

# ENERGY BUZZ

Volume 1, Issue 3

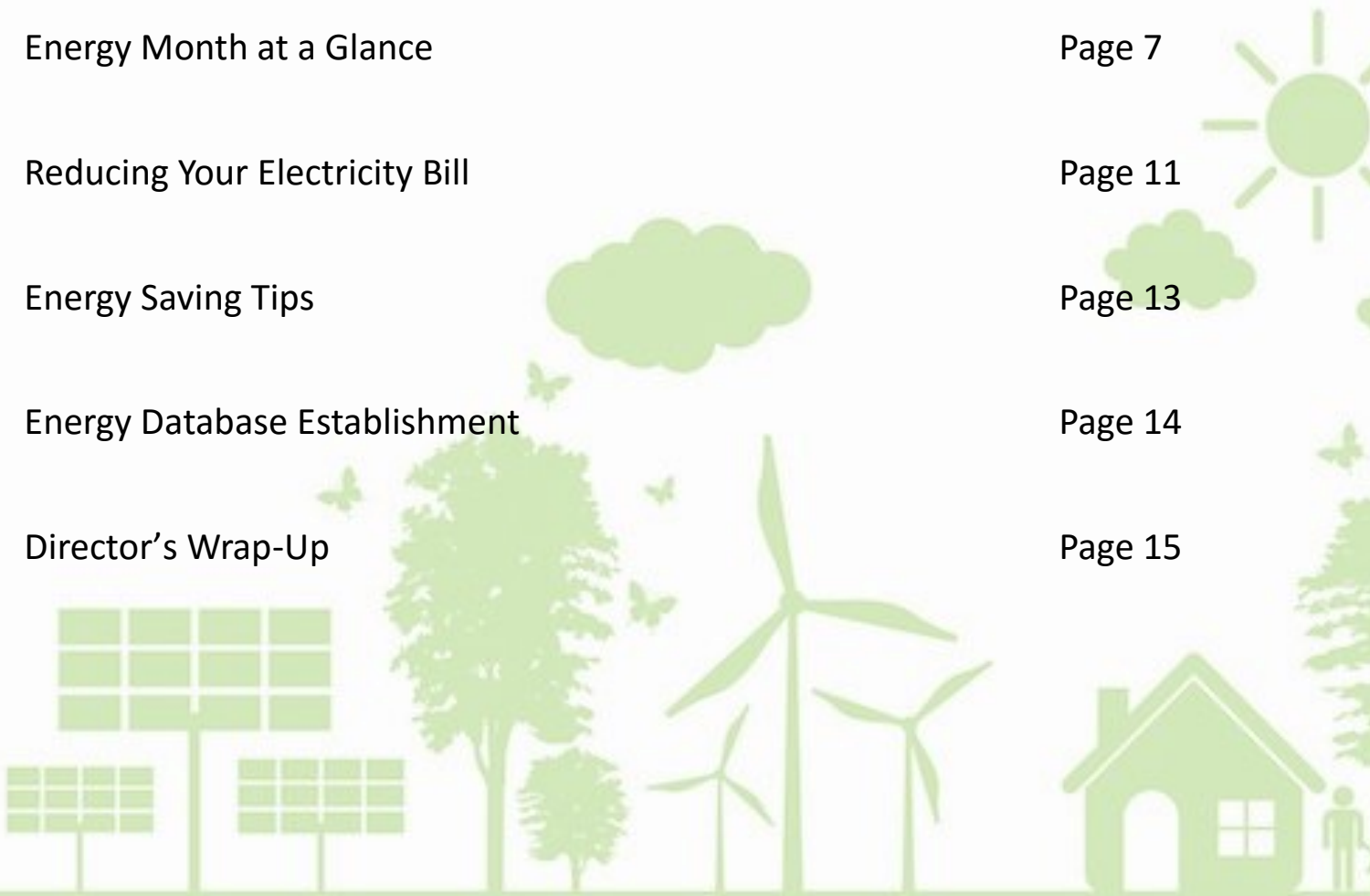
January -March 2021



Produced by the Energy Unit  
Ministry of Communication, Works, Labour, and Energy  
Brades, MSR1110, Montserrat

