EMerge ALLIANCE

Smart Power Standards

Welcome!

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Smart Power Standards

Today we'll cover…

- What is EMerge?
- Who is EMerge?
- Why should my organization join?
- Where are Standards being applied?
  - Current installations
  - Commercial projects
- When will Registered Products be available?
- How can I learn more?

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What is EMerge all about?

A Hybrid AC/DC Power Platform for Commercial Buildings

- New, open standard for room-level DC Microgrids in commercial buildings
- A safe, flexible, sustainable use of low voltage DC power at room level
- Complements AC infrastructure with a “hybrid DC power layer” for load level
- Low voltage at the user interface enables plug-and-play device flexibility
- Facilitates energy savings from efficient lighting, controls and other electrical devices
- Allows direct integration of site based renewable energy sources

An open industry association

promoting the rapid adoption of safe, low voltage DC power distribution and use in commercial building interiors.

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It Takes an Industry to Build a Building

Creating a Vibrant Sustainable Eco-system

The Alliance Approach

- Open platforms

- Simple
- Safe
- Sustainable

An open industry association

promoting the rapid adoption of safe, low voltage DC power distribution and use in commercial building interiors.

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Professionally Managed, Member Driven

California-based 501-C Corporation

- Mgt support: Global Inventures
- Board of Directors
- 6 Levels of Membership
- Standing Committees

An open industry association

promoting the rapid adoption of safe, low voltage DC power distribution and use in commercial building interiors.

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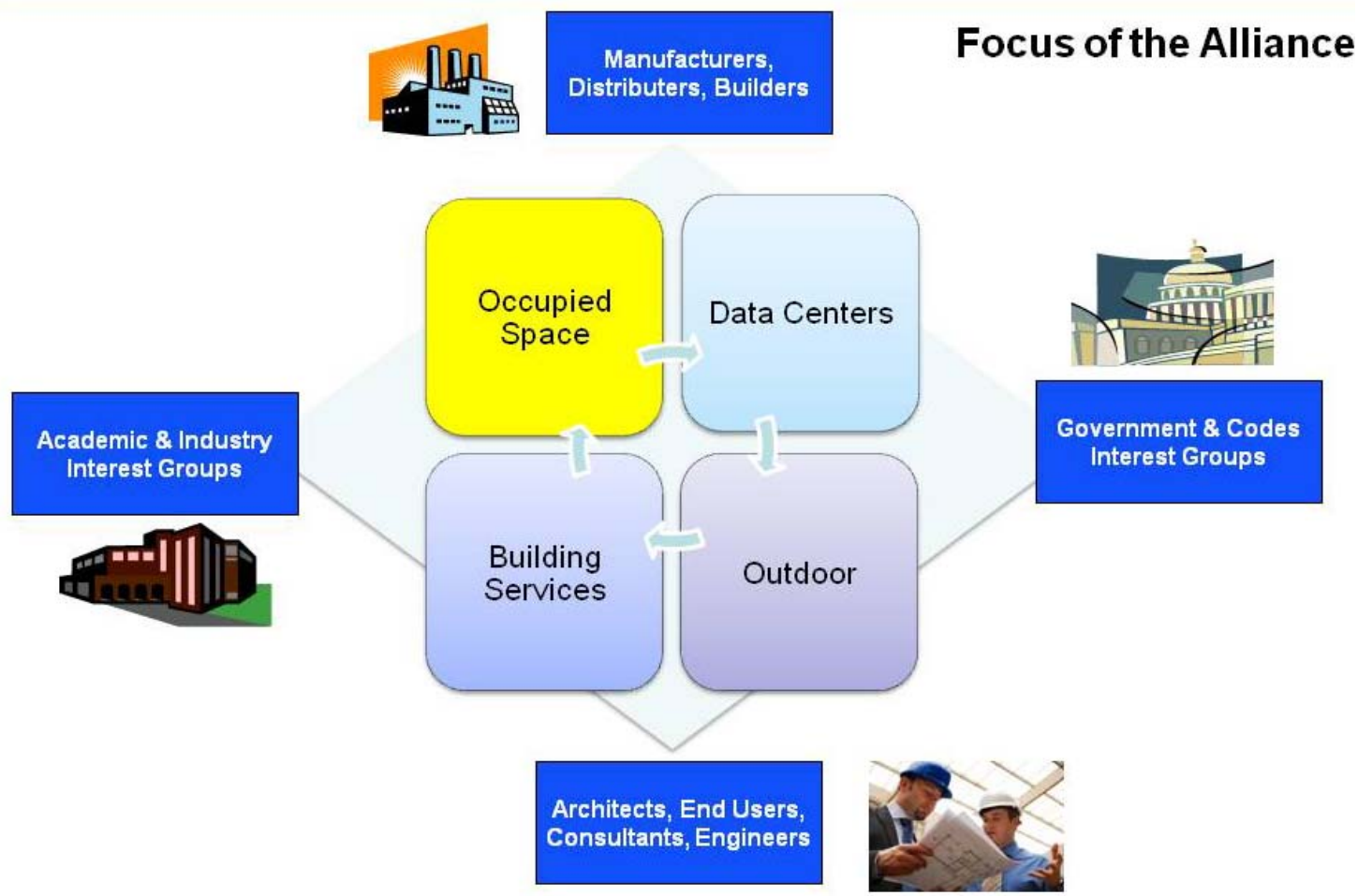
EMerge Scope of Work

