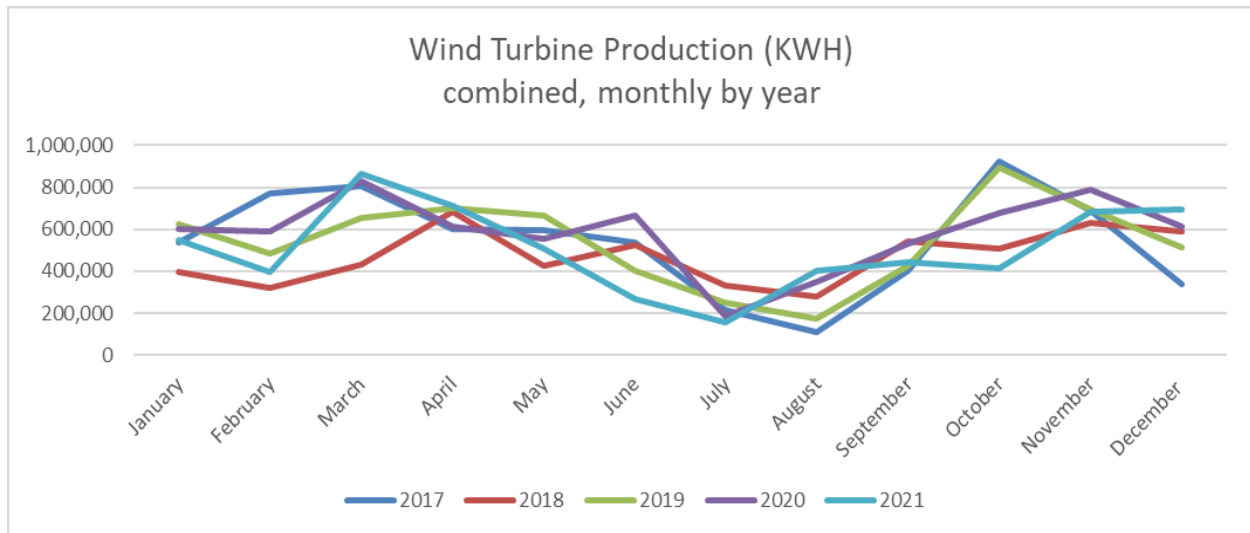




WILLMAR MUNICIPAL UTILITIES

December 2021 Wind Turbine Report

“Willmar Municipal Utilities will provide safe, reliable & quality utility services at competitive rates for their customers.”



	Production (KWH)		Availability (%)		Total	Major Outages
	#3	#4	#3	#4	KWH	
Dec 2021	356,542	337,412	94.2	88.8	693,954	
Nov 2021	241,863	443,307	50.1	99.9	685,170	#3 Gearbox speed sensor fault
Oct 2021	114,588	298,858	36.3	96.9	413,446	#3 Gearbox speed sensor fault
Sept 2021	177,347	267,383	68.3	90.6	444,730	#3 Gearbox speed sensor fault
Aug 2021	163,470	236,982	*70	100.0	400,452	#3 Yaw system fault
July 2021	58,742	97,830	70.7	84.3	156,572	Grid protection fault
June 2021	130,799	139,012	78.8	76.6	269,811	Grid protection fault
May 2021	247,196	261,855	99.8	99.0	509,051	
April 2021	351,367	358,272	99.4	99.5	709,639	
Mar 2021	521,031	345,469	99.5	75.0	866,500	#4 Gearbox speed sensor fault
Feb 2021	218,288	179,581	77.3	83.5	397,869	
Jan 2021	263,950	287,559	98.1	99.2	551,509	
Dec 2020	292,905	320,403	92.9	97.2	613,308	
2021 Total	2,845,183	3,253,520			6,098,703	

* availability % was estimated.

Month	2017	2018	2019	2020	2021
January	534,867	398,844	624,884	598,668	551,509
February	771,227	317,618	484,162	590,960	397,869
March	806,936	432,165	656,272	827,205	866,500
April	601,823	681,026	699,956	611,169	709,639
May	598,108	427,219	668,434	552,522	509,051
June	534,662	523,406	400,456	667,898	269,811
July	214,304	330,556	247,502	184,774	156,572
August	109,215	278,651	176,047	352,244	400,452
September	400,210	545,469	426,860	531,071	444,730
October	925,000	505,906	895,781	675,543	413,446
November	690,847	628,416	695,008	788,202	685,170
December	338,980	587,263	514,858	613,308	693,954
Total	6,526,179	5,656,539	6,490,220	6,993,564	6,098,703

