A 1950's residence is renovated to LEED

The Clarke residence in Lincoln, MA

By Jennifer Greene, Principal at JG Interiors, MAID, MBA, ASID member, has a strong interest in sustainable design. Jennifer can be reached at greenejen@yahoo.com.

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55% drought resistant plants [1]

87% construction waste diverted from landfill, by weight [2]

100% Energy Star appliances[3]

Karen Clarke, cochair of the Interior Design department at New England School of Art and Design at Suffolk University, practices what she preaches in sustainable design. In August 2007, she embarked on a Leadership in Energy and Environmental Design For Homes (LEED-H v 1.11 pilot program) renovation of her 10,300 sq., ft. modernist home in Lincoln, MA. The home was built in the 1950's by Henry Hoover, a Harvard-educated architect who followed the Bauhaus modern

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1 See Exhibit 1, p. 6.

2 Waste Diverted from Land fill. Total recycled 17.75 tons /20.26 tons = total diverted concrete, metal, wood, etc. from landfill = 87.6% minimum construction waste diverted from landfill, by weight

3 Engery Star Appliances include Bosch Fridge, Energy Star Miele Dishwasher, Energy Star Washer Epic Maytag & Dryer (The washer and dryer- receive innovation points.)

aesthetic.

Karen knew she wanted to preserve the architecture in an environmentally-friendly and sustainable way. The property envelope, set on a 6-acre parcel abutting conservation land, increased in size for an attached garage, a necessity given the New England winters, and a bonus room above. The large foot-print made the property suspect for certification by an organization that discourages and penalizes bigger homes. Initially Karen was told that she was crazy! Critics aside, was it possible to use LEED-H as a guide and gain certification?

A local LEED for Homes Provider, the Conservation Service Group, acted as the third party auditing body to determine the credits needed for certification. The US Green Building Council (USGBC), the governing body for all "LEED" programs, gives a two-year window for residential "gut/rehabilitation" projects. Karen knew she had her work cut out for her so she put together a team of experts which included an architect, contractor, structural engineer, a mechanical engineer, landscape designer and herself, the homeowner and interior designer. Karen now admits her task at hand "was quite an ambitious process"!.

Getting Started: To LEED or not to LEED?"

A green home uses less energy, water and natural resources, creates less waste and is healthier for the people living inside compared to a standard home. It's as simple as that! What is LEED–H? The LEED Green Building Rating System is a voluntary building certification program defining high-performance green buildings as healthier and more environmentally-responsible structures.

LEED evaluates homes in the following areas: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources and Indoor Environmental Quality. The level of certification a home will be awarded is determined by the number of points the project earns within these credit areas. LEED for Homes is a voluntary initiative to promote the transformation of the mainstream home building industry towards more sustainable practices. LEED-H is targeting the top 25 percent of homes with best practices environmental features.

The LEED-H definition of "green" includes four tiers of performance: Certified, Silver, Gold and Platinum. The main strength of the LEED-H program is the third-party verification. This verification process includes on-site inspections to ensure LEED-H features have been properly installed and performance testing to ensure proper performance.

Here's the LEED for Homes Certification Levels as of November 2008[4]:

Levels	*Point Required*
Certified	*45-59*
Silver	*60-74*
Gold	*75-89*
Platinum	*90-136*

