

A photograph of a traditional wooden stilt house in Cambodia. The house features a steep gabled roof with decorative finials at the eaves. It is built on stilts, with a wide staircase leading up to a balcony on the upper level. The house is surrounded by lush greenery, including large trees and potted plants in the foreground. The text is overlaid on a semi-transparent dark band across the middle of the image.

Improving the efficiency of low-income housing
in Cambodia by adapting parametric house
design models to accommodate for different
environmental conditions



RESEARCH CAMBODIA BACKGROUND

A hand holding a blue stethoscope against a blurred background of a person in medical scrubs. The stethoscope's chest piece is centered in the foreground. Surrounding it are numerous circular icons representing various medical concepts: a doctor, a clipboard, test tubes, a first aid kit, pills, a hospital building, a heart with an ECG line, a virus, an ambulance, a telephone with a cross, a stethoscope, laboratory flasks, a person with a cross on their chest, a syringe, and a hospital building with a cross. The background is a soft-focus image of a person in blue scrubs, with a network of white dots and lines overlaid, suggesting a digital or research theme.

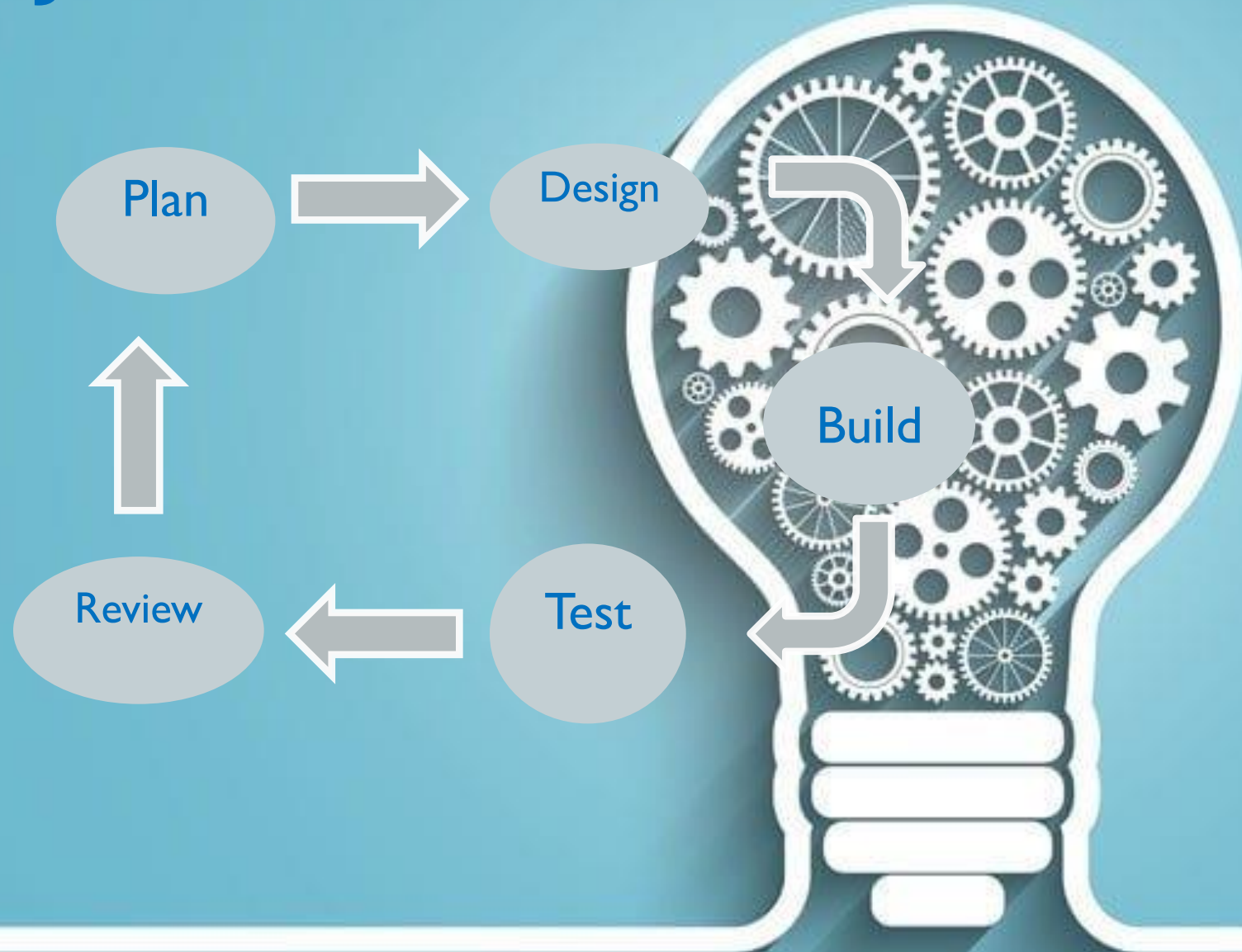
RESEARCH AIMS **RESEARCH QUESTIONS**

PROJECT OBJECTIVES

- **Provide safe and comfortable houses**
- **Completed automated modelling**
- **Save drawing time for architects**



