Ozone Season Summary 2011

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MWAQC Meeting, COG

September 28, 2011

Ozone Season Summary

[As of September 23, 2011]

Peak 8-Hour Ozone Concentrations (ppb)

Data based on the 8-hour standard set at 75 ppb.

April

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
					57	46
17	18	19	20	21	22	23
53	59	52	60	53	44	36
24	25	26	27	28	29	30
45	55	35	32	53	50	44

May

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
39	55	52	40	53	58	55
8	9	10	11	12	13	14
56	54	53	65	61	41	35
15	16	17	18	19	20	21
48	53	50	45	42	49	60
22	23	24	25	26	27	28
59	55	51	75	73	58	49
29	30	31				
46	76	96				

June

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
			1	2	3	4
			74	72	60	73
5	6	7	8	9	10	11
69	75	76	95	93	100	71
12	13	14	15	16	17	18
63	54	47	59	55	59	76
19	20	21	22	23	24	25
69	64	61	56	44	58	53
26	27	28	29	30		
51	59	76	72	69		

July

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1	2
					80	90
3	4	5	6	7	8	9
70	71	85	67	94	55	66
10	11	12	13	14	15	16
73	75	72	67	61	52	50
17	18	19	20	21	22	23
54	80	75	86	78	90	85
24	25	26	27	28	29	30
68	65	72	65	81	77	70
31						
67						

August

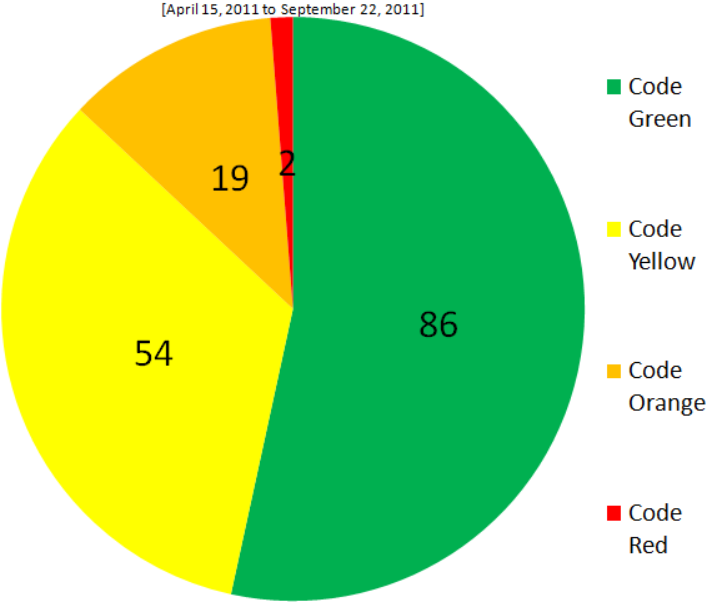
Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6
	87	69	49	63	60	47
7	8	9	10	11	12	13
55	66	64	61	63	76	50
14	15	16	17	18	19	20
53	55	50	64	66	71	74
21	22	23	24	25	26	27
54	48	56	60	47	68	31
28	29	30	31			
43	42	60	73			

September

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
				64	50	50
4	5	6	7	8	9	10
60	41	35	24	19	45	48
11	12	13	14	15	16	17
54	58	61	67	41	25	25
18	19	20	21	22	23	24
36	35	30	28	31		
25	26	27	28	29	30	

Ozone AQI Color Code Chart

[April 15, 2011 to September 22, 2011]



•Analysis is based on draft data until September 23, 2011 and is subject to change.

