

#Week 7

**** Task 1** Provide a summary of the main concepts that went through about solar radiation (formulas are not needed)**

The sun continuously in the form of electromagnetic waves around the radiation of energy called solar radiation, is the sun to the space of the electromagnetic wave and particle flow. The energy transmitted by solar radiation is called solar radiant energy. Solar radiation is a kind of short-wave radiation.

The distribution of solar radiation in the upper boundary of the atmosphere is determined by the astronomical position of the earth. The climate determined by astronomical radiation is called astronomical climate. Solar radiation through the atmosphere, part of the ground, called direct solar radiation; The other part is the absorption, scattering and reflection of atmospheric molecules, atmospheric dust and water vapor. Solar radiation intensity refers to the intensity of solar radiation reaching the ground. The absorption, reflection and scattering of solar radiation by the atmosphere greatly weaken the solar radiation reaching the ground. While absorbing solar radiation, the earth's surface radiates most of its energy to the atmosphere. This way of radiating outward with its own heat day and night is called surface radiation. The amount of solar radiation reaching the ground is mainly affected by the thickness of the atmosphere. The thicker the atmosphere, the more serious the absorption, reflection and scattering of solar radiation, and the less solar radiation reaches the ground.

**** Task 2** create a pdf file with screenshots of all of the steps we went through in the second lesson on openStudio and explain briefly the reason behind the use of each step (in your own words!)**

1. Add weather data

Weather File & Design Days | Life Cycle Costs | Utility Bills

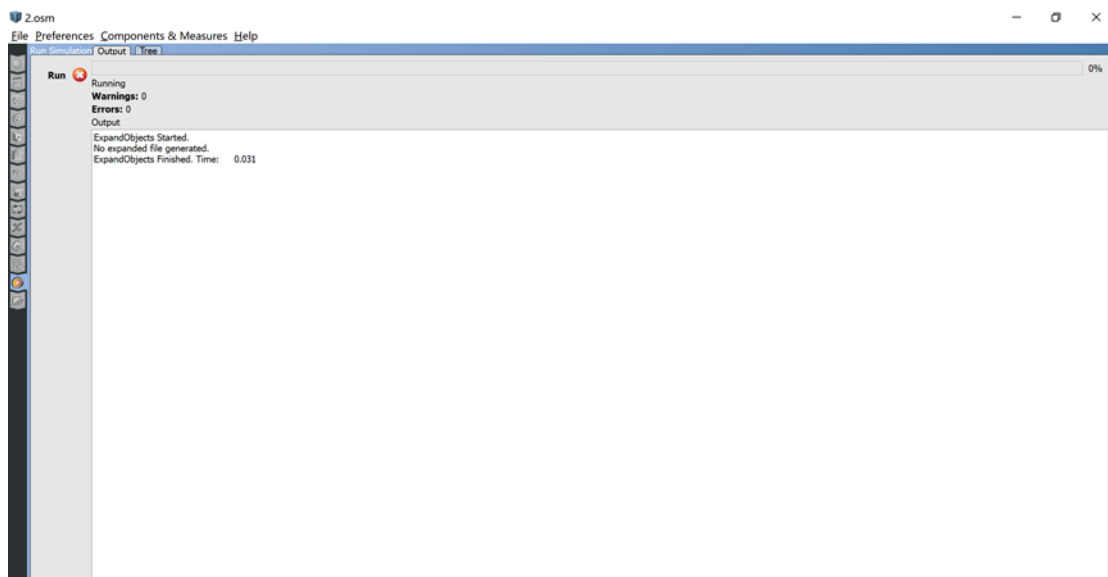
Name: Piacenza
Latitude: 44.92
Longitude: 9.73
Elevation: 134
Time Zone: 1
Download weather files at www.energyplus.gov

