



Ozone Season Summary

2013

Sunil Kumar

MWAQC-TAC

September 10, 2013



Ozone Season Summary

Peak 8-Hour Ozone Concentrations (ppb)

April

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6
	52	53	52	53	60	53
7	8	9	10	11	12	13
61	62	61	64	68	36	54
14	15	16	17	18	19	20
56	50	54	50	46	38	50
21	22	23	24	25	26	27
54	49	44	56	56	63	70
28	29	30				
71	52	49				

May

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
			1	2	3	4
			59	46	51	50
5	6	7	8	9	10	11
58	36	36	48	46	60	47
12	13	14	15	16	17	18
48	49	55	72	62	71	51
19	20	21	22	23	24	25
37	42	53	60	44	34	44
26	27	28	29	30	31	
50	53	57	67	74	61	

June

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
						1
						57
2	3	4	5	6	7	8
40	48	62	76	49	30	58
9	10	11	12	13	14	15
56	32	52	69	50	50	58
16	17	18	19	20	21	22
53	64	40	47	57	75	53
23	24	25	26	27	28	29
40	64	67	70	44	48	62
30						
42						

July

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6
	36	30	31	22	30	37
7	8	9	10	11	12	13
33	55	47	48	59	35	47
14	15	16	17	18	19	20
28	58	69	76	77	77	54
21	22	23	24	25	26	27
62	54	53	53	51	61	48
28	29	30	31			
45	56	62	52			

August

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
				37	59	44
4	5	6	7	8	9	10
39	48	37	47	42	44	53
11	12	13	14	15	16	17
55	63	50	36	55	66	69
18	19	20	21	22	23	24
47	37	63	54	58	32	51
25	26	27	28	29	30	31
59	61	72	35	65	67	57

September

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
59	56	56	63	62		
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Since April 1, 2013, there have been:

4 Code Orange Day, 39 Code Yellow Days, 115 Code Green Days

•2013 data is current as of September 6, 2013. Data is subject to change.



2013 Ozone Exceedances

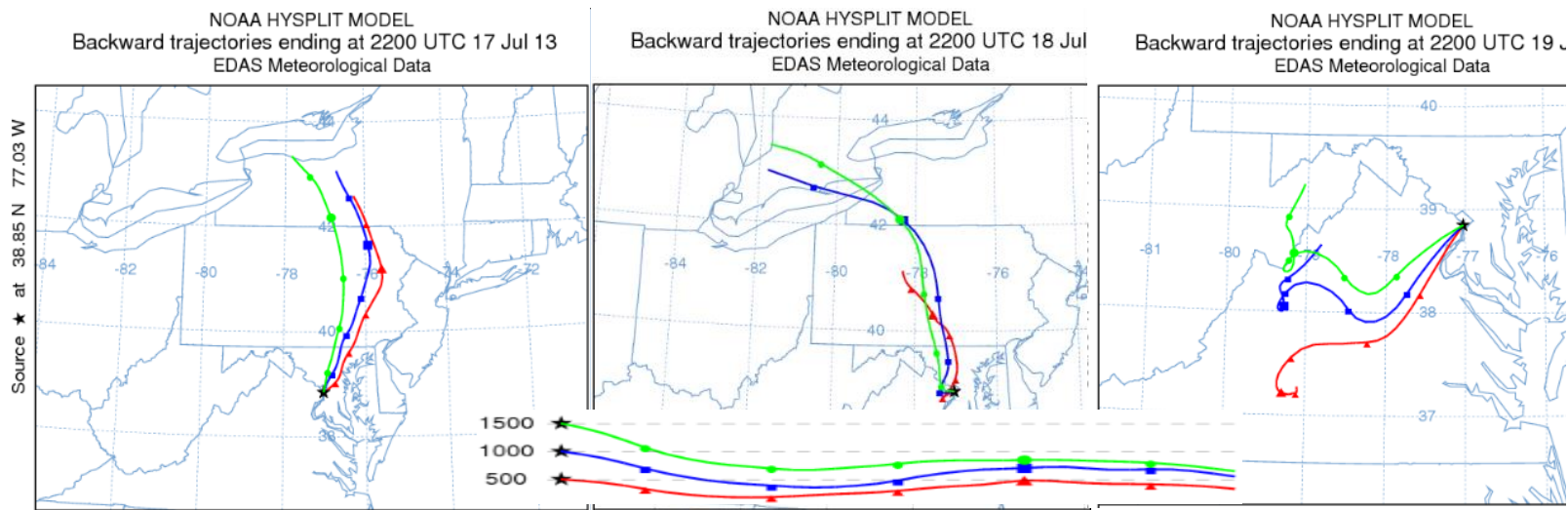
Date	# of Monitors Exceeding	Highest Monitor	Highest Concentration (ppb)
6/5/2013	1	Frederick	76
07/17/2013	1	Franconia	76
07/18/2013	1	Beltsville	77
07/19/2013	1	Beltsville	77

