

CASE STUDY:

GREENING

A GREENE AND GREENE HOUSE

The first GreenPoint Rated historic home—a Greene and Greene house in Claremont—showcases how to improve a building’s environmental performance while protecting its architectural integrity.

“Not only will our historic home be energy efficient but the way in which we’ve built it has extended the house’s life cycle, making it possible for future families to share in its history.”

– **BLENDA WRIGHT**, *homeowner*

Blenda and Andrew Wright's home, an influential work by early twentieth century architects Greene and Greene, had seen better days. The couple wanted to accommodate a modern lifestyle while protecting and restoring their home’s architectural integrity. More than 100 years later, it seems only fitting that the home bear another green label—GreenPoint Rated.

Improving the environmental performance of a historic home proved to be an exciting opportunity for their architecture and construction firm, HartmanBaldwin.



ENERGY USE

To create an effective air barrier and improve insulation performance, HartmanBaldwin retrofitted the exterior walls and vaulted ceilings with spray foam insulation.

Properly sealing and insulating the home’s building envelope helped make it possible to downsize the heating, ventilation and air conditioning (HVAC) system, which has the dual benefit of improving comfort and reducing energy use.

Most of the windows were either not original or rotten beyond repair. These were replaced with new custom double-pane windows to improve comfort and energy efficiency while maintaining the historic look.



PROJECT STATS

LOCATION: Claremont, CA

GREENPOINT RATED SCORE: 49

YEAR BUILT: 1903

ORIGINAL SIZE: 2,940 square feet

NEW SIZE: 3,962 square feet
(including new garage and studio)

PROJECT SCOPE:

- Energy-efficient retrofit (*Green renovation*) while preserving historic home’s architectural integrity.
- Addition of 3-car garage and study.
- Extensive interior renovation and exterior redesign of grounds.

ORIGINAL ARCHITECT:
Greene and Greene

REMODEL ARCHITECT/BUILDER:
HartmanBaldwin Design/Build

GREENPOINT RATER:
Charisse Dunn, Healing Spaces by Design

ELEMENTS LABEL

Score was capped at 49 due to Whole House label prerequisites





INDOOR AIR QUALITY

The home has a detached garage, an excellent strategy for keeping car exhaust and other air pollutants out of the house. To further protect indoor air quality, low-VOC paints were used throughout the home's interior. The bathrooms and kitchen have exhaust fans that vent to the outside to remove moisture and odors. The HVAC system has a high efficiency filter to reduce indoor air pollution, and the home has an alarm to alert residents if carbon monoxide in the indoor air exceeds safe levels.



RESOURCE CONSERVATION

The project team took strides to reduce waste wherever possible. The original garage, for example, was relocated in its entirety to another property in Claremont. Its new owners are planning to restore it and use it as a guesthouse. Some of the original plumbing fixtures, as well as a pedestal sink and kitchen sink that were not original, were removed and reused on another project. Construction waste, including cardboard, plastic and aluminum, was recycled.



WATER CONSERVATION

All the faucets and showerheads were replaced with low-flow fixtures, and the toilets were replaced with low-flow reproductions of a 1921 toilet with a low wall-hung tank. Planned improvements to the home's landscaping include creating a garden true to the Arts and Crafts period, with a smaller lawn and an emphasis California native plants and trees that require less irrigation.



COMMUNITY & LIVING GREEN

As is common with many older homes, the Darling-Wright residence presents an inviting face to the community, with a front door and porch oriented toward the street. The entryway also provides residents with a good view of callers approaching the door. The pedestrian-friendly neighborhood is served by public transit, and many neighborhood services and amenities are located within walking distance. The project also received GreenPoint Rated points for accessibility, thanks to a ground-floor bathroom that has blocking for grab bars.



Skylight lets in natural daylight and helps reduce energy use.



Detached garage keeps exhaust and other pollutants out of the home.



All cardboard, metal and concrete construction debris is recycled.