PROJECT METHODOLOGY



PROJECT OUTCOMES

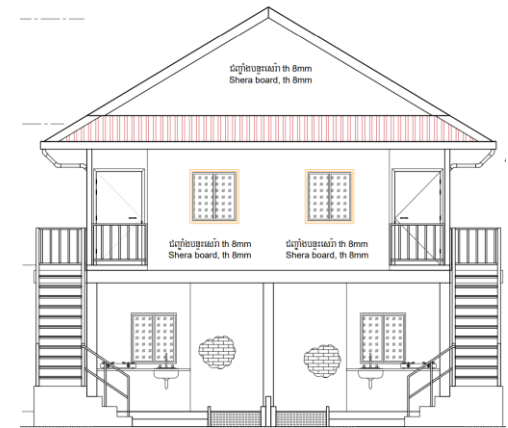
Comfortable
temperature and
humidity

Minimize the use of
electricity

Efficiency house
design script

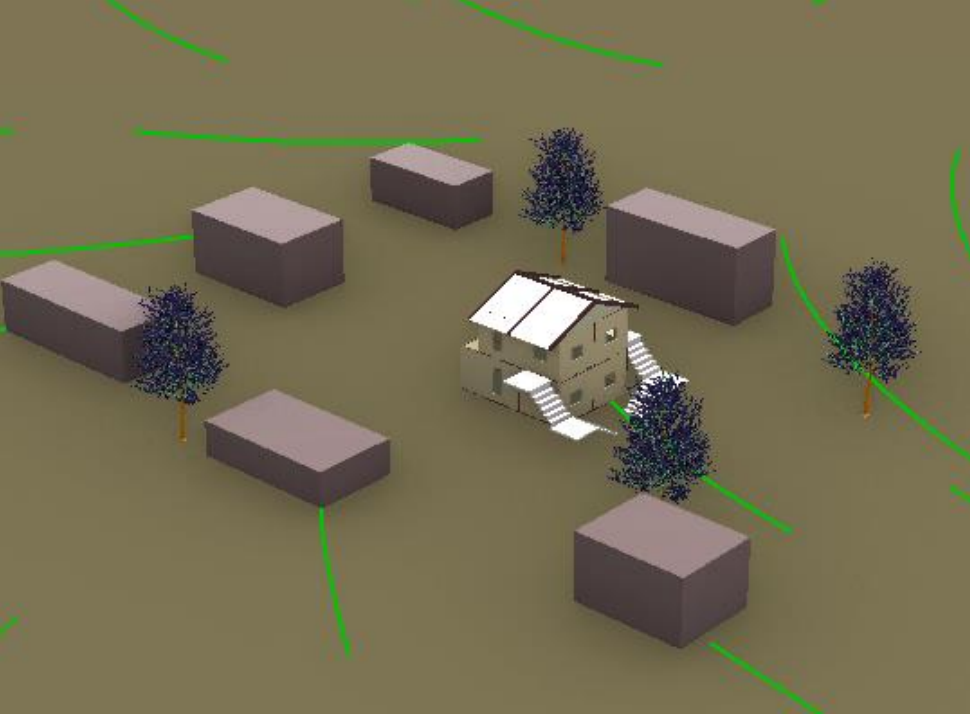
OUTCOME

WORKFLOW





