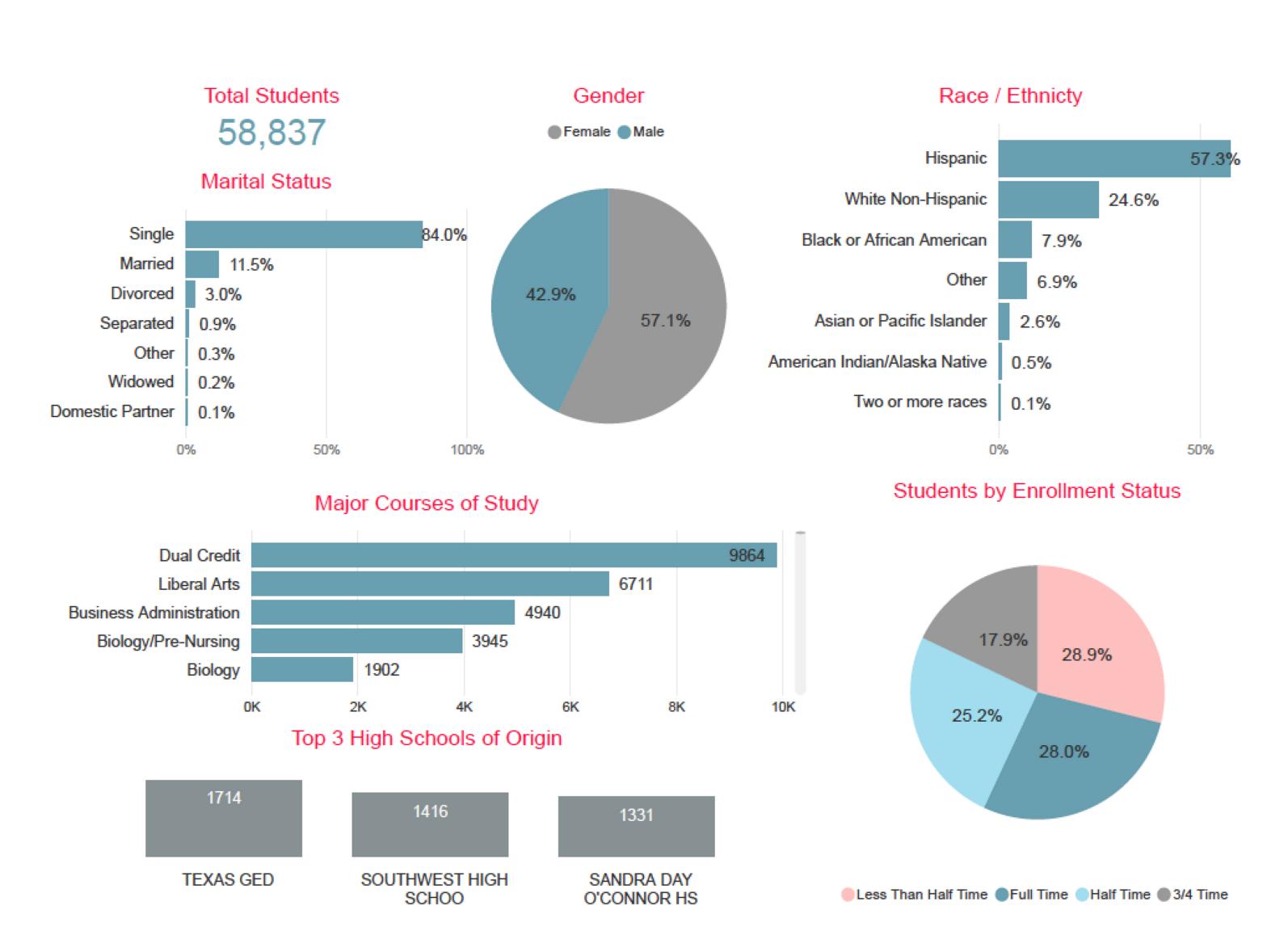
## **DIVERSE COMMUNITY**



# **Engaging a Diverse Community in STEM Courses at the** Alamo Colleges District

ALAMO

COLLEGES

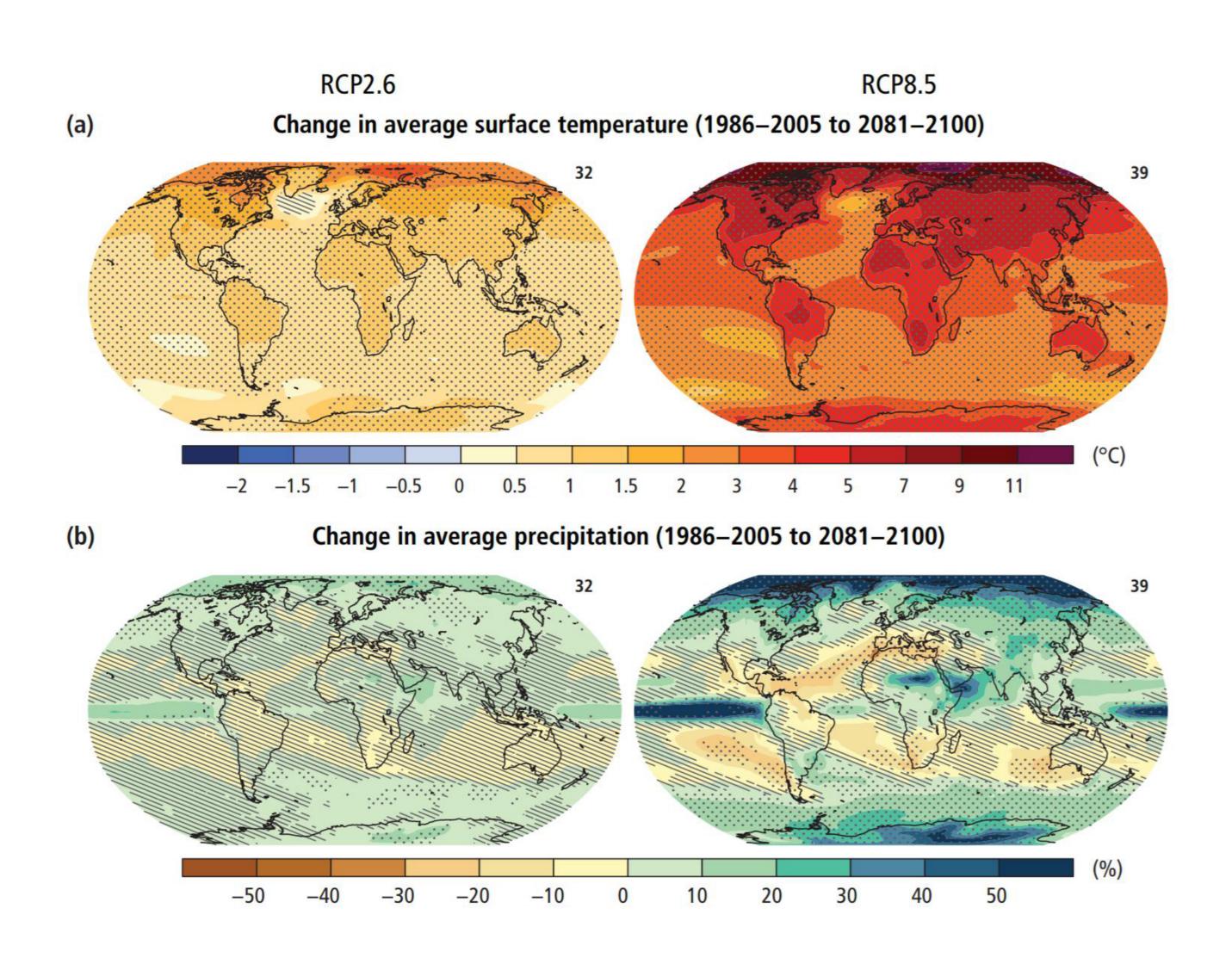
DISTRICT

John Strybos, P.E., C.E.M. Associate Vice Chancellor of Facilities