2011 Ozone Exceedances

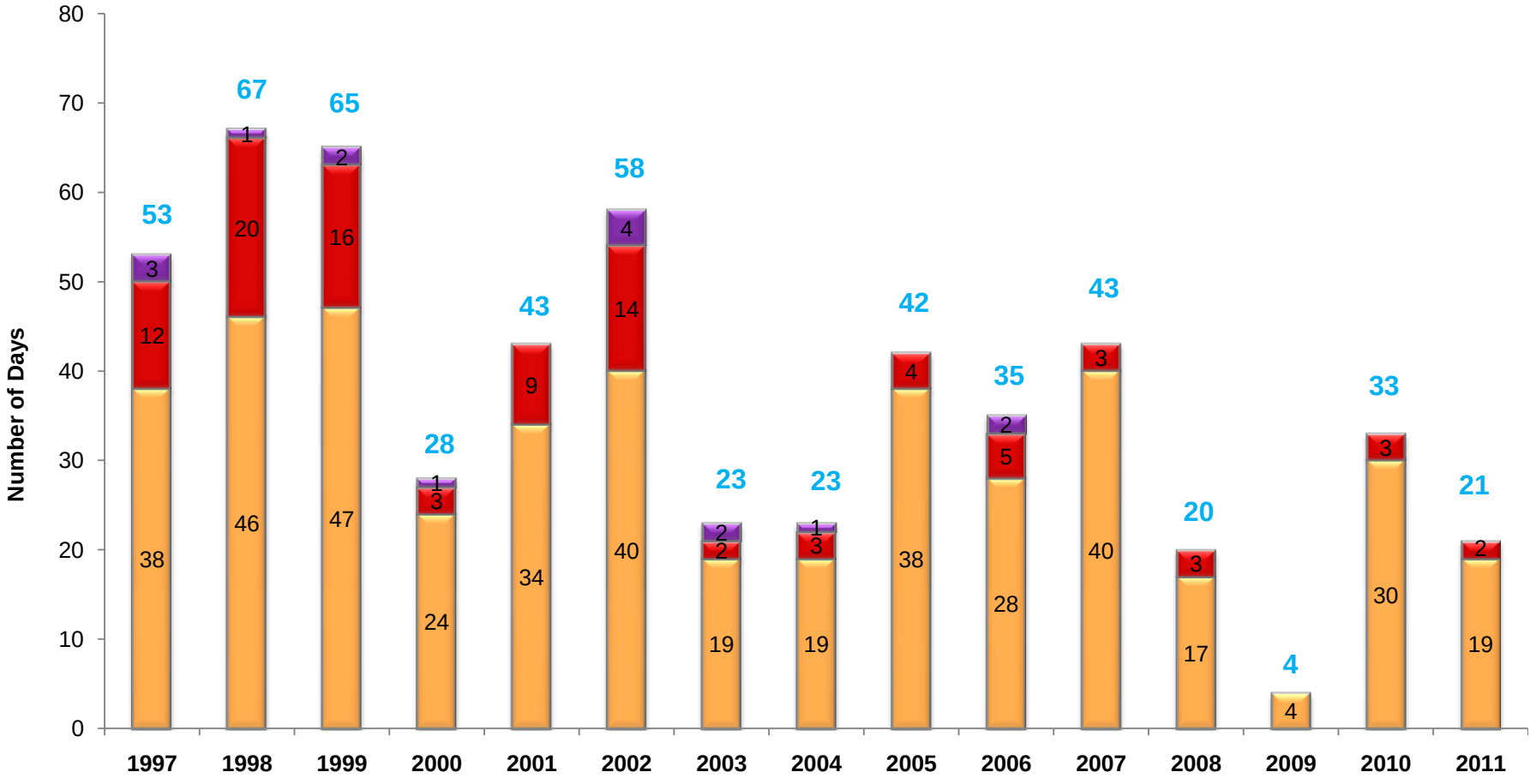
Date	# of Monitors Exceeding	Highest Monitor	Highest Conc (ppb)
5/30/2011	1	Calvert County	76
5/31/2011	7	Franconia	96
6/7/2011	**1**	**Beltsville**	**76**
6/8/2011	**11**	**Prince George's Equestrian Center**	**95**
6/9/2011	**8**	**Calvert County**	**93**
6/10/2011	**9**	**Alexandria Health & Aurora Hills**	**100**
6/18/2011	1	Prince George's Equestrian Center	76
6/28/2011	1	Prince George's Equestrian Center	76
7/1/2011	2	Prince George's Equestrian Center	80
7/2/2011	13	Alexandria Health	90
7/5/2011	4	Prince George's Equestrian Center	85
7/7/2011	8	HU-Beltsville	94
7/18/2011	1	Prince George's Equestrian Center	80
7/20/2011	**6**	**Ashburn**	**86**
7/21/2011	**1**	**Beltsville**	**78**
7/22/2011	**6**	**Prince George's Equestrian Center**	**90**
7/23/2011	**2**	**Southern Maryland**	**85**
7/28/2011	2	McMillan Reservoir	81
7/29/2011	1	Prince George's Equestrian Center	77
8/1/2011	4	Southern Maryland	87
8/12/2011	1	Franconia	76

