

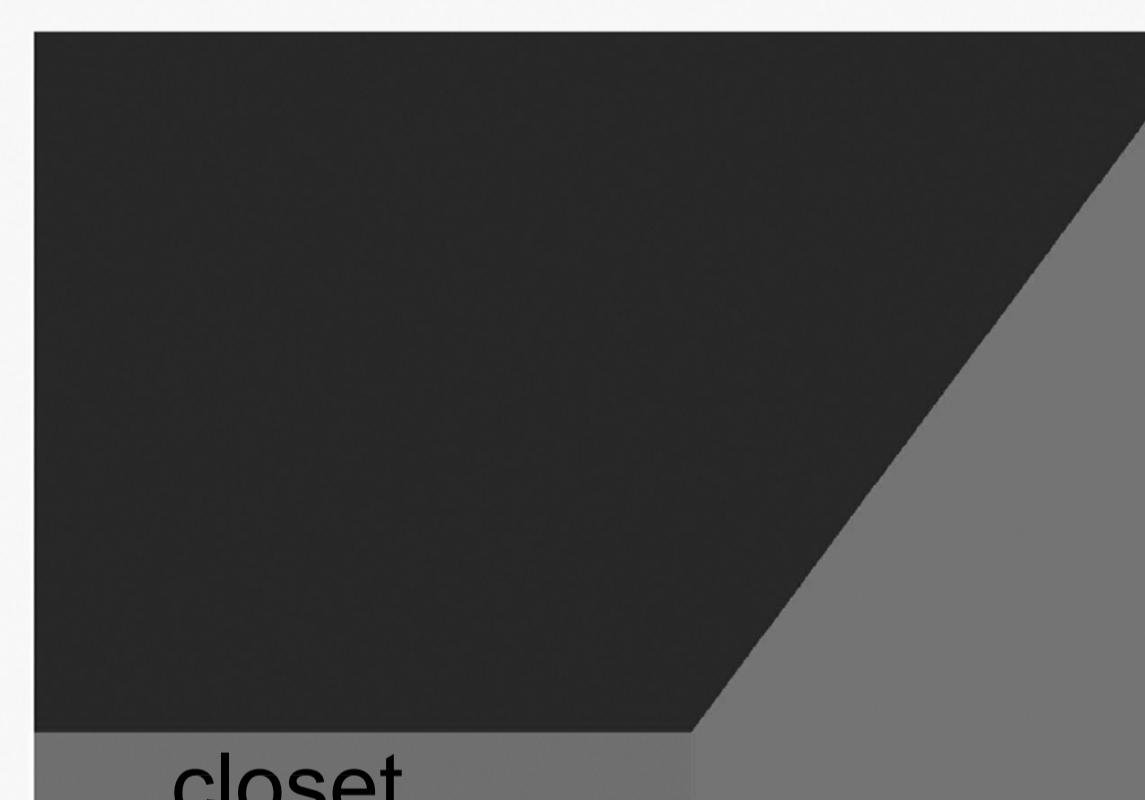
adjacent building



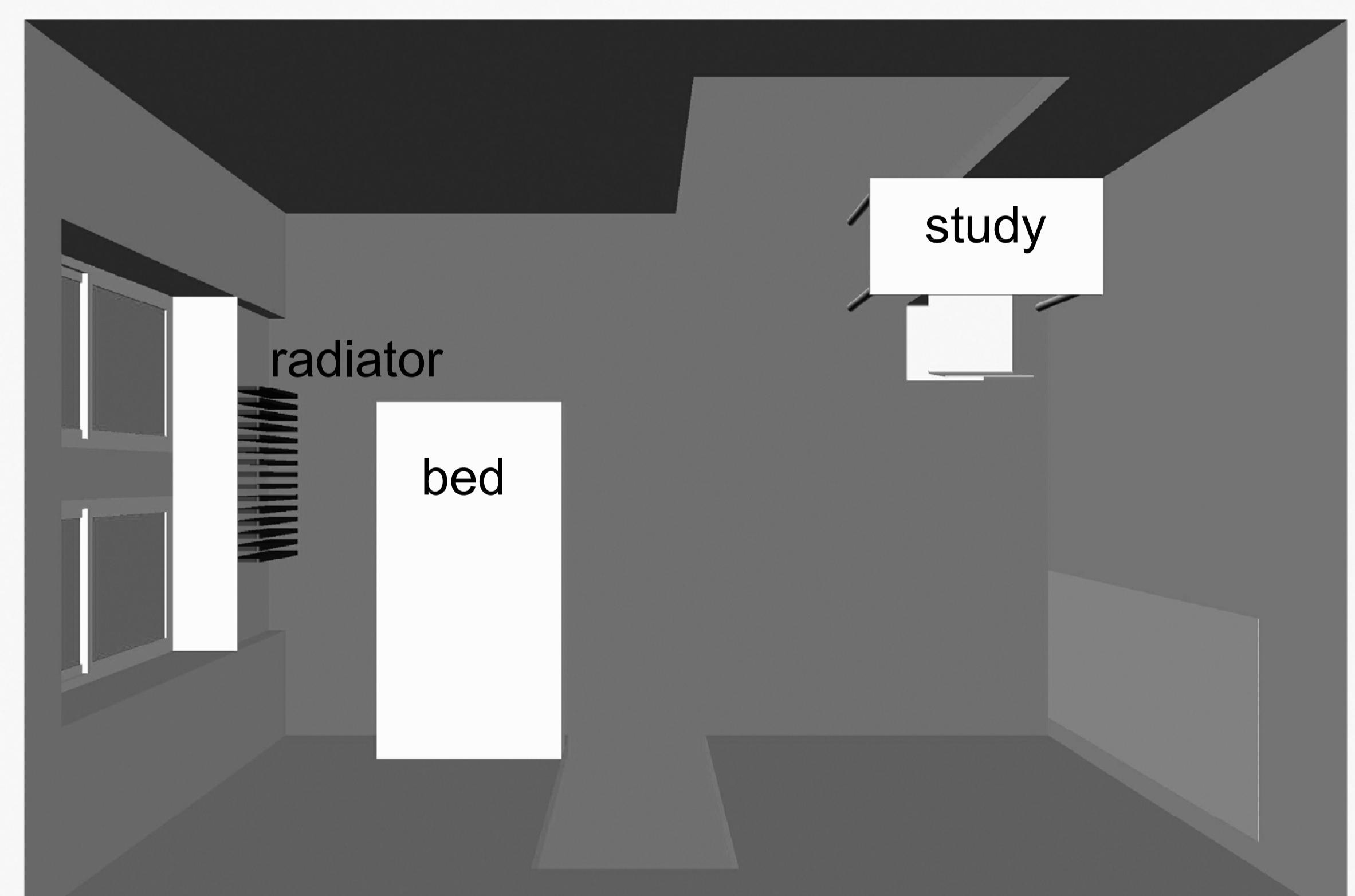
neighboring apartment



bathroom



closet



study

radiator

bed

hallway



kitchen

neighboring apartment

LOCATION

- Philadelphia, PA, USA

