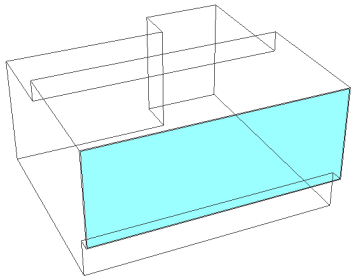
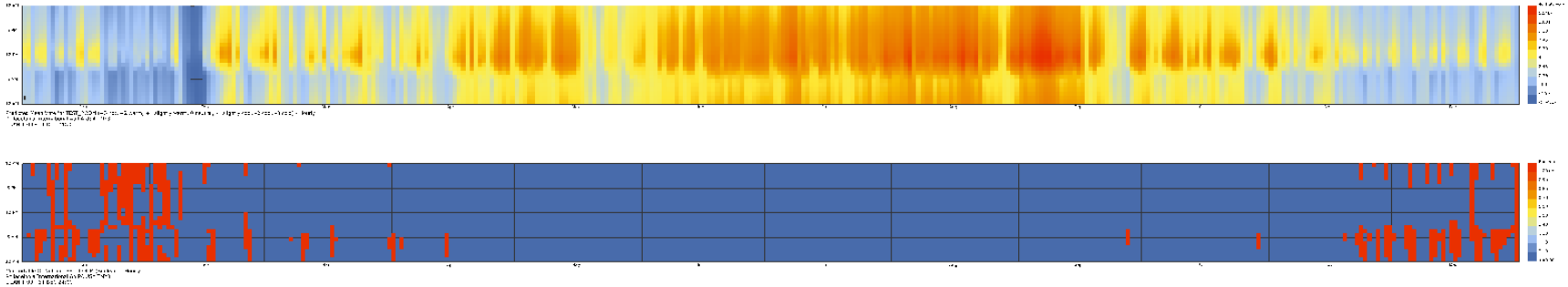
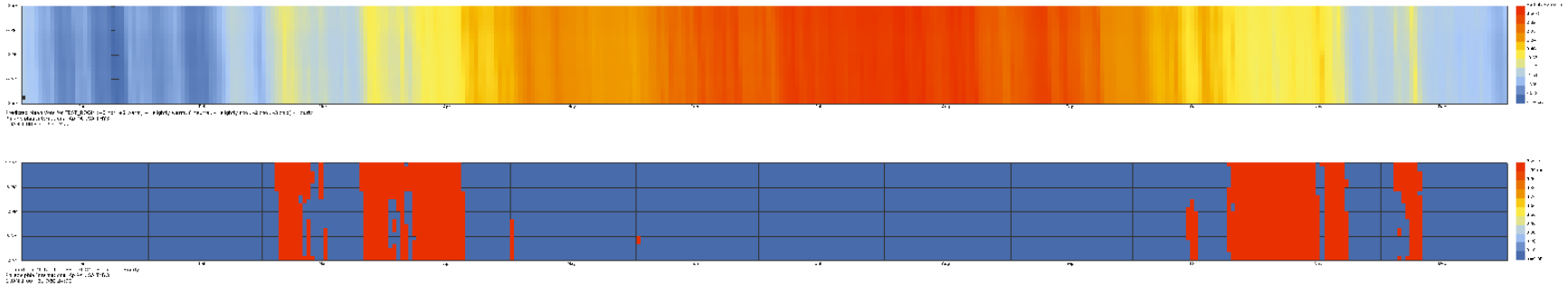
0.0) Baseline conditions the room is considered with whole glazed facade and without systems