CASE STUDY:

A LARGE HOME GETS A SMALLER FOOTPRINT

A luxury home approaches zero net energy use thanks to extensive efficiency improvements, renewable energy systems, and a “dashboard” for tracking energy and water consumption.

“A lot of our clients want to go green but very few mean it to the level and depth that Frank Levinson has taken this home.”

– COLLEEN MAHONEY, *architect*

Frank and Monika Levinson wanted a dashboard that told them the energy-saving performance of their house in real time. After completing an extensive remodel of their Tiburon home, the Levinson’s have just that – a resource monitoring system that displays information about their resource usage. These days, the resource monitor isn’t showing much waste, thanks to a major overhaul of the home’s energy-using systems and building envelope. The stunningly situated house, with sweeping views of the San Francisco Bay, was also updated with contemporary and green finishes, better lighting and changes to the floor plan to enhance flow and views.



ENERGY USE

Even after taking basic energy-saving steps like substantially improving insulation in walls, roof, and floor, adding double-paned windows, and using LED and fluorescent lighting, the Levinsons wanted to do more to ensure that most of their energy came from sustainable sources – so they had a photovoltaic system mounted on the garage roof. Gas furnaces were replaced with efficient dual-source (electric and gas) heat pumps and tightly sealed new ductwork.



PROJECT STATS

LOCATION: Tiburon, CA

GREENPOINT RATED SCORE: 128

YEAR BUILT: 1971

ORIGINAL SIZE: 5,500 square feet
(Including a separate 2-bedroom apartment)

NEW SIZE: 5,500 square feet
(Including a separate 2-bedroom apartment)

PROJECT SCOPE:
Whole house remodel to reduce the home’s carbon footprint and update it with contemporary design and green materials.

ARCHITECT/BUILDER:
Mahoney Architects and Interior
Larwood Construction

GREENPOINT RATER AND GREEN
BUILDING CONSULTANT: Kevin Beck

WHOLE HOUSE LABEL



A solar hot water system serves the main house, the apartment and an endless pool, with a gas water heater providing supplemental domestic hot water during cloudy spells.

The Levinsons now use 90 percent less gas than they previously used, and are making more electricity than they consume.



Rooftop solar PV and solar water.



15

INDOOR AIR QUALITY

Throughout the interior, Mahoney specified healthier finishes, including low-VOC paints and natural stucco. Other healthy home features include high efficiency HVAC filters, bathroom and kitchen exhaust fans vented to the outside to remove moisture and odors, and insulation that gives off few or no indoor air pollutants compared to conventional insulation.



FSC certified maple flooring.



24

RESOURCE CONSERVATION

The Levinsons prioritized durability in their choice of materials. Their classic maple floors will stand the test of time, and have been certified by the Forest Stewardship Council to have come from sustainably managed forests. The new exterior cedar siding, as well as cabinets, new interior doors and the entry door are also FSC certified.



16

WATER CONSERVATION

Underneath the house, Levinson had two 7,500 gallon cisterns built to collect rainwater for landscape irrigation. To further reduce water use in and around their home, the Levinsons selected dual-flush toilets, an on-demand recirculation pump that reduces the time it takes for water to reach fixtures, and drought-tolerant plants for the gardens.



High performing faucets use less water.



14

COMMUNITY & LIVING GREEN

The home has a number of design elements that accommodate diverse households, including a fully functional independent apartment and accessibility features such as a main floor with a zero-step entrance, doors and passageways with at least 32 inches of clear passage space, and bathrooms with blocking for grab bars. The home is within walking distance of public transit and neighborhood services.

CASE STUDY:

REVAMPING

AN OLDER TRACT HOUSE

A homeowner who also happens to be an architect, contractor and Certified Green Building Professional tackles his family’s bungalow, transforming the cramped and dated floor plan into a spacious, energy efficient and modern home.

“Everything is very comfortable. That’s a big part of the day-to-day experience of green.”