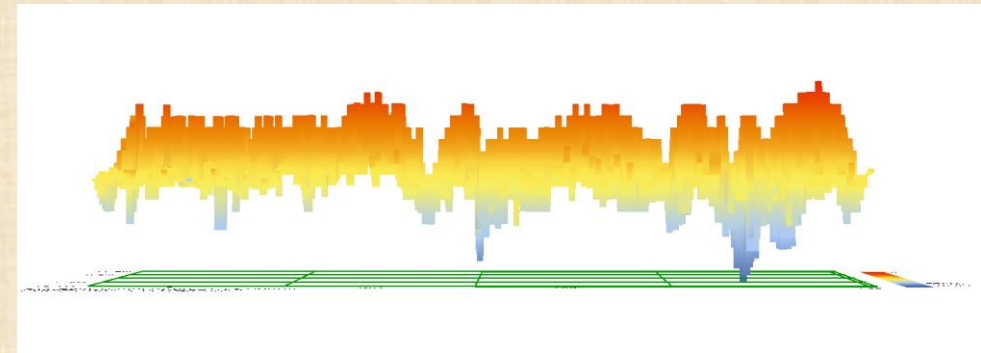
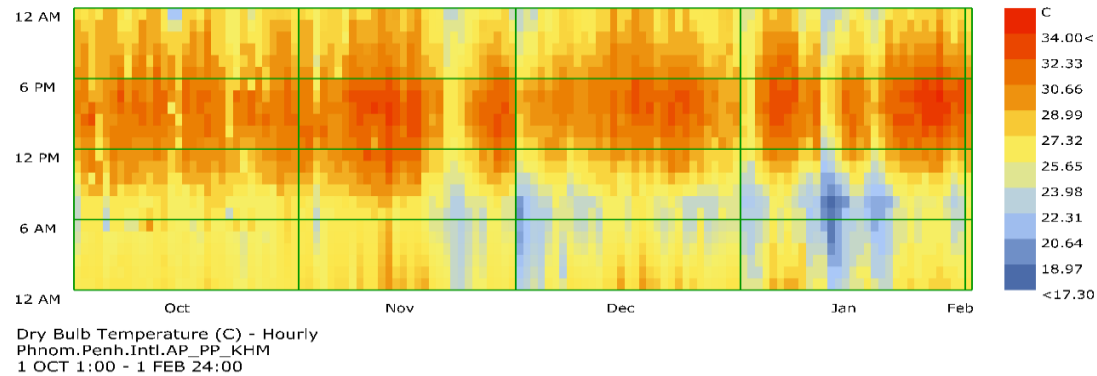
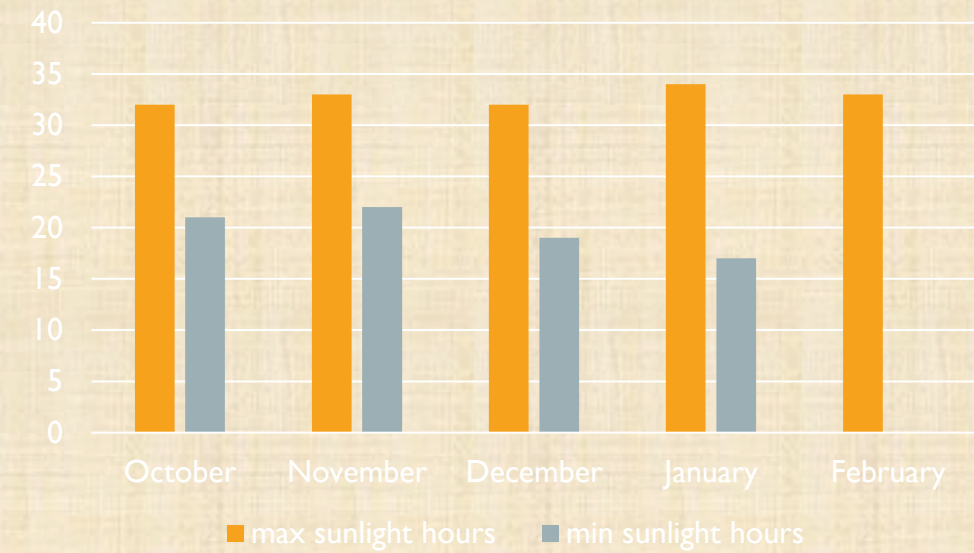




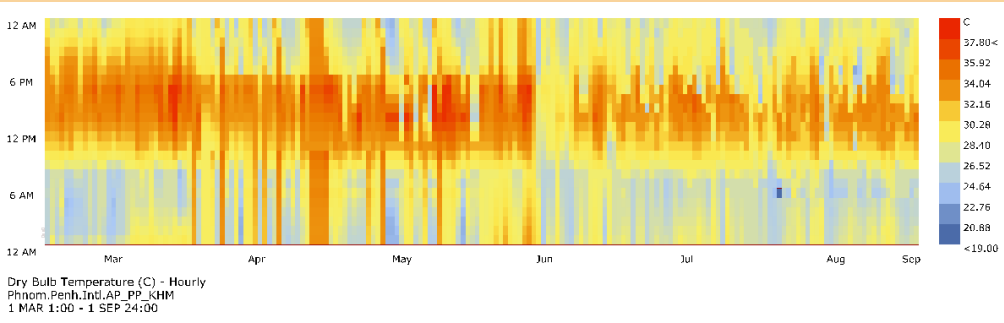
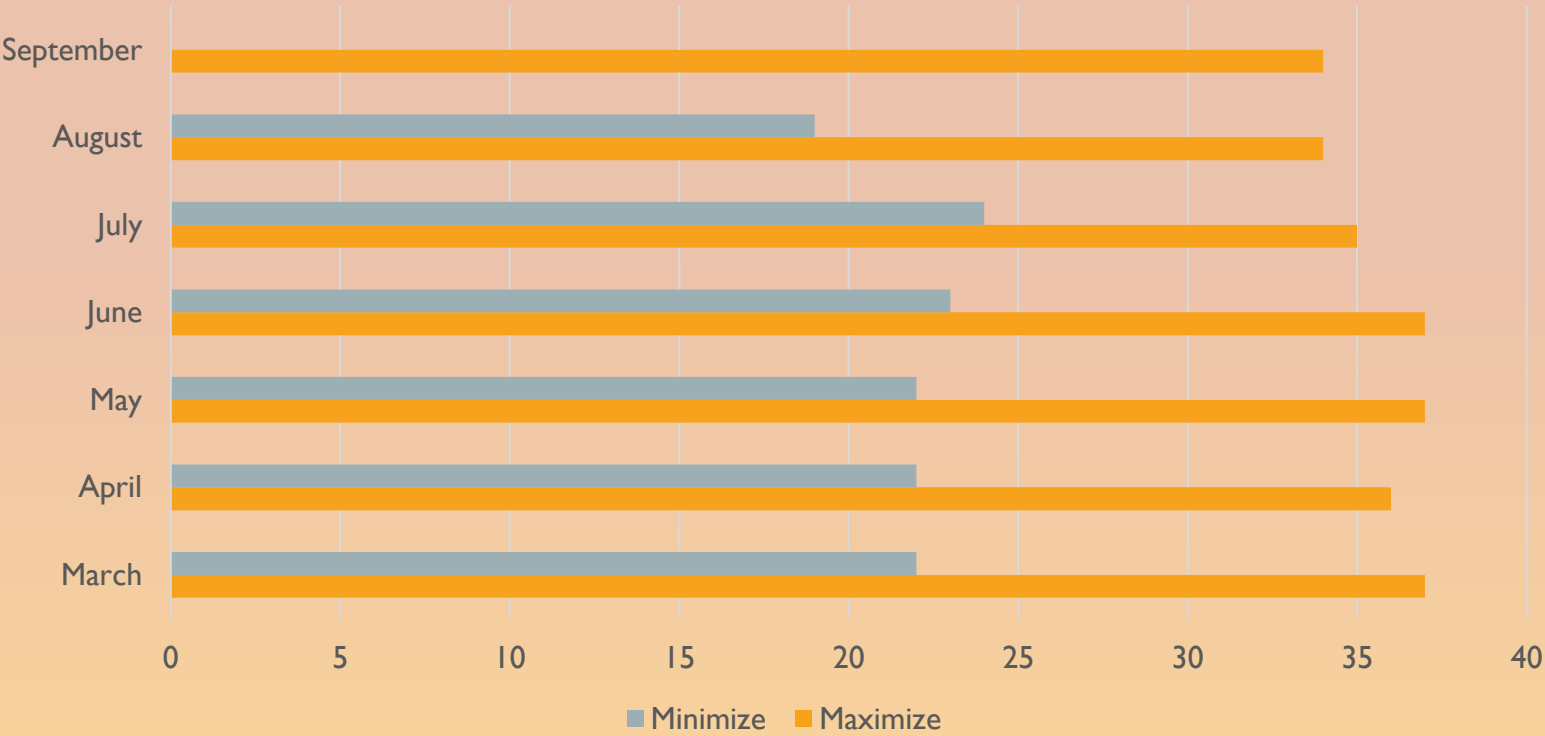
LOCATION OF THE HOUSE ON TERRAIN

