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PRELIMINARY ENERGY AUDIT ON THE RESIDENTIAL HOUSE *TERRACE HOUSE*

*Chang Ching Shen
Yap Ga Hung
Tan Hun Jian
Lee Chao Xiang
Kong Wei Seng
Tunku Nizar Tunku Mansor
Zainuddin Mat Isa*

Technical Report

TECHNICAL REPORT

**PRELIMINARY ENERGY AUDIT ON
THE RESIDENTIAL HOUSE
*TERRACE HOUSE***

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Penerbit Universiti Malaysia Perlis
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TABLE OF CONTENTS

	PAGE
LIST OF TABLES	5
LIST OF FIGURES	6
1.0 INTRODUCTION	7
2.0 BACKGROUND OF RESIDENTIAL HOUSE	9
3.0 ELECTRICAL ENERGY AUDIT	11
3.1 Energy consumption profile	11
3.2 Energy auditing.	12
4.0 RESULT AND ANALYSIS	15
4.1 Analysis of energy consumption	15
5.0 RECOMMENDATION	16
5.1 No cost energy saving measures	16
5.2 Low-cost energy saving	17
6.0 CONCLUSION	21
7.0 REFERENCES	22
APPENDIX A	23
APPENDIX B	25
APPENDIX C	29

LIST OF TABLES

	PAGE
Table 1 Premises details	10
Table 2 Monthly electrical bill details	11
Table 3 Average electrical bill	12
Table 4 Daily Energy consumption by equipment divided by room	14
Table 5 Energy consumption estimation	15
Table 6 Monthly cost prediction breakdown	15
Table 7 No cost energy saving suggestion	16
Table 8 No cost energy saving analysis	17
Table 9 LED energy saving analysis	17
Table 10 Cost retrofit lamp	18
Table 11 Estimated energy saving from rice cooker	18
Table 12 Rice cooker replacement cost	18
Table 13 Retrofit spending list	19
Table 14 Return of Investment (ROI) calculation for estimation and average data	20

LIST OF FIGURES

	PAGE
Figure 1 Mr. Lee's House front corridor view	9
Figure 2 Internal house layout	10
Figure 3 Premise energy usage bill per month	12
Figure 4 Daily energy usage timeline (Blue: By daily; Yellow: only weekly)	13

PREFACE

As the global population continues to grow, so as for demand in energy to support the increasing human population. Fossil fuel is a biggest contribution in energy supply. Since fossil fuel reserves have a limited lifespan of supply, therefore, the emphasis on being energy efficient grows higher as the awareness to conserve limited energy resources grows as well. Malaysia's also taking measures towards promoting efficient use of energy in efforts to reduce consumption of non-renewable resources. The Malaysian government has developed the National Energy Efficiency Action Plan (NEEAP) which focuses several key initiatives to save electricity and reduce electricity demand growth, which they target is to reduce by 8%.

The initiatives that have been implemented are such as promoting 5-star rated electrical appliances among domestic use and the implementation of Minimum Energy Performance Standards (MEPS) which helps specify the minimum energy level performance every electrical appliance must meet before being commercialized. In addition, NEEAP has also implemented energy audits and energy saving measures on commercial buildings which help optimize energy consumption as well, and encourage designs linked to energy efficient buildings.

The energy audit is aimed to investigate and analyse the electrical energy consumption of a selected premise. The analysis will include history bill usage, energy consumption by monthly in past 4 to 6 months and appliances usage time by weekly. The audit will also provide recommend energy saving opportunities that focus on no and low-cost measures.

ACKNOWLEDGEMENT

We would like to express our heartfelt gratitude, first of all to Mr. Lee for his immense contribution allowing the auditing process to be completed in his house. Also, special thanks to SG Energy Sdn. Bhd. for continuous support and opportunity to perform the preliminary energy auditing for buildings in Malaysia. We could never have completed the project without their help and support.

The contributions of the staff at the Faculty of Electrical Engineering Technology, Universiti Malaysia Perlis are accordingly recognized.

This technical report could not have been completed without the commitment, passion, and hard work of a large group of members and editors.

1.0 INTRODUCTION

As the global population continues to grow, so as for demand in energy to support the increasing human population. As to date, the global energy demand is being supplied by three types of energy sources which are fossil fuels (coal, oil, gas), renewable energy (RE) and nuclear fusion [1]. The fossil fuels still dominate the energy supply industry by more than 80%, with the main contributors being oil (33%), coal (28%) and natural gas (21%) [2]. Continuous use of non-renewable energy sources is no longer a reliable option considering that the combustion of fossil fuels will release greenhouse gasses into the Earth's atmosphere which contributes to global warming and subsequently climate change, as well as the fact that fossil fuel reserves have a limited lifespan of supply, with new estimates as of 2019 that oil reserves will run out by 2052, gas by 2060 and coal by 2090 [3]. Therefore, the emphasis on being energy efficient grows higher as the awareness in order to conserve limited energy resources grows as well. A concept called electrification is introduced whereby electricity is leveraged as much as possible as its efficiency at the end use is significantly superior than fossil fuels due to the ability to manipulate various portions of the electromagnetic spectrum [4].

In regard to energy efficiency, Malaysia's also taking measures towards promoting efficient use of energy in efforts to reduce consumption of non-renewable resources. The Malaysian government have established the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) as well as other key agencies such as Suruhanjaya Tenaga (ST) and Sustainable Energy Development Authority of Malaysia (SEDA Malaysia) in leading the effort towards cultivating energy efficient use in Malaysia. MESTECC (previously known as Ministry of Energy, Green Technology and Water, or KeTTHA) has developed the National Energy Efficiency Action Plan (NEEAP) which focuses several key initiatives in order to save electricity and reduce electricity demand growth, which they target is to reduce by 8% [5].

The initiatives that has been implemented are such as promoting 5-star rated electrical appliances among domestic use and the implementation of Minimum Energy Performance Standards (MEPS) which helps specify the minimum energy level performance every electrical appliance must meet before being commercialized. In addition, NEEAP has also implemented energy audits and energy saving measures on commercial buildings which help optimize energy consumption as well, and encourage designs linked to energy efficient buildings.

The energy audit is aimed to investigate and analyze the electrical energy consumption of selected premises. The analysis will include history bill usage, energy consumption by monthly in past 4 to 6 months and appliances usage time by weekly. The audit will also provide recommend energy saving opportunities that focus on no and low-cost measures.

2.0 BACKGROUND OF RESIDENTIAL HOUSE

Mr. Lee's house is a level terrace house which located at Alor Setar, Kedah. He's been staying in this house for more than 10 years. The size of the house is about 18x65 square foot. Figure 1 shows the front corridor view of Mr. Lee's house. His house contains one living room, one master bedroom, one bedroom, one bathroom and one toilet room as shown in Table 1. Figure 2 illustrate the internal house layout. The electricity is supplied by Tenaga Nasional Berhad (TNB). The reason why his house was chosen because the location of the house is suitable for auditing and the electrical application that used by his house is very simple and easy to organize.



Figure 1 Mr. Lee's House front corridor view



Figure 2 Internal house layout

Table 1 Premises details

Type of residential	Level terrace house
Number of occupants	4
Specify the number of rooms in the house	2
Name of electricity supply company	Tenaga Nasional Berhad (TNB)
Tariff Class	A

3.0 ELECTRICAL ENERGY AUDIT

The energy auditing process is divided into two part. The first part is collecting monthly energy consumption by inspecting the Electrical Bill produced by TNB. The second part is inspecting the electrical appliance available in the house. The important information such as power rating and average daily usage hours are job down. Other than that, the location of the appliance also being noted.

3.1 Energy consumption profile

Tables 2 and 3 provide the details and average of monthly electrical bills. Observing the bill analysis, Mr. Lee average consume 343.5 kWh or RM 101.04 cost of the electrical bill. From the trend of his household electrical bill, between November 2019 and January 2020, the bill trend is decreasing steeply as clearly shown in Figure 3. This suggest that Mr. Lee's family reduce electrical equipment usage on heavy powered consumption air conditioner when the surrounding temperature is low during that period. It can be concluded that Mr. Lee and his family went out for a certain period between December 2019 and January 2020 causes electrical usage to drop down significantly

From February 2020, the bill of the house rise reason is Mr. Lee family celebrating January 2020 Lunar New Year in his household causing electrical usage high due to frequent using electrical cookware to serve the guest. Another reason is the temperature start to rise during that month make Mr. lee use more electricity to cool down household. Monthly bill from March 2020 onward did not take into consideration due to Movement Control Order by Malaysia Government which could be heavily influence the bill average.

Table 2 Monthly electrical bill details

Tariff		A	
Month, Year	Power usage (kWh)	Cost (RM)	Bill Date
November, 2019	377.00	97.63	18.10.2019 - 17.11.2019
December, 2019	321.00	89.25	18.11.2019 - 17.12.2019
January, 2020	285.00	71.99	18.12.2019 - 16.01.2020
February, 2020	391.00	125.94	17.01.2020 - 16.02.2020

Table 3 Average electrical bill

Monthly Average Power Usage	343.5 kWh	Monthly Average cost	RM 101.04 (incl. 1.6% KWTBB)
Daily Average Power Usage	11.262kWh		

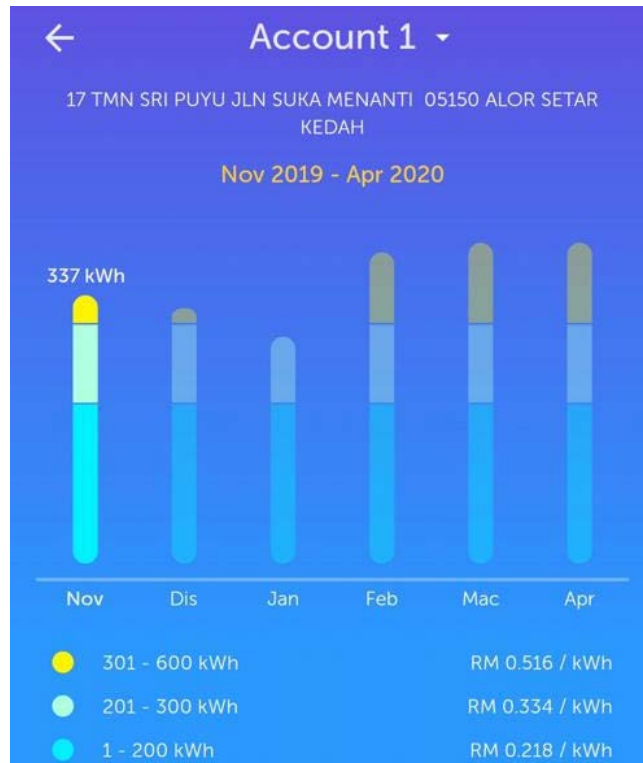


Figure 3 Premise energy usage bill per month

3.2 Energy auditing.

The electrical energy audit was performed in April 2020. Figure 4 summarized the usage of all appliances in this house. All the electrical appliances with their rated power and usage time are recorded in Table 4.

No.	Equipment	Time																							
		0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	0000	0100	0200	0300	0400	0500
Living room																									
1	Celling fan			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2	Fluorescent lamp															■	■	■	■	■	■	■	■	■	
3	Television			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
4	Laptop									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
5	Refrigerator	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
6	Washing machine					■	■																		
7	Radio			■	■	■	■																		
8	Rice cooker									■					■										
9	Table fan					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
10	CFL down light	■	■																						
Master room																									
1	Table fan									■	■	■	■	■	■										
2	Air-conditioner																								
3	Fluorescent lamp																								
Bedroom																									
1	Fluorescent lamp																								
2	Air conditioner																								
3	Table fan																								

Figure 4 Daily energy usage timeline (Blue: By daily; Yellow: only weekly)

Table 4 Daily Energy consumption by equipment divided by room

No.	Equipment	Power rating (W)	Unit	Daily Usage (hour)	Daily Energy (kWh)	Time
Living room-Kitchen						
1	Celling fan	75	1	17 hours	1.275	8am-1am
2	Fluorescent lamp	44	6	7 hours	1.848	8pm-2am
3	Television	115	1	13 hours	1.495	9am-10pm
4	Laptop	50	1	12 hours	0.6	1pm-1am
5	Refrigerator	305	1	24 hours	7.32	Whole day
6	Washing machine	600	1	0*	0*	Weekly 1 hr
7	Radio	12.5	1	4 hours	0.05	8am-12pm
8	Rice cooker	710	1	2hours	1.42	12pm-1pm 6pm-7pm
9	Table fan	75	1	12 hours	0.9	10am-10pm
10	CFL down light	24	1	1 hour	0.024	6am-7am
Area total		2010.5			14.932	
Master room						
1	Table fan	75	1	5 hours	0.375	12pm-5pm
2	Air-conditioner	1 hp	1	8 hours	5.968	10pm-6am
3	Fluorescent lamp	44	1	1 hours	0.044	8pm-9pm
Area total		865			6.387	
Bedroom						
1	Fluorescent lamp	44	1	3 hours	0.132	8pm-11pm
2	Air conditioner	1 hp	1	4 hours	2.984	12am-5am
3	Table fan	75	1	11 hours	0.825	1pm-12am
Area total		865			3.941	
Grand Total		3740.5			25.26	

4.0 RESULT AND ANALYSIS

4.1 Analysis of energy consumption

According to the Table 4, the most energy use of daily is refrigerator and air-conditioner in master room because the refrigerator was open 24 hours (whole day) and the daily energy was 7.32kwh. while the air conditioner was open 8 hours from 10pm to 6am in the morning and the daily energy was 5.968kwh. The least energy use equipment was radio and CFL down light. The radio was open by 4 hours from 9am to 12pm and it just 0.05kwh of daily energy and the CFL down light of daily energy was just 0.02kwh by opened 1 hour from 6am to 7am only. In other hand, the washing machine of daily usage and daily energy was zero due to the cloth wash once every two or three days and maybe more.

Table 5 shows the energy consumption estimation and Table 6 illustrate the monthly cost prediction breakdown. Expected costing of the electrical bill will be 775.8 kW which equivalent RM333.03. However, in actual bill, averagely the bill cost only RM101.04. This shows that Mr. Lee's family may not usually stay at home or having non fix routine which occasionally saving the energy.

Table 5 Energy consumption estimation

Estimated Daily Power Usage	3.694 kWh
Estimated Weekly Power Usage	25.86 kWh
Estimated Monthly Power Usage (30 days)	775.8 kW
Estimated Monthly Power Usage Cost	RM 333.03

Table 6 Monthly cost prediction breakdown

Estimated Monthly Cost breakdown		
Tariff A		
Power (kWh)	Cost per hours (RM/ kWh)	Total Cost (RM)
200	0.218	43.6
100	0.334	33.4
300	0.516	154.8
175.8	0.546	95.987
Sub total		327.787
KWTBB	1.6%	5.245
Grand total		333.03

5.0 RECOMMENDATION

5.1 No cost energy saving measures

The No Cost Energy Saving is the process of reducing the energy consumption without involving any changes of equipment or in other word, did not involve any money. It can be achieved by changing of behavior. Some suggestion from no cost saving recommended by energy commission (ST) [6] are as follow:

i) Frequent engage house keeping

According to ST, lighting and cooling systems lose significant amounts of their output when they are covered with dust, dirt or scale. The dust debris can block the light which make user need to switch on more lighting to illuminate the room. For cooling system, dust blocking the dust filter make air conditioner need work extra power to exhaust out heat from room.

ii) Optimized temperature of cooling system.

Cooling system will work longer to meet low temperature condition set by user. Most of air conditioner system have auto cut off work if the temperature condition met. Therefore, it is suggested that user need to rise their air conditioner temperature to comfort level, which is 24 degree Celsius according to ST or higher if they tolerate the temperature well.

iii) Reduce usage hours

Non-essential electrical equipment such as air conditioner and table fan should be reduced usage hours. Suggestion action should be as in Table 7.

Table 7 No cost energy saving suggestion

Item	Action	Hours saved
Air conditioner (master room)	Reduce 3 hours of operating time by encourage wake up earlier.	3
Table fan (Bedroom)	Encourage work in living room using fan installed at there.	5
Fluorescent lamp (Living room)	Switch off half of the light after 10 pm	3 unit 3 hours

If the suggestions being strictly followed, the potential daily saving percentage is around 11.83%. The no cost saving analysis is given in Table 8.

Table 8 No cost energy saving analysis

No	Item	Unit	Hours saved	Power	Total power
1	Air conditioner (master room)	1	3	746 W	2238
2	Table fan (Bedroom)	1	5	75 W	375
3	Fluorescent lamp (Living room)	3	3	44 W	396

Potential saving percentage by daily:

$$\text{Saving \%} = \frac{2238W + 375W + 369W}{25260W \text{ per day}} = 11.81\%$$

5.2 Low-cost energy saving

Following are low-cost energy saving suggestion:

- i) Use LED tube fluorescent lamp fit without ballast.

Modern LED tube are highly efficient and can be operate via retrofit without ballast which can save more energy. Downlight also can switch to LED bulb to save the energy. Tables 9 and 10 show the LED energy saving analysis and replacement cost.

Table 9 LED energy saving analysis

No	Item	Unit	Hours	Power saved	Total saved
1	Replace with LED T8 lamp (bedrooms)	1	3	28 W	84W
	Replace with LED T8 lamp (master rooms)	1	1	28 W	28W
2	Replace with LED T8 lamp (living room)	6	3	28 W	504W
3	Replace with LED T8 lamp (half at 10 pm)	3	4	28 W	336W
4	Replace with LED Downlight	1	1	14 W	14W
Total saving					966 W

Table 10 Cost retrofit lamp

No	Item	Power	Unit	Cost	Total
1	GLOBAL PRO G24 PLC	10W	1	RM4.5	RM4.5
2	GE 92841E LED T8 TUBE	16W	6	RM11	RM66

ii) Replace old inefficient equipment

Older model electrical appliances consumed more electrical energy because lack of energy efficiency regulation on past. Now household electrical equipment mostly will have energy efficient rating based on performance. For example, new rice cooker can cook faster and consume less energy to complete the task. Therefore, it is suggested to replace the rice cooker with low cost energy efficiency model. Philips Rice Cooker HD3129 able to finish cooking task under 1 hours with 400W power consumption. Tables 11 and 12 show the estimate energy saving analysis and replacement cost for rice cooker.

Table 11 Estimated energy saving from rice cooker

No	Item	Unit	Hours	Power saved	Total saved
1	Reduce cooking hours	1	2	700 W	1400 W
2	Replace with Philips Rice Cooker HD3129	1	2	300 W	600W

Table 12 Rice cooker replacement cost

No	Item	Power	Unit	Cost	Total
1	Philips Rice Cooker HD3129	400W	1	RM130	RM130

iii) Install PIR switch or timer socket

To further reduce the electrical usage, user should install auto switch off device for equipment like light or fan. This help to reduce wastage if no people around the area and avoid for not being mindful. Ideally it will help user to save the energy, but practically the amount is hard to define since it depends on location and usage factors. However, this is a good low-cost effort to save the electrical usage.

If all the replacement being followed, the potential daily saving percentage is around 22.2%. The retrofit spending list is given in Table 13. The Return of Investment (ROI) analysis using estimated and average data is illustrated in Table 14. The maximum ROI is estimated around 4 months.

Potential saving percentage by daily

$$Saving \% = \frac{2238W + 375W + 996 W + 1400W + 600W}{25260W \text{ per day}} = 22.2\%$$

Low-cost energy saving payback period

Total spending on new equipment:

Table 13 Retrofit spending list

No	Item	Power	Unit	Cost	Total
1	GLOBAL PRO G24 PLC	10W	1	RM4.5	RM4.5
2	GE 92841E LED T8 TUBE	16W	6	RM11	RM66
3	Philips Rice Cooker HD3129	400W	1	RM130	RM130
Total					RM200.5

$$Total \text{ Power saved} = 2238W + 375W + 996 W + 1400W + 600W = 5609 Wh$$

Table 14 Return of Investment (ROI) calculation for estimation and average data

From using estimation data	From using average data
$5.609 \text{ kWh} \times 30 \text{ days} = 168.27 \text{ kWh}$ Estimated Monthly Power Usage $= 775.8 \text{ kWh} - 168.27 \text{ kWh}$ $= 607.53 \text{ kWh}$ New bill calculation $[(200 \times \text{RM } 0.218) + (100 \times \text{RM } 0.334) + (300 \times \text{RM } 0.516) + (7.5 \times \text{RM } 0.546)] \times 1.016 = \text{RM } 235.9$ Saving per month: $\text{RM } 333.03 - \text{RM } 235.9 = \text{RM } 97.13$ ROI in month: $\frac{\text{RM } 200.5}{\text{RM } 97.13} = 2.06 \text{ months} \approx 3 \text{ months}$	$5.609 \text{ kWh} \times 30 \text{ days} = 168.27 \text{ kWh}$ Average expected Monthly Power Usage = $343.5 \text{ kWh} - 168.27 \text{ kWh} = 175.23 \text{ kWh}$ New bill calculation $[(175.2 \times \text{RM } 0.218)] = \text{RM } 38.19$ Average saving per month: $\text{RM } 101.04 - \text{RM } 38.19 = \text{RM } 62.85$ ROI in month: $\frac{\text{RM } 200.5}{\text{RM } 62.85} = 3.19 \text{ months} \approx 4 \text{ months}$

6.0 CONCLUSION

Preliminary energy audit is a costless way to identify the possible saving can be implement as owner premises. Preliminary energy audit requires benchmark of previous energy consumption data as baseline and calculate the possible saving from the suggestion. The user can decide to implement the no-cost energy saving method or both included low cost energy saving method. In Malaysia, Energy Commission prepared a set of guidelines assist user to save electricity usage which can easily follow. There are plenty of energy efficient equipment in the market which user can choose to implement in their premises to make energy consumption more efficient. By following preliminary energy audit suggestion, user able to enjoy 20% of the saving by just keep implement the suggestion. Finally, the concept of energy saving is totally depending on behavior of the user which is ultimate decision of the method to save the energy with or without costing.

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APPENDIX A

Energy Audit Check List

Auditor Details

Name

Chang Ching Shen

Audit Date, Time

MM DD YYYY

04 / 01 / 2020

Audit premises details

Premises owner

Lee Chao Xiang

Premises Address

no 17, taman sri puyu, Alor Setar, Kedah

Premises type

Single Story, 2 Room, terrace house

Premises Tariff

- A
- B
- C1
- D
- E1
- Other:

Premises Document

	Yes	No
Energy bil	<input checked="" type="radio"/>	<input type="radio"/>
Equipment List by Room	<input checked="" type="radio"/>	<input type="radio"/>
Equipment Power rating	<input checked="" type="radio"/>	<input type="radio"/>
Equipment total Power usage	<input checked="" type="radio"/>	<input type="radio"/>

Detail Analysis

List down equipment and its power rating that did not use daily basis.

As Appendix

List down equipment and its rating daily use time per room

As Appendix

APPENDIX B

November 2019 Electric Bill

BIL ELEKTRIK DAN INVOIS CUKAI

No. Akaun : 220570677009
 No. Kontrak : 31681
 Deposit : RM161.53
 No. Invois Cukai : 6023528858
 LEE KONG TIEW
 17, TMN SRI PUYU JLN SUKA MENANTI
 05150 ALOR SETAR
 KEDAH



TERIMA KASIH
 Kerana
 Membayar Dalam
 Tempoh 30 Hari

TNB Careline
 1-300-88-5454

Jumlah Perlu Dibayar RM 93.35 Tarikh Bil : 17.11.2019 Bil : OPC

	RM	Amaun	Bayar Sebelum		
Tunggakan	RM	4.30-	Terima Kasih		
Caj Semasa	RM	97.63			
Penggenapan	RM	0.02			
Jumlah Bil	RM	93.35	17.12.2019		
Bil Terdahulu (17.10.2019)	RM	85.70	Bayaran Akhir (06.11.2019)	RM	90.00
Jenis Bacaan	: Bacaan Sebenar				
Tempoh Bil	: 18.10.2019 - 17.11.2019 (31 Hari)			Faktor Prorata	
Tarif	: A:Kediaman			1.00000	
Blok Tarif (kWh/kW)		Kegunaan (kWh/kW)	Kadar(RM)	Amaun(RM)	
200		200.00	0.2180	43.60	
100		100.00	0.3340	33.40	
300		37.00	0.5160	19.09	
Jumlah		337.00		96.09	

Untuk maklumat bil dan bayaran terdahulu, sila layari:
<http://www.mytnb.com.my>
 atau hubungi Hotline TNB 1 300 88 5454
 Untuk gangguan bekalan atau kerosakan lampu jalan TNB sila hubungi melalui telefon/SMS: 15454

Subsidi 2.55 sen/kWh djbjayai Kerajaan Persekutuan RM 8.59

Surcaj 1% dikenakan bagi pembayaran selepas 30 hari dari tarikh bil selaras dengan Peraturan-Peraturan Bekalan Pemegang Lesen 1990

Bayaran melalui cek sah setelah penjelasan cek oleh bank

Service Tax (ST) 6% bagi penggunaan Domestik melebihi 600 kWh.

Keterangan		Tidak Kena ST	Kena ST	Jumlah
Kegunaan kWh	kWh	337.00	0.00	337.00
Kegunaan RM	RM	96.09	0.00	96.09
Kegunaan Bulan Semasa	RM	96.09	0.00	96.09
Service Tax (6%)	RM			0.00
KWTBB (1.6%)	RM			1.54
Caj Semasa	RM			97.63

No. Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit
		Dahulu	Semasa		
M 7182185759	1.00000	3,818.00	4,155.00	337.00	kWh

December 2019 Electric Bill

BIL ELEKTRIK DAN INVOIS CUKAI

No. Akaun : 220570677009
 No. Kontrak : 31681
 Deposit : RM161.53
 No. Invois Cukai : 6038066298
 LEE KONG TIEW
 17, TMN SRI PUYU JLN SUKA MENANTI
 05150 ALOR SETAR
 KEDAH



TERIMA KASIH
 Kerana
 Membayar Dalam
 Tempoh 30 Hari

TNB Careline
 1-300-88-5454

Jumlah Perlu Dibayar RM 87.60

Tarikh Bil : 17.12.2019

Bil : OPC

		Amaun	Bayar Sebelum		
Tunggakan	RM	1.65-	Terima Kasih		
Caj Semasa	RM	89.25			
Penggenapan	RM	0.00			
Jumlah Bil	RM	87.60	16.01.2020		
Bil Terdahulu (17.11.2019)	RM	93.35	Bayaran Akhir (08.12.2019)	RM	45.00
Jenis Bacaan	: Bacaan Sebenar				
Tempoh Bil	: 18.11.2019 - 17.12.2019 (30 Hari)				
Tarif	: A:Kediaman				Faktor Prorata 1.00000
Blok Tarif (kWh/kW)		Kegunaan (kWh/kW)	Kadar(RM)	Amaun(RM)	
200		200.00	0.2180	43.60	
100		100.00	0.3340	33.40	
300		21.00	0.5160	10.84	
Jumlah		321.00		87.84	

Untuk maklumat bil dan bayaran terdahulu, sila layari:
<http://www.mytnb.com.my>
 atau hubungi Hotline TNB 1 300 88 5454
 Untuk gangguan bekalan atau kerosakan lampu jalan TNB sila hubungi melalui telefon/SMS: 15454

Subsidi 2.55 sen/kWh dibiayai Kerajaan Persekutuan RM 8.19

Surcaj 1% dikenakan bagi pembayaran selepas 30 hari dari tarikh bil selaras dengan Peraturan-Peraturan Bekalan Pemegang Lesen 1990

Bayaran melalui cek sah setelah penjelasan cek oleh bank

Service Tax (ST) 6% bagi penggunaan Domestik melebihi 600 kWh.

Keterangan	Tidak Kena ST	Kena ST	Jumlah	
Kegunaan kWh	kWh	321.00	0.00	321.00
Kegunaan RM	RM	87.84	0.00	87.84
Kegunaan Bulan Semasa	RM	87.84	0.00	87.84
Service Tax (6%)	RM			0.00
KWTBB (1.6%)	RM			1.41
Caj Semasa	RM			89.25

No. Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit
		Dahulu	Semasa		
M 7182185759	1.00000	4,155.00	4,476.00	321.00	kWh

January 2020 Electric Bill

BIL ELEKTRIK DAN INVOIS CUKAI

No. Akaun : 220570677009
 No. Kontrak : 31681
 Deposit : RM165.57
 No. Invois Cukai : 6052672157
LEE KONG TIEW
 17, TMN SRI PUYU JLN SUKA MENANTI
 05150 ALOR SETAR
 KEDAH



TERIMA KASIH
 Kerana
 Membayar Dalam
 Tempoh 30 Hari

TNB Careline
 1-300-88-5454

Jumlah Perlu Dibayar RM 72.00

Tarikh Bil : 16.01.2020

Bil : OPC

	RM	<u>Amaun</u>	<u>Bayar Sebelum</u>		
Tunggakan	RM	0.00	Terima Kasih		
Caj Semasa	RM	71.99			
Penggenapan	RM	0.01			
Jumlah Bil	RM	72.00	15.02.2020		
Bil Terdahulu (17.12.2019)	RM	87.60	Bayaran Akhir (07.01.2020)	RM	42.60
Jenis Bacaan	: Bacaan Sebenar				
Tempoh Bil	: 18.12.2019 - 16.01.2020 (30 Hari)				
Tarif	: A:Kediaman		Faktor Prorata 1.00000		
Blok Tarif (kWh/kW)	Kegunaan (kWh/kW)		Kadar(RM)	Amaun(RM)	
200	200.00		0.2180	43.60	
100	85.00		0.3340	28.39	
Jumlah	285.00			71.99	

