Ozone Season Summary 2014

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MWAQC/CEEPC Meeting, COG

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Ozone Season Summary

[As of September 24, 2014]

Peak 8-Hour Ozone Concentrations (ppb)

April

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1	2	3	4	5
		54	53	52	51	51
6	7	8	9	10	11	12
53	44	54	63	66	71	66
13	14	15	16	17	18	19
62	52	42	49	51	49	61
20	21	22	23	24	25	26
56	56	56	46	55	62	56
27	28	29	30			
59	47	43	39			

May

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
				53	55	57
4	5	6	7	8	9	10
56	49	57	51	63	48	45
11	12	13	14	15	16	17
66	64	71	32	35	44	52
18	19	20	21	22	23	24
53	63	68	60	64	59	50
25	26	27	28	29	30	31
54	61	65	59	27	42	51

June

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
54	59	56	73	55	56	59
8	9	10	11	12	13	14
58	56	54	50	26	47	50
15	16	17	18	19	20	21
57	87	74	61	58	65	52
22	23	24	25	26	27	28
62	57	55	50	58	57	58
29	30					
59	60					

July

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1	2	3	4	5
		59	62	52	46	51
6	7	8	9	10	11	12
57	67	69	47	67	76	58
13	14	15	16	17	18	19
57	60	47	59	58	63	65
20	21	22	23	24	25	26
50	55	47	65	38	57	63
27	28	29	30	31		
48	48	41	56	64		

August

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1	2
					50	52
3	4	5	6	7	8	9
42	71	72	77	58	58	57
10	11	12	13	14	15	16
60	48	35	50	48	53	69
17	18	19	20	21	22	23
50	50	49	54	57	48	35
24	25	26	27	28	29	30
44	56	60	76	60	56	48
31						
43						

September

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6
	32	43	59	59	55	51
7	8	9	10	11	12	13
40	43	32	38	46	43	32
14	15	16	17	18	19	20
39	49	55	52	55	50	54
21	22	23	24	25	26	27
56	36	34	31			
28	29	30				

Data based on the 8-hour standard set at 75 ppb. Since April 1, 2014, there have been:

4 Code Orange Days, 39 Code Yellow Days, 134 Code Green Days

2014 Ozone Exceedances

Date	Monitors Exceeding	Highest Monitor	8-Hr Max (ppb)
6/16/2014	4	Arlington	87
7/11/2014	1	Prince William	76
8/6/2014	1	Charles County	77
8/27/2014	2	Arlington/Prince George County (tie)	76

•Analysis is based on draft data until September 24, 2014. Data is subject to change.

