HOME ENERGY TUNE-UP® A CMC Energy Services Program | Bringing Today's Energy Efficiency to Yesteryear's Homes.

Home Tune-uP Report

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11/16/2008

This Home Tune-uP report:

- Lists energy efficiency improvements and their estimated savings and costs;
- Identifies the group of improvements that save more than they cost;
- Lists features examined but not recommended;
- Explains each recommendation in detail;
- Provides information on implementation and contractor resources;
- Suggests additional energy efficiency measures;
- Gives guidance on indoor air quality.

Implementing these recommendations will reduce your energy bills and make your home more comfortable and more valuable. It will also help the environment. The energy savings realized by making improvements may pay for the monthly cost of the improvements when financed. Thus investing in energy efficiency can be profitable from day one.

Inspection ID:	3001
Structure type:	Detached
Date built (est.):	1976
# of bedrooms:	4
House size (sq. ft.):	2080
House volume (cu. ft.):	16640
Heating fuel:	Heating Oil
Price of heating fuel:	$2.425/Gallon
Price of electricity:	$0.082/kWh

The estimates in this Tune-uP Report are based on the data obtained from measuring and inspecting your home. The information was analyzed using CMC Energy Services' Home Tune-uP software, which takes account of local weather, energy prices and implementation costs. CMC's experience, based on more than 250,000 home energy inspections since 1977, has shown the accuracy of CMC estimates to compare favorably to others. The savings estimates do not reflect variations in the behavior of the occupants nor future weather changes. The actual costs will vary from the estimated costs due to variations in the complexity of the job as well as price differences among contractors and suppliers. To speed up the loan process, the amount financed will be based on the "estimated cost" from the RS Means Repair & Renovation estimates for the region, rather than on an approved contractor's bid.

CMC Energy Services does not offer any warranty, either expressly or implied, for the estimated savings or costs in this Report. Should you find an error in the Report, please call us at 866-336-5262. The liability of CMC Energy Services for any errors or omissions in this Report is limited to the fee paid for this Report.

Energy Efficiency Improvement Opportunities

The following table summarizes the energy efficiency improvement opportunities available for your home and lists estimates of the annual savings, costs, and payback (the cost divided by the annual savings). Details for each improvement opportunity are provided in the recommendations section of the report.

Table 1

Feature	Recommendation	Estimated Annual Savings*	Estimated Cost	Payback (Years)
Programmable Thermostat - Unit 1	Install	$119	$212	2
Duct Repair - Basement	Repair ducts	$75	$138	2
Water Heater - Basement	Install electric timer	$38	$81	2
Refrigerator - Basement	Replace due to age	$119	$630	5
Air Sealup	Seal air leaks	$98	$608	6
Floor Insulation - Original House	Insulate to R 19	$127	$1,030	8
2 Mini Basement Window(s)	Replace with double-pane	$12	$135	11
Duct/Pipe Insulation	Insulate	$38	$445	12
Refrigerator - Kitchen	Replace due to age	$50	$810	16
Clothes Washer - Utility Room	Replace due to age	$41	$775	19
Attic/Ceiling Insulation - Original House	Insulate to R 38	$39	$824	21
		Total	$5,686	

*Total annual savings are not included since each savings estimate assumes that all other features remain the same.

Implementing all these recommendations would result in an annual reduction of Greenhouse Gases equivalent to not driving a car for 4.7 months.

Improvements That Save More Than They Cost

The table below identifies the group of improvements you cannot afford to pass up because the monthly energy savings they create exceed their monthly costs when financed. Furthermore, they will make your home more comfortable while also increasing its value. (These estimates are based on a 30-year loan with a 6.00% interest rate.)

