**Appendix.**

Table 4 describes the probability of people appearing in different regions at different times, and the data in Table 4 is representative historical data of the author's statistics. Table 4 also describes the probability of people appearing in different regions at different times, and the data in Table 4 is the author's statistics for the day of the simulation.

**Table 4.** Probability of People Distribution

|  |  |
| --- | --- |
|  | Hours of the day |
| Probability | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 |
|  | 0.0014 | 0.0026 | 0.0030 | 0.0034 | 0.0039 | 0.0043 | 0.0034 | 0.0030 | 0.0048 | 0.0052 | 0.0048 | 0.0043 |
|  | 0.0007 | 0.0013 | 0.0015 | 0.0017 | 0.0019 | 0.0022 | 0.0017 | 0.0015 | 0.0024 | 0.0026 | 0.0024 | 0.0022 |
|  | 0.0025 | 0.0045 | 0.0053 | 0.0061 | 0.0069 | 0.0076 | 0.0061 | 0.0053 | 0.0084 | 0.0092 | 0.0084 | 0.0076 |
|  | 0.0048 | 0.0087 | 0.0102 | 0.0117 | 0.0132 | 0.0147 | 0.0117 | 0.0102 | 0.0162 | 0.0177 | 0.0162 | 0.0147 |
|  | 0.0020 | 0.0037 | 0.0043 | 0.0049 | 0.0055 | 0.0062 | 0.0049 | 0.0043 | 0.0068 | 0.0074 | 0.0068 | 0.0062 |
|  | 0.0009 | 0.0016 | 0.0019 | 0.0022 | 0.0025 | 0.0027 | 0.0022 | 0.0019 | 0.0030 | 0.0033 | 0.0030 | 0.0027 |
|  | 0.0012 | 0.0022 | 0.0026 | 0.0030 | 0.0033 | 0.0037 | 0.0030 | 0.0026 | 0.0041 | 0.0045 | 0.0041 | 0.0037 |
|  | 0.0016 | 0.0029 | 0.0034 | 0.0039 | 0.0044 | 0.0049 | 0.0039 | 0.0034 | 0.0054 | 0.0059 | 0.0054 | 0.0049 |
|  | 0.0016 | 0.0029 | 0.0034 | 0.0039 | 0.0044 | 0.0049 | 0.0039 | 0.0034 | 0.0054 | 0.0059 | 0.0054 | 0.0049 |
|  | 0.0004 | 0.0008 | 0.0009 | 0.0010 | 0.0011 | 0.0013 | 0.0010 | 0.0009 | 0.0014 | 0.0015 | 0.0014 | 0.0013 |
|  | 0.0021 | 0.0038 | 0.0045 | 0.0051 | 0.0058 | 0.0065 | 0.0051 | 0.0045 | 0.0071 | 0.0078 | 0.0071 | 0.0065 |
|  | 0.0013 | 0.0024 | 0.0028 | 0.0032 | 0.0036 | 0.0040 | 0.0032 | 0.0028 | 0.0044 | 0.0048 | 0.0044 | 0.0040 |
|  | 0.0019 | 0.0034 | 0.0040 | 0.0046 | 0.0052 | 0.0058 | 0.0046 | 0.0040 | 0.0064 | 0.0070 | 0.0064 | 0.0058 |
|  | 0.0009 | 0.0016 | 0.0019 | 0.0022 | 0.0025 | 0.0027 | 0.0022 | 0.0019 | 0.0030 | 0.0033 | 0.0030 | 0.0027 |
|  | 0.0009 | 0.0016 | 0.0019 | 0.0022 | 0.0025 | 0.0027 | 0.0022 | 0.0019 | 0.0030 | 0.0033 | 0.0030 | 0.0027 |
|  | 0.0024 | 0.0044 | 0.0051 | 0.0059 | 0.0066 | 0.0074 | 0.0059 | 0.0051 | 0.0081 | 0.0089 | 0.0081 | 0.0074 |
|  | 0.0003 | 0.0005 | 0.0006 | 0.0007 | 0.0008 | 0.0009 | 0.0007 | 0.0006 | 0.0010 | 0.0011 | 0.0010 | 0.0009 |
|  | 0.0025 | 0.0045 | 0.0053 | 0.0061 | 0.0069 | 0.0076 | 0.0061 | 0.0053 | 0.0084 | 0.0092 | 0.0084 | 0.0076 |
|  | 0.0003 | 0.0005 | 0.0006 | 0.0007 | 0.0008 | 0.0009 | 0.0007 | 0.0006 | 0.0010 | 0.0011 | 0.0010 | 0.0009 |
|  | 0.0022 | 0.0040 | 0.0047 | 0.0054 | 0.0061 | 0.0068 | 0.0054 | 0.0047 | 0.0075 | 0.0081 | 0.0075 | 0.0068 |
|  | 0.0001 | 0.0002 | 0.0002 | 0.0002 | 0.0003 | 0.0003 | 0.0002 | 0.0002 | 0.0003 | 0.0004 | 0.0003 | 0.0003 |

