

Low-Carbon Model Town in Shah Alam

Annie Syazrin Ismail
Shah Alam City Council



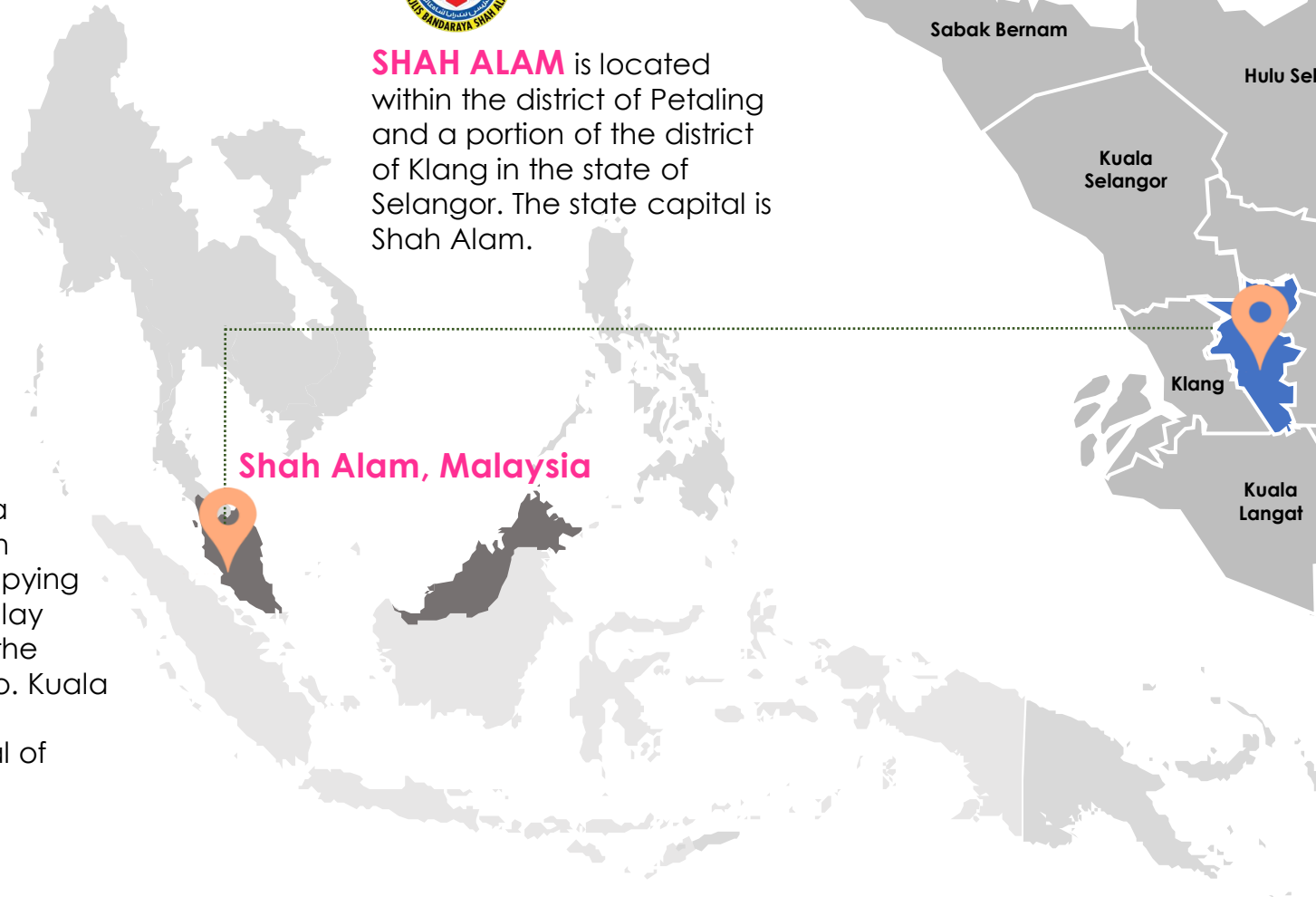
APEC Low-Carbon Model Town Project Wrap-up Symposium

10 September 2021

Introduction of Shah Alam



SHAH ALAM is located within the district of Petaling and a portion of the district of Klang in the state of Selangor. The state capital is Shah Alam.



MALAYSIA is a Southeast Asian Economy occupying parts of the Malay Peninsula and the island of Borneo. Kuala Lumpur, is the national capital of Malaysia

Shah Alam, Malaysia



Area :
303.1 km²



Built Up Area :
61%



Population
2020 **671,200**
2035 **939,912**

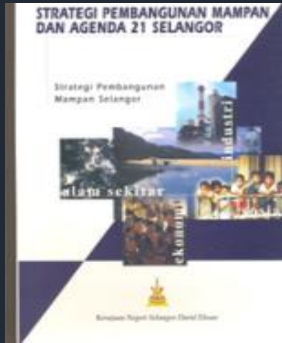


Revenue :
USD114,656,824.66



Assets
USD51,127.28

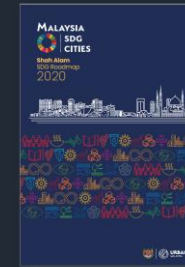
OUR JOURNEY...and more to come...