Initial Focus on the Interior Space & Data/Telecom Centers



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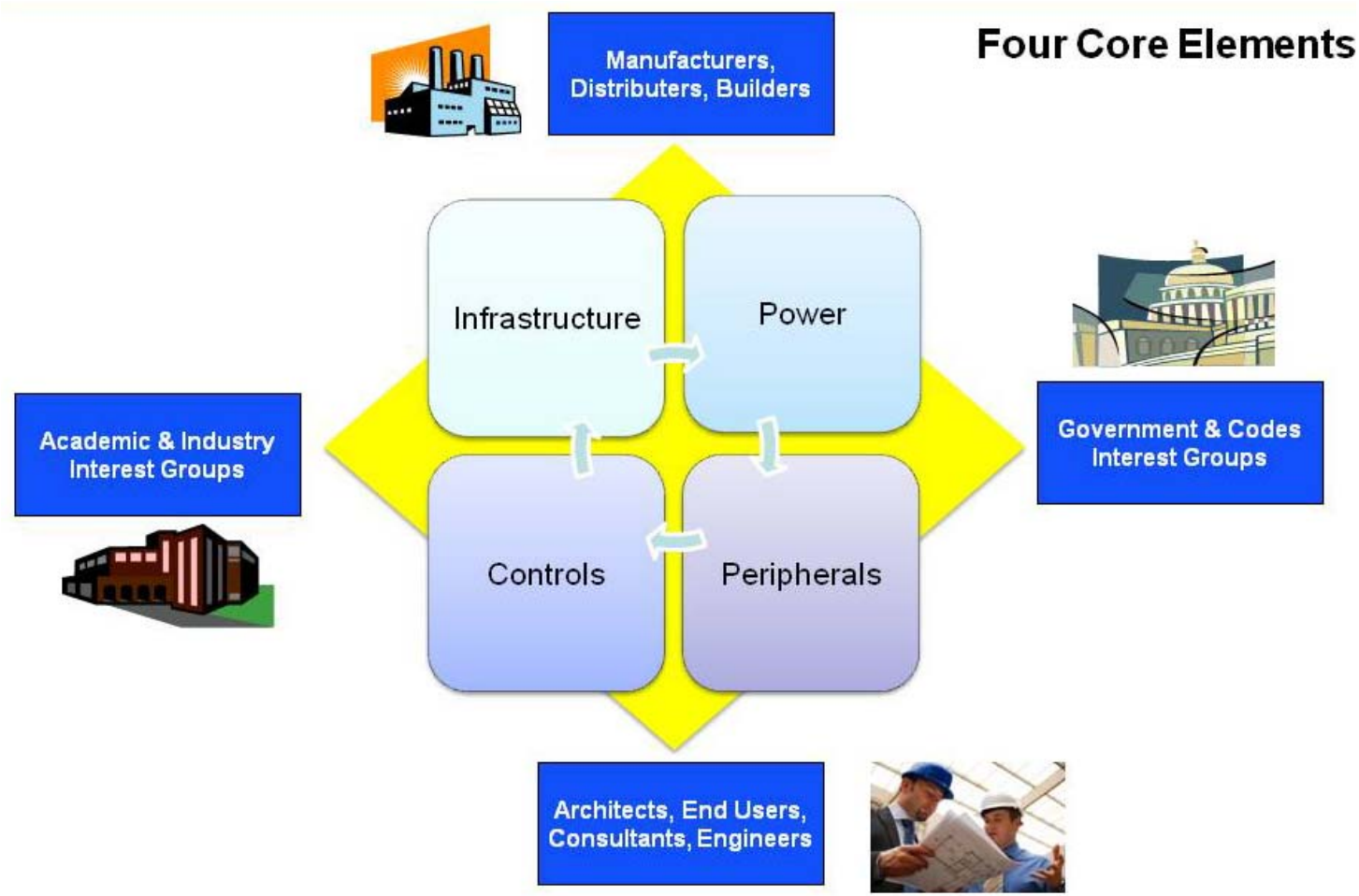
Content of the EMerge Work

Focused on Essential System Elements



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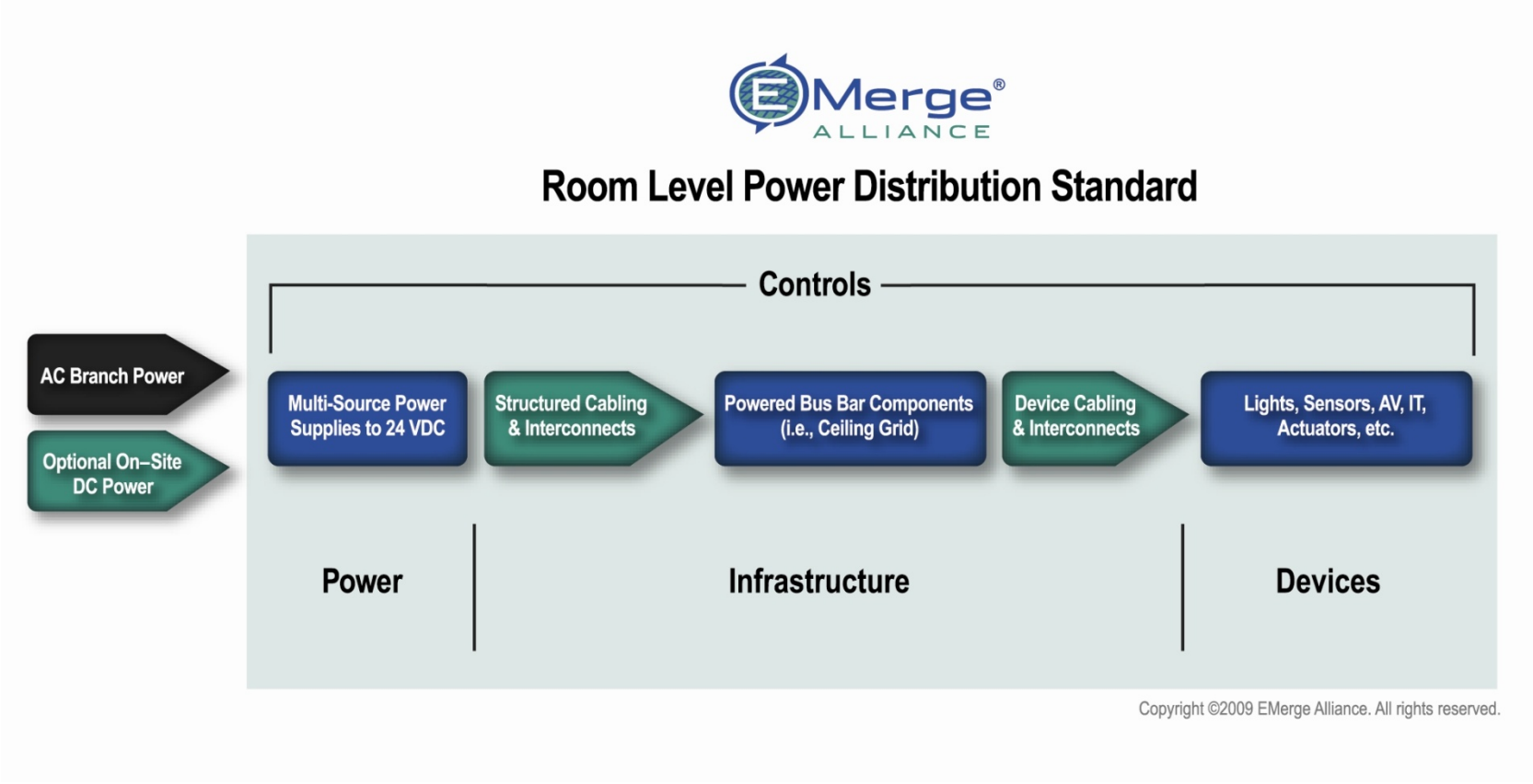
EMerge Scope of Work

