OZONE SEASON SUMMARY 2018

Sunil Kumar
Principal Environmental Engineer

July 10, 2018

Agenda Item 2

Metropolitan Washington
Council of Governments

Peak 8-Hour Average Ozone Levels (ppb)

March 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	01	02	03
				34	45	46
04	05	06	07	08	09	10
47	46	39	38	44	41	48
11	12	13	14	15	16	17
50	40	47	41	48	44	43
18	19	20	21	22	23	24
50	55	39	48	49	53	51
25	26	27	28	29	30	31
48	47	48	33	54	41	50
01	02	03	04	05	06	07

April 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	29	30	31
01	02	03	04	05	06	07
48	45	40	48	51	61	51
08	09	10	11	12	13	14
52	50	54	56	59	70	57
15	16	17	18	19	20	21
44	36	44	52	50	56	56
22	23	24	25	26	27	28
61	59	53	48	57	53	61
29	30	01	02	03	04	05
46	60					

May 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	01	02	03	04	05
		70	73	64	68	53
06	07	08	09	10	11	12
46	63	62	70	56	65	63
13	14	15	16	17	18	19
35	46	56	34	25	37	23
20	21	22	23	24	25	26
50	58	41	52	71	61	52
27	28	29	30	31	01	02
51	28	46	27	34		
03	04	05	06	07	08	09

June 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01	02	03	04	05	06	07
65	50	26	43	56	44	55
08	09	10	11	12	13	14
65	64	46	35	52	44	55
15	16	17	18	19	20	21
61	67	67	85	51	54	56
22	23	24	25	26	27	28
36	40	47	49	57	37	57
29	30	01	02	03	04	05
69	80					
06	07	08	09	10	11	12

Peak 8-Hour Average Ozone Levels (ppb)

July 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01	02	03	04	05	06	07
69	**67**	**76**	**59**	**37**	**47**	**60**
08	09	10	11	12	13	14
60						
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	01	02	03	04
05	06	07	08	09	10	11

5 Code Orange Days, 43 Code Yellow Days, Rest Code Green Days

Analysis is based on draft data as of July 8, 2018. Data is subject to change

2018 Ozone Exceedances

Date	Monitors Exceeding	Highest Monitor	8-Hr Max (ppb)
5/2	1	Beltsville	73
5/24	1	Franconia	71
6/18	3	Beltsville	85
6/30	5	Beltsville	80
7/3	4	Takoma	76

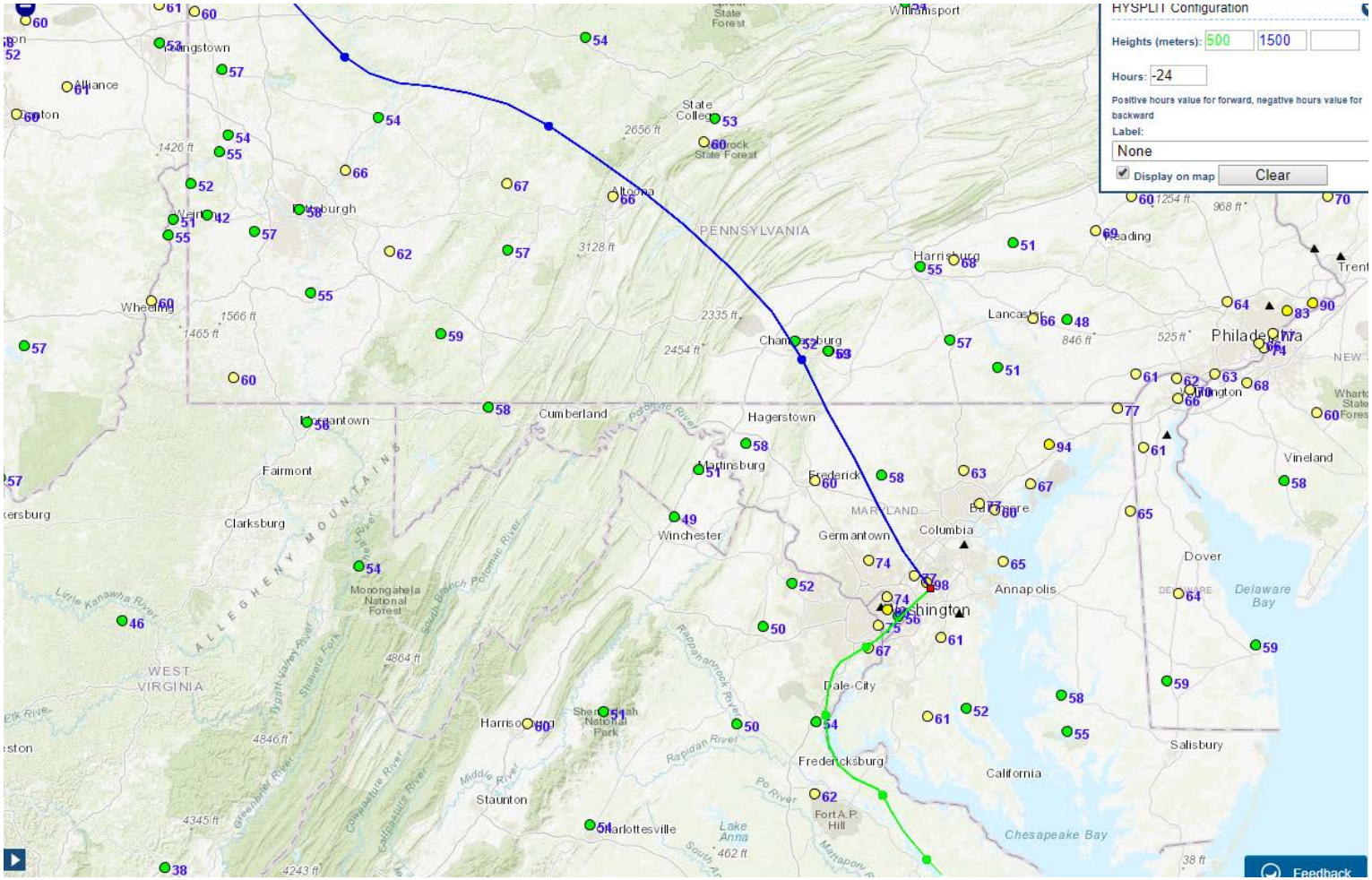
Analysis is based on draft data as of July 8, 2018. Data is subject to change.