4 HTTP://WWW.GREENLIFESMARTLIFE.COM/LEED.CFM

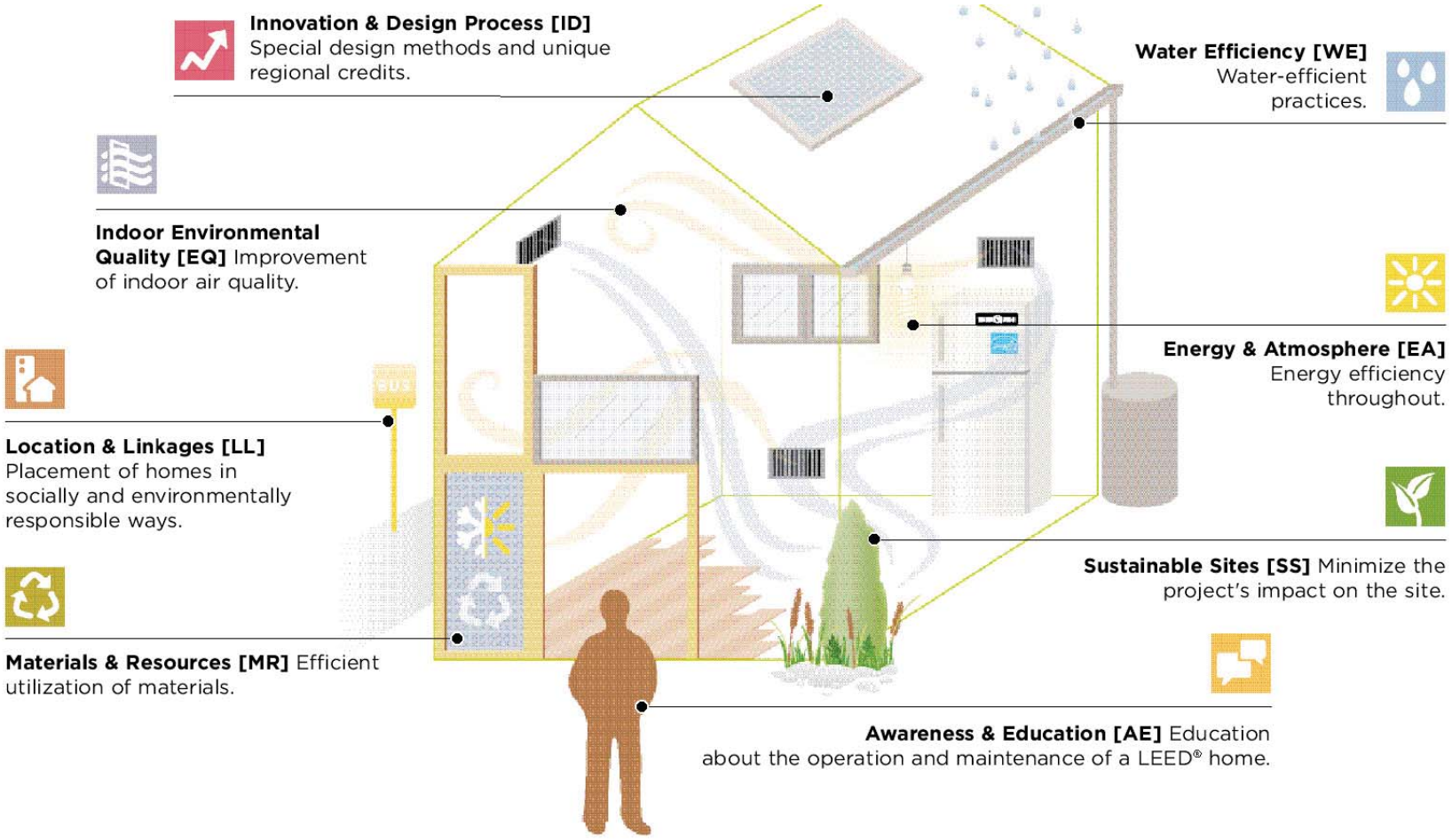

Exhibit 1: Chis Higgins, Sabmagazine (http://www.sabmagazine.com/blog/2009/06/21/leed-canada-for-homes/)

As of September 2009, the USGBC has certified roughly 2500 homes, of which only 87 are in Massachusetts .[5] LEED-H is a largely new program and process! The benefits of a green home are well discussed. A green home uses less energy, water and natural resources, creates less waste, and is healthier and more comfortable for occupants. The benefits of a LEED home include lower energy and water bills; reduced greenhouse gas emissions; and less exposure to mold, mildew and other indoor toxins. The net cost of owning a LEED home is comparable to that

"The LEED-H process can be confusing, Some rules make sense while others seem to have no thoughtful basis."

Homeowner

of owning a conventional home. So shouldn't we all want to LEED certify our new homes and renovations?

That is a loaded question. While the benefits are persuasive, the process is arduous and complex and not for the faint of heart! Verifying every step of a LEED-H renovation takes maximum coordination