Sunlight Analysis in cool season (October to February)

Maximize	Minimize
34	17
Jan	Jan

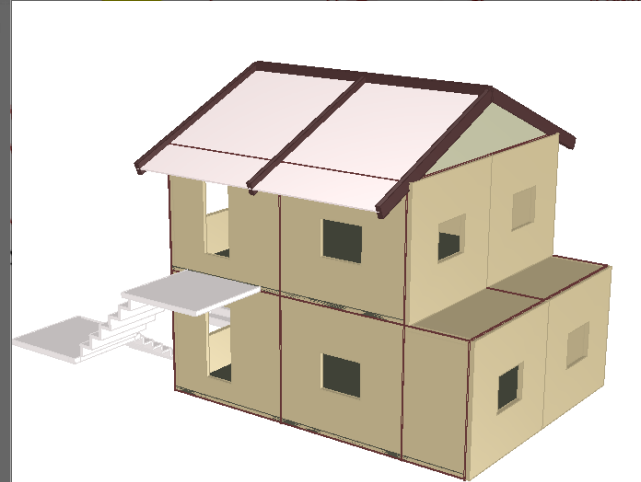
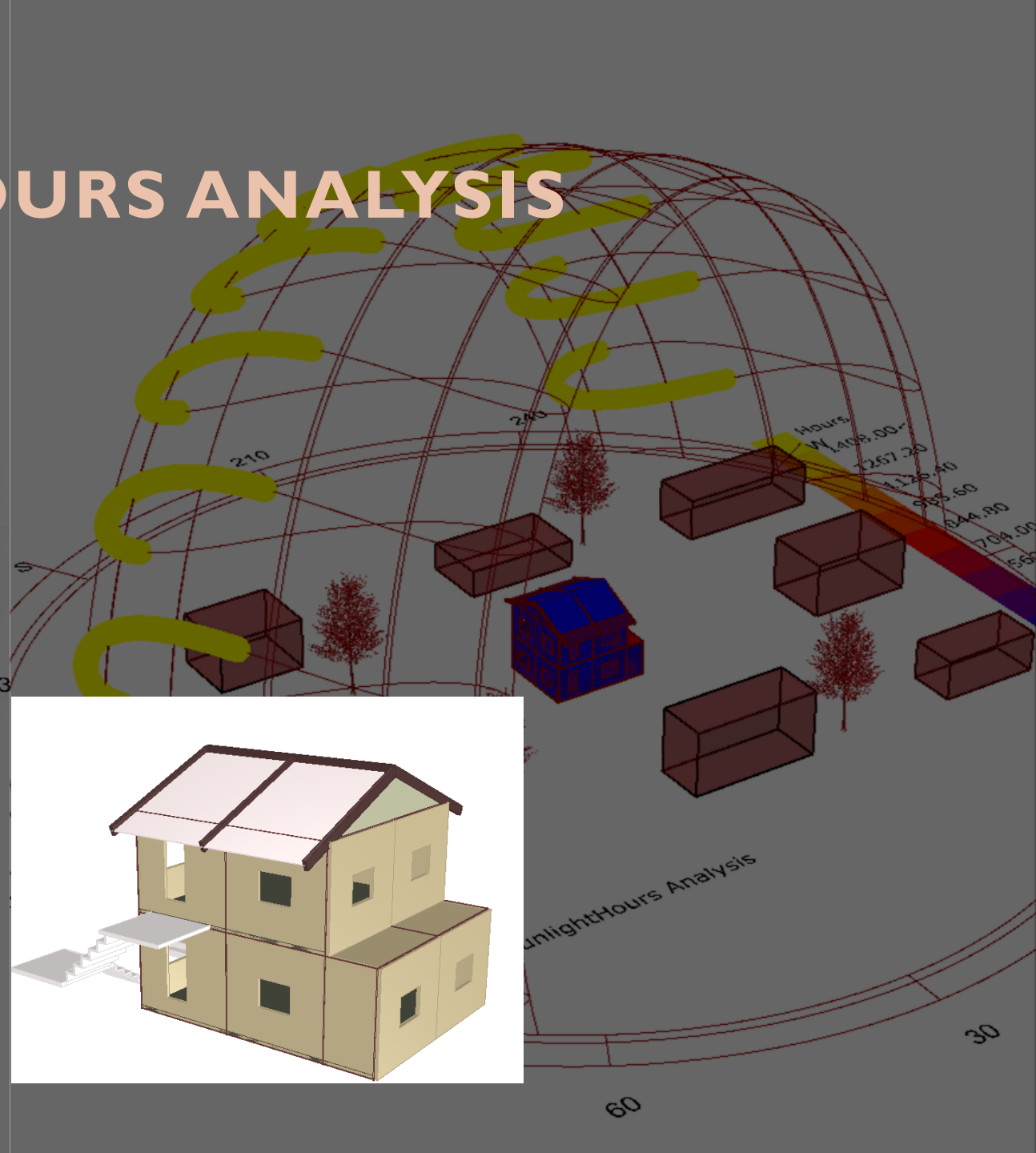
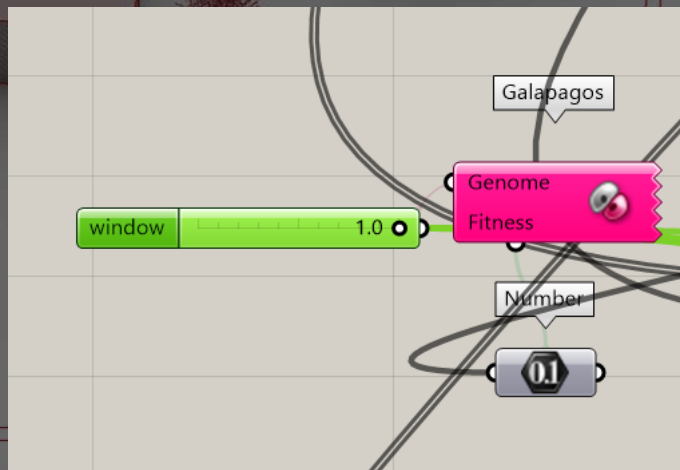
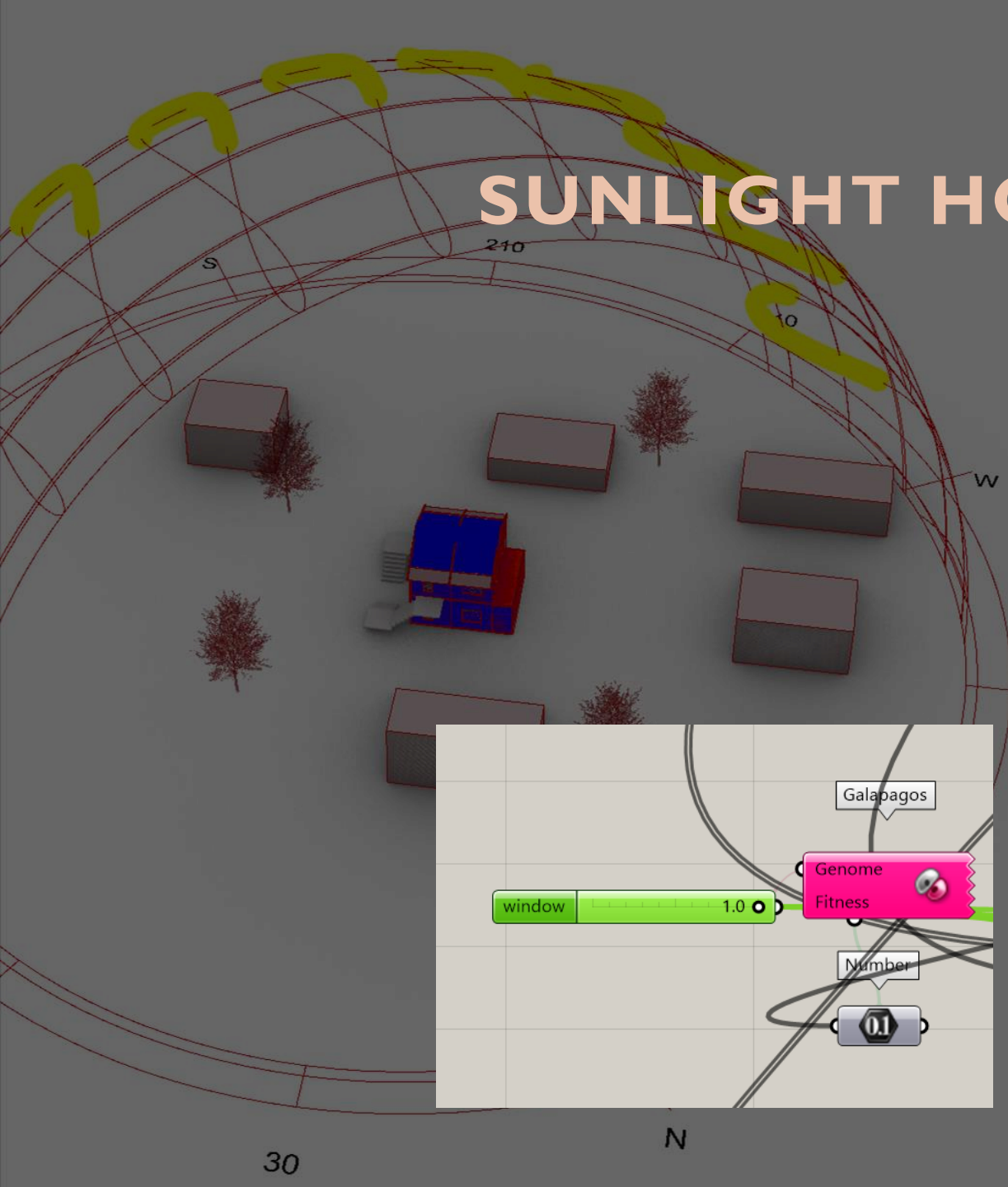