Meteorology on Exceedance Days

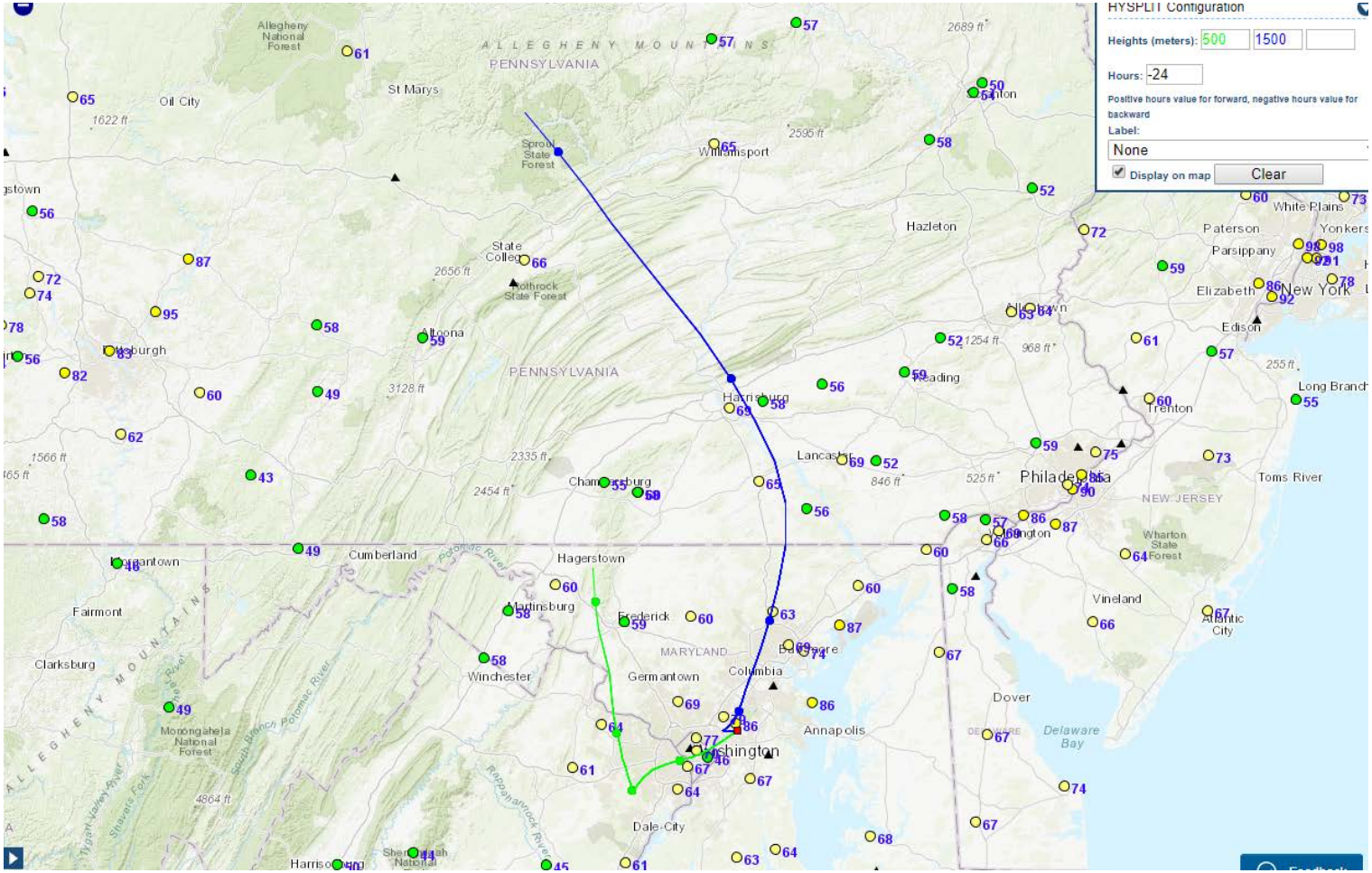
Exceedances seem influenced by both transported & local emissions

