

## Optimistic / Normal / Pessimistic Limits of Urban Wind Speed in Armidale NSW, Australia

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**Abstract:** -Wind has a very intermittent nature, its behaviour and speed are directly affected by several factors, specifically the nature of the environment and the height that wind blows at. Wind behaviour at urban large city areas and urban suburban areas is completely different than such behaviour at open terrain and flat unobstructed areas, wind turns to be more disturbed and turbulent and wind speed is reduced due to the existence of several obstructions, mostly buildings either single storey or medium rise or high rise buildings in addition to trees. As well, the height at which wind is blowing, the lower height the more disturbed wind the less wind speed, such effect is maximised in urban areas and near to the ground level. In this study, typical reference years of urban wind speed for Armidale town in New South Wales in Australia are generated from the daily meteorological wind speed data measured for 23 years from two weather stations in Armidale which are Armidale Airport Automatic Weather Stations and Armidale Tree Group Nursery Manual Weather Station, utilising the Finkelstein-Schafer statistical method. The study outcome is a database of the daily optimistic, normal and pessimistic limits all over the year of the urban wind speed in Armidale NSW. The said database limits would be a real help for wind energy generation systems' designers in this region for all building applications varying between residential, educational, administrative and commercial for sizing and maximising efficiency of such systems by using the tabular TYR outcome for the each day of the year for various heights (10, 9, 8, 7, 6, 5 & 4) meters.

**Keywords:** - Armidale NSW, test meteorological year, test reference year, wind speed, micro-scale energy generation, micro-wind turbines

### I. INTRODUCTION

When wind flows over an open area approaches the boundaries of the built-up area, it encounters a high roughness of the surface, created by the buildings. The increased resistance resulting from this roughness reduces the wind flow at the level of the urban canopy. In this way a transitional zone is created between the ground and the undisturbed wind flow above the urban air dome, which is called "urban boundary layer". The "undisturbed flow" is called the "gradient wind" and its velocity is called the gradient velocity. Near the ground, wind experiences friction. Its speed is reduced more steeply and its turbulence increases. [1, 2 & 3].

The main urban design elements which can modify the wind conditions are: the overall density of the urban area, size and height of the individual buildings; existence of high-rise buildings, orientation of the streets, availability, size distribution, and design details of open spaces and green shelter belts. [4, 5 & 6].

The wind field is characterized by two parameters: the vertical profile of the mean wind speed and the turbulence spectrum. Both are affected and modified by the profile of the terrain and, in an urban setup, by the urban structure [4, 5, 6 & 7].

Micro-scale energy generation ranges from [0.5 to 10] kW which suits domestic/residential, educational and small commercial applications. , wind is one of the renewable inexhaustible energy sources for this scale of energy generation. Thus it most likely that micro scale wind turbines would operate at level higher than a house or a school or shop building.

The main aim of this study is to provide a database's estimate of optimistic/normal/pessimistic urban wind speed data for Armidale NSW, Australia based on TMY produced at earlier studies [8, 9& 10].The study focuses on the generation of wind speed at urban Armidale NSW, Australia at heights (10, 9, 8, 7, 6, 5 & 4) meters. This scope is selected mainly to provide micro-scale wind energy generation systems' designers an annual realistic mean daily speed such heights of micro-wind turbines' possible installations.

### II. DATA AND LOCATION

A previously meteorological wind speed TRY at 10m height was developed [11]. That TRY was generated based on the daily mean wind speed recorded during the period 1994–2010 recorded at Armidale's Airport Weather Station (AWS). That TYR was generated utilising Finkelstein-Schafer (FS) statistics [12].

In Australia, meteorological observations are recorded by the Australian Bureau of Meteorology (BOM) weather stations are widely spreader in lots of cities and towns around Australia. In this study, the global wind speed data

recorded by Armidale Airport Weather Automatic Station and published on the BOM’s website where it was collected. The missing and invalid measurements account for 0.001% of the whole database of mean wind speed; those were replaced with the values of preceding or subsequent days by interpolation. During the calculations process, any year found with more than ten days in any month observations not available was excluded. “Table 1” provides geographical information for Armidale town and the periods of the relevant mean wind speed data and “figure 1” shows Armidale’s location in NSW, Australia.

Table 1 Geographical and mean wind speed database information of Armidale NSW, Australia

	Longitude ( °E)	Latitude( °S)	Elevation (m)	Mean Daily Wind Speed	
				Period	Total years
Armidale	151.67	30.52	970-1070	1991—2013	23

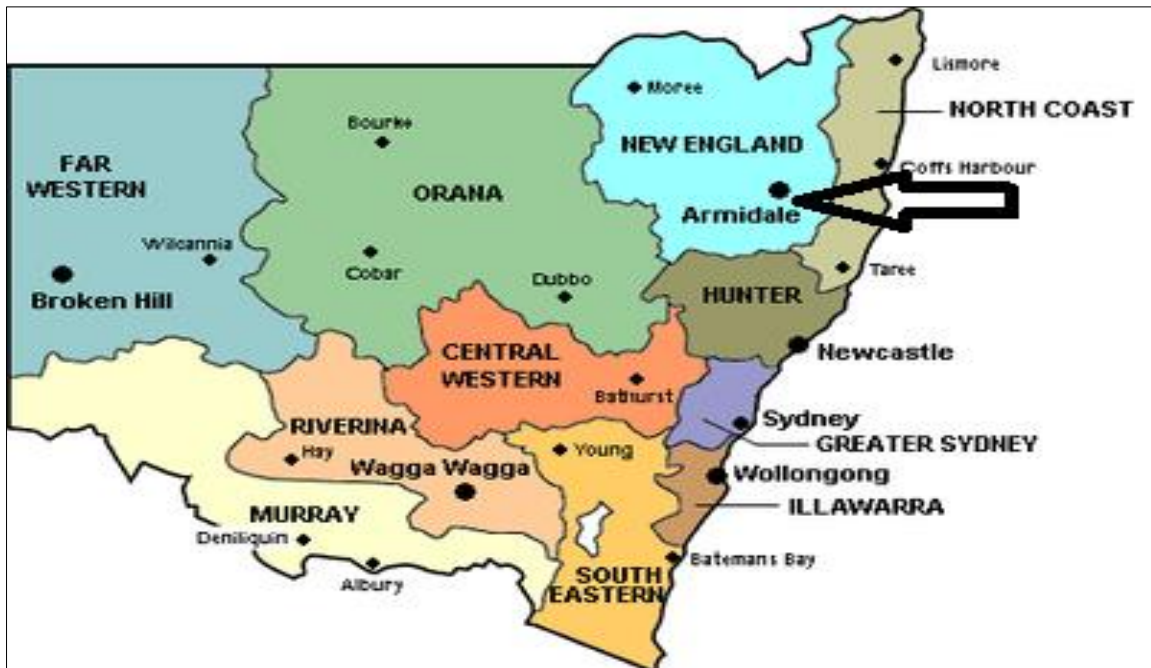


Figure1 Armidale NSW, Australia location

### III. METHODOLOGY

To estimate the wind speed in urban areas, a reference measured wind speed is required which is usually the wind speeds measured and recorded by meteorological stations at a specified height. Such height is usually ten meters from ground level. Although, meteorological stations give all needed data but the problem is that the terrain of the station area and the height of the wind anemometer, are different from the design site [13]

The information of wind data in meteorology stations is gotten in the height of 10 meters above the ground and in a flat and completely open area. In lower levels the wind speed will be reduced because of the friction of the earth surfaces. The amount of the wind speed reduction depends on the terrain conditions. Reduction of the wind speed on the large area of water surface is the least and in the compressed urban area with low and high rise buildings is the most (Table 2). So the data of the wind speed reported by the meteorology station is not enough to estimate the wind speed in urban areas [13].

A numerical method is presented, in modelling the urban effect on the wind speed, the vertical profile of the wind, from the gradient wind level down to the ground is used. The simple equation developed by Davenport in 1960 [5] - shows the profile of the wind speed in different height of an area. It shows that the wind speed vary with height according to a power law [13].

:

$$\frac{\bar{v}_z}{\bar{v}_G} = \left[ \frac{z}{z_G} \right]^{-\alpha} \tag{1}$$

Where:

$\overline{V}_Z$  = mean wind speed at height Z in the study site (m/s)

$\overline{V}_G$  = mean wind speed at height  $Z_G$  (“gradient” height) at top of the boundary layer of the study site, above which the speed is assumed to be constant, (m/s)

Z = the height for which the wind speed  $z$  V is computed (m)

$Z_G$  = the height at which “gradient velocity”  $\overline{V}_G$  is first observed (layer thickness) in the same terrain (m)

$\alpha$  = an empirical exponent which depends on the surface roughness, stability and temperature gradient  
 “Table 2” shows the typical values of  $Z_G$  and  $\alpha$  for mean wind speeds over four types of terrain.

**Table 2 Suggested Values of  $Z_G$  and  $\alpha$  for Various Terrain Conditions**

Terrain Category	Description	Exponent $\alpha$	Layer Thickness $Z_G$ m
1	Large city centers, in which at least 50% of buildings are higher than 21 m, over a distance of at least 2000 meters upwind.	0.33	460
2	Urban, suburban, wooded areas, and other areas with closely spaced obstructions compared to or larger than single-family dwellings (over a distance of at least 2000meters upwind).	0.22	370
3	Open terrain with scattered obstacles generally less than 10 meters height.	0.14	270
4	Flat, unobstructed areas exposed to wind flowing over a large water body (no more than 500 meters inland).	0.1	210

Equation (1) will be developed to equation (2) which helps to calculate wind speed in the same terrain for every study height.

$$\frac{\overline{V}_Z}{\overline{V}_{Z_{10}}} = \left[ \frac{Z}{Z_{10}} \right]^\alpha \tag{2}$$

Where:

$\overline{V}_{Z_{10}}$  = mean wind speed at the height of 10 meters in the study terrain (m/s)

Z = the study height above the ground in the same terrain (m)

$Z_{10}$  = the height of 10 meters in the same terrain (m)

To estimate the wind speed in different urban areas with different density and terrain roughness, equation (3) is introduced:

$$\frac{\overline{V}_{met_{10}}}{\overline{V}_{Z_{10}}} = \frac{\left[ \frac{met_{10}}{met_G} \right]^{\alpha_{met}}}{\left[ \frac{Z_{10}}{Z_G} \right]^\alpha} \tag{3}$$

where:

$\overline{V}_{met_{10}}$  = mean wind speed at height of 10 meters in the meteorology station (m/s)

$met_{10}$  = the standard observation height of 10 meters in the meteorology station (m)

$Z_G$  = gradient height at the top of the boundary layer of the study terrain

#### **IV. GENERATION OF TYPICAL WIND SPEED YEAR**

“Table3” shows the meteorological TRY for wind speed measured at 10 meter height in (m/s) at Armidale Airport Automatic Weather Station, which is situated at the highest altitude at Armidale’s hill. While “Table 4” presents the meteorological TRY for wind speed measured at 10 meter height in (m/s) at Armidale Nursery Tree Group Manual Weather Station, which is located at the lowest highest altitude in Armidale’s valley.

Applying the above methodology for all the days and months in the database, the meteorological Test Reference Year for daily wind speed data was formed for Armidale. “ Tables 5 to 27 “ shows the calculated urban daily wind speed values obtained from Test Reference Year data for Armidale NSW, Australia at heights (10, 9, 8, 7, 6, 5 &4) respectively in (m/s) demonstrating the optimum, normal and pessimistic limits of associated wind speed.

