



# An Introduction to Sustainable Facilities & Infrastructure

*Training Outcomes and Recommendations*

**Dr. Annie R. Pearce**

**Sustainable Facilities & Infrastructure Program**

**Georgia Tech Research Institute**

# Overview



- ◆ SFI training and its role in sustaining CDC
- ◆ Training exercises and outcomes
- ◆ Barriers to implementing sustainability
- ◆ Recommended actions, goals, and objectives for CDC (organization and projects)
- ◆ Discussion on next steps...

# SFI Training and its Role in Sustaining CDC

## ◆ Training:

- Two sessions: November 2000/April 2001
- Approximately 40 participants total
- Two days of training and facilitated exercises

## ◆ Training Objective:

- To provide an introduction to the concept of sustainability as it pertains to the built environment, along with an overview of basic tools and methods for sustainability implementation, assessment and evaluation, and economic analysis

# SFI Training and its Role in Sustaining CDC

- ◆ CDC Motivation for Sustainability:
  - Policy Mandates (primarily Executive Orders)
  - Mission, including health of the US and increased CDC personnel productivity
  - Leadership
  - National strategic opportunity

# SFI Training Topics

A dark blue world map is visible in the background of the slide, showing the continents in a lighter shade of blue.

- ◆ The Context for Sustainable Capital Projects
- ◆ Sustainable Facility Strategies
- ◆ Integrated Strategy Design
- ◆ Barriers to Project Sustainability
- ◆ Decision Making and Selection Strategies
- ◆ The LEED Green Building Rating System
- ◆ Economics of SFI
- ◆ Implementation: Avenues for Change

# Facets of Sustainable Facilities



- ◆ Planning
- ◆ Site Ecosystems and Resource Bases
- ◆ Energy Systems
- ◆ Water and Wastewater
- ◆ Alternative Materials and Systems
- ◆ Indoor Environmental Quality
- ◆ Project Management
- ◆ Specifications
- ◆ Waste Management Tools
- ◆ Universal Waste Rule

# Facilitated Exercises

A dark blue world map is visible in the background of the slide, showing the outlines of continents and countries.

- ◆ Reactions to, benefits of, and risks of implementing sustainability
- ◆ Integrating sustainability into CDC decision making
- ◆ Ease of LEED point implementation in CDC projects

# Facilitated Exercises

- ◆ Barriers to, benefits of, and next steps for implementing top-ranking LEED points
- ◆ CDC recommended action items, benefits, required resources, and target dates
- ◆ Personal commitment input sheets, including benefits, required resources, and target dates

# Implementing Sustainability: Reactions, Benefits, and Risks

- ◆ Optimism: “good for environment”, “right thing to do”, “excellent concept”, “can see the potential benefits”
- ◆ Pessimism: “what benefit at what cost?”, “unpractical and unworkable in the CDC environment”, “hyped too much”, “maybe the government is not the place?”
- ◆ Realism: “will require extra work”, “difficult to implement [due to]the inherent way that government works”, “initially costly”, “need focus from higher-ups”

# Implementing Sustainability: *Reactions, Benefits, and Risks*

- ◆ Economic: “good for bottom line”, “long term cost savings”, “cut costs and improve quality”
- ◆ Social/Mission: “respect from private agencies”, “better stewardship”, “healthier workplace”, “opportunity for leadership”, “politically it is the right thing to do”, “good public relations”, “supports our mission”
- ◆ Environmental: “energy savings”, “waste reduction”, “cleaner environment”, “preserve open space”

# Implementing Sustainability: *Reactions, Benefits, and Risks*

- ◆ Uncertainty: “risk of failure”, “poor quality buildings”, “cost overruns”, “effort turns out to be wasted”
- ◆ Organization: “because of CDC mission, risks are associated”, “resistance from procurement”, “whole chain of command has to have the same perspective”, “bureaucracy”
- ◆ Resources: “cost?”, “not meeting budget and scheduling constraints”, “possible union complications”, “restricted competition”, “availability of a sustainable alternative”

# What is CDC already doing?

- ◆ Energy efficient lighting
- ◆ Low VOC paints, adhesives, and carpets
- ◆ Recycling
- ◆ Ozone-depleting substance elimination
- ◆ Green materials (if on GSA schedule)
- ◆ Energy recovery/night setbacks of HVAC
- ◆ CDC Greening Committee

# Making Sustainable Decisions



- ◆ Material and equipment selection
- ◆ Equipment location and installation sequencing
- ◆ Design standards, review, and evaluation
- ◆ Value engineering/constructability reviews
- ◆ Program, scope, and budget determination
- ◆ Contractor selection

# LEED: Ease of Implementation

A dark blue world map is visible in the background of the slide, showing the continents in a slightly lighter shade of blue.

