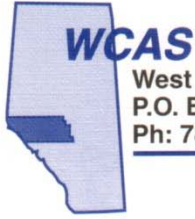




**TransAlta Utilities Corporation  
Continuous Ambient Air Quality  
Monitoring Program  
Annual Summary for 2010**

**Prepared by:**

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



**West Central Airshed Society**  
P.O. Box 7421, Drayton Valley, Alberta T7A 1S6  
Ph: 780-514-3533 • Fax: 780-514-3563 • www.wcas.ca

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February 18<sup>th</sup>, 2011

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

Dear Sir:

**Re: Annual Ambient Air Quality Monitoring Report January – December 2010.  
For TransAlta Utilities Corporation**

The West Central Airshed Society (WCAS) presents the 2010 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 Network Stations 907, 908, 909 were commissioned April 23, April 26, and April 20 of 2004, respectively. WCAS data collection and validation began July 1, 2004. The following is a list of the reported ambient air and meteorological parameters measured at each site location:

**AMS 907 (Power)**

SO<sub>2</sub>, NO/ NO<sub>2</sub>/ NO<sub>x</sub>, Particulate Matter (2.5 microns), Wind Speed and Direction, Relative Humidity, and External Temperature.

**AMS 908 (Meadows)**

SO<sub>2</sub>, NO/ NO<sub>2</sub>/ NO<sub>x</sub>, Wind Speed and Direction, Relative Humidity, and External Temperature.

**AMS 959 (Wagner2)**

SO<sub>2</sub>, NO/ NO<sub>2</sub>/ NO<sub>x</sub>, 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

A handwritten signature in black ink, appearing to read "J. McClintock". The signature is fluid and cursive, with the first letter of each word being capitalized and prominent.

Jeff McClintock  
Intermediate Technologist

**TransAlta Utilities Corporation  
Frequency Distribution Charts  
Wind Speed and Direction  
Year 2010**

West Central Airshed Society - Power (AMS 907)  
 Annual Summary for 2010  
 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
North	2.23	3.85	3.05	1.19	0.13	-	10.45
NorthEast	2.82	3.36	0.92	0.10	-	-	7.20
East	1.76	3.06	1.14	0.06	-	-	6.02
SouthEast	2.04	5.05	5.23	1.66	0.37	-	14.35
South	2.48	7.25	5.55	0.61	0.05	-	15.94
SouthWest	2.73	5.83	3.94	0.23	-	-	12.73
West	3.29	7.49	4.35	0.72	0.08	-	15.93
NorthWest	2.89	4.61	5.30	2.80	1.06	0.25	16.91
Totals	20.23	40.50	29.48	7.35	1.68	0.25	99.49

Percent Calm	0.51
Number of Data Values	8758
Hours in Time Period	8760

West Central Airshed Society - Meadows (AMS 908)  
 Annual Summary for 2010  
 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
North	1.95	3.65	1.62	0.37	-	-	7.59
NorthEast	2.32	3.65	1.44	0.23	-	-	7.64
East	4.51	5.98	3.32	0.74	0.02	-	14.57
SouthEast	3.25	5.35	3.82	1.60	0.51	-	14.53
South	1.77	2.22	0.99	0.09	0.01	-	5.08
SouthWest	2.95	3.11	1.48	0.45	0.01	-	8.00
West	7.61	12.77	4.34	1.07	0.32	0.05	26.16
NorthWest	2.41	4.46	4.76	2.56	0.98	0.02	15.19
Totals	26.78	41.19	21.77	7.12	1.86	0.07	98.79

Percent Calm	1.21
Number of Data Values	8667
Hours in Time Period	8760

West Central Airshed Society - Wagner2 (AMS 959)  
 Annual Summary for 2010  
 Percentage Frequency Distribution of Wind

