
MASDAR CITY ECO-VILLA

NET ZERO ENERGY



ECO-VILLA

THIS VILLA GENERATES ENERGY MORE THAN IT CONSUMES

MASDAR CITY IS COMMITTED TO PROVIDING SUSTAINABLE HOUSING SOLUTIONS FOR ABU DHABI'S GROWING POPULATION.

The Masdar City Eco-Villa continues Abu Dhabi's tradition of innovation by pioneering a new concept for design, construction and operation of sustainable family homes. The Eco-Villa deploys PV panels generates more than it consumes.

ECO-VILLA GFA: 405 sqm

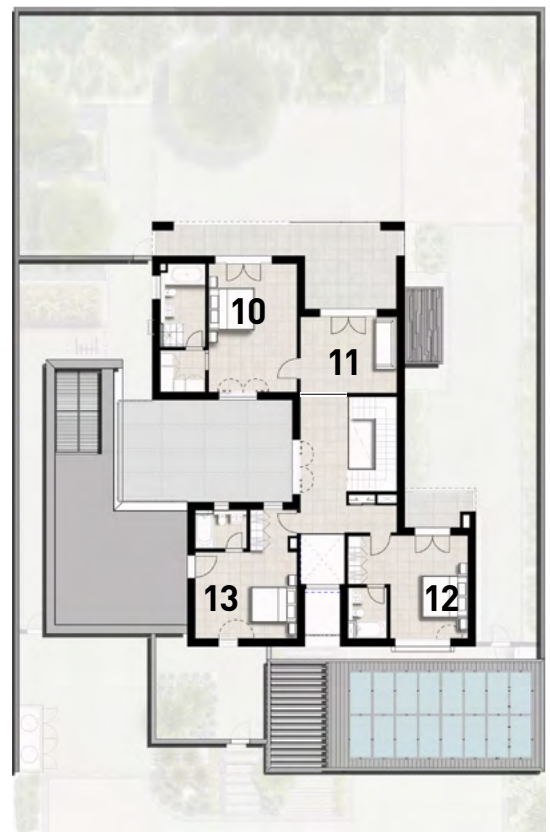
Ground Floor

25m x 36m

1. Living Room
2. Dining Room
3. Kitchen
4. Laundry Room
5. Maid's Room
6. Majlis
7. Guest Bathroom
8. Guest Bedroom
9. Courtyard
10. Master Bedroom
11. Family Room
12. Bedroom 1
13. Bedroom 2



First Floor



September 2016

Preparations and Foundations



ECO-VILLA FEATURES

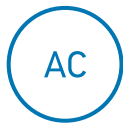
SMART DESIGN AND RENEWABLE ENERGY



Thermosyphon Hot Water Generation:
Solar hot water efficient system



Orientation:
The Eco-Villa orientation is on the North South axis



AC

Variable Refrigerant Volume Air Conditioning:
VRV systems offer high levels of energy efficiency and flexibility.



PV Panels:
High performance photovoltaic generation oriented and included for maximum output of 40,000 kWh - 89 PV panels



Lighting control system:
All areas are equipped with motion sensors. During daylight, the sensors - which consists of photocells - shuts off the lights automatically when daylight levels are adequate. The dimming light option is also available



Energy Metering and Occupant Feedback:
Provides full control over the of the villa's energy output and provides information on the existing indoor enviroment.



Water Reduction:
35% Interior Water reduction and low demand water fittings



ICF walls:
Insulated Concrete form (ICF) Thermally massive walls with External U-value 0.16W/m2.k



Lighting:
High Efficiency LED lighting with automated intelligent controls and interface



Rain water:
Rainwater harvesting system that contributes to water reuse



Window openings:
External shading on East, South and West Facades



Management of Construction Waste:
Storage and collection of waste and recyclable materials

October 2016

Completion of Insulated Concrete Form (ICF) ground floor - eco-villa fence



November 2016

Completion of Insulated Concrete Form (ICF) walls – first floor

ECO-VILLA ENVIRONMENTAL HIGHLIGHTS

DETAILS OF ENERGY PRODUCTION AND CONSUMPTION

Renewable Energy Output
Eco-Villa

40,000

kWh per year

Energy Demand
Eco-Villa

39,285

kWh per year

Produces
More energy than it consumes



0

kWh per year

ENERGY CONSUMPTION

Traditional Villa

350 KWH

sqm / year

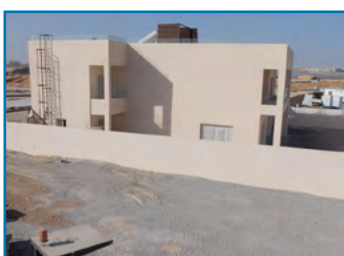
Eco-Villa

97 KWH

sqm / year

ECO-VILLA ECONOMIC VALUE

	Traditional Villa	Eco-villa with PV
Energy Consumption	350 kWh sqm / year	0 kWh sqm / year
Annual energy cost saving based on (31.8 fils/kWh)		32,500 AED



December 2017

Completion of
Facade and interior
works



January 2017

Compleiteon of
interior decora-
tions, tests and
final delivery

ECO-VILLA

SUMMARY

Energy Consumption

97 kWh
sqm

Energy Reduction

72%
Energy Reduction
Eco-Villa compared to
Traditional Villa

Materials used in construction

90%
materials used are locally
sourced

0 kWh

sqm / year
Net Zero Energy Eco-Villa

100%

Renewable Energy

eco-friendly construction
materials

Emission reductions

36 tonnes
of CO2 annually

Reused and certified timber



“THE ECO-VILLA CONSUMES **LESS THAN ONE QUARTER ENERGY** THAN TRADITIONAL VILLAS”



MASDAR CITY

P.O. Box 54115, Abu Dhabi, UAE

800+MASDAR (627327)

masdarcity@masdar.ae

www.masdar.ae

