

Cabling Infrastructure for Green Buildings

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Objective

This presentation will discuss and propose cabling strategies that may contribute for overall building LEED certification according to the USGBC LEED ratings.



Agenda

- Objective of a green building
- USGBC LEED Ratings Review
- LEED Goals
- LEED Rating System Credits
- Telecommunications cabling & potential LEED credits
- Additional comments & conclusions

Introduction

- Objective of green buildings:
 - Increased building efficiency
 - Energy
 - Water
 - Materials
 - Reduce building impact on human health and the environment through;
 - Better site location
 - Design & Construction
 - Operation & Maintenance
 - Removal along its life cycle

The USGBC LEED Ratings

- United States Green Building Council
 - created the LEED (Leadership in Energy and Environmental Design) rating systems
 - define and measure green buildings



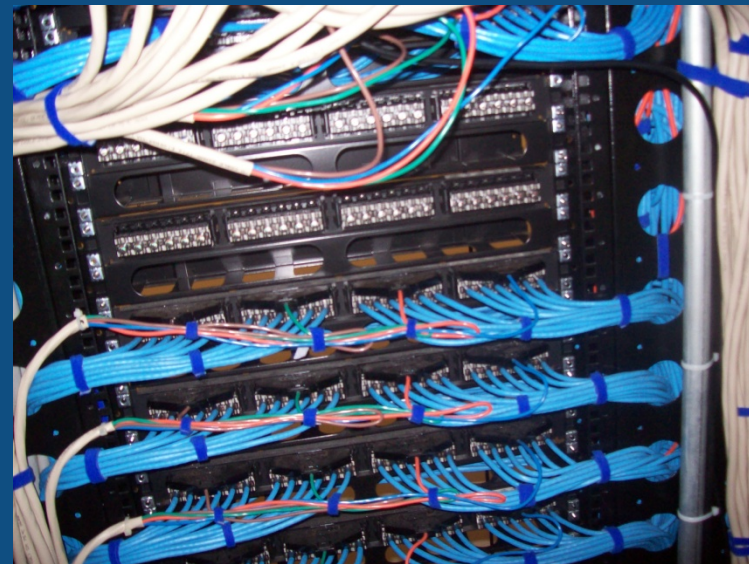
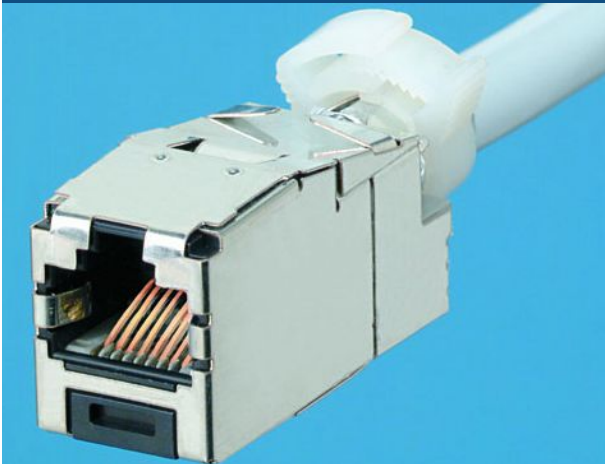
LEED Goals

- Whole-building approach to sustainability
- Key-areas of human and environmental health:
 - Sustainable sites
 - Water efficiency
 - Energy and atmosphere
 - Materials and resources
 - Indoor environmental quality
 - Innovation and design process (NC V2.2)



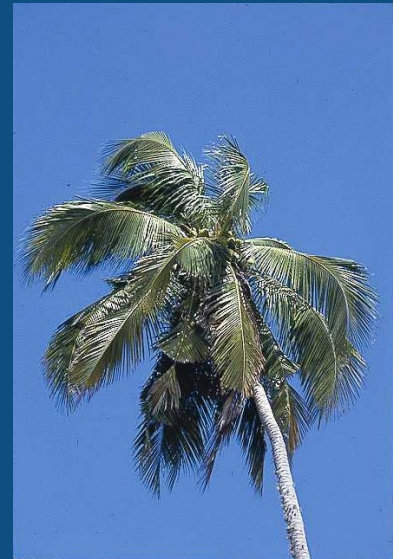
What About Cabling?

- Telecommunications cabling is not directly addressed in the USGBC rating systems...



