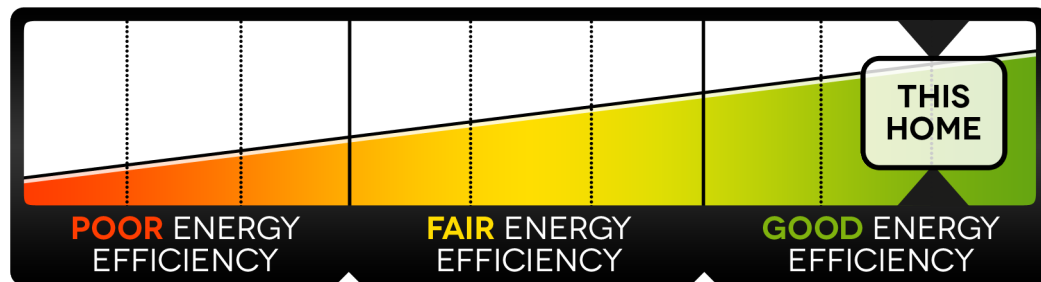


# INTERNACHI HOME ENERGY INSPECTION

FOR **123 FLORIDA STREET**



ESTIMATED YEARLY ENERGY COSTS: **\$3,481** PER YEAR

Dear Client,

This house has been scored on a scale of 1 to 100. A 100 would represent a home with perfect energy performance whereas a 1 would represent a home that needs significant energy upgrades. You can use this score to compare homes. A higher score generally means a lower energy bill and a more efficient home (with less of an environmental impact).

In order to generate your Home Energy Inspection Report, I conducted a brief walk-through of the home and collected about 45 data points related to energy.

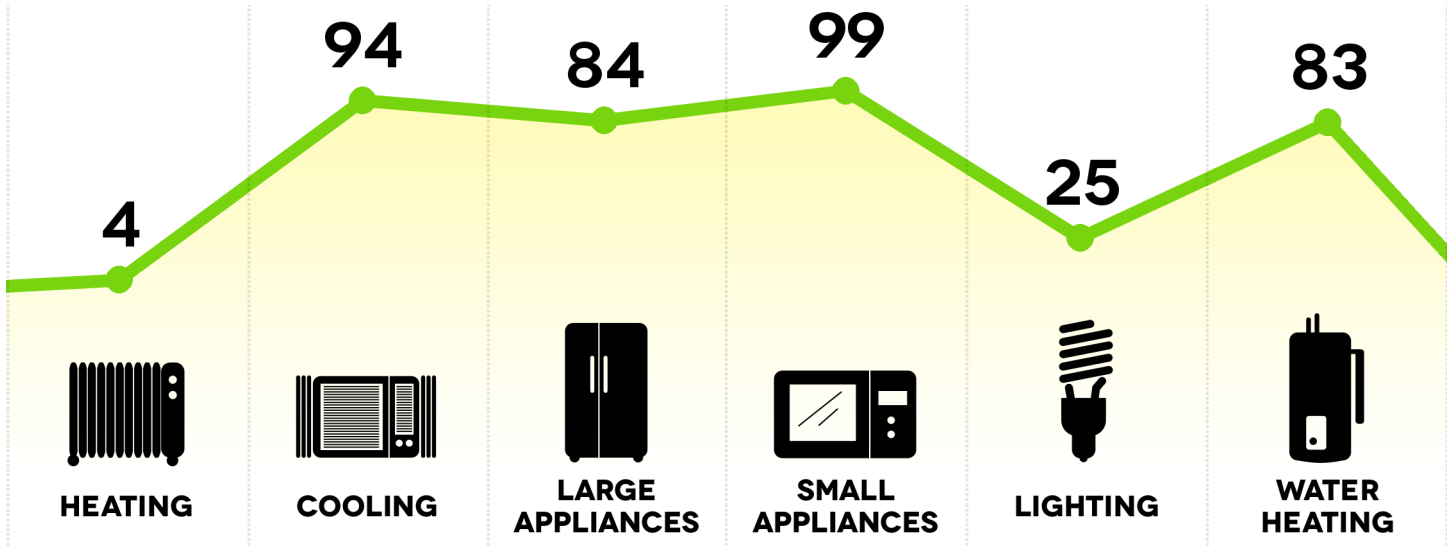
I then used an advanced energy calculator developed by the International Association of Certified Home Inspectors to:

- estimate the home's yearly energy usage,
- pinpoint potential energy inefficiencies,
- calculate a score based on these estimations, and
- develop recommendations for energy improvements.

