

Denver Water's Growing Water-Energy Nexus

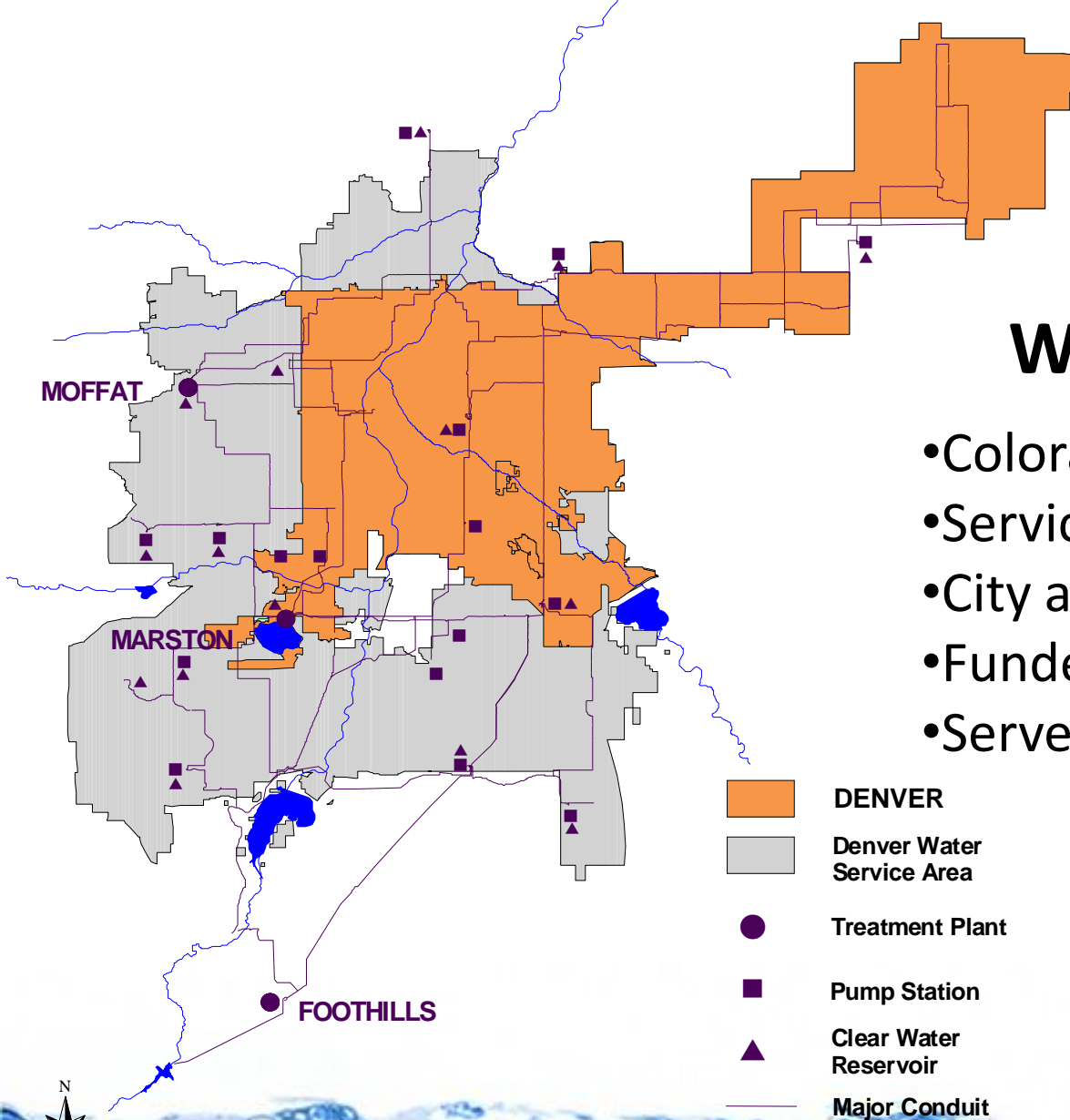
Bob Peters, PE
Water Resource Engineer



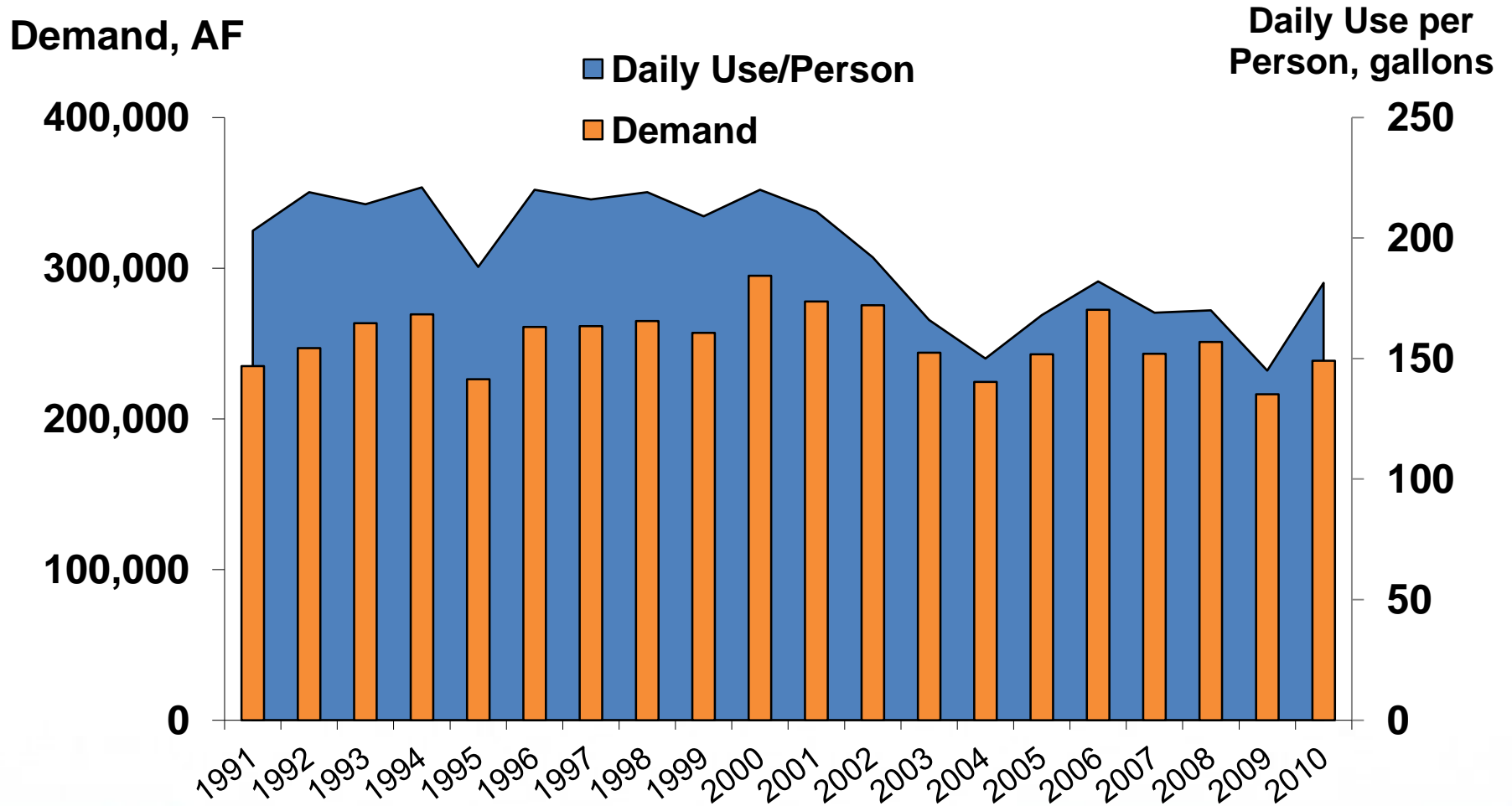
DENVER WATER

Who is Denver Water?

