



South Tahoe Public Utility District

Energy Baseline

2015 - 2022



Overview



Purposes

- Visualize energy use patterns
- Understand how forces impact energy use
- Use to set energy use/GHG targets

Background

- Grid electricity from Liberty Utilities accounts for 85-90% of District energy use
- 86 district facilities (46 potable water, 40 wastewater)
- Monthly kilowatt hour (kWh) readings from January 2015 - December 2022
- Sourced from Liberty Utilities energy bills

Baseline Year: 2019



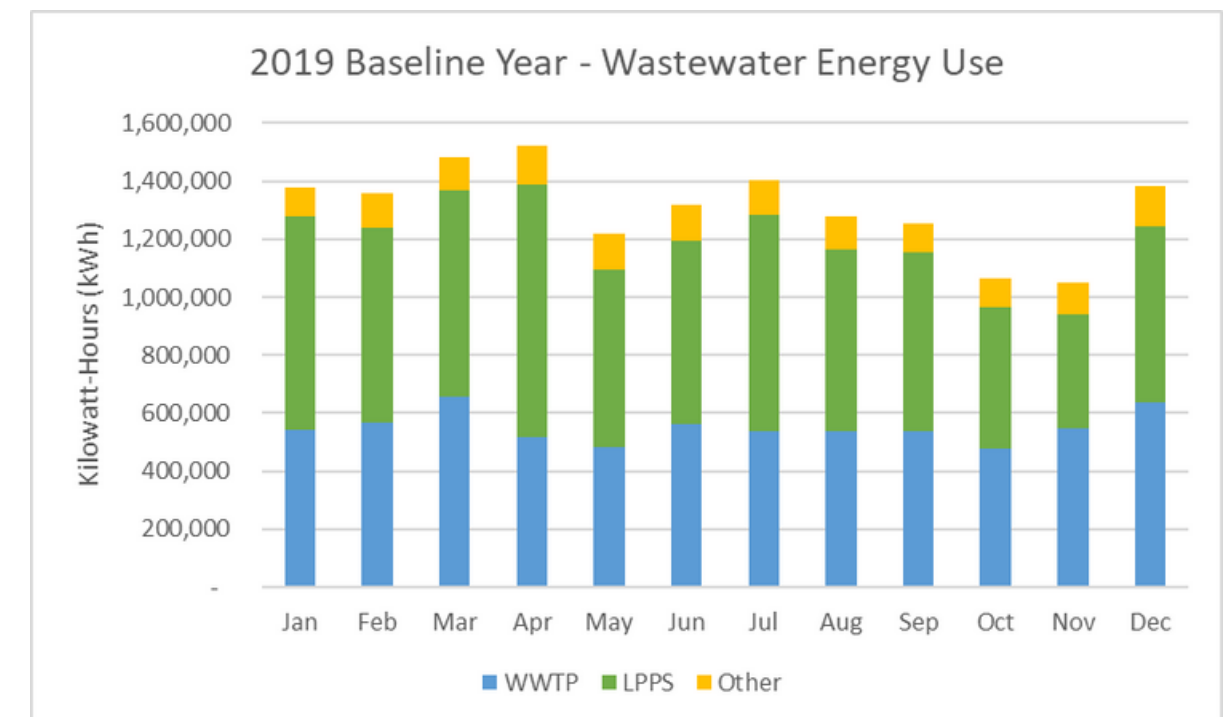
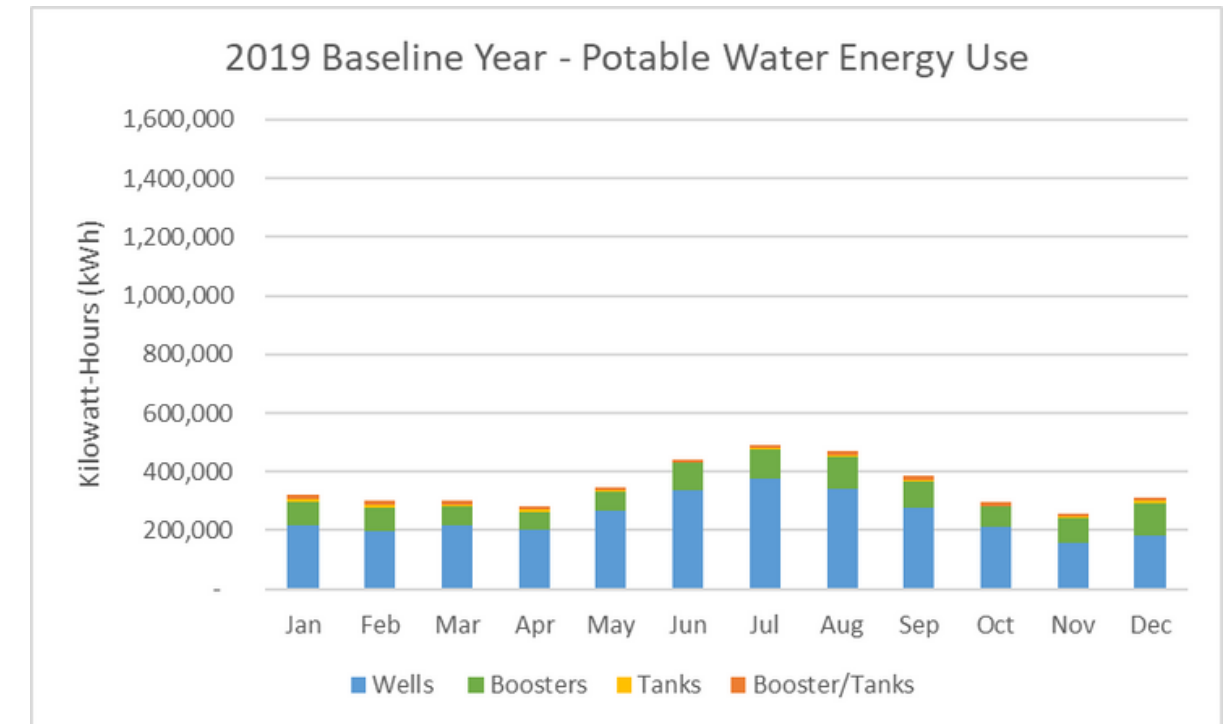
Serves as the comparison year, "typical" energy use

Why 2019?