1st Commercial Interior Space – Power Distribution Standard



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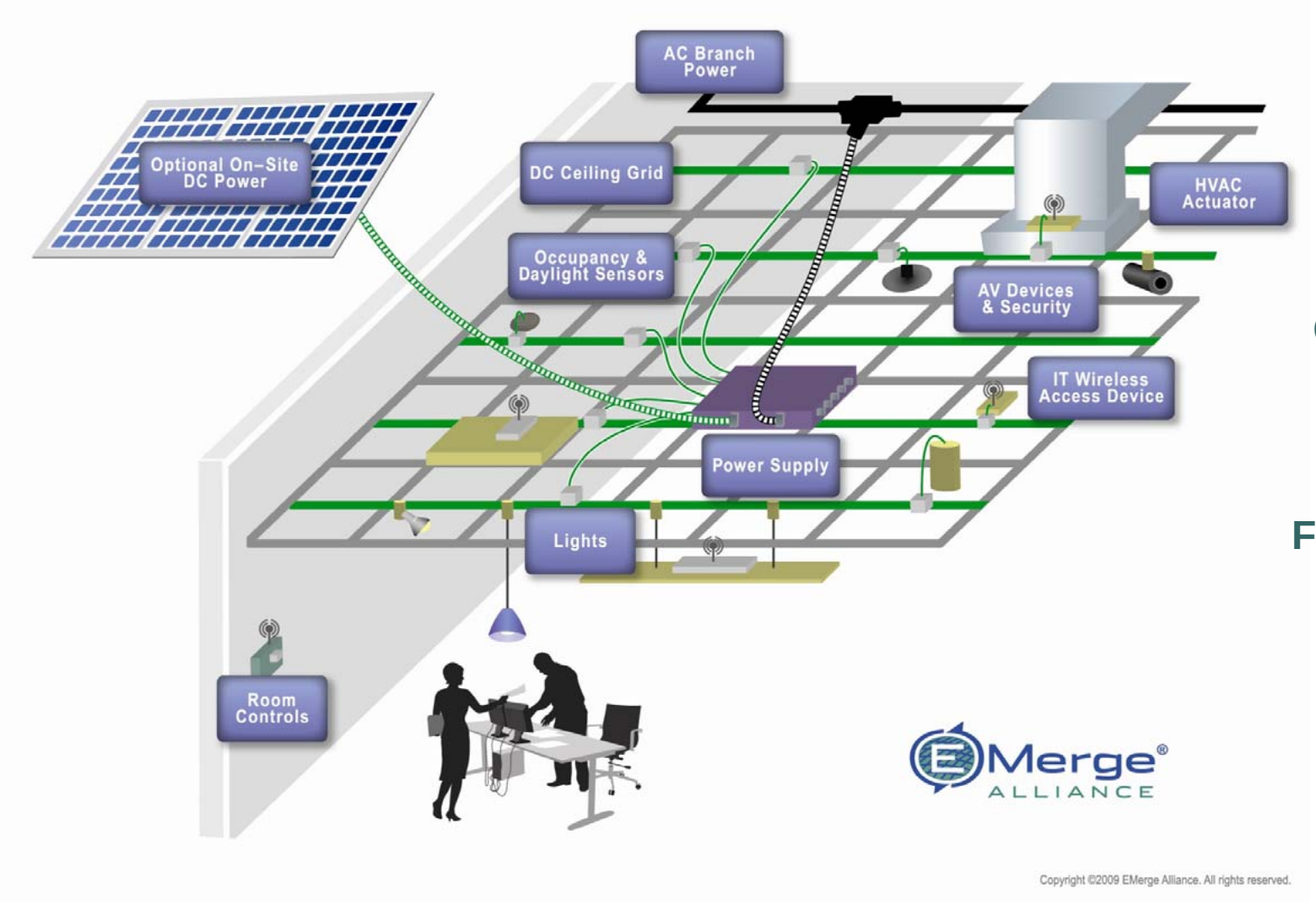
Working from the Top-Down

Applies Well to Renovation and New Builds



Ceiling

⇩

Walls

⇩

Furniture

⇩

Floors

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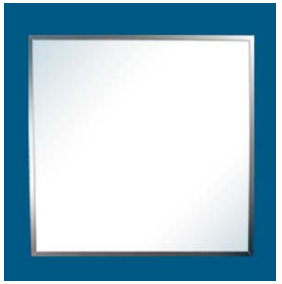
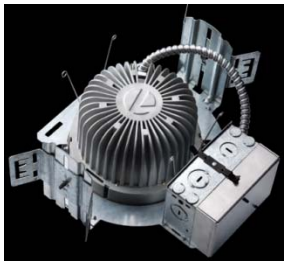
Key Opportunities for Improved Power Efficiency

Solid State Lighting Advantages

- Eliminate high voltage ballasts and relays
- Simplified direct modulation for continuous dimming
- Simple controls for room level devices
- Great platform for primary, task and decorative LED implementations
- Eliminate AC to DC power conversions





Courtesy of Lunera, Lithonia, Finelite and Philips

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Key Opportunities for Improved Power Efficiency

Wireless Controls for Ultimate Flexibility

- Eliminate high voltage switches and relays
- Simplified direct modulation for continuous dimming
- Actuators for room level devices
- Great platform for wireless controls based on new protocols
  - ZigBee, EnOcean
- Eliminate batteries altogether, even in remote locations

Courtesy of EnOcean

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Key Opportunities for Improved Power Efficiency

Alternate Energy Really Starts to Make Sense

- Integrate Solar, Wind, Fuel Cell and more on a common distribution bus
- Simplified direct use of dc power generated in its native form
- 380VDC general distribution bus (includes data/telecom center)
- Safe 24VDC at the user's plug and play level
- Eliminate multiple DC to AC and AC to DC power conversion losses

Courtesy of Bloom, & SunPower Systems

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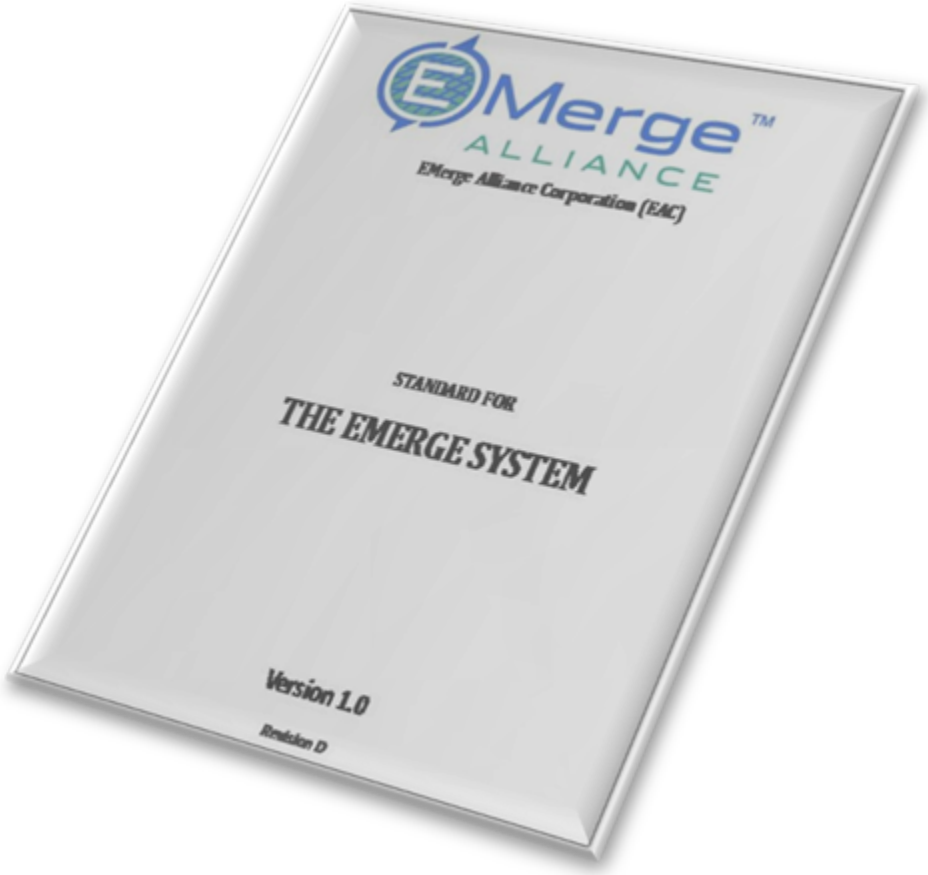
The 1st EMerge Alliance Standard