Table 2

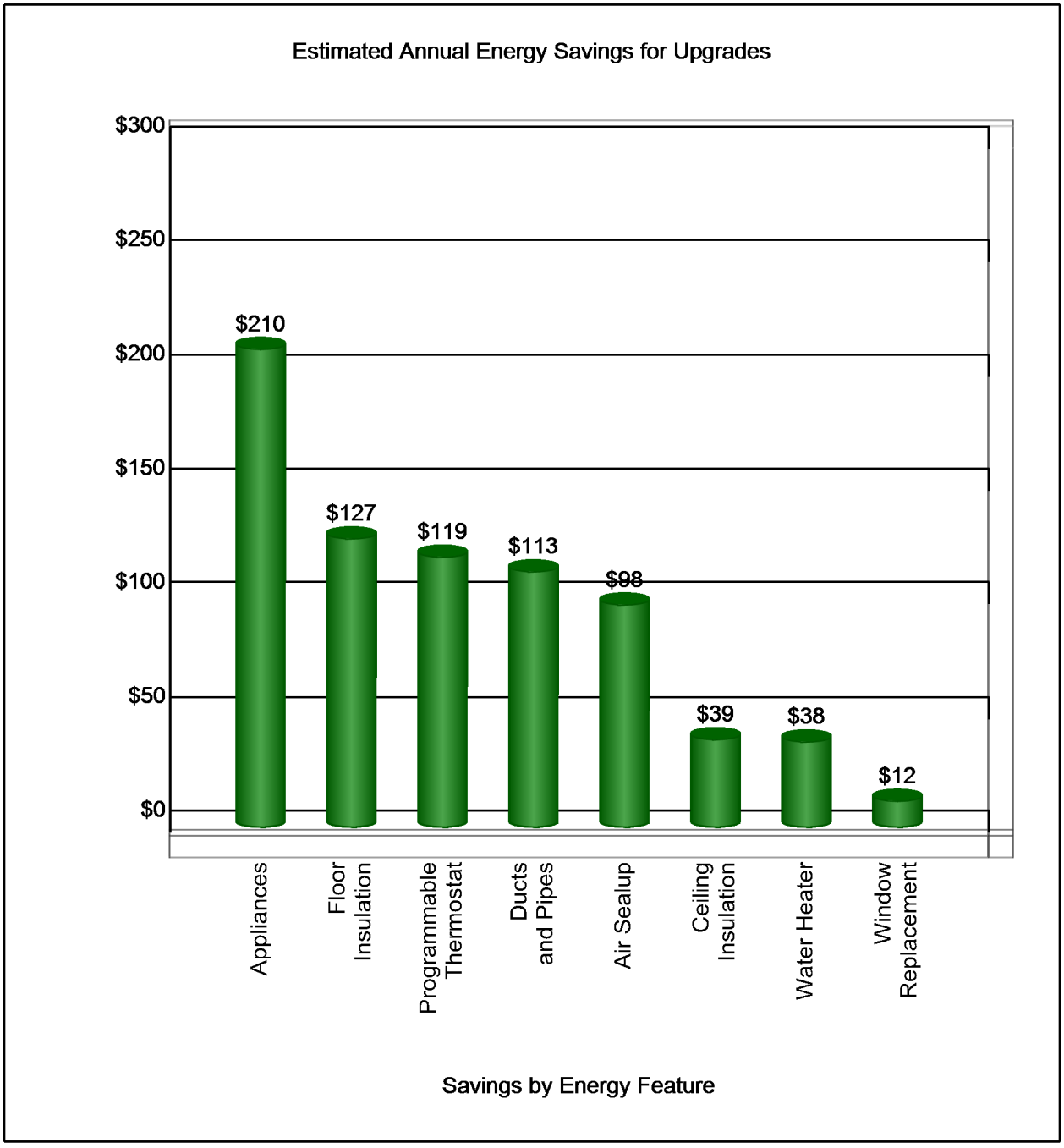
Feature	Recommendation	Estimated Annual Savings*	Estimated Cost	Payback (Years)
Water Heater - Basement	Install electric timer	$38	$81	2
Programmable Thermostat - Unit 1	Install	$69	$212	3
Duct Repair - Basement	Repair ducts	$44	$138	3
Refrigerator - Basement	Replace due to age	$119	$630	5
Air Sealup	Seal air leaks	$98	$608	6
Floor Insulation - Original House	Insulate to R 19	$127	$1,030	8
2 Mini Basement Window(s)	Replace with double-pane	$12	$135	11
Duct/Pipe Insulation	Insulate	$38	$445	12
Refrigerator - Kitchen	Replace due to age	$50	$810	16
Clothes Washer - Utility Room	Replace due to age	$41	$775	19
Attic/Ceiling Insulation - Original House	Insulate to R 38	$39	$824	21
	Total	$675	$5,686	
Estimated Monthly Savings and Cost When Financed**		$56	$34	

* The annual and monthly savings estimates displayed in Table 2 take account of the interaction between the measures and may therefore be less than the savings listed in Table 1. For example, if the efficiency of the heating system is improved and insulation is added, the savings from the improved heating system will be less because the added insulation reduces the heating load, and likewise the savings from the improved insulation will be less because the new heating system will be more efficient.

