

Home Energy Management



Energy Saving Guidelines for Your Home

Lower Electric Costs
and Conserve Energy Resources



*Prepared especially for
Seminole Electric Cooperatives*



The purpose of this booklet is to equip you, our member/customer, with information to help in making wise energy management decisions in your household. It is the goal of your local electric cooperative in Florida to help you gain a greater understanding of your energy consumption and save you money in the long run.



Lifestyle Can Make a Difference

You have complete control over how and when to use your electricity. And, you choose the ingredients necessary to maintain this standard of living. Let's take a look at some "lifestyle considerations" that may cause your electric bill to be higher than normal.

There is a direct relationship between the number of people living in the home and the amount of energy that is being used. This is especially true if you have teenagers at home. Also, if friends and relatives are visiting, you can expect to use more energy for heating or cooling, laundry, bathing, and cooking, etc .

Ask yourself some of the following questions...

When I take a bath, do I use hot water sparingly or is the tub completely full of water?

Do I take short showers or do I stay in the shower until the hot water runs out?

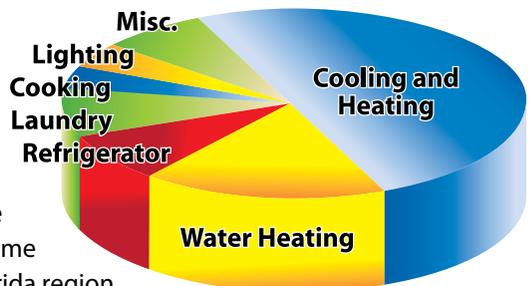
Do I repair leaky faucets or simply let them drip?

Do I operate automatic washers and/or dishwashers with a full load, or whenever it's convenient?

Remember, knowledge can be a powerful tool in reducing your energy costs. And, as you thumb through this pamphlet, you may discover a number of ideas in *Home Energy Management* that will help you to identify areas that need improvement. You will learn how to calculate your energy usage, review insulation recommendations, understand the details in your electric bill, learn energy savings tips, and much more. However, it is up to you to formulate a plan, make the right decisions, and follow through in order to improve the energy efficiency in your home.

Where is my energy going?

This illustration shows that the majority of energy usage goes into cooling and heating the home. These statistics are based on an average home for a family of four in the Central Florida region.



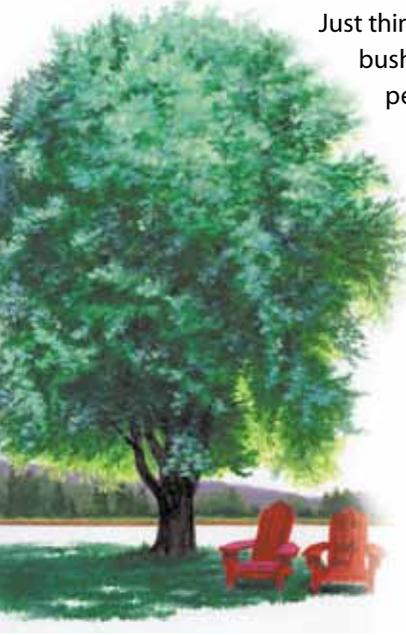
**The information given is an approximation of the "average family home." There are many variables to consider when determining individual energy usage per family dwelling.*



Cooling Your Home the Natural Way

Landscaping is a very cost effective way to cool your home naturally, plus it offers environmental benefits. Studies indicate in shaded neighborhoods temperatures can be reduced 3° F to 6° F during the summer months.

Just think, a few carefully selected/placed trees, bushes, or vines can prevent excess sunlight from penetrating your home. For more on planting the right tree in the right place, check out www.arboday.org.



When designing your landscape, use plants native to Florida and position them wisely. You may consider planting deciduous trees on the southwestern corner of your home. Due to the angle of the sun, this will provide more shade during the summer months. Keep in mind the expected size of the tree after many growing seasons and place trees accordingly. Vines, shrubs, grasses, and hedges are also effective. This method doesn't pay off immediately; however, with careful planning and work, you'll reap the benefits in time.

