



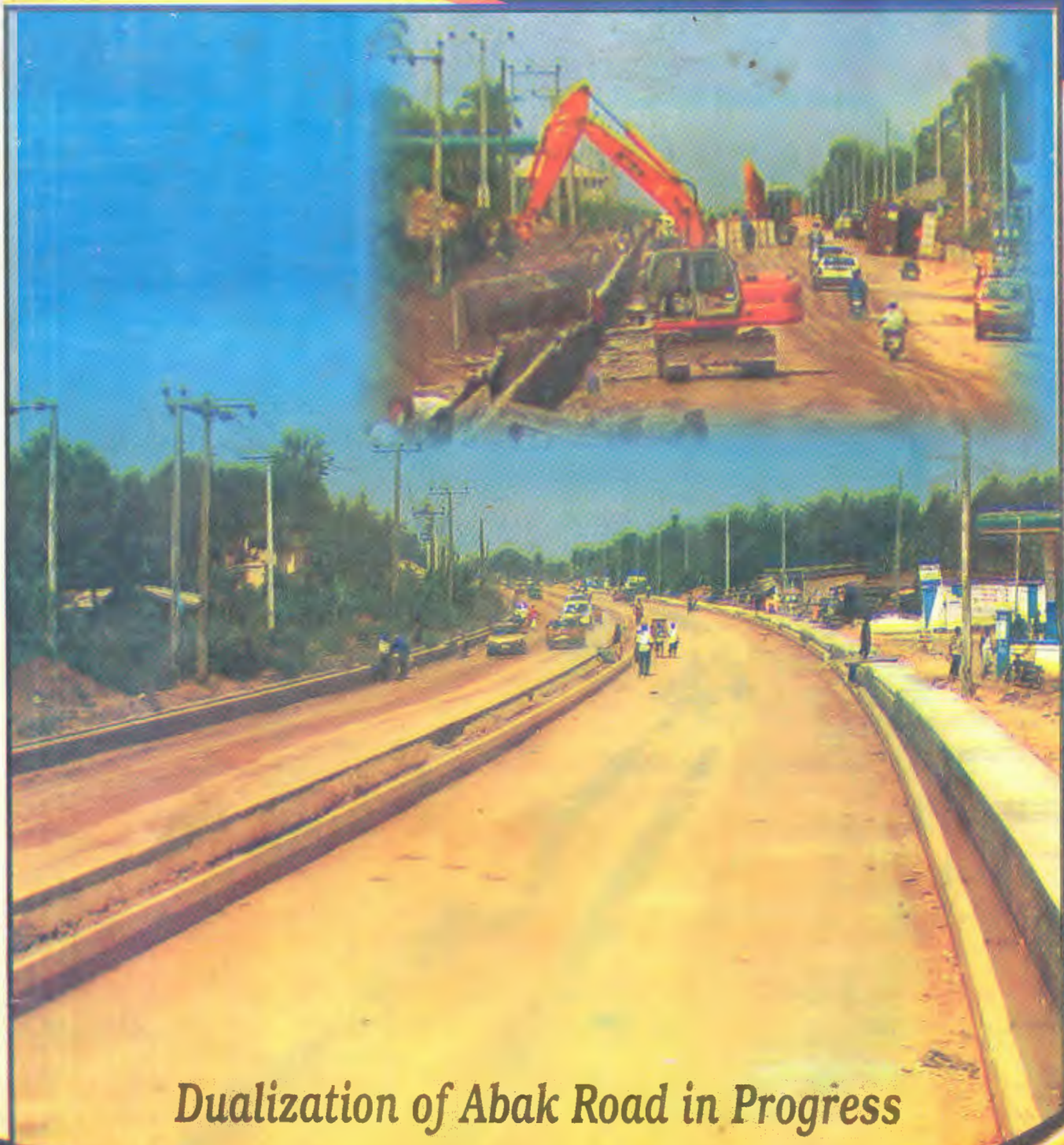
The Professional

The Newsletter Publication of The Nigerian Society of Engineers,
Uyo Branch

ISBN 978-36515-0-1

Vol. 1 / No 2

May 2005



Dualization of Abak Road in Progress

UYO URBAN RENEWAL:

Towards Changing the Status of Uyo

MANAGEMENT OF UTILITY (NEPA) BILLS

ABSTRACT

This paper considers the appropriate use of electricity as a domestic consumer with the aim of understanding personal consumption pattern in order to regulate and properly manage your consumption rate, cut cost on utility bills (money saving) and proper management of personal/NEPA equipment. The paper provides basic knowledge on electricity, the rating of household appliances, unit consumption, sample computation of NEPA bills for a domestic consumer and concludes that the management of utility bills requires a reasonable knowledge of the aforementioned parameters leading to a net saving in electricity thereby cutting down utility bills.

