Ayotunde Ogunmoyero

Environmental Systems II

Philadelphia Weather Report

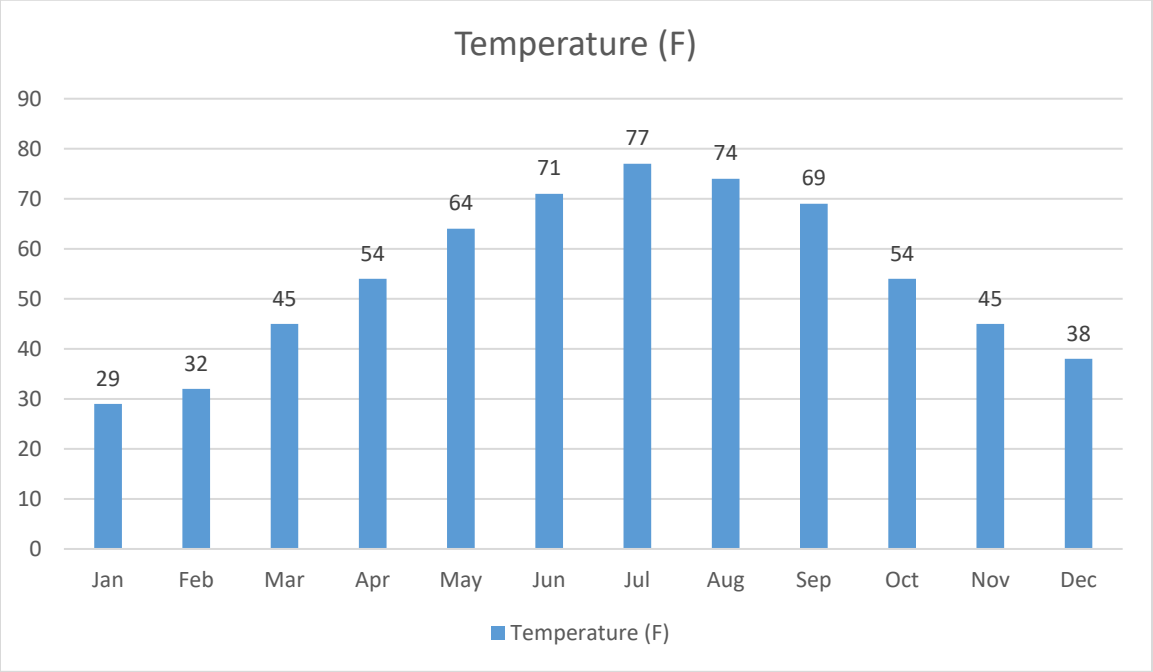
12/16/17

Station Location: Philadelphia International Airport, PA