On the following pages you will find information about the efficiency of major systems in the home, and recommendations for upgrades.

# OVERVIEW OF MAJOR COMPONENTS

Along with scoring your home as a whole, we have calculated a score for each major component of the home. This information is helpful for determining the source of energy inefficiencies, and can help prioritize upgrades in the future.



## ESTIMATIONS

We have also estimated the operating cost of each component and calculated the potential yearly savings from upgrading that component (recommendations included later in this report).

| COMPONENT               | ESTIMATED COST | AFTER UPGRADES | POTENTIAL SAVINGS |
|-------------------------|----------------|----------------|-------------------|
| <b>Heating</b>          | \$7            | \$1            | \$6               |
| <b>Cooling</b>          | \$2,320        | \$1,899        | \$421             |
| <b>Large Appliances</b> | \$494          | \$358          | \$136             |
| <b>Small Appliances</b> | \$151          | \$151          | \$0               |
| <b>Lighting</b>         | \$169          | \$59           | \$110             |
| <b>Water Heating</b>    | \$340          | \$242          | \$98              |
| <b>Total</b>            | <b>\$3,481</b> | <b>\$2,710</b> | <b>\$771</b>      |

# DETAILED ENERGY USAGE

All calculations are based on detailed estimations of home energy usage. This table is particularly useful when pricing energy sources.

|                  |             | CURRENT        | AFTER<br>UPGRADES | POTENTIAL<br>SAVINGS | REDUCTION |
|------------------|-------------|----------------|-------------------|----------------------|-----------|
| Whole House      | Energy Bill | \$3,481        | \$2,710           | \$771                | 22%       |
|                  | Electricity | 29,754 kWh     | 23,165 kWh        | 6,589 kWh            | 22%       |
|                  | Emissions   | 39,233 CO2     | 30,545 CO2        | 8,688 lb. CO2        | 22%       |
| Heating          | Energy Bill | \$7            | \$1               | \$6                  | 86%       |
|                  | Electricity | 59 kWh         | 5 kWh             | 54 kWh               | 92%       |
|                  | Emissions   | 78 lb. CO2     | 7 lb. CO2         | 71 lb. CO2           | 91%       |
| Cooling          | Energy Bill | \$2,320        | \$1,899           | \$421                | 18%       |
|                  | Electricity | 19,828 kWh     | 16,233 kWh        | 3,595 kWh            | 18%       |
|                  | Emissions   | 26,145 lb. CO2 | 21,405 lb. CO2    | 4,740 lb. CO2        | 18%       |
| Hot Water        | Energy Bill | \$340          | \$242             | \$98                 | 29%       |
|                  | Electricity | 2,909 kWh      | 2,073 kWh         | 836 kWh              | 29%       |
|                  | Emissions   | 3,836 lb. CO2  | 2,733 lb. CO2     | 1,103 lb. CO2        | 29%       |
| Large Appliances | Energy Bill | \$494          | \$358             | \$136                | 28%       |
|                  | Electricity | 4,223 kWh      | 3,057 kWh         | 1,166 kWh            | 28%       |
|                  | Emissions   | 5,568 lb. CO2  | 4,031 lb. CO2     | 1,537 lb. CO2        | 28%       |
| Small Appliances | Energy Bill | \$151          | \$151             | \$0                  | 0%        |
|                  | Electricity | 1,290 kWh      | 1,290 kWh         | 0 kWh                | 0%        |
|                  | Emissions   | 1,701 lb. CO2  | 1,701 lb. CO2     | 0 lb. CO2            | 0%        |
| Lighting         | Energy Bill | \$169          | \$59              | \$110                | 65%       |
|                  | Electricity | 1,445 kWh      | 507 kWh           | 938 kWh              | 65%       |
|                  | Emissions   | 1,905 lb. CO2  | 669 lb. CO2       | 1,236 lb. CO2        | 65%       |

## YEARLY HEATING AND COOLING RESULTS

| Total Cost     |        |
|----------------|--------|
| <b>Cost</b>    | \$2327 |
| <b>Heating</b> | \$7    |
| <b>Cooling</b> | \$2320 |

| Total Energy      |         |
|-------------------|---------|
| <b>Energy Use</b> | \$19887 |
| <b>Heating</b>    | \$59    |
| <b>Cooling</b>    | \$19828 |

Notes: This house is 0% heated by wood fuel.  
100% of the floor area is heated and 100% cooled.