Design Steps: Import From EPW

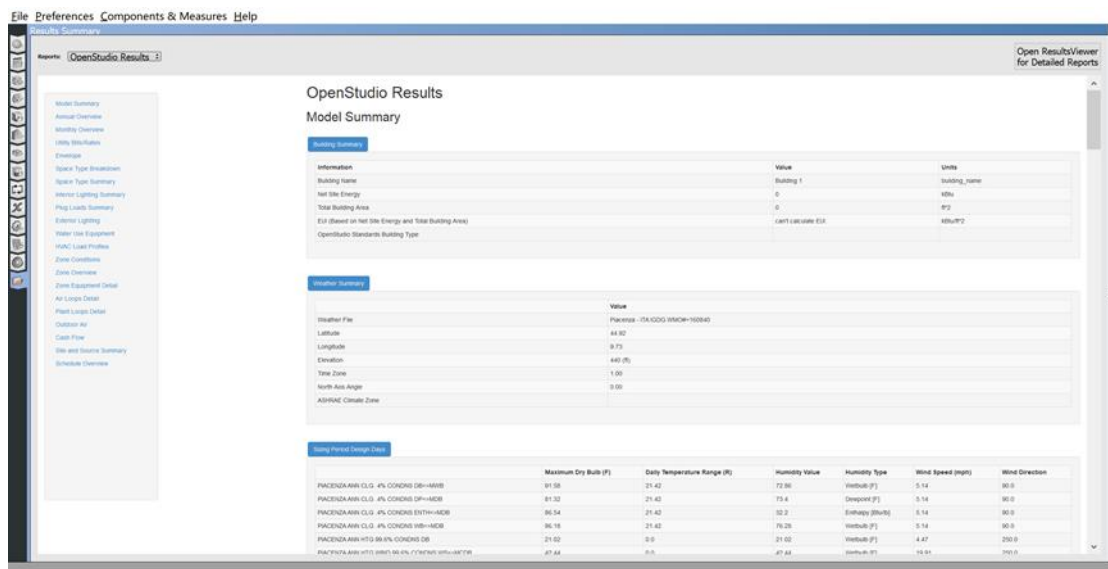
Design Days

Design Day Name	Day Of Month	Month	Day Type	Daylight Saving Time Indicator
Piacenza Ann Clg .4% Conds DB=>MWB	21	8	SummerDesignDay	
Piacenza Ann Clg .4% Conds DP=>MDB	21	8	SummerDesignDay	
Piacenza Ann Clg .4% Conds Enth=>MDB	21	8	SummerDesignDay	
Piacenza Ann Clg .4% Conds WB=>MDB	21	8	SummerDesignDay	
Piacenza Ann Htg 99.6% Conds DB	21	1	WinterDesignDay	
Piacenza Ann Htg 99.6% Conds WS=>MCDB	21	1	WinterDesignDay	
Piacenza Ann Hum. n 99.6% Conds DP=>MCDB	21	1	WinterDesignDay	

