Austin Water and Wastewater Commission Briefing

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Webber Energy Group

THE UNIVERSITY OF TEXAS AT AUSTIN

Austin Water runs its system on electricity

Austin Water Utility (AWU) quick facts:

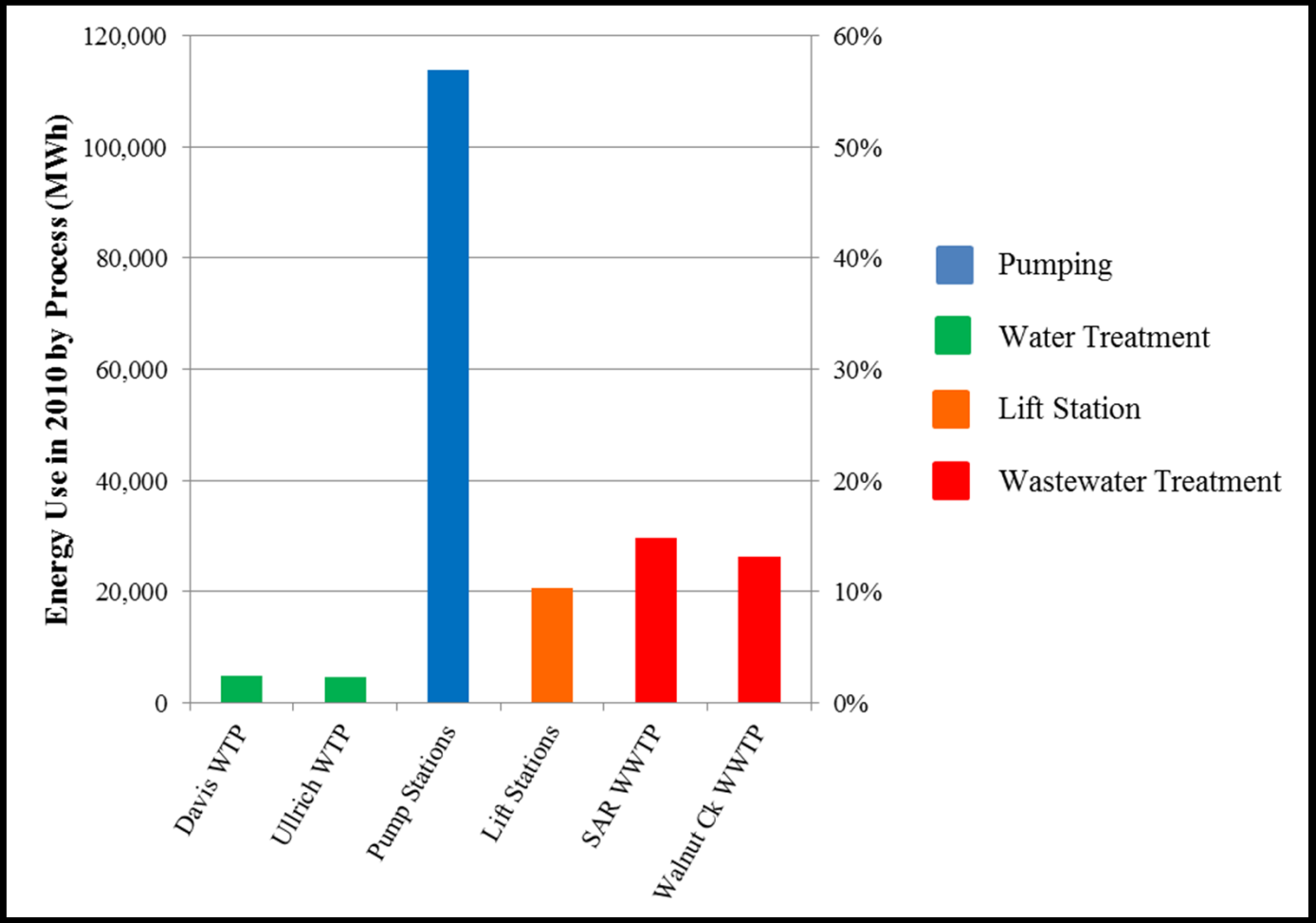
- 190,000,000 kWh/yr of electricity is used to treat:
  - 47 billion gallons of water
  - 36 billion gallons of wastewater
  - 1.3 billion gallons of reclaimed water

- AWU is a top-10 customer for AE, and about 67% of AWU electricity use goes towards pumping

- In recent years, Austin Energy introduced demand charges ($/kW), which complicates how AWU schedules pumps

