



2009 NAA **Green** Conference & Exposition

April 28-29, 2009 • Phoenix Convention Center • Phoenix, Arizona

Building Your Green Team – So You Want to Go Green...

BARBARA S. HOLME

DIRECTOR OF GRANTS & CONSERVATION

AIMCO

Apartment Investment and Management Co.

Evolution of AIMCO Energy Team

- Q4 2005 – Hired SVP of Technical services who initiated energy team
- Q1 2006 hired VP for energy and director of Energy Team to develop business cases and implement energy projects
- Q2 07 – Q3 07: hired 5 project managers and contracts administrator

AIMCO ENERGY TEAM

- Implemented over **\$55 million in energy projects** related to redevelopment efforts and stand alone energy projects. To date we have implemented over **321 energy conservation projects.**
- The Energy Team provides technical assistance to all of Aimco properties
- Hires third-party consultants to support detailed design requirements including energy auditors and MEP engineering firms to evaluate specific conservation measures
- Since 2005, experts have completed **231 energy audits.**

Energy Team projects include:

- Support redevelopment projects
- **Lighting retrofits** - common areas and in sometimes in residents units
- **Appliances** upgrades.
- **Central Plant HVAC conservation projects.**
- Upgrade HVAC in the apartments
- Install **low flow** toilets, showerheads, and aerators, **“Smart” Irrigation Controllers,**
- Miscellaneous programs such as **vending misers, trash compactors, window film and synthetic turf.**

GETTING STARTED

- Determine the need, or opportunity within the organization and the goal of the conservation effort:
 - Develop a charter
 - Gain support of upper management

Get buy-in from upper management

- Important that they see the value and will support your efforts
- May need to make presentations to upper management, to onsite personnel, to anyone involved in implementing the plan to explain why the work is necessary and worth doing.

Energy Conservation Program Planning

- Assess company property portfolio
- Determine program goals
- Determine Scope of services needed and resource requirements
- Economic constraints, goals
- Develop RFP for vendors, energy auditors, service providers, equipment suppliers -These are typically new vendors that require a new approach related to purchasing and contracts – performance criteria is a must

PREPARE YOUR BUDGET

- Will work be done in-house or with outside contractors?
- Will you do low-cost, no-cost items such as low flow showerheads, aerators, CFLs?
- What minimum ROI does each project need?
- Will you do only work that lowers owner's bills or will you also do work that lowers residents' bills?
- Include money for marketing

1 BUILDING YOUR GREEN TEAM

- Select a leader who can articulate the value proposition of “going green”.
- Person needs strong business background and expertise in energy conservation, project management, quality systems, and construction.
- Credentials that are relevant in today’s climate include CEM and LEED AP
- Background in engineering can be beneficial.
- Can be an internal or external resource.

2 BUILDING YOUR GREEN TEAM

- Based on budget, hire additional people to implement the plan
 - Need persons experienced in construction contracts, budgets, preparing specs, supervising the work
 - Need person to track contracts, costs, savings, apply for utility rebates

CONTRACTING WITH EXPERTS

- Consider hiring national or regional firm that can do low-cost, quick payback measures.
- For example, we hired national companies to install controllers on irrigation systems and to upgrade lights in common areas.

CHALLENGES

- How to fund the work
- How to profit from the investment
- Estimating savings
- Doing the work in occupied units
- Training onsite staff to maintain the new equipment properly and being sure that knowledge is passed on to new staff



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Building Your Green Team: Owner, Manager, O & M Green Team Skills



