



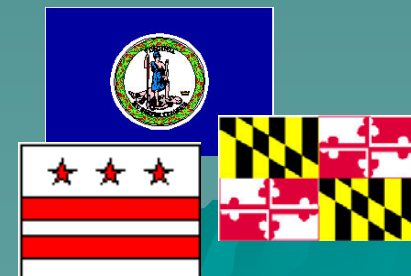
Meeting Air Quality Challenges: Washington, DC-MD-VA Region



October 23, 2005

Outline

- ◆ Description Washington Region
- ◆ Regional Cooperation
- ◆ Emissions and Air Quality Trends
- ◆ Factors Improving Air Quality
- ◆ Meeting the New Ozone and PM Standards





The Washington Region



- ☀ Approximately 3,000 square miles
- ☀ Includes 4.5 million people and 2.8 million jobs
- ☀ The Metropolitan Washington Air Quality Committee (MWAQC) develops SIPs for the Washington, DC-MD-VA Nonattainment area



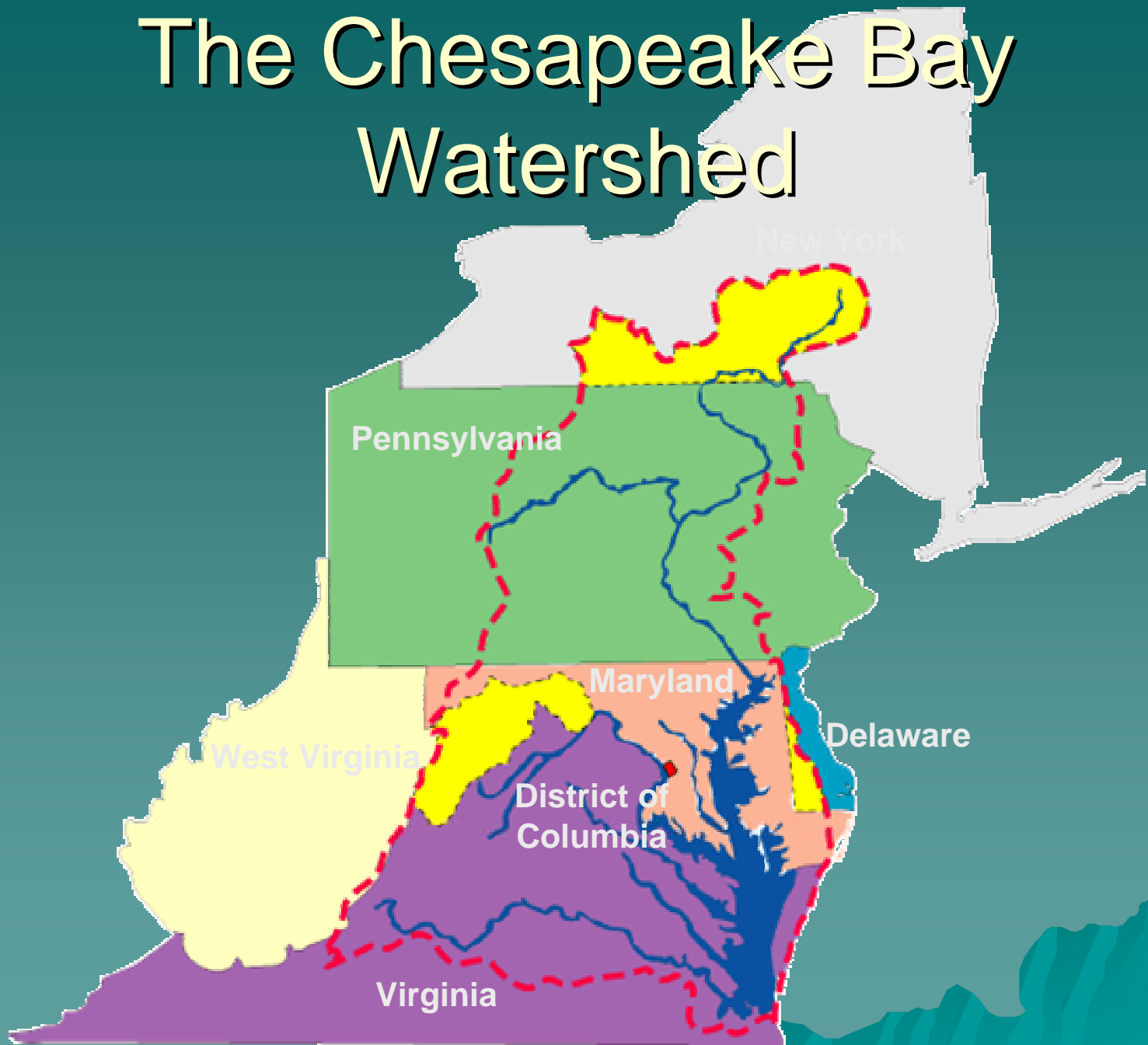








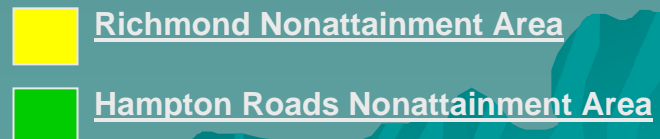
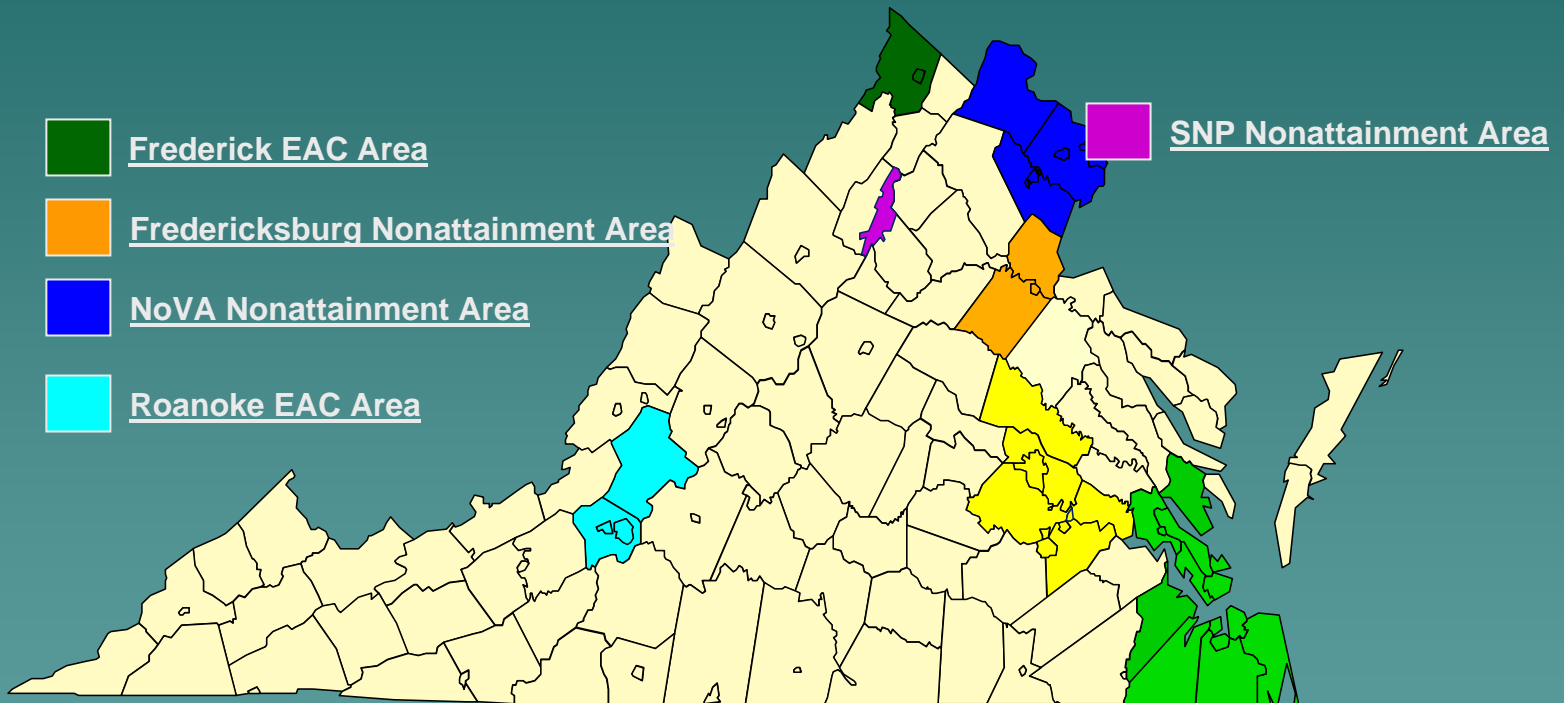
The Chesapeake Bay Watershed



