

CAP Energy Needs

Tom McCann

Ron Lunt

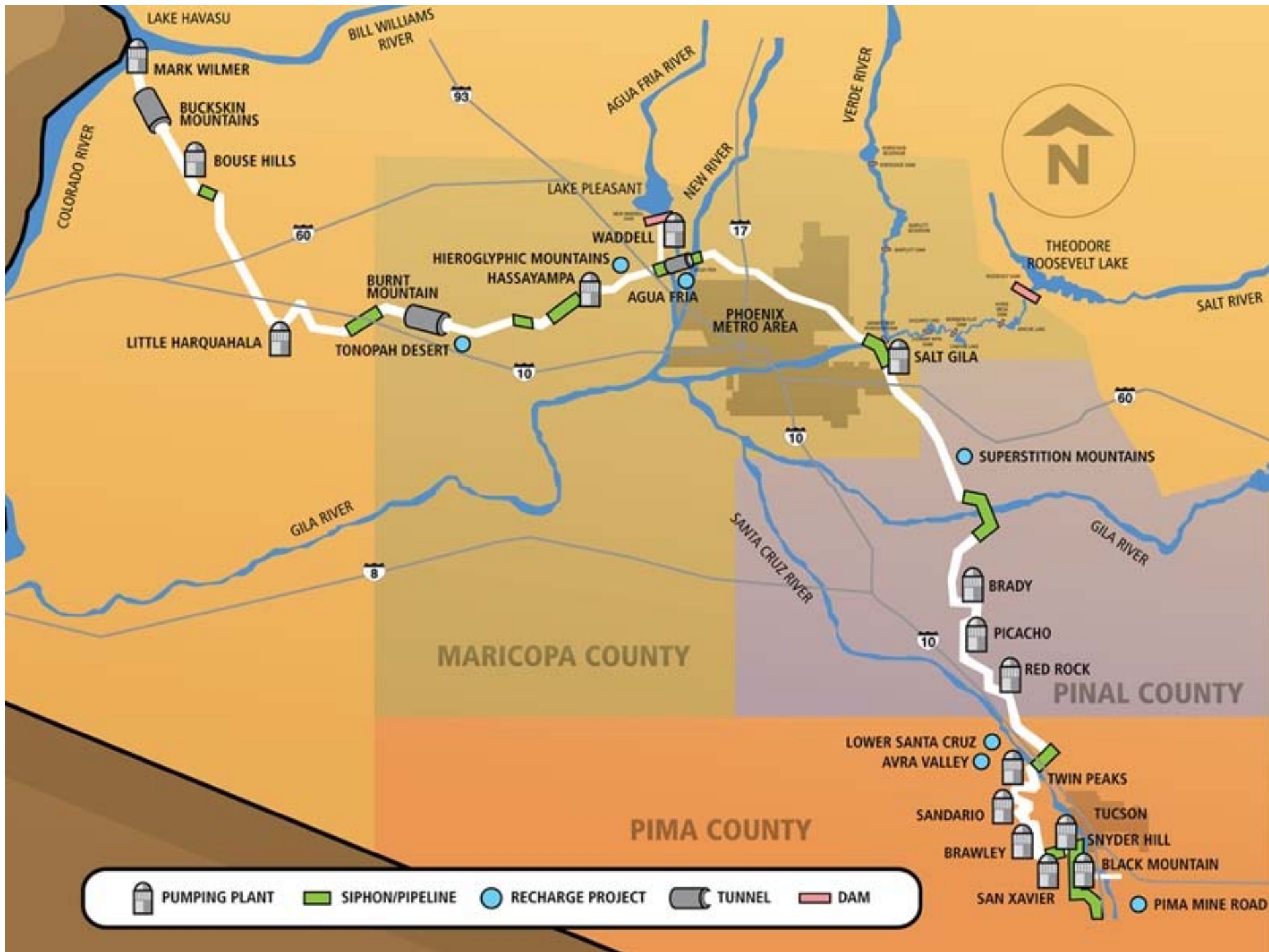
October 17, 2013



YOUR WATER. YOUR FUTURE.

