

LEED-H for Design Professionals Process and Challenges

Once the decision is made to create a LEED home, the challenge is integrating LEED-H into the design process.

Kathleen Reardon, LEED AP
RD Architecture, LLC

Establishing LEED goals

- Identify potential opportunities that might create a direction for design.
- Identify constraints.
- What is the central focus?
- Is there a single main goal, such as energy efficiency or several goals?

Understanding the point system

- Review the point system and understand where the majority of points are, and minimum requirements.
- Energy related points are important.
- Material selections can be challenging.
- Location points for an urban area can give a project a good head start.

Driving factors for LEED goals

- Homeowner's wish list or preferences
 - Building systems
 - Renewable energy
 - Materials, finishes and fixtures
- Site and location
- Budget

Homeowner decisions

- Main Goals for the project will probably be homeowner driven, due to costs involved.
- For example, ICF construction may be an owner choice, contributing to energy efficiency.



Energy Points

- 38 out of 136 points are energy points. Success of a LEED project can be dependent on these points.
- Pay attention to building envelope and air conditioning system.
- Windows, building orientation and overhangs all impact the energy calculation.
- Third party testing will later evaluate the builder's success in creating a good envelope.

How are Energy points calculated?

- Calculated by the LEED rater.
- Can also use the point by point method for an initial estimate.
- Be aware during the design phase how decisions can impact the energy calculations, for example minimize windows on the west side.

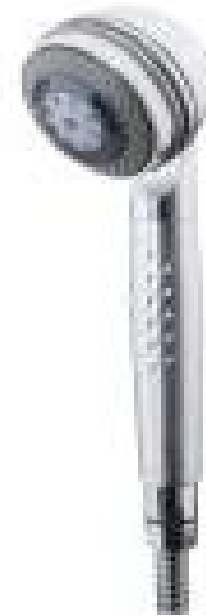
KEEP THE HOUSE SMALL!!

- Larger homes increase the number of points needed.
- For example, a neutral sized 3 bedroom LEED home is 1,900 s.f.



