

# LEED EBOM Certification

**1) Overview of USGBC & LEED Rating System**

**2) IFMA Member Questions**

**3) Question: Is My Building a Good Candidate?**



Alexa Stone, LEED AP O+M  
Todd Morgan, LEED AP O+M





U.S. GREEN BUILDING COUNCIL

LEED PLATINUM

2009

# LEED Certification



**Leadership in Energy Environmental Design**

ecoPreserve

**C**omprehensive  
**E**nergy  
**S**ervices, Inc.

Relationship Based • Performance Driven

# Commercial LEED Certified Projects (cumulative)

As of October 2010

7,368



2005

2006

2007

2008

2009

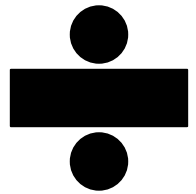
2010

# Commercial LEED Registered Projects

## Total Currently Registered

As of October 2010

# 29,101



**7,368 Certified Buildings**

---

**3.94**



## How does LEED look today?

For every LEED Certified Building there are 3.94 in the process of becoming Certified



ecoPreserve

**C**omprehensive  
**E**nergy  
**S**ervices, Inc.

Relationship Based • Performance Driven

# IFMA Member Questions!



ecoPreserve

Comprehensive  
CES  
Energy  
Services, Inc.

Relationship Based • Performance Driven

# IFMA Question: LEED AP vs LEED Certified



Research Institute  
Certified



OUC HQ Downtown  
LEED Gold Certified

Buildings are  
**LEED**  
Certified

City of Orlando  
Fire Station 1

LEED Silver  
Certified



# LEED Certified?



Products cannot be LEED Certified



People cannot be LEED Certified



LEED Accredited Professional

ecoPreserve

Comprehensive  
**CES** energy  
services, Inc.

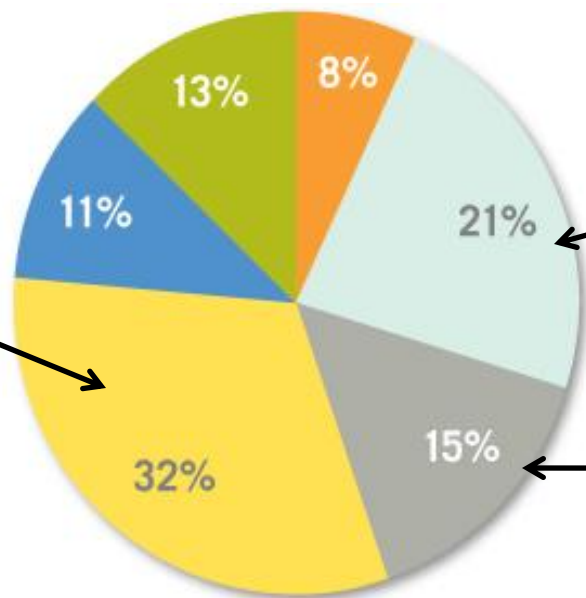
Relationship Based • Performance Driven

# Is my building a good candidate for LEED EBOM?

100 Points -- 5 Areas

|                                     |                  |            |
|-------------------------------------|------------------|------------|
| <b>Energy &amp; Atmosphere</b>      | <b>35 Points</b> | <b>32%</b> |
| <b>Sustainable Sites</b>            | <b>26 Points</b> | <b>21%</b> |
| <b>Indoor Environmental Quality</b> | <b>15 Points</b> | <b>15%</b> |
| <b>Water Efficiency</b>             | <b>14 points</b> | <b>13%</b> |
| <b>Materials &amp; Resources</b>    | <b>10 Points</b> | <b>10%</b> |