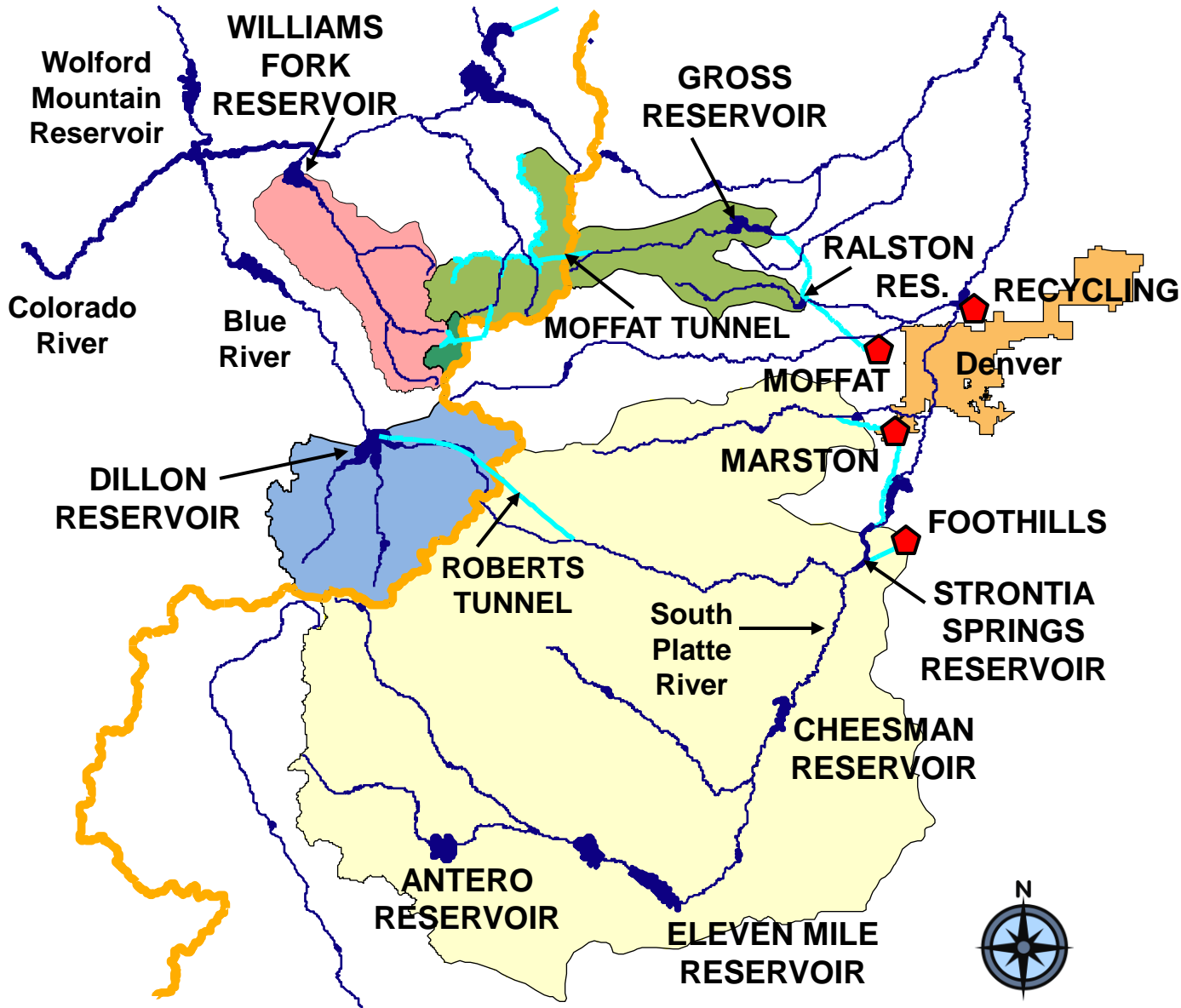
- Colorado's largest water utility
- Service area 330 sq mi; 0.3% of CO
- City and County + ~75 districts
- Funded by only rates and tap fees
- Serve 1 in 4 Coloradans



