

OZONE SEASON SUMMARY 2021

Sunil Kumar
Principal Environmental Engineer

MWAQC-Technical Advisory Committee
June 8, 2021

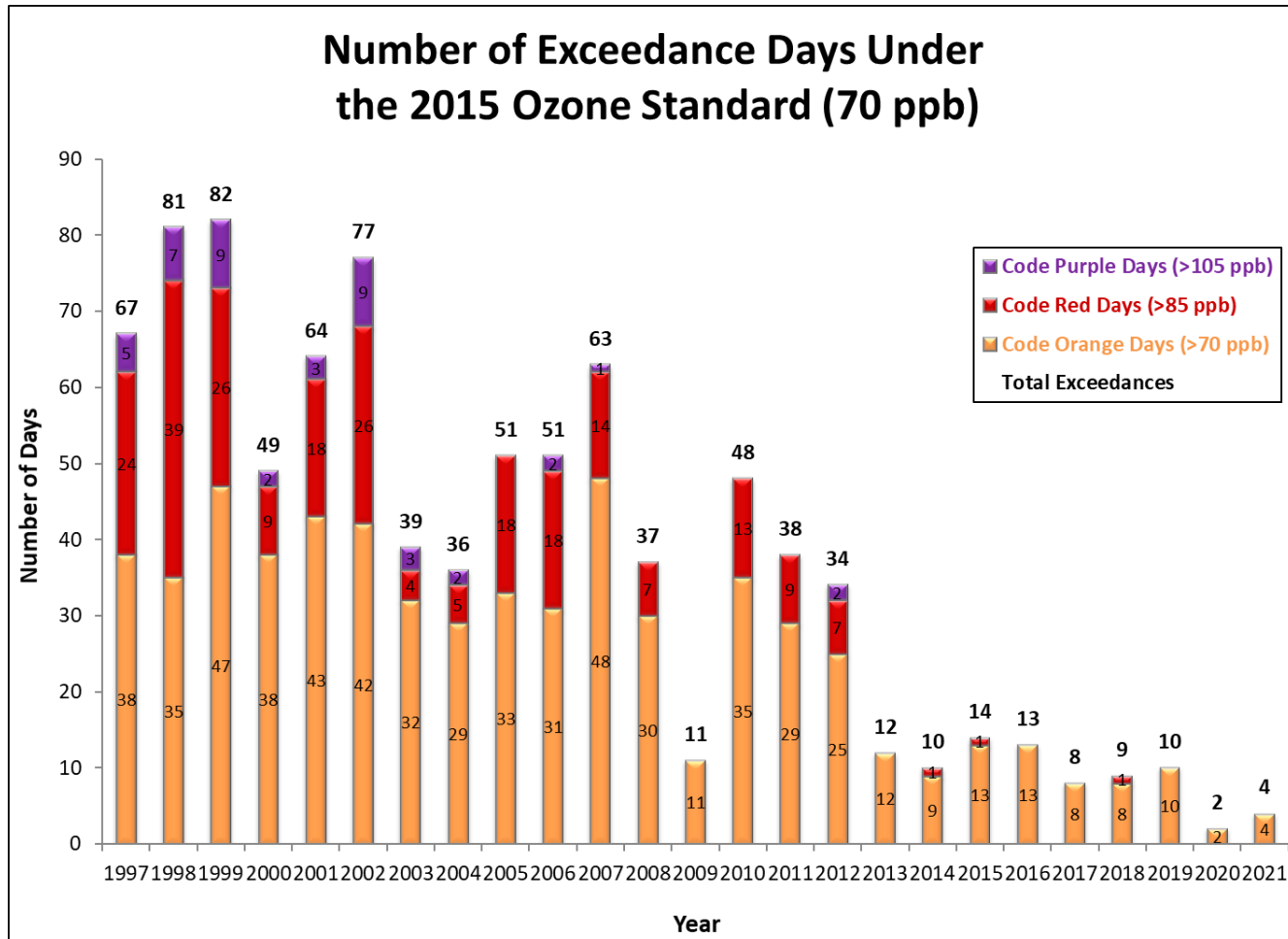
Peak 8-Hour Average Ozone Levels (ppb)

March 2021							April 2021							May 2021									
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday			
	39	44	44	46	45	47					37	48	47							49			
07	48	48	59	63	61	47	52	04	61	58	63	67	50	36	49	02	57	38	46	44	43	41	44
14	52	48	44	38	34	47	48	11	53	36	39	38	46	42	41	09	44	49	51	41	50	49	60
21	55	52	47	26	33	51	50	18	45	48	55	45	46	58	58	16	53	59	66	71	82	74	66
28	39	47	55	41				25	51	55	60	61	49	48		23	59	30	47	63	62	45	33
																30	27	44					
																31							
June 2021																							
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																	
30		50	52	38	54	73																	
06	63																						

4 Code Orange Days, 16 Code Yellow Days, rest all Code Green Days

Analysis is based on draft data as of June 7, 2021.