Source: SEQ Healthy Waterways Partnership

About 57% of Austin Water's electricity consumption goes towards moving water



Responding to demand charges is an ongoing effort at AWU

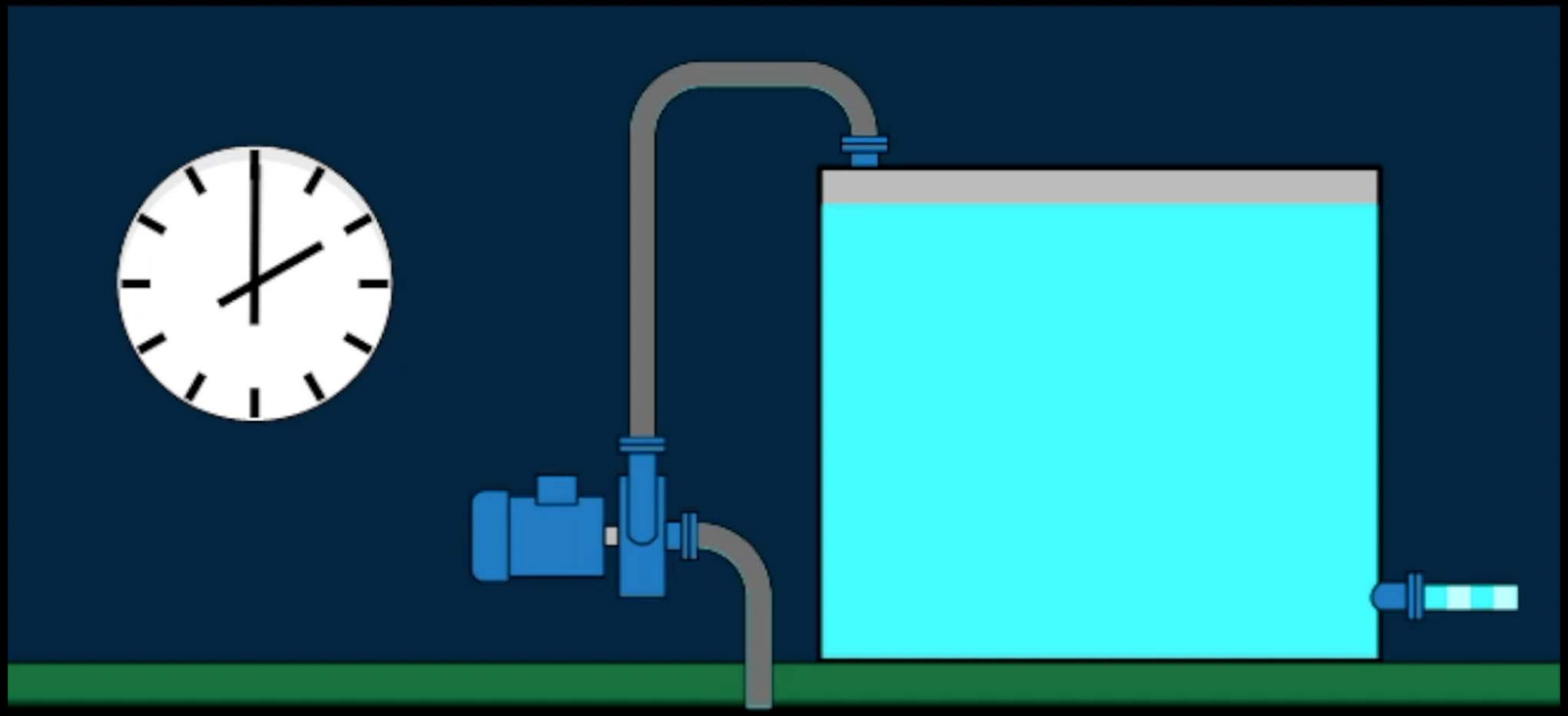
- Pump sequencing to avoid brief overlaps that cause demand spikes
- Merged multiple electric accounts to avoid an additive demand charge across pump stations when maximum demands do not coincide.
- Two pump stations optimized operations to avoid on-peak pumping and then opted in to AE's time-of-use rate to reduce bills up to 50%.

This study assessed how time-specific operations and demand charges impact the system, and assessed the feasibility of employing load shifting to reduce electricity bills

Optimized pump scheduling can theoretically eliminate peak electric load at AW's Davis Lane Pump Station.

- Actual implementation of time-of-use operation system-wide would require assessment of other factors including water age and system pressure

Electricity rate tariffs can be site specific to create a tradeoff between load shifting and revenues from electricity sales

