

OZONE SEASON SUMMARY - 2023

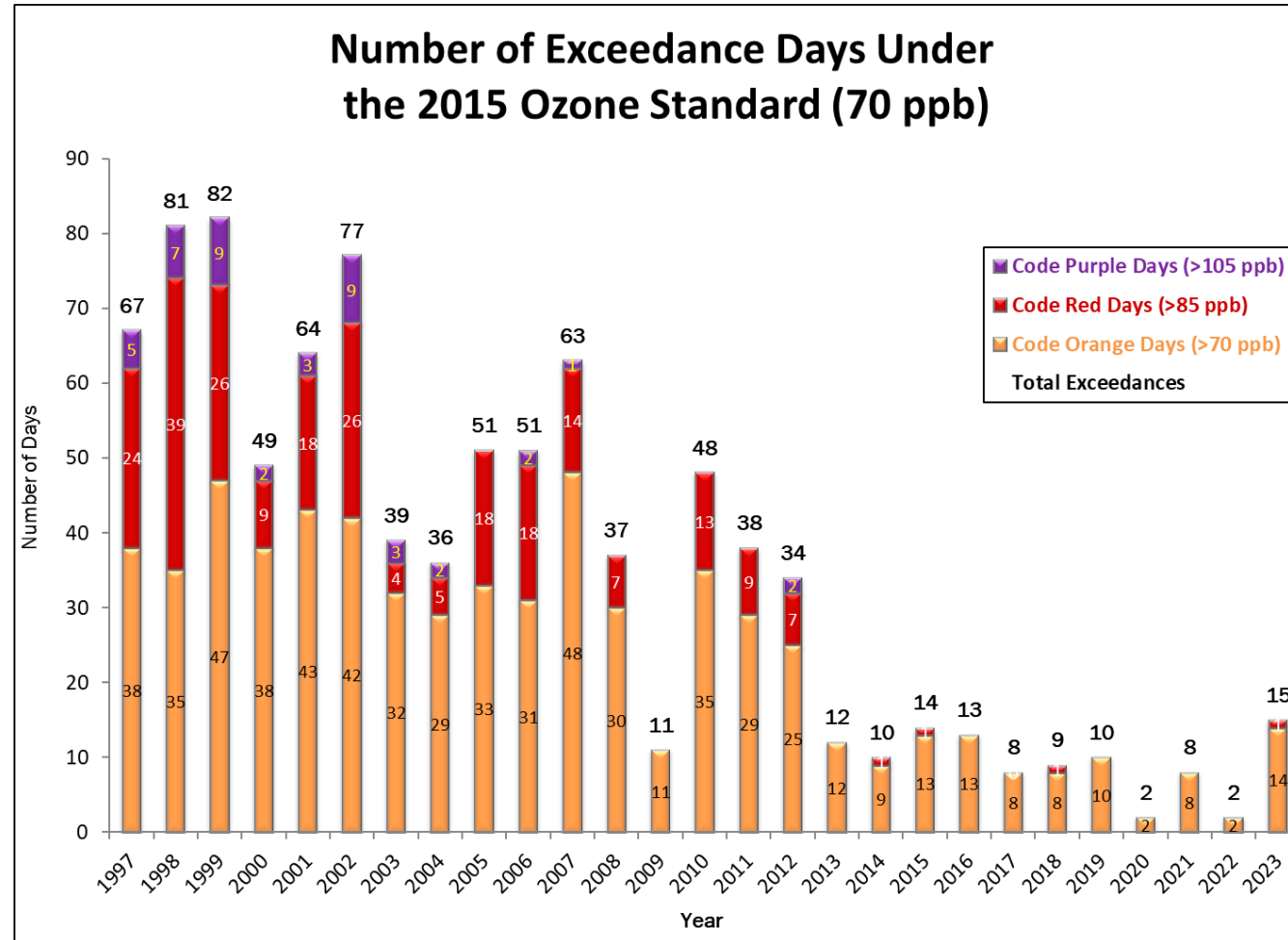
Sunil Kumar
Principal Environmental Engineer

MWAQC
September 27, 2023

Summary

- The 2023 Ozone Season involved serious exceedances of the ozone NAAQS, in part due to smoke traveling to the region from the Canadian Wildfires.
- Due to the extreme air pollution levels from the wildfires, the region's Design Value (based on 3 consecutive years of data) will show the region has gone back to violating the ozone NAAQS once data are final in May 2024.
- EPA has a process to flag and exclude unusually and atypically high air pollution concentrations, if approved this could solve the issue of the Design Value violating the NAAQS.
 - Called Exceptional Events Exemption Request and Determination

Ozone Exceedance Trend



* 2023 data is draft and incomplete as of September 8, 2023.