** The total monthly cost is the monthly payment, including interest, required to pay for all the improvements listed in Table 2 when financed with a 30-year loan at 6.00%

Recommendations

The major factors that affect the comfort of your home—and your utility bills— are insulation, windows, air leaks, heating and cooling systems, the water heater(s) and major appliances. The chart below, based on the savings in Table 1, shows which improvements will save the most money and energy in your home.



Insulation - Attic/Ceiling

	Area #1
Location:	Original House
Existing insulation type:	Blanket / Batt - Fiberglass
Existing R-value:	19
Area (sq. ft.):	1040
Attic floored:	No
Roof type:	Pitched
Ceiling type:	Flat
Room to add insulation:	Yes
Recommendation:	Insulate to R 38
Estimated cost:	$824
Estimated annual savings:	$39

A well-insulated ceiling reduces energy loss, makes your home more comfortable, and lowers your energy bills. It helps protect your home from fire and moisture damage, and is an effective sound-proofing material. During warm weather, ceiling insulation reduces the heat transfer from the hot attic to the rooms below.

Inspector Comments:
The hatch entry to the attic should be weather-stripped and insulated on the attic side to reduce air leakage and heat loss or heat gain.

Attic insulation

Homeowner Notes:

Insulation - Floors

	Area #1
Location:	Original House
Floor construction:	Over Unconditioned Basement with System
Insulation present:	No
Existing R-value:	0
Floor joists are accessible:	Yes
Floor area (sq. ft.) or slab perimeter (ft.):	1040
Recommendation:	Insulate to R 19
Estimated cost:	$1,030
Estimated annual savings:	$127

To reduce heat loss to an unheated basement or crawl space, fiberglass batts installed between wood floor joists provide good insulation.

Inspector Comments:
When batt or blanket insulation with vapor retarder is installed, the vapor retarder must contact the floor.

Homeowner Notes:

House Air Leakage

Est. air leakage condition: Average
Recommendation: Seal air leaks
Estimated cost: $608
Estimated annual savings: $98

Many homes, especially older ones, have air leaks that allow heated and cooled air to escape when the air pressure differs between the inside and the outside of the home. Because these leaks allow unconditioned air to enter as conditioned air is lost, air leaks can be a significant waste of energy and money. They also make the house drafty. Many homes have hidden air leaks that require a weatherization technician to find the leaks and seal them. It is recommended that you find a seal-up technician who uses a blower door to help identify where the air is leaking and, after sealing the leaks, verifies the reduction in leakage. Homes with indoor air pollution caused by combustion heating, tobacco smoking, or moisture problems may require more ventilation than an average house.

Inspector Comments:
Prior to adding insulation all holes, gaps, and penetrations should be sealed by an air sealing technician to prevent air leakage that can render insulation ineffective.
Close the damper when the fireplace is not being used as conditioned air can be drawn up the flue.

Insulation damage at duct

Homeowner Notes:

Windows and Glass Doors - Replacement

Number of Windows	Window Size/Type/Condition	Recommendation	Cost	Savings
3	Small/Double/Good	None - Satisfactory		
4	Medium/Double/Good	None - Satisfactory		
3	Large/Double/Good	None - Satisfactory		
2	Oversized/Double/Good	None - Satisfactory		
2	Mini Basement Window(s)	Replace with double-pane	$135	$12

Glass is a very poor insulator and much heat is lost through windows during the winter. A single pane of glass loses fifteen times more heat than a section of insulated wall of the same size. By adding a second pane of glass, the amount of energy lost through windows is cut almost in half. Using low-e glass for the second pane reduces energy loss by an additional 10%. In warm climates, the heat of the sun shining through windows accounts for up to half of the cooling costs. Solar tinted glass, or a solar film on existing windows, or a solar shade, can reduce total air-conditioning costs by up to 25%. Replacing windows is expensive, but if the window frames are in poor condition, this may be the best solution. The National Fenestration Rating Council rates the energy efficiency of replacement windows. The quality of the installation is as important as the quality of the product, therefore check references of the installer before signing a contract.