- Post-drought, normal winter
- Pre-pandemic
- No major wildfires

2019 Trends

- Potable - peak in summer
- Wastewater - peak in winter, smaller peak in summer



System Wide Energy Use

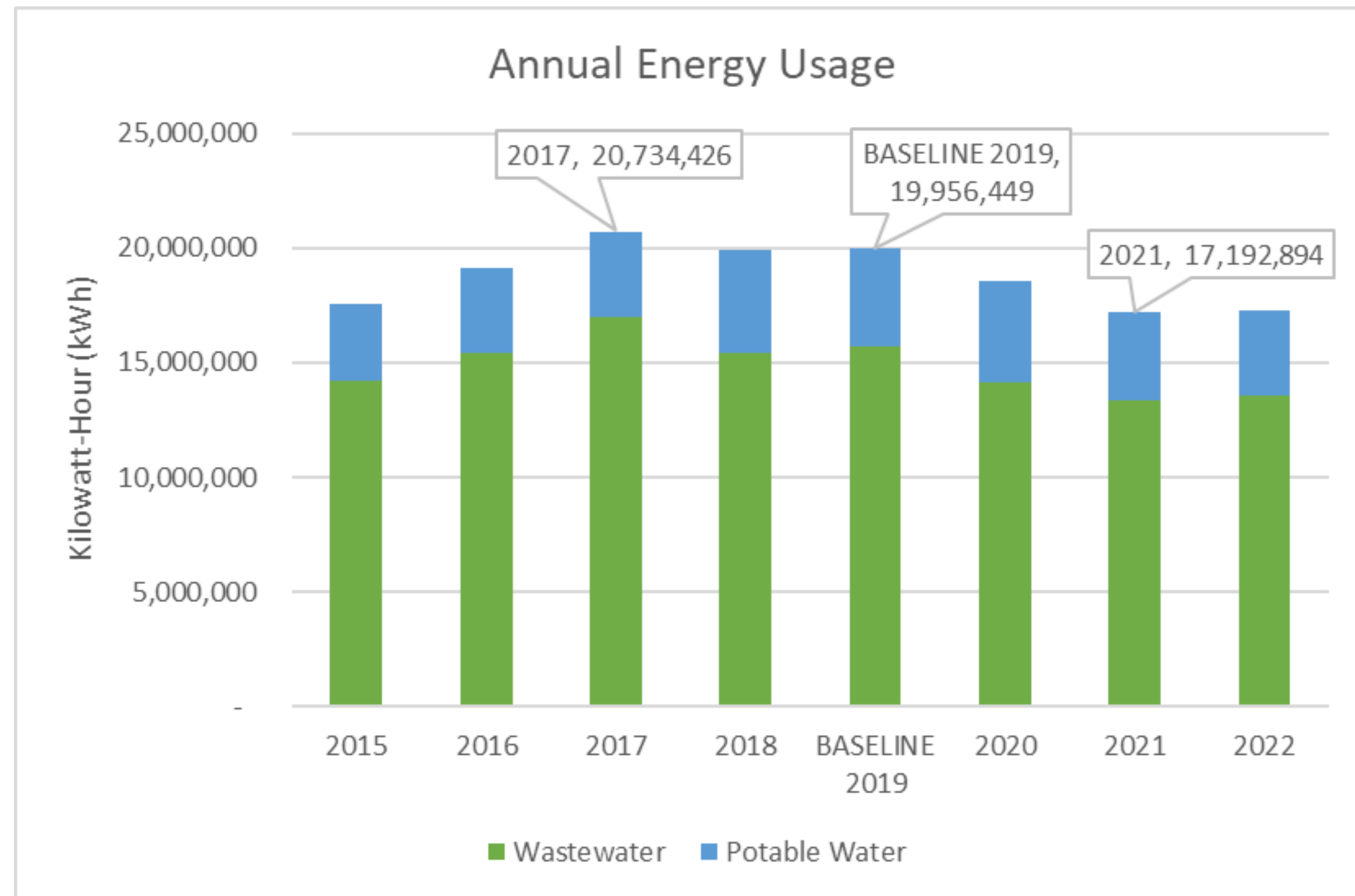


Wastewater:

- 79% of annual kWh usage on average
- 40 facilities

Potable Water:

- 21% of annual kWh usage on average
- 46 facilities



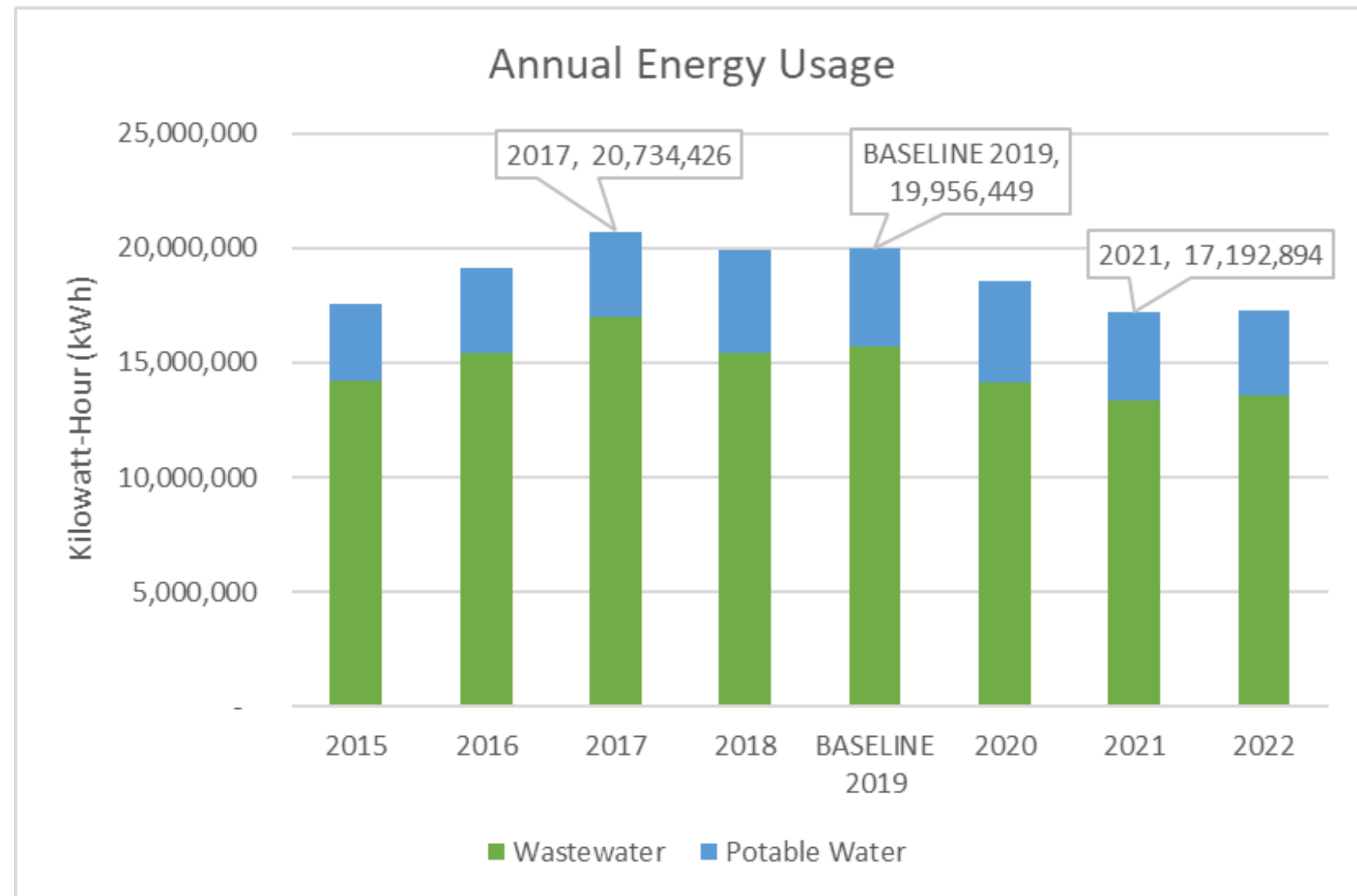
System Wide Energy Use



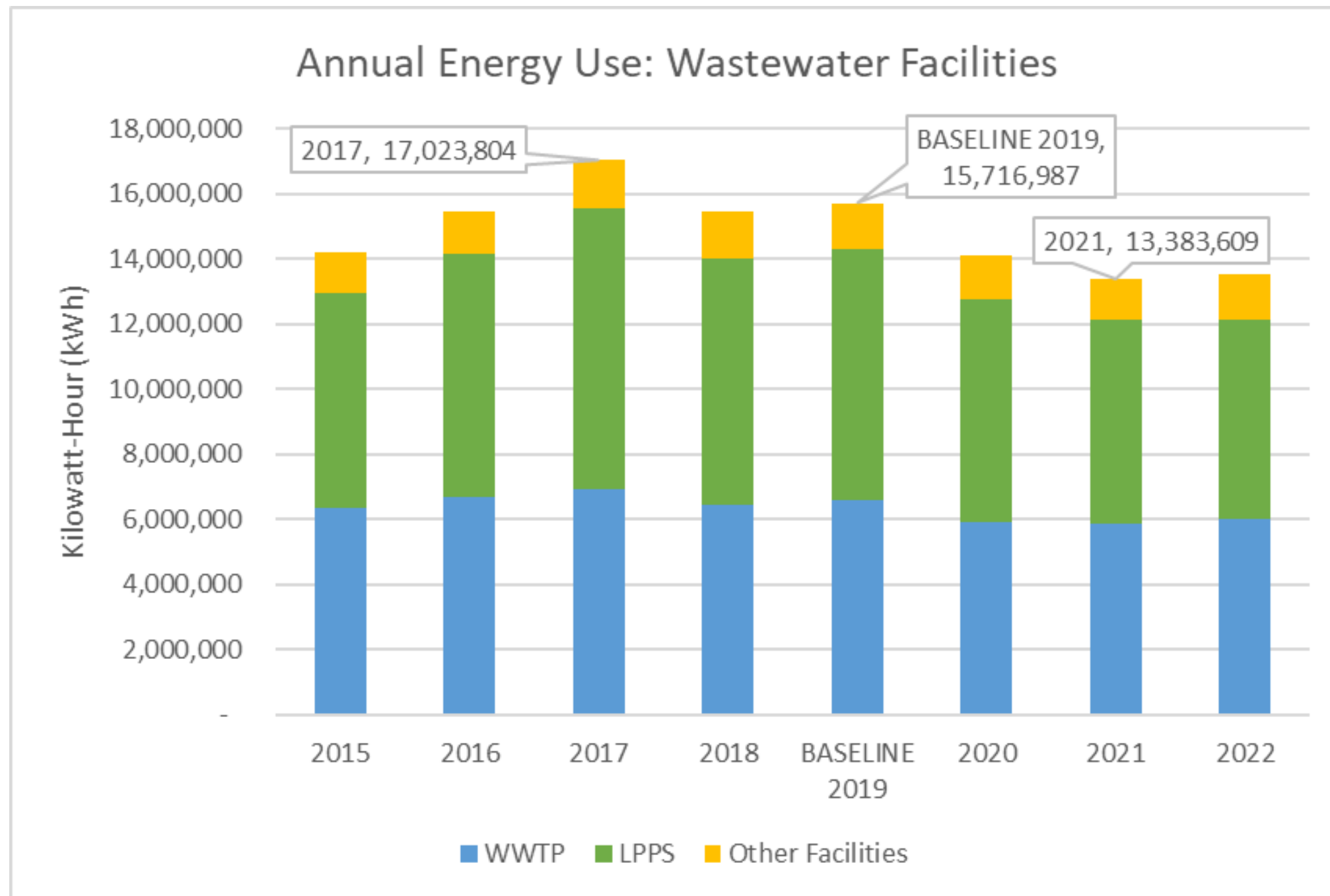
Average annual energy use:
18.8 million kWh

Most energy use:
2017
20.7 million kWh

Least energy use:
2021
17.2 million kWh



Wastewater Energy Use



Facilities

- Luther Pass Pump Station
- Wastewater Treatment Plant
- 31 pump stations
- 7 Alpine County facilities

Observations

- 2017 - Most energy use
 - Rain on snow in March
- 2021 - Least energy use
 - Caldor Fire in Sept

Wastewater Energy Use

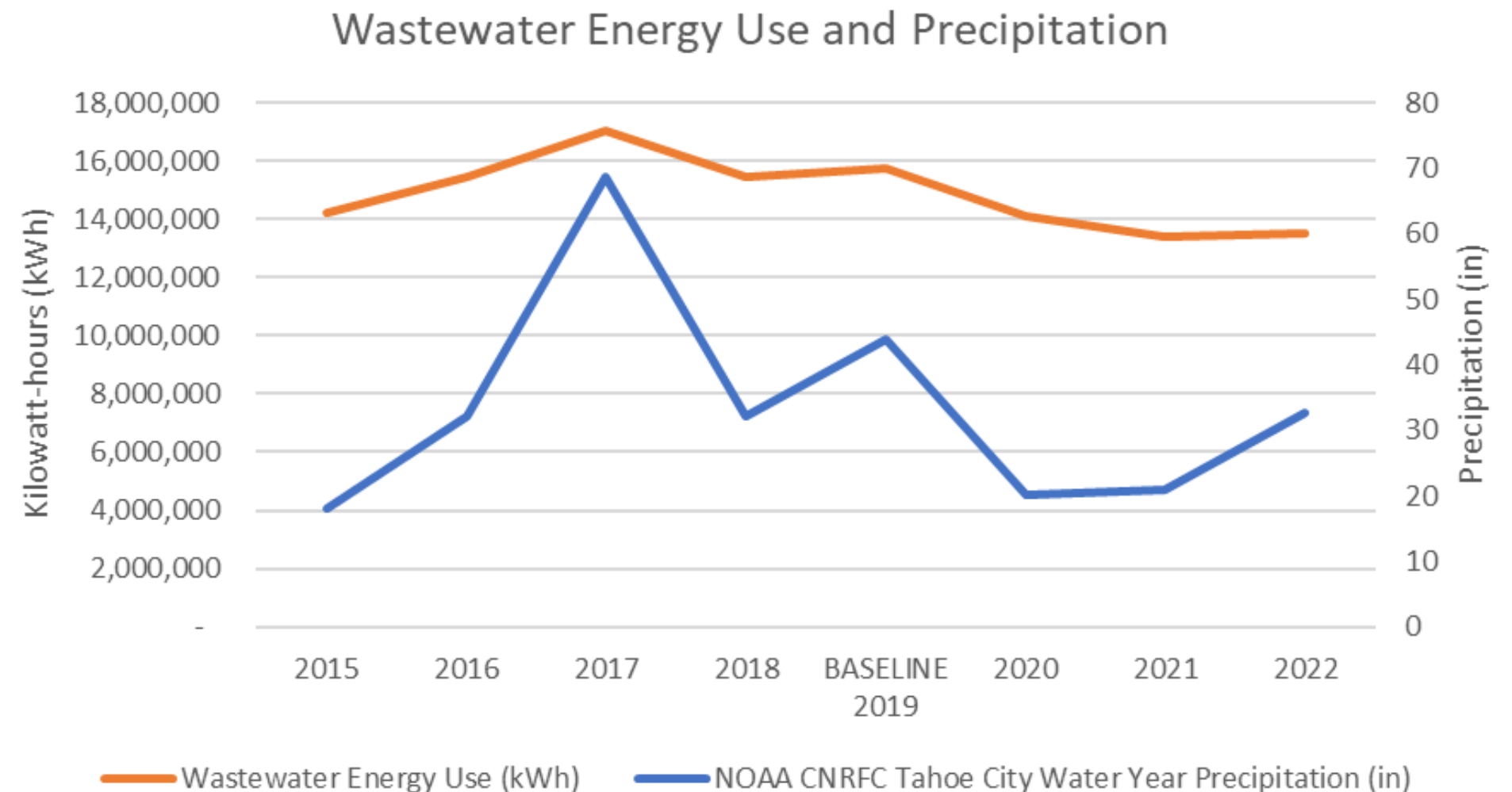


Influencing Factors

- Precipitation has a strong correlation with energy use
 - Inflow and Infiltration from precipitation & snowmelt