**Table 3 Meteorological daily wind speed values obtained from Test Reference Year data, Australia at 10 m height in (m/s) at Armidale Airport Automatic Weather Station**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	5.59	6.29	5.94	5	5.14	4.59	6.04	5.63	5.31	6.04	5.63	5.31
2	6.49	6.74	5.86	5.21	5.31	5.24	5.31	5.86	5.08	5.7	5.86	5.73
3	5.59	5.94	5.86	4.73	4.86	4.51	5.21	6.84	6.35	5.39	6.04	5.7
4	6.53	5.45	6.11	4.76	5.39	4.1	5.7	6.11	5.8	4.96	5.31	6.04
5	5.86	5.04	6.33	5.63	4.51	5.08	5.7	6.53	6.21	4.83	5.04	6.49
6	5.9	5.41	6.35	5.73	4.96	5.04	5.49	6.25	6.25	6.21	5.49	6.25
7	6.49	6.49	5.7	6.04	5.14	4.86	4.73	6.53	5.7	5.86	5.49	5.94
8	6.56	5.63	5.14	5.7	4.41	5.39	5.21	6.84	6.11	6.35	5.86	5.41
9	6.84	6.11	5.73	4.83	4.41	5.8	6.18	6.11	6.18	6.18	5.59	5.24
10	6.11	5.49	5.63	5.18	4.73	5.49	5.94	6.18	5.49	5.55	5.63	5.94
11	6.33	5.21	5.7	4.76	4.83	5.31	5.94	6.11	6.01	5.31	5.49	5.55
12	5.94	5.7	5.55	5.49	4.86	4.83	4.51	6.6	5.55	5.55	5.63	5.18
13	5.63	6.01	5.39	4.93	5.08	5.35	4.65	5.8	5.73	5.8	6.11	5.55
14	5.63	6.35	5.08	4.28	5.14	6.21	6.04	6.49	5.21	6.25	5.21	5.86
15	5.94	6.04	4.41	4.34	4.2	5.66	5.7	6.04	5.21	5.39	5.8	5.49
16	5.94	5.39	4.9	4.65	5.08	5.21	4.51	6.53	8.85	6.56	6.11	5.08
17	5.94	5.49	5.14	4.96	5.18	5.24	4.65	6.18	6.35	6.29	5.94	5.18
18	5.94	6.11	5.84	4.65	4.86	4.73	5.31	6.66	5.31	5.63	5.49	5.8
19	6.43	5.53	5.35	4.2	5.8	5.55	5.7	5.63	5.28	5.7	4.96	5.63
20	6.11	5.7	5.21	4.34	5.14	5.18	5.39	6.11	5.39	5.39	5.31	5.94
21	5.94	5.55	4.9	4.2	5.53	6.21	6.6	6.35	5.08	4.51	5.55	5.39
22	5.45	5.8	5.39	4.41	4.93	6.11	5.14	6.84	4.34	5.63	6.11	5.45
23	5.24	6.04	5.35	4.41	4.51	5.9	5.39	5.86	5.8	6.18	5.94	5.55
24	6.25	5.94	5.21	4.83	4.65	5.14	5.08	6.6	5.7	5.39	5.31	5.86
25	6.43	5.8	5.24	5.31	4.73	4.59	5.31	6.25	6.11	5.39	5.1	5.39
26	6.01	5.14	5.04	5.45	5.21	5.24	6.49	6.18	6.04	6.15	5.08	5.41
27	6.11	4.76	4.51	5.31	4.83	5.31	5.86	6.11	6.25	6.25	6.35	5.45
28	5.94	5	4.83	5.53	4.79	6.6	6.11	6.21	6.11	5.14	5.94	5.21
29	5.73	5.55	4.59	5.24	5.49	6.84	5.63	6.01	6.88	5.98	5.45	5.49
30	5.49		4.59	5.04	4.69	6.04	5.49	7.4	5.39	5.49	5.55	5.84
31	6.25		5		4.9		5.49	6.64		6.11		5.7

Extracted from [8]

**Table 4 Meteorological daily wind speed values obtained from Test Reference Year data, Australia at 10 m height in (m/s) at Armidale Tree Group Nursery Weather Station**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	4.86	5.66	5.23	4.55	4.63	4.36	5.62	4.95	4.62	5.38	4.9	4.73
2	5.65	6.07	5.16	4.74	4.78	4.98	4.94	5.16	4.42	5.07	5.1	5.1
3	4.86	5.35	5.16	4.3	4.37	4.28	4.85	6.02	5.52	4.8	5.25	5.07
4	5.68	4.91	5.38	4.33	4.85	3.9	5.3	5.38	5.05	4.41	4.62	5.38
5	5.1	4.54	5.57	5.12	4.06	4.83	5.3	5.75	5.4	4.3	4.38	5.78
6	5.13	4.87	5.59	5.21	4.46	4.79	5.11	5.5	5.44	5.53	4.78	5.56
7	5.65	5.84	5.02	5.5	4.63	4.62	4.4	5.75	4.96	5.22	4.78	5.29
8	5.71	5.07	4.52	5.19	3.97	5.12	4.85	6.02	5.32	5.65	5.1	4.81
9	5.95	5.5	5.04	4.4	3.97	5.51	5.75	5.38	5.38	5.5	4.86	4.66
10	5.32	4.94	4.95	4.71	4.26	5.22	5.52	5.44	4.78	4.94	4.9	5.29
11	5.51	4.69	5.02	4.33	4.35	5.04	5.52	5.38	5.23	4.73	4.78	4.94
12	5.17	5.13	4.88	5	4.37	4.59	4.19	5.81	4.83	4.94	4.9	4.61
13	4.9	5.41	4.74	4.49	4.57	5.08	4.32	5.1	4.99	5.16	5.32	4.94
14	4.9	5.72	4.47	3.89	4.63	5.9	5.62	5.71	4.53	5.56	4.53	5.22
15	5.17	5.44	3.88	3.95	3.78	5.38	5.3	5.32	4.53	4.8	5.05	4.89
16	5.17	4.85	4.31	4.23	4.57	4.95	4.19	5.75	7.7	5.84	5.32	4.52
17	5.17	4.94	4.52	4.51	4.66	4.98	4.32	5.44	5.52	5.6	5.17	4.61
18	5.17	5.5	5.14	4.23	4.37	4.49	4.94	5.86	4.62	5.01	4.78	5.16
19	5.59	4.98	4.71	3.82	5.22	5.27	5.3	4.95	4.59	5.07	4.32	5.01
20	5.32	5.13	4.58	3.95	4.63	4.92	5.01	5.38	4.69	4.8	4.62	5.29
21	5.17	5	4.31	3.82	4.98	5.9	6.14	5.59	4.42	4.01	4.83	4.8
22	4.74	5.22	4.74	4.01	4.44	5.8	4.78	6.02	3.78	5.01	5.32	4.85
23	4.56	5.44	4.71	4.01	4.06	5.61	5.01	5.16	5.05	5.5	5.17	4.94
24	5.44	5.35	4.58	4.4	4.19	4.88	4.72	5.81	4.96	4.8	4.62	5.22
25	5.59	5.22	4.61	4.83	4.26	4.36	4.94	5.5	5.32	4.8	4.44	4.8
26	5.23	4.63	4.44	4.96	4.69	4.98	6.04	5.44	5.25	5.47	4.42	4.81
27	5.32	4.28	3.97	4.83	4.35	5.04	5.45	5.38	5.44	5.56	5.52	4.85
28	5.17	4.5	4.25	5.03	4.31	6.27	5.68	5.46	5.32	4.57	5.17	4.64
29	4.99	5	4.04	4.77	4.94	6.5	5.24	5.29	5.99	5.32	4.74	4.89
30	4.78		4.04	4.59	4.22	5.74	5.11	6.51	4.69	4.89	4.83	5.2
31	5.44		4.4		4.41		5.11	5.84		5.44		5.07

Table 5 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 10 m height in (m/s) for January, February, March and April

Day	January			February			March			April		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	4.01	3.8	3.49	4.51	4.3	4.06	4.26	4	3.75	3.58	3.4	3.26
2	4.65	4.4	4.05	4.83	4.6	4.35	4.2	4	3.7	3.73	3.6	3.39
3	4.01	3.8	3.49	4.26	4.1	3.83	4.2	4	3.7	3.39	3.2	3.08
4	4.68	4.4	4.07	3.91	3.7	3.52	4.38	4.1	3.85	3.41	3.3	3.1
5	4.2	3.9	3.65	3.61	3.4	3.25	4.54	4.3	4	4.04	3.9	3.68
6	4.23	4	3.68	3.88	3.7	3.49	4.55	4.3	4	4.11	3.9	3.74
7	4.65	4.4	4.05	4.65	4.4	4.19	4.09	3.9	3.6	4.33	4.1	3.94
8	4.7	4.4	4.09	4.04	3.8	3.64	3.68	3.5	3.24	4.09	3.9	3.72
9	4.9	4.6	4.26	4.38	4.2	3.94	4.11	3.9	3.62	3.46	3.3	3.15
10	4.38	4.1	3.81	3.94	3.8	3.55	4.04	3.8	3.56	3.71	3.6	3.38
11	4.54	4.3	3.95	3.73	3.6	3.36	4.09	3.9	3.6	3.41	3.3	3.1
12	4.26	4	3.71	4.09	3.9	3.68	3.98	3.7	3.5	3.94	3.8	3.59
13	4.04	3.8	3.51	4.31	4.1	3.88	3.86	3.6	3.4	3.53	3.4	3.21
14	4.04	3.8	3.51	4.55	4.3	4.1	3.64	3.4	3.2	3.07	2.9	2.79
15	4.26	4	3.71	4.33	4.1	3.9	3.16	3	2.78	3.11	3	2.83
16	4.26	4	3.71	3.86	3.7	3.47	3.51	3.3	3.09	3.33	3.2	3.03
17	4.26	4	3.71	3.94	3.8	3.55	3.68	3.5	3.24	3.56	3.4	3.24
18	4.26	4	3.71	4.38	4.2	3.94	4.19	3.9	3.69	3.33	3.2	3.03
19	4.61	4.3	4.01	3.96	3.8	3.56	3.83	3.6	3.37	3.01	2.9	2.74
20	4.38	4.1	3.81	4.09	3.9	3.68	3.73	3.5	3.28	3.11	3	2.83
21	4.26	4	3.71	3.98	3.8	3.58	3.51	3.3	3.09	3.01	2.9	2.74
22	3.91	3.7	3.4	4.16	4	3.74	3.86	3.6	3.4	3.16	3	2.88
23	3.76	3.5	3.27	4.33	4.1	3.9	3.83	3.6	3.37	3.16	3	2.88
24	4.48	4.2	3.9	4.26	4.1	3.83	3.73	3.5	3.28	3.46	3.3	3.15
25	4.61	4.3	4.01	4.16	4	3.74	3.76	3.5	3.31	3.81	3.6	3.47
26	4.31	4	3.75	3.68	3.5	3.31	3.61	3.4	3.18	3.91	3.7	3.56
27	4.38	4.1	3.81	3.41	3.2	3.07	3.23	3	2.84	3.81	3.6	3.47
28	4.26	4	3.71	3.58	3.4	3.22	3.46	3.3	3.04	3.96	3.8	3.6
29	4.11	3.9	3.58	3.98	3.8	3.58	3.29	3.1	2.9	3.76	3.6	3.42
30	3.94	3.7	3.43				3.29	3.1	2.9	3.61	3.5	3.29
31	4.48	4.2	3.9				3.58	3.4	3.15			

Table 6 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 10 m height in (m/s) for May, June, July and August

