



COMPLETE HOME ENERGY AUDIT REPORT



Joe Smith

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Date Performed: Saturday, May 16, 2009
Energy Auditor: Joel Gordillo
Energy Efficiency Consultant: K.C. Roberts

Your report includes the following:

- 41-Point Inspection
- IR Scan
- Blower Door
- Duct Blaster
- HERS Index

YOUR HOME'S EFFICIENCY REPORT

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DISCLAIMER: This home energy audit is not intended to be exhaustive. The information provided in this audit may change or become out of date due to the variations in weather conditions, conditions of the property, behaviour of occupants and other variations that we may not reasonably be able to anticipate. The recommendations of SRE will not offset the home value. SRE makes no warranties or representations of any kind as to the content of this document and the information contained herein is provided for informational purposes only.

Many factors were considered to determine your home's energy efficiency—its age, square footage, number of occupants, previous improvements, and energy bill patterns among others. We gathered this information in order to compare your home's energy consumption to the average usage of a similar home.

Square Footage

4161

Year Built

2008

Stories

2

Home Orientation

Southwest

Electric Provider

Spark

Electric Rate

\$ 0.10

Average kWh/month (summer)

N/A

Average kWh/month (winter)

N/A

Average Summer Electric Bill

\$ 300

Average Winter Electric Bill

\$ 100

Foundation

Slab on Grade

Roof Type

Asphalt/Composition

Flooring

Carpet , Tile , Wood

Building Material

Masonry

Renovation/Remodel Notes

N/A

BUILDING ENVELOPE

In building science you typically hear someone mention the building “envelope.” Much like an envelope you send in the mail, a building’s envelope encloses the living space, preventing outside elements from entering, while also preventing the inside contents from spilling out.

Your home's envelope includes the windows, ceiling, walls, and floor. The envelope is an integral part of home comfort and energy efficiency, but it is often overlooked.

INSULATION

Insulation plays a critical role in reducing heat transfer and air infiltration across your home’s boundaries. Adequate levels of insulation allow for consistent temperatures throughout the home, increased comfort within the living space, and a reduction in the amount of energy required to heat and cool your home.

SRE completed a thorough inspection of the insulation in your home’s attic, taking into account the insulation type, depth, condition, and coverage. We looked for insulation that may have settled or degraded, and for areas that require additional insulation.

Attic Name	Square Feet	Insulation Type	Insulation R-value	Radiant Barrier	Duct Condition	Duct Hangers
Main	1800		30	Cool-Ply Blanket	Good	Hung, Crimped

RECOMMENDATIONS

Finding(s)	Recommendation(s)
1 Insulation - Some Insulation/Insufficient	The insulation in your attic performs below the ENERGY STAR® standard of an R-38 value. We suggest you increase the depth to an R-38 value or better to remedy the hot spots and to help lower your utility costs. Insulation levels are specified by R-Value. R-Value is a measure of insulation's ability to resist heat flow. The higher the R-Value, the better the thermal performance of the insulation.
2 Attic Tent Not Installed	Installing an attic tent will complete the thermal barrier between your living space and attic. The stairway into your attic is a common area for infiltration, and attic tents are an inexpensive and easy way to keep the attic air out of your conditioned, living space.
3 Ductwork Crimped or improperly installed	The condition of your ductwork is making it difficult for air to pass through effectively. Not only is this causing your HVAC system to work harder, it is likely leading to uneven temperatures in various areas of your home. You should have your ductwork replaced immediately.

RECOMMENDATIONS

Finding(s)	Recommendation(s)
4 Attic Fan Recommended	A properly ventilated attic prolongs your roof's life, improves your HVAC system's efficiency, and makes your living space more comfortable. Solar attic fans ventilate your attic space when temperatures reach a certain threshold, and most importantly, they do not carry any fuel costs.
5 Seal Can Lights	Seal your can lights in your attic with insulation. Contractors typically overlook sealing can lights, but they are simply holes in your ceiling, and should be insulated. We suggest spray foam insulation, as it adheres to its surroundings, creating a tighter seal around the recessed can.

WEATHERIZATION

Weatherization is the process of protecting your home and its interior from outside elements, including sunlight, precipitation, and wind. These protective measures will modify your home to reduce energy consumption and optimize energy efficiency.

SRE performed a thorough evaluation of your home’s doors, windows, electrical outlets, lighting fixtures, and attic access to identify worn or missing seals. Even the smallest cracks can lead to much larger problems.