– IAN MACLEOD, *homeowner*

Ian MacLeod and Beatrice Morand shared a cramped, Mediterranean-style bungalow with their two children. Ian tackled his family’s bungalow himself, transforming the cramped and dated floor plan into a spacious, energy efficient and modern home.



ENERGY USE

The remodel included a new solar hot water system that meets 80 percent of the household’s needs, a variable speed high efficiency furnace (95 percent AFUE), a photovoltaic system, extensive caulking, and a combination of spray foam and blown-in insulation. The second story addition provided another opportunity to improve the home’s energy use through natural ventilation.

Passive design strategies helped further reduce electricity use. The long axis of the house runs east-west, giving it good southern exposure. They added more windows on the south side to bring in sunlight and heat.



PROJECT STATS

LOCATION: Albany, CA

GREENPOINT RATED SCORE: 231

YEAR BUILT: 1927

ORIGINAL SIZE: 1,100 square feet

NEW SIZE: 2,010 square feet

PROJECT SCOPE:

- Replace 75% of existing structure
- Upgrade all systems
- Add second story with 2 bedrooms, 1 bath

ARCHITECT/BUILDER:
MacLeod Design & Construction

GREENPOINT RATER:
Russell Bayba

WHOLE HOUSE LABEL





INDOOR AIR QUALITY

Integrated with the new furnace and ductwork is an energy recovery ventilation system, which brings fresh outdoor air into the home all year round without wasting energy. Healthier interior materials also help keep the air fresh. New cabinets throughout the house are constructed of plywood with no added urea formaldehyde, a carcinogenic wood adhesive used in conventional cabinetry. The interior paints have low levels of volatile organic compounds (VOCs) and the woodwork was finished using linseed oil.



New windows lets in natural daylight and helps reduce energy use.



RESOURCE CONSERVATION

Although MacLeod wound up gutting nearly 75 percent of the original structure, he was adamant about not letting good materials go to waste. He reused the floor joists, and saved all the wall framing, some of which was repurposed for nonstructural interior partition walls and for handrails. He even cleaned up the form boards that were used when pouring concrete for new sections of the foundation, and reused them as rafters. Most of the new lumber used is certified by the Forest Stewardship Council (FSC) to have come from sustainably harvested forests.

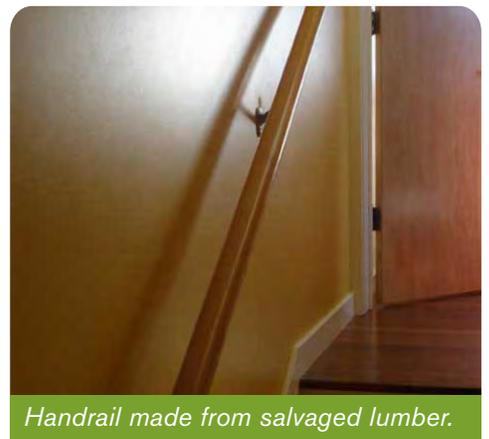


Salvage lumber for reuse.



WATER CONSERVATION

The home's toilets are now high efficiency models that use less than 1.28 gallons per flush (federal law mandates no more than 1.6 gallons per flush). Showerheads and faucets also exceed federal code requirements for water conservation. Outdoors, the couple chose plants that need little water, and used efficient irrigation with a smart controller.



Handrail made from salvaged lumber.



COMMUNITY & LIVING GREEN

The project received GreenPoint Rated points for being located in an urban setting served by public transit. The home also earned points for its efficient size and its location in a compact, walkable neighborhood.

CASE STUDY:

A SOLAR HOME

THAT'S AHEAD OF THE CURVE

The founders of a solar power company find out what it takes to modernize an older home and make it independent of fossil fuels.

“Our goal was that no fossil fuels be required to sustain and operate the house after the remodeling was finished.”