Day	May			June			July			August		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.68	3.5	3.31	3.29	3.2	3.13	4.33	4.2	4.03	4.04	3.8	3.56
2	3.81	3.6	3.43	3.76	3.7	3.57	3.81	3.7	3.54	4.2	4	3.7
3	3.48	3.3	3.13	3.23	3.2	3.07	3.73	3.6	3.47	4.9	4.6	4.31
4	3.86	3.7	3.47	2.94	2.9	2.79	4.09	4	3.8	4.38	4.1	3.85
5	3.23	3.1	2.91	3.64	3.6	3.46	4.09	4	3.8	4.68	4.4	4.12
6	3.56	3.4	3.2	3.61	3.5	3.43	3.94	3.8	3.66	4.48	4.2	3.94
7	3.68	3.5	3.31	3.48	3.4	3.31	3.39	3.3	3.15	4.68	4.4	4.12
8	3.16	3	2.84	3.86	3.8	3.67	3.73	3.6	3.47	4.9	4.6	4.31
9	3.16	3	2.84	4.16	4.1	3.95	4.43	4.3	4.12	4.38	4.1	3.85
10	3.39	3.2	3.05	3.94	3.8	3.74	4.26	4.1	3.96	4.43	4.2	3.9
11	3.46	3.3	3.11	3.81	3.7	3.62	4.26	4.1	3.96	4.38	4.1	3.85
12	3.48	3.3	3.13	3.46	3.4	3.29	3.23	3.1	3	4.73	4.5	4.16
13	3.64	3.5	3.28	3.83	3.7	3.64	3.33	3.2	3.1	4.16	3.9	3.66
14	3.68	3.5	3.31	4.45	4.3	4.23	4.33	4.2	4.03	4.65	4.4	4.09
15	3.01	2.9	2.71	4.06	4	3.86	4.09	4	3.8	4.33	4.1	3.81
16	3.64	3.5	3.28	3.73	3.6	3.54	3.23	3.1	3	4.68	4.4	4.12
17	3.71	3.5	3.34	3.76	3.7	3.57	3.33	3.2	3.1	4.43	4.2	3.9
18	3.48	3.3	3.13	3.39	3.3	3.22	3.81	3.7	3.54	4.77	4.5	4.2
19	4.16	4	3.74	3.98	3.9	3.78	4.09	4	3.8	4.04	3.8	3.56
20	3.68	3.5	3.31	3.71	3.6	3.52	3.86	3.7	3.59	4.38	4.1	3.85
21	3.96	3.8	3.56	4.45	4.3	4.23	4.73	4.6	4.4	4.55	4.3	4
22	3.53	3.4	3.18	4.38	4.3	4.16	3.68	3.6	3.42	4.9	4.6	4.31
23	3.23	3.1	2.91	4.23	4.1	4.02	3.86	3.7	3.59	4.2	4	3.7
24	3.33	3.2	3	3.68	3.6	3.5	3.64	3.5	3.39	4.73	4.5	4.16
25	3.39	3.2	3.05	3.29	3.2	3.13	3.81	3.7	3.54	4.48	4.2	3.94
26	3.73	3.6	3.36	3.76	3.7	3.57	4.65	4.5	4.32	4.43	4.2	3.9
27	3.46	3.3	3.11	3.81	3.7	3.62	4.2	4.1	3.91	4.38	4.1	3.85
28	3.43	3.3	3.09	4.73	4.6	4.49	4.38	4.2	4.07	4.45	4.2	3.92
29	3.94	3.8	3.55	4.9	4.8	4.66	4.04	3.9	3.76	4.31	4.1	3.79
30	3.36	3.2	3.02	4.33	4.2	4.11	3.94	3.8	3.66	5.3	5	4.66
31	3.51	3.3	3.16				3.94	3.8	3.66	4.76	4.5	4.19

Table 7 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 10 m height in (m/s) for September, October, November and December

Day	September			October			November			December		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.81	3.6	3.31	4.33	4.1	3.85	4.04	3.8	3.51	3.81	3.6	3.39
2	3.64	3.4	3.17	4.09	3.9	3.64	4.2	3.9	3.65	4.11	3.9	3.66
3	4.55	4.3	3.96	3.86	3.7	3.44	4.33	4.1	3.77	4.09	3.9	3.64
4	4.16	3.9	3.62	3.56	3.4	3.17	3.81	3.6	3.31	4.33	4.1	3.85
5	4.45	4.2	3.87	3.46	3.3	3.08	3.61	3.4	3.14	4.65	4.4	4.14
6	4.48	4.2	3.9	4.45	4.2	3.96	3.94	3.7	3.43	4.48	4.2	3.99
7	4.09	3.8	3.56	4.2	4	3.74	3.94	3.7	3.43	4.26	4	3.79
8	4.38	4.1	3.81	4.55	4.3	4.05	4.2	3.9	3.65	3.88	3.7	3.45
9	4.43	4.1	3.85	4.43	4.2	3.94	4.01	3.8	3.49	3.76	3.6	3.35
10	3.94	3.7	3.43	3.98	3.8	3.54	4.04	3.8	3.51	4.26	4	3.79
11	4.31	4	3.75	3.81	3.6	3.39	3.94	3.7	3.43	3.98	3.8	3.54
12	3.98	3.7	3.46	3.98	3.8	3.54	4.04	3.8	3.51	3.71	3.5	3.3
13	4.11	3.9	3.58	4.16	3.9	3.7	4.38	4.1	3.81	3.98	3.8	3.54
14	3.73	3.5	3.25	4.48	4.2	3.99	3.73	3.5	3.25	4.2	4	3.74
15	3.73	3.5	3.25	3.86	3.7	3.44	4.16	3.9	3.62	3.94	3.7	3.51
16	6.34	5.9	5.52	4.7	4.4	4.18	4.38	4.1	3.81	3.64	3.4	3.24
17	4.55	4.3	3.96	4.51	4.3	4.01	4.26	4	3.71	3.71	3.5	3.3
18	3.81	3.6	3.31	4.04	3.8	3.6	3.94	3.7	3.43	4.16	3.9	3.7
19	3.78	3.5	3.29	4.09	3.9	3.64	3.56	3.3	3.1	4.04	3.8	3.6
20	3.86	3.6	3.36	3.86	3.7	3.44	3.81	3.6	3.31	4.26	4	3.79
21	3.64	3.4	3.17	3.23	3.1	2.87	3.98	3.7	3.46	3.86	3.7	3.44
22	3.11	2.9	2.71	4.04	3.8	3.6	4.38	4.1	3.81	3.91	3.7	3.48
23	4.16	3.9	3.62	4.43	4.2	3.94	4.26	4	3.71	3.98	3.8	3.54
24	4.09	3.8	3.56	3.86	3.7	3.44	3.81	3.6	3.31	4.2	4	3.74
25	4.38	4.1	3.81	3.86	3.7	3.44	3.66	3.4	3.18	3.86	3.7	3.44
26	4.33	4.1	3.77	4.41	4.2	3.92	3.64	3.4	3.17	3.88	3.7	3.45
27	4.48	4.2	3.9	4.48	4.2	3.99	4.55	4.3	3.96	3.91	3.7	3.48
28	4.38	4.1	3.81	3.68	3.5	3.28	4.26	4	3.71	3.73	3.5	3.32
29	4.93	4.6	4.29	4.29	4.1	3.82	3.91	3.7	3.4	3.94	3.7	3.51
30	3.86	3.6	3.36	3.94	3.7	3.51	3.98	3.7	3.46	4.19	4	3.73
31				4.38	4.1	3.9				4.09	3.9	3.64

Table 8 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 9 m height in (m/s) for January, February, March and April

Day	January			February			March			April		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.92	3.7	3.41	4.41	4.2	3.97	4.16	3.9	3.66	3.5	3.4	3.19
2	4.54	4.3	3.95	4.72	4.5	4.25	4.1	3.9	3.61	3.64	3.5	3.31
3	3.92	3.7	3.41	4.16	4	3.74	4.1	3.9	3.61	3.31	3.2	3.01
4	4.57	4.3	3.98	3.82	3.6	3.44	4.28	4	3.77	3.33	3.2	3.03
5	4.1	3.8	3.57	3.53	3.4	3.18	4.44	4.2	3.91	3.95	3.8	3.59
6	4.13	3.9	3.59	3.79	3.6	3.41	4.45	4.2	3.92	4.02	3.8	3.66
7	4.54	4.3	3.95	4.54	4.3	4.09	4	3.8	3.52	4.23	4	3.85
8	4.59	4.3	3.99	3.95	3.8	3.56	3.6	3.4	3.17	4	3.8	3.64
9	4.79	4.5	4.17	4.28	4.1	3.85	4.02	3.8	3.54	3.38	3.2	3.08
10	4.28	4	3.72	3.85	3.7	3.47	3.95	3.7	3.48	3.62	3.5	3.29
11	4.44	4.2	3.86	3.64	3.5	3.28	4	3.8	3.52	3.33	3.2	3.03
12	4.16	3.9	3.62	4	3.8	3.6	3.89	3.7	3.42	3.85	3.7	3.5
13	3.95	3.7	3.44	4.21	4	3.79	3.77	3.6	3.32	3.45	3.3	3.14
14	3.95	3.7	3.44	4.45	4.2	4.01	3.56	3.4	3.13	3	2.9	2.73
15	4.16	3.9	3.62	4.23	4	3.81	3.09	2.9	2.72	3.04	2.9	2.77
16	4.16	3.9	3.62	3.77	3.6	3.39	3.43	3.2	3.02	3.25	3.1	2.96
17	4.16	3.9	3.62	3.85	3.7	3.47	3.6	3.4	3.17	3.48	3.3	3.17
18	4.16	3.9	3.62	4.28	4.1	3.85	4.09	3.9	3.6	3.25	3.1	2.96
19	4.5	4.2	3.92	3.87	3.7	3.48	3.74	3.5	3.29	2.94	2.8	2.68
20	4.28	4	3.72	4	3.8	3.6	3.64	3.4	3.2	3.04	2.9	2.77
21	4.16	3.9	3.62	3.89	3.7	3.5	3.43	3.2	3.02	2.94	2.8	2.68
22	3.82	3.6	3.32	4.06	3.9	3.65	3.77	3.6	3.32	3.09	3	2.81
23	3.67	3.4	3.19	4.23	4	3.81	3.74	3.5	3.29	3.09	3	2.81
24	4.38	4.1	3.81	4.16	4	3.74	3.64	3.4	3.2	3.38	3.2	3.08
25	4.5	4.2	3.92	4.06	3.9	3.65	3.67	3.5	3.23	3.72	3.6	3.39
26	4.21	3.9	3.66	3.6	3.4	3.24	3.53	3.3	3.11	3.82	3.7	3.48
27	4.28	4	3.72	3.33	3.2	3	3.16	3	2.78	3.72	3.6	3.39
28	4.16	3.9	3.62	3.5	3.3	3.15	3.38	3.2	2.97	3.87	3.7	3.52
29	4.02	3.8	3.5	3.89	3.7	3.5	3.21	3	2.82	3.67	3.5	3.34
30	3.85	3.6	3.35				3.21	3	2.82	3.53	3.4	3.21
31	4.38	4.1	3.81				3.5	3.3	3.08			



Table 9 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 9 m height in (m/s) for May, June, July and August

Day	May			June			July			August		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.6	3.4	3.24	3.21	3.1	3.05	4.23	4.1	3.93	3.95	3.7	3.48
2	3.72	3.5	3.35	3.67	3.6	3.49	3.72	3.6	3.46	4.1	3.9	3.61
3	3.4	3.2	3.06	3.16	3.1	3	3.64	3.5	3.39	4.79	4.5	4.22
4	3.77	3.6	3.39	2.87	2.8	2.73	4	3.9	3.72	4.28	4	3.77
5	3.16	3	2.84	3.56	3.5	3.38	4	3.9	3.72	4.57	4.3	4.02
6	3.48	3.3	3.13	3.53	3.4	3.35	3.85	3.7	3.58	4.38	4.1	3.85
7	3.6	3.4	3.24	3.4	3.3	3.23	3.31	3.2	3.08	4.57	4.3	4.02
8	3.09	2.9	2.78	3.77	3.7	3.58	3.64	3.5	3.39	4.79	4.5	4.22
9	3.09	2.9	2.78	4.06	4	3.86	4.33	4.2	4.03	4.28	4	3.77
10	3.31	3.2	2.98	3.85	3.8	3.66	4.16	4	3.87	4.33	4.1	3.81
11	3.38	3.2	3.04	3.72	3.6	3.53	4.16	4	3.87	4.28	4	3.77
12	3.4	3.2	3.06	3.38	3.3	3.21	3.16	3.1	2.94	4.62	4.4	4.07
13	3.56	3.4	3.2	3.74	3.7	3.55	3.25	3.1	3.02	4.06	3.8	3.57
14	3.6	3.4	3.24	4.35	4.2	4.13	4.23	4.1	3.93	4.54	4.3	4
15	2.94	2.8	2.65	3.97	3.9	3.77	4	3.9	3.72	4.23	4	3.72
16	3.56	3.4	3.2	3.64	3.6	3.46	3.16	3.1	2.94	4.57	4.3	4.02
17	3.62	3.4	3.26	3.67	3.6	3.49	3.25	3.1	3.02	4.33	4.1	3.81
18	3.4	3.2	3.06	3.31	3.2	3.14	3.72	3.6	3.46	4.66	4.4	4.1
19	4.06	3.9	3.65	3.89	3.8	3.7	4	3.9	3.72	3.95	3.7	3.48
20	3.6	3.4	3.24	3.62	3.5	3.44	3.77	3.6	3.51	4.28	4	3.77
21	3.87	3.7	3.48	4.35	4.2	4.13	4.62	4.5	4.3	4.45	4.2	3.92
22	3.45	3.3	3.11	4.28	4.2	4.07	3.6	3.5	3.35	4.79	4.5	4.22
23	3.16	3	2.84	4.13	4	3.92	3.77	3.6	3.51	4.1	3.9	3.61
24	3.25	3.1	2.93	3.6	3.5	3.42	3.56	3.4	3.31	4.62	4.4	4.07
25	3.31	3.2	2.98	3.21	3.1	3.05	3.72	3.6	3.46	4.38	4.1	3.85
26	3.64	3.5	3.28	3.67	3.6	3.49	4.54	4.4	4.22	4.33	4.1	3.81
27	3.38	3.2	3.04	3.72	3.6	3.53	4.1	4	3.81	4.28	4	3.77
28	3.35	3.2	3.02	4.62	4.5	4.39	4.28	4.1	3.98	4.35	4.1	3.83
29	3.85	3.7	3.47	4.79	4.7	4.55	3.95	3.8	3.67	4.21	4	3.7
30	3.28	3.1	2.95	4.23	4.1	4.02	3.85	3.7	3.58	5.18	4.9	4.56
31	3.43	3.3	3.09				3.85	3.7	3.58	4.65	4.4	4.09

