



LEED EB – Certification of Existing Buildings

November 2008

Presentation to:

AFEC

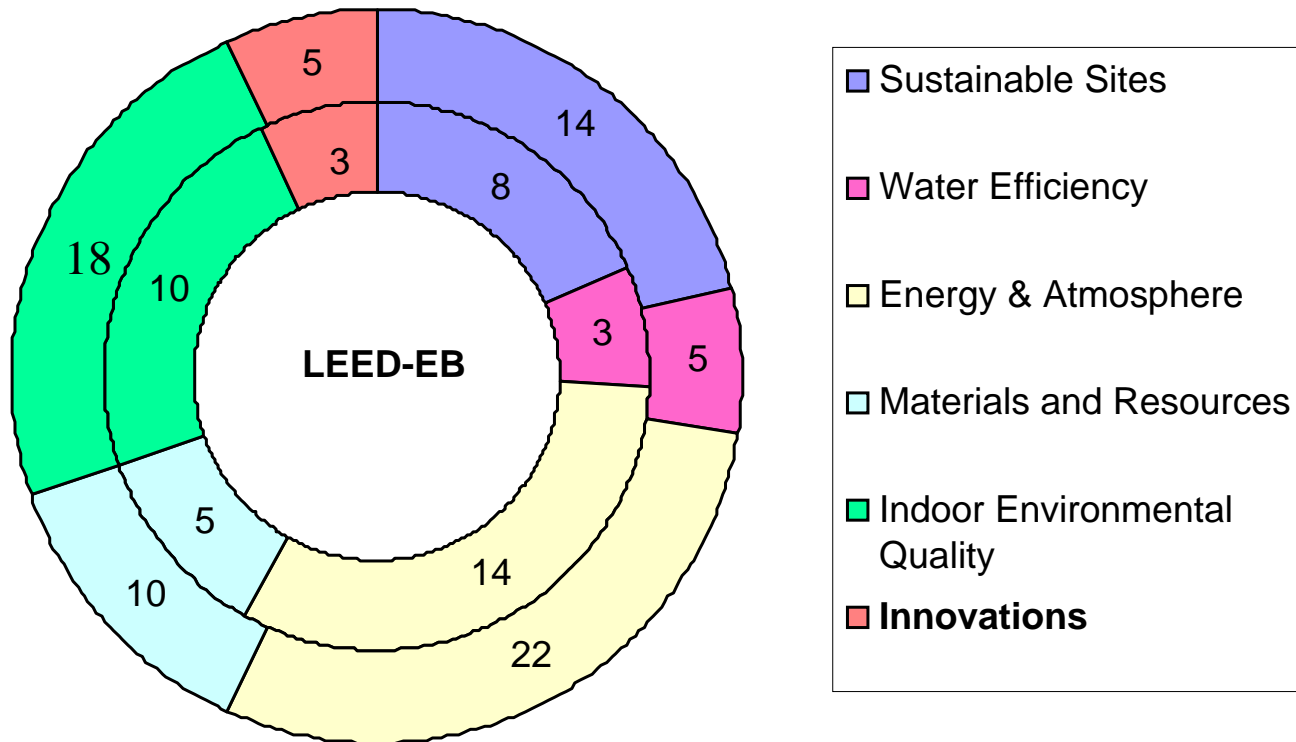
***Lori Carter, LEED AP, RPA
Crestone Partners, LLC
2008 Denver BOMA Past President***

Why participate in LEED?

- The U.S. Department of Energy's Center for Sustainable Development reports that buildings account for:
 - 40% of the world's energy consumption
 - 16% of the world's water consumption
 - and 25% of its wood harvestCommercial buildings need to be responsible
- LEED = Recognition of Quality Buildings and Environmental Stewardship

Prerequisites & Credits

Achieving GOLD Level



Possible and Achieved Credits

Sustainable Sites

- Sustainable Sites: 4 of 14 possible credit points
- Received credits for being an existing building in high density downtown location, close to light rail, bus stops and bus station
- Exterior Management – snow removal, window washing, sidewalks, pest control, fertilizers, paints
- Received credits for having all parking located underground and encouraging alternative fuel vehicle use

Sustainable Sites Alternative Fuel Vehicles – SS-C3.3



Water Efficiency – P1, C3.1&.2 (2 pts)