# TOPICS

Community Corner	Page 3
The Energy Audit Explained	Page 4
Residential Energy Consumption Study	Page 5
How to Choose Your Air-Conditioning Unit	Page 6
Energy Month at a Glance	Page 7
Reducing Your Electricity Bill	Page 11
Energy Saving Tips	Page 13
Energy Database Establishment	Page 14
Director's Wrap-Up	Page 15



# COMMUNITY CORNER



*"The sharp scrutiny of environmental issues, including the contrasting of fossil against renewable draws attention to how we use energy for our existence. This is a reality both globally and locally. My awareness of the need to responsibly consume energy increased many years ago when MONLEC gave me a sticker which I have since displayed on my refrigerator door. It reads: **"Get More From Your Energy Dollar"**. At that time, my monthly electricity bill annoyingly exceeded \$200.00, quite exorbitant for a lone occupant of a small residential property. Thereafter, I began making some necessary changes to reduce my energy consumption with helpful suggestions from MONLEC's and the Ministry of Communication and Works' media campaigns.*

*In January 2012, I installed a solar panel on my roof to heat my water supply. Although it was costly, it is a decision I have never regretted because unless there are continuous days of inclement weather, I am always enjoying hot water. Just think of the amount of money I have saved from not using electricity or gas for that purpose. Furthermore, I replaced almost all the incandescent bulbs in my house with LED bulbs that not only save energy but are reputed to also have longer lifespan. I guess the lifespan really depends on the brand because I have had to change a few that did not last as long as the original bulbs. In addition, I unplug all appliances (with the exception of the refrigerator which has a surge protector) when not in use, an action that protects them from the chronic fluctuation in our electricity service.*

*All these adjustments have favourably and appreciatively impacted my electricity bill resulting in reductions ranging from 30% - 45%, sometimes lower depending on the current fuel surcharge. I would like to recommend the adoption of energy efficient and conservation practices for the principal reasons of getting more from our energy dollar and protecting our environment."*

**Yasmin E W White**

# THE ENERGY AUDIT EXPLAINED

An energy audit is an evaluation of energy consumption for a home or business, which highlights how energy is being used inefficiently or lost, and provides solutions to help improve energy conservation. It emphasizes processes or systems to either maintain the amount of energy being used and increase the output or reduce the amount of energy put into the system without negatively affecting the output.

At the Energy Unit within the Ministry of Communication, Works, Labour and Energy, we generally perform ASHRAE Level 2 audits. An ASHRAE Level 2 audit is for those who wish to improve energy efficiency, hone in on how the build-

Type of Audit	Type of Audit Brief Description
<b>Level 1</b>	<ul style="list-style-type: none"><li>• Brief on-site survey of the building</li><li>• Savings and cost analysis of low-cost/no-cost Energy Conservation Measures (ECMs)</li></ul>
<b>Level 2</b>	<ul style="list-style-type: none"><li>• More detailed building survey</li><li>• Breakdown of energy use</li><li>• Savings and cost analysis of all ECMs</li><li>• Identification of ECMs requiring more thorough data collection and analysis (Level 3)</li></ul>
<b>Level 3</b>	<ul style="list-style-type: none"><li>• Attention to capital-intensive projects identified during the Level 2 audit</li><li>• More detailed field analysis</li><li>• More rigorous engineering analysis</li><li>• Cost and savings calculations with a high level of accuracy</li></ul>

# RESIDENTIAL ENERGY CONSUMPTION STUDY

As a part of the Energy Unit's activities to promote energy efficiency and conservation, a study is being conducted to determine the appliances and equipment with the highest energy demand. This will be conducted in the residential sector, and aims to identify areas of energy efficiency and conservation improvement. The Unit is looking for ten (10) participants, who will receive a Free Walk-through and Residential Energy Audit, to highlight areas of inefficiency and savings options. These participants will be split into two groups; five whose usage is below and five whose is above 200kWh per month. Persons interested in participating will be asked to their name, telephone number and address to Mr. Kenrick Burke at [burkek@gov.ms](mailto:burkek@gov.ms) or Miss Marissa Allen at [allenml@gov.ms](mailto:allenml@gov.ms).