Denver Water Demand



Denver Water Collection System

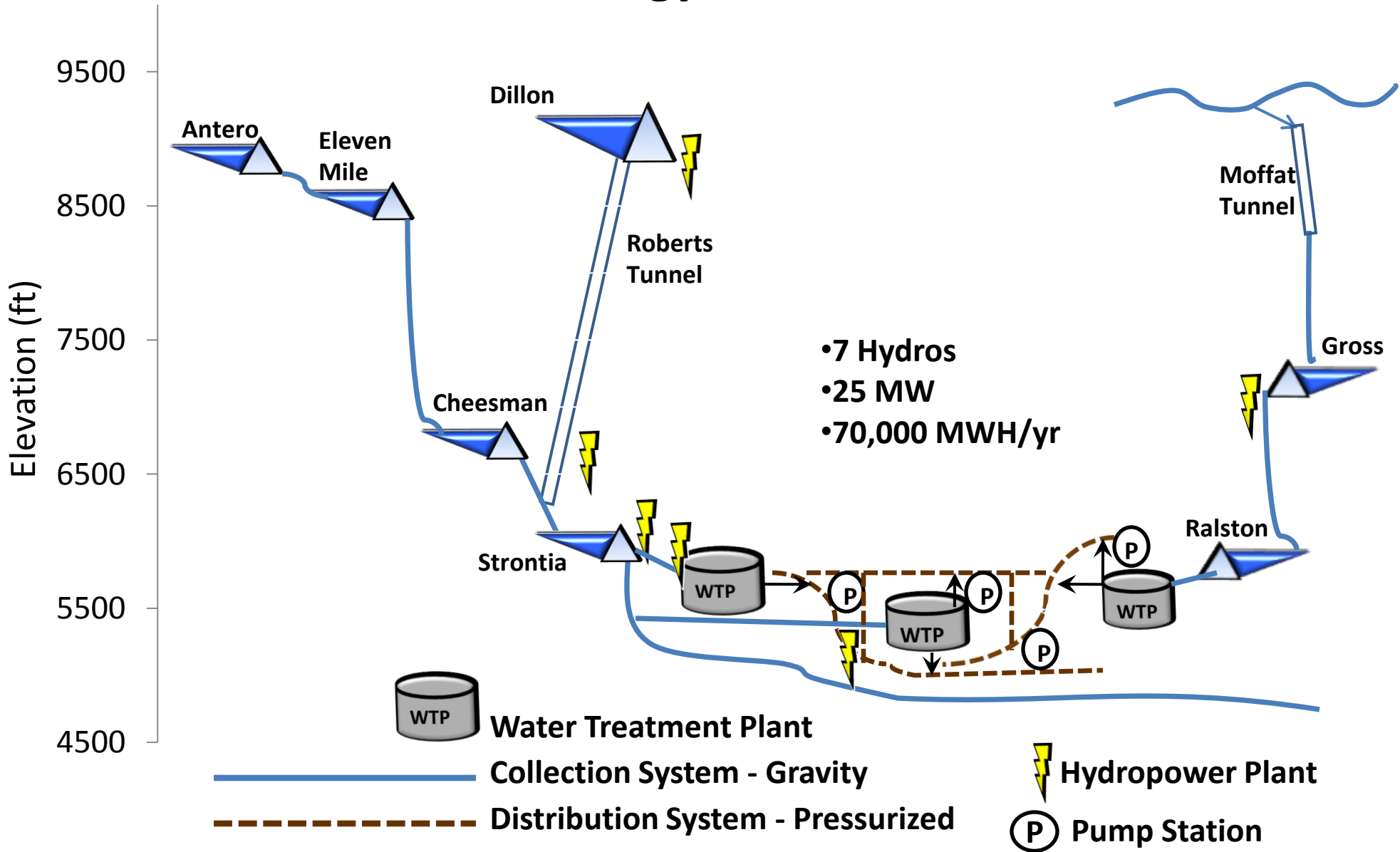


- 50% of supply is West Slope

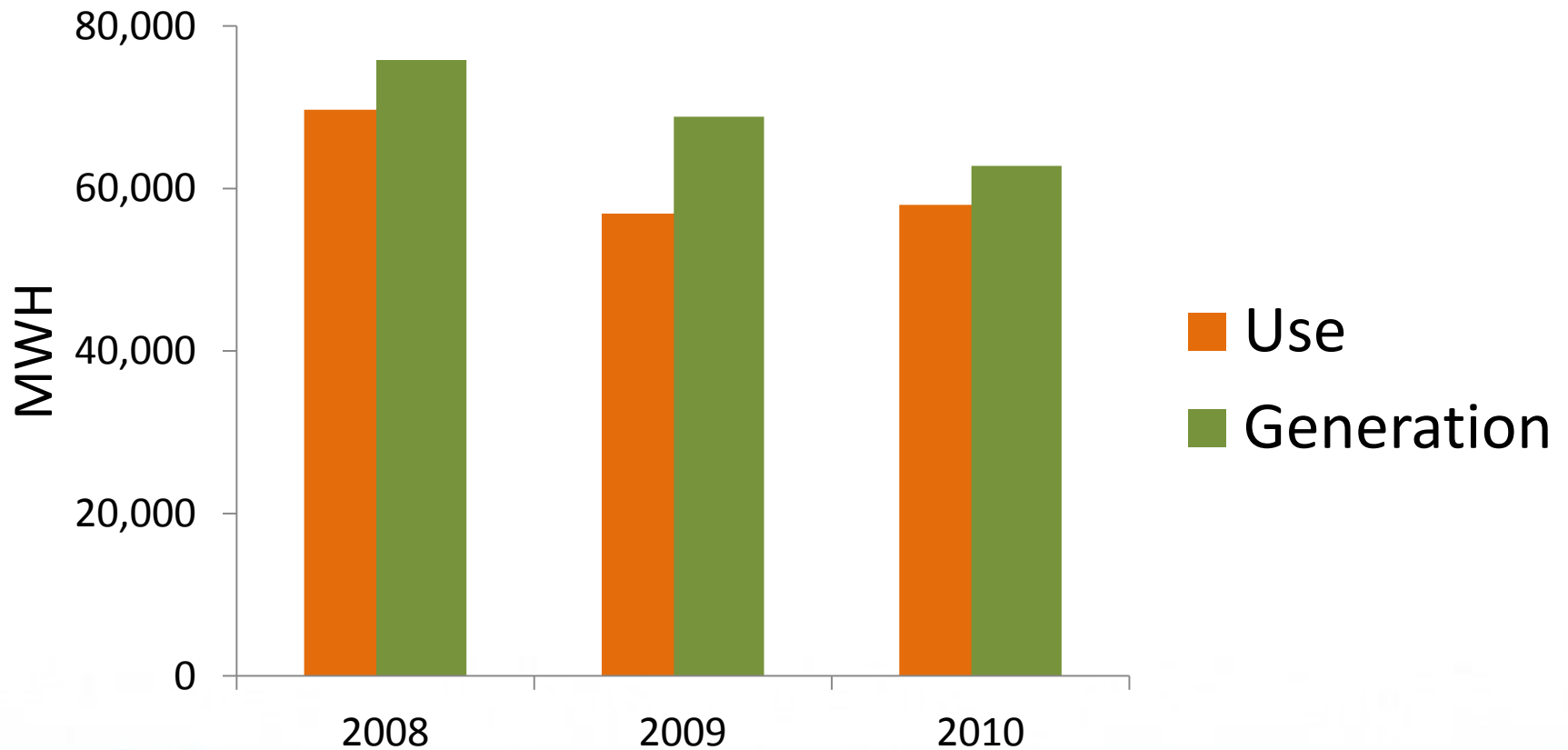
- 17 reservoirs;
690 KAF storage

- High quality,
mountain supply
derived from snow
melt

Water Collection and Distribution Energy Profile

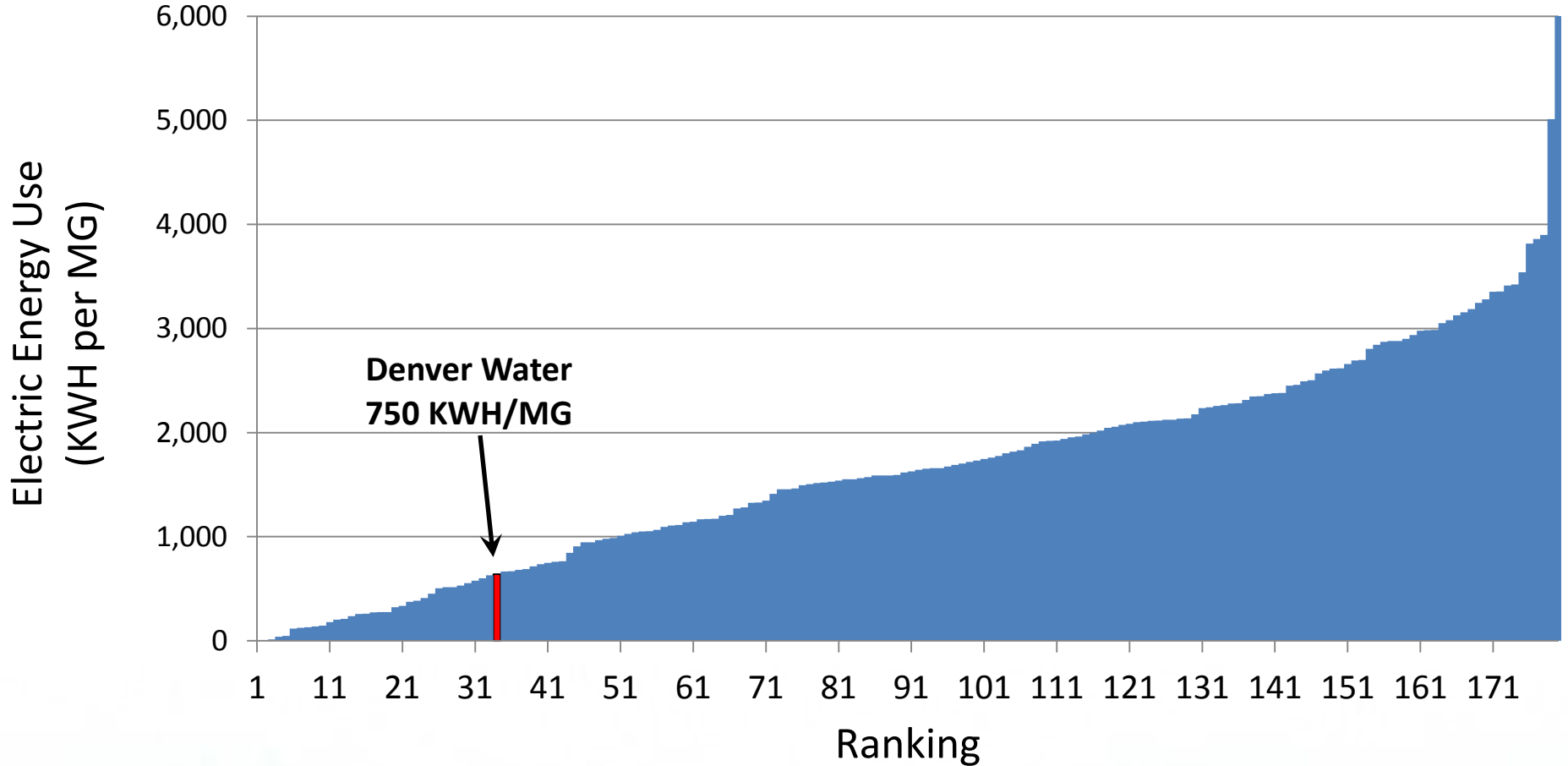