Peak 8-Hour Average Ozone Levels (ppb)

March 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	01	02	03	04
			41	47	41	47
05	06	07	08	09	10	11
49	49	48	47	46	37	43
12	13	14	15	16	17	18
37	40	42	52	52	50	50
19	20	21	22	23	24	25
47	49	51	57	46	40	41
26	27	28	29	30	31	
56	44	58	55	55	56	

April 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	31	01
						51
02	03	04	05	06	07	08
53	53	58	45	52	47	52
09	10	11	12	13	14	15
57	58	62	68	75	61	50
16	17	18	19	20	21	22
54	54	63	65	67	73	54
23	24	25	26	27	28	29
49	49	52	55	56	49	44
30						
42						

May 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	01	02	03	04	05	06
	41	40	35	38	46	55
07	08	09	10	11	12	13
48	59	44	52	65	76	55
14	15	16	17	18	19	20
55	55	56	59	55	53	54
21	22	23	24	25	26	27
53	55	53	67	57	61	56
28	29	30	31			
54	56	56	64			

June 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	31	01	02	03
				81	84	74
04	05	06	07	08	09	10
46	51	67	75	65	49	58
11	12	13	14	15	16	17
69	52	59	56	72	64	54
18	19	20	21	22	23	24
64	68	55	38	32	28	42
25	26	27	28	29	30	
48	58	50	55	89	58	

July 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	29	30	01
						57
02	03	04	05	06	07	08
44	51	48	60	66	56	65
09	10	11	12	13	14	15
42	54	73	72	68	57	51
16	17	18	19	20	21	22
42	73	73	64	73	59	46
23	24	25	26	27	28	29
50	57	64	74	57	63	48
30	31					
42	52					

August 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31	01	02	03	04	05
		43	60	48	57	56
06	07	08	09	10	11	12
55	44	45	57	44	59	60
13	14	15	16	17	18	19
48	56	46	52	58	49	57
20	21	22	23	24	25	26
62	67	54	59	54	70	49
27	28	29	30	31		
52	43	39	54	46		

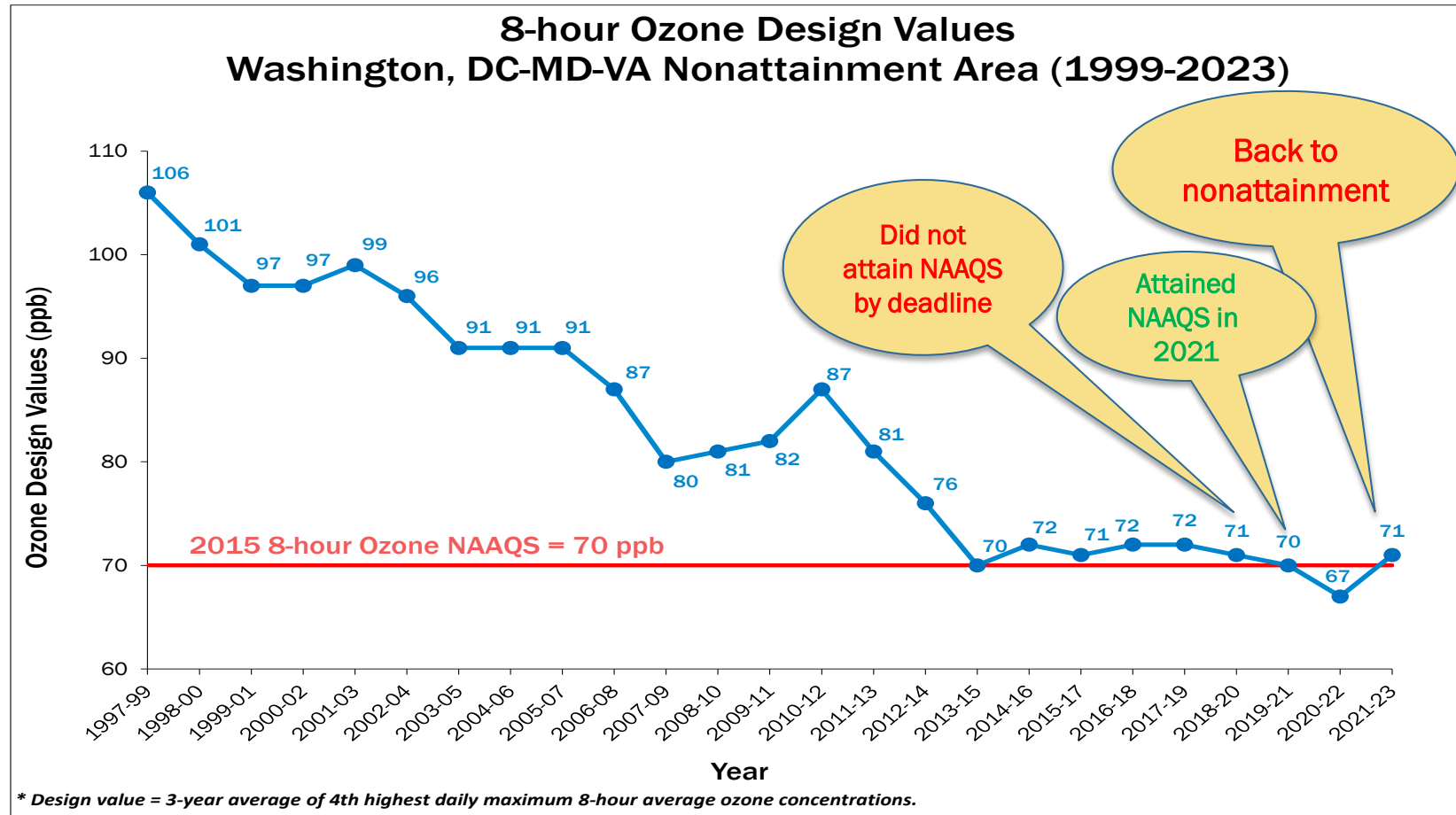
September 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	01	02
					57	57
03	04	05	06	07	08	09
58	51	64	65	57		
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

