

Community Colleges Optimizing Energy Use with Thermal Energy Storage (TES) Tanks



ALAMO
COLLEGES

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Objective

- Alamo Colleges completed the installation of three thermal energy storage (TES) tanks.
- Reliability - meet the cooling needs of campuses with increasing student population.
- Replicability – Cost and energy savings.
- TES tanks adding to overall benefits from energy management at Alamo Colleges

The Alamo Colleges

San Antonio College (SAC)



1925
2,166,594 ft²
31 Buildings
~ 20,000 students

Northeast Lakeview College (NLC)



2007
369,651 ft²
10 Buildings
~ 3,000 students

Northwest Vista College (NVC)



1995
838,471 ft²
12 Buildings
~ 17,000 students

St. Phillip's College (SPC)



1898
MLK: 781,460 ft²
18 Buildings
SWC: 460,492 ft²
6 Buildings
~ 11,000 students

Palo Alto College (PAC)



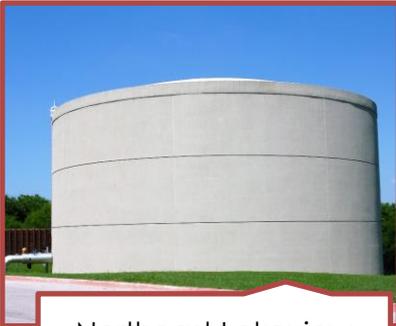
1985
567,437 ft²
25 Buildings
~ 9,000 students

Total Area¹: 5,498,597 ft²
More than 50,000 students

1) ACCD Building Inventory 2014. Includes Fire Training Academy and district offices.



Chilled Water Thermal Energy Storage (TES) Tanks: Since 2014



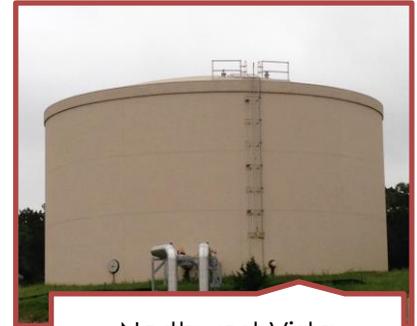
Northeast Lakeview
College

1.0 million gallons
70'-0" ID x 34'-9" water depth
4,000 gpm



Palo Alto College

0.53 million gallons
42'-4" ID x 50'-8" water depth
2,500 gpm



Northwest Vista
College

0.9 million gallons
66'-2" ID x 35'-0" water depth
4,000 gpm



Thermal Storage Project in Numbers



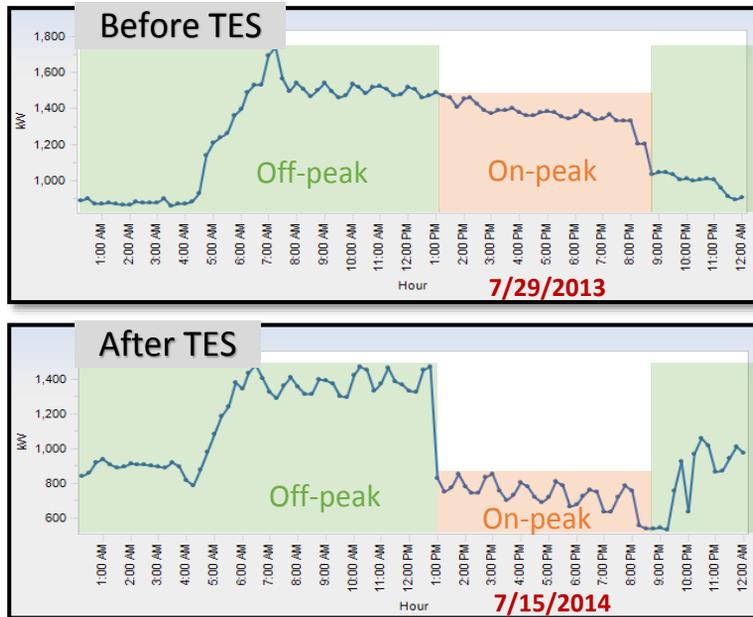
- ~\$7 Million project
- Approx. \$280,000 in expected annual cost savings
- Almost 1.5 GWh/yr in expected energy consumption benefits

TES Tanks: Part of a larger district initiative to optimize energy use



TES Tanks: Manage Daily Peak Loads

Colleges switched from real-time cooling to drawing from the TES tanks.



Demand Response: Contracted curtailment load increased in 2015

Historic Performance and Rebate



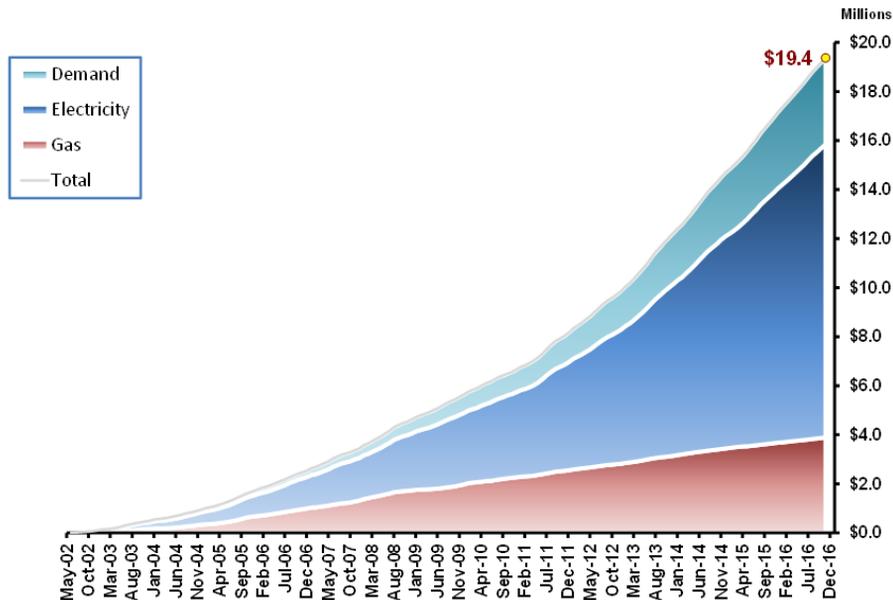
Alamo Colleges kW contracted reduction versus actual reduction, and corresponding rebate for 2013, 2014, 2015 and 2016

To date, **Alamo Colleges** has earned almost **\$600,000 in rebates** from participating in this program.



TES Tanks add to Overall Benefits from Energy Management

Alamo Colleges Cumulative Savings



Cumulative cost savings ~ \$20 Millions

(from May 2002 through November 2016)

Includes district wide operation buildings and all campuses.



Conclusion

- Optimize energy use: meet the demands of an increasing student population
- Additional cost savings and energy benefits:
Increase curtailment load on DR program
- Long-term payback: ~ 25 years
- Promote sustainability



Thanks.