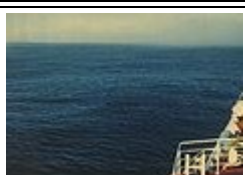


Wind Turbine performance compared to the Beaufort Scale

(Note: Wind speed numbers at hub height are approximations)

Beaufort number	Description	Wind speed at ground level	Approx. Wind Speed at Hub Height	Wind Turbine State	Wave height	Sea conditions	Land conditions	Sea state photo	Associated Warning Flag
0	Calm	< 1 km/h < 1 mph < 1 kn < 0.3 m/s			0 m 0 ft	Flat.	Calm. Smoke rises vertically.		
1	Light air	1.1–5.5 km/h 1–3 mph 1–2 kn 0.3–1.5 m/s	0.6-3 m/s		0–0.2 m 0–1 ft	Ripples without crests.	Smoke drift indicates wind direction and wind vanes cease moving.		
2	Light breeze	5.6–11 km/h 4–7 mph 3–6 kn 1.6–3.4 m/s	3.2- 7 m/s	Turbine starts generating electricity at 4m/s	0.2–0.5 m 1–2 ft	Small wavelets. Crests of glassy appearance, not breaking	Wind felt on exposed skin. Leaves rustle and wind vanes begin to move.		
3	Gentle breeze	12–19 km/h 8–12 mph 7–10 kn 3.4–5.4 m/s	7 – 11 m/s	Assumed Average wind speed at Hub Height 9 m/s for Tas wind	0.5–1 m 2–3.5 ft	Large wavelets. Crests begin to break; scattered whitecaps	Leaves and small twigs constantly moving, light flags extended.		
4	Moderate breeze	20–28 km/h 13–17 mph 11–15 kn 5.5–7.9 m/s	11 -16 m/s	Wind Turbine generates at maximum rating of 3 MW at 13 m/s	1–2 m 3.5–6 ft	Small waves with breaking crests. Fairly frequent whitecaps.	Dust and loose paper raised. Small branches begin to move.		
5	Fresh breeze	29–38 km/h 18–24 mph 16–20 kn 8.0–10.7 m/s			2–3 m 6–9 ft	Moderate waves of some length. Many whitecaps. Small amounts of spray.	Branches of a moderate size move. Small trees in leaf begin to sway.		
6	Strong breeze	39–49 km/h 25–30 mph 21–26 kn 10.8–13.8 m/s			3–4 m 9–13 ft	Long waves begin to form. White foam crests are very frequent. Some airborne spray is present.	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic garbage cans tip over.		

Wind Turbine performance compared to the Beaufort Scale

(Note: Wind speed numbers at hub height are approximations)

Beaufort number	Description	Wind speed at ground level	Approx. Wind Speed at Hub Height	Wind Turbine State	Wave height	Sea conditions	Land conditions	Sea state photo	Associated Warning Flag
7	High wind, moderate gale, near gale	50–61 km/h 31–38 mph 27–33 kn 13.9–17.1 m/s			4–5.5 m 13–19 ft	Sea heaps up. Some foam from breaking waves is blown into streaks along wind direction. Moderate amounts of airborne spray.	Whole trees in motion. Effort needed to walk against the wind.		
8	Gale fresh gale	62–74 km/h 39–46 mph 34–40 kn 17.2–20.7 m/s	25 m/s	Turbine will shut down at 25m/s (Turbine restarts at 20 m/s)	5.5–7.5 m 18–25 ft	Moderately high waves with breaking crests forming spindrift. Well-marked streaks of foam are blown along wind direction. Considerable airborne spray.	Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded.		
9	Strong gale	75–88 km/h 47–54 mph 41–47 kn 20.8–24.4 m/s			7–10 m 23–32 ft	High waves whose crests sometimes roll over. Dense foam is blown along wind direction. Large amounts of airborne spray may begin to reduce visibility.	Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over.		
10	Storm whole gale	89–102 km/h 55–63 mph 48–55 kn 24.5–28.4 m/s			9–12.5 m 29–41 ft	Very high waves with overhanging crests. Large patches of foam from wave crests give the sea a white appearance. Considerable tumbling of waves with heavy impact. Large amounts of airborne spray reduce visibility.	Trees are broken off or uprooted, saplings bent and deformed. Poorly attached asphalt shingles and shingles in poor condition peel off roofs.		
11	Violent storm	103–117 km/h 64–72 mph 56–63 kn 28.5–32.6 m/s			11.5–16 m 37–52 ft	Exceptionally high waves. Very large patches of foam, driven before the wind, cover much of the sea surface. Very large amounts of airborne spray severely reduce visibility.	Widespread damage to vegetation. Many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely.		
12	Hurricane force	≥ 118 km/h	40m/s	Turbines designed to withstand winds of 250 km/h	≥ 14 m	Huge waves. Sea is completely white with foam and spray. Air is filled with driving spray, greatly reducing visibility.	Very widespread damage to vegetation. Some windows may break; mobile homes and poorly constructed sheds and barns are damaged. Debris may be hurled about.		