Your Energy Audit

Home Upgrade
Energy Upgrade California®

Home

Free Blank Job
4818 Duluth Ct
Sacramento CA, 95814
(555) 555-5555
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May 8, 2015
05:50 pm

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The Energuy
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Sacramento CA, 95814
Office: 877-600-0123
8:30AM-5PM PST Mon-Fri

Thank you for choosing The Energuy for your whole home assessment. We hope you are happy with the service we provided so far, and we look forward to providing energy saving recommendations, that will improve the quality of life in your home.

If you have any questions regarding this report, please contact me at 1-877-600-0123.

Good luck during your retrofits,

Best,

Inside Your Report

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Solutions for Your Home

Totals

Estimated Savings

$1,185 per year

This is an estimate of how much you could save starting in Year 1. Savings will only increase as energy prices rise over the years.

Impact of upgrades

Energy Reduction	38%
Carbon (CO2) Savings	5 tons
Equivalent cars removed from the road	1.0/yr

DETAILS	APPROXIMATE ANNUAL SAVINGS
Insulate Attic	$ 80
Upgrade Heating System	$ 41
Upgrade Cooling System	$ 142
Seal Duct Work	$ 81
Seal Air Leaks	$ 25
Upgrade Pool Pump	$ 716
Upgrade Lighting	$ 99

Insulate Attic

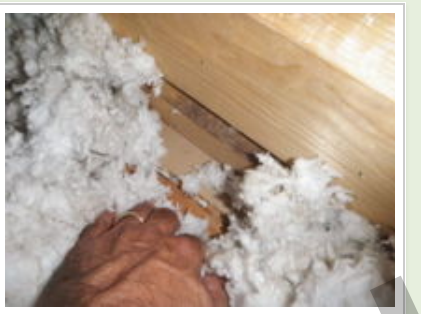
ATTIC

Energy Savings

Approx. $80

Why it matters

Adding insulation to your attic can lead to a significant reduction in your utility bills. This process is often combined with careful air sealing of the ceiling from the attic side to ensure the new insulation perform at its maximum level.



When it comes to maximizing energy efficiency and saving money with insulation, the attic is one of the first places you should look. Insulating your attic is one of the easiest ways to make your home more energy efficient. By adding attic insulation, and sealing the attic floor, you can keep your home warmer during the colder months, and cooler during the hotter months.

Notes to Homeowners

Existing: R11
Recommend: Blow in up to R44
(1500 sq ft)

Notes to Contractors

Insulation contaminated - evidence of rodents

Now & Goal

DETAILS	NOW	GOAL
Attic		
Attic 1		
Modeled Area	1500 ft²	1500 ft²
Insulation	11 R Value	44 R Value
Radiant Barrier?	No	No
Has Knee Wall?	No	No
Cool Roof?	No	No

Upgrade Heating System

HEATING SYSTEM

Energy Savings

Approx. $41

Why it matters

Install a more efficient furnace, boiler or heat pump. Depending on the age of the unit, substantial savings may be gained by replacing it with an Energy Star rated appliance. If you?re heating with gas, look for a sealed combustion unit. They?re much safer since the exhaust pathway from the unit is sealed and goes directly outside. If it doesn't quite make sense to replace your heating system now, be prepared to replace it with a high efficiency Energy Star unit when it finally wears out.

Upgrade your furnace to a 95-98% efficient, sealed combustion system. You will only be losing 2-5 cents per dollar of heating and you will reduce your risk of carbon monoxide poisoning.

Notes to Homeowners

Existing: 78% AFUE
Recommend: 95% AFUE

Now & Goal

DETAILS	NOW	GOAL
Heating System		
Hvac System 1		
System Name	Hvac System 1	
Equipment Type	Furnace / Central AC (shared ducts)	
Upgrade action	Replace with a newer model	
% of Total Heating Load	100%	100%
Heating Energy Source	Natural Gas	Natural Gas
Heating Capacity	60000 BTU/h	60000 BTU/h
Heating System Efficiency	78 AFUE	95 AFUE
Heating System Model Year	1980	2018

Upgrade Cooling System

COOLING SYSTEM

Energy Savings

Approx. $142

Why it matters

Install a more efficient air conditioner or evaporative cooler. Depending on the age of the unit, substantial savings may be gained by replacing it with an Energy Star rated appliance. If it doesn\'t quite make sense to replace your air conditioner now, be prepared to choose a high efficiency Energy Star unit (14 SEER or higher) when it finally wears out.

