

Designers Lighting Forum

PoE Past - Present - Future

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March 20th 2024



Credit(s) earned on completion of this course will be reported to **AIA CES** for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

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material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



Learning Objectives

At the end of this course, participants will be able to:

1. Participants will get a base understand of PoE technology
2. Participants will understand the advantages of PoE in building designs
3. Participants will learn how PoE can save energy & installation costs
4. Participants will understand how they can apply PoE in their projects today and in the future.



Definitions

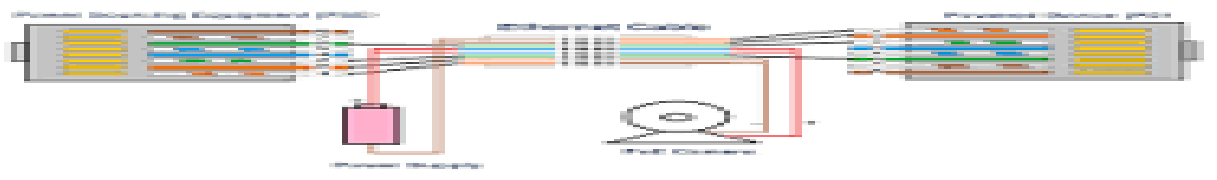
- **Power over Ethernet, or PoE** – describes any of several standards systems that pass electric power along with data on twisted-pair Ethernet cabling CAT6. This allows a single cable to provide both a data connection and enough electricity to power devices such as wireless access points (WAPs), Internet Protocol (IP) cameras and voice over Internet Protocol (VoIP) phones, Lighting, Window Shades, Outlets, HVAC, Others.
- **IoT** – The Internet of Things (IoT) describes the network of physical objects—“things”—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet.
- **DC2DC Architecture** — Distributed low-voltage **DC** power and digital controls for a range of LED luminaires. Eliminate the need for power conversion at each luminaire’s LED driver.
Types: Class 2.
- **Smart Building** – automation, also known as building management system or building energy management system, is the automatic centralized control of a building's HVAC, electrical, lighting, shading, access control, security systems, and other interrelated systems.



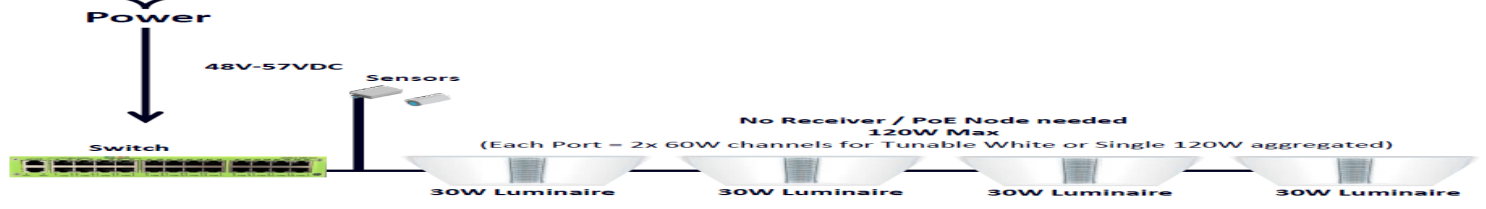
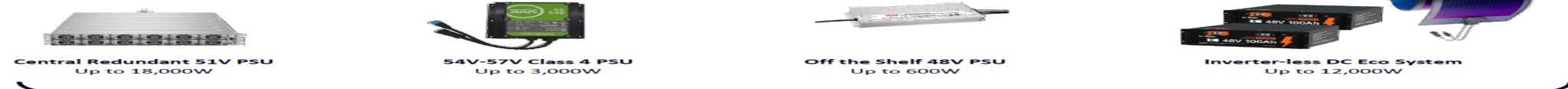
Basic Wiring

PoE 60watt

What Wires Carry Power on PoE?