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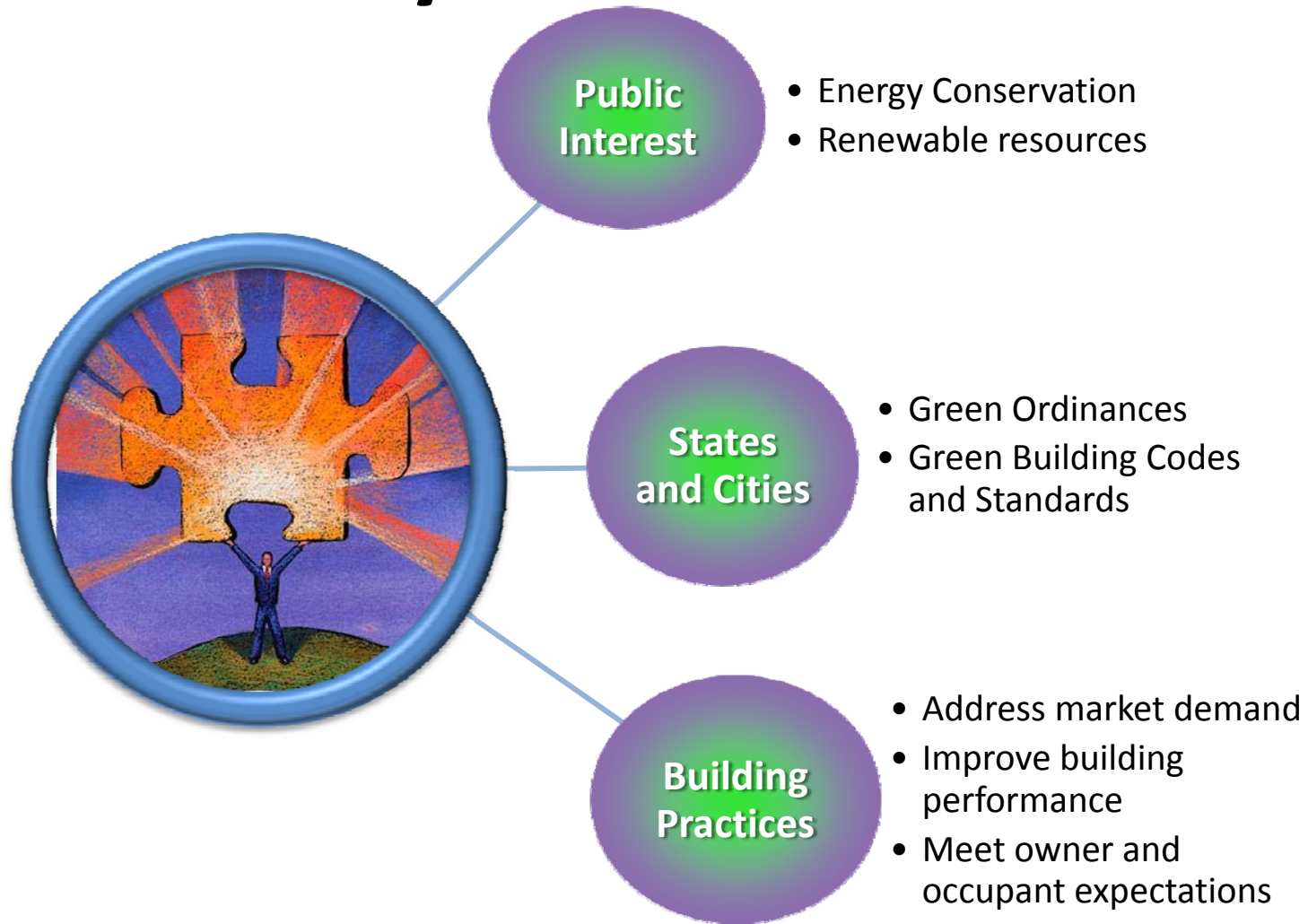
“Green”/ “Sustainable” Building:

The process of building design, construction, operation and maintenance of residential, commercial, institutional structures in an ecological and resource-efficient manner.

Green Building Design Objectives

- Protect occupant health and well being;
- Improve occupant comfort and productivity;
- Utilize energy, water, and material resources effectively and efficiently;
- Decrease Building Operation and Maintenance costs
- Reduce/minimize the overall impact to the environment; and,
- Reduce waste production and enhance pollution controls.

Why Build Green?



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Economic Benefits of Green Buildings

- A green building cost and estimated 2% to 7% more up front, but provides significant returns through lower operating and maintenance costs over the life of the building.
- The green building approach applies a project life cycle cost analysis for determining the appropriate up-front expenditure.
- Life Cycle Cost Analysis: An analytical method used to calculate the estimated cost of building design, construction and operation over the useful life of the building.