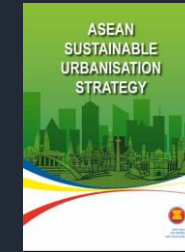
AGENDA 21 SELANGOR



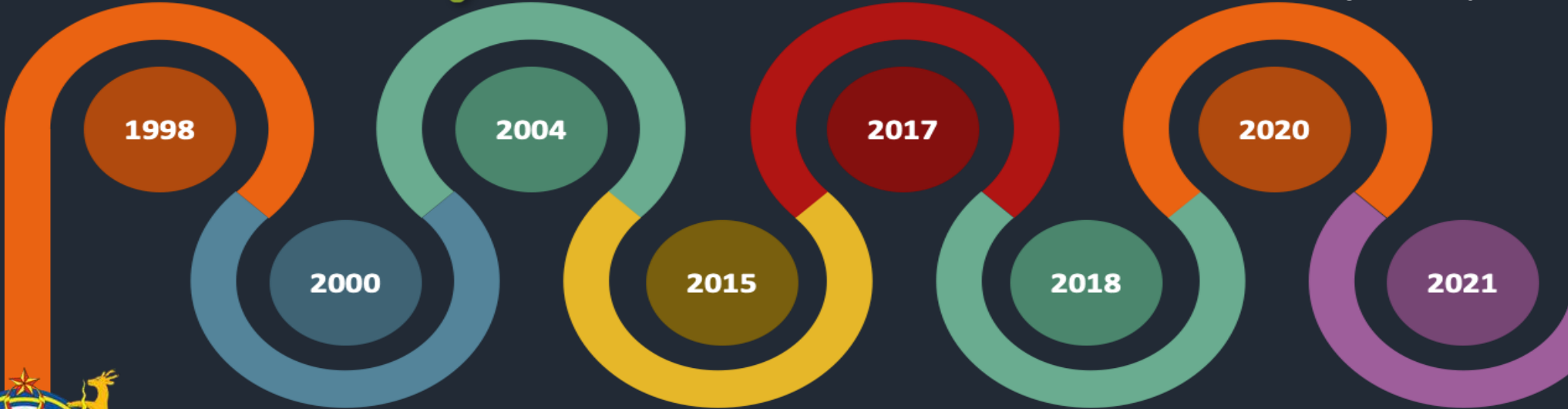
APEC LOW-CARBON MODEL TOWN PROJECT PHASE 7



SHAH ALAM SDGs ROAD MAP



ASUS PROJECT : REPRESENTATIVE FOR MALAYSIA



LA 21 SHAH ALAM



SHAH ALAM LOW CARBON CITY



MALAYSIA FRONTRUNNER CITY



SHAH ALAM SDGs VLR REPORT



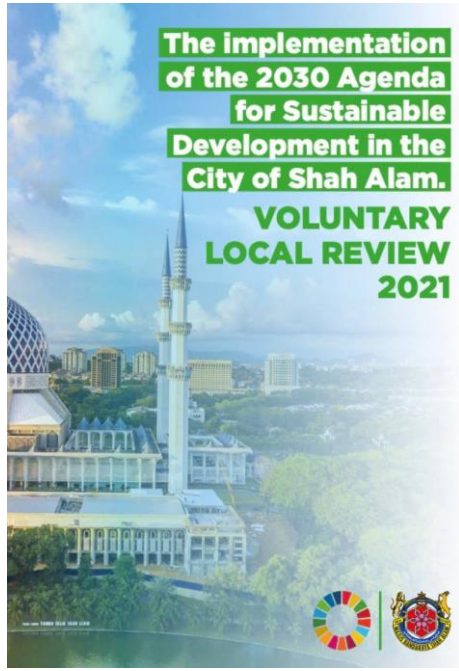
SHAH ALAM CITY INITIATIVE

smart, liveable and resilient



LOW CARBON CITIES 2030

Low-Carbon Model Development in Shah Alam



13 JULY 2021

SHAH ALAM VOLUNTARY LOCAL REVIEW (VLR) REPORT

Shah Alam's Commitment To The Sustainable Development Goals (SDGs)



10
key initiatives

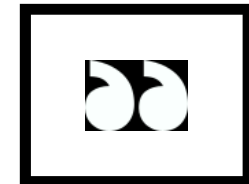
- Strategic initiative **1**
Shah Alam Draft Local Plan 2035
- Strategic initiative **2**
MBSA Strategic Plan 2016-2020
- Strategic initiative **3**
Local Agenda 21 Shah Alam
- Strategic initiative **4**
Malaysian Urban Rural Indicators Network for Sustainable Development
- Strategic initiative **5**
Shah Alam Low Carbon City Framework
- Strategic initiative **6**
APEC Low Carbon Model Town Project
- Strategic initiative **7**
ASEAN SDG Frontrunner Cities Programmes
- Strategic initiative **8**
Shah Alam Safe City Programme
- Strategic initiative **9**
Shah Alam SDG Roadmap
- Strategic initiative **10**
ASEAN Sustainable Urbanisation Strategy

Shah Alam City Council Commitment

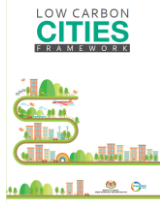


Shah Alam City Council is committed to implement LCCF program that anchored from 4 Low Carbon elements.

