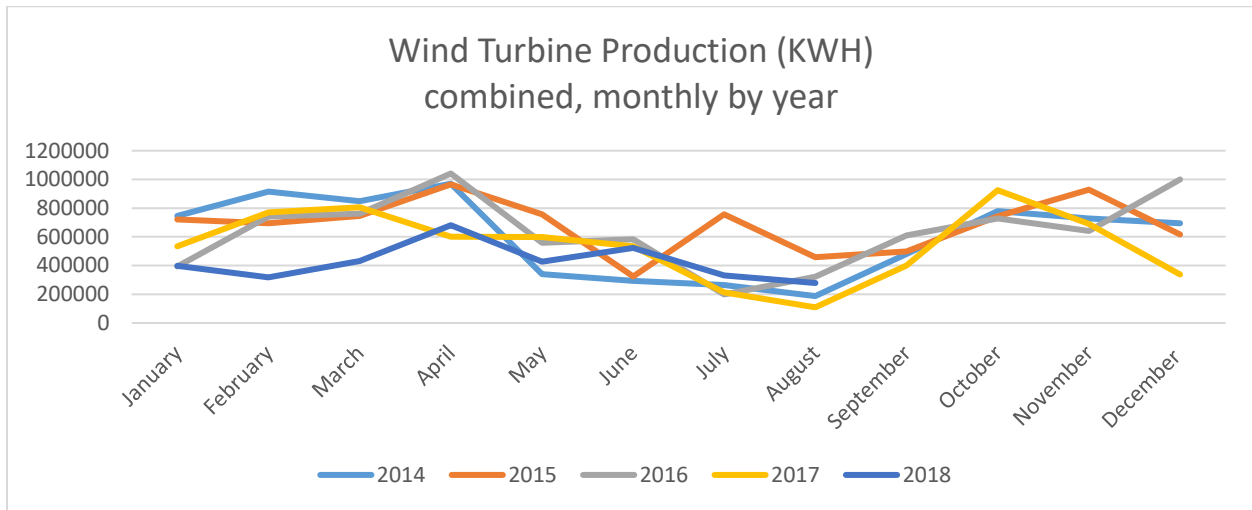




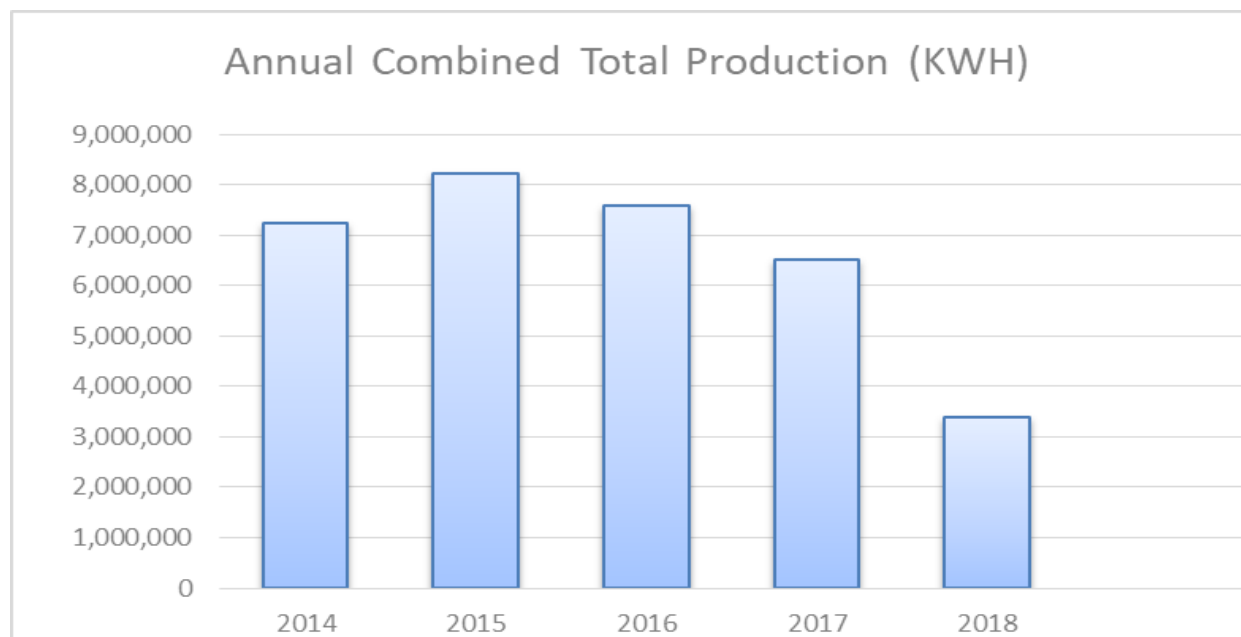
WILLMAR MUNICIPAL UTILITIES

August 2018 Wind Turbine Report



	Production (KWH)		Availability (%)		Total KWH	Major Outages
	#3	#4	#3	#4		
Aug. 2018	137,091	141,560	100.0	81.6	278,651	
July 2018	155,457	175,099	95.2	98.2	330,556	
June 2018	249,292	274,114	90.4	91.3	523,406	
May 2018	209,088	218,131	94.6	96.9	427,219	
Apr. 2018	303,979	377,047	78.6	100.0	681,026	
Mar. 2018	389,456	42,709	93.6	6.9	432,165	#4 Blade Pitch Control Unit Failure
Feb. 2018	317,618	-	99.6	0.0	317,618	#4 Blade Pitch Control Unit Failure
Jan. 2018	398,844	-	92.0	0.0	398,844	#4 Blade Pitch Control Unit Failure
Dec. 2017	338,980	-	91.7	0.0	338,980	#4 Blade Pitch Control Unit Failure
Nov. 2017	404,496	286,351	94.7	73.7	690,847	
Oct. 2017	468,821	456,179	97.8	92.7	925,000	
Sep. 2017	192,873	207,337	62.2	67.4	400,210	#3 Control Software Malfunction #4 Hydraulic System Overheated
Aug. 2017	109,215	-	66.0	0.0	109,215	#3 Control Software Malfunction #4 Hydraulic System Overheated
2018 Total	2,160,825	1,228,660			3,389,485	

Month	2014	2015	2016	2017	2018
January	745643	720369	393,477	534,867	398,844
February	916093	695143	740,655	771,227	317,618
March	848017	746045	761,028	806,936	432,165
April	970215	965530	1,041,382	601,823	681,026
May	340154	755889	557,947	598,108	427,219
June	292744	324005	583,043	534,662	523,406
July	264420	755889	199,043	214,304	330,556
August	187490	457386	321,326	109,215	278,651
September	480586	499215	609,004	400,210	
October	779328	744572	727,379	925,000	
November	728534	929609	640,522	690,847	
December	694570	616700	998,977	338,980	
Total	7,247,794	8,210,352	7,573,783	6,526,179	3,389,485



Fun Fact: Albert Betz (1885-1968) was a German physicist and a pioneer of the wind turbine technology. He discovered wind energy theory and published in his book 'Wind-Energie', published in 1919.