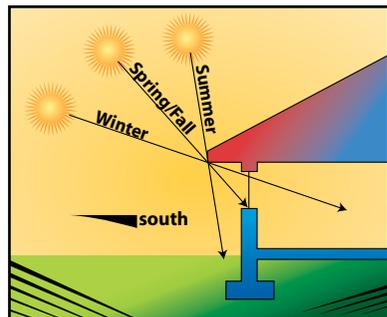
Before planting a tree, the state of Florida requires that you call ahead to get the utility lines clearly marked prior to digging. You do not want to damage any underground utility lines while planting, and as the tree matures, its root system may grow into your utility lines (electric, water, sewage, or cable) with the possibility of disrupting the service. It may take up to 48 hours for this service; remember to dial 811 before you dig.

Window treatments

Available in a variety of different styles and materials, louvers, shutters, awnings, and interior shades offer a good means of preventing direct sunlight from entering through your windows and doors. Also, consider installing reflective films or solar screens to cover the south- and west-facing windows.

Choose the right color

It's not just for aesthetics; color is an important scientific factor to consider when purchasing any home improvement items, such as new roofing materials, paint, window shades, blinds, etc. Lighter-colored surfaces reflect heat and darker-colored surfaces absorb heat by way of conduction.



Seasonal shading performance of a south facing roof over hang.



Other tips:



- ✓ For economy and best humidity control, set the fan on "auto" when operating your unit.
- ✓ Use a ceiling or portable fan when operating your air conditioner and you can raise your thermostat setting 3° F or more. You'll feel just as comfortable for less cost.
- ✓ Turn off your computer, printer, and other electronic devices when not in use.
- ✓ Unplug cell phone, camera, and other battery chargers after charging is complete.
- ✓ Turn off all lights when you leave the room.
- ✓ Keep your fireplace damper closed if not in use and install tempered glass doors. Although aesthetically appealing, your fireplace is one of the more inefficient heat sources in the home.
- ✓ Dress for the weather. Wear lightweight cotton clothing to stay cooler and wear sweaters in the winter to stay warm.



Ventilation

Reduced temperature and moisture control are the two major concerns for providing proper attic ventilation. Excessive heat that builds up in the attic results in higher energy cooling costs during the summer months. Plus, excess moisture may cause insulation and construction material damage.

A properly weatherized home, with a well-insulated ceiling, will help prevent moisture from seeping into the attic. Moisture buildup from showering, laundry, cooking, dish washing, and even plant and animal life are common causes for an increased level of humidity. The use of bathroom or kitchen exhaust fans will help reduce humidity levels, thus improving your comfort level. Ensure all exhaust fans are vented to the exterior of the home.

A well-ventilated attic, with proper air flow, reduces attic temperature considerably and promotes a cooler, drier attic. This will help stop moisture from becoming trapped in insulation, thus preventing materials from rotting and insulation from becoming moldy.

Cooling & Heating Your Home



From a comfort standpoint, most Floridians prefer to be relatively cool in summer and warm in winter. Space conditioning is probably the largest energy user in your home, and it offers the most potential for energy savings. In fact, during the summer, air conditioning accounts for a significant portion of your monthly utility bills. Also, humidity plays an important part in our year-round comfort. If we operate a dehumidifier in summer and, to a lesser degree, a humidifier in winter, this contributes to our household energy consumption. Read on!

Ideal thermostat settings:

Thermostat settings make a big difference in your cooling and heating costs. Recommended thermostat settings are between 78° F and 80° F in summer and 68° F and 70° F or below in winter.



- There can be an annual cooling cost savings of 6% to 8% for each degree higher you set the thermostat during the summer.
- You'll save 3% to 5% of your annual heating costs for each degree lower you set the thermostat in winter.
- When you leave home, adjust the thermostat to save energy. You can do this manually or automatically with a programmable thermostat.
- When you're away for an extended period of time, set the thermostat up to 82° F in summer; down to 55° F in winter. For additional savings, you can turn the unit off completely, but it may take several hours to regain a comfortable temperature when you return. If freezing or mildew is a problem, keep the unit on and adjust the thermostat accordingly.

Heat Pumps... Ideal for Florida

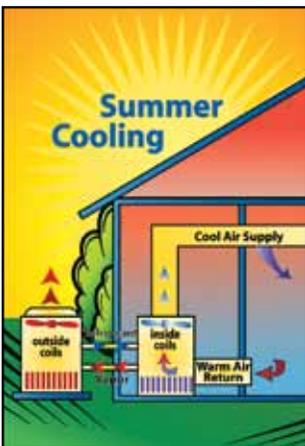
Today, heat pumps are installed in most new Florida homes. And, because they are ideal for the hot summers and the mild winters, many existing homes are equipped with an air-to-air type of heat pump.

