

Embracing Sustainability at the Alamo Colleges



ALAMO
COLLEGES

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March 2017

The Alamo Colleges District

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)



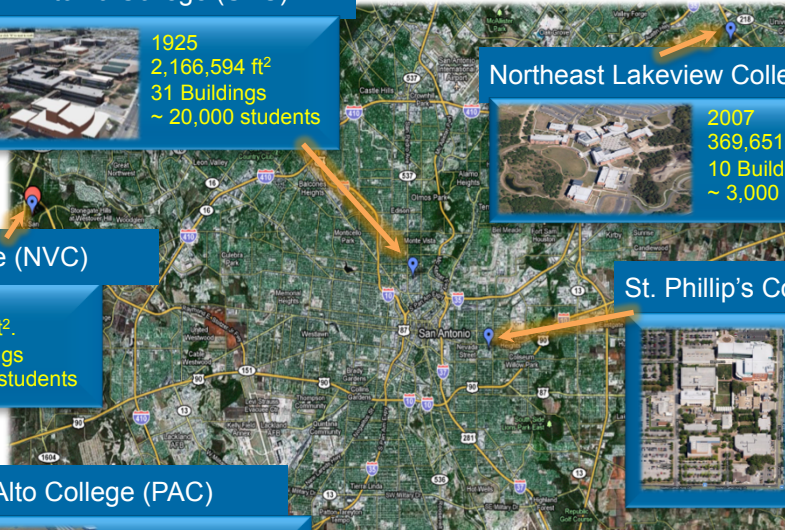
1898
MLK: 781,460 ft²
18 Buildings
SWC: 460,492 ft²
6 Buildings
~ 11,000 students

Palo Alto College (PAC)



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

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



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



ALAMO
COLLEGES

Alamo Colleges Sustainability Mission

Minimizing the environmental impact of its daily operations while empowering its students and employees to reduce their individual environmental impacts.



Climate Action Plan – 1st Step:

Establish Alamo Colleges Sustainability Goals

Greenhouse Gas Emissions

- **Second Nature's Climate Leadership Commitments** – since 2009.
- Carbon neutrality by 2050, reduce carbon emissions by 30% by 2020.

Energy Conservation

- Reduce total electricity consumption by 5% each year (Texas SB 898).

Water Conservation

- 70% reduction in domestic water use by 2050, and a 25% reduction in domestic water use by 2020.

Indoor Air Quality

- Complete indoor occupancy quality monitoring by 2050 and active reductions in pollutant emissions from landscaping, housekeeping, etc.

Procurement

- Zero waste purchasing goal by 2050, and a 40% green purchasing goal by 2025 (applies to products with a sustainable substitute).



Climate Action Plan – 2nd Step:

Adopt a Sustainability Policy and Procedure

Adopted in 2012 with six focus areas:

- 1) Greenhouse Gas Emissions and Energy Conservation
- 2) Water Conservation
- 3) Indoor and Outdoor Air Quality
- 4) New Constructions, Additions and Renovations
- 5) Sustainability Literacy
- 6) Procurement



GHG Emissions and Energy Conservation: Continuous Commissioning® since 2002

Air Handler Optimization

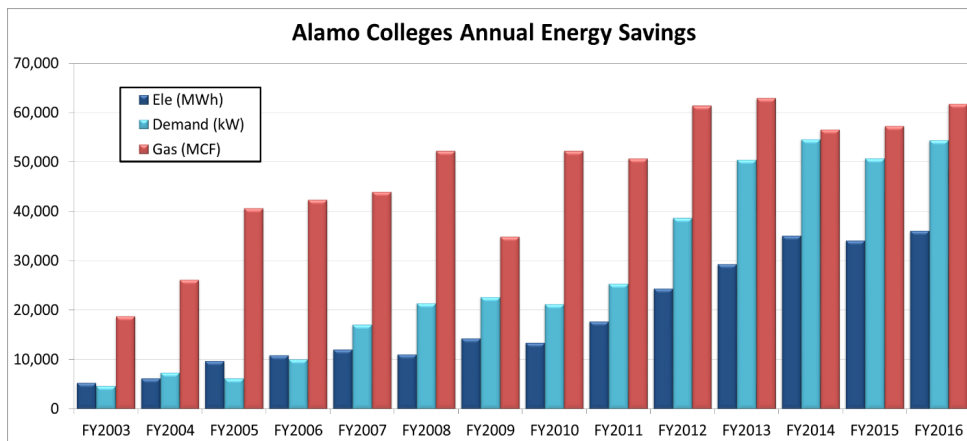
- Occupied/unoccupied schedules
Supply air temperature reset
schedule
- Duct static pressure reset schedule
- Economizer mode
- Humidity control

