

**100% Glass -100% Adiabatic Wall, No Solar Radiation & Heat Transfer**

**78% Total Load Decrease, 76% Total Cooling Decrease, 99.7% Total Heating Decrease**

\*The Rest **891 KWh** is all Internal Load, Including: Lighting Heat , Equipement Heat & People Heat

**100% Glass -100% Wall, No Solar Radiation**

**72% Total Load Decrease, 74% Total Cooling Decrease,**

**72% Total Heating Decrease**

\*The Rest **1056 KWh** is Internal Load + Heat Transfer,

\*Heat Transfer through wall is **165 KWh**, Cooling :**84**, Heating: **80**

\*Heat Transfer through Window is about **576 KWh**,

Cooling:**288**, Heating :**288**

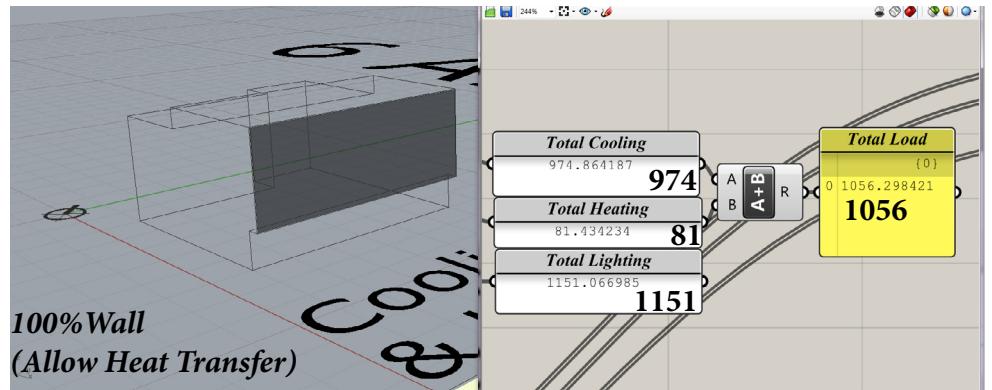
\*Internal Load is **891 KWh**. Cooling:**890**, Heating: **1**

\*Solar Radiation through Window is about **2509 KWh** contribute to Cooling Load.

\*Solar Radiation through Window is about **2509 KWh or less** contribute to Cooling Load.

\*Internal Load is **891 KWh**. Cooling:**890**, Heating: **1**

\*Heat Transfer all through Window is about **576 KWh or more**, Cooling:**288 or more**, Heating:**288 or more**



### Design Strategy:

For Reaching Comfort without Cooling:

Eliminate Solar Radiation is first Choice,

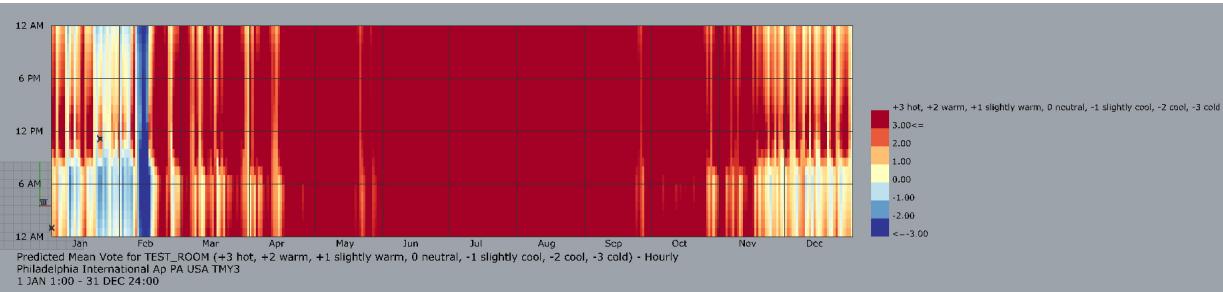
Introduce Natural Ventilation is second Choice