**Table 5.** Probability of People Distribution

|  |  |
| --- | --- |
|  | Hours of the day |
| Probability | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 |
|  | 0.0011 | 0 | 0.0014 | 0.0007 | 0.006 | 0.0012 | 0.002 | 0.008 | 0.0025 | 0.0023 | 0.0023 | 0.0044 |
|  | 0.0001 | 0.0001 | 0.001 | 0.0012 | 0.001 | 0.0005 | 0.0021 | 0.0023 | 0.0024 | 0.0037 | 0.0037 | 0.0168 |
|  | 0.0015 | 0.0038 | 0.0001 | 0.008 | 0.008 | 0.019 | 0.0046 | 0.005 | 0.009 | 0.0089 | 0.008 | 0.0045 |
|  | 0.003 | 0.0013 | 0.0019 | 0.018 | 0.023 | 0.0034 | 0.009 | 0.0087 | 0.0024 | 0.0032 | 0.0023 | 0.0034 |
|  | 0.0001 | 0.0001 | 0.0008 | 0.005 | 0.0089 | 0.008 | 0.005 | 0.002 | 0.0111 | 0.0006 | 0.005 | 0.0085 |
|  | 0.0001 | 0.0079 | 0.0001 | 0.003 | 0.0072 | 0.0022 | 0.0021 | 0.002 | 0.003 | 0.0045 | 0.005 | 0.0151 |
|  | 0.011 | 0.0013 | 0.0012 | 0.001 | 0.0031 | 0.003 | 0.0031 | 0.002 | 0.0009 | 0.0082 | 0.013 | 0.004 |
|  | 0.0001 | 0.003 | 0.0043 | 0.002 | 0.0067 | 0.0021 | 0.0023 | 0.0001 | 0.0032 | 0.004 | 0.007 | 0.0045 |
|  | 0.0093 | 0.0001 | 0.0003 | 0.008 | 0.005 | 0.0001 | 0.0023 | 0.005 | 0.0054 | 0.004 | 0.0012 | 0.0102 |
|  | 0.0001 | 0.0072 | 0.0001 | 0.0009 | 0.0005 | 0.005 | 0.0013 | 0.0008 | 0.0082 | 0.0012 | 0.0008 | 0.0023 |
|  | 0.0001 | 0.0001 | 0.0011 | 0.01 | 0.0087 | 0.005 | 0.0035 | 0.006 | 0.001 | 0.0056 | 0.0213 | 0.0067 |
|  | 0.005 | 0.0019 | 0.0014 | 0.0003 | 0.0031 | 0.0023 | 0.0009 | 0.003 | 0.0044 | 0.005 | 0.0112 | 0.0147 |
|  | 0.0001 | 0.0033 | 0.0001 | 0.005 | 0.005 | 0.001 | 0.005 | 0.0048 | 0.008 | 0.006 | 0.0038 | 0.0053 |
|  | 0.0001 | 0.0013 | 0.004 | 0.0032 | 0.0057 | 0.0023 | 0.003 | 0.0012 | 0.005 | 0.008 | 0.0031 | 0.0153 |
|  | 0.0011 | 0.005 | 0.0001 | 0.012 | 0.002 | 0.003 | 0.003 | 0.0034 | 0.0024 | 0.0026 | 0.005 | 0.0023 |
|  | 0.003 | 0.0045 | 0.0171 | 0.008 | 0.0081 | 0.0023 | 0.0051 | 0.0032 | 0.0111 | 0.0202 | 0.0019 | 0.0032 |
|  | 0.0002 | 0.0006 | 0.0001 | 0.0014 | 0.001 | 0.0001 | 0.0049 | 0.0002 | 0.001 | 0.0012 | 0.0005 | 0.0007 |
|  | 0.001 | 0.0032 | 0.0005 | 0.009 | 0.0023 | 0.003 | 0.0031 | 0.0034 | 0.0037 | 0.0006 | 0.017 | 0.0038 |
|  | 0.001 | 0.001 | 0.0006 | 0.0009 | 0.0018 | 0.0001 | 0.0001 | 0.0006 | 0.0012 | 0.0115 | 0.0012 | 0.0006 |
|  | 0.0001 | 0.0023 | 0.0001 | 0.0089 | 0.0089 | 0.0002 | 0.0076 | 0.0034 | 0.0075 | 0.0054 | 0.0027 | 0.0078 |
|  | 0.0005 | 0.0002 | 0.0085 | 0.001 | 0.0008 | 0.0001 | 0.0005 | 0.0002 | 0.0015 | 0.0001 | 0.0004 | 0.0001 |

**Notation**

*The following symbols are used in this paper:*

A = plane area of the building (m2);

LHIE = Local Heat Island Effect;

*l =* number of air outlets;

*PPV* = PV output power generation (kW);

*PRL* = air conditioning cooling power (kW);

PV = photovoltaic;

*Q* = heat dissipating load (kW);

*Ri =* total number of people;

*CL* = air conditioning cooling load (kW);

*qm* = air supply volume (kg/s);

*α* = probability of the presence of occupants;

= number of floors in the building;

η = efficiency;

*∆T* *=* temperature difference (℃).

***Subscripts***

*i* = number 1, 2, 3, 4…;

s = heat or cooling load caused by occupants ;

r = external walls and roof;

*b* = total heat load generated by indoor heat source;

w = fresh air;

t = total air conditioning system cooling load;

*PV,loss* = solar power curtailment;