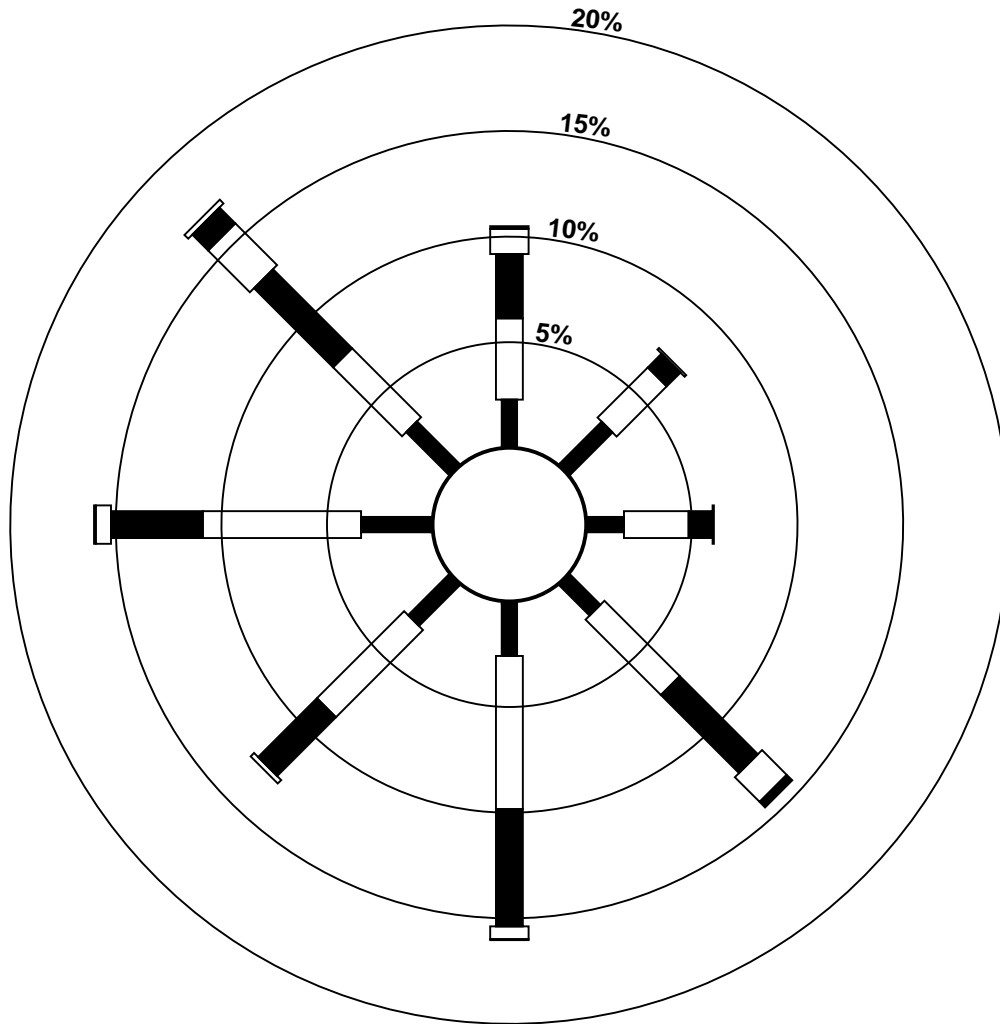
Speed (kph)							
Direction	>1 to 5	>5 to 11	>11 to 19	>19 to 28	>28 to 38	>38	Totals
North	9.76	0.94	0.01	-	-	-	10.71
NorthEast	3.97	0.54	-	-	-	-	4.51
East	6.85	3.37	1.21	0.06	-	-	11.49
SouthEast	7.07	3.71	2.25	0.38	-	-	13.41
South	3.99	1.15	0.49	0.06	-	-	5.69
SouthWest	2.32	0.21	-	-	-	-	2.53
West	5.15	2.19	0.37	0.03	-	-	7.74
NorthWest	16.78	6.52	2.51	0.27	-	-	26.08
Totals	55.89	18.63	6.84	0.80	-	-	82.16

