



A Consumers' Guide to Energy Saving Costs in the Home



ENERGY CONSERVATION ENERGY EFFICIENCY RENEWABLE ENERGY SOURCES

SAFEGUARD Our Future

The harness and use of energy resources is a key factor in the development of civilization, and an essential part of modern living. Every day, we use energy for powering our homes, industries and transportation systems. How efficiently we use the available energy will affect our ability to sustain a good quality of life for years to come.

The average amount of electricity consumed at home in Trinidad and Tobago is relatively high. In 2017, residential electricity consumption in Trinidad and Tobago (population 1.3 million) 240MWh was more than the combined residential consumption of Jamaica, Suriname, Curacao, Caymen Islands, Guyana, US Virgin Islands, Belize, St. Lucia and Bahamas (total population 5.5 million, consumption 237 MWh).

Thus, **Energy Conservation** at home can contribute to reducing Trinidad and Tobago's high demand for energy. **Every residential consumer has the power to make a positive impact by saving energy at home.** Also, improving **Energy Efficiency** at home, reduces the need and cost for acquiring additional generation capacity. The energy consumed in Trinidad and Tobago comes from burning our finite natural gas and oil resources. The use of **Renewable Energy Sources** is a step towards a cleaner, greener and healthier future.

This guide explores Renewable Resources, Energy Conservation, and Energy Efficiency and discusses issues relevant to the residential consumer. It also presents practical advice that can result in cost savings for these consumers. The cost estimations shown are based on appliance usage patterns observed in typical households. The average wattage (power requirement) for an appliance is presented along with the approximate hours of usage during the two-month billing cycle and these values form the basis for calculating the estimated amount of kilowatthours (kWh) and bi-monthly cost.

WHAT IS Renewable Energy?

Renewable energy uses energy sources that are continually replenished by nature — the sun, the wind, water, the Earth's heat, and plants. Renewable energy technologies turn these fuels into usable forms of energy — most often electricity, but also heat, chemicals, or mechanical power.



WHY USE Renewable Energy?

The combustion of hydrocarbons, such as oil and natural gas, produce gases that contribute to global warming.

The use of renewable energy technologies is referred to as "clean" or "green" because they produce few if any harmful emissions.

By increasing the use of renewable energy the negative impacts on the environment can be reduced.

About 40 percent of energy from natural resources is used for electricity, which means that our resources are used more for that purpose than for any other.

According to the United States (US) Environmental Protection Agency, approximately 30% of the energy consumption in commercial buildings is either inefficient or unnecessary.

USING Renewable Resources

Solar Water Heating

Solar energy can be used to heat water for your residential needs. Most solar water-heating systems consist of a solar collector and a water storage tank.



Replacing a 30-gallon Water Heater with solar water heating will reduce yearly electricity consumption by approximately **7,560kWh**. The corresponding yearly savings of **\$1,965.60** is currently estimated to payback for the installation cost of the new system in **5 years** with further saving benefits over the remainder of the system's useful life (at least 10 years) and will also provide security against rising electricity costs.

Solar Photovoltaic Electricity

Solar Photovoltaic (PV) electricity generation is one of the fastest growing forms of renewable energy. PV panels are used to power a diverse range of equipment, from small devices to entire homes to utility-scale operations.



Currently, in Trinidad and Tobago, application is limited to off-grid uses such as standalone lighting devices, powering remote buildings and a few pilot projects. At present, consumers do not pay the Trinidad and

Tobago Electricity Commission (T&TEC) for electricity produced from such installations. However, persons should confirm what is permitted with T&TEC and the Government Electrical Inspectorate before acquiring any electricity generating system.

Electric Vehicles

Electric vehicles use an electric motor and battery pack for propulsion. They are over three times more energy efficient than traditional internal combustion engines. They also need less maintenance, making them much cheaper to operate, and more friendly to the environment over their lifetime.

They are especially suited for the majority of the motoring experience in Trinidad and Tobago, that is characterized by frequent short distance commute. However, the upfront cost of ownership is higher, and local options for recharging the vehicle's battery away from home are presently limited.

SAVE MONEY by Saving Energy

CONSUMPTION EXPENSES FOR COMMON HOUSEHOLD APPLIANCES

This listing ranks the appliances that are commonly used by residential customers in terms of Consumption Expense in decreasing order. Customers may have more than one of these appliances, hence, the electricity consumed may then be greater than the amounts shown and is also dependent on the usage pattern of the appliance.