Heating electricity values include fan or pumping energy for homes that have forced-air or water-based heating systems powered by circulation pumps.

## YEARLY LARGE APPLIANCES AND WATER HEATING RESULTS

| Appliance                          | Total Cost |
|------------------------------------|------------|
| <b>First Refrigerator</b>          | \$126      |
| <b>Stove</b>                       | \$43       |
| <b>Oven</b>                        | \$28       |
| <b>Clothes Dryer</b>               | \$170      |
| <b>Clothes Washer</b>              | \$70       |
| <b>Dishwasher</b>                  | \$58       |
| <b>Hot Water: Taps and Faucets</b> | \$340      |
| <b>Totals</b>                      | \$834      |

Equipment energy is the energy used by motors, heating elements, and burners inside your appliances. This number excludes the energy consumed by your water heater to supply hot water for appliances such as clothes washers and dishwashers (which is included instead in the rows for those appliances).

## YEARLY SMALL APPLIANCES RESULTS

| Appliance                    | Energy Use | Total Cost |
|------------------------------|------------|------------|
| <b>Entertainment</b>         | 345 kWh    | \$40       |
| <b>Home Office</b>           | 361 kWh    | \$42       |
| <b>Miscellaneous Kitchen</b> | 464 kWh    | \$54       |
| <b>Other Appliances</b>      | 120 kWh    | \$14       |

## YEARLY LIGHTING RESULTS

| Room                    | Energy Use | Energy Costs |
|-------------------------|------------|--------------|
| <b>All Bathrooms</b>    | 101 kWh    | \$11.82      |
| <b>All Bedrooms</b>     | 34 kWh     | \$3.98       |
| <b>Dining Room</b>      | 120 kWh    | \$14.04      |
| <b>Family Room</b>      | 77 kWh     | \$9.01       |
| <b>Garage</b>           | 75 kWh     | \$8.78       |
| <b>Hall</b>             | 57 kWh     | \$6.67       |
| <b>Kitchen</b>          | 104 kWh    | \$12.17      |
| <b>Living Room</b>      | 91 kWh     | \$10.65      |
| <b>Master Bedroom</b>   | 34 kWh     | \$3.98       |
| <b>Outdoor Lighting</b> | 120 kWh    | \$14.04      |

# DETAILED UPGRADE RECOMMENDATIONS

## UPGRADE PACKAGE SUMMARY:

|   |           |
|---|-----------|
| <b>Estimate Yearly Bill Savings:</b>      | \$771     |
| <b>Estimated Lifetime Energy Savings:</b> | \$14649   |
| <b>Estimated Added Cost:</b>              | \$504     |
| <b>Maximum Price for 10 Year Payback:</b> | \$44376   |
| <b>Return on Investment:</b>              | 12%       |
| <b>Upgrade Pays for Itself in:</b>        | 8 year(s) |

## We recommend the following upgrades:

- When re-roofing, choose an ENERGY STAR-labeled roofing material with high solar reflectance cool roof
- When replacing your windows, choose a double-pane solar-control low-E argon gas wood frame window
- Replace high use incandescent lamps with compact fluorescent lamps
- Have your ducts professionally sealed to reduce leakage
- When replacing your heat pump, choose an ENERGY STAR-labeled model
- When replacing your clothes washer, choose an ENERGY STAR-labeled model
- Install a programmable thermostat
- When replacing your electric water heater, choose an energy efficient model
- Increase attic floor insulation to R-38
- When replacing your main refrigerator, choose an ENERGY STAR-labeled model
- Have a professional seal your home's air leaks

WHEN RE-ROOFING, CHOOSE AN ENERGY STAR-LABELED ROOFING MATERIAL WITH HIGH SOLAR REFLECTANCE COOL ROOF

## Economic Benefits:

|   |        |
|---|--------|
| <b>Estimate Yearly Bill Savings:</b>      | \$158  |
| <b>Estimated Lifetime Energy Savings:</b> | \$3002 |
| <b>Estimated Added Cost:</b>              | \$186  |

|   |           |
|---|-----------|
| <b>Maximum Price for 10 Year Payback:</b> | \$1580    |
| <b>Return on Investment:</b>              | 85%       |
| <b>Upgrade Pays for Itself in:</b>        | 1 year(s) |

## **Additional Benefits:**

Cool reflective roofs reduce solar gains, keeping your home cooler and more comfortable. High temperatures are one of the factors that shorten the lifespan of roofing materials, so cool roofs may last longer than conventional roofs. Cool roofs also help lower the air temperature surrounding your house, which helps fight the urban heat island effect.