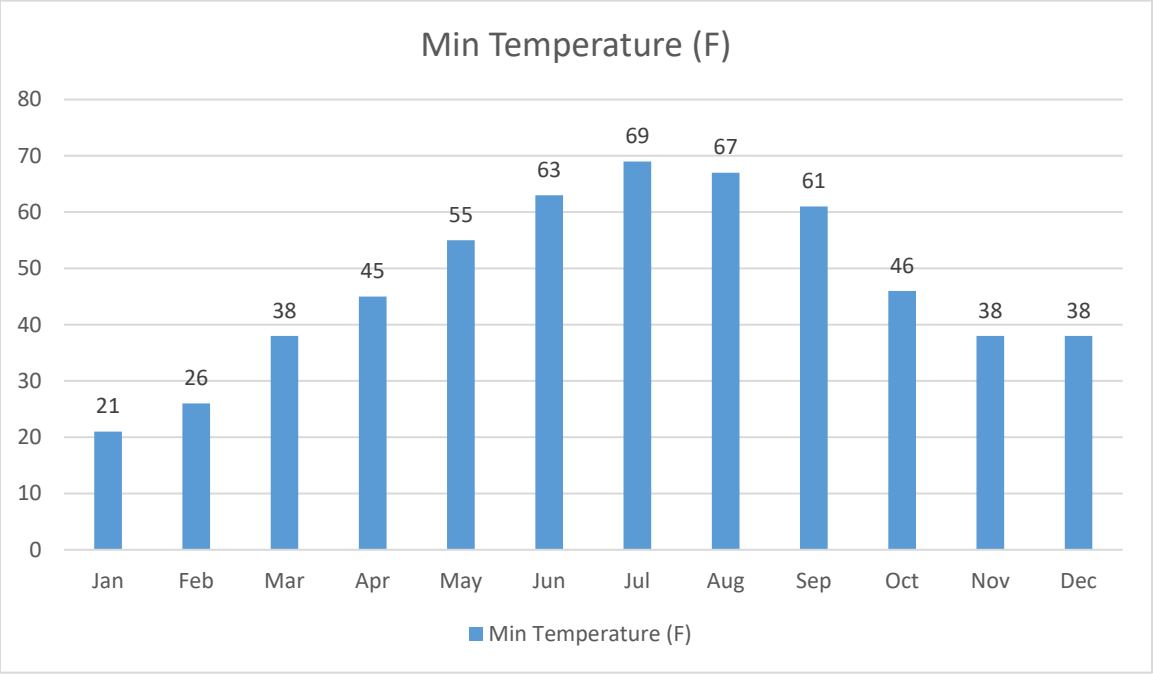
Elevation: 6 ft

All graphs are made by myself using data got from the Philadelphia TMY3 epw file.

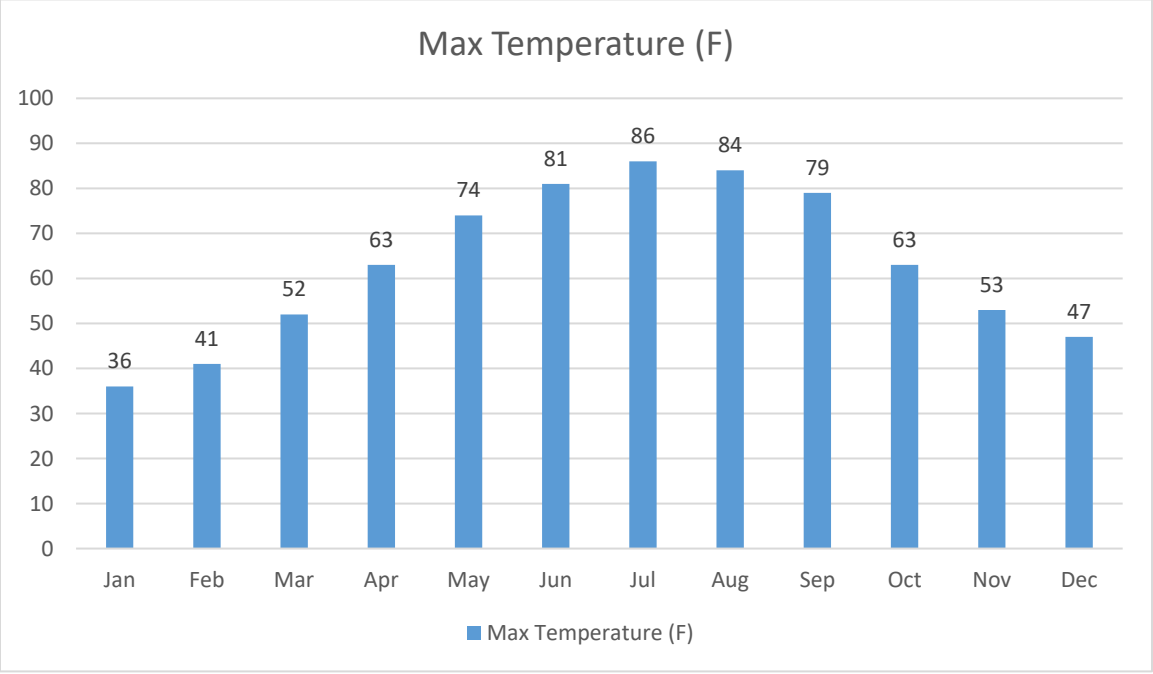
Temperature:



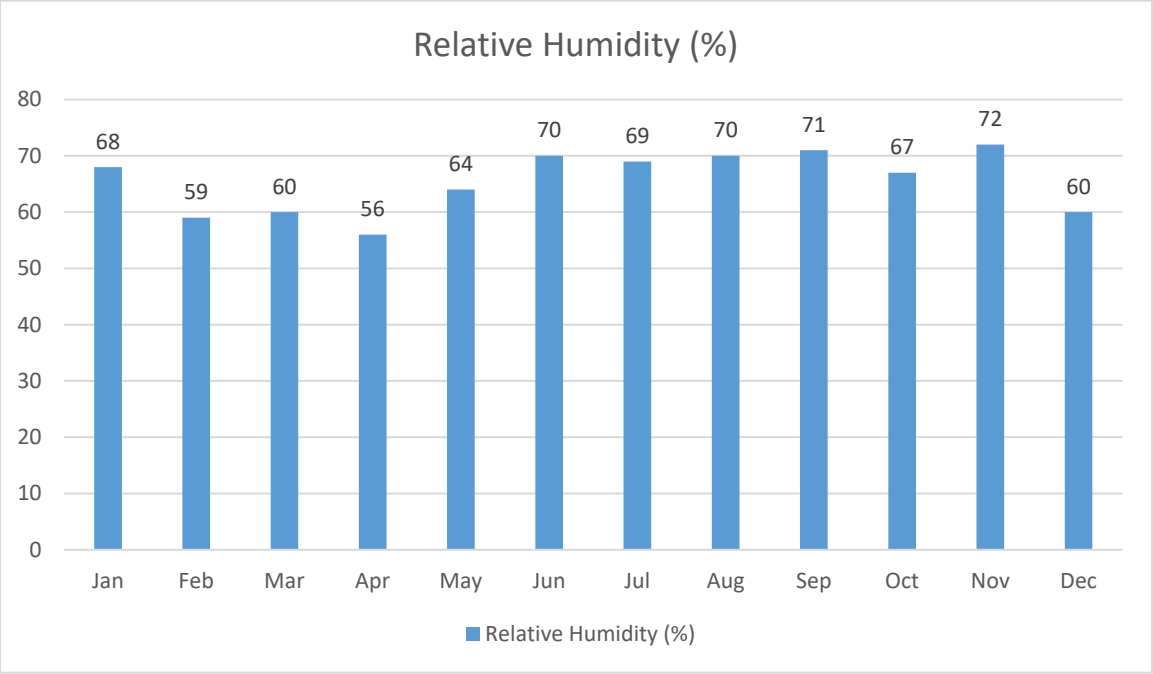
Min Temperature:



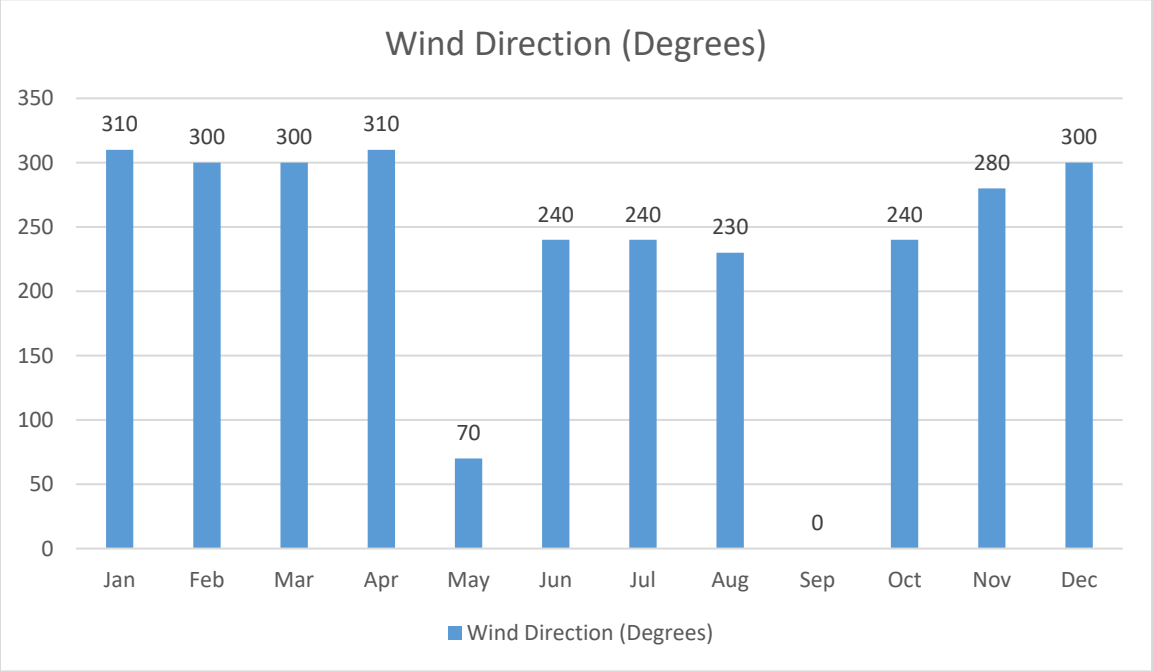
Max Temperature:



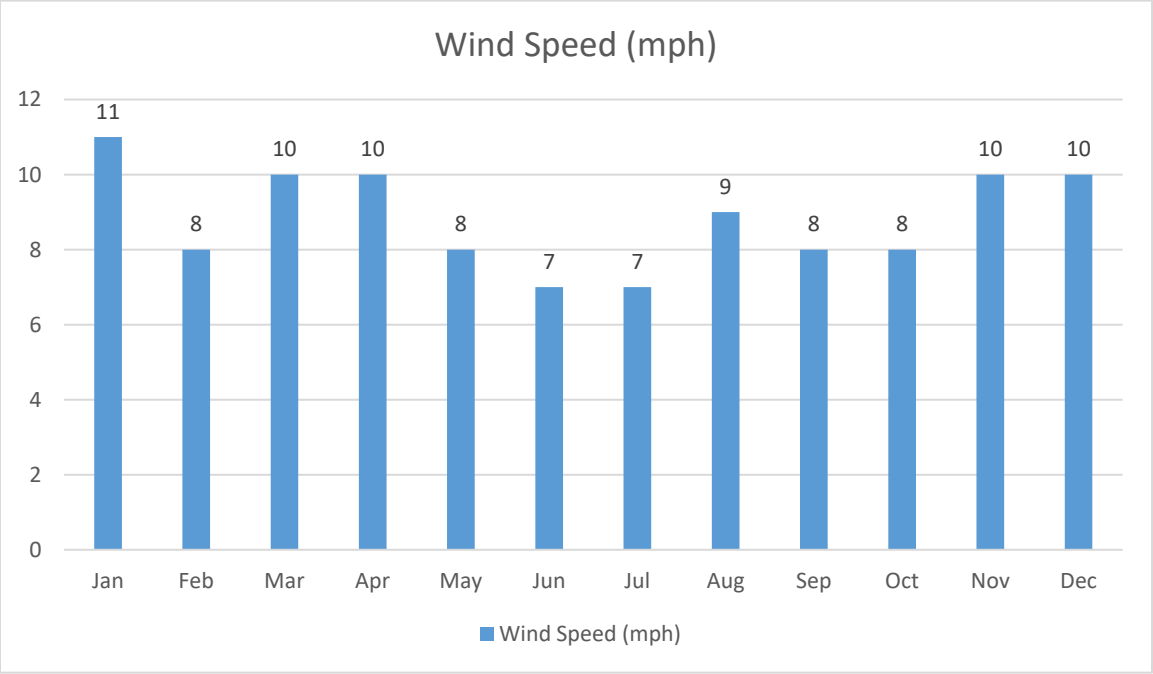
Relative Humidity:



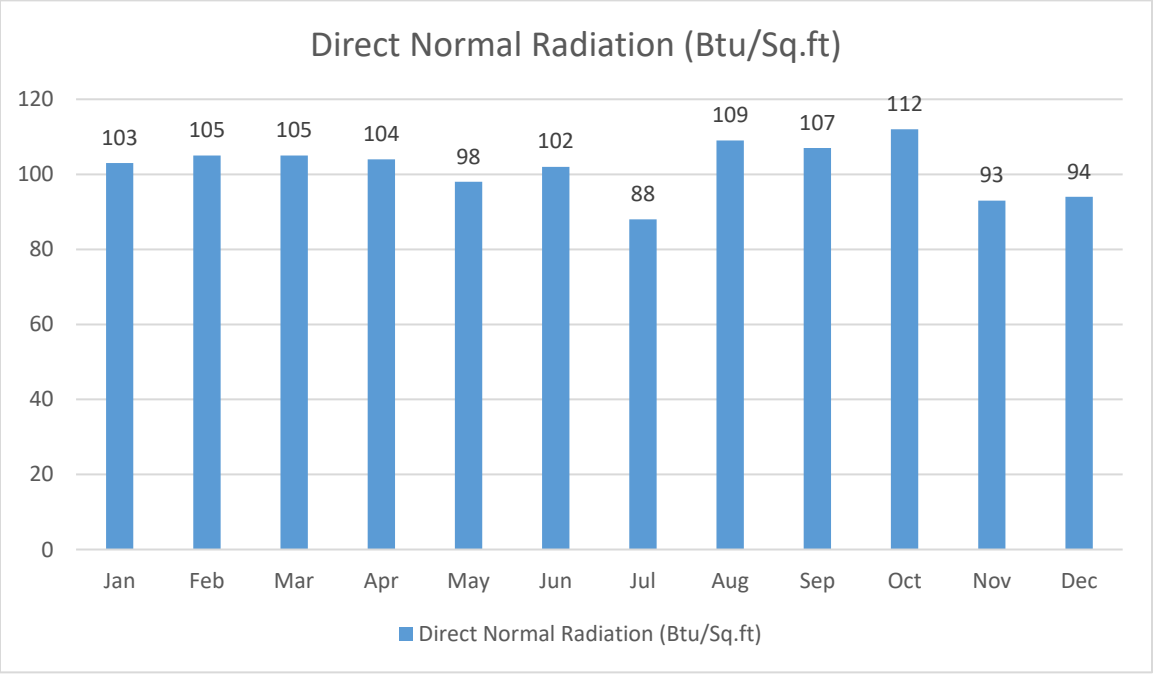
Wind Direction:



Wind Speed:



Direct Normal Radiation:

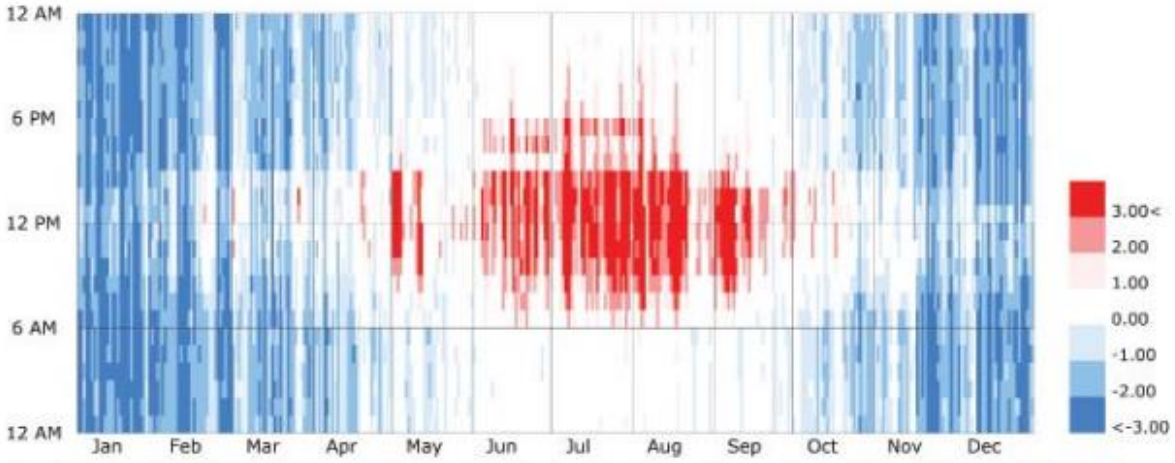


Indoor Passive Design Strategies:

Three important passive design strategies to consider in Philadelphia are:

1. Shading. Good use of window shading that allows the winter sun while blocking out the summer sun is very important. The temperature graphs above show that the temperature in the summer can get as high at 77F and the direct radiation can get as high as 112 Btu/Sq.ft so shading from the sun/radiation is very important in cooling the interior.
2. Cross ventilation. Orient the building's opening to pick up summer winds as well as have an exhaust to allow the old/hot air to pass through. The wind direction graph show that the strongest winds come from the west sides so opening up your windows and doors towards that direction would be very beneficial to cooling your building in the hot months.
3. Thermal Mass. This key strategies entail building up mass intended to retain inside heat in the winter and resist outside heat in the summer. The graphs above show that Philadelphia has a very wide range of elements from very cold to very hot and good thermal mass can keep the inside more stable. Warmer in the cold months and cooler when it is hot outside.

Outdoor Thermal Comfort:



Outdoor Comfort (Hourly)
Philadelphia Intl Airport // PA, USA

Comfortable:	39.38%
Short Pd Comfort:	19.29%
Heat Stress:	8.97%
Cold Stress:	32.35%

3	Extreme Heat
2	Hot
1	Warm
0	Comfort
-1	Cool
-2	Cold
-3	Extreme Cold