* 2013 data is current as of Sep 8, 2013 and is subject to change.



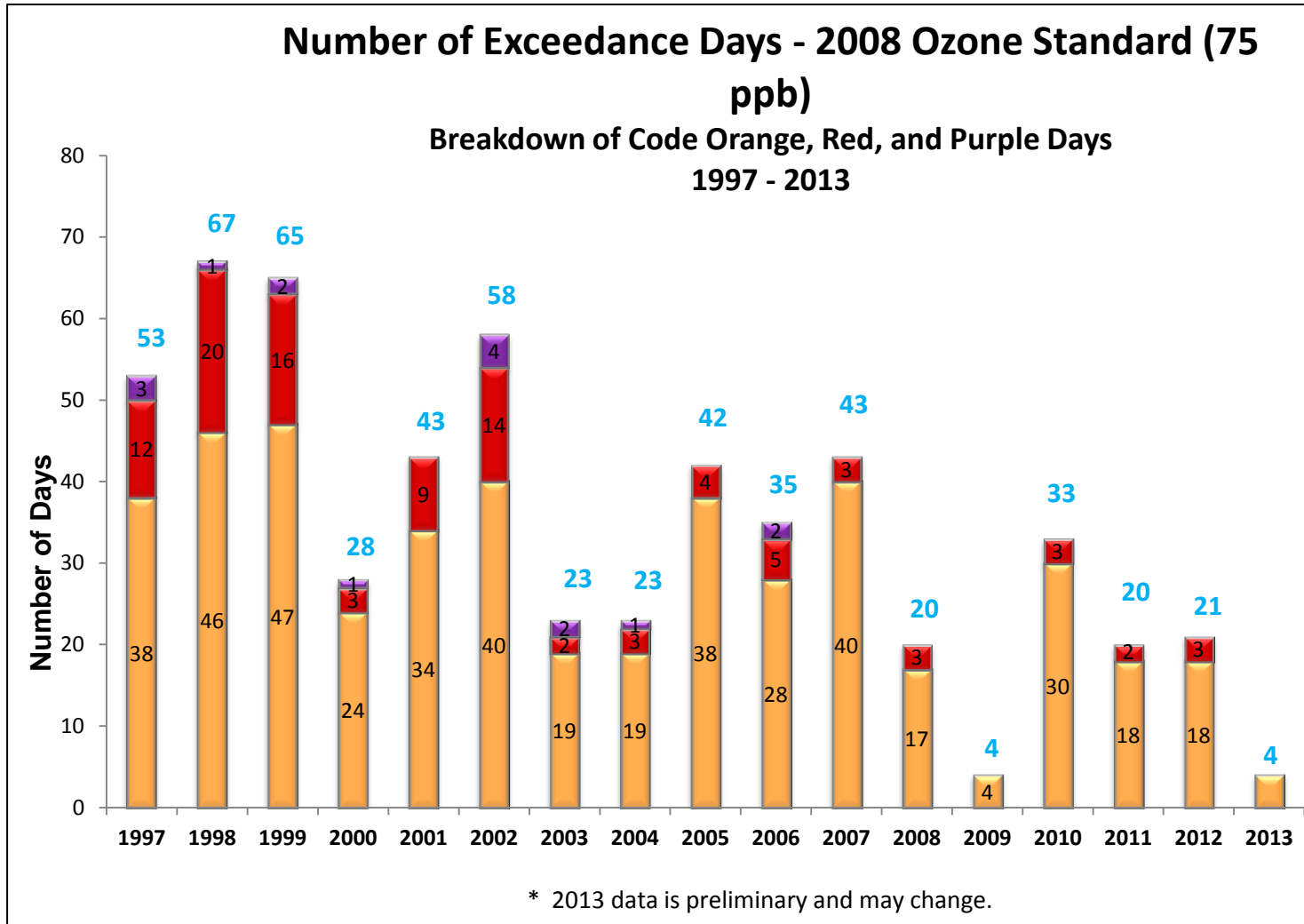
Meteorology – Code Orange Episode (July 17-19)