Percent Calm	17.84
Number of Data Values	8595
Hours in Time Period	8760

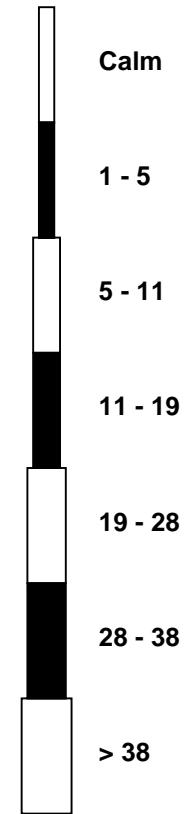
**WCAS - Power  
Wind Speed Rose**



**Wind Speed (WS) - kph  
January 2010**



**Wind Frequency (kph)**

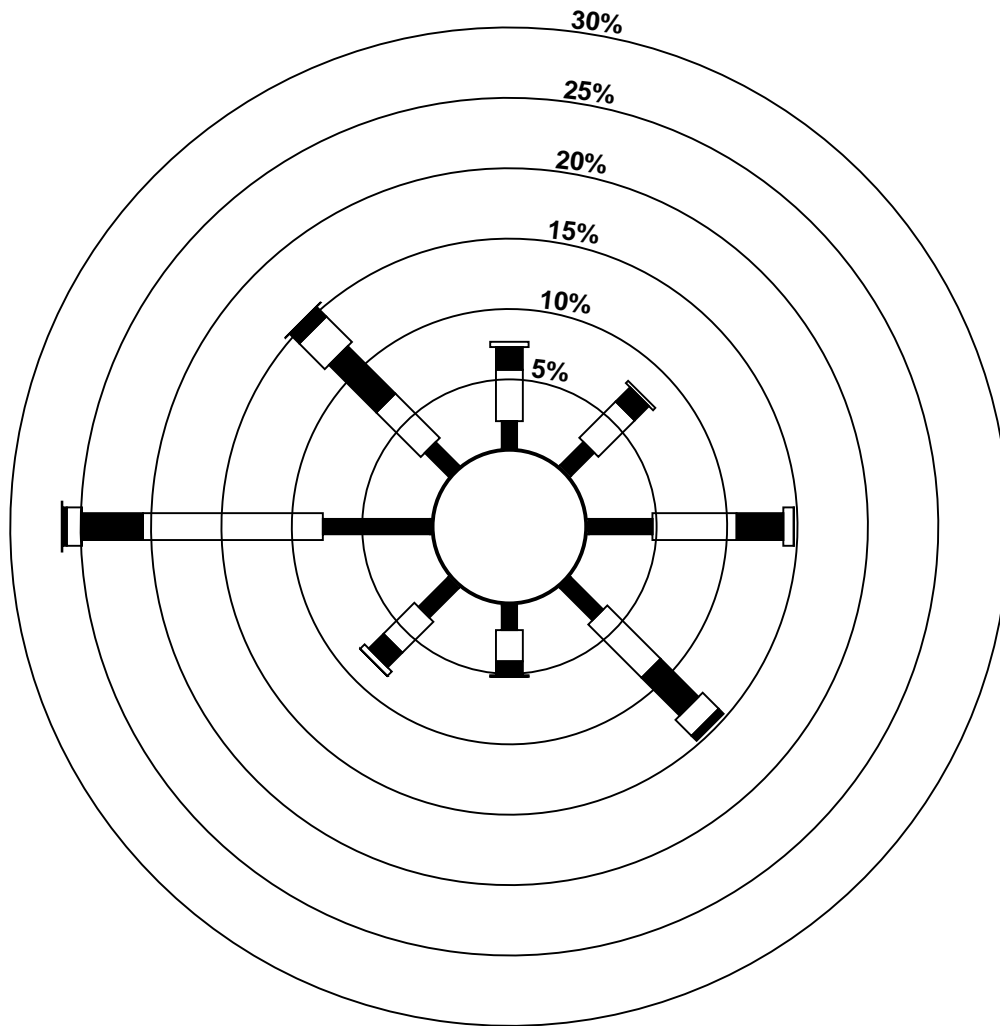




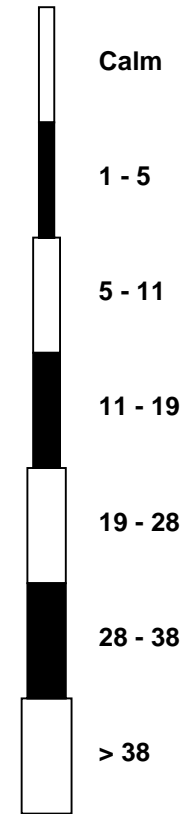
