



**TransAlta Utilities Corporation
Continuous Ambient Air Quality
Monitoring Program
Annual Summary for 2014**

Prepared by:

**West Central Airshed Society
Drayton Valley, Alberta**



February 6th, 2015

Attention: Mr. Ken Woollard
GBS Building
RR#1, Site 4, Box #2
Duffield Alberta
T0E 0N0

Dear Sir:

**Re: Annual Ambient Air Quality Monitoring Report January – December 2014.
For TransAlta Utilities Corporation**

The West Central Airshed Society (WCAS) presents the 2014 Annual Report containing ambient air quality and meteorological information from the following sites:

Network Stations are	AMS 907	Power
Identified as:	AMS 908	Meadows
	AMS 959	Wagner2

The following is a list of the reported ambient air and meteorological parameters measured at each site location:

AMS 907 (Power)

SO₂, NO/ NO₂/ NO_x, Particulate Matter (2.5 microns), Wind Speed and Direction, Relative Humidity, and External Temperature.

AMS 908 (Meadows)

SO₂, NO/ NO₂/ NO_x, Wind Speed and Direction, Relative Humidity, and External Temperature.

AMS 959 (Wagner2)

SO₂, NO/ NO₂/ NO_x, Wind Speed and Direction, Relative Humidity, and External Temperature.

If additional information is required please contact Patrick Andersen at (780) 514-3533.

Sincerely,



Patrick Andersen
Environmental Specialist



Greg Swain
Senior Technologist



Jeff McClintock
Intermediate Technologist

Summary Report

Continuous air quality/meteorological monitoring measurements

West Central Airshed Society

TransAlta / Powers Station 907													January to December 2014
Parameter	Calibration Hours	Number of Data	Percent Uptime	Mean	Total	Min	Max	----- P10	----- Q1	Percentile Median	----- Q3	----- P90	24 Hour Average Max (ppm)
SO ₂ (ppb)	419	8333	99.9	0.3	-	0.0	29.3	0.0	0.0	0.0	0.0	0.3	0.006
NO (ppb)	435	8317	99.9	0.3	-	0.0	35.6	0.0	0.0	0.0	0.0	0.2	-
NO ₂ (ppb)	435	8317	99.9	3.3	-	0.0	42.1	0.0	0.8	2.1	4.3	7.7	0.021
NO _x (ppb)	435	8317	99.9	2.7	-	0.0	60.8	0.0	0.0	0.7	3.4	7.8	-
Particulate Matter 2.5 microns (µ/m ³)	21	8719	99.8	4.1	-	0.0	77.6	0.2	1.2	2.7	5.1	9.1	31.21 ug/m3
Wind Speed (kph)	0	8753	99.9	11.3	-	0.0	52.8	4.1	6.8	10.4	14.6	19.5	-
Temperature (°C)	0	8553	97.6	3.6	-	-32.9	30.8	-14.2	-5.2	4.8	13.2	19.0	-
Relative Humidity (%)	0	8750	99.9	69.3	-	14.9	102.2	40.2	54.4	72.3	85.5	94.0	-
Precipitation (mm)	0	8753	99.9	-	104.8	0.0	4.6	0.0	0.0	0.0	0.0	0.0	-
Std Dev Wind Direction (deg)	0	8753	99.9	18.1	-	1.1	100.2	8.1	10.2	13.4	19.9	33.2	-
Std Dev Wind Speed (kph)	0	8753	99.9	2.7	-	0.2	16.9	1.2	1.7	2.4	3.4	4.6	-