Energy Star Score!!  
1-18 points



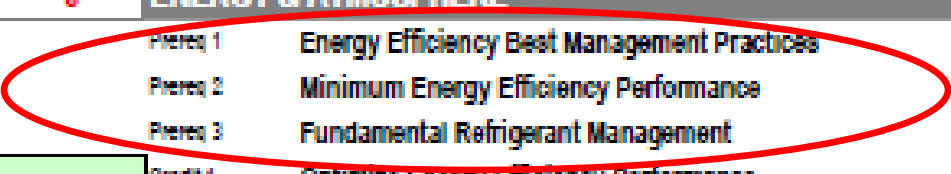
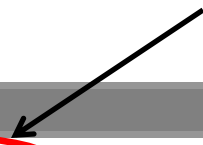
Alternative  
Transportation  
1-15 points  
(10-75%)

Green Cleaning  
1-6 credits

# Official LEED EBOM Rating Checklist

| 0 | 0 | 0 | WATER EFFICIENCY |   | 14 Points |
|---|---|---|------------------|---|-----------|
| Y |   |   | Prereq 1         | Minimum Indoor Plumbing Fixture and Fitting Efficiency    | Required  |
|   |   |   | Credit 1         | Water Performance Measurement                             | 1 to 2    |
|   |   |   | Credit 2         | Additional Indoor Plumbing Fixture and Fitting Efficiency | 1 to 5    |
|   |   |   | Credit 3         | Water Efficient Landscaping                               | 1 to 5    |
|   |   |   | Credit 4         | Cooling Tower Water Management                            | 1 to 2    |

| 0 | 0 | 0 | ENERGY & ATMOSPHERE |  | 35 Points |
|---|---|---|---------------------|--|-----------|
| Y |   |   | Prereq 1            | Energy Efficiency Best Management Practices                  | Required  |
| Y |   |   | Prereq 2            | Minimum Energy Efficiency Performance                        | Required  |
| Y |   |   | Prereq 3            | Fundamental Refrigerant Management                           | Required  |
|   |   |   | Credit 1            | Optimize Energy Efficiency Performance                       | 1 to 18   |
|   |   |   | Credit 2.1          | Existing Building Commissioning - Investigation and Analysis | 2         |
|   |   |   | Credit 2.2          | Existing Building Commissioning - Implementation             | 2         |
|   |   |   | Credit 2.3          | Existing Building Commissioning - Ongoing Commissioning      | 2         |
|   |   |   | Credit 3.1          | Performance Measurement - Building Automation System         | 1         |
|   |   |   | Credit 3.2          | Performance Measurement - System-Level Metering              | 1 to 2    |
|   |   |   | Credit 4            | On-site and Off-site Renewable Energy                        | 1 to 6    |
|   |   |   | Credit 5            | Enhanced Refrigerant Management                              | 1         |
|   |   |   | Credit 6            | Emissions Reduction Reporting                                | 1         |



## LEED EBOM Prerequisite Checklist

| Required | Energy & Atmosphere   |     |
|----------|---|-----|
| eap1     | Does the facility have a building operation plan?                       | Y/N |
| eap1     | Does the facility have a narrative of the major building systems?       | Y/N |
| eap1     | 30 Yes/No Questions   | Y/N |
| eap1     |   | Y/N |
| eap2     |   | Y/N |
| eap2     |   |     |
| eap2     | If yes, what is the score?  |     |
| eap3     | Is the score higher than 69?  |     |
| eap2     | Has the facility identified no & low cost energy savings opportunities? | Y/N |
| Required | Materials & Resources   |     |
| mrp1     | Does t  | Y/N |
| mrp1     | Please  |     |
| mrp1     | - Pa  | Y/N |
| mrp1     | - O   | Y/N |
| mrp1     | - B   | Y/N |
| mrp1/mr4 | - M   | Y/N |
| mrp1     | - Rechargeable Batteries  | Y/N |
| mrp2     | Does the facility have a recycling or re-use program in place?          | Y/N |
| mrp2     | Please identify the items covered in the recycling program:             |     |
| mrp2     | - Paper, plastic, cardboard, metal                                      | Y/N |