Seasonal Trends

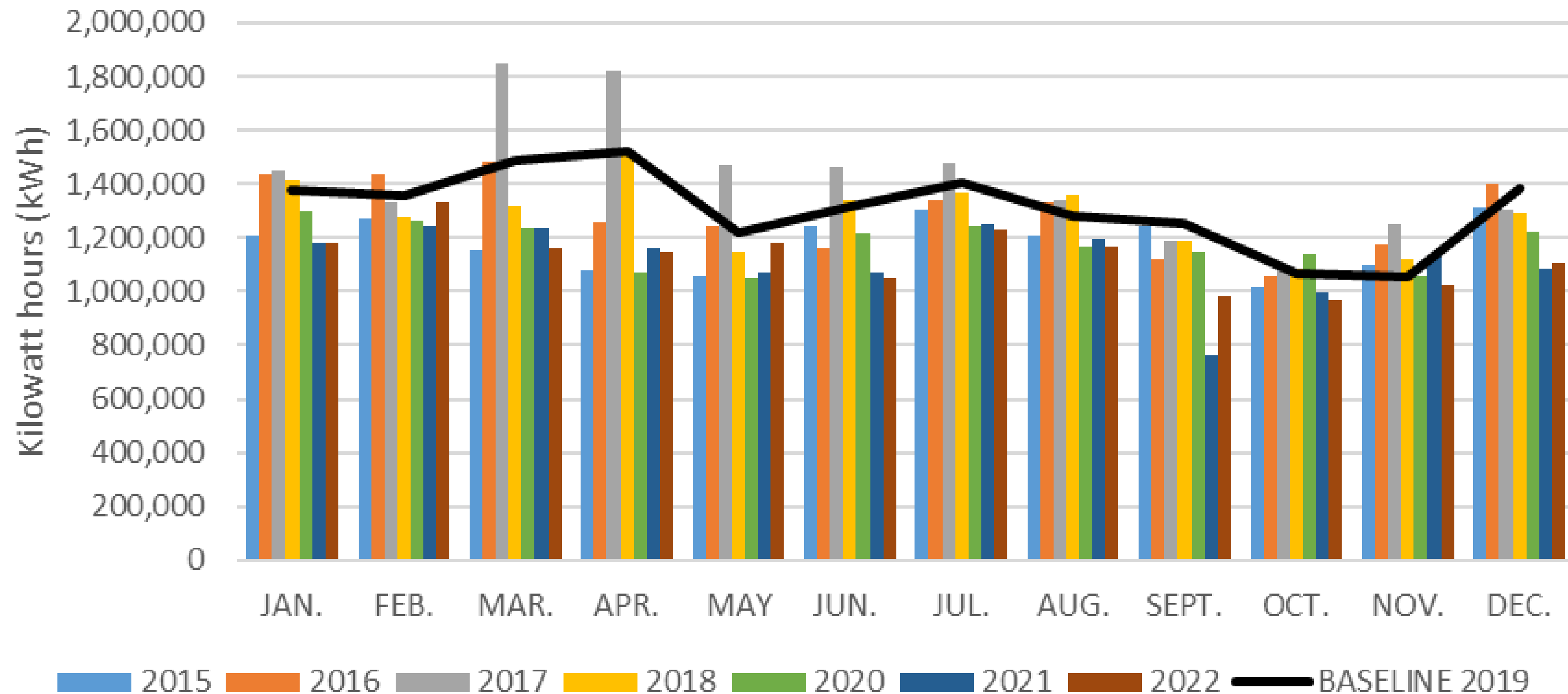
- Dependent on precipitation
- Wetter years will peak in winter, dryer years in summer



Wastewater Energy Use



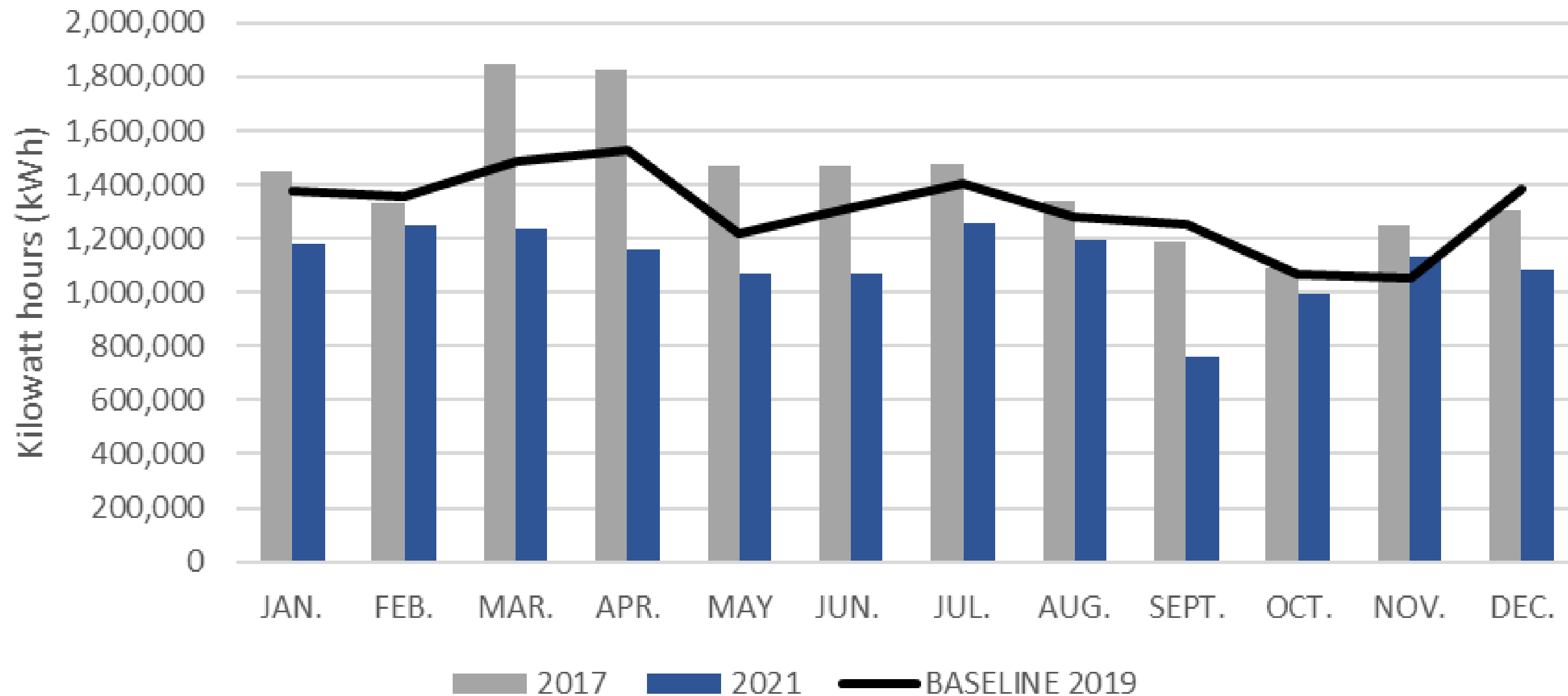
Wastewater Compared to Baseline 2019



Wastewater Energy Use



Wastewater Compared to Baseline 2019



Wastewater Energy Use



Luther Pass Pump Station

- Uses the most energy district wide
- Max 3400 horsepower
- Average of 7.2 million kWh used annually
- 38.0% of district usage

