

Tahir Foundation Connexion

First onsite Net-Zero Energy Building with MET Construction in City

Estimated
EUI 58.6 kWh/m2/year
45% better Energy
Performance than
Green Mark (Platinum)
Building



1) Native Landscaping

Alternating trees and palms give a rhythm of vertically and circularity to building



2) Enhanced Building Envelope

ETTV 26 W/m2

Inputs from CD Team

12) Analytics & Machine Learning for Energy System Optimization

Goal

Minimize power consumption, while ensuring acceptable luminance at occupied location

Power cost of brightness

Brightness of the j th bulb

Prefer zero power cost

Minimize

$$\sum_j p(b_j) + \epsilon \sum_j b_j$$

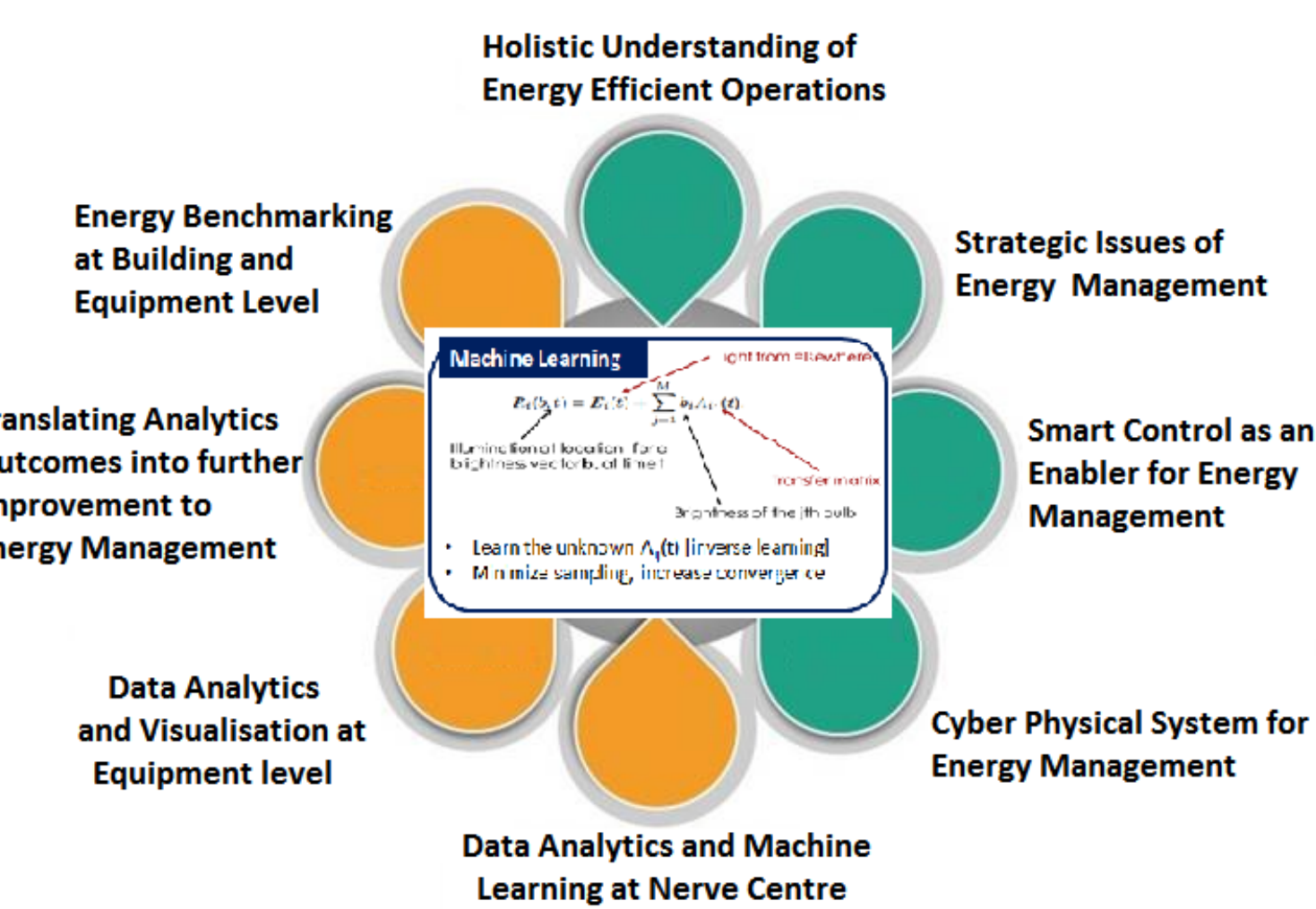
subject to

$$R_i(b, t) \geq q_i(t) h_i \quad \text{for all } i,$$

illumination at location i for a brightness vector b , at time t

We only care about locations that are occupied at time t