5 USGBC PROFILE DATABASE, SEPTEMBER, 2009

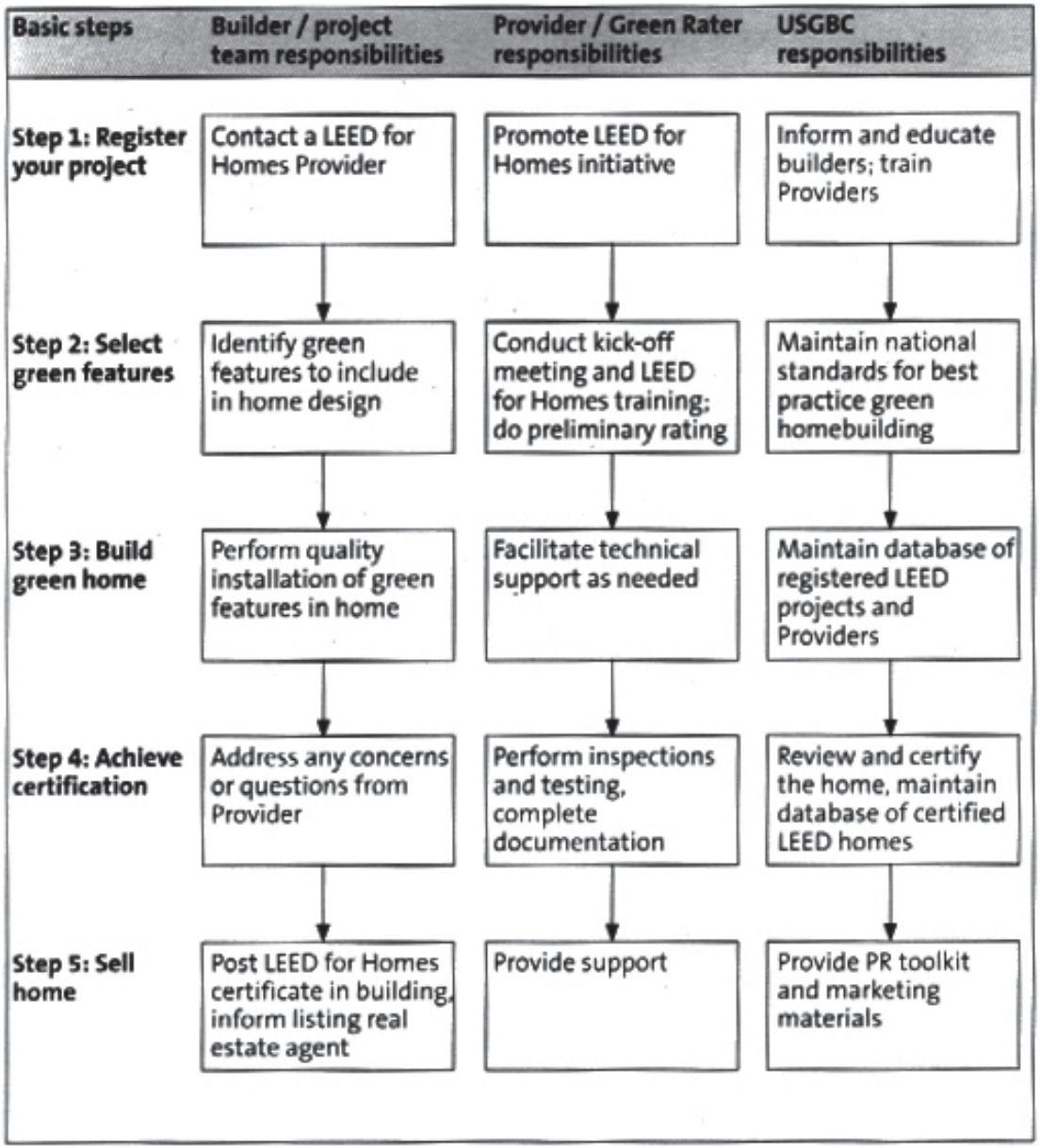

Exhibit 2: LEED-H basic steps

and cumbersome documentation.

Also, LEED was started with the focus on new buildings. Is LEED-H really applicable/ready for residential gut/rehabilitations? The stated intent for LEED-H is "targeting the top 25% of new homes with best practice environmental features. LEED has started to address "LEED for HOMES" however it has been more of an adaptation of the existing rules than a new approach for a different market sector.

"Home Size Adjustment"

With LEED-H you will need to calculate a "Home Size Adjustment" based on your home's size. According to LEED, this compensates for the overarching effect of home size on resource consumption by adjusting the award level point threshold based on home size. The adjustment is based on the square footage of the house and the number of bedrooms. The bigger the house, the more points are needed to achieve certification. With 10, 300 sq. ft. and 6 bedrooms, it was determined that Karen's project would require 69 points to achieve LEED certification. This was a colossal adjustment!

> ***"Initially my project was denied several points that I thought were "slam dunks". In one instance, I didn't have a manual for a fan! Communicate with your LEED for Homes Provider and ask for as much information as possible. "***
>
> ***Homeowner***

The "Home Size Adjustment" calculation has its' basis but is questionable in some areas. Overall, the idea of looking at the total habitable square footage space (rooms) to see how well the space is utilized makes sense. However, the definition of all "living space" including a basement even if it is uninhabitable doesn't make sense! One critic stated:

"This requirement is overly restrictive and will discourage the use of LEED for Homes. . . . The home size adjuster does not account for home designs which give the families who move in opportunities to build for the future when more resources become available to them. Whether it's a couple who moves in and starts a family or a large family with limited resources - a design that allows them the space to add a bedroom (say, in a loft space or unfinished basement) later within the same square footage means that less material is used to build the original structure but allows for future expansion making the structure more flexible and lasting. . . . Smaller homes are frequently less material and labor resource efficient on a per square ft. basis than larger homes. . . " [6]

More tweaking is needed!

Certification is a one shot deal!

The way the process works, final certification is a really a one

6 www.consilienceblog.org - Weyerhaeuser

shot deal and occurs after most of the work is done! Communication with the LEED for Homes Provider or "green rater" comes in the form of emails, phone calls and three or four site visits. That's it! The green rater conducts the final conference call with the USGBC .

What level are you going for – certified. silver, gold or platinum? Determine what is possible and what is important to you. Determine if you have the necessary prerequisites for each of the eight main categories. Verify at critical checkpoints (durability test, framing, insulation, and the blower test) that you are on track for the credits you expect. Reevaluate at each check point and ask for more information from your "green rater" if the credit is in question. If your "green rater" denies your credit then you must reapply for that credit.

