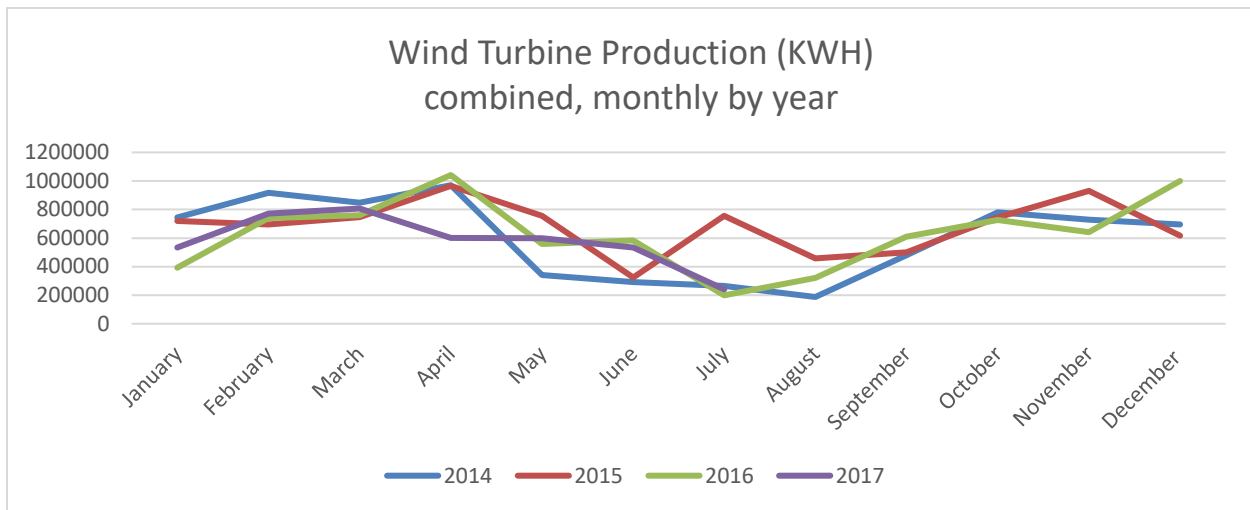




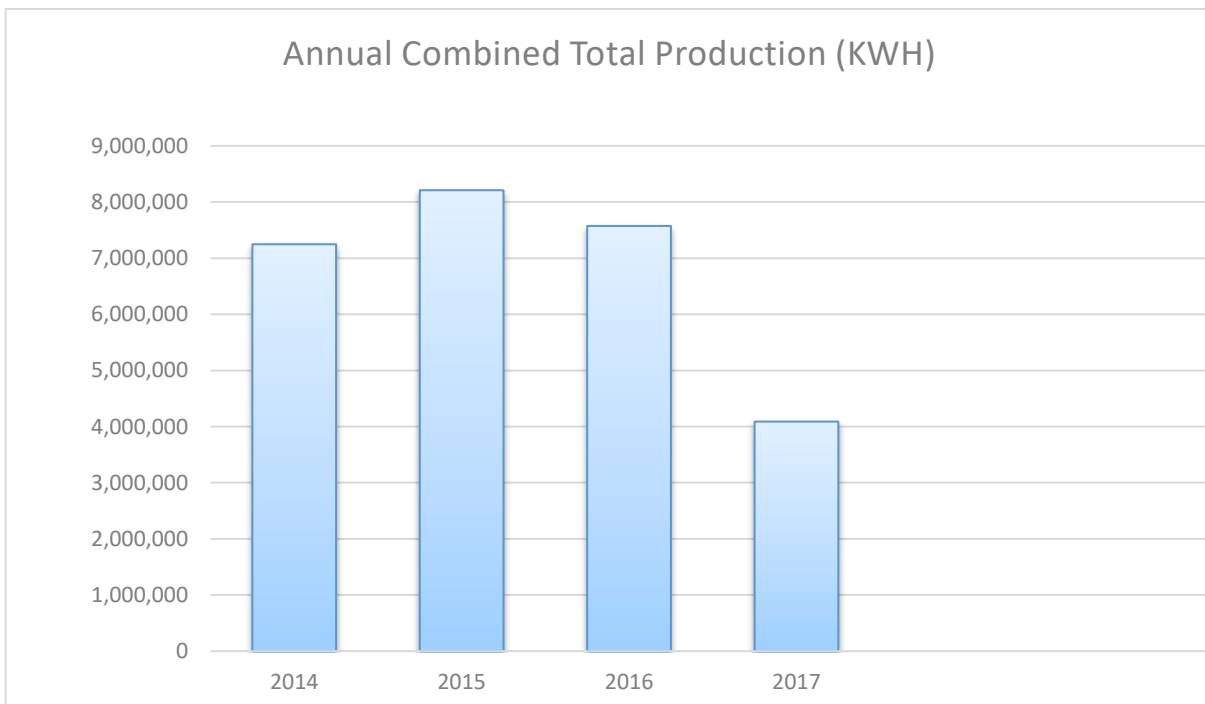
WILLMAR MUNICIPAL UTILITIES

July 2017 Wind Turbine Report



	Production (KWH)		Availability (%)		Total KWH	Major Outages
	#3	#4	#3	#4		
July 2017	104,131	136,936	61.8	93.2	241,067	#3 Control Software Malfunction
June 2017	257,597	277,065	98.0	97.6	534,662	
May 2017	294,078	304,030	94.2	99.0	598,108	
Apr. 2017	299,044	302,779	86.8	86.3	601,823	
Mar. 2017	409,026	397,910	88.0	91.3	806,936	
Feb. 2017	385,543	385,684	94.5	95.8	771,227	
Jan. 2017	236,582	298,285	77.4	91.3	534,867	
Dec. 2016	467,905	531,073	92.9	93.4	998,977	
Nov. 2016	289,656	350,866	87.4	98.7	640,522	
Oct. 2016	324,972	402,407	87.7	98.6	727,379	
Sep. 2016	294,369	314,635	94.3	94.8	609,004	#3 & #4 Semi-Annual Maintenance
Aug. 2016	146,747	174,579	89.6	99.3	321,326	
July 2016	51,934	147,109	49.4	66.8	199,043	
2017 Total	1,986,001	2,102,689			4,088,690	

Month	2014	2015	2016	2017		
January	745643	720369	393,477	534,867		
February	916093	695143	740,655	771,227		
March	848017	746045	761,028	806,936		
April	970215	965530	1,041,382	601,823		
May	340154	755889	557,947	598,108		
June	292744	324005	583,043	534,662		
July	264420	755889	199,043	241,067		
August	187490	457386	321,326			
September	480586	499215	609,004			
October	779328	744572	727,379			
November	728534	929609	640,522			
December	694570	616700	998,977			
Total	7,247,794	8,210,352	7,573,783	4,088,690		



Fun fact: Because the generator is connected by an electrical cable that runs from the nacelle (top) to the switch gear (bottom). The turbine has the potential to wrap itself up and needs to periodically stop and unwind or rotate in the opposing direction in order to avoid tangling.