home energy makeover contest winners **case study**

The Bryan Home in Pomona

SUPERVISORIAL DISTRICT 1 RESIDENT

What It Cost

Many homeowners begin with a 20% energy savings target.

The Bryans' upgrade included:

20% *Cost-effective upgrades projected to achieve at least **20% energy savings** in this home*

Energy assessment	$250
Attic and wall insulation upgrade with air sealing	$2,760
Subtotal investment	$3,010
Qualified Energy Upgrade California incentives	**$4,000***
Subtotal #1 costs	-$990
Subtotal #1 out-of-pocket costs	$0**

But the Bryans went a step further.

40% *Additional upgrades projected to achieve over **40% energy savings** in this home*

Lennox heating and A/C system with duct enhancements	$6,600
Door weatherization	$210
Building envelope sealing	$200
Shower valve and other upgrades	$100
Subtotal additional investment	$7,110
Additional Energy Upgrade California incentives	**$4,000***
Subtotal #2 out-of-pocket costs	$3,110
Subtotal #1 costs	-$990
Total out-of-pocket costs	**$2,120**

* Check EnergyUpgradeCA.org/LACounty for current promotion.

** Out-of-pocket costs cannot be less than zero.

Pomona residents William and Cynthia Bryan live in a 1,700-square-foot home built in 1992. They have two boys, and are both active in the community. The Bryans spend about $3,800 annually for electricity and gas. They suspected that their vaulted ceilings, the age of their air conditioner and the hot weather were to blame for their high electricity bills. Energy Upgrade California uncovered the truth!

Energy Upgrade California Home Energy Makeover

1. Comprehensive Energy Assessment

To provide a complete evaluation of the Bryans' home energy use, **REEis Companies** conducted a comprehensive home energy assessment using diagnostic equipment that included a blower door. In addition to revealing the home's insulation and air sealing needs, **REEis** uncovered a mold issue in the master suite shower caused by moisture behind the wall from a leaking faucet.

2. Insulation with Air Sealing

In the attic, the dropped ceiling design created knee walls that ran the length of the home, and offered no insulation between the attic and living area. Uninsulated wall cavities caused air to flow through the attic insulation, leaving a layer of dust and dirt. **REEis** covered the uninsulated knee walls with R-30 insulation batts which perform better than required by today's energy building code.

REEis also treated 22 ceiling lights by insulating and properly venting them, insulated two built-in wall speakers, and sealed all penetrations between the attic and living areas. They then added attic insulation to an R-38 energy efficiency level to comply with modern building energy codes.

The Bryan's home in Pomona

Old flex ductwork and air return

Large voids in attic insulation

Finally, **REEis** weather-stripped a sliding glass door and several windows, paying special attention to seal around the laundry room door and all other areas that exposed the living area to the garage. These combined measures reduced the air exchange rate in the total home.

3. Heating and Cooling System

Lennox Industries provided a new central gas furnace and electric air conditioning system that is 15.5 SEER efficient to replace the nearly 20-year-old existing 8 SEER system. Coincidentally, the air conditioner died the very week it was scheduled to be replaced. A problem with the system's electrical wiring had created unsafe conditions that had gone unnoticed.

Leaks, holes and poorly connected ducts were losing over 20% of the air moving through the old heat pump's duct system. This was creating higher energy costs and decreasing comfort. **REEis** redesigned and installed a new air-balanced ducting system that included a second air supply return in the hallway. **REEis** also sealed the primary air return that had been designed into an empty wall cavity. It was leaking air between the house and garage creating an unhealthy indoor environment. The new ductwork was insulated to an R-6 efficiency level, sealed to a 95% efficiency, and then buried in the attic's new insulation.

REEis then installed a programmable touch-screen thermostat donated by **Lennox**. This ensures the system operates at peak efficiency and can be adjusted to a pre-set schedule. Now the system runs less when the occupants are asleep or away from home.

Soon after the new air conditioner was installed, Mr. Bryan noticed an improvement in the comfort of his home—even during the middle of the day when the system wasn't operating. He observed that the old system had operated constantly and he had never felt as comfortable as he does now. Ironically, the home's old 4-ton sized system was replaced with a 3.5-ton system. The smaller size was made possible by the increased insulation and improved duct design.