## **Upgrade Description:**

When replacing your roof, choose a "cool" roofing material that qualifies for the ENERGY STAR label. These roofing materials reflect more of the sun's energy, staying cooler than typical materials and reducing your air conditioning bill. Our calculations bill savings, typical upgrade costs, and cost-effectiveness are for a low-slope roofing material with the minimum reflectance levels that qualify for the ENERGY STAR label 0.60 reflectance after some weathering. To qualify for the ENERGY STAR label, steep-slope roofs must have an initial solar reflectance of greater than 0.25.

## **Purchasing Tips:**

- The ENERGY STAR criteria differ for low-slope less than 2:12 inches and high-slope roofs. The reflectance requirements are lower for high-slope roofs because in the past it has been difficult to make shingles and tiles highly reflective these materials are typically used for a high-slope roofs. High-reflectance products for high-slope roofs are now becoming more common in the market, so look for the highest reflectance materials you can for your roof type.

**WHEN REPLACING YOUR WINDOWS, CHOOSE A DOUBLE-PANE SOLAR-CONTROL LOW-E ARGON GAS WOOD FRAME WINDOW**

## **Economic Benefits:**

|                                      |       |
|--------------------------------------|-------|
| <b>Estimate Yearly Bill Savings:</b> | \$449 |
|--------------------------------------|-------|

|   |           |
|---|-----------|
| <b>Estimated Lifetime Energy Savings:</b> | \$8531    |
| <b>Estimated Added Cost:</b>              | \$648     |
| <b>Maximum Price for 10 Year Payback:</b> | \$4490    |
| <b>Return on Investment:</b>              | 69%       |
| <b>Upgrade Pays for Itself in:</b>        | 1 year(s) |

## **Additional Benefits:**

Energy-efficient windows can make your home more comfortable year-round, reduce condensation, block outside noise, improve fire safety, and cut back on ultraviolet radiation that can fade your carpets and furniture.

## **Upgrade Description:**

When replacing windows, choose a double-pane, solar-control low-E, argon gas-filled, wood or vinyl frame window.

Note: The annual bill savings and cost-effectiveness assume that you replace all of your windows with windows that have U-factor=0.36 and SHGC=0.31 see the links in More Information for an explanation of these units. Bill savings will be less if you do not replace all of your windows, but the cost-effectiveness of replacing less than all of your windows should be approximately the same as shown above. Windows with even better performance are available, and could provide additional energy savings.

## **Purchasing Tips:**

- Choose a window that is appropriate for your climate. ENERGY STAR window labels have a Climate Region Map that indicates which of four broad climate regions Northern, North/Central, South/Central, or Southern the window qualifies for. Make sure the window you choose is appropriate for the region you live in.
- Consider different types of glazing for windows on different sides of your house to benefit from passive solar energy and maximize energy benefits. Install the lowest U-value windows you can afford on north-facing windows. Select windows with appropriate low-e coatings for your location on the east, west, and south sides of your house. [6](#)
- To maximize energy performance, choose windows with larger unbroken glazing areas instead of multi-pane or true-divided-light windows. Applied grills that simulate true- divided-light windows, however, do not reduce energy efficiency. [6](#)
- Choose windows with good warranties against the loss of the air seal. If the glazing

seal is lost, not only will fogging occur, but also any low-conductivity gas between the layers of glass will immediately be lost.<sup>6</sup>

- If summer heat gain is a problem in your house, look for windows with low-e coatings, especially spectrally selective low-e coatings, which significantly reduce solar heat gain and improve insulation without affecting visible light or color. Tinted windows also reduce solar heat gain, but they transmit less visible light.
- Look for the National Fenestration Rating Council NFRC label to help you compare performance and other features."
- Select windows with low air leakage ratings - between 0.01 and 0.06 cfm/ft.<sup>6</sup>