1 Code Red Day, 14 Code Orange Days

Analysis is based on draft data as of September 8, 2023.

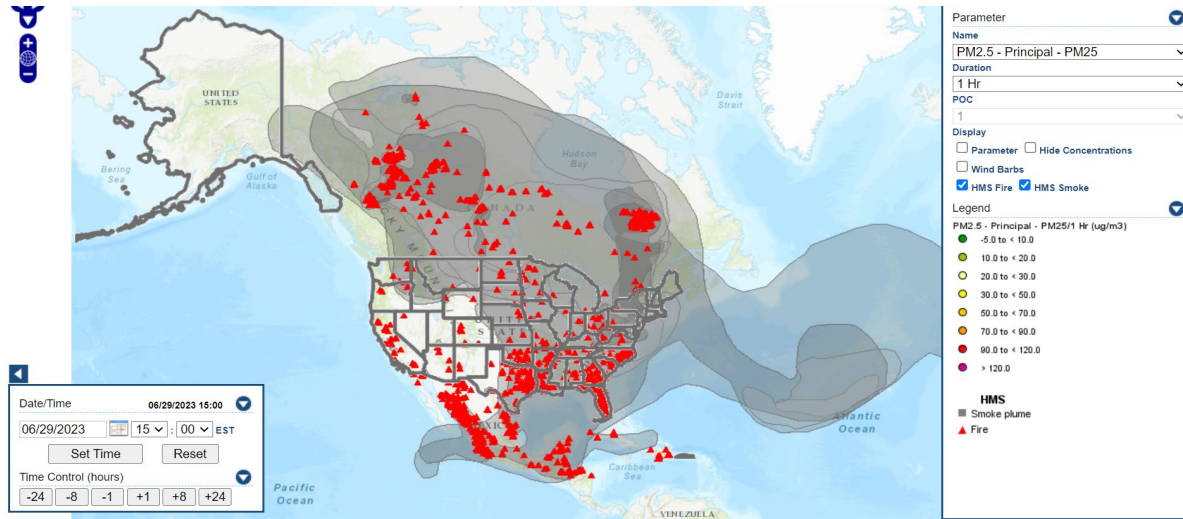


Ozone Design Value Trend

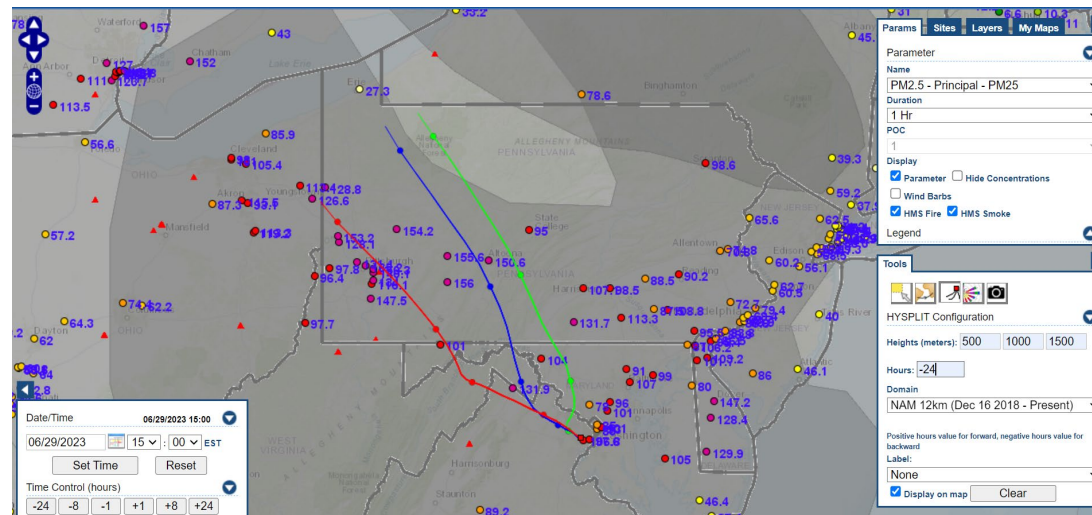


* 2023 data are draft as of September 8, 2023.

Example – Canadian Wildfire Smoke (June 29, 2023)



Fire Source:
Quebec, Canada



Exceptional Events Exemption Request

- Exceptional Events – Serious events out of our control or caused by human activity that is unlikely to recur at a particular location or natural events such as wildfires, can have an exceptional/atypical impact on measured air pollution levels.
- EPA has a formal process for the States to flag and request that EPA make an Exceptional Events Determination for those days.
- Currently, States are in the process of preparing those analyses and expect to submit the Exceptional Events Exemption Request soon.