Inspector Comments:
Insulate basement windows with bubble plastic cut to size and sealed over window.

Seal Failure noted at basement patio door. Recommend repair or replacement.

Homeowner Notes:

Ducts/Pipe Insulation

Heating Pipe Insulation:	
Length of uninsulated heating pipes (ft.):	0
Recommendation	Insulate
Estimated cost:	$445
Estimated annual savings:	$38
Duct Insulation:	
Length of uninsulated ducts (ft.):	130
Location of duct gaps:	Basement
Recommendation:	Repair ducts
Estimated cost:	$138
Estimated annual savings:	$75
Duct Leakage:	
Duct leakage test recommended?	No
Recommendation:	None - Satisfactory
Estimated cost:	
Estimated annual savings:	

Uninsulated ducts or pipes passing through unconditioned spaces waste energy. Insulating will often pay for itself within one year if you do it yourself and within two years if a contractor does it. Seal the joints and any gaps with mastic before insulating ducts. After insulating the ducts, seal the insulation seams with foil scrim kraft tape (FSK) or web tape. If you have steam pipes wrapped in asbestos and the outside sheathing appears to be flaky or parts are missing, contact a qualified insulation contractor to do the work. Insulating ducts and pipes can often be done as part of insulating the home or as part of a weatherization job.

One of the easiest ways to save energy is to look for gaps in the joints of the ducts. Close these gaps and seal them with mastic. Some duct repair can be done easily by homeowners, but more extensive work should be done by a professional. Duct repair and sealing can usually be done as part of a seal-up or weatherization job or by insulation contractors.

Leaky ductwork is a common problem. It wastes energy and can make it difficult to regulate a home's comfort. However, it may cost more to repair leaky ducts than the savings if the ducts are in an inside wall or in a conditioned space. A contractor with special instrumentation will have to find the hidden leaks and decide how best to seal them.

Inspector Comments:
Seal ducts with visible gaps in an unconditioned area to save energy.

Disconnected supply duct from boot at front right corner of basement below living room.

Disconnected duct

Homeowner Notes:

Programmable Thermostat

	Unit #1
Heating system type:	Oil Furnace
Cooling system type:	Split System
Estimated cost:	$212
Estimated annual savings for day and night setback:	$119
Estimated annual savings for night only setback:	$71
Recommendation:	Install

A programmable thermostat is recommended for night setback as well as for day setback when no one is at home during the day. Programmable thermostats that have the ENERGY STAR rating contain no mercury. If properly used, programmable thermostats can save 10% to 15% annually in heating and cooling costs. They generally pay for themselves in a year. Contact a licensed electrician to install your timed thermostat.

Most thermostats come with four pre-programmed temperature settings for typical weekday and weekend routines. Resist the urge to override the pre-programmed settings. Every time you do, you use more energy and end up paying more on your energy bill. Set the “hold” button at a constant energy-saving temperature when going away for the weekend or on vacation.

Install your thermostat away from heating or cooling registers, appliances, lighting, doorways, skylights, and windows, and areas that receive direct sunlight or drafts. Interior walls are best.

For heat pumps, a smart recovery thermostat is required in order for the house to slowly heat up in the winter without the use of auxiliary heating strips.

Inspector Comments:
None

Existing thermostat

Homeowner Notes:

Water Heater

	Unit #1
Location:	Basement
Type:	Electric
Age/Design life (years):	7/13
Size (gallons):	80
Unit recommendation:	None - Satisfactory
Unit estimated cost:	
Unit est. annual savings:	
Insulation recommendation:	None - Satisfactory
Insulation estimated cost:	
Insulation est. annual savings:	
Timer recommendation:	Install electric timer
Timer estimated cost:	$81
Timer est. annual savings:	$38

The design life of most water heaters is 13 years. It is advisable to replace a water heater if it is older than its design life rather than waiting until it unexpectedly breaks down. If a water heater is not working properly, a technician should decide whether it should be repaired or replaced. Lower the temperature of the water heater to 120° F to save energy and reduce the chance of scalding. If the hot water supply is insufficient at this setting, increase the water heater temperature by 5 degrees Fahrenheit and try it for a few days. CAUTION: If your dishwasher does not have a booster heater and your dishes do not come out clean, you should raise the water temperature to the setting recommended by the dishwasher manufacturer.

