

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

Solar radiation

Solar radiation is the energy that the sun travels outward. The sun radiates electromagnetic waves mainly to the earth and acts on the earth. It is the main source of light and heat on the earth. The energy of solar radiation is closest to that of blackbody radiation, but it is mostly weakened after it acts on Earth.

The Solar Radiation Density

The Solar Radiation Density is calculated by years. We can measure it per unit area. The average of these are 1367W/m^2

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

Dispersion and Absorption

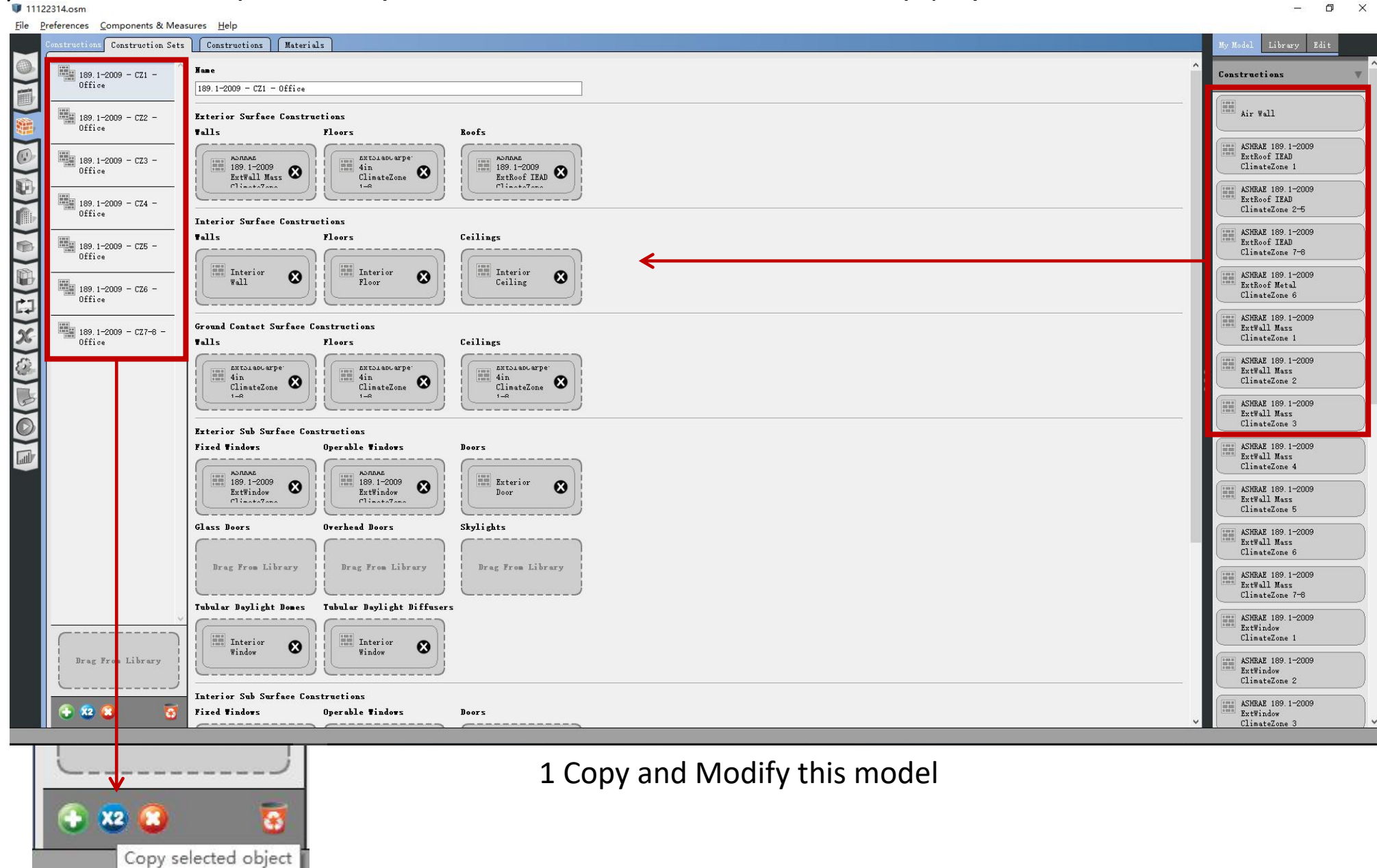
Similar to thermal radiation, solar radiation has absorption and reflection phenomena. Before reaching the earth's surface, it will encounter various kinds of reflections in the space. When entering the earth, it will absorb some energy in the atmosphere and the atmosphere. When passed to the ground, only some of the energy is left. Absorption are related to oxygen, carbon dioxide and so on. And dispersion can be also related to the wave of them.