Windows:

Type: Double pane

Frame: Aluminum

North East	North West	South East	South West
5 - 1' x 6'	3 - 3' x 5'		2 - 1' x 6'
1 - 2' x 4'	1 - 3' x 6'		3 - 2' x 2'
2 - 2' x 6'	1 - 5' x 5'		2 - 2' x 4'
6 - 3' x 5'			3 - 2' x 6'
4 - 5' x 5'			1 - 3' x 2' - Arch
4 - 5' x 6'			2 - 3' x 5'
			1 - 3' x 6'
			1 - 5' x 3'
			0 - 5' x 4' - Arch

Doors:

Location	Quantity	Size	Type	Weather stripping needed?
Front door	1	3' x 7'	Full-light	Yes
Back door	1	3' x 7'	Full-light	Yes

RECOMMENDATIONS

- | Finding(s) | Recommendation(s) |
|-------------------------------|---|
| 1 Doors - Weather-strip - Add | Add weather-stripping to your exterior doors. In many places your weather stripping is broken and/or missing. While this may not seem to be a large factor in your home's performance, keep this in mind: a 1/8 inch gap around a door is equal to having a 6 inch by 6 inch hole in your wall. |
| 2 Window Film - Install | Adding window film on the south, east, and west side of your home will greatly reduce heat gain in your home. Window film increases comfort and energy efficiency, but is not a terribly large investment. |

RECOMMENDATIONS

Finding(s)	Recommendation(s)
3 Doors - Install Sweep	Install door sweeps on exterior doors to properly prevent air infiltration.
4 Windows - Caulk	Apply caulk around windows both inside and out. It is important to ensure the windows are sealed both where the glass meets the frames and where the window unit meets the home. This prevents the infiltration of hot air from outside and leakage of conditioned air.
5 Windows - Weather stripping	We recommend adding new weather stripping to your windows. Windows are a commonly overlooked area for infiltration, and weather-stripping is a quick and easy solution that will make a noticeable difference on comfort.

BLOWER DOOR TEST

A **blower door test** is a diagnostic test that uses a fan to pressurize (force air into) or de-pressurize (force air out of) a home. Blower doors have gauges which can measure the relative leakiness of a home. The homes **leakage rate** is **air changes per hour (ACH)**, which estimates how many times in one hour the entire volume of air inside the home leaks to the outside.

To determine ACH, the blower door creates a pressure difference of 50 Pascals between the inside and outside of your home. Fifty Pascals is approximately equivalent to a 20 mph wind blowing against all surfaces of the home. The leakier the home, the harder the fan must work to maintain the pressure. The amount of air the fan blows, measured in **cubic feet per minute (CFM)**, is used to calculate your home's ACH. Leakier homes have a higher ACH, equating to higher heating and cooling costs, and greater potential for moisture, comfort, and health problems.



CFM @ 50 Pascal	ACH – Your Home	ACH – GOAL*
2651	0.14	0.35

* An ACH over 0.35 indicates leakage rates where air sealing efforts would be beneficial.

RECOMMENDATIONS

Finding(s)	Recommendation(s)
1 ACH/Leakage Rate Minimal/None	The air changes per hour shows that your home has little to no leakage. Sealing and insulating the "envelope" or "shell" of your home and its outer walls, ceiling, windows, doors, and floors is often the most cost-effective way to improve energy efficiency and comfort. A leaky house uses more energy for both heating & cooling and will often have a negative effect on the air quality. Weatherization includes caulking and weather stripping around windows and doors; inserting foam insulators behind outlet and switch plate covers; and replacing old windows and storm doors with high-efficiency models.

If every American home replaced just one light bulb with an ENERGY STAR® qualified bulb, we would save enough energy to light more than 3 million homes for a year, more than \$600 million in annual energy costs, and prevent greenhouse gases equivalent to the emissions of more than 800,000 cars.

The common incandescent light bulb is terribly inefficient, and until recently, was the only option. Fortunately, the price of compact fluorescent light bulbs (CFL) has dropped to competitive levels with incandescent bulbs. SRE ENERGY STAR® CFLs provide the greatest savings in fixtures that are on for a substantial amount of time each day. At a minimum, ENERGY STAR® recommends installing qualified CFLs in fixtures that are used at least 15 minutes at a time or several hours per day.

Location	Lighting Type	Wattage	Quantity
Utility room	Fluorescent tubes	N/A	2
Master Closet	Fluorescent tubes	N/A	2
Bathroom 1	IC Cans	60	1
Dining Room	Incandescent	60	6
Bedroom 3	Incandescent	60	2
Kitchen	CFL bulbs	N/A	7
Study	Incandescent	60	4
Closet	Incandescent	60	1
Bedroom 2	CFL bulbs	N/A	1
Master bedroom	Incandescent	60	6
Hallway	IC Cans	60	1
Hallway	Incandescent	60	2
Master bathroom	IC Cans	60	3
Upstairs hallway	IC Cans	60	3
Bedroom 2	Incandescent	60	4
Game room	Incandescent	60	5
Study	CFL bulbs	N/A	6
Pantry	CFL bulbs	N/A	4
Half bathroom	CFL bulbs	N/A	2
Living Room	Incandescent	60	4
Breakfast room	Incandescent	60	3
Bathroom 1	CFL bulbs	N/A	13
Bathroom 2	IC Cans	60	1
Bedroom 3	IC Cans	60	4
Water Closet	Incandescent	60	2

Location	Lighting Type	Wattage	Quantity
Living Room	CFL bulbs	N/A	1
Master Closet	Fluorescent tubes	N/A	2
Bedroom 1	Incandescent	60	4
Bathroom 2	CFL bulbs	N/A	4
Foyer	Incandescent	60	5
Bedroom 4	Incandescent	60	3

RECOMMENDATIONS

Finding(s)	Recommendation(s)
1 CFL Implementation Present/Not in all possible locations	Replacing your old, power-hungry incandescent light bulbs with energy-efficient compact fluorescent light, CFL, bulbs from Standard Renewable Energy will substantially decrease the amount of energy you use to light your home. Standard Renewable Energy's CFL bulbs are specially designed to mimic the shape and light color of traditional incandescent bulbs, while using only a fraction of the energy, and most bulbs are available in a dimmable version.
2 Occupancy Sensors - Install	Light bulbs, combined with hours of use, create your lighting consumption. We suggest you install occupancy sensors in all rooms to ensure that your lights will only be turned on when there is someone in the room. The lights will eventually shut off to prevent wasteful consumption.