## REPLACE HIGH USE INCANDESCENT LAMPS WITH COMPACT FLUORESCENT LAMPS

### Economic Benefits:

|   |           |
|---|-----------|
| <b>Estimate Yearly Bill Savings:</b>      | \$59      |
| <b>Estimated Lifetime Energy Savings:</b> | \$1121    |
| <b>Estimated Added Cost:</b>              | \$88      |
| <b>Maximum Price for 10 Year Payback:</b> | \$590     |
| <b>Return on Investment:</b>              | 61%       |
| <b>Upgrade Pays for Itself in:</b>        | 1 year(s) |

### Additional Benefits:

Fluorescent lamps last several times longer than ordinary incandescent bulbs, which saves you the time and expense of replacing bulbs when they burn out.

### Upgrade Description:

Replace high-use incandescent lamps with compact fluorescent lamps. These units can save up to 75% of the energy used by an ordinary incandescent bulb.

### Purchasing Tips:

- Compare the light output in Lumens of the bulb you are replacing to ensure you are using the appropriate CFL. Most CFLs list their light output and equivalent

incandescent wattage on their package.

- CFLs are available in many shapes and sizes, which will allow replacing nearly any incandescent bulb.
- When buying new light fixtures, look for ENERGY STAR qualified models.
- CFLs are a good investment for lights that are used 2-3 hours per day on average or more.

### **More Information:**

- [Energy Saving Tips: Lighting \(http://www.nachi.org/energy-lighting.htm\)](http://www.nachi.org/energy-lighting.htm)

## **HAVE YOUR DUCTS PROFESSIONALLY SEALED TO REDUCE LEAKAGE**

### **Economic Benefits:**

|   |           |
|---|-----------|
| <b>Estimate Yearly Bill Savings:</b>      | \$258     |
| <b>Estimated Lifetime Energy Savings:</b> | \$4902    |
| <b>Estimated Added Cost:</b>              | \$890     |
| <b>Maximum Price for 10 Year Payback:</b> | \$2580    |
| <b>Return on Investment:</b>              | 28%       |
| <b>Upgrade Pays for Itself in:</b>        | 3 year(s) |

### **Additional Benefits:**

Having a professional seal your home's air leaks can make your home more comfortable, reduce the risk of moisture damage, improve indoor air quality and fire safety, and help to prevent frozen water pipes.

### **Upgrade Description:**

Have a qualified professional seal your home's air leaks. Leaky houses waste energy because heated or cooled air can easily escape. Older homes tend to be leakier than newer homes. Tightening up a leaky house will reduce the heating and cooling bills. Recent advancements in air sealing technology allow specialists to go beyond the old techniques of caulking and weatherstripping around obvious places such as doors and

windows. The biggest problems are usually hidden leaks in out of the way places such as attics, floors and walls, which are easily found and sealed by a specialist. Note: The annual bill savings and cost-effectiveness assume that your home's air leakage is reduced by 25%.

## Purchasing Tips:

- To get the best results, hire a qualified contractor, preferably a "building performance contractor", or "energy auditor" to find out where the leaks are in your home's shell. Make sure the contractor uses a "blower door" test to find the air leaks. An infrared scan can be beneficial in addition to the blower door test. Check with your utility company; some offer no- or low-cost basic energy audits. However, the extra money you would spend to have the audit done by a home performance contractor is often well worth it. [5.6](#)
- Make sure your contractor tests the leakage rate after completing the sealing, not only to determine the degree of improvement, but also to ensure that the ventilation in your home is adequate. If you don't already have proper mechanical ventilation, consider installing a ventilation system. Proper home ventilation will make your home healthier and more comfortable.
- Make sure your contractor performs a combustion safety test after sealing your home's air leaks. This test checks for backdrafting and carbon monoxide, and will help assure your home is safe. [9](#)
- If you choose to do the work yourself, follow the guidance in ENERGY STAR's [Do-It-Yourself Guide to ENERGY STAR Homesealing](#).

