Energy Modelling

110N 34th Street, Philadelphia

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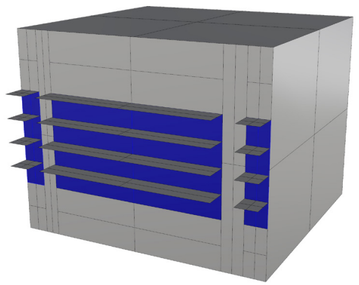
ARCH_753_Building Simulation

Energy Simulation FOR “DREAM ROOM“

Philadelphia falls in Climate Zone 4A according to energy.gov

Philadelphia
110N 34th Street

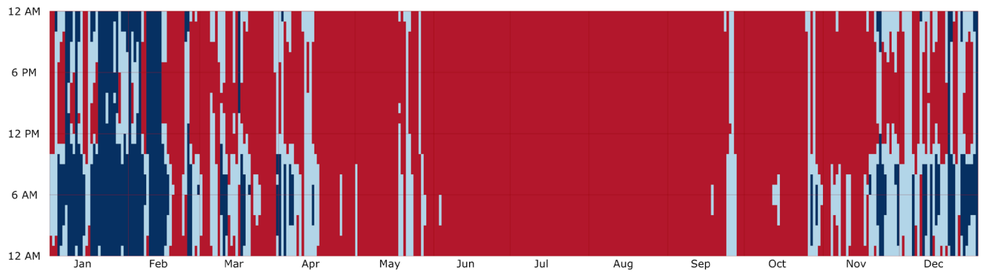
1.00< Cold
0.00 Comfortable
<-1.00 Hot



Final Proposed Design

1. default materials for walls, roof, floor and window.

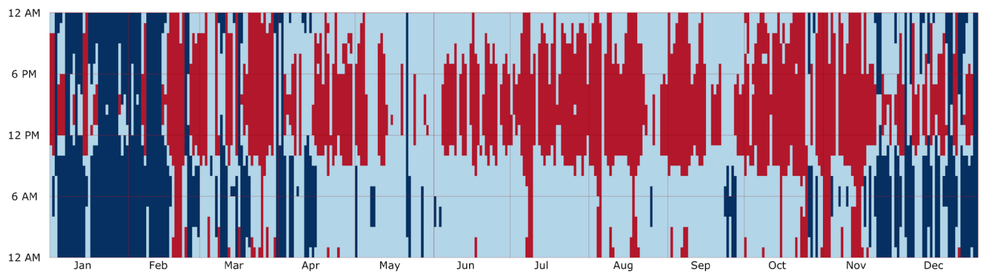
Scenario 1



% of time comfortable: 17
% of time hot: 71
% of time cold: 11

2. considering the above parameters and the following:
- natural ventilation (indoor 24-35) (outdoor 16-28)
- infiltration: average building with min lighting and min people per sqft

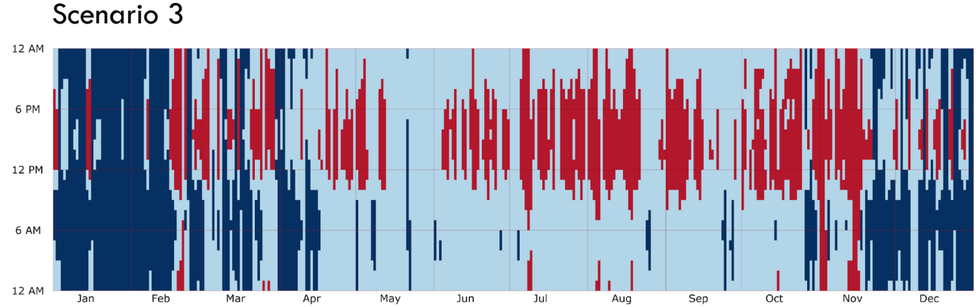
Scenario 2



% of time comfortable: 47
% of time hot: 32
% of time cold: 19

3. increasing the R Values of the roof, floor and walls while adding natural ventilation and infiltration.