•Analysis is based on draft data until September 23, 2011. Data is subject to change.

Ozone Exceedance Trend

Number of Exceedance Days - 2008 Ozone Standard (75 ppb)

Breakdown of Code Orange, Red, and Purple Days
1997 - 2011



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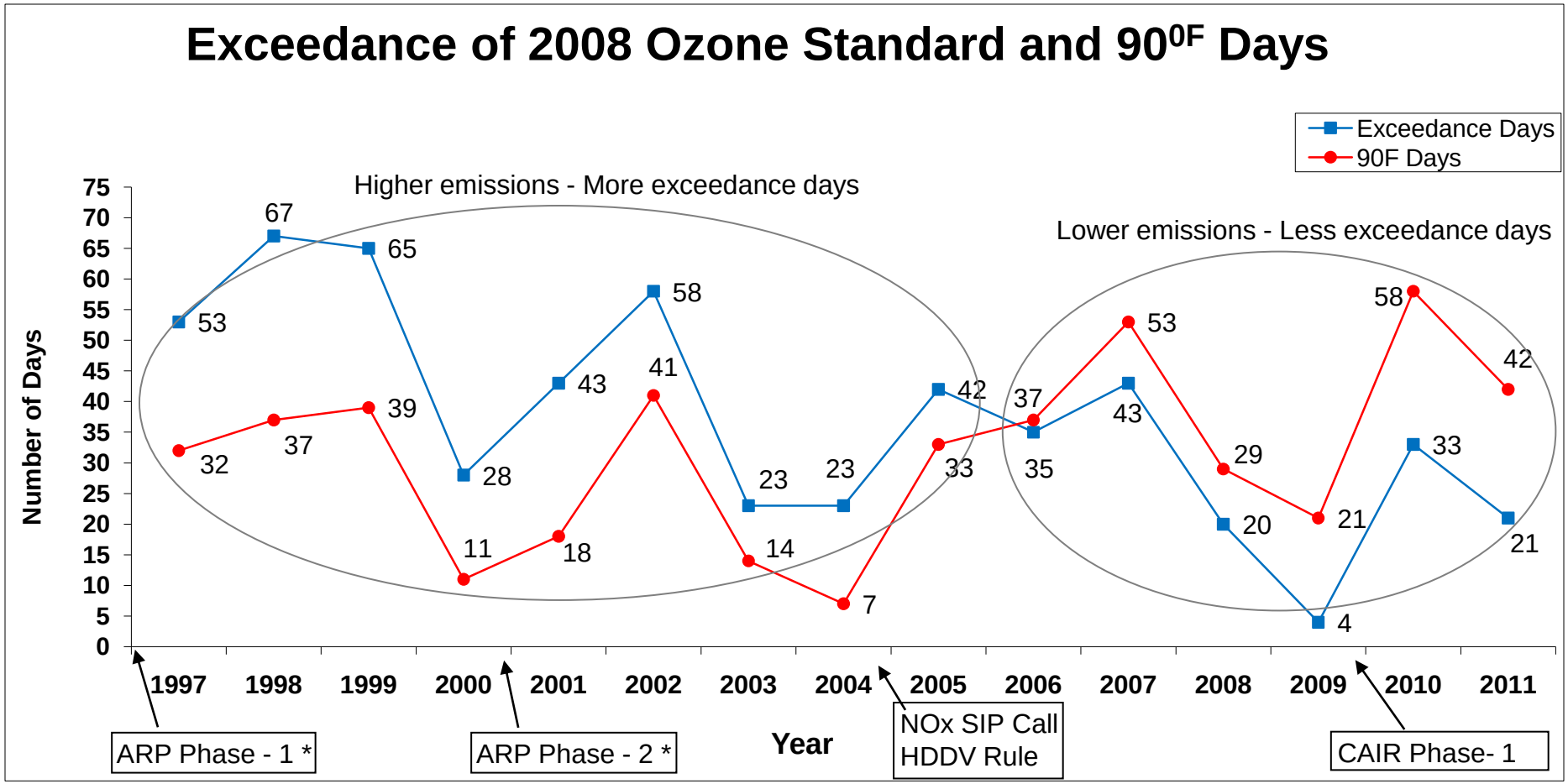
Trend - Ozone Exceedances & Days ≥ 90˚F