- ❖ High pressure in Mid-Atlantic advected warm air into the region.
- ❖ Limited winds and cloud cover helped ozone production.
- ❖ Winds from upwind areas with high ozone levels brought ozone and its precursors into our region.





Ozone Exceedance Trend

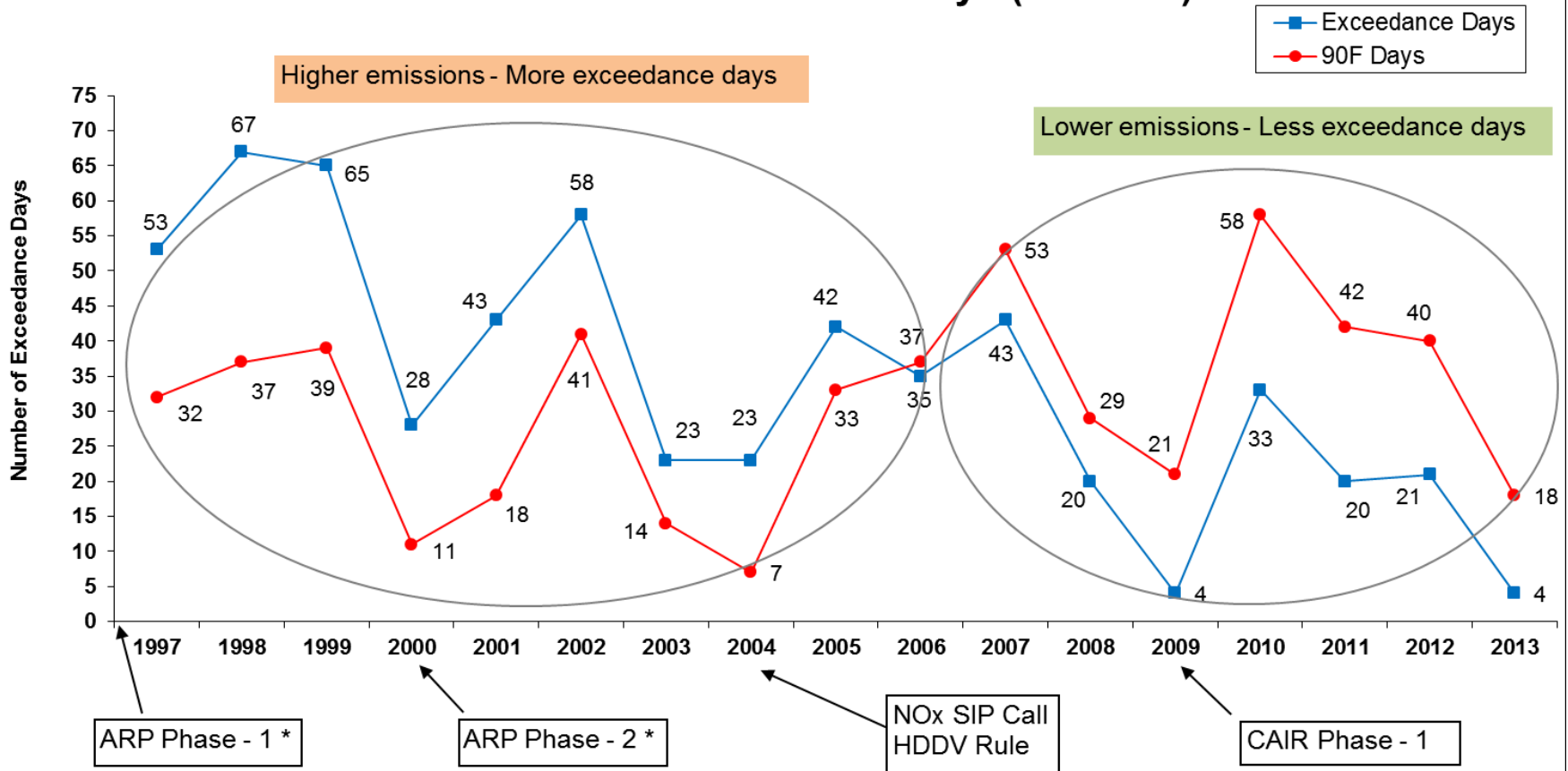


* 2013 analysis is based on draft data as of September 6, 2013 and is subject to change.