Regional Cooperation

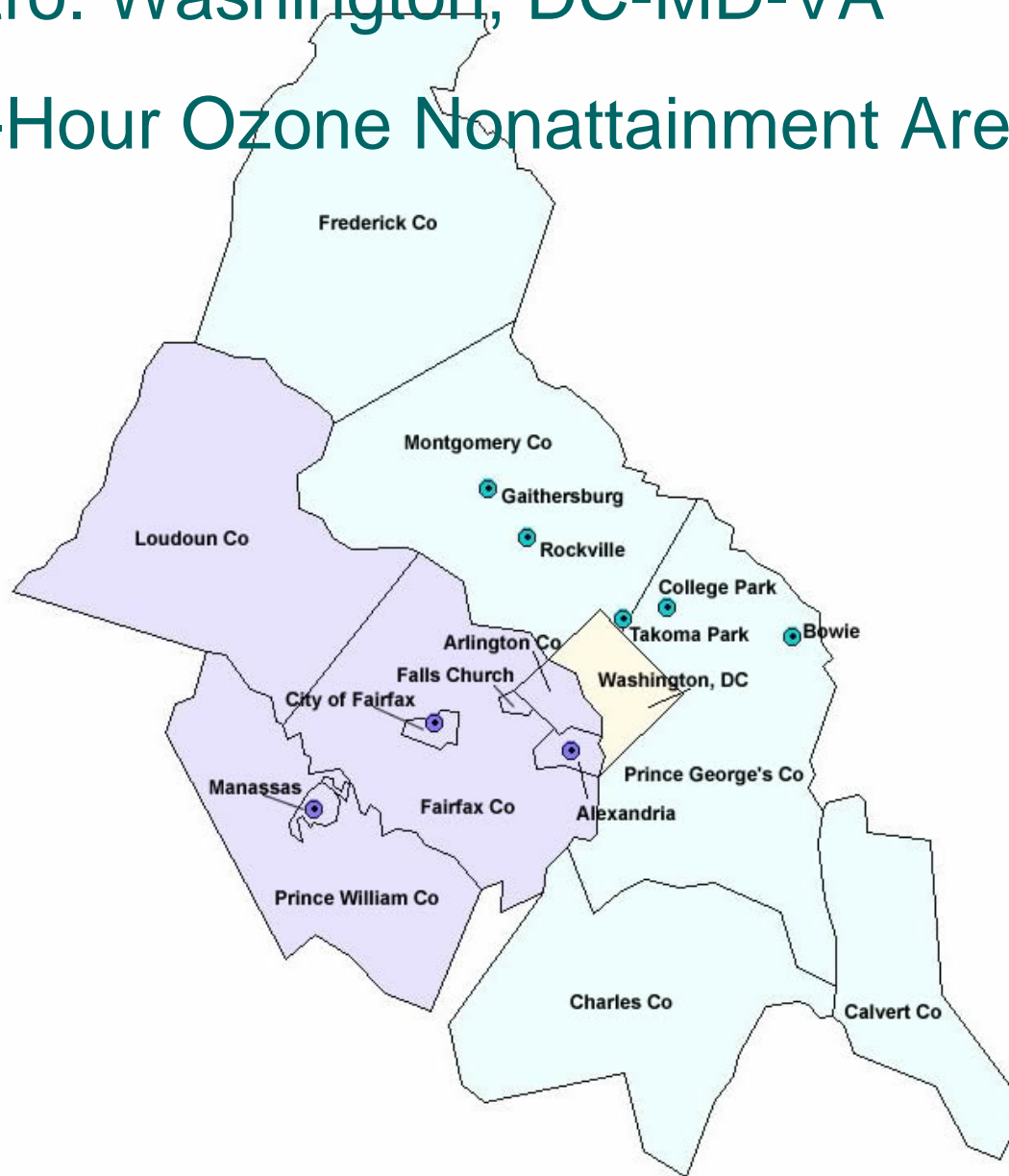


Overview of Virginia's Air Quality

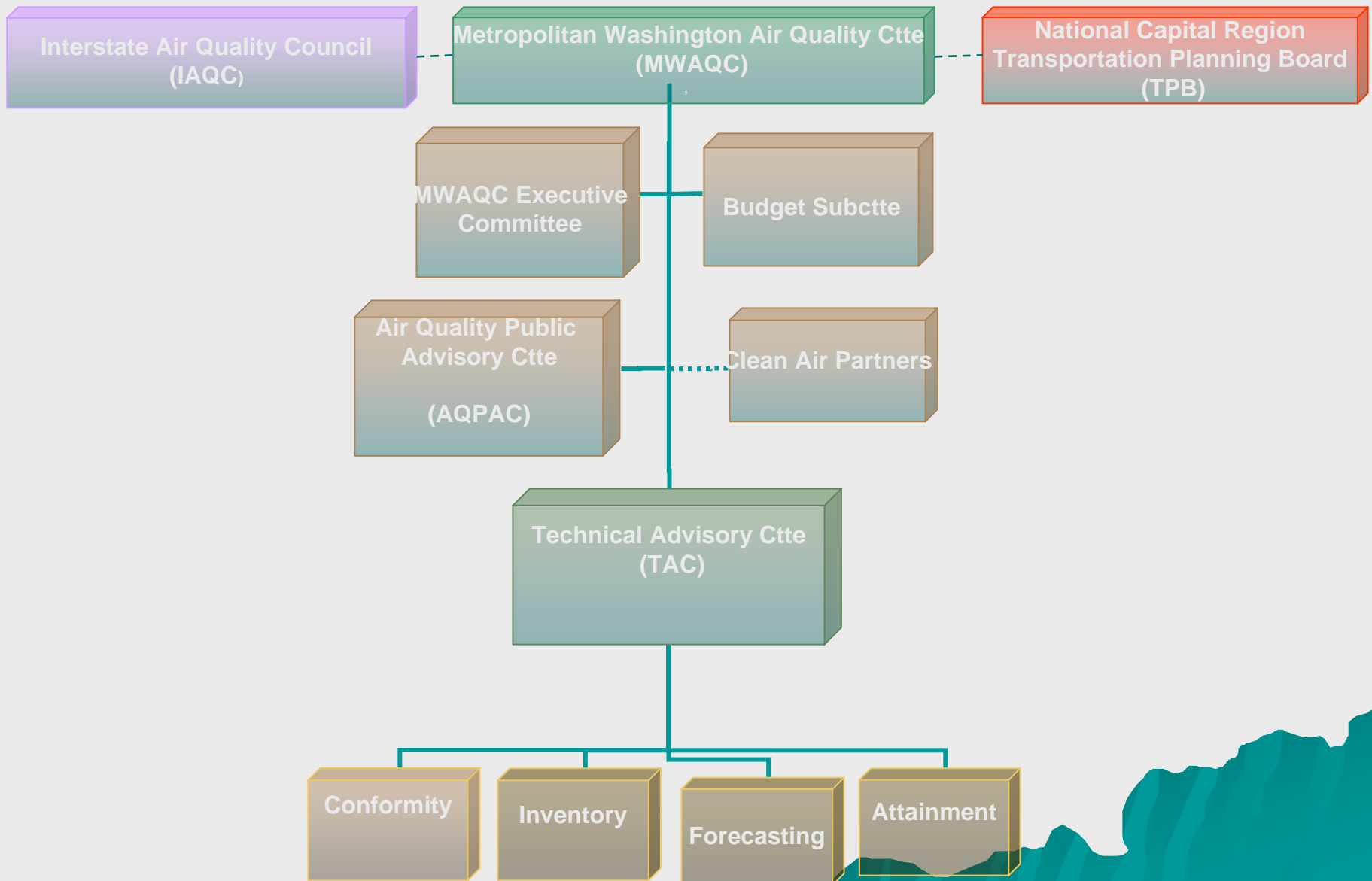


Metro. Washington, DC-MD-VA

8-Hour Ozone Nonattainment Area



MWAQC Organizational Structure



Emissions and Air Quality Trends



Washington Region Designations

Pollutant

Designation

Carbon Monoxide (CO)

Attainment

Nitrous Oxides (NO₂)

Attainment

Sulfur Dioxide (SO₂)