Available to Alliance Members



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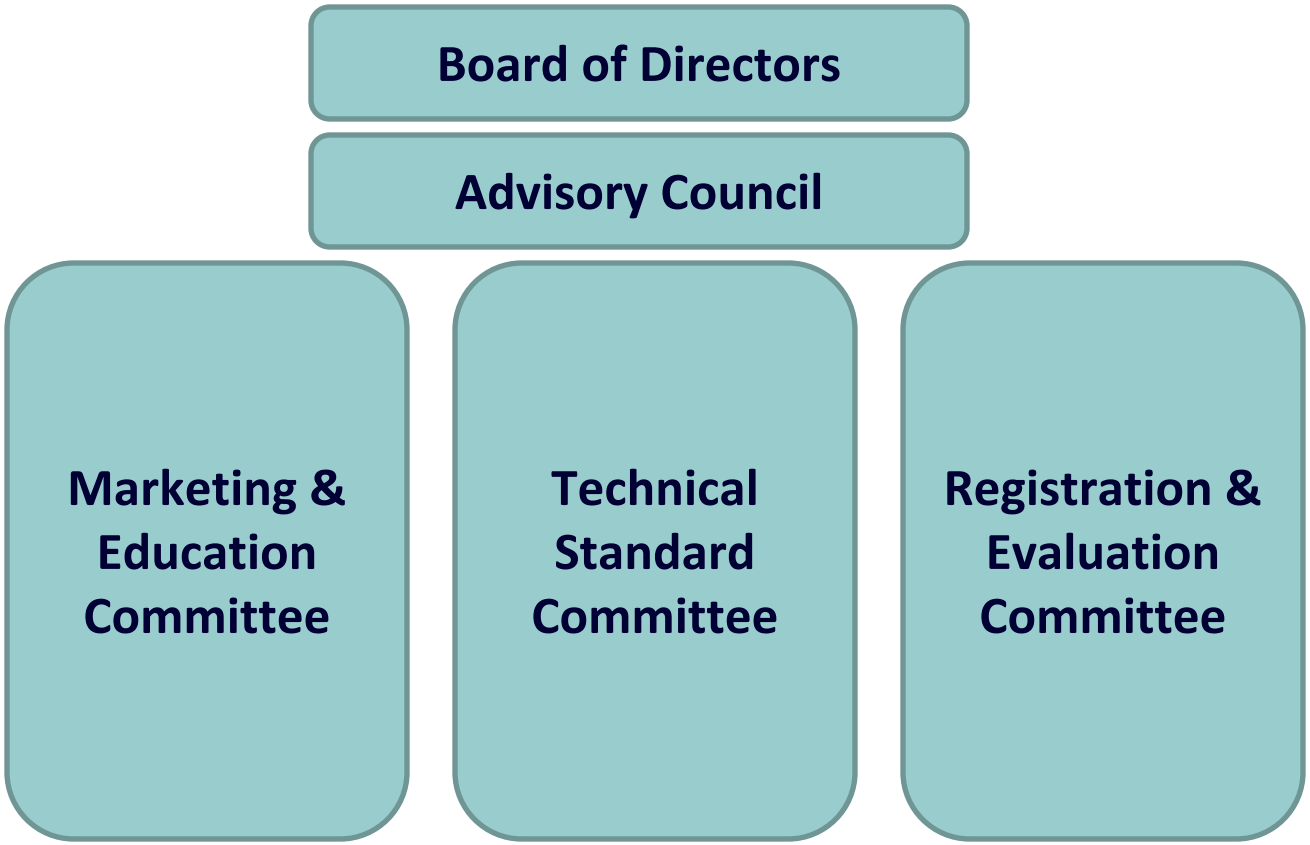
Who is the EMerge Alliance?

- **Introduction of Leaders here today**



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Who is the EMerge Alliance?

- **Six Levels of Membership**
  - **Governing**
  - **Participating**
  - **General**
  - **Supporting**
  - **Liaison**
  - **Advisory Council**

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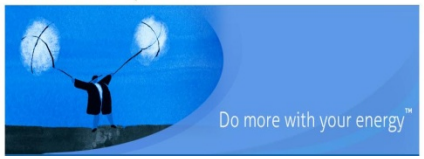
Governing Members

Armstrong CEILING SYSTEMS

Johnson Controls

Nextek Power Systems



OSRAM SYLVANIA

WAVE
WORTHINGTON ARMSTRONG VENTURE

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Participating Members

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General Members

- Configura, Inc.
- Electri-Cable Assemblies
- Kanepi Innovations
- Steelcase Inc.
- Universal Lighting Technologies

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Supporting Members

- 3am Systems, Ltd.
- ANL Lighting LLC
- APEX Consulting
- Brinjac Engineering
- Clean Technology Commercialization
- Delta Products Corp.
- Donnelly Kerley Builders, Inc.
- Eden Park Illumination
- Emeral Tech
- Energy Solutions Intl, Inc.
- Good Energies
- Integrated Design Associates, Inc.
- JB Electrical Design, PC
- Los Angeles Community College District
- Lucifer Lighting Company
- MCV Technologies, Inc.
- Metropolitan Lifelong Learning Center LLC
- OneSource Building Technologies, Inc.
- Paladino and Company
- PICA Interconnect Solutions
- Sensor Switch, Inc.
- Standard Solar, Inc.
- Webcor Builders

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Liaison Members

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Advisory Council

- Darnell Group
  Jeff Shepard, President
- Naomi Miller Lighting Design
  Naomi Miller, Principal
- Los Angeles Community College District
  Larry Eisenberg, Facilities Planning & Development Director
- Paladino & Company
  Tom Paladino
- The PNC Financial Services Group, Inc.
  Gary Saulson, Director of Corporate Real Estate
- Southern California Edison
  Alok Singh, Manager
- Turner Construction
  Ben Kaplan, Vice President/General Management
- University of California
  Karl Johnson, Institute for Energy & Environment

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Why Join Now?

