Energy Efficient Operations
Load Management

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UCSD Best Practices for Load Management and Demand Response

**Basics**
- Implement specific zone level (t-stat) control parameters to increase energy savings during low occupancy.
- Program system to simultaneously active the parameters to shed load during critical peak power times.
- Benefit financially.

**Critical Components**
- Adequate technology for control sequences and in house staff to program/understand system.
- Expert knowledge of critical spaces in the buildings.
- Support from Campus.
- Metering and Monitoring System to prove results.
UCSD Load Profile
Load Profile Imported Power Only
Project Process

- Crucial Decision
  - Change paradigm
  - Individual programming of over 4,000 t-stat

- Expertise on Staff
  - Zone Maintenance
  - Energy Management System
  - Outreach

- Program
  - Code writing
  - Test and Modify
  - Continuously Maintain
Technical Overview

Setpoint Parameters
- Occupied 70 – 74 M-F 9am – 4:30pm
- Standby 68 – 76 M-F 4:30pm – 8pm, 6am – 9am
- Unoccupied 68 – 78 M-F 8pm – 6am, 24hr SS/Holiday

Demand Response
- Forces zones into unoccupied mode
- Static pressure setpoint setback
- Discharge Air Reset
- Duty Cycling of fans not on variable frequency drives
Operator Interface
Text Screen to Implement Load Shed

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Typical Fan Speed – Daily Cycle
Demand Response Data

- 10 Day Adjusted Average Usage: 6.682
- Curtailment Day Usage: 4.868
- Targeted Curtailment: 1.500
- Achieved Curtailment: 1.814

3PM to 4PM
Acknowledgements of Team

- UCSD Facilities Management
  - Robert Austin, EMS Administrator
  - Tony Hodgins, Controls Supervisors
  - Gerry Pradarelli, HVAC Technician
  - Greg Bridger, HVAC Technician

- UCSD FD&C
  - Gerry White, Director of Engineering

- Johnson Controls Inc.
  - Dan Kreitz
  - Walter Richardson
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