**WCAS - Meadows  
Wind Speed Rose**



**Wind Speed (WS) - kph  
January 2010**



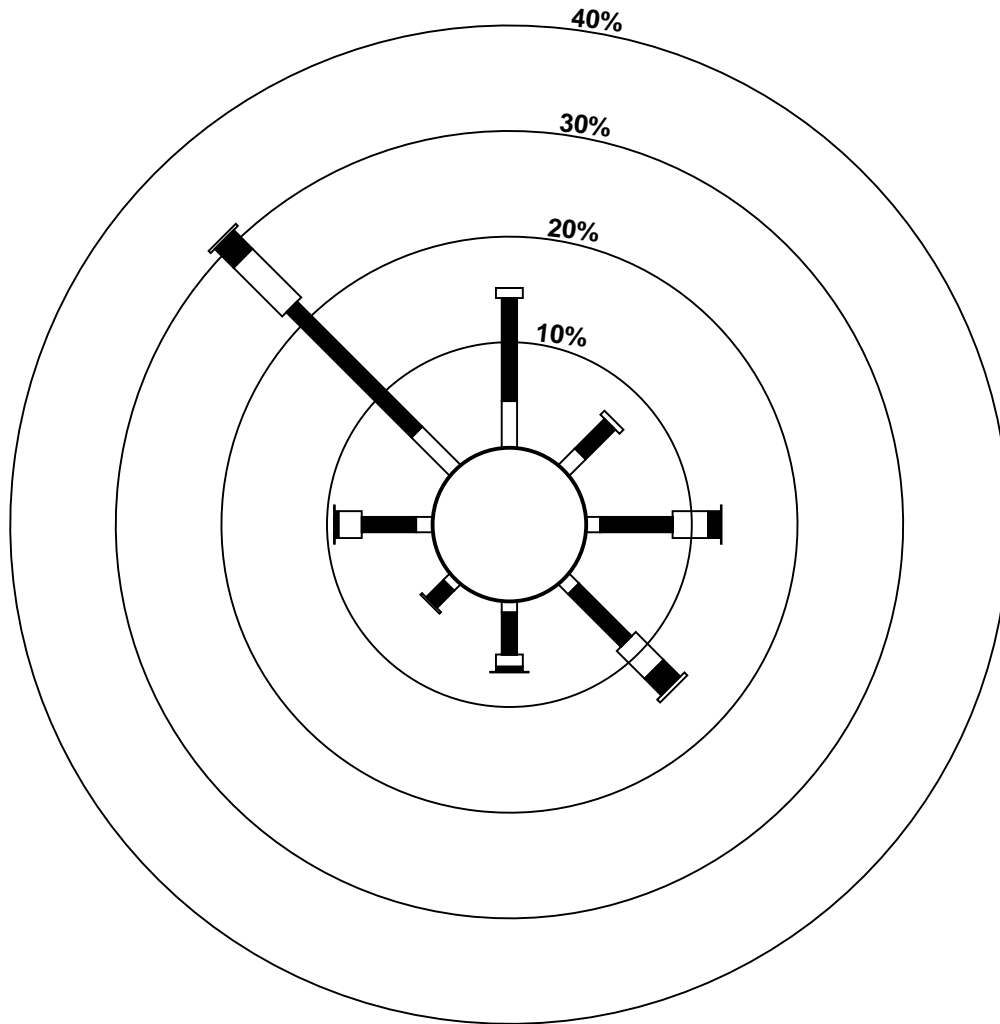
**Wind Frequency (kph)**



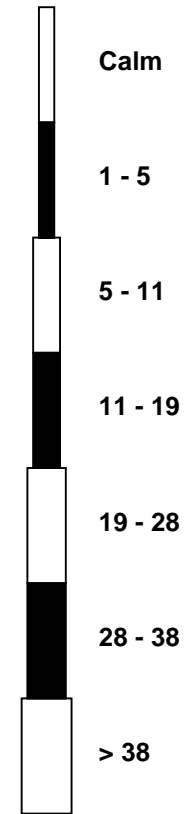
WCAS - Wagner2  
Wind Speed Rose



Wind Speed (WS) - kph  
January 2010



Wind Frequency (kph)