1. INTRODUCTION

Electrical energy is sold in kilowatt hour (kWh) called a 'unit' in the electricity bill (one unit is equivalent to 1kWh or 1000 Wh and it is the amount of energy consumed/used in one hour). It is therefore, very necessary to know the watt ratings of consumer household appliances (blender, cooker, fridge/freezer, lamp, dryer, heaters, iron, kettles, microwave ovens, television, toaster, coffee/tea maker, air conditioners, vacuum cleaner, washing machine, musical equipment). Also, electric energy must be used in and around the home very wisely and well in order not to waste the energy that you pay for (save money/cost cutting), ensure that NEPA installations are not overloaded (one of the major cause of power failure resulting in interrupted power supply and loss of equipment).

2. THE CONCEPT OF OVERLOADING

Knowledge of equipment rating will determine their usability and how you connect them. In order to stop overloading it maybe necessary to do the following:

- Control the number of equipment connected to one socket
- Use cables of appropriate rating to connect (especially) high powered equipment air conditioners, water heaters, electric iron/kettle.
- Use standard cables for wiring
- Use only equipment that are not faulty to control the level of current drawn
- Make no illegal/unauthorized connections especially direct tapping/multiple phases to a single phase subscriber
- Use overload protectors at all times (fuses, circuit breakers)

Overloading may lead to fire outbreak, damage to transformers, electrical/electrocution leading to instant death, power failure and destruction of cable insulation.

3. POWER FAILURE

Failure in power supply may affect life's conveniences such as inability to pump water (the source of life), threat to life in operating theatres, loss of consumables/perishables (which can disrupt feeding/money already budgeted for and spent).

4. NAPA BILLS FOR DOMESTIC CONSUMERS

Beside fixed/maintenance charges and VAT, every domestic consumer is charge six naira per unit of electricity consumed (N6/unit). The monthly bill you pay therefore is a function of your consumption rate. Thus if it is possible to manage consumption rate, you can more effectively manage your utility bill. Management of consumption rate entails some reasonable knowledge of the appliance rating, the computation method adopted for billing and the appropriate use of appliances. An attempt has been made to deal with various appliances with a view to recommending how effectively they can be used and for how long before a unit of electricity is consumed.

4.1 LIGHTING

Different types of lamps of various ratings have been used in residential places namely: incandescent (40, 60, 100, 200 Watt) and fluorescent lamps (rarely used at home). Though lighting may cost very little, some savings can still be made by ensuring that all lights are put off when not in use and or the use of dimmer switches (instead of ordinary on off switches). This also apart from reducing electricity consumption by controlling the wattage output provides attractive lighting.

Fluorescent lamp (20, 40 W) when used provides the same amount of light and cost reduction of 25%.

Depending on the rating of the lamp, it may require 10 25 hours for it to consume a unit of energy (1kWh)

4.2 ELECTRIC KETTLE/RING BOILERS

Electric kettles (small 2,000W, medium 3,500W) consume a unit of electricity in 0.5 to 0.3 hours respectively.

The rating of the ring boiler is lower (1000 1500W). This implies that for the same quantity/volume of water, more time is required for heating and more energy will be consumed. To manage consumption rate, it is advised that about the required/exact quantity of water be boiled but always ensure the boiling ring is always wholly covered by the water.

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UTILITY BILLS (Contd.)

4.3 ELECTRIC COOKER

The ratings range from 6000W (small), 8,000W (4 plate regular type with oven), to 10,500W each requiring respectively 0.2, 1.21 and 0.1 hours in order to consume a unit of electricity at full blast.

To manage cooking time and hence consumption, it is advisable to ensure that cooking utensils (pots, frying pans) match the ring/plate size in order to make adequate use of the heat produced. Also, units with multiple rings are advisable.

Single plate cookers (1,800W) of the portable type can also be used. These ones require 0.6 hours to consume a unit of electricity.

4.4 WATER HEATER

Most bathrooms in homes are fitted with unit heaters or centrally controlled water heaters of 50 100 litres capacity. Their ratings are respectively 1,200W (50 litres type) and 2,500W (100 litres type). Each consumes a unit of electricity in 0.8 to 0.4 hours respectively. It is advisable to heat water in the quantity required and feed all sectors in the home from a single unit.

4.5 FRIDGE/FREEZER

In order to manage the consumption rate (saving power and money) it is very necessary to open your fridge/freezer door only when necessary and to defrost the freezer regularly. With respect to the former, some units today (especially the upright model fridge/freezers) come with unit compartments having individual doors as well as a common door. In the most popular type fridge/freezers, a pair of door is used for each compartment.