Planning a successful path

What's the best way to start thinking about a LEED-H project? The homeowners share some pointers:

1. Read, read, read! Spend a considerable time up front understanding the LEED process. Read through the entire USGBC site and everything else you can find. Ask questions! A very good resource guide is "The Greenhomeguide.com" by Penny Bonda, ASID. In the Boston area, visit NEXUS Green Building Resource Center (www.greenroundtable.org). This is a resource center for sustainable design and green building innovation. It includes over 6,000 square feet of product and educational showrooms, a print and online samples and resource library and networking/event space. The center is staffed by green building experts and LEED accredited professionals. It is open to building owners, architects,

2. Plan, plan, plan! Have a kick-off meeting to get everyone on board. Understand the roles of each contributor – contractor, architect, designer, mechanical engineer, landscape designer, and the third party verification firm. For example, the third party verification firm is not consulting on your project, they are involved independently to verify that you have completed the necessary steps to obtain a LEED credit.

3. Get on board with your town. Many towns have "Green Forums" and literature available for homeowners.

4. Expect some confusion. It's a process. Expect lots of red tape. The USGBC CIS database can be difficult to navigate. Updates to credits are made in cryptic form by addendum.

5. Be aware! If you are in the design field, your project name is currently listed in the contractors name (not the Interior designer or architect even if it's your project). For all industry folks, this is an important nuance. The LEED database only allows one name! You must push for this may not get the press you expect so make it known from the beginning where you stand on this.

6. Educating your subcontractors is critical. Most contractors are new to the LEED-H requirements and process. For example, the homeowners had to remind their contractor to separate material waste for recycling. Have as many recycling bins as possible for applicable waste.

7. Document, document, document. Keep impeccable records (spreadsheets, receipts, emails, etc.). Accountability is a challenge. Everything must be signed off on, and manually copied which can be tedious. After your project is finished, you will want to calculate an actual cost vs. a projected design cost as well as a payback. These actual calculations can be significant in proving that LEED certification translates into real savings.

8. Spend considerable time contemplating innovation points at the start of your project. Although time lines vary, the homeowner was told by her third party auditor that it may take up to eight weeks to hear back from USGBC for such points.

Planting List 2007 - 2009	2007-8	Drought tolerant	2009	Drought tolerant	Total	Drought tolerant
Abies concolor – White fir	6	6	1	1	7	7
Cedrus Atlantica Glauca – Blue Atlas Cedar	1	1			1	1
Cryptomeria japonica – Japanese Cryptomeria	1	1			1	1
Japanesese plum yew			5	5	5	5
Juniperus – Juniper (various)	4	4	3	3	7	7
Juniperus -- Juniper spreading (various)	15	15	54	54	69	69
Picea – Spruce (various)	5	5	3	3	8	8
Pinus – Pine (various)	8	8	2	2	10	10
Fir - Fraser			1	1	1	1
Sciadopitys verticillata – Umbrella Pine	3	3			3	3
Taxus – Yew (various)	13	13	5	5	18	18
Tsuga Canadensis – Canadian hemlock	4	4	1	1	5	5
Deciduous Trees						
Cornus kousa – Kousa Dogwood	1	1	1	1	2	2
Ginkgo biloba – Ginkgo	2	2			2	2
Malus -- Crab apple	1	1	1	1	2	2
Prunus – Japanese cherry	2		4		6	0
Acer -- Maple (various)	2	2			2	2
Betula nigra -- River Birch	3	3			3	3
Magnolia			1	1	1	1
Shrubs						
Cotoneaster – Cotoneaster	11	11	12	12	23	23
Viburnum – Viburnum	4	4	7	7	11	11
Buddleia			2	2	2	2
Spirea			2	2	2	2
Forsythia			4	4	4	4
Hydrangea			4	4	4	4
Perennials						
Coreopsis			8	8	8	8
Purple cone flower			15	15	15	15
Day Lillies			25	25	25	25
Hosta			15	15	15	15
Black Eyed Susan			9	9	9	9
Broadleaf Evergreens						
Azalea – Azalea (various)	7				7	0
Rhododendron – Rhododendron (various)	49		5		54	0
Pieris – Pieris (various)	13		5		18	0
Kalmia – Laurel	2				2	0
Total	**157**	**84**	**195**	**181**	**352**	**265**
		53.5%		**92.8%**		**75.3%**

Exhibit 3: Drought Resistant plants at the Clarke residence.

Highlights on LEED-H Credits

The LEED for Homes rating system measures the overall performance of a home in eight categories. Here are some highlights, lowlights and lessons learned from our homeowners as they went through their certification process.

Innovation Design (ID)

Integrating project planning, Durability Management Process and Innovative or Regional Design.

ID 1.1 Integrating Project Planning.

Despite having a preliminary rating "plan" and an integrating project team, the home owner did not have a "design charrette". The charette is supposed to be an eight hour meeting, which was not 100% relevant here and therefore did not achieve maximum credits.

ID 2.1 Durability Evaluation.

During this phase of the project, the green rater on the project was replaced with another individual. Unfortunately, some information was lost in this transition, resulting in some confusion on these credits. It was a diligent effort to clarify and finally earn these credits. Sometimes things that are totally out of your control happen!

