



Ozone Season Summary

2015

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 MWAQC Meeting
 September 29, 2015



Ozone Season Summary

Peak 8-Hour Ozone Concentrations (ppb)

APRIL 2015							MAY 2015							JUNE 2015							
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	
		51	62	46	46	53					43	52	68	51	32	28	32	33	54	49	
57	45	39	37	42	58	60	67	71	67	70	72	45	41	56	60	67	88	60	59	57	
60	43	53	58	51	65	58	48	59	46	59	60	61	40	45	42	55	46	47	52	46	
48	52	54	50	55	48	52	52	52	47	38	59	60	68	68	52	63	64	60	43	42	
47	50	61	60				60	65	48	69	66	52	43	53	58						
JULY 2015							AUGUST 2015							SEPTEMBER 2015							
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	
		60	46	62	54	54						57	54			72	77	68	72	45	57
39	62	41	39	60	57	71	62	64	73	55	53	55	55	58	57	54	39	58	33	35	
50	54	56	60	48	48	62	37	52	48	55	75	71	67	51	73	81	82	78	57	40	
68	54	56	67	68	63	62	68	59	44	39	63	60	69								
58	70	49	51	67			62	64	57	53	62	63	61								
							62														

* Since April 1, 2015, there have been 5 Code Orange Days, 61 Code Yellow Days, and 107 Code Green Days



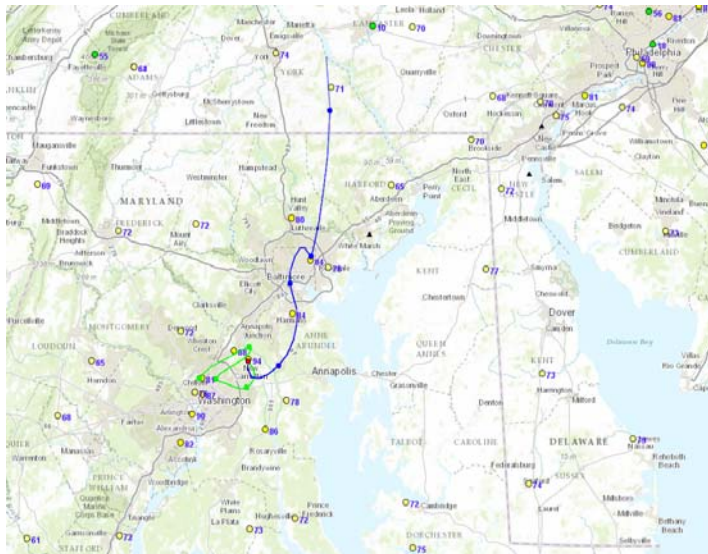
Meteorology Factors on Exceedance Days

- June 11 & September 2 (Local & Transported Emissions)
 - High Temperatures: 92°F/93°F, Clear skies
 - Light westerly winds brought ozone from Ohio River Valley
 - Ozone build up on previous days
 - Recirculation (September 2) & Canadian wildfire smoke (June 11)
- September 16-18 (Mostly Recirculation of Local Emissions)
 - High Temperatures: Mid-80°F, Clear skies
 - Extremely light winds & Recirculation
 - Ozone build up on previous days

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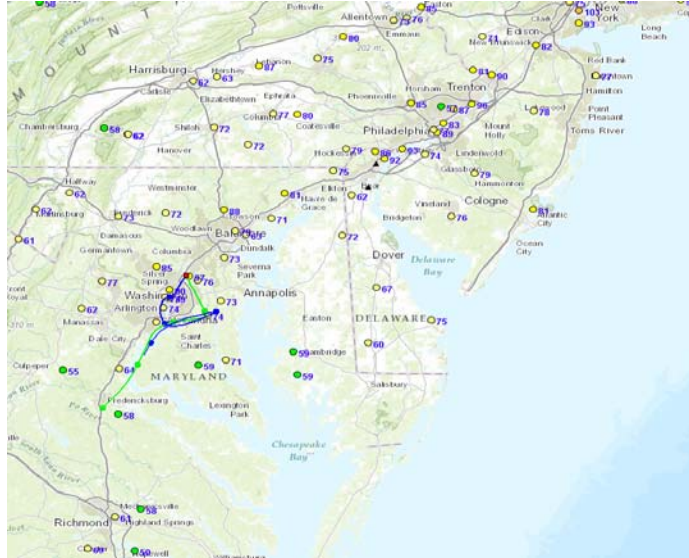
Wind Trajectories (September 16)



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Wind Trajectories (September 17)