Summary Report

Continuous air quality/meteorological monitoring measurements

West Central Airshed Society

TransAlta / Meadows Station 908													January to December 2014
Parameter	Calibration Hours	Number of Data	Percent Uptime	Mean	Total	Min	Max	P10	Q1	Percentile Median	Q3	P90	24 Hour Average Max (ppm)
SO ₂ (ppb)	418	8336	99.9	0.6	-	0.0	56.7	0.0	0.0	0.0	0.1	1.4	0.006
NO (ppb)	432	8322	99.9	4.7	-	0.0	191.3	0.0	0.0	0.0	2.5	13.8	-
NO ₂ (ppb)	432	8322	99.9	7.4	-	0.0	45.5	0.0	0.6	4.2	11.7	20.3	0.026
NO _x (ppb)	432	8322	99.9	11.8	-	0.0	220.0	0.0	0.0	4.4	14.6	33.3	-
Wind Speed (kph)	0	8754	99.9	9.7	-	0.0	47.4	2.6	5.2	8.5	13.2	18.2	-
Temperature (°C)	0	8754	99.9	3.6	-	-34.0	29.6	-14.7	-5.9	5.0	13.7	19.4	-
Relative Humidity (%)	0	8754	99.9	69.6	-	15.4	98.3	42.1	57.0	73.2	84.4	90.9	-
Precipitation (mm)	0	8754	99.9	-	124.1	0.0	5.3	0.0	0.0	0.0	0.0	0.0	-
Std Dev Wind Direction (deg)	0	8754	99.9	22.8	-	2.5	105.3	7.3	10.3	15.2	26.4	52.7	-
Std Dev Wind Speed (kph)	0	8754	99.9	2.6	-	0.0	13.6	1.2	1.6	2.3	3.2	4.4	-

Summary Report

Continuous air quality/meteorological monitoring measurements

West Central Airshed Society

TransAlta / Wagner2 Station 959												24 Hour Average Max (ppm)
January to December 2014												
Parameter	Calibration Hours	Number of Data	Percent Uptime	Mean	Min	Max	P10	Q1	Percentile Median	Q3	P90	
SO ₂ (ppb)	418	8293	99.4	0.9	0.0	41.8	0.0	0.0	0.0	0.0	2.4	0.006
NO (ppb)	430	8282	99.5	1.7	0.0	83.5	0.0	0.0	0.0	0.9	5.1	-
NO ₂ (ppb)	430	8282	99.5	5.9	0.0	92.9	1.2	2.2	4.4	7.7	13.0	0.040
NO _x (ppb)	430	8282	99.5	7.1	0.0	135.8	0.3	1.5	4.3	9.2	17.1	-
Wind Speed (kph)	0	8708	99.4	4.0	0.0	24.9	0.2	0.7	2.6	6.0	9.8	-
Temperature (°C)	0	8707	99.4	4.0	-39.9	32.1	-14.6	-5.5	5.2	14.4	20.5	-
Relative Humidity (%)	0	8708	99.4	68.6	14.4	96.5	38.5	54.7	73.1	84.8	91.0	-
Std Dev Wind Direction (deg)	0	8708	99.4	47.2	7.1	120.0	18.9	26.4	39.5	69.0	86.6	-
Std Dev Wind Speed (kph)	0	8708	99.4	2.2	0.1	10.3	0.7	1.0	1.8	3.1	4.3	-

**TransAlta Utilities Corporation
Frequency Distribution Charts
Wind Speed and Direction
Year 2014**

West Central Airshed Society - Power (AMS 907)
 Annual Summary for 2014
 Percentage Frequency Distribution of Wind

Speed (kph)							
Direction	>1 to 5	>5 to 11	>11 to 19	>19 to 28	>28 to 38	>38	Totals
N	0.56	1.70	1.70	0.48	0.05	0.00	4.50
NNE	0.76	1.77	1.54	0.13	0.01	0.00	4.21
NE	1.15	2.22	0.56	0.08	0.00	0.00	4.02
ENE	1.00	1.31	0.16	0.00	0.00	0.00	2.47
E	0.91	1.19	0.32	0.01	0.00	0.00	2.43
ESE	0.63	1.31	0.71	0.20	0.00	0.00	2.85
SE	0.85	3.18	3.47	1.07	0.02	0.00	8.60
SSE	1.17	4.26	4.46	0.96	0.09	0.00	10.94
S	1.59	3.61	1.85	0.01	0.00	0.00	7.06
SSW	1.25	2.49	0.76	0.10	0.00	0.00	4.60
SW	1.58	3.11	1.76	0.15	0.01	0.00	6.60
WSW	1.01	3.28	2.51	0.12	0.00	0.00	6.92
W	1.23	3.90	3.29	0.40	0.00	0.00	8.83
WNW	1.01	3.87	3.45	0.97	0.14	0.05	9.48
NW	0.90	2.44	4.02	3.06	0.89	0.12	11.41
NNW	0.79	1.60	1.70	0.82	0.15	0.01	5.07
Totals	16.41	41.23	32.29	8.55	1.36	0.17	100.00