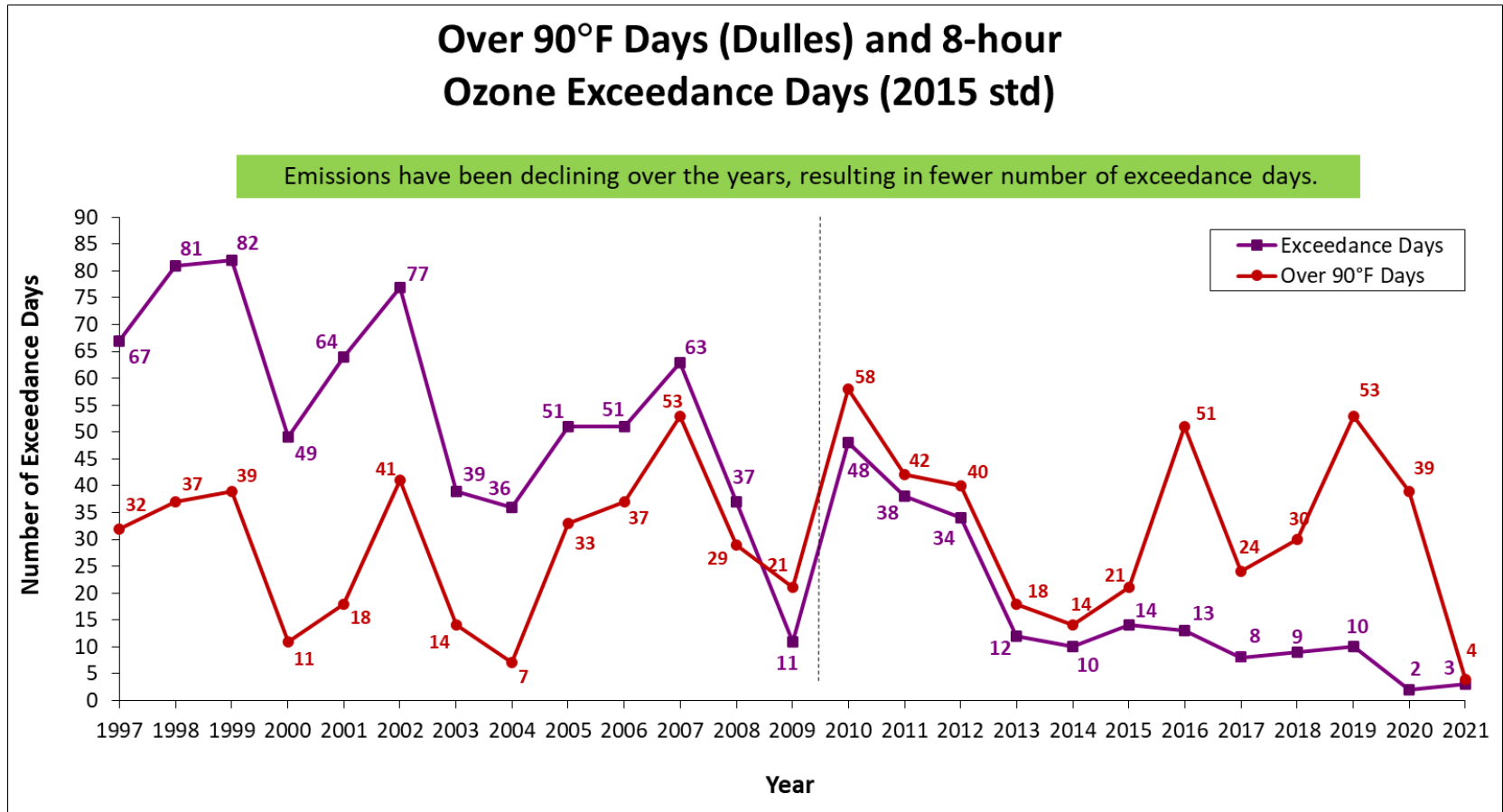
Ozone Exceedance Trend



2021 data is draft and incomplete as of June 7, 2021.