Terminal Box Optimization

- Minimum flow setting
- Air flow calibration/verification

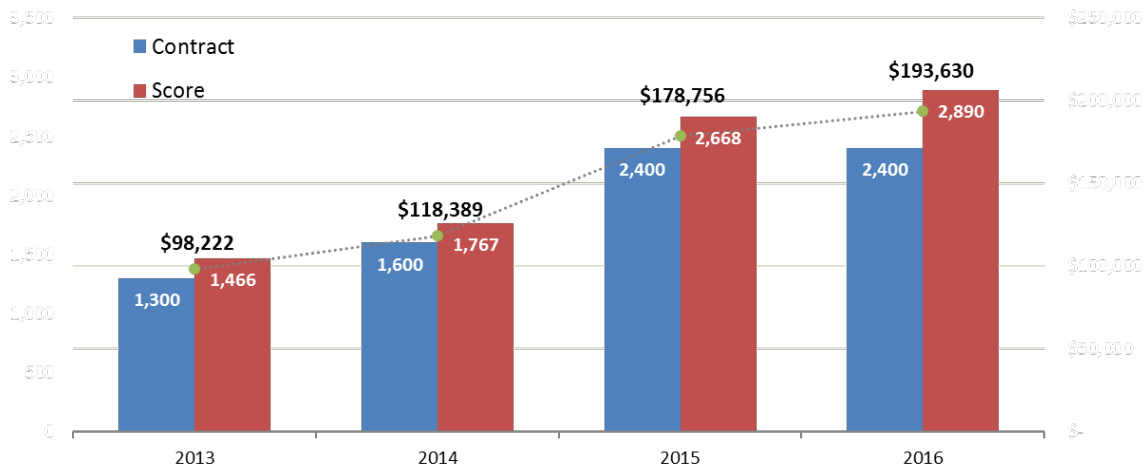
Central Plant Optimization

- Chilled and hot water reset schedules
- Chiller staging



GHG Emissions and Energy Conservation: CPS Energy Demand Response Program

Historic Performance and Rebate

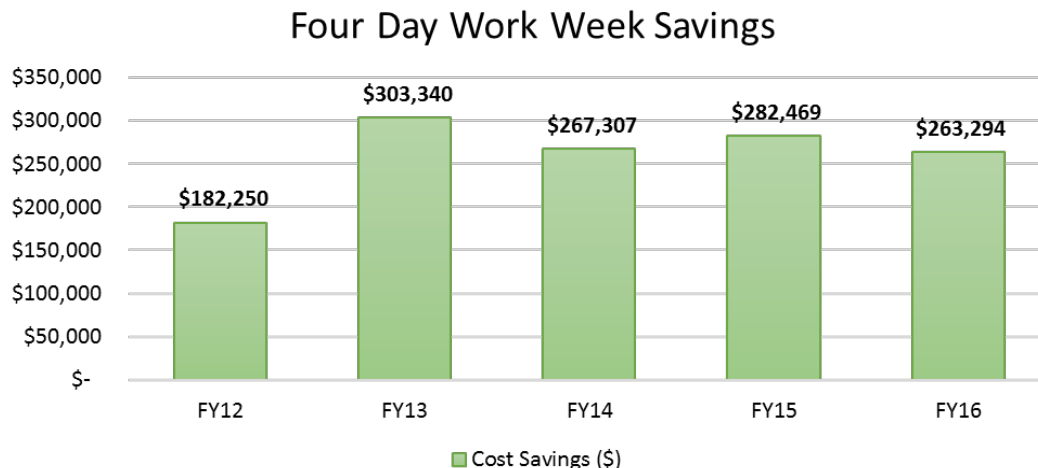


June 1st to September 30th
2-hour period

Cumulative rebates since 2013: \$600,000 approx.



GHG Emissions and Energy Conservation: 4-Day Work Week Summer Schedule



June 1st to July 31st

Shut down and consolidate classes in fewer buildings.

Cumulative savings since 2012: \$1,300,000 approx.



GHG Emissions and Energy Conservation: 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