30 Yes/No Questions

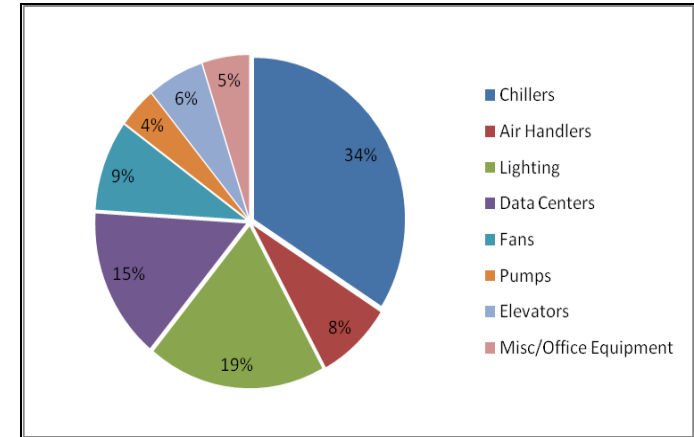
20 + Yes means your building is a great candidate!

# EA Prereq 1 - Energy Efficiency Best Management

- 1) Breakdown you energy use
- 2) Identify low & no cost opportunities
- 3) Show Annual savings



## ASHRAE Level 1 Walk Through



### Low and No Cost Measures

|   | Description | Implementation Date | kWh/Gal Saved | \$/yr saved | Cost | Payback |
|---|-------------|---------------------|---------------|-------------|------|---------|
| 1 |             |                     |               |             |      |         |
| 2 |             |                     |               |             |      |         |
| 3 |             |                     |               |             |      |         |
| 4 |             |                     |               |             |      |         |
| 5 |             |                     |               |             |      |         |

# IFMA Question : How do we sell it to the C-Suite?

- Research your industry
- Create a vision
- State your objectives
- Identify your resources
- Highlight your strategy



Speak their language

# Orange County Convention Center



- Department of Orange County Government
- Staffed by County employees and contractors
- Funded by rental of exhibit space
- \$1B+ in economic impact to Central Florida annually

# If you are already so green...why LEED?



- One megawatt, rooftop mounted, solar array
- Utilization of daylight harvesting & lighting control systems
- Recycling or reuse of 40% of the total waste stream
- 100% reclaimed water for irrigation of 85 acres of landscaping

# OCCC Director of Operations – Why LEED?

- Create a more competitive business environment
- Expand our market share
- Satisfy demand by our clients and guests for a sustainable facility
- 3<sup>rd</sup> party verification of the green technologies already implemented
- More organized focus on our sustainable activities
- We believe it's the right thing to do

LEED is a  
competitive  
requirement

# 14 LEED Certified Convention Centers

|  | City           | State | Rating System | Level     |
|--|----------------|-------|---------------|-----------|
| ARIA Convention Center and Showroom      | Las Vegas      | NV    | LEED NC       | Gold      |
| Colorado Convention Center               | Denver         | CO    | LEED EB O&M   | Certified |
| Dallas Convention Center                 | Dallas         | TX    | LEED EB       | Silver    |
| David L. Lawrence Convention Center      | Pittsburgh     | PA    | LEED NC       | Gold      |
| Kansas Cty Convention Ctr Grand Ballroom | Kansas City    | MO    | LEED NC       | Silver    |
| Los Angeles Convention Center            | Los Angeles    | CA    | LEED EB       | Certified |
| Oregon Convention Center                 | Portland       | OR    | LEED EB       | Silver    |
| Phoenix Convention Center                | Phoenix        | AZ    | LEED NC       | Silver    |
| Raleigh Convention Center                | Raleigh        | NC    | LEED NC       | Silver    |
| Songdo Convention Ctr                    | New Songdo     | Korea | LEED NC       | Certified |
| Spokane Convention Center Expansion      | Spokane        | WA    | LEED NC       | Silver    |
| The Oregon Convention Center             | Portland       | OR    | LEED EB       | Certified |
| Virginia Beach Convention Center         | Virginia Beach | VA    | LEED EB       | Gold      |

