WEEK ASSIGNMENT- 7

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QUESTION 1:

SUMMARY :

SOLAR RADIATION:

Solar radiation is radiant energy emitted by the sun from a nuclear fusion reaction that creates electromagnetic energy. About half of the radiation is in the visible short-wave part of the electromagnetic spectrum. The other half is mostly in the near-infrared part, with some in the ultraviolet part of the spectrum.

DIRECT AND DIFFUSE SOLAR RADIATION:

As sunlight passes through the atmosphere, some of it enters the surface of the Earth direct and undisturbed. Beam solar radiation throws sharp shadows and can be focused.

Another component of sunlight is the diffuse solar radiation, on its way through the atmosphere it is absorbed, scattered, or reflected by dust, water vapor, clouds, pollutants, etc. It does not throw sharp shadows and cannot be focused.

The sum of the diffuse and direct beam solar radiation is called global solar radiation

ATMOSPHERIC ABSORPTION:

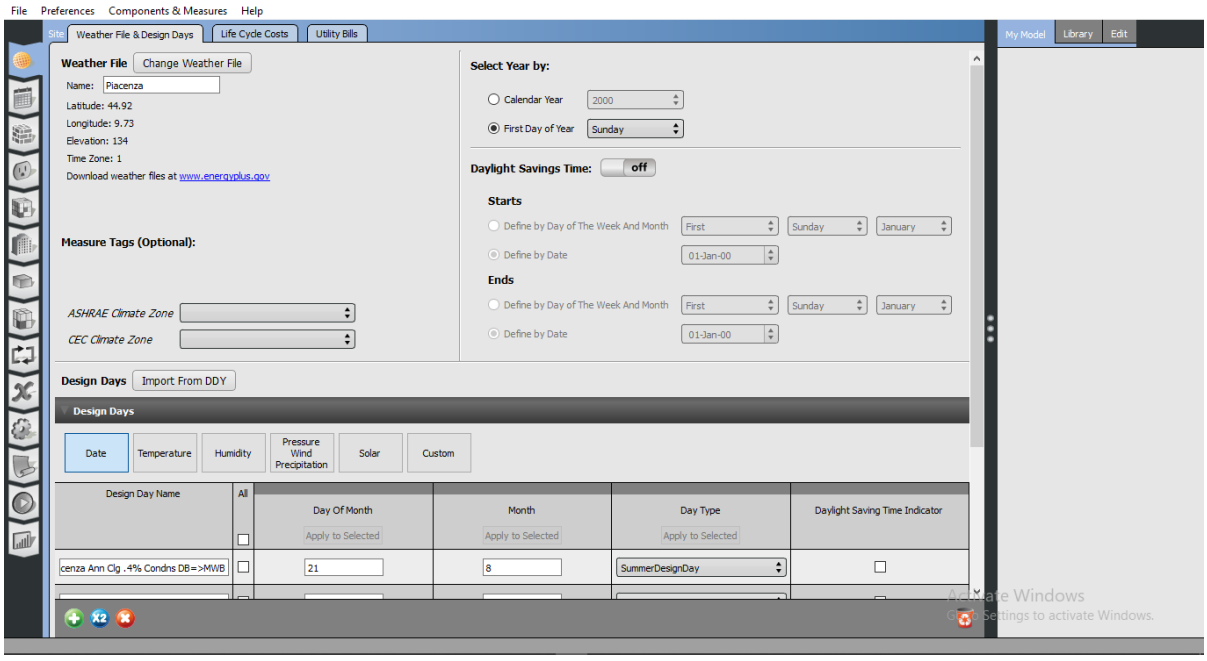
Solar radiation absorption is due to some atmospheric components which absorb the incident radiation in specific wavelength bands which modifies its energetic spectrum

When the sun is perpendicular to the plan of the horizon, it crosses the minimum thickness of the atmosphere When the sun is at an angle it crosses a large thickness of the atmosphere.