5. KNOWING YOUR ENERGY CONSUMPTION CAPACITY

Some common household appliances shall be further considered and the time for which they can be operated in order to consume a unit of electricity. If it were possible to have a budget and a said amount has been allocated for electricity (NEPA BILL), then a moderation of the use of some or all of the appliances or whichever ones as applicable will assist in the management of your utility bill monthly. Table 5.1 shows the appliances, wattage and the possible period for which they are operated to consume a unit of electricity (1 unit of electricity is equivalent to 1000Wh or 1kWh).

TABLE 5.1 ENERGY CONSUMPTION TABLE

S/N	APPLIANCE	OPERATING TIME (HOURS)	UNITS CONSUMED (kWh)
1	Cooker (1 week's meal)	10	1
2	Fluorescent lamp	20	1
3	Upright freezer	24	1-2
4	Fridge/freezer	24	2
5	Iron	1	0.5-1
6	Kettle (6.75 l)	0.5/0.3	1
7	Incandescent lamp	16	1
8	Microwave (0.33 kg of beef cooked)		0.5
9	Refrigerator	24	@ 1
10	Refrigerator with freezer box	24	@ 1
11	Stereo system	8-10	1
12	Tape recorder	24	1
13	Television (22 inches colour)	6-9	1
14	Toaster (60 slices)		1
15	Blender (700 pints of soup)		1
16	Tea/coffee maker (35 cups)		1
17	Vacumm cleaner (upright type)	2	1
18	Washing machine (automatic type - weekly wash)		8-9
19	Air conditioner (1.5 hp @ 1.3kW)	1	1
20	Ceiling fan (0.3hp)	45	1
21	Standing fan (0.1hp)	14	1

6. SAMPLE COMPUTATIONS

6.1 GENERAL

For 31 months a customer (domestic/R 2 CATEGORY) consumed 7102 units of electricity. His average monthly consumption is $7102/31 = 227$ unit as follows:

15/11/2002 5990 units after 28 estimations @ 214 units per month)

07/01/2003 6621 units after 30 months @ 221 units per month)

07/02/2003 7102 units after 31 months @ 229 units per month)

Average monthly charge:

Monthly kWh = 229

Charge/kWh = N6

Monthly energy charge (N) = $6 \times 229 = 1,374.00$

Fixed charge (N) = 30

Meter maintenance charge (N) = 100

TOTALA (N) = 1,504.00

Add VAT (5%) (N) = 75.2

FINAL MONTHLY CHARGE (N)

= 1,579.20 @ N 394.8 per week)

2005 ENGINEERING WEEK - UYO BRANCH

This year's Engineering Week is scheduled to start from the 15th to 20th May, 2005. The theme for this year's event is "Information Technology as Catalyst for Economic Development." Interestingly the week's events will be witnessed by the President of the Society, Engr. Mustapha Bulama (FNSE). Arrangements are in top gear for the Branch to present the best of every event. The programme for the week-long activities will be flagged-off with a church's thanksgiving service at the Presbyterian Church, 73 Wellington Bassey Way, Uyo. The highlights of the events are the presentation of awards by the President to winners especially His Excellency, the Governor of Akwa Ibom State, Arc (Obong) Victor Attah (FNIA) and others. A Presidential Dinner will be held in honour of the visiting President during which the awards will be given. However, the Branch's Annual Dinner will be held after the launching of Engineering Centre Building fund on Friday 20th May, 2005. The President will be expected to pay courtesy call on His Excellency the Governor. Arrangements are on for the President to visit some engineering project sites and facilities such as the Hotel Le Meridien and Golf Course, Nwaniba; Victor Attah Digital Opportunity Centre (VADOC), Obio Imo Street, Uyo and others.

Unlike other years, the Executive Council has stretched out its long arms to bring in Fellows, senior members and all members of the Branch to participate in all activities of the week. The Deputy Governor, himself a fellow of the Society has been graciously involved in the planning of the events. All hands are on deck with no stones left unturned. A good and successful outing is expected.

During the week, the following individuals and corporate bodies will be presented with Awards.

- (a) *Individual Merit Award - for excellence* - Arc (Obong) Victor Attah (FNIA)
- (b) *Corporate Winners for Competence* -
- ★ Jos Hansen & Sohne
 - ★ Vicka Construction Co. Ltd.
 - ★ Ebasco Consulting Engineers
 - ★ AEC Works Ltd
 - ★ MotherCat (Nig) Ltd
 - ★ Gitto Construzioni Generali (Nig.) Ltd
- (b) *Individual Winners for excellence* -
- Engr (Dr) Linus Asuquo (FNSE)
 - Engr Mayen Adetiba (FNSE)
 - Engr (Dr) E. A. B. Nya (FNSE)