Attainment

Ozone

1-Hour standard

Nonattainment

8-hour standard

Nonattainment

Particulates

10 micrg./m³

Attainment

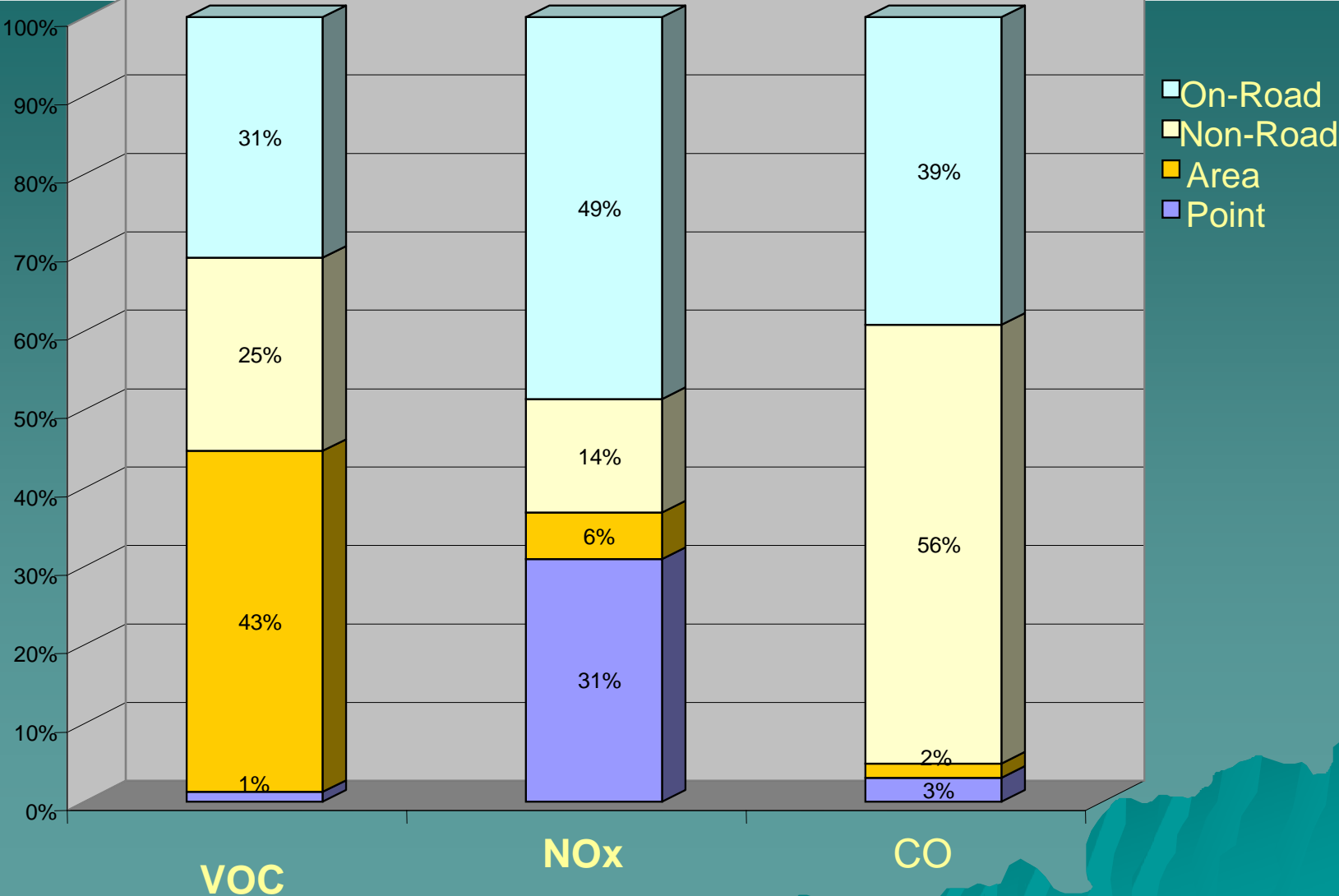
2.5 micrg/m³

Nonattainment


Lead

Attainment

2002 Emissions by Source Sector



No Code Red Days in 2005

- ◆ There were no Code Red Days this summer, despite high temperatures
 - ◆ Meteorology- typical
 - ◆ Peak ozone levels were not as high as in previous years
 - ◆ Air quality improves despite regional growth
- 

1-Hour Ozone Season Summary

Daily Peak One-Hour Ozone Concentration (ppb)
Washington Area-2005

MAY

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
58	55	44	58	61	54	75
8	9	10	11	12	13	14
68	66	76	79	58	50	70
15	16	17	18	19	20	21
56	47	53	68	61	59	55
22	23	24	25	26	27	28
56	48	37	46	57	71	63
29	30	31				
56	67	67				

JUNE

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
			1	2	3	4
			87	57	36	59
5	6	7	8	9	10	11
87	98	98	96	70	49	62
12	13	14	15	16	17	18
45	49	80	70	69	56	75
19	20	21	22	23	24	25
61	60	84	86	89	92	100
26	27	28	29	30		
96	54	84	61	104		

JULY

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1	2
					104	75
3	4	5	6	7	8	9
82	80	89	81	66	53	88
10	11	12	13	14	15	16
86	90	115	66	106	67	68
17	18	19	20	21	22	23
76	78	67	97	112	115	74
24	25	26	27	28	29	30
81	107	111	86	78	72	83
31						
66						

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AUGUST

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6
	100	104	116	111	116	103
7	8	9	10	11	12	13
84	60	30	77	119	102	111
14	15	16	17	18	19	20
96	80	62	94	83	67	79
21	22	23	24	25	26	27
70	69	73	65	86	68	43
28	29	30	31			
72	69	37	48			

SEPTEMBER

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
				61	83	61
4	5	6	7	8	9	10
57	62	70	71	97	98	89
11	12	13	14	15	16	17
94						
18	19	20	21	22	23	24
25	26	27	28	29	30	

8-Hour Ozone Summary

Daily Peak 8-Hour Ozone Concentration (ppb) Washington Area-2005

MAY

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
55	51	40	53	58	51	69
8	9	10	11	12	13	14
64	60	67	67	47	46	59
15	16	17	18	19	20	21
50	44	47	62	58	54	49
22	23	24	25	26	27	28
52	41	29	37	53	65	53
29	30	31				
53	58	63				

JUNE

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4			
			78	45	32	49
5	6	7	8	9	10	11
81	75	80	83	63	41	52
12	13	14	15	16	17	18
48	41	75	66	60	53	69
19	20	21	22	23	24	25
49	48	78	73	70	81	87
26	27	28	29	30		
96	43	67	52	91		

JULY

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2					
					86	69
3	4	5	6	7	8	9
78	68	66	70	48	47	75
10	11	12	13	14	15	16
75	81	100	52	81	50	58
17	18	19	20	21	22	23
58	69	54	88	93	94	64
24	25	26	27	28	29	30
64	80	97	78	66	55	70
31						
59						

