

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



ALAMO
COLLEGES

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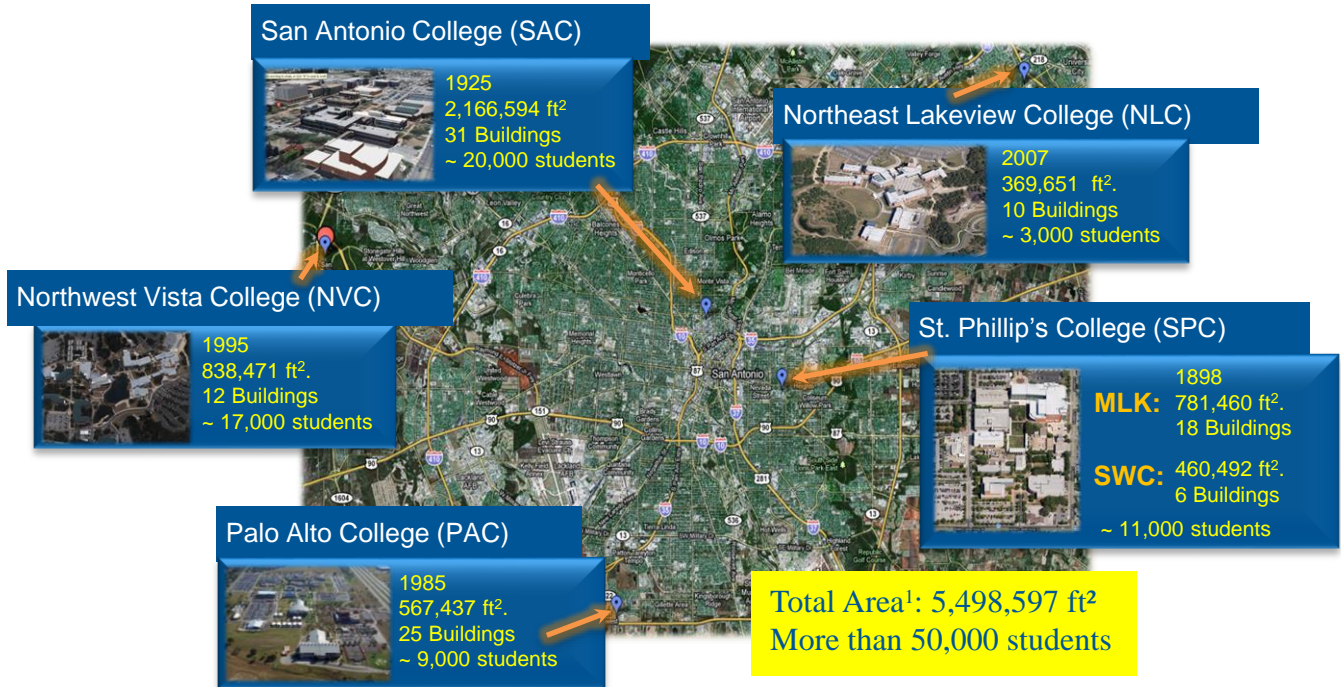
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Objective