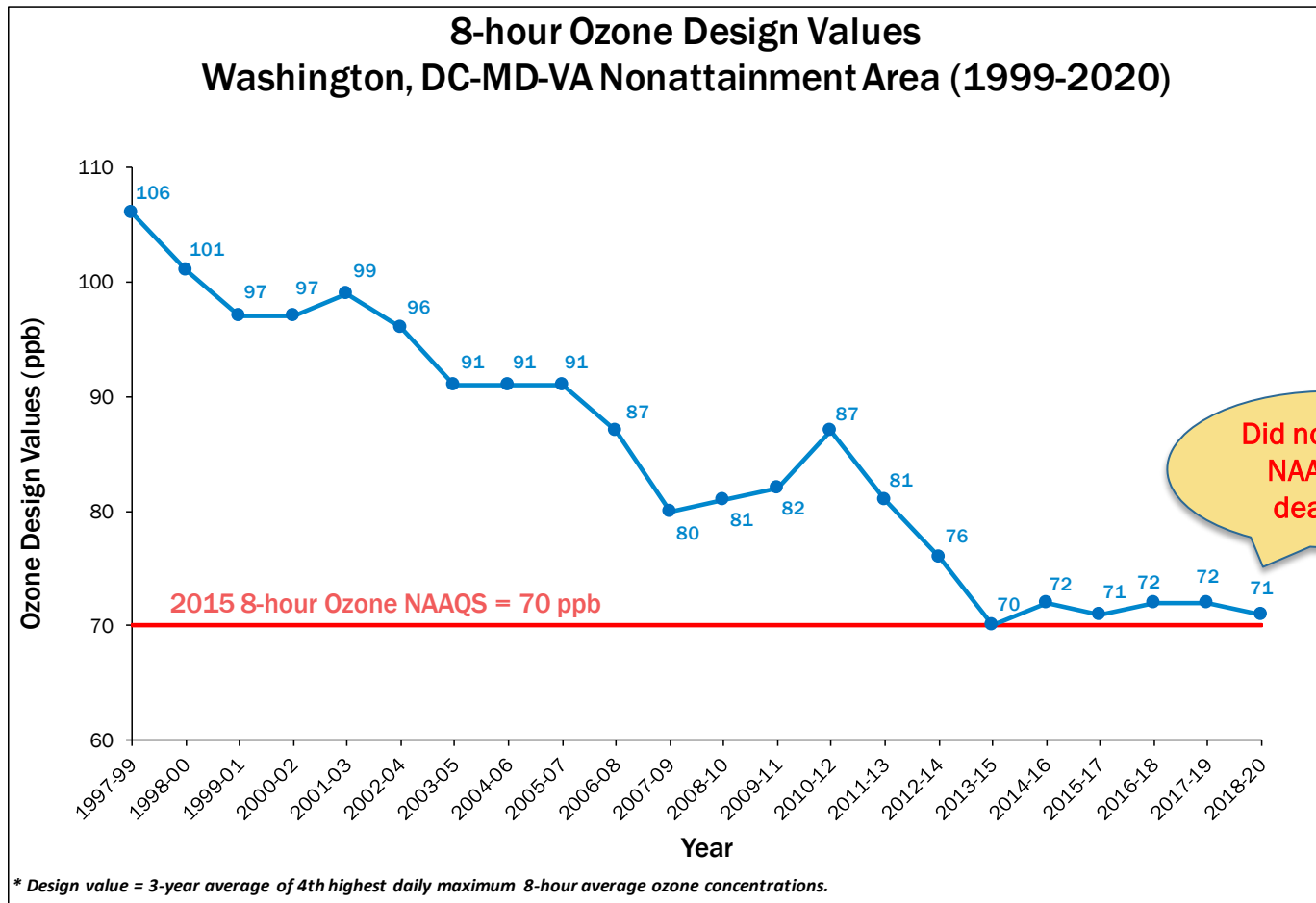


Ozone & Temperature Trend



2021 data is draft and incomplete as of June 7, 2021.

Ozone Design Value Trend



2018-2020 design value data is draft as of June 7, 2021.



Why Fewer Exceedance Days Now ?

Emission Control Programs

Federal	State	Local
Acid Rain Program (1996/2000)	Vehicle Inspection & Maintenance Programs	Renewable Energy Programs Regional Wind Power Purchase Program Clean Energy Rewards Program Renewable Portfolio Standards
Tier 2 (LD Vehicle) Rule (2004)	Maryland Healthy Air Act (2009/2012)	Energy Efficiency Programs LED Traffic Signal Retrofit program Building Energy Efficiency Programs
HD Diesel vehicle Rule (2004/2007)	Virginia CSAPR Rule	VRE Idling Reduction
NOX SIP Call (2004)	Ozone Transport Commission Rules	LOW VOC Paint
CAIR/CSAPR/CSAPR Update/Revised CSAPR Update (2009/2015/2017/2021)		Gas Can Replacement



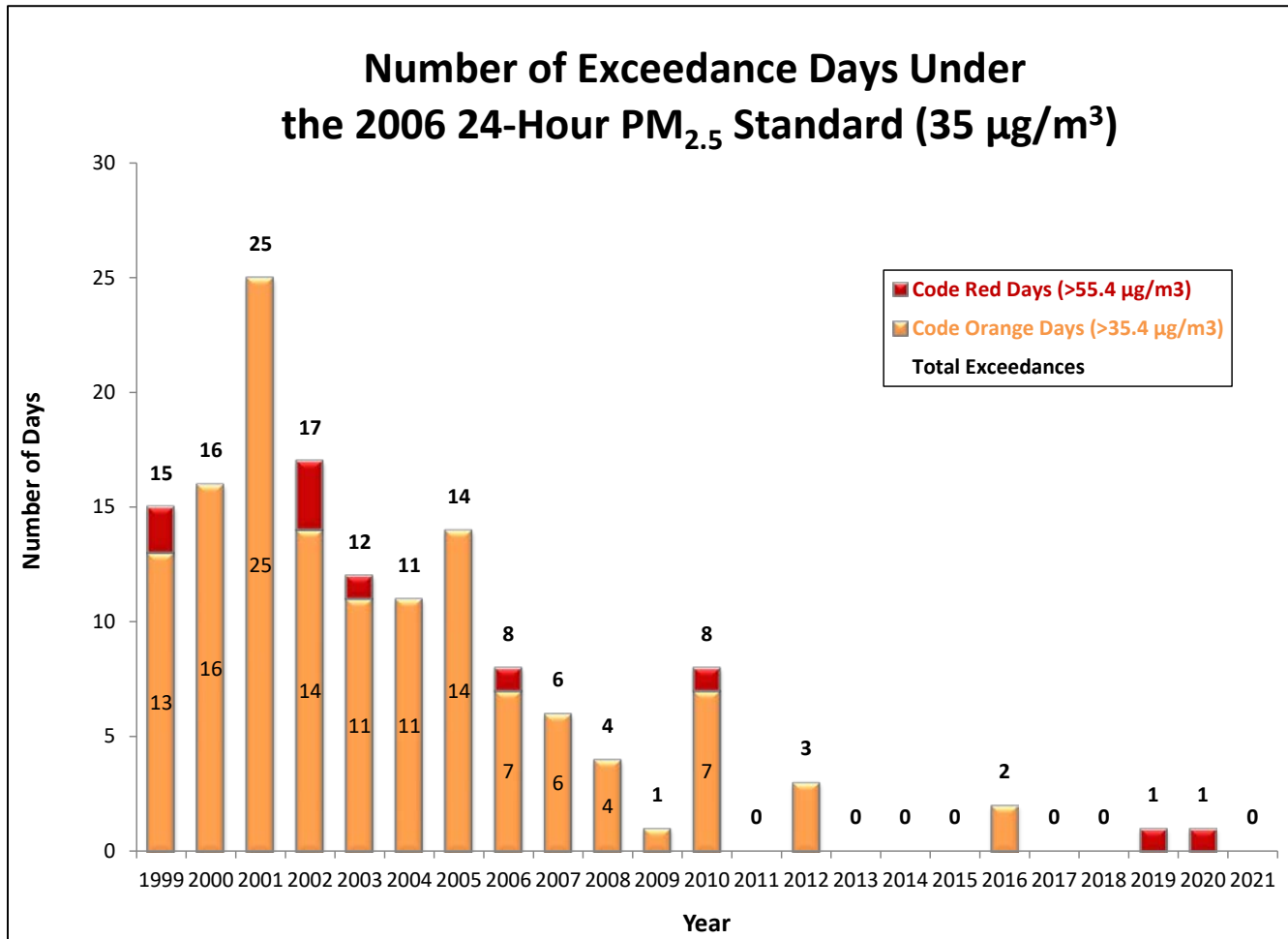
24-Hour Average PM2.5 Levels ($\mu\text{g}/\text{m}^3$)