Ozone & Temperature Trend

90 Degree Days (DCA) and 8-hour Ozone Exceedance Days (2008 std)



* ARP = Acid Rain Program

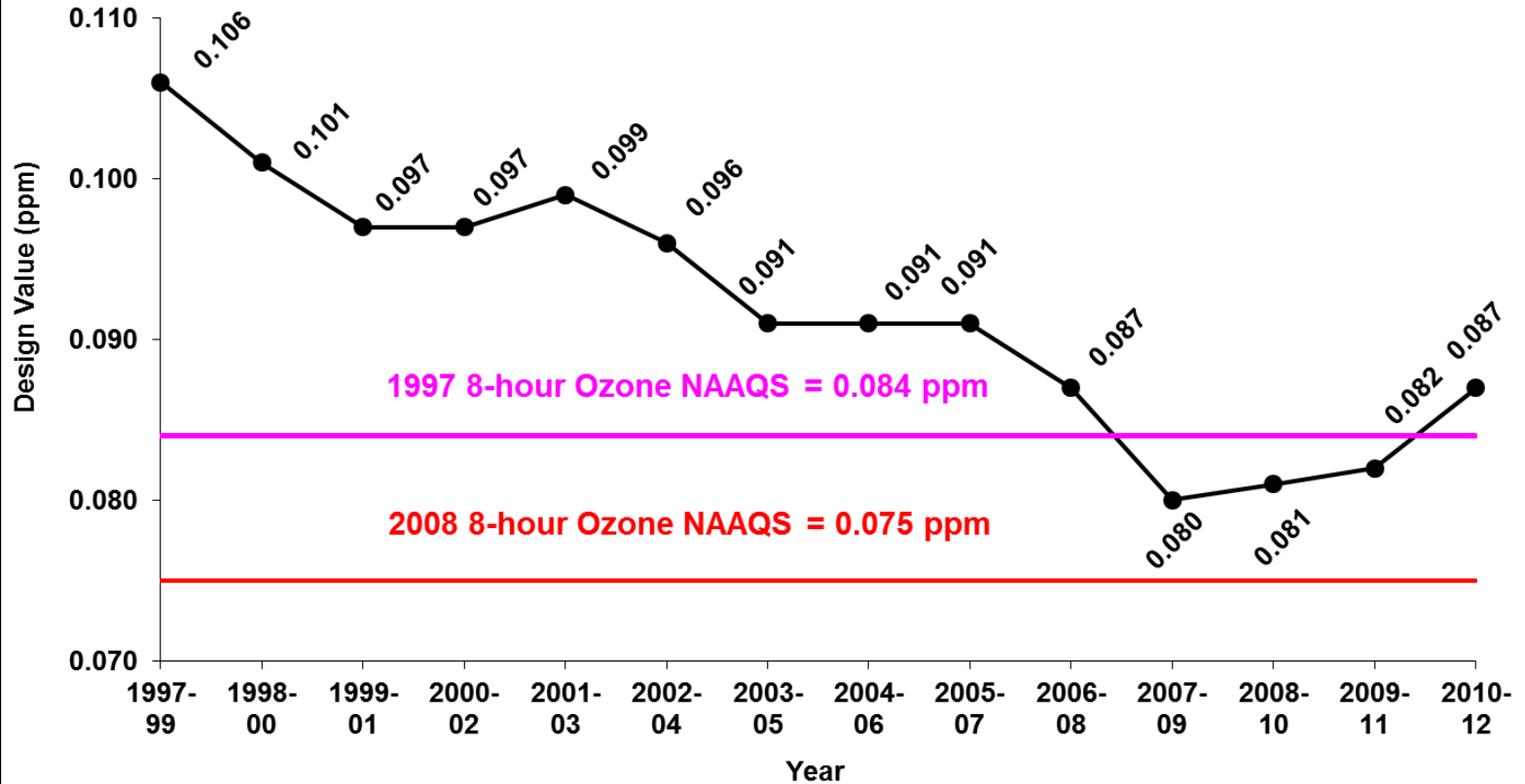
- Phase 1 : 1996
- Phase 2 : 2000

Draft temp data for 2013 only available until Sep 6, 2013 and is subject to change.



Ozone Design Value Trend

8-hour Ozone Design Value Washington, DC-MD-VA Ozone Nonattainment Area (1999-2012)



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



Fine Particle Summary

24-Hour PM2.5 Concentrations (ug/m3)

April

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6
	15.1	7.3	9.4	8.3	13.9	8.7
7	8	9	10	11	12	13
10.1	14.7	14.0	19.0	14.9	13.3	11.8
14	15	16	17	18	19	20
11.6	12.3	12.1	14.7	14.7	9.0	7.3
21	22	23	24	25	26	27
7.9	6.6	13.0	13.6	8.9	9.0	14.2
28	29	30				
11.3	7.0	5.2				

May

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
			1	2	3	4
			7.5	5.5	7.4	6.8
5	6	7	8	9	10	11
9.8	10.0	6.2	9.5	13.0	15.5	13.2
12	13	14	15	16	17	18
7.7	6.5	8.8	15.5	17.2	12.4	7.5