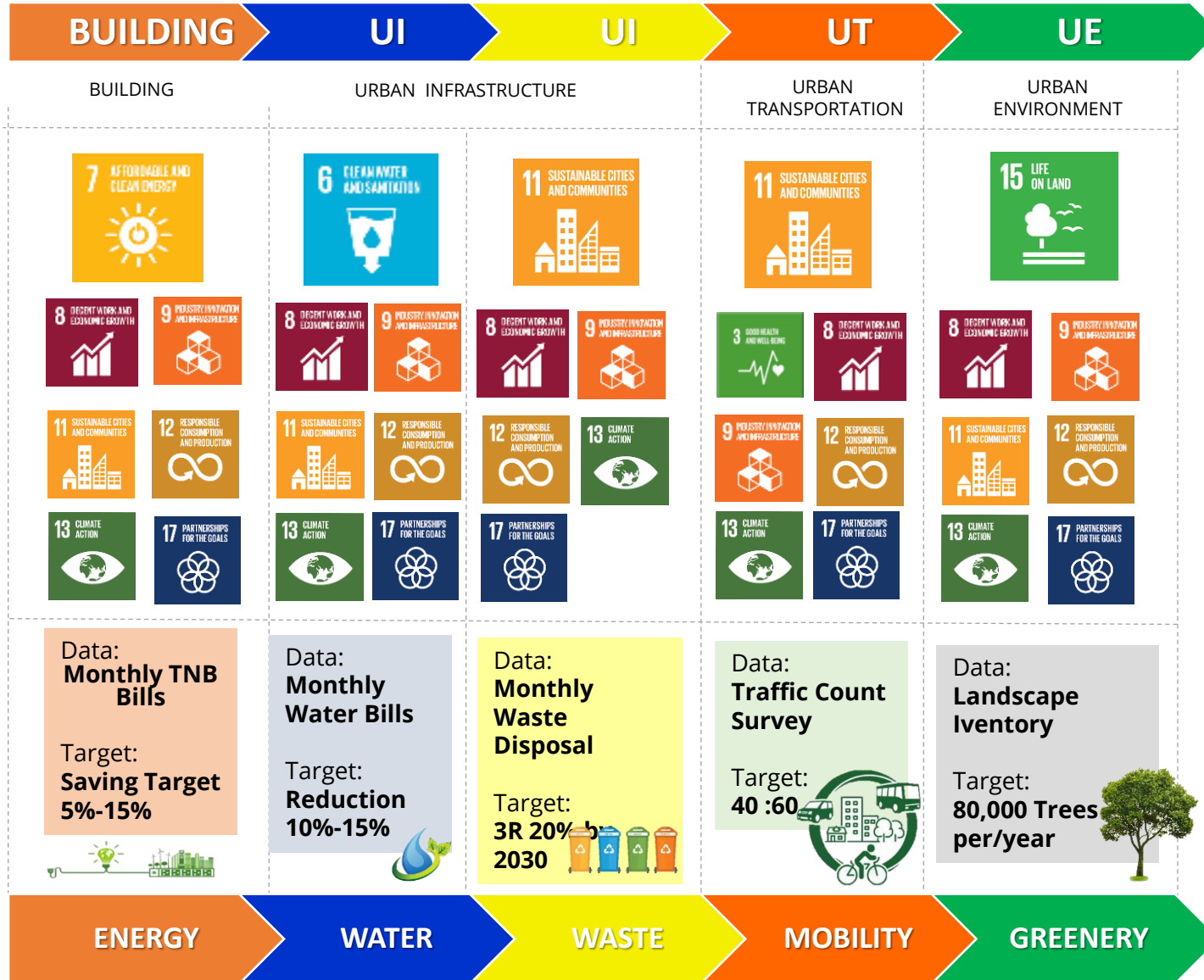
Shah Alam City Council aimed to reduce carbon emission by 45% by 2030 from baseline year of 2015.



LOCF & SDGs



Launched on 23 July 2019 by the Ministry of Energy, Science, Technology, Innovation & Creative Economy (MESTECC)



LCCF DELIVERING 10 SDGs GOALS



&

CO₂ reduction results and roadmap

PILOT PROJECT

SECTION 14, TOWN CENTER
159.89 Hectares / 395 Acres



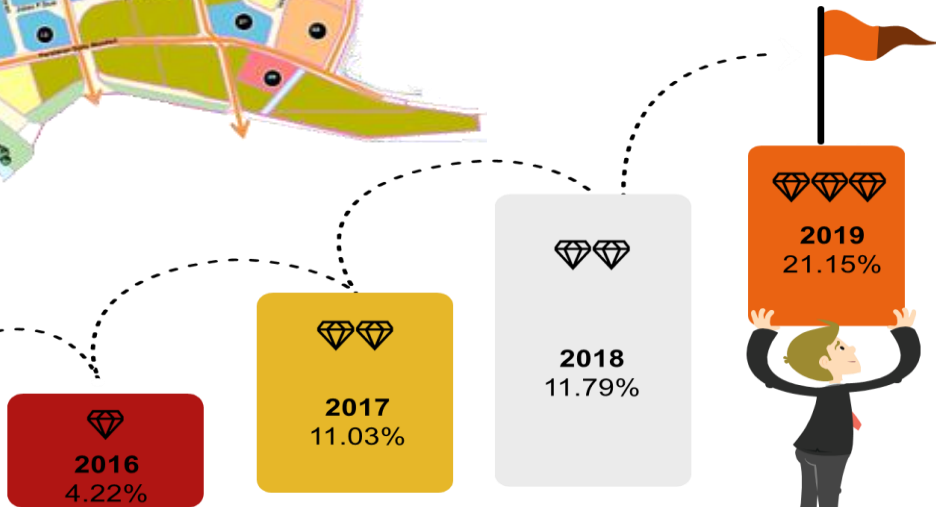
Year of **2015**
Total Number of Building
12/23 units
(52%)