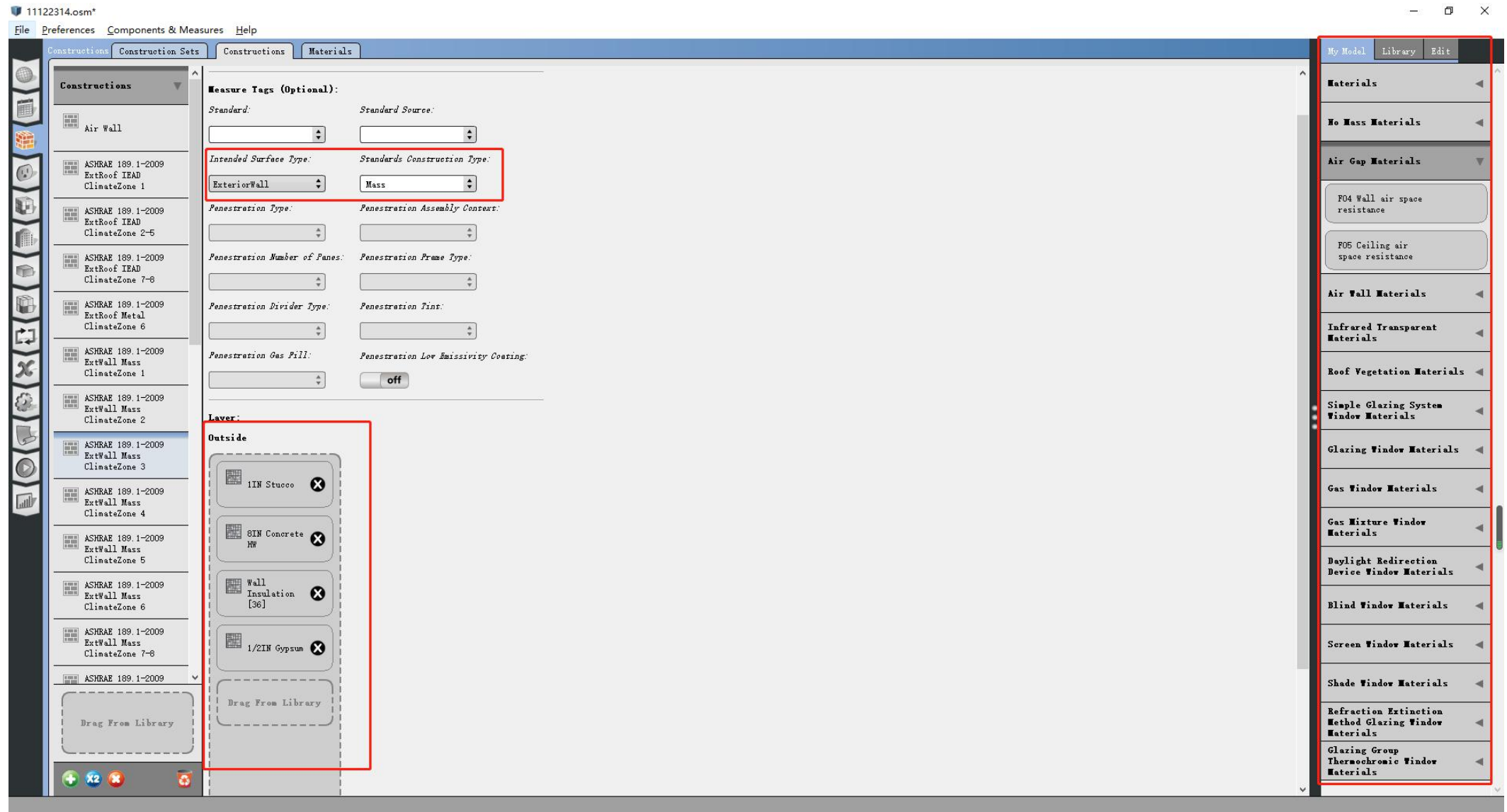
Task 1: Provide a summary of the main concepts that went through about solar radiation (formulas are not needed)

There are 4 elements that may affect solar radiation:

1. Latitude position - It is related to the solar elevation angle. The larger the solar elevation angle, the larger the radiation.
2. Weather conditions - Clouds have a certain reflection and absorption effect on solar radiation, and the more clouds, the less radiation.
- 3, altitude - the higher the altitude, the greater the radiation
- 4, the length of sunshine - the longer the sunshine time, the greater the solar radiation

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!)