Go Green

- Be first to market with products and services with new and innovative green benefits
- Improve and promote the environmental benefits of your products and services by being part of this unique hybrid power model
- Influence the expansion of the Standard for scalable use of safe, low-voltage DC power in commercial buildings

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Why Join Now?

Stay Competitive

- Key industry leaders are readying products now
- Late market entry reduces opportunities for greater share and product innovation
- Gain early access to the Standard and its specifications for faster registration
- Network with other EMerge members and gain strategic business advantages

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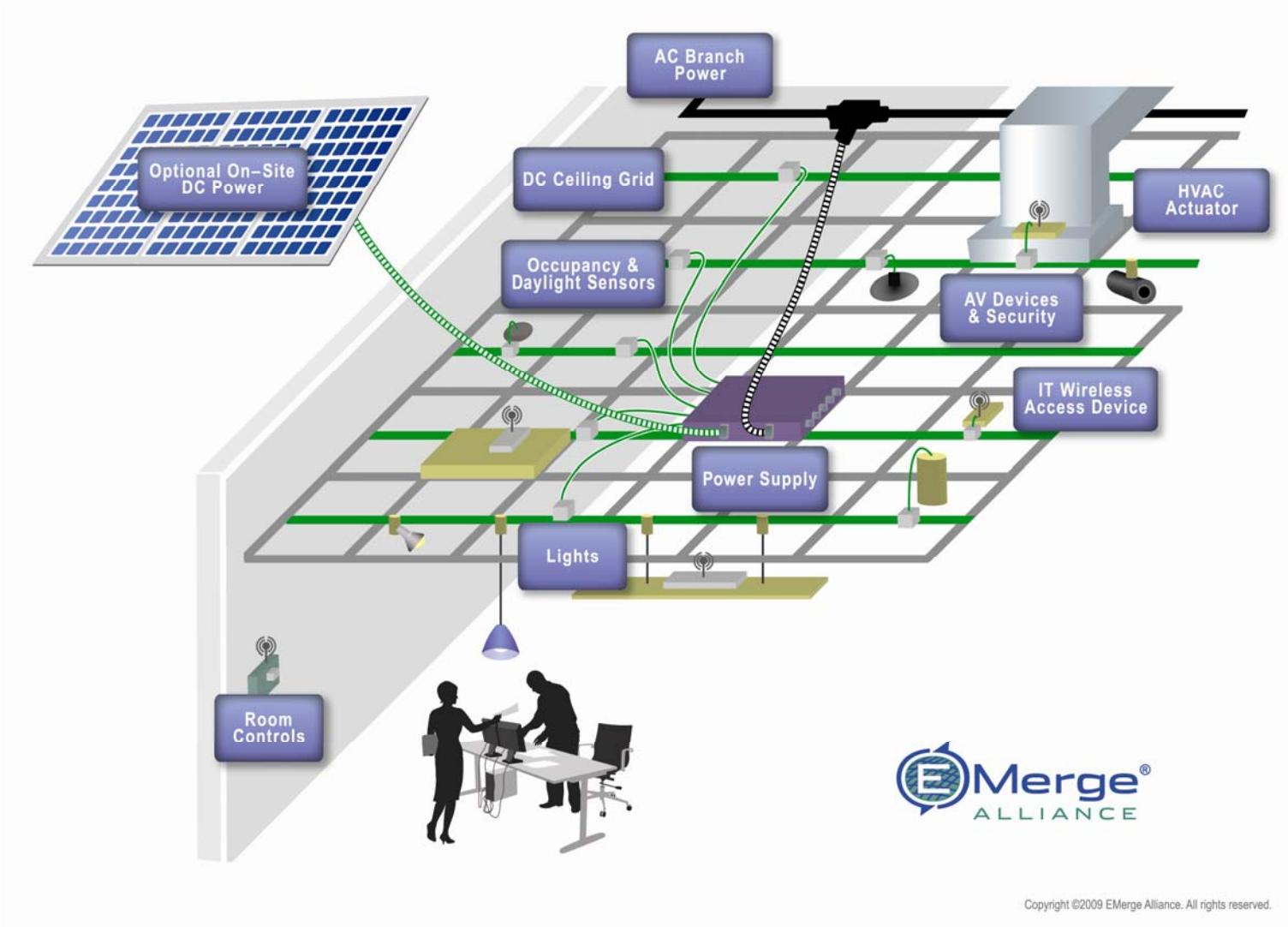
Demonstration Sites



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Current Demonstration Sites

PNC Financial Services HQ
Pittsburgh, PA

lauckgroup Design HQ
Dallas, Texas

US Green Building Council HQ
Washington, DC

Nextek Power NextEnergy Center
Detroit, Michigan

UC San Diego Sustainability Center
San Diego, CA

Southern Cal Edison Customer Center
Irwindale, CA

Armstrong World Ind. Innovation Center
Lancaster, PA

Are you involved in one of these projects?

LACCD Trade Tech Campus
Los Angeles, CA

CLTC
UC Davis Campus
Davis, CA

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US Green Building Council Headquarters

- Continuous high light reflectivity acoustical ceilings
- DC multi-channel power servers – utility AC Primary
- Solar supplemental planned for later
- Fluorescent light fixtures – with DC ballasts
- Wired controls, touch-panel interface
- Daylight, occupancy and dimming functions
- LEED Platinum for Commercial Interiors

Architect Rod Letonja of Envision Design:

"The infrastructure is in place for USGBC to add solar... Solar panels will be able power all the lights in the conference rooms with DC energy distributed through the ceiling grid."

"Smart Net-Zero Energy Ceiling" in place – Case Study / Public Demo in Washington DC

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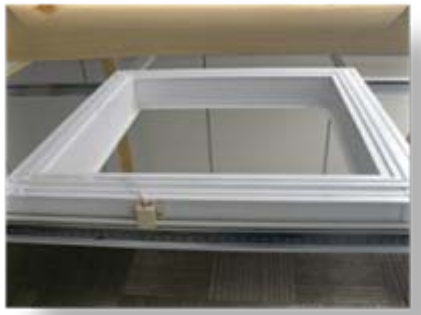
lauckgroup

- Interior architecture firm with sustainability focus
- Continuous high light reflectivity acoustical ceilings
- DC multi-channel power server – utility AC Primary
- Recessed LED light fixtures – driven by 24VDC
- Wired on/off wall controls and occupancy sensors

LED lighting in Dallas, TX

Brigette Preston, Managing Principal, lauckgroup:

"The lighting has been a huge hit with everyone... We've had all the building management people down to see it…Our design team loves it, too."