Table 10 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 9 m height in (m/s) for September, October, November and December

Day	September			October			November			December		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.72	3.5	3.24	4.23	4	3.76	3.95	3.7	3.44	3.72	3.5	3.31
2	3.56	3.3	3.1	4	3.8	3.56	4.1	3.8	3.57	4.02	3.8	3.58
3	4.45	4.2	3.87	3.77	3.6	3.36	4.23	4	3.68	4	3.8	3.56
4	4.06	3.8	3.53	3.48	3.3	3.1	3.72	3.5	3.24	4.23	4	3.76
5	4.35	4.1	3.78	3.38	3.2	3.01	3.53	3.3	3.07	4.54	4.3	4.04
6	4.38	4.1	3.81	4.35	4.1	3.87	3.85	3.6	3.35	4.38	4.1	3.9
7	4	3.7	3.48	4.1	3.9	3.65	3.85	3.6	3.35	4.16	3.9	3.7
8	4.28	4	3.72	4.45	4.2	3.96	4.1	3.8	3.57	3.79	3.6	3.37
9	4.33	4.1	3.77	4.33	4.1	3.85	3.92	3.7	3.41	3.67	3.5	3.27
10	3.85	3.6	3.35	3.89	3.7	3.46	3.95	3.7	3.44	4.16	3.9	3.7
11	4.21	3.9	3.66	3.72	3.5	3.31	3.85	3.6	3.35	3.89	3.7	3.46
12	3.89	3.6	3.38	3.89	3.7	3.46	3.95	3.7	3.44	3.62	3.4	3.22
13	4.02	3.8	3.5	4.06	3.8	3.61	4.28	4	3.72	3.89	3.7	3.46
14	3.64	3.4	3.17	4.38	4.1	3.9	3.64	3.4	3.17	4.1	3.9	3.65
15	3.64	3.4	3.17	3.77	3.6	3.36	4.06	3.8	3.53	3.85	3.6	3.43
16	6.19	5.8	5.39	4.59	4.3	4.09	4.28	4	3.72	3.56	3.4	3.17
17	4.45	4.2	3.87	4.41	4.2	3.92	4.16	3.9	3.62	3.62	3.4	3.22
18	3.72	3.5	3.24	3.95	3.7	3.52	3.85	3.6	3.35	4.06	3.8	3.61
19	3.69	3.5	3.21	4	3.8	3.56	3.48	3.3	3.03	3.95	3.7	3.52
20	3.77	3.5	3.28	3.77	3.6	3.36	3.72	3.5	3.24	4.16	3.9	3.7
21	3.56	3.3	3.1	3.16	3	2.81	3.89	3.6	3.38	3.77	3.6	3.36
22	3.04	2.8	2.64	3.95	3.7	3.52	4.28	4	3.72	3.82	3.6	3.4
23	4.06	3.8	3.53	4.33	4.1	3.85	4.16	3.9	3.62	3.89	3.7	3.46
24	4	3.7	3.48	3.77	3.6	3.36	3.72	3.5	3.24	4.1	3.9	3.65
25	4.28	4	3.72	3.77	3.6	3.36	3.58	3.4	3.11	3.77	3.6	3.36
26	4.23	4	3.68	4.31	4.1	3.84	3.56	3.3	3.1	3.79	3.6	3.37
27	4.38	4.1	3.81	4.38	4.1	3.9	4.45	4.2	3.87	3.82	3.6	3.4
28	4.28	4	3.72	3.6	3.4	3.2	4.16	3.9	3.62	3.64	3.4	3.24
29	4.82	4.5	4.19	4.19	4	3.73	3.82	3.6	3.32	3.85	3.6	3.43
30	3.77	3.5	3.28	3.85	3.6	3.43	3.89	3.6	3.38	4.09	3.9	3.64
31				4.28	4.1	3.81				4	3.8	3.56

Table 11 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 8 m height in (m/s) for January, February, March and April

Day	January			February			March			April		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.82	3.6	3.32	4.29	4.1	3.86	4.06	3.8	3.57	3.41	3.3	3.1
2	4.43	4.1	3.85	4.6	4.4	4.14	4	3.8	3.52	3.55	3.4	3.23
3	3.82	3.6	3.32	4.06	3.9	3.65	4	3.8	3.52	3.23	3.1	2.94
4	4.46	4.2	3.88	3.72	3.5	3.35	4.17	3.9	3.67	3.25	3.1	2.96
5	4	3.7	3.48	3.44	3.3	3.1	4.32	4.1	3.8	3.85	3.7	3.5
6	4.03	3.8	3.51	3.69	3.5	3.32	4.33	4.1	3.81	3.91	3.7	3.56
7	4.43	4.1	3.85	4.43	4.2	3.99	3.89	3.7	3.42	4.12	3.9	3.75
8	4.47	4.2	3.89	3.85	3.7	3.47	3.5	3.3	3.08	3.89	3.7	3.54
9	4.67	4.4	4.06	4.17	4	3.75	3.91	3.7	3.44	3.29	3.1	2.99
10	4.17	3.9	3.63	3.75	3.6	3.38	3.85	3.6	3.39	3.53	3.4	3.21
11	4.32	4	3.76	3.55	3.4	3.2	3.89	3.7	3.42	3.25	3.1	2.96
12	4.06	3.8	3.53	3.89	3.7	3.5	3.79	3.6	3.34	3.75	3.6	3.41
13	3.85	3.6	3.35	4.1	3.9	3.69	3.68	3.5	3.24	3.36	3.2	3.06
14	3.85	3.6	3.35	4.33	4.1	3.9	3.47	3.3	3.05	2.92	2.8	2.66
15	4.06	3.8	3.53	4.12	3.9	3.71	3.01	2.8	2.65	2.96	2.8	2.69
16	4.06	3.8	3.53	3.68	3.5	3.31	3.34	3.1	2.94	3.17	3	2.88
17	4.06	3.8	3.53	3.75	3.6	3.38	3.5	3.3	3.08	3.39	3.2	3.08
18	4.06	3.8	3.53	4.17	4	3.75	3.99	3.8	3.51	3.17	3	2.88
19	4.39	4.1	3.82	3.77	3.6	3.39	3.65	3.4	3.21	2.87	2.7	2.61
20	4.17	3.9	3.63	3.89	3.7	3.5	3.55	3.3	3.12	2.96	2.8	2.69
21	4.06	3.8	3.53	3.79	3.6	3.41	3.34	3.1	2.94	2.87	2.7	2.61
22	3.72	3.5	3.24	3.96	3.8	3.56	3.68	3.5	3.24	3.01	2.9	2.74
23	3.58	3.4	3.11	4.12	3.9	3.71	3.65	3.4	3.21	3.01	2.9	2.74
24	4.27	4	3.71	4.06	3.9	3.65	3.55	3.3	3.12	3.29	3.1	2.99
25	4.39	4.1	3.82	3.96	3.8	3.56	3.58	3.4	3.15	3.63	3.5	3.3
26	4.1	3.8	3.57	3.5	3.3	3.15	3.44	3.2	3.03	3.72	3.6	3.39
27	4.17	3.9	3.63	3.25	3.1	2.93	3.08	2.9	2.71	3.63	3.5	3.3
28	4.06	3.8	3.53	3.41	3.2	3.07	3.29	3.1	2.9	3.77	3.6	3.43
29	3.91	3.7	3.4	3.79	3.6	3.41	3.13	2.9	2.75	3.58	3.4	3.26
30	3.75	3.5	3.26				3.13	2.9	2.75	3.44	3.3	3.13
31	4.27	4	3.71				3.41	3.2	3			

Table 13 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 8 m height in (m/s) for May, June, July and August

Day	May			June			July			August		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.5	3.3	3.15	3.13	3.1	2.97	4.12	4	3.83	3.85	3.6	3.39
2	3.63	3.5	3.27	3.58	3.5	3.4	3.63	3.5	3.38	4	3.8	3.52
3	3.31	3.2	2.98	3.08	3	2.93	3.55	3.4	3.3	4.67	4.4	4.11
4	3.68	3.5	3.31	2.8	2.7	2.66	3.89	3.8	3.62	4.17	3.9	3.67
5	3.08	2.9	2.77	3.47	3.4	3.3	3.89	3.8	3.62	4.46	4.2	3.92
6	3.39	3.2	3.05	3.44	3.4	3.27	3.75	3.6	3.49	4.27	4	3.76
7	3.5	3.3	3.15	3.31	3.2	3.14	3.23	3.1	3	4.46	4.2	3.92
8	3.01	2.9	2.71	3.68	3.6	3.5	3.55	3.4	3.3	4.67	4.4	4.11
9	3.01	2.9	2.71	3.96	3.9	3.76	4.22	4.1	3.92	4.17	3.9	3.67
10	3.23	3.1	2.91	3.75	3.7	3.56	4.06	3.9	3.78	4.22	4	3.71
11	3.29	3.1	2.96	3.63	3.5	3.45	4.06	3.9	3.78	4.17	3.9	3.67
12	3.31	3.2	2.98	3.29	3.2	3.13	3.08	3	2.86	4.5	4.2	3.96
13	3.47	3.3	3.12	3.65	3.6	3.47	3.17	3.1	2.95	3.96	3.7	3.48
14	3.5	3.3	3.15	4.24	4.1	4.03	4.12	4	3.83	4.43	4.2	3.9
15	2.87	2.7	2.58	3.87	3.8	3.68	3.89	3.8	3.62	4.12	3.9	3.63
16	3.47	3.3	3.12	3.55	3.5	3.37	3.08	3	2.86	4.46	4.2	3.92
17	3.53	3.4	3.18	3.58	3.5	3.4	3.17	3.1	2.95	4.22	4	3.71
18	3.31	3.2	2.98	3.23	3.2	3.07	3.63	3.5	3.38	4.54	4.3	4
19	3.96	3.8	3.56	3.79	3.7	3.6	3.89	3.8	3.62	3.85	3.6	3.39
20	3.5	3.3	3.15	3.53	3.4	3.35	3.68	3.6	3.42	4.17	3.9	3.67
21	3.77	3.6	3.39	4.24	4.1	4.03	4.5	4.4	4.19	4.33	4.1	3.81
22	3.36	3.2	3.02	4.17	4.1	3.96	3.5	3.4	3.26	4.67	4.4	4.11
23	3.08	2.9	2.77	4.03	3.9	3.83	3.68	3.6	3.42	4	3.8	3.52
24	3.17	3	2.85	3.5	3.4	3.33	3.47	3.4	3.23	4.5	4.2	3.96
25	3.23	3.1	2.91	3.13	3.1	2.97	3.63	3.5	3.38	4.27	4	3.76
26	3.55	3.4	3.2	3.58	3.5	3.4	4.43	4.3	4.12	4.22	4	3.71
27	3.29	3.1	2.96	3.63	3.5	3.45	4	3.9	3.72	4.17	3.9	3.67
28	3.27	3.1	2.94	4.5	4.4	4.28	4.17	4	3.88	4.24	4	3.73
29	3.75	3.6	3.38	4.67	4.6	4.44	3.85	3.7	3.58	4.1	3.9	3.61
30	3.2	3	2.88	4.12	4	3.91	3.75	3.6	3.49	5.05	4.8	4.44
31	3.34	3.2	3.01				3.75	3.6	3.49	4.53	4.3	3.99

Table 15 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 8 m height in (m/s) for September, October, November and December