19	20	21	22	23	24	25
11.1	12.4	14.9	20.0	19.3	6.5	7.1
26	27	28	29	30	31	
6.5	8.3	17.1	20.0	16.9	14.7	

June

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
						1
						11.7
2	3	4	5	6	7	8
8.5	9.6	6.8	11.0	7.3	5.9	12.9
9	10	11	12	13	14	15
13.7	4.8	8.8	16.8	10.8	5.2	13.2
16	17	18	19	20	21	22
14.3	13.4	14.9	8.6	8.7	9.0	6.6
23	24	25	26	27	28	29
7.4	9.6	10.7	9.1	9.7	7.4	7.8
30						
12.5						

July

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6
	4.2	4.3	6.1	7.0	6.5	5.7
7	8	9	10	11	12	13
4.3	5.5	13.7	9.7	8.2	9.7	6.5
14	15	16	17	18	19	20
6.2	11.9	14.5	19.6	21.2	22.3	13.7
21	22	23	24	25	26	27
10.2	8.0	7.1	8.0	7.1	9.4	12.0
28	29	30	31			
10.5	8.6	13.1	14.8			

August

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
				9.5	10.3	11.6
4	5	6	7	8	9	10
5.8	5.6	8.2	9.9	8.8	10.2	9.8
11	12	13	14	15	16	17
12.3	16.9	12.5	4.4	5.7	6.5	7.9
18	19	20	21	22	23	24
6.8	7.4	10.3	11.1	7.8	10.7	7.7
25	26	27	28	29	30	31
5.1	7.1	20.6	15.1	16.4	14.0	12.0