Alamo Colleges District, San Antonio, TX

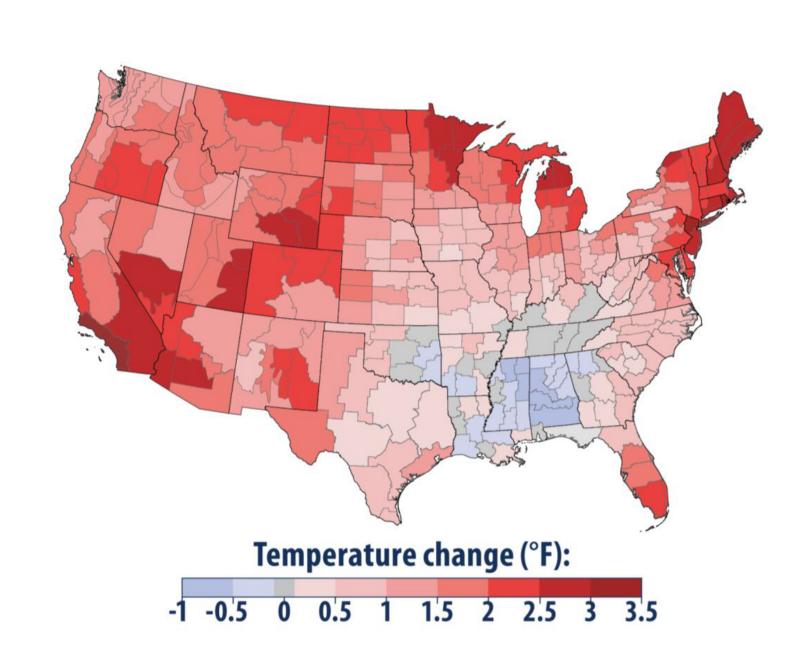
# CLIMATE CHANGE Global Impact

Change in Average Surface Temperature and Precipitation



(IPCC AR5, 2014)