March 2021							April 2021							May 2021						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	6.6	5.3	9.5	8.6	5.1	5.5					5.3	4.0	5.8							4.3
8.6	14.0	15.2	20.0	17.7	8.6	4.8	9.2	12.0	12.7	13.5	5.3	6.6	9.7	8.9	11.0	15.0	8.0	5.9	8.0	4.5
5.5	5.0	8.0	9.3	5.8	5.0	7.5	5.9	6.3	7.7	10.5	6.7	4.2	6.5	6.8	4.2	6.8	5.0	7.3	10.6	9.7
14.7	11.3	9.2	8.1	11.4	6.7	5.0	7.2	8.5	8.4	6.7	6.3	9.4	11.6	8.2	10.9	11.3	12.7	12.3	9.9	12.5
6.5	4.9	9.4	7.7				9.2	6.0	12.4	14.4	12.4	3.9		12.3	7.3	10.4	15.4	9.6	10.1	2.5
														4.1	7.8					
June 2021																				
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday														
		13.6	10.3	8.0	8.3	12.7														
15.5																				

10 Code Yellow Days, rest all Code Green Days

Analysis is based on draft data as of May 4, 2021.

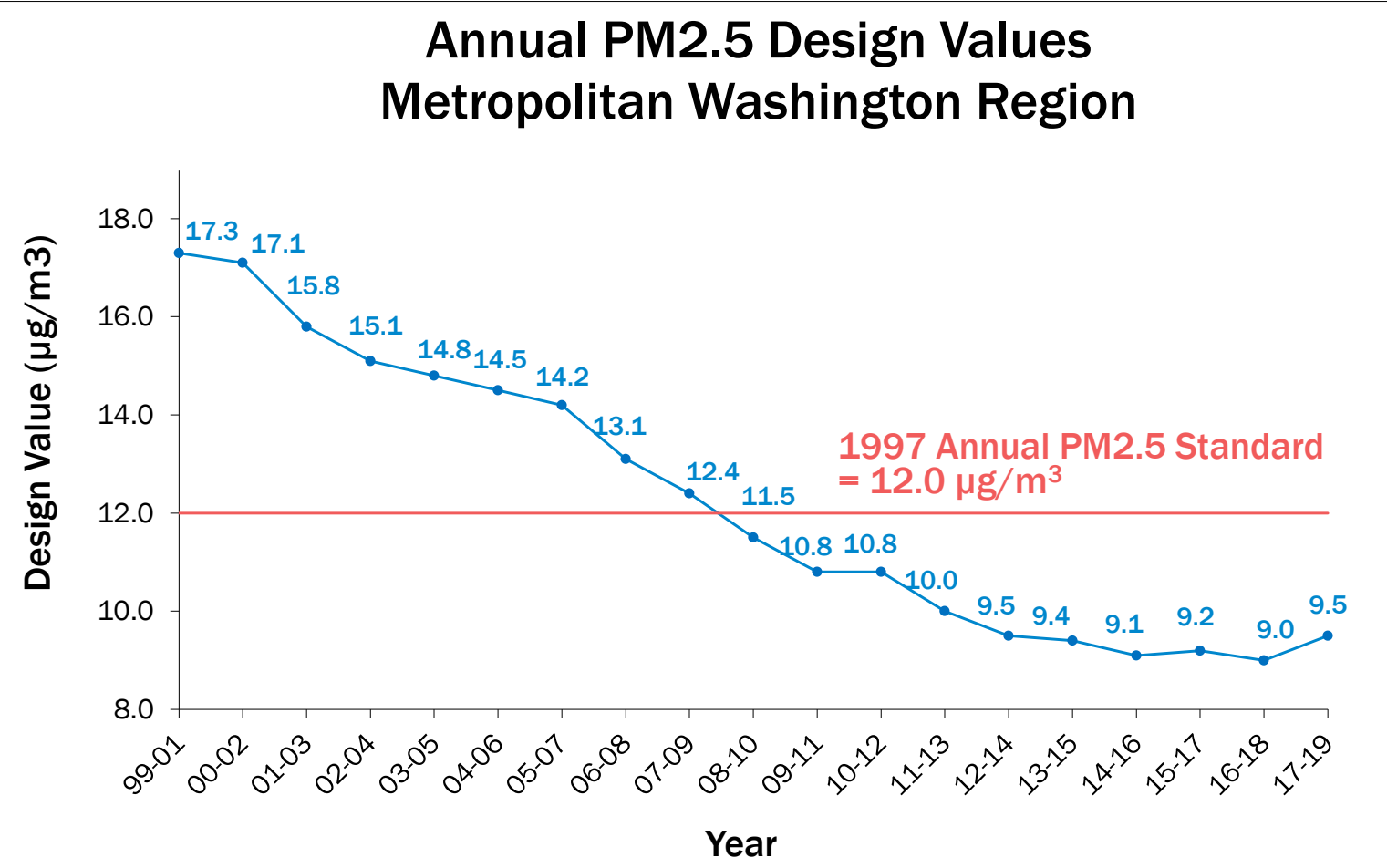
PM2.5 Exceedance Trend



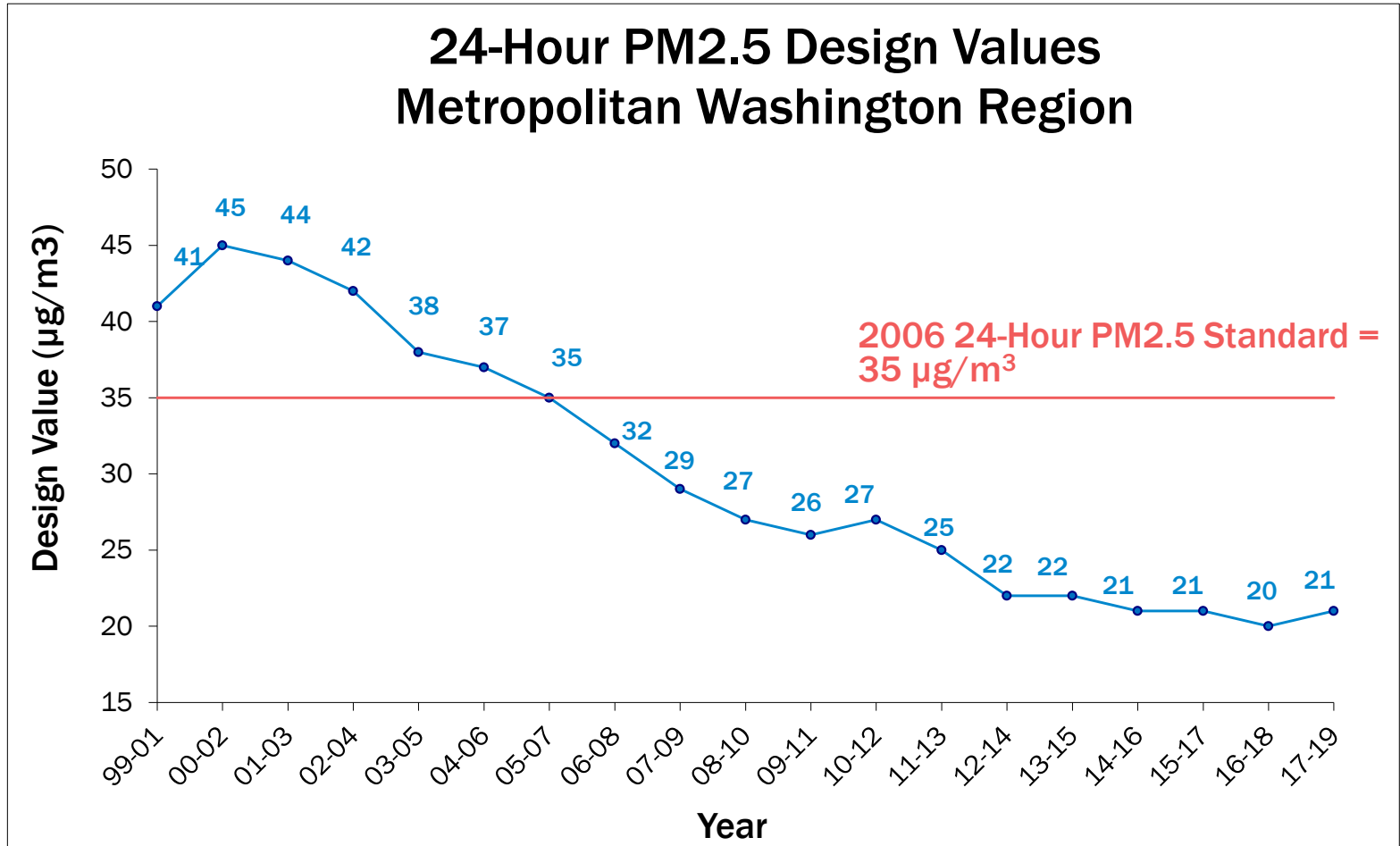
2021 data is draft and incomplete as of June 7, 2021.