Day	September			October			November			December		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.63	3.4	3.16	4.12	3.9	3.67	3.85	3.6	3.35	3.63	3.4	3.23
2	3.47	3.3	3.02	3.89	3.7	3.46	4	3.7	3.48	3.91	3.7	3.48
3	4.33	4.1	3.77	3.68	3.5	3.28	4.12	3.9	3.58	3.89	3.7	3.46
4	3.96	3.7	3.45	3.39	3.2	3.02	3.63	3.4	3.16	4.12	3.9	3.67
5	4.24	4	3.69	3.29	3.1	2.93	3.44	3.2	2.99	4.43	4.2	3.94
6	4.27	4	3.71	4.24	4	3.77	3.75	3.5	3.26	4.27	4	3.8
7	3.89	3.6	3.38	4	3.8	3.56	3.75	3.5	3.26	4.06	3.8	3.61
8	4.17	3.9	3.63	4.33	4.1	3.85	4	3.7	3.48	3.69	3.5	3.28
9	4.22	4	3.67	4.22	4	3.76	3.82	3.6	3.32	3.58	3.4	3.19
10	3.75	3.5	3.26	3.79	3.6	3.37	3.85	3.6	3.35	4.06	3.8	3.61
11	4.1	3.8	3.57	3.63	3.4	3.23	3.75	3.5	3.26	3.79	3.6	3.37
12	3.79	3.6	3.3	3.79	3.6	3.37	3.85	3.6	3.35	3.53	3.3	3.14
13	3.91	3.7	3.4	3.96	3.7	3.52	4.17	3.9	3.63	3.79	3.6	3.37
14	3.55	3.3	3.09	4.27	4	3.8	3.55	3.3	3.09	4	3.8	3.56
15	3.55	3.3	3.09	3.68	3.5	3.28	3.96	3.7	3.45	3.75	3.6	3.34
16	6.04	5.7	5.25	4.47	4.2	3.98	4.17	3.9	3.63	3.47	3.3	3.09
17	4.33	4.1	3.77	4.29	4.1	3.82	4.06	3.8	3.53	3.53	3.3	3.14
18	3.63	3.4	3.16	3.85	3.6	3.43	3.75	3.5	3.26	3.96	3.7	3.52
19	3.6	3.4	3.13	3.89	3.7	3.46	3.39	3.2	2.95	3.85	3.6	3.43
20	3.68	3.4	3.2	3.68	3.5	3.28	3.63	3.4	3.16	4.06	3.8	3.61
21	3.47	3.3	3.02	3.08	2.9	2.74	3.79	3.6	3.3	3.68	3.5	3.28
22	2.96	2.8	2.58	3.85	3.6	3.43	4.17	3.9	3.63	3.72	3.5	3.31
23	3.96	3.7	3.45	4.22	4	3.76	4.06	3.8	3.53	3.79	3.6	3.37
24	3.89	3.6	3.38	3.68	3.5	3.28	3.63	3.4	3.16	4	3.8	3.56
25	4.17	3.9	3.63	3.68	3.5	3.28	3.48	3.3	3.03	3.68	3.5	3.28
26	4.12	3.9	3.58	4.2	4	3.74	3.47	3.3	3.02	3.69	3.5	3.28
27	4.27	4	3.71	4.27	4	3.8	4.33	4.1	3.77	3.72	3.5	3.31
28	4.17	3.9	3.63	3.5	3.3	3.12	4.06	3.8	3.53	3.55	3.4	3.16
29	4.69	4.4	4.08	4.08	3.9	3.63	3.72	3.5	3.24	3.75	3.6	3.34
30	3.68	3.4	3.2	3.75	3.6	3.34	3.79	3.6	3.3	3.99	3.8	3.55
31				4.17	3.9	3.71				3.89	3.7	3.46

Table 16 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 7 m height in (m/s) for January, February, March and April

Day	January			February			March			April		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.71	3.5	3.23	4.17	4	3.75	3.94	3.7	3.47	3.31	3.2	3.01
2	4.3	4	3.74	4.47	4.3	4.02	3.88	3.7	3.41	3.45	3.3	3.14
3	3.71	3.5	3.23	3.94	3.8	3.55	3.88	3.7	3.41	3.13	3	2.85
4	4.33	4.1	3.77	3.61	3.4	3.25	4.05	3.8	3.56	3.15	3	2.87
5	3.88	3.6	3.38	3.34	3.2	3.01	4.2	4	3.7	3.74	3.6	3.4
6	3.91	3.7	3.4	3.59	3.4	3.23	4.21	4	3.7	3.8	3.6	3.46
7	4.3	4	3.74	4.3	4.1	3.87	3.78	3.6	3.33	4	3.8	3.64
8	4.35	4.1	3.78	3.74	3.6	3.37	3.4	3.2	2.99	3.78	3.6	3.44
9	4.53	4.2	3.94	4.05	3.9	3.65	3.8	3.6	3.34	3.2	3.1	2.91
10	4.05	3.8	3.52	3.64	3.5	3.28	3.74	3.5	3.29	3.43	3.3	3.12
11	4.2	3.9	3.65	3.45	3.3	3.11	3.78	3.6	3.33	3.15	3	2.87
12	3.94	3.7	3.43	3.78	3.6	3.4	3.68	3.5	3.24	3.64	3.5	3.31
13	3.74	3.5	3.25	3.98	3.8	3.58	3.57	3.4	3.14	3.26	3.1	2.97
14	3.74	3.5	3.25	4.21	4	3.79	3.37	3.2	2.97	2.84	2.7	2.58
15	3.94	3.7	3.43	4	3.8	3.6	2.92	2.8	2.57	2.88	2.8	2.62
16	3.94	3.7	3.43	3.57	3.4	3.21	3.25	3.1	2.86	3.08	2.9	2.8
17	3.94	3.7	3.43	3.64	3.5	3.28	3.4	3.2	2.99	3.29	3.1	2.99
18	3.94	3.7	3.43	4.05	3.9	3.65	3.87	3.6	3.41	3.08	2.9	2.8
19	4.26	4	3.71	3.66	3.5	3.29	3.54	3.3	3.12	2.78	2.7	2.53
20	4.05	3.8	3.52	3.78	3.6	3.4	3.45	3.3	3.04	2.88	2.8	2.62
21	3.94	3.7	3.43	3.68	3.5	3.31	3.25	3.1	2.86	2.78	2.7	2.53
22	3.61	3.4	3.14	3.85	3.7	3.47	3.57	3.4	3.14	2.92	2.8	2.66
23	3.48	3.3	3.03	4	3.8	3.6	3.54	3.3	3.12	2.92	2.8	2.66
24	4.14	3.9	3.6	3.94	3.8	3.55	3.45	3.3	3.04	3.2	3.1	2.91
25	4.26	4	3.71	3.85	3.7	3.47	3.48	3.3	3.06	3.52	3.4	3.2
26	3.98	3.7	3.46	3.4	3.2	3.06	3.34	3.1	2.94	3.61	3.5	3.29
27	4.05	3.8	3.52	3.15	3	2.84	2.99	2.8	2.63	3.52	3.4	3.2
28	3.94	3.7	3.43	3.31	3.2	2.98	3.2	3	2.82	3.66	3.5	3.33
29	3.8	3.6	3.31	3.68	3.5	3.31	3.04	2.9	2.68	3.48	3.3	3.17
30	3.64	3.4	3.17				3.04	2.9	2.68	3.34	3.2	3.04
31	4.14	3.9	3.6				3.31	3.1	2.91			

Table 17 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 7 m height in (m/s) for May, June, July and August

Day	May			June			July			August		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.4	3.2	3.06	3.04	3	2.89	4	3.9	3.72	3.74	3.5	3.29
2	3.52	3.4	3.17	3.48	3.4	3.31	3.52	3.4	3.27	3.88	3.7	3.41
3	3.22	3.1	2.9	2.99	2.9	2.84	3.45	3.3	3.21	4.53	4.3	3.99
4	3.57	3.4	3.21	2.72	2.7	2.58	3.78	3.7	3.52	4.05	3.8	3.56
5	2.99	2.8	2.69	3.37	3.3	3.2	3.78	3.7	3.52	4.33	4.1	3.81
6	3.29	3.1	2.96	3.34	3.3	3.17	3.64	3.5	3.39	4.14	3.9	3.64
7	3.4	3.2	3.06	3.22	3.1	3.06	3.13	3	2.91	4.33	4.1	3.81
8	2.92	2.8	2.63	3.57	3.5	3.39	3.45	3.3	3.21	4.53	4.3	3.99
9	2.92	2.8	2.63	3.85	3.8	3.66	4.1	4	3.81	4.05	3.8	3.56
10	3.13	3	2.82	3.64	3.6	3.46	3.94	3.8	3.66	4.1	3.9	3.61
11	3.2	3	2.88	3.52	3.4	3.34	3.94	3.8	3.66	4.05	3.8	3.56
12	3.22	3.1	2.9	3.2	3.1	3.04	2.99	2.9	2.78	4.37	4.1	3.85
13	3.37	3.2	3.03	3.54	3.5	3.36	3.08	3	2.86	3.85	3.6	3.39
14	3.4	3.2	3.06	4.11	4	3.9	4	3.9	3.72	4.3	4	3.78
15	2.78	2.6	2.5	3.75	3.7	3.56	3.78	3.7	3.52	4	3.8	3.52
16	3.37	3.2	3.03	3.45	3.4	3.28	2.99	2.9	2.78	4.33	4.1	3.81
17	3.43	3.3	3.09	3.48	3.4	3.31	3.08	3	2.86	4.1	3.9	3.61
18	3.22	3.1	2.9	3.13	3.1	2.97	3.52	3.4	3.27	4.41	4.2	3.88
19	3.85	3.7	3.47	3.68	3.6	3.5	3.78	3.7	3.52	3.74	3.5	3.29
20	3.4	3.2	3.06	3.43	3.4	3.26	3.57	3.5	3.32	4.05	3.8	3.56
21	3.66	3.5	3.29	4.11	4	3.9	4.37	4.2	4.06	4.21	4	3.7
22	3.26	3.1	2.93	4.05	4	3.85	3.4	3.3	3.16	4.53	4.3	3.99
23	2.99	2.8	2.69	3.91	3.8	3.71	3.57	3.5	3.32	3.88	3.7	3.41
24	3.08	2.9	2.77	3.4	3.3	3.23	3.37	3.3	3.13	4.37	4.1	3.85
25	3.13	3	2.82	3.04	3	2.89	3.52	3.4	3.27	4.14	3.9	3.64
26	3.45	3.3	3.11	3.48	3.4	3.31	4.3	4.2	4	4.1	3.9	3.61
27	3.2	3	2.88	3.52	3.4	3.34	3.88	3.8	3.61	4.05	3.8	3.56
28	3.17	3	2.85	4.37	4.3	4.15	4.05	3.9	3.77	4.11	3.9	3.62
29	3.64	3.5	3.28	4.53	4.4	4.3	3.74	3.6	3.48	3.98	3.7	3.5
30	3.11	3	2.8	4	3.9	3.8	3.64	3.5	3.39	4.9	4.6	4.31
31	3.25	3.1	2.93				3.64	3.5	3.39	4.4	4.1	3.87

Table 18 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 7 m height in (m/s) for September, October, November and December