"Smart Net-Zero Energy Ceiling" in place – Case Study / Public Demo in Washington DC

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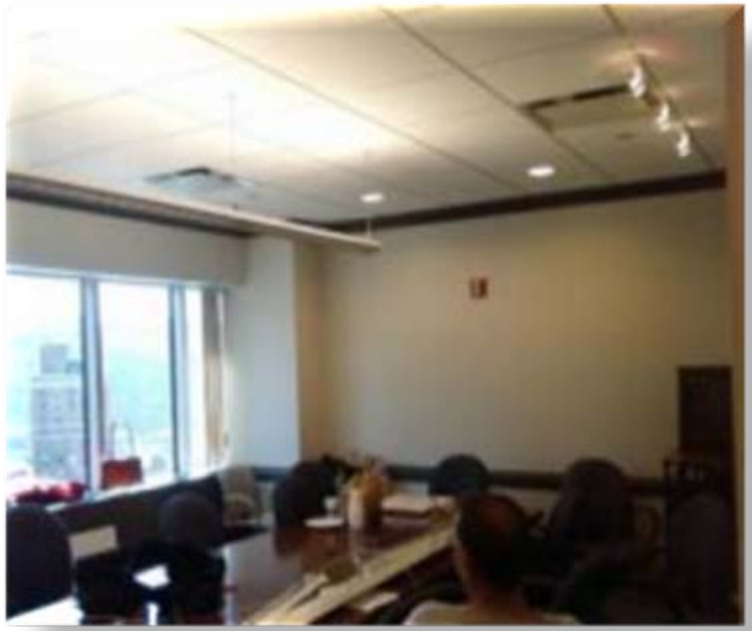
PNC Financial Services

- Downtown Hi-rise commercial office building
- Non-seismic – union contractors installation
- Continuous – high reflectivity acoustical ceiling
- DC multi-channel power servers – utility AC input
- Fluorescent & incandescent lighting fixtures – with DC ballasts
- Wireless (ZigBee) controls - touch panel interface IP addressable
- Daylight, occupancy and dimming functions
- A/V DC powered speakers



PNC LEADING THE WAY

“Smart Ceiling” in place – Case Study / Public Demo in Pittsburgh, PA

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NextEnergy Center - Nextek Power Systems

- One-story mixed use commercial
- Non-seismic – non-union contractors install
- Continuous – High reflectivity acoustical ceiling
- DC multi-channel power servers – utility AC with Solar (PV) planned
- Fluorescent lighting fixtures – with DC ballasts
- Wired bus/branch controls – traditional wall switch interface
- Daylight, occupancy and dimming function

NEXTENERGY

“Smart Ceiling” in place – Case Study / Public Demo in Detroit, MI

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UC San Diego – Sustainability Resource Center

- Mixed use facility on campus – home of UCSD's Sustainability 2.0 initiative- pursuing LEED-CI Platinum certification
- Sophisticated direct DC Microgrid energy systems, generating 80 percent its electricity needs including 1 megawatt of solar
- Continuous – high light reflectivity acoustical ceiling
- DC multi-channel power servers – solar (PV) primary with AC alternate
- Fluorescent lighting fixtures – dimmable DC ballasts
- Wired controls – standard wall switch interfaces
- Daylight, occupancy and dimming functions

UC San Diego
Local Impact, National Influence, Global Reach

"Smart Net Zero Energy Ceiling" in place – Case Study / Public Demo in San Diego, CA

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Southern California Edison

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

- Single story commercial office
- Promotes energy savings programs with commercial customers – studies lighting & control systems
- DC multi-channel power servers – utility AC primary
- Fluorescent lighting fixtures – with DC ballasts
- Daylight, occupancy and dimming functions
- Solar (PV) direct to DC loads planned in next phase

“Smart Net Zero Energy Ceiling” in place – Case Study / Public Demo in Irwindale, CA

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Armstrong World Industries

- Two-story mixed use commercial office/classroom/ factory building
- Non-seismic – non-union contractors installation
- Continuous – high light reflectivity acoustical ceiling
- DC multi-channel power servers – solar (PV) primary power with utility AC back-up
- Fluorescent lighting fixtures – with DC ballasts
- Wired bus/branch controls – touch panel interface
- Daylight, occupancy and dimming function

Armstrong®

"Smart Net Zero Energy Ceiling" in place – Case Study / Public Demo in Lancaster, PA

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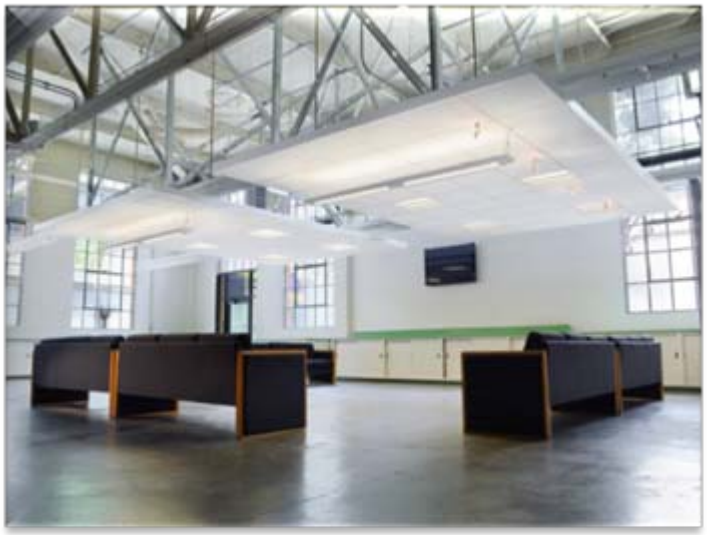
Los Angeles Community College District



- Trade & Technology College – home of architectural, electrical & renewable energy depts.
- Re-purposed single story hi-bay multi-use building
- Clouds of high light reflectivity acoustical ceilings
- DC multi-channel power servers – utility AC primary, solar desired for future
- Fluorescent lighting fixtures – dimmable DC ballasts
- Wired controls – touch panel interface
- Daylight, occupancy and dimming functions

LACCD LOS ANGELES COMMUNITY COLLEGE

LOS ANGELES TRADE-TECH LATTC A Community College

“Smart Net Zero Energy Ceiling” in place – Case Study / Public Demo in Los Angeles, CA

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California Lighting Technology Center

- University Classroom– headquarters/home of CLTC
- Re-purposed single story hi-bay multi-use building
- Continuous high reflectivity acoustical ceilings
- DC multi-channel power servers – utility AC primary, solar desired for future
- Fluorescent lighting fixtures – dimmable DC ballasts
- Wired controls – Switch panel interface
- Daylight, occupancy and dimming functions

CLTC
CALIFORNIA LIGHTING TECHNOLOGY CENTER

UCDAVIS

“Smart Ceiling” in place – Case Study / Public Demo in Davis, CA

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How Can You Get Involved?

- Join the Alliance
- Build products
- Work on standards development
- Participate in demonstration sites
- Promote awareness of standards

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Future Commercial Projects

Join and register products for customers looking to apply the standard

PNC Financial Services HQ
Pittsburgh, PA

lauckgroup Design HQ
Dallas, Texas

US Green Building Council HQ
Washington, DC

Nextek Power NextEnergy Center
Detroit, Michigan

UC San Diego Sustainability Center
San Diego, CA

Your Customers?
Your Specified Projects?

