



Lighting the Way to Net Zero: Power over Ethernet in K-12 Facilities

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Power Over Ethernet (PoE) in Schools

- Schools face growing pressure to reduce carbon footprint and operating costs.
- Lighting is a major energy consumer—PoE offers a smarter, safer solution.
- PoE transforms educational spaces into energy-efficient and future-ready environments.
 - Create modern classrooms with a focus on improving the student experience
 - OT/IT Convergence
 - Integration of BMS, Security, IAQ/vape sensors, and more

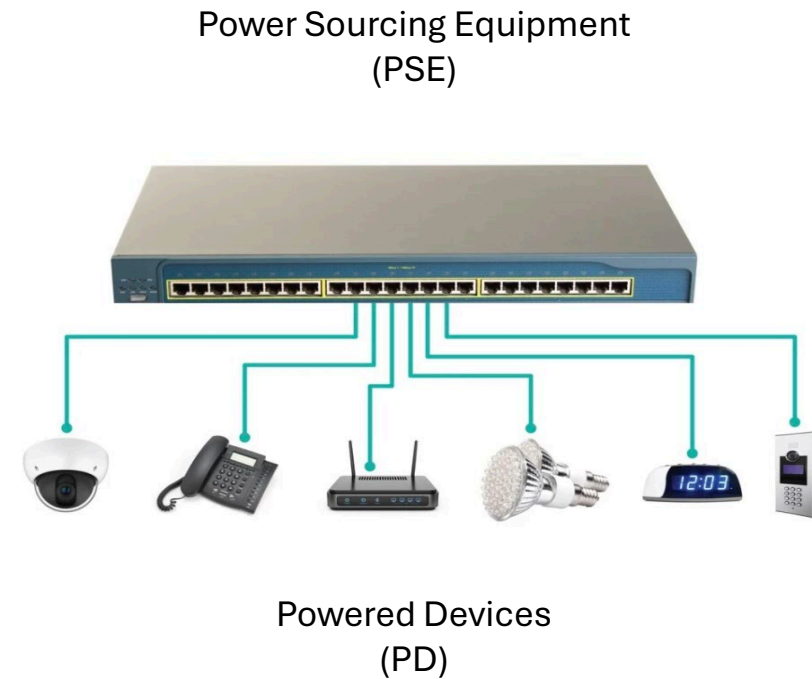
Connecting the Dots: Smart Buildings in Education

- Sensors and controls optimize energy use in real-time and gather data for insights.
- Improves student comfort, learning outcomes, and efficiency.
- Example:
 - Lights auto-dim in daylight or turn off in empty classrooms.
 - Lights perform a circadian rhythm program to adjust the color temperature throughout the day to match the natural sunlight.
 - Understand how many occupants are in a room and the indoor air quality levels to adjust HVAC setpoints.
 - Sensors detect when a vape is used and send a notification to staff.

What is POE

PoE 101

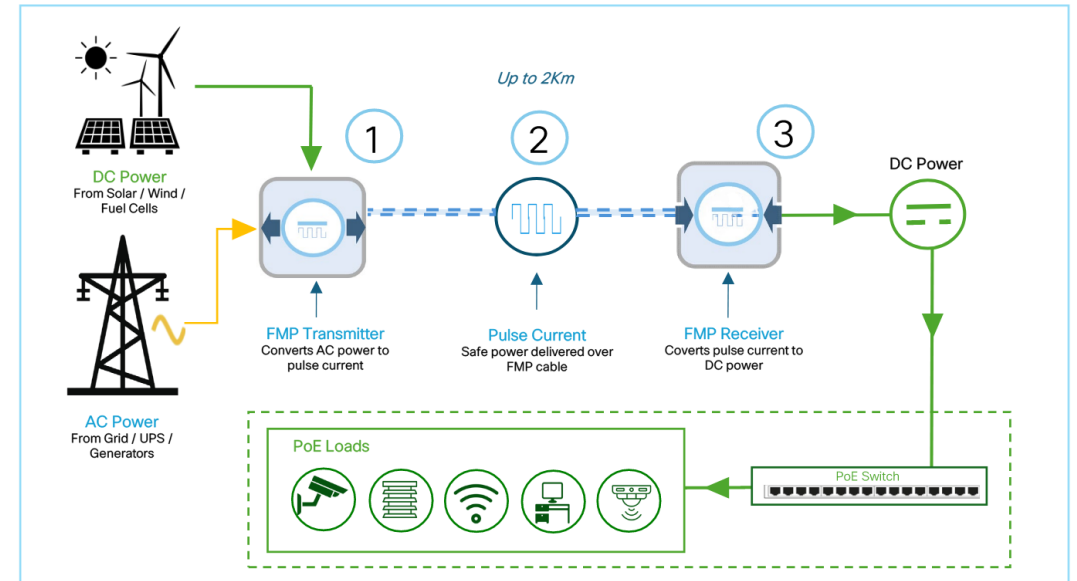
- Combines data + low-voltage power in one CAT5/6 cable.
- Replaces traditional line voltage for devices like lights, sensors, controls, and outlets.
- Common in IT systems, now reimagined for OT building systems.
- PoE powered devices:
 - LED Lights
 - VoIP Phones
 - Security Cameras
 - Shades
 - Computer Charger
 - TV/Monitor
 - Sensors
 - Door Locks
 - HVAC
 - Access Points
 - Desks