# **US & Texas Weather**



Rising temperatures in the last century. The western part of Texas has warmed twice as much as the eastern part. Source: EPA, Climate Change Indicators in the United States.

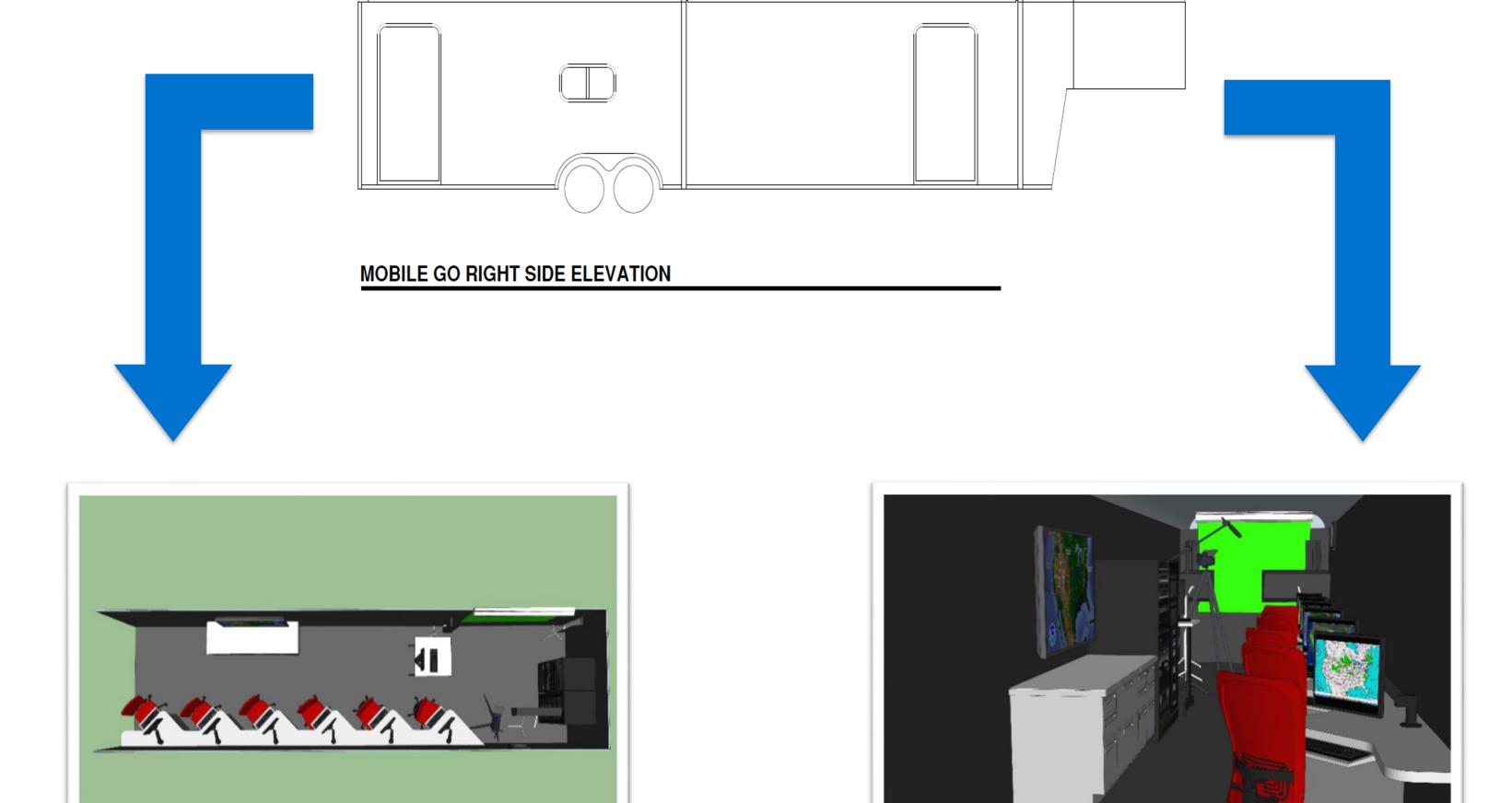
(EPA, What Climate Change Means for Texas, 2016)