GreenPoint Rated Elements label improvements

GreenPoint rating and processing	$1,600
Garage seal, labor	$1,500
Toilets, faucets, shower heads	$1,500
Plumbing labor	$1,000
CO alarms	$50
Subtotal additional investment	$5,650
GreenPoint Rated Elements label rebate and LA bonus	**$900***
Total additional out-of-pocket	**$4,750**

Sliding glass door in need of sealing and shading

South- and west-facing windows in need of shading

GreenPoint Rated Improvements

Since the Bryan Family was already making a lot of energy improvements as part of Energy Upgrade California, they didn't have much further to go to get the GreenPoint Rated Elements label. Simple improvements helped them earn 35 points—above and beyond the minimum 25 points needed for the label.

GreenPoint Rating for the Bryan home was provided by **Restore 2 Green**.

During **Restore 2 Green's** site inspection, they observed dry rot (water damage) along a portion the roof eave. There were also signs of water damage to the patio cover ledger and post bases, to the door jamb of the garage side door, as well as, in the stucco above the patio slabs.

Energy Efficiency—12 points

All energy points were achieved through the Energy Upgrade California's Advanced Upgrade Package.

Water Efficiency—6 points

The Bryans replaced two showerheads and the main bath faucets with high performing/low-flow models. They also replaced both 1.6 gallon-per-flush (GPF) toilets with .94 GPF Sydney Smart Dual Flush Wash toilets donated by **Caroma**. These will provide a savings of 40%—well beyond the 1.28 GPF toilets now mandated in California. Mrs. Bryan was pleasantly surprised at how much she likes the lower flow devices.

In addition, **REEis** installed a shower control valve. This valve turns the flow off automatically once the desired temperature is achieved and holds it until water is actually needed.

Indoor Air Quality—4 points

The air and duct sealing completed as part of the energy-efficiency upgrades, including sealing the wall between the home and the garage to keep out harmful carbon monoxide, vastly improved the indoor air quality in the Bryan's home. The newly installed sealed combustion high-efficiency furnace is also equipped with a MERV 16 air filtration unit that effectively removes additional indoor pollutants. The home also received a new carbon monoxide monitor to comply with new code effective in California as of July 1, 2011.

Resource Efficiency—7 points

REEis made sure to recycle all cardboard, concrete and metal waste created during the upgrade. This is a required part of the GreenPoint Rated process and saves a lot of waste from ending up in our landfills.

The Bryan Home in Pomona *(continued)*

Better Communities—6 points

The residence received points for green practices already in place that help create healthier, safer communities. These include a smaller home size with a front entrance facing the street, which enhances safety and encourages interaction with neighbors.

GreenPoint Rated Improvements

The GreenPoint Rated label is the mark of quality for green home upgrades. It verifies that your home upgrade was installed according to proven green standards, and can even improve your property value at time of sale. When you participate in GreenPoint Rated, you earn points for improvements that save energy, water, resources and indoor air quality.

Learn about GreenPoint Rated Improvements at GreenPointRated.com.

About Energy Upgrade California in Los Angeles County

Energy Upgrade California in Los Angeles County is a rebate and incentive program for homeowners to improve their homes' energy efficiency, save water and natural resources, lower utility bills, and create a healthier and more comfortable home through a home energy upgrade. Energy Upgrade California connects homeowners with local Participating Contractors who can complete their home energy upgrade and help them apply for rebates and incentives. Learn more at EnergyUpgradeCA.org/LACounty or call 1-877-785-2237.

MAKEOVER TEAM

CONTEST HOST AND ADMINISTRATOR
Los Angeles County Team

PARTICIPATING UTILITIES
Southern California Edison
Southern California Gas Company
City of Pomona Water Agency

OVERALL MAKEOVER WORK SCOPE COORDINATION PROVIDED BY:
REEis Companies, reeishome.com

COMPREHENSIVE HOME ENERGY ANALYSIS PROVIDED BY:
REEis Companies, reeishome.com

GREENPOINT RATING PROVIDED BY:
Restore 2 Green

HEATING AND A/C SYSTEM PROVIDED BY:
Lennox Industries, www.lennox.com
INSTALLED BY:
REEis Companies, reeishome.com

INSULATION WITH AIR SEALING PROVIDED AND INSTALLED BY:
REEis Companies, reeishome.com

TOILETS AND SHOWER HEADS PROVIDED BY:
Caroma, www.caromausa.com
INSTALLED BY:
Restore 2 Green