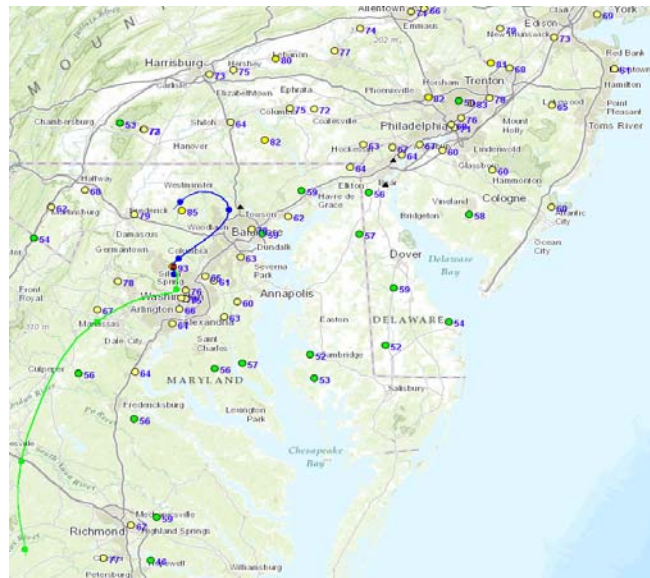
500 m

1500 m

5



Wind Trajectories (September 18)



500 m

1500 m

6



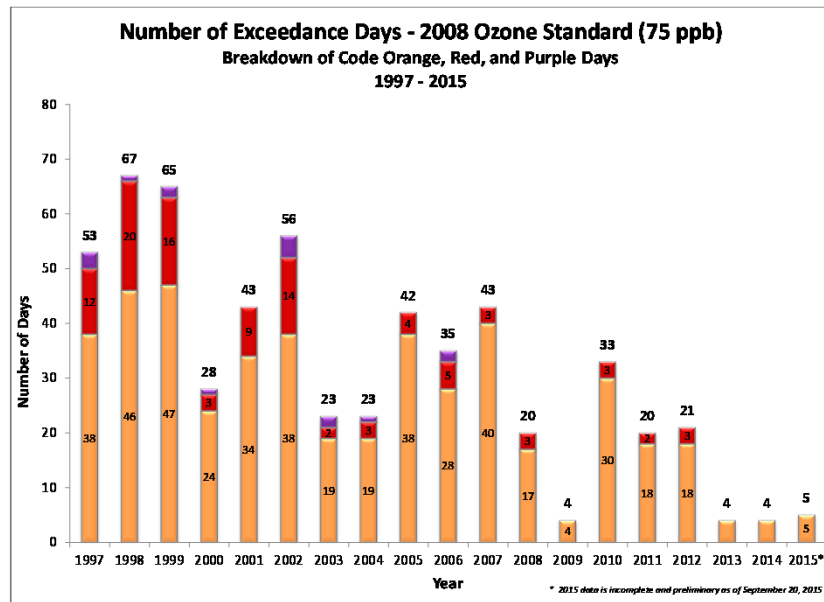
2015 Ozone Exceedances

Date	Monitors Exceeding	Highest Monitor	8-Hr Max (ppb)
6/11	6	HU-Beltsville	88
9/2	1	Southern Maryland	77
9/16	7	Beltsville	81
9/17	4	Beltsville	82
9/18	2	Rockville	78

*Analysis is based on draft data as of September 22, 2015. Data is subject to change.

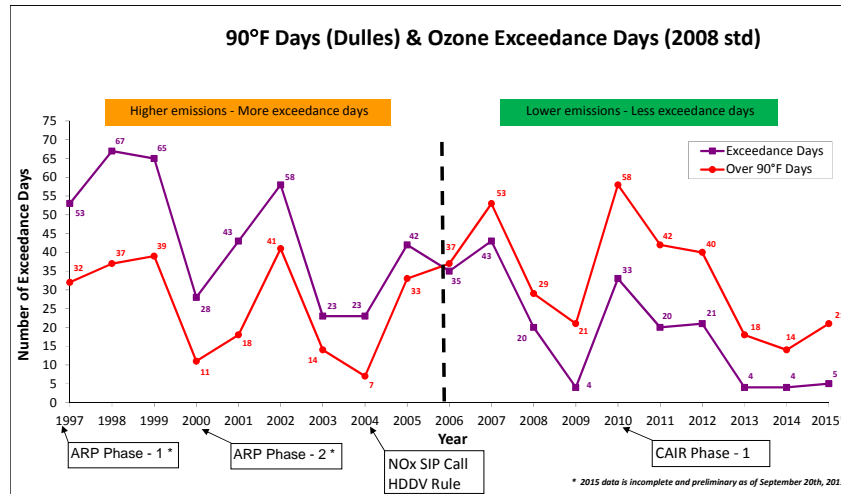


Ozone Exceedance Trend





Trends of 90°F Days and Exceedance Days



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Why Fewer Exceedance Days Now ?