If you choose to install / upgrade an AC unit, consider installing an ENERGY STAR rated or higher efficiency unit (15 to 20 SEER). Keep the pad on which the AC unit sits level, shaded and maintain at least one foot from the home and any other obstructions.

Notes to Homeowners

Existing: 3 Ton 9 SEER / 6 EER Split
Recommend: 3 Ton 16 SEER / 13 EER Split

Now & Goal

DETAILS	NOW	GOAL
Cooling System		
Hvac System 1		
System Name	Hvac System 1	
Equipment Type	Furnace / Central AC (shared ducts)	
Upgrade action	Replace with a newer model	
% of Total Cooling Load	100%	100%
Cooling Capacity	36000 BTU/h	36000 BTU/h
Cooling System Efficiency	9 SEER	16 SEER
Cooling System Model Year	1980	2018

Seal Duct Work

DUCTS

Energy Savings

Approx. $81

Why it matters

If you have a forced air system for heating or cooling, sealing the connections and penetrations with mastic will ensure that all of the air makes it to where it was designed to go. This increases the efficiency of your heating and cooling system and improves comfort. If you have a boiler system for heating, insulating the pipes will increase the effectiveness of the system.

If ducts are located in an unconditioned space, such as a vented attic or vented crawlspace, they should be sealed and insulated to prevent heat loss due to air leaks, conduction and to provide some protection against harsh conditions. The photo on the left is your current ductwork, and the photo on the right, shows properly sealed ductwork. For added energy savings, consider burying the new ductwork in the attic insulation.

Notes to Homeowners

Existing: R4.2 ducts and 30% duct leakage using nominal cooling
Recommend: R8 ducts sealed to 5% duct leakage using nominal cooling

Notes to Contractors

Ducts smashed in some locations - all ducts accessible

Now & Goal

DETAILS	NOW	GOAL
Ducts		
Hvac System 1		
Duct Location	Attic (unconditioned)	Attic (unconditioned)
Duct Insulation	Measured (R Value)	R-8 Duct Insulation
Duct Insulation Value	4.2 R Value	
Duct Leakage	30% - Very leaky	Seal to 6% Leakage
Duct Efficiency	76.8%	89.6%

Seal Air Leaks

AIR LEAKAGE

Energy Savings

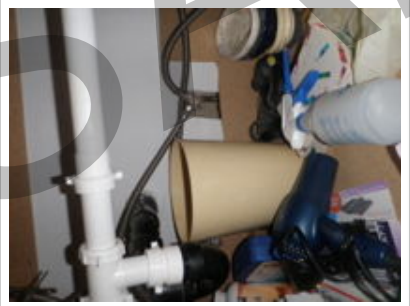
Approx. $25

Why it matters

Air sealing is typically the most cost effective improvement you can make to your home. To properly seal out air leaks, a large fan called a blower door is used to depressurize your house. This makes air leaks easy to find, so corrective measures can be taken. A good air sealing job will dramatically increase the comfort of your home and help you save significant energy.

Good air-sealing and a continuous air barrier between the attic and the home's conditioned (living) space are important, not only to save energy and reduce fuel bills, but also to prevent moisture problems in the attic.

Air leakage found at exterior door - Weatherstripping needed
Air leakage found at wood stove



Air leakage found at plumbing penetrations and outlets/switches

Notes to Homeowners

Existing: 2838cfm
Target: 1500cfm

Seal Air Leaks

AIR LEAKAGE

Energy Savings

Approx. $25

Why it matters

Air sealing is typically the most cost effective improvement you can make to your home. To properly seal out air leaks, a large fan called a blower door is used to depressurize your house. This makes air leaks easy to find, so corrective measures can be taken. A good air sealing job will dramatically increase the comfort of your home and help you save significant energy.