Number of Data Values		8691
Hours in Time Period		8760

West Central Airshed Society - Meadows (AMS 908)
 Annual Summary for 2014
 Percentage Frequency Distribution of Wind

Speed (kph)							
Direction	>1 to 5	>5 to 11	>11 to 19	>19 to 28	>28 to 38	>38	Totals
N	0.82	1.87	0.75	0.07	0.00	0.00	3.52
NNE	0.78	1.32	0.49	0.09	0.00	0.00	2.68
NE	1.01	1.87	0.84	0.11	0.00	0.00	3.82
ENE	1.21	1.92	1.45	0.01	0.00	0.00	4.59
E	2.55	2.53	1.16	0.01	0.00	0.00	6.26
ESE	2.91	5.27	2.46	0.66	0.02	0.00	11.32
SE	1.74	2.59	2.42	1.06	0.15	0.00	7.96
SSE	0.91	1.11	1.07	0.13	0.01	0.00	3.22
S	0.69	0.86	0.22	0.00	0.00	0.00	1.78
SSW	0.75	0.93	0.36	0.04	0.00	0.00	2.08
SW	1.45	1.06	0.51	0.14	0.06	0.00	3.21
WSW	3.08	3.03	0.89	0.05	0.01	0.00	7.07
W	4.00	8.20	2.53	0.27	0.04	0.00	15.03
WNW	1.80	4.26	5.09	1.80	0.26	0.05	13.26
NW	0.78	2.31	3.98	1.93	0.28	0.07	9.34
NNW	0.82	2.16	1.54	0.33	0.00	0.00	4.86
Totals	25.30	41.28	25.77	6.69	0.84	0.12	100.00

Number of Data Values	8501
Hours in Time Period	8760

West Central Airshed Society - Wagner2 (AMS 959)
 Annual Summary for 2014
 Percentage Frequency Distribution of Wind

Speed (kph)							
Direction	>1 to 5	>5 to 11	>11 to 19	>19 to 28	>28 to 38	>38	Totals
N	3.48	0.53	0.00	0.00	0.00	0.00	4.01
NNE	3.25	0.68	0.00	0.00	0.00	0.00	3.93
NE	1.72	0.18	0.00	0.00	0.00	0.00	1.90
ENE	2.13	0.32	0.00	0.00	0.00	0.00	2.45
E	3.66	2.23	0.25	0.00	0.00	0.00	6.15
ESE	5.88	5.33	2.08	0.17	0.00	0.00	13.46
SE	3.60	2.85	1.48	0.00	0.00	0.00	7.93
SSE	2.70	1.15	0.70	0.03	0.00	0.00	4.58
S	2.75	0.80	0.12	0.00	0.00	0.00	3.66
SSW	1.03	0.17	0.00	0.00	0.00	0.00	1.20
SW	1.00	0.05	0.00	0.00	0.00	0.00	1.05
WSW	1.83	0.35	0.00	0.00	0.00	0.00	2.18
W	4.08	1.02	0.03	0.00	0.00	0.00	5.13
WNW	5.81	5.71	1.37	0.03	0.00	0.00	12.93
NW	8.53	7.30	2.83	0.00	0.00	0.00	18.66
NNW	7.53	3.17	0.08	0.00	0.00	0.00	10.78
Totals	58.99	31.83	8.95	0.23	0.00	0.00	100.00

Number of Data Values		6003
Hours in Time Period		8760

**TransAlta Utilities Corporation
Frequency Distribution Charts
SO₂ Monthly Averages
Year 2014**

West Central Airshed Society - Power (AMS 907)
 Annual Summary for 2014
 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					
								<=0.02	>0.02-0.06	>0.06-0.11	>0.11-0.17	>0.17-0.34	>0.34
January	707	0.1	2.2	5.8	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	640	0.4	3.3	8.4	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	709	0.5	4.7	29.1	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
April	682	0.2	1.7	15.3	99.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	708	0.2	2.6	12.6	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	685	0.2	1.4	7.4	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	706	0.4	2.0	12.6	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	707	0.2	2.1	17.9	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	685	0.3	2.1	29.3	100.0	0	0	99.85	0.15	0.00	0.00	0.00	0.00
October	708	0.2	1.1	8.9	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	687	0.1	1.0	10.6	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.3	5.8	19.5	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8333	0.3	5.8	29.3	99.9	0	0	99.98	0.02	0.00	0.00	0.00	0.00

