

Aquatic Centers

Saving Water and Energy Plan

10/20/2016



Aquatic Centers – Utilities Overview

Large bodies of water that require

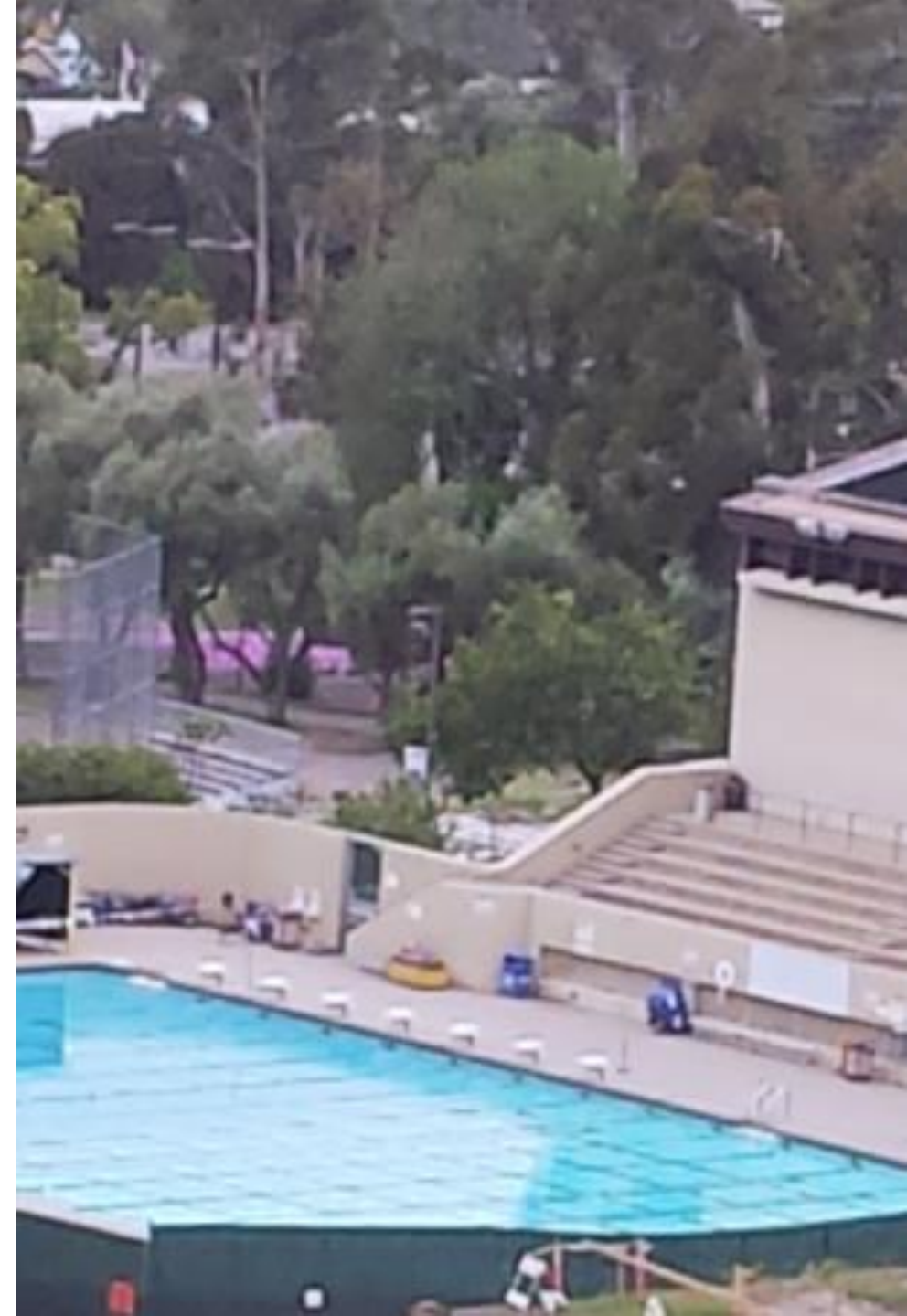
- Large boilers
- Large filtration systems
- Large pumps – 40 HP and Up

Resources cost breakdown

- Electric bills – 46%
- Gas Bills – 31%
- Water Bills – 13%

Customer is interested in:

- Reducing gas bills
- Reducing Electrical bills
- Reducing Water consumption
- Verify savings on an ongoing basis
- Easy one dashboard to control and data log water & energy usage , pool temp, PH & Chlorine levels



Example of a Large Commercial Pool

Pool

- Pool Surface area – 9,825 Sqft
- Pool Volume – 600,000 Gallon
- Operating hours – 9:00AM – 3:00PM 6 days /week unoccupied on Sunday