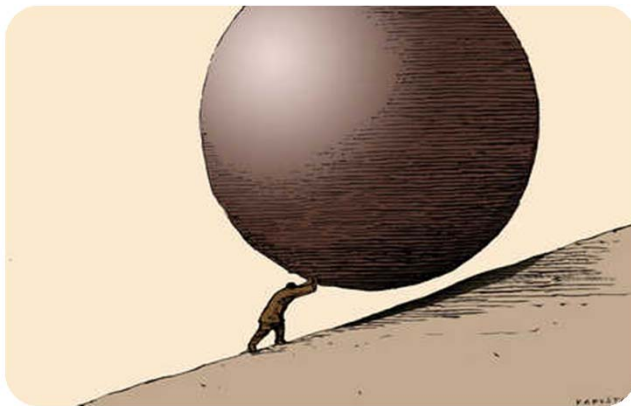
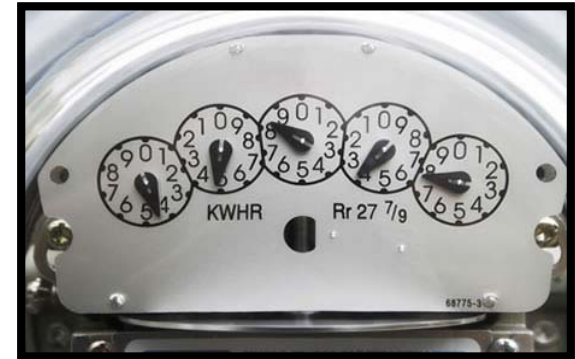
Central Arizona Project

- 336-mile aqueduct
- 15 pumping plants
- 8 inverted siphons, 3 tunnels
- New Waddell Dam & Lake Pleasant
- 24.3% of Navajo Generating Station