| <b>30 LEED Registered Convention Centers</b> | <b>City</b>     | <b>State</b> | <b>System</b>           |
|--|-----------------|--------------|-------------------------|
| Austin Convention Center Dept                | Austin          | TX           | LEED EB 2.0             |
| Broward County Convention Center             | Fort Lauderdale | FL           | LEED EB O&M             |
| Cleveland Medical Mart Convention Center     | Cleveland       | OH           | LEED-NC v2009           |
| David L Lawrence Convention Center           | Pittsburgh      | PA           | LEED-EB:OM v2009        |
| Gaylord National Resort and Convention C     | National Harbor | MD           | LEED-EB:OM v2009        |
| Gaylord Texan Resort and Convention Cent     | Grapevine       | TX           | LEED EB O&M             |
| Greater Columbus Convention Center North     | Columbus        | OH           | LEED-EB:OM v2009        |
| Greater Columbus Convention Center North     | Columbus        | OH           | LEED EB O&M             |
| Guiyang International Convention Center      | Guiyang         |              | LEED NC 2.2             |
| Hawaii Convention Center                     | Honolulu        | HI           | LEED EB O&M             |
| Jacob Javits Convention Center               | New York        | NY           | LEED NC 2.2             |
| Las Cruces Convention Center                 | Las Cruces      | NM           | LEED NC 2.2             |
| Monroeville Convention Center                | Monroeville     | PA           | LEED NC 2.2             |
| Mumbai Conventioni Center                    | Mumbai          |              | LEED-NC v2009           |
| Mumbai Conventioni Center                    | Mumbai          |              | LEED NC 2.2             |
| Old Convention Center Site Redevelopment     | Washington      | DC           | LEED ND 1.0 Pilots Only |
| PASADENA CONVENTION CENTER                   | PASADENA        | CA           | LEED NC 2.1             |
| Palmdale Convention Center                   | Palmdale        | CA           | LEED NC 2.2             |
| Puerto Rico Convention Center Facilities     | San Juan        | PR           | LEED EB 2.0             |
| San Jose Convention Center Expansion         | San Jose        | CA           | LEED NC 2.2             |
| Sanford Convention Center                    | Sanford         | FL           | LEED NC 2.2             |
| SeaGate Convention Centre                    | Toledo          | OH           | LEED EB 2.0             |
| Sharonville Convention Center Expansion      | Cincinnati      | OH           | LEED NC 2.2             |
| Sheraton Puerto Rico Convention Center       | Santurce        | PR           | LEED NC 2.2             |
| St Charles Convention Center                 | St Charles      | MO           | LEED EB 2.0             |
| The Greater Columbus Convention Center       | Columbus        | OH           | LEED EB 2.0             |
| Tucson Hotel & Convention Center             | Tucson          | AZ           | LEED NC 2.2             |
| Utah County Convention Center                | Provo           | UT           | LEED-NC v2009           |
| WA State Convention & Trade Center           | Seattle         | WA           | LEED-EB:OM v2009        |
| Wilmington Convention Center                 | Wilmington      | NC           | LEED NC 2.2             |

# EA Prereq 2: Efficiency Determines a Building's Value

1. Energy Star label for buildings?
2. ENERGY STAR's Portfolio Manager?
3. ENERGY STAR labeled building?



# Why should you get your energy star score?



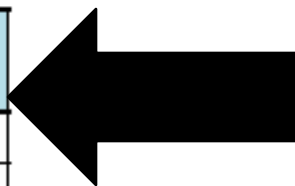
May  
become  
mandatory!

IFMA's ENERGY  
STAR  
Challenge

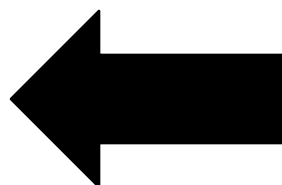
More LEED points  
than any other  
credit!