**TransAlta Utilities Corporation  
Frequency Distribution Charts  
SO<sub>2</sub> Monthly Averages  
Year 2010**

West Central Airshed Society - Power (AMS 907)  
 Annual Summary for 2010  
 SO2 (ppb)

Month	Number of Data	Operational Time (%)	Mean	Maximum 1-Hour Value	Number 1-Hour Violations	Maximum 24-Hour Value	Number 24-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	706	99.7	0.7	15.223	0	3.814	0	100.0	--	--	--	--	--
February	640	100.0	2.0	40.633	0	9.383	0	98.1	1.9	--	--	--	--
March	709	100.0	0.6	64.232	0	5.141	0	99.7	0.14	0.14	--	--	--
April	684	100.0	0.2	7.947	0	1.981	0	100.0	--	--	--	--	--
May	708	100.0	0.3	13.886	0	1.563	0	100.0	--	--	--	--	--
June	685	100.0	0.4	23.835	0	2.914	0	99.9	0.15	--	--	--	--
July	708	100.0	0.4	16.732	0	4.547	0	100.0	--	--	--	--	--
August	709	100.0	0.5	31.653	0	4.962	0	99.7	0.3	--	--	--	--
September	685	100.0	0.3	13.675	0	4.472	0	100.0	--	--	--	--	--
October	705	100.0	0.2	22.345	0	2.427	0	99.9	0.14	--	--	--	--
November	686	100.0	0.2	12.790	0	1.726	0	100.0	0.0	--	--	--	--
December	708	100.0	0.3	16.189	0	2.007	0	100.0	--	--	--	--	--
Annual	8333	100.0	0.5	64.232	0	9.383	0	99.8	0.2	0.01	--	--	--

West Central Airshed Society - Meadows (AMS 908)  
 Annual Summary for 2010  
 SO2 (ppb)

Month	Number of Data	Operational Time (%)	Mean	Maximum 1-Hour Value	Number 1-Hour Violations	Maximum 24-Hour Value	Number 24-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	705	99.7	1.2	27.703	0	5.136	0	99.6	0.43	-	-	-	-
February	640	100.0	0.9	17.460	0	3.792	0	100.0	-	-	-	-	-
March	699	98.7	0.6	20.439	0	3.038	0	99.7	0.3	-	-	-	-
April	681	99.4	1.1	26.829	0	9.012	0	99.4	0.6	-	-	-	-
May	708	99.9	0.6	20.562	0	2.805	0	99.9	0.1	-	-	-	-
June	654	95.8	0.5	19.591	0	2.331	0	100.0	0.0	-	-	-	-
July	683	96.4	0.5	24.369	0	3.635	0	99.6	0.4	-	-	-	-
August	706	99.7	0.3	21.368	0	2.774	0	99.9	0.1	-	-	-	-
September	680	99.2	0.2	13.700	0	2.108	0	100.0	-	-	-	-	-
October	706	100.0	0.7	32.018	0	7.312	0	99.2	0.9	-	-	-	-
November	682	99.4	0.3	11.027	0	1.402	0	100.0	-	-	-	-	-
December	702	99.2	0.6	13.791	0	2.247	0	100.0	-	-	-	-	-
Annual	8246	99.0	0.6	32.018	0	9.012	0	99.8	0.2	-	-	-	-

West Central Airshed Society - Wagner2 (AMS 959)  
 Annual Summary for 2010  
 SO2 (ppb)