Southern Cal Edison Customer Center
Irwindale, CA

Armstrong World Ind. Innovation Center
Lancaster, PA

LACCD Trade Tech Campus
Los Angeles, CA

CLTC
UC Davis Campus
Davis, CA

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Membership Options

Governing Member: Founding and/or Board Members who provide significant resources to establish and grow the Alliance ***Rights:*** Full voting and membership rights	***Annual Membership Dues: $50,000*** Requires approval by Board of Directors
Participating Member: Key suppliers of products and technology that comply with the Standard ***Rights:*** Limited voting but full participation in committee proceedings, with a role in development of specifications, as well as total access to all specifications; registration and events/promotional activities for products meeting the Standard	***Annual Membership Dues: $10,000***
General Member: Organizations wanting to use member products in buildings and that need a deeper knowledge of the Standard ***Rights:*** Access to completed specification is provided prior to public availability; may attend general meetings; registration of products that meet the Standard	***Annual Membership Dues: $5,000***

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Membership Options

Supporting Member: Architects, engineers, designers, consultants, contractors, owners and other relevant companies or organizations where mutual cooperation can facilitate the use of the Standard ***Rights:*** No voting rights, may attend general meetings as determined by Board; marketing recognition for your support of the Alliance mission	***Annual Membership Dues: $350***

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Membership Marketing Benefits

- **Public Relations & Awareness**
- **Trade Shows & Speaking Events**
- **Promoting Member-Registered Products**
- **Demonstration Tools / Videos**
- **Total Cost of Ownership Analysis**

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EMerge "In the News"

02/18/10 - Green building technologies that could change the game
from Daily Journal of Commerce

03/01/10 - An Innovative Power Platform: A new industry standard allows buildings to adapt to the needs of tomorrow
From Buildings Magazine
by Ben Hartman, CTO, Nextek Power Systems, Inc.

02/02/10 - EMerge and EPRI make DC Power Progress at the 2010 Green Building Power Forum
from Darnell Group

12/07/09 - DC Power Rally Begins
ELEBLOG

03/25/10 - Bringing Power Directly to the People
From Architectural Products Green Issue

02/18/10 - DC-powered ceiling grids? COOL!
from Electrical Business

03/05/10 - Trends in Wireless Controls
Automated Buildings Email Interview - Jim Sinopoli, Ken Sinclair & Amara Rozgus

03/22/10 - Let's Talk AC/DC (the currents, not the band)
From The Huffington Post

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Talking about DC

DC – Is It The New AC?

Author: David Palmer-Steven, Panduit

Are we about to witness the decline of AC Power distribution? *Two years ago, not many people read the press release that accompanied the launch of the Airbus 380. If you'd been one of them, you would have learned how they saved deploying a .75 ton power generator on board because of the decision to use Organic Light Emitting Diodes (OLED) technology. They also saved 7 tons of mains power cables.*

OLED technology is set to change the dynamics of provisioning power services in office buildings of the future because it is a low power DC voltage driven technology that does not generate any heat. Buildings of the future will need very little AC mains distribution as they adopt an alternative DC power solution

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We Cover Some Ground…

March 17, 2010 - Los Angeles, CA
IFMA Los Angeles Chapter – Presentation of Hybrid Energy
View Presentation | View Photo Gallery.

February 25, 2010 - Troy, MI
Michigan Solid State Lighting Association

February 15-17, 2010 - San Diego, CA
Darnell's CTO Power Summit

February 10-12, 2010 - Santa Clara, CA
Strategies in Light
View Photo Gallery.

January 25-27, 2010 - Santa Ana, California
Green Building Power Forum
View Presentations.

January 20, 2010 – Dallas, TX
Illuminating Engineering Society

November 15-17, 2009 - Seattle, WA
IES Annual Conference

November 11-13, 2009 - Phoenix, AZ
U.S Green Building Council, Greenbuild Conference and Expo 2009
View Presentation | View Photo Gallery.

October 7-9, 2009 - Orlando, Florida
IFMA World Workplace 2009 Conference and Expo
View Presentation.

September 23, 2009 – Washington D.C.
USGBC Chapter Event - What's New?! What's Green?!
View Presentation.

July 13, 2009 - Irvine, California
2009 CLTC Campus Lighting Retrofit Forum

July 1, 2009 - Davis, California
2009 CLTC Campus Lighting Retrofit Forum

June 15-17, 2009 - Chicago
NEOCON Trade Show
View Photo Gallery.

June 1-3, 2009 - Anaheim, California
First Annual Green Building Power Forum
View Presentation.

14 Events since Lightfair last year

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Upcoming Shows & Presentations

May 24-27, 2010 - Santa Clara, CA

ConnectivityWeek

ConnWeek™

June 20-23, 2010 - Los Angeles

2010 California Higher Education Sustainability Conference

California Higher Education Sustainability Conference 2010
GOLDEN STATE GREEN OPPORTUNITIES

At Los Angeles Trade-Technical College

June 22, 2010 - Dallas

Turner Logistics Tradeshow

Turner ≡ Logistics

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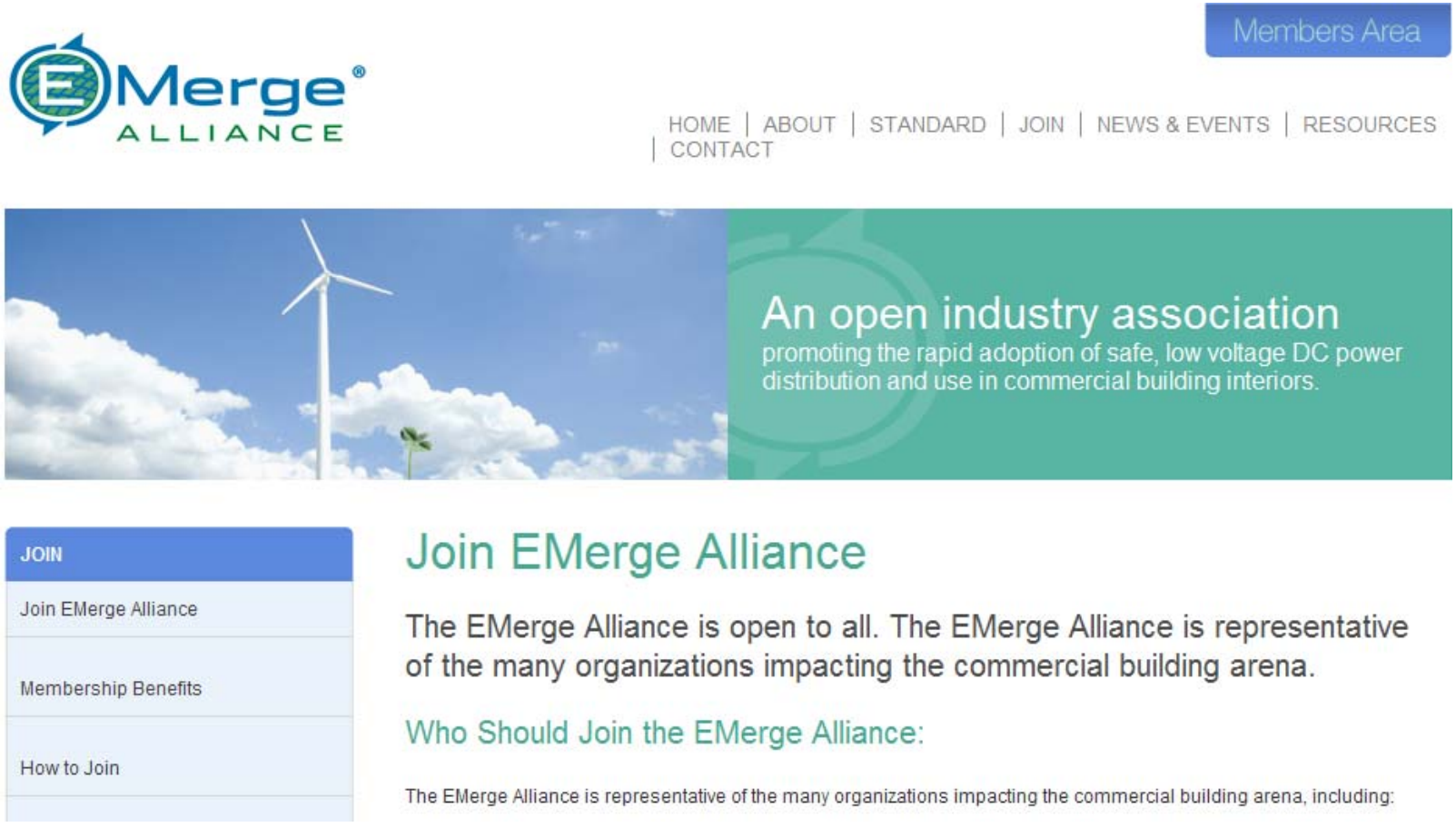
www.emergealliance.org/join