- High Temperature:
  - 83°F - 88°F (May 2/24)
  - 92°F - 96°F (June 18/30 & July 3)
- Clear sky
- Light winds brought some ozone from upstream areas
- Ozone build up on previous days

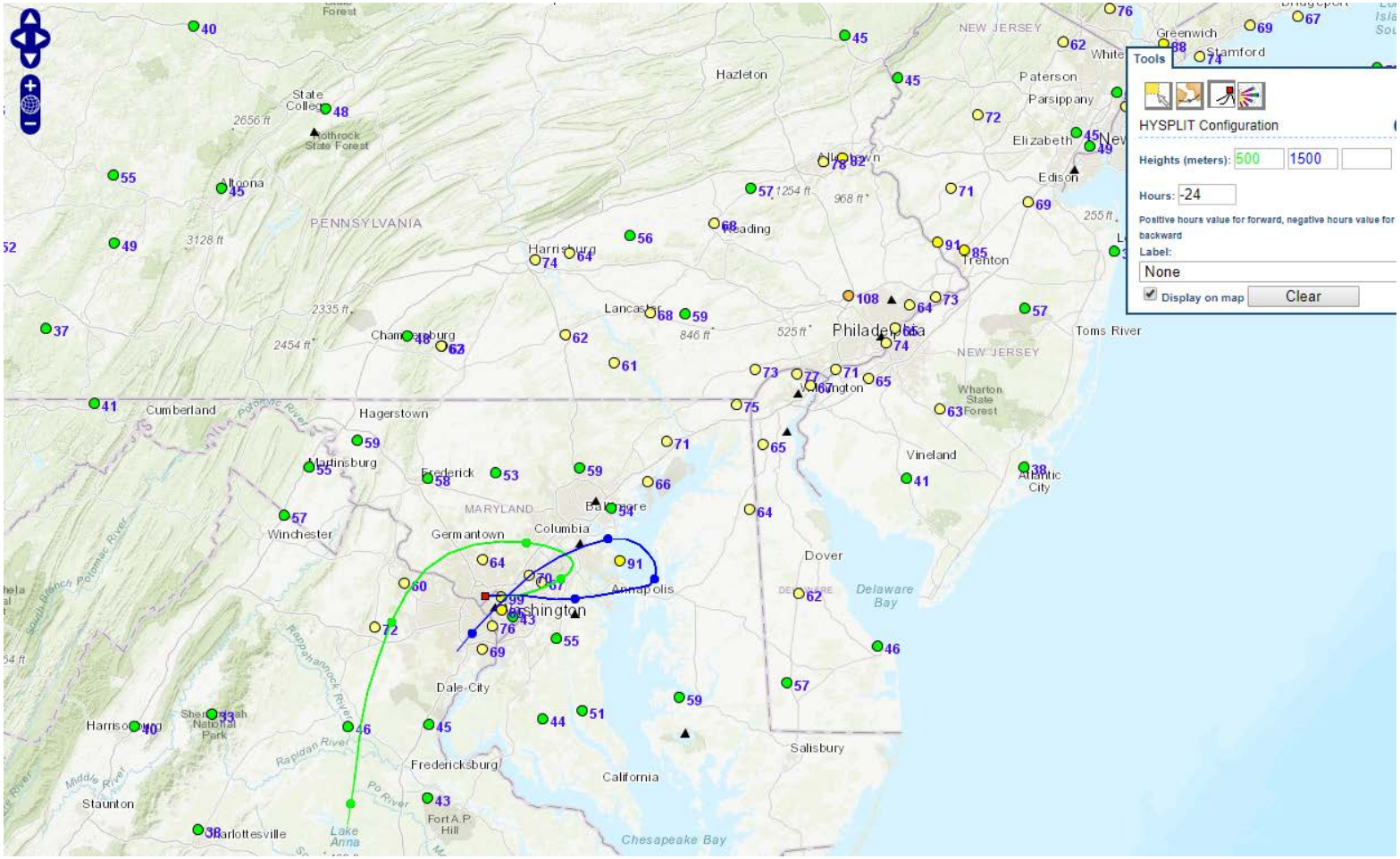
Wind Trajectories (June 18)