Year of **2016**
Total Number of Building
20/23 units
(86%)

In **2017**
23 Premise from
23 Premise (100%)

Smart Partnership /
Strategic Partners

23
Buildings



TOTAL EMISSIONS (P)	60,474.94	57,914.37	53,798.45	53,341.93	47,683.36
BUSINESS AS USUAL (B)	60,474.94	60,474.94	60,474.94	60,474.94	60,474.94
REDUCTION ACHIEVED (B-P)		2,560.57	6,676.49	7,133.00	12,791.58
PERCENTAGE,% REDUCTION (B-P)/B		4.23%	11.04%	11.79%	21.15%
DIAMOND RECOGNITION	BASELINE ONLY	1 DIAMOND	3 DIAMOND	3 DIAMOND	3 DIAMOND

CO₂ reduction results and roadmap

ANNUAL ELECTRICITY CONSUMPTION 23 BUILDING INTOWN CITY CENTER



NO.	PARTNER	BASELINE				
		2015	2016	2017	2018	2019
1	MAYBANK	949,355	1,105,504	1,002,007	1,851,000	1,898,728
2	MENARA AFFIN / MENARA SERBA DINAMIK	4,106,610	4,114,050	4,119,430	3,987,667	4,028,543
3	SHAH ALAM CONVENTION CENTRE	2,701,503	2,590,657	2,244,510	2,124,813	2,047,507
4	MUZIUM	945,329	841,441	1,045,002	1,075,155	993,051
5	LAMAN BUDAYA	1,967	3,117	10,373	1,087	561
6	GALERI SHAH ALAM	42,141	43,786	29,173	25,704	32,350
7	AVISENA SPECIALIST HOSPITAL	5,592,955	5,520,120	5,239,541	5,193,054	5,311,308
9	PLAZA PERANGSANG	3,908,111	4,520,677	4,022,356	3,676,479	3,544,380
10	GRAND BLUEWAVE SHAH ALAM	6,621,996	6,329,802	6,771,363	6,407,661	6,202,986
11	WISMA MBSA	7,771,523	8,119,468	7,426,075	7,481,021	7,057,330
12	MENARA MRCB	3,333,579	4,471,013	3,548,455	3,351,816	3,153,768
13	BANGUNAN DARUL EHSAN	4,031,838	4,172,541	4,164,937	4,287,986	4,397,060
14	BANGUNAN UMNO SELANGOR(KUMPULAN MUARA)	1,019,093	1,075,120	1,062,344	1,139,477	48,341
15	JABATAN AUDIT NEGARA SELANGOR	258,195	249,865	231,104	210,013	241,329
16	WISMA PKPS	2,153,700	2,258,640	2,060,980	1,841,390	192,065
17	MASJID SHAH ALAM	2,406,021	3,197,736	2,961,256	3,050,297	2,510,992
18	PEJABAT POS	640,486	741,775	660,771	590,500	668,749
19	HENTIAN PUSAT BANDAR	9,024	12,002	11,056	10,499	12,276
20	PLAZA ALAM SENTRAL	13,075,765	13,213,436	11,929,846	11,778,622	10,019,167
21	SACC MALL	4,726,170	4,647,990	4,172,755	3,873,229	3,642,838
22	PLAZA ANGGERIK	944,239	906,473	835,015	744,374	661,384
23	KOMPLEKS PKNS	8,085,574	8,288,009	8,128,623	8,842,067	9,615,186
TOTAL		73,325.17	76,423.22	71,676.97	71,543.91	66,279.90
		54,773.90	53,037.72	49,743.82	49,651.47	45,998.25
Occupancy		8,957	8,957	8,957	8,957	8,957
% Reduction			-4.23%	2.25%	2.43%	9.61%

Unit : kwh

LOCF expansion project



IGES
Institute for Global
Environmental Strategies

FRONTRUNNER CITY PROJECT

Area Expansion of Shah Alam Low Carbon City Framework
To UiTM Campus, Section 1, Shah Alam

SECTION 1, SHAH ALAM

162.27 Hectares / 400.99 Acres



30

Buildings

TOTAL EMISSIONS (P)	48,806.09	47,928.04	45,414.39	43,290.33	45,239.05
BUSINESS AS USUAL (B)	48,806.09	55,101.33	61,396.57	67,691.82	73,987.06
REDUCTION ACHIEVED (B-P)		7,173.29	15,982.19	24,401.48	28,748.01
PERCENTAGE,% REDUCTION (B-P)/B		13.02%	26.03%	36.05%	38.86%
DIAMOND RECOGNITION	BASELINE ONLY	3 DIAMOND	4 DIAMOND	4 DIAMOND	3 DIAMOND

Area Expansion of Shah Alam Low Carbon City Framework to
State Administration Area, Section 5, Shah Alam

