Weight-of-Evidence Analyses
(Washington, DC-MD-VA Ozone Non-Attainment Area)

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TAC Meeting

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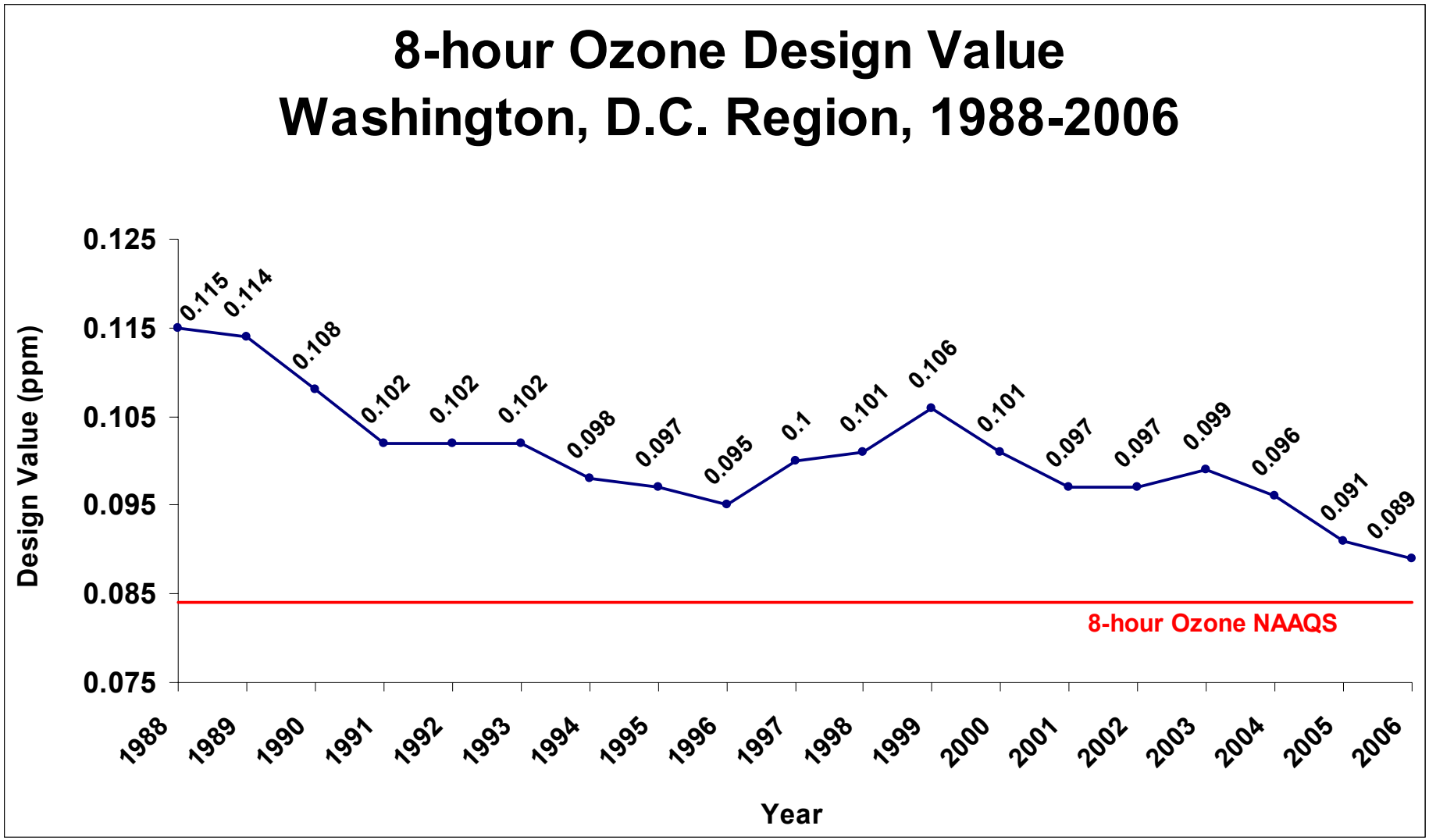
Why WOE Analyses ?

