

# Aircosaver HVAC Energy Optimization Test

A detailed illustration of the Aircosaver satellite in orbit above the Earth. The satellite features a central body with gold-colored thermal insulation, a white parabolic antenna, and two large rectangular solar panel arrays extending outwards. The Earth's blue and white horizon is visible on the right side of the frame, set against a dark space background with faint stars.

Aircosaver  
HVAC controls  
May 19, 2010

Authors:

**Russell Murry**

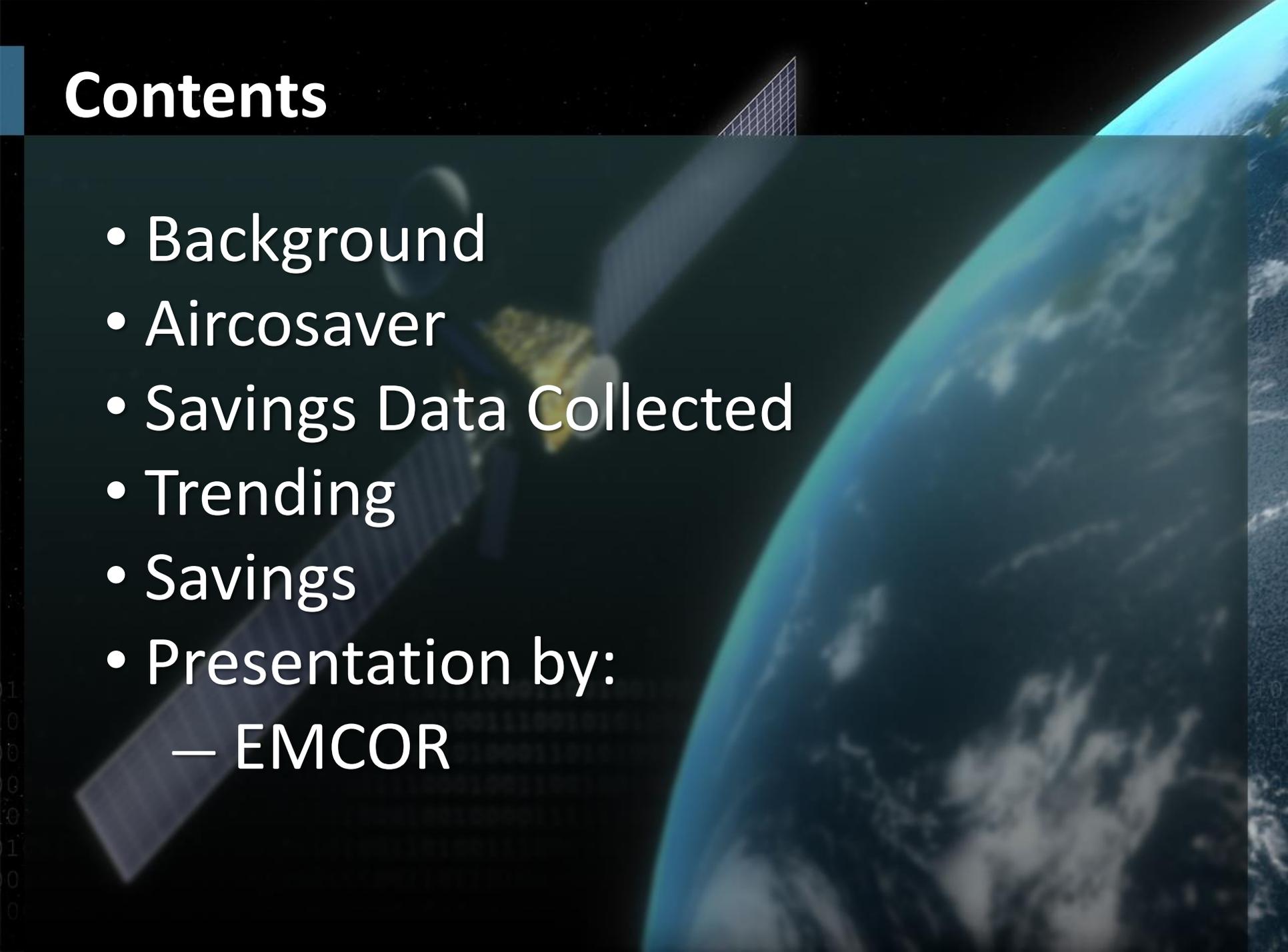
Resource Center Manager and

**Alex Hernandez**

Energy Engineer

JPL Facilities M&O Support Services

# Contents

The background of the slide features a satellite in orbit above the Earth's surface. The satellite is positioned in the upper left quadrant, with its solar panels and antenna visible. The Earth's blue and white clouds are visible on the right side of the frame. The overall scene is set against a dark, starry space background.

- Background
- Aircosaver
- Savings Data Collected
- Trending
- Savings
- Presentation by:
  - EMCOR

# Background

- A collaboration between Mountain Clear LLC and Energe Corp. was requested by Emcor to demonstrate the viability of a technology that will reduce energy consumption on Direct Expansion (DX) air conditioning units at JPL.
- The demonstration of the Aircosaver technology took place on a new York 10 ton A/C unit at B121 and two Eubank 3 ton A/C units on Trailers. The energy savings has been quantified by both Energe Corp. and Emcor with data logging performed by both groups.
- This technology is recognized and supported through the SPC program by the EPA, SDG&E, SCE, and PG&E and has been tested and proven in various other industries.

# Aircosaver

- “The Aircosaver sensor-driven software algorithms are designed to detect thermodynamic saturation (overcooling of the evaporator) and to optimize the compressor run time accordingly. When overcapacity is detected, the Aircosaver switches the compressor off and avoids inefficient overcooling”.
- The Aircosaver thermostat control device is wired in series with the room thermostat to control the air conditioner. Following shutdown of the compressor, the evaporator fan is left in service to remove stored energy from the evaporator.