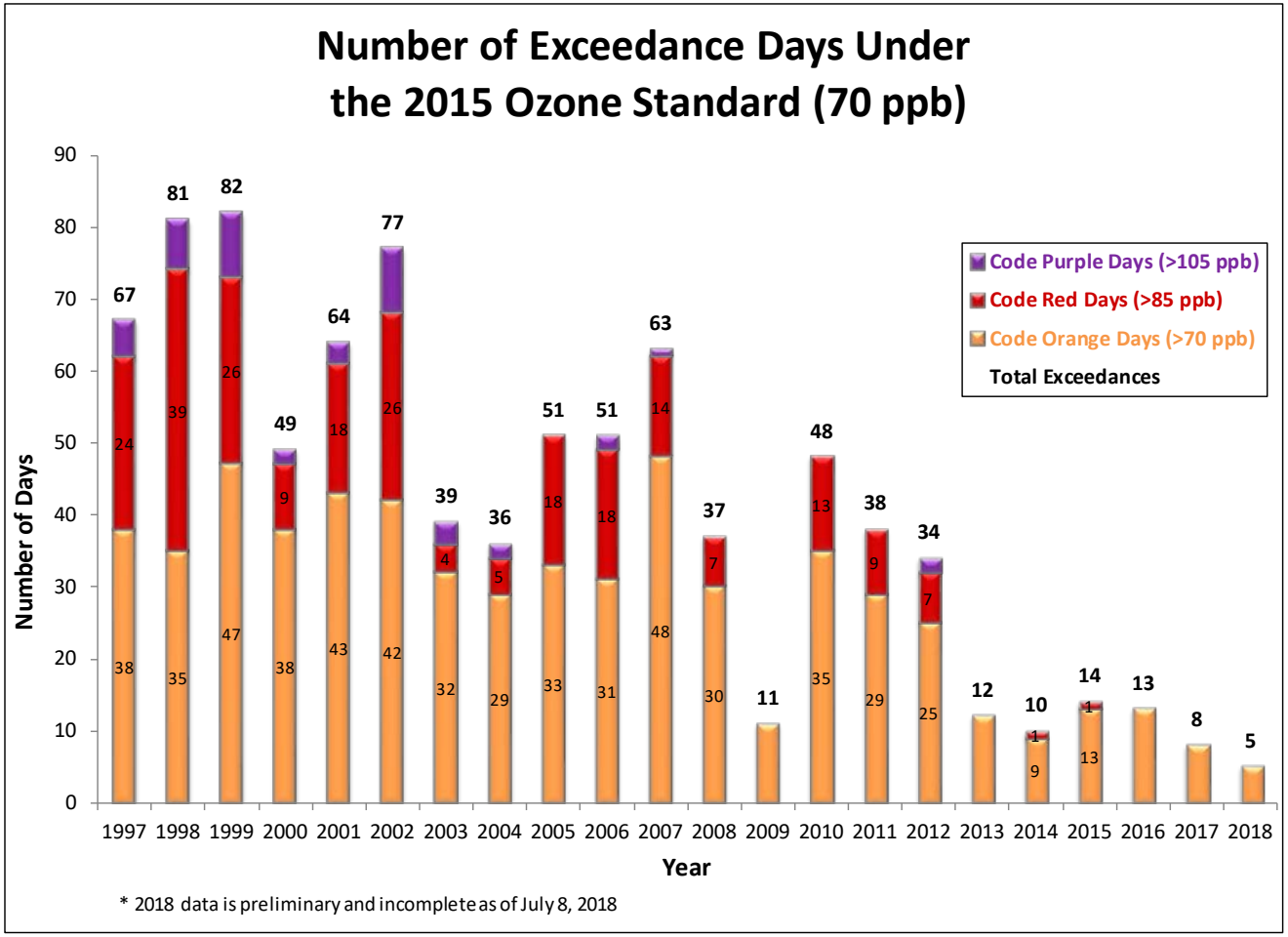
Wind Trajectories (June 30)



Wind Trajectories (July 3)