- WOE analyses needed to support attainment modeling results.
- Model projected attainment Design Value
  - < 82 ppb – Basic supplemental analyses needed to confirm modeled attainment test.
  - 82-87 ppb – Aggregate WOE analyses needed to support modeled attainment test.
  - ≥ 88 ppb – WOE analyses less likely to change modeled attainment test.

Weight-of-Evidence Analysis List

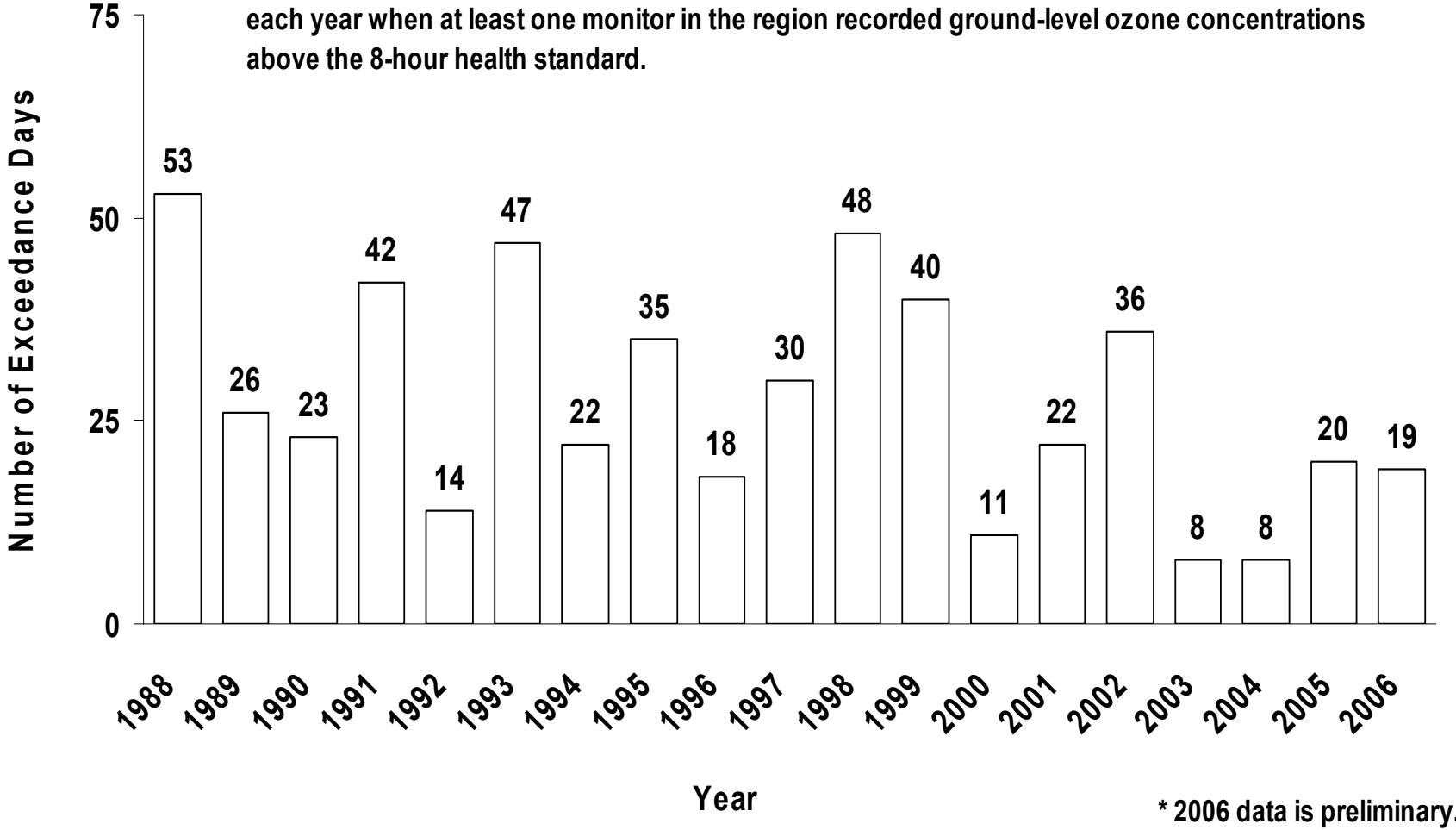
		Attainment Demonstration	Pollution Apportionment	Transport (more general)	Small measures	Historical control effectiveness (Trends Analysis)
	WOE Techique	O3	O3	O3	O3	O3
	Grid Models					
1	DC CMAQ modeling	**VDEQ (Currently underway)**				
2	OTC CMAQ modeling	**OTC (Currently underway)**				
3	ASIP CMAQ modeling	**ASIP (Currently underway)**				
4	VISTAS CMAQ modeling	**VISTAS (Currently underway)**				
5	CMAQ with DDM		**OTC (?)**	**OTC (?)**	**?**	
6	CALGRID	**OTC (?)**	**OTC (?)**		**?**	
7	EPA CAIR Modeling	**Can be used**		**Can be used**		
	Trajectory & Met Data Analysis Techniques					
8	Low Altitude 24-hour Trajectories (Local Transport)			**MDE**		
9	Trajectory Analyses using Profiler Data Compared with HYSPLIT Trajectories			**MDE**		
	Monitoring Data/Inventory Analysis					
10	Trends in DVs					**COG (Complete)**
11	Monitor Exceedances					**COG (Complete)**
12	Trends in Ambient NO2 Concentrations (Ozone Precursor)					**COG (Complete)**
13	Trends in Ambient CO Concentrations					**COG (Complete)**
14	Meteorologically Adjusted Trend Analysis					**COG (Complete)**
15	Spatial & Temporal Comparison of Non-attainment Zones with DVs					**COG (Complete)**
16	Exceedance Days Vs. High Temperature Days					**COG (Complete)**
17	Emissions Inventory Trends					**COG (Complete)**
	Literature Review / Other					
18	Low Level Jet Analyses			**MDE/UMD**		
19	Blackout Paper			**UMD**		**UMD**
20	Additional Measures not Modeled: Voluntary Measures				**COG (Currently underway)**	