When buying an appliance, remember that it has two price tags: what you pay to take it home and what you pay for the energy and water it uses. ENERGY STAR® qualified appliances incorporate advanced technologies that use 10–50% less energy and water than standard models. The money you save on your utility bills can more than make up for the cost of a more expensive but more efficient ENERGY STAR® model.

Energy Star Appliances®	Non-Energy Star Appliances®
Clothes Washer Freezer Microwave Oven Dishwasher Computer Refrigerator Stove	Clothes Dryer

Water Heater

Type	Size	Brand	Model #	Qty
Natural Gas	40 gallon	State Select	GS640YOCA	2

RECOMMENDATIONS

Finding(s)	Recommendation(s)
1 Distribution losses	Exposed copper pipes can waste up to 9% of the water heating energy from distribution losses to the point of use. Add foam insulation tubes around the accessible hot water pipes in the home to reduce this waste.
2 ENERGY STAR® Power Strips - Install	To reduce energy waste, we recommend plugging in televisions and audiovisual equipment into ENERGY STAR® power strips. This allows you to easily switch off or unplug several devices at once, saving kWh on your next electric bill.
3 Water Heater Jacket Not Installed	Water heater jackets are an inexpensive improvement, and will certainly improve your water heater's performance. The jacket is a thermal layer that wraps around your tank, allowing the water to retain the heat for longer.
4 Generic ENERGY STAR® Products	Choosing ENERGY STAR® qualified products can help keep your home comfortable year-round and contribute to a cleaner environment. A list of such products can be found on the ENERGY STAR® website: www.energystar.gov
5 Appliances Most Are ENERGY STAR®	When your appliances stop performing to your expectations, make sure you replace them with qualified ENERGY STAR® appliances.

RECOMMENDATIONS

Finding(s)	Recommendation(s)
6 Install On Demand Hot Water Heater	Instead of having your water heated constantly, on demand water heaters quickly and efficiently raise the temperature of the water just before you use it. This way your home does not expend energy heating water that is not in use.

Heating, ventilation, and air conditioning (HVAC) systems are the single largest source of home energy consumption. Your system works around the clock and is asked to move tons of air per minute. Like all mechanical equipment, an HVAC system’s performance degrades over time resulting in substantial energy waste and uncomfortable living conditions. The furnace and air conditioner are the two main components of your HVAC system. We inspected the general condition of your unit(s) and documented the manufacturer, age, and original efficiency.

HVAC System : 1

Media Filter Installed:
No

Filter Size(s):
20x30 & 16x25

Thermostat:
Programmable

UV Light present in the coil?
No

Condenser/Heat Pump
Brand: Carrier
Model #: 24ABA442A320
Serial #: 110BE23920

Furnace/Air Handler
Brand: Carrier
Model #: 58STA090
Serial #:100A32463

HVAC System : 2

Media Filter Installed:
No

Filter Size(s):
20x30 & 16x25

Thermostat:
Programmable

UV Light present in the coil?
No

Condenser/Heat Pump
Brand: Carrier
Model #: 24ABA448A320
Serial #: 2008E18225

Furnace/Air Handler
Brand: Carrier
Model #: 585TA070
Serial #:1008A32472

RECOMMENDATIONS

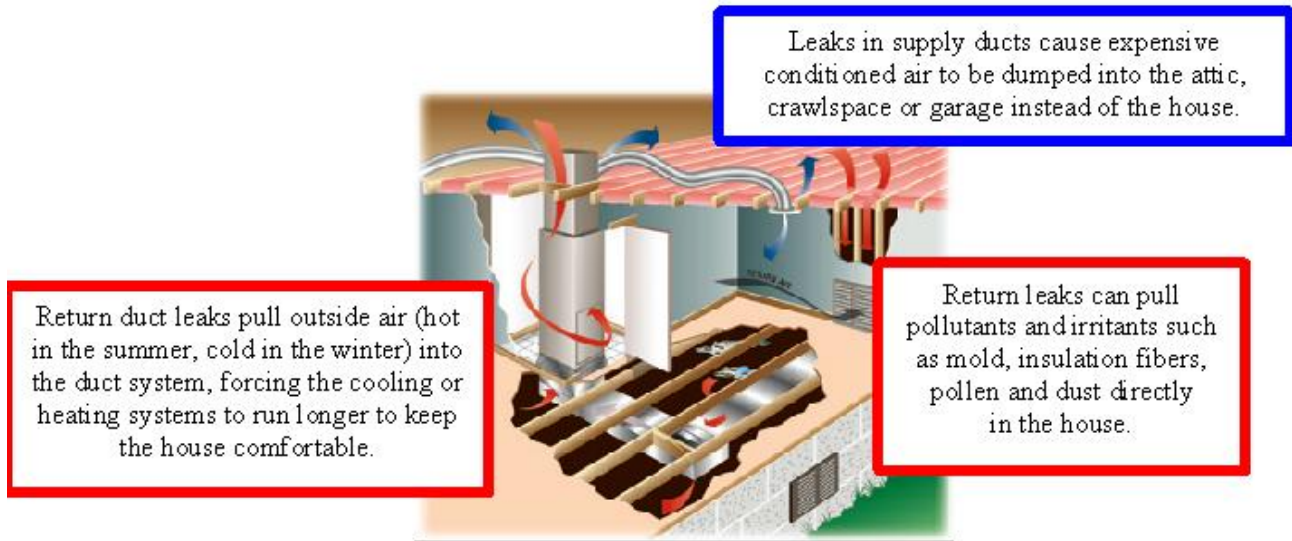
Finding(s)	Recommendation(s)
1 Change Filter	Change your HVAC air filter quarterly. A clean filter will improve airflow and the efficiency of your heating system, while also improving the air quality in your home. If you are particularly sensitive to airborne dust and mold, consider installing a media air filter, UV light or HEPA filtration system.
2 HVAC Maintenance	Establish a bi-annual preventative maintenance agreement with Standard Renewable Energy's HVAC team. These bi-annual check-ups will keep your system performing at a high level, and will flush out issues before they become emergencies.