Contributing Factors for Exceedance Days

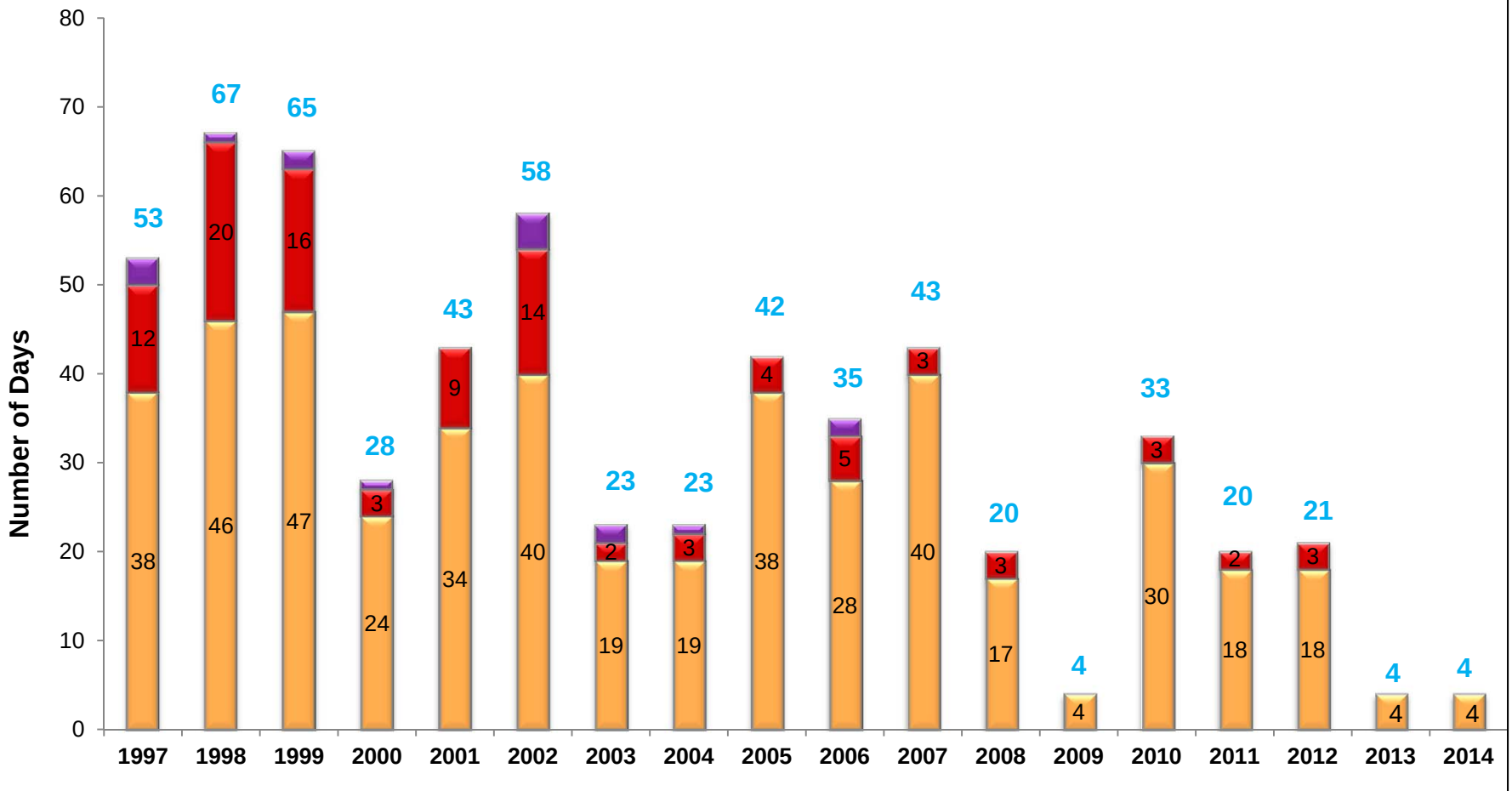
- Meteorology
  - High temp (90°F) and sunny skies
  - Light winds
- Transport of NOx and Ozone from upwind areas
  - Upper level winds brought high ozone and NOx levels from Ohio river valley and Western PA region
- Recirculation of local emissions
  - Recirculating winds kept local emissions inside the area