APARTMENT FEATURES

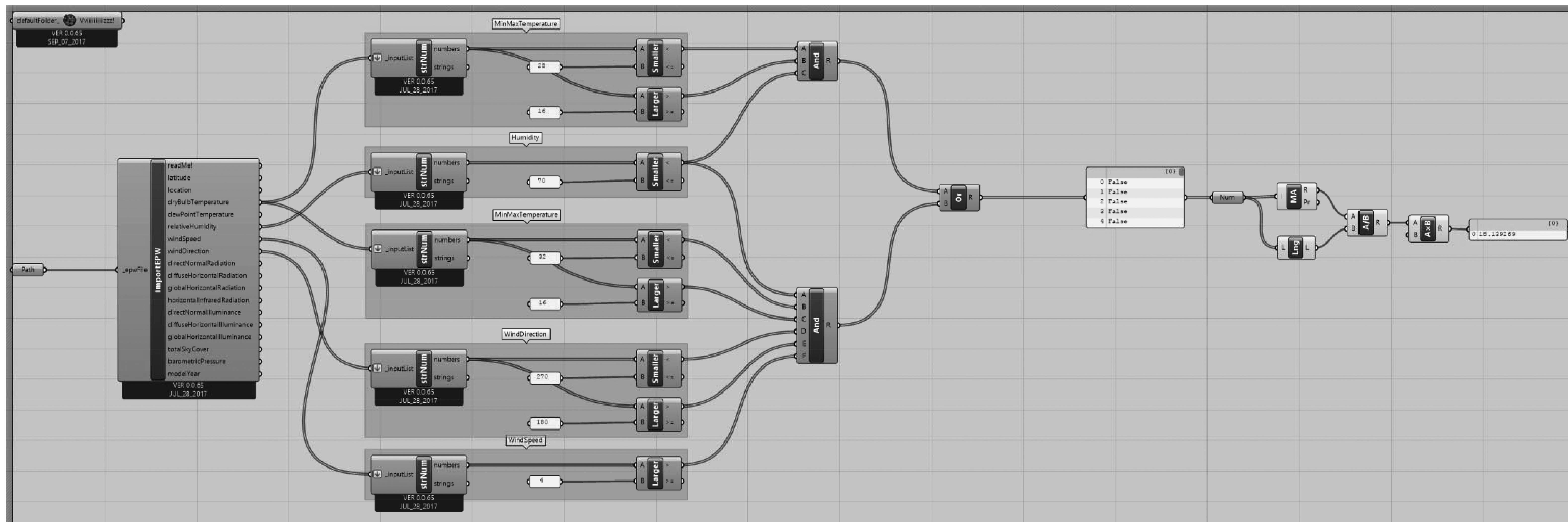
- Four storey building
- 3rd floor studio apartment
- West facing windows
- Four storey adjacent building to the North West
- Steam radiator for heating
- No air-conditioner