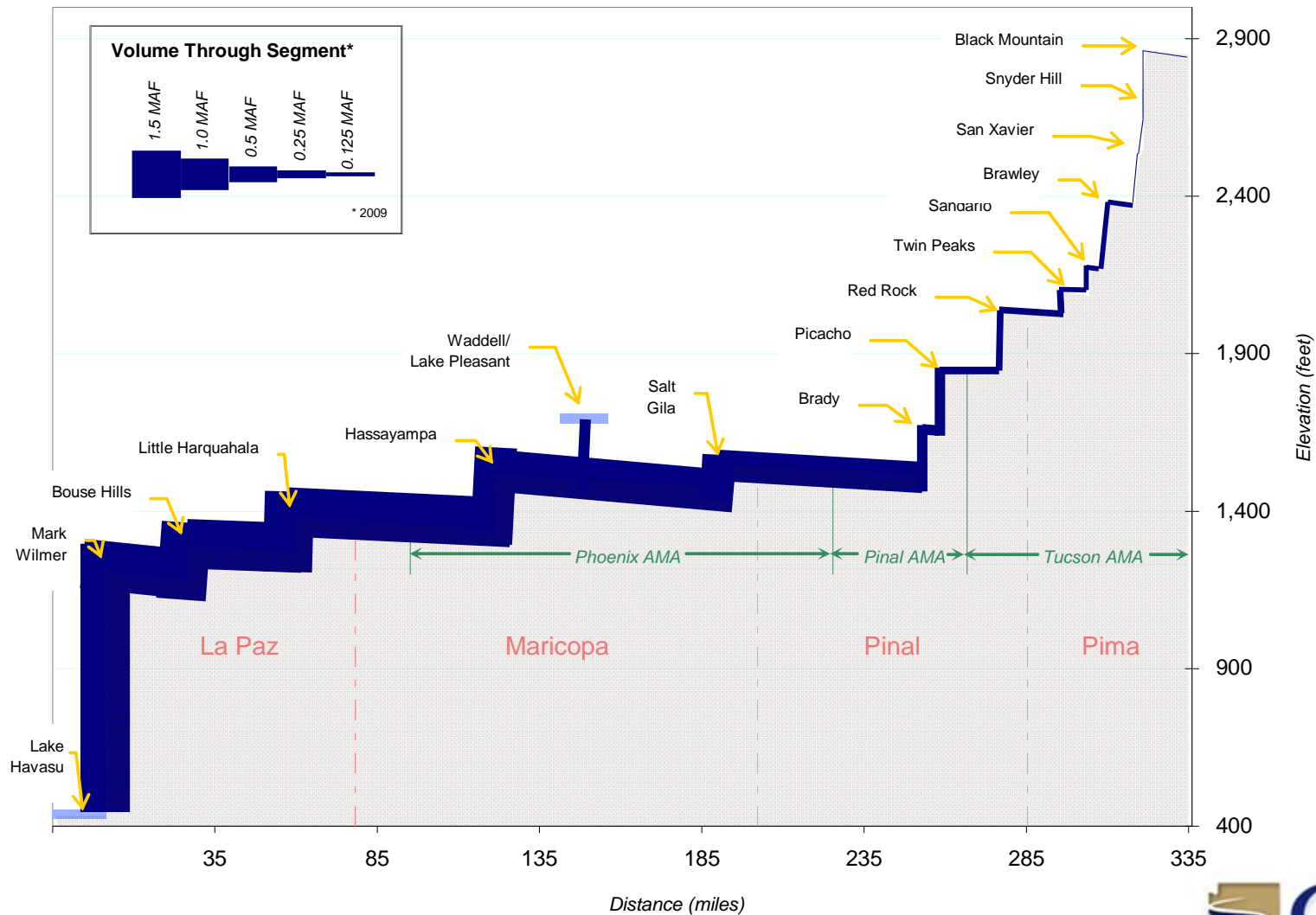
CAP Energy Use

- CAP is largest power user in Arizona
- 2.8 million MWh needed to deliver 1.6 million acre-feet