# EA Credit 1 – Optimize Energy Efficiency (1-18 Points)

| Energy Star | LEED Points  |
|-------------|--------------|
| 71          | 1            |
| 73          | 2            |
| 74          | 3            |
| 75          | 4            |
| 76          | 5            |
| 77          | 6            |
| 78          | 7            |
| 79          | 8            |
| 80          | 9            |
| 81          | 10           |
| 82          | 11           |
| 83          | 12           |
| 85          | 13           |
| 87          | 14           |
| 89          | 15           |
| 91          | 16           |
| 93          | 17           |
| 95          | 18           |
| 97          | 1+ Exemplary |



69 = 0  
LEED  
Points



98 = 19  
LEED  
Points



**Lincoln Plaza**  
**LEED Certified**

ecoPreserve

# Energy & Atmosphere prereq 3 – CFCs

Does equipment use CFC-based refrigerants?

no

Complete  
LEED-Online  
credit form

yes

3<sup>rd</sup> party determines if replacement  
is economically feasible

yes

Develop 5 year  
phase out

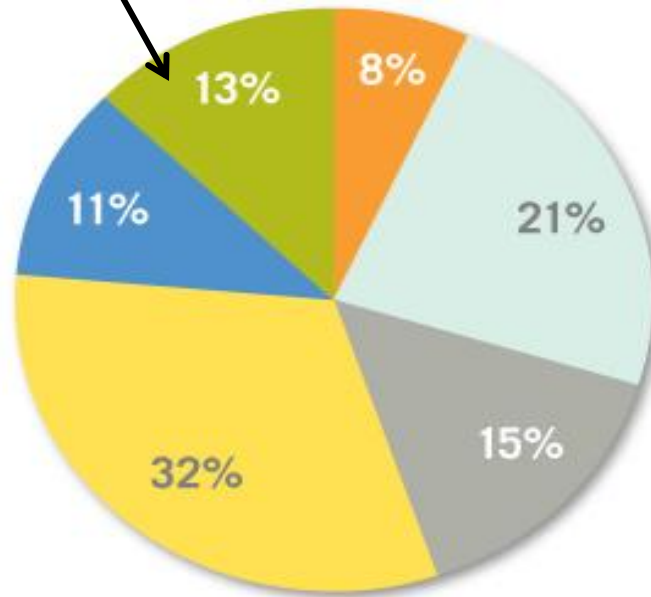
no

Minimize leakage to  
5% or

# Is my building a good candidate for LEED EBOM?

100 Points -- 5 Areas

|                                    |                      |                |
|------------------------------------|----------------------|----------------|
| <del>Energy &amp; Atmosphere</del> | <del>35 Points</del> | <del>32%</del> |
| <del>Sustainable Sites</del>       | <del>26 Points</del> | <del>21%</del> |
| Indoor Environmental Quality       | 15 Points            | 15%            |
| Water Efficiency                   | 14 points            | 13%            |
| Materials & Resources              | 10 Points            | 10%            |



# Materials & Resources Prerequisites

Purchasing



| Prereqs | Materials & Resources   |     |
|---------|---|-----|
| mrp1    | Does the facility have a policy for purchasing green products in place? | Y/N |
| mrp1    | Please identify the items addressed in the purchasing policy:           |     |
| mrp1    | - Paper & office supplies   | Y/N |
|         |   | Y/N |
|         |   | Y/N |
|         |   | Y/N |
|         |   | Y/N |
|         |   | Y/N |
| mrp2    | Does the facility have a recycling or re-use program in place?          | Y/N |
| mrp2    | Please identify the items covered in the recycling program:             |     |
| mrp2    | - Paper, plastic, cardboard, metal                                      | Y/N |
| mrp2    | - Office equipment  | Y/N |
| mrp2    | - Building materials used by staff & contractors                        | Y/N |
| mrp2    | - Mercury containing light bulbs, electronic equipment and batteries    | Y/N |