What is a heat pump?

Heat pumps use energy to transfer and intensify heat that is already available in the surrounding environment. There are several types of heat pumps; however, the type most commonly used in Florida is the air-to-air (air-source) heat pump. In the winter, the heat is transferred from the outside to the inside, and in the summer, the heat is transferred from the inside to the outside.



To ensure peak performance, have your system serviced by a qualified HVAC technician. Also, clear excess debris, foliage, and shrubbery from around your exterior heat pump unit to prevent any air blockage.

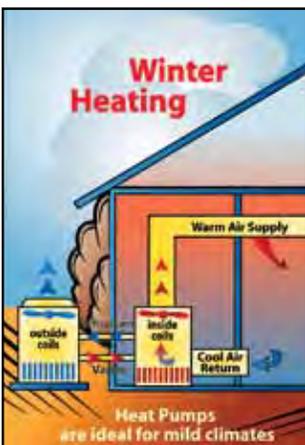


When is it ideal to use a heat pump?

It's critical to know that when outdoor temperatures fall below 40° F, traditional air-to-air heat pumps may no longer provide adequate heat to maintain a comfort level in your home, whereby auxiliary heat strips may operate for supplemental heating.

What to look for when purchasing a heat pump

Get a professional to assist you in making a decision of this magnitude. Here are a number of factors to consider: square footage of your home, window orientation and exposure to light, construction materials, levels of insulation, air infiltration, and lifestyle. Be sure to get at least three bids from various qualified heating/cooling professionals, read your contract carefully, and never pay in full until the work is complete.



It is necessary that you consider the SEER (Seasonal Energy Efficiency Rating) and the HSPF (Heating System Performance Factor) of your potential purchase. Basically, the higher the SEER or HSPF number, the greater the energy savings; however, the initial cost of the unit goes up as well. Depending on what you purchase, your cooling expert should be able to calculate the annual energy savings in your home. Just be sure to compare apples with apples when comparing costs.

Below are tables to help you understand the cost efficiency factor.

Annual Cooling Energy Cost



SEER (Seasonal Energy Efficiency Ratio)

TONS	10	12	13	14	16	18
2	\$ 810	\$ 670	\$ 620	\$ 580	\$ 500	\$ 450
2.5	\$1,010	\$ 840	\$ 780	\$ 720	\$ 630	\$ 560
3	\$1,210	\$1,010	\$ 930	\$ 860	\$ 760	\$ 670
3.5	\$1,410	\$1,180	\$1,090	\$1,010	\$ 880	\$ 780
4	\$1,610	\$1,340	\$1,240	\$1,150	\$1,010	\$ 900
4.5	\$1,810	\$1,510	\$1,400	\$1,300	\$1,130	\$1,010
5	\$2,020	\$1,680	\$1,550	\$1,440	\$1,260	\$1,120

The above calculations are based on 2800 annual cooling hours (average for South Florida), a 3-ton A/C, and 12 cents per kwh.

Annual Heating Energy Cost

HSPF (Heating System Performance Factor)

TONS	7.5	8	8.5	9	9.5
1	\$101	\$95	\$89	\$83	\$77
1.5	\$134	\$126	\$119	\$112	\$104
2	\$168	\$158	\$149	\$139	\$130
2.5	\$202	\$189	\$178	\$167	\$156
3	\$214	\$205	\$193	\$181	\$168
3.5	\$236	\$221	\$208	\$195	\$181
4	\$269	\$253	\$238	\$223	\$208

Average cost savings listed above is based on a number of averaging variables (family size, lifestyle, appliance efficiency and usage, etc.), which may vary from household to household.

Leaky Ducts – major cause of high energy bills

In the southern United States, it is estimated that 80% of all homes lose more energy through duct leaks than any other means. Here are a few inspection tips for your space conditioning system:



- Turn the thermostat fan to "on." Using your hands, feel along the entire length of the duct system for escaping air. Wet hands are more sensitive to air movement.
- Look for dirty spots on the duct insulation and around the air vents in your home. These can be signs of air leakage.
- It's well worth your investment to wrap any uninsulated ducts located in the attic with fiberglass insulation.
- Be sure to check all the connections to the vents, joints and heating/cooling unit for a snug fit.