WOE Analyses
(COG)

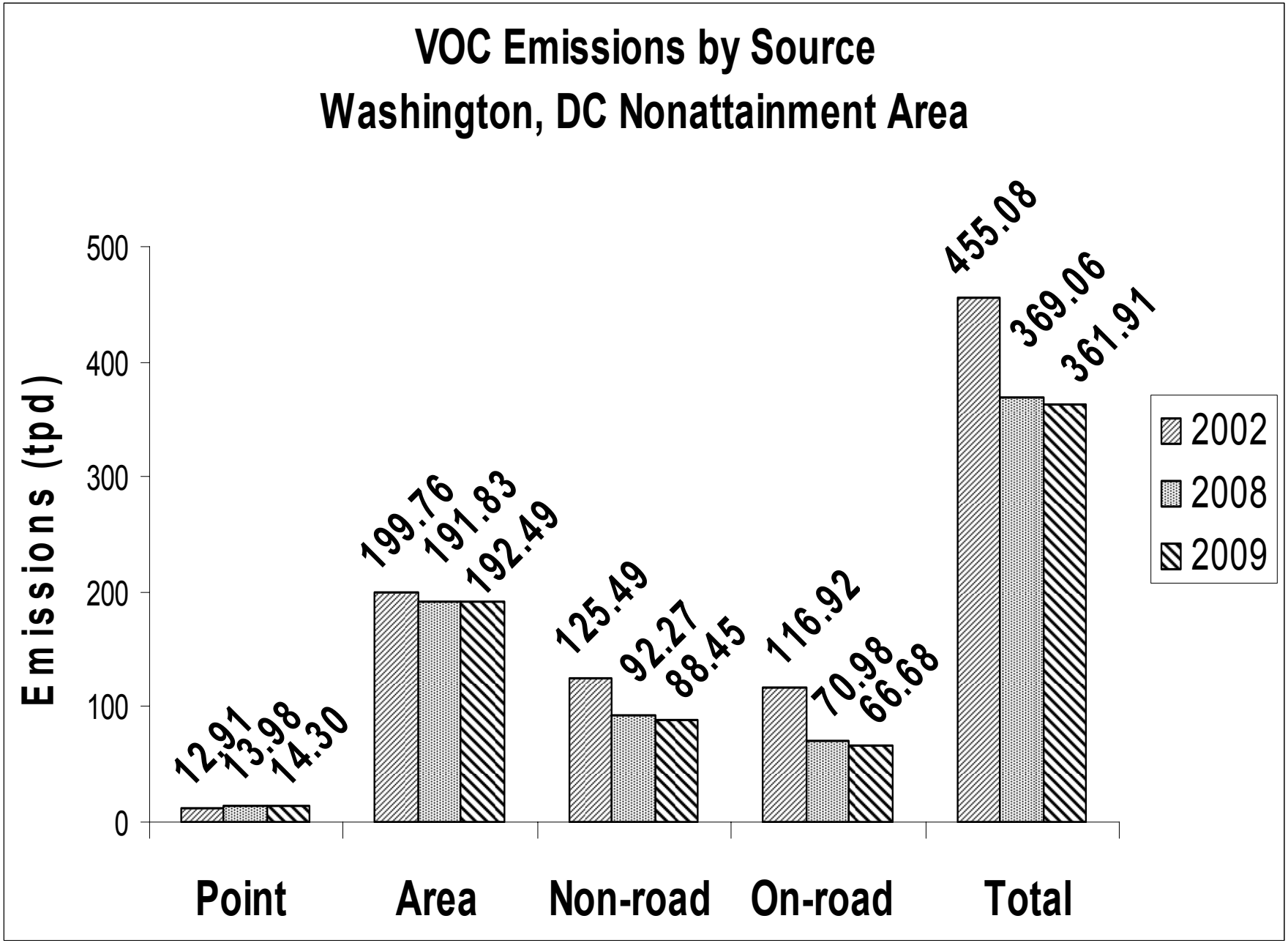


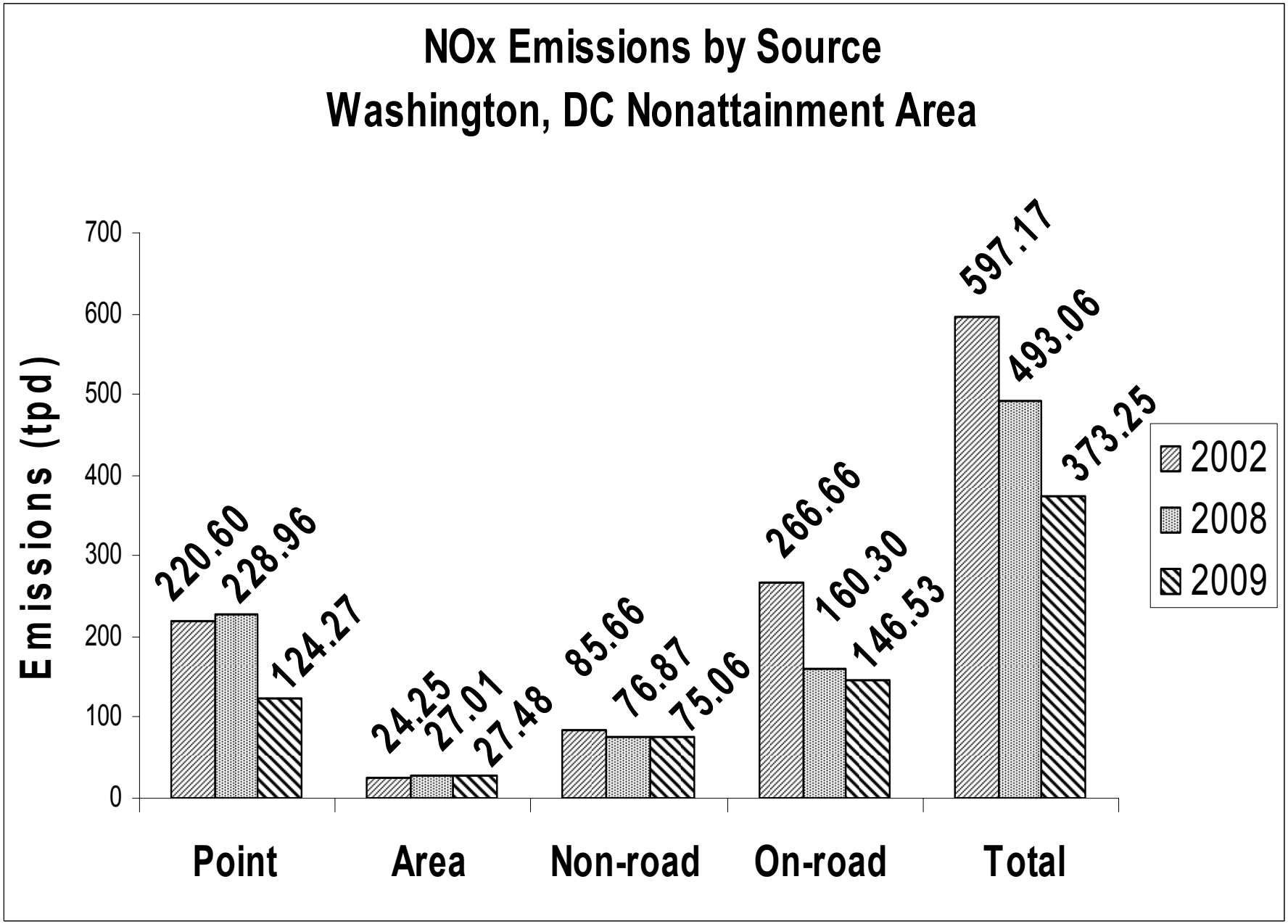
Exceedances of 8-hour Ozone Standard
Washington, D.C. Region, 1988-2006*

Note: Health Standard for 8-hour Ozone is 0.08 ppm. Data shown are the number of days in each year when at least one monitor in the region recorded ground-level ozone concentrations above the 8-hour health standard.