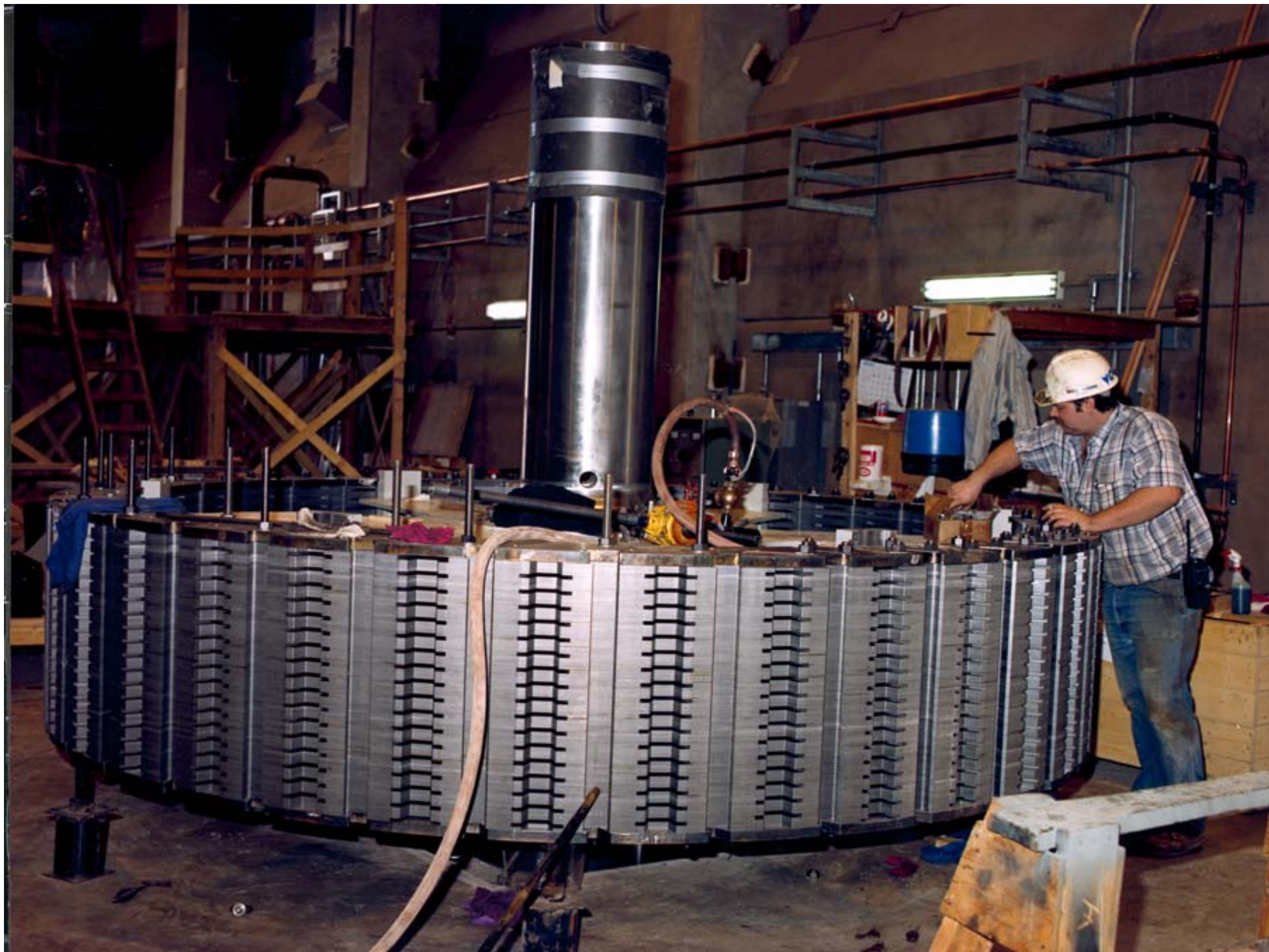


- Nearly 3000 feet of lift from Lake Havasu to terminus

CAP Elevation Profile

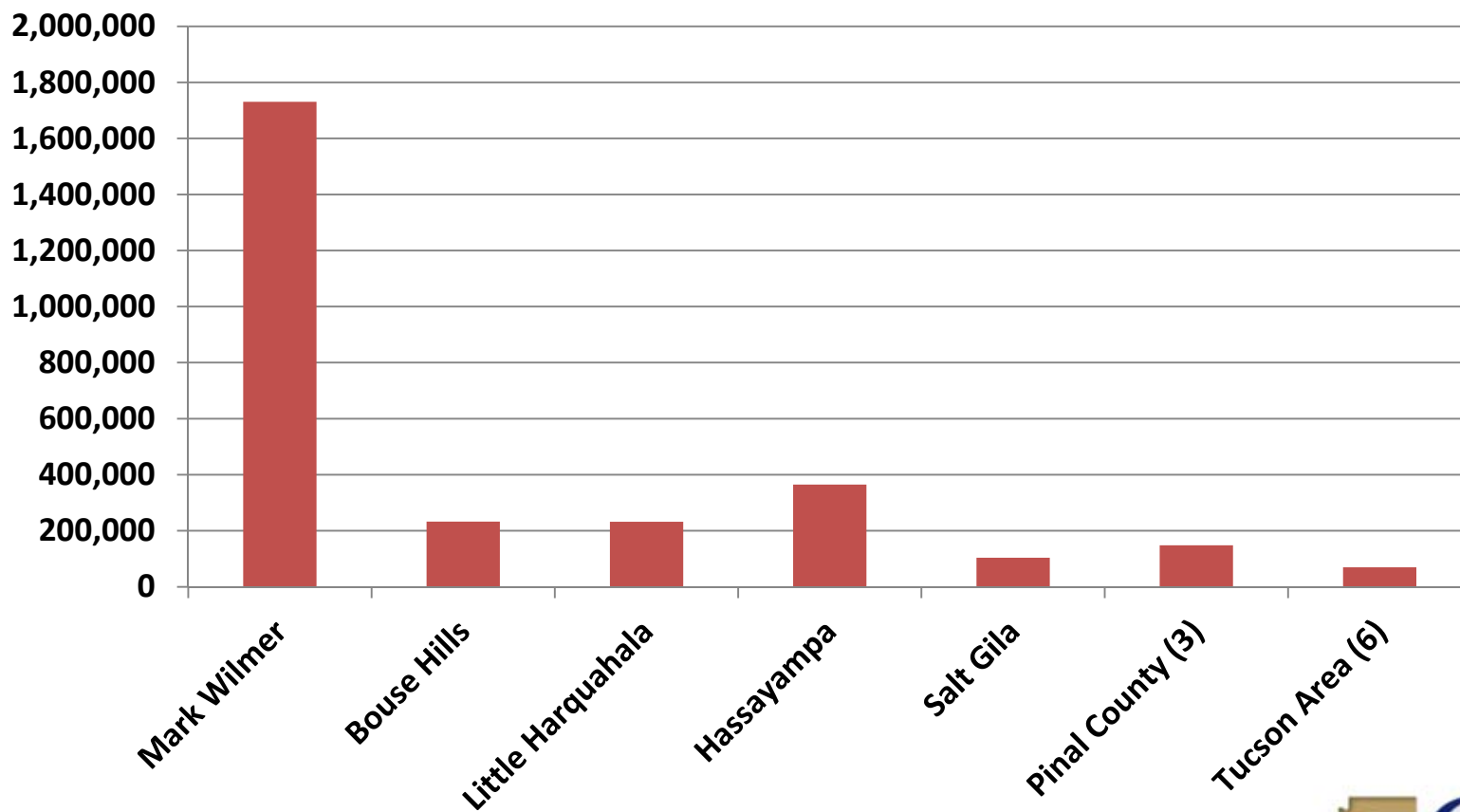






Energy Use by Pumping Plant

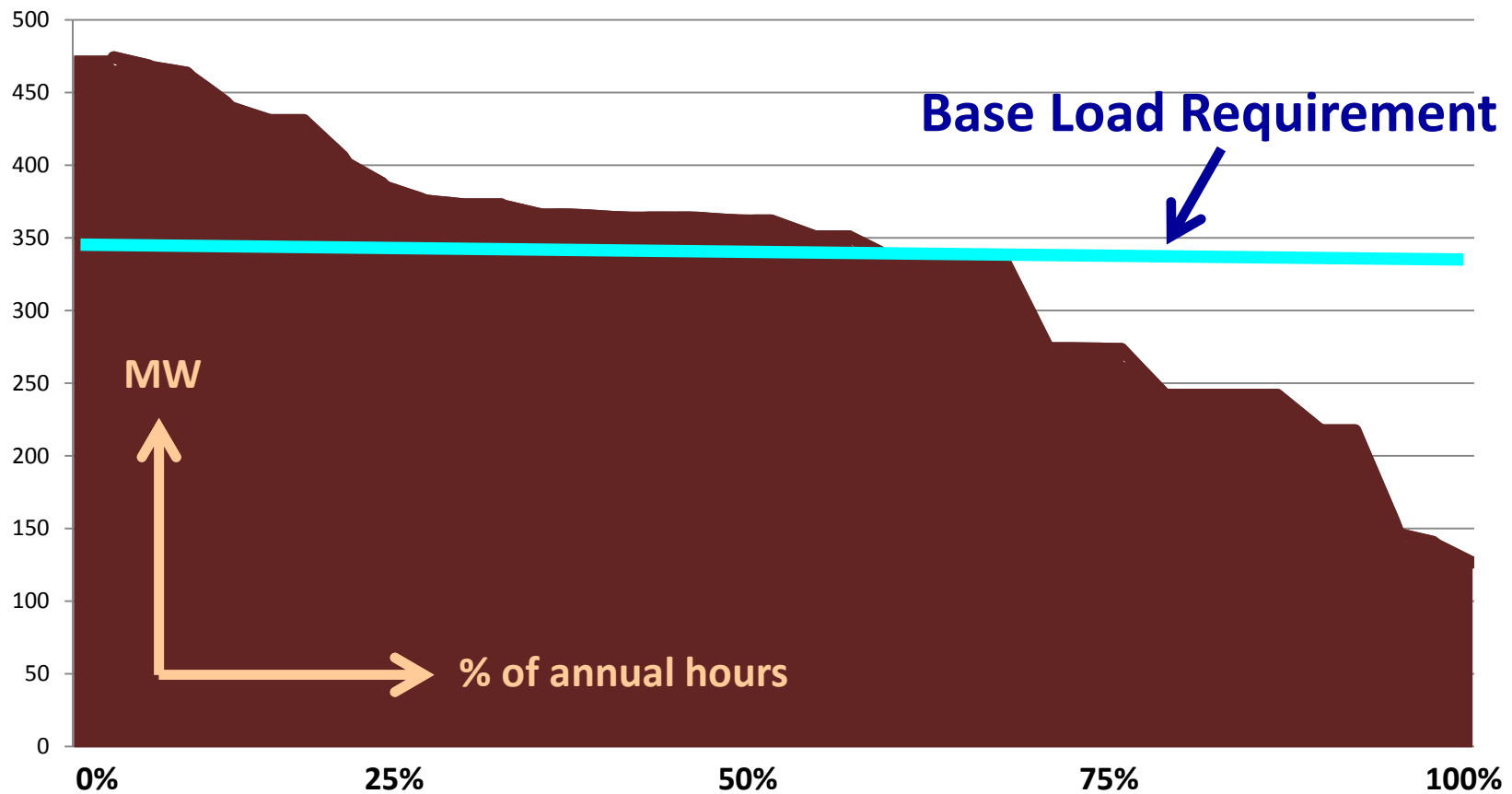
Annual MWh



CAP Needs Base Load Power

- CAP system design
 - Requires operation at constant volume
 - Requires continuous operation (24/7) to deliver full water entitlements
- CAP customers require deliveries 24/7
- Repeated starts/stops increase cost and risk
 - Pump/motor maintenance
 - Potential canal damage due to constantly changing water levels
 - Reduced system reliability

CAP Energy Usage



CAP Generation Resources

- Navajo Generating Station
- Hoover
- New Waddell
- Market



Hoover Energy

- Contract with APA, expires in 2017
 - Hoover B energy
 - Up to 176,768 MWh (6% of CAP needs)
 - Provides ramping, regulation and reserves for CAP loads (not readily available from market)
 - Hoover C energy
 - Additional energy during high flows (359,519 MWh in 1999)
 - CAP also diverts more water then, so needs increase
 - Includes transmission rights



NGS Energy

- CAP reserves NGS energy to meet pumping needs
 - Real-time scheduling & tagging performed by AEPCO/APM
- Unreserved NGS energy is sold by Western Area Power Administration as Navajo Surplus
 - Net proceeds assist CAP repayment
 - Value dependent on energy market