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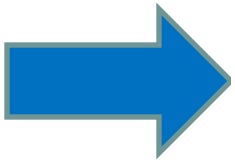
Join Online – Forms Available

How to Join

The EMerge Alliance offers six levels of membership: Governing, Participating, General, Supporting, Liaison and Advisory Council.

Membership fees are for a 12-month period, renewable on the anniversary date of the membership contract.

To Join the Alliance as a Participating Member:



1. Read the EMerge Alliance Articles of Incorporation, Bylaws, Antitrust Guidelines and Intellectual Property Rights.
2. Complete the EMerge Alliance Participating Member Agreement in full.
3. Complete the EMerge Membership Information Profile in full and submit required files.
4. Scan and email the completed forms and files to help@EMergeAlliance.org. You may also fax forms to 1.925.884-8668.
5. Mail originals and payment to address below.

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See Applications on Show Floor Today

- Osram Sylvania
- Tyco Electronics
- Lunera Lighting

One Result from Sylvania booth last year:
Lauck Group Architects, Dallas, TX

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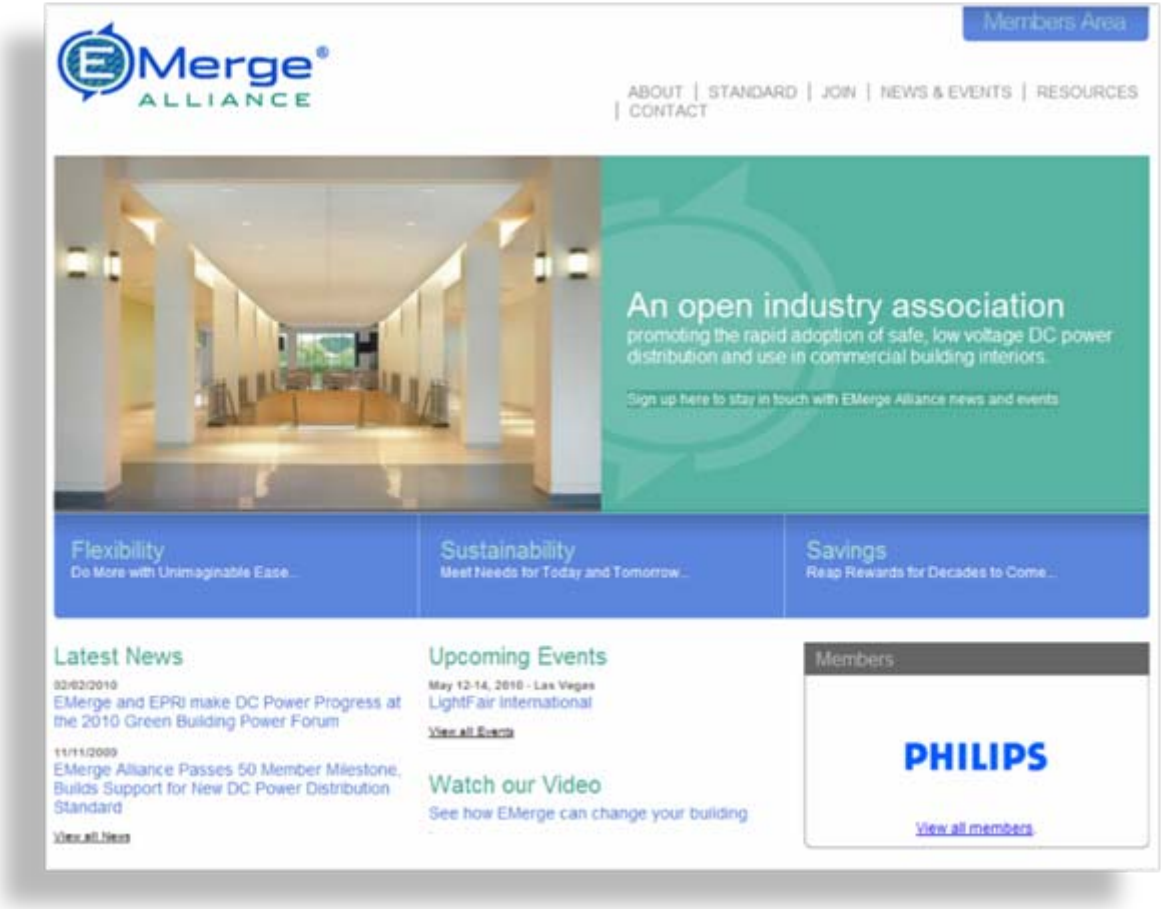
Visit Our Website @ www.emergealliance.org



Alliance FAQs

1. What is the EMerge Alliance?
2. What is the EMerge Alliance Standard?
3. Where is EMerge focused?
4. How can I obtain a copy of the EMerge Alliance Standard?
5. I have questions about the EMerge Alliance Standard, where can I learn more?
6. Who is part of the EMerge Alliance?
7. When can the market expect to see EMerge products and services?
8. Who should join the EMerge Alliance?
9. How can I get involved?
10. How can I stay in touch with EMerge news and information?