

GEA
GUYANA ENERGY AGENCY

Taking Account of Energy Efficiency in Procurement



GEA Vision Statement & Mandate

- Ensure that reliable energy is provided to all in Guyana within an economically, environmentally and socially sustainable framework; with increasing consideration of renewable energy sources
- Advice and make recommendations to the Minister regarding any measures necessary to secure the efficient management of energy and the source of energy in the public interest;

Background

“One of the priorities of CARICOM Heads of Government is for the Region to embark on a more sustainable pattern of energy supply, and end-use for the future, through greater utilization of renewable and sustainable energy sources, reduced dependence on fossil fuels and greater efficiency and conservation in the use of energy, within the context of energy security and the desire for a low carbon approach to development.” (CARICOM Energy Policy).



Taking Account of Energy Efficiency in Procurement

- The public sector is often considered to have a leadership role when it comes to reducing negative environmental impacts and promoting more sustainable products and services.
- Purchasing energy-efficient products can reduce energy costs, lower maintenance costs, reduce greenhouse gas emissions, and enhance pollution prevention and resource conservation activities.
- Procurement decisions for electrical appliances are often only based on evaluation of cost and quality. As a result, the energy cost of operating the electrical appliance is usually not considered.

Taking Account of Energy Efficiency in Procurement

- Energy efficient procurement provides the initiative to begin a transition from first cost to life-cycle cost based purchasing methods and culture.
- In an effort to promote the procurement of energy efficient equipment and appliances for public buildings, the following policy seeks to encourage the adaption of an energy efficient procurement policy for electrical appliances.

Purpose

- The purpose of this policy is to ensure that the annual operating energy costs of electrical appliances must be included as part of the evaluation in the procurement process.



Policy Statement:

- All public procurement of electrical appliances shall include, as part of the decision-making process, an evaluation of the annual operating energy costs of the various electrical appliances.



Expected Results:

- This policy will result in lower electricity and fuel bills, lower energy use, and lower greenhouse gas emissions.
- By prioritizing the purchase of energy-efficient products, it is likely that more suppliers will have available more EE products that meet the demands of the public sector.
- Procurement staff will be confident that energy-efficient procurement criteria offer the best long-term value for their organization's money and represent *real* environmental gains.

Applicability

- This policy applies to all public procurement of electrical appliances.
 - IT equipment- computers, server, imaging equipment
 - Lighting (indoor and outdoor)
 - Air conditioning
 - Cooling & heating equipment (refrigerator, water heater)

Evaluation

- Annual operating energy costs will be assessed over the expected operating lifetime. The results of the assessment will influence purchasing decisions.
- The products must also meet user requirements for quality, performance, and durability.



Implementation

- Guyana Energy Agency (GEA) will provide technical support, educational and training resources as required.



Sample Procurement Memo

- An organization would like to procure a 12,000 BTU high wall split air-conditioning unit to be installed in its Board Room. See below a summary of the quotations received:

Suppliers	12000 BTU AC Units 220 - 240V 60Hz Split	Unit Cost G\$
A	Brand X	\$ 105,199
B	Brand Y	\$ 127,600
C	Brand Z	\$ 174,203

- A typical Evaluation

Sample Procurement Memo

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Suppliers	12000 BTU AC Units 220 - 240V 60Hz Split	Unit Cost G\$
A	Brand X: 10 SEER	\$ 105,199
B	Brand Y: 13 SEER	\$ 127,600
C	Brand Z: 17 SEER (Inverter Type)	\$ 174,203