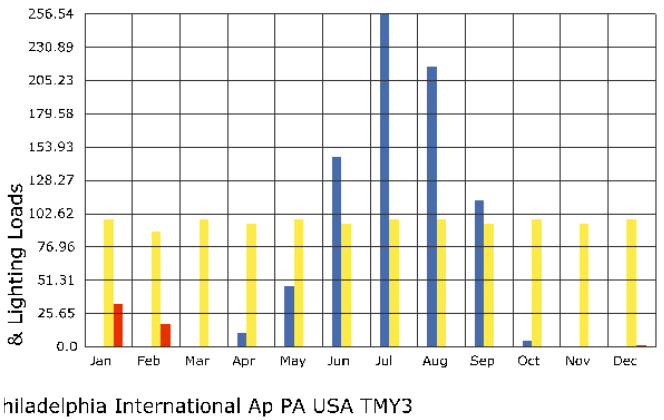
adaptive comfort and PMV comfort calculator

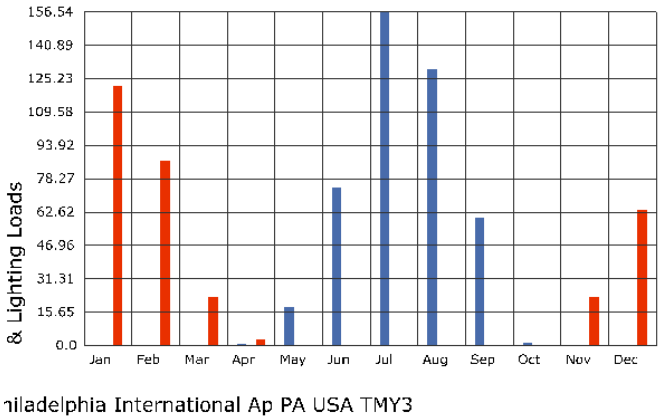
0.1) Baseline conditions the room is considered without glazing and without systems



The graph on the left shows the energy simulation of the room, considering no glazing: of course, it reports high lighting intensity and cooling loads during the summer months.

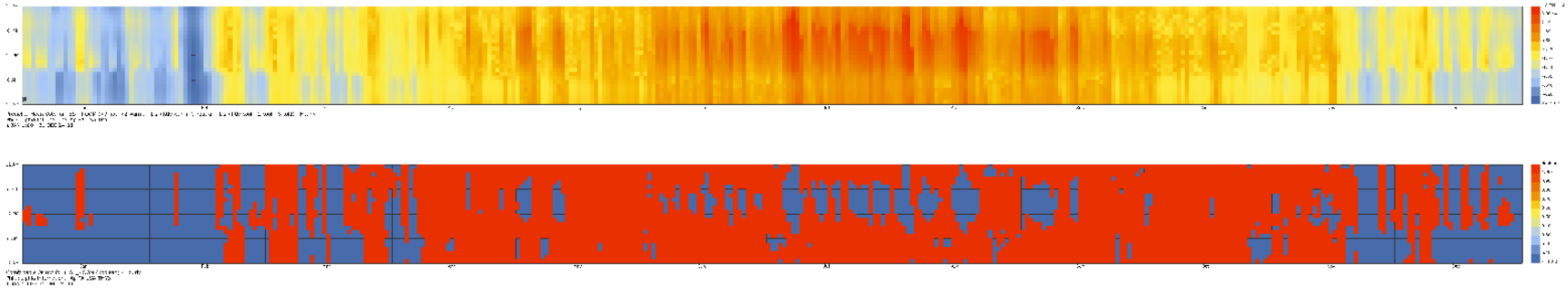
On the right, the same conditions are simulated but without the addition of lighting devices: a much higher energy consumption is required to provide winter heating.