Energy can be saved by installing an insulating blanket around the water tank to reduce standby heat losses. When the water heater is located in a conditioned space that requires cooling in the summer, insulating will also lower the cooling load. Many homeowners can install this product themselves. CAUTION: If the tank has a warning label against the installation of additional insulation, do not install a wrap.

Another energy saving option is an electric timer which shuts off an electric water heater when hot water is not needed, thus reducing standby losses. This measure typically saves between 5%–12% of the energy used by the water heater. CAUTION: Contact a qualified electrician to perform the installation of the electric timer (the breaker must be turned off or the fuse must be disconnected).

Inspector Comments:
None

Existing water heater

Homeowner Notes:

Refrigerator

	Unit #1	Unit #2
Location:	Kitchen	Basement
Age/Design life (years):	16/10	36/10
Size (cubic feet):	22	18
Condition:	Good	Poor
Recommendation:	Replace due to age	Replace due to age
Estimated cost:	$810	$630
Estimated annual savings:	$50	$119

Refrigerators consume more electricity than any other appliance in most homes, and today's efficient refrigerators use about half the electricity of those made 15 years ago. If the house has two refrigerators, see if you can substitute them for one larger unit. When buying a refrigerator, ask for an Energy Star® model which uses about 10% less energy.

Inspector Comments:

Homeowner Notes:

Clothes Washer

	Unit #1
Location:	Utility Room
Age/Design life (years):	17/10
Size:	Medium / Large
Condition:	Good
Recommendation:	Replace due to age
Estimated cost:	$775
Estimated annual savings:	$41

The energy used for washing clothes is primarily (85%) determined by the temperature of the water used, not by the efficiency of the washing machine. To save energy, use cool water. With today's detergents, most laundry can be successfully washed in cold or warm water, and all can be rinsed in cold water. Also, washing two small loads uses approximately twice as much energy as combining them into one full load.

Front-load washers use less water than top-load machines and have high-speed spin cycles that remove more water from washed clothes, thereby, requiring less time in the dryer. In tests, front-load washers were also found to clean clothes better. Since the front-loading machines "wash whiter", "spin dryer" and are quieter than the top loading machines, they deserve serious consideration.

Inspector Comments:
Although the washing machine appears to be operable, upgrading to a front loading/horizontal axis machine will substantially reduce the water needs and due to the high spin cycle lessen the time required for drying.
Today's detergents wash clothes as well in cold water as in warm or hot water, saving 85% of the energy used.

Homeowner Notes:

Implementation and Contractors

Finding experienced, professional contractors and suppliers to implement home improvements can be difficult. To ensure that the efficiency improvements you invest in will actually save energy, they must be properly and safely installed. This requires that a third party inspect each completed job and that participating contractors agree to rectify work found to be unsatisfactory at no additional cost. If possible, you should work with contractors and suppliers you know and trust. The energy inspectors who advise you as to which improvements to make and who provide information as to the savings and costs, should not have any financial interest in the improvements they recommend.

CMC does not recommend or endorse any contractors or suppliers. A technical expert is available at the Tune-uP help-line to advise you. Call 866-336-5262 between 9 AM and 5 PM EST for assistance.

Nationwide Contractor Resources

Contractors.com
Contractors.com specializes in online contractor listings, with over one million contractors listed by zip code and service type. You can search for contractors in your area, review contractor profiles, read service ratings and testimonials provided by past clients of the contractor, visit the contractor web sites, and submit projects to obtain free estimates from contractors.
http://www.hometuneup.com/contractors.asp

Angie's List
Angie's List is a word-of-mouth network for consumers. It's a growing collection of homeowners' experiences with local service companies. The people who join Angie's List are looking for a way to find trustworthy companies that perform high-quality work. There is a small membership fee to join the Angie's List network. Members can view Angie's List to find out what people in their area are saying about the companies they've hired in the area.
www.angieslist.com

Building Performance Institute
BPI provides professional accreditation services for contractor organizations and their professional staff in the building performance industry. The BPI contractors combine the role of advising the homeowner as to which improvements to make and making the improvements. Contractors who are professionally certified by BPI in their skills area have demonstrated competency through both written and field practical examinations. For more information and to locate a BPI certified contractor near you visit
www.bpi.org