- SEER : Seasonal Energy Efficiency Ratio

Seasonal Energy Efficiency Ratio

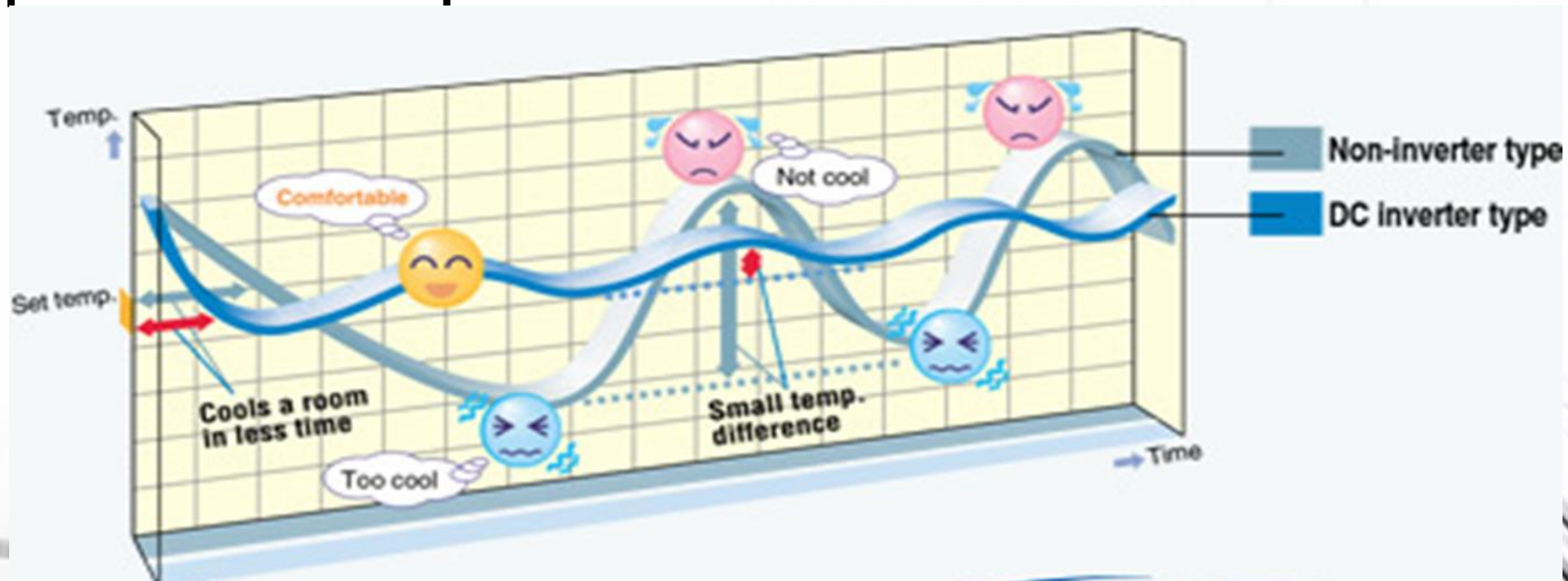
- The SEER rating of a unit is the cooling output divided by the total electric energy input during the same period. The higher the unit's SEER rating the more energy efficient the unit is.



<http://www.cfacservic.com/seer-ratings>

Some of the benefits of Energy Efficient inverters Air-Conditioners are :

- At least 30% - 50% (base on rated EER) cheaper to run as it consumes less power
- Far quicker to achieve desired temperature
- The startup time is reduced by 30%
- Much quieter
- Small temperature fluctuations, maximizing comfort level
- No voltage peaks from compressor



Comparison

- The Comparison Table below shows Brand Z, having a Seasonal Energy Efficiency Ratio (SEER) of 17, while having the highest capital cost, has the lowest operating cost after at least 2 years of operation. The 17 SEER is therefore recommended for purchase.

AC Type	Capital Cost (G\$)	BTU/h	SEER	Average Power: Watts (BTU/h)/ SEER	Energy Charge (G\$/ kWh)	Cost per Hour (G\$/h)	Operation Cost per 8 Hour day (G\$/day)	Operation Cost: 260 days per year (G\$/year)	Capital and Operation Cost (G\$)			
									After 1 year of operation	After 2 years of operation	After 3 years of operation	After 4 years of operation
Z	\$174,203	12,000	17	705.9	\$65.81	\$46.45	\$371.63	\$96,624.56	\$270,827.56	\$367,452.13	\$464,076.69	\$560,701.26
Y	\$127,600	12,000	13	923.1	\$65.81	\$60.75	\$485.98	\$126,355.20	\$253,955.20	\$380,310.40	\$506,665.60	\$633,020.80
X	\$105,199	12,000	10	1200	\$65.81	\$78.97	\$631.78	\$164,261.76	\$269,461.00	\$433,722.76	\$597,984.52	\$762,246.28

Lighting Procurement Example

- An organization would like to procure Fluorescent fixtures that would operate 14hrs/day, 5 days/week (3640 hrs/yr).

First Choice

- Standard cool white T12 40-watt fluorescent lamps and standard magnetic ballasts.