## WHEN REPLACING YOUR HEAT PUMP, CHOOSE AN ENERGY STAR-LABELED MODEL

### Economic Benefits:

|   |           |
|---|-----------|
| <b>Estimate Yearly Bill Savings:</b>      | \$70      |
| <b>Estimated Lifetime Energy Savings:</b> | \$1330    |
| <b>Estimated Added Cost:</b>              | \$240     |
| <b>Maximum Price for 10 Year Payback:</b> | \$700     |
| <b>Return on Investment:</b>              | 28%       |
| <b>Upgrade Pays for Itself in:</b>        | 3 year(s) |

## Additional Benefits:

ENERGY STAR® heat pumps may operate more quietly, be more visually appealing, have better temperature and/or moisture control, and be easier to maintain than minimum efficiency heat pumps.

## Upgrade Description:

When replacing your heat pump, choose an ENERGY STAR-labeled model. ENERGY STAR-labeled air source heat pumps must exceed the federal energy efficiency standards by at least 10%.

Note: Our calculations bill savings, typical upgrade costs, and cost-effectiveness are for a model with the lowest efficiency that qualifies for the ENERGY STAR label 14 SEER for cooling and 8.2 HSPF for heating. Higher efficiency models are available, which can provide additional bill savings.

## Purchasing Tips:

- Every new heat pump is labeled with its heating and cooling efficiency. The cooling efficiency is the Seasonal Energy Efficiency Ratio SEER, and the heating efficiency is the Heating Seasonal Performance Factor HSPF. Use these ratings to compare different models. The higher the SEER and HSPF, the more efficient the unit. For maximum efficiency, make sure the efficiency ratings for the indoor and outdoor coils match. [4](#)
- Don't buy an oversized unit. A unit that's too big for your needs will waste energy, have less ability to control humidity, and have a shorter life due to excessive on-off cycling. Ask your contractor for an exact heat-gain calculation following ACCA Manual J procedures to determine the proper size unit for your house. Make sure the contractor sizes the unit based on the latent cooling load as well as the sensible cooling load. Do not rely on rule-of-thumb estimates as they tend to be inaccurate. If you've improved your home's efficiency since the last time you purchased a heat pump, you may be able to purchase a smaller unit. [4,5](#)
- Consider buying a two-speed heat pump, which can run very efficiently at its lower speed during most of the season, while using its higher speed only during the hottest or coldest hours.
- Locate the outside unit properly. Install it in a cool, shaded spot about two feet from the north or east side of your home. Avoid direct sunlight, which makes the unit work harder, and keep the unit away from other objects. Don't enclose the unit with a deck

or shrubbery - it needs room to breathe. [4](#)

- Don't buy a heat pump as a stand-alone heating system if you live in a cold climate. Heat pumps operate very inefficiently at sub-freezing temperatures.
- If your duct system has leaks or disconnected portions, you will not reap the full energy savings you could get from a high efficiency heat pump. Consider having your contractor check the entire length of your ductwork for leaks and seal any leaks with mastic-type sealant, not duct tape. It's now possible for a contractor to perform verified duct sealing by using a special fan to test duct system leakage before and after sealing. Also have the contractor check for and repair disconnected ducts - a common problem. Insulate any ducts in unheated spaces to at least R-6.
- If you don't already have one, consider purchasing a programmable thermostat and having your contractor install it along with your new heat pump.

## WHEN REPLACING YOUR CLOTHES WASHER, CHOOSE AN ENERGY STAR-LABELED MODEL

### Economic Benefits:

|   |           |
|---|-----------|
| <b>Estimate Yearly Bill Savings:</b>      | \$50      |
| <b>Estimated Lifetime Energy Savings:</b> | \$950     |
| <b>Estimated Added Cost:</b>              | \$180     |
| <b>Maximum Price for 10 Year Payback:</b> | \$500     |
| <b>Return on Investment:</b>              | 26%       |
| <b>Upgrade Pays for Itself in:</b>        | 4 year(s) |

### Additional Benefits:

ENERGY STAR® clothes washers can reduce water use significantly, leave the clothes drier thus reducing drying time and energy consumption, and reduce wear and tear on clothes.

### Upgrade Description:

When replacing your clothes washer, choose an ENERGY STAR-labeled model. ENERGY STAR clothes washers can reduce energy consumption by up to 70% and are available in top-loading and front-loading designs. Some ENERGY STAR models

use up to 50% less water in addition to saving energy.

Note: Our calculations bill savings, typical upgrade costs, and cost-effectiveness are for a model with the lowest efficiency that qualifies for the ENERGY STAR label.