Tuning up your cooling/heating system



- ✓ Have the air conditioner and/or heating system inspected by a qualified professional annually. Preventative maintenance on your AC unit could save you money and discomfort later in the season.
- ✓ Check filters monthly and change as needed. Clogged filters make the unit work harder and increase operating costs.

Weatherize your home

The average home in the United States may have a 25% – 40% increase in its heating and cooling bill due to a poorly weatherized house. Certain measures will help improve your housing envelope:



- ✓ Caulk and weatherstrip all exterior doors, windows, attic entrance, and baseboards.
- ✓ Seal and/or caulk any air leaks including the duct work, plumbing, electrical outlets, and light fixtures.
- ✓ Check for air leaks in places like fireplace dampers, around ventilation pipes, dryer exhaust vents, drains, door jambs, and recessed lighting.
- ✓ Insulate your interior attic door or hatch cover to the recommended levels for your area of Florida.



Taken on a cold day, this infrared photo helps us to better understand energy loss through the building envelope of the house. It clearly shows the heat loss in and around the windows, doors, and particularly through the roof and chimney – demonstrating the need to weatherize this home.

Photograph provided by Owens Corning®

Why insulate?

Inadequate insulation and air leakage are the leading causes of energy waste in most U.S. homes. Not only does extra insulation save money, it also makes for a more comfortable home.

Insulation is rated in terms of thermal resistance called R-value. R-value is a measure of its resistance to heat flow: the higher the R-value, the greater the insulating effectiveness. Installing more insulation in your home will increase your R-value, thus improving the resistance to heat flow.

Here are the recommended R-values for a Florida home:

Existing Construction (Range)		The amount of insulation needed for your home depends on a number of variables:
Ceilings	R30 - R38	
Walls	R11 - R19	
Floors	R11 - R19	

- type of insulation needed for certain construction.
- type of heating/cooling being used.
- where you plan to insulate.
- climate of the home.

There are excellent resources available on the internet to help you better understand the intricacies of insulation. Try visiting Oak Ridge National Laboratory at www.ornl.gov to help you determine the ideal R-value for your home.

Water Heating

According to the Department of Energy, water heating can account for 14%–25% of the energy consumed in your home, second to cooling and heating.

There are commonly known methods of conserving hot water: use less water, turn down the thermostat setting, purchase a more efficient water heater, insulate exposed water lines.

Hot water conservation

One simple yet inexpensive solution for conserving hot water is to install a low-flow showerhead. A standard showerhead uses about 2.5 gallons-per-minute (gpm) compared to a low-flow showerhead that uses a flow rate of 1.7 gpm or less.

The purchase price ranges anywhere from \$10 to \$50 dollars and your payback is substantial. Plus, installation should be a snap.

Here's a quick test to see if you would benefit from this type of showerhead. Set your shower to a normal pressure, then hold up a bucket to catch all the water. If it takes less than 20 seconds to catch one gallon of water, a low-flow showerhead may be a wise investment.

Another way to save on hot water is to adjust the water heater's thermostat setting to 115° F. However, if your automatic dishwasher does not have a temperature booster, the ideal setting is 140° F.

The factory preset on most new water heaters is usually 140° F or above. Bear in mind, higher hot water temperature settings may pose a safety risk for some people, particularly seniors and young children. Set the temperature according to your household needs.

Consider insulating an older electric water heater, especially one purchased prior to those with the yellow "Energy Guide" label. Newer models are more likely to be energy efficient. They are designed with built-in insulation. The older models probably need insulation.

Other hot water tips:

- ✓ Repair all leaky faucets. According to the U.S. government, a leak of just one drip per second can cost \$1 per month.
- ✓ Simply turn the faucet off while shaving or brushing your teeth and try taking short showers instead of long showers or baths.
- ✓ Install a water heater timer and set it according to your family needs.
- ✓ Wash your clothes with cold water.
- ✓ Periodically drain the hot water tank. This will prevent a buildup of sediment which puts a strain on the heating elements.

If you are in the market for a new water heater, there are many choices available. Varieties include heat recovery units, heat pump exchange units, solar water heaters, and tankless water heaters. Study and compare these to determine what is best suited for your budget, bearing in mind long-term usage cost. If you are not sure, ask an energy expert at your local Cooperative which type is best suited for your home.