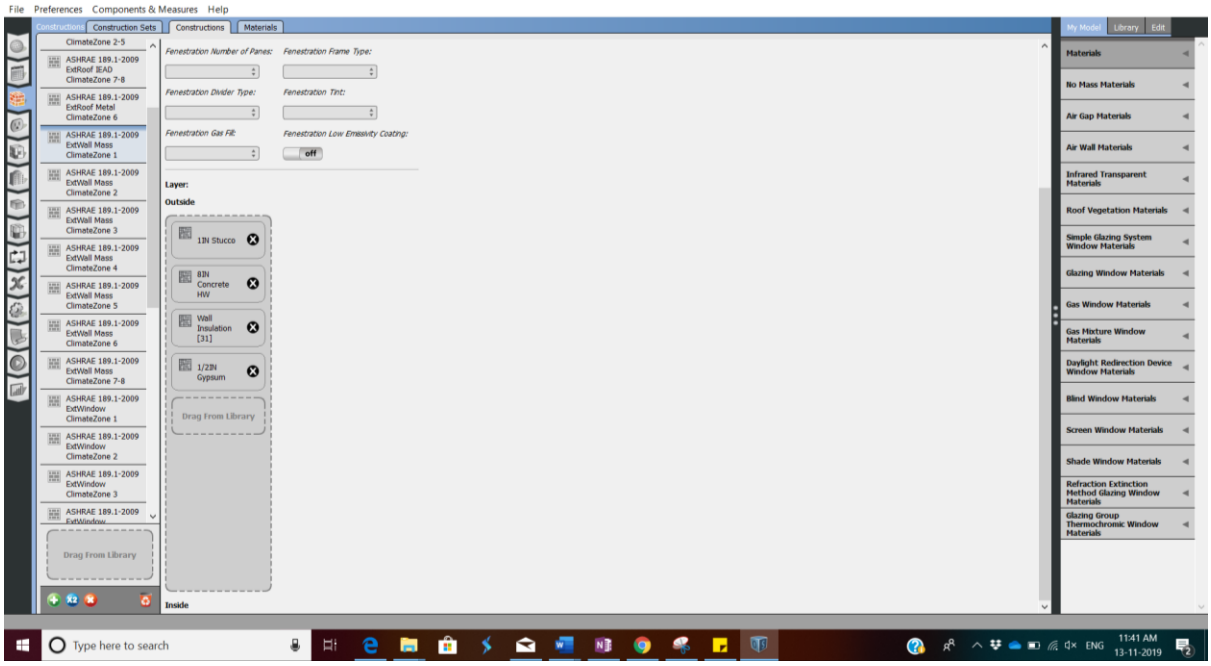
SOLAR RADIATION AVAILABILITY:

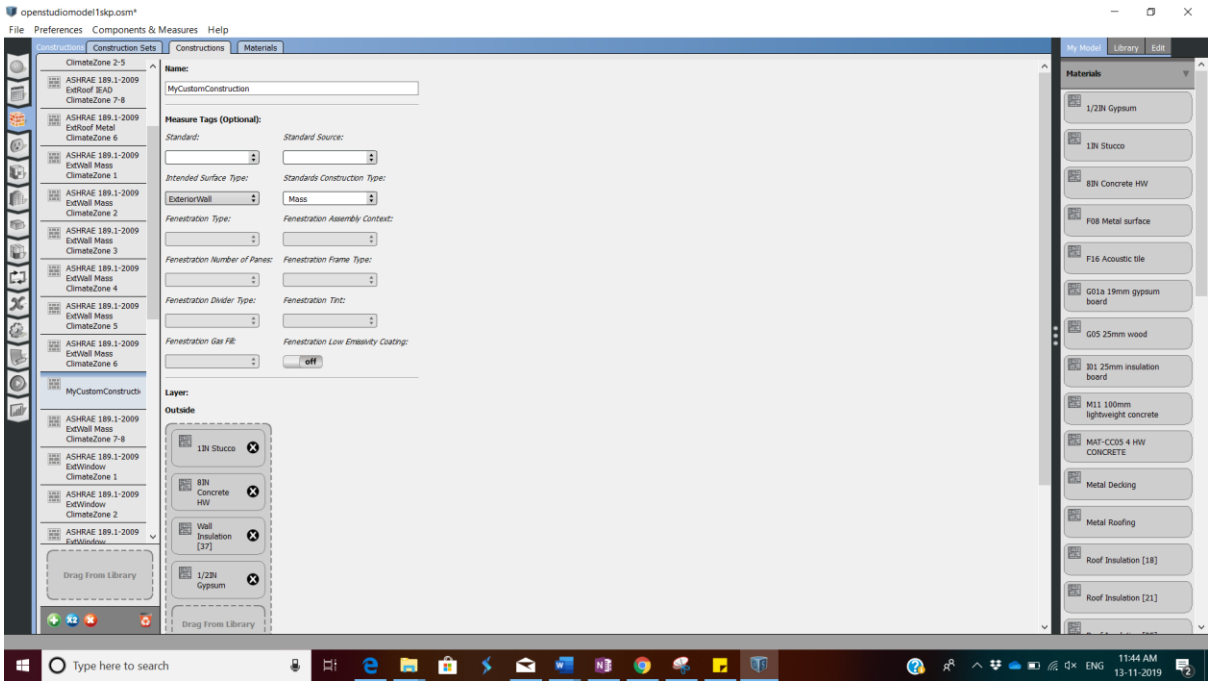
The solar radiation, available on the Earth's surface for conversion in other energy forms, depends on the sun position, the weather condition, the site altitude over the sea level, and the daylight hours.

STEP 1: open the open studio file of your previous work and upload the climate data
(Click discard changes when it asks to save an empty file)