– TOM McCALMONT, homeowner

Tom and Darlene McCalmont knew that their small bungalow needed extensive updating. But as co-founders of Regrid Power, a company that installs solar power systems, they were committed to remodeling sustainably.



ENERGY USE

In addition to making their home more energy efficient, the McCalmonts installed a solar electric system. They also insulated the entire building envelope with closed-cell spray foam, installed energy efficient LED lighting, and used passive solar design to help with temperature regulation. And as part of their quest to reduce fossil fuel consumption, they wired the garage for electric vehicles.



INDOOR AIR QUALITY

The home's heating and air conditioning system includes heat recovery ventilation, which is programmed to automatically circulate fresh air at a low level on a continual basis. The back of the house has a 16-foot wide section of accordion doors that can be pushed open to naturally ventilate the house on mild days. When it's too warm inside, several operable skylights provide a thermal stack effect, drawing warm air up and out of the house. To reduce indoor air pollution, zero VOC paints and water-based clear finishes were used throughout the home.



PROJECT STATS

LOCATION: Palo Alto, CA

GREENPOINT RATED SCORE: 122

YEAR BUILT: 1951

ORIGINAL SIZE: 3,162 square feet

NEW SIZE: 3,723 square feet

PROJECT SCOPE:

Whole house remodel to modernize systems and spaces and create a home that is independent of fossil fuels.

ARCHITECT/BUILDER:

Peter Lyon General Contractor, Inc.

INTERIOR DESIGN:

Vision Design

GREENPOINT RATER:

Kevin Beck

WHOLE HOUSE LABEL

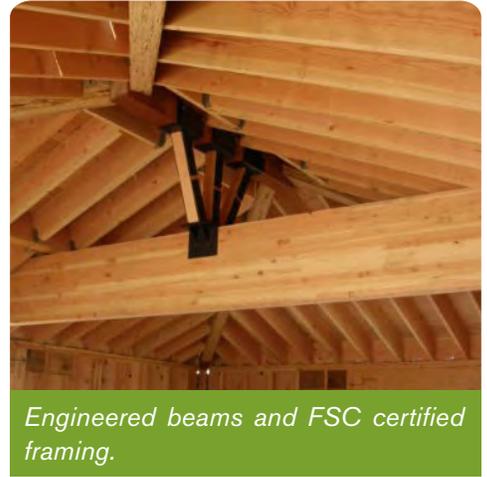




RESOURCE CONSERVATION

More than half of the existing house was retrofitted with a new foundation for earthquake safety, which involved shoring up the framing, pouring a new foundation, and setting the framing back down. Seismic retrofitting increases the likelihood that the building will remain usable for many generations.

For the new framing, all the major timbers are engineered lumber, and most of the solid lumber and plywood is certified by the Forest Stewardship Council (FSC) to have been sustainably harvested. The builders reused many of the existing framing members. The old exterior redwood siding was sandblasted, clearcoated and reused in the home's interior.



Engineered beams and FSC certified framing.



WATER CONSERVATION

The home's new water distribution system uses small diameter, flexible cross-linked polyethylene (PEX) pipes that run directly to the fixtures from manifolds located near the water heaters. This alternative to typical branched piping decreases the volume of water in individual pipes and saves water and water heating energy. The project installed high efficiency toilets that use 1.28 gallons per flush, low-flow showerheads and bathroom faucets, a water-efficient washing machine, and an on-demand recirculation control pump. Outside, the McCalmonts are planning new water-conserving landscaping. Instead of turf, the property will be planted with mostly California native and Mediterranean species that require little irrigation water.



A durable roof with 24" overhangs to preserve the building envelope.



COMMUNITY & LIVING GREEN

The project received GreenPoint Rated points for being located in a built urban setting with utilities already in place. Accessibility features include a zero step entrance, interior doors and passageways on the main floor that have at least 32-inch clear passage space, and blocking for grab bars in main floor bathrooms.



