Lighting the CSU Classroom Environment

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Overview

- Legacy systems
- New Approach
- Case In Point
- CSU Goals
Legacy Systems

- Wide variety
  - Fixtures
  - Controls (or lack thereof)

- Light Quality
  - Fixture Performance
  - Uniformity – hot spots
  - Scene Control
Legacy Systems
New Implementation Approach

• New Construction
  – T24 2008
  – Design with big picture in mind
    • Building orientation
    • Daylighting
    • Building users/activities

• Retrofit/Renovation
  – Improve light use and quality
  – Ease of implementation
  – Campus standards
  – Maintenance
New Implementation Approach

• Challenges
  – Ensure high quality/performance
  – Cost (equipment and labor)
  – Adoption

• Opportunities
  – Engage Lighting designers, ET,ESCOs
  – Performance specifications (update campus standards)
  – Clear communication amongst stakeholders
  – Strategic Procurement
  – Proper Training
Case In Point

- Cal Poly SLO
  - Conference Room Challenges
    - Low Ceiling
    - Hard Ceiling
    - Rewiring
    - Constant Use
  - Opportunities/Solutions
    - Specialized Fixture
    - Wire Molding
    - Installation then Demo
    - 50% savings - fixture swap
    - 20% savings- controls
Case In Point

• Cal Poly SLO
  – Science Classroom Challenges
    • Asbestos
    • Sloped ceiling
    • Hard tile ceiling
  – Opportunities/Solutions
    • Wire molding
    • Reuse hanging points/hardware
    • Clean it up, wipe it down
    • Educate users
Case In Point

- SFSU
  - ICLS Demonstration
    - 60%+ savings
  - Campus standards update
    - 80 CRI + 4100K T8
    - Energy Saver
    - Easy Scene Controls
    - A/V integration
  - ESCO project design/development
    - M&V - IGA
    - Engage CLTC & Utility ET
Case In Point

• SFSU
  – Campus Responses
    • Better uniformity
    • Easier control
    • Manual daylighting
    • Easier maintenance
  – Lessons
    • Training – Learning Curve
      – 2 people, 4 days
      – 2 people, 2-3 days
    • Academic Dept Coordination
    • User education – overcome behavioral inertia
    • Demonstration & Education lead to additional retrofits
CSU Goals

• The Potential
  – Current
    – 6.5M ft²
    – ~23M kWh/yr
  – Savings
    – ~10M kWh
    – ~3-4 MW
  – “Shovel Ready”
    – Short Plan/Design Phase
    – Trained Contractors
    – Short work windows

• From Here to There
  – Best Practice Lighting Design
  – Life Cycle Cost/Benefit Analysis
  – Utility Partnerships
    • Retrofits – auditing resources
    • Savings by Design

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CSU Goals

- From Here to There
  - Strategic Procurement
    - UC/CSU/CCC
    - Performance specification
    - Warranty & Service Agreements
  - Proper Training
    - Contractor familiarity & Mfr Training/Support
    - Ceiling penetration & asbestos abatement
    - Commissioning
    - Result:
      - Lower cost
      - Quicker return
      - Greater satisfaction
Summary

• Retrofit Potential
• New campus standards
• Strategic procurement
• Proper training

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