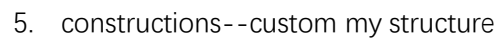
2. run simulation

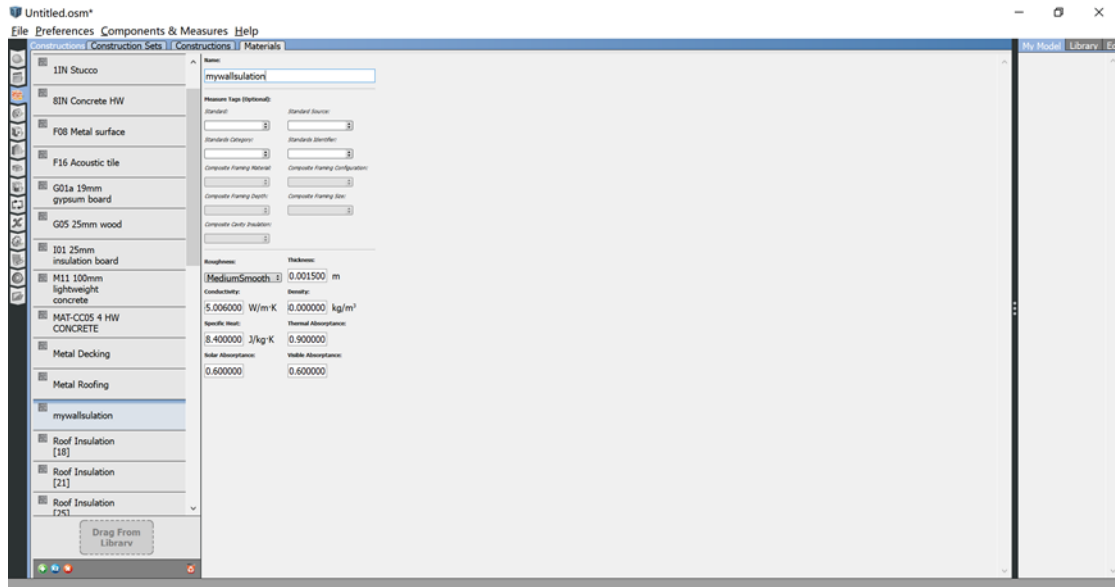


3. results analysis

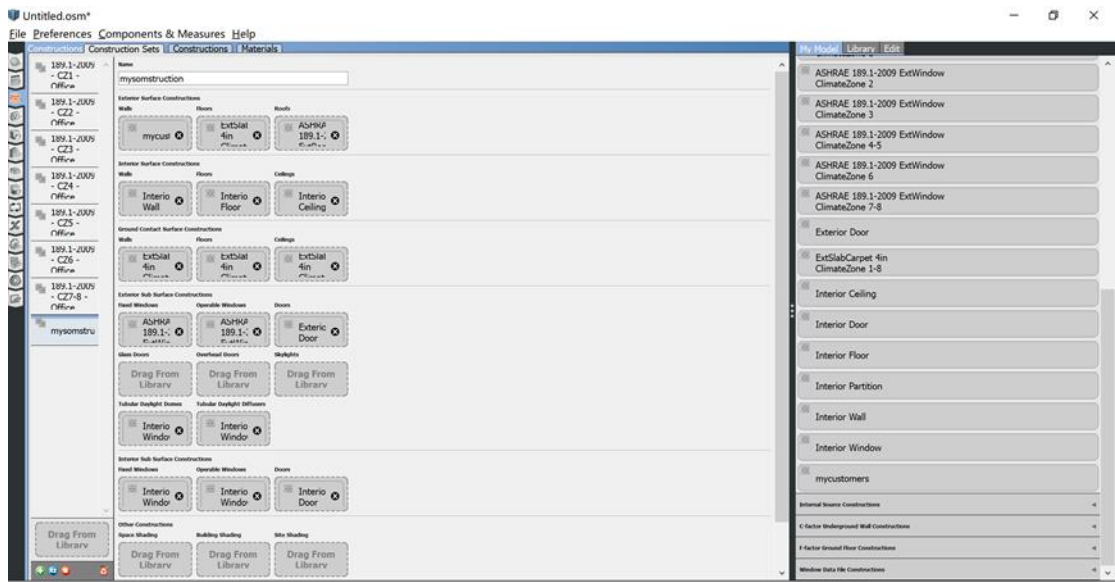


4. construction-construction set: customize the building and rename it "myconstruction"