- If granted, the data for the days of concern can be excluded from the region’s Design Value calculation.
- If this happens, the region will continue meeting the ozone NAAQS. Otherwise, the region will violate the NAAQS when the 2023 data becomes final next May.

Days of Concern for Ozone Violations/ Exceptional Event

- This ozone season had number of days that could be considered Exceptional Events:
 - June 29 - Very high smoke levels. 3 monitors with unusually high ozone levels – McMillan, Prince George Equestrian Center, and Beltsville
 - June 1-2; July 17-18 - High smoke levels. One or more monitors with higher than expected ozone readings.
- Excluding just one (6/29), as well as more of these days will resolve this issue of ozone NAAQS violation by lowering the 2023 Design Value.

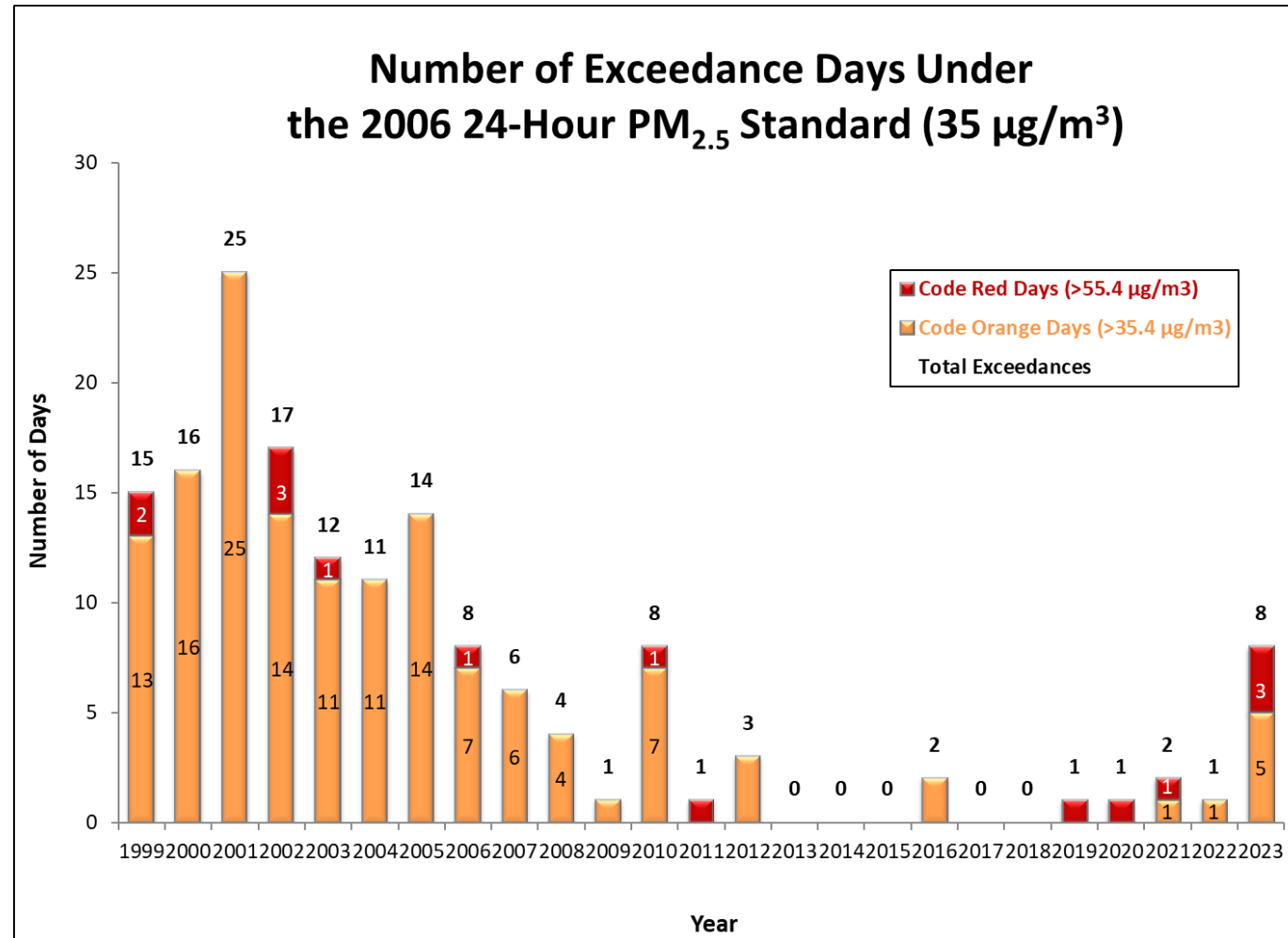
Impact of Exemption on Design Values (ppb)