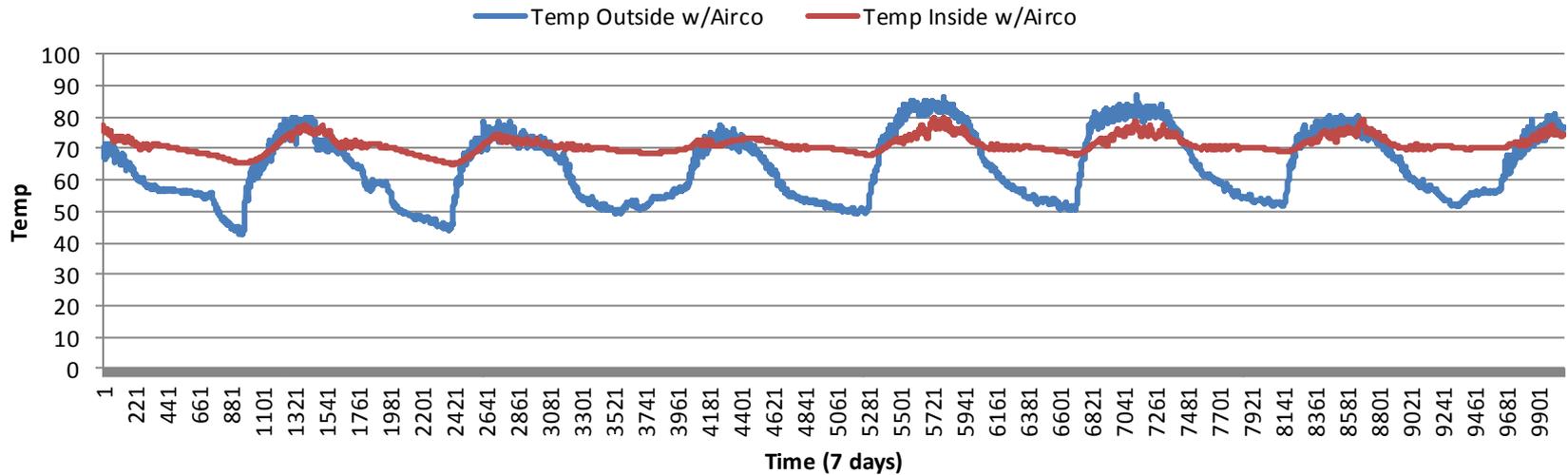
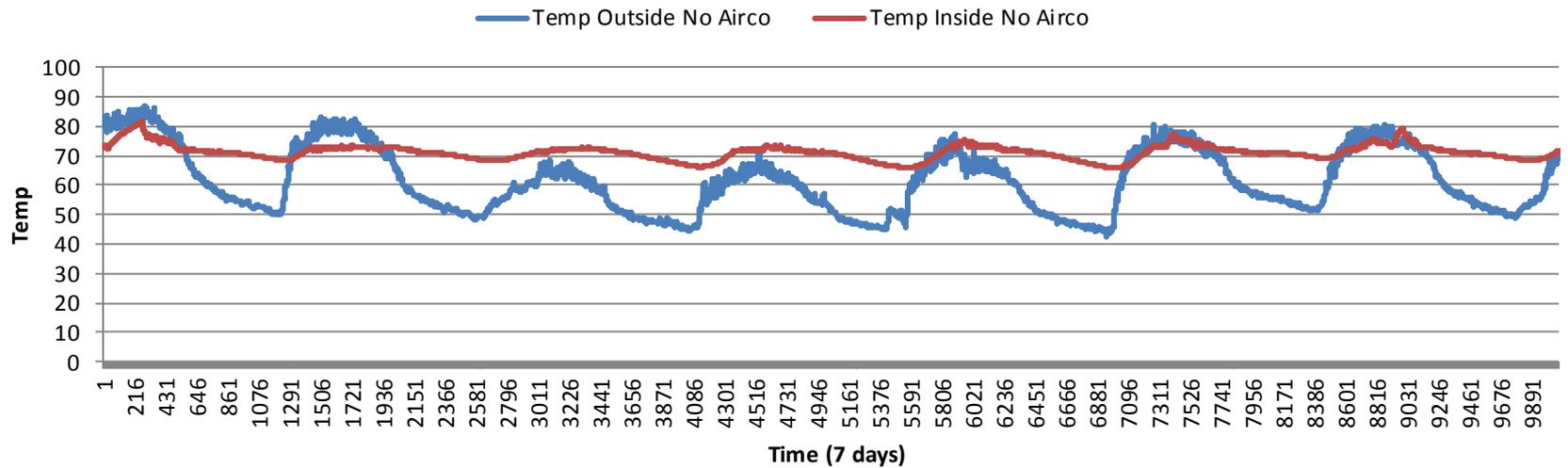
# JPL Temperature & RH Test

	Avg Outside Temp	Avg Inside Temp	Avg Outside RH	Avg Inside RH
Without AircoSaver	61.415	71.136	51.052	39.009
With AircoSaver	63.968	71.144	44.644	37.897