Ozone Exceedance Trend

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

Breakdown of Code Orange, Red, and Purple Days

1997 - 2014



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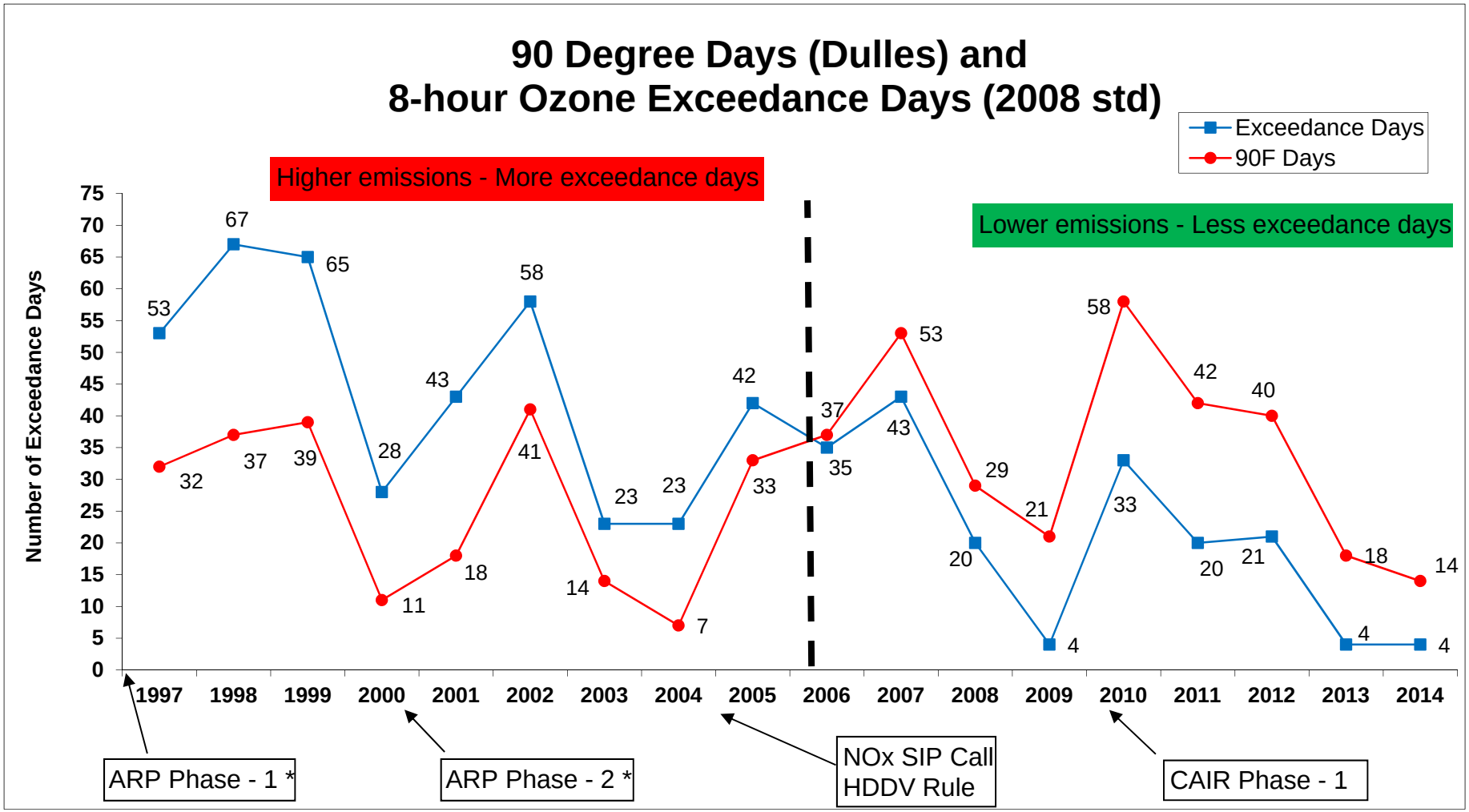
90 Degree Days and Exceedance Days