1.0) Natural ventilation

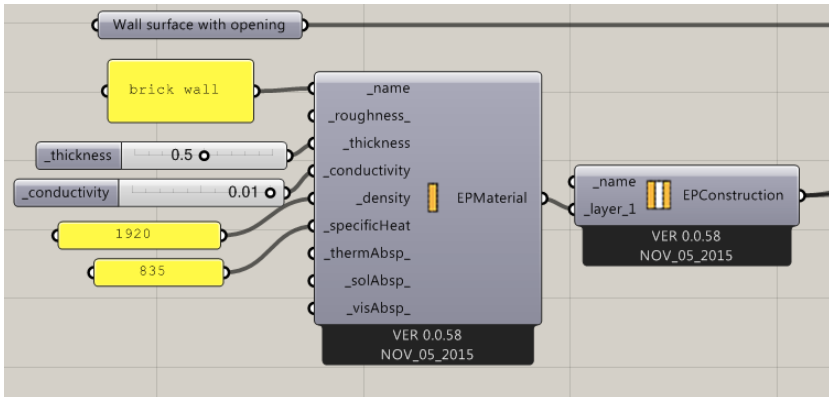
the room is considered with whole glazed facade and without systems

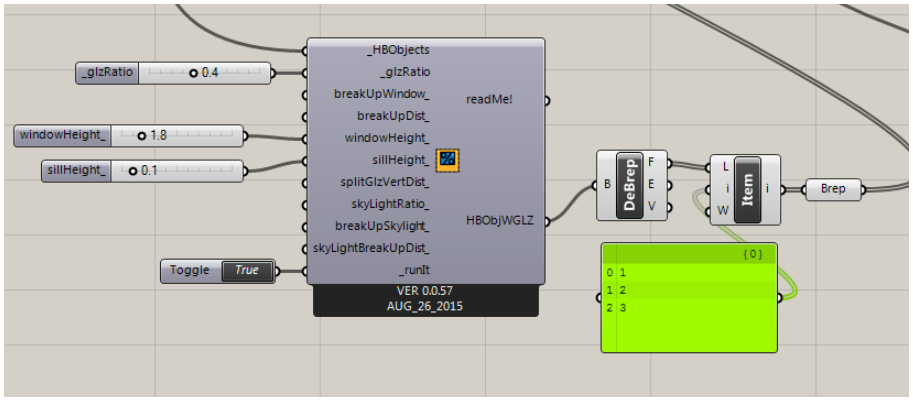


64%

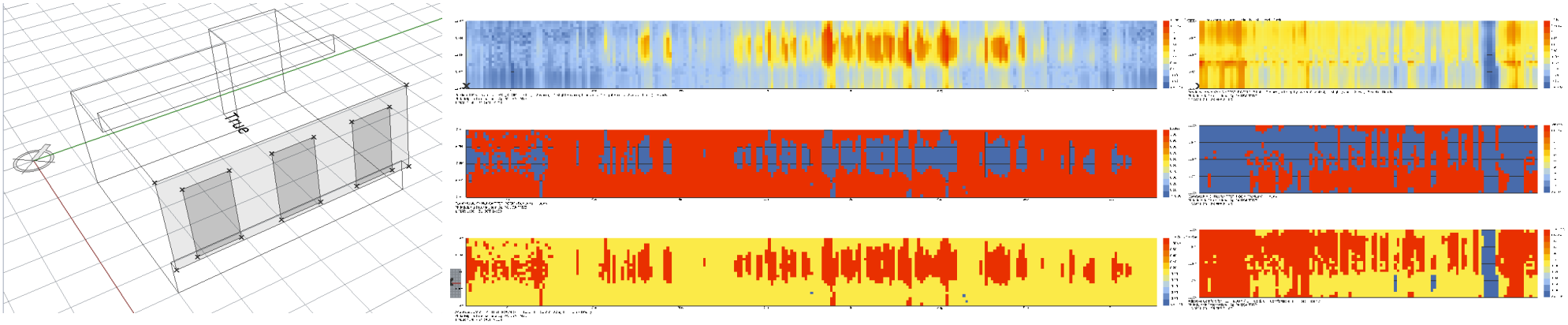
comfortable (adaptive comfort)