Increase R value of facade is third Choice

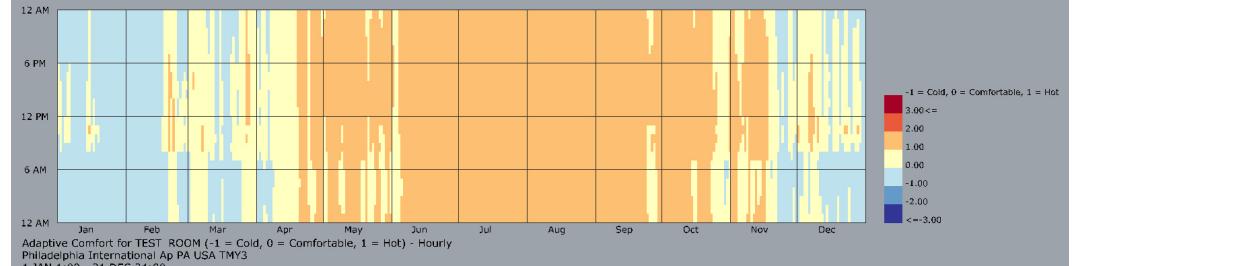
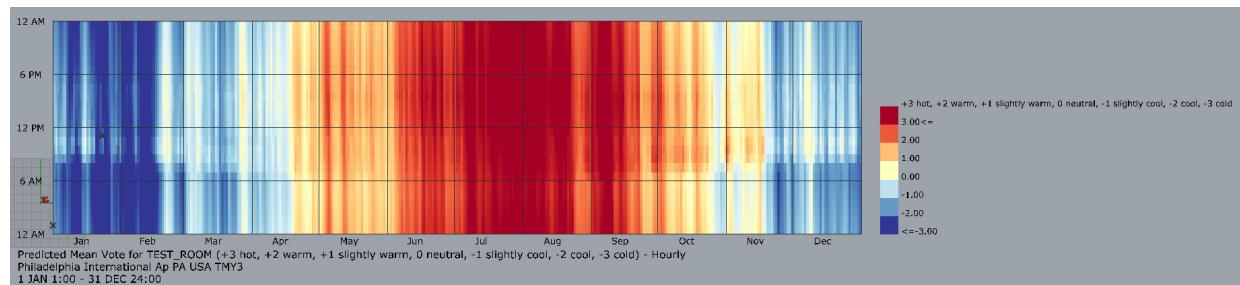
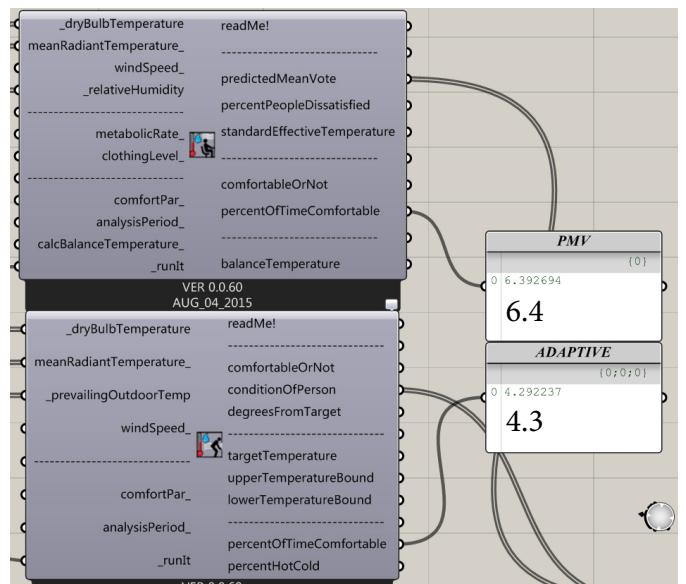
### Passive Design Strategy:

For Reaching Comfort without Heating:

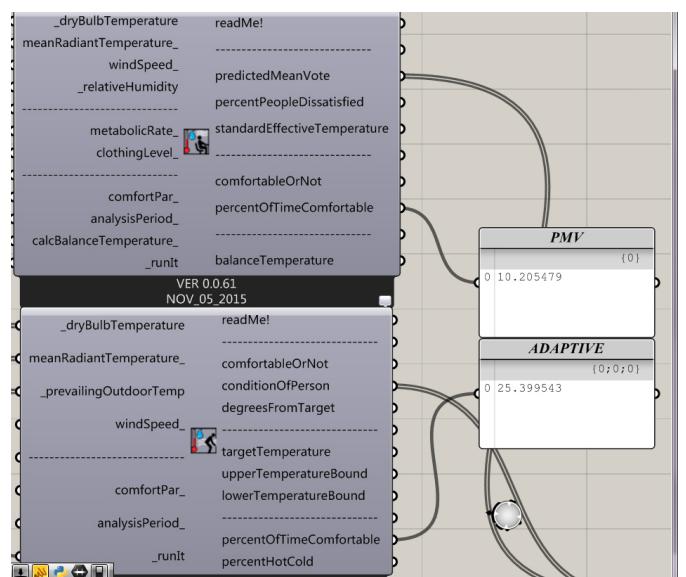
Increase R value of facade is First Choice

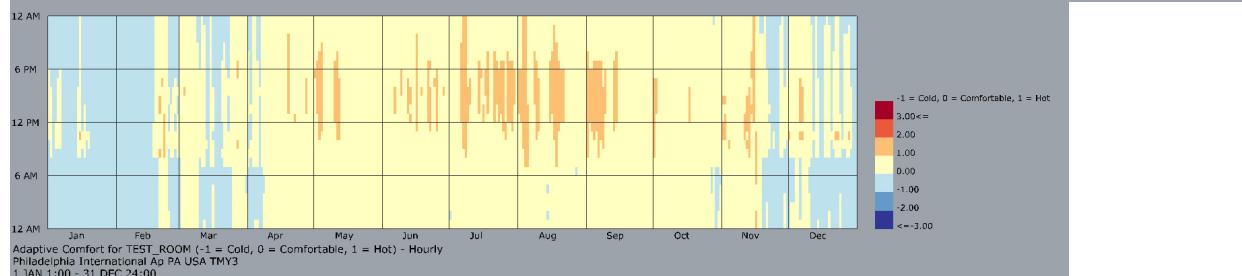
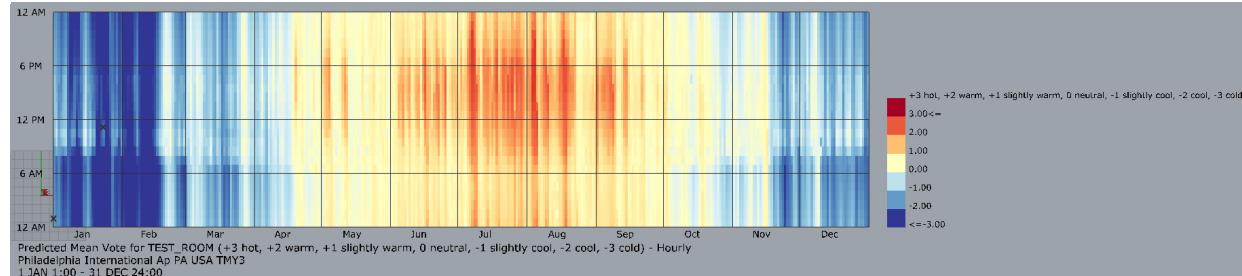