Ozone Exceedance Trend



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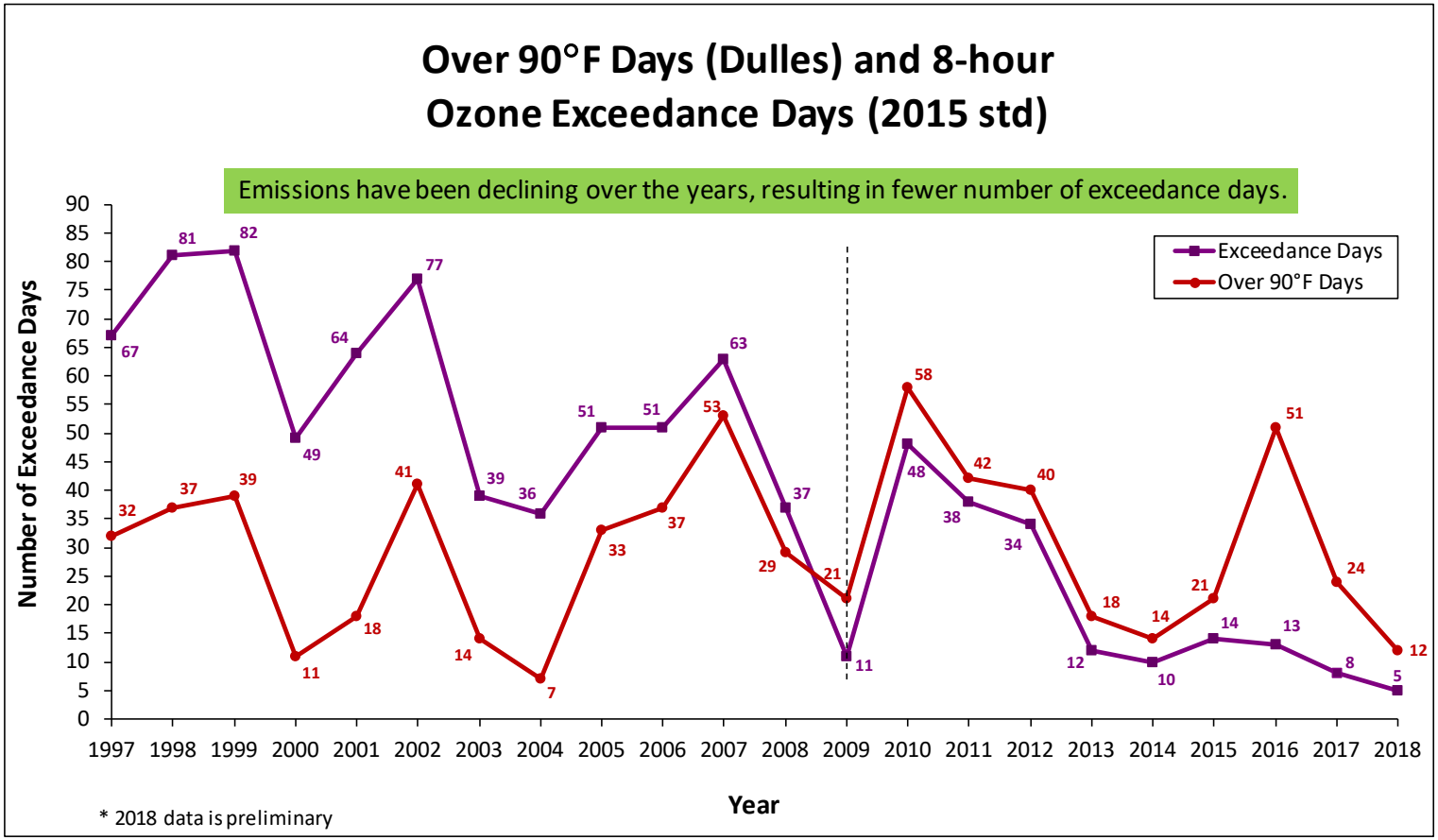
Ozone & Temperature Trend