**Process Innovation:**  
Ongoing practices that  
impact building  
performance

Recycling



Lamp &  
Batteries



# LEED Compliant Sample Policies

## SAMPLE

### Sustainable Purchasing Policy

Adapted from USGBC LEED Reference Guide for O&M 2009

---

## SAMPLE

### Solid Waste Management Policy

Adapted from USGBC LEED Reference Guide for O&M 2009

---

#### Purpose

To reduce the amount of waste and toxin hauled and disposed in landfills or incineration facilities

#### Scope

The policy encompasses all ongoing consumables, durable goods and materials used during facility alterations and additions as described below:

- Ongoing Consumables – including paper, cartridges, glass, plastics, cardboard, food waste, metals and (list others) should be reused, recycled or composted when possible. At least \_\_\_% of the ongoing consumables waste stream will be diverted from landfills and incinerations. Recycling bins must be located (list) to serve (list building occupants served by each location).
- Portable dry-cell batteries, including single use and rechargeable batteries used in radios, phones, cameras, computes and other devices or equipment should be recycled to the maximum extent possible. Recycling bins must be located at (location of recycling bins) in the building (list building occupants).

(Organization Name) has developed and adopted this environmentally preferable purchasing policy to encourage the purchase and use of materials, products, and corporate environmental, social, community and performance goals.

Purchasing must be encouraged or required, if feasible, to ongoing consumables, toner cartridges, binders, batteries and desk accessories. Food and beverage exempt. Purchasing activity for the entire building and associated grounds must be documented.

Facilities must evaluate its needs and make purchases that meet 1 or more of the following:

10% postconsumer and/or 20% pre-consumer material

50% rapidly renewable materials

50% materials harvested or extracted and processed within 500 miles of the

50% Forest Stewardship Council (FSC) certified paper products

rechargeable batteries

Facilities must encourage the purchase and use of sustainable durable goods:

Goods

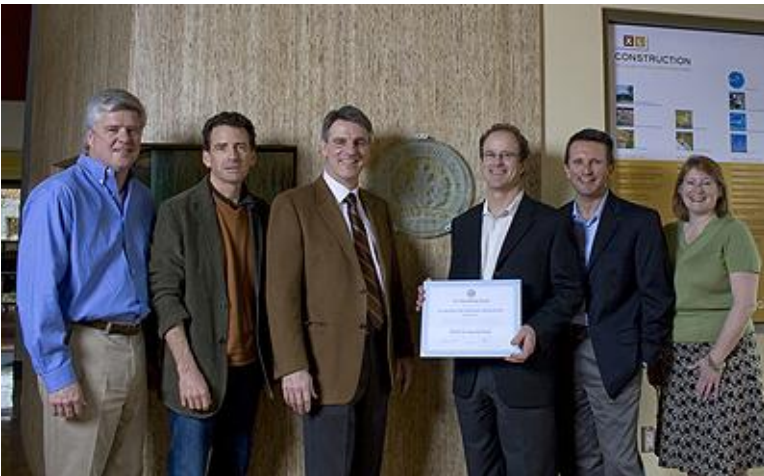
Environmentally sustainable, electric-powered equipment, including office equipment, copiers, external power adaptors, televisions, and other audio visual equipment, ENERGY STAR qualified when feasible

# IFMA: How long does it take to get?

Ask yourself:

1. Do you have access to systems documentation?
2. Do you have funding support for capital improvements?
3. Do you have a dedicated project manager or consultant?
4. How old, efficient, large is your building?