SECTION 5, SHAH ALAM

29,030 Hectares / 112.89 Acres



6

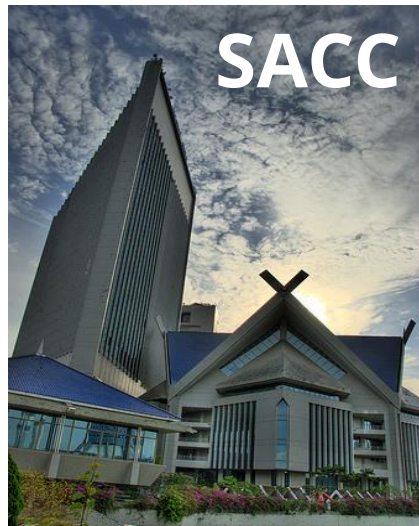
Building

Element	Total Carbon Emissions		Reduction Achieved		Remarks
	Baseline (B) tCO ₂ /yr	Project (P) tCO ₂ /yr	(B-P) tCO ₂ /yr	%	
Energy	8,865.83	-	-	-	Baseline only
Water	44.93	-	-	-	
Waste	-	-	-	-	
Mobility	-	-	-	-	
Total Emissions	8,910.76	-	-	-	
Element	Total Carbon Sequestrations		Sequestration Increased		Remarks
	Baseline (B) tCO ₂ /yr	Audit (P) tCO ₂ /yr	(B-P) tCO ₂ /yr	%	
Greenery & Water Bodies	733.6188				
Total Sequestrations	733.6188	-	-	-	

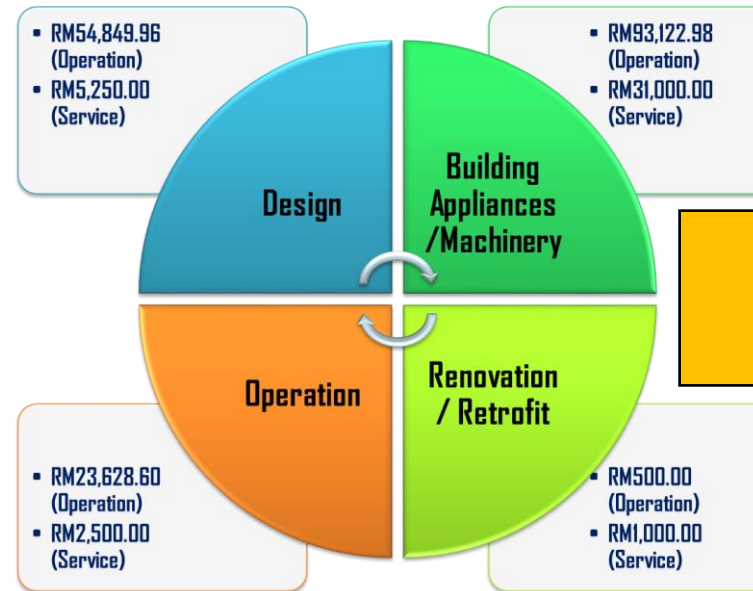
Notable achievements

OTHER SUSTAINABLE DEVELOPMENT PROJECT TO SUPPORT LCCF:

BUILDING ENERGY



Based on the assessment results in 2019, WISMA MBSA has achieved 7.90% reduction in carbon emissions equivalent to 454.64 tCO₂



Total Saving :
USD 50,500.98 / Month
USD 606,011.73 / Year

Element	Total Carbon Emissions		Reduction Achieved		Remarks
	Baseline (B) tCO ₂ /yr	Audit (P) tCO ₂ /yr	(B-P) tCO ₂ /yr	%	
Energy	5,634.91	5,191.83	443.08	7.86	Carbon Reduce
Water	39.46	39.70	-0.24	-0.61	Carbon Increase
Waste	81.80	70.00	11.8	14.42	Carbon Reduce
Mobility					
Total Emissions	5,756.17	5,301.53	454.64	7.90%	Carbon Reduction
Element	Total Carbon Sequestrations		Sequestration Increased		Remarks
	Baseline (B) tCO ₂ /yr	Audit (P) tCO ₂ /yr	(B-P) tCO ₂ /yr	%	
Greenery & Water Bodies					
Total Sequestrations					



CERTIFICATE BY SEDA ON LOW CARBON BUILDING ASSESSMENT GREEN OPERATION



CERTIFICATE BY GREENTECH ON LOW CARBON BUILDING (2019)

Unofficial results in 2020 :-

3 Diamond 
 853.39 tco₂
 14.91%

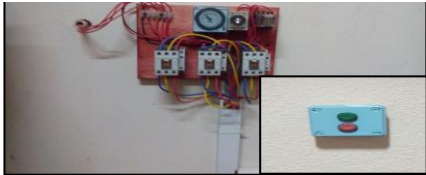
SACC LOW CARBON INITIATIVES : BUILDING ENERGY