West Central Airshed Society - Meadows (AMS 908)
 Annual Summary for 2014
 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					
								<=0.02	>0.02-0.06	>0.06-0.11	>0.11-0.17	>0.17-0.34	>0.34
January	709	0.2	1.9	4.6	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	640	0.7	5.8	16.5	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	709	1.2	6.4	38.5	100.0	0	0	99.15	0.85	0.00	0.00	0.00	0.00
April	686	0.6	4.6	18.7	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	706	0.5	4.7	30.3	99.7	0	0	99.43	0.57	0.00	0.00	0.00	0.00
June	682	0.6	3.4	28.7	99.4	0	0	99.85	0.15	0.00	0.00	0.00	0.00
July	705	1.0	5.3	56.7	100.0	0	0	99.72	0.28	0.00	0.00	0.00	0.00
August	710	0.7	5.3	21.9	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
September	686	0.2	1.1	17.1	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	709	0.5	3.6	16.9	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	686	0.3	2.2	11.6	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	708	0.4	2.8	6.1	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8336	0.6	6.4	56.7	99.9	0	0	99.83	0.17	0.00	0.00	0.00	0.00

West Central Airshed Society - Wagner2 (AMS 959)
 Annual Summary for 2014
 SO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operation Time (%)	Number 24-Hour Violations	Number 1-Hour Violation	Percent of Data in each Concentration Range					
								<=0.02	>0.02-0.06	>0.06-0.11	>0.11-0.17	>0.17-0.34	>0.34
January	689	0.8	4.9	20.2	97.5	0	0	99.85	0.15	0.00	0.00	0.00	0.00
February	640	0.6	4.1	17.0	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	709	0.7	4.5	15.1	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	1.2	5.8	23.6	100.0	0	0	99.42	0.58	0.00	0.00	0.00	0.00
May	691	1.1	3.7	26.2	97.3	0	0	99.57	0.43	0.00	0.00	0.00	0.00
June	683	1.8	6.2	41.8	99.7	0	0	99.27	0.73	0.00	0.00	0.00	0.00
July	706	1.3	6.0	36.9	99.9	0	0	98.87	1.13	0.00	0.00	0.00	0.00
August	709	0.7	2.9	19.9	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	686	0.8	3.5	29.1	100.0	0	0	99.71	0.29	0.00	0.00	0.00	0.00
October	709	0.5	3.1	30.6	100.0	0	0	99.72	0.28	0.00	0.00	0.00	0.00
November	677	0.7	3.3	26.7	99.0	0	0	99.70	0.30	0.00	0.00	0.00	0.00
December	708	0.2	1.5	15.2	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8293	0.9	6.2	41.8	99.4	0	0	99.67	0.33	0.00	0.00	0.00	0.00

**TransAlta Utilities Corporation
Frequency Distribution Charts
NO₂ Monthly Averages
Year 2014**

West Central Airshed Society - Power (AMS 907)
 Annual Summary for 2014
 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			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	705	4.4	14.6	24.6	99.7	0	0	100.00	0	0	0
February	639	4.9	19.8	42.1	100.0	0	0	100.00	0	0	0
March	708	2.9	8.3	17.4	100.0	0	0	100.00	0	0	0
April	678	2.8	5.3	13.2	99.4	0	0	100.00	0	0	0
May	708	1.9	5.4	13.6	100.0	0	0	100.00	0	0	0
June	685	1.7	5.9	11.5	100.0	0	0	100.00	0	0	0
July	704	1.9	5.3	16.3	100.0	0	0	100.00	0	0	0
August	707	2.2	5.4	22.8	99.7	0	0	100.00	0	0	0
September	684	2.2	5.6	17.2	100.0	0	0	100.00	0	0	0
October	706	3.4	8.1	17.2	100.0	0	0	100.00	0	0	0
November	686	4.4	15.2	23.7	100.0	0	0	100.00	0	0	0
December	707	6.7	20.7	26.8	100.0	0	0	100.00	0	0	0
Annual	8317	3.3	20.7	42.1	99.9	0	0	100.00	0	0	0