The Unit will require permission to access each participant's home, and in their presence, install energy usage recording equipment to gather data on their energy consumption patterns. This will be done in tandem with the Electrical Inspectorate Division from the Physical Planning Unit, to ensure equipment is safely installed and all electrical work is in compliance with our Regulations. The equipment will be installed for a total of 5 days, preferably beginning on a Friday and ending on a Wednesday. Once the study is completed, participants will be provided with an individual assessment of their energy consumption and ways in which it can be reduced. This data will also be used to produce a generalized report highlighting household appliances with the highest energy demand and promoting the uptake of energy efficient appliances and equipment.



# HOW TO CHOOSE YOUR AIR-CONDITIONING UNIT

When shopping for a new AC unit, size and type matter. Size is not solely physical, but also means the cooling power that is typically expressed in British Thermal Units (BTUs) or tons (12,000 BTU=1 ton). Below is a guide to the differences between four main types of AC units.

## Central Air Conditioner

A central air conditioner is designed to cool multiple rooms, or an entire home at one time. Homeowners control these systems with a wall-mounted thermostat, and the air conditioner circulates cool air through a system of ducts and vents until the indoor air reaches the temperature set on the thermostat.

- Pros**
- Whole-home comfort
  - Quiet operation
  - Cleaner air
- Cons**
- Requires ductwork
  - High upfront cost
  - Wasted energy



## Mini-Split Systems

With this system, each cooled room has its own evaporator and fan unit, usually installed high on the wall. These units then share a single outdoor condenser and compressor unit.

- Pros**
- Individual zone control
  - No ductwork needed
  - Unobtrusive design
- Cons**
- Less energy efficient than central air conditioner
  - Cost increase with additional units



## Window Units

Window air conditioners are installed in a window and it uses two air cycles. The interior of the unit uses a fan to blow air over the evaporator to cool the room.

- Pros**
- Low initial cost
  - Flexibility
- Cons**
- Noisy
  - Security concerns
  - Warm air infiltration



## Portable AC Units

A portable air conditioner is an air conditioner that is mobile. Unlike window, through-the-wall, or central air conditioning units, portable units do not require permanent installation.

- Pros**
- No installation required
  - Can be placed anywhere
  - Inexpensive
- Cons**
- Noisy
  - Inefficient



# ENERGY MONTH

## AT A GLANCE

The Energy Unit celebrated CARICOM Energy Month 2020 throughout November. The month began with the Energy Unit staff attending the St. Patricks Roman Catholic Church service on November 1<sup>st</sup> and the Minster's speech officially opening the month on November 2<sup>nd</sup>.

Various activities were conducted over the period under the local topic, "**Securing Montserrat's resilience through Renewable Energy**", which was derived from the CARICOM regional theme "**RE-Silent Community; Energy at the Centre**". These activities included several competitions, and capacity building and awareness improvement events. There were five (5) competitions:

The Logo Competition will help make the Energy Unit a recognizable entity, while allowing the public to have an input into the artistic nature of the design.

- ★ 1st place - Mrs. Daniele James
- ★ 2nd place - Kayann Bryan
- ★ 3rd place - Ms. Laurian Brand



To increase awareness about the potential of renewable energy resources on Montserrat, persons were asked to create a two-minute video centred around the theme for the Video Competition.

- ★ 1st place - Randia Fenton and Liana Green
- ★ 2nd place - Neelesh Sadhwani.



The Poetry Competition encouraged persons to write a five stanza poem, which was judged based on the message, creativity and flow.

- ★ 1st place - Amara O'Donoghue.