ENERGY

- Building Energy Audit



- SMARTBus System



- Timer AHU System



- Timer Car Park Lighting



- Energy Saving Lift System



- Timer Restroom Fan System



- LED Lighting used at common area

WATER

- Energy & Water Saving Pump System



- SPAH SYSTEM2.0



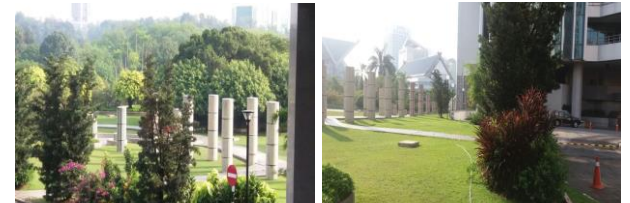
WASTE

- Promote reduction on waste program
- Promote recycle program



- Recycling program between building in Town Center

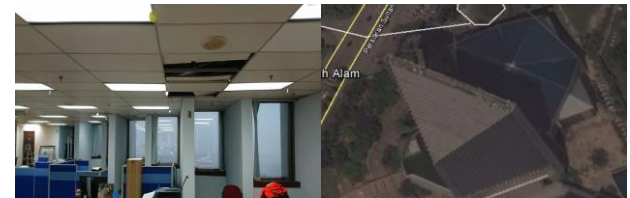
Other initiatives undertaken by MBSA



Roof Garden



Natural Ventilation Car Park



Natural Lighting & Building Orientation



District Cooling with Thermal Storage

Self-assessment results by LCT-I system

Overall Assessment

Overall Rank



Total Point
average of (1) to (14)

3.9

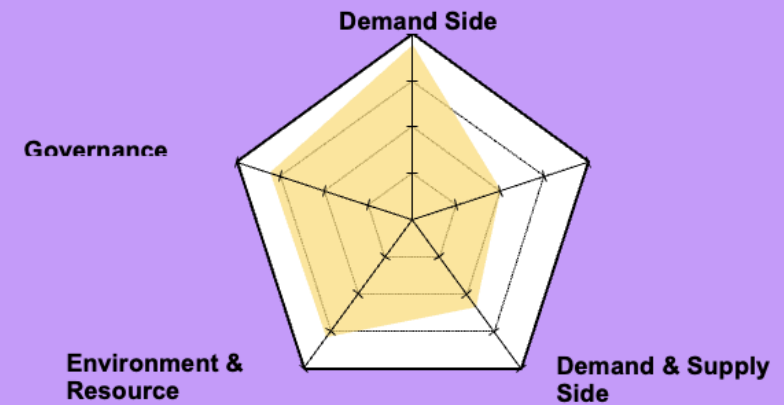
CO2 Reduction

35,219.0

t-CO2/year

Baseline Year 2015

Radar Chart



Future plan

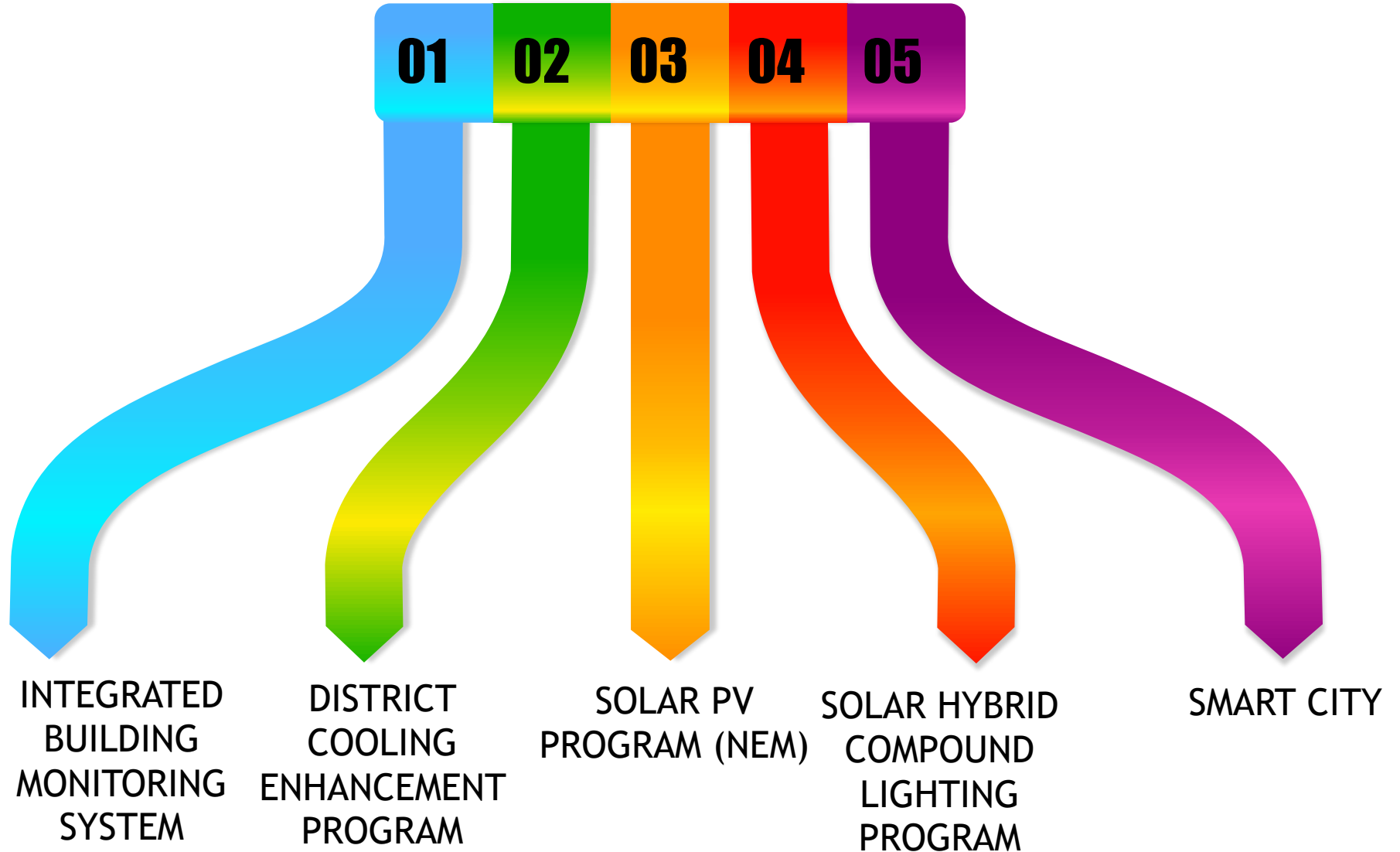
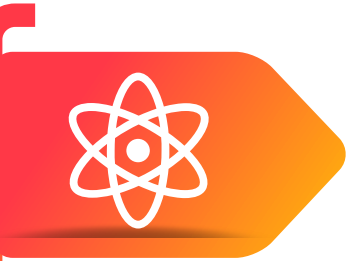
REVISE SHAH ALAM LOW CARBON CITY ACTION PLAN ACCORDING TO UN HABITAT GUIDELINE

