

Greening Buildings at the Dallas/Fort Worth International Airport

Sustainable Communities Conference
Dallas, TX

March 10, 2009

Agenda

- Energy Efficiency in New Construction
- Energy Efficiency in Retrofits
- Energy Efficiency in Operations & Maintenance
- Renewable Energy Initiatives
- Green Industry Recognition & Leadership

Energy Efficiency in New Construction

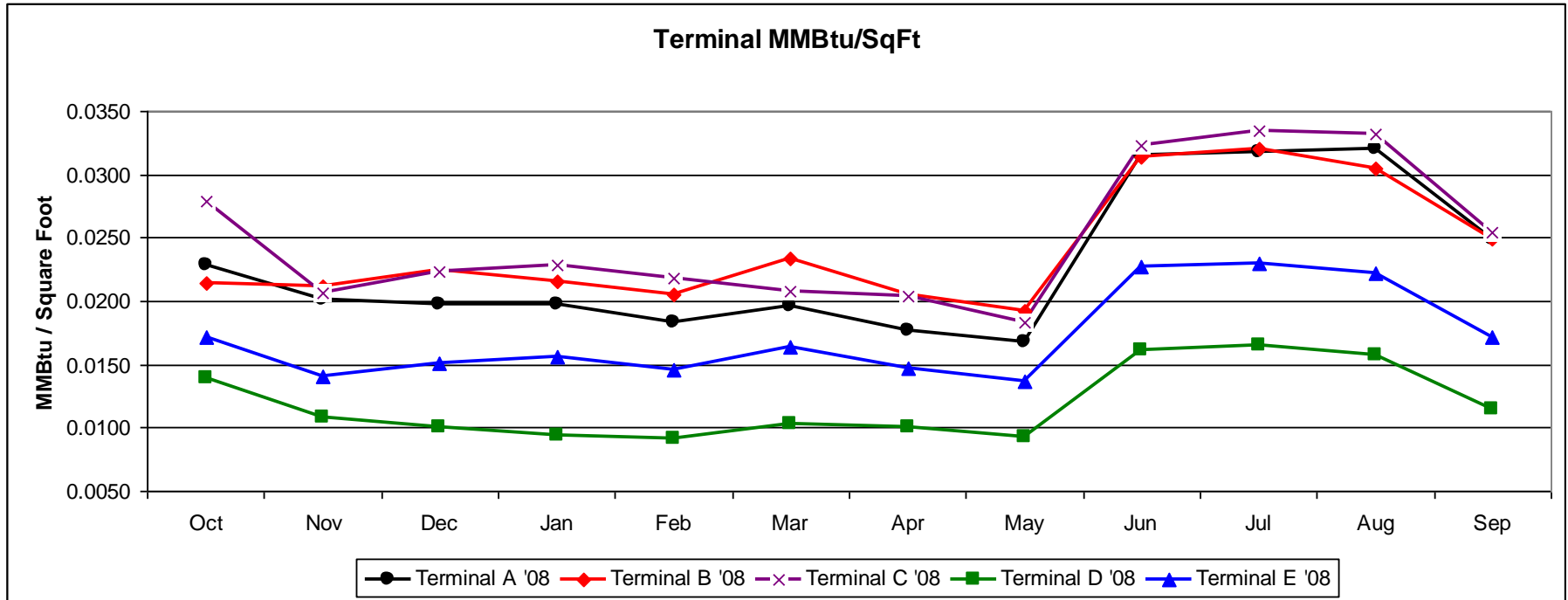


Energy Efficiency in New Construction – International Terminal D

Energy efficiency innovation in the design of International Terminal D included terminal lighting, air quality, and heating and cooling systems.

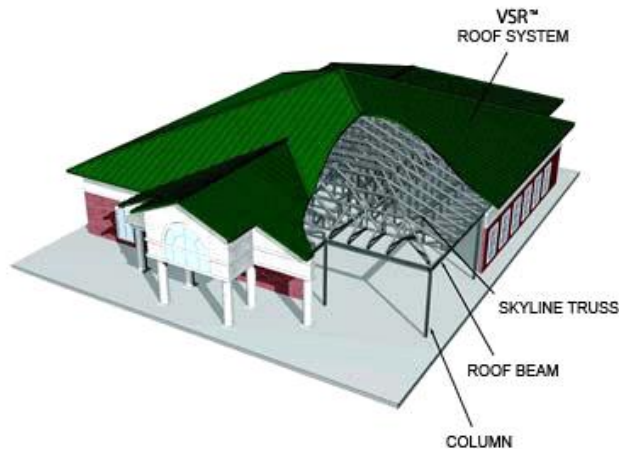


Passenger Terminal Energy Utilization



Energy Efficiency in New Construction – Environmental Affairs Bldg

Low budget building incorporates LEED Components, ENERGY STAR® rating



- Pre-engineered steel building
- ENERGY STAR® rating (target score 90)
- Design to comply with the prescriptive measures of the **ASHRAE Advanced Energy Design Guide for Small Office Buildings 2004**
- Ground source heat pumps
- ENERGY STAR® rated equipment
- Water Conserving Fixtures (40% less water than baseline)
- Low-emitting materials (meet LEED NC 2.2 IEQ requirements)
- Whole building commissioning