Second Choice

- Standard cool white T8 32-watt fluorescent lamps with electronic T8 instant-start ballasts



Comparison

Equipment	Years and Operation Cost per Lamps			
	Initial Cost	1 Year (G\$)	2 Years (G\$)	3 Years (G\$)
T8 with electronic ballast	2,600.00	7,665.00	15,330.00	22,995.00
T12 with magnetic ballast	2,300.00	9,581.00	19,162.00	28,743.00

20 % Energy Savings
Improved Color Rendering
Reduction in Demand Charge



Outdoor Lighting

175 Watts Mercury Vapour Lamps Vs 65 Watts Compact Fluorescent Lamps

- The 65 W CFL are recommended to replace the 175 W MV lamps based on the technical specifications
- A 175 W mercury vapor lamp would cost approximately G\$12,000 and requires up to G\$45,000 to operate annually.
- If you were to change to an outdoor 65 W CFL which costs approximately G\$ 13,500 , your operating cost would be about G\$10,000 annually.

75 % cost savings



You can save as much as G\$35,000 per year for each lamp replaced.



Mercury Vapour Lamp

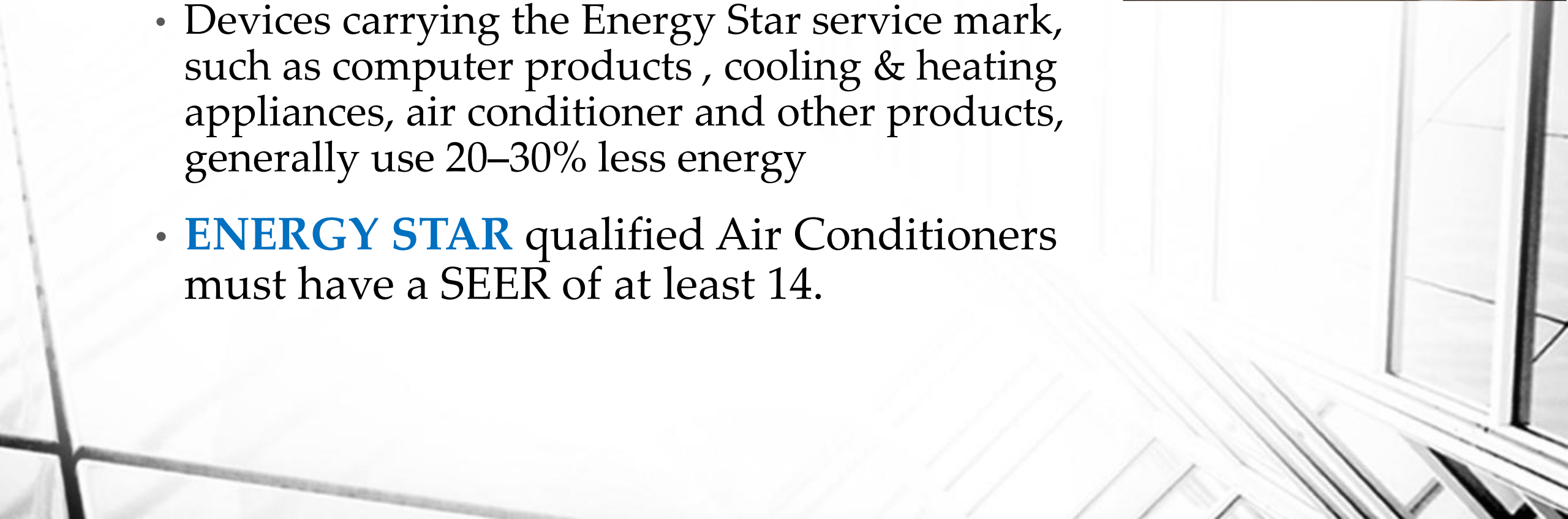


Outdoor CFL

Energy Star

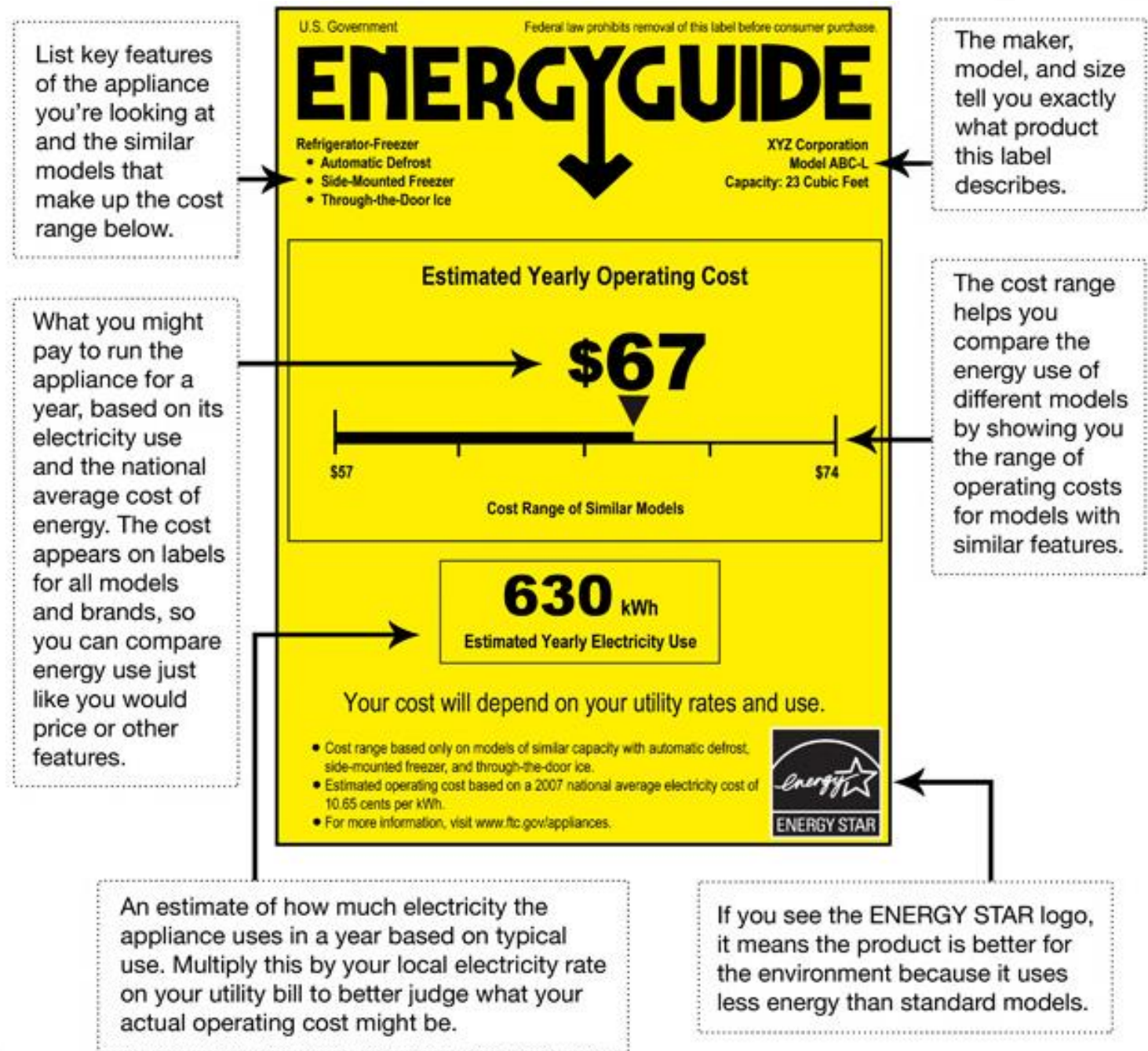


- Energy Star is an international standard for energy efficient consumer products.
- Devices carrying the Energy Star service mark, such as computer products, cooling & heating appliances, air conditioner and other products, generally use 20–30% less energy
- **ENERGY STAR** qualified Air Conditioners must have a SEER of at least 14.

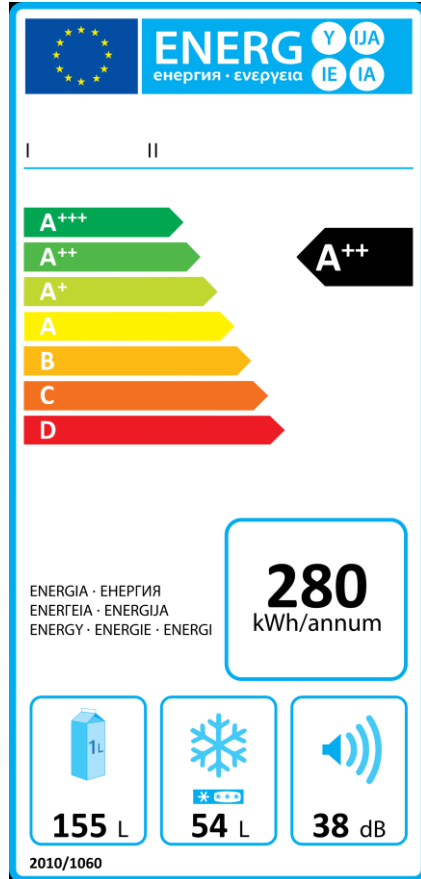


Energy Star

- The Energy Star label is also shown on Energy Guide appliance label of qualifying products.
- Compare Energy Labels