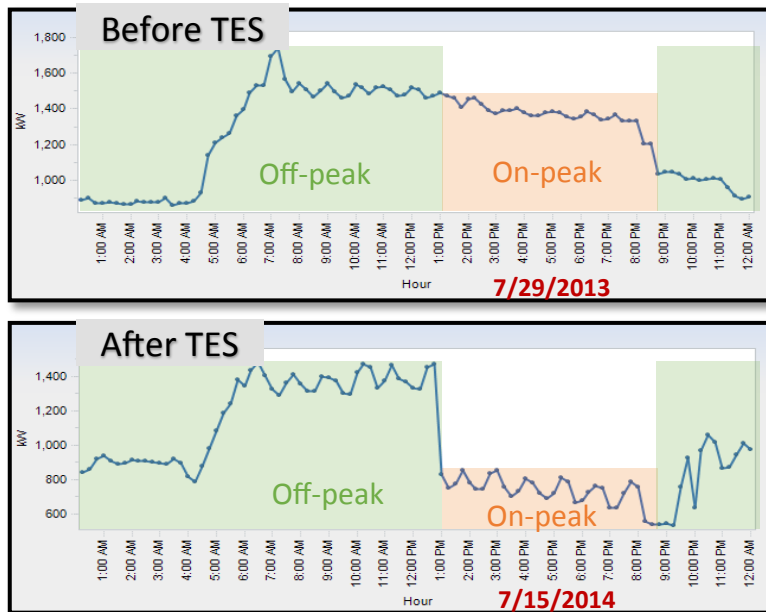
~\$7 Million project

\$280,000 approx. in expected annual cost savings

Almost 1.5 GWh/yr in expected energy consumption benefits



GHG Emissions and Energy Conservation: TES Tanks to Manage Daily Peak Loads



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



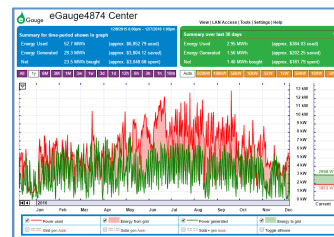
GHG Emissions and Energy Conservation: 600-kW Capacity in Solar Panels

Location	Date of Installation	Capacity (kW)	Annual Energy Production (MWh)
SWC*	February 2011	400	566*
NVC – Parking Garage Building	November 2013	154	245
SAC - Scobee Education Center	October 2014	33.32	43.1
SAC – Eco Centro Rooftop	January 2015	23.8	29.5

Total Annual Energy Production:
~ 800 MWh

Connected to eGauge Systems:
NVC, Scobee and Eco Centro

Upcoming Solar Installation:
Eco Centro Covered Parking: 39 – solar panel carport at San Antonio College



eGauge, 2016

*Available data for Annual Energy Production taken from EPA Green Power Partnership (August 10, 2016).



GHG Emissions and Energy Conservation: Solar Panels with Dual Purpose



St. Philip's College – Southwest Campus

EDUCATION -
Green jobs
training



San Antonio College – Scobee Education
Center

EDUCATION –
Complements
educational
experience at
this science
hub



Northwest Vista College – Parking Garage

SHADING – for
parking

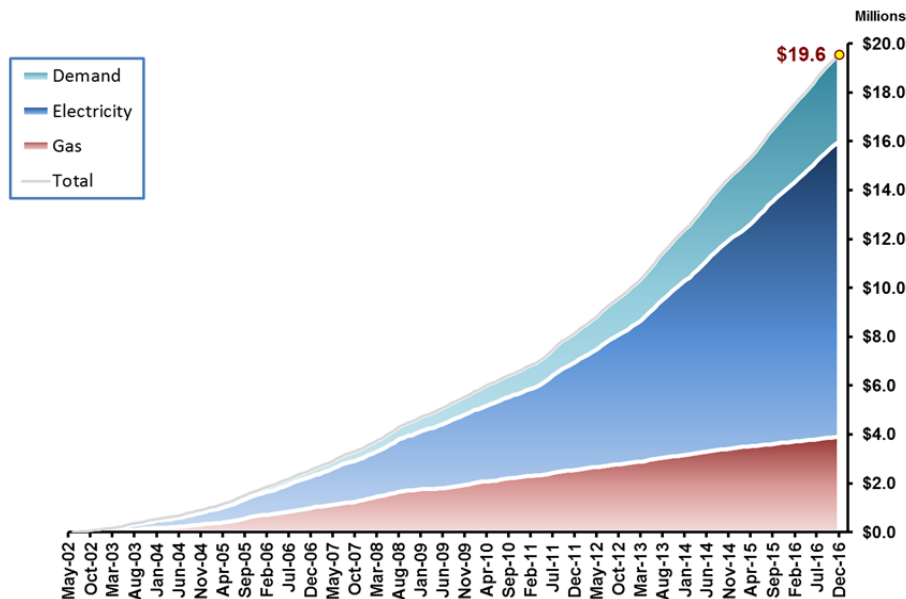


San Antonio College - Eco Centro

EDUCATION –
Sustainability
community
outreach
center

GHG Emissions and Energy Conservation: Cost Savings from Energy Management

Alamo Colleges Cumulative Savings



Cumulative cost savings ~ \$20 Millions

(from May 2002 through December 2016)

Includes district wide operation buildings and all campuses.