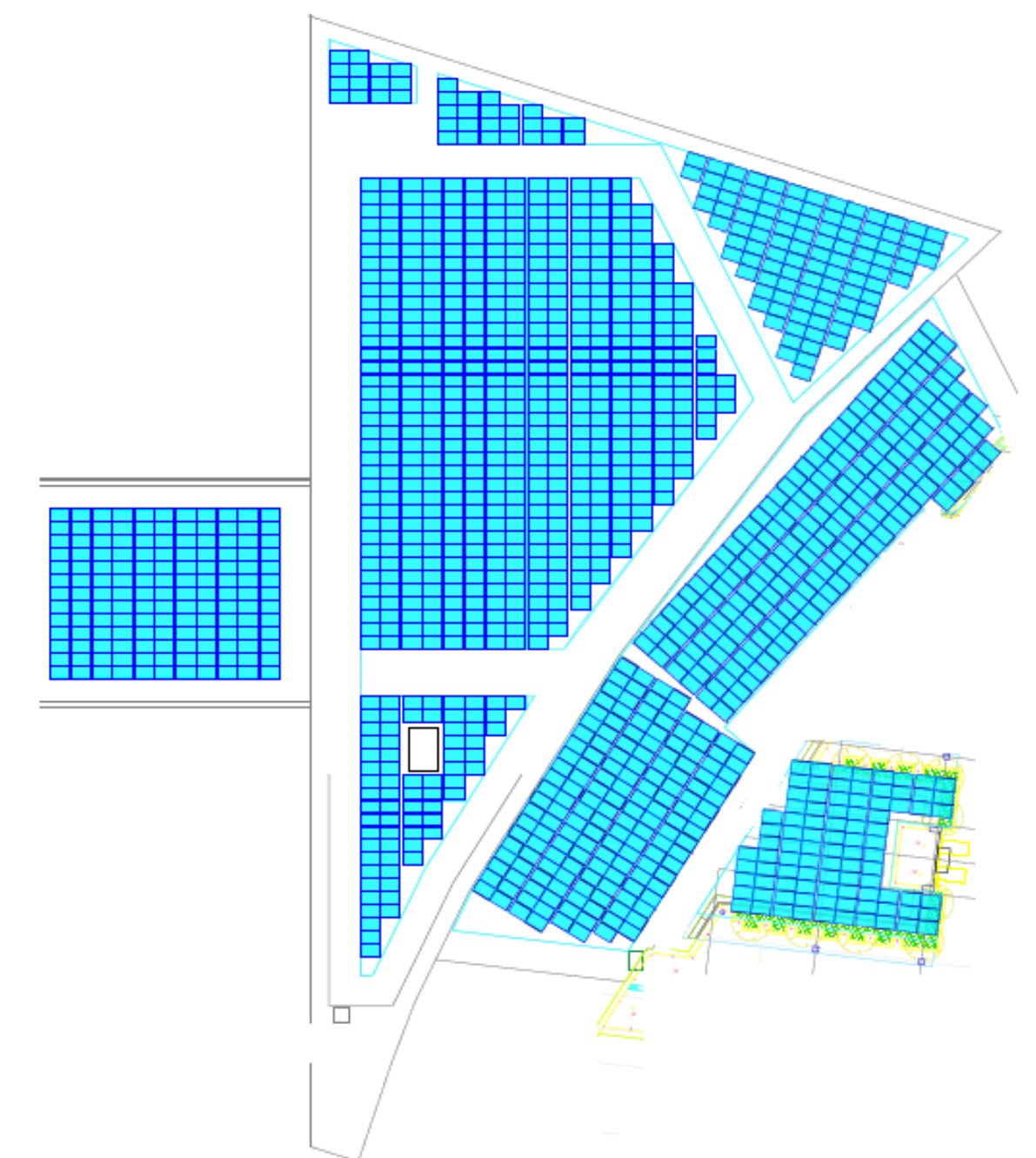
Minimum brightness required



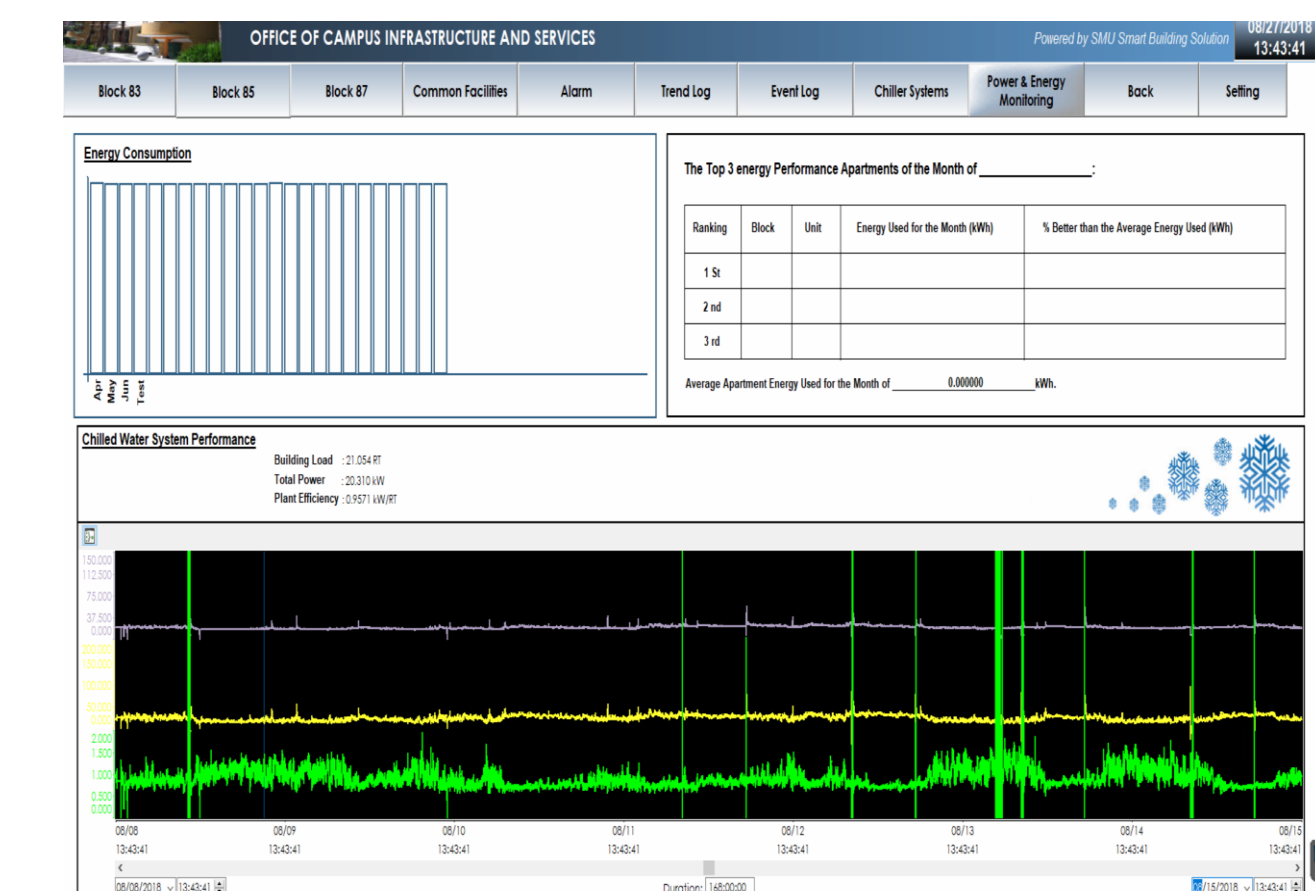
3) Photovoltaic Array

100%

Energy Creation



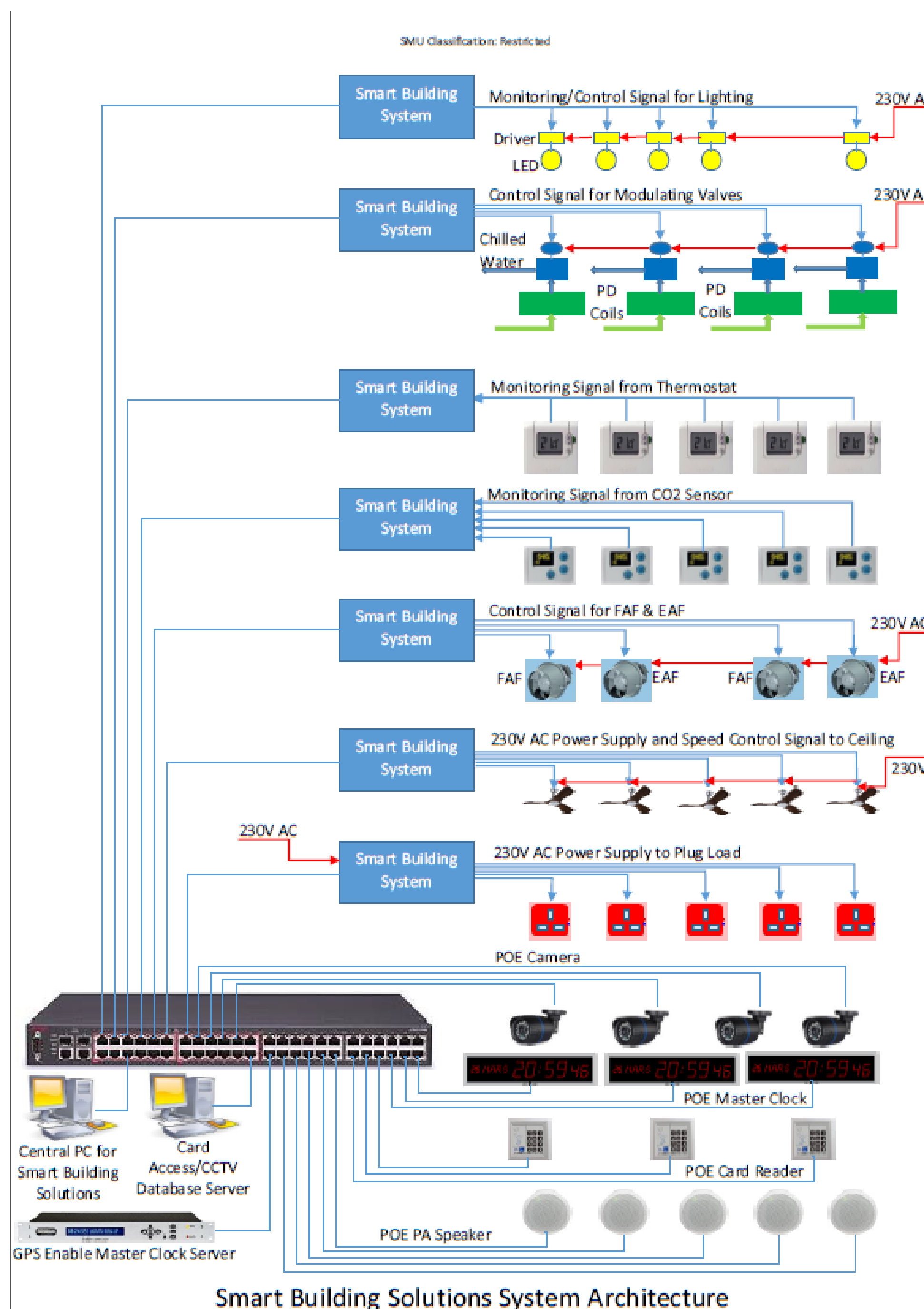
450kWp PV panels array on the roof will generate 100% of the building's electricity consumption



11) Energy Performance Display

Building energy production, consumption and systems' performance

7) Operation Centric Smart Control System for Energy Efficient Operation



4) Enhanced Passive Displacement Cooling (EPDC)

44%

Energy Savings

Building is equipped 100% with EPDC which also reduces maintenance cost and saves 300m2 of GFA



10) IAQ Monitoring and Ventilation Control

Occupancy responsive localised fresh air supply and air purging system

9) Converged Power System (CPS)

68%

Energy Savings

Conventional UPS systems replaced by CPS also saves space, maintenance cost and reduces heat load