#### San Antonio, TX

"Since the 1880s, temperatures in the Alamo City have risen about 2.4 degrees, the National Oceanic and Atmospheric Administration has reported. Globally, temperatures are up about 2 degrees."



MOBILE WEATHER STATION



## **Educational Outreach Tool**

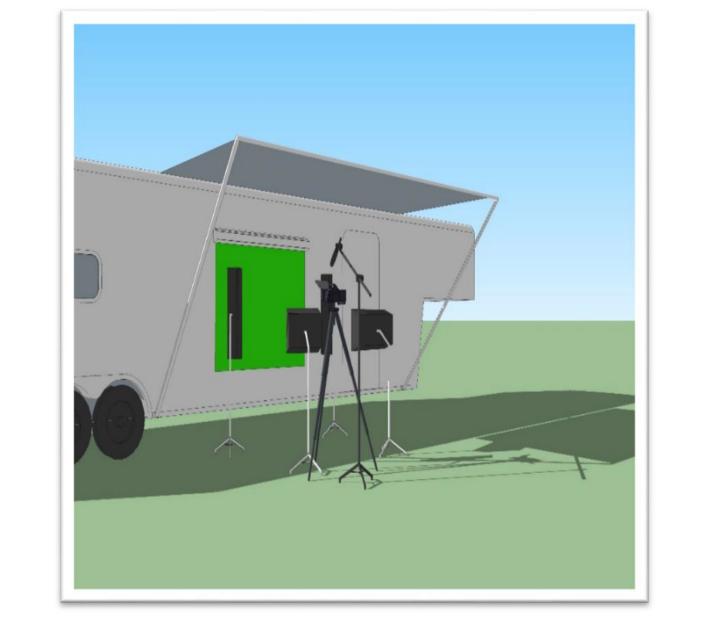
Drive to communities, and educate middle and high school students about the complexities of climate science.

Meteorological equipment installed to measure:



# **Interactive Experiences**

- ✓ Focus on local weather data.
- ✓ Work stations with laptops, monitors and a large touch screen.
- ✓ Indoor and outdoor activities.
- ✓ Access to research tools.