PERSONAL COMFORT PARAMETERS (based on one year in the apartment)

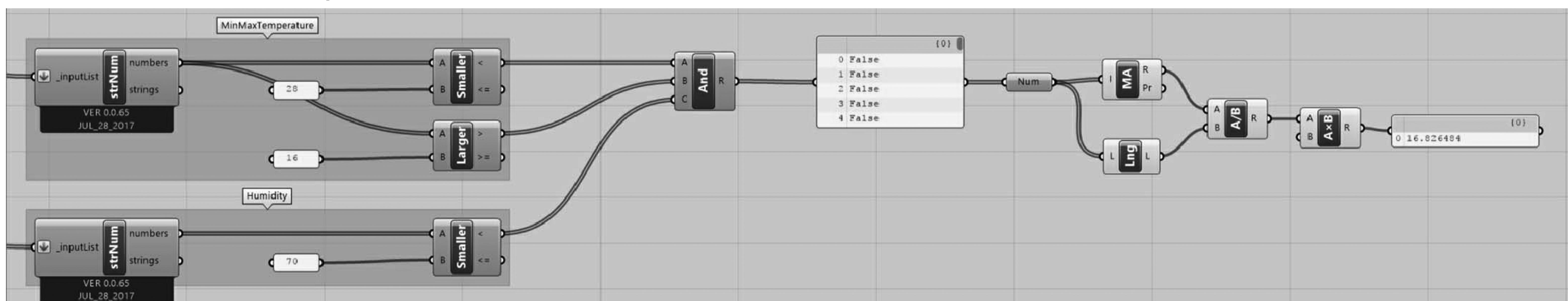
- Max. temperature with open window and wind @ 4m/s = 32°C
 - Max. temperature with open window = 28°C
 - Max. temperature with closed window = 24°C
 - Min. temperature with closed windows = 19°C
 - Min. temperature with closed windows and sweater = 16°C
 - Max. humidity = 70%
 - Wind direction = 180° - 270° (due to orientation and adjacent building)