The Poster Competitions were centered around the local theme and required participants to express their vision and message artistically. First place posters were painted as murals on the wall along the Brade's Main Road.

### Primary School

- ★ 1st place - Joel Gilford
- ★ 2nd place - Chaemor Lindsey
- ★ 3rd place - Keauna Rodney, Daniel Sinclair, Jose Edgecombe, Adien Jeffery, and Thaisa Hilton



### Secondary School

- ★ 1st place - Jasmine Gilford
- ★ 2nd place - Girandi Alcalá
- ★ 3rd place - Liana Green

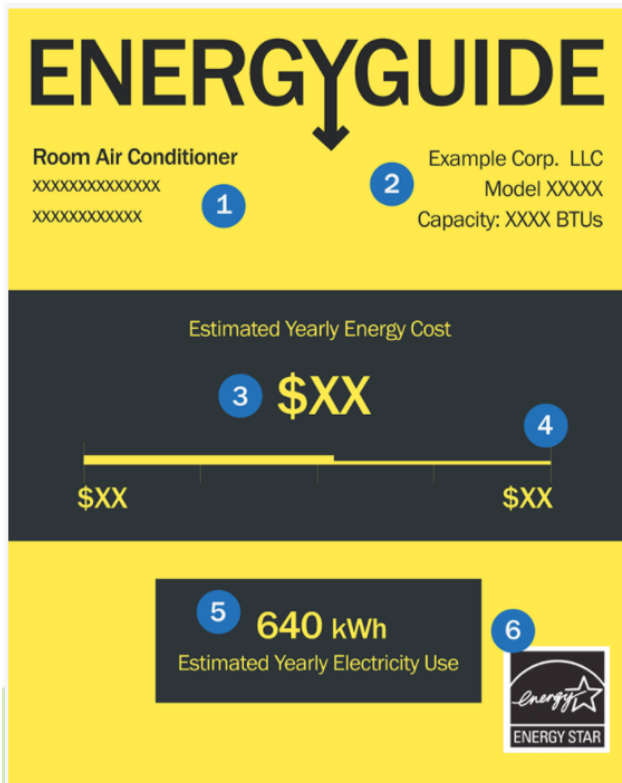
The schools were also engaged via school lectures and demonstration of miniature renewable energy models. The integration of RE was further solidified by a fieldtrip to MUL. Public outreach was undertaken throughout the month, with an Energy Efficiency training at the Statistics Department and a demonstration outside the Bank of Montserrat. The unit participated in the Drive Time program, discussing electric and hybrid vehicles. Lastly, a team-building hike was hosted for staff of MCWLE by the unit to Hell's Gate.

# HOW TO CHOOSE YOUR AIR-CONDITIONING UNIT CTD

When purchasing a new, energy-efficient air-conditioner, there are a few key things to take into consideration:

- ◆ **Appropriate size AC for the space:** AC units work by reducing the humidity and temperature of the air. An oversized unit will cool the air faster than it can remove the humidity, resulting in damp and clammy air. An undersized unit will work harder to maintain the set temperature, thus increasing the amount of energy used. The appropriate capacity to area size is given below.
- ◆ **ENERGY STAR certification:** this certification means the unit has met or exceeded high efficiency standards
- ◆ **Energy Saving Setting:** this setting turns off both the compressor and fan, once the space as reached the set temperature.
- ◆ **High EER and SEER ratings:** EER, which means Energy Efficiency Rating, is the standardized measurement of the efficiency of an AC unit. SEER, which means Seasonal Energy Efficiency Rating, is the measure of how efficient an AC operates over a season. An EER of 12 and higher, and a SEER 16 and higher good rates.
- ◆ **Programmable settings:** ensure the unit comes with digital displays that allow you to schedule periods for the AC to turn on and off.

Area (ft <sup>2</sup> )	Capacity (BTU)
100-150	5,000
150-250	6,000
250-300	7,000
300-350	8,000
350-400	9,000
400-450	10,000
450-550	12,000
550-700	14,000
700-1,000	18,000



An air conditioner's Energy Guide label is a great way to learn a little more about a specific AC as they are packed with information.