West Central Airshed Society - Meadows (AMS 908)
 Annual Summary for 2014
 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			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	708	9.2	23.1	43.2	100.0	0	0	100.00	0	0	0
February	639	10.3	22.3	38.7	100.0	0	0	100.00	0	0	0
March	708	7.1	20.0	38.6	100.0	0	0	100.00	0	0	0
April	684	6.0	17.0	45.5	100.0	0	0	100.00	0	0	0
May	706	4.1	8.5	27.4	99.7	0	0	100.00	0	0	0
June	680	4.5	8.5	24.4	99.4	0	0	100.00	0	0	0
July	704	4.2	10.2	37.7	100.0	0	0	100.00	0	0	0
August	709	5.4	9.1	32.7	100.0	0	0	100.00	0	0	0
September	685	5.1	10.2	27.9	100.0	0	0	100.00	0	0	0
October	707	8.5	14.0	37.1	100.0	0	0	100.00	0	0	0
November	685	8.8	18.0	38.4	100.0	0	0	100.00	0	0	0
December	707	15.4	25.6	40.3	100.0	0	0	100.00	0	0	0
Annual	8322	7.4	25.6	45.5	99.9	0	0	100.00	0	0	0

West Central Airshed Society - Wagner2 (AMS 959)
 Annual Summary for 2014
 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			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	688	7.7	19.1	32.8	97.5	0	0	100.00	0	0	0
February	639	7.3	22.9	56.9	100.0	0	0	99.84	0.16	0	0
March	708	5.1	15.7	30.8	100.0	0	0	100.00	0	0	0
April	684	4.6	10.8	29.9	100.0	0	0	100.00	0	0	0
May	690	3.9	7.8	19.1	97.3	0	0	100.00	0	0	0
June	682	7.6	39.8	92.9	99.7	0	0	99.12	0.88	0	0
July	704	4.4	8.1	25.4	99.9	0	0	100.00	0	0	0
August	709	3.6	6.9	16.5	100.0	0	0	100.00	0	0	0
September	685	4.2	7.8	25.9	100.0	0	0	100.00	0	0	0
October	708	5.2	9.0	22.9	100.0	0	0	100.00	0	0	0
November	678	7.1	15.9	27.8	99.2	0	0	100.00	0	0	0
December	707	10.7	21.6	32.4	100.0	0	0	100.00	0	0	0
Annual	8282	5.9	39.8	92.9	99.5	0	0	99.92	0.08	0	0

**TransAlta Utilities Corporation
Frequency Distribution Charts
PM Monthly Averages
Year 2014**

West Central Airshed Society - Power (AMS 907)
 Annual Summary for 2014
 PM_{2.5} (µg/m³)

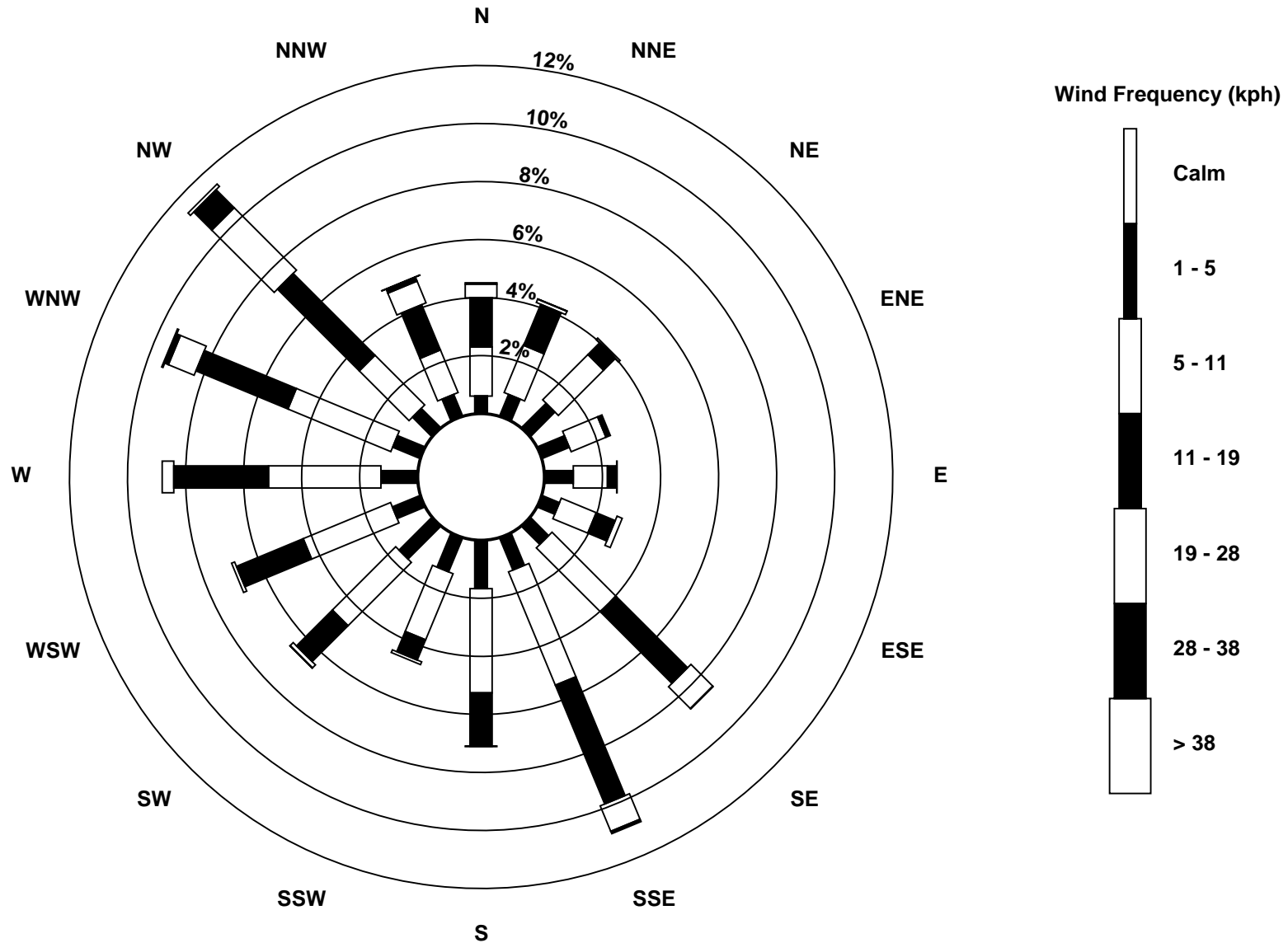
Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations
January	740	2.0	6.8	13.5	99.6	0	0
February	668	3.4	10.0	25.8	100.0	0	0
March	743	2.5	7.6	11.4	99.9	0	0
April	715	2.8	6.6	12.4	99.4	0	0
May	739	3.6	7.1	18.4	100.0	0	0
June	720	3.4	8.2	33.5	100.0	0	0
July	737	8.5	31.2	77.6	99.5	1	0
August	736	8.4	22.1	47.5	99.5	0	0
September	718	3.6	18.1	31.4	99.7	0	0
October	744	2.3	9.2	18.4	100.0	0	0
November	717	4.2	14.3	21.1	100.0	0	0
December	742	4.0	13.1	30.1	99.7	0	0
Annual	8719	4.1	31.2	77.6	99.8	1	0