8) Oil-Free Chiller

47%

Energy Savings

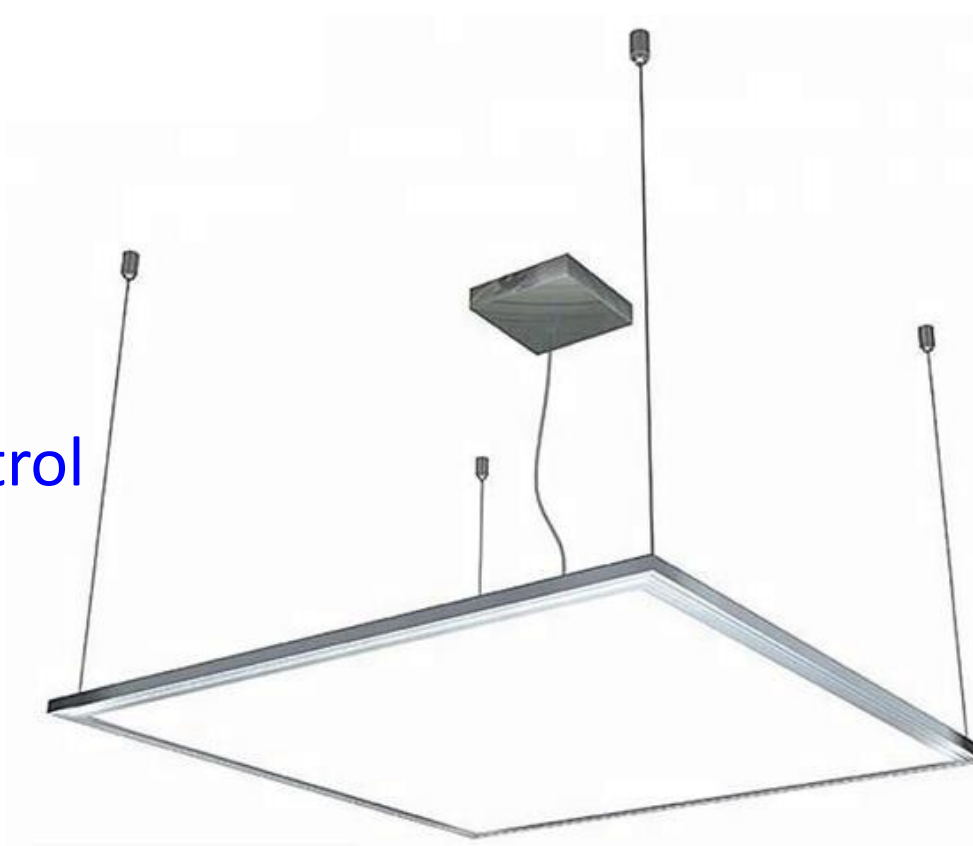
Chilled water tapped from the main campus saves xxxm2 of GFA

5) LED Lighting and Smart Control

43%

Energy Savings

Occupancy responsive automatic lighting control system

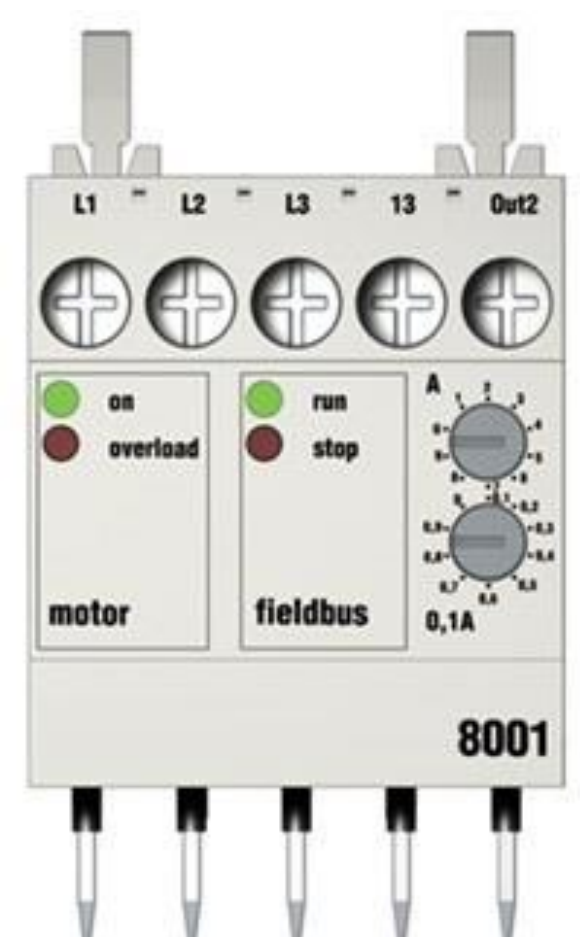


6) Plug Load Management

19%

Energy Savings

Manage the plug load energy consumption by deployment of occupancy sensors and smart contactors



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