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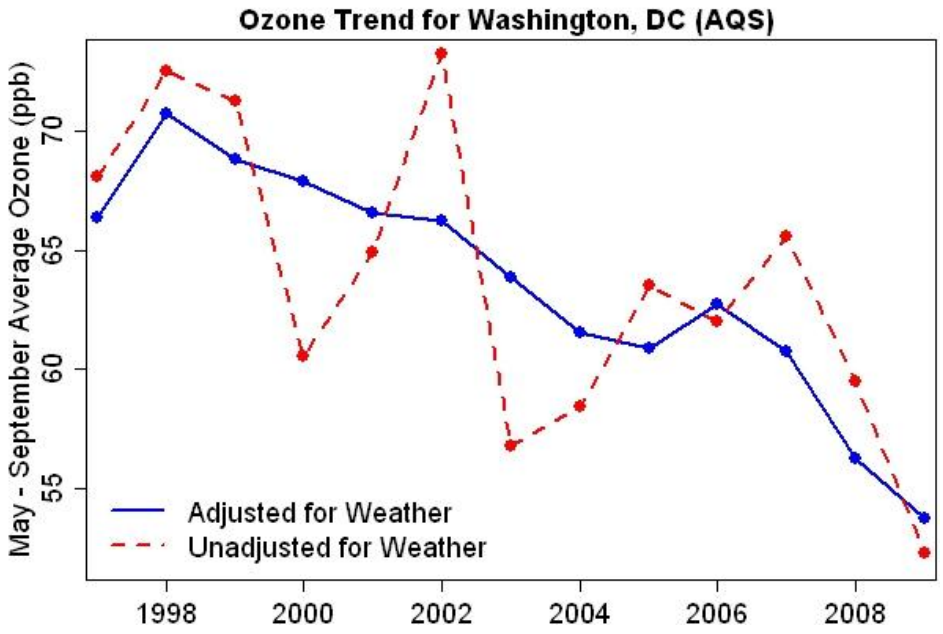