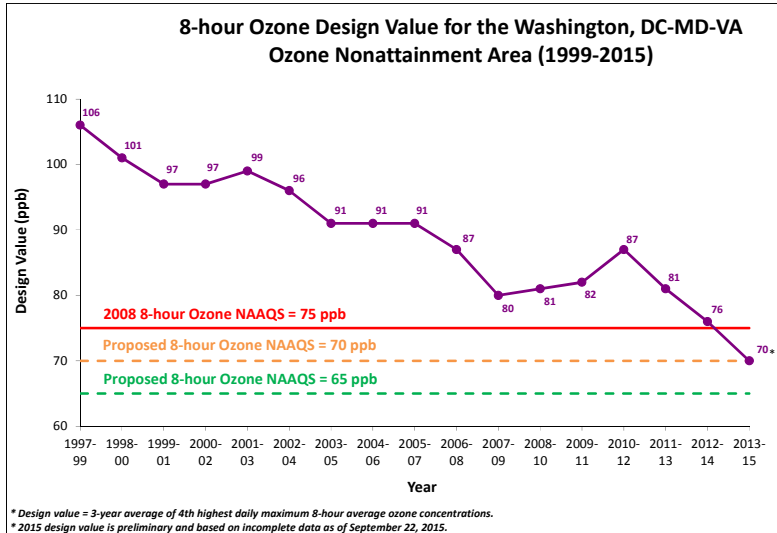
Emission Control Programs

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 CSAPR Rule	VRE Idling Reduction
NOx SIP Call (2004)	DC CSAPR Rule	Low VOC Paint
Clean Air Interstate Rule/CSAPR (2009/2015)	Ozone Transport Commission Rules	Gas Can Replacement

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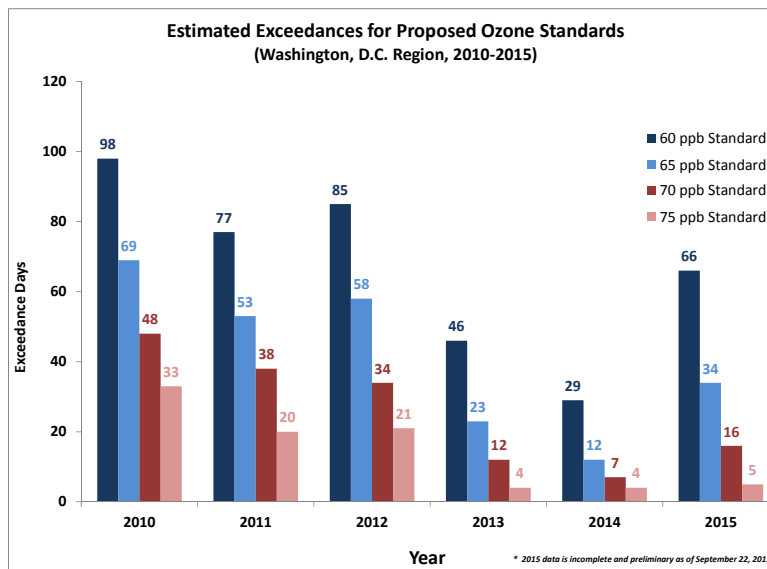
Ozone Design Value Trend



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Estimated Exceedances for Proposed Ozone Standards



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Fine Particle Summary

24-hour PM_{2.5} Concentrations (µg/m³)

APRIL 2015							MAY 2015							JUNE 2015						
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
		10.5	11.4	16.6	7.5	6.8					13.1	14.3	19.2	9.7	4.9	6.8	7.7	6.5	9.9	9.6
10.1	16.7	9.6	12.1	12.7	8.2	9.1	21.2	24.4	21.5	16.7	18.7	12.7	17.4	10.0	11.5	24.6	32.5	17.2	14.2	13.9
11.6	13.4	8.9	10.0	13.5	17.2	13.9	20.5	9.7	6.6	5.7	8.5	14.8	11.3	10.5	8.8	10.5	8.8	12.4	11.7	8.1
12.7	11.3	12.5	9.0	7.6	11.0	10.9	12.2	10.6	8.4	8.5	8.4	6.6	11.5	10.3	15.0	6.0	11.4	13.6	5.7	5.1
10.9	11.0	13.2	16.3				14.1	13.5	11.2	12.7	13.5	8.7	12.2	8.2	10.9					

JULY 2015							AUGUST 2015							SEPTEMBER 2015						
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
		14.1	21.4	16.2	24.1	17.8						11.4	12.4		18.1	26.7	21.7	27.7	15.8	8.2
7.9	14.5	14.7	6.8	9.7	14.0	14.8	10.7	11.3	10.9	10.7	10.8	9.0	10.2	9.7	9.7	8.8	8.2	7.0	9.5	5.7
12.9	8.8	4.6	4.9	10.4	9.3	15.2	9.3	10.9	6.8	5.9	9.3	12.5	15.8	7.2	8.9	12.7	14.6	12.6	11.4	5.9
12.1	10.9	6.0	8.0	7.8	10.7	15.0	14.1	17.1	12.4	9.2	7.4	8.7	8.7							
10.9	9.3	10.8	9.7	8.6			12.7	9.7	10.0	8.8	11.4	12.6	15.7							
							17.2													