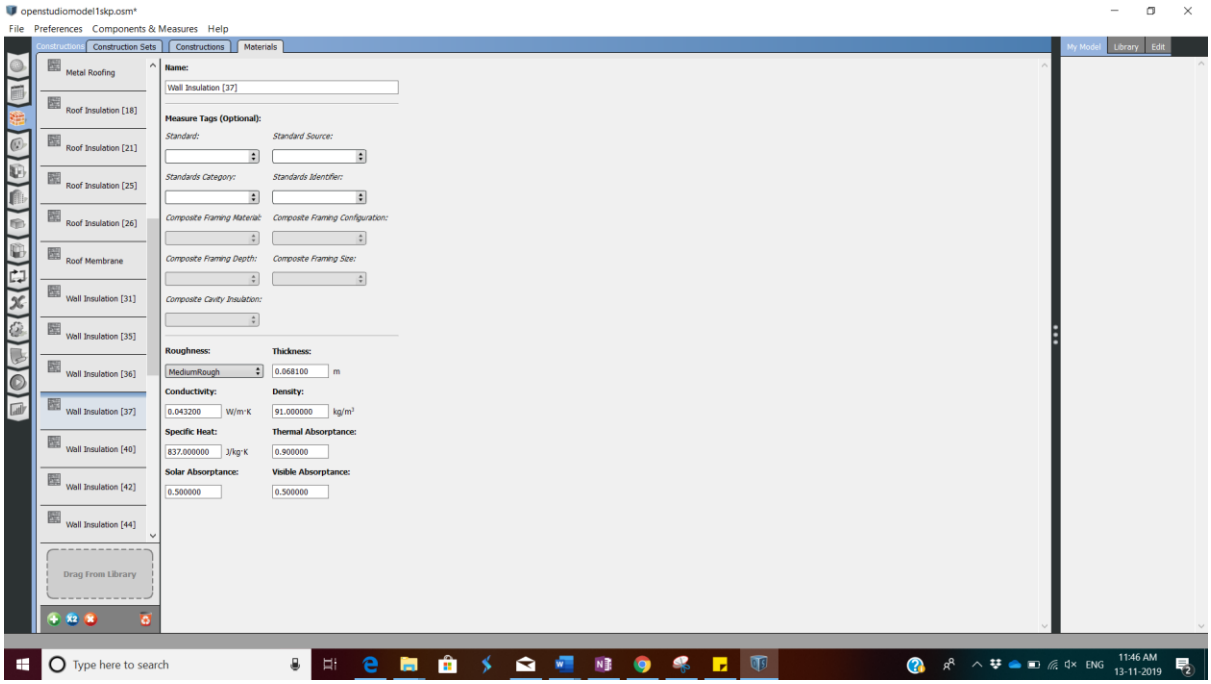


STEP 2: go to construction command to customize the building attributes.
Before changing the default materials create a copy set and rename it according to your own design.