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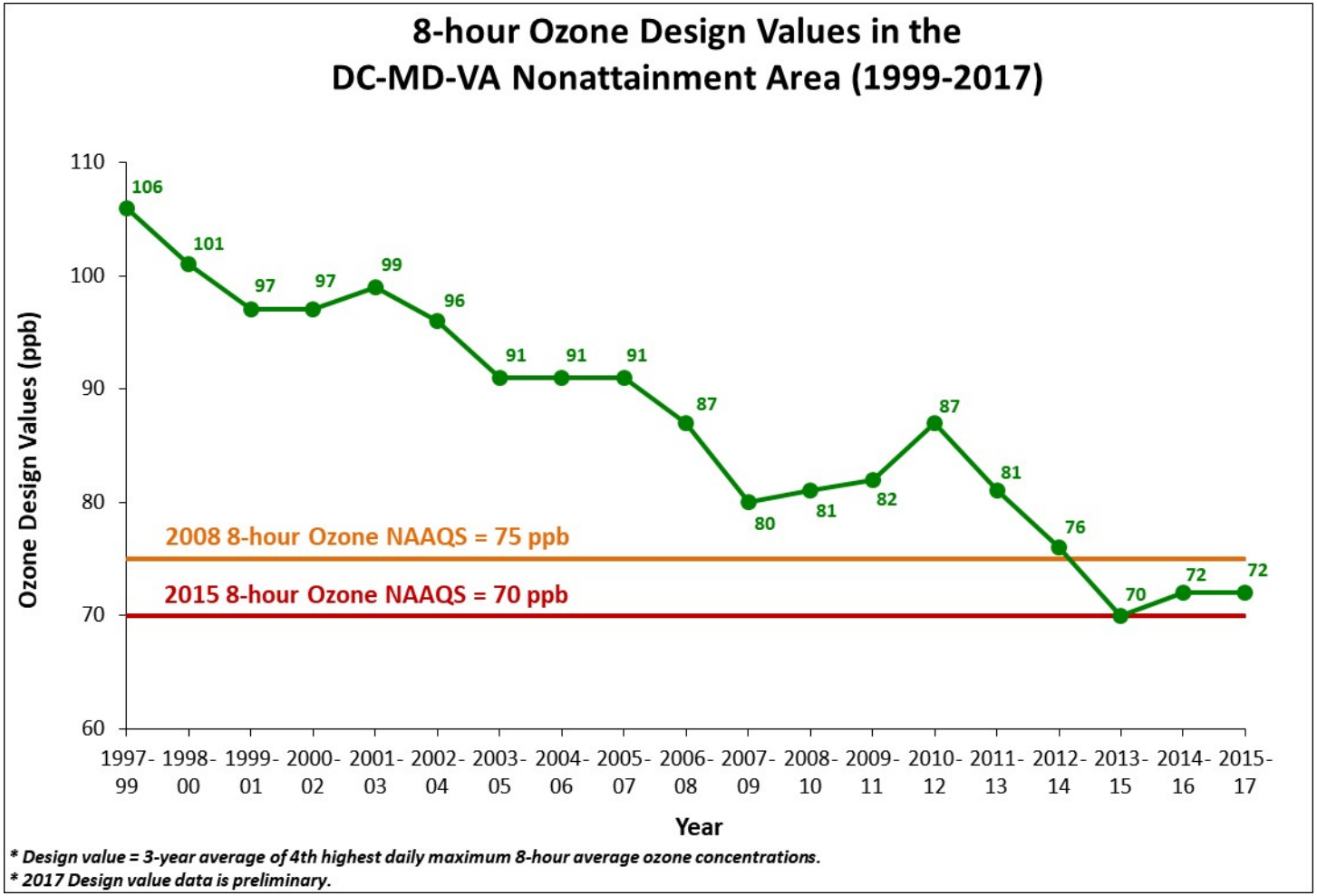
Ozone Design Value Trend



** Design value = 3-year average of 4th highest daily maximum 8-hour average ozone concentrations.*
** 2017 Design value data is preliminary.*

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)		Low VOC Paint
Clean Air Interstate Rule/CSAPR (2009/2015)	Ozone Transport Commission Rules	Gas Can Replacement

24-Hour Average PM2.5 Levels (µg/m³)

March 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	01	02	03
				21.9	7.9	9.5
04	05	06	07	08	09	10
7.6	7.7	14.9	10.8	10.2	10.5	15.0
11	12	13	14	15	16	17
16.2	16.4	11.9	10.2	14.5	10.7	11.7
18	19	20	21	22	23	24
12.5	18.7	15.4	12.2	9.1	10.7	9.1
25	26	27	28	29	30	31
16.3	11.8	12.6	19.2	23.4	13.0	9.0
01	02	03	04	05	06	07

April 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	29	30	31
01	02	03	04	05	06	07
9.9	12.2	20.3	10.1	8.1	11.6	8.1
08	09	10	11	12	13	14
10.3	13.3	17.1	16.0	20.3	23.1	23.5
15	16	17	18	19	20	21
12.7	6.1	7.4	10.1	11.1	8.1	9.8
22	23	24	25	26	27	28
10.1	10.1	9.1	5.8	8.8	9.6	15.9
29	30	01	02	03	04	05
8.0	9.6					