Draft

Draft

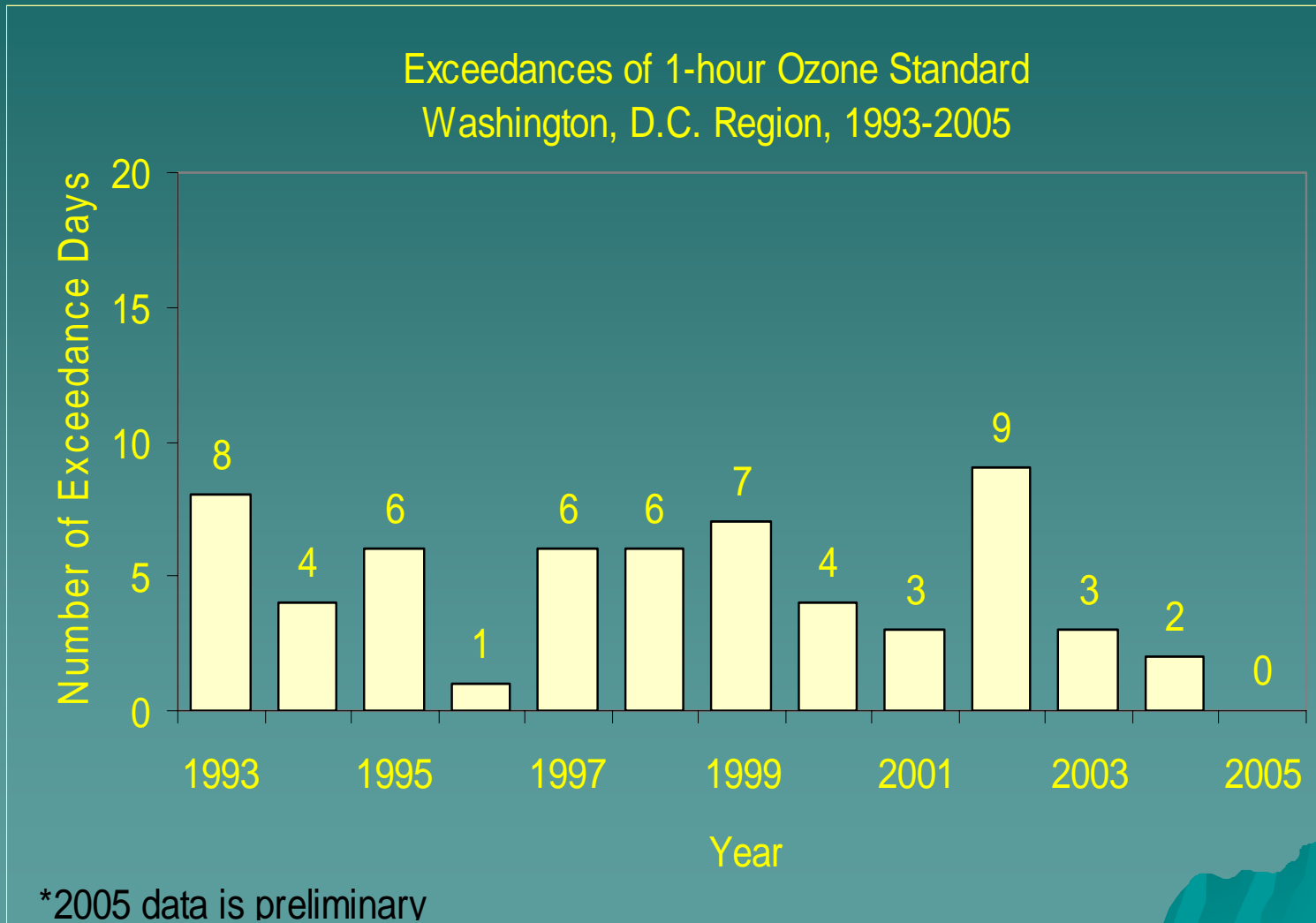
AUGUST

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	
	82	89	97	97	94	88
7	8	9	10	11	12	13
69	52	28	60	94	88	88
14	15	16	17	18	19	20
80	73	46	71	73	46	69
21	22	23	24	25	26	27
63	62	62	58	68	56	35
28	29	30	31			
58	55	29	43			

SEPTEMBER

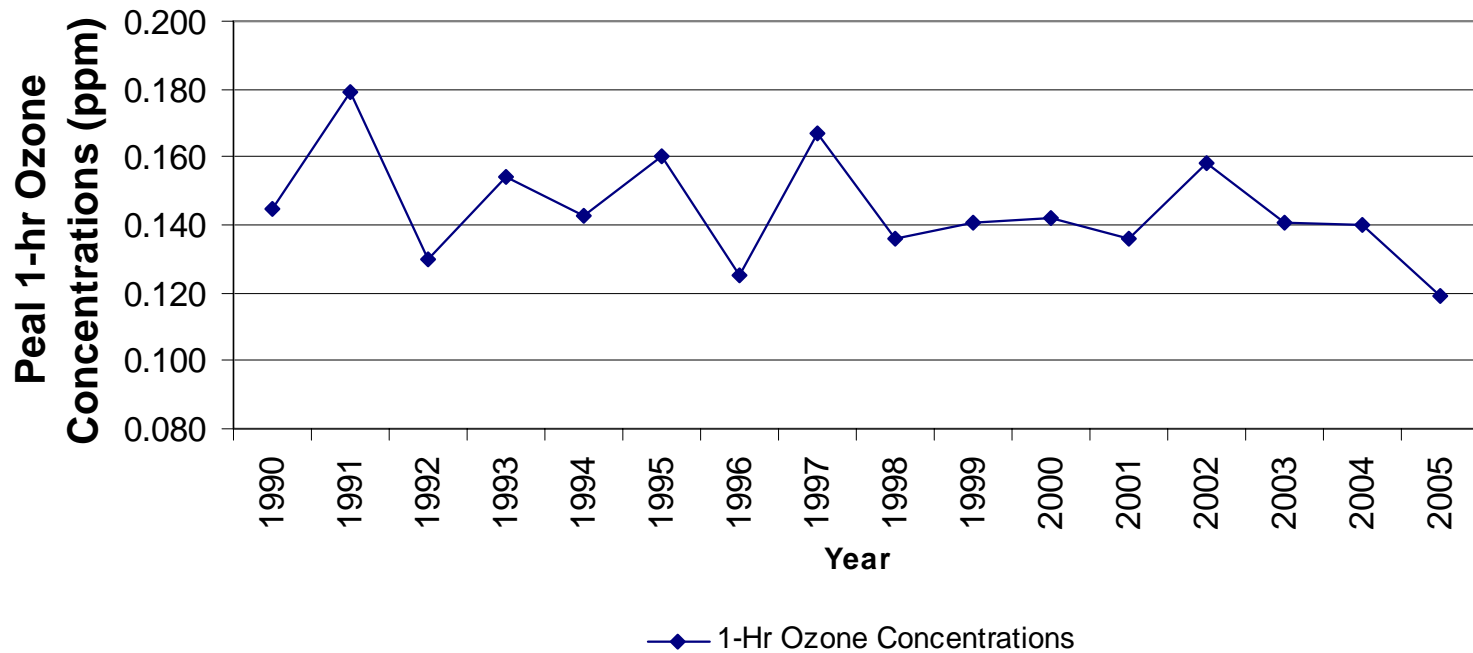
Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3				
				54	72	54
4	5	6	7	8	9	10
50	55	60	67	83	88	80
11	12	13	14	15	16	17
77						
18	19	20	21	22	23	24
25	26	27	28	29	30	

Exceedances of the 1-Hour Ozone Standard



Peak Ozone Dropped

1-Hr Peak Ozone Concentrations



1-Hour Ozone Standard Met

Monitor	Days Over 125 ppb	Date	Maximum Hrly Level
P.G. Equestrian	2	6/25/04	141
		6/26/03	137
Mt. Vernon	3	6/25/03	132
		8/14/03	127
		7/2/04	140

FN: EPA revoked the 1-Hr standard in 6/2005

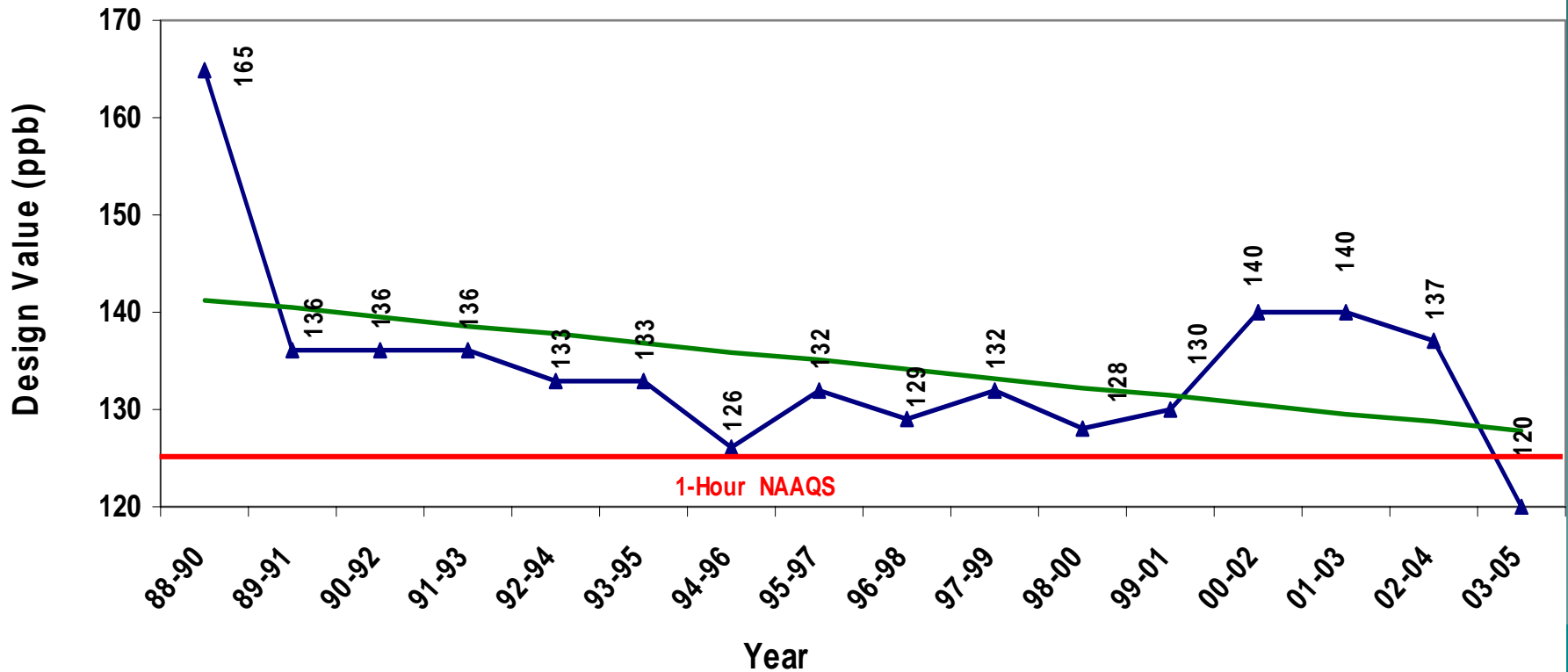
Regional Growth, 1990-2005

- ◆ Household population grew 28%
- ◆ Vehicle Miles Traveled grew 25%
- ◆ Ozone Design Value dropped 27%