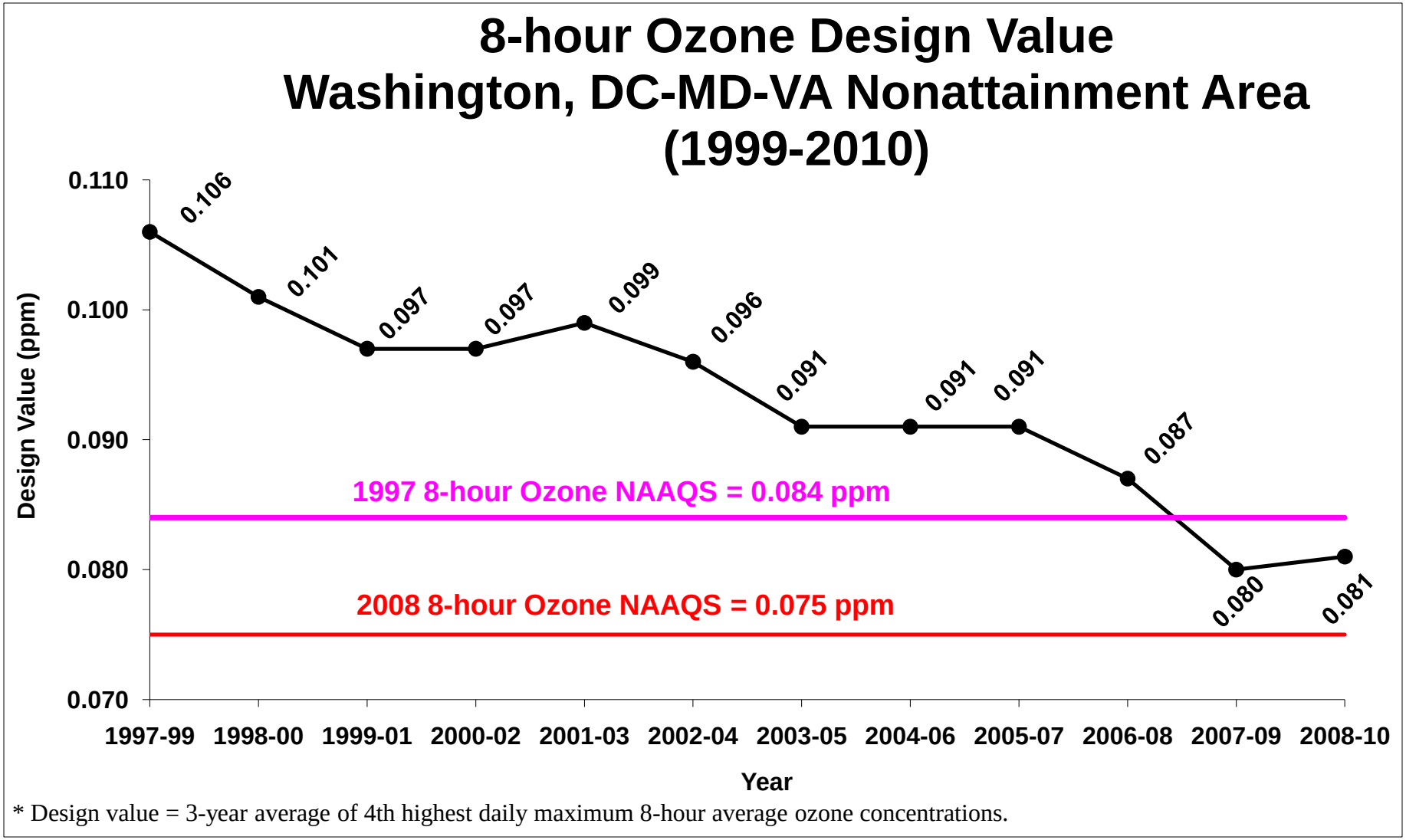
Weather Adjusted Ozone Trend
(1998-2009)