Day	September			October			November			December		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.52	3.3	3.06	4	3.8	3.56	3.74	3.5	3.25	3.52	3.3	3.13
2	3.37	3.2	2.93	3.78	3.6	3.36	3.88	3.6	3.38	3.8	3.6	3.38
3	4.21	3.9	3.66	3.57	3.4	3.18	4	3.7	3.48	3.78	3.6	3.36
4	3.85	3.6	3.35	3.29	3.1	2.93	3.52	3.3	3.06	4	3.8	3.56
5	4.11	3.9	3.58	3.2	3	2.85	3.34	3.1	2.91	4.3	4.1	3.83
6	4.14	3.9	3.6	4.11	3.9	3.66	3.64	3.4	3.17	4.14	3.9	3.68
7	3.78	3.5	3.29	3.88	3.7	3.45	3.64	3.4	3.17	3.94	3.7	3.51
8	4.05	3.8	3.52	4.21	4	3.75	3.88	3.6	3.38	3.59	3.4	3.2
9	4.1	3.8	3.57	4.1	3.9	3.65	3.71	3.5	3.23	3.48	3.3	3.1
10	3.64	3.4	3.17	3.68	3.5	3.28	3.74	3.5	3.25	3.94	3.7	3.51
11	3.98	3.7	3.46	3.52	3.3	3.13	3.64	3.4	3.17	3.68	3.5	3.28
12	3.68	3.4	3.2	3.68	3.5	3.28	3.74	3.5	3.25	3.43	3.2	3.05
13	3.8	3.6	3.31	3.85	3.6	3.43	4.05	3.8	3.52	3.68	3.5	3.28
14	3.45	3.2	3	4.14	3.9	3.68	3.45	3.2	3	3.88	3.7	3.45
15	3.45	3.2	3	3.57	3.4	3.18	3.85	3.6	3.35	3.64	3.4	3.24
16	5.86	5.5	5.1	4.35	4.1	3.87	4.05	3.8	3.52	3.37	3.2	3
17	4.21	3.9	3.66	4.17	3.9	3.71	3.94	3.7	3.43	3.43	3.2	3.05
18	3.52	3.3	3.06	3.74	3.5	3.33	3.64	3.4	3.17	3.85	3.6	3.43
19	3.49	3.3	3.04	3.78	3.6	3.36	3.29	3.1	2.86	3.74	3.5	3.33
20	3.57	3.3	3.11	3.57	3.4	3.18	3.52	3.3	3.06	3.94	3.7	3.51
21	3.37	3.2	2.93	2.99	2.8	2.66	3.68	3.4	3.2	3.57	3.4	3.18
22	2.88	2.7	2.51	3.74	3.5	3.33	4.05	3.8	3.52	3.61	3.4	3.21
23	3.85	3.6	3.35	4.1	3.9	3.65	3.94	3.7	3.43	3.68	3.5	3.28
24	3.78	3.5	3.29	3.57	3.4	3.18	3.52	3.3	3.06	3.88	3.7	3.45
25	4.05	3.8	3.52	3.57	3.4	3.18	3.38	3.2	2.94	3.57	3.4	3.18
26	4	3.7	3.48	4.08	3.9	3.63	3.37	3.2	2.93	3.59	3.4	3.2
27	4.14	3.9	3.6	4.14	3.9	3.68	4.21	3.9	3.66	3.61	3.4	3.21
28	4.05	3.8	3.52	3.4	3.2	3.03	3.94	3.7	3.43	3.45	3.3	3.07
29	4.56	4.3	3.97	3.97	3.8	3.53	3.61	3.4	3.14	3.64	3.4	3.24
30	3.57	3.3	3.11	3.64	3.4	3.24	3.68	3.4	3.2	3.87	3.7	3.44
31				4.05	3.8	3.6				3.78	3.6	3.36



Table 19 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 6 m height in (m/s) for January, February, March and April

Day	January			February			March			April		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.58	3.4	3.11	4.03	3.8	3.63	3.81	3.6	3.35	3.2	3.1	2.92
2	4.16	3.9	3.62	4.32	4.1	3.89	3.75	3.5	3.3	3.33	3.2	3.04
3	3.58	3.4	3.11	3.81	3.6	3.43	3.75	3.5	3.3	3.03	2.9	2.77
4	4.18	3.9	3.64	3.49	3.3	3.14	3.91	3.7	3.44	3.05	2.9	2.79
5	3.75	3.5	3.26	3.23	3.1	2.91	4.06	3.8	3.57	3.61	3.5	3.3
6	3.78	3.5	3.29	3.47	3.3	3.12	4.07	3.8	3.58	3.67	3.5	3.35
7	4.16	3.9	3.62	4.16	4	3.74	3.66	3.4	3.22	3.87	3.7	3.54
8	4.2	3.9	3.65	3.61	3.4	3.25	3.29	3.1	2.9	3.66	3.5	3.35
9	4.38	4.1	3.81	3.91	3.7	3.52	3.67	3.5	3.23	3.09	3	2.82
10	3.91	3.7	3.4	3.52	3.4	3.17	3.61	3.4	3.18	3.32	3.2	3.03
11	4.06	3.8	3.53	3.33	3.2	3	3.66	3.4	3.22	3.05	2.9	2.79
12	3.81	3.6	3.31	3.66	3.5	3.29	3.56	3.4	3.13	3.52	3.4	3.22
13	3.61	3.4	3.14	3.85	3.7	3.47	3.45	3.3	3.04	3.15	3	2.88
14	3.61	3.4	3.14	4.07	3.9	3.66	3.25	3.1	2.86	2.74	2.6	2.5
15	3.81	3.6	3.31	3.87	3.7	3.48	2.82	2.7	2.48	2.78	2.7	2.54
16	3.81	3.6	3.31	3.45	3.3	3.11	3.14	3	2.76	2.98	2.9	2.72
17	3.81	3.6	3.31	3.52	3.4	3.17	3.29	3.1	2.9	3.18	3.1	2.91
18	3.81	3.6	3.31	3.91	3.7	3.52	3.74	3.5	3.29	2.98	2.9	2.72
19	4.12	3.9	3.58	3.54	3.4	3.19	3.42	3.2	3.01	2.69	2.6	2.46
20	3.91	3.7	3.4	3.66	3.5	3.29	3.33	3.1	2.93	2.78	2.7	2.54
21	3.81	3.6	3.31	3.56	3.4	3.2	3.14	3	2.76	2.69	2.6	2.46
22	3.49	3.3	3.04	3.72	3.5	3.35	3.45	3.3	3.04	2.82	2.7	2.58
23	3.36	3.1	2.92	3.87	3.7	3.48	3.42	3.2	3.01	2.82	2.7	2.58
24	4	3.7	3.48	3.81	3.6	3.43	3.33	3.1	2.93	3.09	3	2.82
25	4.12	3.9	3.58	3.72	3.5	3.35	3.36	3.2	2.96	3.41	3.3	3.12
26	3.85	3.6	3.35	3.29	3.1	2.96	3.23	3	2.84	3.49	3.3	3.19
27	3.91	3.7	3.4	3.05	2.9	2.75	2.89	2.7	2.54	3.41	3.3	3.12
28	3.81	3.6	3.31	3.2	3	2.88	3.09	2.9	2.72	3.54	3.4	3.24
29	3.67	3.4	3.19	3.56	3.4	3.2	2.94	2.8	2.59	3.36	3.2	3.07
30	3.52	3.3	3.06				2.94	2.8	2.59	3.23	3.1	2.95
31	4	3.7	3.48				3.2	3	2.82			

Table 20 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 6 m height in (m/s) for May, June, July and August

Day	May			June			July			August		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.29	3.1	2.96	2.94	2.9	2.79	3.87	3.7	3.6	3.61	3.4	3.18
2	3.41	3.2	3.07	3.36	3.3	3.19	3.41	3.3	3.17	3.75	3.5	3.3
3	3.11	3	2.8	2.89	2.8	2.75	3.33	3.2	3.1	4.38	4.1	3.85
4	3.45	3.3	3.11	2.63	2.6	2.5	3.66	3.5	3.4	3.91	3.7	3.44
5	2.89	2.8	2.6	3.25	3.2	3.09	3.66	3.5	3.4	4.18	3.9	3.68
6	3.18	3	2.86	3.23	3.2	3.07	3.52	3.4	3.27	4	3.8	3.52
7	3.29	3.1	2.96	3.11	3	2.95	3.03	2.9	2.82	4.18	3.9	3.68
8	2.82	2.7	2.54	3.45	3.4	3.28	3.33	3.2	3.1	4.38	4.1	3.85
9	2.82	2.7	2.54	3.72	3.6	3.53	3.96	3.8	3.68	3.91	3.7	3.44
10	3.03	2.9	2.73	3.52	3.4	3.34	3.81	3.7	3.54	3.96	3.7	3.48
11	3.09	2.9	2.78	3.41	3.3	3.24	3.81	3.7	3.54	3.91	3.7	3.44
12	3.11	3	2.8	3.09	3	2.94	2.89	2.8	2.69	4.23	4	3.72
13	3.25	3.1	2.93	3.42	3.3	3.25	2.98	2.9	2.77	3.72	3.5	3.27
14	3.29	3.1	2.96	3.98	3.9	3.78	3.87	3.7	3.6	4.16	3.9	3.66
15	2.69	2.6	2.42	3.63	3.5	3.45	3.66	3.5	3.4	3.87	3.6	3.41
16	3.25	3.1	2.93	3.33	3.3	3.16	2.89	2.8	2.69	4.18	3.9	3.68
17	3.32	3.2	2.99	3.36	3.3	3.19	2.98	2.9	2.77	3.96	3.7	3.48
18	3.11	3	2.8	3.03	3	2.88	3.41	3.3	3.17	4.26	4	3.75
19	3.72	3.5	3.35	3.56	3.5	3.38	3.66	3.5	3.4	3.61	3.4	3.18
20	3.29	3.1	2.96	3.32	3.2	3.15	3.45	3.3	3.21	3.91	3.7	3.44
21	3.54	3.4	3.19	3.98	3.9	3.78	4.23	4.1	3.93	4.07	3.8	3.58
22	3.15	3	2.84	3.91	3.8	3.71	3.29	3.2	3.06	4.38	4.1	3.85
23	2.89	2.8	2.6	3.78	3.7	3.59	3.45	3.3	3.21	3.75	3.5	3.3
24	2.98	2.8	2.68	3.29	3.2	3.13	3.25	3.1	3.02	4.23	4	3.72
25	3.03	2.9	2.73	2.94	2.9	2.79	3.41	3.3	3.17	4	3.8	3.52
26	3.33	3.2	3	3.36	3.3	3.19	4.16	4	3.87	3.96	3.7	3.48
27	3.09	2.9	2.78	3.41	3.3	3.24	3.75	3.6	3.49	3.91	3.7	3.44
28	3.07	2.9	2.76	4.23	4.1	4.02	3.91	3.8	3.64	3.98	3.7	3.5
29	3.52	3.4	3.17	4.38	4.3	4.16	3.61	3.5	3.36	3.85	3.6	3.39
30	3	2.9	2.7	3.87	3.8	3.68	3.52	3.4	3.27	4.74	4.5	4.17
31	3.14	3	2.83				3.52	3.4	3.27	4.25	4	3.74

Table 21 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 6 m height in (m/s) for September, October, November and December

Day	September			October			November			December		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.41	3.2	2.97	3.87	3.7	3.44	3.61	3.4	3.14	3.41	3.2	3.03
2	3.25	3	2.83	3.66	3.5	3.26	3.75	3.5	3.26	3.67	3.5	3.27
3	4.07	3.8	3.54	3.45	3.3	3.07	3.87	3.6	3.37	3.66	3.5	3.26
4	3.72	3.5	3.24	3.18	3	2.83	3.41	3.2	2.97	3.87	3.7	3.44
5	3.98	3.7	3.46	3.09	2.9	2.75	3.23	3	2.81	4.16	3.9	3.7
6	4	3.7	3.48	3.98	3.8	3.54	3.52	3.3	3.06	4	3.8	3.56
7	3.66	3.4	3.18	3.75	3.6	3.34	3.52	3.3	3.06	3.81	3.6	3.39
8	3.91	3.7	3.4	4.07	3.9	3.62	3.75	3.5	3.26	3.47	3.3	3.09
9	3.96	3.7	3.45	3.96	3.7	3.52	3.58	3.4	3.11	3.36	3.2	2.99
10	3.52	3.3	3.06	3.56	3.4	3.17	3.61	3.4	3.14	3.81	3.6	3.39
11	3.85	3.6	3.35	3.41	3.2	3.03	3.52	3.3	3.06	3.56	3.4	3.17
12	3.56	3.3	3.1	3.56	3.4	3.17	3.61	3.4	3.14	3.32	3.1	2.95
13	3.67	3.4	3.19	3.72	3.5	3.31	3.91	3.7	3.4	3.56	3.4	3.17
14	3.33	3.1	2.9	4	3.8	3.56	3.33	3.1	2.9	3.75	3.6	3.34
15	3.33	3.1	2.9	3.45	3.3	3.07	3.72	3.5	3.24	3.52	3.3	3.13
16	5.67	5.3	4.93	4.2	4	3.74	3.91	3.7	3.4	3.25	3.1	2.89
17	4.07	3.8	3.54	4.03	3.8	3.59	3.81	3.6	3.31	3.32	3.1	2.95
18	3.41	3.2	2.97	3.61	3.4	3.21	3.52	3.3	3.06	3.72	3.5	3.31
19	3.38	3.2	2.94	3.66	3.5	3.26	3.18	3	2.77	3.61	3.4	3.21
20	3.45	3.2	3	3.45	3.3	3.07	3.41	3.2	2.97	3.81	3.6	3.39
21	3.25	3	2.83	2.89	2.7	2.57	3.56	3.3	3.1	3.45	3.3	3.07
22	2.78	2.6	2.42	3.61	3.4	3.21	3.91	3.7	3.4	3.49	3.3	3.11
23	3.72	3.5	3.24	3.96	3.7	3.52	3.81	3.6	3.31	3.56	3.4	3.17
24	3.66	3.4	3.18	3.45	3.3	3.07	3.41	3.2	2.97	3.75	3.6	3.34
25	3.91	3.7	3.4	3.45	3.3	3.07	3.27	3.1	2.84	3.45	3.3	3.07
26	3.87	3.6	3.37	3.94	3.7	3.51	3.25	3	2.83	3.47	3.3	3.09
27	4	3.7	3.48	4	3.8	3.56	4.07	3.8	3.54	3.49	3.3	3.11
28	3.91	3.7	3.4	3.29	3.1	2.93	3.81	3.6	3.31	3.33	3.2	2.96
29	4.41	4.1	3.84	3.83	3.6	3.41	3.49	3.3	3.04	3.52	3.3	3.13
30	3.45	3.2	3	3.52	3.3	3.13	3.56	3.3	3.1	3.74	3.5	3.33
31				3.91	3.7	3.48				3.66	3.5	3.26