Annual PM2.5 Design Value Trend



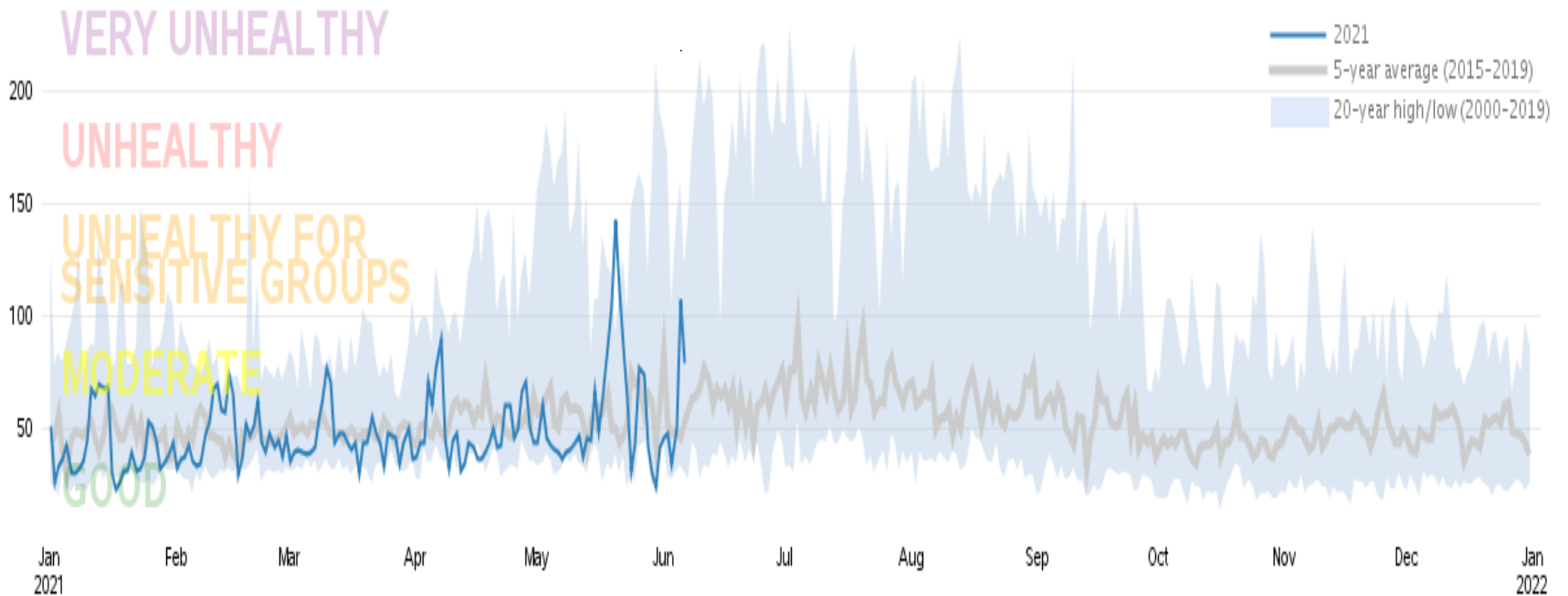
24-Hour PM2.5 Design Value Trend



AQI Value Trends

Combined Ozone and PM2.5 Daily AQI Values

Washington-Arlington-Alexandria, DC-VA-MD-WV



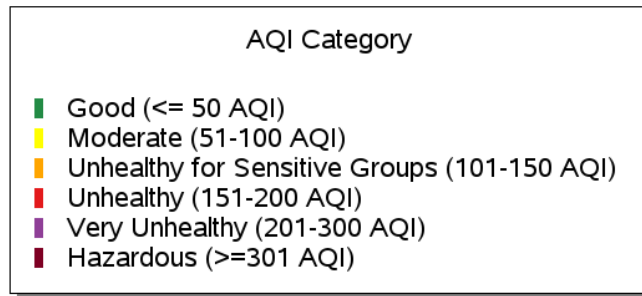
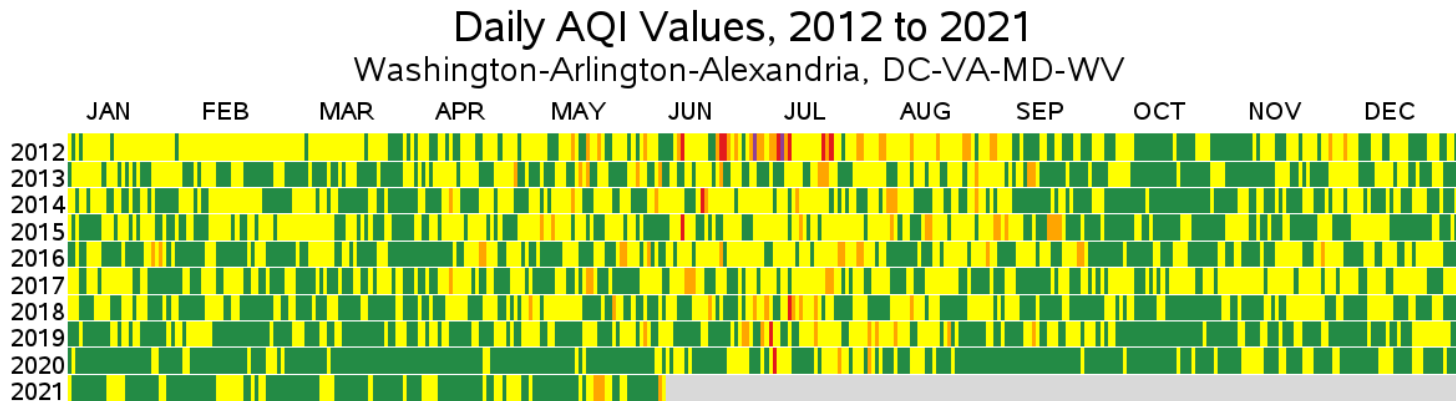
Source: U.S. EPA AirData <<https://www.epa.gov/air-data>>

Generated: June 7, 2021

Note: Data shown above is for the Washington-Arlington-Alexandria CBSA.