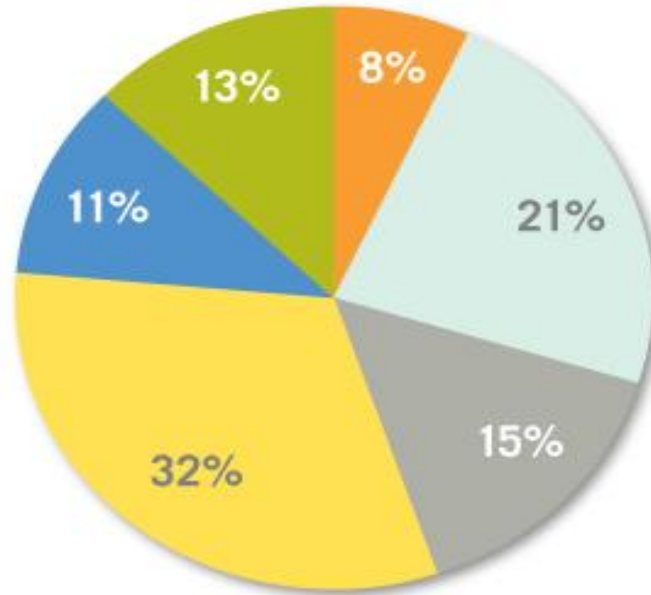
.....typically it takes 1.5 years



# Is my building a good candidate for LEED EBOM?

100 Points -- 5 Areas

|                                      |                      |                |
|--------------------------------------|----------------------|----------------|
| <del>Energy &amp; Atmosphere</del>   | <del>35 Points</del> | <del>32%</del> |
| <del>Sustainable Sites</del>         | <del>26 Points</del> | <del>21%</del> |
| Indoor Environmental Quality         | 15 Points            | 15%            |
| Water Efficiency                     | 14 points            | 13%            |
| <del>Materials &amp; Resources</del> | <del>10 Points</del> | <del>10%</del> |



# IFMA Question: Why should I propose LEED-EB?

## Reduce:

Energy Use – 25% to 50%

Water Use - 40%

Solid Waste – 70%

8-9% Cost Decreases

7.5% building value increases

3.5% occupancy ratio increases

3% rent ratio increases



**Efficiency Determines  
a Building's Value**

# IEQ Prereq 1: Outdoor Air Ventilation

## Option 1:

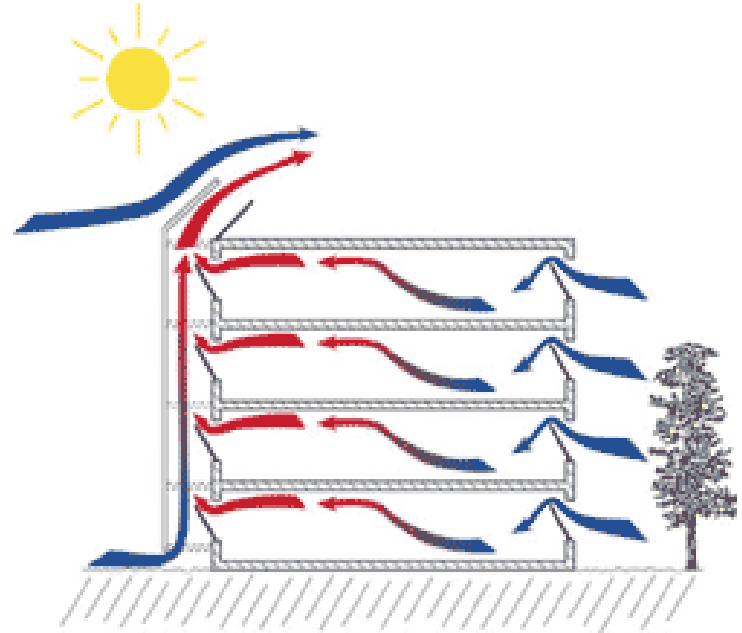
Supply at least O/A ventilation rate required by ASHRAE 62.1-2007

## Option 2:

(If above is infeasible) Supply at least 10 cfm of O/A per person

## Option 3:

Combination of air handling units with Options 1 & 2



# IEQ Prereq2: Indoor Air Quality

## Option 1:

Prohibit smoking in building.