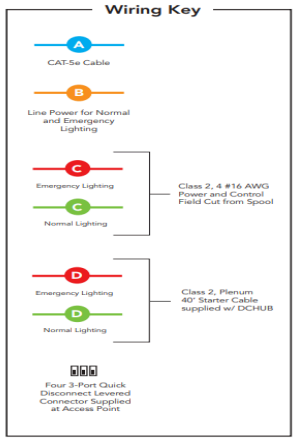
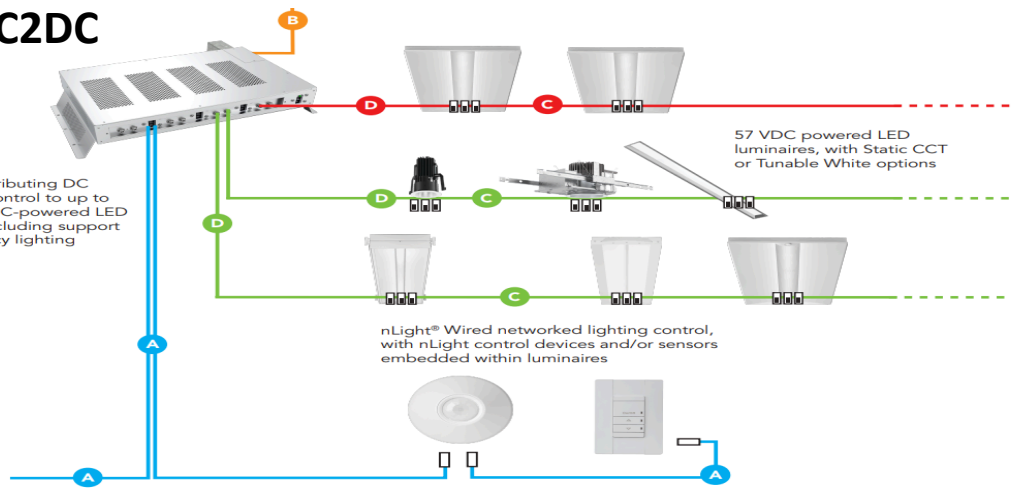


XPoE 130 watt



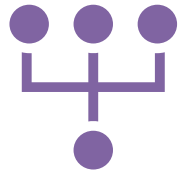
DC2DC

DCHUB, distributing DC power and control to up to 1080 VA of DC-powered LED luminaires including support for emergency lighting



Past – Present – Future

Office, Hospitality, Healthcare, Education,



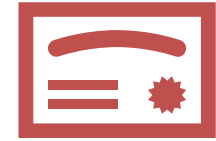
Design

- Who, What, How



Solutions

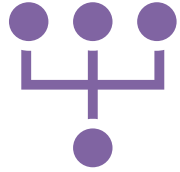
- Who, What, How



Implementation

- Who, What, How





Past

Design

- Who did it work?
 - Who - MEP, LD's, Contractor, IT, System Integrator
 - Energy – LED's helped create systems
 - Sustainability - ?
 - IT Security
 - Data
 - Skill sets (Owner, MEP, LD's, Contractor, Distributor, MFG)



Past

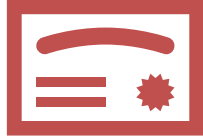


Solutions

- What solutions were available?
 - Lighting - Limited
 - Controls - Limited
 - Other – Very Limited



Past



Implementation

- Who did what?
 - Commissioning
 - Contractor EL or IT?
 - Documentation & Data

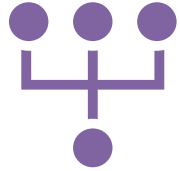


Present

Office, Hospitality, Healthcare, Industrial



Present



Design

- What has improved related to?
 - Who - MEP, LD's, Contractor, IT, System Integrator (Div 16, 26, 27)
 - Energy – System Efficiencies
 - Sustainability – All the Rage
 - IT Security
 - Data
 - Skill sets (Owner, MEP, LD's, Contractor, Distributor, MFG)