RECOMMENDATIONS

Finding(s)	Recommendation(s)
3 Install Media Filter	Add a 5" media filter system to your existing HVAC equipment to ensure cleaner air is distributed throughout your home, resulting in increased indoor air quality and prolonging the life of the HVAC system.
4 Install UV Lights	Ultraviolet (UV) germicidal lights kill up to 99.99% of surface mold, airborne bacteria, and viruses. Once installed in your HVAC system, the UV light improves indoor air quality by destroying these health threats before they circulate in your home.

DUCT BLASTER TEST

The Duct Blaster Test is a calibrated air flow measurement system designed to test and document the air tightness of forced air duct systems in houses. The amount of air the fan blows, measured in **cubic feet per minute (CFM)**, is used to calculate your home’s duct leakage. Duct air tightness measurements are used to diagnose and demonstrate leakage problems and estimate efficiency losses from duct leakage.



Location	CFM @ 25 Pascal	Duct Leakage – Your Home	Duct Leakage – GOAL*
Downstairs	267	17%	10%
Upstairs	117	7%	10%

* A Duct Leakage of more than 10% indicates that outside air is penetrating the return duct system and the ducts need to be sealed. ENERGY STAR homes are required to have duct leakage of 5% or lower.

RECOMMENDATIONS

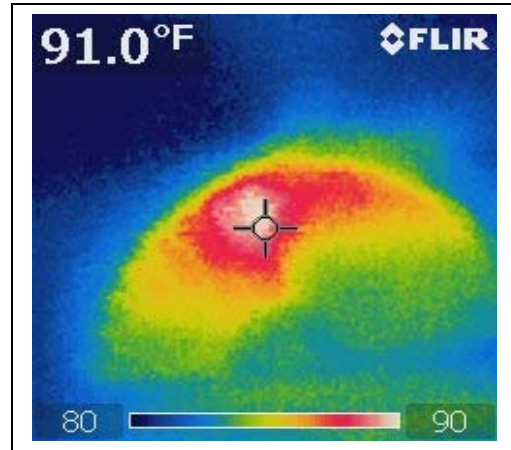
Finding(s)	Recommendation(s)
1 Duct Leakage Average	It would be beneficial to seal your ducts with mastic and UL 181 tape to prevent further leakage. Leaks in forced air duct systems are now recognized as a major source of energy waste in both new and existing houses. Studies indicate that duct leakage can account for as much as 25% of total house energy loss, and in many cases has a greater impact on energy use than air infiltration through the building shell. Just as important, duct leakage can prevent heating and cooling systems from doing their job properly, resulting in hot or cold rooms, and humidity problems. Worse yet, duct leaks can create air quality problems by pulling pollutants and irritants directly into the house.

RECOMMENDATIONS

Finding(s)	Recommendation(s)
2 Duct Leakage Minimal/None	Your home has little to no duct leakage. Check the mastic on your ducts every two to three years for tears and disintegration. Leaks in forced air duct systems are now recognized as a major source of energy waste in both new and existing houses. Studies indicate that duct leakage can account for as much as 25% of total house energy loss, and in many cases has a greater impact on energy use than air infiltration through the building shell. Just as important, duct leakage can prevent heating and cooling systems from doing their job properly, resulting in hot or cold rooms, and humidity problems. Worse yet, duct leaks can create air quality problems by pulling pollutants and irritants directly into the house.