ID 3.1 Innovative Design

The Clarke Residence Living Room

Innovation points were awarded for Maytag Appliances which are above Energy Star efficiency. Additionally, the homeowners employed a natural system called the Presby septic system, out of N.H., which uses less back fill than a natural site. Unfortunately the system did not currently have certification for LEED, and the homeowners choose not to pursue ID points so as not to delay the project.

TIP: Write a proposal up front for Innovation Points which could take several weeks! Have a game plan from the start about how you may obtain these points!

Sustainable Site (SS)

The use of the entire property so as to minimize the project's impact on the site.

SS 1.2 Site Stewardship

Every effort was made to control erosion during construction. Dirt was stock piled and trees were wrapped and 40% of the lot was undisturbed. A Landscape architect added a river rock bed that runs around the east side of the building to provide a drip edge. The deep overhang of the roof does not have gutters. The stone drip edge around the perimeter of the building collects the water via a pipe and pulls it away from the house.

SS 2.0 Landscaping

Design landscape features to avoid invasive species and minimize water for synthetic chemicals. The landscape design included the following green efforts:

a) Cut down four twenty foot spruce trees and two black locust trees and a local Lincoln saw mill dried the logs and cut them into boards for flooring. We left the boards in the barn for two years and then returned them to the mill to plane.

b) Relocated a 10' tall dogwood and two large rhododendron and azalea that were planted around the original house.

c) The existing heritage trees and grass were grand fathered and not calculated into the new garden installation.

d) Two large birch trees were planted and a Japanese maple were planted close to the front of the house to provide shade

e) No invasive plants were installed.

SS 2.4 Drought Resistant Plants

The home owner choose drought tolerant plants for 75% of her for the new landscaping reducing watering needs. She chose to maintain the open grass fields. Zen Associates out of Woburn, MA, designed a garden that was drought tolerant and did not need irrigation.

Water Efficiency (WE)

WE 1.1 Water Reuse

To enhance water reuse for irrigation, a rain cachment system (RCS) was installed. A 1500 gallon rainwater tank was installed to collect water from the gutters of the house and the barn for manual irrigation. A leader pump was installed to pump the water from the tank. It has a automatic shut off valve. Any overflow goes down the adjacent hill in a dry well. Although is a very savvy sustainable solution, the USGBC thought the over flow could cause erosion, and did not award the full number of credits for this solution.

WE 2.1 Irrigation System

In the town of Lincoln, homeowner's pay a surcharge to use water for irrigation – an added incentive to keep costs down. Since adding drought resistant plantings, the homeowner was able to verify with her landscape architect that she would not need an irrigation system. The cost of Lincoln water is as follows: 0-58,000 gallons $4.83 per 1,000 gallons; over 58,000 gallons $7.25 per 1, 000 gallons. For

ENVIRONMENTAL PRODUCTS **3.4.09**

Assembly	Component	EPP specification	Emissions Specification	Local Production
Floor	Flooring	Pendant Fixture - Kitchen Table		n/a
Floor	Flooring	Pendant Fixtures- Kitchen counter	low VOC	Eligible
Floor	Flooring	Floor Tile	Bio fushion	n/a
Floor	Flooring	Back Splash Tile	low VOC	Eligible
Floor	Flooring	Wool Carpet	CRI Green Label	Eligible
Floor	Floor panels	Viega Radiant	N/A	Eligible
Floor	Framing	FSC certified wood	N/A	eligible
Exterior Walls	Paint & Coatings	Green Seal standard GS-43	meet low VOC standards	Eligible
Interior Walls	Paint & Coatings	Green Seal standard GS-43	low VOC	Eliglble
Interior Walls	Substrate & Finishes	Green Seal Standards	low VOC	Eligible
Kitchen Cabinets	Val Cucina	Eco Label/ISO14001	no VOC	N/A
Millwork	Cabinetry	Bamboo	low VOC	n/a
Millwork	Cabinetry	Tabu Veneer	low VOC	Eligible
Millwork	Cabinetry	FSC core	low VOC	Eligible
Other	Counter tops	Silestone	low VOC	Eligible
Other	Counter tops	Caesar Stone	low VOC	Eligible
Other	Counter top	Stone Soup Concrete	N/A	Eligible
Other	Counter tops	Icestone	no VOC	Eligible

Exhibit 4: Sustainable products used at the Clarke residence.

irrigation the cost of water is $14.50 per 1000 gallons.

Valcucine kitchen

WE 3.1 Indoor Water Use

To minimize indoor demand for water through water-efficient fixtures and fittings, the homeowner choose low flush toilets (1.28 GPF vs.1.6 toilets GPF). After the installation and upon inspection, the homeowner discovered that the supplier had sent one toilet that was not “low flush” resulting in the loss of the credit!

Tip: Always confirm what suppliers deliver on site!

Energy and Atmosphere (EA)

EA 1.0 Optimizing Energy Performance.

Improve the overall energy performance of a home by meeting or exceeding the performance of the ENERGY STAR labeled home.