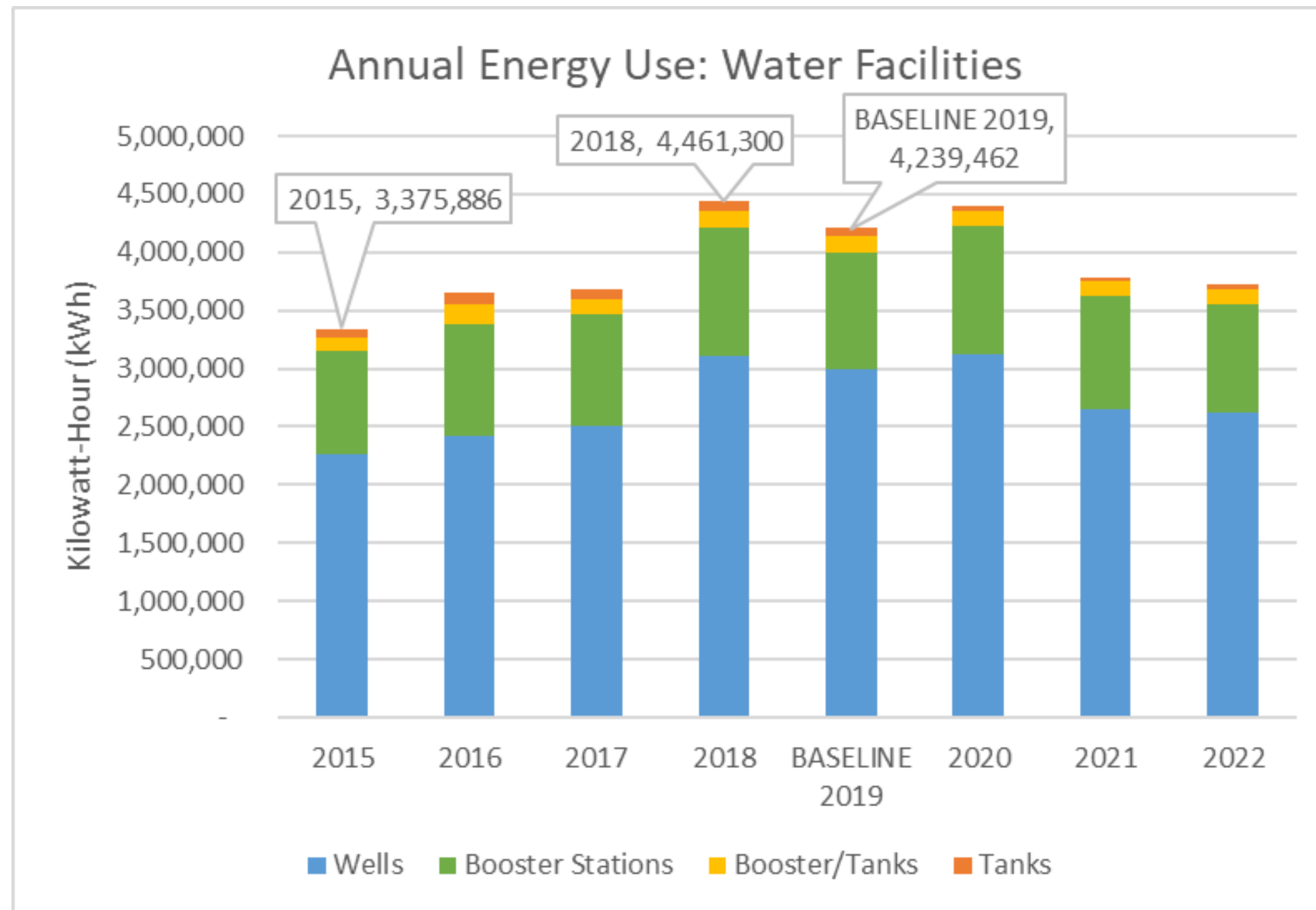


Wastewater Treatment Plant

- Uses the 2nd most energy district wide
- Plant demand load: 1875 horsepower
- Average of 6.4 million kWh used annually
- 33.8% of district usage



Potable Water Energy Use



Facilities

- 13 Wells (11 active)
- 13 Booster Stations
- 11 Tank Sites
- 3 Tanks w/ Boosters

Observations

- 2018 - Most energy use
 - Lifted irrigation restrictions
- 2015 - Least energy use
 - Height of the drought

Potable Water Energy Use

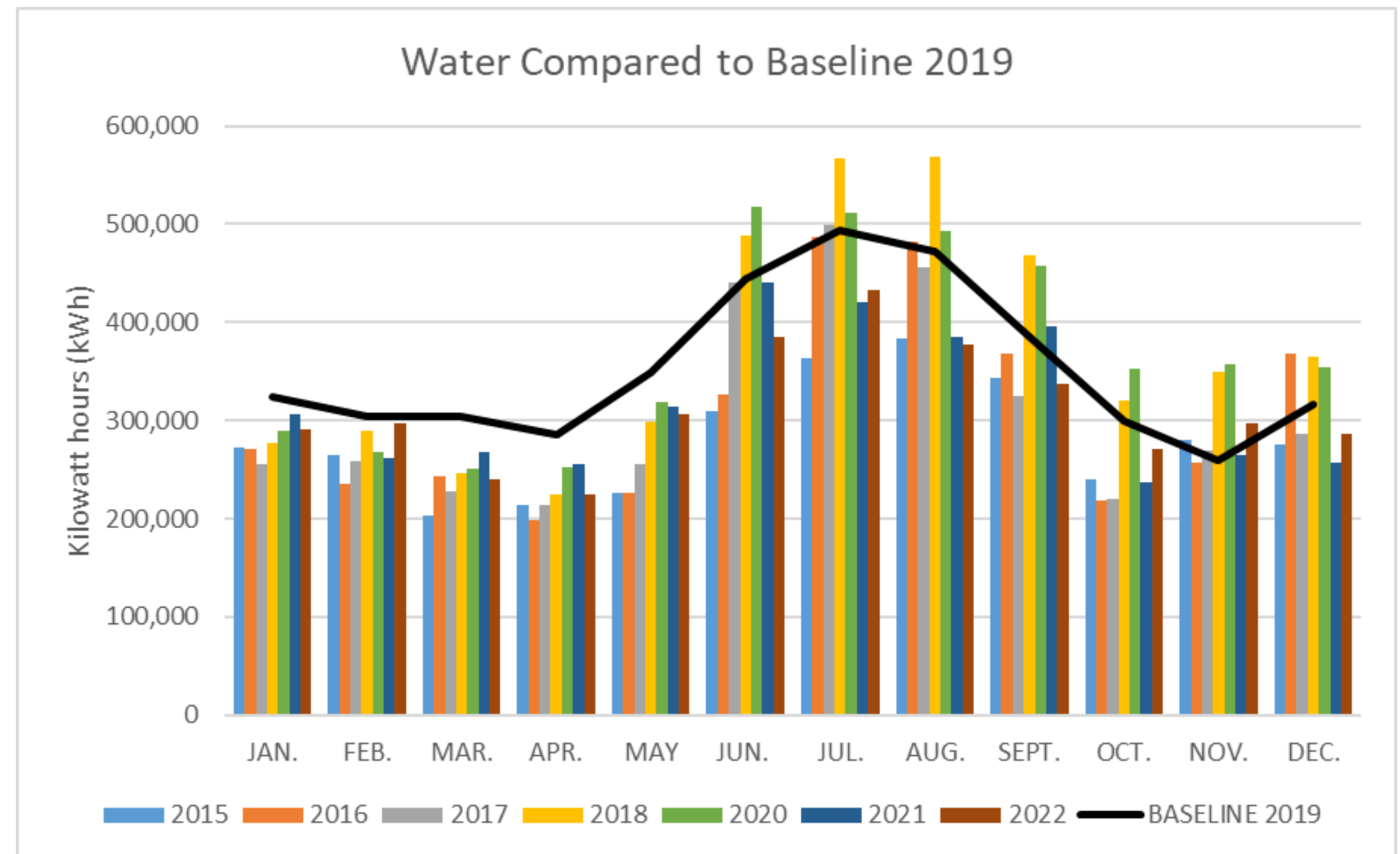


Influencing Factors

- Irrigation
 - Wet vs Dry Years

Seasonal Trends

- Irrigation peaks in summer months, June - September
- Months with least energy use - March, April, October