- Replaced with low-flow:
 - 345 water closets
 - 26 urinals
 - 260 hands-free faucets
- 20% water use reduction below EPACT (2 pts)
- Decreases utility costs
- DP saving 4 million gallons water annually

Water Efficiency – C1.1

Landscaping, 1 more point



- Installation of irrigation meters
- Increase use of xeric plants
- Monitor irrigation usage on weekly basis
- Change to neaprim (drip) irrigation system, no sprinklers, no waste of water

IF CONTEMPLATING LEED LABEL – ENERGY STAR FIRST 13 of 23 points



- Prerequisite #2 = 60
- Optimize Energy
Performance points are based on the building's Energy Star Score
- Up to 10 Points Possible
- For our example - we'll use score of 83, 6 points
- Share data with BOMABEEP

Energy & Atmosphere

Fundamental Commissioning – P1

- Xcel Re-Commissioning Program

- Energy Retrofits - Opportunities

- Flex connectors, access seals
- Supply air temp reset
- Exit signs to LED
- Post-cleaning light sweeps
- 58 kW peak demand savings
- 387,700 kWh annual energy savings, 4 month payback

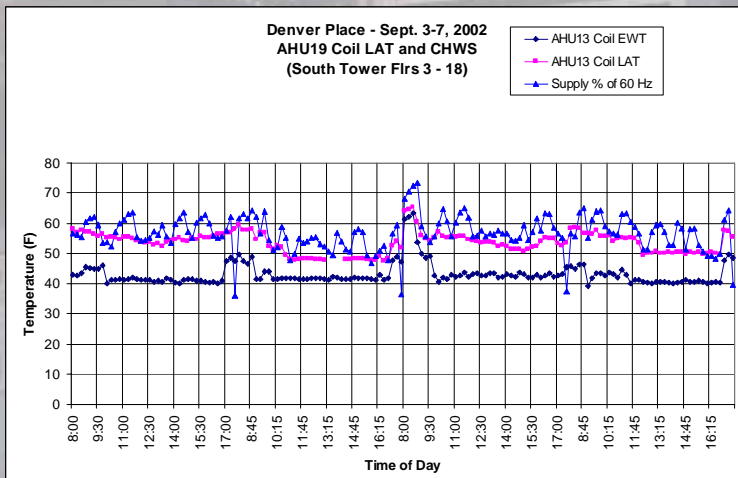


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Energy & Atmosphere



- Building Operating Plan
 - Utility budget “alarm” & “limit” in EMS
 - IAQ & Mold prevention plans
 - Morning cool-down / warm-up
 - Calibrated min OSA
 - Static pressure controls
 - 100% OSA economizers
 - 72°F tower sumps
 - Chilled water supply reset



11/11/200

Energy & Atmosphere – P3 Ozone Protection

- Annual Tests
- Tight chillers
 - Essentially Zero leakage



- STAFF EDUCATION
Operations and Maint
1 point

Energy & Atmosphere – C3.2

Operations and Maintenance 1 pt

Work Order			
Your Logo Here Amerimar Realty Management Co.-Colo. Suite 1201 999 18th Street Denver CO 80202- (303) 312-3900 Fax (303) 312-3902		Work Order No 43861 Call-In Date 11/16/04 Call-In Time 12:09 pm Entered By JEV Srvc Provider DPE	
Tenant College Access Network Suite 035100425 Address 1 999 18th Street Address 2 Suite 425 Upper Retail Address 3 Denver, CO 80202 Phone () - Caller Data Candy () - Addl Info None Special Instructions			
Scheduled For 11/16/04 12:00 am	Permission To Enter Yes	Classification Hvac	Priority Code Asap - W.O.
CAN - 4 STR- default aversion-too cold			
Start Time _____	Caused By Tenant YES NO	Service Call _____	
End Time _____		Entry Date _____	
Total Time _____	Charge Owner YES NO	Entered By _____	
Mileage _____		Charge _____	
New Status (Circle One)		Diagnosis (Circle One)	
Open	Waiting For Parts	Normal Wear	Crime/Vandalism
Reassign	Pending Completion	Abuse/Misuse	Act of God
Completed/Closed	Other	Defective Matls	Other
Srvc Provider _____			____/____/____
Tenant _____			____/____/____