COMFORTABLE HOURS IN A TYPICAL YEAR

- With S to SW wind when hot and closed windows when cold = 18%



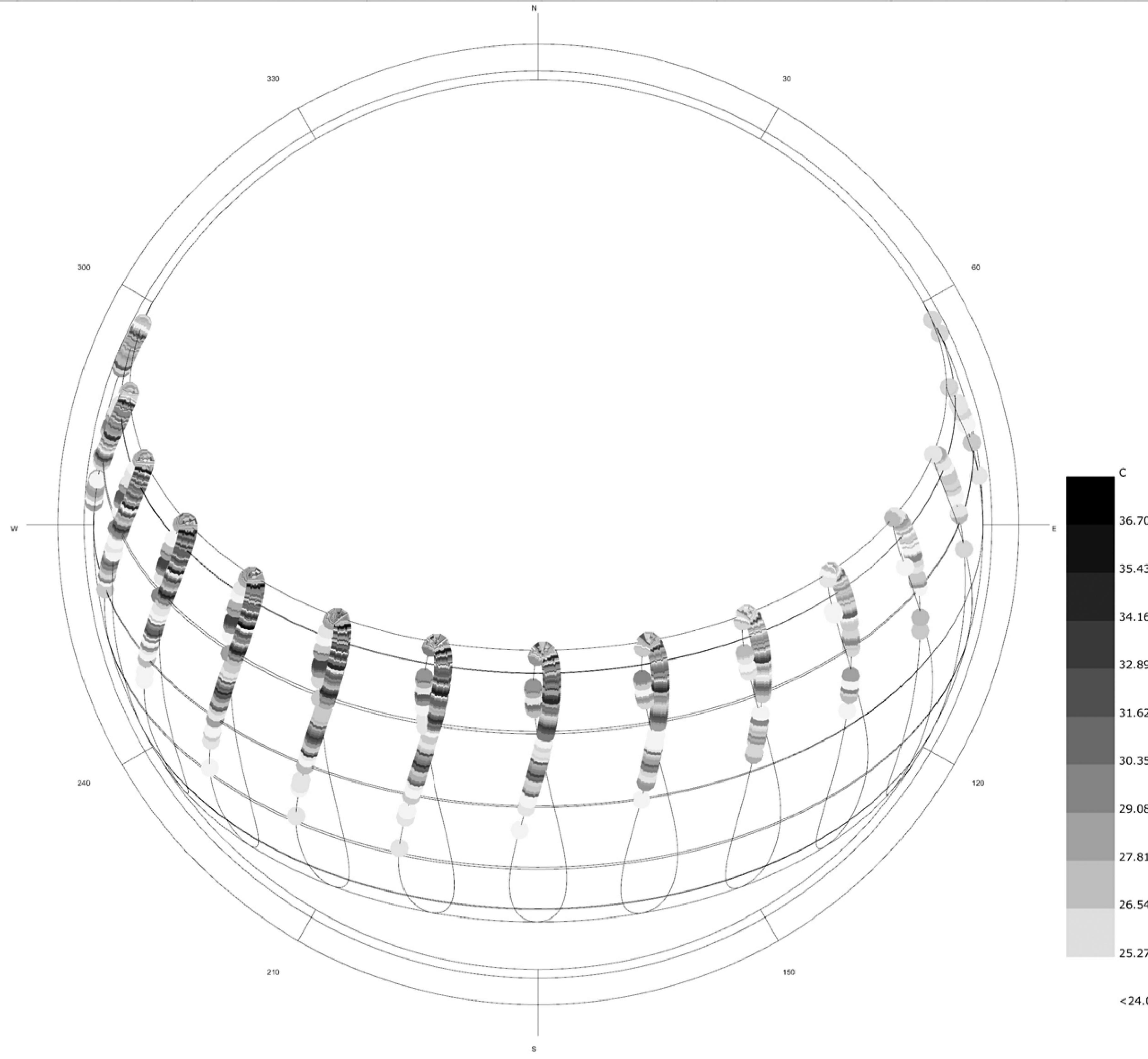
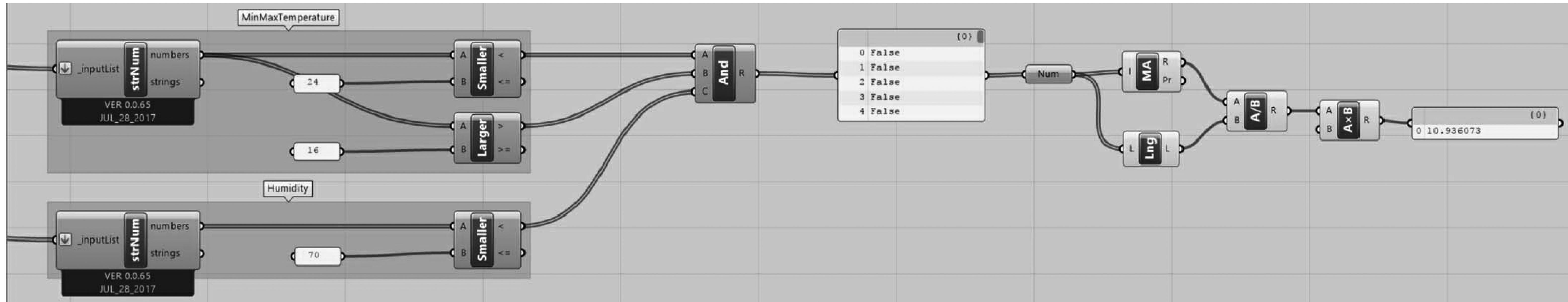
- Without wind, with open windows when hot and closed windows when cold = 17%



\$
Wind-Rose
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Dry Bulb Temperature (C)
Calm for 0.00% of the time = 0 hours.