1. This lists the type of air conditioner and any key features.
2. This is the make, model and size of the appliance.
3. This is the average projected yearly cost of running the air conditioner.
4. This is the range of costs of similar air conditioners so you can judge where the yearly cost falls in comparison to other models.
5. The EER is the energy efficiency ratio, a number produced by dividing the air conditioner BTU rating (its output) by its wattage (its input). The higher the number, the better.
6. The ENERGY STAR® designation signifies that the air condi-



# REDUCING YOUR ELECTRICITY BILL

To reduce your electricity bill, you must lessen the amount of energy used for daily activities. This can be accomplished by selecting appliances with adequate capacity and wattage for the number of members in the household. The main appliances that are created with a variety of capacities and energy demand were identified as the refrigerator, washing machine, microwave and electric kettle.

Appliance	Family of 1-2 persons	Family of 4+ persons
<u>Refrigerator</u> - average refrigerators range in capacity between 9 to 30ft <sup>3</sup> <sup>(1)</sup> .	<ul style="list-style-type: none"> <li>• 2 persons require 8-10ft<sup>3</sup> of fridge space.</li> <li>• 2 persons require 4ft<sup>3</sup> of freezer space.</li> </ul>	<ul style="list-style-type: none"> <li>• Each additional person requires 1ft<sup>3</sup> extra of fridge space, starting with 10-12ft<sup>3</sup> for 4 persons.</li> <li>• Each additional person requires 2ft<sup>3</sup> extra of freezer space, starting at 8ft<sup>3</sup> for 4 persons.</li> </ul>
<u>Washing Machine</u> - compact washers are usually 2.30 to 2.45 ft <sup>3</sup> , standard washers are 3.1 to 4.0 ft <sup>3</sup> , and front-load washers can range from 4.0 to 5.0 ft <sup>3</sup> <sup>(2)</sup> .	<ul style="list-style-type: none"> <li>• A single person can manage with a compact washer, while two persons will require a standard size washer.</li> </ul>	<ul style="list-style-type: none"> <li>• A family of four and more require a larger washer, typically attained in the front-load machines.</li> </ul>
Microwave - the internal capacity can range from 0.5ft <sup>3</sup> to 2ft <sup>3</sup> .	<ul style="list-style-type: none"> <li>• Although microwaves range in capacity, the wattage is the crucial factor to consider. Microwaves can be attained with a wattage as low as 700W and as high as 1,300W.</li> </ul>	
Kettle - assuming a cup equates to 250ml, these range in capacity between 0.5L and 2.2L. Kettles also range in wattage between 600W and 3000W.	<ul style="list-style-type: none"> <li>• A 600W, 0.5L kettle is suitable for an individual at most. For a family of two, a 1.0L kettle would be a suitable capacity.</li> </ul>	<ul style="list-style-type: none"> <li>• A family of four will require a kettle with a 1.7L capacity, which is about 7cups.</li> </ul>

A single person or family of two would require appliances with smaller capacities than a family of four and more. Most smaller capacity appliances also come with a lower wattage requirement, although the two are not directly linked. Some larger capacity appliances, such as microwaves, also have low wattages, but this make them slower at reheating as the waves are dispersed in a larger space.

There are other methods that can be implemented to reduce the amount of electricity used in a household.