Energy Efficiency in New Construction – Data Center

New data center incorporates energy efficient facility design and IT systems



Oncor Data Center Energy Management Pilot Program

Receive financial incentives for energy-efficiency upgrades to your Data Center.



Eligible measures include:

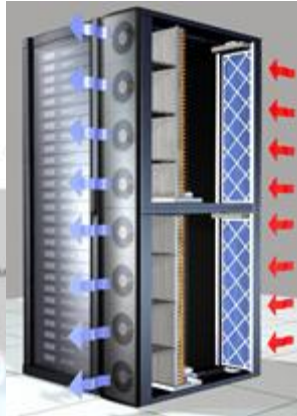
- Virtualization
- Server Consolidation
- High Efficiency UPS
- High Efficiency Cooling
- Custom Technologies (various qual)

Processor performance is increasing exponentially.
That doesn't mean your electric consumption should!

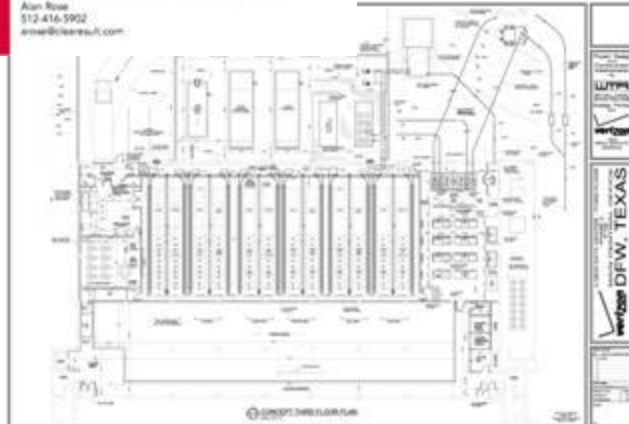


To apply or receive additional information, please contact:

Alan Rose
512-416-9902
arose@clearresult.com



- Virtualization of servers
- Migration to blade servers
- Retirement/consolidation of old servers
- Right-sizing of support infrastructure
- Blanking panels on server cabinets
- Row-oriented cooling
- Efficient floor layout
- Best-in-class UPS
- High efficiency lighting
- Whole building commissioning
- Oncor Data Center Energy Management pilot program



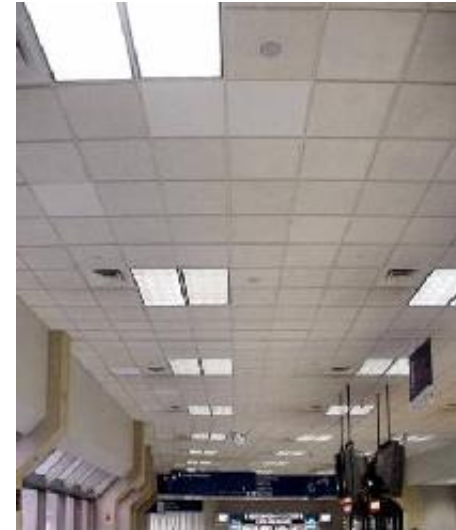
Energy Efficiency in Retrofits



Energy Efficiency in Retrofits

Terminal Lighting Upgrades

- Replace T12 fluorescent lamps with T8s
- Replace magnetic lighting ballasts with electronic ballasts
- Replace incandescent exit signs with LED type
- Replace PAR and HID down lights with CFLs
- Occupancy sensors for lighting control
- Light harvesting fluorescent ballasts



Energy Efficiency in Retrofits

DFW Wellness Center

- High efficiency lighting
- Lighting controls
- Daylighting
- High efficiency air source heat pumps with ERVs
- High efficiency plumbing fixtures with auto shut-off
- Solar thermal hot water system