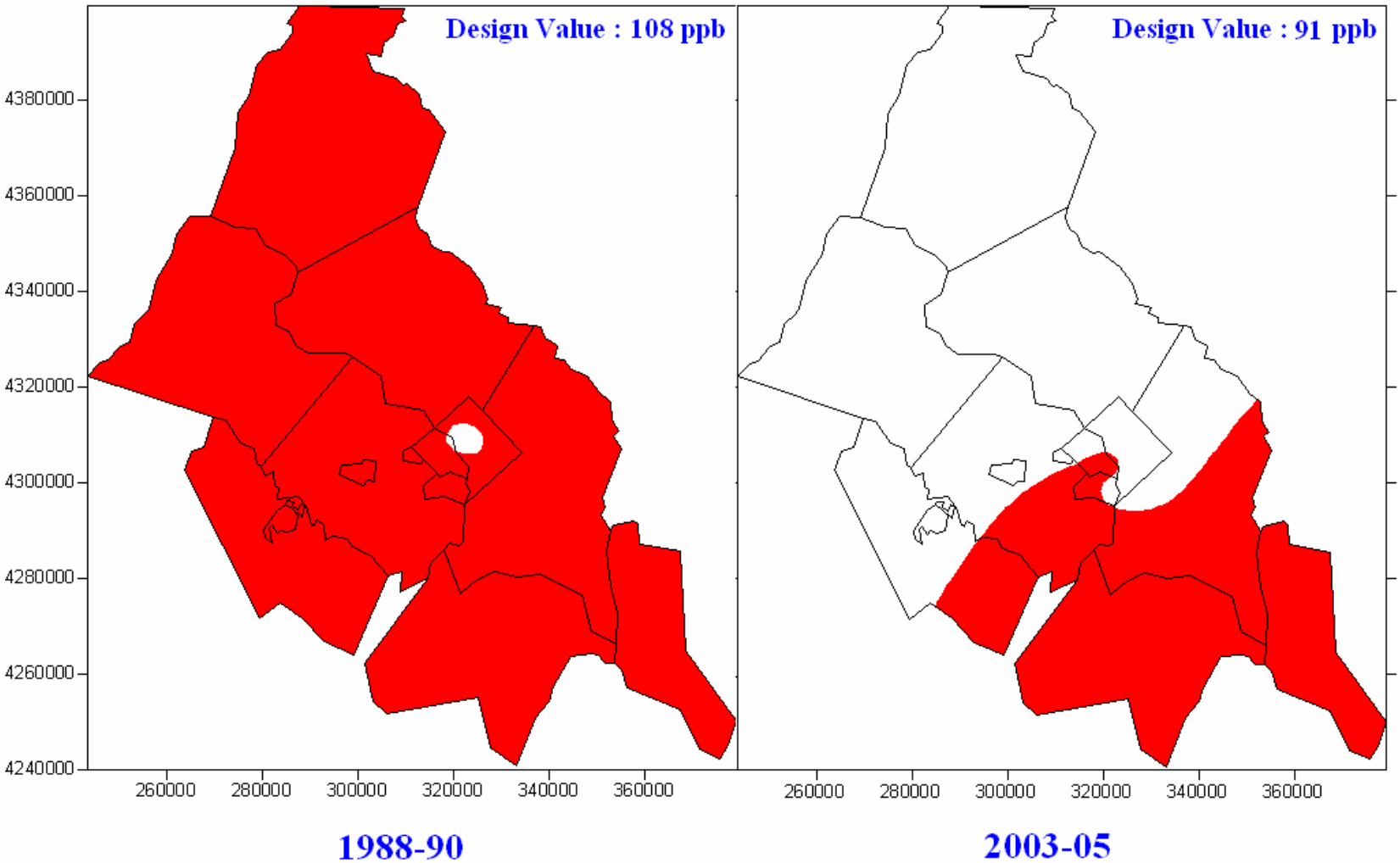


* 2006 data is preliminary.