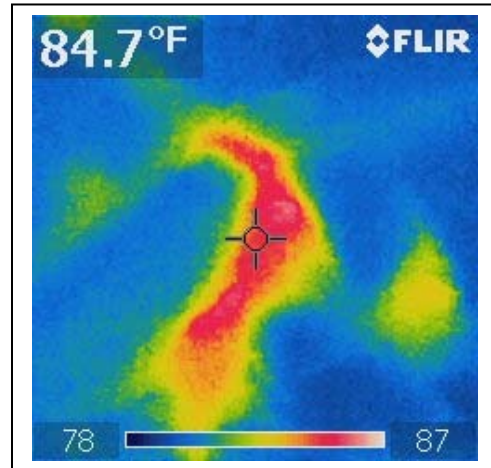
1. Dining Room Arch Window



2. Install V-KOOL window film to reduce the amount of heat transfer.



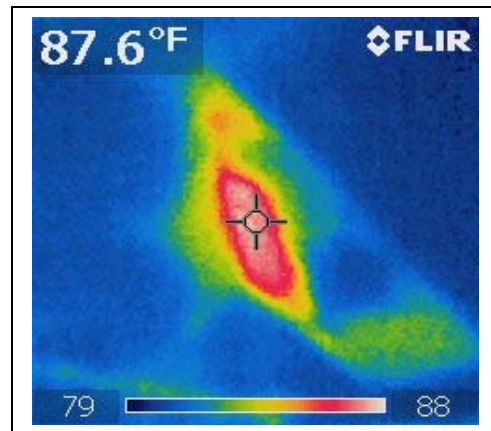
3. Upstairs Front Bedroom
Vaulted Ceiling



4. Spread out insulation to remedy hot spot in ceiling.



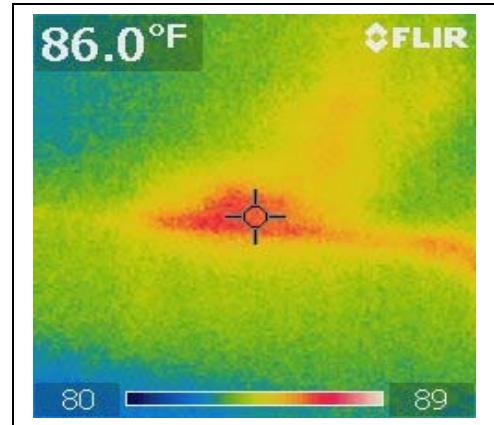
5. Upstairs Den Vaulted Ceiling



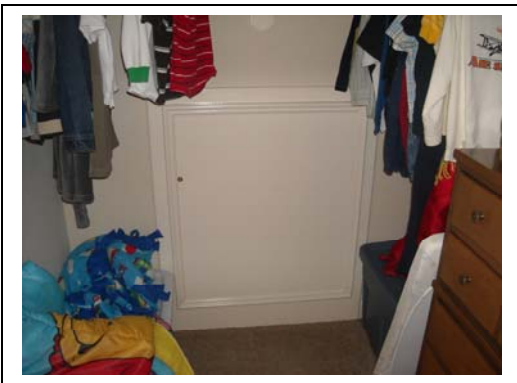
6. Spread insulation to corners to prevent hot spots.



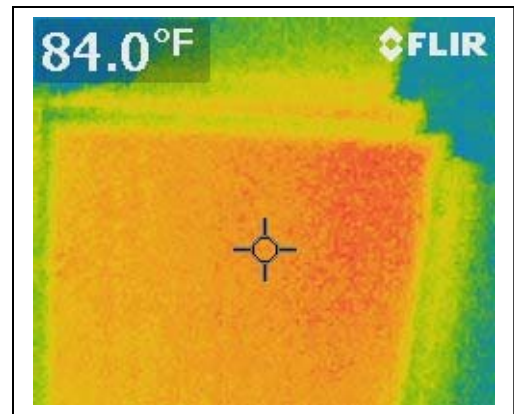
7. Upstairs Bedroom Kneewall



8. Spread out insulation to remedy hot spots.



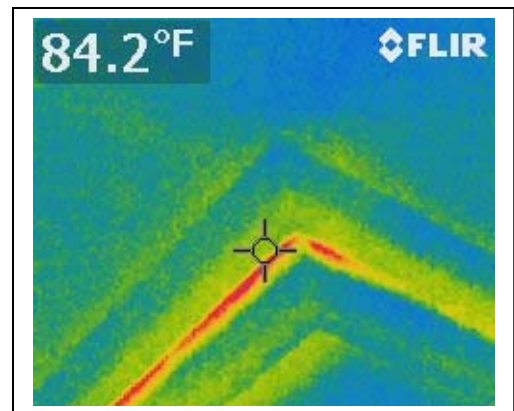
9. Attic Access at Closet



10. Sheath access panel on back side to prevent unwanted heat transfer.



11. Attic Access



12. Insulate around attic access door to prevent heat transfer

Renewable energy includes natural, inexhaustible, and pollution-free resources such as the sun and the wind. A wind energy, solar water heating (thermal), solar electric (PV) system installed at your home allows you to use less energy from fossil fuels and to reduce greenhouse gasses and other pollutants.

How Wind Energy Systems Work:

A wind energy system is made up of a turbine resembling a propeller engine from a sleek, modern aircraft mounted on top of a tall tower. As wind blows over the turbine's blades, the turbine revolves and generates electricity. The electricity your turbine produces is sent directly to your home's main electrical panel, where it immediately provides power for your home.