**TransAlta Utilities Corporation
Frequency Distribution Charts
Meteorological Measurements
Year 2014**

WCAS - Power
Wind Speed Rose



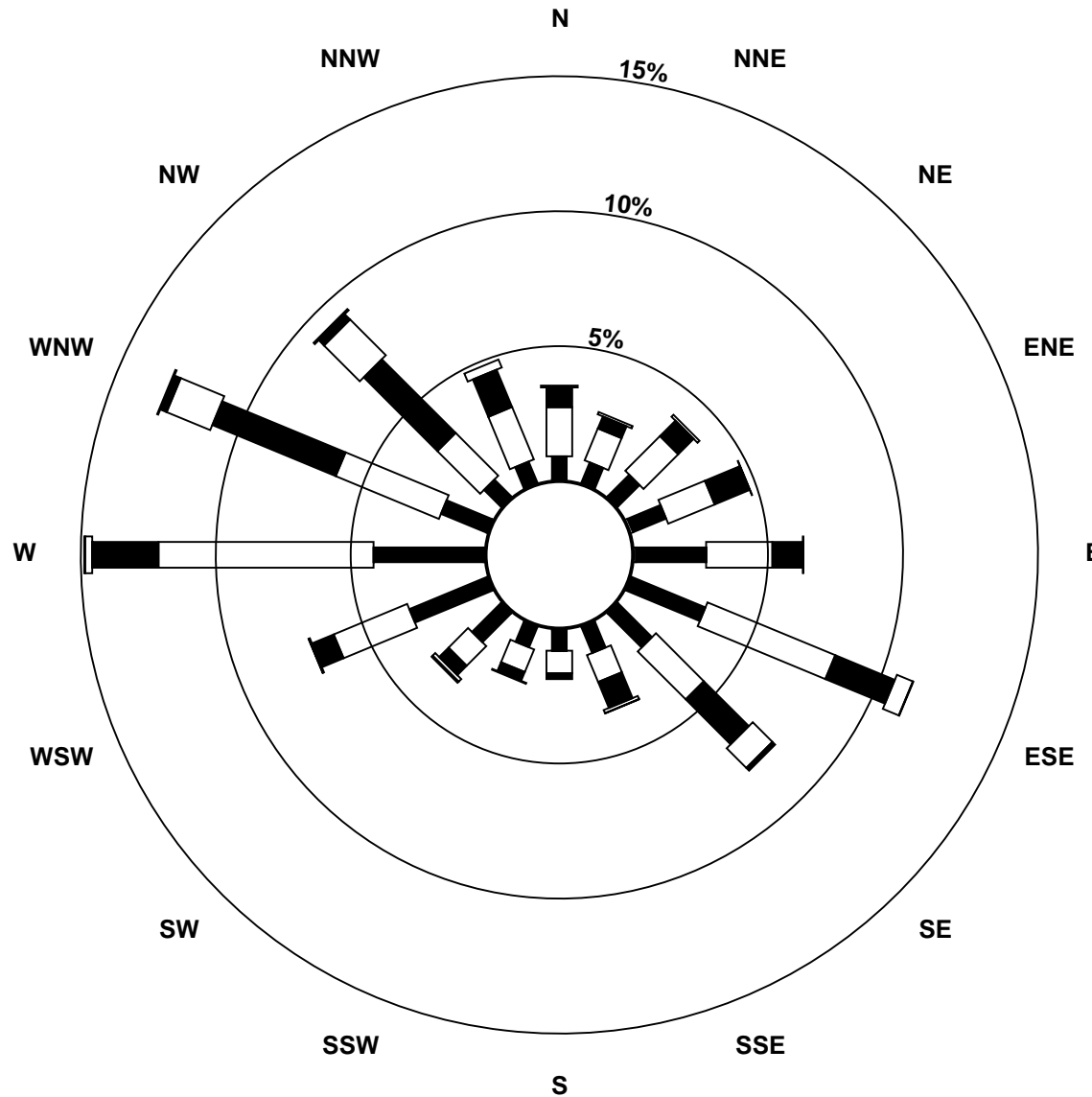
Wind Speed (WS) - kph
2014



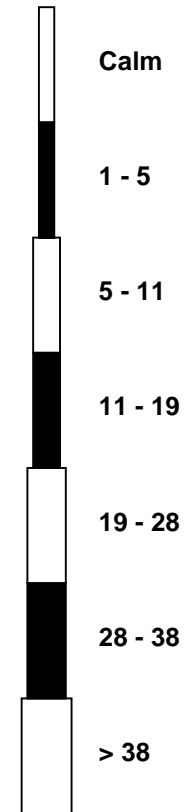