CAP Power Management

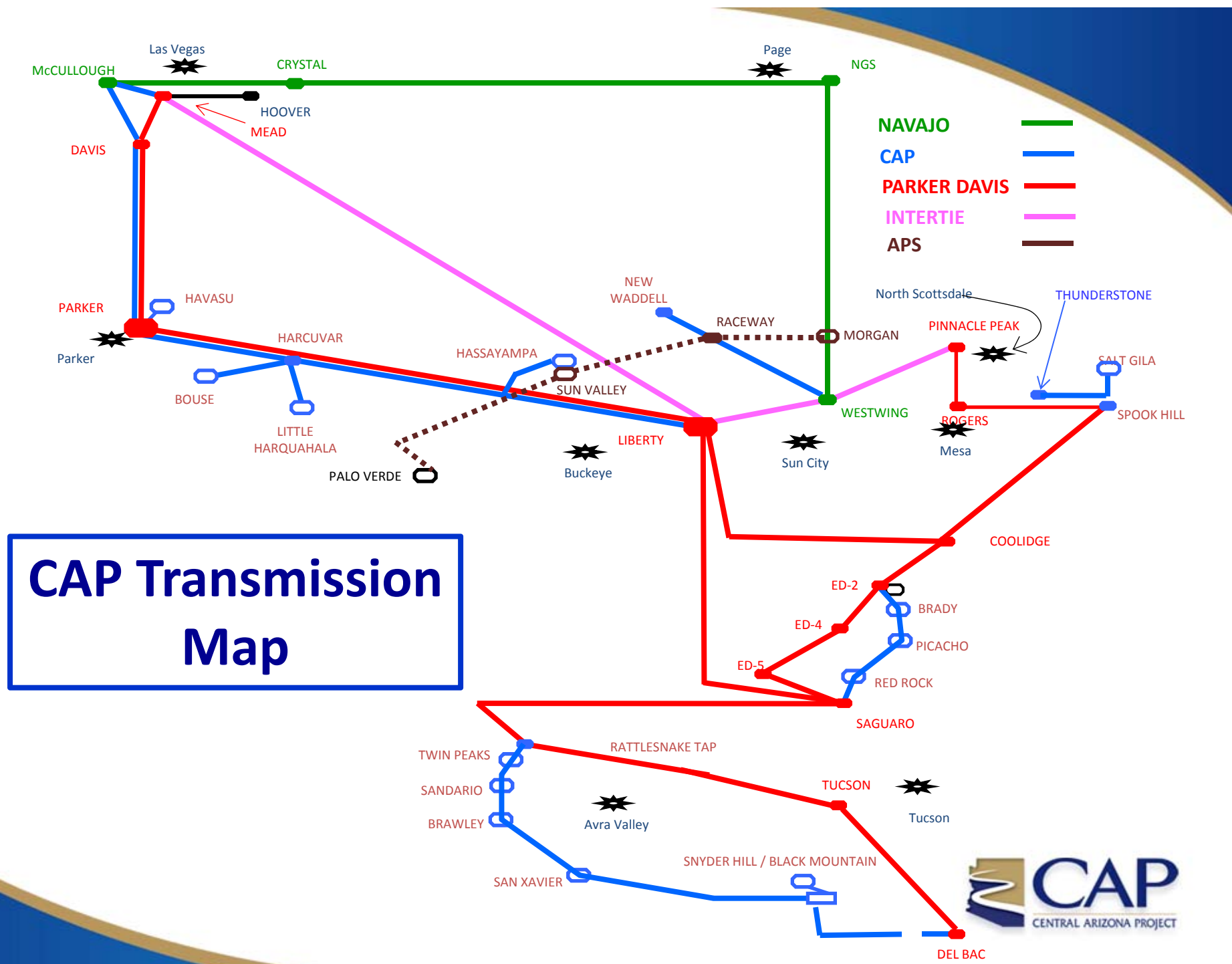
- Lake Pleasant provides regulatory storage for CAP
- Allows CAP to optimize pumping seasonally
 - Pump from Colorado River to fill lake in winter when energy costs are lower
 - Release from lake in summer when energy costs are higher



CAP Transmission Portfolio

- Navajo Transmission
- CAP Transmission
- Contract rights
 - Intertie
 - Parker-Davis
- Network Service
 - APS
 - SRP





NGS Replacement Considerations

- Type of generation
 - CAP needs significant base load resource
- Cost
 - Capital cost of replacement generation
- CAP repayment impact
 - NGS provides \$25M±/year toward CAP repayment
- Transmission needs
 - CAP transmission system is designed to move electricity from NGS to CAP pumps

Questions?



CAP

CENTRAL ARIZONA PROJECT

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