2 Change different type of construction

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File Preferences Components & Measures Help

Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading

General Airflow Custom

Filters: Story Thermal Zone Space Type

All All All

Space Name	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	Building Story 1	Thermal Zone 1	189.1-2009 - Office - O1	189.1-2009 - CZ1 - Offi.		<input checked="" type="checkbox"/>
Space 102	Building Story 1	Thermal Zone 1	189.1-2009 - Office - O1	189.1-2009 - CZ1 - Offi.		<input checked="" type="checkbox"/>
Space 103	Building Story 19		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 104	Building Story 1	Thermal Zone 1	189.1-2009 - Office - O1	189.1-2009 - CZ1 - Offi.		<input checked="" type="checkbox"/>
Space 105	Building Story 1	Thermal Zone 1				
Space 201	Building Story 20					
Space 202	Building Story 20					
Space 203	Building Story 20					
Space 204	Building Story 20					
Space 205	Building Story 20					
Space 301	Building Story 21					
Space 302	Building Story 21					
Space 303	Building Story 21					
Space 304	Building Story 21					
Space 305	Building Story 21					

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File Preferences Components & Measures Help

Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading

General Airflow Custom

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Space Name	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set	Part of Total Floor Area
Space 101	Building Story 1	Thermal Zone 1	189.1-2009 - Office - O1	189.1-2009 - CZ1 - Offi.		<input checked="" type="checkbox"/>
Space 102	Building Story 1	Thermal Zone 1	189.1-2009 - Office - O1	189.1-2009 - CZ1 - Offi.		<input checked="" type="checkbox"/>
Space 103	Building Story 19		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 104	Building Story 1	Thermal Zone 1	189.1-2009 - Office - O1	189.1-2009 - CZ1 - Offi.		<input checked="" type="checkbox"/>
Space 105	Building Story 1	Thermal Zone 1	189.1-2009 - Office - O1	189.1-2009 - CZ1 - Offi.		<input checked="" type="checkbox"/>
Space 201	Building Story 20		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 202	Building Story 20		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 203	Building Story 20		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 204	Building Story 20		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 205	Building Story 20		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 301	Building Story 21		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 302	Building Story 21		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 303	Building Story 21		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 304	Building Story 21		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>
Space 305	Building Story 21		189.1-2009 - Office - O1			<input checked="" type="checkbox"/>