North American Technician Excellence (NATE)
NATE provides certification for contractors/technicians in the heating, ventilation, and air conditioning industry. The NATE certification tests are rigorous, and taking them is voluntary. For more information and to locate a NATE certified contractor near you visit
www.natex.org/consumer_locator.htm

Additional Energy Efficiency Measures

Lighting Options

Compact fluorescent light bulbs use only one-third the electricity consumed by incandescent bulbs, yet last up to thirteen times longer. They produce less heat, are available in warm colors, and can be screwed into many existing light fixtures. While they cost more initially, their energy savings and long-life saves money and hassles in the long run. Consider installing hardwired fluorescent lights in your study or den and in your kitchen. Consider putting outside lights on a sensor so that they are lit only when someone approaches the house.

Recycling and Disposal of CFLs

Although compact fluorescents are fast becoming the most popular form of efficient residential lighting, they are also starting to be seen in our landfills. Because of their mercury content, it's best to handle CFLs the same way you would other household hazardous waste products like paint or batteries. They should never be incinerated. While most states and communities do not require recycling of compact fluorescents, check with your community recycling center or local government about your recycling options. For information on disposal laws and recycling programs in your area, see www.epa.gov/bulbrecycling.

If you break a CFL, the Environmental Protection Agency recommends you take the following steps:

- Open a window to disperse any vapor that may escape and leave the room for 15 minutes or more.
- Carefully scoop up the fragments and powder with stiff paper or cardboard and place them in a sealed plastic bag; use disposable rubber gloves if available. Do not use your bare hands.
- Wipe the area clean with damp paper towels or disposable wet wipes and place them in the plastic bag.
- Place the plastic bag in a second sealed plastic bag and dispose of in the trash. Some states require that broken and unbroken CFLs be taken to a recycling center.
- Do not use a vacuum cleaner or broom to clean up the broken bulb on hard surfaces.
- For carpet cleaning and additional information on CFL disposal, see the Energy Star CFL page.

Ceiling Fans

During the winter, ceiling fans set at slow speed can push warm air away from the ceiling and move it around the room, spreading heat evenly and making you feel more comfortable without creating a draft. During the summer, ceiling fans will move the air to make you feel cooler.

Laundry

The energy used for washing clothes is primarily (85%) determined by the temperature of water used, not by the efficiency of the washing machine. To save energy, use cool water. With today's detergents, most laundry can be successfully washed in cold or warm water, and all can be rinsed in cold water. Also, washing two small loads uses approximately twice as much energy as combining them into one full load. Front-load washers use less water than top-load machines and have high-speed spin cycles that remove more water from washed clothes so they require less time in the dryer. In tests, front-load washers were also found to clean clothes better. Since the front-loading machines "wash whiter", "spin dryer" and are quieter than the top loading machines, they deserve serious consideration.

Energy-Saving Showerheads
Energy-efficient showerheads have become common in recent years, having been required in new homes since 1994. A good quality efficient showerhead saves a significant amount of energy and water.

Fireplace
A fireplace can be a major drain on home energy. To burn, a fire draws conditioned air from your rooms to be replaced by cold outside air. Warm air will escape through the chimney to the outside if the damper is not completely closed or sealed when not in use. The fireplace should have well-closing glass doors and a direct source of outside air. If you do not use your fireplace at all, seal the damper [flue] with a specially designed inflatable plug or balloon inserted into the fireplace beneath the damper. This type of product is available at hardware stores or online and can pay for itself in one mid-winter heating bill.

Dishwasher
ENERGY STAR® dishwashers are 30% more efficient than the 1994 standards. Models with an “energy-saver” or short-wash cycle option use less hot water. Reduce the total number of loads washed by running full loads. Turn off the drying heater so that dishes air dry.

Stove and Range
Solid disk elements and radiant elements take longer to heat and use more electricity than halogen and induction elements. Self-cleaning ovens use less electricity than ovens without that feature because they are better insulated. Use a microwave, or toaster oven, rather than a full-sized oven or the stove. Smaller appliances use less energy than a stove and can reduce cooking time.