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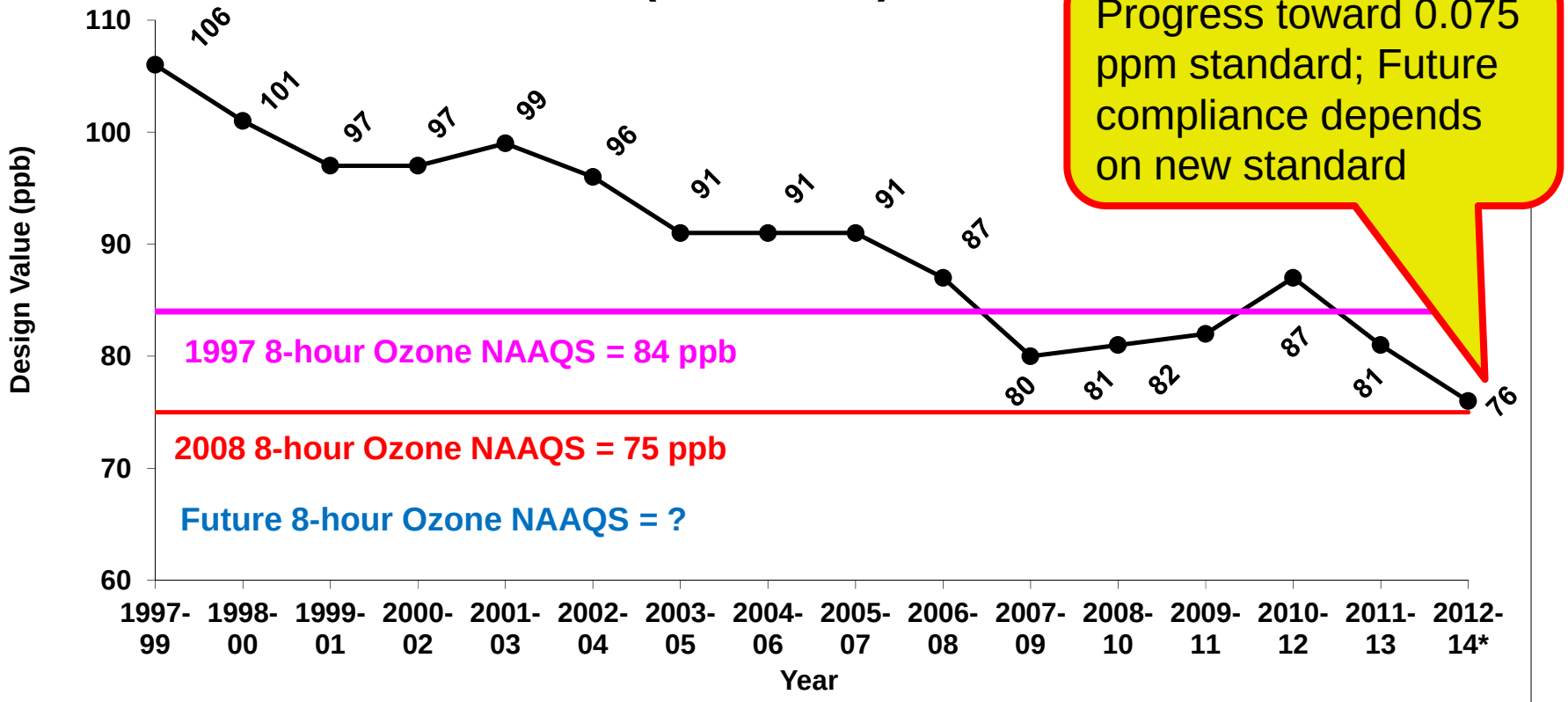
Why Fewer Exceedance Days Now ?

Federal	State	Local
Acid Rain Program (1996/2000)	Vehicle Inspection and Maintenance Programs	Renewable Energy Programs Regional Wind Power Purchase Program Clean Energy Rewards Program Renewable Portfolio Standards
Tier 2 (LD Vehicle) Rule (2004)	MD Healthy Air Act (2009/2012)	Energy Efficiency Programs LED Traffic Signal Retrofit Program Building Energy Efficiency Programs
HD Diesel Vehicle Rule (2004/2007)	VA CAIR Rule	VRE Idling Reduction
NOx SIP Call (2004)	Ozone Transport Commission Rules	Low VOC Paint
Clean Air Interstate Rule (2009), DC CAIR FIP*	MD LEV Rule	Gas Can Replacement

* DC CAIR was implemented through Federal Implementation Plan.

4th Highest Ozone Value

8-hour Ozone Design Value
Washington, DC-MD-VA Ozone Nonattainment Area
(1999-2014)



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

* 2014 data is preliminary .