Monitor	Current draft 2021-23 DV	DV- Data exempted (6/29)	DV- Data exempted (6/29, 7/17)	DV- Data exempted (6/29, 7/17-18)	DV- Data exempted (6/29, 7/17-18, 6/1)	DV- Data exempted (6/29, 7/17-18, 6/1-2)
McMillian	71	70	70	70	70	69
Prince George's Equestrian Center	69	68	68	68	68	67
Beltsville	69	68	68	68	68	67

Conclusion - Ozone

- Draft 2021-23 ozone design value data shows violation of the 2015 ozone NAAQS.
- There seems to be a good chance for the above five dates to be granted exceptional events exemption.
- If that happens, design values of the three monitors will become lower than the current ozone standard. This will also provide some cushion for any future tougher ozone NAAQS.

PM2.5 Exceedance Trend



* 2023 data is draft and incomplete as of September 8, 2023.



24-Hour Average PM2.5 Levels (µg/m3)

March 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	01	02	03	04
			10.9	11.6	8.6	2.9
05	06	07	08	09	10	11
6.8	9.2	5.3	3.6	5.1	8.7	4.1
12	13	14	15	16	17	18
8.3	10.4	4.5	4.0	6.1	21.5	5.5
19	20	21	22	23	24	25
4.7	10.7	10.7	9.8	17.9	8.6	10.1
26	27	28	29	30	31	
6.8	15.3	6.1	6.5	7.0	8.8	

April 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	31	01
						6.9
02	03	04	05	06	07	08
4.4	8.2	8.4	13.6	8.3	5.3	6.4
09	10	11	12	13	14	15
8.3	6.5	7.4	10.0	11.5	11.8	8.9
16	17	18	19	20	21	22
9.2	4.5	5.4	9.3	14.0	18.8	16.5
23	24	25	26	27	28	29
6.3	5.6	7.5	9.8	11.4	7.2	4.8
30						
5.0						

May 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	01	02	03	04	05	06
5.0	5.0	3.3	2.5	2.5	5.0	8.5
07	08	09	10	11	12	13
10.0	11.3	8.2	9.0	13.0	16.2	14.6
14	15	16	17	18	19	20
10.6	6.9	10.7	9.0	5.9	7.7	7.8
21	22	23	24	25	26	27
13.9	14.6	18.1	13.7	7.0	7.3	6.6
28	29	30	31			
7.0	7.2	20.2	24.4			

June 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	31	01	02	03
				34.4	30.8	16.5
04	05	06	07	08	09	10
9.0	8.7	36.9	103.2	146.8	23.8	21.1
11	12	13	14	15	16	17
27.5	13.1	8.8	8.2	7.7	16.1	26.8
18	19	20	21	22	23	24
22.6	24.8	19.5	7.7	4.7	6.9	6.7
25	26	27	28	29	30	
6.7	12.7	7.1	47.5	93.1	45.4	