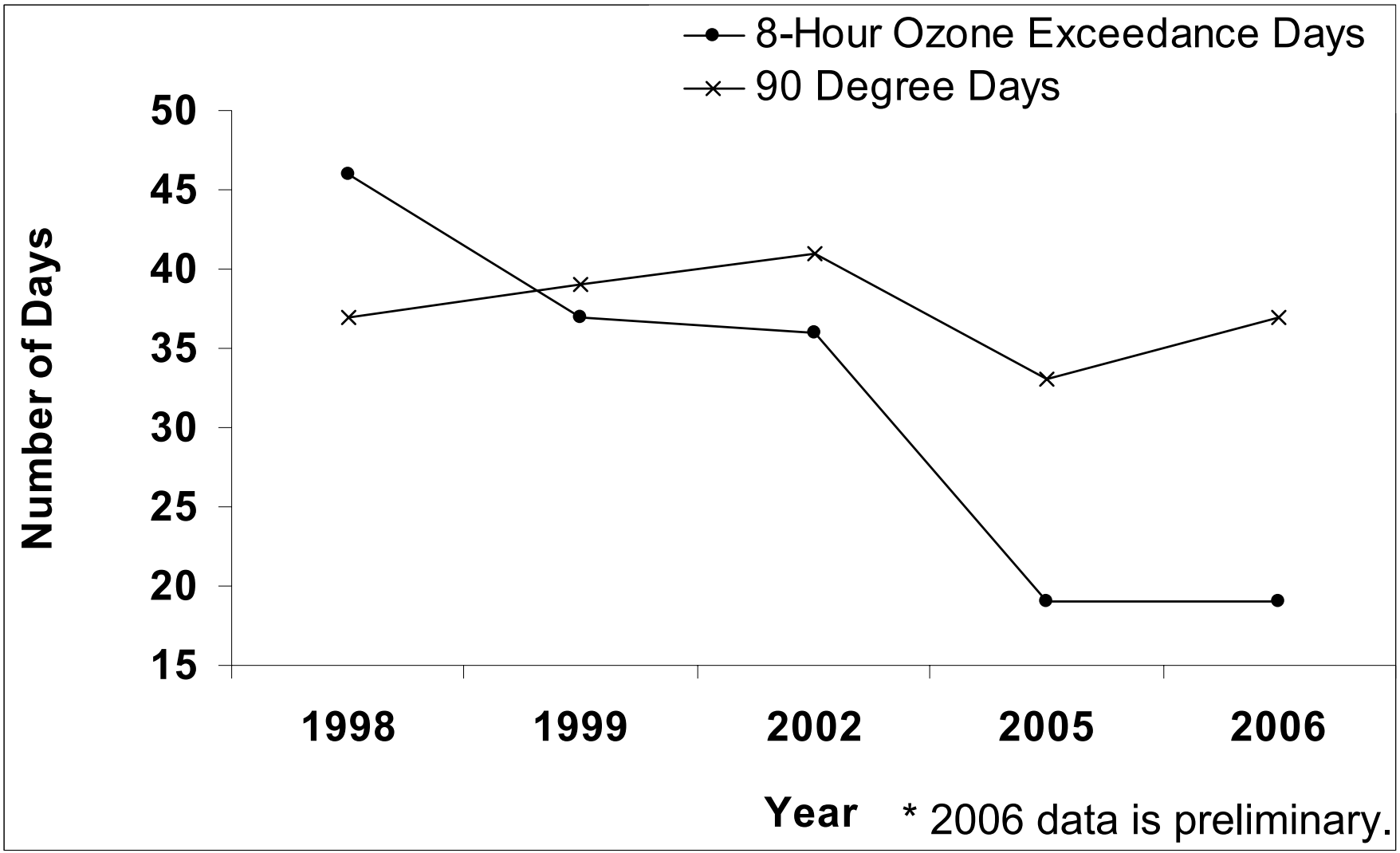

VOC Emissions by Source
Washington, DC Nonattainment Area
Emissions (tpd)
500
400
300
200
100
0
12.91
13.98
14.30
199.76
191.83
192.49
125.49
92.27
88.45
116.92
70.98
66.68
455.08
369.06
361.91
2002
2008
2009
Point
Area
Non-road
On-road
Total


NOx Emissions by Source
Washington, DC Nonattainment Area
Emissions (tpd)
700
600
500
400
300
200
100
0
220.60
228.96
124.27
24.25
27.01
27.48
85.66
76.87
75.06
266.66
160.30
146.53
597.17
493.06
373.25
2002
2008
2009
Point
Area
Non-road
On-road
Total