Fine Particle Summary

[As of September 24, 2014]

24-hour $PM_{2.5}$ Average (µg/m³)

April

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1	2	3	4	5
		8.7	10.3	13.7	15.8	8.6
6	7	8	9	10	11	12
5.6	7.2	10.0	10.8	10.0	9.5	10.9
13	14	15	16	17	18	19
15.9	7.9	5.8	6.0	8.9	9.4	10.9
20	21	22	23	24	25	26
10.9	7.3	11.6	7.1	5.5	9.8	10.7
27	28	29	30			
4.6	7.1	6.7	8.6			

May

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
				10.8	9.1	10.2
4	5	6	7	8	9	10
10.7	5.7	9.4	9.6	20.4	17.2	12.1
11	12	13	14	15	16	17
9.1	14.7	12.9	11.6	12.5	7.5	10.2
18	19	20	21	22	23	24
6.6	10.0	11.0	15.5	16.9	6.0	7.1
25	26	27	28	29	30	31
7.6	12.0	16.3	14.8	4.3	6.8	6.4

June

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
8.8	8.2	16.2	14.7	11.9	7.4	10.8
8	9	10	11	12	13	14
15.5	17.5	15.6	13.8	7.9	11.3	11.3
15	16	17	18	19	20	21
9.0	15.7	19.6	26.1	14.8	9.7	12.5
22	23	24	25	26	27	28
13.0	10.9	8.7	10.8	9.4	10.4	7.0
29	30					
8.4	10.0					

July

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1	2	3	4	5
		14.5	20.0	15.1	19.8	7.4
6	7	8	9	10	11	12
12.8	17.2	17.0	9.0	11.3	11.8	13.6
13	14	15	16	17	18	19
14.6	11.9	11.5	9.4	9.9	9.8	9.4
20	21	22	23	24	25	26
9.7	7.4	8.9	13.5	8.8	6.1	11.7
27	28	29	30	31		
11.3	7.7	10.4	11.2	15.6		

August

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1	2
					18.8	10.6
3	4	5	6	7	8	9
7.1	9.5	16.9	17.0	14.0	13.0	16.7
10	11	12	13	14	15	16
16.7	10.0	5.4	8.9	10.9	9.9	10.4
17	18	19	20	21	22	23
13.7	9.4	10.4	9.9	15.6	14.0	7.2
24	25	26	27	28	29	30
8.5	9.8	13.4	16.8	11.9	8.4	10.0
31						
13.1						