EA 2.0 Insulation

A green moisture wrapping called Rain was used vs the more traditional Tybec wrapping.

EA 4.1 Windows

Low-E, high efficiency insulated windows were an important update for the homeowner. Conservation Services Group recommended triple glaze windows which are twice the cost of dual pane windows and aesthetically not attractive to the homeowners. This raised an interesting question, at what point do aesthetics out weigh increased efficiency? Double glazed windows are good but are triple glazed that much better? How do we balance this question of efficiency vs. aesthetics?

Glass doors on the fireplace reduce toxic air from filtering throught the residence.

EA 6.1 Heating Boiler

To update the heating system, the homeowner chose a new direct vent system recommended by Sun Engineering, out of Waltham,MA. Upon DD review, the 3rd party verification company contradicted this recommendation and suggested bringing down the level of BTU’s to increase efficiency. Sometimes even

the experts disagree! What's a homeowner to do? Energy calculations vs. load calculations can yield different results. Eventually the homeowner went with the original boiler suggestion with the higher number of BTU's.

TIP: enlist as many experts as needed to make an informed decision.

EA 7.1 Water Heating

Atlantic Heating and Cooling. The hot water tank works jointly with two, 5x8 Viesmine 100 Series solar panels. The 100 gallon tank is kept at 135 degrees. If solar panels heats over 135 degrees no longer use gas. When the temperature drops, panels kick in to assist in heating. A thermometer on the panels tells you when the solar heat kicks in. The homeowner was excited about decreasing utility costs, further preserving fossil fuels and reducing air pollution, and in ten years or less the panels should pay for themselves. Additional benefits come in the form of rebates and tax incentives.

TIP: As always the home owner is responsible for rebates and other incentives which require paper work and adjustments on annual taxes.

Materials and Resources (MR)

With a background in design, sustainable materials were prevalent in Karen's renovation. She received a very high percentage of the total LEED-H MR credits:

MR 2.1 FSC Certified Tropical Wood

All woods must be certified! The homeowner choose Forest Steward Certified wood (FSC) from Sterritt Lumber, in Watertown, MA for interior framing and mouldings where possible. Any custom wood features in your home, it is critical that you tell your vendor that you are doing a LEED certified project. The homeowner worked with a garage door company that would have sent her doors that contain tropical woods, had she not mentioned her LEED-H project. In the end, the homeowner needed a "Certificate of Origin" for the custom mahogany garage doors to satisfy the green rater and get credit.

MR 2.2 Environmentally Preferable Products

The homeowner worked with Valcucine, an Italian manufacturer based in NYC (www.valcucinena.com). The cabinetwork is completely recyclable, sustainable, scratch resistant, and totally emission free. Counter tops include a mix of Icestone, a recycled glass and Silesstone, a natural quartz, and engineered walnut wood. The homeowner reduced necessary materials for flooring, They used engineered wood with a radiant heated floor system by Viega. The wood was minimized by using only 1/4" veneer over a subfloor vs. a typical wood floor which is ¾" thick.

MR 3.1 Waste Disposal

In order to divert waste from your project, you must tell contractor up front to break down – steel, concrete, wood etc. and have separate bins so that the materials can be weighed and transported separately if need be. Be very specific. Most contractors are not used to this.!

Indoor Environmental Quality (IEQ)

EQ 2.1 Combustion Venting

To minimize the leakage of combustible gases into the occupied area. Glass doors reduce the toxins. Glass doors for a fireplace are a prerequisite for this credit.

EQ 9.1 Radon Protection

With new windows and new Icynene spray foam insulation, a green product, the house was so well insulated that it couldn't breathe! The basement showed high levels of radon which is a clear health issue. Unfortunately, this was not discovered until after the renovation was complete and the envelope was closed. Retrofitting for this issue can be an expensive proposition. The homeowner was forced to install a 4" PVC footing pipe below grade that is wrapped around the exterior of the building which removes the toxicity from the house. To verify the results, the USGBC requested a 60 day radon test. This was confusing. The homeowners'' radon specialist said that 60-day tests don't exit. A 120-day test was completed. Due to the extensive delay, a project extension needed to be filed.

Additionally, the home owner installed an Energy Recovery System which mechanically pumps in fresh air. With a well insulated envelope this is necessary to maintain good air quality throughout the winter months.

TIP: If the homeowner had known this was a potential concern, she admits she would have installed the PVC pipe and fan at the beginning of the project, there by, saving a lot of time and money. The homeowners would strongly advise any one doing a restoration project to plan to put in an air vent with a fan. They also suggest purchasing an off-the-shelf radon alarm system and testing for radon after finishing the project which is not currently mandated.

EQ 5.2 Bathroom Ventilation

Fans must work on timers which run for 10 minutes. Unfortunately for the homeowner, their "Smart House" Lutron System stops working when power is knocked out. Since there is no automated system to bring it back up, they did not receive the credit for this.

EQ 5.3 Third-party Air Flow Testing

LEED requires an independent company, not the installing company to test the heating and ventilation system to determine that air is coming out of vents. This independent verification can cost $500.00. Is this a waste of time and money?