How Solar Water Heating (Thermal) Systems Work:

Solar collectors mounted on your roof use heat energy from the sun to provide hot water for your home. And though they are compact- a single solar collector is only 4' x 8' x 3" and a typical system requires only 64 sqft of roof space- they are extremely durable. Solar collectors can withstand from extreme temperatures, have life spans of 20 years or more, and are optimized for year-round performance, regardless of outside temperatures.

How Solar Electric Systems Work



1 Solar panels are mounted on your roof with a custom racking system. Solar panels collect energy from the sun and turn it into direct current (DC) electricity.

2 DC electricity flows into an **inverter**, which converts it into alternating current (AC) electricity, the type of electricity your home uses.

3 AC electricity from the inverter is fed directly into your home's main electrical panel where it immediately provides power to your home. If you need more power than your system is providing, you continue to receive power from your electricity provider just as you do now.

BACK UP POWER SOURCES

Whole Home Generators offer a space-saving design with an exclusive overload protection to give you the best alternative power source when the grid is not available.

Recommended Models	kW	Starting Watts	Running Watts
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SEREGEN™ 300 Series Air Cooled			
Natural Gas	18	25,200	18,000
Propane	20	28,000	20,000

SEREGEN™ 400 Series Air Cooled			
Natural Gas	27	33,000	27,000
Propane	30	37,000	30,000



BENEFITS:

- Fully Automatic - Advanced electronics will detect a utility power outage and automatically start the generator whether you are home or away.
- Maximum Efficiency - Includes computer controlled power management system for maximum efficiency (optional feature).
- Whole House comfort - The generators will supply enough power to manage up to two 5-ton air conditioners in addition to essential household power requirements which is necessary for largest homes (3,500 sqft +).
- Continues Fuel Supply - A permanent connection to natural gas or propane delivers uninterrupted performance with no messy gasoline storage and refueling.
- Premium Warranty - 4 year limited- your guarantee of quality and performance.

DO YOUR PART TO SAVE ENERGY

The SRE Power Cost Monitor provides real-time feedback on your home's electricity consumption. With visibility into how your home uses electricity, you have the knowledge you need to make simple and immediate changes that can save energy and save money.

Be smart about your energy use

The SRE Power Cost Monitor will help identify which appliances are using the most electricity. By simply turning your appliances on and off, one by one and reading the LCD screen you can see how much energy each appliance uses. This empowers you to change your habits and make smart choices about reducing your energy consumption.

Display features of the SRE Home Energy Monitor

- Current wattage of electricity being used
- Cost per month
- How much saved when an appliance turns off
- How much spent when an appliance turns on
- A graph shows you how much energy you have used:
 - 7am to 3pm during the previous day
 - 3pm to 11pm the previous evening and
 - 11pm to 7am the previous night.
- You can scroll the graph to the last day, last 7 days, and last 30 days
- The time and temperature



Installation included with purchase

We'll install your monitor, help you personalize your settings, and show you how you can monitor your home energy consumption and your various appliances.

SUMMARY OF RECOMMENDATIONS

INSULATION

Finding	Recommendations
1 Insulation - Some Insulation/Insufficient	The insulation in your attic performs below the ENERGY STAR® standard of an R-38 value. We suggest you increase the depth to an R-38 value or better to remedy the hot spots and to help lower your utility costs. Insulation levels are specified by R-Value. R-Value is a measure of insulation's ability to resist heat flow. The higher the R-Value, the better the thermal performance of the insulation.
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LIGHTING

Finding(s)	Recommendation(s)
1 CFL Implementation Present/Not in all possible locations	Replacing your old, power-hungry incandescent light bulbs with energy-efficient compact fluorescent light, CFL, bulbs from Standard Renewable Energy will substantially decrease the amount of energy you use to light your home. Standard Renewable Energy's CFL bulbs are specially designed to mimic the shape and light color of traditional incandescent bulbs, while using only a fraction of the energy, and most bulbs are available in a dimmable version.
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HVAC

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RENEWABLE/GENERAL

Finding(s)	Recommendation(s)
1 Solar PV Recommended	You have adequate roof space and sun exposure to install a solar electric (PV) system. Solar panels are a simple, durable, proven technology that generates electricity while also decreasing pollution, decreasing electricity costs and increasing home value.
2 Install SRE Power Cost Monitor	Installing an SRE Home Energy Cost Monitor makes it easy to monitor your energy use. Our monitor has an LCD screen that updates every 6 seconds to give you immediate feedback on how much electricity your appliances and lights are consuming. In addition, the monitor can easily be personalized with your cost/kWh rate. It even has multi-rate ability. This feature lets you estimate at any time what your next utility bill will be, no more surprises!
3 Solar Water Heating Recommended	A solar hot water system uses the sun's radiant energy to keep the water in your hot water tank at a consistently higher temperature. This releases some of the work load from the water heater, thereby reducing your energy consumption.
4 Install Back up Power	Take charge before the power goes out with a fully automatic, permanently installed Home Generator System. These days people

