BULACAN STATE UNIVERSITY

COLLEGE OF ENGINEERING

ELECTRICAL ENGINEERING DEPARTMENT

EE 312 ENVIRONMENTAL ENGINEERING

ENVIRONMENTAL IMPACT ASSESSMENT

NAME: GARCIA, SHILOH R.

COURSE: BSEE – 3C

DATE PERFORMED:

DATE SUBMITTED:

ENGR. NHOWEL F. JIMENEZ, REE

INSTRUCTOR

1ST SEM S.Y. 2022-2023

IDENTIFICATION

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR POWER CONSUMPTION IN A HOUSEHOLD IS A PROCESS OF EVALUATING THE POTENTIAL ENVIRONMENTAL IMPACTS OF ENERGY CONSUMPTION AND IDENTIFYING STRATEGIES TO REDUCE THE ENVIRONMENTAL IMPACT OF POWER USE. AN EIA TYPICALLY INVOLVES A COMPREHENSIVE ANALYSIS OF THE HOUSEHOLD'S ENERGY CONSUMPTION PATTERNS, INCLUDING THE SOURCES OF ENERGY, THE AMOUNT OF ENERGY CONSUMED, AND THE ASSOCIATED ENVIRONMENTAL IMPACTS. IN MY CASE, I COLLECT DATA FOR POWER CONSUMPTION AND DAILY MONITORED IT FOR TWO MONTHS (1 FOR OBSERVATION AND 1 FOR IMPLEMENTATION).

DATA COLLECTION

Garcia, Shiloh R.
BSEE-3C

DAILY RECORD FOR POWER CONSUMPTION

ELECTRIC DEVICE	LOCATION		QTY	1	2	3	4	5	6	7	WEEK 1
				13-JAN-23	14-JAN-23	15-JAN-23	16-JAN-23	17-JAN-23	18-JAN-23	19-JAN-23	
				FRI	SAT	SUN	MON	TUE	WED	THU	
				(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	
Lights	Room 1		1				7	6	7	7	**27**
	Room 2		1				6	5	4	5	**20**
	Living Room		1				3	3	5	3	**14**
	Dining Room		1				3	4	4	3	**14**
	Kitchen		1				9	8	10	6	**33**
	Bathroom		1				3	3	2	3	**11**
Refrigerator	Kitchen		1				24	24	24	24	**96**
Fan	Living Room		1				14	12	13	13	**52**
	Dining Room		1				6	9	7	7	**29**
	Room 1		1				15	16	16	17	**64**
Clip Fan	Room 2		1				7	6	9	10	**32**
Television	Living Room		1				5	3	2	5	**15**
Desktop	Room 2		1				3	2	3	3	**11**
Laptop	Room 1		1				10	9	11	10	**40**
Printer	Room 1		1				-	-	-	-	**-**
Cellphone			3				5	5	5	5	**20**
Washing Machine	Garage		1				-	-	3	-	**3**
E-bike	Garage		1				-	-	-	-	**-**
Aircon	Room 1		1				10	7	8	8	**33**
Aircon	Room 2		-				8	6	6	7	**27**
		Daily Consumption I									
Power Quality											
		Present Meter Reading		1854	-	-	1878	1883	1889	1895	
		Previous Meter Reading		-	-	-		1878	1883	1889	
		Daily Consumption		24				5	6	6	**41**

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DAILY RECORD FOR POWER CONSUMPTION

ELECTRIC DEVICE	LOCATION		QTY	1	2	3	4	5	6	7	WEEK 2
				20-JAN-23	21-JAN-23	22-JAN-23	23-JAN-23	24-JAN-23	25-JAN-23	26-JAN-23	
				FRI	SAT	SUN	MON	TUE	WED	THU	
				(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	
Lights	Room 1		1	4	7	6	7	6	7	7	**44**
	Room 2		1	6	6	4	5	5	5	5	**36**
	Living Room		1	3	5	4	4	3	4	3	**26**
	Dining Room		1	2	5	3	3	3	4	5	**25**
	Kitchen		1	7	5	3	7	5	10	8	**45**
	Bathroom		1	2	4	3	3	3	3	3	**21**
Refrigerator	Kitchen		1	24	14	24	24	24	24	24	**158**
Fan	Living Room		1	10	15	8	13	11	13	13	**83**
	Dining Room		1	2	5	2	7	6	7	7	**36**
	Room 1		1	10	16	12	15	15	15	14	**97**
Clip Fan	Room 2		1	7	8	7	7	6	7	9	**51**
Television	Living Room		1	1	6	2	5	4	2	5	**25**
Desktop	Room 2		1	-	3	2	3	1	3	3	**15**
Laptop	Room 1		1	3	10	8	11	8	12	10	**62**
Printer	Room 1		1	-	1	1	1	-	1	-	**4**
Cellphone			3	5	6	3	5	4	5	5	**33**
Washing Machine	Garage		1	-	7	-	-	-	3	-	**10**
E-bike	Garage		1	-	9	-	-	-	8	-	**17**
Aircon	Room 1		1	6	10	8	9	8	12	14	**67**
Aircon	Room 2		-	6	9	8	8	8	8	8	**55**
		Daily Consumption I									
Power Quality											
		Present Meter Reading		1899	1906	1911	1917	1922	1929	1935	
		Previous Meter Reading		1895	1899	1906	1911	1917	1922	1929	
		Daily Consumption		4	7	5	6	5	7	6	**40**

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DAILY RECORD FOR POWER CONSUMPTION

ELECTRIC DEVICE	LOCATION		QTY	1	2	3	4	5	6	7	WEEK 3
				27-JAN-23	28-JAN-23	29-JAN-23	30-JAN-23	31-JAN-23	01-FEB-23	02-FEB-23	
				FRI	SAT	SUN	MON	TUE	WED	THU	
				(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	
Lights	Room 1		1	5	7	5	7	6	7	7	**44**
	Room 2		1	5	5	5	5	4	5	5	**34**
	Living Room		1	3	4	4	4	3	4	3	**25**
	Dining Room		1	2	5	2	3	3	4	5	**24**
	Kitchen		1	6	6	3	7	5	10	8	**45**
	Bathroom		1	3	4	3	3	3	3	3	**22**
Refrigerator	Kitchen		1	24	14	24	24	24	24	24	**158**
Fan	Living Room		1	10	15	8	13	11	13	13	**83**
	Dining Room		1	3	5	2	7	6	7	7	**37**
	Room 1		1	10	14	14	15	15	15	14	**97**
Clip Fan	Room 2		1	7	7	8	7	6	7	9	**51**
Television	Living Room		1	2	5	2	5	4	2	5	**25**
Desktop	Room 2		1	-	5	3	3	1	3	3	**16**
Laptop	Room 1		1	4	13	9	10	9	10	11	**66**
Printer	Room 1		1	-	1	1	1	-	1	-	**4**
Cellphone			3	6	6	4	5	4	5	5	**35**
Washing Machine	Garage		1	-	6	-	-	-	3	-	**9**
E-bike	Garage		1	-	9	-	-	-	8	-	**17**
Aircon	Room 1		1	6	13	10	9	9	10	11	**68**
Aircon	Room 2		1	6	10	7	8	7	8	8	**54**
		Daily Consumption I									
Power Quality											
		Present Meter Reading		1939	1947	1953	1959	1964	1970	1976	
		Previous Meter Reading		1935	1939	1947	1953	1959	1964	1970	
		Daily Consumption		4	8	6	6	5	6	6	**41**

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DAILY RECORD FOR POWER CONSUMPTION

ELECTRIC DEVICE	LOCATION		QTY	1	2	3	4	5	6	7	WEEK 4
				03-FEB-23	04-FEB-23	05-FEB-23	06-FEB-23	07-FEB-23	08-FEB-23	09-FEB-23	
				FRI	SAT	SUN	MON	TUE	WED	THU	
				(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	
Lights	Room 1		1	6	10	6	7	6	8	7	**50**
	Room 2		1	5	6	4	5	5	5	5	**35**
	Living Room		1	3	5	4	4	3	5	3	**27**
	Dining Room		1	3	5	3	3	3	5	5	**27**
	Kitchen		1	5	6	4	7	4	10	8	**40**
	Bathroom		1	2	4	3	3	3	3	3	**21**
Refrigerator	Kitchen		1	24	14	24	24	24	24	24	**158**
Fan	Living Room		1	11	16	10	13	11	13	13	**87**
	Dining Room		1	3	5	3	7	6	7	7	**38**
	Room 1		1	9	13	13	15	15	15	14	**94**
Clip Fan	Room 2		1	7	8	8	7	6	7	9	**52**
Television	Living Room		1	2	4	2	5	4	2	5	**24**
Desktop	Room 2		1	1	5	1	3	1	3	3	**17**
Laptop	Room 1		1	5	10	10	10	9	12	10	**66**
Printer	Room 1		1	-	1	-	1	1	1	-	**4**
Cellphone			3	5	6	5	5	4	5	5	**35**
Washing Machine	Garage		1	-	7	-	-	-	3	-	**10**
E-bike	Garage		1	-	9	-	-	-	8	-	**17**
Aircon	Room 1		1	6	14	10	10	9	11	10	**70**
Aircon	Room 2		1	6	10	8	8	8	8	8	**56**
		Daily Consumption I									
Power Quality											
		Present Meter Reading		1980	1989	1995	2001	2006	2013	2019	
		Previous Meter Reading		1976	1980	1989	1995	2001	2006	2013	
		Daily Consumption		4	9	6	6	5	7	6	**43**

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DAILY RECORD FOR POWER CONSUMPTION

ELECTRIC DEVICE	LOCATION		QTY	1	2	3	4	5	6	7	WEEK 5
				10-FEB-23	11-FEB-23	12-FEB-23	13-FEB-23	14-FEB-23	15-FEB-23	16-FEB-23	
				FRI	SAT	SUN	MON	TUE	WED	THU	
				(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	
Lights	Room 1		1	6	10	5	7	7	9	7	**46**
	Room 2		1	5	6	4	5	5	6	5	**36**
	Living Room		1	3	5	3	4	3	5	3	**26**
	Dining Room		1	3	5	3	3	3	5	5	**27**
	Kitchen		1	5	6	3	7	4	10	8	**43**
	Bathroom		1	2	4	2	3	3	3	3	**20**
Refrigerator	Kitchen		1	24	14	24	24	24	24	24	**158**
Fan	Living Room		1	11	16	11	13	11	13	13	**88**
	Dining Room		1	3	5	3	7	6	6	7	**37**
	Room 1		1	9	13	11	15	15	15	14	**92**
Clip Fan	Room 2		1	7	8	7	7	6	7	9	**51**
Television	Living Room		1	2	4	1	5	4	2	5	**23**
Desktop	Room 2		1	1	5	2	3	1	3	3	**18**
Laptop	Room 1		1	6	13	9	11	10	12	11	**72**
Printer	Room 1		1	-	1	-	1	-	1	-	**3**
Cellphone			3	5	6	5	5	4	5	5	**35**
Washing Machine	Garage		1	-	7	-	-	-	3	-	**10**
E-bike	Garage		1	-	9	-	-	-	9	-	**18**
Aircon	Room 1		1	9	13	9	10	10	9	10	**70**
Aircon	Room 2		1	7	9	7	8	7	8	8	**54**
		Daily Consumption I									
Power Quality											
		Present Meter Reading		2026	2037	2041	2046	2052	2058	2064	
		Previous Meter Reading		2019	2026	2037	2041	2046	2052	2058	
		Daily Consumption		7	11	4	5	6	6	6	**45**

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DAILY RECORD FOR POWER CONSUMPTION

ELECTRIC DEVICE	LOCATION		QTY	1	2	3	4	5	6	7	WEEK 6
				17-FEB-23	18-FEB-23	19-FEB-23	20-FEB-23	21-FEB-23	22-FEB-23	23-FEB-23	
				FRI	SAT	SUN	MON	TUE	WED	THU	
				(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	
Lights	Room 1		1	6	10	6	5	4	8	7	**46**
	Room 2		1	5	6	4	4	5	5	6	**35**
	Living Room		1	3	5	3	3	3	5	4	**26**
	Dining Room		1	3	5	3	2	2	5	5	**25**
	Kitchen		1	5	6	3	3	4	6	8	**35**
	Bathroom		1	2	4	2	3	3	2	3	**19**
Refrigerator	Kitchen		1	24	14	24	24	24	24	24	**158**
Fan	Living Room		1	10	15	11	11	13	13	13	**86**
	Dining Room		1	3	5	3	7	6	6	7	**37**
	Room 1		1	9	13	11	9	7	15	14	**78**
Clip Fan	Room 2		1	7	8	7	7	6	7	9	**51**
Television	Living Room		1	2	4	1	5	4	2	5	**23**
Desktop	Room 2		1	1	5	2	3	1	4	3	**19**
Laptop	Room 1		1	5	12	10	8	8	9	10	**62**
Printer	Room 1		1	-	-	-	1	-	1	-	**2**
Cellphone			3	5	6	5	5	4	5	5	**35**
Washing Machine	Garage		1	-	7	-	-	-	3	-	**10**
E-bike	Garage		1	-	6	-	-	-	7	-	**13**
Aircon	Room 1		1	7	14	10	9	9	9	9	**67**
Aircon	Room 2		1	7	9	8	7	7	9	9	**56**
		Daily Consumption I									
Power Quality											
		Present Meter Reading		2068	2077	2083	2088	2093	2099	2105	
		Previous Meter Reading		2064	2068	2077	2083	2088	2093	2099	
		Daily Consumption		4	9	6	5	5	6	6	**41**

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DAILY RECORD FOR POWER CONSUMPTION

ELECTRIC DEVICE	LOCATION		QTY	1	2	3	4	5	6	7	WEEK 7
				24-FEB-23	25-FEB-23	26-FEB-23	27-FEB-23	28-FEB-23	01-MAR-23	02-MAR-23	
				FRI	SAT	SUN	MON	TUE	WED	THU	
				(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	
Lights	Room 1		1	6	10	6	5	4	8	7	**46**
	Room 2		1	5	6	4	4	5	5	6	**35**
	Living Room		1	3	5	3	3	3	5	4	**26**
	Dining Room		1	3	5	3	2	2	5	5	**25**
	Kitchen		1	5	6	3	3	4	6	8	**35**
	Bathroom		1	2	4	2	3	3	2	3	**19**
Refrigerator	Kitchen		1	24	14	24	24	24	24	24	**158**
Fan	Living Room		1	10	15	11	11	13	13	13	**86**
	Dining Room		1	3	5	3	7	6	6	7	**37**
	Room 1		1	9	13	11	9	7	15	14	**78**
Clip Fan	Room 2		1	7	8	7	7	6	7	9	**51**
Television	Living Room		1	2	4	1	5	4	2	5	**23**
Desktop	Room 2		1	1	5	2	3	1	4	3	**19**
Laptop	Room 1		1	5	13	7	9	8	11	10	**63**
Printer	Room 1		1	-	-	-	1	-	1	-	**2**
Cellphone			3	5	6	5	5	4	5	5	**35**
Washing Machine	Garage		1	-	7	-	-	-	3	-	**10**
E-bike	Garage		1	-	6	-	-	-	7	-	**13**
Aircon	Room 1		1	7	14	10	11	9	10	11	**72**
Aircon	Room 2		1	7	9	8	7	7	9	8	**55**
		Daily Consumption I									
Power Quality											
		Present Meter Reading		2109	2118	2123	2129	2134	2140	2146	
		Previous Meter Reading		2105	2109	2118	2123	2129	2134	2140	
		Daily Consumption		4	9	5	6	5	6	6	**41**

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DAILY RECORD FOR POWER CONSUMPTION

ELECTRIC DEVICE	LOCATION		QTY	1	2	3	4	5	6	7	WEEK 8
				03-MAR-23	04-MAR-23	05-MAR-23	06-MAR-23	07-MAR-23	08-MAR-23	09-MAR-23	
				FRI	SAT	SUN	MON	TUE	WED	THU	
				(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	
Lights	Room 1		1	6	10	6	5	4	8	7	**46**
	Room 2		1	5	6	4	4	5	5	6	**35**
	Living Room		1	3	5	3	3	3	5	4	**26**
	Dining Room		1	3	5	3	2	2	5	5	**25**
	Kitchen		1	5	6	3	3	4	6	8	**35**
	Bathroom		1	2	4	2	3	3	2	3	**19**
Refrigerator	Kitchen		1	24	14	24	24	24	24	24	**158**
Fan	Living Room		1	10	15	11	11	13	13	13	**86**
	Dining Room		1	3	5	3	7	6	6	7	**37**
	Room 1		1	9	13	11	9	7	15	14	**78**
Clip Fan	Room 2		1	7	8	7	7	6	7	9	**51**
Television	Living Room		1	2	4	1	5	4	2	5	**23**
Desktop	Room 2		1	1	5	2	3	1	4	3	**19**
Laptop	Room 1		1	5	12	9	10	9	10	11	**66**
Printer	Room 1		1	-	-	-	1	-	1	-	**2**
Cellphone			3	5	6	5	5	4	5	5	**35**
Washing Machine	Garage		1	-	7	-	-	-	3	-	**10**
E-bike	Garage		1	-	6	-	-	-	7	-	**13**
Aircon	Room 1		1	8	14	10	11	9	10	11	**73**
Aircon	Room 2		1	8	9	7	7	8	8	7	**54**
		Daily Consumption I									
Power Quality											
		Present Meter Reading		2151	2161	2166	2172	2177	2183	2189	
		Previous Meter Reading		2146	2151	2161	2166	2172	2177	2183	
		Daily Consumption		5	10	5	6	5	6	6	**43**

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DAILY RECORD FOR POWER CONSUMPTION

ELECTRIC DEVICE	LOCATION		QTY	1	2	3	4	5	6	7	WEEK 9
				10-MAR-23	11-MAR-23	12-MAR-23	13-MAR-23	-	-	-	
				FRI	SAT	SUN	MON	TUE	WED	THU	
				(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	(Hr)	
Lights	Room 1		1	6	10	6					**22**
	Room 2		1	5	6	4					**15**
	Living Room		1	3	5	3					**11**
	Dining Room		1	3	5	3					**11**
	Kitchen		1	5	6	3					**14**
	Bathroom		1	2	4	2					**8**
Refrigerator	Kitchen		1	24	14	24					**62**
Fan	Living Room		1	10	15	11					**36**
	Dining Room		1	3	5	3					**11**
	Room 1		1	9	13	11					**32**
Clip Fan	Room 2		1	7	8	7					**22**
Television	Living Room		1	2	4	1					**7**
Desktop	Room 2		1	1	5	2					**8**
Laptop	Room 1		1	5	12	10					**27**
Printer	Room 1		1	-	-	-					**-**
Cellphone			3	5	6	5					**16**
Washing Machine	Garage		1	-	7	-					**7**
E-bike	Garage		1	-	6	-					**6**
Aircon	Room 1		1	7	15	11					**33**
Aircon	Room 2		1	7	9	8					**24**
		Daily Consumption I									
Power Quality											
		Present Meter Reading		2193	2203	2209	-				
		Previous Meter Reading		2189	2193	2203	2209				
		Daily Consumption		4	10	6					**20**

PREDICTION

I PREDICT THAT OUR POWER CONSUMPTION WILL DECREASE SINCE WE HAVE STARTED LIMITING THE USAGE HOURS OF SOME OF OUR APPLIANCES. FOR EXAMPLE, WE HAVE SET A SCHEDULE FOR OUR AIR CONDITIONER TO TURN ON ONLY DURING THE NIGHT AND TO TURN OFF DURING THE EARLY MORNING WHERE IT IS COOLER. WE HAVE ALSO LIMITED THE USAGE HOURS OF OUR LIGHTS SPECIALLY DURING DAYTIME, AND LIMITED MY TIME FOR USING LAPTOP. ALTHOUGH WE STILL CONSUME MORE DURING SATURDAYS, I STILL PREDICT THAT THE CONSUMPTION WILL DECREASE DURING THE IMPLEMENTATION MONTH.

ASSESMENT

AFTER CONDUCTING A POST-IMPLEMENTATION EVALUATION OF THE CHANGES RESULTING FROM MY ENVIRONMENTAL IMPACT ASSESSMENT, I FOUND THAT DESPITE MY INITIAL PREDICTION, THE CHANGES DID NOT LEAD TO A SIGNIFICANT DECREASE IN CONSUMPTION. THE DATA SHOWED THAT CONSUMPTION LEVELS REMAINED LARGELY UNCHANGED FROM BEFORE THE IMPLEMENTATION OF THE CHANGES, INDICATING THAT ADDITIONAL MEASURES MAY BE NECESSARY TO ACHIEVE THE DESIRED OUTCOMES. I ANALYZED THE RESULTS OF THE EVALUATION AND IDENTIFIED SEVERAL POTENTIAL REASONS FOR THIS. ONE FACTOR MAY BE THAT THE CHANGES IMPLEMENTED WERE NOT SUFFICIENT TO ADDRESS THE ROOT CAUSES OF THE HIGH CONSUMPTION LEVELS, WHICH IS THE HOUR USAGE OF AIRCONDITIONER, AND THAT MORE COMPREHENSIVE CHANGES OR ADDITIONAL MEASURES MAY BE NEEDED. ANOTHER FACTOR MAY BE THAT THERE WERE UNFORESEEN EXTERNAL FACTORS OR CIRCUMSTANCES THAT AFFECTED THE RESULTS LIKE UNEXPECTED CHARGING OF EBIKE AND USAGE OF UNNECESSARY APPLIANCES. WITH THIS, I CONCLUDE THAT REDUCING POWER CONSUMPTION IS CRUCIAL TO MITIGATE THE ENVIRONMENTAL IMPACTS OF ENERGY USE IN HOUSEHOLD. BY LIMITING THE USAGE HOURS OF CERTAIN APPLIANCES PROPERLY, WE CAN SIGNIFICANTLY REDUCE OUR ENERGY CONSUMPTION, LOWER OUR ELECTRICITY BILLS, AND DECREASE OUR CARBON FOOTPRINT.