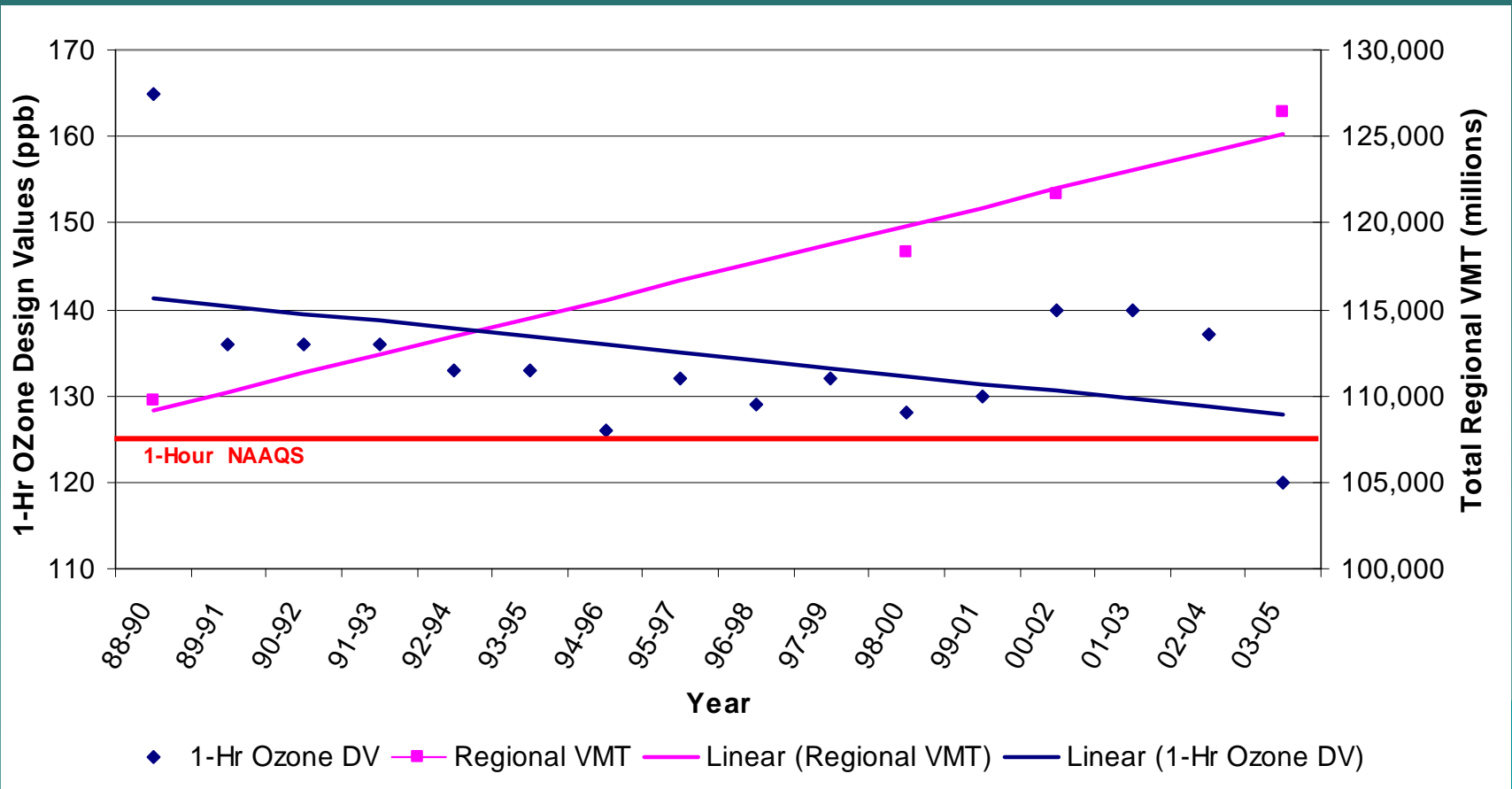


Design Value Declined to Below 1-Hour Standard

1-Hour Ozone Design Value
Washington Metropolitan Region, 1990-2005




1-Hr Ozone Trends Down, VMT Trend Up 1990-2005



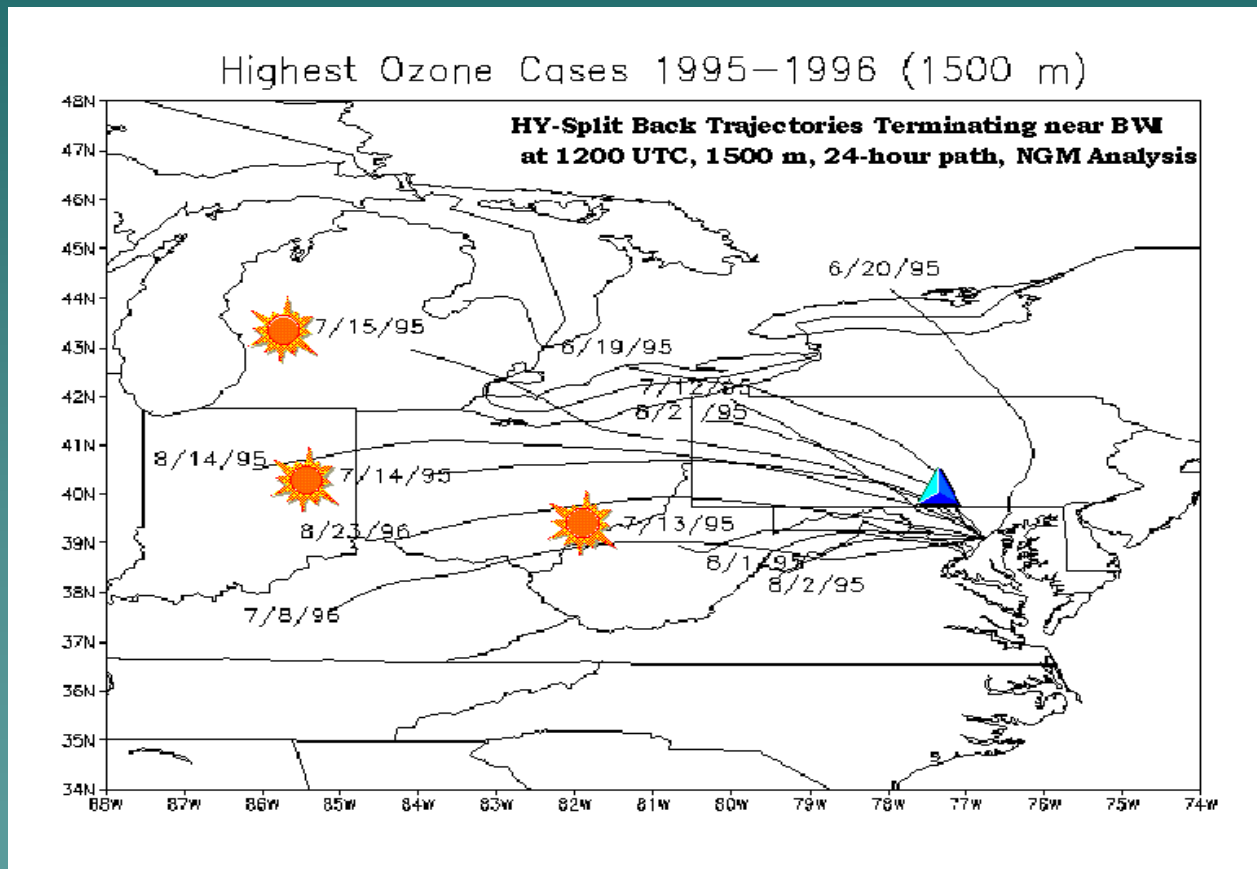
FACTORS IMPROVING AIR QUALITY



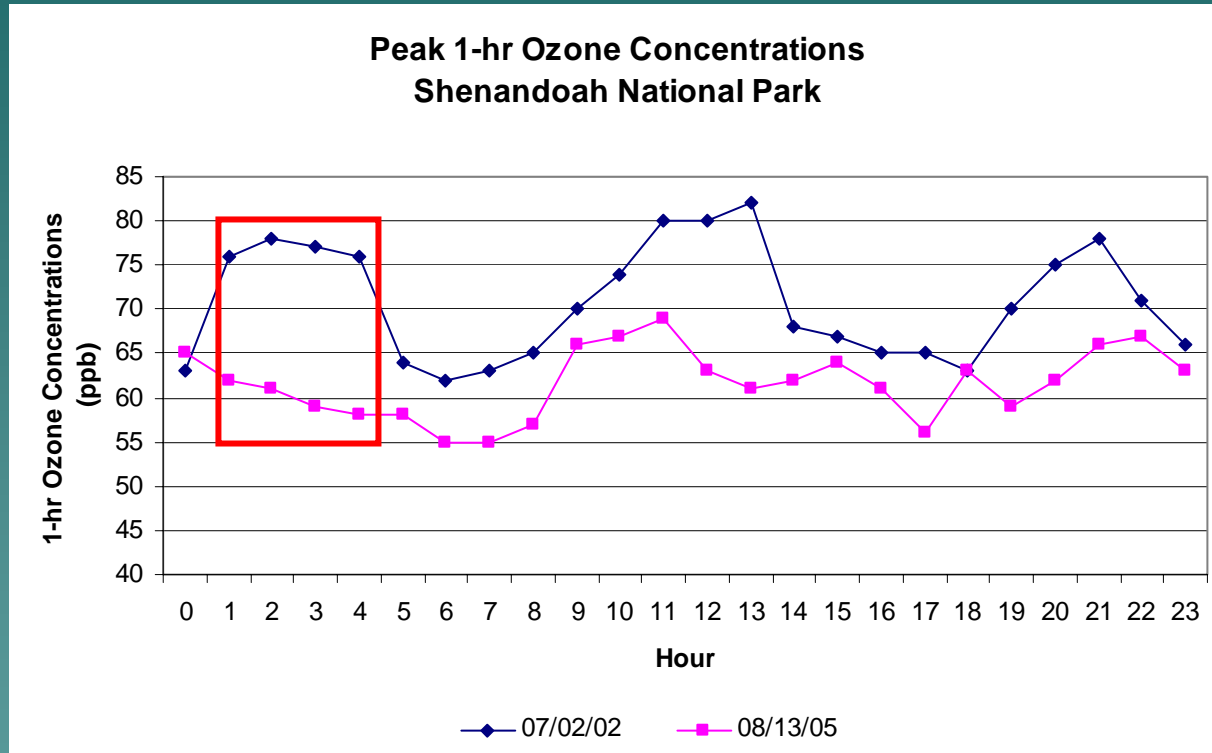
Factors Improving Air Quality

1. Reduced transport from Midwest
 2. Controls on power plants (NO_x SIP Call) Midwest and regionally
 3. Cleaner cars and trucks, low sulfur fuel
 4. Control programs in air quality plan (SIP)