Sunlight Analysis in HOT season(march to September)

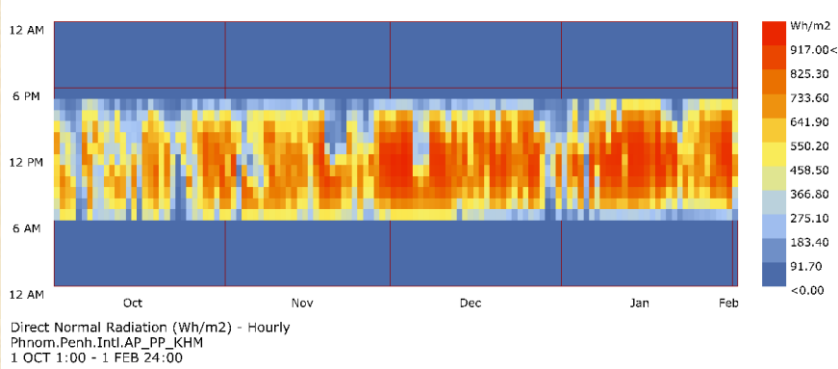
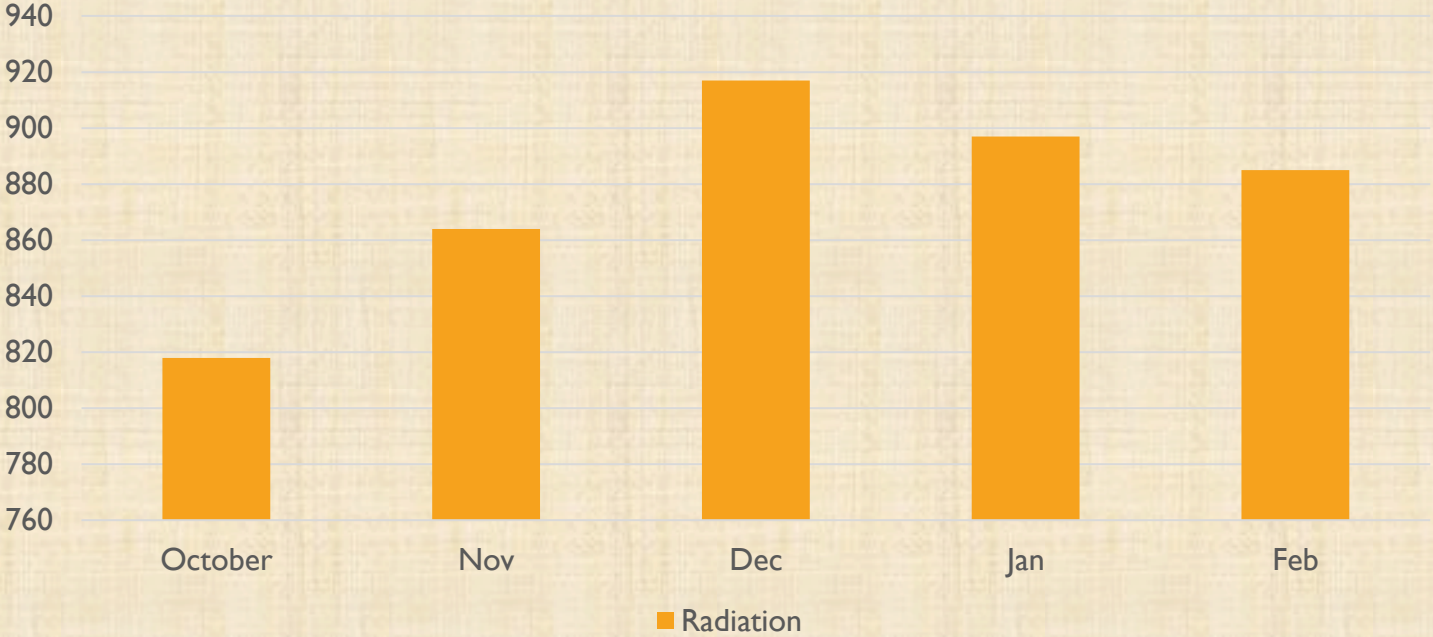