PERCEIVED ADVANTAGES OF BUILDING GREEN

8-9% decrease in operating costs

7.5% increase in building values

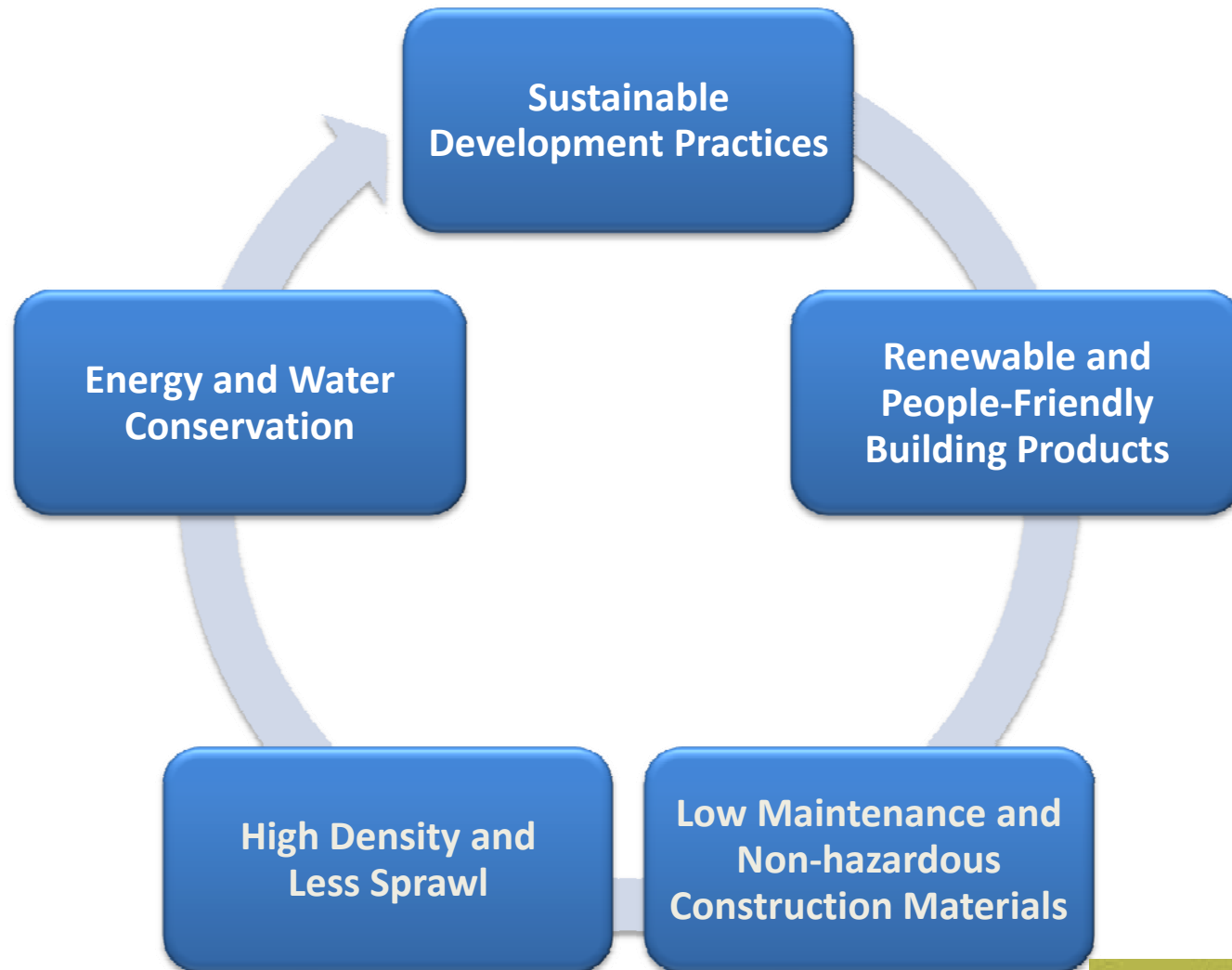
6.6% improvement in ROI

3.5% increase in occupancy

3% rent increase

Source: U.S. Green Building Council (2008)

Green Building Focus



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Green Building Standards for New and Existing Buildings:

Single Family and Low Rise
Residential Buildings and
Developments

- NGBS
- LEED (pending)

Mid & High Rise/
Mixed Use Residential Buildings
and Developments

- NGBS
- LEED New Construction (NC)
- Green Globe

Commercial High Rise
(Retail & Office)

- Green Globe
- LEED NC (Core & Shell, Commercial Interior)

Institutional (Schools,
Healthcare, Multiple
Buildings/Campuses)

- LEED NC
- Green Globe

Laboratories

- LEED NC

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Green Team Skills

- To Achieve and Maintain “Green” Facility Asset Value through the Design-Construct/Acquire-Operate-and Divest process, a new level of “LEADERSHIP” must be exhibited.
- “LEED”ership: The enhanced level of skills, knowledge, and sophistication in facility ownership, management commitment, technical applications, and maintenance to ensure sustainable/green building operation and performance rating objectives.