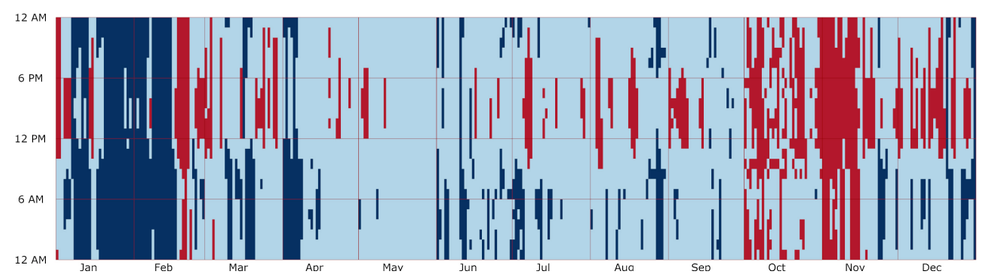
Scenario 3



% of time comfortable: 54.7
% of time hot: 20.1
% of time cold: 25.1

4. Setting schedules based on usage of the room and allocating sensors respecively.

Scenario 4



% of time comfortable: ***66.8%***
% of time hot: 15.2
% of time cold: 17.9

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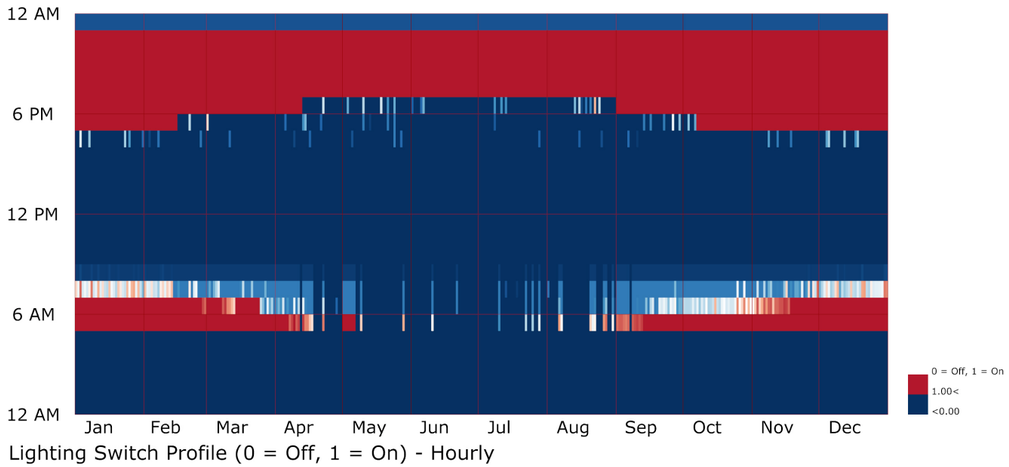
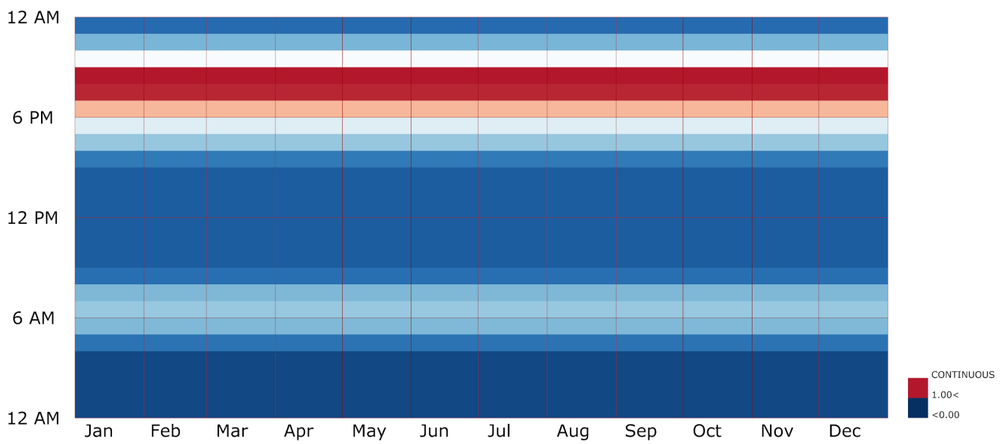
Comparion of the Lighting required vs Lighting Schedule



Lighting Switch Profile (0 = Off, 1 = On) - Hourly

1 JAN 1:00 - 31 DEC 24:00



MidriseApartment Apartment Light (CONTINUOUS) - Hourly
schedule:year
1 JAN 1:00 - 31 DEC 24:00

The below graph shows the lighting schedule which shows that during the day light is required in the evenings and in the mornings. However, after adding windows with respect to philadelphia and the sun condition, the lighting required changes as shown in the graph above. During this time sensors have been added to make sure that lighting will be turned on and off respectively to save energy.