- Effect of weather (temperature & wind) on ozone removed.
- Variation in ozone levels only due to changes in emissions.
- Emissions change due to control programs adopted.



Source: EPA

Ozone Design Value Trend



* Design value = 3-year average of 4th highest daily maximum 8-hour average ozone concentrations.

Summary – Meteorology on High Ozone Days

Strong high pressure over the region during high ozone days leading to:

- Limited vertical mixing of pollutants thereby not allowing ground level ozone to disperse
- Clear skies allowing solar radiation to create ozone
- Clear skies also allowing for maximum temperatures to reach record highs and so creating lot of ozone

- West winds brought dirty air from the Ohio valley

- Light winds allowed for stagnation

Fine Particle Summary

[As of September 23, 2011]

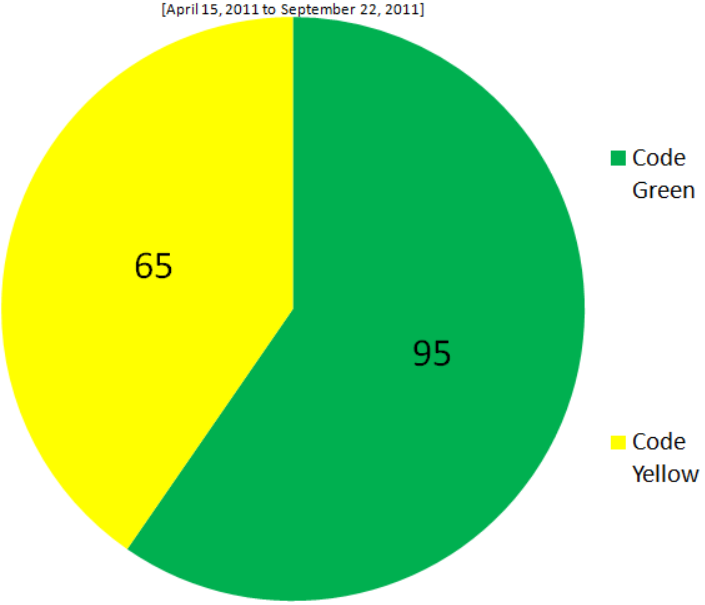
24-hour Avg

$PM_{2.5}$ (µg/m³)

Data based on the 24-hour standard set at 35 µg/m³.

$PM_{2.5}$ AQI Color Code Chart

[April 15, 2011 to September 22, 2011]



•Analysis is based on draft data until September 23, 2011 and is subject to change.

April

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
					11.3	7.3
17	18	19	20	21	22	23
6.3	12.8	17.3	13.8	8.3	7.7	8.7
24	25	26	27	28	29	30
14.1	13.9	8.9	8.2	10.4	7.8	6.7

May

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
9.7	12.0	14.1	6.1	7.8	10.1	10.4
8	9	10	11	12	13	14
12.2	9.1	8.0	9.6	14.5	15.1	10.2
15	16	17	18	19	20	21
9.8	11.8	10.7	9.2	8.4	14.4	10.3
22	23	24	25	26	27	28
15.3	20.5	16.1	17.5	24.4	15.2	9.1
29	30	31				
14.2	23.8	31.8				

June

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
			1	2	3	4
			33.3	9.5	6.5	12.2
5	6	7	8	9	10	11
18.1	19.0	21.8	28.8	31.5	30.7	25.5
12	13	14	15	16	17	18
16.0	7.6	8.3	7.3	15.5	10.5	12.6
19	20	21	22	23	24	25
18.6	15.1	17.8	15.3	13.3	7.2	11.9
26	27	28	29	30		
11.3	21.2	16.0	9.7	10.1		

July

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1	2
					11.4	18.4
3	4	5	6	7	8	9
21.0	16.8	21.1	23.3	20.9	19.8	16.3
10	11	12	13	14	15	16
19.3	20.5	16.2	20.6	7.4	7.6	8.1
17	18	19	20	21	22	23
10.7	20.6	26.7	28.2	35.3	28.6	23.2
24	25	26	27	28	29	30
24.8	17.4	12.0	9.1	19.8	24.7	12.9
31						
12.4						