Awareness & Education (AE)

AE 1.3 Public Awareness

The goal here is to maintain the performance of the home by educating the occupants about the operations. Many of the requirements under A&E do not apply to an average residential home owner.

Under this credit, the owner must conduct at least three of the following activities: hold an advertised, public open house for four hours on at least four weekends, display a 6'x6' sign, publish a website and/or, publish a newspaper article. Not many homeowners would approve of a sign of that size or be willing to open their home to the public! The home owners plan to do a website and have a blog about their sustainable choices. This is yet another example of how challenging LEED-H can be!

How realistic is LEED-H?

LEED-H is a rigorous, complex process! Is requires a serious time commitment. Collaboration between architect, contractor, designer, and builder is 100% necessary. These folks need to be 100% on board with the process. Navigating the process can be challenging given the role of the green rater as "auditor", asking "is it done?" vs. a consultant who would assist in "how to get it done". Some standards are too rigid.

Could LEED-H consider partial credit for more of the points Can there be some additional varying levels to earn credits? For example, if LEED-H wants to encourage homes to have a green roof, why is 50% area necessary, why not 30% or a step function? Not many homes have flat roofs!

Also, USGBC prefers systems that operate mechanically and are automated (e.g. automated fans in bathrooms, irrigation system, heat recovery system). Why can't people take responsibility for manual operation of a system and still get credit? The strict standards make home owners reluctant to attempt certification.

The Green Premium - How much more does it cost???

That depends on who you ask! The first silver LEED certification in Massachusetts, was built by Doug Storey, managing partner of Two Story Building. Storey determined that his LEED-certified project cost "5.7 percent more than a similar, conventionally built home, partly because of the extra time required for planning and paperwork." [7]

When considering the total cost of a project you can not just look at start up costs. Cost/benefit analysis and payback takes years to complete when accounting for actual data. Calculating any of these can be challenging, assumptive and subjective.

"It is a mistake to look only at first costs when considering the budget for a building or remodeling project, because operating costs, over the life-span of a building, can be two to three times the original cost of construction. So green upgrades that increase energy efficiency and reduce maintenance costs quickly pay for themselves and then continue to pay dividends for the life of the building. And that's not even taking into account the documented increases in productiv-

7 Boston Magazine, "A Greener Home", July 2009, p. 94.

ity among workers in green buildings". [8]

The homeowner paid approximately $2525.00 in fees to her third party verifier and to USGBC for audits, application and certification fees through out the LEED certification process. While data on operating expenses will become available in the months and years to come, the Clarkes are sure that the green retrofit will pay for itself over the long run.

Green Liability: Are LEED certified building living up to the energy savings?

The premise of green design is savings in energy and water resources. Saving is often based on design intent. The intention of a projected outcome is not enough. One study found some buildings not saving at all! No proof is required after the fact to confirm that LEED-H is resulting in savings for the homeowner. Part of the LEED-H process should include a 1 year or 2 year audit to compare the design case scenario to the to actual case scenario including an analysis on water/heat/electric/gas bills.

Unfulfilled expectations are a simplified way of saying a "breach of contract." Either way, someone's not happy with an outcome – in this context, most likely a client who believes they were deliberately mislead by the representations of their design and construction professionals about the performance and/or value of their new green project.

With all the new green products coming on the market today, so comes "green wash" – products with false green accusations. The Argo Insurance Group has countered this with a new green professional liability policy designed to protect architects and engineers involved in sustainable projects. What is unique about the policy, which is underwritten by Lloyd's of London, is that it specifically includes "sustainable services in the list of covered professional services which the policy covers, including services: provided as an accredited/certified professional in the areas of sustainable site development, water savings, energy efficiency, materials and resource selection, indoor environmental quality, and computer aided drafting and design services". [9]

Does LEED-H account for the concept of sustainability and aesthetics?

The simple answer is no. LEED-H is not concerned with aesthetics nor is it a primary objective of the certification. That said, most homeowners wants a healthy and efficient home that is beautiful! A homeowner must constantly make trade offs among sustainability, aesthetics and cost. For example, the up-front cost of insulation or double pane windows can be prohibitive especially in a recession.

8 http://www.consilienceblog.org/consilience-the-blog/2009/4/29/how-much-less-does-it-cost-to-build-green-two-posts.html)

9 http://www.greenbuildinglawblog.com/2009/08/articles/insurance/attention-architects-engineersgreen-professional-liability-insurance-has-arrived/

Individual style preferences are part of the subjective improvements in "quality of life". As the demand for green products increases, so will the choices being offered.

Does USGBC promote preservation of existing homes?

Preservation of materials is accounted for in LEED-H Materials and Resources "resource re-use', however no innovation points are set up for historic preservation. Since LEED began in 2000, the gold standard of environmentally conscious construction was focused on commercial builders. The need for a broader set of rules was clear with the introduction of LEED for Homes in 2007.