<sup>1</sup> - <https://www.bhg.com/kitchen/appliances/selecting-a-refrigerator/>

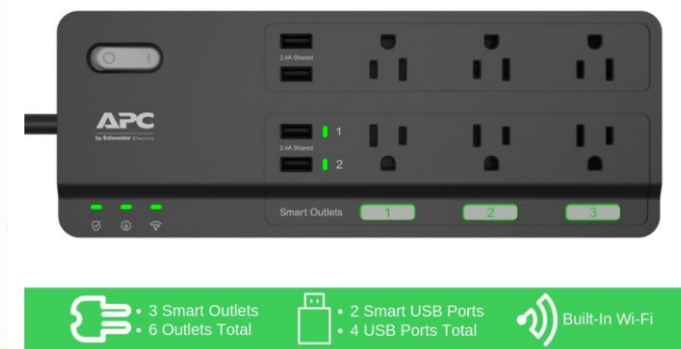
<sup>2</sup> - <https://www.thespruce.com/formula-to-calculate-washer-tub-capacity-2145871#:~:text=Compact%20washers%20are%20usually%202.30,4.2%20and%204.5%20cubic%20feet.>

# REDUCING YOUR ELECTRICITY BILL CTD

One such method is the use of smart power strips. Phantom load is the electricity used by appliances and electronics when turned off. Appliances such as televisions, microwaves and charges use standby power to keep features working and ready to start when turned on <sup>(1)</sup>. This can be lessened by either unplugging appliances when not in use or by using smart power strips.

Smart power strips reduce power usage by completely shutting down and preventing the transmission of power to electronics when they enter standby mode. These strips have two components; the electrical outlets and circuitry. This circuitry monitors the power consumption from each outlet and cuts the power to that outlet when the power consumption drops <sup>(2)</sup>. Some of these smart power strips also have the surge protector feature, which is added protection for your appliances and electronics.

BRAND	COST
LINGANZH Smart Power Strip Surge Protector Wi-Fi Extension Socket	\$23.00
APC Smart Plug Wi-Fi Power Strip	\$34.99
VOCOLinc HomeKit Smart Power Strip Multi Outlet Surge Protector	\$42.00
Kasa Smart HS300 Plug Power Strip, Surge Protector	\$54.00
Eve Energy Strip - Apple HomeKit Smart Home Triple Outlet & Power Meter	\$100.00



There has been a push to upgrade light bulbs to LEDs as a means of conserving energy, but installing motion sensor lights add an additional amount of savings. Motion sensor switch off in the day, and turn on at night when motion is detected. These as outdoor lighting adds a level of convenience and safety. Indoor motion sensor lights are also convenient and can be used to provide a soft light during the night, instead of turning on the bright lights in a room. These can be rechargeable and LED, with wattages as low as 3W.

<sup>1</sup> -<https://www.whe.org/blog/what-are-phantom-loads.html>

<sup>2</sup> -<https://science.howstuffworks.com/environmental/green-tech/sustainable/smart-power-strip.htm>

# ENERGY SAVING TIPS

- ◆ Boil only as much water as you need.
- ◆ Clean the heating element of the kettle regularly to prevent lime-scale buildup.
- ◆ Save the extra hot water in a thermos instead of leaving it in the kettle to cool down.



- ◆ Check that the refrigerator gasket is sealing **tightly**.
- ◆ Take all needed items out of the refrigerator at one time when preparing meals rather than opening the refrigerator several times.
- ◆ Avoid heavy frost buildup. Defrost **regularly**.
- ◆ Cover all foods to be placed in the refrigerator.
- ◆ Don't overcrowd your refrigerator.
- ◆ Place refrigerator away from direct heat, sun or stove.
- ◆ Make sure the refrigerator coils are well ventilated. **Don't enclose in a cupboard.**

- ◆ Full machine loads save water, detergents and energy, compared to several small loads. **Don't overload.**
- ◆ Set water control level to the size of the load being washed.
- ◆ Wash clothes in cool water as often as possible as this reduces cost and cuts down on wrinkles.
- ◆ Pre-soak stains and do not rely on the washing machine to remove them.



# ENERGY DATABASE ESTABLISHMENT

To allow prudent decision making and ensure that the impact of these decision can be tracked, an energy data based has been established. The information collected will be analyzed and used to inform future decision making and policy development. Critical energy indicators such as the per capita energy consumption, the local energy intensity, sectorial energy consumption and monthly fuel consumption will be compiled to highlight monthly and yearly trends, similarities and differences.