- 

1. Transported Air Pollution



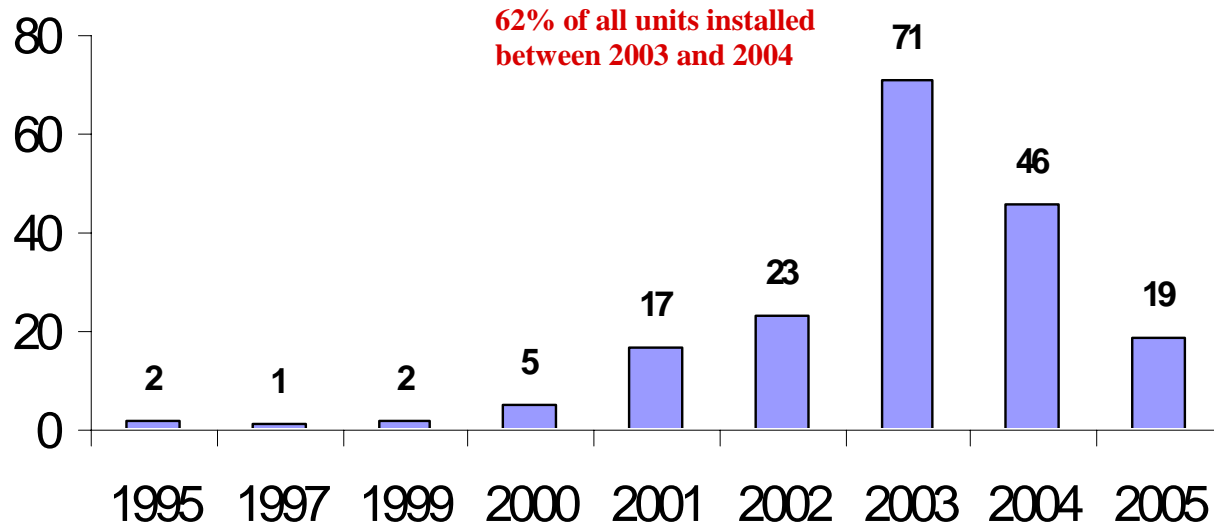
Evidence of Reduced Transport: Shenandoah National Park



Power Plant Controls Installed

1995-2005

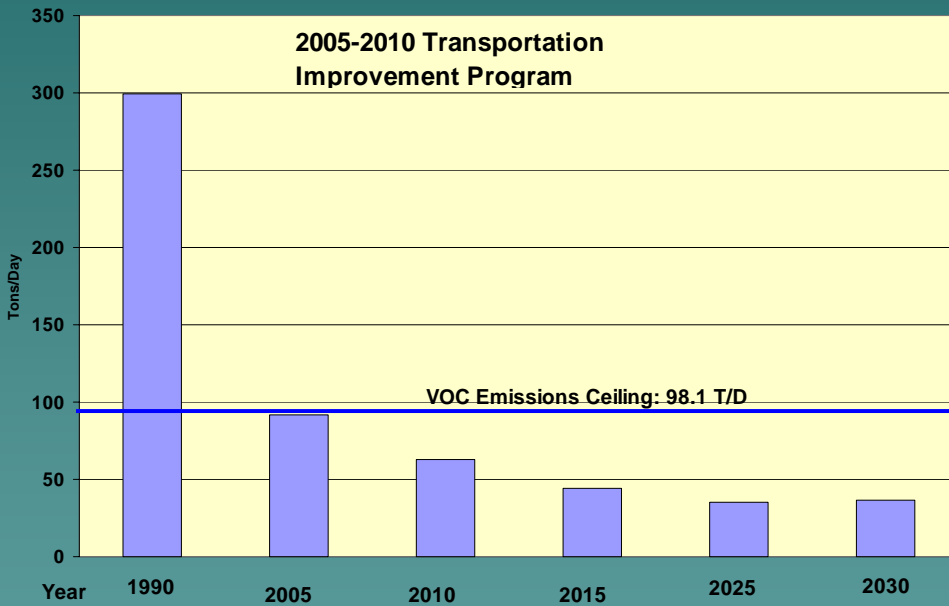
Exhibit 1. SCR Units Installed by Year



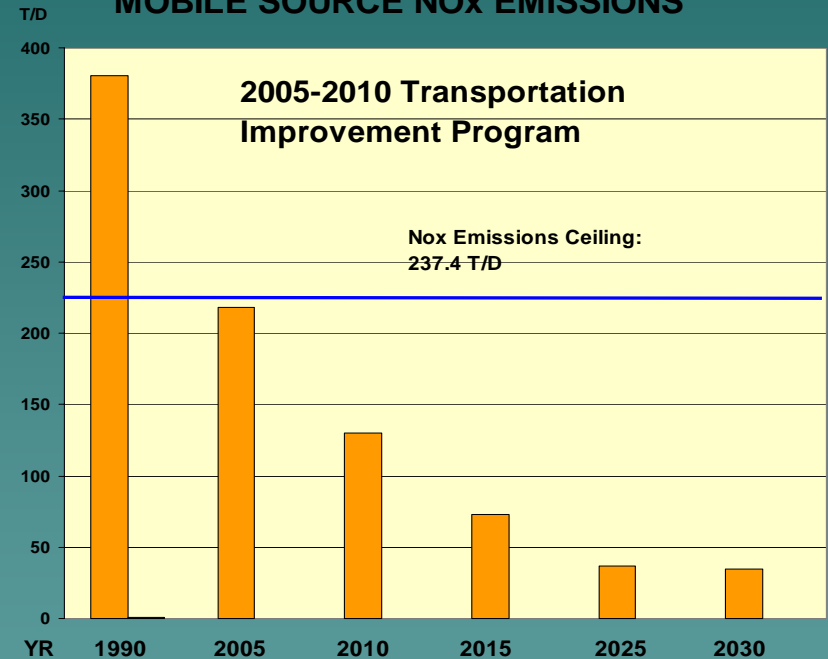
Source: *The Role of Ozone Transport in the Washington, DC Area*. Presentation by Tad Aburn (Maryland Department of the Environment) and Jeff Stehr (University of Maryland), to the Metropolitan Washington Air Quality Committee. February 19, 2004.