CONCLUSION: The hours of the year where wind can be utilized for cooling (between 24-32°C & RH < 70) is negligible, though wind direction is favorable under these conditions.

- With closed windows = 11%

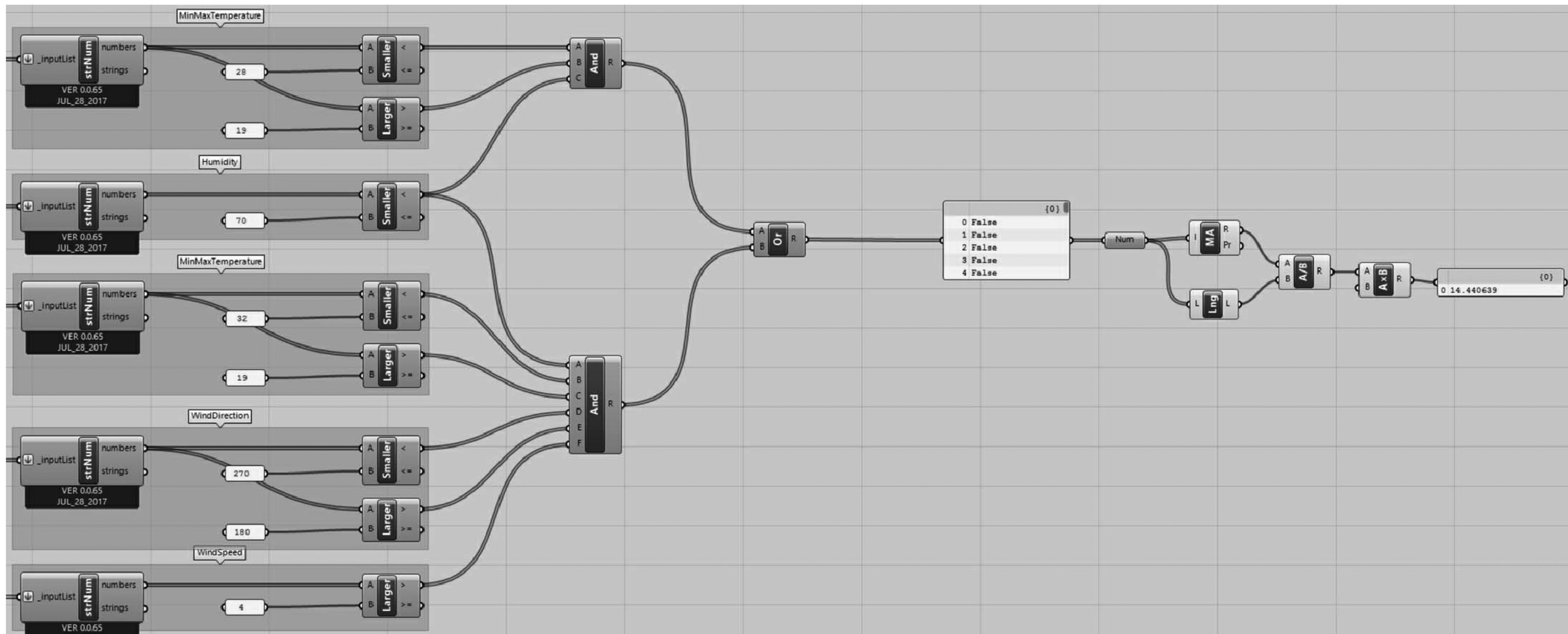


Sun-Path Diagram - Latitude: 39.87
Hourly Data: Dry Bulb Temperature (C)
Philadelphia International Ap_PA_USA

...
Conditional Selection Applied:
Dry Bulb Temperature > 24
1059.0 hours of total 4398.0 sun up hours(24.08%).

CONCLUSION: Opening windows above 24°C significantly increases the number of comfortable hours (as it allows the internal and external temperatures to equalize, somewhat mitigating the effect of radiation from the West).

- Without sweater = 14%



CONCLUSION: Wearing a sweater increases the number of comfortable hours by 4%.