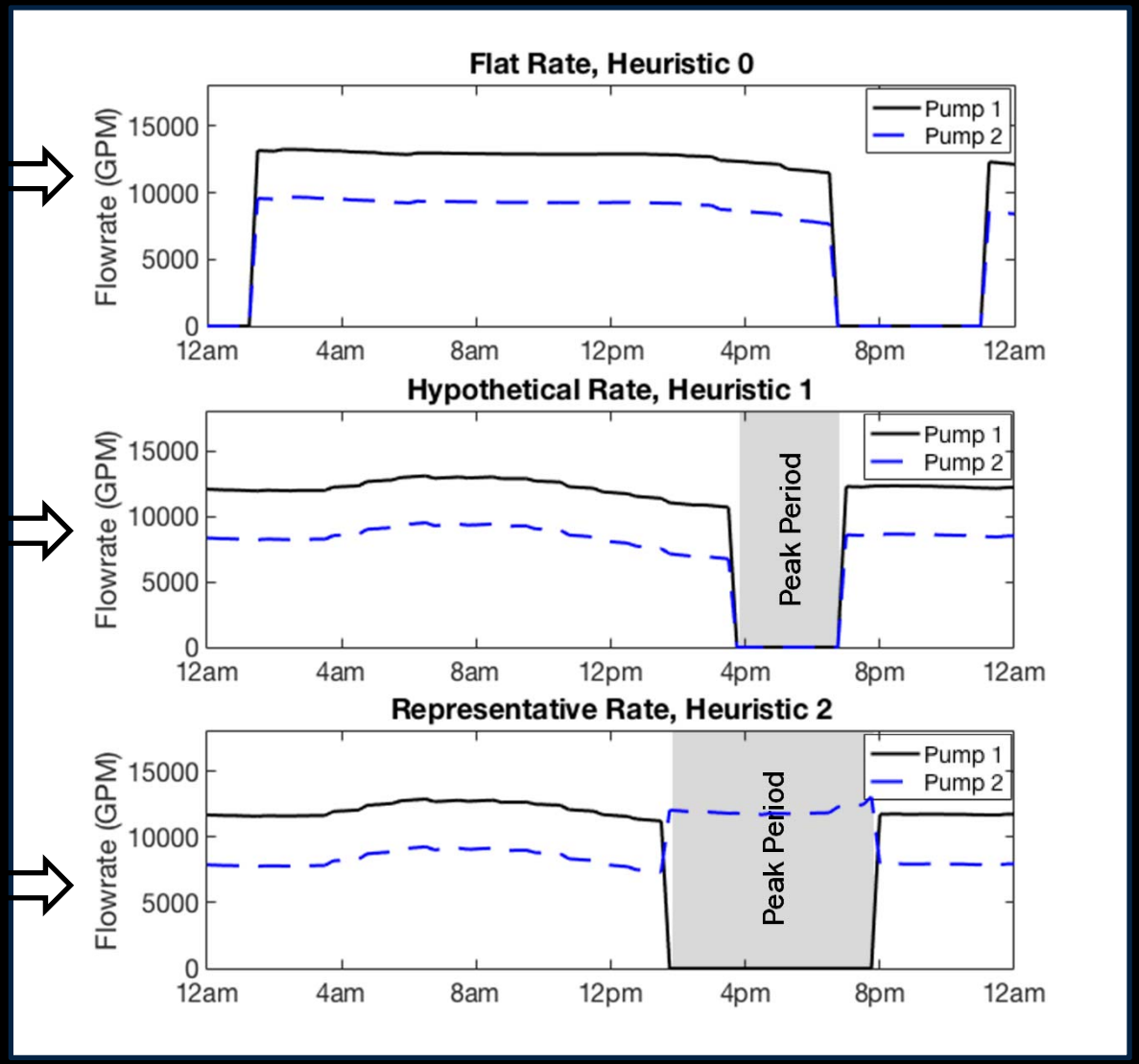


Load shifting strategies depend on the electric tariffs

Under a typical flat rate, pumping occurs during peak

If the peak period is short, peak demand can be avoided

Otherwise, limiting peak demand is a reasonable strategy



There is potential to strategically integrate renewable energy sources to produce drinking water from groundwater.

Figure 7 shows the capacity (as a volumetric flow rate, v) that one square meter of PV array could produce and the location of the six highest calculated capacities. Table 1 shows the values of the variables that resulted in these highest capacities.

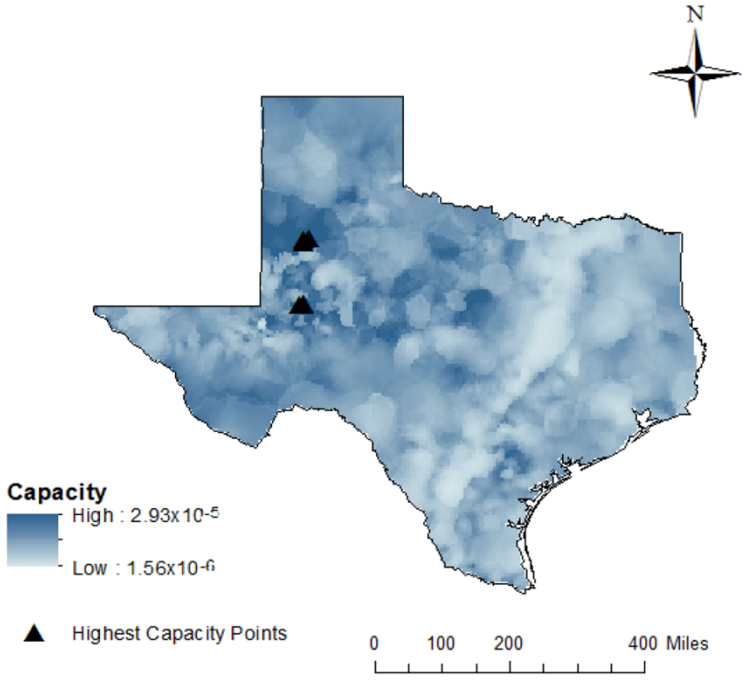


Figure 7. Desalination capacity across Texas calculated using well characteristic and solar radiation data.

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