May 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	01	02	03	04	05
		17.5	23.9	30.1	33.9	11.8
06	07	08	09	10	11	12
14.5	11.2	10.2	11.7	12.5	13.6	19.7
13	14	15	16	17	18	19
12.1	14.6	12.6	9.6	6.6	5.2	7.7
20	21	22	23	24	25	26
9.7	10.0	10.7	9.7	11.7	15.7	12.9
27	28	29	30	31	01	02
9.5	10.8	19.1	6.6	9.6	8.6	10.3
03	04	05	06	07	08	09

June 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	01	02
					8.6	10.3
03	04	05	06	07	08	09
7.0	7.1	8.9	8.6	11.3	14.2	15.3
10	11	12	13	14	15	16
11.7	8.1	9.6	12.0	7.5	6.2	8.5
17	18	19	20	21	22	23
13.3	17.7	14.0	7.4	6.7	8.4	5.0
24	25	26	27	28	29	30
6.0	7.0	8.5	8.4	9.2	14.1	16.2
01	02	03	04	05	06	07

24-Hour Average PM2.5 Levels (µg/m^3)

July 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01	02	03	04	05	06	07
17.0	**17.7**	**20.0**	**25.5**	**7.7**	**9.2**	**4.5**
08	09	10	11	12	13	14
6.9						
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	01	02	03	04
05	06	07	08	09	10	11

50 Code Yellow Days, Rest Code Green Days

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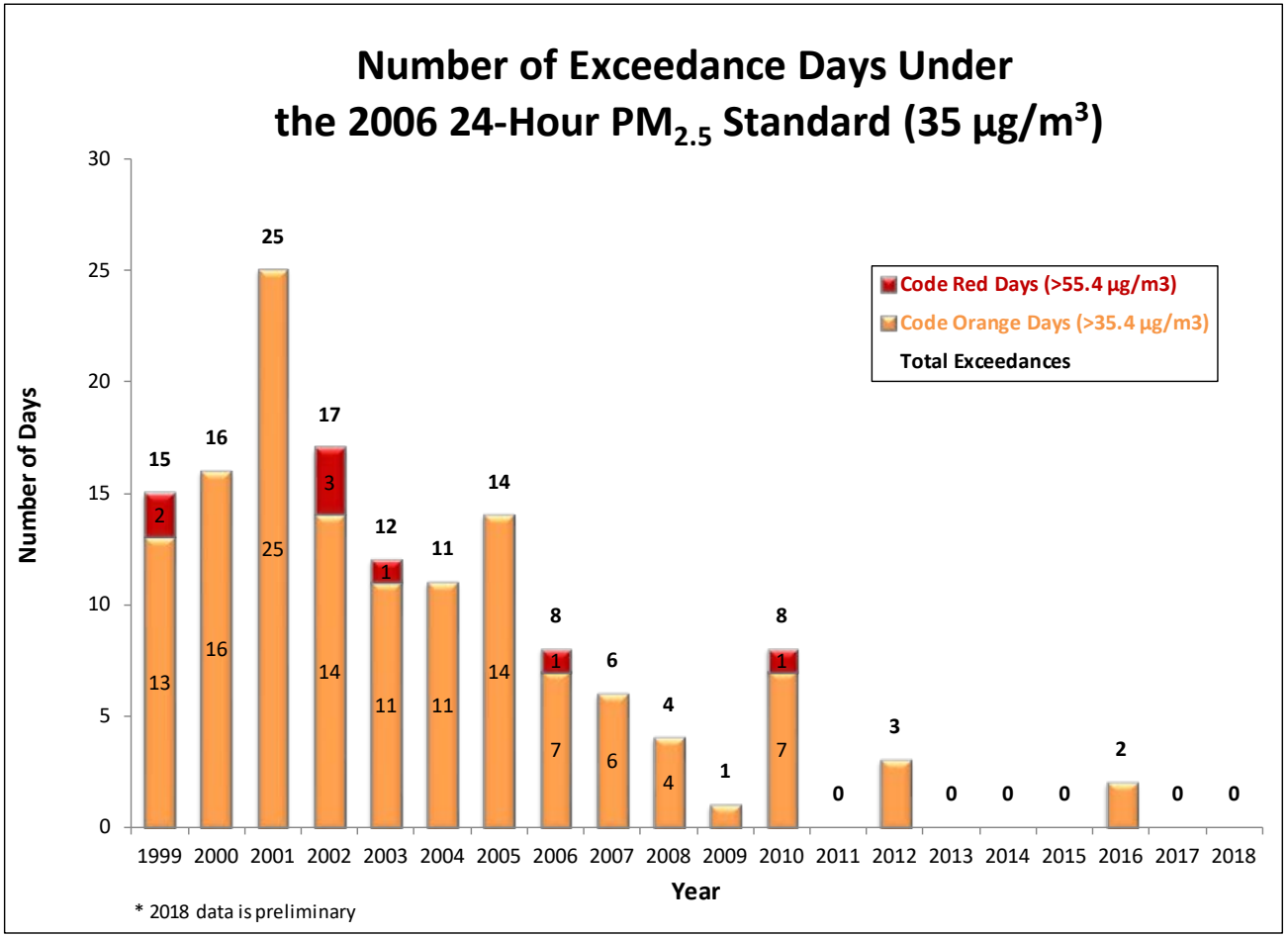
PM2.5 Exceedance Trend