Potable Water Energy Use

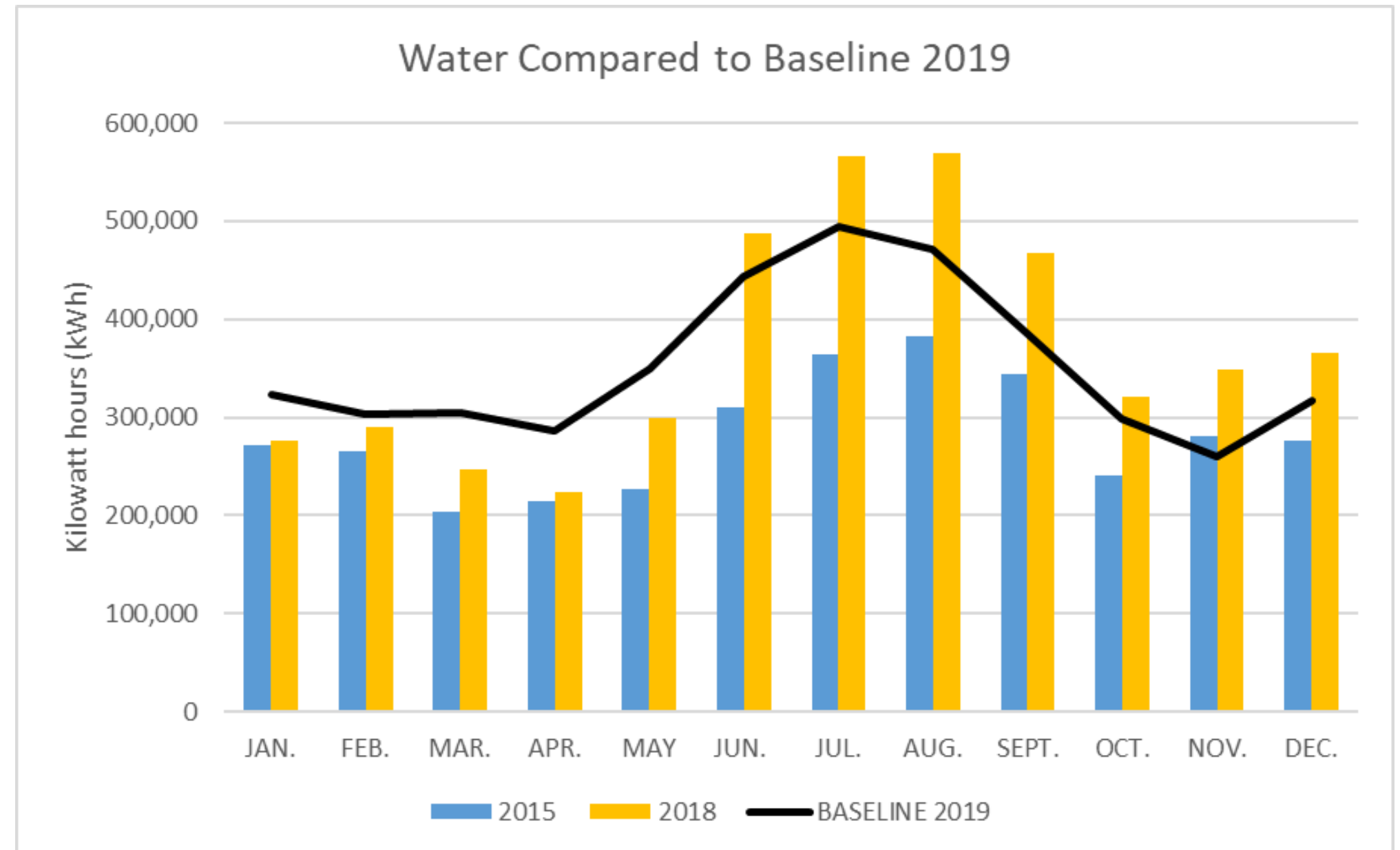


Influencing Factors

- Irrigation
 - Wet vs Dry Years

Seasonal Trends

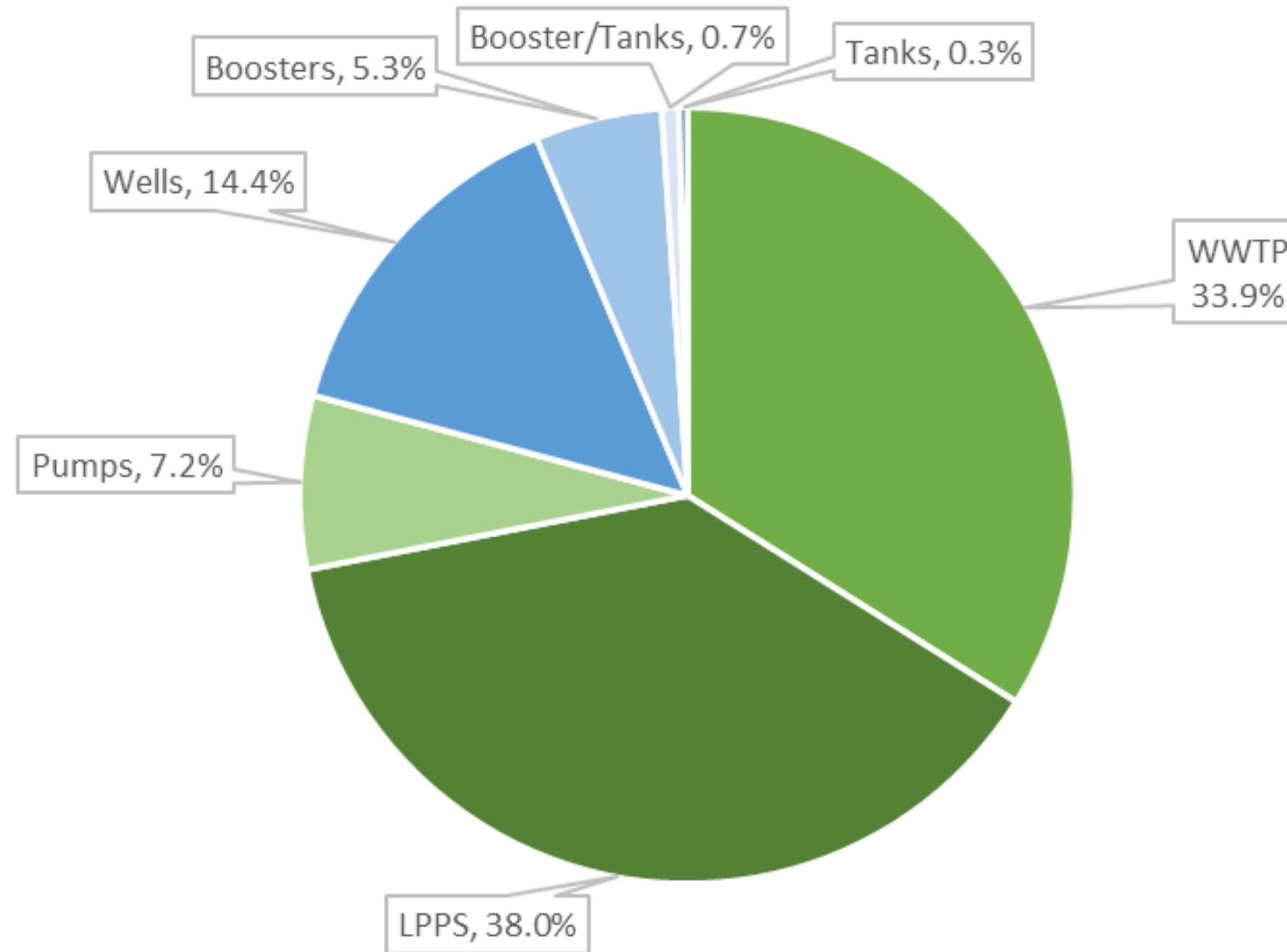
- Irrigation peaks in summer months, June - September
- Months with least energy use - March, April, October



Energy Use Breakdown



Average Annual Energy Usage by Facility



Energy Use Summary



Energy Use Stats

- Wastewater facilities use ~4x more electricity than water facilities per year
- Biggest energy users are LPPS and WWTP
- Wetter years see higher energy use
- Baseline year 2019 used more energy than all but 1 year in 8 year period