GHG Emissions and Energy Conservation: Emissions Reductions from Energy Management

Cumulative Emissions Reductions from Jun-02 to Dec-16				
Source	Reduction	Unit	Tons	Unit
Electricity	270,104	MWh	81.49	NOx
			29.44	SOx
			75,388	CO ₂
Gas	682,925	MCF	35.85	NOx
			30,732	CO ₂

Total CO₂ reduction from electricity and gas - 106,120 tons:

Equivalent to 20,336 passenger vehicles driven for one year*

* EPA Greenhouse Gas Equivalencies Calculator, 2016



Water Conservation:

Irrigation and Water Catchment

SPC Campus Water Conservation Initiative

- Irrigation systems upgrades and repairs program
- Completed Fall 2016
- Expected Savings:
 - ~26,000 gallons a month
 - ~314,000 gallons per year

Grounds and Irrigation Sustainability Policy

- Reduce added fertilizing such as:
 - Planting hardy, native plants
 - Monitor fertilizer run-off and adjusting accordingly
 - Using nutrient-rich recycled water for irrigation.

Water Catchment Structures

- Eco Centro @ San Antonio College
- Demonstration piece for the community



Xeriscaping

- District-wide initiative
- 179 native, drought-tolerant plants at NLC



Indoor and Outdoor Air Quality

Facilities integrating sustainability in maintenance and operations:

- Sustainable & Green Cleaning Housekeeping Policy
- Hire contractors based on their APPA Custodial Staffing Guidelines score
- Integrated Pest Management Policy
- CO2 and humidity sensors – installed on all return air ducts for each air handler system to bench mark the areas being served.



New Constructions and Existing Buildings

New Constructions, Additions and Renovations

Construction projects aim to include:

- Recycled water
- Low Impact Development (LID)
- Solar panels
- Thermal storage (ice or water)
- Water harvesting (rain and condensate)
- Energy efficient chillers and air handler units
- Energy efficiency lighting
- Sustainable landscaping

Existing Buildings – LEED Certification

• **Northwest Vista College:**

- Aims to become a LEED certified campus
- First building under process of certification
- LEED for Existing Buildings: Operations and Maintenance Certification

• **Eco Centro at San Antonio College:**

- LEED Certified Building



Sustainability Literacy: Courses and Curriculum

Sustainability-related courses:

- Environmental Science Lectures (SAC)
- Wind Power Generation, Wind Turbine Troubleshooting (SPC)
- Photovoltaics Technical Sales and Solar Photovoltaics Systems (SPC)
- Wastewater Minimization and Pollution Prevention (NVC)
- Waste Water Treatment (NVC)

Greening the Curriculum

- Faculty at each college incorporating sustainability into their classes
- Documented by the Sustainability Council



Sustainability Literacy: Community Outreach

Eco Centro at San Antonio College

- Community Sustainability Center
- LEED-certified, 3,000 square foot facility
- Solar-photovoltaic system
- Water catchment tanks
- EV charging stations
- Solar B-Cycle Station
- Composting
- Community Garden Area



Procurement and Recycling: Green Purchasing

- Monthly reports on green purchases made by employees → Provided by office supply vendor
- Staff is encourage to purchase sustainable substitutes.
- Data used as baseline for green purchases under the Environmental Sustainability Policy.
- Upcoming amendments to the purchasing policy → changes required to achieve LEED standards.



Procurement and Recycling: Waste Management and Recycling Program

Reduce Waste / Increase Recycling:

- Hand Dryers
- Green Purchasing
- Recycling Campaign – Website
- Recycling Labels
- Increase number of recycling bins
 - 2016 Coca-Cola / Keep America Beautiful Public Space Recycling Bin

Recycling Rates Data:

- Waste collection vendor reports total weight of recyclables collected per month per campus
- Inventory of new recycling bins



Other Sustainability Initiatives:

Encouraging Sustainable Transportation



EV Charging Stations



Solar Bikes



VIA Bus Stop

Transportation Survey:

- Completed in November 2016
- ~4,300 responses
- Goal: Understand the commuting habits of students, faculty and staff
- Purpose: Search new ways to decrease commuting emissions

Other Sustainability Initiatives:

EDF Climate Corps Fellows

Program

- EDF (Environmental Defense Fund) Climate Corps Fellows
- Alamo Colleges has been paired with a fellow each summer since 2013
- Fellows with Sustainability and Energy Management background

Projects

- Energy audits and lighting retrofit proposals
- Analysis of buildings' energy and water performance
- LEED standard recommendations
- Renewable energy analysis



Other Sustainability Initiatives:

Sustainability Council

- Faculty and Staff (including Facilities)
- Meets once a month during the semester
- Initiatives include:
 - Greening the curriculum
 - Sustainability communications and outreach
 - Recycling education
 - Waste reduction initiatives



Thanks.