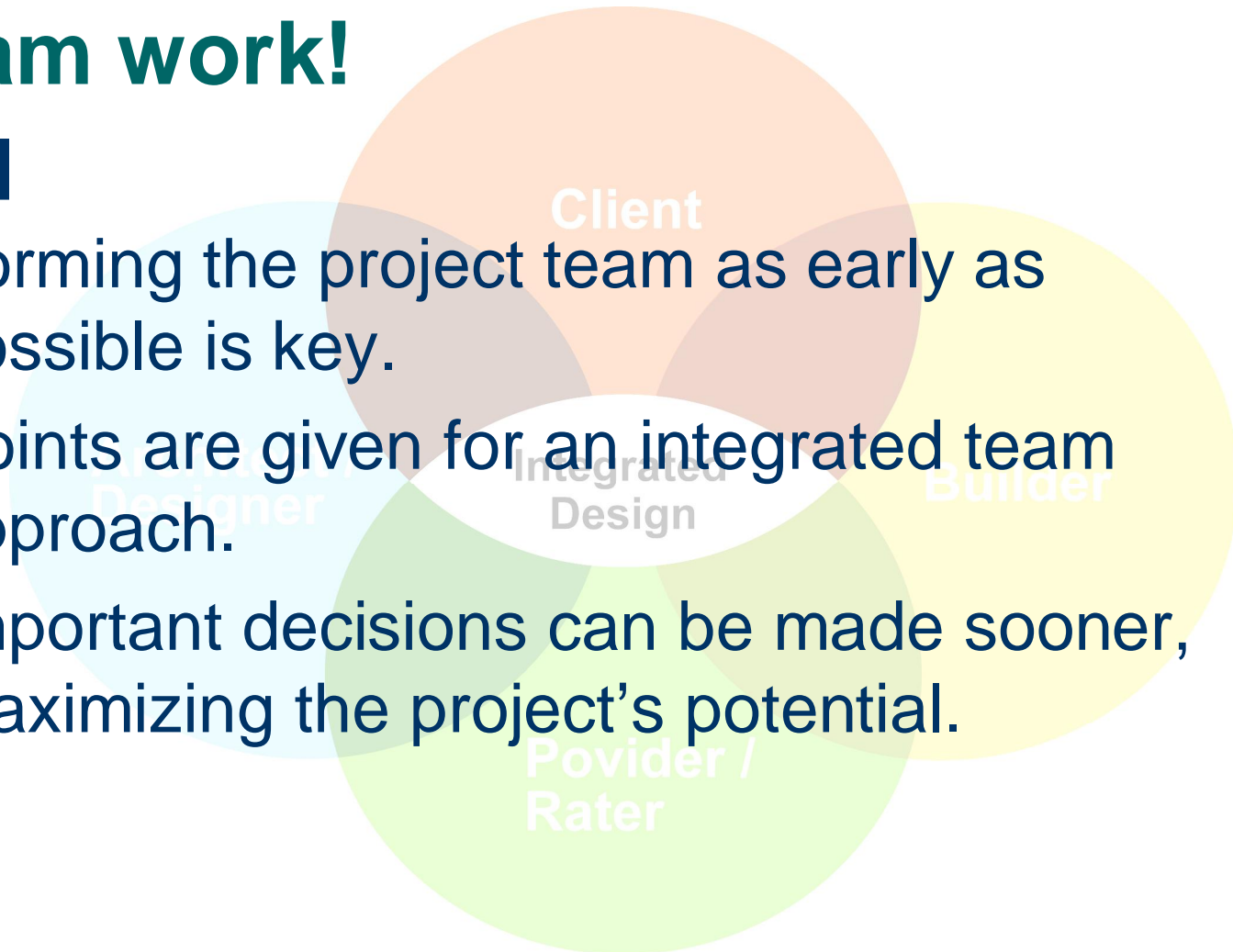
Secondary goals

- Paying attention to secondary goals and other LEED points along the way is important.
 - Water efficiency points, review fixtures
 - Landscaping points
 - Team approach points
 - Durability List



Team work!

- Forming the project team as early as possible is key.
- Points are given for an integrated team approach.
- Important decisions can be made sooner, maximizing the project's potential.



The Project Team

During schematic design, develop the team:

- LEED Rater
- Builder
- Air Conditioning Contractor
- Landscape Professional
- Renewable Energy Contractor
- Other Specialties

Team Members' Time

- Time spent meeting and planning is higher than in some projects but equivalent to some higher end custom homes.
- 100% commitment to the process, and a willingness to make the time investment is needed.

The Designer's Role

- Identifying potential goals
- Client awareness and education
 - Discussing what is feasible.
- Integrating the client's desires and expectations into the process and design
 - Expectations for a LEED project may be higher than that of other residential projects.

Designer's potential role as Coordinator

- As the project proceeds through schematic design, organize the team.
- Charrette meetings
- Identify important issues to discuss and resolve.
- Establishing an initial point goal list.

LEED meeting Agenda with Action Notes
 Design Charrette for Air Conditioning System
 Sample Residence
 November 1, 2007 Michael Strong, Robert Milner, Kathleen Reardon