Inadequate Ventilation
Most older homes need be weatherized to reduce energy loss. This can reduce the amount of air infiltrating the home resulting in inadequate ventilation and concentrations of indoor air pollutants from sources inside the home. Signs of inadequate ventilation include stuffy air, moisture condensation on cold surfaces, or mold and mildew growth (see www.epa.gov/mold). If the house appears to be too tight, an air-to-air energy recovery ventilator should be installed to increase air circulation without losing much heat. Having adequate air ventilation is important for maintaining good indoor air quality.

Reducing Toxins
Equally important is using less toxic materials in the home. Unfortunately, many home improvement products have significant “off-gassing,” where the chemicals leach out of the product and into the home. Painting and carpeting are the two most common household improvements that people make when moving into a house, and both contain toxic chemicals.

Paints
There are serious health and environmental concerns surrounding paint. Using paints that are free of Volatile Organic Compounds (VOCs) such as benzene and toluene, free of heavy metals such as lead or cadmium, and/or made of post-consumer recycled content can aid in reducing exposure to toxins for both you and your environment. However, the fact that a paint is VOC free does not necessarily mean that it is free of toxins such as formaldehyde, ammonia, acetone or odor-masking agents. Fortunately, paints with reduced levels of VOCs, or even VOC-free, are available.

Carpeting
Scientists have not yet determined whether the chemicals emitted by new carpets are responsible for causing a variety of symptoms in household residents. Therefore, if you are installing new carpet, you may wish to take the following steps:

- Ask the carpet retailer for information on emissions from carpet.
- Ask the retailer to unroll and air out the carpet before installation.
- Ask for low-emitting adhesives (if adhesives are needed).
- Consider leaving the premises during and immediately after carpet installation
- Make sure the installer follows the Carpet and Rug Institute's installation guidelines.
- Ventilate the house to the outdoors during and 48 to 72 hours after the new carpet is installed.
- Contact your carpet retailer if objectionable odors persist.
- Follow the manufacturer's instructions for proper carpet maintenance.

Resources
The Environmental Protection Agency (EPA) has a consumer booklet, The Inside Story: A Guide to Indoor Air Quality. www.epa.gov/iaq/pubs/insidest.html

New American Dream has information on Green Seal certified paint manufacturers: www.newdream.org/consumer/paint.php

Financing Energy Efficiency

Energy improvements are unique because they create a stream of income in reduced monthly energy bills that may cover the monthly cost of the investment. Financing energy efficiency improvements as part of your home mortgage is the best possible way to go—you have the advantage of (i) low monthly payments due to a 30-year term and a relatively low interest rate; and (ii) interest that is deductible from your income tax.

Nationwide Financing Resources

Streamlined (k) Limited Repair Program
The Streamlined (k) Limited Repair program is ideal for financing energy-efficiency improvements and upgrades to existing homes. Homebuyers can finance up to an additional $35,000 in their mortgage for improvements identified by a home inspector or an FHA appraiser. This loan can be issued by any FHA lender. HUD's Mortgagee Letter 2005-50 explains the program. For more information visit www.hometuneup.com/step4.asp.

Fannie Mae Energy Loan
Some lenders offer an unsecured Fannie Mae Energy Loan for $1,000 to $20,000. The approval for this loan is fast and simple. The Energy Loan's 10 year term and interest rates are generally better than those offered by contractors or suppliers.

Local Financing Resources

Utility Rebate or Loan Programs
A number of utilities offer special energy efficiency rebate and/or loan programs. Program details may vary from what energy efficiency products or services qualify for these programs and how much the rebates or loans are for. In some cases, utility rebates may cover most of the product or service cost. Visit your utility's website to find out if it offers energy efficiency rebates or loans. Additional information may also be available at www.dsireusa.org, a website dedicated to tracking state incentives for energy efficiency and renewable energy development.

Appendix:
Additional Information For Measures Not Recommended

Insulation - Attic Radiant Barrier

	Area #1
Location:	Original House
Radiant barrier:	No
Roof type:	Pitched
Ceiling type:	Flat
Area (sq. ft.):	1040
Recommendation:	None - Satisfactory
Estimated cost:	$487
Estimated annual savings:	$1

A radiant barrier is a layer of aluminum foil or aluminum chips installed on the underside of the roof or floor fan attic to reduce the transfer of heat from the roof to the attic and the rooms below. Not only will this help to reduce a home's cooling load but it will also reduce the overall temperature of the attic, making it better for storage. Radiant barrier effectiveness is reduced with dust build-up, so it is most effective when attached to the underside of the roof where dust cannot build up. The less common types of barriers, "chips" and multi-layer products, are more suitable for floor installation.