Maximize	Minimize
37	19
May	April

SUNLIGHT HOURS ANALYSIS



Maximize radiation in cool season
(October to February)

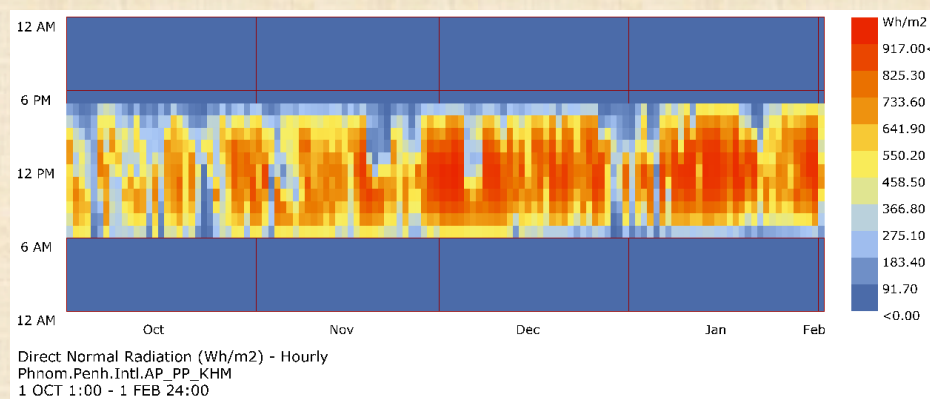
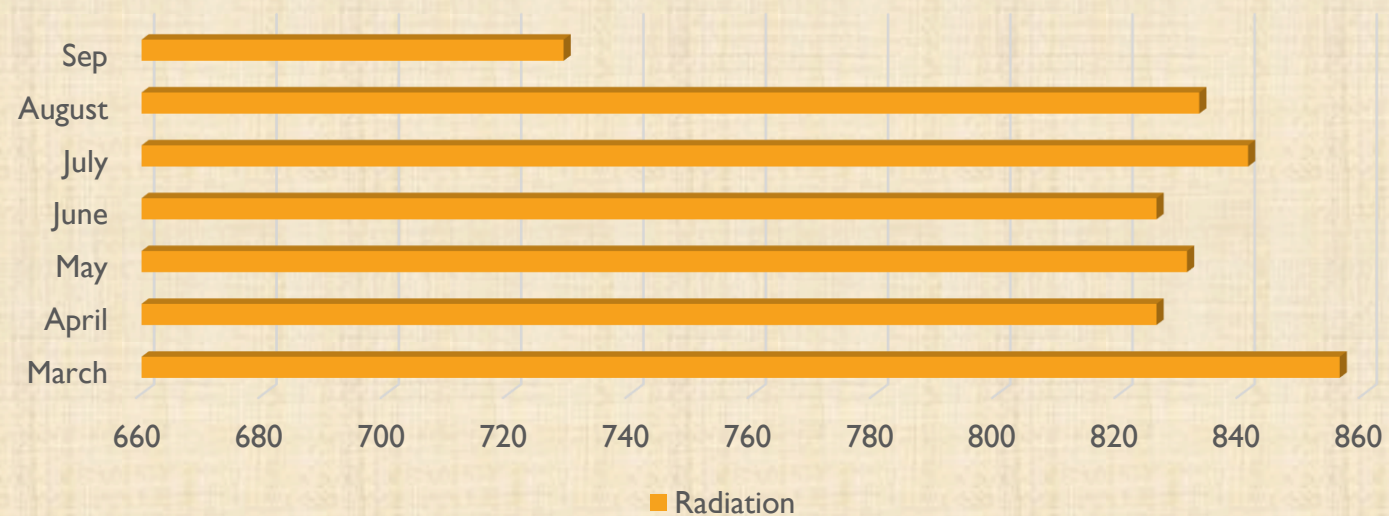


Maximize radiation

917(wh/m2)

December

Maximize radiation in HOT season (March to September)



