

**Capital Power  
Continuous Ambient Air Quality  
Monitoring Program  
Annual Summary for 2017**

**Prepared by:**



January 24, 2018

Capital Power  
Mr. Kevin Parry  
Box 20, Site 2, RR 1  
Warburg, AB  
T0C 2T0

Dear Mr. Parry:

**Re: Annual Ambient Air Quality Monitoring Report January – December 2017  
For Capital Power**

The West Central Airshed Society (WCAS) presents the 2017 Annual Report containing ambient air quality and meteorological information from the following site:

Network Station is                      AMS 910              Genesee  
Identified as:

WCAS data collection and validation began March 1, 2004. The following is a list of the reported ambient air and meteorological parameters measured at the site location:

**AMS 910 (Genesee)**

SO<sub>2</sub>, NO/ NO<sub>2</sub>/ NO<sub>x</sub>, Particulate Matter (2.5 microns), Wind Speed and Direction, Relative Humidity, External Temperature (10m and 2m), Delta Temperature, (2m – 10m), Global Solar Radiation.

**Exceedances of the Alberta Air Quality Objectives (AAAQO):**

There were twenty (20) exceedances of the 1-hour AAAQG and ten (10) exceedances of the 24-hour AAAQO for PM<sub>2.5</sub> recorded in 2017, attributed primarily to forest fire events.

If additional information is required, please call (587) 499-4900.

Sincerely,



Patrick Andersen  
Environmental Specialist

**Summary Report**

Continuous air quality/meteorological monitoring measurements

**West Central Airshed Society**

Capital Power / Genesee Station 910														January to December 2017		
Parameter	Calibration Hours	Number of Data	Percent Uptime	Mean	Total	Min	Max	Percentile					Exceedences		24 Hour Average Maximum (ppm)	
								P10	Q1	Median	Q3	P90	1-hour	24-hour		
SO <sub>2</sub> (ppb)	418	8287	99.4	0.7	-	0.0	42.3	0.0	0.0	0.2	0.5	1.3	0	0	0.007	
O <sub>3</sub> (ppb)	419	8291	99.4	20.5	-	0.0	74.4	8.1	13.1	19.2	26.3	34.7	0	-	0.043	
NO (ppb)	434	8271	99.4	0.7	-	0.0	32.0	0.1	0.2	0.4	0.7	1.6	-	-	-	
NO <sub>2</sub> (ppb)	434	8271	99.4	3.6	-	0.3	27.8	1.3	1.9	2.8	4.4	6.8	0	0	0.011	
NO <sub>x</sub> (ppb)	434	8271	99.4	4.3	-	0.4	54.4	1.5	2.2	3.2	5.1	8.1	-	-	-	
Particulate Matter 2.5 microns (µ/m <sup>3</sup> )	0	8700	99.3	7.2	-	0.5	326.2	1.9	2.9	4.7	8.1	13.8	20	10	58 ug/m3	
Wind Speed (kph)	0	8656	98.8	12.2	-	0.0	55.6	4.0	6.9	11.1	15.9	21.6	-	-	-	
Temperature - 2m (°C)	0	8711	99.4	4.2	-	-32.3	31.8	-13.1	-3.2	4.6	13.3	19.6	-	-	-	
Temperature - 10m (°C)	0	8711	99.4	4.2	-	-32.0	30.8	-13.3	-2.7	5.0	13.5	19.0	-	-	-	
Delta Temperature (°C)	0	8711	99.4	0.0	-	-3.5	6.2	-1.4	-0.8	-0.2	0.8	1.9	-	-	-	
Relative Humidity (%)	0	8711	99.4	72.6	-	20.4	100.7	46.7	59.6	75.0	87.6	94.7	-	-	-	
Global Solar Radiation (W/m <sup>2</sup> )	0	8711	99.4	144.0	-	0.0	937.9	0.0	0.0	6.9	215.6	514.0	-	-	-	
Std Dev Wind Direction (deg)	0	8656	98.8	17.9	-	1.6	100.0	6.9	9.3	12.7	19.7	36.9	-	-	-	
Std Dev Wind Speed (kph)	0	8656	98.8	2.9	-	0	17.8	1.3	1.7	2.5	3.6	4.9	-	-	-	

West Central Airshed Society - Genesee (AMS 910)  
 Annual Summary for 2017  
 SO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations	Percent of Data in each Concentration Range (ppm)					
								<=0.02	>0.02-0.06	>0.06-0.11	>0.11-0.17	>0.17-0.34	>0.34
January	708	0.5	2.6	9.3	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	640	0.8	3.1	10.2	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	704	0.6	2.3	20.1	99.6	0	0	99.86	0.14	0.00	0.00	0.00	0.00
April	683	0.6	2.8	17.6	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	674	1.2	4.5	38.9	95.0	0	0	99.70	0.30	0.00	0.00	0.00	0.00
June	686	2.0	7.4	42.3	100.0	0	0	98.83	1.17	0.00	0.00	0.00	0.00
July	703	0.9	3.1	26.7	99.5	0	0	99.72	0.28	0.00	0.00	0.00	0.00
August	709	0.4	1.5	13.2	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	682	0.3	1.3	7.3	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	709	0.2	0.7	7.9	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	685	0.2	0.8	4.6	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	704	0.2	0.5	2.4	99.2	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8287	0.7	7.4	42.3	99.4	0	0	99.84	0.16	0.00	0.00	0.00	0.00