X-PoE Benefits for Building owners

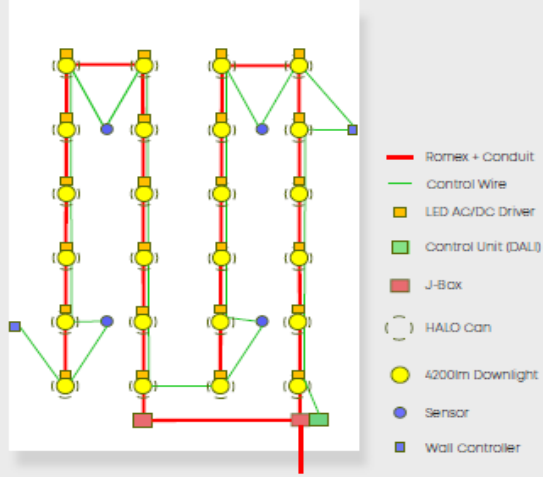
Warehouse Case Study 20,000 sqft



	Traditional AC w. Controls	Traditional PoE	X-PoE
Installation Cost	4-6\$/sqft	5-7\$/sqft	2-3\$/sqft
Installation Speed	400hrs	500hrs	300hrs
Annual Energy cost	\$4,700	\$5,300	\$3,800



AC/DC



EMBODIED CARBON
3,997 lb. CO₂e

ANNUAL CARBON
10,168 lb. CO₂e
Cost/yr.: \$1,327

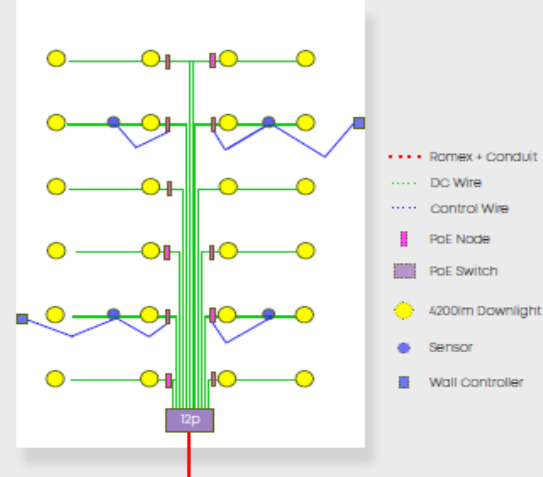
DC/DC



EMBODIED CARBON
3,726 lb. CO₂e

ANNUAL CARBON
10,430 lb. CO₂e
Cost/yr.: \$1,361

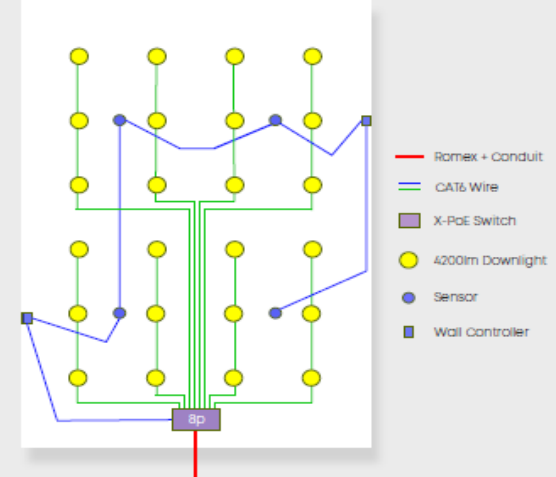
PoE



EMBODIED CARBON
3,484 lb. CO₂e

ANNUAL CARBON
11,635 lb. CO₂e
Cost/yr.: \$1,518

X-PoE



EMBODIED CARBON
1,593 lb. CO₂e

ANNUAL CARBON
8,975 lb. CO₂e
Cost/yr.: \$1,171

Present

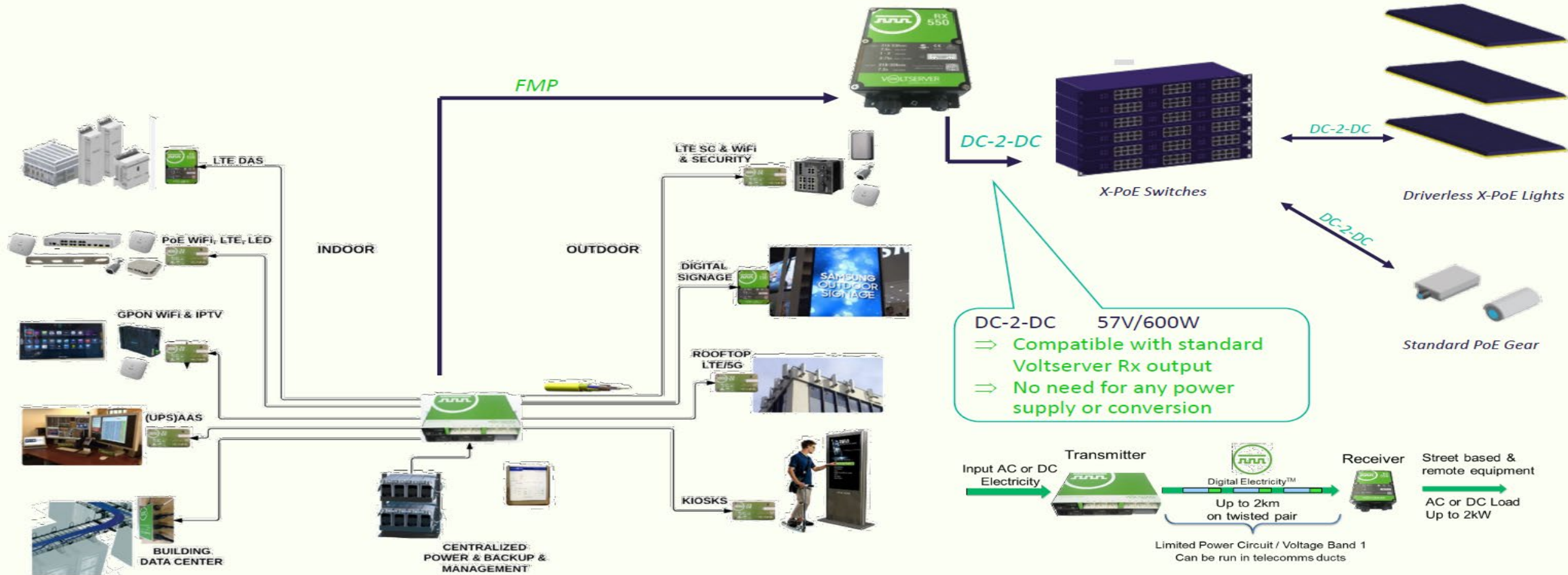


Solutions

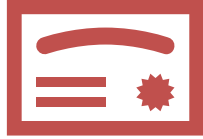
- Does the Design team have more solutions at there disposal?
 - Lighting Many, Smaller and Decorative
 - Controls Many – Control Agnostic (Dali, 0-10v, DMA, Other)
 - Security Cameras, Shades, TV, Phone, Mini Ref, Outlets, HVAC, Other



Solutions



Present



Implementation Speed to Market?

- How is it working and Who does what?
 - Commissioning Systems (Self Commissioning)