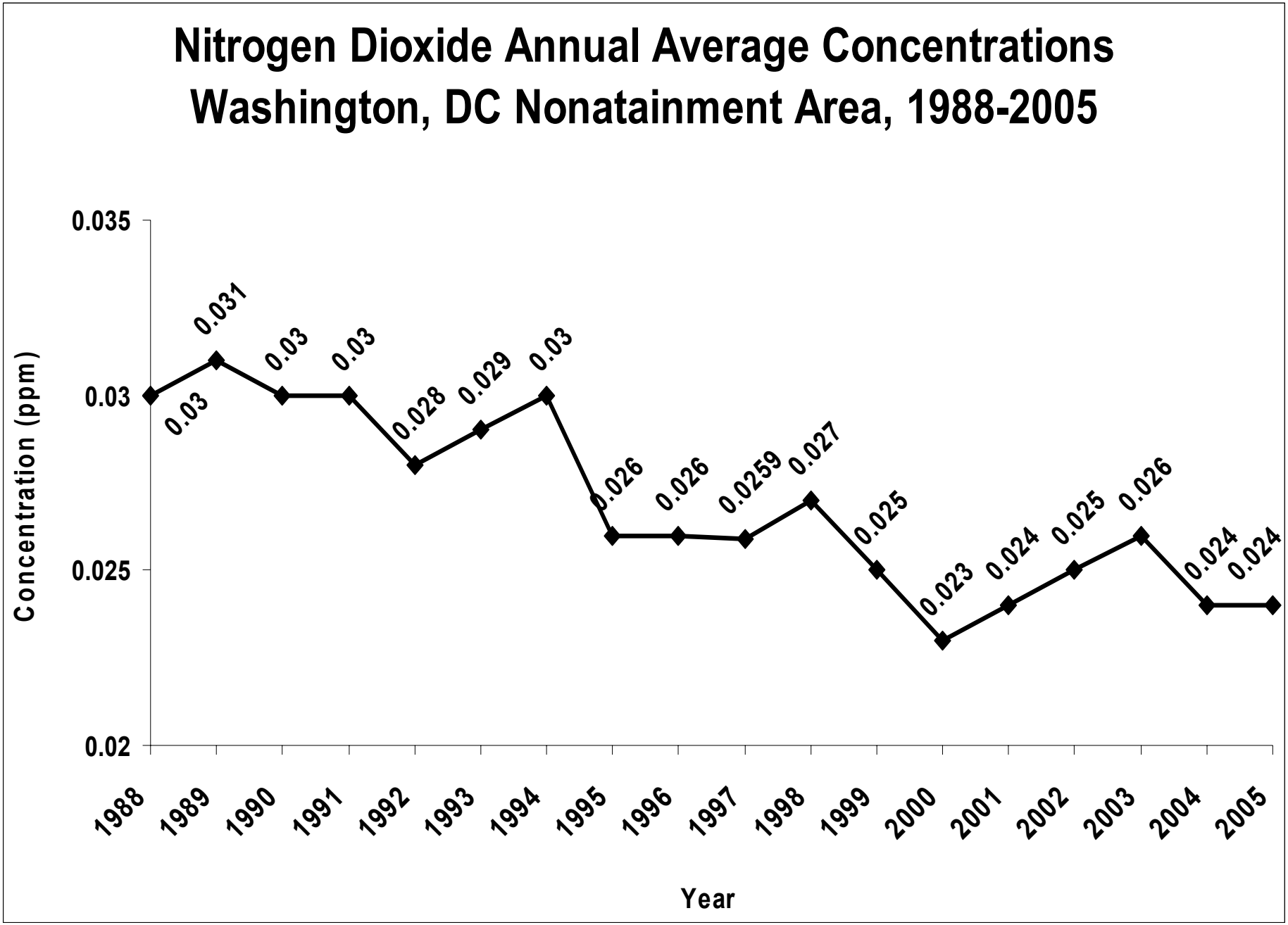
Comparison of Nonattainment Zones within Washington, DC-MD-VA Nonattainment Area (1990 – 2005)



8-Hour Ozone Exceedance Days & High Temperature Days (≥ 90ºF)



Nitrogen Dioxide Annual Average Concentrations
Washington, DC Nonatainment Area, 1988-2005



Carbon Monoxide 2nd High 1-hour Concentrations
Washington, DC Nonattainment Area, 1988-2005