Energy Efficiency in Retrofits

Innovative Signage Project



Dynamic Parking Availability Signs

Innovative solution yields \$227,000 savings over 10 years

13 Locations (Express & Remote Parking Lots)

Solar powered LED displays

Cell phone activated

Energy Efficiency in Operations & Maintenance



Energy Efficiency in Operations & Maintenance

Continuous Commissioning® Projects

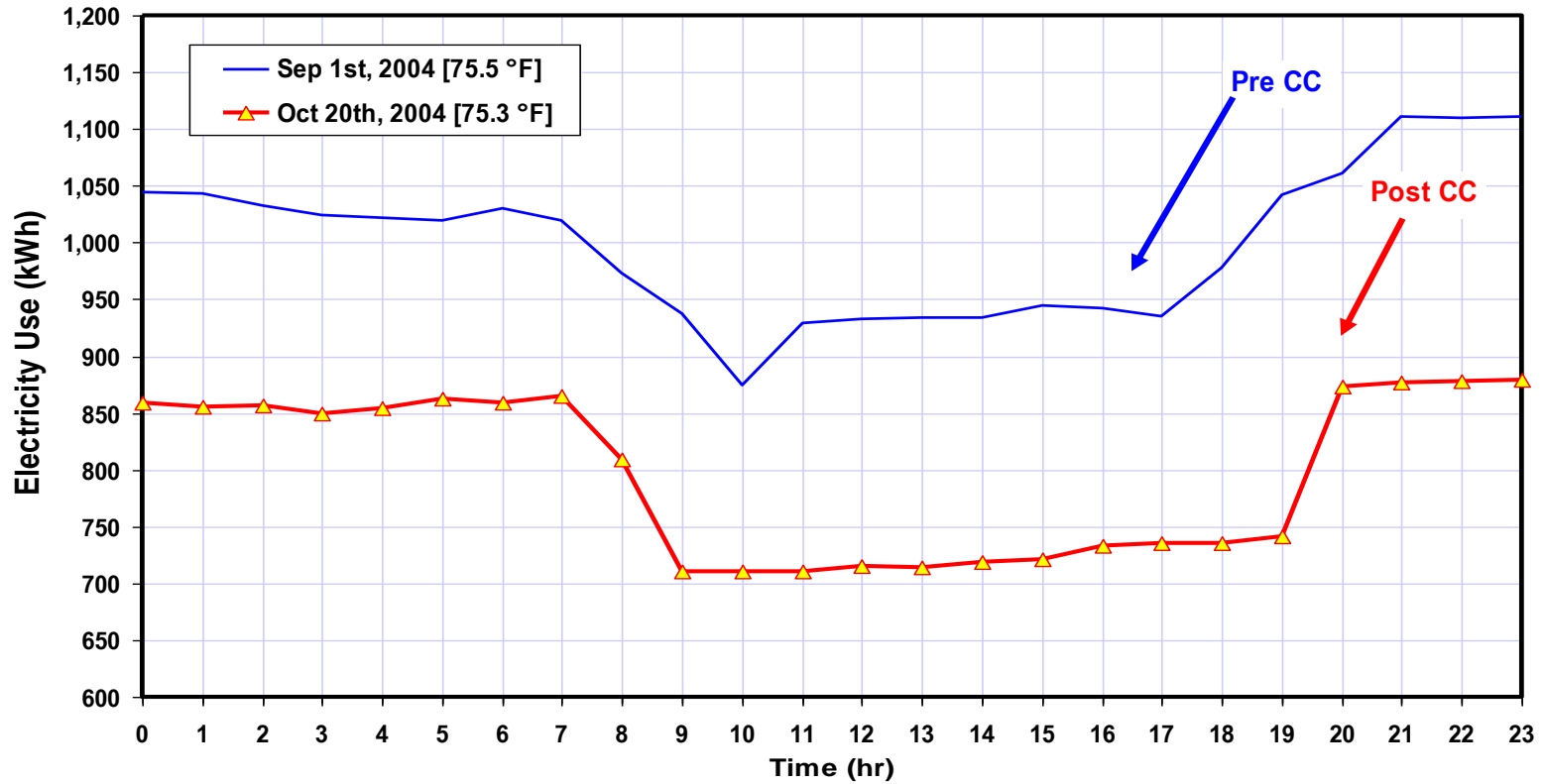
- CC optimizes energy use based actual building conditions and requirements
- Routinely achieves 10 – 25% whole building energy cost reductions
- Calibrated and repaired sensors and malfunctioning devices
- Modified control sequences and implemented reset schedules
- Optimized control sequences
- Increased heating and cooling deadbands and implemented uniform space temperature setpoints throughout