* Since April 1, 2015, there have been 69 Code Yellow Days and 104 Code Green Days

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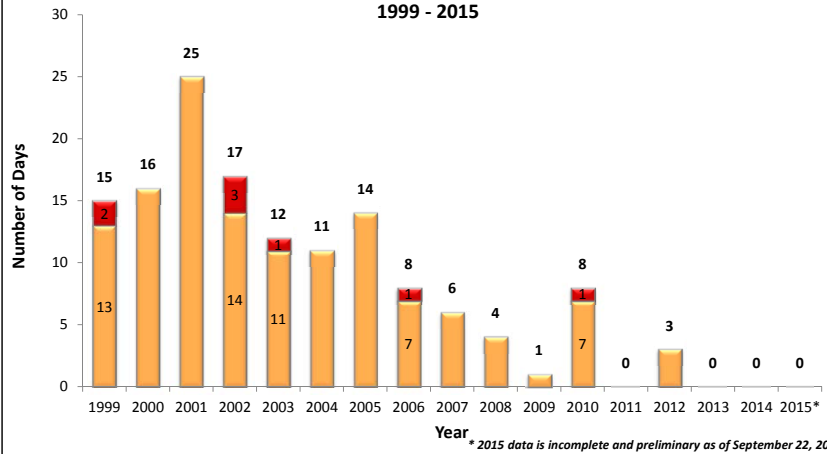


PM_{2.5} Exceedance Trend

Number of Exceedance Days - 2006 24-Hour PM_{2.5} Standard (35 µg/m³)

Breakdown of Code Orange, Red, and Purple Days

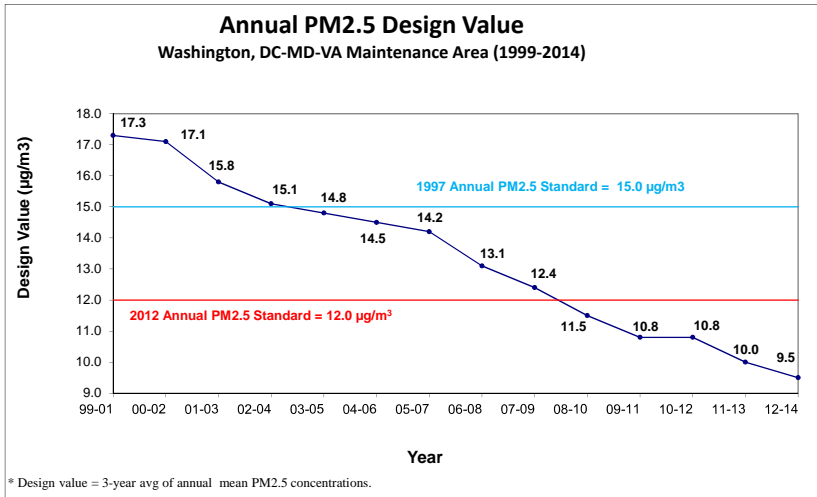
1999 - 2015



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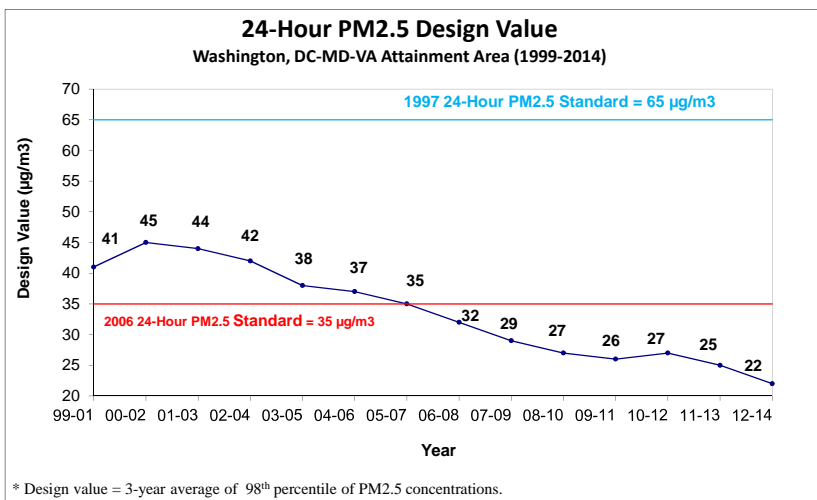
Annual PM_{2.5} Design Value Trend



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24-Hour PM_{2.5} Design Value Trend



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