West Central Airshed Society - Genesee (AMS 910)  
 Annual Summary for 2017  
 NO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations	Percent of Data in each Concentration Range (ppm)			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	707	5.1	9.0	21.6	100.0	0	0	100.00	0	0	0
February	638	4.8	11.0	27.8	100.0	0	0	100.00	0	0	0
March	704	4.5	7.9	20.2	99.6	0	0	100.00	0	0	0
April	682	3.4	6.2	19.4	99.6	0	0	100.00	0	0	0
May	672	4.5	8.1	22.5	95.0	0	0	100.00	0	0	0
June	685	4.7	8.2	23.6	100.0	0	0	100.00	0	0	0
July	702	3.1	4.7	21.6	99.5	0	0	100.00	0	0	0
August	708	2.0	3.4	12.6	100.0	0	0	100.00	0	0	0
September	678	2.1	4.8	13.7	99.6	0	0	100.00	0	0	0
October	707	2.6	4.7	11.1	100.0	0	0	100.00	0	0	0
November	684	3.4	7.0	14.5	100.0	0	0	100.00	0	0	0
December	704	3.0	4.6	11.2	99.3	0	0	100.00	0	0	0
Annual	8271	3.6	11.0	27.8	99.4	0	0	100.00	0	0	0

West Central Airshed Society - Genesee (AMS 910)  
 Annual Summary for 2017  
 O3 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 1-Hour Violations
January	708	20.7	34.8	40.7	100.0	0
February	640	25.4	43.3	45.3	100.0	0
March	705	20.6	29.6	41.0	99.6	0
April	682	20.5	30.6	44.0	99.4	0
May	674	24.8	41.2	57.6	95.0	0
June	686	24.7	40.5	57.3	100.0	0
July	704	24.8	38.3	54.8	99.5	0
August	709	21.7	37.2	56.1	100.0	0
September	680	18.7	42.4	74.4	99.7	0
October	709	13.6	22.3	37.9	100.0	0
November	685	14.5	22.6	32.2	100.0	0
December	709	16.4	22.1	28.9	100.0	0
Annual	8291	20.5	43.3	74.4	99.4	0

West Central Airshed Society - Genesee (AMS 910)  
 Annual Summary for 2017  
 PM<sub>2.5</sub> (µg/m<sup>3</sup>)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations
January	744	5.0	16.5	29.5	100.0	0	0
February	672	5.4	16.9	33.7	100.0	0	0
March	740	6.1	15.2	36.8	99.5	0	0
April	716	3.8	7.9	15.7	99.4	0	0
May	707	5.4	17.5	41.9	95.0	0	0
June	716	5.8	12.0	32.0	99.4	0	0
July	740	12.1	51.8	109.2	99.5	3	11
August	744	13.8	58.0	326.2	100.0	5	8
September	717	8.4	31.8	58.4	99.6	1	0
October	744	4.0	6.5	18.9	100.0	0	0
November	720	9.9	31.0	65.2	100.0	1	0
December	740	5.9	14.6	86.3	99.5	0	1
Annual	8700	7.2	58.0	326.2	99.3	10	20

West Central Airshed Society - Genesee (AMS 910)  
 Annual Summary for 2017  
 Percentage Frequency Distribution of Wind

Direction	Speed (kph)						Totals
	>1 to 5	>5 to 11	>11 to 19	>19 to 28	>28 to 38	>38	
N	82.00	135.00	128.00	29.00	3.00	3.00	380.00
NNE	64.00	121.00	70.00	8.00	3.00	0.00	266.00
NE	85.00	119.00	37.00	2.00	0.00	0.00	243.00
ENE	115.00	226.00	55.00	8.00	0.00	0.00	404.00
E	120.00	338.00	132.00	4.00	0.00	0.00	594.00
ESE	105.00	259.00	207.00	35.00	0.00	0.00	606.00
SE	97.00	142.00	135.00	61.00	10.00	0.00	445.00
SSE	97.00	95.00	38.00	34.00	4.00	0.00	268.00
S	110.00	65.00	33.00	8.00	0.00	0.00	216.00
SSW	108.00	110.00	33.00	5.00	0.00	0.00	256.00
SW	122.00	355.00	246.00	29.00	0.00	0.00	752.00
WSW	103.00	400.00	486.00	36.00	5.00	0.00	1030.00
W	59.00	243.00	403.00	102.00	14.00	0.00	821.00
WNW	43.00	136.00	326.00	179.00	61.00	13.00	758.00
NW	40.00	142.00	368.00	305.00	116.00	30.00	1001.00
NNW	54.00	161.00	206.00	87.00	27.00	6.00	541.00
Totals	1404.00	3047.00	2903.00	932.00	243.00	52.00	8581.00