September

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
9.0	8.8	9.2	6.8	10.3		
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

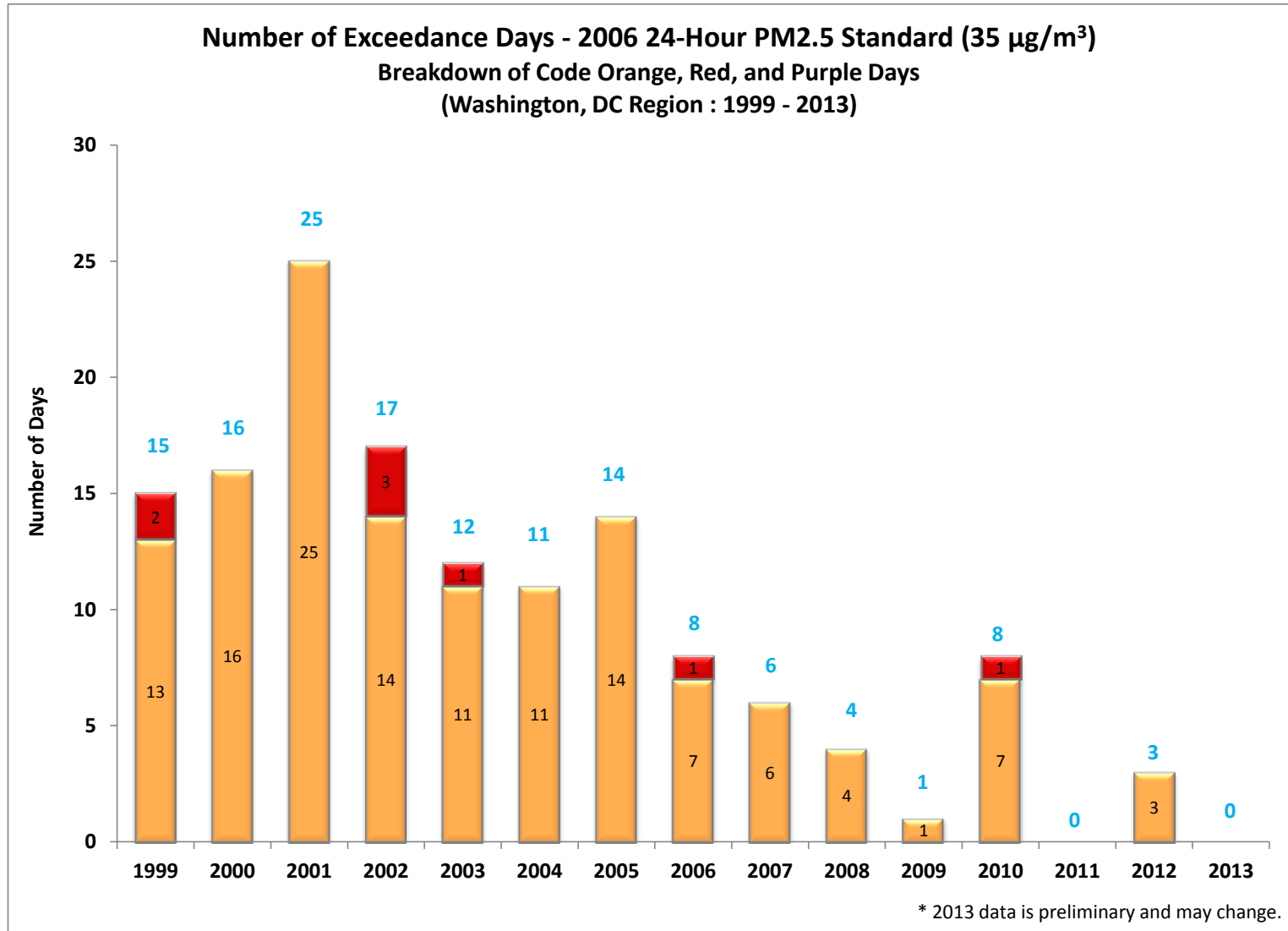
Since April 1, 2013, there have been:

50 Code Yellow Days and 108 Code Green Days

* 2013 data is current as of September 6, 2013 and is subject to change.