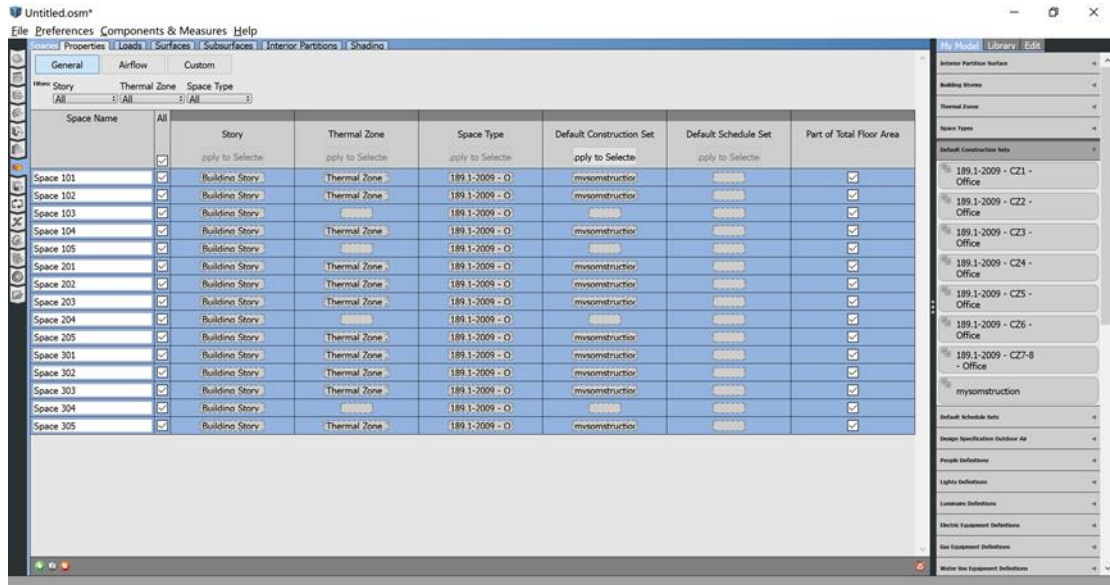




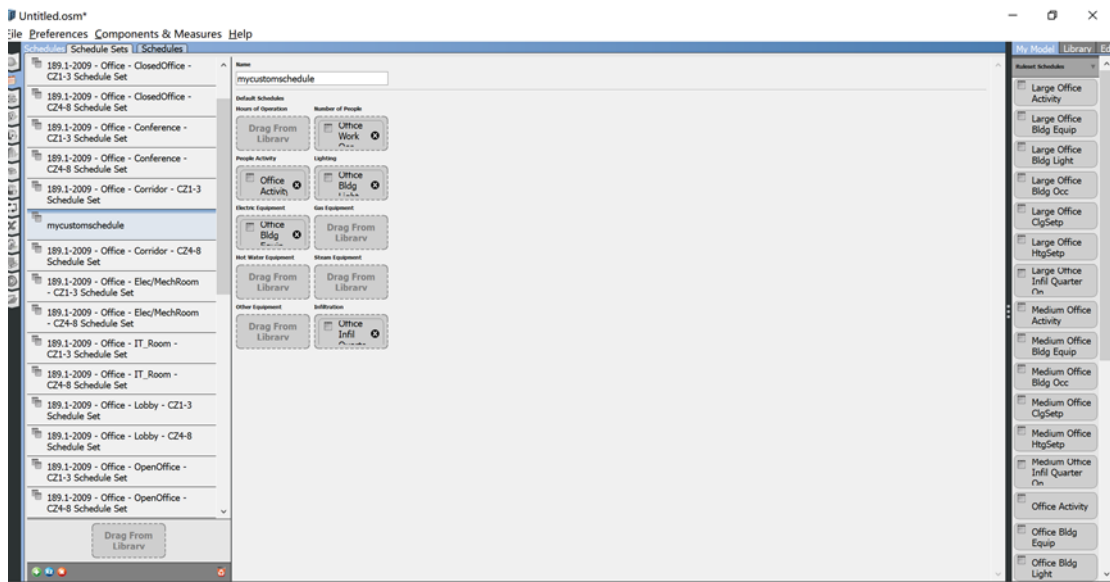
7. Insert my customer into my construction set