Solar panels on roof serve 100% of electrical needs.

CASE STUDY:

A GREEN APPROACH TO TRADITIONAL DESIGN

A San Francisco Edwardian undergoes a renovation that integrates green building practices with traditional design.

“We care about our personal role in climate change – about being part of the solution.”

– MARYAM MOHIT, *homeowner*

When Maryam Mohit and Erik Blachford bought a three-story Edwardian house on the edge of San Francisco’s Presidio in late 2007, they knew it would have to be extensively renovated before they could move in. From the start, the couple was committed to bringing environmental awareness to their remodeling decisions.



ENERGY USE

Energy Star appliances, formaldehyde-free insulation, energy-efficient windows and lighting, and new skylights were all easy steps to boost the home’s energy efficiency. A new energy-efficient boiler provides heat for both domestic hot water and the home’s new radiant heating system. On the roof, a 2.4-kilowatt photovoltaic system offsets much of the household’s electricity use, further reducing their carbon footprint.



INDOOR AIR QUALITY

Mohit specified that low-VOC paints be used throughout the home. To reduce the exposure of construction workers and the family to carcinogenic formaldehyde, Larsen used formaldehyde-free insulation as well as plywood and medium-density fiberboard (MDF) with no added formaldehyde. In the bathrooms, exhaust fans with timers automatically remove moisture and provide ventilation.



PROJECT STATS

LOCATION: San Francisco, CA

GREENPOINT RATED SCORE: 121

YEAR BUILT: 1905

ORIGINAL SIZE: 3,610 square feet

NEW SIZE: 4,910 square feet

PROJECT SCOPE:

Expand and reconfigure to accommodate contemporary family use patterns. Integrate green finishes and energy-efficient systems with original Edwardian design.

ARCHITECT:

Sutro Architects

BUILDER:

Larsen Builders

INTERIOR DESIGN:

Adeeni Design Group

GREENPOINT RATER:

Kevin Beck

WHOLE HOUSE LABEL





RESOURCE CONSERVATION

In the first phase of the renovation, the couple brought in The Reuse People, an organization that deconstructs buildings and sells any usable components. When the builders removed the main deck to make way for the addition, they stacked the deck boards and reused them later when rebuilding the third-floor deck.

They matched original molding with new molding custom made from Forest Stewardship Council-certified wood. For the kitchen countertops, Mohit chose FSC-certified wood and stainless steel, whose durability attracted the mother of three.

All the new concrete for the foundations, driveway and sidewalks contains a high volume of flyash, a byproduct of burning coal to generate electricity. Using flyash in concrete keeps it out of landfills and reduces greenhouse gas emissions associated with conventional cement production.



Skylight lets in natural daylight and helps reduce energy use.



WATER CONSERVATION

To reduce water use, Mohit chose a water-efficient dishwasher and clothes washer, and dual-flush toilets. An on-demand recirculation control pump reduces time spent waiting for hot water at the faucets.

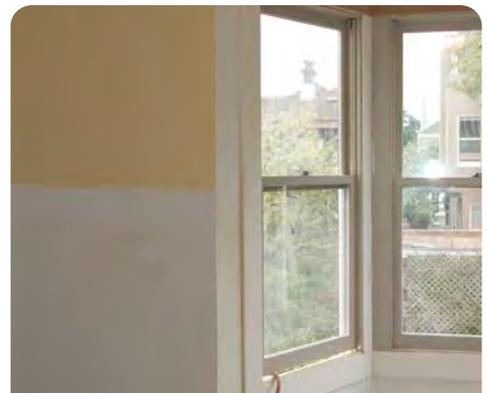


All new wood is FSC certified.



COMMUNITY & LIVING GREEN

The home's urban setting earned it GreenPoint Rated points. The neighborhood is well served by public transit, and shops, restaurants, neighborhood services and other amenities are in easy walking and bicycling range.



Low VOC paints and energy efficient windows.