Inspector Comments:
Please refer to the Insulation - Attic/Ceiling Report page for Inspector Comments pertaining to Radiant Barriers

Attic insulation

Homeowner Notes:

Insulation - Outside Walls

	Area #1
Location:	Original House
Insulation present:	Standard R-11
Insulation feasibility:	Not feasible
Area (sq. ft.):	2112
Recommendation:	None - Satisfactory
Estimated cost:	
Estimated annual savings:	

Walls are the largest area of the house exposed to the outside, and are often not insulated. Above-grade walls can be insulated through holes drilled from inside or outside the house. Loose cellulose or fiberglass insulation is blown through these holes into the wall. Though more expensive than insulating the floor or ceiling, insulating walls will often more than pay for itself when financed with a long-term loan and will make the house more comfortable.

Inspector Comments:
None

Homeowner Notes:

Heating System

	Unit #1
Location:	Basement
Type:	Oil Furnace
Age/Design life (years):	16/15
Size (Btu/hr):	100000
Efficiency (AFUE)	
- Existing:	81
- ENERGY STAR®:	90
- Range Available:	78 - 95%
Percent of heat supplied:	100
Recommendation:	Replace due to age
Estimated cost(1):	$3,105
Estimated savings / yr (1):	$64
Estimated cost(2):	$3,571
Estimated savings / yr (2):	$94

(1) – Estimates for replacement with an ENERGY STAR® model.

(2) – Estimates for replacement with an industry best model.

A heating system is expected to last from 20-25 years, depending on the system. If the system is nearing the end of its life, it is better to replace it sooner rather than later to avoid being without heat for several days when it fails. This way, you will have time to compare bids, check references and ensure that the contractors are bonded and insured. A load calculation for the house should be made to determine the proper size based on the current conditions of the house since older homes often have heating systems that are oversized.

Inspector Comments:
Furnace label is not legible. Furnace size is an estimate.
The efficiency range for a Oil Furnace is 78% to 95% AFUE. It must have a minimum efficiency of 83% AFUE to qualify as an Energy Star product.

Oil fired furnace

Homeowner Notes:

Central Cooling System

	Unit #1
Location:	Basement
Type:	Split System
Age/Design life (years):	16/19
Size (Btu/hr):	4000
Efficiency (SEER):	
- Existing:	10.4
- ENERGY STAR®:	14
- Range Available:	12.5 - 16
Percent of cooling supplied:	100
Recommendation:	Replace
Estimated cost(1):	$1,863
Estimated savings / yr (1):	$25
Estimated cost(2):	$2,403
Estimated savings / yr (2):	$35

(1) – Estimates for replacement with an ENERGY STAR® model.

(2) – Estimates for replacement with an industry best model.

Central air conditioning systems are expected to last from 15-20 years. Waiting for an older air conditioner to stop working before replacing it makes little sense since the old one will cost twice as much to operate each day you wait. Older homes often have air conditioners which require twice as much electricity as the current Energy Star® air conditioner.

Inspector Comments:
Unable to operate system due to ambient conditions.
Recommend replacement due to age of unit. Outside condensing unit has damage to coil. Unit is at the end of it's life expectancy.

Homeowner Notes:

Clothes Dryer

	Unit #1
Location:	Utility Room
Age/Design life (years):	32/12
Fuel type:	Electric
Condition:	Poor
Recommendation:	Replace due to age
Estimated cost:	$475
Estimated annual savings:	$11

When purchasing a new dryer, consider purchasing an energy efficient one that senses the amount of moisture in clothes and shuts off automatically when the clothes are dry. Over drying not only wastes energy but can ruin your clothes. Using the high-speed spin cycle on the clothes washer removes more water, therefore clothes will require less time in the dryer.

Inspector Comments:
Be sure to clean the lint filter every time the dryer is used to lessen drying time and the risk of fire.
The dryer's exhaust should be extended to the exterior and periodically checked to ensure there are no blockages.

Homeowner Notes: