



**International
Finance Corporation**
World Bank Group

Philippine Green Building Spreadsheet

March 15, 2017

Technical Training Agenda

- Establishing the Baseline Energy & Water Consumption and Cost

- Computing Total Energy Savings, CO2 Avoidance and Water Savings

- Tracking Monthly Consumption of Electricity and Water

- Hands-on and Question and Answer

Establishing the Baseline Energy Consumption and Cost

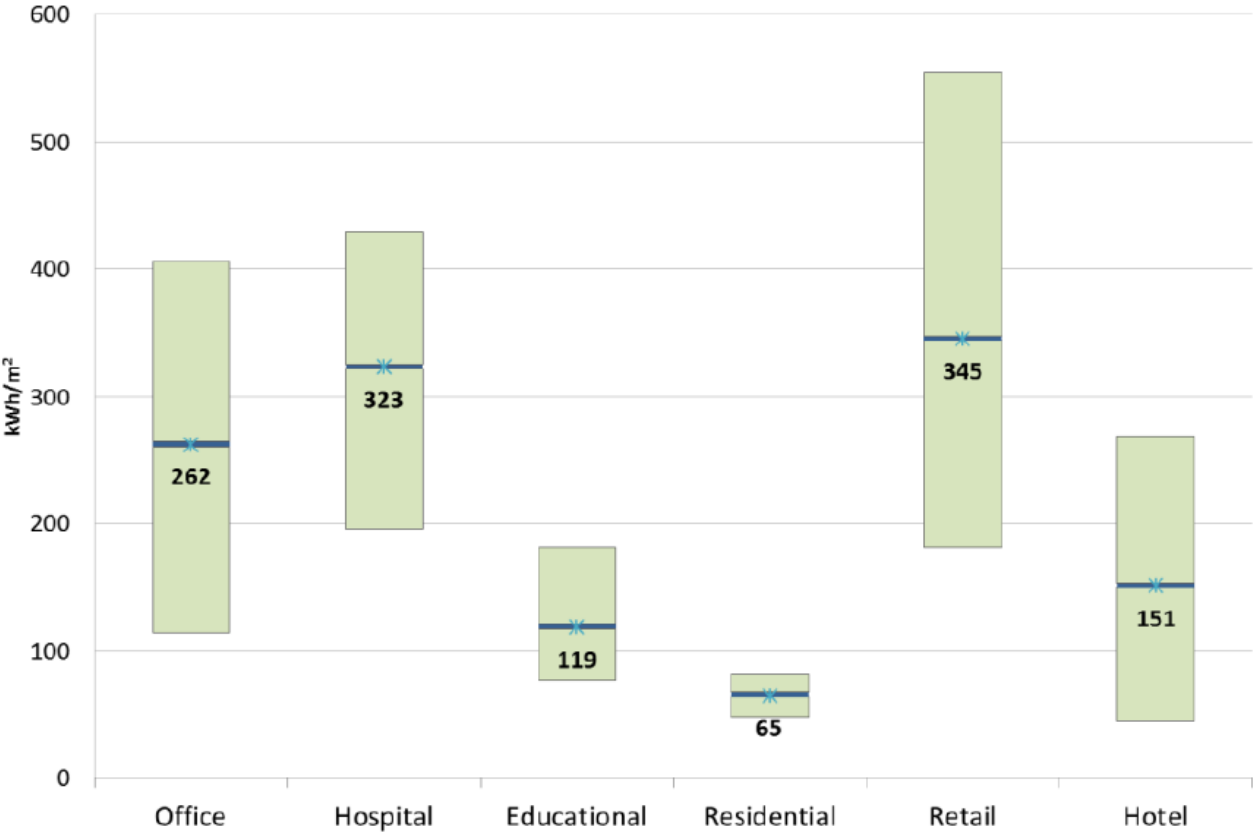
Existing buildings survey

- Offices (6 buildings)
 - Hospitals (4 buildings)
 - Educational (3 buildings)
 - Residential (6 buildings)
 - Retail (4 buildings)
 - Hotels (6 buildings)
- 59 buildings surveyed with
1,133,970 m² of floor area
with 50,000 occupants

Summary of the results

- Buildings average 10 years old
- Buildings average 10 stories
- 100% with no insulation
- Glazing types vary
- 50% with central AC
- 66% with low flow water fitting
- 30% with VSD fans and pumps
- 186 kWh/m²/year average energy use

Establishing the Baseline Energy Consumption and Cost



Computing Total Energy Savings and CO2 Avoidance

Use	Energy Consumption (kWh/m2/yr)	Cost (PHP/kWh)
Office	262	11.00
Hospital	323	11.00
School	119	11.00
Residential	65	11.00
Mercantile	345	11.00
Hotel	151	11.00

Establishing the Baseline Water Consumption & Cost & Total Water Savings

Use	Water Consumption (m ³ /yr/unit)	Cost (PHP/m ³) 2016	% Water Savings	EDGE Building Data	EDGE Water Efficiency Measures
Office	1.8657square meters	54.10	32.4%	Office (10,000 m ²) food court	OFW01 (4.8 Lt./min) OFW02 (4.9 Lt./flush) OFW03 (1 Lt./flush) OFW04 (4.8 Lt./min)
Hospital	231beds	54.10	14.3%	Private Hospital 105 beds, 9,975 m ² , 70% occupied uncheck all	HSW01 (9 Lt./min) HSW02 (4.8 Lt./min) HSW03 (4.9 Lt./flush) HSW04 (1 Lt./min)
School	1.497square meters	54.10	34.03%	Office (10,000 m ²) uncheck all	OFW01 (4.8 Lt./min) OFW02 (4.9 Lt./flush) OFW03 (1 Lt./flush) OFW04 (4.8 Lt./min)
Residential	105units	17.70	40.9%	Lower Middle Income Flats/Apartments (188 units)	HMW01 (9 Lt/min) HMW02&3 (4.8 Lt./min) HMW05 (4.9 Lt./flush)
Mercantile	7.2904square meters	54.10	35.4%	Shopping Mall (15,000 m ²), indoor parking, supermarket, food court	RTW01 (4.9 Lt./flush) RTW02 (1 Lt./flush) RTW03&4 (4.8 Lt./min)
Hotel	74.1982rooms	54.10	20.8%	1-Star Hotel (10,000 m ²) 247 guest rooms uncheck all	HTW01 (9 Lt./min) HTW02 (4.8 Lt./min) HTW03 (4.9 Lt./flush) HTW05 (1 Lt./flush) HTW06 (4.9 Lt./flush) HTW07 (4.8 Lt./min)

Computing Total Energy Savings and CO2 Avoidance

- **Table 1 Electricity Cost, Water Cost & USD-PHP Exchange Rate**
- *fill out the following information:*
 - *Residential Cost of Electricity (PHP/kWh)*
 - *Nonresidential Cost of Electricity (PHP/kWh)*
 - *Residential Cost of Water (PHP/m³)*
 - *Nonresidential Cost of Water (PHP/m³)*
 - *1.00 USD TO PHP Exchange Rate (PHP)*
 - *Date of Cost Information (YYYY-MM-DD)*

Computing Total Energy Savings and CO2 Avoidance

- **Table 3 New Construction and/or with Alteration of Buildings Covered by the Philippine Green Building Code**
- columns L to T will automatically compute baseline energy, green building energy savings and CO2 avoidance.
- *fill out columns A to J with information on the buildings complying with PGBC.*

Columns A-J	L-M	N-O	P	Q-R	S-T
New Construction and/ or with Alteration of Buildings Covered by the PGBC	Baseline Energy	Green Building Energy Savings (15%)	CO2 Avoidance (tCO2/yr)	Baseline Water	Green Building Water Savings