No Shading, No Natural Ventilation

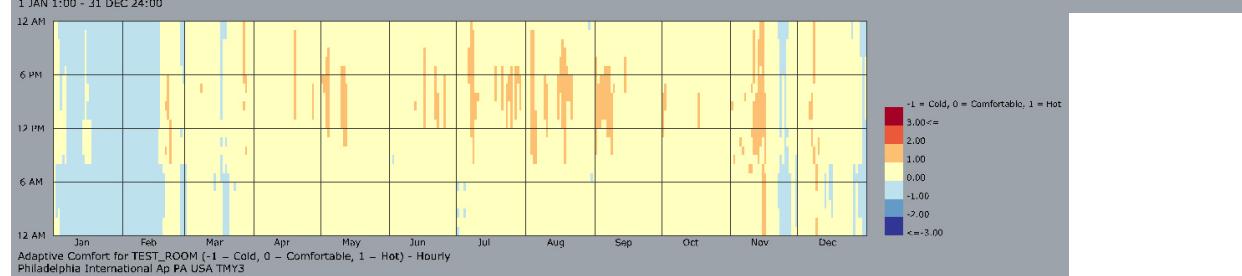
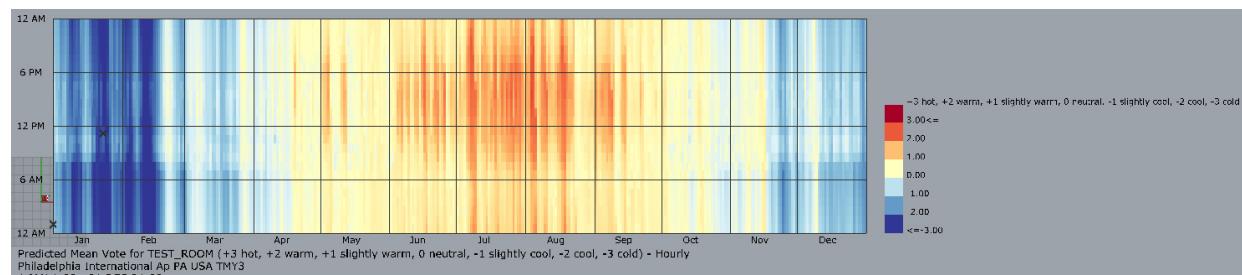


With Shading, No Natural Ventilation

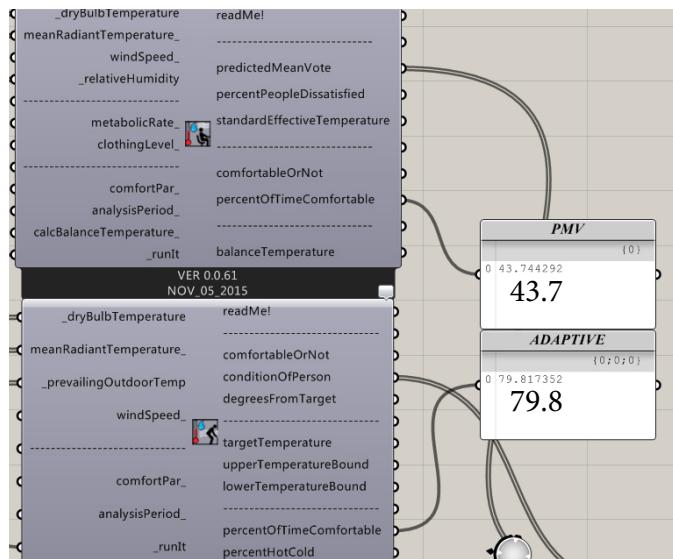
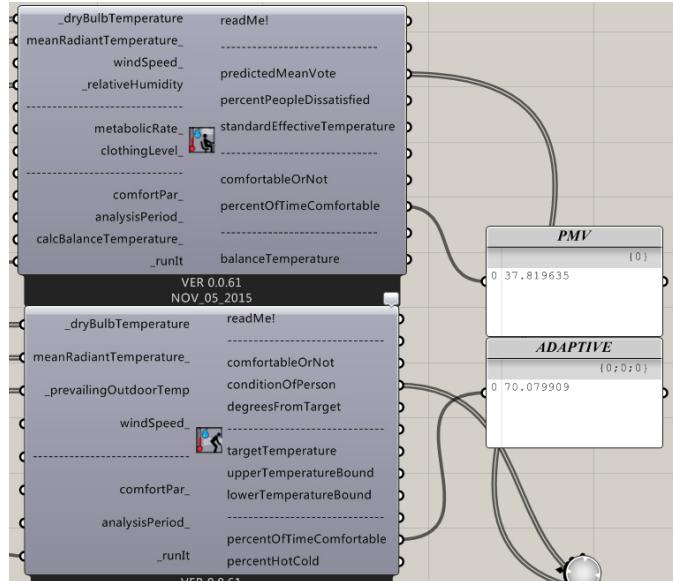