Sustainable Sites

- LEED credits:
 - Construction activity pollution prevention
 - Site selection
 - Development density and community connectivity
 - Alternative transportation
 - Maximize open space, and so on...



CABLING DOES NOT FIT HERE!

Water Efficiency



- LEED credits:
 - Water efficient landscaping – Reduce by 50%
 - Innovative wastewater technologies
 - Water use reduction – 20%
 - Water use reduction – 30%



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Indoor Environmental Quality

- LEED credits:
 - Environmental tobacco smoke control
 - Outdoor air delivery monitoring
 - Low-emitting materials
 - adhesives and sealants
 - Low-emitting materials
 - carpet systems, and so on...

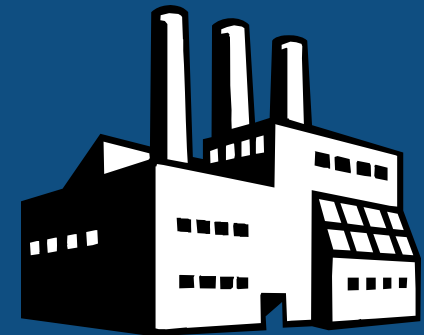


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Energy & Atmosphere



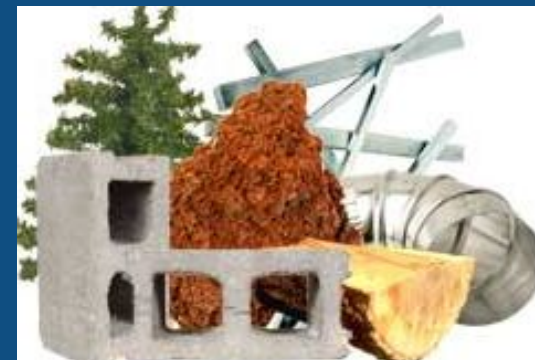
- LEED credits:
 - Commissioning of the building energy system
 - Minimum energy performance
 - Fundamental refrigerant management
 - Optimize energy performance
 - On-site renewable energy
 - Enhanced commissioning
 - and so on...



CABLING MAY FIT HERE!

Materials & Resources

- LEED credits:
 - Construction waste management
 - Materials reuse
 - Regional materials
 - Extracted
 - Processed
 - Manufactured



CABLING MAY FIT HERE!

Innovation in Design

- NEW to the existing LEED rating systems
 - APPLIES TO new construction
- LEED NC Version 2.2
 - New Construction & Major Renovation
- Credits:
 - Potential technologies & strategies
 - Energy performance
 - Quantifiable environment benefits



CABLING MAY FIT HERE!

Potential LEED Credits

- Energy and Atmosphere
 - Energy optimization (credit EA 1):
 - Cables of smaller diameters
 - Physical layer management solutions



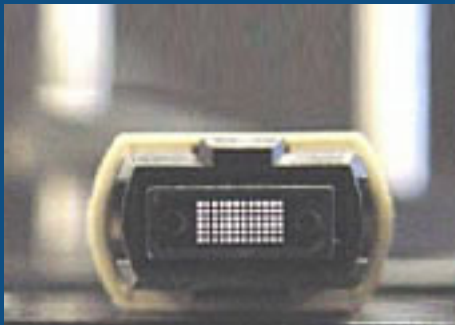
Potential LEED Credits (continued)

- Materials and Resources
 - Waste management (credits MR 2.1/2.2)
 - Use of preterminated cabling solutions
 - Use of larger reels of cables
 - Convergence & Cable sharing
 - Physical layer management solutions



Potential LEED Credits (continued)

- Materials and Resources
 - Materials reuse (credits MR 3.1/3.2)
 - Convergence
 - Cable sharing
 - Modular trunking design (including MPO)
 - Higher-bandwidth solutions



Potential LEED Credits (continued)

- Innovation in Design
 - Potential technologies & strategies
 - Energy performance
 - (credits 1.1/1.2/1.3/1.4)
 - Physical layer management solutions
 - Cable reduction
 - BAS: Building Automation Systems
 - Higher-bandwidth solutions
 - Wireless network



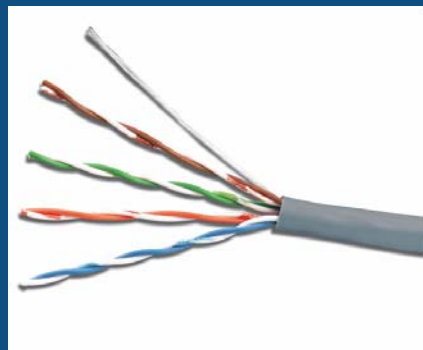
And About Cable Recycling?