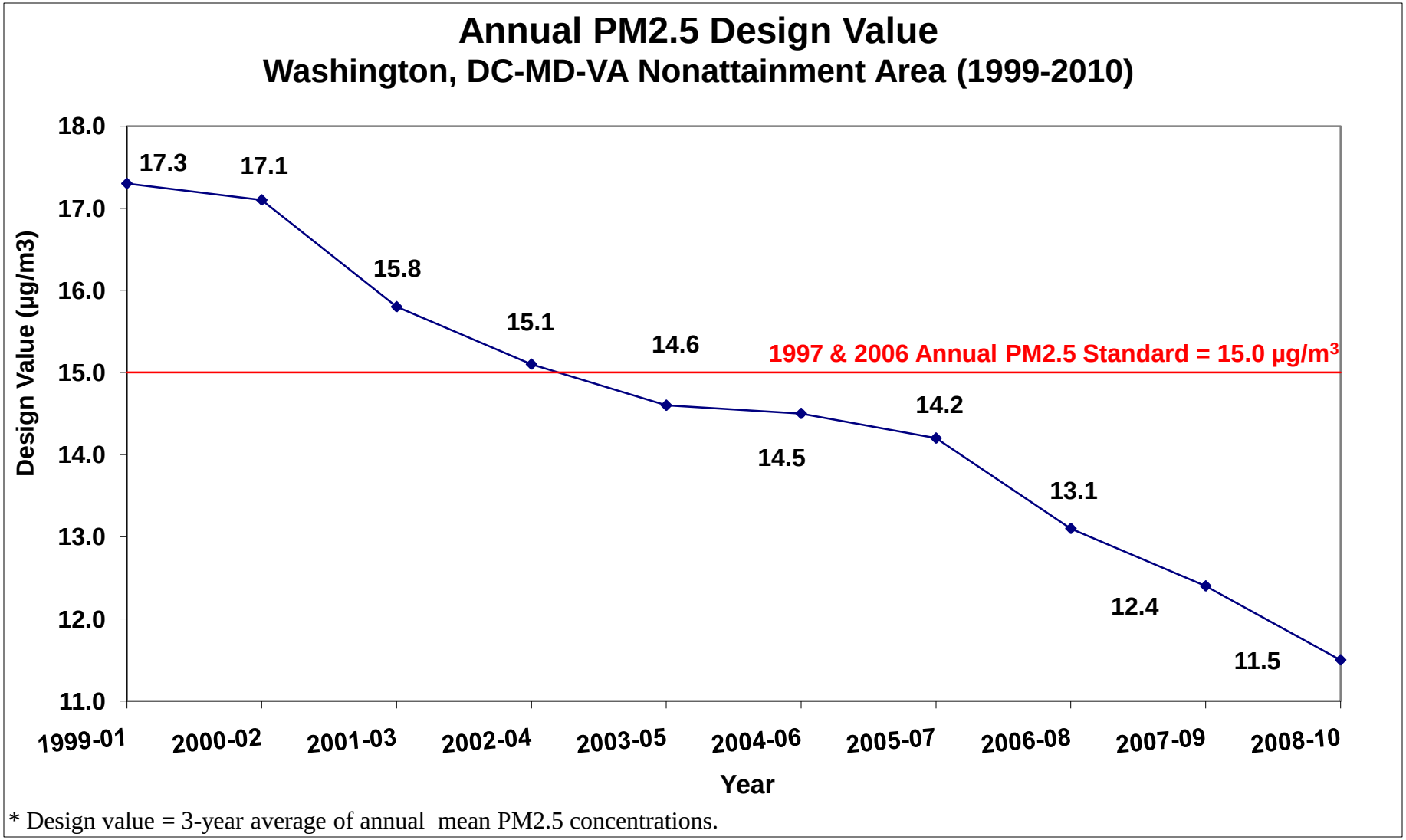
August

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6
	17.2	15.0	31.2	22.5	13.7	16.1
7	8	9	10	11	12	13
20.4	20.2	24.3	16.1	16.9	16.1	25.2
14	15	16	17	18	19	20
14.2	5.2	12.0	13.3	16.5	14.0	14.0
21	22	23	24	25	26	27
13.5	6.0	7.2	12.9	16.3	16.2	14.2
28	29	30	31			
12.4	12.9	14.0	17.6			