DETAILS	NOW	GOAL
Air Leakage		
Blower Door Reading	2838 CFM50	1500 CFM50
Conditioned Air Volume	12000 ft^3	
Wind Zone	2	
N-Factor	18.5	
Equivalent NACH	0.77 NACH	0.41 NACH
Effective Leakage Area	158.07 in^2	83.55 in^2
Equivalent ACH50	14.19 ACH50	7.5 ACH50
Kitchen Fan		
Bathroom Fan 1		
ASHRAE 62.2 Required mechanical ventilation rate	N/A CFM	N/A CFM
Minimum CFM50		2285 CFM50

Upgrade Pool Pump

POOL PUMPS

Energy Savings

Approx. $716

Why it matters

Single-speed pool pumps can often equate to half of an entire home's electricity demand. Substantial energy savings can be achieved by replacing it with a variable speed pool pump.

Notes to Homeowners

Existing: Single Speed Pool Pump
Recommend: Variable Speed Pool Pump.5

Now & Goal

DETAILS	NOW	GOAL
Pool Pumps		
Pump Type	Single Speed	Variable Speed
Size	18000 Gallons	
Pump Horsepower	1.5	1.5
Pump Annual Frequency	365 Days/Year	365 Days/Year
Pump Daily Frequency	8 Hours/Day	8 Hours/Day
Variable Speed Turnover	1	1.5

Upgrade Lighting

LIGHTING

Energy Savings

Approx. $99

Why it matters

Compact Florescent Lightbulbs (CFLs) use 1/4 of the energy of regular incandescent light bulbs and last 8 to 15 times as long. Light Emitting Diode (LED) bulbs use 12% of the energy of regular incandescent light bulbs and last up to 50 times as long. Replacing incandescent bulbs with CFLs or LEDs will save significant energy and replacement costs over time.

Notes to Homeowners

Existing: 14 Incandescent Light Bulbs
Recommend: 14 High Efficiency CFL bulbs

Now & Goal

DETAILS	NOW	GOAL
Lighting		
# of CFLs installed		
# of CFLs	13	20
# of LEDs		
# of Incandescents	14	

Health & Safety

These tests are recommended by the Building Performance Institute (BPI). They can help identify potential health and safety concerns in your home.

Test Summary

Ambient Carbon Monoxide	✓
Natural Condition Spillage	✓
Worst Case Depressurization	✓
Worst Case Spillage	✓
Undiluted Flue CO	✓
Draft Pressure	✓
Gas Leak	✗
Venting	✗

✓ Passed ✗ Failed ⚑ Warning

Install a Low Level Carbon Monoxide Monitor

CO detectors are highly recommended in homes with fuel-burning appliances. The detectors signal homeowners via an audible alarm when CO levels reach potentially dangerous levels.

Water heater flue failed - too close to ceiling material - B-VENT requires 2" away from combustible materials

Gas leak found at the furnace - GSR Called - GSR Ticket # - 4569987223

Metrics

About the metrics

These metrics are for the whole house in a pre and post-retrofit state.

The 'Baseline' savings numbers will likely not be the same as the actual energy consumption of the home. These numbers are weather normalized and then projected based on the Typical Meteorological Year for the past 30 years (TMY30). In other words, this is the energy consumption of the home for a typical year, not the year that the utility bills were from.