2.0) Design parameters walls and glazing





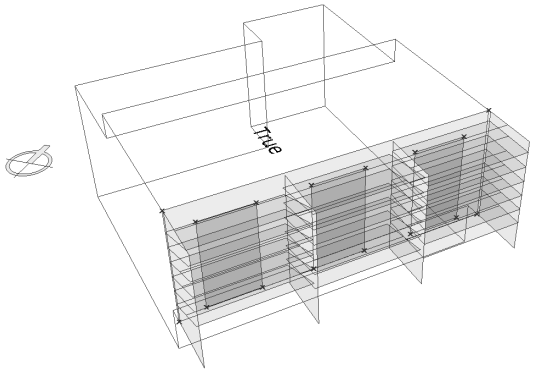
I used the Honeybee_Energyplus Opaque Material Component to provide improved insulating characteristic to the wall, and I added 40% glazing (3 windows).

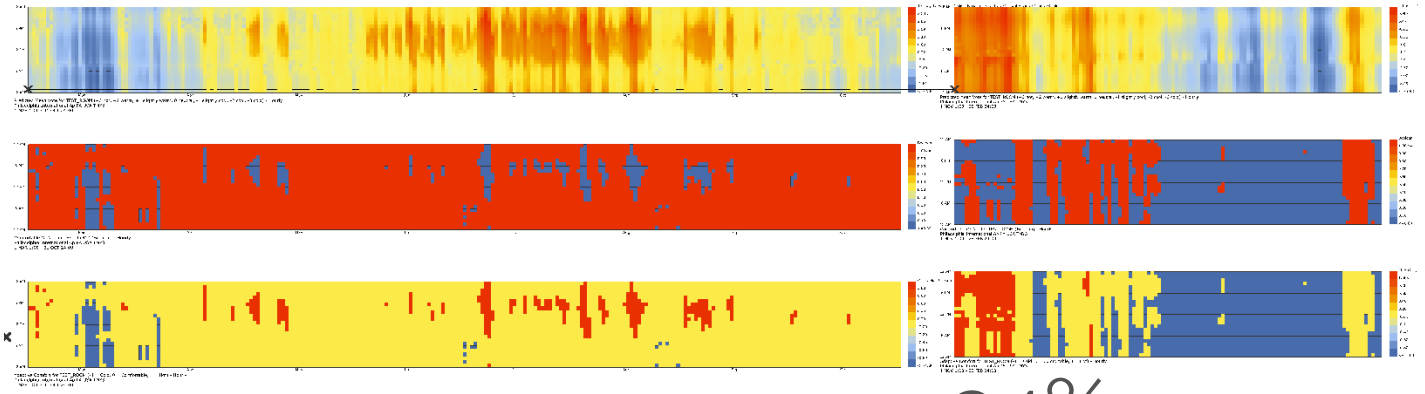


I split the simulation in warm months (from march to october) and cold months (november to february) to regulate natural ventilation. I am also focusing on the condition of person, instead of the PMV: I reach 77% for the first period, and 41% for the second.