- Building System Maintenance
- Aware Manager
 - Check-out procedures
 - Frequency schedule
 - Computer issued task orders
 - Track until completion
- PM Task Detail
 - All assets (equipment)
- Facilities
 - Issue service call

Energy & Atmosphere –C3.2

Building Systems Maintenance 1 pt

- Maintenance Contracts
 - Chiller service
 - Refrigerant leak test
 - Eddy current
 - Vibration analysis
 - Controls service
 - Continuous improvement



Energy & Atmosphere – C3.3

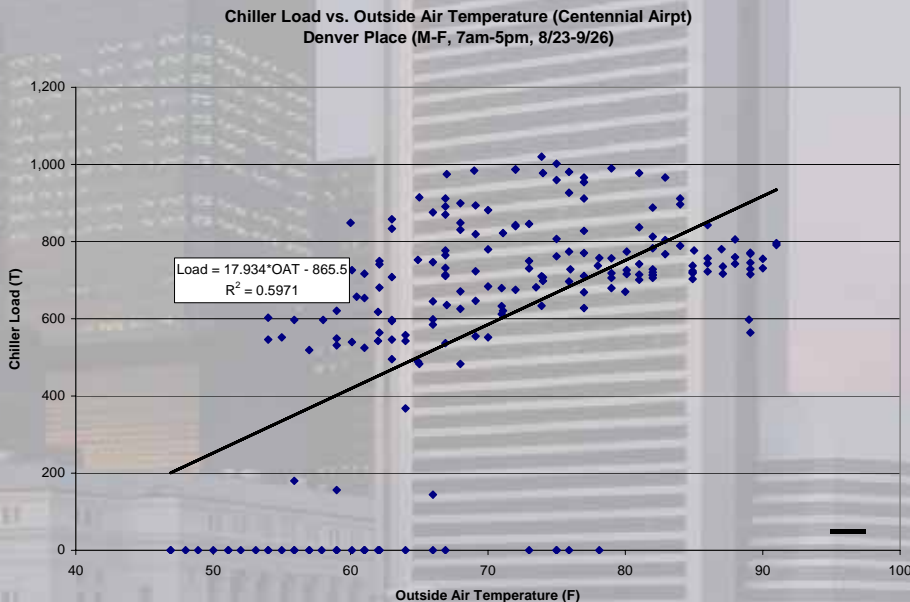
Operations and Maintenance 1 pt

- Continuous Monitoring Plan

- Per shift monitor & trend

- Chilled water, hot water, fans
- Building kW, outside and space temperatures, fan status and VFD/inlet vane position, solar sensors, amps, pressures, and many other points

- Manual load shed



Energy & Atmosphere – C5.1

Measurement & Verification

- EMS Monitoring 1 pt
 - Bldg electric meters
 - Process water (tenant cooling tower)
 - Process energy (computer rooms)
 - Motor loads (amps, volts)



Energy & Atmosphere – C5.2

Measurement & Verification

- EMS Monitoring 1 pt
 - VFDs – speed
 - Boiler efficiencies
 - Chiller efficiency, variable loads – flow & temps



Energy & Atmosphere – C5.3

Measurement & Verification

- EMS Monitoring 1 pt
 - Cooling load (flow, temps at chillers)
 - Water economizer & heat recovery (flows, temps)
 - Water risers & irrigation (flow meters)



Energy & Atmosphere – C5.4 Emissions Reduction (1 pt)



- **Cleaner and Greenersm Certification Program**
 - ⑩ **Level 1 Certification: Support the Cleaner and Greenersm Principles**
 - ⑩ **Level 2 Certification: Report emission reductions**
 - ⑩ **Level 3 Certification: Retire emission reduction credits**
 - ⑩ **Level 4 Certification: Ask your suppliers and customers to participate**
 - **Level 5 Certification: Calculate and offset your company's emissions**

Energy & Atmosphere – C5.4 Emissions Reduction (1 pt)



- Cleaner & Greener Program Donation
 - Retire 10% of annual energy retrofit savings
 - 4,773,657 (kWh)
 - 65,288 (Therms) gas
 - CO₂: 9,188,683 (lbs.)
 - SO₂: 20,146 (lbs.)
 - NO_x: 16,292 (lbs.)
 - Hg: 26,852 (lbs.)
 - CO: 1,810 (lbs.)
 - PM₁₀ Particulate: 360 (lbs.)