FUELS	BASELINE	IMPROVED	SAVED
Total Fuel Energy Usage therms/year	590	444	146
Natural Gas Energy Usage therms/year	590	444	146

METRIC	BASELINE	IMPROVED	SAVED
Electric Energy Usage kWh/year	12,626	5,609	7,017
Electric Energy Demand kW	5.580	2.405	3.175
Total Energy Usage MMBtu/year	102.00	64.00	38.00
Fuel Energy Cost $/year	$ 531	$ 399	$ 132
Electric Energy Cost $/year	$ 1,894	$ 841	$ 1,053
Total Energy Cost $/year	$ 2,425	$ 1,241	$ 1,184
CO2 Production Tons/year	10.8	5.8	5.0
Payback years			10
Total Energy Savings			38%
Total Carbon Savings			47%
Net Savings to Investment Ratio SIR			1.2
Net Annualized Return MIRR			6.0%

HEATING & COOLING LOAD CALCULATIONS		
Heating Load Btu/hr	Base: 35,528	Improved: 22,903
Cooling Load: Sensible Btu/hr	Base: 36,635	Improved: 22,127
Cooling Load: Latent Btu/hr	Base: 1,127	Improved: 915
Winter Design Temperature	Outdoor: 36°	Indoor: 70°
Summer Design Temperature	Outdoor: 96°	Indoor: 75°

Tech Specs

Property Details

Year Built:	1960
Conditioned Area:	1500 ft²
Includes Basement:	No
Average Wall Height:	8 ft
House Length:	50 ft
House Width:	30 ft
Floors Above Grade:	1
Number of Occupants:	2
Number of Bedrooms:	3
Type of Home:	Single Family Detached
Front of Building Orientation:	North
Shielding:	Normal
Tuck Under Garage:	No

Thermostat

Programmable Thermostat Installed:	No
Heating Setpoint High:	64-72 °F
Heating Setpoint Low:	60-68 °F
Cooling Setpoint High:	76-88 °F
Cooling Setpoint Low:	72-82 °F

Heating & Cooling

Heating Design Load:	35528 Btu/hr
Hvac: 1	
System Name:	Hvac System 1
Equipment Type:	Furnace / Central AC (shared ducts)
Upgrade action:	Replace with a newer model
Heating Energy Source:	Natural Gas
% of Total Heating Load:	100%
Heating Capacity:	60000 BTU/h
Heating System Efficiency:	78 AFUE
Heating System Model Year:	1980
% of Total Cooling Load:	100%
Cooling Capacity:	36000 BTU/h
Cooling System Efficiency:	9 SEER
Cooling System Model Year:	1980
Duct Location:	Attic (unconditioned)
Duct Insulation:	Measured (R Value)
Duct Insulation Value:	4.2 R Value
Duct Leakage:	30% - Very leaky
Duct Efficiency:	76.8%

Appliances

Range: 1	
Range Fuel Type:	Natural Gas
Oven: 1	
Oven Fuel Type:	Natural Gas
Clothes Dryer: 1	
Dryer Fuel Type:	Electricity

Clothes Washer

Type:	Top Load
Integrated Modified Energy Factor:	0.64 IMEF
ENERGY STAR:	No

Dishwasher

Dishwasher Installed?:	Yes
Energy Factor:	0.43 EF
ENERGY STAR:	No

Refrigerators

Refrigerator: 1	
Refrigerator Age:	Don't Know
Refrigerator Size:	Don't Know
ENERGY STAR:	No
Usage:	559.17 kWh/yr

Lighting

% CFLs or LEDs:	26-50%
Total # of Light Bulbs:	20
# of CFLs:	13
# of LEDs:	0
# of Incandescents:	14

Doors

Door: 1	
Type:	Wood
Area:	21 ft²
ENERGY STAR:	No
U Value:	0.46 U Value
Door: 2	
Area:	21 ft²
ENERGY STAR:	No
U Value:	0.46 U Value

Exterior Walls

Wall: 1	
Modeled Area:	1280 ft²
Insulated?:	No
Siding:	Metal/vinyl siding
Construction:	2x4 Frame
Cavity Insulation:	11 R Value
Continuous Insulation:	0 R Value

Attic & Vaulted Ceiling

Attic: 1

Tech Specs

Modeled Area:	1500 ft²
Insulation Depth:	0
Insulation Type:	Cellulose
Insulation:	11 R Value
Radiant Barrier?:	No
Has Knee Wall?:	No
Cool Roof?:	No