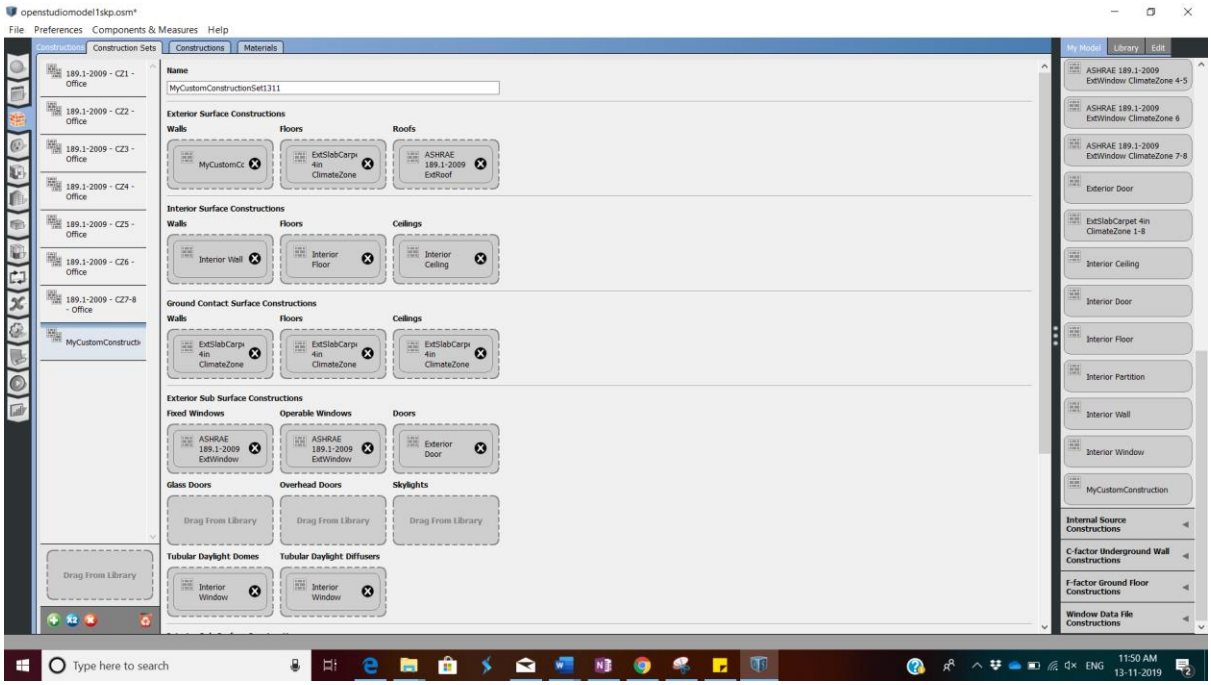


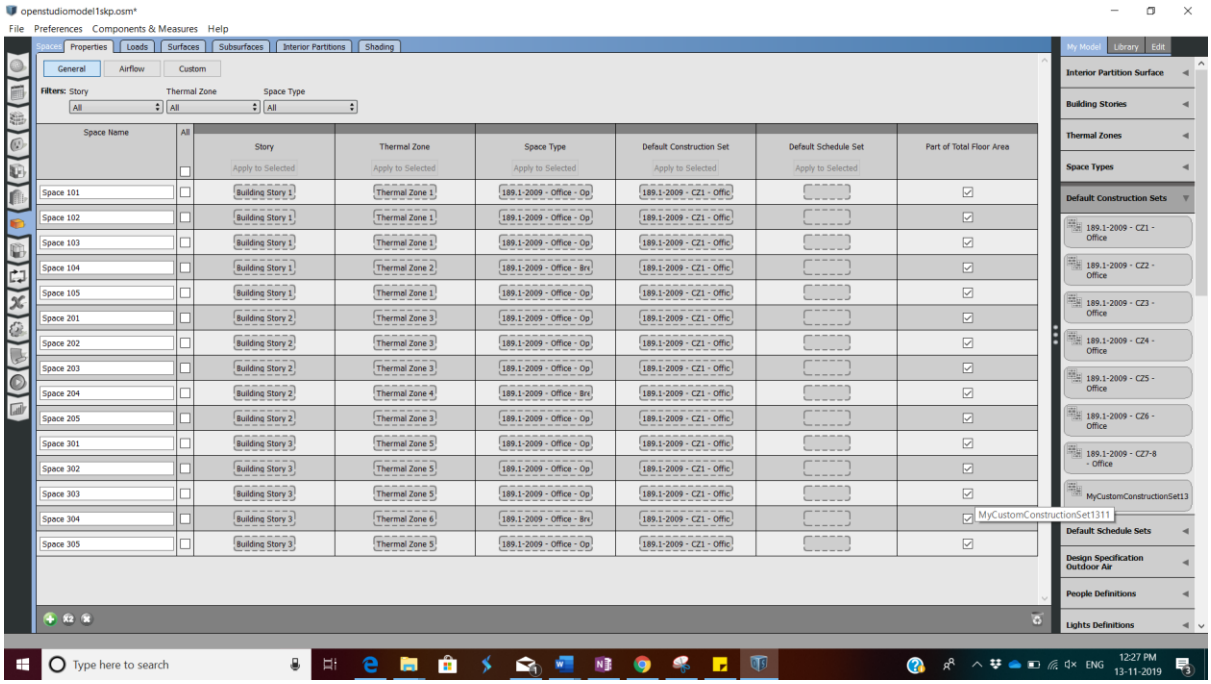
STEP 3: change the material of the wall according to your design by creating a new construction.