Table 22 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 5 m height in (m/s) for January, February, March and April

Day	January			February			March			April		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.44	3.4	3.44	3.87	3.9	3.87	3.66	3.7	3.66	3.07	3.1	3.07
2	3.99	4	3.99	4.15	4.2	4.15	3.61	3.6	3.61	3.2	3.2	3.2
3	3.44	3.4	3.44	3.66	3.7	3.66	3.61	3.6	3.61	2.91	2.9	2.91
4	4.02	4	4.02	3.36	3.4	3.36	3.76	3.8	3.76	2.93	2.9	2.93
5	3.61	3.6	3.61	3.1	3.1	3.1	3.9	3.9	3.9	3.47	3.5	3.47
6	3.63	3.6	3.63	3.33	3.3	3.33	3.91	3.9	3.91	3.53	3.5	3.53
7	3.99	4	3.99	3.99	4	3.99	3.51	3.5	3.51	3.72	3.7	3.72
8	4.04	4	4.04	3.47	3.5	3.47	3.16	3.2	3.16	3.51	3.5	3.51
9	4.21	4.2	4.21	3.76	3.8	3.76	3.53	3.5	3.53	2.97	3	2.97
10	3.76	3.8	3.76	3.38	3.4	3.38	3.47	3.5	3.47	3.19	3.2	3.19
11	3.9	3.9	3.9	3.2	3.2	3.2	3.51	3.5	3.51	2.93	2.9	2.93
12	3.66	3.7	3.66	3.51	3.5	3.51	3.42	3.4	3.42	3.38	3.4	3.38
13	3.47	3.5	3.47	3.7	3.7	3.7	3.31	3.3	3.31	3.03	3	3.03
14	3.47	3.5	3.47	3.91	3.9	3.91	3.13	3.1	3.13	2.64	2.6	2.64
15	3.66	3.7	3.66	3.72	3.7	3.72	2.71	2.7	2.71	2.67	2.7	2.67
16	3.66	3.7	3.66	3.31	3.3	3.31	3.01	3	3.01	2.86	2.9	2.86
17	3.66	3.7	3.66	3.38	3.4	3.38	3.16	3.2	3.16	3.06	3.1	3.06
18	3.66	3.7	3.66	3.76	3.8	3.76	3.6	3.6	3.6	2.86	2.9	2.86
19	3.96	4	3.96	3.4	3.4	3.4	3.29	3.3	3.29	2.58	2.6	2.58
20	3.76	3.8	3.76	3.51	3.5	3.51	3.2	3.2	3.2	2.67	2.7	2.67
21	3.66	3.7	3.66	3.42	3.4	3.42	3.01	3	3.01	2.58	2.6	2.58
22	3.36	3.4	3.36	3.57	3.6	3.57	3.31	3.3	3.31	2.71	2.7	2.71
23	3.23	3.2	3.23	3.72	3.7	3.72	3.29	3.3	3.29	2.71	2.7	2.71
24	3.85	3.9	3.85	3.66	3.7	3.66	3.2	3.2	3.2	2.97	3	2.97
25	3.96	4	3.96	3.57	3.6	3.57	3.23	3.2	3.23	3.27	3.3	3.27
26	3.7	3.7	3.7	3.16	3.2	3.16	3.1	3.1	3.1	3.36	3.4	3.36
27	3.76	3.8	3.76	2.93	2.9	2.93	2.77	2.8	2.77	3.27	3.3	3.27
28	3.66	3.7	3.66	3.07	3.1	3.07	2.97	3	2.97	3.4	3.4	3.4
29	3.53	3.5	3.53	3.42	3.4	3.42	2.82	2.8	2.82	3.23	3.2	3.23
30	3.38	3.4	3.38				2.82	2.8	2.82	3.1	3.1	3.1
31	3.85	3.9	3.85				3.07	3.1	3.07			

Table 23 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 5 m height in (m/s) for May, June, July and August

Day	May			June			July			August		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.16	3.2	3.16	2.82	2.8	2.82	3.72	3.7	3.72	3.47	3.5	3.47
2	3.27	3.3	3.27	3.23	3.2	3.23	3.27	3.3	3.27	3.61	3.6	3.61
3	2.99	3	2.99	2.77	2.8	2.77	3.2	3.2	3.2	4.21	4.2	4.21
4	3.31	3.3	3.31	2.52	2.5	2.52	3.51	3.5	3.51	3.76	3.8	3.76
5	2.77	2.8	2.77	3.13	3.1	3.13	3.51	3.5	3.51	4.02	4	4.02
6	3.06	3.1	3.06	3.1	3.1	3.1	3.38	3.4	3.38	3.85	3.9	3.85
7	3.16	3.2	3.16	2.99	3	2.99	2.91	2.9	2.91	4.02	4	4.02
8	2.71	2.7	2.71	3.31	3.3	3.31	3.2	3.2	3.2	4.21	4.2	4.21
9	2.71	2.7	2.71	3.57	3.6	3.57	3.8	3.8	3.8	3.76	3.8	3.76
10	2.91	2.9	2.91	3.38	3.4	3.38	3.66	3.7	3.66	3.8	3.8	3.8
11	2.97	3	2.97	3.27	3.3	3.27	3.66	3.7	3.66	3.76	3.8	3.76
12	2.99	3	2.99	2.97	3	2.97	2.77	2.8	2.77	4.06	4.1	4.06
13	3.13	3.1	3.13	3.29	3.3	3.29	2.86	2.9	2.86	3.57	3.6	3.57
14	3.16	3.2	3.16	3.82	3.8	3.82	3.72	3.7	3.72	3.99	4	3.99
15	2.58	2.6	2.58	3.49	3.5	3.49	3.51	3.5	3.51	3.72	3.7	3.72
16	3.13	3.1	3.13	3.2	3.2	3.2	2.77	2.8	2.77	4.02	4	4.02
17	3.19	3.2	3.19	3.23	3.2	3.23	2.86	2.9	2.86	3.8	3.8	3.8
18	2.99	3	2.99	2.91	2.9	2.91	3.27	3.3	3.27	4.1	4.1	4.1
19	3.57	3.6	3.57	3.42	3.4	3.42	3.51	3.5	3.51	3.47	3.5	3.47
20	3.16	3.2	3.16	3.19	3.2	3.19	3.31	3.3	3.31	3.76	3.8	3.76
21	3.4	3.4	3.4	3.82	3.8	3.82	4.06	4.1	4.06	3.91	3.9	3.91
22	3.03	3	3.03	3.76	3.8	3.76	3.16	3.2	3.16	4.21	4.2	4.21
23	2.77	2.8	2.77	3.63	3.6	3.63	3.31	3.3	3.31	3.61	3.6	3.61
24	2.86	2.9	2.86	3.16	3.2	3.16	3.13	3.1	3.13	4.06	4.1	4.06
25	2.91	2.9	2.91	2.82	2.8	2.82	3.27	3.3	3.27	3.85	3.9	3.85
26	3.2	3.2	3.2	3.23	3.2	3.23	3.99	4	3.99	3.8	3.8	3.8
27	2.97	3	2.97	3.27	3.3	3.27	3.61	3.6	3.61	3.76	3.8	3.76
28	2.94	2.9	2.94	4.06	4.1	4.06	3.76	3.8	3.76	3.82	3.8	3.82
29	3.38	3.4	3.38	4.21	4.2	4.21	3.47	3.5	3.47	3.7	3.7	3.7
30	2.88	2.9	2.88	3.72	3.7	3.72	3.38	3.4	3.38	4.55	4.6	4.55
31	3.01	3	3.01				3.38	3.4	3.38	4.09	4.1	4.09

Table 24 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 5 m height in (m/s) for September, October, November and December

Day	September			October			November			December		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.27	3.3	3.27	3.72	3.7	3.72	3.47	3.5	3.47	3.27	3.3	3.27
2	3.13	3.1	3.13	3.51	3.5	3.51	3.61	3.6	3.61	3.53	3.5	3.53
3	3.91	3.9	3.91	3.31	3.3	3.31	3.72	3.7	3.72	3.51	3.5	3.51
4	3.57	3.6	3.57	3.06	3.1	3.06	3.27	3.3	3.27	3.72	3.7	3.72
5	3.82	3.8	3.82	2.97	3	2.97	3.1	3.1	3.1	3.99	4	3.99
6	3.85	3.9	3.85	3.82	3.8	3.82	3.38	3.4	3.38	3.85	3.9	3.85
7	3.51	3.5	3.51	3.61	3.6	3.61	3.38	3.4	3.38	3.66	3.7	3.66
8	3.76	3.8	3.76	3.91	3.9	3.91	3.61	3.6	3.61	3.33	3.3	3.33
9	3.8	3.8	3.8	3.8	3.8	3.8	3.44	3.4	3.44	3.23	3.2	3.23
10	3.38	3.4	3.38	3.42	3.4	3.42	3.47	3.5	3.47	3.66	3.7	3.66
11	3.7	3.7	3.7	3.27	3.3	3.27	3.38	3.4	3.38	3.42	3.4	3.42
12	3.42	3.4	3.42	3.42	3.4	3.42	3.47	3.5	3.47	3.19	3.2	3.19
13	3.53	3.5	3.53	3.57	3.6	3.57	3.76	3.8	3.76	3.42	3.4	3.42
14	3.2	3.2	3.2	3.85	3.9	3.85	3.2	3.2	3.2	3.61	3.6	3.61
15	3.2	3.2	3.2	3.31	3.3	3.31	3.57	3.6	3.57	3.38	3.4	3.38
16	5.44	5.4	5.44	4.04	4	4.04	3.76	3.8	3.76	3.13	3.1	3.13
17	3.91	3.9	3.91	3.87	3.9	3.87	3.66	3.7	3.66	3.19	3.2	3.19
18	3.27	3.3	3.27	3.47	3.5	3.47	3.38	3.4	3.38	3.57	3.6	3.57
19	3.25	3.3	3.25	3.51	3.5	3.51	3.06	3.1	3.06	3.47	3.5	3.47
20	3.31	3.3	3.31	3.31	3.3	3.31	3.27	3.3	3.27	3.66	3.7	3.66
21	3.13	3.1	3.13	2.77	2.8	2.77	3.42	3.4	3.42	3.31	3.3	3.31
22	2.67	2.7	2.67	3.47	3.5	3.47	3.76	3.8	3.76	3.36	3.4	3.36
23	3.57	3.6	3.57	3.8	3.8	3.8	3.66	3.7	3.66	3.42	3.4	3.42
24	3.51	3.5	3.51	3.31	3.3	3.31	3.27	3.3	3.27	3.61	3.6	3.61
25	3.76	3.8	3.76	3.31	3.3	3.31	3.14	3.1	3.14	3.31	3.3	3.31
26	3.72	3.7	3.72	3.79	3.8	3.79	3.13	3.1	3.13	3.33	3.3	3.33
27	3.85	3.9	3.85	3.85	3.9	3.85	3.91	3.9	3.91	3.36	3.4	3.36
28	3.76	3.8	3.76	3.16	3.2	3.16	3.66	3.7	3.66	3.2	3.2	3.2
29	4.23	4.2	4.23	3.68	3.7	3.68	3.36	3.4	3.36	3.38	3.4	3.38
30	3.31	3.3	3.31	3.38	3.4	3.38	3.42	3.4	3.42	3.6	3.6	3.6
31				3.76	3.8	3.76				3.51	3.5	3.51

Table 25 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 4 m height in (m/s) for January, February, March and April