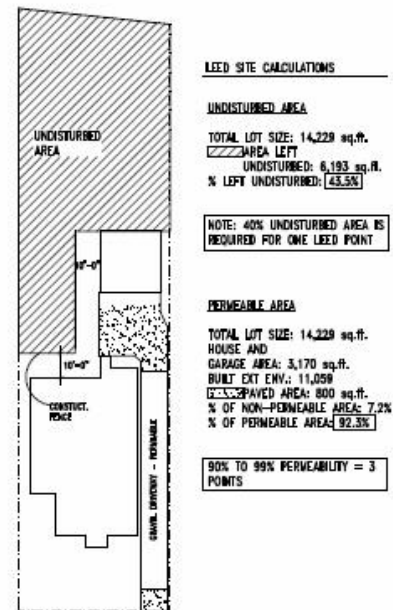
Items in bold have been agreed upon

Review of Project

	Action	
General		
<ul style="list-style-type: none"> • Discuss the overall intent of the project – LEED Certified rating • Review the floor plans and building section/elevation • Review return air chases and equipment locations for maximum efficiency. 	Send revised plan to Robert	KR
	Add supply air for crawl space on plan Determine sizes of chases	KR RM
Energy and Atmosphere		
<ul style="list-style-type: none"> • Review options for energy efficiency (SEER ratings) and the project budget. • Agree on two or three options for energy efficiency and pricing for each option. • System shall be HCFC Free (yes) 	Give a/c budget to Robert	MS
	Robert will price 15 and 21 seer systems with two insulation options	RM
Indoor Environmental Quality		
<ul style="list-style-type: none"> • Moisture control – discuss dehumidification system • Review outdoor air ventilation – with or with out energy recovery? (With energy recovery) • Local Exhaust – timer or humidistat in bathrooms, third party testing. (Timer) • Supply air Dist - review Manual D requirements such as room by room duct design. (yes) • Determine if we will have third party testing for each room (for 2 points) • Determine Merv Filter rating (merv 16) • Discuss sealing off ductwork during construction (yes, and a temp a/c system will be used) 	Agreed to condition/dehumidify crawl space, investigate dehumidification options	RM
	Room by room duct design. Robert will give Kathleen a prelim layout to review	RM
	Get a proposal for third party testing	RM
Additional Notes:		
SEER 15 vs SEER 21 was discussed, and we agreed to price both, and present the energy information for both, so the savings in utility costs could be presented to the owner. David Munnah can hopefully run two scenarios in the energy calculation.		

Design Documentation

- Integrating key information on construction documents
 - Intent of LEED
 - Site Calculations
 - Energy Calculation information
 - Important specifications



The Ronn Residence – LEED pilot

- *How did we achieve a GOLD rating?*
- Team approach, involved homeowner and GreenHaus Builders
- ICF paired with efficient A/C, renewable energy
- Good material choices
- Site Design

✓	Innovation & Design	5.5 / 9
✓	Location & Linkages	9 / 10
✓	Sustainable Site	14 / 21
✓	Water Efficiency	5 / 15
✓	Energy & Atmosphere	27 / 38
✓	Materials & Resources	8 / 14
✓	Indoor Environmental Quality	14 / 20
✓	Awareness & Education	2 / 3
	84.5 out of a possible 130 points	

The Ronn Residence - Energy

- ICF (insulated concrete forms) gives air tight construction.
- Lennox A/C system with 18 SEER
- Sealed attic
- Electric Solar system
- Hot Water Solar system
- Fluorescent lighting
- Energy Star Windows



The Ronn Residence – Indoor Air Quality

- High efficiency air purification.
- No carpet
- No VOC paint
- Vacuum system



Ronn Residence – Water Efficiency

- Dual Flush Toilets
- We did not use low flow faucets or shower heads – these are becoming more readily available.
- Efficient lawn sprinkler system



Ronn Residence - Materials

- Scored well with Materials
 - Metal Roof and siding have recycled steel
 - Bamboo flooring
 - Locally made windows



Ronn Residence - Challenges

- Weighing the decisions:
cost –vs- homeowner’s desires –vs- value for LEED
 - In many instances these three things were in agreement. For example a solar system, although costly, was something the homeowner wanted and contributed to LEED.
 - Other possible choices, such as a gray water system was decided against, too costly, and too much maintenance.

Designing a successful project

- Identify the driving ideas.
- Create a strong team.
- Be familiar with the point system.
- Pick up secondary points as design proceeds.
- Homeowner awareness, expectations and flexibility.
- Don't lose sight of why –
Sustainability means living within our ecological means, not depleting our material and energy resources.