PM2.5 Exceedance Trend

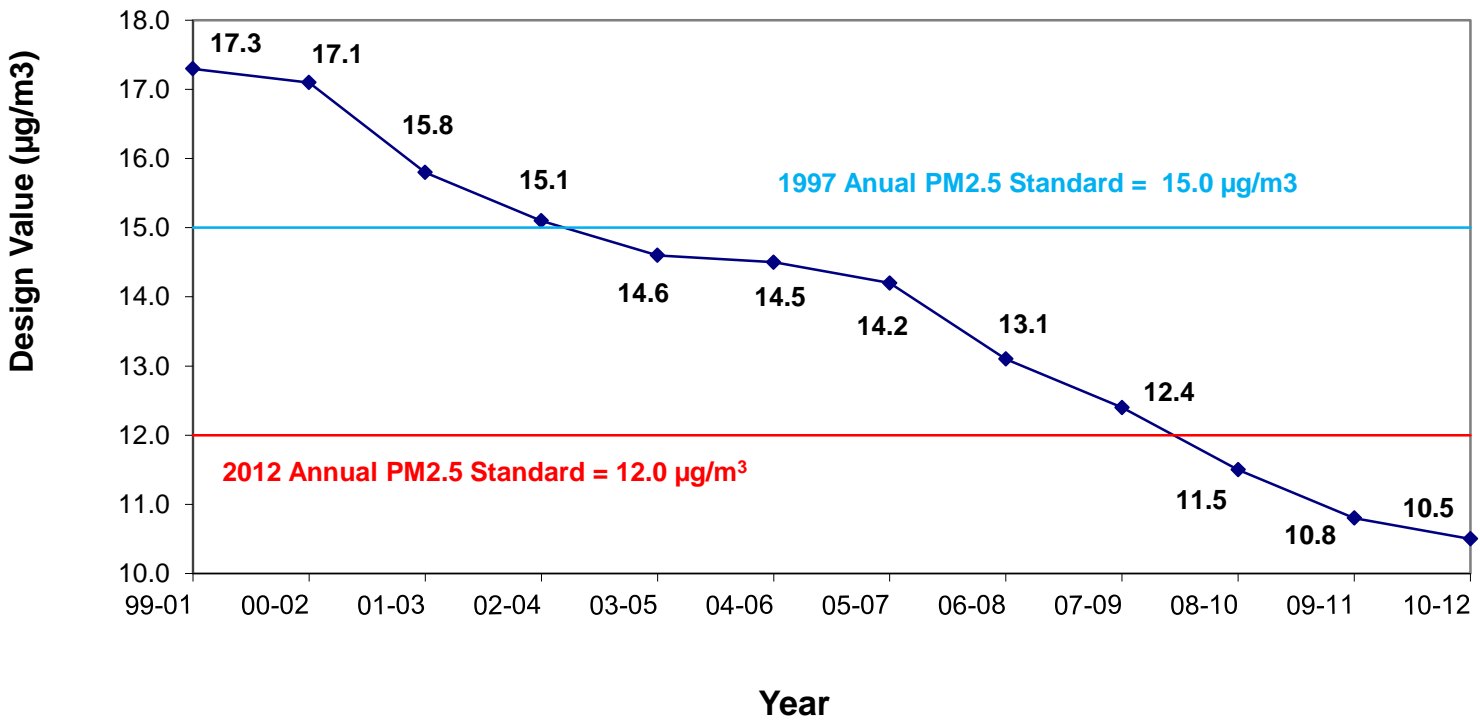


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Annual PM_{2.5} Design Value Trend

**Annual PM_{2.5} Design Value
Washington, DC-MD-VA Nonattainment Area (1999-2012)**



* Design value = 3-year avg of annual mean PM_{2.5} concentrations.



24-Hour PM_{2.5} Design Value Trend