Month	Number of Data	Operational Time (%)	Mean	Maximum 1-Hour Value	Number 1-Hour Violation	Maximum 24-Hour Value	Number 24-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	709	100.0	0.09	9.285	0	1.179	0	100.0	-	-	-	-	-
February	640	100.0	0.39	22.493	0	2.724	0	99.8	0.2	-	-	-	-
March	709	100.0	0.27	23.331	0	1.826	0	99.7	0.3	-	-	-	-
April	685	99.9	0.70	21.197	0	3.618	0	99.7	0.3	-	-	-	-
May	645	91.5	0.33	19.166	0	2.213	0	100.0	-	-	-	-	-
June	655	95.6	0.82	27.617	0	4.155	0	99.4	0.6	-	-	-	-
July	643	91.1	0.76	29.494	0	4.078	0	99.1	0.9	-	-	-	-
August	704	99.5	0.60	33.776	0	2.698	0	99.6	0.4	-	-	-	-
September	686	100.0	0.53	29.792	0	2.991	0	99.7	0.3	-	-	-	-
October	707	100.0	0.23	12.596	0	1.366	0	100.0	-	-	-	-	-
November	686	100.0	0.08	13.667	0	1.026	0	100.0	-	-	-	-	-
December	709	100.0	0.10	16.164	0	1.222	0	100.0	-	-	-	-	-
Annual	8178	98.1	0.40	33.776	0	4.155	0	99.8	0.2	-	-	-	-

**TransAlta Utilities Corporation  
Frequency Distribution Charts  
NO<sub>2</sub> Monthly Averages  
Year 2010**

West Central Airshed Society - Power (AMS 907)  
 Annual Summary for 2010  
 NO2 (ppb)

Month	Number of Data	Operational Time (%)	Mean	Maximum 1-Hour Value	Number 1-Hour Violations	Maximum 24-Hour Value	Number 24-Hour Violations	Percent of Data in each Concentration Range			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	706	99.7	10.616	39.036	0	27.211	0	100.00	-	-	-
February	639	100.0	8.046	35.518	0	19.058	0	100.00	-	-	-
March	708	100.0	3.695	34.922	0	9.406	0	100.00	-	-	-
April	684	100.0	1.544	11.235	0	4.233	0	100.00	-	-	-
May	707	100.0	1.764	13.877	0	4.432	0	100.00	-	-	-
June	684	100.0	2.549	25.671	0	5.675	0	100.00	-	-	-
July	708	100.0	1.829	15.263	0	5.857	0	100.00	-	-	-
August	708	100.0	2.357	22.292	0	6.624	0	100.00	-	-	-
September	684	100.0	2.831	21.608	0	9.082	0	100.00	-	-	-
October	705	100.0	4.282	23.451	0	8.797	0	100.00	-	-	-
November	685	100.0	5.363	25.764	0	12.756	0	100.00	-	-	-
December	707	100.0	10.566	29.927	0	21.580	0	100.00	-	-	-
Annual	8325	100.0	4.608	39.036	0	27.211	0	100.00	-	-	-



West Central Airshed Society - Meadows (AMS 908)  
 Annual Summary for 2010  
 NO2 (ppb)

Month	Number of Data	Operational Time (%)	Mean	Maximum 1-Hour Value	Number 1-Hour Violations	Maximum 24-Hour Value	Number 24-Hour Violations	Percent of Data in each Concentration Range			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	705	99.7	14.085	44.447	0	29.179	0	100.0	-	-	-
February	639	100.0	13.577	39.357	0	24.565	0	100.0	-	-	-
March	697	98.7	6.157	39.962	0	17.466	0	100.0	-	-	-
April	681	99.4	6.542	40.868	0	14.240	0	100.0	-	-	-
May	707	99.9	6.087	41.416	0	14.947	0	100.0	-	-	-
June	653	95.8	7.173	30.541	0	9.891	0	100.0	-	-	-
July	683	96.4	4.067	27.981	0	8.018	0	100.0	-	-	-
August	705	99.7	3.773	22.175	0	8.203	0	100.0	-	-	-
September	661	99.2	5.245	26.457	0	12.154	0	100.0	-	-	-
October	705	100.0	8.545	32.235	0	14.216	0	100.0	-	-	-
November	675	99.2	10.239	34.545	0	18.912	0	100.0	-	-	-
December	695	99.1	11.407	33.190	0	22.551	0	100.0	-	-	-
Annual	8206	98.9	8.056	44.447	0	29.179	0	100.0	-	-	-