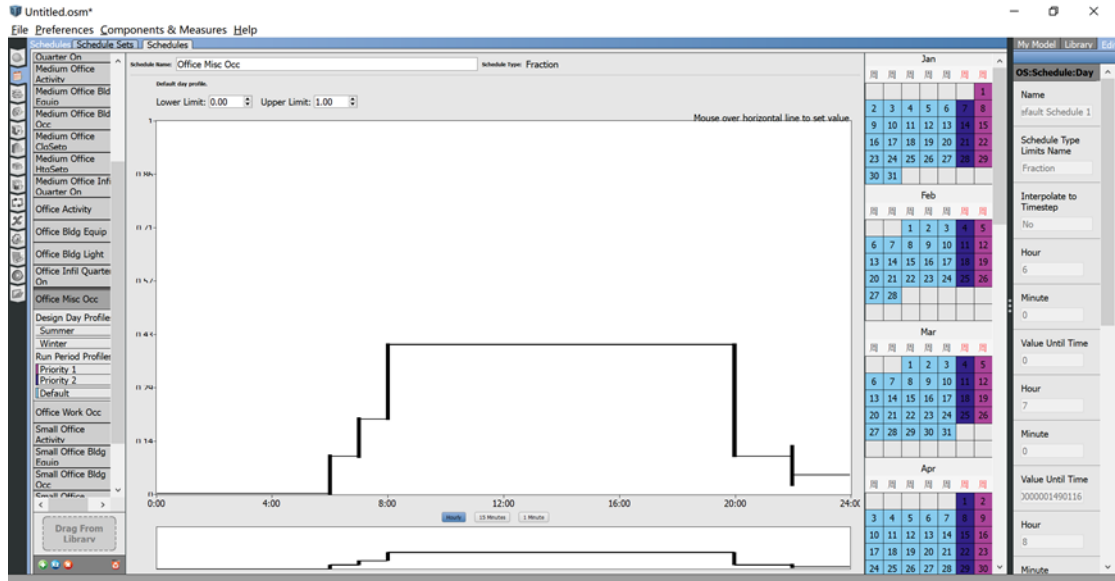


8. "space"window: insert "myconstructionset" and apply it into the whole building



9. go to schedule set and custom all the information about people, light, electric...





Untitled.osm*

File Preferences Components & Measures Help

mycustompeople

Name: mycustompeople

Number of People: 0.056511 people/m²

Space Floor Area per Person: m²/person

Fraction Radiant: 0.300000

Scalable Heat Fraction: 0.000038

Carbon Dioxide Generation Rate: 0.000038 U/s/W

Calculate

189.1-2009 - Office - Corridor - C24-8 People Definition

189.1-2009 - Office - IT_Room - C21-3 People Definition

189.1-2009 - Office - IT_Room - C24-8 People Definition

189.1-2009 - Office - Lobby - C21-3 People Definition

189.1-2009 - Office - Lobby - C24-8 People Definition

189.1-2009 - Office - OpenOffice - C24-8 People Definition

mycustompeople

189.1-2009 - Office - PrintRoom - C21-3 People Definition

189.1-2009 - Office - PrintRoom - C24-8 People Definition

189.1-2009 - Office - Restroom - C21-3 People Definition

189.1-2009 - Office - Restroom - C24-8 People Definition

189.1-2009 - Office - Vending - C21-3 People Definition

189.1-2009 - Office - Vending - C24-8 People Definition

189.1-2009 - Office - WholeBuilding - Lg Office - C21-3 People Definition

189.1-2009 - Office - WholeBuilding - Lg Office - C24-8 People Definition

Drag From Library

Untitled.osm*

File Preferences Components & Measures Help

C24-8 Electric Equipment Definition

mycustomelectric

Design Level: 5.812512 W/m²

Energy Per Square Foot Area: W/m²

Energy Per Person: W/person

Fraction Latent: 0.000000

Fraction Radiant: 0.000000

Fraction Loss: 0.000000

189.1-2009 - Office - Restroom - C21-3 Electric Equipment Definition

189.1-2009 - Office - Restroom - C24-8 Electric Equipment Definition

189.1-2009 - Office - Vending - C21-3 Electric Equipment Definition

189.1-2009 - Office - Vending - C24-8 Electric Equipment Definition

189.1-2009 - Office - WholeBuilding - Lg Office - C21-3 Electric Equipment Definition

189.1-2009 - Office - WholeBuilding - Lg Office - C24-8 Electric Equipment Definition

189.1-2009 - Office - WholeBuilding - Md Office - C21-3 Electric Equipment Definition

189.1-2009 - Office - WholeBuilding - Md Office - C24-8 Electric Equipment Definition

189.1-2009 - Office - WholeBuilding - Sm Office - C21-3 Electric Equipment Definition

189.1-2009 - Office - WholeBuilding - Sm Office - C24-8 Electric Equipment Definition

mycustomelectric

Gas Equipment Definitions

Miscellaneous Equipment Definitions

Other Equipment Definitions

Drag From Library