My Model Library Edit

Interior Partition Surface

Building Stories

Thermal Zones

Space Types

Default Construction Sets

Default Schedule Sets

Design Specification Outdoor Air

My Model Library Edit

Interior Partition Surface

Building Stories

Thermal Zones

Space Types

Default Construction Sets

Default Schedule Sets

Design Specification Outdoor Air

People Definitions

Lights Definitions

Luminaire Definitions

Electric Equipment Definitions

Gas Equipment Definitions

Water Use Equipment Definitions

Heat Pump Water Heater

Hot Water Equipment Definitions

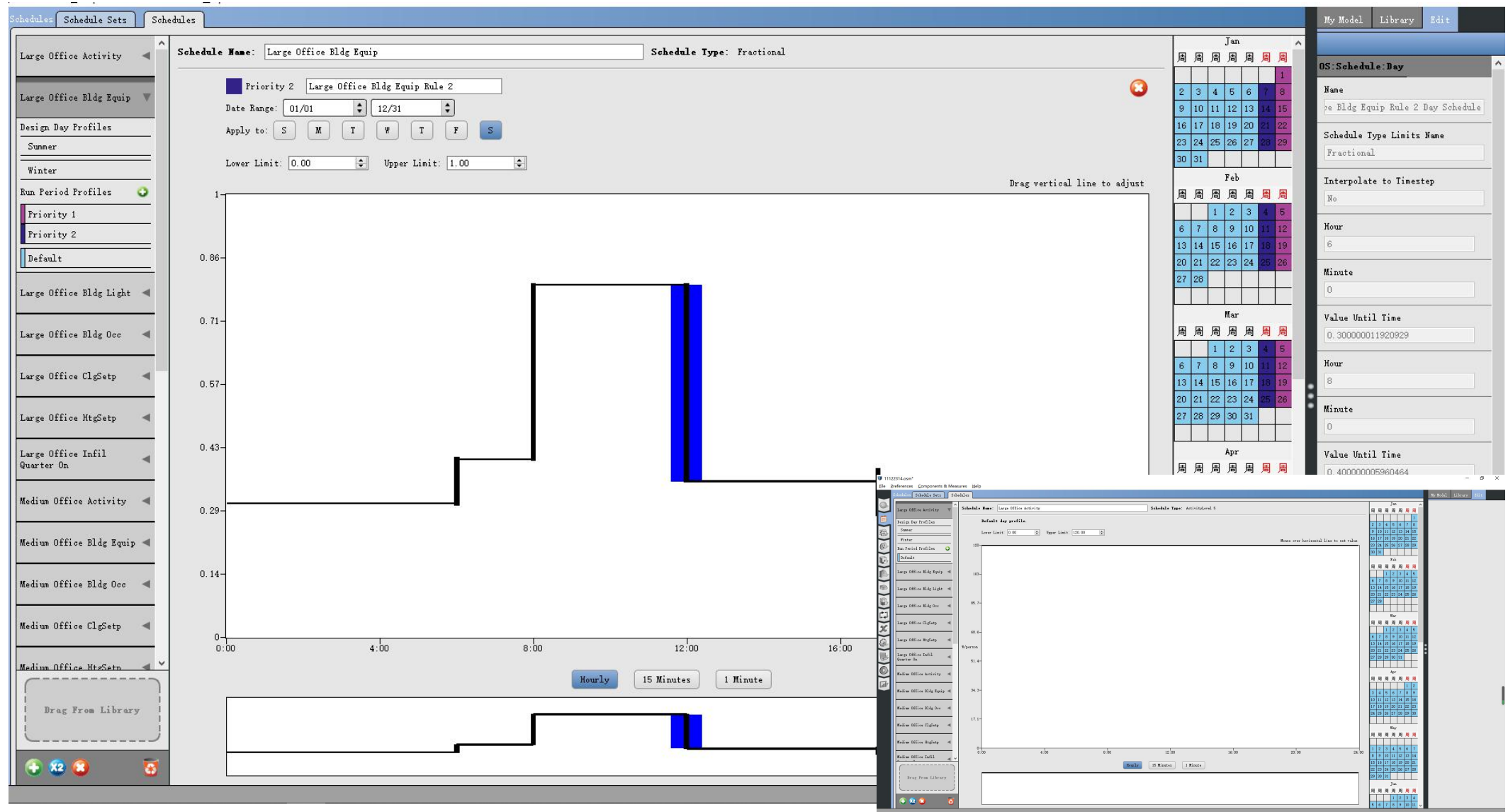
Steam Equipment Definitions

Other Equipment Definitions

Internal Mass Definitions

Default Schedules

3 Spaces to change these 3 model, use different kind of environment to process our evaluation.
And also there are another way to change schedule here.



4 Another way to change schedule. Change the line to different time.

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File
Preferences
Components & Measures
Help

Drop Space Type

General

Loads

Measure Tags

Custom

Filter: Load Type

Show all loads

Space Type Name	All	Rendering Color	Default Construction Set	Default Schedule Set	Design Specification Outdoor Air	Space Infiltration Design Flow Rates	Space Infiltration Effective Leakage Areas
	<input type="checkbox"/>		<div>Apply to Selected</div>	<div>Apply to Selected</div>	<div>Apply to Selected</div>	<div>Apply to Selected</div>	<div>Apply to Selected</div>
1-2009 - Office - BreakRoom - CZ1-3	<input type="checkbox"/>	<div></div>	<div></div>	189.1-2009 - Office - B	189.1-2009 - Office - B	ce - BreakRoom - CZ1-3 Infiltration	<div></div>
1-2009 - Office - BreakRoom - CZ4-8	<input type="checkbox"/>	<div></div>	<div></div>	189.1-2009 - Office - B	189.1-2009 - Office - B	ce - BreakRoom - CZ4-8 Infiltration	<div></div>
009 - Office - ClosedOffice - CZ1-3	<input type="checkbox"/>	<div></div>	<div></div>	189.1-2009 - Office - C	189.1-2009 - Office - C	- ClosedOffice - CZ1-3 Infiltration	<div></div>
009 - Office - ClosedOffice - CZ4-8	<input type="checkbox"/>	<div></div>	<div></div>	189.1-2009 - Office - C	189.1-2009 - Office - C	- ClosedOffice - CZ4-8 Infiltration	<div></div>
-2009 - Office - Conference - CZ1-3	<input type="checkbox"/>	<div></div>	<div></div>	189.1-2009 - Office - C	189.1-2009 - Office - C	e - Conference - CZ1-3 Infiltration	<div></div>
-2009 - Office - Conference - CZ4-8	<input type="checkbox"/>	<div></div>	<div></div>	189.1-2009 - Office - C	189.1-2009 - Office - C	e - Conference - CZ4-8 Infiltration	<div></div>
1-2009 - Office - Corridor - CZ1-3	<input type="checkbox"/>	<div></div>	<div></div>	189.1-2009 - Office - C	189.1-2009 - Office - C	ice - Corridor - CZ1-3 Infiltration	<div></div>
1-2009 - Office - Corridor - CZ4-8	<input type="checkbox"/>	<div></div>	<div></div>	189.1-2009 - Office - C	189.1-2009 - Office - C	ice - Corridor - CZ4-8 Infiltration	<div></div>
09 - Office - Elec/MechRoom - CZ1-3	<input type="checkbox"/>	<div></div>	<div></div>	189.1-2009 - Office - E	189.1-2009 - Office - E	Elec/MechRoom - CZ1-3 Infiltration	<div></div>
						Elec/MechRoom - CZ4-8 Infiltration	

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5 Space type to change different environment