Electricity Use and Hydroelectric Generation

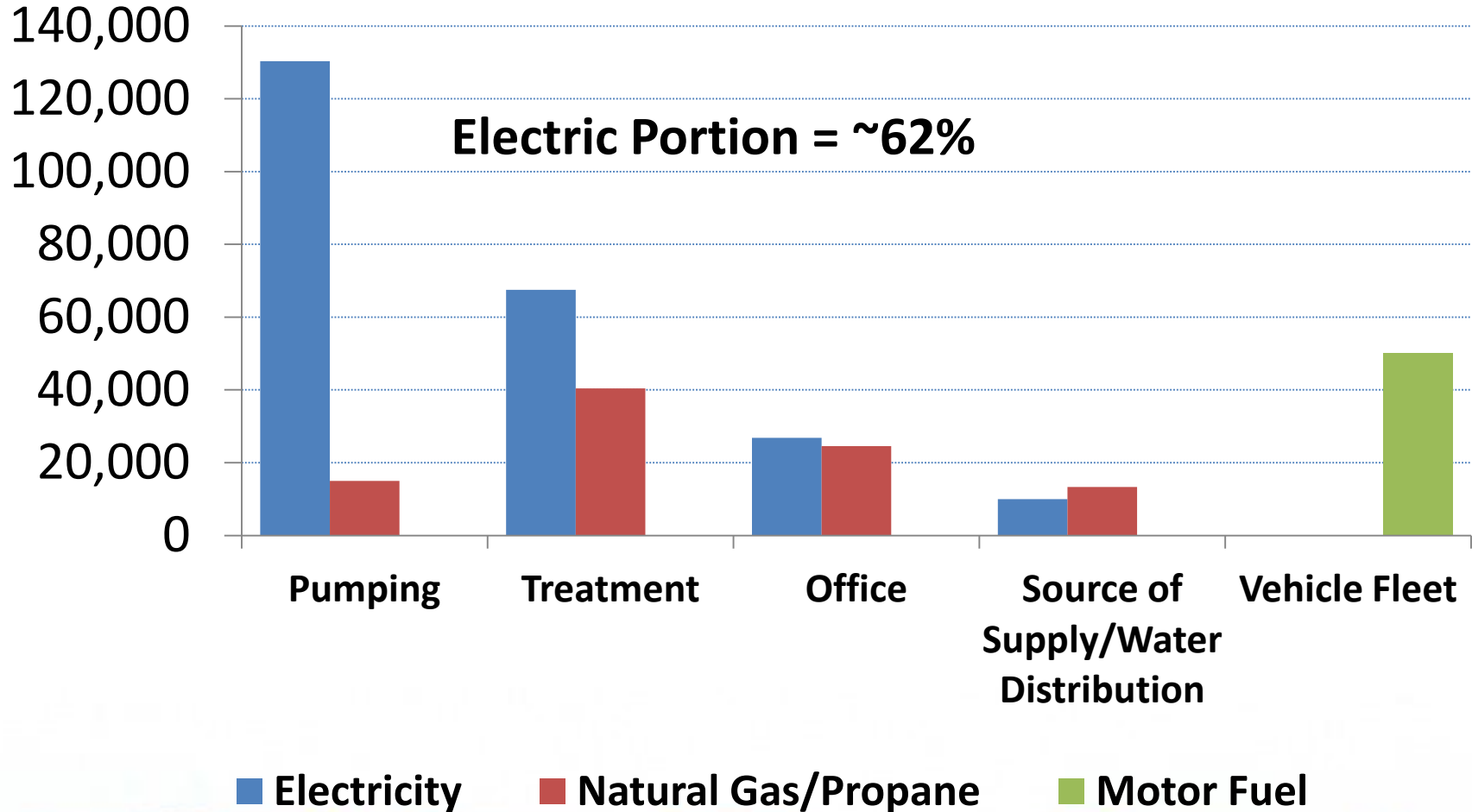


Comparative Energy Use

AWWARF 2007 Study



2008 Energy Uses, Million Btu



Energy Efficiency

- 10-15% electricity savings
 - 6-9 GWH/year; cut ~5000 metric tons CO₂
- Hybrid Vehicles (50-70% reduction in fuel use)
 - 5% of fleet; cut 20-25 metric tons CO₂
- Water Conservation?