SUMMARY OF RECOMMENDATIONS

RENEWABLE/GENERAL

Finding(s)	Recommendation(s)
	rely on electricity more than ever, but it does not take much for power to be disrupted. Even a short power outage leaves you without the creature comforts we all take for granted. And a power outage after a major storm? It could last weeks, making it more than just an inconvenience.
5 Penetrations Not Sealed - Plumbing	Use silicone caulk or expanding foam to seal around your plumbing, as these gaps are allowing air to enter and exit your home.
6 Penetrations Not Sealed - Outlets	Seal around electrical outlets and lighting plates with clear silicone caulking or spray foam.
7 Penetrations Not Sealed - Outlet Gaskets	Outlet gaskets are an inexpensive way to seal all walls. While outlets do not appear to be large enough to really matter, the amount of air filtrating through all of your outlets can have a great effect on your home's energy efficiency.
8 Penetrations Not Sealed - Can Lighting	Seal around can lighting with clear silicone caulking. Unsealed can lights allow air to enter your living space, and although each hole or crack may seem small, the cumulative effect of all leaks can add up to significant energy waste.
9 Penetrations Not Sealed - Baseboards	Use caulk to seal your baseboards. Even the smallest of gaps and cracks can lead to significant energy loss.
10 Shading Install	The western side of your home is exposed to a great deal of sun. We recommend planting a tree on the west side of your home to provide shading. By reducing the amount of solar heat entering your home, you will also decrease your HVAC system's work load.

Solar Electric Energy Credit

- 30% of the qualified solar electric property expenditures made by the taxpayer during such year, uncapped and expiring December 31, 2016
- Federal Tax Credit is always calculated on the system installation price (rebates do not affect this number)
- Does not apply to solar used to heat swimming pools
- Credits may be used to offset the alternative minimum tax (AMT)

Solar Thermal Energy Credit

- 30% of the qualified solar water heating property expenditures made by the taxpayer during such year, expiring December 31, 2016
- Federal Tax Credit is always calculated on the system installation price (rebates do not affect this number)
- Does not apply to solar thermal used to heat to swimming pools
- Credits may be used to offset the alternative minimum tax (AMT)

Wind Energy Credit

- 30% investment tax credit, expiring December 31, 2016
- Credits may be used to offset the alternative minimum tax (AMT)

Geothermal Energy Credit

- 30% of the qualified geothermal heat pump property expenditures made by the taxpayer during such year, expiring December 31, 2016
- Heat pumps must meet Energy Star program requirements
- Credits may be used to offset the alternative minimum tax (AMT)

Residential Energy Efficiency and Conservation:

Applicable to primary residences only

Valid from February 16, 2009 through December 31, 2010

Tax Credit Cap for all credits claimed under this section is \$1500 total.

Qualified Energy Efficiency Improvements:

Tax credit equals 30% of purchase price of the following items

- Insulation
- Exterior Windows
- Exterior Doors
- Metal Roofs with appropriate pigmented coatings
- Asphalt roof with appropriate cooling granules

Residential Energy Property Expenditures:

Tax credit equals amount of expenditure (full purchase price), subject to individual caps. Below is a list of the minimum efficiency requirements.

- Natural gas, propane, or oil furnace or hot water boiler which achieves an annual fuel utilization rate - 95% AFUE
- Advanced main air circulating fan – used in a furnace which has an annual electricity use no more than 2% of the total annual energy use of the furnace
- Electric heat pump water heater - 2.0 EF
- Electric heat pump - 15 SEER / 13 EER / 9 HSPF
- Split Central Air Conditioner - 16 SEER / 13 EER
- Packaged Central Air Conditioner - 14 SEER / 12 SEER
- Natural gas, propane, or oil water heater - 0.80 EF and 90% AFUE

Alternating current (AC) – the type of electricity used by most household appliances. An inverter is used in a renewable energy system to convert incoming direct current (DC) into usable alternating current (AC).

ACH – "Air Changes per Hour", measurement of air infiltration. It is the total volume of air in a home that is turned over in one hour. It can also be known as the exchange rate per hour, which is expressed in cubic feet per minute.

AFUE – Annualized Fuel Utilization Efficiency is a measure of your furnace's heating efficiency. The higher the AFUE percentage, the more efficient the furnace. The minimum percentage established by the U.S. Department of Energy (DOE) for furnaces is 78%.

Blower Door Test – A Blower Door test is used to measure the air tightness level of building envelopes, diagnose and demonstrate air leakage problems, estimate natural infiltration rates, estimate efficiency losses from building air leakage, and certify construction integrity.

Building Envelope – The assembly of exterior partitions of a building that enclose conditioned spaces, through which energy may be transferred to or from the exterior, unconditioned spaces, or the ground.

Carbon footprint – A measure of an individual's, family's, community's, company's, industry's, product's or services overall contribution of carbon dioxide and other greenhouse gases into the atmosphere. It takes into account energy use, transportation methods and other means of emitting carbon. A number of carbon calculators have been created to estimate carbon footprints, including one from the EPA (U.S. Environmental Protection Agency.)

Compact fluorescent lighting (CFL) – A fluorescent type bulb that has the ability to be utilized in an incandescent fixture, and still maintain the efficiency and qualities of a standard fluorescent bulb. These bulbs generally offer 75% savings in electricity while maintaining comparable light levels. They last up to 10 times as long as a standard incandescent bulb (10,000 vs. 1,000 hours).

Compressor – The part of the outdoor air conditioner or heat pump that compresses and pumps refrigerant to meet household cooling requirements.