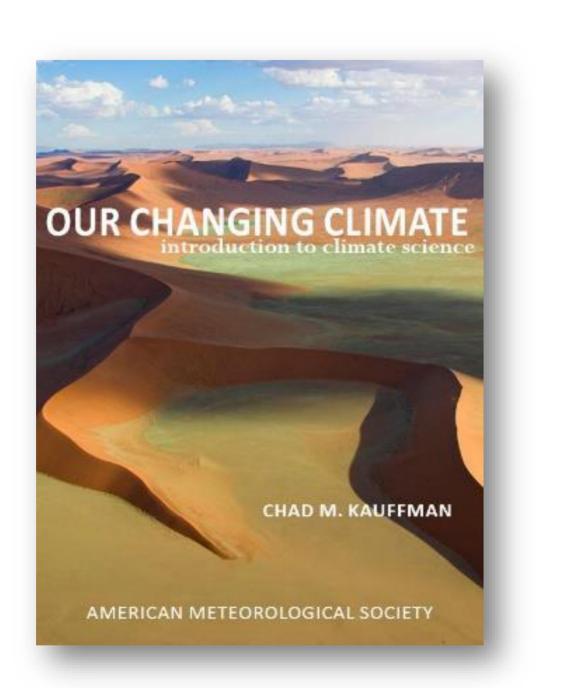
# METEOROLOGY IN THE CURRICULUM

**Upcoming Additional Resources** 

The colleges have identified potential teaching formats that will help successfully introduce the climate studies into the curriculum.

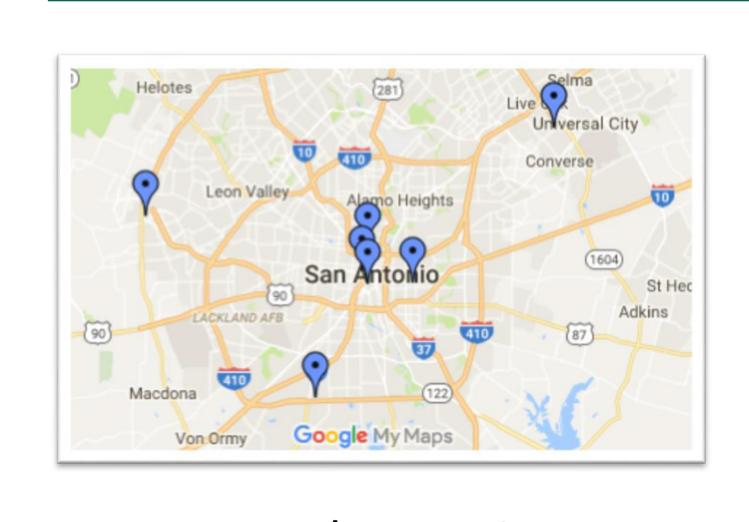
#### **AMS Climate Studies Course Material**

**Essential Climate Variables - Climate System Observations - Climate Principles - Energy and Radiation -Water and Oceans - ENSO Phenomenon** - Mitigation and adaptation - Natural and Human Influences on Climate **Variations** 

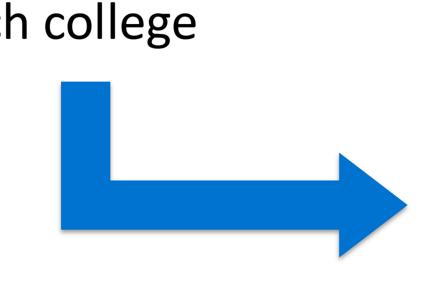


(Our Changing Climate: Introduction to Climate Science, textbook cover from AMS, 2014)

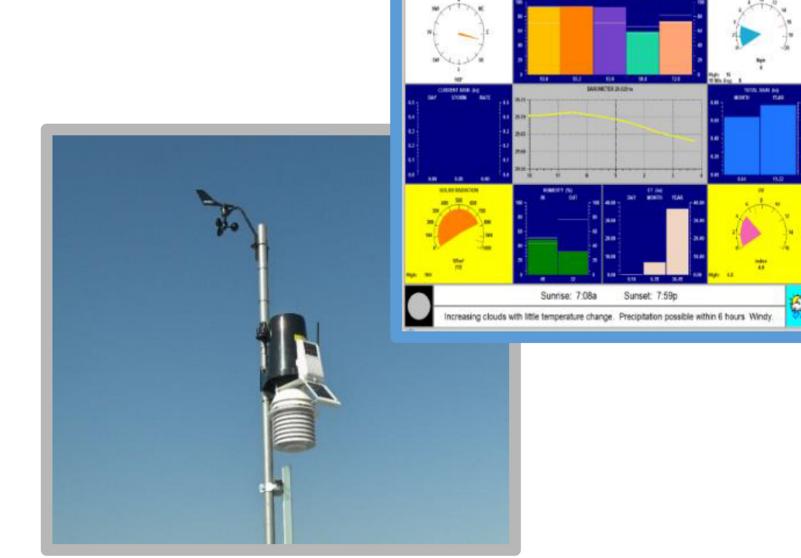
# **Hyperlocal Weather Data**



New weather stations at each college



## Access to online application



#### **End Goal**

- ✓ Communicate the importance of *climate science*.
- ✓ Effectively provide access to *hyperlocal weather data* to engage students and community.
- ✓ Promote *educational opportunities* at the Alamo Colleges District accessible to the Greater San Antonio diverse community.