AQI Value Trends

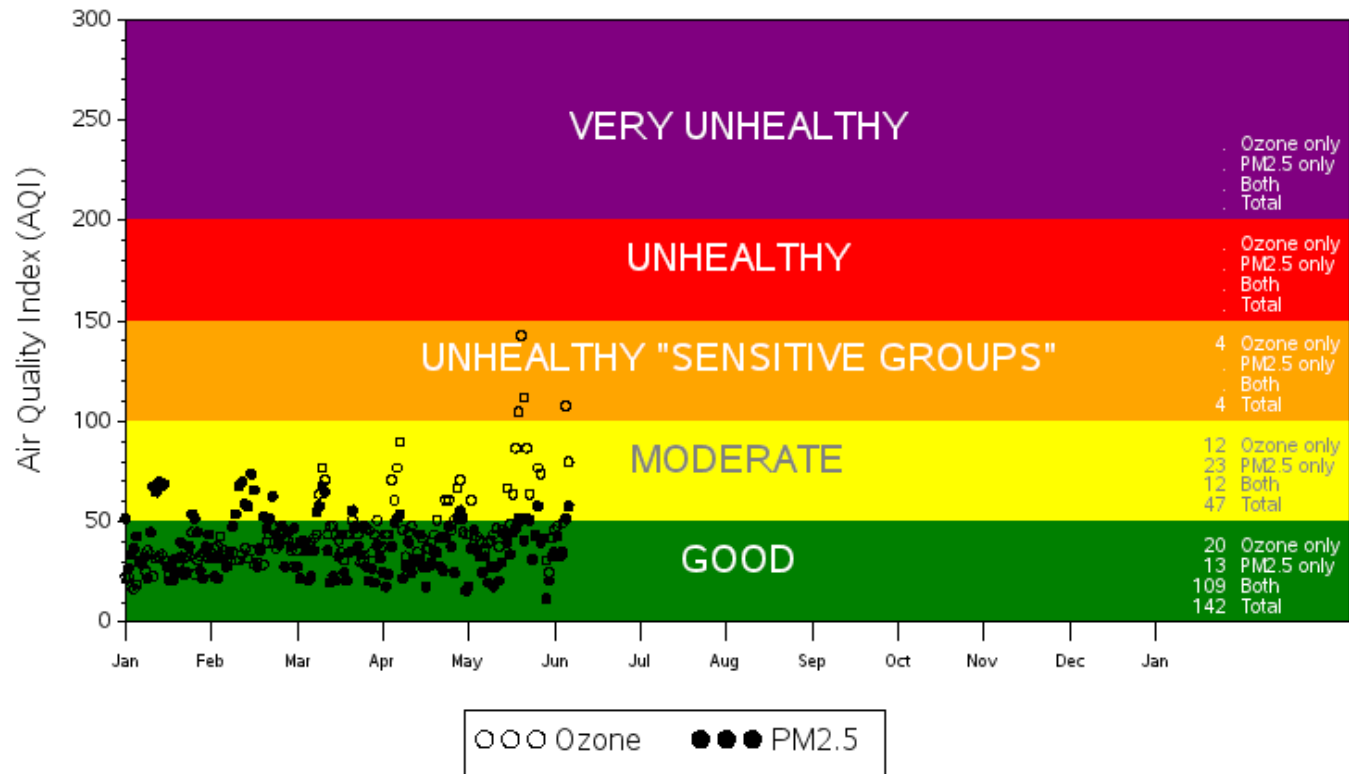


Source: U.S. EPA AirData <<https://www.epa.gov/air-data>>
Generated: June 7, 2021

Note: Data shown above is for combined AQI values for ozone, PM2.5, PM10, CO, NO2, and SO2 for the Washington-Arlington-Alexandria CBSA.

AQI Values - 2021

Daily Ozone and PM2.5 AQI Values in 2021
Washington-Arlington-Alexandria, DC-VA-MD-WV



Source: U.S. EPA AirData <<https://www.epa.gov/air-data>>
Generated: June 7, 2021

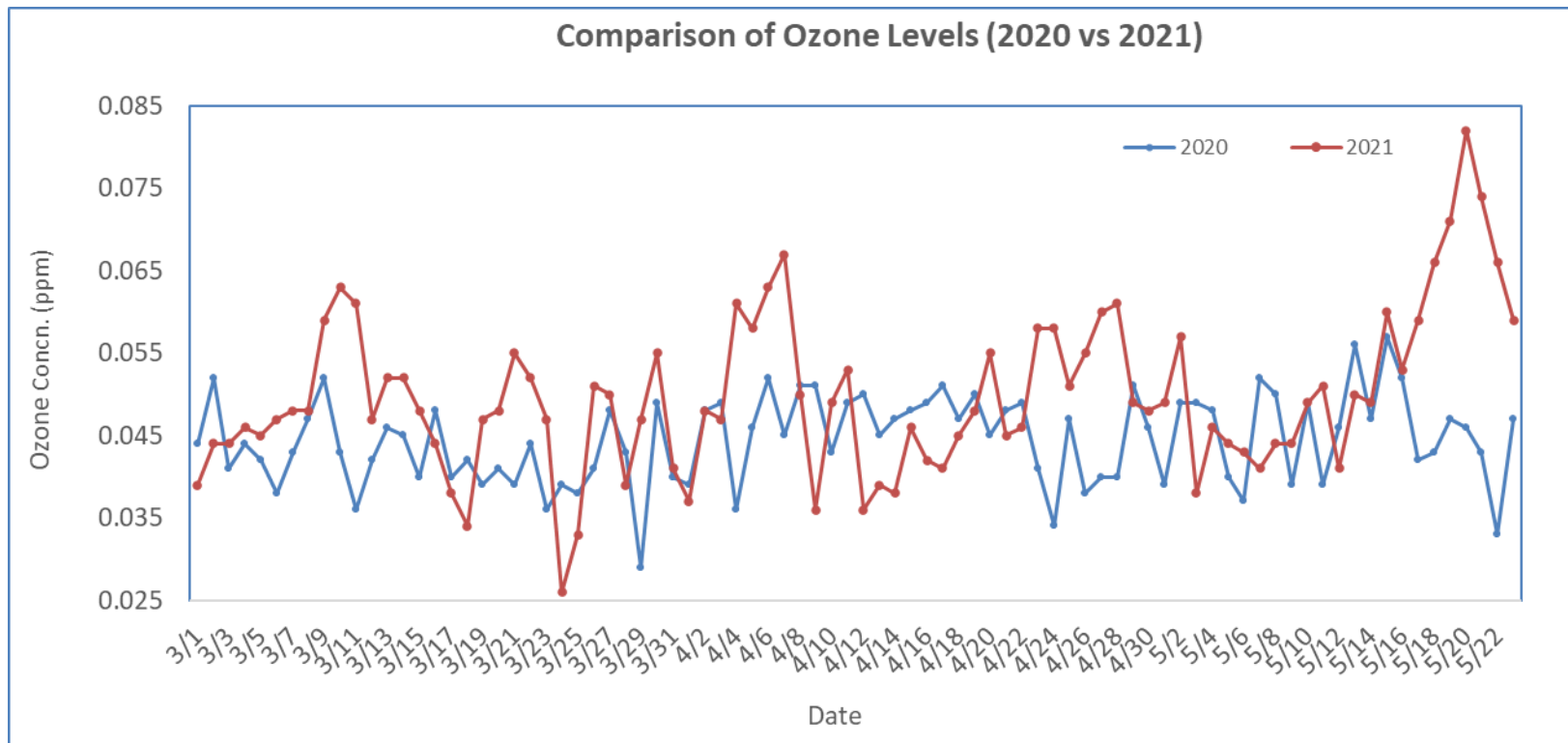


WEATHER & AIR QUALITY

- Weather plays an important role in determining air quality besides emission.
- **March 2021** – Warmer and drier than normal.
- **April 2021** – Warmer and drier than normal.
- **May 2021** – Colder and drier than normal.