Exterior smoking areas min 25 ft  
from entries

## Option 2:

Designated indoor smoking rooms  
with negative pressure



## Green cleaning policy:

- SOPs
- Sustainable products
- Equipment
- Chemical handling and storage
- Staff training



# Water Efficiency Prereq 1: Plumbing Fixture Efficiency

Water use to equal to or below the LEED baseline:

- ❖ 1994 or later –120% of UPC / IPC 2006
- ❖ before 1994 –160% of UPC / IPC 2006

Policy requiring economic assessment of fixtures for future plumbing renovations



# Take the LEED EBOM Self Assessment

| LEED EBOM Prerequisite Checklist |  |     |
|----------------------------------|--|-----|
| Required                         | Energy & Atmosphere  |     |
| eap1                             | Does the facility have a building operation plan?  | Y/N |
| eap1                             | Does the facility have a narrative of the major building systems?  | Y/N |
| eap1                             | Does the facility have a sequence of operations?   | Y/N |
| eap1                             | Does the facility have a preventative maintenance plan?  | Y/N |
| eap2                             | Has the facility benchmarked through Energy Star's Portfolio Manager?  | Y/N |
| eap2                             | If yes, what is the score?   |     |
| eap3                             | Is the score higher than 69?   |     |
| eap2                             | Has the facility identified no & low   |     |
| Required                         | Materials & Resources  |     |
| mrp1                             | Does the facility have a policy for  |     |
| mrp1                             | Please identify the items addressed  |     |
| mrp1                             | - Paper & office supplies  |     |
| mrp1                             | - Office equipment: copiers, co  |     |
| mrp1                             | - Building materials used by sta   |     |
| mrp1/mr4                         | - Mercury content of light bulb  |     |
| mrp1                             | - Rechargeable Batteries   |     |
| mrp2                             | Does the facility have a recycling c   |     |
| mrp2                             | Please identify the items covered  |     |
| mrp2                             | - Paper, plastic, cardboard, met   |     |
| mrp2                             | - Office equipment   |     |
| mrp2                             | - Building materials used by sta   |     |
| Required                         | Water Efficiency   |     |
| wep1                             | Does the facility have water meters that provide monthly data on total water usage?  | Y/N |
| we2                              | Are the toilets $\leq 1.6$ gpf & urinals $\leq 1$ gpf ?  |     |
| we2                              | Are the public lavatory faucets and aerators $\leq .5$ gpm ( at 80 pounds per sq inch)?  |     |
| we2                              | Are public metering lavatory faucets $\approx .25$ gallons per metering cycle?   |     |
| we2                              | Are kitchen sink faucets $\geq 2.20$ ?   |     |
| we3                              | Does the facility use reclaimed water for irrigation?  |     |
| Required                         | Indoor Air Quality   |     |
| ieqp1                            | Are AHUs delivery flows compliant with ASHRAE 62.1-2007?   | Y/N |
| ieqp1                            | If not to above, can you modify the system to supply $\geq 10$ cfm/person outdoor air under normal operation?                      | Y/N |
| ieqp2                            | Is there a policy that prohibits smoking indoors and within 25 feet of building entrance, outdoor air intake and operable windows? | Y/N |
| ieqp3                            | Does the facility have a green cleaning policy in place for staff and contractors?   | Y/N |
| ieqp3                            | Does the facility use cleaning products that meet the requirements of GreenSeal or EPA?  | Y/N |
| ieq2.2                           | Do at least 50% of occupants have access to a light switch and task lighting?  | Y/N |

# Contact Information



Alexa Stone, LEED AP O+M

[alexa@ecopreserve.net](mailto:alexa@ecopreserve.net)

[www.ecopreserve.net](http://www.ecopreserve.net)

Tel 407-385-8901

Todd Morgan, LEED AP O+M

[tmorgan@cesmechanical.com](mailto:tmorgan@cesmechanical.com)

[www.cesmechanical.com](http://www.cesmechanical.com)

Tel 407-466-3778

ecoPreserve