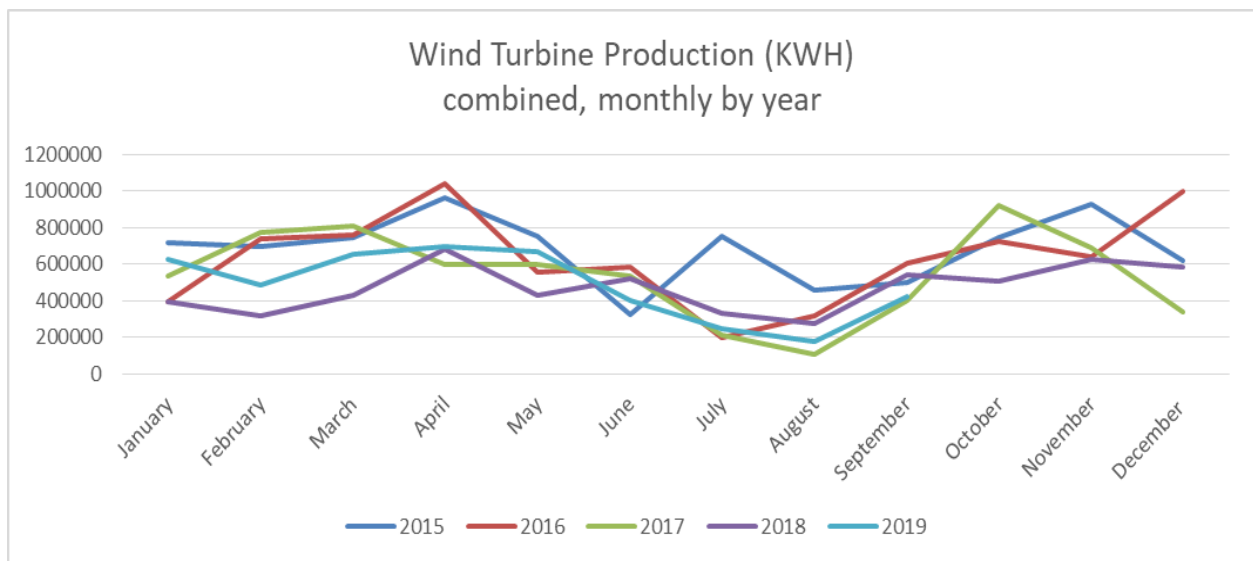




WILLMAR MUNICIPAL UTILITIES

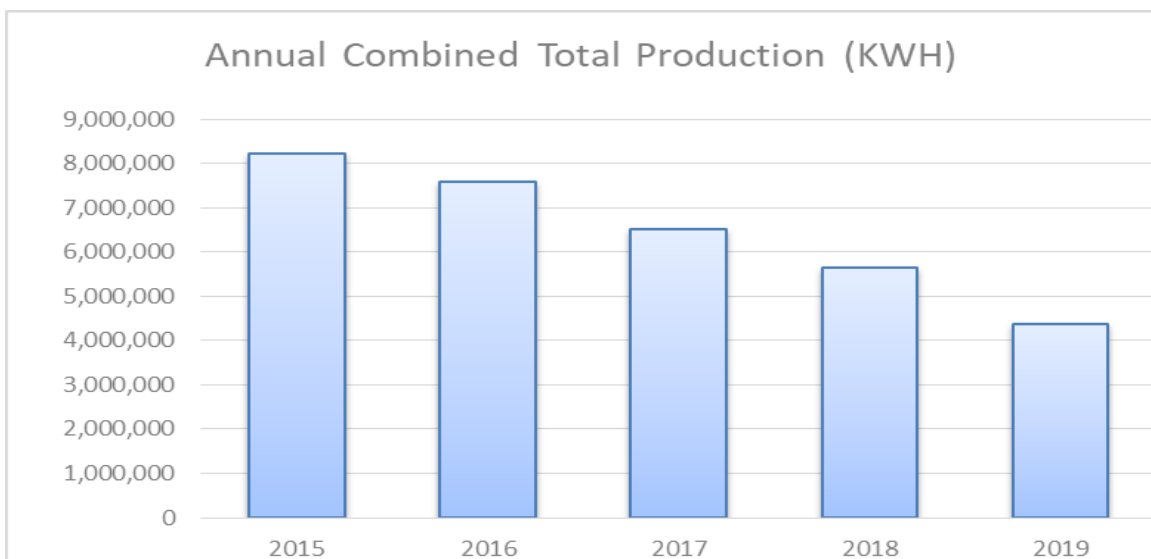
September 2019 Wind Turbine Report

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



	Production (KWH)		Availability (%)		Total KWH	Major Outages
	#3	#4	#3	#4		
Sept. 2019	266,430	160,430	97.5	99.8	426,860	#4 Blade Repairs
Aug. 2019	152,004	24,043	99.9	92.8	176,047	#4 Blade Repairs
July 2019	103,870	143,632	87.0	99.2	247,502	
June 2019	193,833	206,623	97.5	96.3	400,456	
May 2019	334,629	333,805	98.2	90.7	668,434	
Apr. 2019	351,660	348,296	99.0	93.0	699,956	
Mar. 2019	323,973	332,299	99.1	99.8	656,272	
Feb. 2019	237,229	246,933	96.8	99.9	484,162	
Jan. 2019	329,634	295,250	94.2	88.6	624,884	
Dec. 2018	316,836	270,427	99.8	97.2	587,263	
Nov. 2018	312,989	315,427	99.0	100.0	628,416	
Oct. 2018	195,545	310,361	69.7	90.6	505,906	#3 and #4 Blade Repairs
Sept. 2018	263,800	281,669	97.2	97.8	545,469	
2019 Total	2,293,262	2,091,311			4,384,573	

Month	2015	2016	2017	2018	2019
January	720369	393,477	534,867	398,844	624,884
February	695143	740,655	771,227	317,618	484,162
March	746045	761,028	806,936	432,165	656,272
April	965530	1,041,382	601,823	681,026	699,956
May	755889	557,947	598,108	427,219	668,434
June	324005	583,043	534,662	523,406	400,456
July	755889	199,043	214,304	330,556	247,502
August	457386	321,326	109,215	278,651	176,047
September	499215	609,004	400,210	545,469	426,860
October	744572	727,379	925,000	505,906	
November	929609	640,522	690,847	628,416	
December	616700	998,977	338,980	587,263	
Total	8,210,352	7,573,783	6,526,179	5,656,539	4,384,573



Fun Fact – If someone asked you when the first electricity-generating wind turbine was made in America, what would you say? The 1940s or 50s? The very first was constructed long before that. In 1888, Charles Brush, an Ohio-based engineer, built a 60-foot tower with a 56-foot rotor to generate up to about 12kW of electricity.