Green Team Skills



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Overview



- Sustainable Site & Building
- Water Efficiency
- Materials and Resources
- Energy and Atmosphere
- Indoor Environmental Quality (IEQ)
- Innovation in Design
- Training for Owner, Manager, O&M Staff and Occupant

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Sustainable Sites

Intent:

Minimize impact of development on land consumption and ecosystems, enhance health of the surrounding community

Key Skills:

- Site selection
(minimize ecosystem, land, & community impacts)
- Storm water management
(construction and beyond)
- Alternative transportation
(Access to bus, train, bike)
- Building and Resource Innovation (roof top vegetation, minimize light pollution)

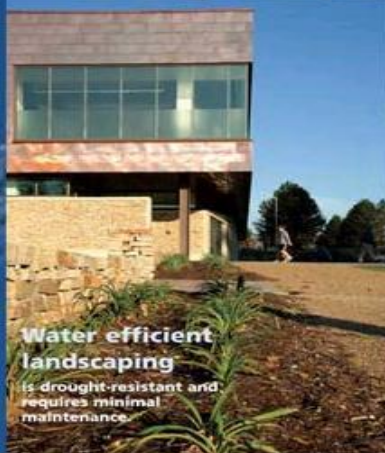
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Water Efficiency

LEED Leadership in Energy & Environmental Design

Water Efficiency

On an annual basis, Americans currently use 3,700 billion gallons per year more than we return to the natural water system. This impacts our long term water supply and associated ecosystems. Water conservation in the Recreation Center has reduced the buildings water use by 30% over a traditional building of this type.



Water efficient landscaping
is drought-resistant and requires minimal maintenance.

The need for an irrigation system has been eliminated completely.



Water use reduction - 37%

Low flow plumbing fixtures:

"Dual-flush" toilets that offer a choice of using 1.1 gallons per flush or 1.6 gallons per flush versus 1.6 gallons at all times.

Intent:

Reduce water usage and waste by occupants and grounds keeping

Key Skills:

- Indoor Plumbing & Fixture Efficiency
- Landscaping & Open Space Restoration
- Erosion Control
- Cooling Tower Water Management
- Water Performance Monitoring



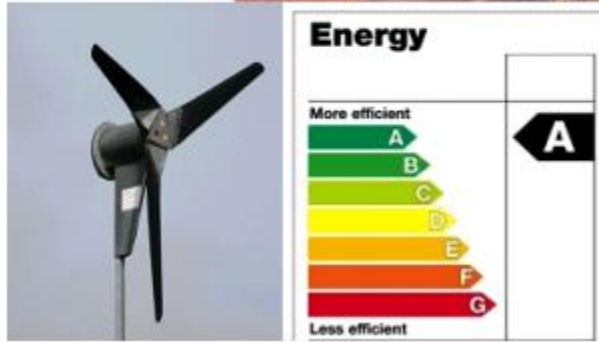
The UMaine Student Recreation and Fitness Center meets or exceeds these LEED qualifications

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Energy & Atmosphere

Intent

- Ensures that installation, calibration and performance of energy systems meet design and operational performance specifications



www.essexrcc.org.uk

Key Skills

- Energy Efficient Building Design & Commissioning
- Energy Standards Compliance (ANSI/ASHRAE/IESNA)
- HVAC & R Systems Operation & Control
- Lighting & Daylight Control
- Hot Water Use
- Renewable Energy Systems Operation
- Systems Monitoring and Verification

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Materials and Resources

Intent:

- Reduce the Volume of Materials Needed for Operations, Alterations and Additions
- Reduce Material Transport Costs & Pollution, Use Regionally Produced Materials
- Use Rapidly Renewable or Recycled Materials (Forest Stewardship Council wood)
- Use Low Volatility Products and Low Maintenance Materials
- Reduce and Manage Waste, Provide for Storage and Use of Recyclables

Key Skills

- Sustainable Purchasing Practices for Consumables and Durable Materials
- Solid Waste Management Program Controls and Verification
- Material Life Cycle Analysis of Structure, Envelope & Interior
- Identification and Redirection of Reusable and Recyclable Materials
- Product Cost Management

Indoor Environmental Quality

Intent:

- Promote Occupant Comfort and Health by Maximizing Indoor Air Quality (IAQ)
- Eliminate, Reduce, and Manage Indoor Pollutants
- Provide Ample Lighting and Thermal Comfort Control
- Ensure HVAC System Control
- Ensure Proper Clean Air Exchange Rates and Use of Outdoor Air
- Use of Low Emitting Materials and Furnishings

Key Skills:

- Knowledge of ASHRAE Std. 62.1-2004- *Ventilation for Acceptable IAQ* and ASHRAE 52.2-1999-Best Management Practice
- Mechanical Systems Operation, Maintenance, and Measurement- Best Management Practice
- Establish Building Non-Smoking Policy and Designated Smoking Areas
- Monitor Occupant Comfort and Ventilation
- Develop and Implement IEQ Management Program to include Verification Testing-Best Management Practice
- Indoor Environmental Quality (IEQ) Monitoring Equipment Calibration and Use-Best management Practice
- Knowledge of Building Flush our Practices for Occupancy and Recommended Maximum Air Contaminant Parameters
- Use of “Green” Certified Products & Materials
- Green Cleaning High Performance Cleaning Program and Custodial Effectiveness Assessment

Stakeholder Training

Intent

- Educate the Owners, Managers, Employees and Occupants on Green and Sustainable Building Practices and Responsibilities
- Application of LEED or NGBS Care and Maintenance Criteria
- Monitor & Verify Performance
- Maintain Established Building Performance Rating & Value

Key Skills

- Effective Communication and Understanding of Policy, Acceptable Practices, Performance Goals and Responsibilities
- Identification of Achievable Benefits
- Stakeholder Manual Preparation and Update
- Performance Monitoring and Verification



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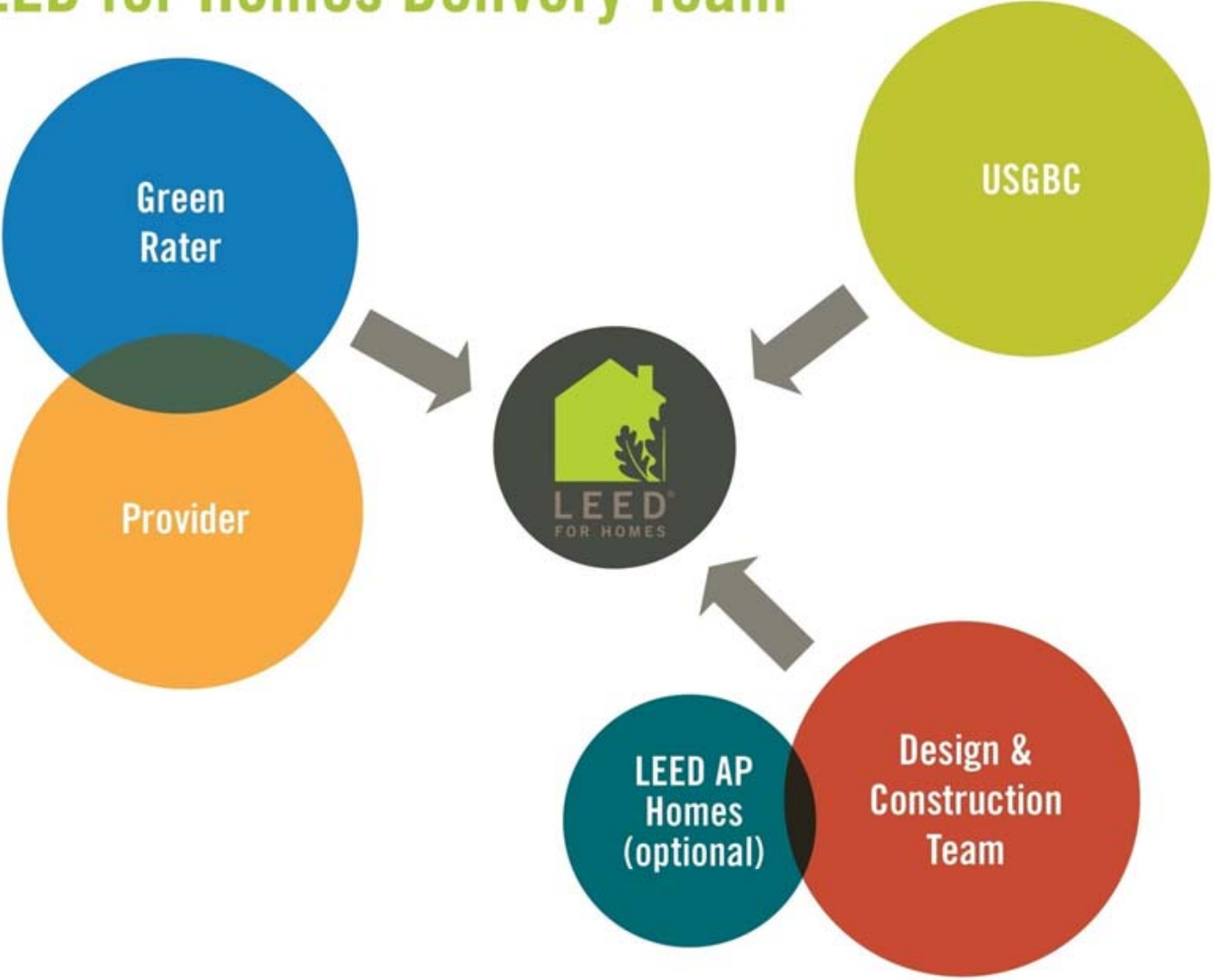
Building Your Green Team For New Construction