West Central Airshed Society - Wagner2 (AMS 959)  
 Annual Summary for 2010  
 NO2 (ppb)

Month	Number of Data	Operational Time (%)	Mean	Maximum 1-Hour Value	Number 1-Hour Violations	Maximum 24-Hour Value	Number 24-Hour Violations	Percent of Data in each Concentration Range			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	709	100.0	11.511	59.028	0	29.945	0	99.6	0.42	-	-
February	640	100.0	10.470	36.956	0	24.726	0	100.0	-	-	-
March	708	100.0	3.806	22.844	0	8.377	0	100.0	-	-	-
April	685	99.9	3.336	31.788	0	9.391	0	100.0	-	-	-
May	645	91.5	3.021	21.876	0	6.311	0	100.0	-	-	-
June	654	95.7	6.441	32.694	0	10.409	0	100.0	-	-	-
July	643	91.1	3.914	24.493	0	7.335	0	100.0	-	-	-
August	704	99.5	3.508	23.629	0	6.989	0	100.0	-	-	-
September	684	100.0	3.544	20.355	0	8.428	0	100.0	-	-	-
October	706	100.0	5.135	20.565	0	9.203	0	100.0	-	-	-
November	686	100.0	8.219	28.468	0	15.144	0	100.0	-	-	-
December	707	100.0	13.462	32.024	0	23.718	0	100.0	-	-	-
Annual	8171	98.1	6.388	59.028	0	29.945	0	100.0	0.04	-	-

**TransAlta Utilities Corporation  
Frequency Distribution Charts  
PM Monthly Averages  
Year 2010**

West Central Airshed Society - Power (AMS 907)  
 Annual Summary for 2010  
 PM2.5 ( $\mu\text{g}/\text{m}^3$ )

Month	Number of Data	Operational Time (%)	Mean	Maximum 1-Hour Value	Number 1-Hour Violations	Maximum 24-Hour Value	Number 24-Hour Violations
January	742	99.7	5.6	32.4	0	19.9	0
February	667	99.9	5.3	28.1	0	12.8	0
March	740	99.5	3.1	16.5	0	9.4	0
April	720	100.0	2.2	17.9	0	6.8	0
May	739	100.0	3.6	25.8	0	11.7	0
June	713	99.0	4.7	30.1	0	12.0	0
July	738	99.3	4.5	30.4	0	10.2	0
August	719	97.2	15.6	450.3	40	140.1	3
September	714	99.2	2.7	23.8	0	5.0	0
October	740	100.0	4.5	25.2	0	8.4	0
November	716	100.0	2.8	16.4	0	9.4	0
December	739	99.3	6.2	30.2	0	18.0	0
Annual	8687	99.4	5.1	450.3	40	140.1	3

**TransAlta Utilities Corporation  
Frequency Distribution Charts  
Meteorological Measurements  
Year 2010**

**Summary Report**

*Continuous air quality/meteorological monitoring measurements*

**West Central Airshed Society**

**TransAlta / Power  
Station 907**

**January to December 2010**

Parameter	Calibration Hours	Number of Data	Percent Uptime	Mean	Total	Min	Max	Percentile				
								P10	Q1	Median	Q3	P90
SO <sub>2</sub> (ppb)	425	8333	100.0	0.5	-	0.0	64.2	0.0	0.0	0.0	0.2	1.1
NO (ppb)	433	8325	100.0	0.6	-	0.0	113.8	0.0	0.0	0.0	0.2	1.4
NO <sub>2</sub> (ppb)	433	8325	100.0	4.6	-	0.0	39.0	1.0	1.8	3.6	6.4	9.7
NO <sub>x</sub> (ppb)	433	8325	100.0	4.1	-	0.0	136.8	0.2	0.8	2.4	5.8	10.1
Particulate Matter 2.5 microns (µ/m <sup>3</sup> )	22	8686	99.4	5.1	-	0.0	450.3	0.5	1.5	3.3	6.2	10.3
Wind Speed (kph)	0	8758	100.0	10.8	-	0.0	45.6	3.8	6.4	9.9	14.1	18.9
Temperature (°C)	0	8758	100.0	4.0	-	-27.9	29.3	-3.6	-0.5	3.6	8.2	12.2
Relative Humidity (%)	0	8758	100.0	68.4	-	12.4	98.6	42.9	55.5	70.1	82.8	90.9
Precipitation (mm)	0	8758	100.0	-	294.8	0.0	19.2	0.0	0.0	0.0	0.0	0.0
Std Dev Wind Direction (deg)	0	8758	100.0	19.6	-	1.0	107.0	8.4	10.7	14.5	22.1	37.9
Std Dev Wind Speed (kph)	0	8757	100.0	2.7	-	0.0	16.4	1.2	1.7	2.4	3.4	4.4