Energy Efficiency in Operations & Maintenance

Continuous Commissioning[®] Projects

Rent-A-Car (RAC) Center at DFW Int'l Airport



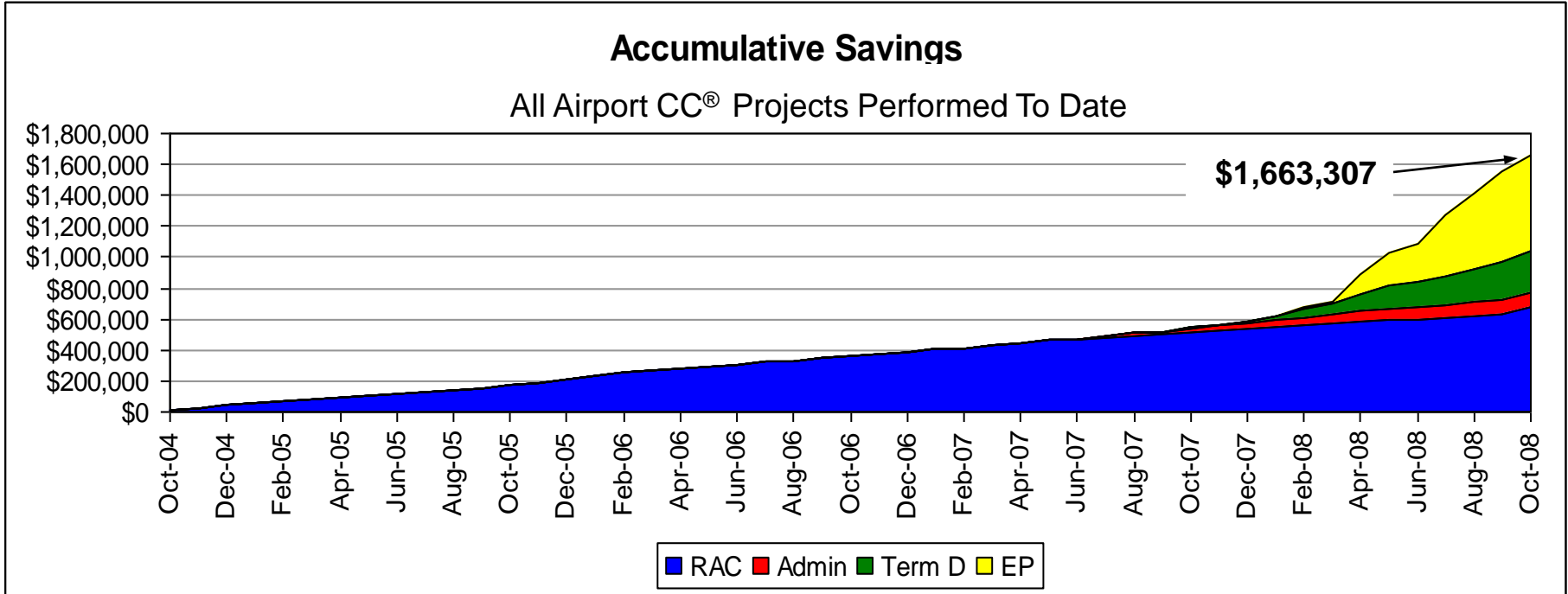
Energy Savings - 1 million (kWh) / yr (18%)

Continuous Commissioning Program in Terminal D & Energy Plaza

- Phase I (FY 08) complete
- Phase II (FY 09) on schedule
- Terminal D
 - Electricity consumption decreased by 5% (2.4MWh)
 - Chilled water consumption decreased by 16.37% (32,221 MMBtu)
 - Hot water consumption decreased by 8.99% (5,576 MMBtu).
- Energy Plaza
 - Electricity consumption decreased by 9% (5.657MWh)
 - Natural gas consumption decreased by 24% (31,420 MMBtu)
 - Peak electrical demand decreased by 3MW
- Total project savings
 - \$1,101,428 (FY 08), exceeds forecast by 120%

Energy Efficiency in Operations & Maintenance

Continuous Commissioning® Projects



Savings determined in accordance with the International Measurement & Verification Protocol

Renewable Energy



Renewable Energy Initiatives

- 15% of DFW's annual electric energy (~45 million kWh per year) is wind generated
- DFW's heavy duty and off-road fleet vehicles use bio-diesel fuel
- Solar thermal hot water system installed for Wellness Center





Industry Recognition and Leadership



Industry Recognition

DFW's energy management achievements have earned industry recognition.

- 2003 - Association of Energy Engineers: International Corporate Energy Manager of the Year Award
- 2004 - Texas State Energy Conservation Office and Texas Energy Partnership: Outstanding Achievement in Energy Efficiency and Air Quality Improvement
- 2005 - Alliance to Save Energy: Star of Energy Efficiency Award



Industry Leadership

DFW's environmental success recently earned the Airport's participation in EPA's National Environmental Performance Track Program, and TCEQ's Clean Texas Platinum Award.

Recognizes top businesses and organizations that excel at environmental leadership and performance



Thank you for your kind attention

Rusty T. Hodapp, P.E., CEM, LEED AP
Vice President, Sustainability Officer
Dallas/Fort Worth International Airport Board
rhodapp@dfwairport.com