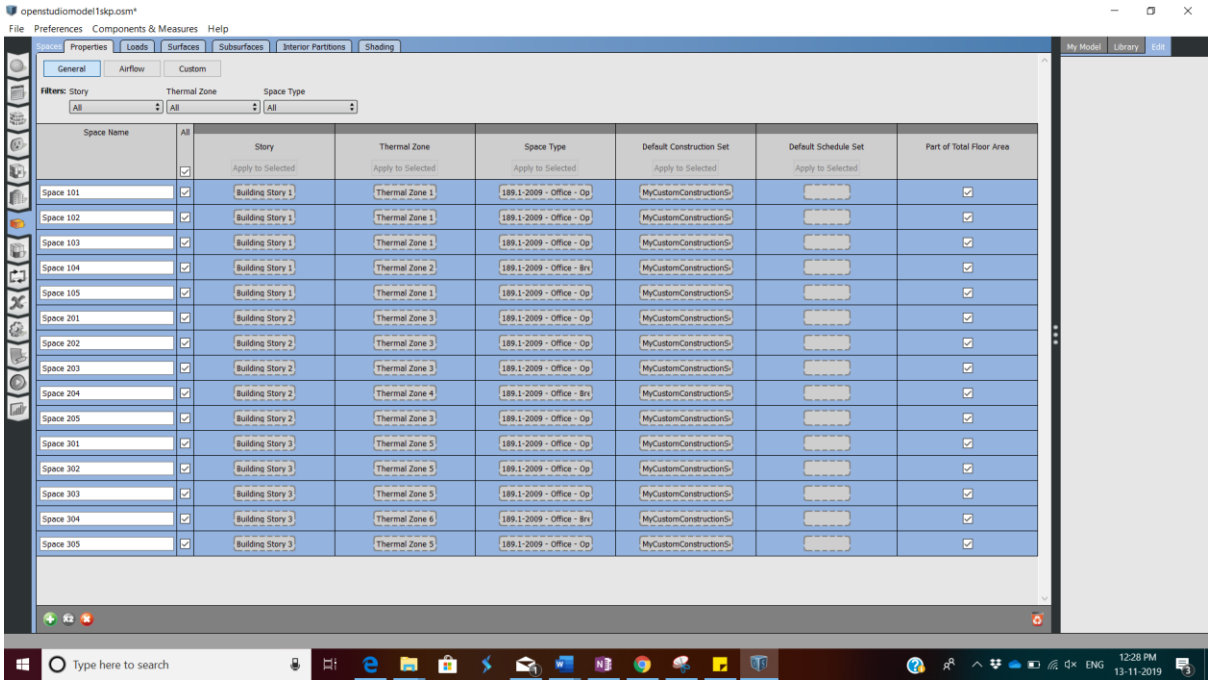
STEP 5: apply all these changes in construction set

We can not only change walls, but change anything – (material, construction type, etc) we want.