Computing Total Energy Savings and CO2 Avoidance

Columns A-J	L-M	N-O	P	Q-R	S-T
New Construction and/ or with Alteration of Buildings Covered by the PGBC	Baseline Energy	Green Building Energy Savings (15%)	CO2 Avoidance (tCO2/yr)	Baseline Water	Green Building Water Savings

Bldg Permit No.	Bldg Name	Bldg Location	Owner Name	Building Description	Lot Area	Use	Total Floor Area for Energy Savings	Add'l Info for Water Savings
000	A1	EDSA, Wack-wack, Mandaluyong	Acme Corp.	40 Storey 1 Basement	888	Office	10000	10000 Total Floor Area in square meters

Computing Total Energy Savings and CO2 Avoidance

Columns A-J		L-M	N-O	P	Q-R	S-T
New Construction and/ or with Alteration of Buildings Covered by the PGBC		Baseline Energy	Green Building Energy Savings (15%)	CO2 Avoidance (kCO2/yr)	Baseline Water	Green Building Water Savings
Consumption (mWh/yr)	Cost (PHP million/yr)	Energy Savings (mWh/yr)	Cost Savings (PHP million/yr)	0.5267 tCO2/mW CO2 Avoidance (tCO2/yr)		
2,620	28.82	393	4.32	207		

Computing Total Water Savings

Columns A-J	L-M	N-O	P	Q-R	S-T
New Construction and/ or with Alteration of Buildings Covered by the PGBC	Baseline Energy	Green Building Energy Savings (15%)	CO2 Avoidance (kCO2/yr)	Baseline Water	Green Building Water Savings

Consumption (m3/yr)	Cost (PHP millions/yr)	Water Savings (m3/yr)	Cost Savings (PHP millions/yr)
18,657	1.01	6,044.87	0.33

Computing Total Energy Savings, CO2 Avoidance and Total Water Savings

- Table 2 Total Lot and Floor Areas, Green Building Energy Savings, CO2 Avoidance, and Green Building Water Savings
- computes total lot and floor area, green building energy savings, CO2 avoidance and green building water savings for the different projects listed in Table 3

	Lot Area	Floor Area	Energy Savings	Cost Savings	CO2 Avoidance	Water Savings	Cost Savings
Office							
Hospital							
School							
Residential							
Mercantile							
Hotel							
TOTAL							

Tracking Monthly Consumption of Electricity and Water

- **Table 4 Operational Buildings Complying with the Philippine Green Building Code**
- records the electricity and water usage of operational buildings complying with the Philippine Green Building Code
- *fill out columns columns G onward with electricity and water usage of operational buildings complying with the PGBC.*

Columns A-F	G-AD	AE-BB
Operational Buildings Complying with the Philippine Green Building Code	Monthly Consumption Electricity & Cost (kWh & PHP)	Monthly Consumption Water & Cost (m3 & PHP)

Tracking Monthly Consumption of Electricity and Water

Columns A-F		G-AD	AE-BB	
Operational Buildings Complying with the Philippine Green Building Code		Monthly Consumption Electricity & Cost (kWh & PHP)	Monthly Consumption Water & Cost (m3 & PHP)	
Bldg Permit No.	Bldg Name	Bldg Location	Owner Name	Building Description
000	A1	EDSA, Wack-wack, Mandaluyong	Acme Corp.	40 Storey 1 Basement

Tracking Monthly Consumption of Electricity and Water

Columns A-F	G-AD	AE-BB
Operational Buildings Complying with the Philippine Green Building Code	Monthly Consumption Electricity & Cost (kWh & PHP)	Monthly Consumption Water & Cost (m3 & PHP)

Electricity (kWh)												Electricity Cost (PHP)											
J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D

Tracking Monthly Consumption of Electricity and Water

Columns A-F	G-AD	AE-BB
Operational Buildings Complying with the Philippine Green Building Code	Monthly Consumption Electricity & Cost (kWh & PHP)	Monthly Consumption Water & Cost (m3 & PHP)

Water (m3)												Water Cost (PHP)											
J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D

Hands-on and Question and Answer