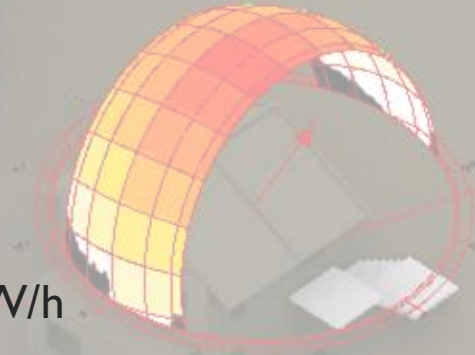
Max radiation

856(wh/m2)

March

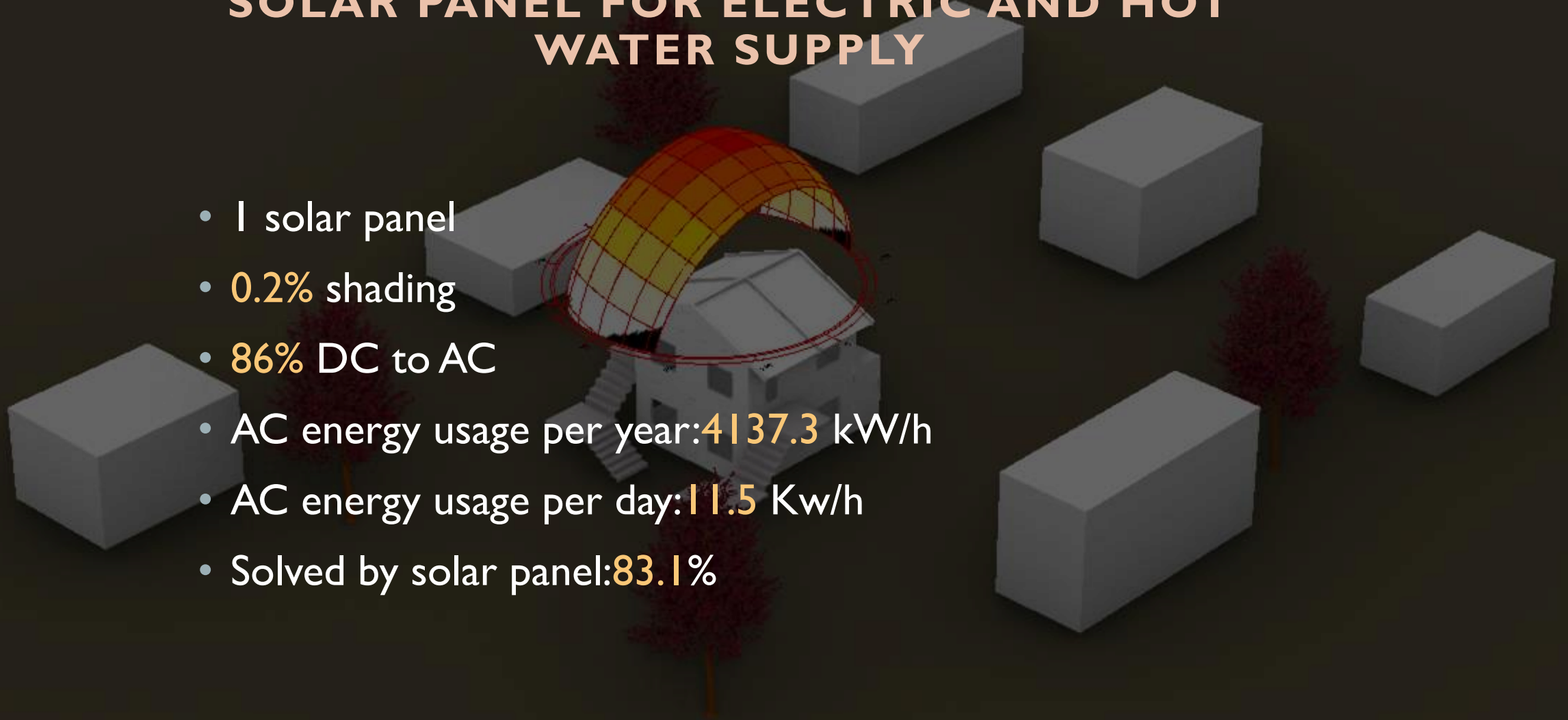
SOLAR PANEL FOR ELECTRIC AND HOT WATER SUPPLY

- 1 solar panel
- 0.3% shading
- 84.5% DC to AC
- AC energy usage per year: 4047.4 kW/h
- AC energy usage per day: 11.1 Kw/h
- Solved by solar panel: 81%



SOLAR PANEL FOR ELECTRIC AND HOT WATER SUPPLY

- 1 solar panel
- 0.2% shading
- 86% DC to AC
- AC energy usage per year: 4137.3 kW/h
- AC energy usage per day: 11.5 Kw/h
- Solved by solar panel: 83.1%



3D MODEL VIEW:
SIMPLY SCAN THE QR CODE



SCAN ME



ACKNOWLEDGEMENT

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- **Daniel Yu**



TANK YOU FOR WATCHING

CREATED BY JEFFREY SONG

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