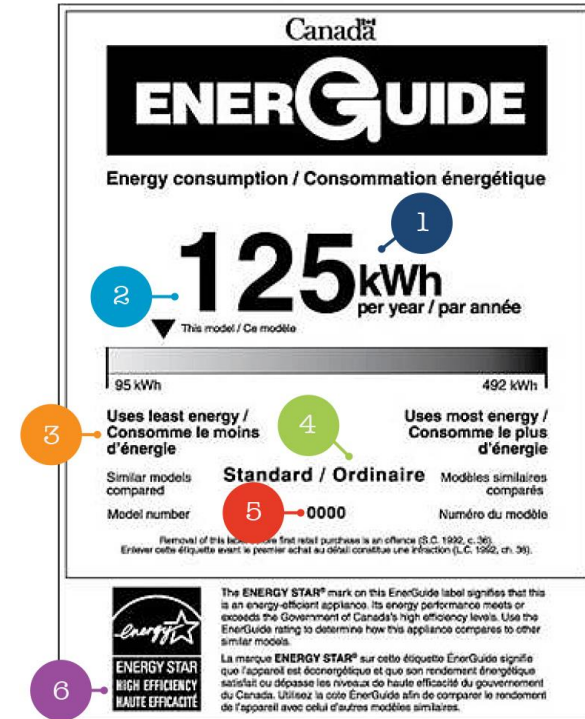
Other Energy Efficient Labels



European



Japanese



- 1 Average annual energy consumption of the appliance in kilowatt hours (kWh)
- 2 Energy efficiency of the appliance relative to similar models
- 3 Annual energy consumption range for models of this type and size
- 4 Type and size of the model
- 5 Model number
- 6 The ENERGY STAR symbol identifies major electrical appliances that are among the most energy efficient in their class, without compromising performance

Canadian

Solar Water Heaters

A 50-gallon electric water heater will cost you about 1 million dollars over its 10-year life.

BUT, investment in an equally-sized solar water heater will only have a one-time cost of about \$330,000 and will serve your hot water needs for more than 20 years.



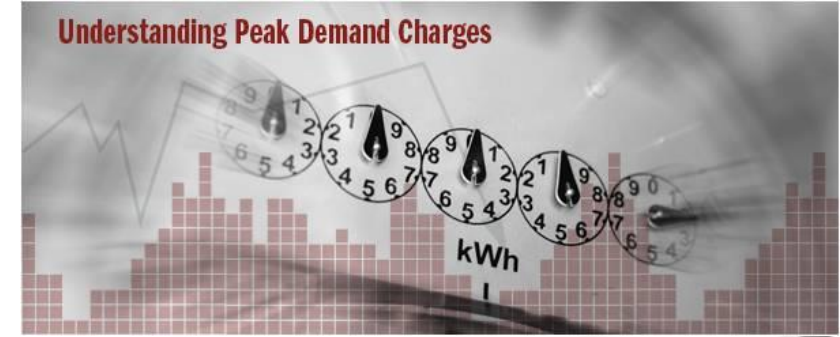
www.gea.gov.gy

Thank you for listening!



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Understanding Energy Bills



Understanding the components of your energy bill is no easy task, but it's a fundamental first step to taking control of your energy use and reducing costs.

Electricity use is metered (and you are charged) in two ways by the utility: first, based on your total **consumption (kilowatt Hour kWh)** in a given month, and second, your **demand (kVA)**, based on the highest capacity you required during the given billing period, typically a 15-minute interval during that billing cycle.

Understanding Energy Bills

TARIFF	UNITS (KVA / DEMAND)	RATE CHARGE()
"C" (INDUSTRIAL)	All	\$1,852.86 per KVA
"D" (INDUSTRIAL)	All	\$1,852.86 per KVA
"C" (GOVT. INDUSTRIAL)	All	\$1,933.42 per KVA
"D" (GOVT. INDUSTRIAL)	All	\$1,933.42 per KVA

<http://www.gplinc.net/domestic/rates>

Understanding Energy Bills

TARIFF	UNITS (kWh / ENERGY)	RATE CHARGE()
"A" (RESIDENTIAL)	1 - 75 Over 75	\$48.42 per kWh \$53.78 per kWh
"B" (COMMERCIAL)	All	\$69.82 per kWh
"C" (INDUSTRIAL)	1 - 120 Over 120	\$63.07 per kWh \$56.93 per kWh
"D" (INDUSTRIAL)	1 - 120 Over 120	\$60.41 per kWh \$54.25 per kWh
"E" (STREET LIGHTING)	All	\$53.35 per kWh