#### **GREEN WORKFORCE**

#### Courses:

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

#### Degrees:

- ✓ SAC: Associate of Science, with optional electives in Environmental Science
- ✓ SPC: Power Generation and Alternative Energy A.A.S.
- ✓ NVC: Water Resource Science A.A.S.

#### Certificates:

- ✓ SPC: Power Generation and Alternative Energy Certificate
- ✓ NVC: Water Resource Science Level 1 Certificate

#### Occupational Skills Awards:

- ✓ SPC: Power Generation and Alternative Energy (OSA)
- ✓ NVC: Water Resource Science Marketable (OSA)

# SOLAR PANELS

# Solar Panels with 600-kW of Capacity

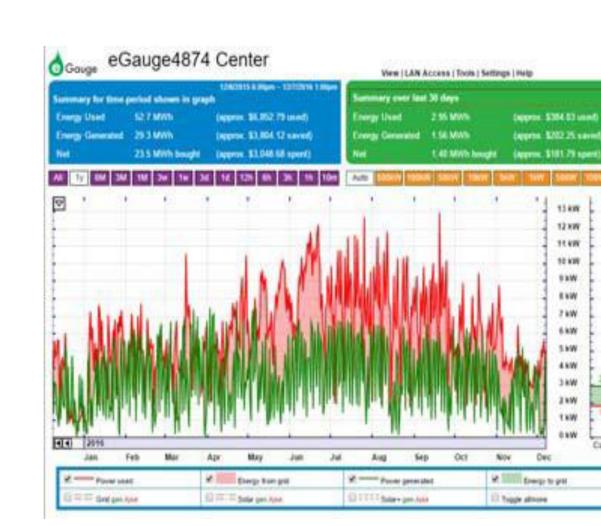
Location	Type of Application	Date of Installation	Project Size (SqFt)	Size of Array (kW)	Annual Energy Production	Annual Cost Savings
St. Philip's College	Roof Mount	February 2011	161, 000	400	536 MWh	\$ 48,248
Northwest Vista College	Parking Garage	November 2013	14,677	218.4	195 MWh	\$ 17,531
Scobee Education Center, San Antonio College	Roof Mount & Bus port	October 2014	1, 296	33.48	35 MWh	\$ 3,123
Eco Centro, San Antonio College	Roof Mount	January 2015	2, 735	23.36	18 MWh	\$ 1,582
Eco Centro Solar Car Port, San Antonio College	Car Port	August 2017	1,866	8.44	10 MWh	\$ 895



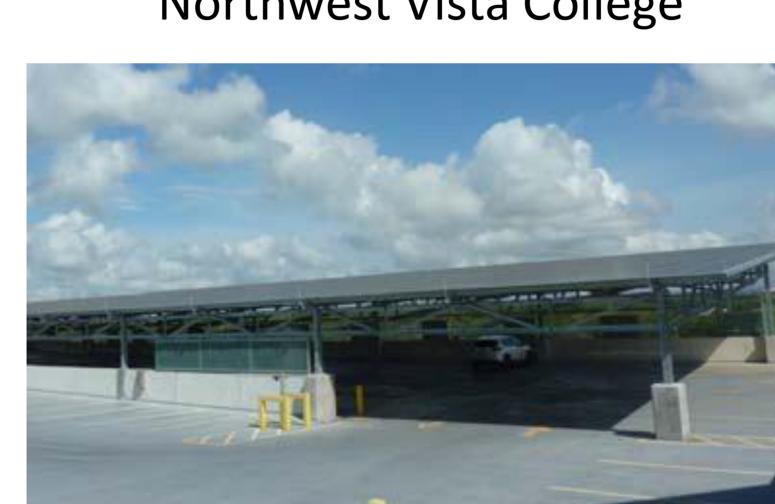


# Solar Panels with Dual Purpose

#### Educational



Provide Covered Parking at Northwest Vista College



# WILLIAM R SINKIN ECO CENTRO **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