Kelsey Mullen

Director of Residential Business Development

U.S. Green Building Council

LEED for Homes Delivery Team



LEED for Homes Delivery Team: USGBC

Roles

- Inform and educate builders
- Train Providers
- Maintain national standards for best practice green homebuilding
- Maintain database of registered projects
- Review and certify the home, maintain database of certified LEED homes
- Provide marketing materials to project team



LEED for Homes Delivery Team: Provider

Roles

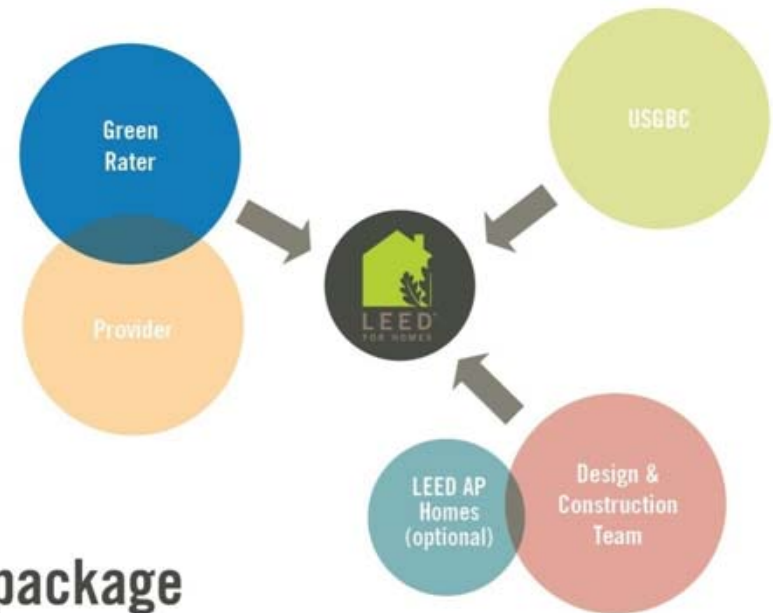
- Delivers the program on behalf of USGBC
- Conducts preliminary rating with project team
- Provides technical support around the LEED for Homes rating system
- Coordinates and provide quality management services over a network of Green Raters
- Submits final certification documents to USGBC



LEED for Homes Delivery Team: Green Rater

Roles

- Provides field verification services
- Should participate in preliminary rating
- Verifies that project submittal package is complete and turns it into Providers
- If Green Rater is not a HERS rater, a HERS rater is needed to perform the energy-related performance testing



LEED for Homes Delivery Team: LEED AP Homes

(Optional)

Roles

- Provides expertise on implementation of LEED for Homes rating system
- Supports project team in identifying and accomplishing appropriate green design and construction strategies



LEED for Homes Delivery Process: Project Phases

Early Planning

Design

Construction/Third Party Verification

Certification

Reflect on Achievements

LEED for Homes Delivery Process

Early Planning

Select a Provider of your choice at: www.usgbc.org/homes
Conduct a Preliminary Rating (with assistance of Provider/Green Rater)
Assemble the Design and Construction team
Register your project at: www.usgbc.org/homes



LEED for Homes Delivery Process

Design

Project team proceeds with Integrative Design Process
Design your home and its green elements, further identifying and validating
the LEED credits you will be pursuing
A LEED AP Homes may be particularly helpful



LEED for Homes Delivery Process

Construction/ Third Party Verification

Ensure LEED measures are incorporated into construction process
Green Rater performs pre-drywall verification
Performance tests are conducted and verified
Green Rater conducts final verification once construction is complete



LEED for Homes Delivery Process

Certification

Green Rater assembles and submits to Provider final Submittal Package (3 documents)

Provider has certification call with USGBC

USGBC reviews the package and certifies the home



LEED for Homes Delivery Process

Reflect on Achievements

Celebrate
Consider lessons learned
Consider successes



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