July 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	29	30	01
						31.6
02	03	04	05	06	07	08
14.5	9.6	47.7	23.4	14.4	13.0	12.6
09	10	11	12	13	14	15
8.0	7.7	10.0	13.1	13.2	5.8	10.0
16	17	18	19	20	21	22
7.2	39.6	28.7	15.7	18.3	7.6	8.5
23	24	25	26	27	28	29
9.9	8.0	10.5	13.0	16.0	14.5	9.7
30	31					
5.2	8.9					

August 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31	01	02	03	04	05
		9.0	11.0	12.0	12.4	12.6
06	07	08	09	10	11	12
14.4	9.3	7.9	9.4	10.6	11.9	12.3
13	14	15	16	17	18	19
8.4	9.9	9.2	6.0	32.6	16.7	14.8
20	21	22	23	24	25	26
14.0	17.4	12.7	9.8	8.7	11.7	7.8
27	28	29	30	31		
10.3	8.5	6.8	8.1	4.5		

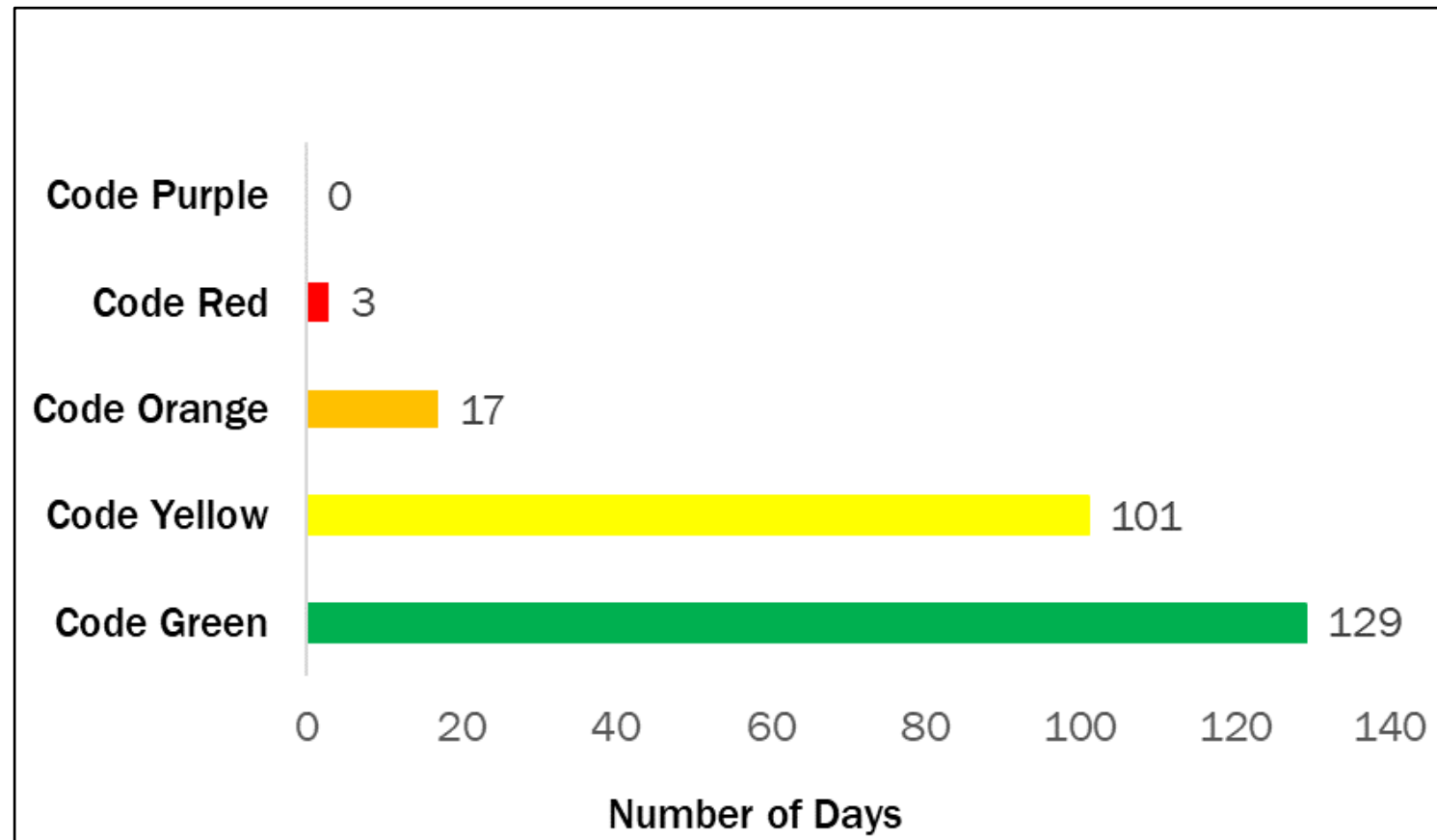
September 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	01	02
					6.6	7.6
03	04	05	06	07	08	09
10.7	9.9	12.8	13.7	14.9		
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