Day	January			February			March			April		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.28	3.1	2.85	3.69	3.5	3.32	3.48	3.3	3.06	2.93	2.8	2.67
2	3.8	3.6	3.31	3.95	3.8	3.56	3.43	3.2	3.02	3.05	2.9	2.78
3	3.28	3.1	2.85	3.48	3.3	3.13	3.43	3.2	3.02	2.77	2.7	2.52
4	3.83	3.6	3.33	3.2	3	2.88	3.58	3.4	3.15	2.79	2.7	2.54
5	3.43	3.2	2.98	2.95	2.8	2.66	3.71	3.5	3.26	3.3	3.2	3
6	3.46	3.2	3.01	3.17	3	2.85	3.72	3.5	3.27	3.36	3.2	3.06
7	3.8	3.6	3.31	3.8	3.6	3.42	3.34	3.1	2.94	3.54	3.4	3.22
8	3.84	3.6	3.34	3.3	3.1	2.97	3.01	2.8	2.65	3.34	3.2	3.04
9	4.01	3.8	3.49	3.58	3.4	3.22	3.36	3.2	2.96	2.83	2.7	2.58
10	3.58	3.4	3.11	3.22	3.1	2.9	3.3	3.1	2.9	3.03	2.9	2.76
11	3.71	3.5	3.23	3.05	2.9	2.75	3.34	3.1	2.94	2.79	2.7	2.54
12	3.48	3.3	3.03	3.34	3.2	3.01	3.25	3.1	2.86	3.22	3.1	2.93
13	3.3	3.1	2.87	3.52	3.4	3.17	3.16	3	2.78	2.89	2.8	2.63
14	3.3	3.1	2.87	3.72	3.5	3.35	2.98	2.8	2.62	2.51	2.4	2.28
15	3.48	3.3	3.03	3.54	3.4	3.19	2.58	2.4	2.27	2.54	2.4	2.31
16	3.48	3.3	3.03	3.16	3	2.84	2.87	2.7	2.53	2.72	2.6	2.48
17	3.48	3.3	3.03	3.22	3.1	2.9	3.01	2.8	2.65	2.91	2.8	2.65
18	3.48	3.3	3.03	3.58	3.4	3.22	3.43	3.2	3.02	2.72	2.6	2.48
19	3.77	3.5	3.28	3.24	3.1	2.92	3.13	2.9	2.75	2.46	2.4	2.24
20	3.58	3.4	3.11	3.34	3.2	3.01	3.05	2.9	2.68	2.54	2.4	2.31
21	3.48	3.3	3.03	3.25	3.1	2.93	2.87	2.7	2.53	2.46	2.4	2.24
22	3.2	3	2.78	3.4	3.2	3.06	3.16	3	2.78	2.58	2.5	2.35
23	3.07	2.9	2.67	3.54	3.4	3.19	3.13	2.9	2.75	2.58	2.5	2.35
24	3.66	3.4	3.18	3.48	3.3	3.13	3.05	2.9	2.68	2.83	2.7	2.58
25	3.77	3.5	3.28	3.4	3.2	3.06	3.07	2.9	2.7	3.11	3	2.83
26	3.52	3.3	3.06	3.01	2.9	2.71	2.95	2.8	2.6	3.2	3.1	2.91
27	3.58	3.4	3.11	2.79	2.7	2.51	2.64	2.5	2.32	3.11	3	2.83
28	3.48	3.3	3.03	2.93	2.8	2.64	2.83	2.7	2.49	3.24	3.1	2.95
29	3.36	3.1	2.92	3.25	3.1	2.93	2.69	2.5	2.37	3.07	2.9	2.79
30	3.22	3	2.8				2.69	2.5	2.37	2.95	2.8	2.68
31	3.66	3.4	3.18				2.93	2.8	2.58			

Table 26 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 4 m height in (m/s) for May, June, July and August

Day	May			June			July			August		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.01	2.9	2.71	2.69	2.6	2.56	3.54	3.4	3.29	3.3	3.1	2.9
2	3.11	3	2.8	3.07	3	2.92	3.11	3	2.89	3.43	3.2	3.02
3	2.84	2.7	2.56	2.64	2.6	2.51	3.05	3	2.84	4.01	3.8	3.53
4	3.16	3	2.84	2.4	2.3	2.28	3.34	3.2	3.11	3.58	3.4	3.15
5	2.64	2.5	2.38	2.98	2.9	2.83	3.34	3.2	3.11	3.83	3.6	3.37
6	2.91	2.8	2.62	2.95	2.9	2.8	3.22	3.1	2.99	3.66	3.4	3.22
7	3.01	2.9	2.71	2.84	2.8	2.7	2.77	2.7	2.58	3.83	3.6	3.37
8	2.58	2.5	2.32	3.16	3.1	3	3.05	3	2.84	4.01	3.8	3.53
9	2.58	2.5	2.32	3.4	3.3	3.23	3.62	3.5	3.37	3.58	3.4	3.15
10	2.77	2.6	2.49	3.22	3.1	3.06	3.48	3.4	3.24	3.62	3.4	3.19
11	2.83	2.7	2.55	3.11	3	2.95	3.48	3.4	3.24	3.58	3.4	3.15
12	2.84	2.7	2.56	2.83	2.8	2.69	2.64	2.6	2.46	3.87	3.6	3.41
13	2.98	2.8	2.68	3.13	3.1	2.97	2.72	2.6	2.53	3.4	3.2	2.99
14	3.01	2.9	2.71	3.64	3.6	3.46	3.54	3.4	3.29	3.8	3.6	3.34
15	2.46	2.3	2.21	3.32	3.2	3.15	3.34	3.2	3.11	3.54	3.3	3.12
16	2.98	2.8	2.68	3.05	3	2.9	2.64	2.6	2.46	3.83	3.6	3.37
17	3.03	2.9	2.73	3.07	3	2.92	2.72	2.6	2.53	3.62	3.4	3.19
18	2.84	2.7	2.56	2.77	2.7	2.63	3.11	3	2.89	3.9	3.7	3.43
19	3.4	3.2	3.06	3.25	3.2	3.09	3.34	3.2	3.11	3.3	3.1	2.9
20	3.01	2.9	2.71	3.03	3	2.88	3.16	3.1	2.94	3.58	3.4	3.15
21	3.24	3.1	2.92	3.64	3.6	3.46	3.87	3.7	3.6	3.72	3.5	3.27
22	2.89	2.8	2.6	3.58	3.5	3.4	3.01	2.9	2.8	4.01	3.8	3.53
23	2.64	2.5	2.38	3.46	3.4	3.29	3.16	3.1	2.94	3.43	3.2	3.02
24	2.72	2.6	2.45	3.01	2.9	2.86	2.98	2.9	2.77	3.87	3.6	3.41
25	2.77	2.6	2.49	2.69	2.6	2.56	3.11	3	2.89	3.66	3.4	3.22
26	3.05	2.9	2.75	3.07	3	2.92	3.8	3.7	3.53	3.62	3.4	3.19
27	2.83	2.7	2.55	3.11	3	2.95	3.43	3.3	3.19	3.58	3.4	3.15
28	2.8	2.7	2.52	3.87	3.8	3.68	3.58	3.5	3.33	3.64	3.4	3.2
29	3.22	3.1	2.9	4.01	3.9	3.81	3.3	3.2	3.07	3.52	3.3	3.1
30	2.75	2.6	2.48	3.54	3.5	3.36	3.22	3.1	2.99	4.33	4.1	3.81
31	2.87	2.7	2.58				3.22	3.1	2.99	3.89	3.7	3.42



Table 27 Optimistic/Normal/Pessimistic Urban daily wind speed for Armidale NSW, Australia at 4 m height in (m/s) for September, October, November and December

Day	September			October			November			December		
	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes	Opt	Nor	Pes
1	3.11	2.9	2.71	3.54	3.4	3.15	3.3	3.1	2.87	3.11	2.9	2.77
2	2.98	2.8	2.59	3.34	3.2	2.97	3.43	3.2	2.98	3.36	3.2	2.99
3	3.72	3.5	3.24	3.16	3	2.81	3.54	3.3	3.08	3.34	3.2	2.97
4	3.4	3.2	2.96	2.91	2.8	2.59	3.11	2.9	2.71	3.54	3.4	3.15
5	3.64	3.4	3.17	2.83	2.7	2.52	2.95	2.8	2.57	3.8	3.6	3.38
6	3.66	3.4	3.18	3.64	3.4	3.24	3.22	3	2.8	3.66	3.5	3.26
7	3.34	3.1	2.91	3.43	3.2	3.05	3.22	3	2.8	3.48	3.3	3.1
8	3.58	3.4	3.11	3.72	3.5	3.31	3.43	3.2	2.98	3.17	3	2.82
9	3.62	3.4	3.15	3.62	3.4	3.22	3.28	3.1	2.85	3.07	2.9	2.73
10	3.22	3	2.8	3.25	3.1	2.89	3.3	3.1	2.87	3.48	3.3	3.1
11	3.52	3.3	3.06	3.11	2.9	2.77	3.22	3	2.8	3.25	3.1	2.89
12	3.25	3	2.83	3.25	3.1	2.89	3.3	3.1	2.87	3.03	2.9	2.7
13	3.36	3.1	2.92	3.4	3.2	3.03	3.58	3.4	3.11	3.25	3.1	2.89
14	3.05	2.9	2.65	3.66	3.5	3.26	3.05	2.9	2.65	3.43	3.2	3.05
15	3.05	2.9	2.65	3.16	3	2.81	3.4	3.2	2.96	3.22	3.1	2.87
16	5.18	4.9	4.51	3.84	3.6	3.42	3.58	3.4	3.11	2.98	2.8	2.65
17	3.72	3.5	3.24	3.69	3.5	3.28	3.48	3.3	3.03	3.03	2.9	2.7
18	3.11	2.9	2.71	3.3	3.1	2.94	3.22	3	2.8	3.4	3.2	3.03
19	3.09	2.9	2.69	3.34	3.2	2.97	2.91	2.7	2.53	3.3	3.1	2.94
20	3.16	3	2.75	3.16	3	2.81	3.11	2.9	2.71	3.48	3.3	3.1
21	2.98	2.8	2.59	2.64	2.5	2.35	3.25	3	2.83	3.16	3	2.81
22	2.54	2.4	2.21	3.3	3.1	2.94	3.58	3.4	3.11	3.2	3	2.85
23	3.4	3.2	2.96	3.62	3.4	3.22	3.48	3.3	3.03	3.25	3.1	2.89
24	3.34	3.1	2.91	3.16	3	2.81	3.11	2.9	2.71	3.43	3.2	3.05
25	3.58	3.4	3.11	3.16	3	2.81	2.99	2.8	2.6	3.16	3	2.81
26	3.54	3.3	3.08	3.6	3.4	3.2	2.98	2.8	2.59	3.17	3	2.82
27	3.66	3.4	3.18	3.66	3.5	3.26	3.72	3.5	3.24	3.2	3	2.85
28	3.58	3.4	3.11	3.01	2.9	2.68	3.48	3.3	3.03	3.05	2.9	2.71
29	4.03	3.8	3.51	3.51	3.3	3.12	3.2	3	2.78	3.22	3.1	2.87
30	3.16	3	2.75	3.22	3.1	2.87	3.25	3	2.83	3.43	3.2	3.05
31				3.58	3.4	3.19				3.34	3.2	2.97

**V. CONCLUSION AND RECOMMENDATIONS**

Urban typical wind speed data is very essential for calculations concerning micro-scale wind energy

generation systems and for buildings' energy calculation modelling and analysis. In this study, test reference years for mean daily wind speed for urban Armidale town NSW, Australia are generated using 23 years of the meteorologically measured data. The daily wind speed at 10 meter height for Armidale for heights [101, 9, 8, , 6, 5 & 4] meter are calculated based on a numerical method utilised a previously developed meteorological test reference year annual mean daily wind speed at 10 meter height in (m/s).

In this study, optimistic, normal and pessimistic typical urban wind speed limits database for each day of the year is estimated based on TRY(s) developed for Armidale NSW, Australia using 23 years' meteorological measured data. Such typical database is highly recommended to be considered by investigators of wind energy systems in Armidale, this database provides realistic and reliable data, no overestimating or undervaluation. It is suggested that user of this database to use normal values when initially evaluation the wind power in Armidale, On the other hand, it is suggested to consider optimistic values in Winter months, pessimistic values in Summer months and normal values for the rest of the year for further thorough evaluation of wind energy systems by either wind specialist of ordinary persons.

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