We all know that going green is the future but are the rules too strict for the average homeowner? Does it make sense for LEED to introduce sensible, less stringent rules for a new category – "LEED-P" to promote the greening (preservation or renovation) of existing homes? Isn't part of being green preserving our current homes so they last for years?

Preserving our past with a responsible green approach would save enormous amounts of energy. The U.S. has more than 100 million existing homes, and it would be incredibly wasteful and unrealistic to tear them all down and replace them with greener versions. An enormous amount of resources went into the construction of those dwelling.

"It would take an average of 65 years for the reduced carbon emissions from a new energy-efficient home to make up for the resources lost by demolishing an old one." [10]

Nearly half of the U.S. carbon emissions come from heating, cooling and powering homes, offices and buildings. What this says is that we cannot change climate control unless we address existing buildings. Old houses lose their efficiency over time due to tiny cracks and gaps that let in outside air. Weatherization and efficiency upgrades reduce power costs and help the earth. Renovations use less raw materials and are often more labor-intensive per dollar spent than new construction, there by creating jobs and stimulating the economy.

"In the broadest sense, the greenest home is the one that has already been built." [11]

The Future of Green Building Where is it going?

10 TIME, "GREENING THIS OLD HOME", BY BRYAN WALSH, MAY 4, 2009, PP.45-46.

11 TIME, "GREENING THIS OLD HOME", BY BRYAN WALSH, MAY 4, 2009, PP.45-46.

Where is it going? While the USGBC continues to make amendments and look for feedback about the technical criteria in the Rating System and its effectiveness, usability and level of stringency, it is still very rigid, discouraging many home owners. Although comments help to shape the revisions to LEED for Homes, LEED certification is not going to be radically changing. In parallel, a nationwide effort to improve existing buildings is underway. This effort could add hundreds of thousands of jobs and simultaneously improve energy efficiency.

President Obama has included $8 billion dollars in the Federal stimulus plan to improve energy efficiency in existing homes. Lane Burt, an energy policy analyst with the Natural Trust Resources Defense Council, believes this is an enormous opportunity to spend now to create jobs, while still saving down the line. Although these funds would benefit a small percentage of low income households, it's a start.

In March 2009, the Natural Trust for Historic Preservation created the "Preservation Green Lab" to promote the greening of existing buildings focusing on preserving older and historic buildings sustainably.[12] The goals of the organization are threefold:

1) develop and implement policies that support green retrofits and adaptive reuse, as well as reinvestment in existing communities;

2) demonstrate that older and historic buildings can, in fact, be retrofitted to achieve high levels of energy efficiency, the Preservation Green Lab will launch a number of green retrofit projects in pilot cities across the country

3) lead the conversation on best practices and model policies for greening our country's prized older and historic buildings, functioning as the go-to resource for those navigating the intersection of historic preservation and sustainability.

In its day-to-day work, the Preservation Green Lab "will coordinate demonstration projects and provide technical assistance and model policies – all in an effort to encourage municipalities and states around the country to fully consider historic preservation and the existing building stock in formulating their climate change action plans."

A variety of local and state governments across the country have accelerated the growth of the green building movement through various green building incentives and mandates. A 2008 study by the American Institute of Architects (AIA) reveals that 14% of U.S. cities with populations of more than 50,000 have green building programs with many more about to follow suit. The report also stated that from 2003 to 2007, the number of cities with green building programs grew by 418% and as of 2008, 36 other cities were in the process of developing green building programs. Although the future of green building looks bright, the responsibility for creating a more sustainable building environment will fall heavily on local leadership and strong citizen nvolvement.[13]

12 http://www.preservationnation.org/issues/sustainability/green-lab/

13 http://www.consilienceblog.org/consilience-the-blog/2009/8/3/future-of-green-building-where-is-it-going.

Locally, in 2007 the City of Boston, Massachusetts added Article 37 to Section 80 of the Boston Zoning Code requiring all new and rehabilitation projects of more than 50,000 square feet to earn either LEED certification or approval by the Boston Interagency Council. Approval by the Boston Interagency Council is based on LEED checklist items and Boston-specific items such as transportation, energy, historic preservation and groundwater recharge. The City is required to deny permits and certificates of occupancy to any noncompliant project.[14] This type of local government mandate will help to promote green building.

What advice would you give to a home owner considering a LEED-H project?

'If I didn't firmly believe in the concept of sustainability I'm not sure I would have gotten through the exercise. Adding the additional steps for LEED-H gave me a new insight and appreciation into several areas. "I now have a healthy and efficient home for my family. " I hope the LEED process becomes more applicable to individual homeowners interested in renovating and preserving architecture."

Homeowner

The homeowner is glad she went through the process. Any house renovation is going to be a lot of work; this was a considerable amount of work with lots of roadblocks given the strict demands of LEED certification.

Image: USGBC Northern California website (http://org2.democracyinaction.org/o/5035/blastContent.jsp?email_blast_KEY=1094962)

14 "Promotion of Green Building: Local Government Land Use and Building Code Incentives and Mandates", By: Geoff White

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Resources

www.usgbc.org
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www.conscience.com
www.greenroundtable.org
www.preservationnation.org