Untuk maklumat bil dan bayaran terdahulu, sila layari <http://www.mytnb.com.my> atau hubungi Hotline TNB 1 300 88 5454
 Untuk gangguan bekalan atau kerosakan lampu jalan TNB sila hubungi melalui telefon/SMS: 15454

Subsidi 2.00 sen/kWh dibayai Kerajaan Persekutuan RM 6.43

Surcaj 1% dikenakan bagi pembayaran selepas 30 hari dari tarikh bil selaras dengan Peraturan-Peraturan Bekalan Pemegang Lesen 1990

Bayaran melalui cek sah setelah penjelasan cek oleh bank

Service Tax (ST) 6% bagi penggunaan Domestik melebihi 600 kWh.

Keterangan		Tidak Kena ST	Kena ST	Jumlah
Kegunaan kWh	kWh	285.00	0.00	285.00
Kegunaan RM	RM	71.99	0.00	71.99
Kegunaan Bulan Semasa	RM	71.99	0.00	71.99
Service Tax (6%)	RM			0.00
Caj Semasa	RM			71.99

No. Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit
		Dahulu	Semasa		
M 7182185759	1.00000	4,476.00	4,761.00	285.00	kWh

Tenaga Nasional Berhad 159001009/094/1208656-AW1

February 2020 Electric Bill

BIL ELEKTRIK DAN INVOIS CUKAI

No. Akaun : 220570677009
 No. Kontrak : 31681
 Deposit : RM165.57
 No. Invois Cukai : 6065279087
 LEE KONG TIEW
 17, TMN SRI PUYU JLN SUKA MENANTI
 05150 ALOR SETAR
 KEDAH



TERIMA KASIH
 Kerana
 Membayar Dalam
 Tempoh 30 Hari
 TNB Careline
 1-300-88-5454

Jumlah Perlu Dibayar RM 125.95

Tarikh Bil : 16.02.2020

Bil : OPC

	RM	Amaun	Bayar Sebelum		RM
Tunggakan		0.00	Terima Kasih		
Caj Semasa		125.94			
Penggenapan		0.01			
Jumlah Bil		125.95	17.03.2020		
Bil Terdahulu (16.01.2020)		72.00	Bayaran Akhir (06.02.2020)		36.00
Jenis Bacaan	: Bacaan Sebenar				
Tempoh Bil	: 17.01.2020 - 16.02.2020 (31 Hari)				
Tarif	: A:Kediaman			Faktor Prorata 1.00000	
Blok Tarif (kWh/kW)		Kegunaan (kWh/kW)	Kadar(RM)		Amaun(RM)
200		200.00	0.2180		43.60
100		100.00	0.3340		33.40
300		91.00	0.5160		46.96
Jumlah		391.00			123.96

Untuk maklumat bil dan bayaran terdahulu, sila layari- <http://www.mytnb.com.my> atau hubungi Hotline TNB 1 300 88 5454
 Untuk gangguan bekalan atau kerosakan lampu jalan TNB sila hubungi melalui telefon/SMS: 15454

Subsidi 2.00 sen/kWh dibiayai Kerajaan Persekutuan RM 7.82

Surcaj 1% dikenakan bagi pembayaran selepas 30 hari dari tarikh bil selaras dengan Peraturan-Peraturan Bekalan Pemegang Lesen 1990

Bayaran melalui cek sah setelah penjelasan cek oleh bank

Service Tax (ST) 6% bagi penggunaan Domestik melebihi 600 kWh.

Keterangan	Tidak Kena ST	Kena ST	Jumlah
Kegunaan kWh	kWh	391.00	391.00
Kegunaan RM	RM	123.96	123.96
Kegunaan Bulan Semasa	RM	123.96	123.96
Service Tax (6%)	RM		0.00
KWTBB (1.6%)	RM		1.98
Caj Semasa	RM		125.94

No. Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit
		Dahulu	Semasa		
M 7182185759	1.00000	4,761.00	5,152.00	391.00	kWh

3D drawing