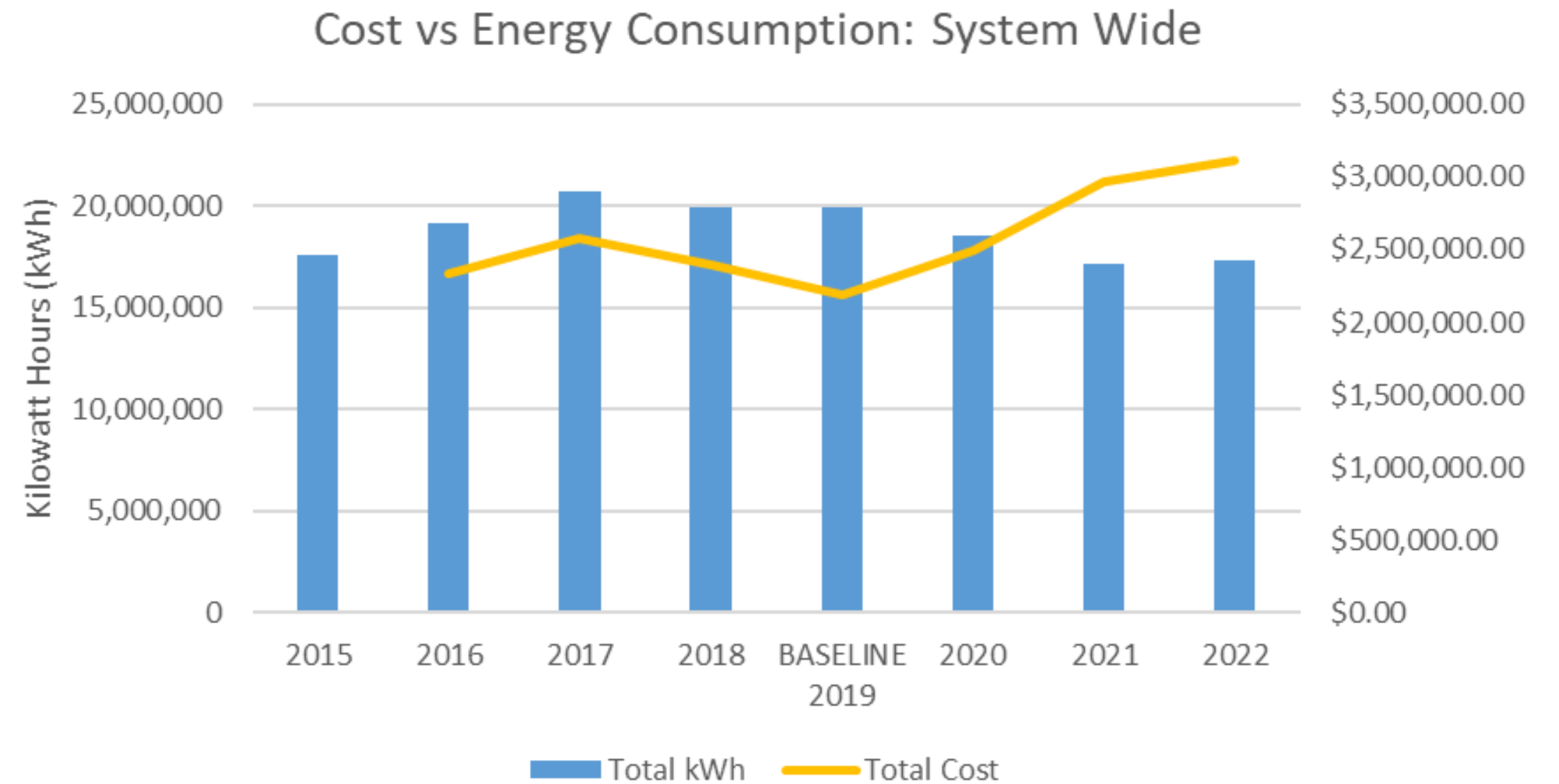
Influential Factors

- Biggest factors influencing energy use:
 - Wastewater
 - Inflow and Infiltration
 - Water Consumption
 - Water
 - Irrigation

Energy Costs



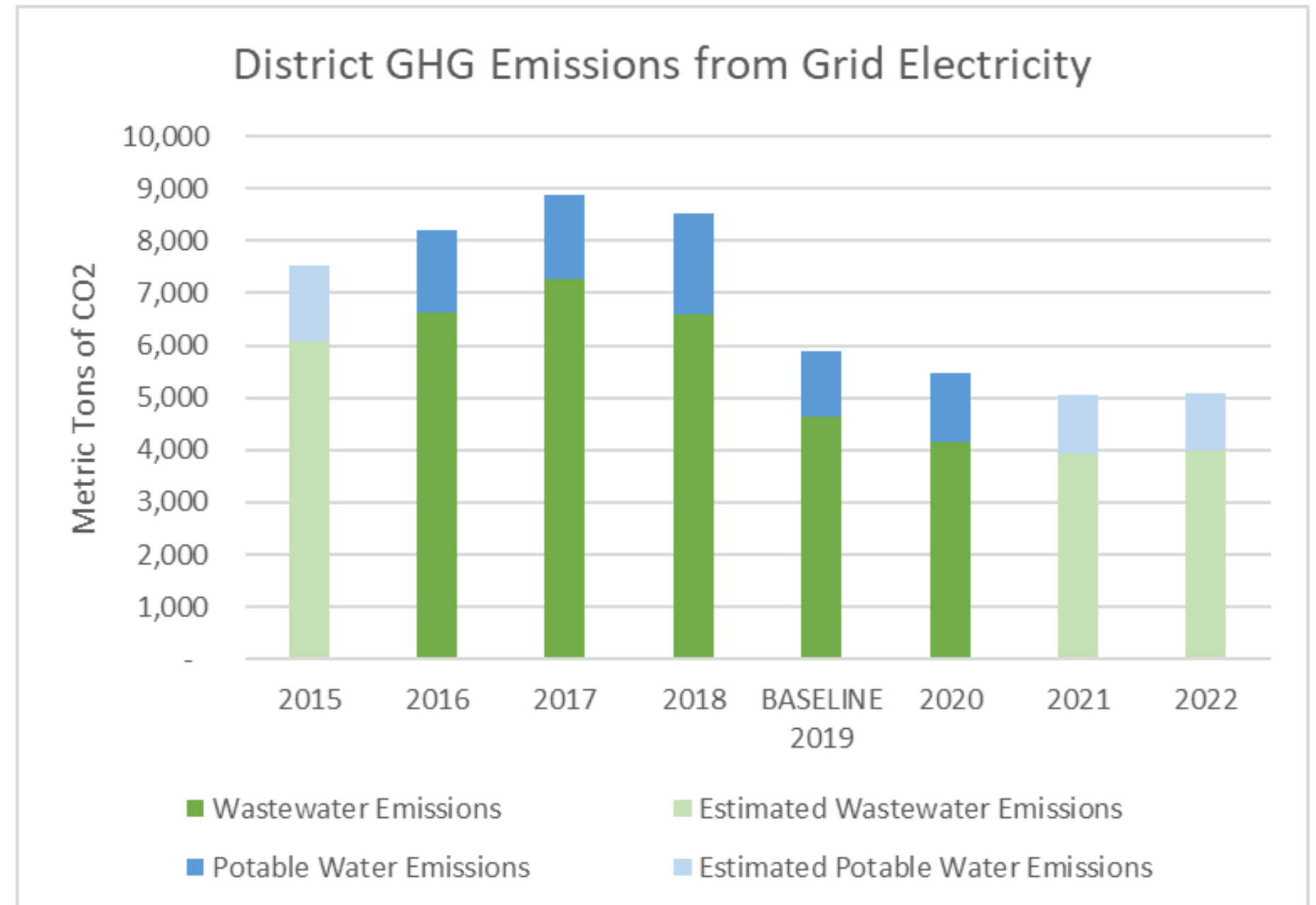
- Electricity is the one of the district's largest operational costs
- Liberty Utilities rate increases are responsible for rising costs