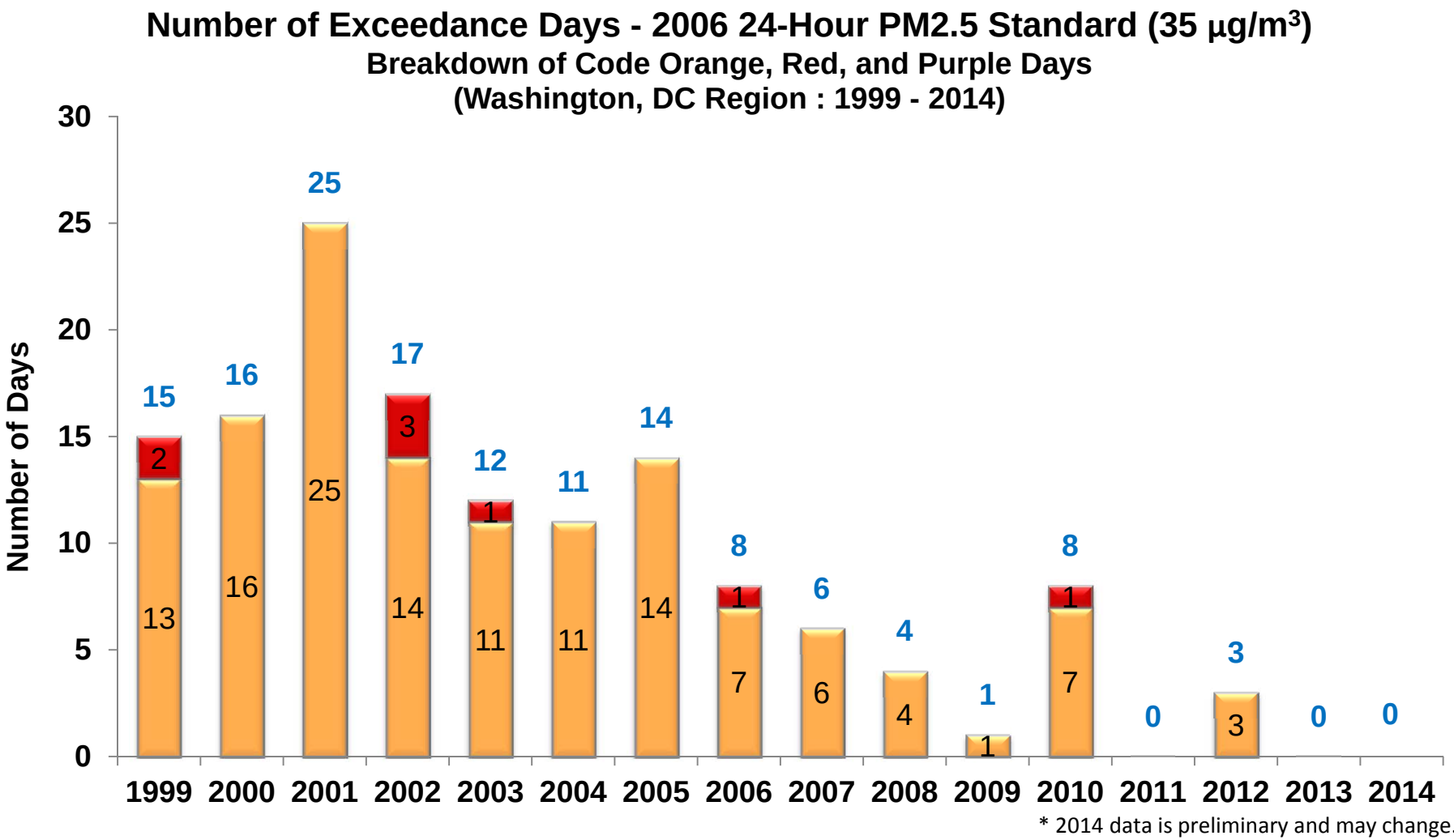
September

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6
	8.7	12.0	10.7	10.7	12.2	11.5
7	8	9	10	11	12	13
7.3	8.3	8.8	8.6	10.5	7.2	8.6
14	15	16	17	18	19	20
6.1	8.3	9.2	7.5	12.1	12.5	9.7
21	22	23	24	25	26	27
11.5	8.2	5.7	8.5			
28	29	30				

Data based on the 24-hour standard set at 35 µg/m³. Since April 1, 2014, there have been:

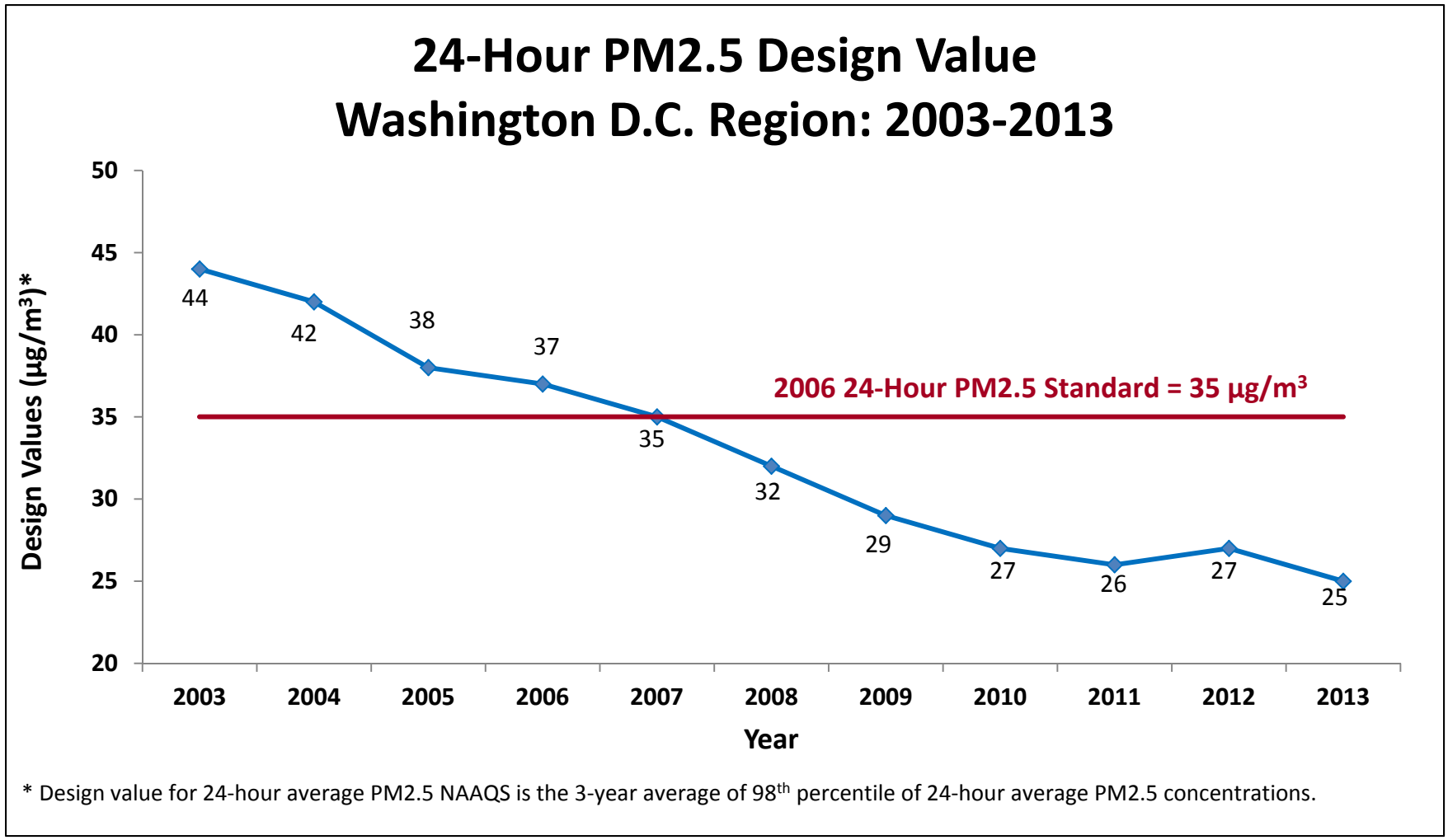
51 Code Yellow Days, 126 Code Green Days

$PM_{2.5}$ Exceedance Trend



* 2014 data is preliminary and may change.