Foundation - General

Foundation: Crawlspace:	100%
Foundation Above Grade Height:	1 ft

Foundation - Crawlspace

Modeled Crawl Floor Area:	1500 ft²
Crawlspace Type:	Vented - Year Round
Crawlspace Insulation:	Crawlspace is uninsulated
Crawl Cavity Insulation:	0 R Value

Frame Floors

Modeled Floor Area:	0 ft²

Windows

Window: 1

Window Area: North (Front):	60 ft²
Window Area: East (Left):	36 ft²
Window Area: South (Back):	60 ft²
Window Area: West (Right):	36 ft²
Type:	Single pane
Frame:	Wood or metal clad
ENERGY STAR:	No
U-Value:	0.89 U Value
Solar Heat Gain Coefficient:	0.64 SHGC
Window Area: North (Front) Overhang Depth:	0 ft
Window Area: East (Left) Overhang Depth:	0 ft
Window Area: South (Back) Overhang Depth:	5 ft
Window Area: West (Right) Overhang Depth:	3 ft
Exterior Treatment: North (Front):	No Treatment
Exterior Treatment: East (Left):	No Treatment
Exterior Treatment: South (Back):	No Treatment
Exterior Treatment: West (Right):	No Treatment

Air Leakage

Blower Door Reading:	2838 CFM50
Conditioned Air Volume:	12000 ft³
Wind Zone:	2
N-Factor:	18.5
Equivalent NACH:	0.77 NACH
Effective Leakage Area:	158.07 in²
Equivalent ACH50:	14.19 ACH50
Kitchen Fan:	0 CFM
Bathroom Fan 1:	0 CFM
ASHRAE 62.2 Required mechanical ventilation rate:	N/A CFM

Water Heating

Water Heating: 1

Fuel:	Natural Gas
Type:	Tank Water Heater
Age:	11-15
Location:	Garage or Unconditioned Space
Temperature Settings:	Don't Know
Energy Factor:	56 EF

Pool & Hot Tub

Pool:	Yes
Pump Type:	Single Speed
Pump Horsepower:	1.5
Pump Annual Frequency:	365 Days/Year
Pump Daily Frequency:	8 Hours/Day
Variable Speed Turnover:	1
Hot Tub:	No

Utilities

Utility Price: Natural Gas:	0.9 $/Therm
Utility Price: Propane:	2.43 $/Gallon
Utility Price: Fuel Oil:	4.01 $/Gallon
Utility Price: Electricity:	0.15 $/kWh
Utility Price: Wood:	0 $/cord
Utility Price: Pellets:	0 $/Ton

Utility Bills

Electric

Electric Utility Provider Name	PGE

Fuel

Fuel Utility Provider Name	PGE

Contact Information

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About This Report

Report Date: February 2, 2018
Job ID: 45137
PG&E Home Upgrade

Report & modeling software: Snugg Pro™ 5.0

Glossary

Annual Fuel Utilization Efficiency (AFUE) The measure of seasonal or annual efficiency of a residential heating furnace or boiler. It takes into account the cyclic on/off operation and associated energy losses of the heating unit as it responds to changes in the load, which in turn is affected by changes in weather and occupant controls.

Annualized Return The return an investment provides over a period of time, expressed as a time-weighted annual percentage. This is the equivalent annual interest rate you would get if you put the same amount of money spent on the energy upgrade into a savings account.

Asbestos Asbestos is a mineral fiber that has been used commonly in a variety of building construction materials for insulation and as a fire-retardant, but is no longer used in homes. When asbestos-containing materials are damaged or disturbed by repair, remodeling or demolition activities, microscopic fibers become airborne and can be inhaled into the lungs, where they can cause significant health problems.

British Thermal Unit (Btu) The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit; equal to 252 calories.

Carbon Monoxide (CO) A colorless, odorless but poisonous combustible gas with the formula CO. Carbon monoxide is produced in the incomplete combustion of carbon and carbon compounds such as fossil fuels (i.e. coal, petroleum) and their products (e.g. liquefied petroleum gas, gasoline), and biomass.

