

# 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



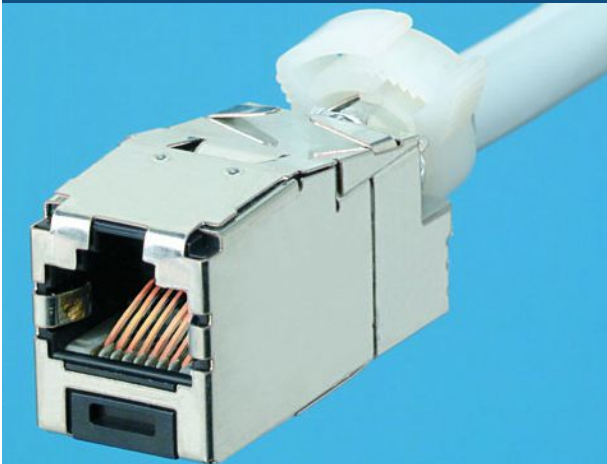
# LEED Goals

- 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)



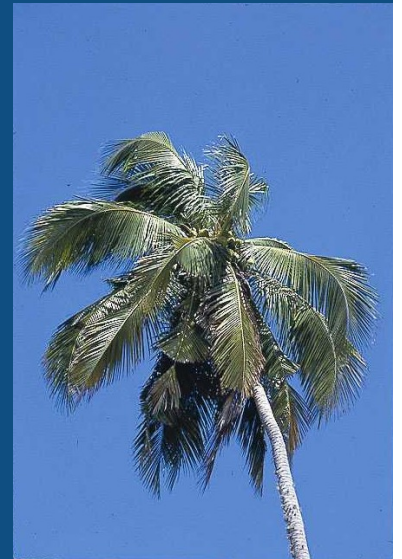
# What About Cabling?

- 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...

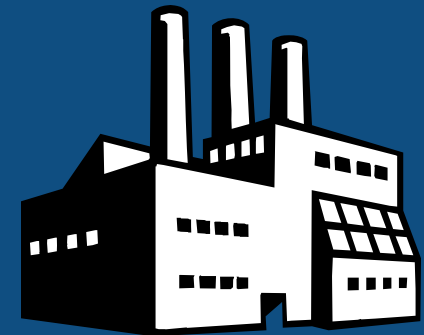


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# Energy & Atmosphere



- 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



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# Potential LEED Credits

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



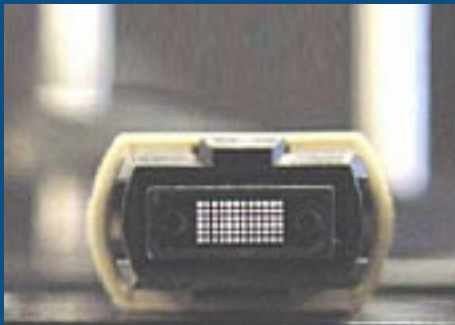
# Potential LEED Credits (continued)

- 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



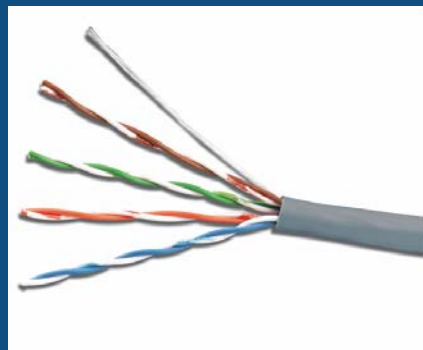
# And About Cable Recycling?

- 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 <b>Note: ID credits apply to new constructions only.</b>

# 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

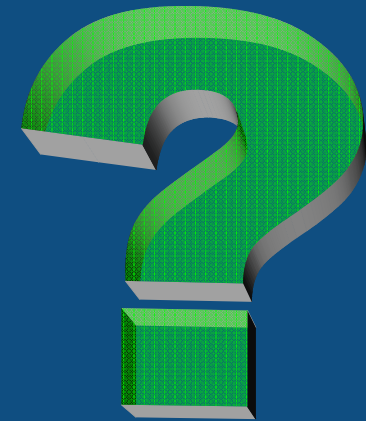
# Additional Comments & Conclusions (continued)

- Other recommendations:
  - CONSIDER HIGH PERFORMANCE, 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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