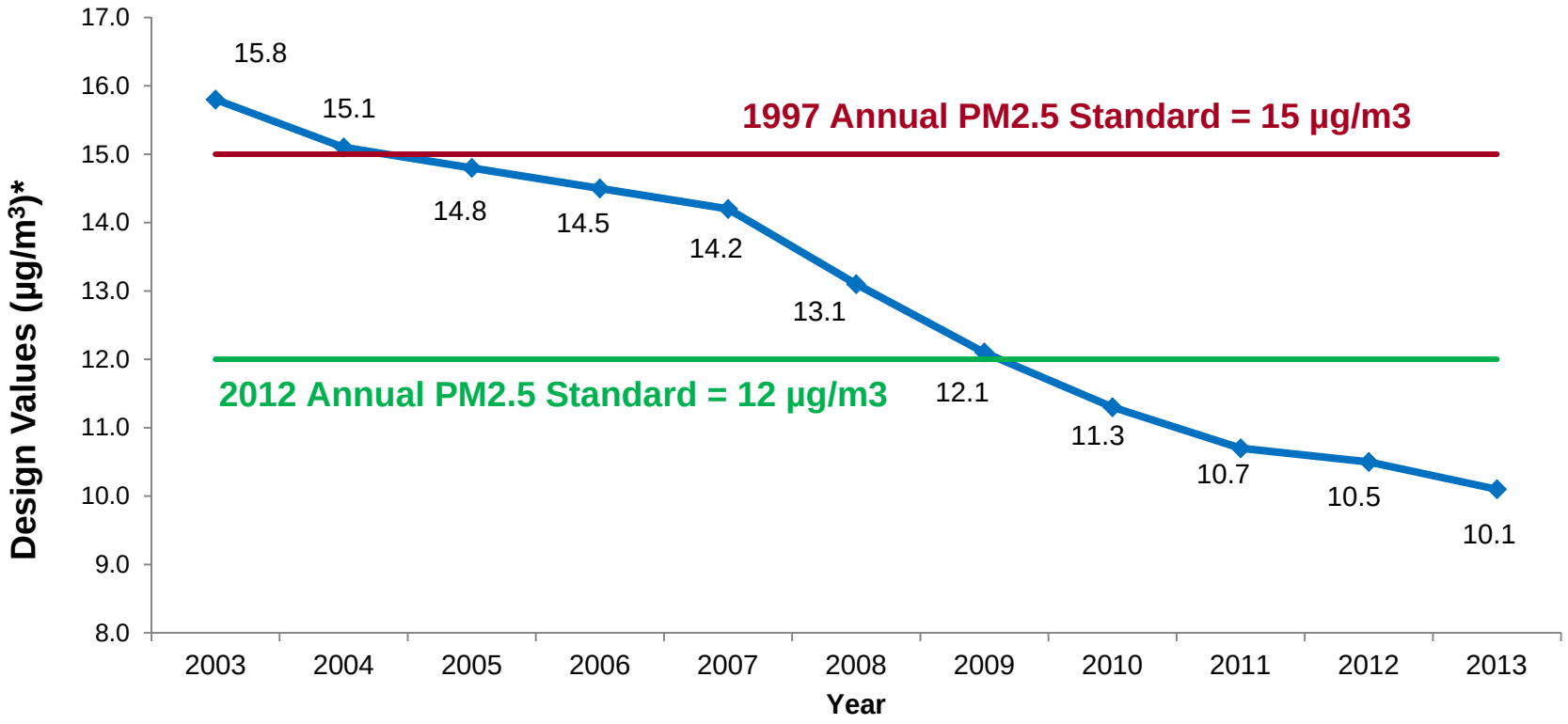
24-Hour $PM_{2.5}$ Design Value Trend



* Design value for 24-hour average PM2.5 NAAQS is the 3-year average of 98th percentile of 24-hour average PM2.5 concentrations.

Annual $PM_{2.5}$ Design Value Trend

Figure 16: $PM_{2.5}$ Annual Design Values Washington, D.C. Region, 2003-2013



* Design value for the annual PM2.5 NAAQS is the 3-year average of annual mean PM2.5 concentrations.

These 4th highest 8-hour ozone values in 2015 would lead to non-attainment in 2015

Site	4th Highest 8-Hour Max Ozone Concentration (ppm)
Beltsville	0.087
PG Equestrian	0.090
Arlington	0.090
Calvert	0.091
Franconia	0.092
Southern Maryland	0.094
Rockville	0.095
HU- Beltsville	0.095
McMillian NCore	0.096
Frederick	0.096
Ashburn	0.099
Long Park	0.100

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