

The photometric files (IES files) for the LightLouver Daylighting System describe the amount and distribution of daylight they provide under various orientations, glazing and sky conditions. These IES files are valid for latitudes +/- 2.5° of the stated latitude and are provided for due east, south and west facade orientations. They are all created for a longitude aligned with a prime meridian (0, 15, 30, 45...) such that noon sees the solar disc with an azimuth angle close to 0deg from south. Other locations with longitudes further from a prime meridian will see the same amount of light and same solar paths but the exact azimuth angles of the sun at specific hours will vary to the right or left.

The IES file distribution is independent of the size of the window and can be adjusted to match the size of window being simulated. You will need to enter the size of the window into the ies file before applying to a lighting model. To do this open the file for the day being simulated, the files follow this naming convention:

- "5x2\_40.0\_0.0\_3\_22\_11.00\_1.ies" = basewindowsize\_latitude\_orientation\_month\_day\_time\_skycondition.ies

There are IES file sets for every 5deg latitude band from 5° to 60°. The orientation will be a number between -180 and 180 and describes to the orientation of the LightLouver window relative to due south. South equals zero with negative angles going to the east and positive angles going to the west. The time is solar time in military decimal form so 15.00 would equal 3:00PM during the winter, or 4:00PM during daylight savings. The orientation listed is fairly valid for facades that are within +/- 7°. The sky condition indicates the CIE type where 1 is a clear sunny sky and 3 is a overcast sky.

Open the file of interest in any text editor and you will have to edit the line after "TILT=" . The header should look something like this when first opened:

```
IESNA:LM-63-2002
[TEST]Generated by TracePro Release: 7 0 2
[MORE]A:\LightLouver\TracePro\LightLouver_10sf_unit.oml
TILT=NONE
1 67640.983322 1.000000 37 73 1 1 1.000000 0.000000 0.000000
1 1 1
```

- You replace the 3rd number (1.000000 in the example abover) with the result of  $(\text{area}/10) * (\text{Tvis}/.76)$ . Area is in square feet, Tvis is the visible transmittance of the glass in decimal form.
- You replace the 8th number with **width** of the window in feet.
- You replace the 9th number with the **height** of the window in feet.

So, for example, the resulting header for a 2'3" high x 6'6" wide window with 70% glass transmittance should look like:

```
IESNA:LM-63-2002
[TEST]Generated by TracePro Release: 7 0 2
[MORE]A:\LightLouver\TracePro\LightLouver_10sf_unit.oml
TILT=NONE
1 67640.983322 1.347 37 73 1 1 6.5 2.25 0.000000
1 1 1
```

- Note the 3rd number =  $((2.25*6.5)/10) * (70/76) = 1.347$

The LightLouver IES files define the 0° vertical angle as perpendicular to the window, pointing into the room (IES files for electric lighting typically define this as down or nadir) and the 0° horizontal angle as up or zenith (this is typically the long axis).

There are 36 files for each orientation. 35 files that represent every daylight hour on the winter solstice, equinox, and summer solstice. The last file represents an IES cloudy sky condition for an equinox sky at noon with a global illuminance of about 1300fc. This file can be used to represent all cloudy conditions, the results should just be scaled appropriately with this multiplier: global illuminance / 1300.

Please let us know if you have any questions or problems using these files for simulation. An automated website tool is in the works, so please be patient and stay tuned.