Source:

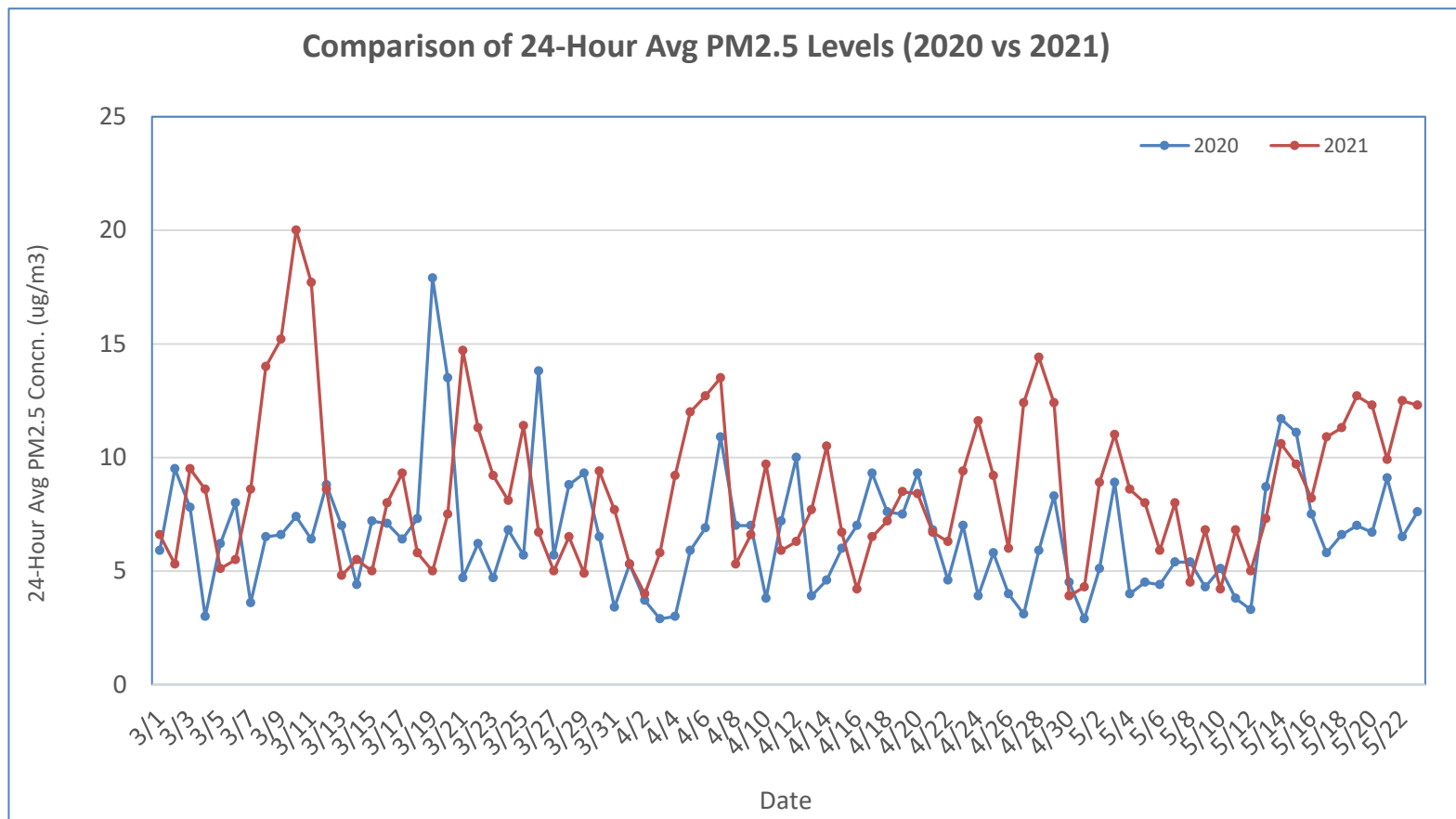
OZONE LEVELS – 2020 Vs 2021



- Draft 2021 ozone levels mostly higher. Warmer and drier than normal weather might be partly responsible.



PM2.5 LEVELS – 2020 Vs 2021



- Draft 2021 PM2.5 levels mostly higher. Warmer and drier than normal weather might be partly responsible.



Ozone Data & Attainment Status

Monitor	County, State	Ozone Concentration (ppb)				
		Draft 2018-20 Design Value	4 th Highest Daily Max 8-Hr Avg Ozone (2019)	4 th Highest Daily Max 8-Hr Avg Ozone (2020)	4 th Highest Daily Max 8-Hr Avg Ozone (2021)	Max 4 th Highest Daily Max 8-Hr Avg Ozone allowed in order to attain (71 ppb) in 2021
Beltsville	Prince George's, MD	71	75	65	67	72
McMillian Ncore	District of Columbia	69	71	63	59	78
HU- Beltsville	Prince George's, MD	68	71	64	64	77
Takoma	District of Columbia	67	67	63	65	82
Arlington	Arlington, VA	66	68	62	61	82
PG Equestrian	Prince George's, MD	65	65	60	66	87
Franconia	Fairfax, VA	64	70	57	63	85
Frederick	Fredrick, MD	65	65	63	67	84
Rockville	Montgomery, MD	63	62	59	67	91
S. Maryland	Charles, MD	60	61	52	63	99
Ashburn	Loudoun, VA	61	60	60	62	92
Long Park	Prince William, VA	60	60	57	61	95
Calvert	Calvert, MD	59	58	54	59	100
River Terrace	District of Columbia	55	62	54	58	96

2021 data is draft and incomplete as of May 4, 2021.

CONCLUSIONS

- Ozone and PM2.5 levels were overall higher in March through May of 2021 compared to same months in 2020.
- Weather might have contributed towards higher pollutant levels this year.
- As post-pandemic recovery takes place, expected increase in emissions might also be contributing.

