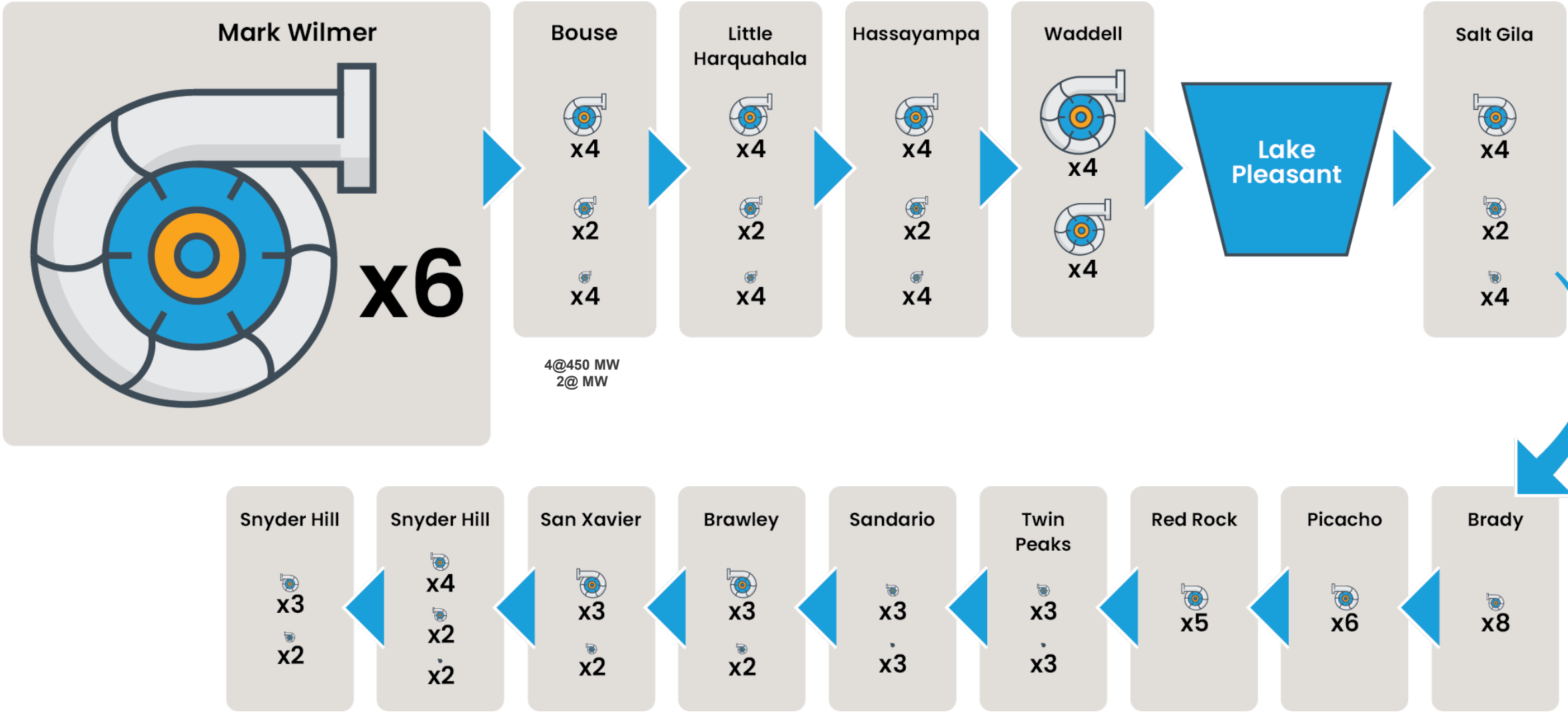
MAX 451.00

NORMAL 447.50

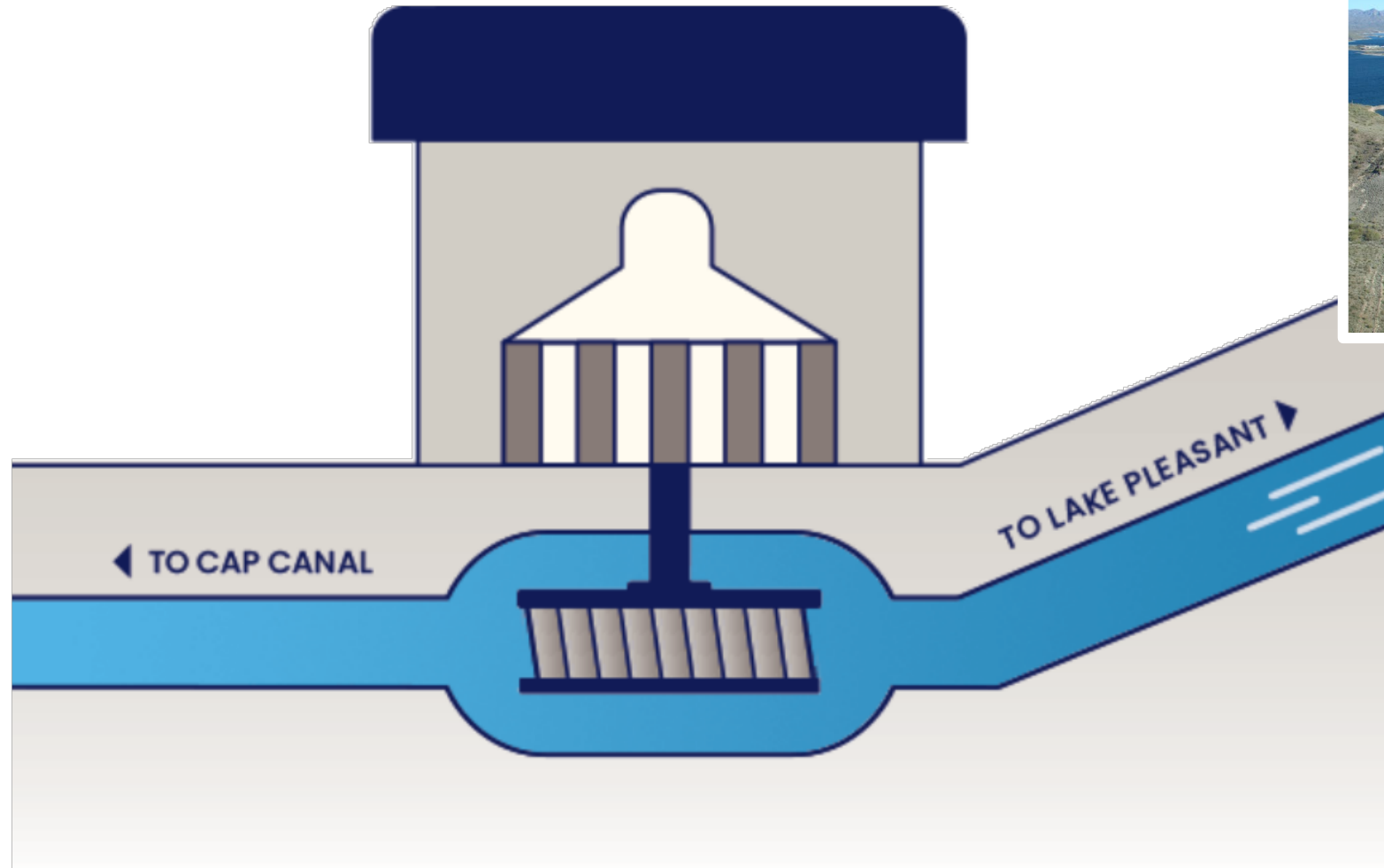
MIN 440.00



*cfs = cubic feet per second



WADDELL PUMP/GENERATING PLANT



6

NOT ALL PUMPS ARE EQUAL

12/5/2022



Operational Constraints

- Water User Deliveries
- Restrictions on Pump Unit Motors – Hot and Cold Starts
- Available Upstream and Downstream Pool Volume
- Timing Constraints from Controlled Volume Operation – All Adjustments Made Simultaneously
- Minimizing Energy Use in Peak Hours
- Energy Scheduling



Key Takeaways

- Pumps: Convert Electrical Power to Mechanical Energy, Moves Water Through the CAP system
- Many Different Pump Sizes – Huge to Small
- Pumps Allow Energy Shaping, Low Energy Costs