- Develop GHG Inventory and emission scenario analysis based on acceptable standard
- Set Ambitious Target (short-, mid-, long term, by sector)
- Identify strategies (based on GHG inventory)
- Develop implementation plan and monitoring plan



PARTICIPATE IN REGIONAL, NATIONAL, AND INTERNATIONAL NETWORKS OF CITIES THAT PROMOTE CLIMATE ACTION SUCH AS THE GLOBAL COVENANT OF MAYORS FOR CLIMATE AND ENERGY (GCOM)

Future Plan



01

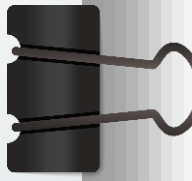
MBSA INTEGRATED MONITORING SYSTEM



DATA DISPLAY

DATA COLLECTED

- Total active energy (kWh)
- Maximum Power Demand (MD/kW)
- Phase to Neutral Voltage (V)
- Current (A)
- Power Factor
- Temperature
- CO2
- Traffic Counting



02

DISTRICT COOLING ENHANCEMENT PROGRAM



WISMA MBSA



THEATER SHAH ALAM



WISMA MBSA



PADAT



MUSEUM SHAH ALAM



 CURRENT USAGE - 50%

 FULL CAPACITY – 86%

Features : District Cooling with Thermal Storage (Build : Year 2006)

Function : Chiller System connected with multiple buildings

Estimated Cost Saving : RM 89,122.98 / month

Full Tank Capacity: 2,280 RT* with 520RT STL tank= 10,752HP

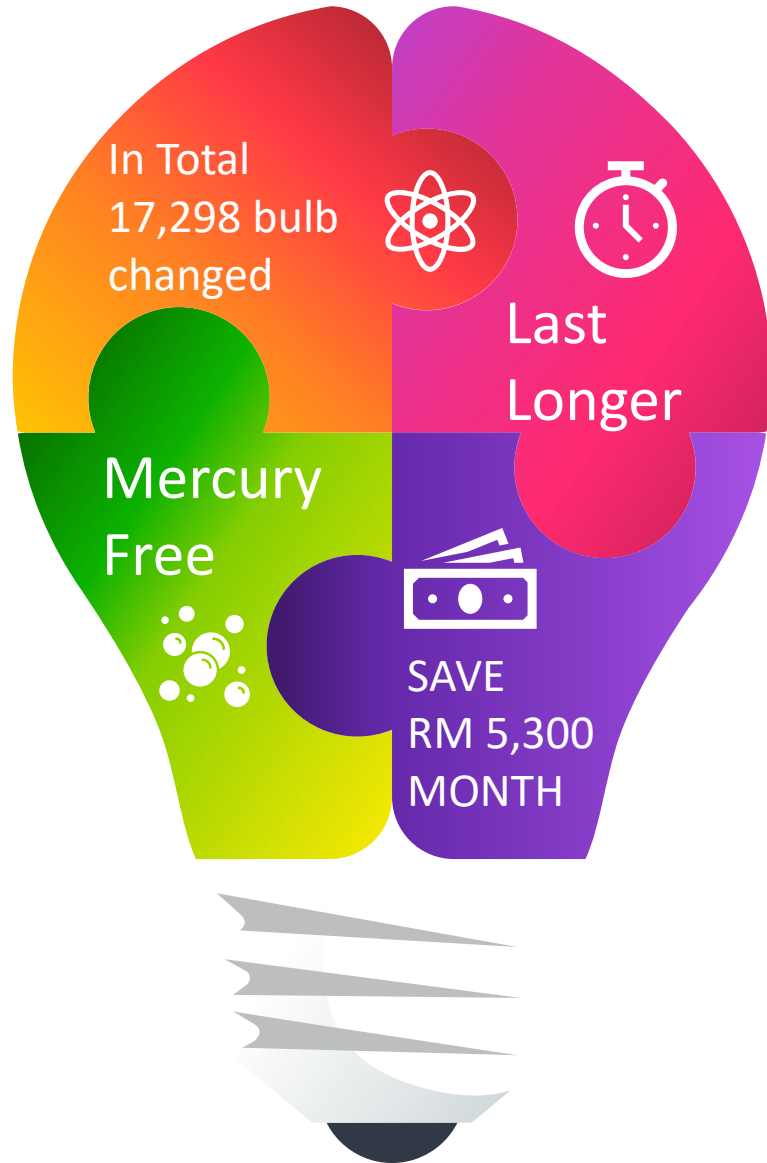
Chiller Capacity: 1760 RT (2 x 380 RT Screw Chillers & 2 x 500 RT Centrifugal Chiller)