WCAS - Meadows
Wind Speed Rose



Wind Speed (WS) - kph
2014



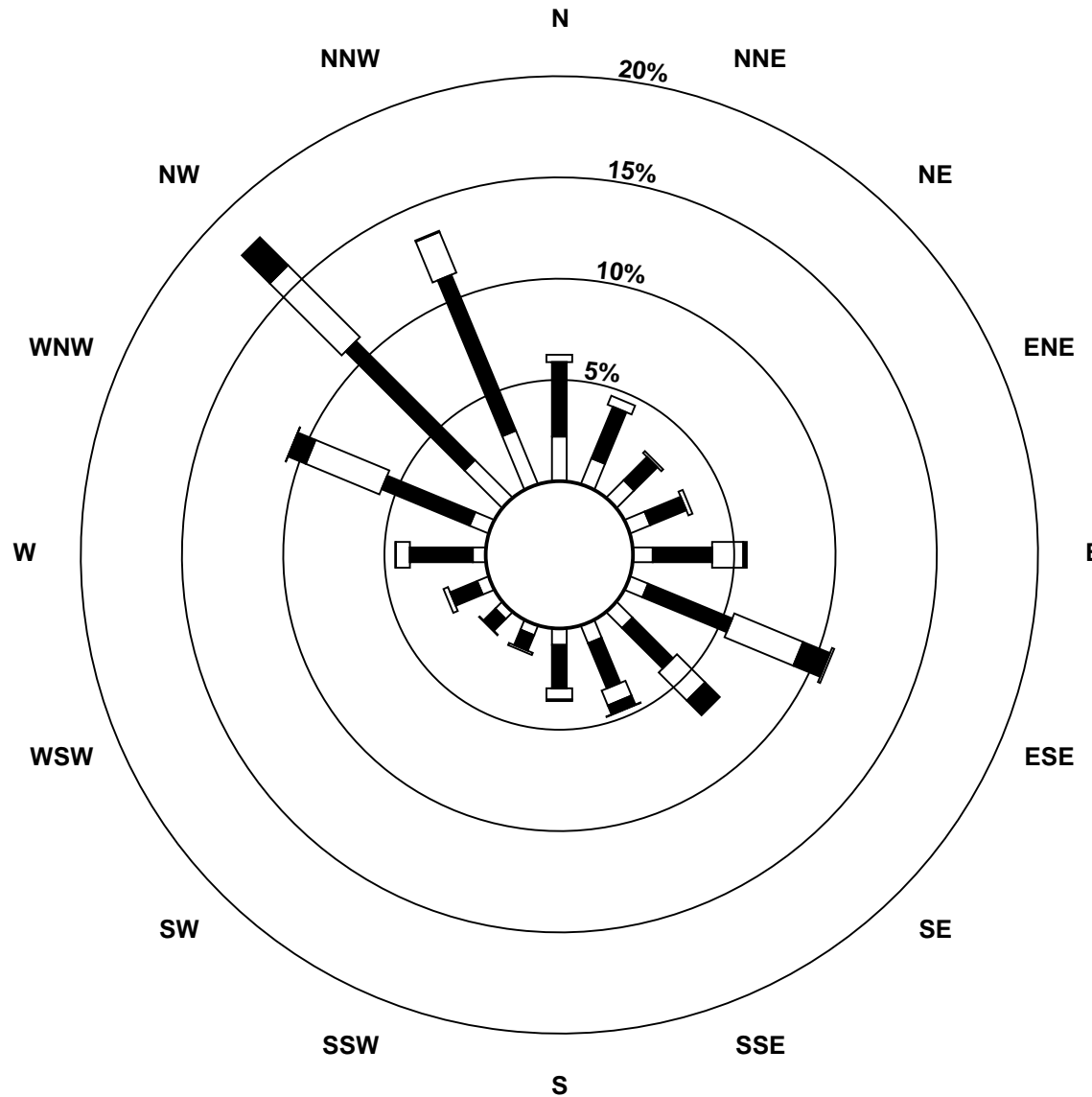
Wind Frequency (kph)



WCAS - Wagner2
Wind Speed Rose



Wind Speed (WS) - kph
2014



Wind Frequency (kph)