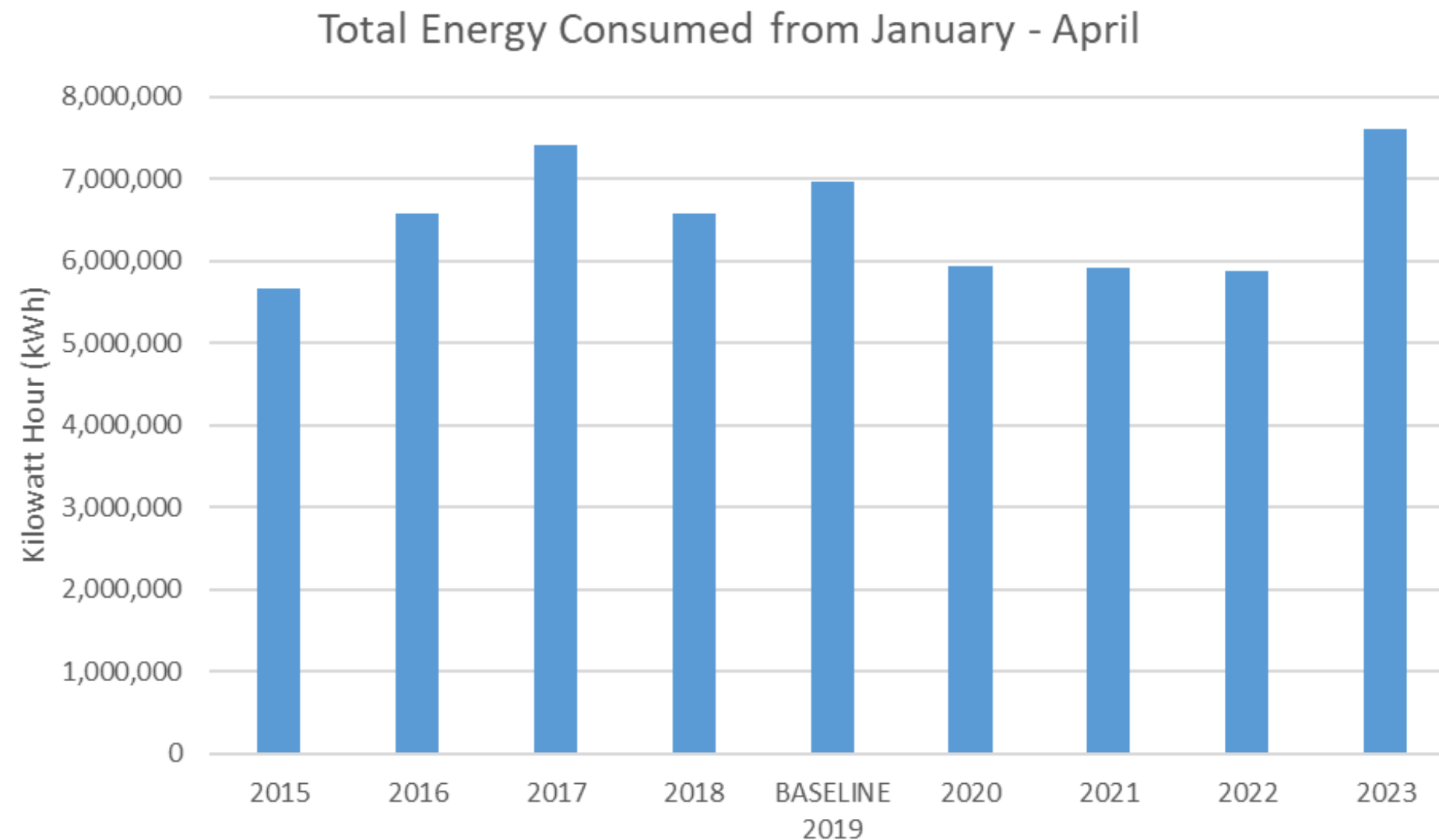
GHG Emissions



- Grid electricity accounts for ~86% of District GHG emissions
- Emission output is determined from ClearPath's LU emissions factor
- Liberty Utilities CO2 output has decreased as they add renewable energy sources to their portfolio



Predictions



- Between the months of January - April, 2023 used the most energy in the past 9 years
- Despite having the most energy use so far, 2023 unlikely to see highest GHG emissions

Addressing Energy Use



Wastewater

What the district is doing:

- WWTP Solar
- Inflow and Infiltration
 - Smart covers, I&I hats
 - CCTV of sewer lines
 - Manhole Assessments
- CIP Sewer Rehabilitation Projects

Water Conservation

What the district is doing:

- Leak Notification & Customer Support
- Leak Detection & Repair
- Watering Days
- Rebates for efficiency upgrades

Questions?

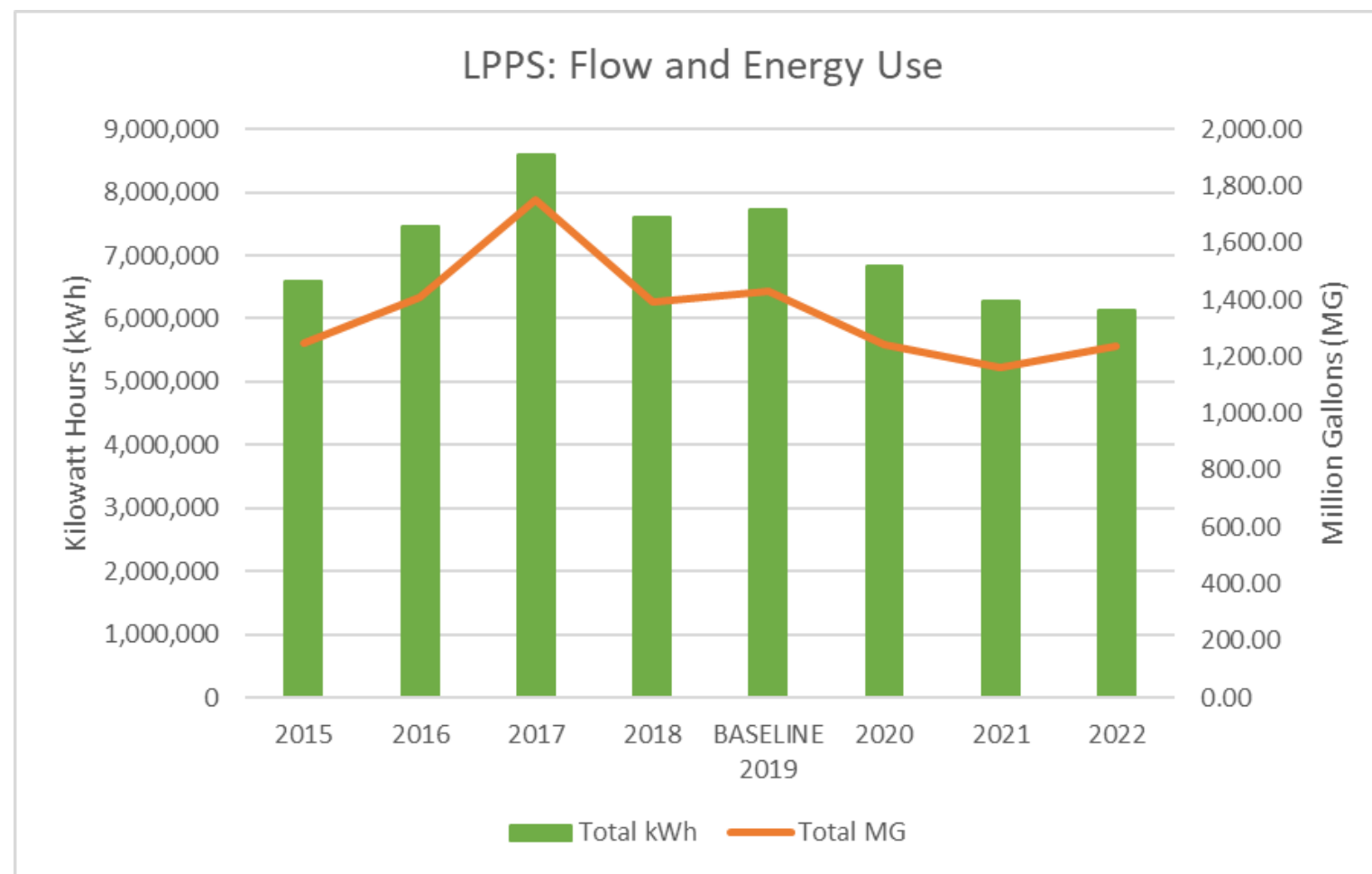
Thank you!



Wastewater Energy Use



Luther Pass Pump Station



Wastewater Treatment Plant