## Purchasing Tips:

- Choose a clothes washer with high-speed spin cycles. This feature removes more water from clothes, which reduces the energy and time required for drying.
- Select a low water-use, high efficiency washer. Front-loading tumble-action washers can cut energy use by up to 70 percent, reduce water consumption significantly, and may actually get clothes cleaner. <sup>1</sup>
- Look for pre-soaking and/or "suds saver" options which conserve energy.
- Clothes washers come with [EnergyGuide](#) yellow and black labels. Use these labels to select the most efficient model for the capacity you have chosen.

## INSTALL A PROGRAMMABLE THERMOSTAT

### Economic Benefits:

|   |           |
|---|-----------|
| <b>Estimate Yearly Bill Savings:</b>      | \$86      |
| <b>Estimated Lifetime Energy Savings:</b> | \$1634    |
| <b>Estimated Added Cost:</b>              | \$320     |
| <b>Maximum Price for 10 Year Payback:</b> | \$860     |
| <b>Return on Investment:</b>              | 26%       |
| <b>Upgrade Pays for Itself in:</b>        | 4 year(s) |

### Additional Benefits:

Programmable thermostats can help keep your home more comfortable.

### Upgrade Description:

Install an ENERGY STAR labeled programmable thermostat, and program it to change the temperature settings when you are away from home and at night. EPA estimates that ENERGY STAR-labeled programmable thermostats can save consumers 10-15%

on heating and cooling bills when used properly. Note: Our calculations bill savings and cost-effectiveness assume that the heating-season set-point is decreased 4 degrees F during the day 9 am to 5 pm and at night 11 am to 7 pm, while the cooling-season set-point is increased 3 degrees F during those same periods. Larger set-point adjustments can provide additional bill savings.

## Purchasing Tips:

- Some programmable thermostats have a "smart" feature designed to maximize energy savings. These thermostats continually monitor usage patterns in order to determine the best time to turn the system on in order to reach the desired temperature setting, while minimizing energy use.

## More Information:

- [Programmable Thermostats \(http://www.nachi.org/energy-thermostats.htm\)](http://www.nachi.org/energy-thermostats.htm)

## WHEN REPLACING YOUR ELECTRIC WATER HEATER, CHOOSE AN ENERGY EFFICIENT MODEL

### Economic Benefits:

|   |           |
|---|-----------|
| <b>Estimate Yearly Bill Savings:</b>      | \$46      |
| <b>Estimated Lifetime Energy Savings:</b> | \$874     |
| <b>Estimated Added Cost:</b>              | \$195     |
| <b>Maximum Price for 10 Year Payback:</b> | \$460     |
| <b>Return on Investment:</b>              | 22%       |
| <b>Upgrade Pays for Itself in:</b>        | 4 year(s) |

### Additional Benefits:

Efficient gas-fired water heaters may hold their temperature longer following power interruptions and operate more safely.

## Upgrade Description:

When replacing your electric water heater, choose an energy-efficient model with an Energy Factor of 0.95.

Note: Our calculations bill savings, typical upgrade costs, and cost-effectiveness assume the efficient water heater has an energy factor of 0.95 and recovery efficiency of 0.98.

## Purchasing Tips:

- The most important measure of efficiency for water heaters is the Energy Factor EF. The higher the EF, the more efficient the water heater.
- Purchase a water heater whose tank is internally insulated with at least R-16. [5](#)
- A water heater that is too large for your home not only has a higher purchase cost but will increase your energy costs due to excessive cycling and standby losses. The resources below provide good, simple guidance on proper sizing of water heaters. The size, or "capacity", of a water heater should be judged by its first hour rating FHR, not its tank size.
- If you have natural gas or propane service at your home, consider switching to a gas-fired water heater to reduce your water heating bills.
- Many types of water heaters are now available, such as "demand" tankless, "indirect" or "integrated", and solar-assisted water heaters. [More Information](#)

## INCREASE ATTIC FLOOR INSULATION TO R-38

### Economic Benefits:

|   |           |
|---|-----------|
| <b>Estimate Yearly Bill Savings:</b>      | \$216     |
| <b>Estimated Lifetime Energy Savings:</b> | \$4104    |
| <b>Estimated Added Cost:</b>              | \$1863    |
| <b>Maximum Price for 10 Year Payback:</b> | \$2160    |
| <b>Return on Investment:</b>              | 11%       |
| <b>Upgrade Pays for Itself in:</b>        | 9 year(s) |

### Additional Benefits:



|   |            |
|---|------------|
| <b>Estimated Lifetime Energy Savings:</b> | \$171      |
| <b>Estimated Added Cost:</b>              | \$87       |
| <b>Maximum Price for 10 Year Payback:</b> | \$90       |
| <b>Return on Investment:</b>              | 10%        |
| <b>Upgrade Pays for Itself in:</b>        | 10 year(s) |

## Additional Benefits:

Energy-efficient refrigerators are quieter, run less often, release less heat into your kitchen, and keep their contents cool longer during power outages.