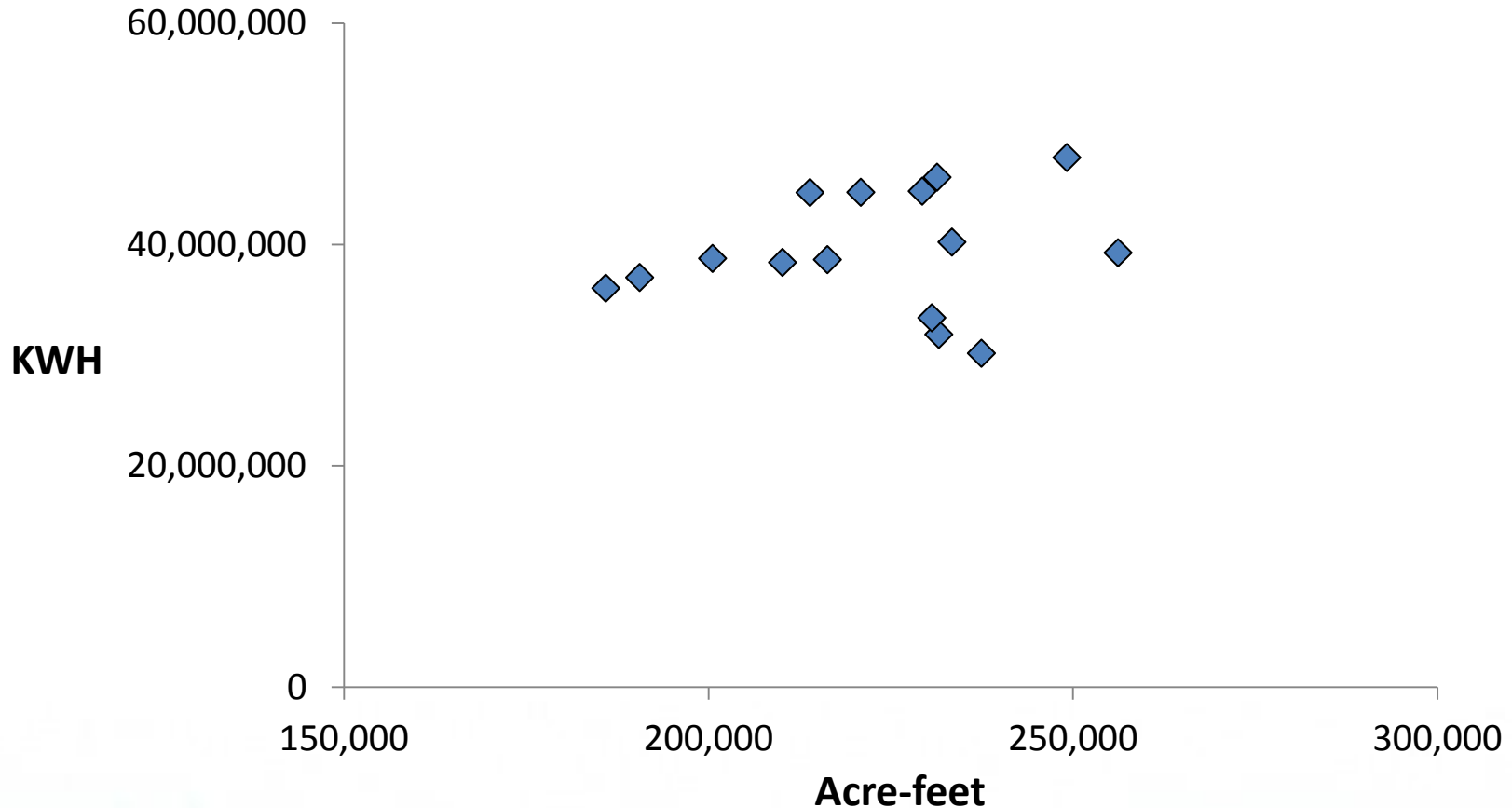
Energy Savings From Water Conservation

- Recent Water Conservation:
 - 20% reduction in per capita use
 - Water use down 20-25,000 AF
- Remaining for 2016 Goal:
 - 9,000 AF
 - ~½ indoor; ½ outdoor
- Energy savings are variable.



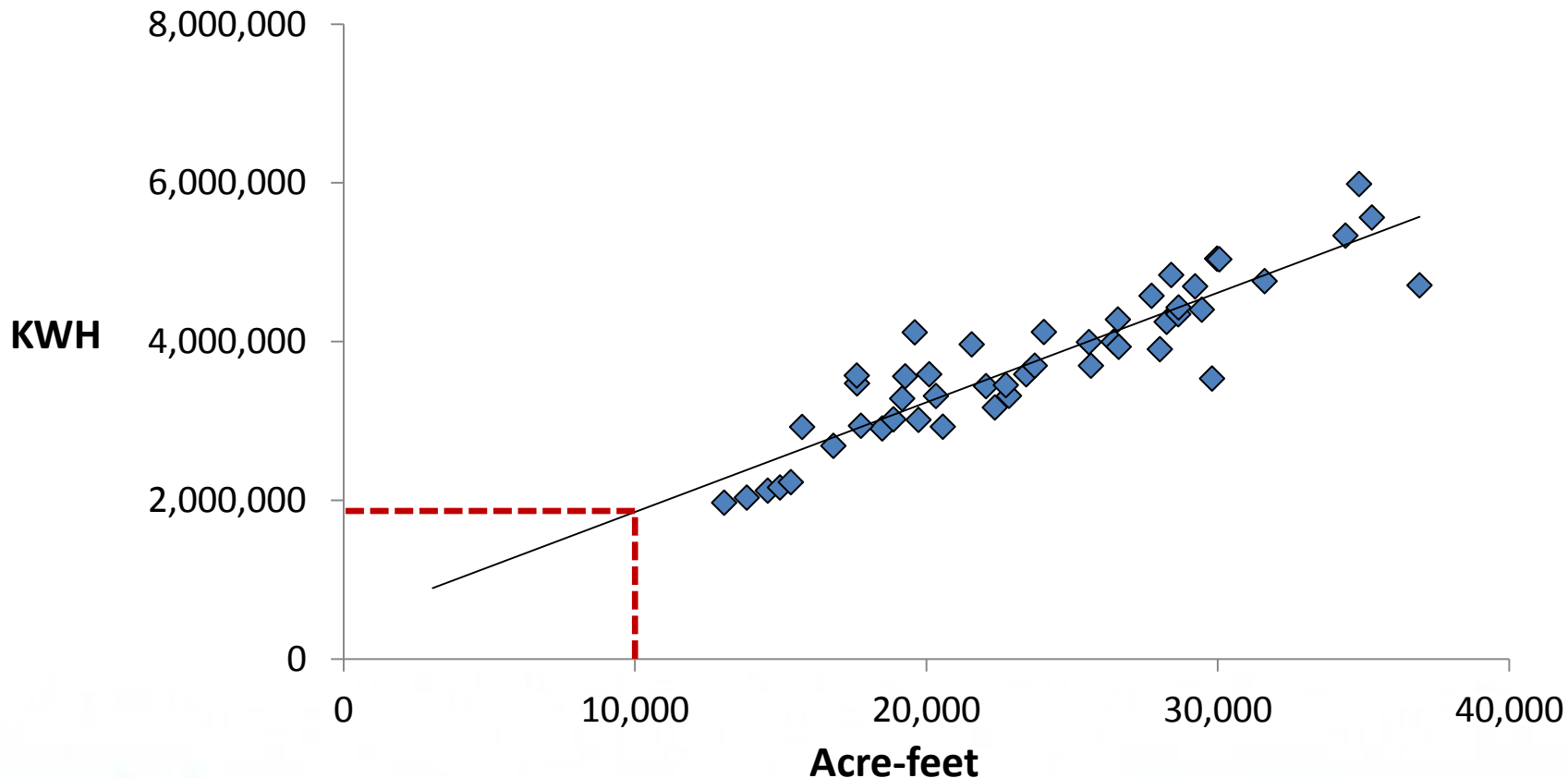
Energy Savings From Water Conservation

Annual Water Use vs Energy Use

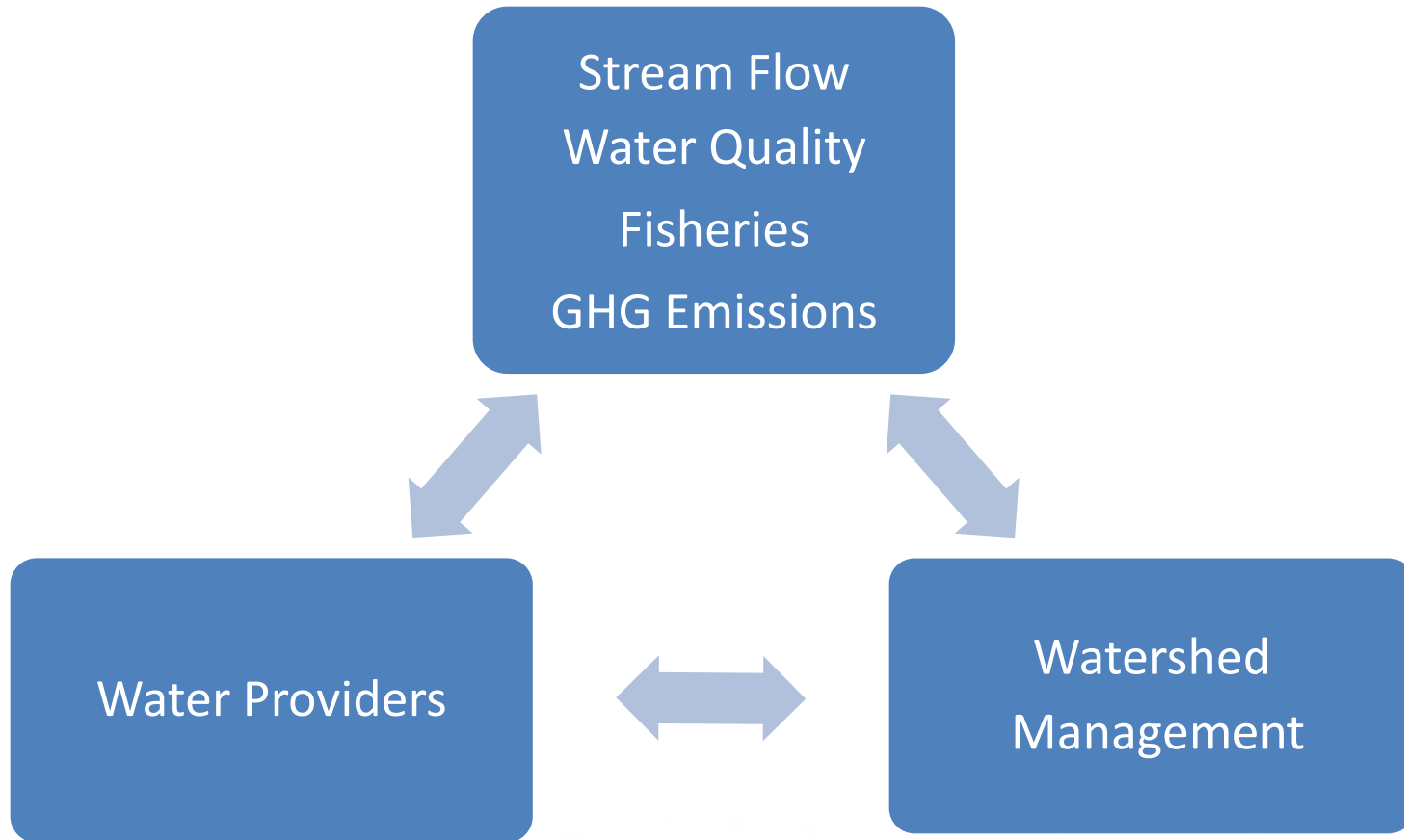


Energy Savings From Water Conservation

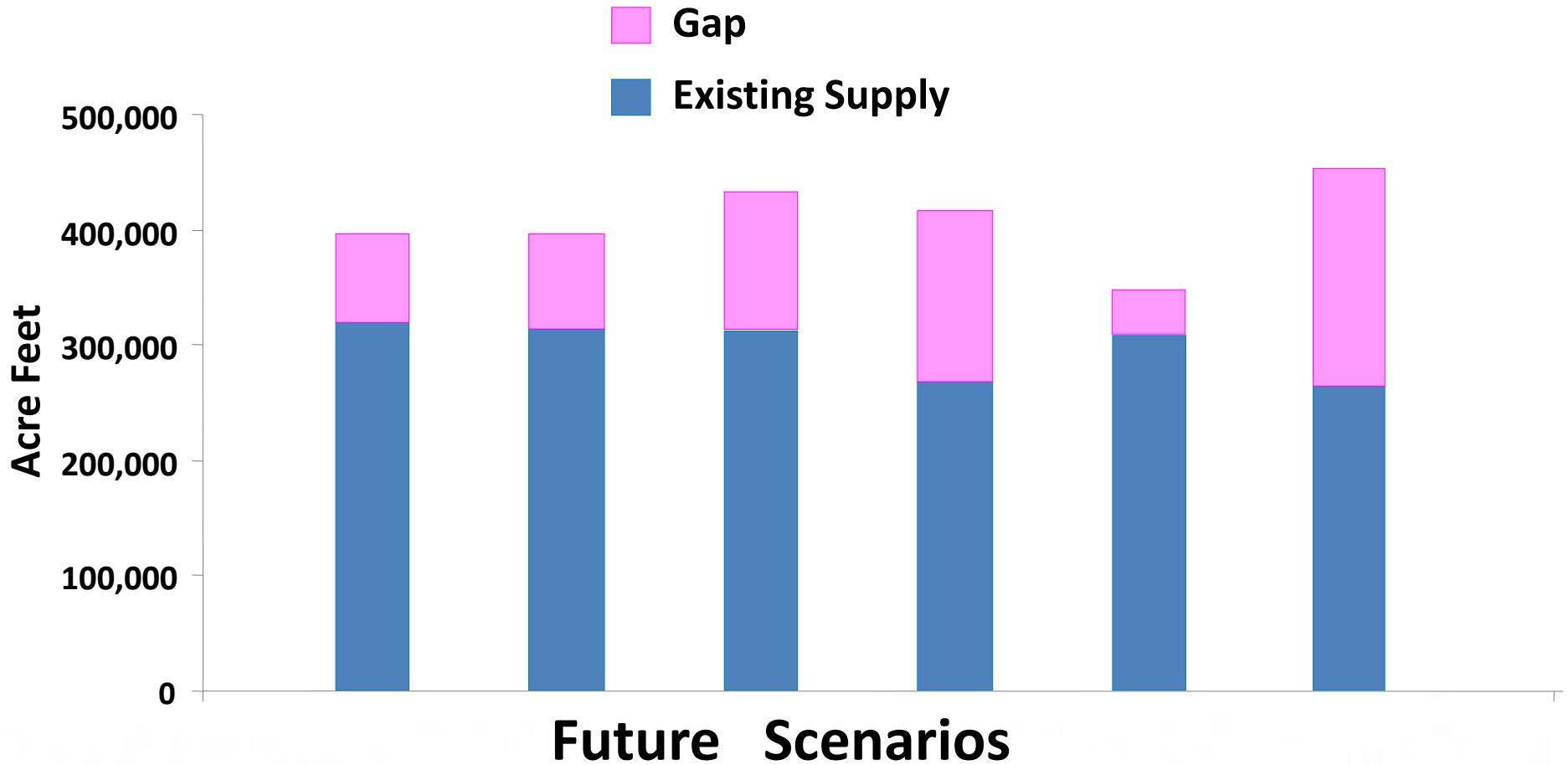
Irrigation Season
Water Use vs Energy Use