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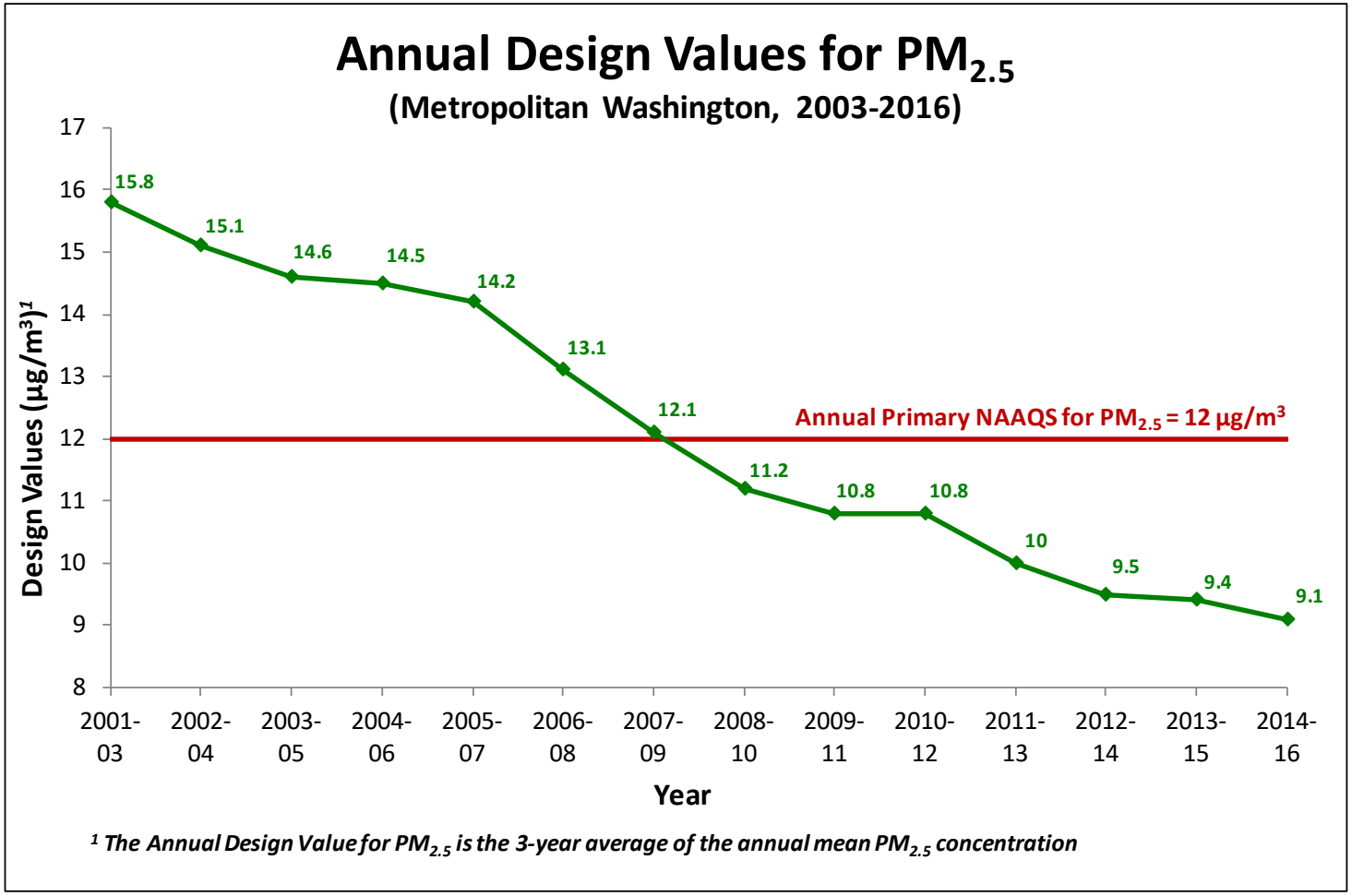
Annual PM2.5 Design Value Trend



24-Hour PM2.5 Design Value Trend