## ◆ Sustainable Sites:

- Alternative transportation - transit and bike (15)
- Stormwater management (5)
- Reduced site disturbance/open space protection (5)
- Reduced light pollution (4)

## ◆ Water Efficiency:

- Water-efficient landscaping (21)
- Water use reduction (20)

# LEED: Ease of Implementation

A dark blue world map is visible in the background of the slide, showing the continents in a slightly lighter shade of blue.

## ◆ Energy and Atmosphere:

- Best practice commissioning (14)
- Eliminate HCFCs and halons (9)
- Measurement and verification of energy performance (8)
- Optimize energy performance (6)

# LEED: Ease of Implementation

## ◆ Materials and Resources:

- Building reuse (10)
- Use of local/regional materials (7)
- Construction waste management/recycling (4)
- Use of certified sustainably harvested lumber (4)
- Use of recycled content materials (3)

# LEED: Ease of Implementation

## ◆ Indoor Environmental Quality:

- Use of low-emitting materials - paints and coatings (13)
- Use of low-emitting materials - carpets (9)
- Increased ventilation effectiveness (5)
- Use of low-emitting materials - adhesives (4)

# Implementing LEED:

## Barriers, Benefits, and Next Steps

- ◆ Affordability/cost effectiveness/lack of funding/increased cost (21)
- ◆ Availability of new products in necessary quantities (11)
- ◆ Human attitudes/perceptions/management vision (6)
- ◆ Product performance/integrity/regulatory requirements (4)

# Implementing LEED: *Barriers, Benefits, and Next Steps*

- ◆ Reduced resource consumption/enhanced conservation/reduced pollution (18)
- ◆ Increased quality of life (9)
- ◆ Enhanced compliance/appearance of being responsible (8)
- ◆ Reduced costs/enhanced savings (9)
- ◆ Lower energy use/greater energy efficiency (6)
- ◆ Increased functionality of building/longer building life/more efficient operation (4)

# Implementing LEED:

## *Barriers, Benefits, and Next Steps*

- ◆ Further study and research potential solutions (15)
- ◆ Increase awareness of ourselves and customers (10)
- ◆ Propose programs and budgets (4)
- ◆ Get local suppliers on GSA schedule/provide feedback to manufacturers (4)
- ◆ Change design/construction requirements, standards, and contract language (3)
- ◆ Plan for future costs now (3)
- ◆ Start implementation - just do it! (3)

# Barriers to Implementing Sustainability for CDC

- ◆ Perceived economic impacts
- ◆ Individual and/or organizational resistance to change
- ◆ Lack of necessary knowledge
- ◆ Lack of management buy-in
- ◆ Risk of failure
- ◆ Lack of resources to implement sustainability concepts
- ◆ Unclear payoff/lack of incentives or rewards

# CDC Goals and Objectives

- ◆ Establish a common vision and mission for sustainability for CDC capital projects:
  - Draft a vision/mission statement, circulate for review, and revise as necessary
  - Revision vision/mission annually and revise to reflect new knowledge or project experience
  - Relate mission to CDC's overall health-related mission

# CDC Goals and Objectives

- ◆ Establish knowledge base:
  - Sustainable facility reference materials
  - LEED training for selected CDC personnel
  - In-depth training on specific topics
  - Periodic refresher training for all personnel
  - Working group to champion sustainability, with the authority to audit processes/projects and make recommendations for change

# CDC Goals and Objectives

- ◆ Establish awareness of and alignment with sustainability vision/mission among *all* team members:
  - Web site/other materials to describe/explain sustainability vision and mission
  - Lunch n' learn sessions for project team and other CDC personnel
  - Use of sustainability criteria for A/E/C selection
  - Highlight areas in which sustainability is already working

# CDC Goals and Objectives

- ◆ Increase the sustainability of future projects:
  - Require minimum LEED rating
  - One project/year as showcase sustainable facility with interpretive displays/other publicity
  - Shift resources/responsibilities to allow for material and technology research
  - Sustainability design review criteria + responsibility for checking compliance + contractual penalties and rewards



Discussion of Next Steps...