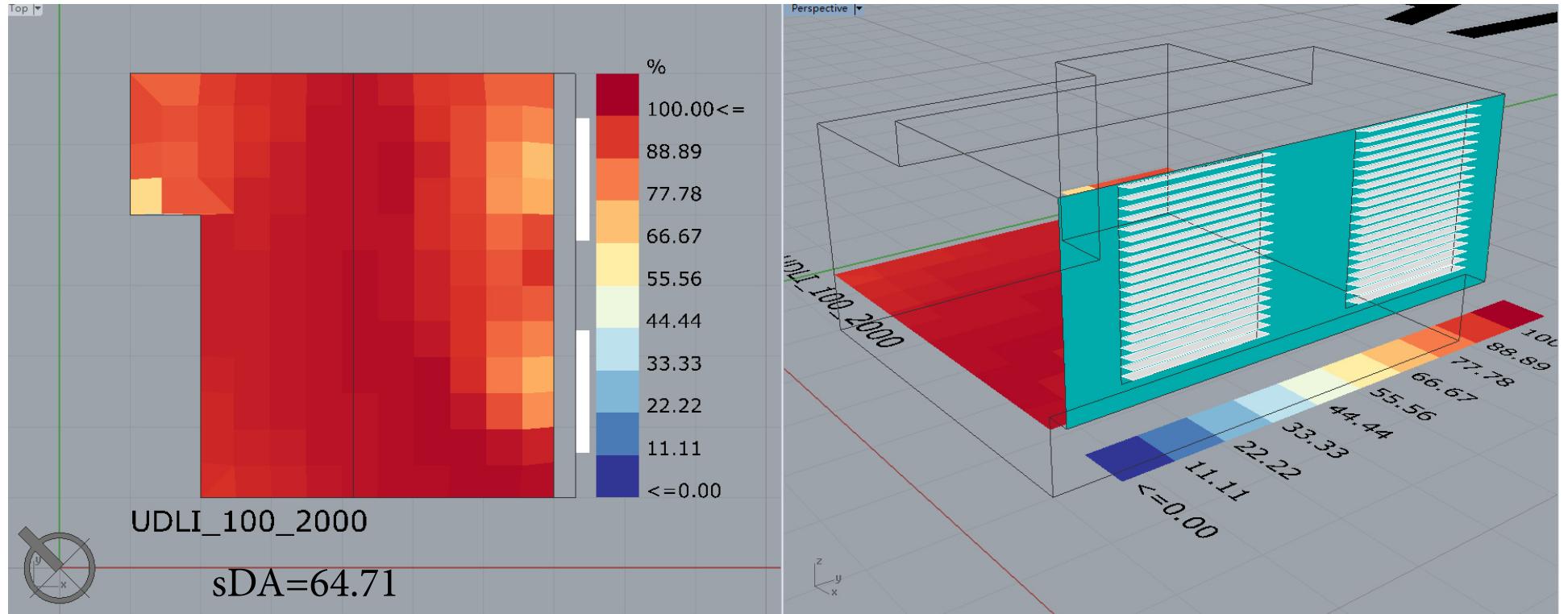


### With Shading, With Natural Ventilation



### With Shading, With Natural Ventilation, with Low-e (High R) Glass





With Shading, With Natural Ventilation, With Low-e ( High R) Glass,  
**the Room's PMV Comfort reaches 43.7 and Adaptive Comfort reaches 79.8**

and sDA reaches 64.71 with 0.5 Window to Wall Ratio.

However, with only passive Strategies, there are still cold stress need to be addressed with Heating Energy in the Winter. And I think the Heat Transfer happened on the Facade is the major cause.