A typical U.S. homeowner's water consumption by place of use.

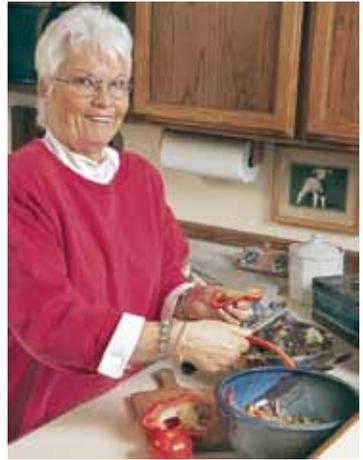
Information provided by U.S. Department of Energy.



Low-flow Showerhead

In the Kitchen

While many Floridians are trying to get away from the heat, particularly during those hot summer months, we all have to eat, and the kitchen can be one of the warmest places in the house. Appliances have a tendency to generate excessive amounts of heat while in use. Let's explore energy tips and techniques for the kitchen and smart appliance usage.



Your refrigerator

Today, more than the television, the refrigerator is the single most widely used appliance in America. While modern refrigerators and freezers now boast a long list of options and sometimes useful features, today's new refrigerators are much more energy efficient.



Still, a refrigerator can be one of the biggest energy users in the home. Old refrigerators and freezers are power hogs, often accounting for as much as 25% of a total monthly energy bill. In fact, many people are tempted to put their old refrigerator in the garage when a new one is purchased, causing their energy bill to go up.

Things to keep in mind:



- Be sure the refrigerator is working properly. Ask yourself - does the compressor motor run continually or does it cycle on and off? If running correctly, the fridge will cycle off when it reaches the correct temperature.
- Check the seals around the door by placing a dollar bill between the seal and door. If the bill stays securely in place, the seals should be in good shape. If the gaskets are hard and not flexible to the touch, out of shape or split, replace the seals or even the fridge.
- Defrost frequently to prevent ice buildup. Frost is an insulator when it forms and the compressor must run longer to keep the freezer cold. Automatic defrost can be a real money saver.
- Keep the doors open only as long as necessary. A refrigerator left open allows the cold air to escape, costing you money.
- For peak efficiency, keep your freezer full. Fill empty spaces with bags of ice or cartons of frozen water.
- Clean condensing coils at the back or bottom of your refrigerator regularly. Try using a special brush or tool attachment on your vacuum cleaner.

Your microwave

Microwaves offer more controls, features, and convenience at a better price than ever before.



Some features, such as preset programmed power, time settings for commonly cooked foods, and browning features make cooking in the microwave an efficient and time-saving convenience. Carousels save time and cook food faster and more evenly.

Combination microwave/convection ovens allow you to cook foods that require browning, eliminating the need to heat up your oven. Many models have built-in sensors that keep food from over cooking. And in Florida, the best news is that it doesn't add heat to your home.

More good ideas:



- Defrost frozen foods in the refrigerator first. Baking defrosted food uses one-third less energy.
- Lower the oven temperature. If you use ceramic, glass, or stainless steel cookware, temperatures should be lowered by 25 degrees. These materials conduct and retain heat better than other types of materials.
- When you have several dishes to go into the oven, try to schedule your cooking so that you can cook more than one dish at a time. Often, a simple temperature change of a few degrees will allow you to put two casseroles in at once, using the oven's heat efficiently and resulting in the same great meal!
- Use a timer. Opening the oven door lets the heat escape and increases energy usage. Use the oven window and the interior light to check on the meal as it cooks.



The ENERGY STAR®

It is important to look for the ENERGY STAR label when making a major purchase on any home appliance, electronics, water heater, cooling or heating units, and other items.

Although energy-efficient models identified with an ENERGY STAR label may cost more to purchase initially, the additional up-front costs are offset by the savings on your utility bill. One helpful way to figure out if buying an ENERGY STAR product makes sense is to think of it as having two price tags. The first price tag is the initial purchase price that you pay at the store when you buy the appliance. The second price tag is the cost to operate the appliance over its lifetime. You might be surprised when you see the potential savings of buying a more energy-efficient model.