3. Reduced Mobile Source Emissions

MOBILE SOURCE VOC EMISSIONS



MOBILE SOURCE NO_x EMISSIONS



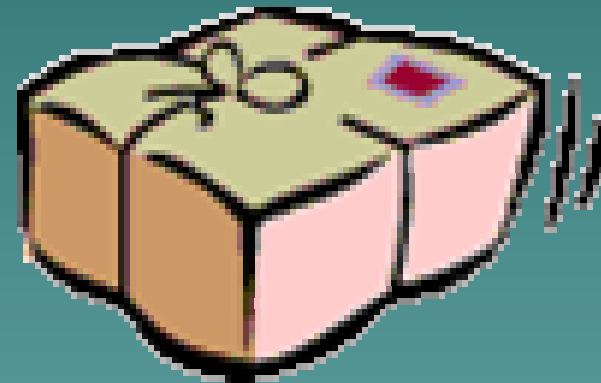
4. Control Measures in SIP

- Vehicle inspection and maintenance programs
- Reformulated paints and solvents
- Gas can replacement programs
- Voluntary Bundle of measures, including AFV purchases, wind energy purchase

Voluntary Bundle

Reductions Credited

- Low-VOC Consumer Products
- Wind Power Purchase
- Gas Can Replacement
- Use of Low-VOC Paint
- Reduce Locomotive Idling

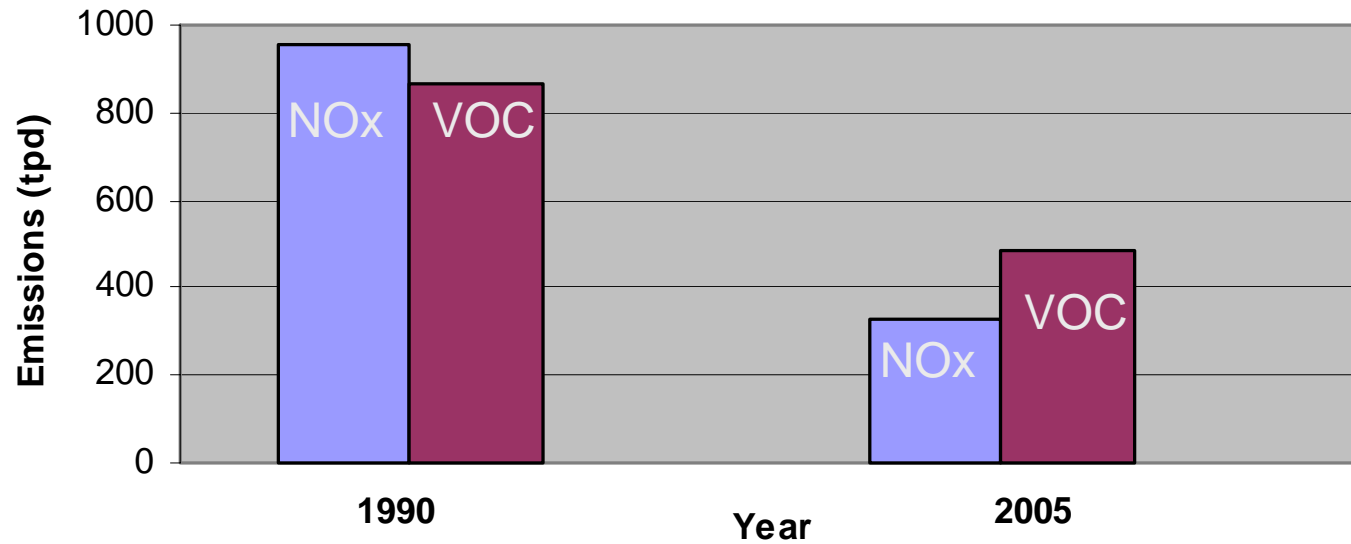


Included, But No Credit Taken

- Alternative Fueled Vehicle Purchase
- Remote Sensing Device
- Diesel Retrofits (School and Transit Buses)

Emission Levels in Washington Area

Emissions of Ozone Precursors in the Washington, DC-MD-VA Nonattainment Area

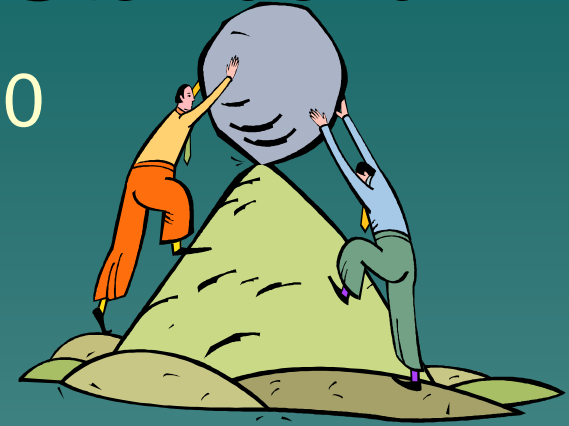


Meeting the Ozone and PM Standards



Challenge: New Ozone Standard

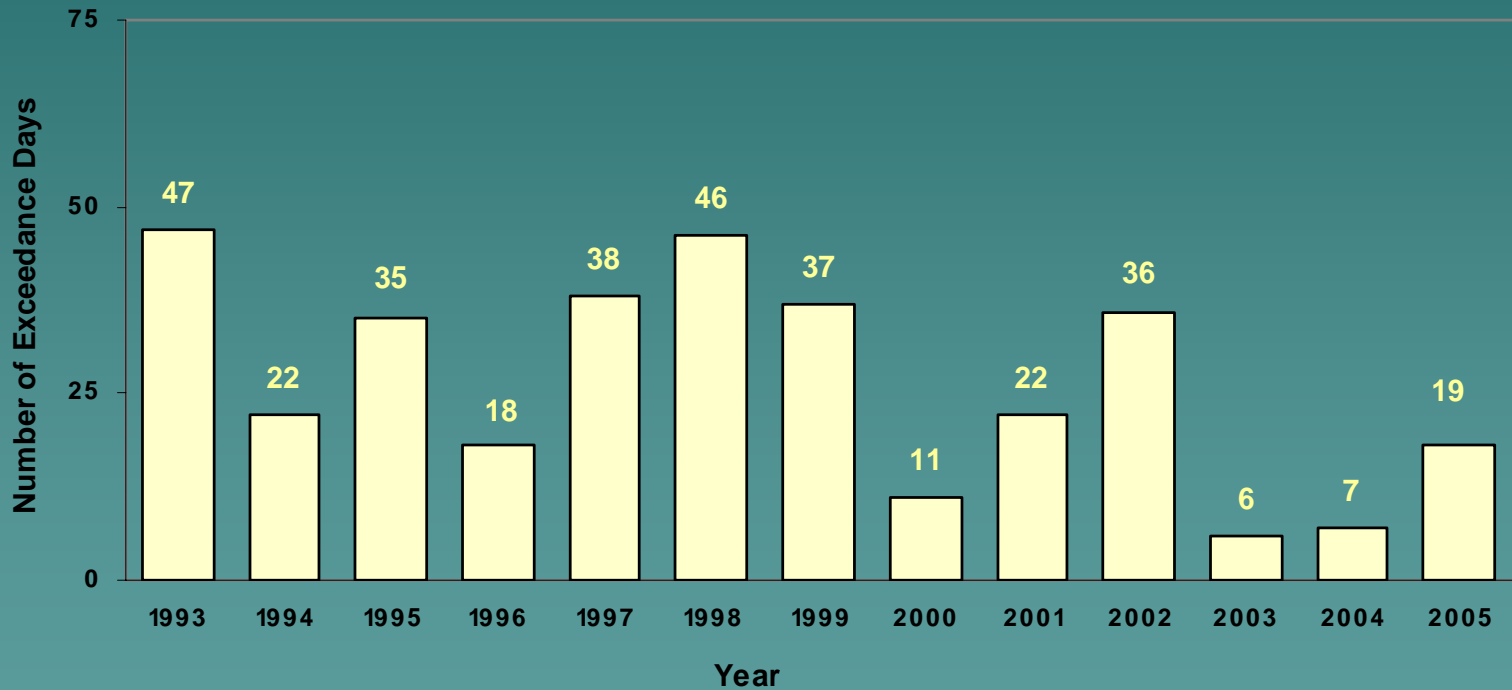
2010



- ◆ 19 exceedances in 2005 (Code Orange)
- ◆ EPA modeling for the Clean Air Interstate Rule (CAIR) shows the Washington region not meeting the 2010 deadline for ozone.
- ◆ New control measures are needed to meet the new standard.