3.0) Shading

sun radiation control

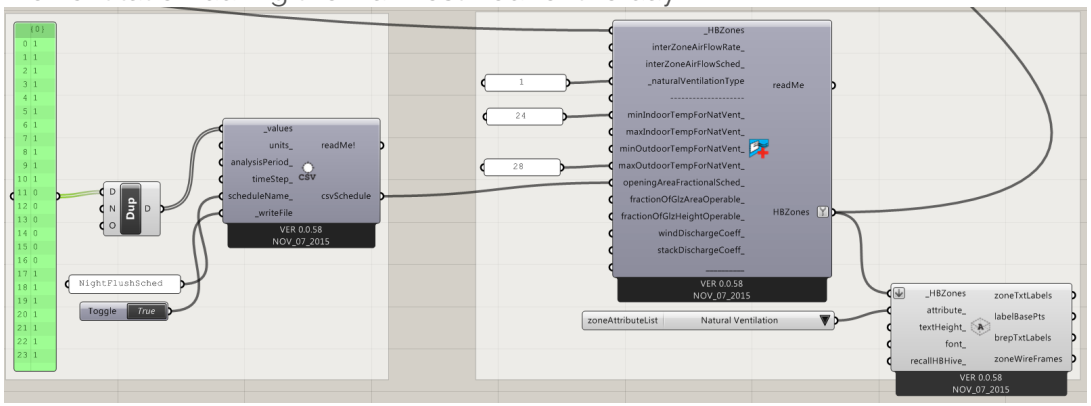




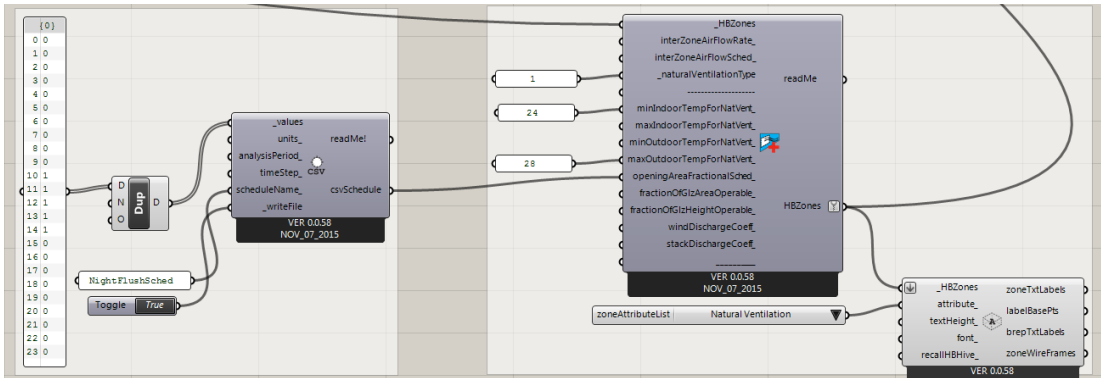
92%

34%

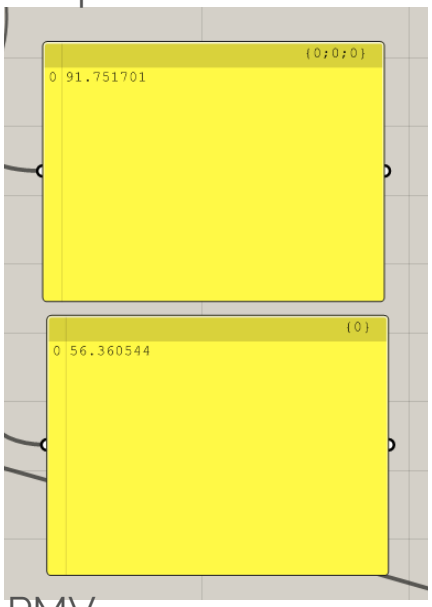
no ventilation during the warmest hour of the day

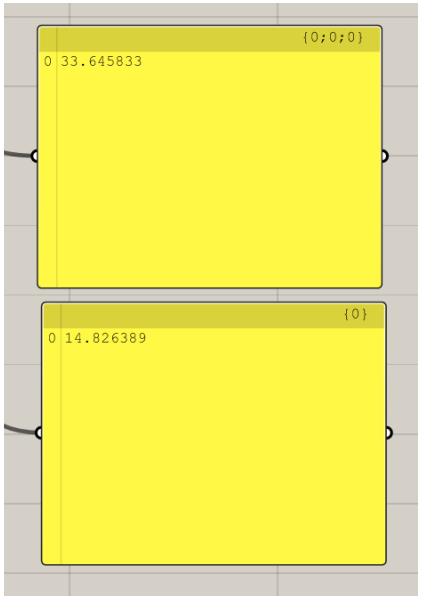


ventilation only during the warmest hour of the day



adaptive comfort





PMV