The ENERGY STAR label was designed by the U.S. Department of Energy and U.S. Environmental Protection Agency to enhance awareness of the need for energy efficiency in consumer products.

Appliances are not the only products associated with the ENERGY STAR label

Even doors, skylights, windows, roofing materials, insulation, light bulbs, HVAC units, and more are available with the ENERGY STAR label. Currently, there are more than 50 different product categories that are eligible to earn the Energy Star rating. Its purpose is to help identify the more energy-efficient products available on the market.

What to look for on the ENERGY STAR label



The bright yellow and black guide on new appliances provides the consumer with two important facts. First, it gives the estimated yearly electricity use in kilowatt-hours for a particular model in comparison to others. Second, the guide provides the estimated yearly operating expense in U.S. dollars based on the national average cost of electricity. You can use these numbers to determine the operating cost over the average life of the product.

ENERGY STAR rated products are always among the most efficient available in today's market. It's wise to not only look for an ENERGY STAR label but to compare the product's energy use and operating cost as well.

Lighting

The average U.S. household has more than 40 sockets for light bulbs, ranging from table lamps to ceiling fixtures. Larger homes can have even more. In fact, lighting accounts for roughly \$200 on our annual household electricity bill. Replacing incandescent bulbs with ENERGY STAR qualified light bulbs provide significant benefits for consumers.

You can save time and effort with ENERGY STAR qualified light bulbs because they may last eight times longer!



Simple facts on saving energy and money with ENERGY STAR light bulbs



- ✓ Because ENERGY STAR qualified light bulbs emit less heat, they make your home more comfortable. They are also safer to use in light fixtures that have delicate paper or fabric shades.
- ✓ 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 energy cost.
- ✓ The average ENERGY STAR light bulb is designed to last 8,000 hours - more than seven years based on typical household use. That's long enough to watch your first-grader turn into a teenager!

What are energy vampires?

Energy vampires are products in your home that require energy while not providing any useful function. This energy is sometimes called "standby power." While standby power sometimes provides useful functions such as remote control, digital displays, and clocks, other products waste power. Electronic devices – cell phone chargers, camera chargers, battery chargers, or power adapters – when plugged in and not being used simply waste precious electricity. The average U.S. household spends \$100 per year to power such devices.

To avoid wasting energy, simply unplug the device. This will eliminate any potential energy loss. For your home entertainment system, you can use a power strip or surge suppressor that can be turned off at the switch. Just remember, if you plan to record a program and the main switch is turned to the off position, the recorder will cease to function without power.



Other Ways to Save



✓ Heating a swimming pool can consume a lot of energy that adds up to high heating bills! You can improve your swimming pool's heating and energy efficiency by doing the following:

- 1) Installing a high-efficiency or solar pool heater
- 2) Using a pool cover
- 3) Managing the water temperature
- 4) Installing a variable flow, energy-efficient pump motor
- 5) Install a time clock

According to www.energysavers.gov, "In a Florida study, most people who reduced pumping to less than 3 hours per day were still happy with the water's quality. On average, this saved them 60% of their electricity bill for pumping."

✓ Spas or hot tubs use a significant amount of energy. It's wise to heat the spa or pool only when in use. You can save by simply covering your spas and/or pools with an insulated cover. This helps to maintain the temperature, plus it prevents excess debris from getting into the water.

✓ The *User Guide to Power Management for PCs and Monitors* published by the U.S. Government makes an interesting point: "Monitors usually consume at least twice as much electricity as the CPUs, and turning off the monitor is a big step in achieving significant energy savings".

✓ For information regarding solar applications, refer to Florida Solar Energy Center on page 14.

Calculating the Cost of Energy

watts X hours = watt-hours

1,000 watt-hours = 1 kilowatt-hour (kWh)

kWh use per year X \$ per kWh = \$ household electricity cost per year

To find out how much it will cost to run a 60-watt porch light 11 hours a night for an entire year or (per month) at the cost \$.1147 per kilowatt (kWh), calculate:

60 watts X 11 hours/day = 660 watt-hours/day

660 watt-hours/day X 365 days/year = 240,900 watt-hours/year

240,900 ÷ 1000 = 240.9 kWh

240.9 kWh X \$.1147* (kWh energy charge) = \$27.63 per year

\$27.63 ÷ 12 months = \$2.30 per month

*average residential energy charge in Florida for 2012

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