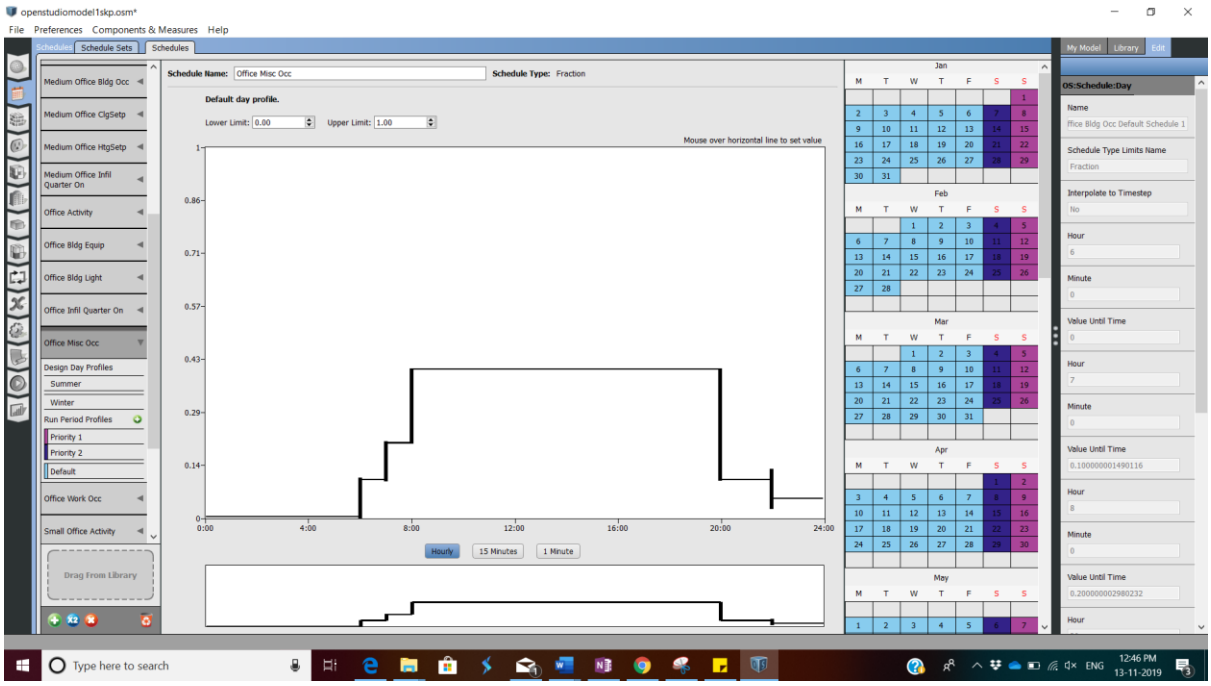




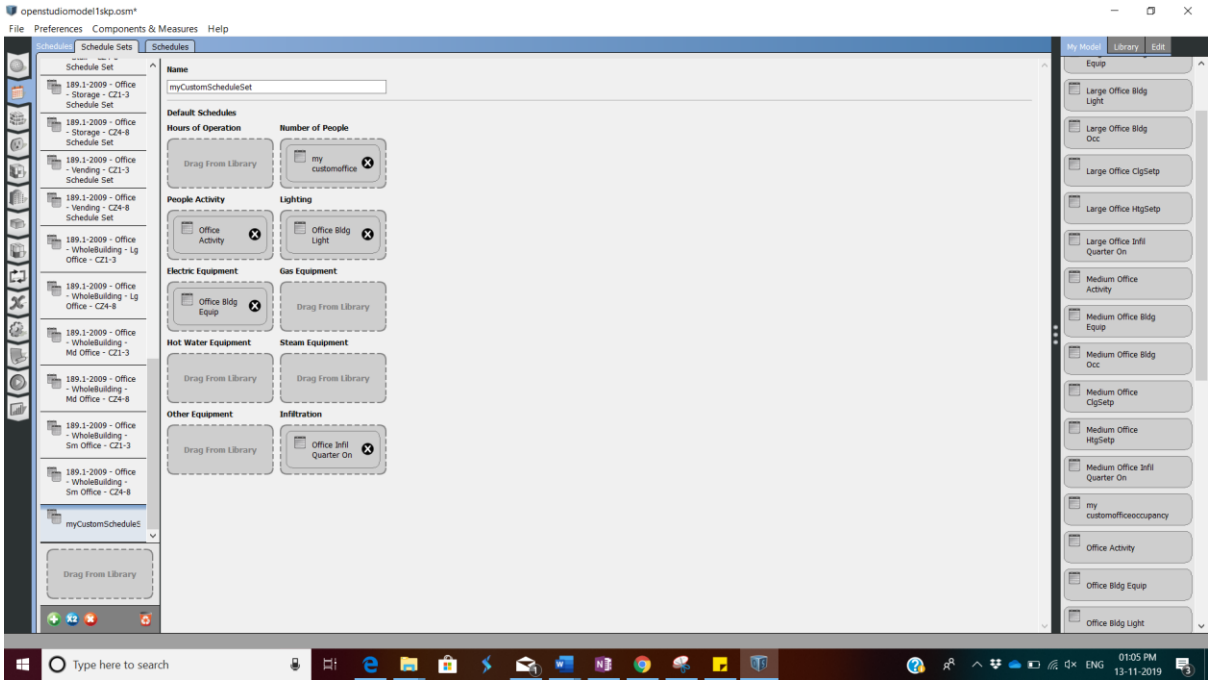
STEP 6: APPLY THESE CHANGES IN BUILDING BY GOING THROUGH THE SPACE WINDOW



STEP 7: CHANGE THE SCHEDULE ACCORDING TO OUR DATA



STEP 9: GO TO LOADS CONTROL TO CHANGE THE LIGHTING, ELECTRICAL EQUIPMENT ETC..



STEP 10: APPLY ALL THE CHANGES TO THE BUILDING AND RUN TO GET THE RESULTS