Condenser Coil – The outdoor portion of an air conditioner or heat pump that either releases or collects heat, depending on the time of the year.

CFM – "Cubic Feet (per) Minute", measurement of movement of air through a heating, ventilation or cooling system, (e.g. an 300 CFM fan will move three hundred cubic feet of air in one minute).

Direct current (DC) – the form of electricity generated by renewable sources.

Duct Blaster Test – A calibrated air flow measurement system designed to test and document the air tightness of forced air duct systems in both houses and light commercial buildings. Duct air tightness measurements are used to diagnose and demonstrate leakage problems, estimate efficiency losses from duct leakage, and certify compliance with duct leakage standards

Duct/Ductwork – A network of metal, fiberboard or flexible material flowing throughout a space which delivers air from an HVAC unit to the respective zones of a home or office.

Energy efficiency – technologies and measures that reduce the amount of electricity and/or fuel required to do the same work without reducing the end-use benefits.

Energy management – empowering a customer to monitor and control usage to leverage use with times of peak pricing or demand. Allows visibility into usage and opportunities for conservation measures.

ENERGY STAR® - Is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) helping us all save money and protect the environment through energy efficient products and practices.

Home Energy Rating System (HERS®) – HERS measure and rate on a scale the relative energy efficiency of any house, regardless of age, efficiency, or fuel use. The rating is based on the efficiency of the thermal envelope and the heating, ventilating, and air conditioning (HVAC) system and is obtained by on-site inspection and calculations. HERS calculations include estimates of annual energy performance and costs and recommendations for cost-effective energy-efficiency improvements.

IR Scan – Infrared scanning evaluates the flow of heat through your home and pinpoints problem spots due to leaks and missing insulation.

Infiltration – outside air that enters a structure through openings or cracks in the construction materials, especially windows and doors. "Design" infiltration in residences can range from one-half air change to three air changes per hour, depending on how well the house is constructed, caulked, or weather-stripped. Average air changes over the heating season are lower. Infiltration is a major area of home heat loss.

Heat Gain – An increase in the amount of heat contained in a space, resulting from direct solar radiation, heat flow through walls, windows, and other building surfaces as well as the heat given off by people, lights, equipment, and other internal sources.

Heat Loss – A decrease in the amount of heat contained in a space, resulting from heat flow through walls, windows, and other building surfaces and from exfiltration of warm air.

Incandescent – Incandescent light bulbs are perhaps the most commonly found bulb in your home. The incandescent bulb contains a filament, which glows to an incandescent level when electricity flows through the filament.

Kilowatt (kW) – standard unit of electrical power equal to 1,000 watts (kilo = 1,000).

Kilowatt-hour (kWh) – standard measurement of electricity consumption or production. One thousand watts consumed or produced over the course of one hour. For example, a 100-watt light bulb used for 10 hours would consume 1 kWh of electricity.

Knee-Wall – a short wall between an attic floor and sloping roof.

LED – light-emitting diode: a semiconductor diode that emits light when conducting current and is used in electronic equipment, especially for displaying readings on digital watches, calculators, etc.

Load – the electrical demand of a location. Also, the amount of energy required by a particular piece of equipment. Usually expressed in watts or kilowatts. Photovoltaic (PV) - A solar power technology that uses solar cells or solar photovoltaic arrays to convert light from the sun directly into electricity.

R-Value – "R" stands for resistance to winter heat loss and summer heat gain and is more accurate than inches in designating insulation performance. Even though one type or brand of insulation is thicker or thinner than another, it will provide identical resistance to heat loss if the R-value is the same. R-values can also be added.

Radiant heat – Heat that passes through the air, heating solid objects that in turn heat the surrounding area.

Refrigerant – A gas or liquid used in air conditioning systems which condenses under pressure and in the process decreases in temperature. Commonly known refrigerants are "R-22" and "R-410A".

REM/Rate™ – A highly sophisticated, residential energy analysis, code compliance and rating software developed specifically for the needs of HERS providers. The software calculates heating, cooling, hot water, lighting, and appliance energy loads, consumption and costs for new and existing single and multi-family homes. An HERS index of 100 or lower indicates that the house is as efficient as or more efficient than the International Energy Conservation Code. Each one point drop in the index represents a 1% change in energy use compared to the base house fixed at 100.

R-22 – Common name for HCFC, (hydro-chlorofluorocarbon), a refrigerant gas used in HVAC equipment for nearly 50 years. Recent studies show that HCFC type refrigerants contain chlorine, an ozone-depleting agent and will be phased out of production on January 1, 2010.

R-410A – Common name for "HFC", (hydro-fluorocarbon) a newer refrigerant gas used in HVAC equipment as it is more environmentally friendly than R-22.

SEER – The Seasonal Energy Efficiency Ratio is an energy efficiency rating for air conditioners. The higher the SEER, the better the energy performance, and the more you save. The U.S. Department of Energy set a higher minimum standard of 13 SEER. All HVAC equipment manufactured after January 23, 2006 must meet a minimum of 13 SEER.

Ton – Unit of measurement for determining cooling capacity. One ton equals 12,000 Btu/h.

Weatherization – Retrofitting a house's envelope with basic energy efficiency measures, such as weather-stripping, caulking, and insulation.