Pool Heating

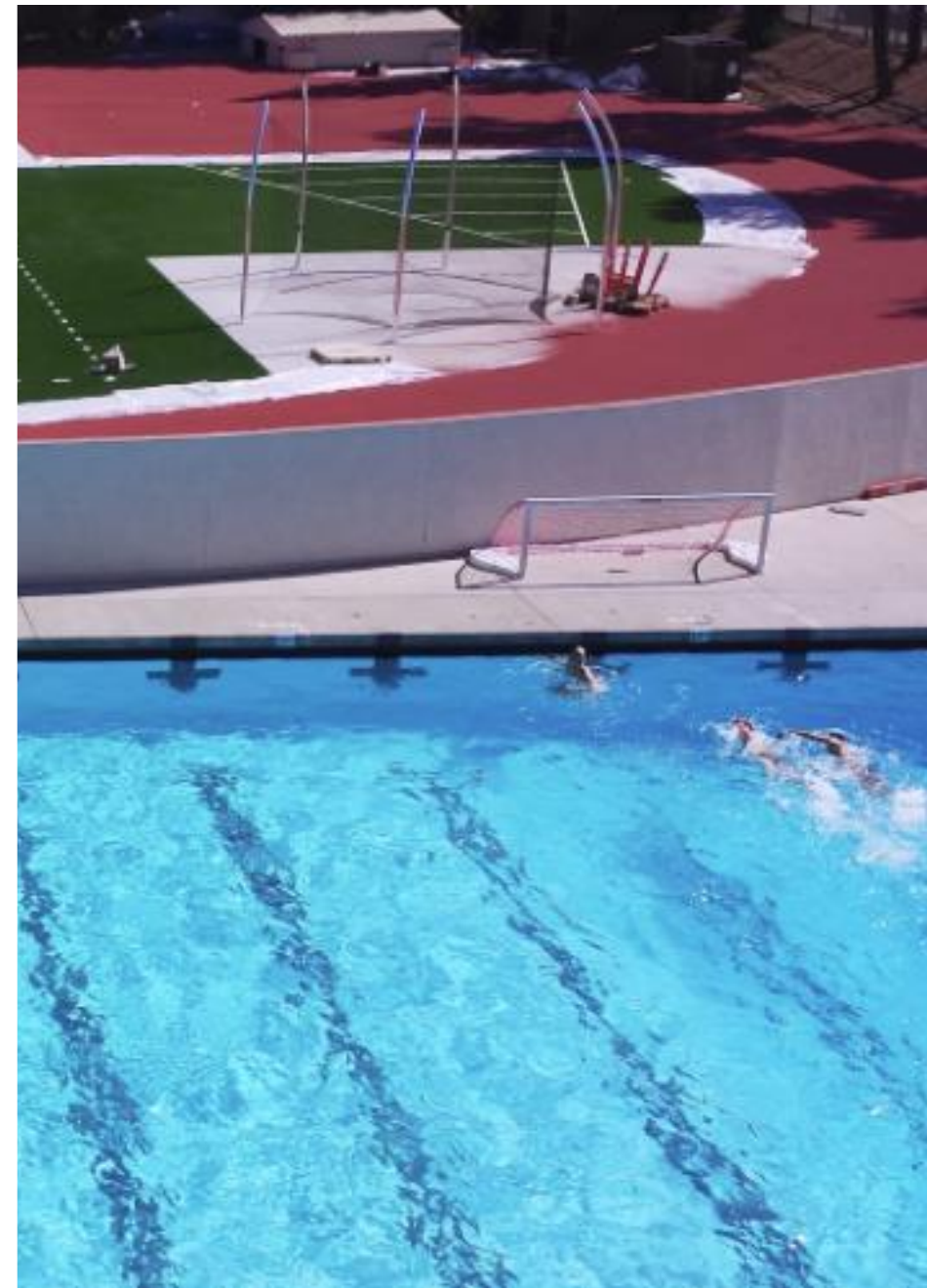
- It takes 30,000 therms annually to heat the pool
- Cost per therm = \$1.24/.8 (boiler efficiency) = \$1.5625
- **Annual gas cost = \$46,875**

Pool Pump

- 45 HP Pump consumes 301,563 kwh annually
- **Annual cost - \$45,234** (\$0.15 /Kwh)

Water Usage

- 750,000 gallons annually are used to back wash filters
- Cost of water to customer at \$0.03/gal = \$22,500
- Disposed chemicals cost estimated at \$5,000
- **Annual cost - \$27,500**





Proposed Solution

Solar Thermal System

- A 200 Collector system would conservatively produce 22,000 Therms /Yr
- Annual gas Savings - \$34,375

Scheduling Main Pool Pump

- Using lower Hz would save 35% of pump energy consumption
- A 45HP pump would reduce its consumption by 12Kwh
- Total reduced Hz hours in a year 6,750 @12Kwh = 81,000 Kwh saved
- Annual savings - \$12,150

Scheduling Pool Boiler

- Reduction of 6,500 Therms annually
- Annual Savings \$10,156

Total Annual System Savings = \$56,680



Additional Benefits

The TEK is a cloud based control and monitoring Pool Energy Management System providing easy interface control and monitoring of the pool system via any smart device

Complete pool Dashboard & diagnostics

- Pool Temperature
- Filter loop and solar flow rates
- Solar BTU Production
- Boiler BTU Spent
- Chemistry monitoring and data logging (PH & ORP)
- Fluid level in Chlorine and Acid tanks
- Make up water meter

Remote and or Local Control

- Pool Temperature control
- Simple VFD interface
- Pump speed scheduling
- Filter loop flow control
- Boiler control
- Pool lights control

Alarms via - Email / text - status messages are emailed / Txt to customer

- Chlorine and or acid levels in tank are low
- Pool temp is out of range
- PH or ORP is out of range
- Flow is too low / high
- Data Logging
 - Selected parameters would be logged in for future reference / download and analysis