Method : Main chiller pipeline is directly connected to multiple building Air Handling Unit (AHU)

CHANGE CONVENTIONAL BULBS WITH LED BULBS

03

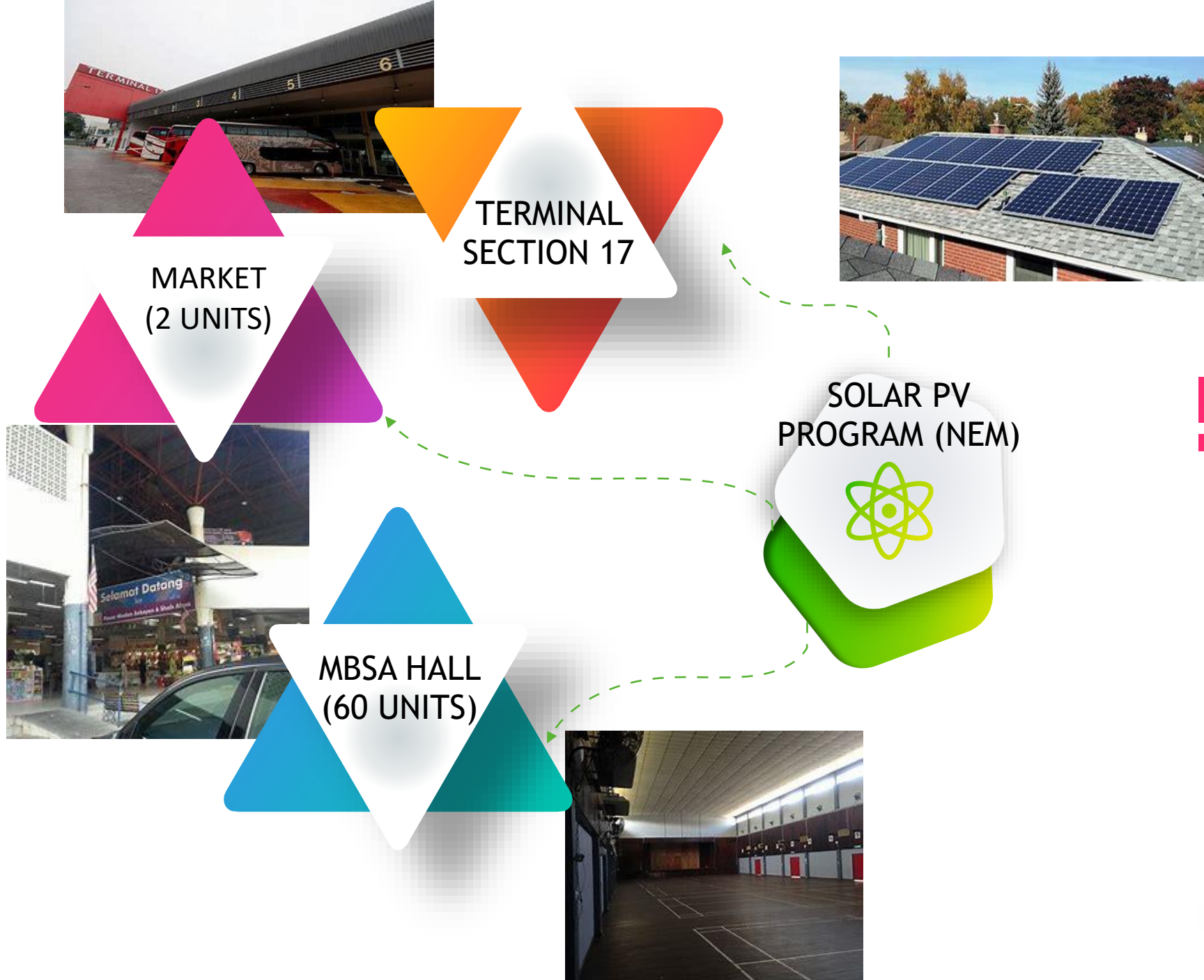
RETROFITTING
PROGRAM



Features : Replacing CFL & Fluorescent with LED bulbs

Function : Substitute bulbs with the same price and better performance with lower energy usage

Method : Replace dysfunctional bulbs one after another



DESCRIPTION

- Element on LCCF program
- Used with integrated building monitoring system for data collection
- Project used MBSA development budget



Potential and Opportunity in DIGITALISATION



Thank you
Terima kasih

ANNIE SYAZRIN ISMAIL

SENIOR ASSISTANT DIRECTOR

SHAH ALAM CITY COUNCIL

anniesyazrin@mbsa.gov.my

+60122943411