- RECYCLED Telecommunications cables
 - DUE TO the high value of copper SCRAP
- Plastic material (insulator) difficult to reuse
- Burning the plastic causes toxic gas emissions
- Polyvinyl Chloride (PVC) insulator has some lead in its CHEMICAL composition
- Proper disposal is mandatory



Cable Recycling (continued)

- Burning telecom cables is not allowed in the U.S.
- Recycling facilities exist
- Technology to recycle abandoned cables is improving
- Recycling plastic material is still an issue



Potential LEED credits Summary

LEED credits	Component/Technology/Methodology
EA1 (10 pts max)	Cables of smaller diameters PLM solutions
MR 2.1/2.2 (2 pts max)	Preterminated cabling solutions Larger reels of cables PLM solutions, convergence and cable sharing

Potential LEED credits Summary

LEED credits	Component/Technology/Methodology
MR 3.1/3.2 (2 points max)	Convergence and cable sharing Modular trunk cables and ARRAY solutions Higher-bandwidth solutions
ID 1.1/1.2/ 1.3/1.4 Design phase (4 points max)	PLM solutions and cable reduction Wireless network and higher-bandwidth solutions BAS – Building Automation Systems Note: ID credits apply to new constructions only.

LEED Certifications

- There are four levels of LEED recognition for new construction

LEED certification	Points needed
Certified	26 to 32
Silver	33 to 38
Gold	39 to 51
Platinum	52 to 69

What does a LEED credit mean?

- Building design, construction and operation meet the highest performance levels in terms of:
 - energy use,
 - environmental conditions for its occupants
 - environmental impact
- Higher the LEED certification level of a building
 - lower its energy consumption
- Building occupants/owners;
 - save money with energy consumption
 - over the building lifecycle



Additional Comments & Conclusions

- Telecommunications cabling
 - NO direct correlation within LEED systems
- Potential credits:
 - energy optimization,
 - waste management,
 - materials reuse
- MR 5.1/5.2 (Regional Materials)
 - NO direct correlation within LEED systems
 - potential LEED credits MAY BE AVAILABLE



Additional Comments & Conclusions (continued)

- Division 27 products (communications products)
 - NOT recognized for LEED credits and points
- USGBC only recognizes CSI
 - Master Format Divisions 2 THROUGH 10
- BICSI & OTHERS are discussing these issues with USGBC
- Expansion of coverage and inclusion of Division 27 is needed to include telecom cables in the LEED punctuation calculations

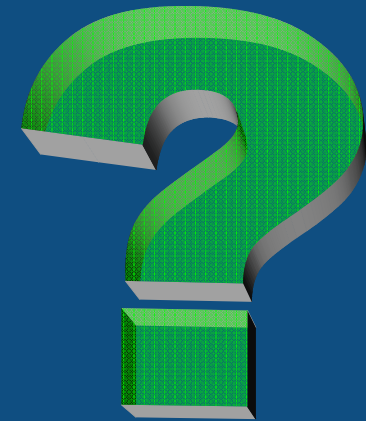
Additional Comments & Conclusions (continued)

- Other recommendations:
 - CONSIDER HIGH PERFORMAMCE, high-density optical networks (ARRAY [MPO, MPT], LC) for 10GbE (data centers)
 - Consider higher-bandwidth technologies for new constructions (Cat. 6, 6A, 7, 7A) AND laser-optimized fiber (OM3, OM4, OS1 & OS2) FIBER
 - Consider PLM for new constructions
 - Optimize cable use (reuse) for existing installations
 - Consider cable sharing for existing installations

Other Green Initiatives

- Green Star Program (Australia and NZ)
- Comprehensive Assessment System for Building Environmental Efficiency (ASBEE [JAPAN])
- EEWH (Taiwan)
- Building Resource Establishment Environmental Assessment Methodology (BREEAM [UK])
- Green Building Council Brazil (BRAZIL)

THANKS! QUESTIONS



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