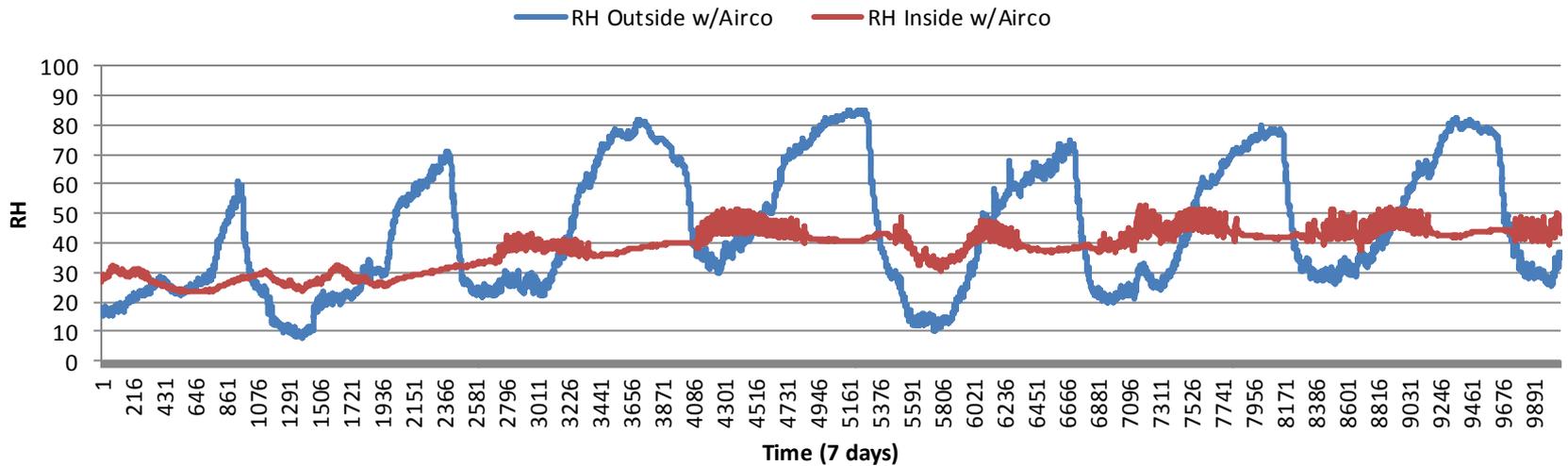
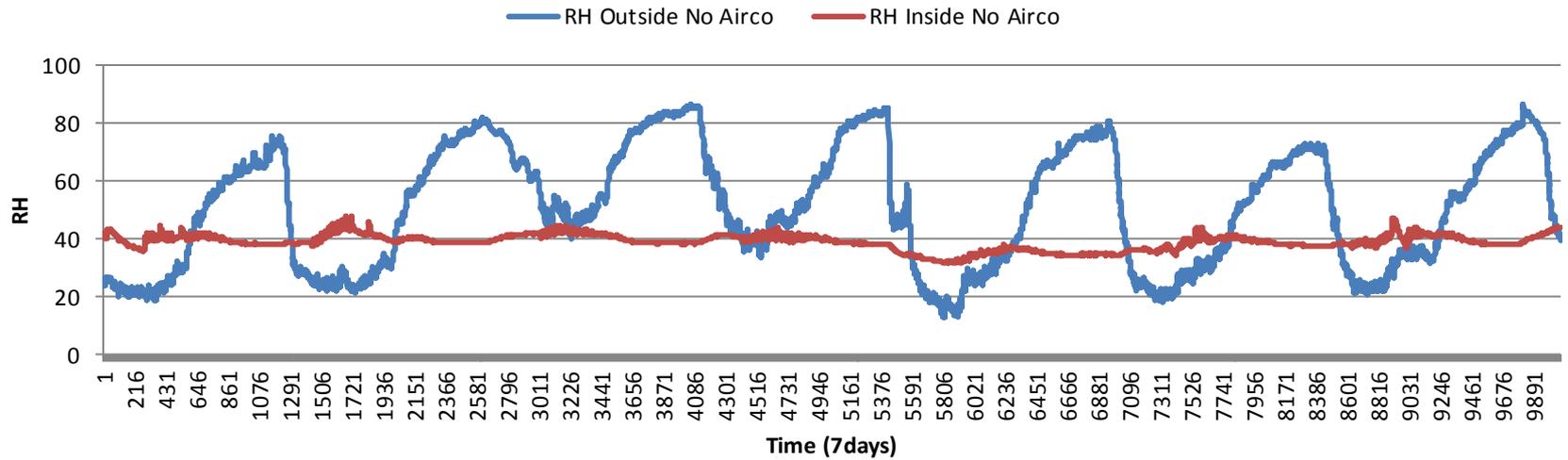
**AircoSaver Savings = 23.6%**

(Based on 7-day before & after hour metering)

# JPL Temperature Details



# JPL RH Details



# Savings & Rebates

- Savings
  - Factoring the differences in loads between the days that data was procured, savings exceeded 20%.
- Rebates
  - 50% under SCE SPC program.
  - 3 and 10 ton units quoted rebates
    - “The estimated rebate is \$3,438 based on 23,156 kWh saved and 1.96 kW reduced” - SCE