 - Contractor EL or IT? System Integrators
 - Documentation, Data, Metrics (Asset tracking)



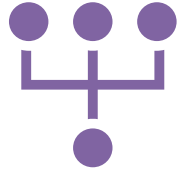
INSIDE THE NGLS LIVING LABS

An Observational Understanding of Connected Lighting Systems

May 2021

Jessica M. Collier | K. Ruth Taylor
Mary Matteson Bryan, PE





Future

Design

- What needs to improve to make it More Cost Effective & Efficient?
 - Smart Total Building Systems
 - Automation
 - Modular Prefab
 - Energy
 - Sustainability
 - IT Security
 - Data
 - Plumbing
 - Skill sets (MEP, Contractor, Distributor, MFG)



Future

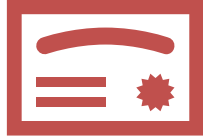


Solutions

- What do we need for the Smart Secure Building of the Future?
 - Lighting ?
 - Controls ?
 - Security Systems, Shades, TV, Phone, Mini Ref, Outlets, HVAC ?
 - Modular Prefab ? (Healthcare,
 - Plumbing/Sprinkler, Other ?



Future



Implementation

- What do we need for the Smart Secure Building of the Future?
 - Commissioning Systems
 - Contractor EL or IT? Labor shortage and EI & IT working together
 - Documentation & Data Asset Tracking, Analytics!!!
 - Digital Twin Requirements?



This concludes The American Institute of Architects Continuing
Education Systems Course



QUESTIONS?



Solution Partners Support