Watershed Linkage

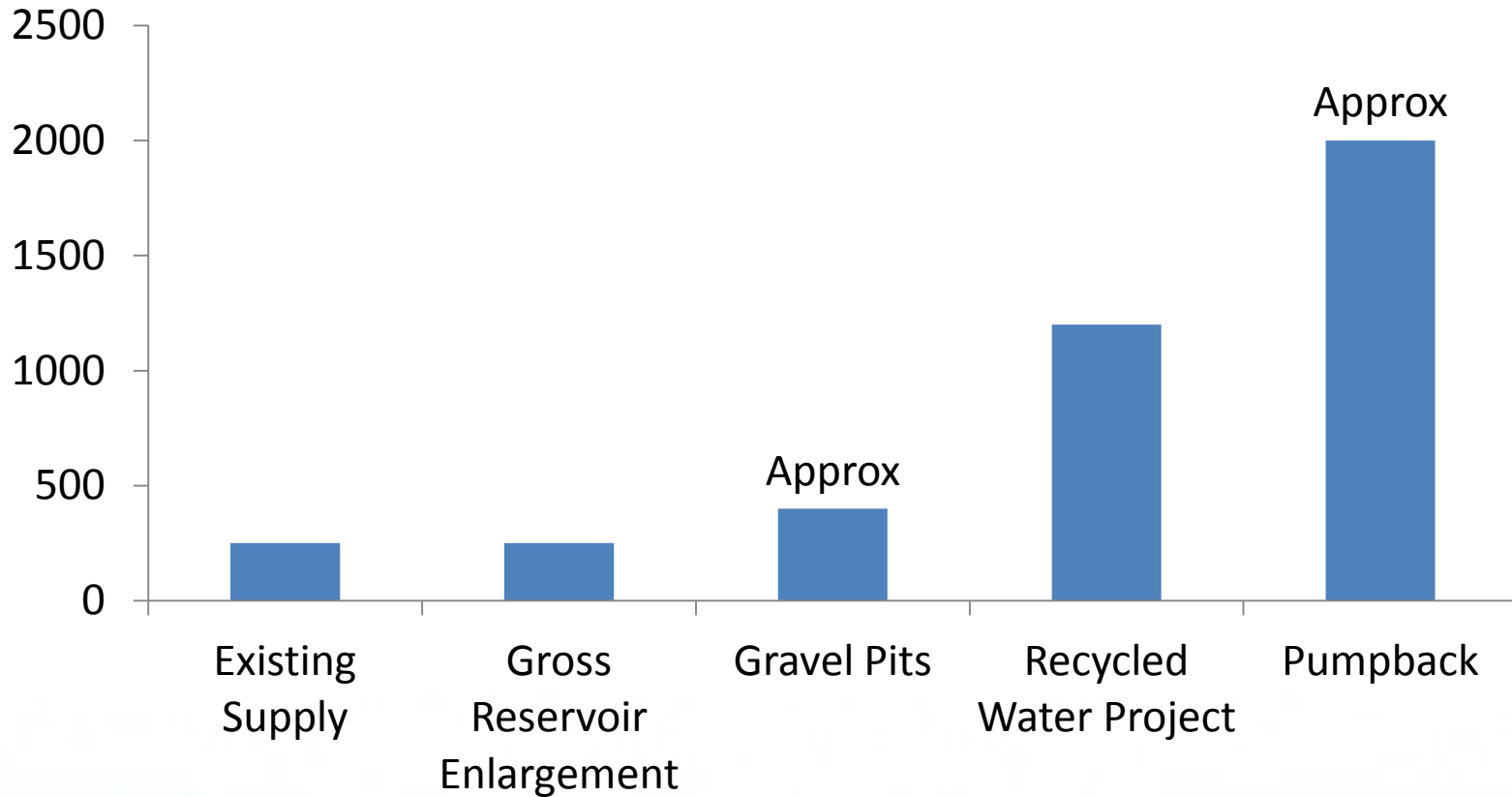


Gap Between Supply and Demand in 2050



Energy Intensity of Supplies

KWH/Acre-foot



Climate Change? GHG Legislation?

Water

- Needs Increase
- Supplies Could Shrink
- Efficiency more important

Energy

- Needs Increase
- Costs Higher
- Efficiency more important



Thank you! ...and please:

**USE ONLY
WHAT YOU
NEED.SM**

 **DENVER WATER**



DENVER WATER