## Upgrade Description:

When replacing your main refrigerator, choose an ENERGY STAR®-labeled model. ENERGY STAR refrigerators must exceed federal efficiency standards by at least 15%. Models that are up to 40% more efficient than the federal standards are available.

Note: Our calculations bill savings, typical upgrade costs, and cost-effectiveness are for a model with the lowest efficiency that qualifies for the ENERGY STAR label.

## Purchasing Tips:

- Be especially careful in choosing a refrigerator because it will use more energy than any other kitchen appliance.
- Refrigerators with the freezer on the bottom or the top are the most efficient. Bottom-mounted freezer models use about 16% less energy than side-by-side models. Top-mounted freezer models use about 13% less energy than a side-by-side. <sup>1</sup>
- Through-the-door icemakers and water dispensers are convenient and reduce the need to open the door, which helps maintain a more constant temperature. However, these convenient items will increase your refrigerator's energy use by 14 to 20%. <sup>1</sup>
- Too large a refrigerator wastes space and energy. One that is too small can mean extra trips to the grocery store. Decide which size fits your needs, then compare the [EnergyGuide](#) yellow and black label on each so you can purchase the most energy efficient make and model. The most efficient refrigerator size is 16-20 cubic feet. <sup>1,2</sup>

HAVE A PROFESSIONAL SEAL YOUR HOME'S AIR LEAKS

## Economic Benefits:

|   |            |
|---|------------|
| <b>Estimate Yearly Bill Savings:</b>      | \$82       |
| <b>Estimated Lifetime Energy Savings:</b> | \$1558     |
| <b>Estimated Added Cost:</b>              | \$850      |
| <b>Maximum Price for 10 Year Payback:</b> | \$820      |
| <b>Return on Investment:</b>              | 9%         |
| <b>Upgrade Pays for Itself in:</b>        | 10 year(s) |

## Additional Benefits:

Having a professional seal your home's air leaks can make your home more comfortable, reduce the risk of moisture damage, improve indoor air quality and fire safety, and help to prevent frozen water pipes.

## Upgrade Description:

Have a qualified professional seal your home's air leaks. Leaky houses waste energy because heated or cooled air can easily escape. Older homes tend to be leakier than newer homes. Tightening up a leaky house will reduce the heating and cooling bills.

Recent advancements in air sealing technology allow specialists to go beyond the old techniques of caulking and weatherstripping around obvious places such as doors and windows. The biggest problems are usually hidden leaks in out of the way places such as attics, floors and walls, which are easily found and sealed by a specialist.

Note: The annual bill savings and cost-effectiveness assume that your home's air leakage is reduced by 25%.

## Purchasing Tips:

- To get the best results, hire a qualified contractor, preferably a "building performance contractor", or "energy auditor" to find out where the leaks are in your home's shell. Make sure the contractor uses a "blower door" test to find the air leaks. An infrared scan can be beneficial in addition to the blower door test. Check with your utility company; some offer no- or low-cost basic energy audits. However, the extra money you would spend to have the audit done by a home performance contractor is often well worth it. [5,6](#)

- Make sure your contractor tests the leakage rate after completing the sealing, not only to determine the degree of improvement, but also to ensure that the ventilation in your home is adequate. If you don't already have proper mechanical ventilation, consider installing a ventilation system. Proper home ventilation will make your home healthier and more comfortable.
- Make sure your contractor performs a combustion safety test after sealing your home's air leaks. This test checks for backdrafting and carbon monoxide, and will help assure the safety of your home's occupants. <sup>9</sup>
- If you choose to do the work yourself, follow the guidance in ENERGY STAR's [Do-It-Yourself Guide to ENERGY STAR Homesealing](#).



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