**Summary Report**

*Continuous air quality/meteorological monitoring measurements*

**West Central Airshed Society**

**TransAlta / Meadows  
Station 908**

**January to December 2010**

Parameter	Calibration Hours	Number of Data	Percent Uptime	Mean	Total	Min	Max	-----Percentile-----				
								P10	Q1	Median	Q3	P90
SO2 (ppb)	422	8246	99.0	0.6	-	0.0	32.0	0.0	0.0	0.1	0.3	1.5
NO (ppb)	459	8206	98.9	5.9	-	0.0	202.1	0.0	0.0	0.8	5.2	16.9
NO <sub>2</sub> (ppb)	459	8206	98.9	8.1	-	0.0	44.4	0.8	2.1	6.0	12.0	19.2
NO <sub>x</sub> (ppb)	459	8206	98.9	13.2	-	0.0	233.8	0.5	1.5	6.5	16.8	35.2
Wind Speed (kph)	0	8668	99.0	9.7	-	0.0	43.8	3.0	5.3	8.6	13.0	18.2
Temperature (°C)	0	8668	99.0	3.7	-	-29.5	29.0	-3.8	-0.6	3.5	7.8	11.8
Relative Humidity (%)	0	8668	99.0	70.2	-	12.5	98.0	46.3	58.1	72.5	83.9	90.5
Precipitation (mm)	0	8668	99.0	-	196.9	0.0	9.0	0.0	0.0	0.0	0.0	0.0
Std Dev Wind Direction (deg)	0	8668	99.0	23.9	-	2.5	104.9	7.7	10.6	16.2	29.4	54.8
Std Dev Wind Speed (kph)	0	8668	99.0	2.7	-	0.0	18.3	1.2	1.7	2.4	3.4	4.5

**Summary Report**

*Continuous air quality/meteorological monitoring measurements*

**West Central Airshed Society**

**TransAlta / Wagner2  
Station 959**

**January to December 2010**

Parameter	Calibration Hours	Number of Data	Percent Uptime	Mean	Min	Max	Percentile				
							P10	Q1	Median	Q3	P90
SO <sub>2</sub> (ppb)	415	8148	97.8	0.4	0.0	33.8	0.0	0.0	0.0	0.0	0.4
NO (ppb)	424	8171	98.1	1.5	0.0	90.4	0.0	0.0	0.0	1.2	4.6
NO <sub>2</sub> (ppb)	424	8171	98.1	6.4	0.0	59.0	1.8	2.9	5.2	8.6	12.6
NO <sub>x</sub> (ppb)	424	8171	98.1	7.0	0.0	150.3	1.0	1.9	4.8	9.5	15.6
Wind Speed (kph)	0	8595	98.1	4.0	0.0	26.2	0.4	0.8	2.6	5.9	9.9
Temperature (°C)	0	8595	98.1	3.8	-31.3	30.8	-4.4	-0.9	3.4	8.2	12.7
Relative Humidity (%)	0	8595	98.1	69.6	12.9	97.0	43.0	56.6	73.4	84.8	89.6
Std Dev Wind Direction (deg)	0	8595	98.1	47.5	6.1	115.3	18.8	25.5	41.8	68.3	86.1
Std Dev Wind Speed (kph)	0	8595	98.1	2.2	0.1	11.2	0.7	1.0	1.9	2.9	4.1