Cashflow When financing energy efficiency improvements, cashflow is the difference between the average monthly energy savings and the monthly loan payment.

Combustion Appliance Zone (CAZ) A contiguous air volume within a building that contains a combustion appliance such as furnaces, boilers, and water heaters; the zone may include, but is not limited to, a mechanical closet, mechanical room, or the main body of a house, as applicable.

Compact Fluorescent Light bulb (CFL) A smaller version of standard fluorescent lamps which can directly replace standard incandescent lights. These highly efficient lights consist of a gas filled tube, and a magnetic or electronic ballast.

Cubic Feet per Minute (CFM) A measurement of airflow that indicates how many cubic feet of air pass by a stationary point in one minute.

Carbon Dioxide (CO2) A colorless, odorless noncombustible gas that is present in the atmosphere. It is formed by the combustion of carbon and carbon compounds (such as fossil fuels and biomass). It acts as a greenhouse gas which plays a major role in global warming and climate change.

Energy Efficiency Ratio (EER) The measure of the energy efficiency of room air conditioners: cooling capacity in Btu/hr divided by the watts consumed at a specific outdoor temperature.

Energy Factor (EF) The measure of efficiency for a variety of appliances. For water heaters, the energy factor is based on three factors: 1) the recovery efficiency, or how efficiently the heat from the energy source is transferred to the water; 2) stand-by losses, or the percentage of heat lost per hour from the stored water compared to the content of the water: and 3) cycling losses. For dishwashers, the energy factor is the number of cycles per kWh of input power. For clothes washers, the energy factor is the cubic foot capacity per kWh of input power per cycle. For clothes dryers, the energy factor is the number of pounds of clothes dried per kWh of power consumed.

Heating Seasonal Performance Factor (HSPF) The measure of seasonal efficiency of a heat pump operating in the heating mode. It takes into account the variations in temperature that can occur within a season and is the average number of Btu of heat delivered for every watt-hour of electricity used.

Heat Recovery Ventilator (HRV) / Energy Recovery Ventilator (ERV)
A device that captures the heat or energy from the exhaust air from a building and transfers it to the supply/fresh air entering the building to preheat the air and increase overall heating efficiency while providing consistent fresh air.

Light Emitting Diode (LED) Lighting An extremely efficient semiconductor light source. LEDs present many ad- vantages over incandescent light sources including lower energy consumption, longer lifetime, improved physical robustness, and smaller size.

Modified Internal Rate of Return (MIRR) This is your return on investment. Roughly speaking, if you invested the same amount of money for this project (listed on this report as the total cost) into a bank account, your equivalent interest rate from all of the energy savings would be the MIRR.

N-Factor A factor of how susceptible your house is to wind, influenced by weather patterns, location, and the number of floors in the home. Used in the calculation of NACH.

Natural Air Changes per Hour (NACH) The number of times in one hour the entire volume of air inside the building leaks to the outside naturally.

Payback Period The amount of time required before the savings resulting from your system equal the system cost.

R-Value A measure of the capacity of a material to resist heat transfer. The R-Value is the reciprocal of the conductivity of a material (U-Value). The larger the R-Value of a material, the greater its insulating properties.

Radon A naturally occurring radioactive gas found in the U.S. in nearly all types of soil, rock, and water. It can migrate into most buildings. Studies have linked high concentrations of radon to lung cancer.

Rim Joist In the framing of a deck or building, a rim joist is the final joist that caps the end of the row of joists that support a floor or ceiling. A rim joist makes up the end of the box that comprises the floor system.

Seasonal Energy Efficiency Ratio (SEER) A measure of seasonal or annual efficiency of a central air conditioner or air conditioning heat pump. It takes into account the variations in temperature that can occur within a season and is the average number of Btu of cooling delivered for every watt-hour of electricity used by the heat pump over a cooling season.

Savings to Investment Ratio (SIR) A ratio used to determine whether a project that aims to save money in the future is worth doing. The ratio compares the investment that is put in now with the amount of savings from the project.