3 Code Red, 5 Code Orange Days

Analysis is based on draft data as of September 8, 2023.

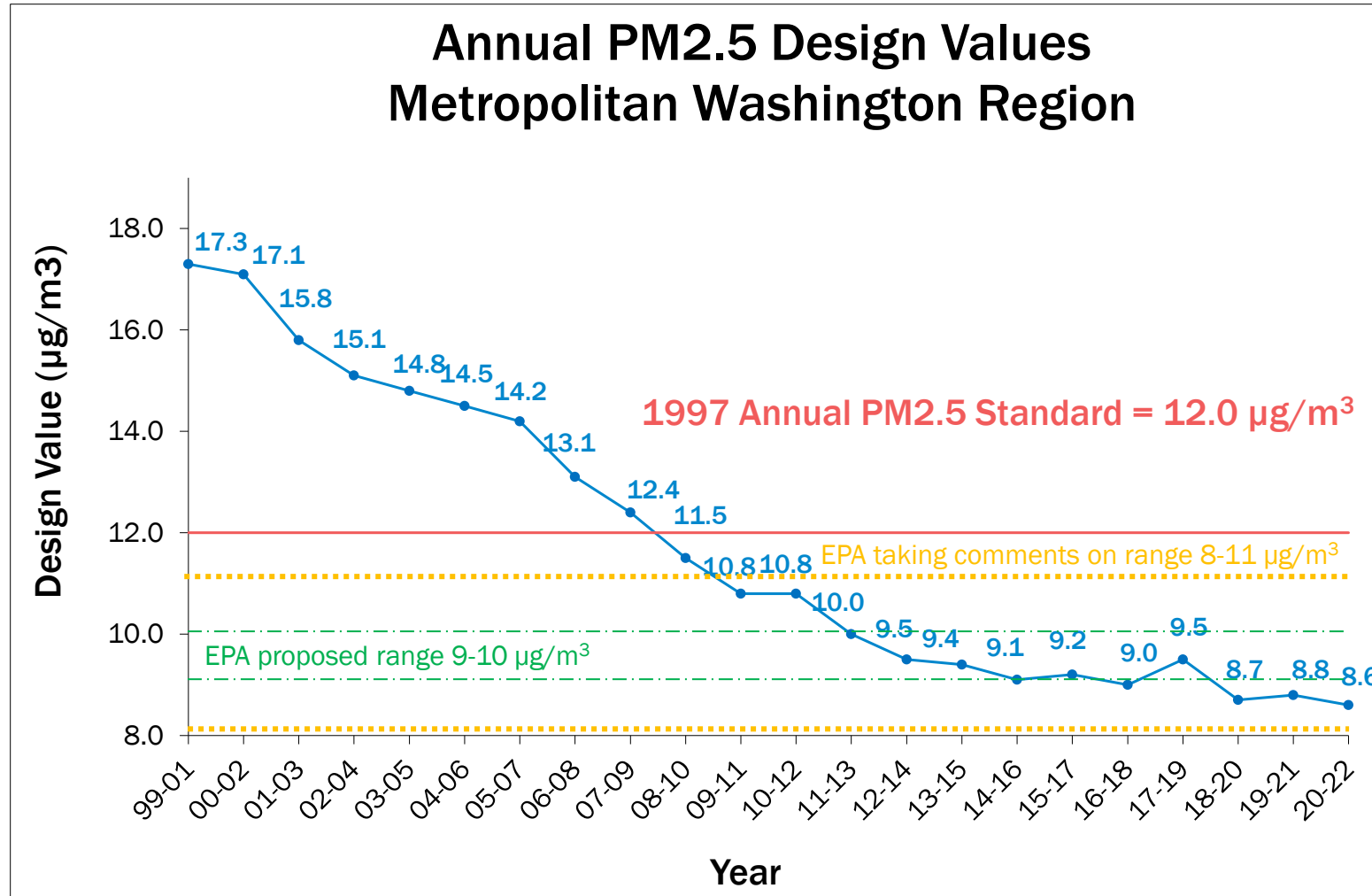
2023 - Daily Air Quality Index

(January 1-September 7, Combined Ozone & PM2.5)