Appliance	Average Wattage (Watts)	Est. Hours Used Bi- Monthly	Est. Kwh Consumed Bi-Monthly	Bi- Monthly Cost (Dollars)
Refrigerator Auto Defrost 22 cu ft	620	480.0	297.60	\$77.38
Clothes Dryer	6,600	33.0	217.80	\$56.63
Air Conditioner 5,150 BTU	530	400.0	212.00	\$55.12
Freezer Auto Defrost 15 cu ft	440	480.0	211.20	\$54.91
Television Plasma 42"	330	370.0	122.10	\$31.75
Shower Heater	3,000	27.0	81.00	\$21.06
Television Flat Screen 27"	180	370	66.60	\$17.32
Electric Range (Oven)	12,500	5.0	62.50	\$16.25
Water Pump (1/2 hp)	440	96.0	42.24	\$10.98
Fan (ceiling)	80	400.0	38.40	\$9.98
Toaster Oven	1,550	20.0	31.00	\$8.06
Electric Kettle	1,500	20.0	30.00	\$7.80
Fan (circulating-16")	60	400.0	28.80	\$7.49
Computer with 5 speaker				
Sound System	300	75.0	22.50	\$5.85
Iron	1,200	16.0	19.20	\$4.99
Washing Machine Auto (20 lbs)	512	33.0	16.90	\$4.39
Stereo	100	164.0	16.40	\$4.26
Microwave Oven (0.6 cu ft)	700	22.0	15.40	\$4.00
Computer with Printer	200	75.0	15.00	\$3.90

To determine the cost of running appliances:

(Wattage x hours used)/1,000 = kWh kWh x cost per kWh = Usage Cost

The bi-monthly cost per kWh calculated for residential customers is based on the current rate at the lowest tier of 0.26 TTD per kWh and excludes VAT and the fixed minimal customer charge. Residential customers' consumption is currently billed in three tiers:

1-400kWh	@ 0.26TTD/kWh;
401-1000kWh	@ 0.32TTD/kWh;
>1000kWh	@ 0.37TTD/kWh.

TOP 4 HIGHEST ENERGY CONSUMING RESIDENTIAL DEVICES

Appliance	Average Wattage (Watts)	Est. Hours Used Bi- Monthly	Est. Kwh Consumed Bi-Monthly	Bi- Monthly Cost (Dollars)
Swimming Pool Filter Motor	1,500	1,440.0	2,160.00	\$561.60
Central Air Conditioner 2.5 tons	3,500	400.0	1,400.00	\$364.00
Water Heater 30 gallon	4,500	280.0	1,260.00	\$327.60
Air Conditioner 12,000 BTU	1,500	400.0	600.00	\$156.00



UNPLUG seldom-used appliances, such as an extra refrigerator. This can reduce your estimated kWh consumption by **1,785.60kWh / \$686.40** per year or greater (if the model is an older inefficient model.)

Most homes continually have chargers for cell phones, digital cameras, cordless tools and other personal gadgets plugged in even when not in use. Use power strips (which protect and allow multiple devices to be plugged in) to easily switch off televisions, home theatre entertainment, cable boxes, DVD players, stereos and chargers when not in use. A household's standby and off-mode power can amount to approximately **440kWh / \$114.40** per year.

Make INFORMED appliance purchases. You can reduce the electricity bill by using high-efficiency large appliances and air conditioning equipment. While these models may be more expensive to buy than comparable models with lower or average efficiency, the savings will put money back into your pocket long before the appliance needs to be replaced. E.g. New energy-efficient refrigerator models can result in savings of about **800kWh / \$208.00** per year over 20-year-old models.

Two processes that consume a lot of energy in the house are the cooling of living spaces (air conditioning) or food storage (refrigerators and freezers) and the heating of water for various domestic purposes or the heating of air in clothes dryers. Any attempts to conserve energy in these activities will result in significant savings.

Lighting

Replace incandescent bulbs and compact fluorescent bulbs with L.E.D. bulbs. L.E.D.s use 75% less energy than incandescent bulbs and last approximately 25 times longer.

Turn off lights when not in use or when leaving a room. Use "task lighting" (lamps, etc.) for close work rather than lighting the whole room unnecessarily.

Appliance	Average Wattage (Watts)	Est. Hours Used Bi- Monthly	Est. Kwh Consumed Bi-Monthly	Bi- Monthly Cost (Dollars)
Lighting 100W x 10 (incandescent)	1,000	600.0	600.00	\$156.00
Lighting 18W x 10 (100W equivalent L.E.D)	180	600.0	108.00	\$28.08
BI-MONTHLY SAVINGS BY REPLACING 10 INCANDESCENT BULBS WITH L.E.D. BULBS			492.00	\$127.92

Kitchen

Refrigerator temperatures should be kept between 2°C and 5°C and freezer temperatures between -15°C and -18°C.

Use smaller kitchen appliances instead of the electric range depending on the size of the meal being prepared.

Space Cooling

The use of high-efficiency air conditioners and measures to reduce cooling loads can reduce energy use by **20-50%**.

The use of one circulating 16" fan in a room size between 100-150 sq. ft. rather than a 5,150 BTU air conditioner unit can result in savings of about **1,128kWh / \$293.28** per year.

Keep air conditioned rooms closed and curtains pulled across windows as this will save energy.

Laundry

Wash full loads.

Keep the lint screen in the dryer clean.

Remove clothes promptly from the dryer and fold them, many items will require no ironing, or just a quick press.

Other Appliances

Don't leave computers in standby for an extended period of time – turn off if they are not being used.

When vacuuming, empty or replace the dust bag frequently.

MISSION STATEMENT

To ensure the promotion of the highest quality of utility services at fair and reasonable rates while building a credible regulatory regime that responds adequately to stakeholders' concerns and also ensures fairness, transparency and equity in the provision of utility services throughout the country.



REGULATED INDUSTRIES COMMISSION

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