Materials & Resources – MR-2.1

Resource Re-use

- Receive one credit for reuse of 10% of building materials
- Most DP projects are tenant remodels therefore can reuse mechanicals, lighting, doors, built ins, fixtures, etc.
- This credit can be achieved in a commercial office building with frequent tenant turnover requiring remodeling

Materials & Resources – MR-5.1

Occupant Recycling



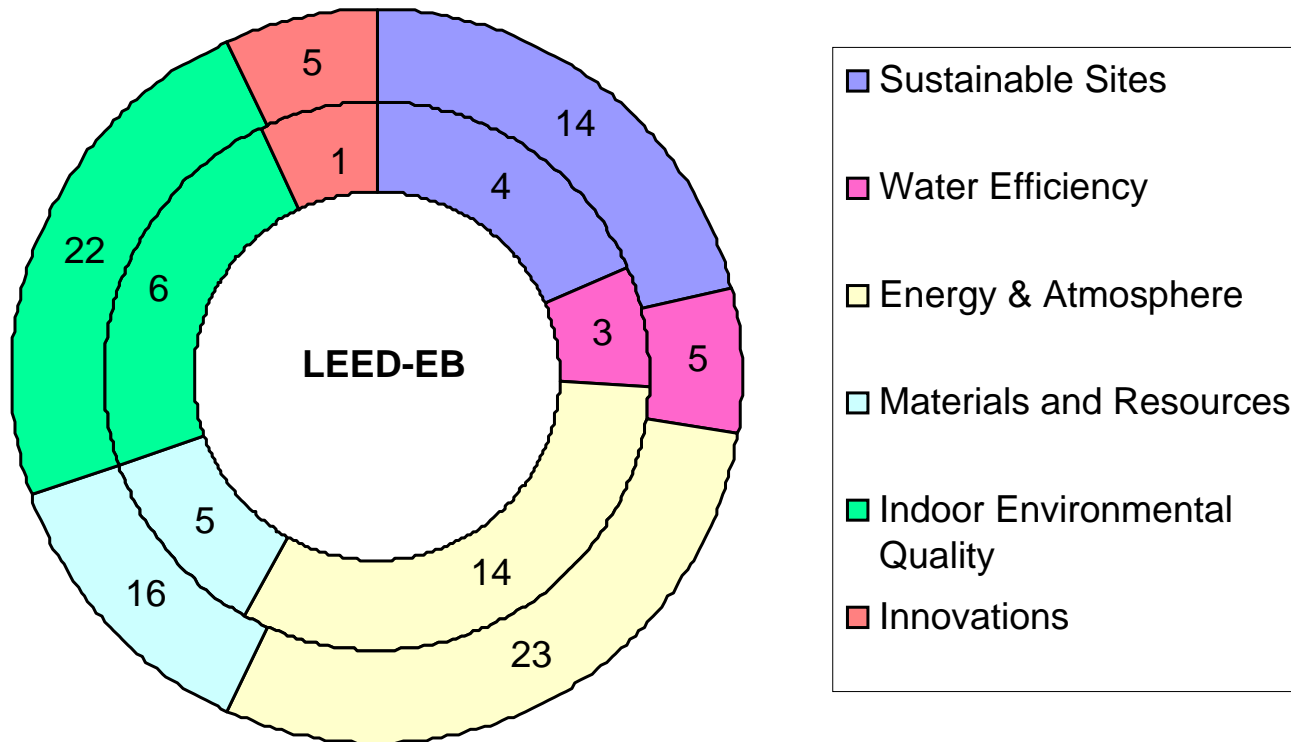
- 1 of 3 possible credits
- Improve your tenant recycle program
- Through tenant education programs, special events, and changing vendors, increase recycling (**by weight**) to over 30% of total waste
- Reduced Mercury in Light Bulbs
 - Talk to your vendors -

Indoor Environmental Quality

- Achieve multiple points through your janitorial company's expertise
- Pedimats at every entry
- Isolation of Janitorial Closets
- Green Cleaning Policy
- Green Pest Management Policy
- Cleaning Equipment Policy (Hepa Vacuums)
- Green Cleaning Products & Materials(M&R)

Be innovative! Be a Leader! You can do it!

Achieving GOLD Level



Possible and Achieved Credits