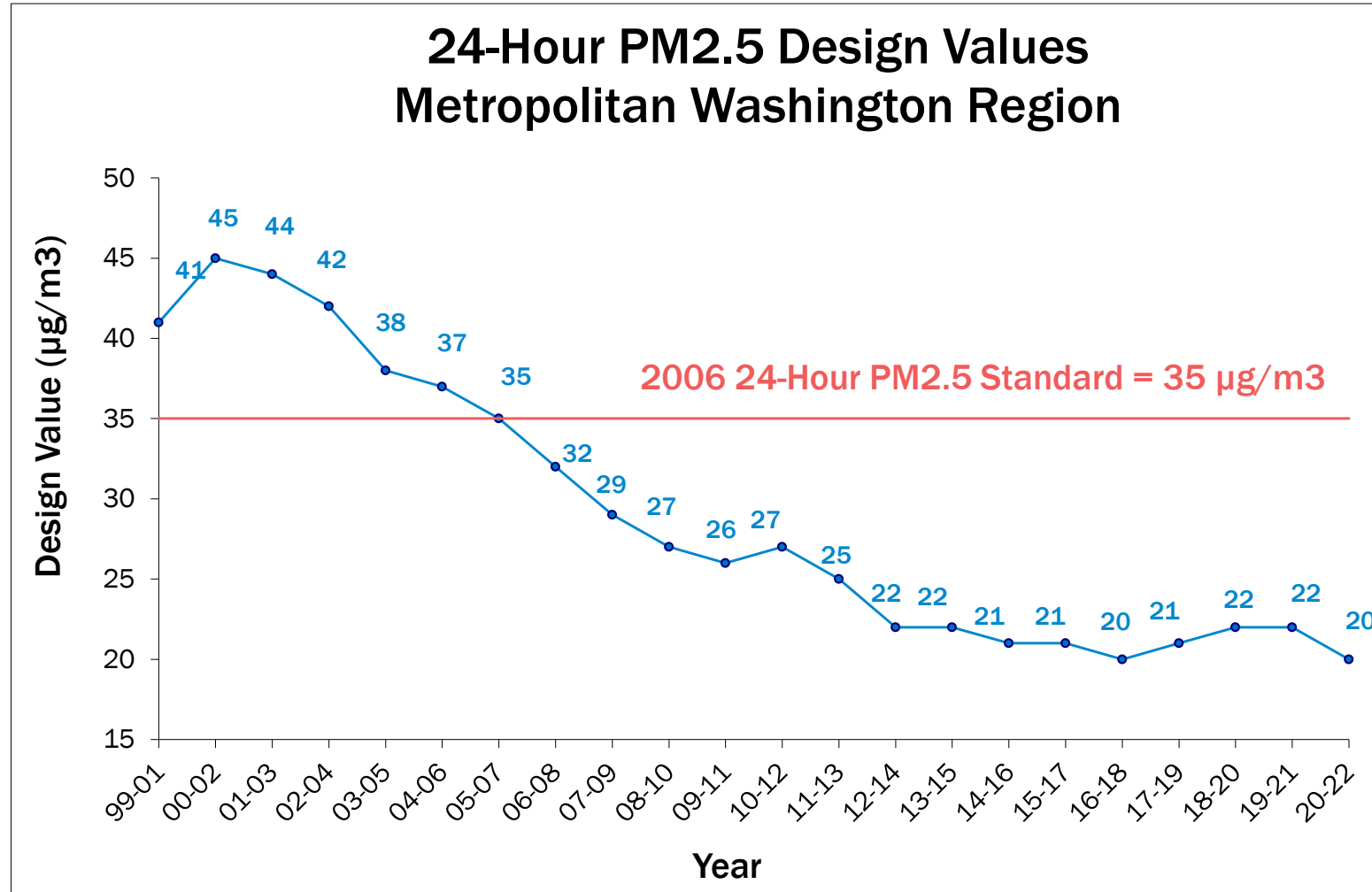


* 2023 data is draft and incomplete as of September 8, 2023.

Annual PM2.5 Design Value Trend



24-Hour PM2.5 Design Value Trend



Sunil Kumar

Principal Environmental Engineer

(202) 962-3244

skumar@mwcog.org

mwcog.org

777 North Capitol Street NE, Suite 300

Washington, DC 20002