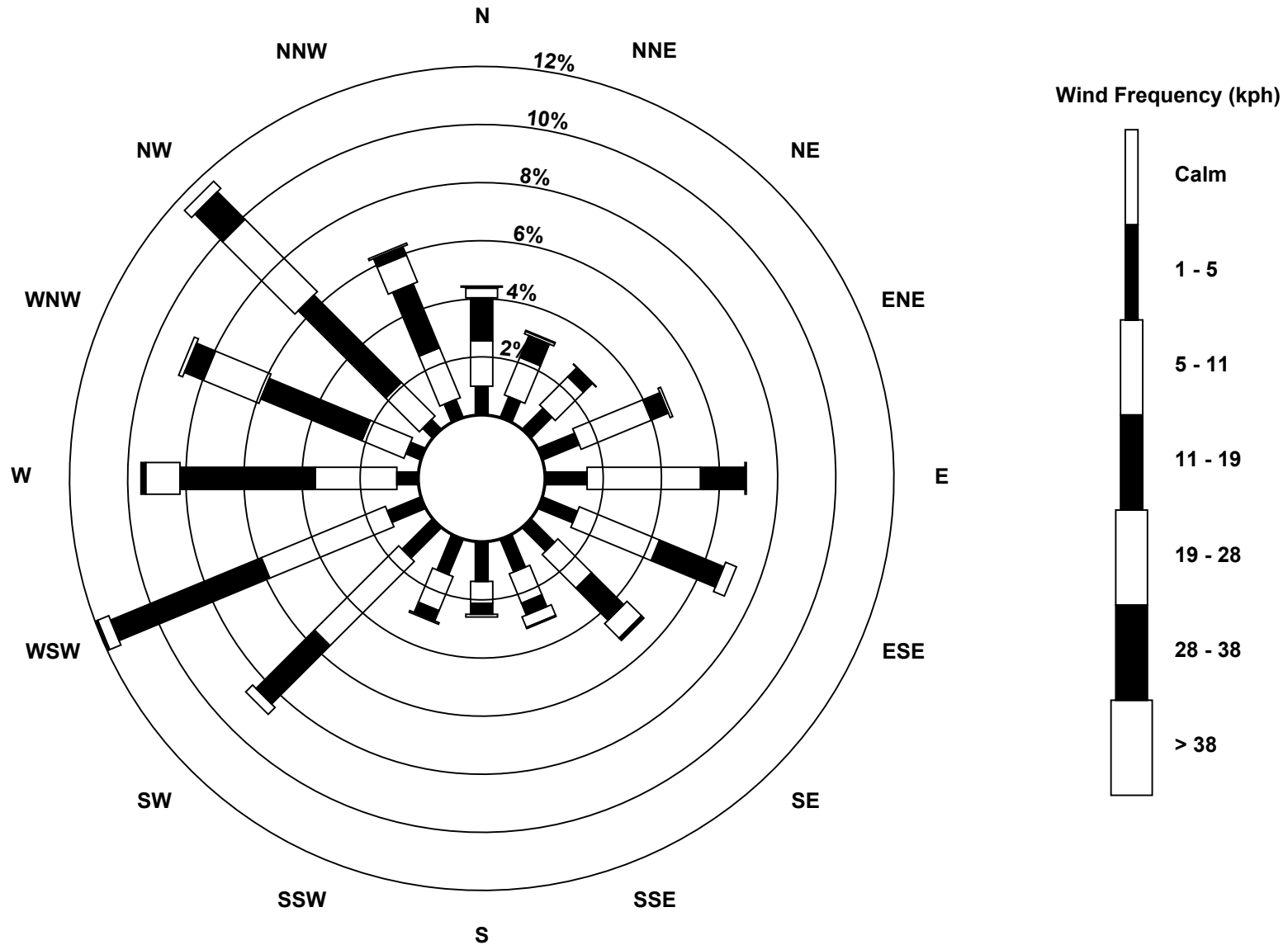
Number of Data Values		8581
Hours in Time Period		8760



WCAS - Genesee  
Wind Speed Rose



Wind Speed (WS) - kph  
2017



West Central Airshed Society - Geness (AMS 910)  
 Annual Summary for 2017  
 External Temperature (°C)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)
January	744	-7.3	5.3	7.6	100.0
February	672	-6.4	8.6	15.4	100.0
March	741	-4.9	5.7	13.0	99.6
April	716	3.2	9.3	14.5	99.4
May	707	13.3	20.6	28.2	95.0
June	720	15.5	20.9	27.8	100.0
July	741	17.7	22.1	29.7	99.6
August	744	16.1	19.1	27.9	100.0
September	718	11.7	18.9	31.8	99.7
October	744	4.9	12.8	22.6	100.0
November	720	-6.9	1.7	6.9	100.0
December	744	-7.1	5.8	10.1	100.0
Annual	8711	4.2	22.1	31.8	99.4