What is FMP

FMP 101

- Fault Managed Power (FMP) uses safe, UL listed, high-voltage DC power up to 450V DC.
- Converts AC power into DC power.
- Allows DC power to be pushed further and to more devices - 600W per channel and over 1 mile.
- AC-DC conversions result in 5-20% energy loss.
- 50% savings on cable and conduit costs.



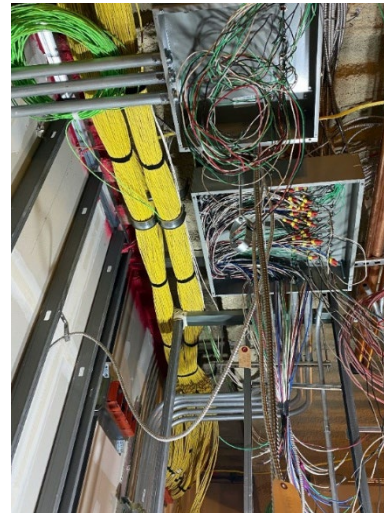
Cut Carbon

Energy:

- 20–30% lower energy usage via efficient DC lighting.
- Reduced conversion losses (AC→DC).
- Intelligent control = no wasted light.

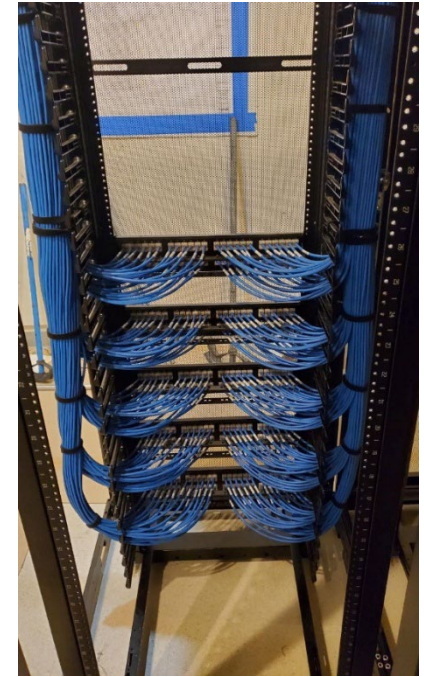
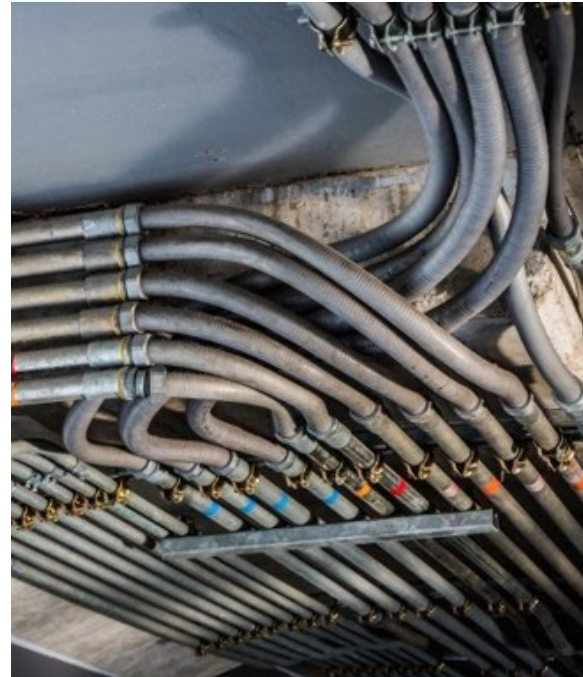
Cost:

- 20–30% lower install costs.
- No need for licensed electricians for low-voltage runs.
- Fewer materials (copper, conduit).



Sustainable Impact of PoE Lighting

- 90% LEED lighting requirements met with PoE.
- Lower embodied carbon: CAT5 vs. BX/EMT.
- Ideal for net-zero and decarbonization goals.



What's Possible

Real-World Results

- Large-scale PoE deployments show 30–40% energy savings.
- Cost-effective, code-compliant, and future-ready.
- PoE + FMP deliver:
 - 14% lower installation costs
 - 40% lower operational costs
 - Reduce environmental impact



Making It Happen in Schools

- Evaluate energy and infrastructure goals.
- Choose compatible vendors and scalable platforms.
- Consider funding sources: E-Rate, green bonds, and grants.



Key Takeaways

Smarter Schools Start with Smarter Lighting

- PoE is cost-effective, sustainable, and safe for K-12.
- Enables real-time energy optimization and data insights.
- Future-proofs school facilities for evolving needs.



Q&A