- 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



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



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



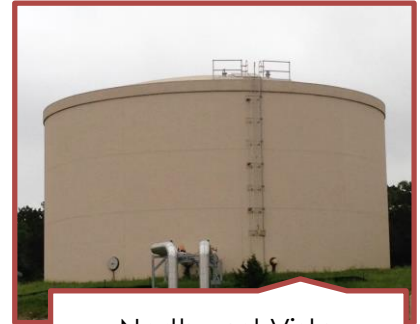
Northeast Lakeview
College

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



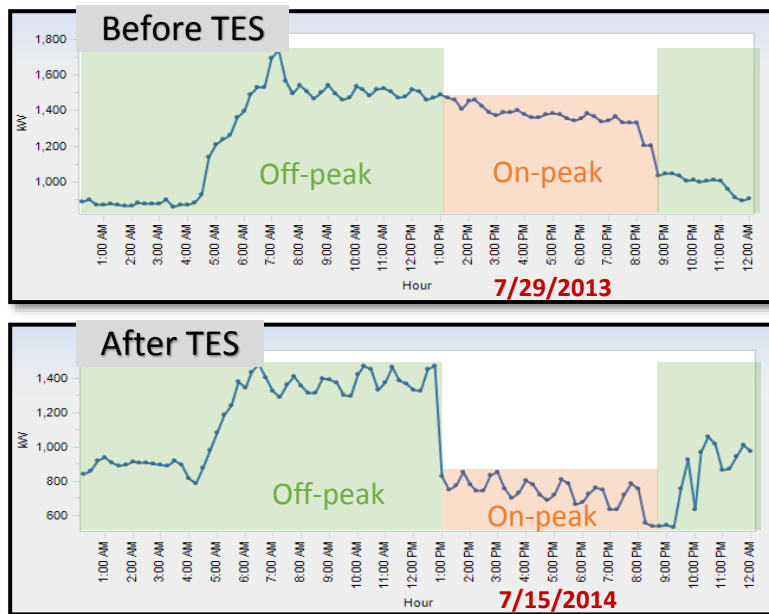
- ~\$7 Million project
- Approx. \$280,000 in expected annual cost savings
- Almost 1.5 GWh/yr in expected energy consumption benefits

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



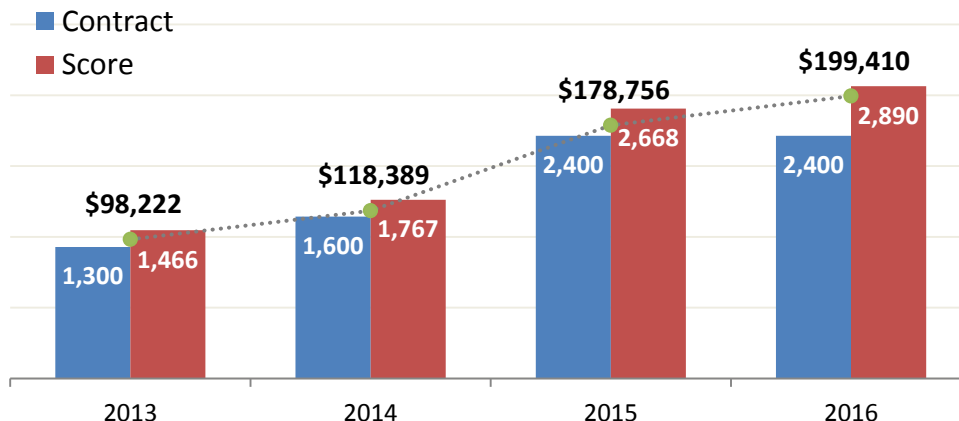
TES Tanks: Manage Daily Peak Loads

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



Demand Response: Contracted curtailment load increased in 2015

Historic Performance and Rebate



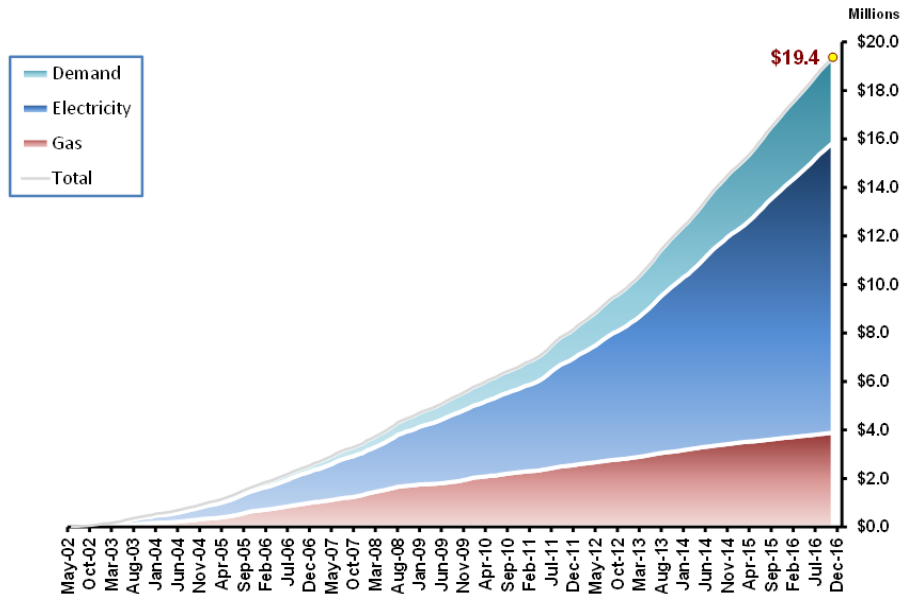
Alamo Colleges kW contracted reduction versus actual reduction, and corresponding rebate for 2013, 2014, 2015 and 2016

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.