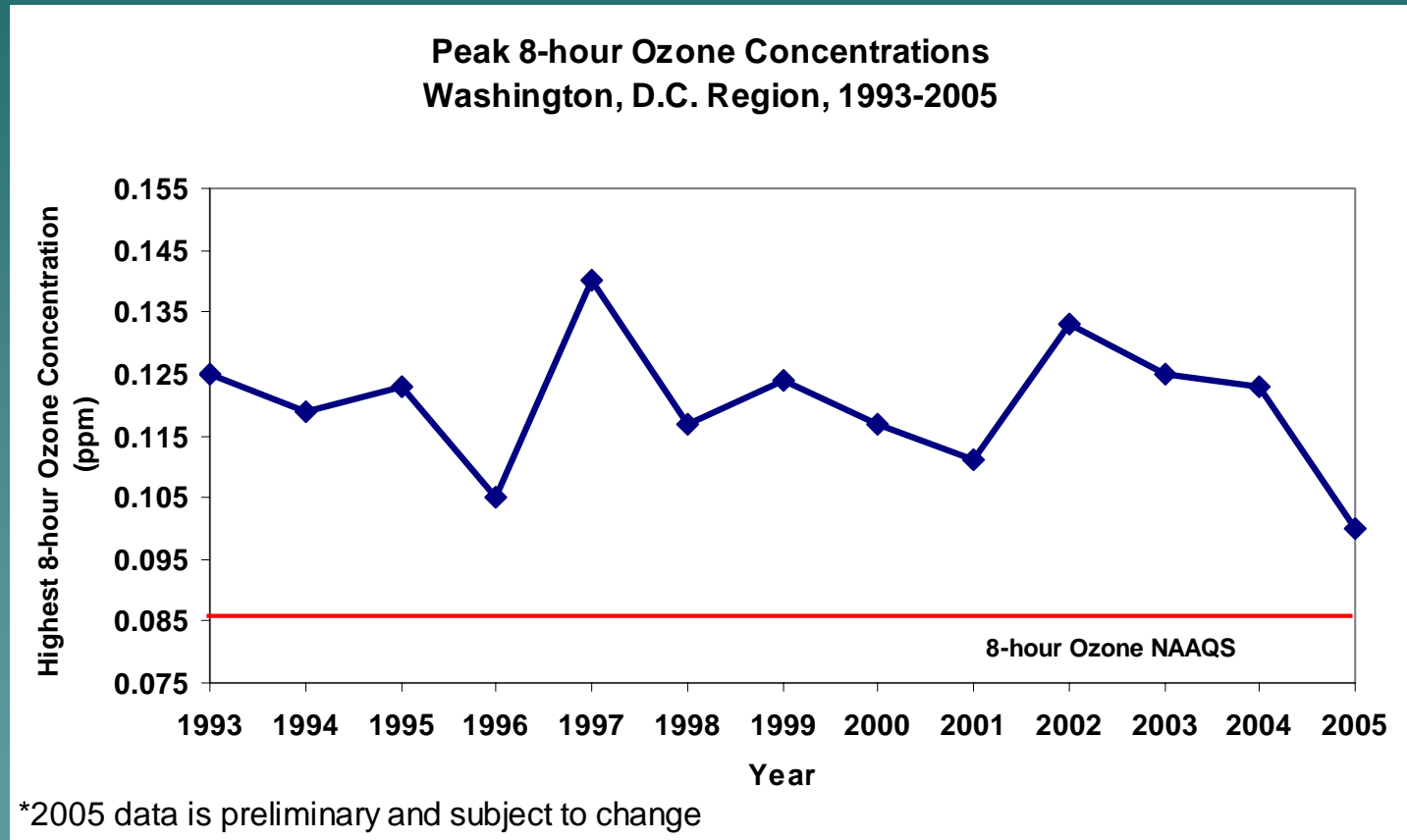
8-hr Ozone Exceedance Days

Exceedances of 8-hour Ozone Standard
Washington, D.C. Region, 1993-2005



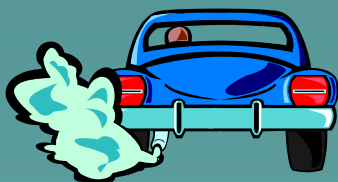
*2005 data is preliminary and subject to

Peak 8-hr Ozone Concentrations



Preliminary Analysis

- ◆ “On the Books” and “On the Way” controls reduce emissions $>21\%$
- ◆ More Reductions are needed to meet 8 hr standard.



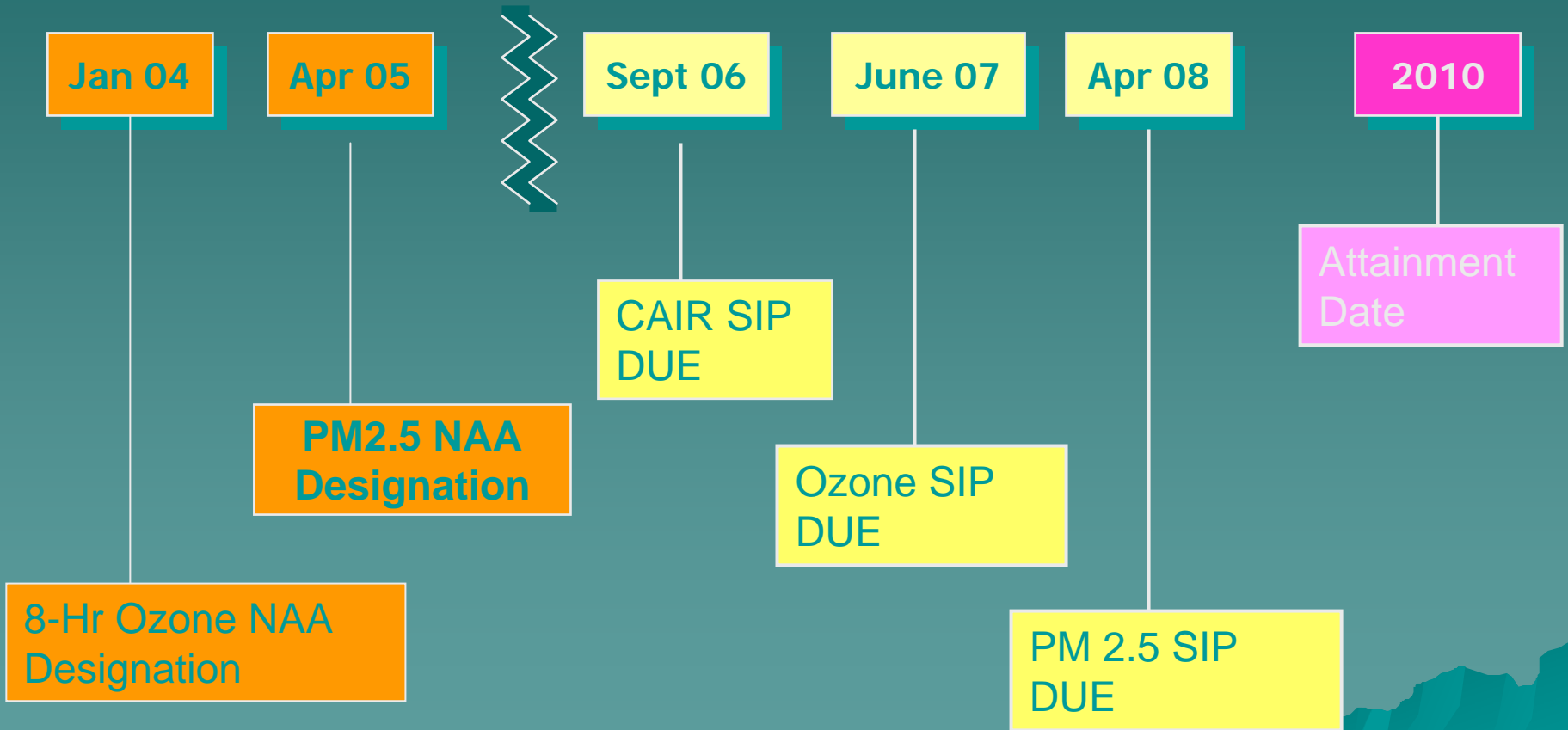
New Controls Being Considered

- ◆ New regional control programs being developed as part of OTC process
 - OTC CAIR plus, OTC Corridor strategy



- ◆ Voluntary Airport Emissions Reductions
- ◆ New Innovative Measures Bundle

Washington Region SIP Deadlines




Next Steps

- ◆ Complete Attainment Modeling Winter 2005
- ◆ Introduce New Legislation and Regulations Winter/Spring 2006
- ◆ Complete SIP Fall/Winter 2006

For Further Information

- ◆ <http://mwcog.org/environment/air>
 - ◆ <http://www.deq.state.va.us/>
 - ◆ <http://www.mde.state.md.us/>
 - ◆ <http://www.airquality.dc.gov>

 - ◆ AIRNOW.ORG
 - ◆ AIR-WATCH.ORG
- 
- A stylized, teal-colored mountain range graphic is located in the bottom right corner of the slide, extending from the right edge towards the center.