September

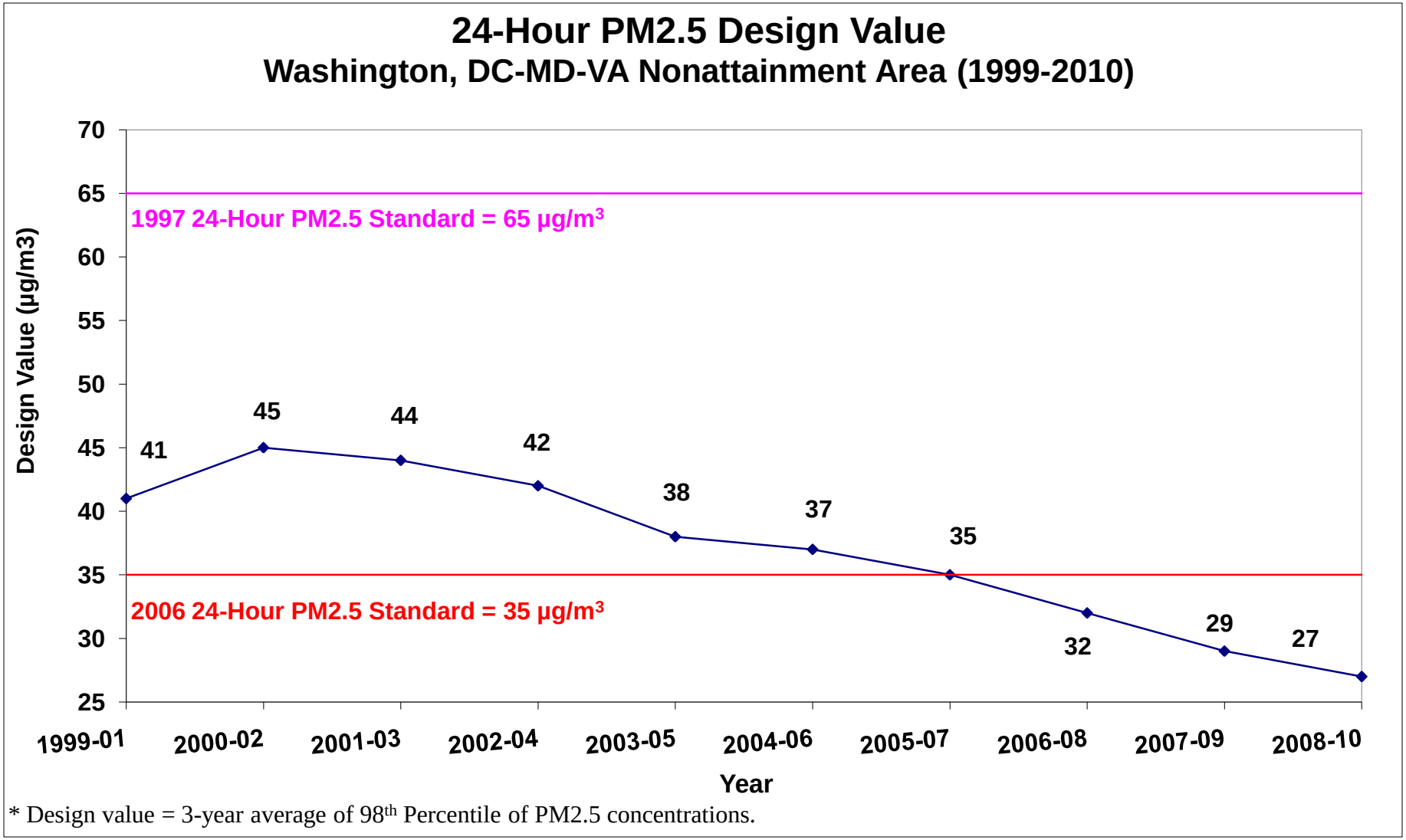
Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
				16.6	12.3	16.5
4	5	6	7	8	9	10
27.1	15.6	5.9	11.8	10.6	10.1	15.1
11	12	13	14	15	16	17
17.5	15.3	19.8	21.0	14.7	8.5	11.6
18	19	20	21	22	23	24
10.6	9.6	12.6	13.0	12.9		
25	26	27	28	29	30	

Annual $PM_{2.5}$ Design Value Trend



* Design value = 3-year average of annual mean PM2.5 concentrations.

24-Hour $PM_{2.5}$ Design Value Trend



* Design value = 3-year average of 98th Percentile of PM2.5 concentrations.