



# Green Construction

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# Green Construction



- BCTD Energy Position Statement (2008)
- Energy Infrastructure & Carbon Emission
- LEEDS and Voluntary Green Standards
- ISO Green Construction Materials Std
- Construction OSH Site Certification Model
- Research & Training Needs

# BCTD Energy Statement



- Humans cause of global warming.
- Improve efficiency and conservation
- Modernization of existing power plants first
- Diverse technologies: clean coal, nuclear, renewable
- Improve energy infrastructure & oil refinery capacity
- CO2 cap & trade to reduce emissions by mid-century
- Similar requirements in China & India
- Access US Oil & Gas with environmental restoration
- Green Buildings - green construction & worker training
- Davis Bacon wages on jobs receiving federal incentives

# Power Infrastructure 2007



| <u>Planned Life:</u><br><u>past</u> | <u>Within</u> | <u>Well</u> |
|-------------------------------------|---------------|-------------|
| Generation<br>3.6%                  | 32%           |             |
| Transmission                        | 34%           | 3.6%        |
| Distribution                        | 27%           | 0%          |
| IT/Computer Systems<br>2.2%         | 59%           |             |
| Maintenance Equip.<br>1.1%          | 41%           | 1.9%        |

# Utility Environmental Concerns



- Carbon Emissions
- Water Supply
- Mercury
- NO<sub>x</sub>
- SO<sub>2</sub>
- Nuclear Fuel Disposal
- Particulates
- Water Effluent
- Site Remediations
- Coal Production & Coal Transportation

# USGBC LEEDs & Green Codes



- California 2010 Green Building Code
- Local Energy Efficiency Building Codes
- US Green Building Council- LEED
  - Voluntary Scoring & Audits
  - Focused on Commercial Buildings
  - No specific training required
- Construction Safety Impacts

# Leadership in Energy & Environmental Design (LEED)



- Sustainable Sites (14 pts)
- Water Efficiency (5 pts)
- Energy & Atmosphere (17 pts)
- Materials & Resources (13 pts)
- Indoor Environmental Quality (15 pts)
- Innovation and Design Process (5 pts)

**(Certified: 26-32, Silver: 33-38, Gold: 39-51, Platinum: 52-69)**

# ISO Green Building Materials



- **ISO 21930:2007** *Sustainability in building construction – Environmental declaration of building products*
- Focused on Building Occupant IAQ
- No Construction Worker Health Focus
- What Can be Called “Green“?

# Draft OSH Project Scoring



- Emphasis on pre-project planning
- Design for safety/constructability
- Scheduling & no stacking of subs
- Pre-qualify safer contractors/subs
- Site traffic and materials flow plan
- Workforce sustainability plan (to be added)
- Safety program implementation

# Construction Safety Score



- Project Team (6.6 pts)
- Safety & Health in Contracts (5.5 pts)
- Safety & Health Professionals (8.1 pts)
- Safety Commitment (4.3 pts)
- Safety Planning (27.8 pts)
- Training & Education (15.3 pts)
- Safety Resources (1.8 pts)

# Safety Scoring (2 of 2)



- Drug & Alcohol Program (1.8 pts)
- Accident Investigation & Reporting (3.7)
- Employee Involvement (4.2 pts)
- Safety Inspection (3.8 pts)
- Safety Accountability & Performance Measurement (8 pts)
- Industrial Hygiene Practices (9.1 pts)

**(Certified 54 – 60, Silver 61 – 75, Gold 76-90, Platinum 91 – 100)**

(From Rajendran and Gambatese 2008)

# Research & Training



## Training and Outreach

- Train LEED Auditors with Activist Perspectives
- Participate in Local Development Planning
- Increase Worker/Community Awareness

## Research & Policy Issues

- Expanding Green: Social Responsibility/Sustainability
- Workforce Surge Capacity & Sustainability
- Life-Cycle: Technology, Task & Skill Assessments
- Safety Impacts of CO2 Reduction & Green Building
- Verification/Validation of LEED Process

# Thanks!



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