

Victoria Ozone Air Quality

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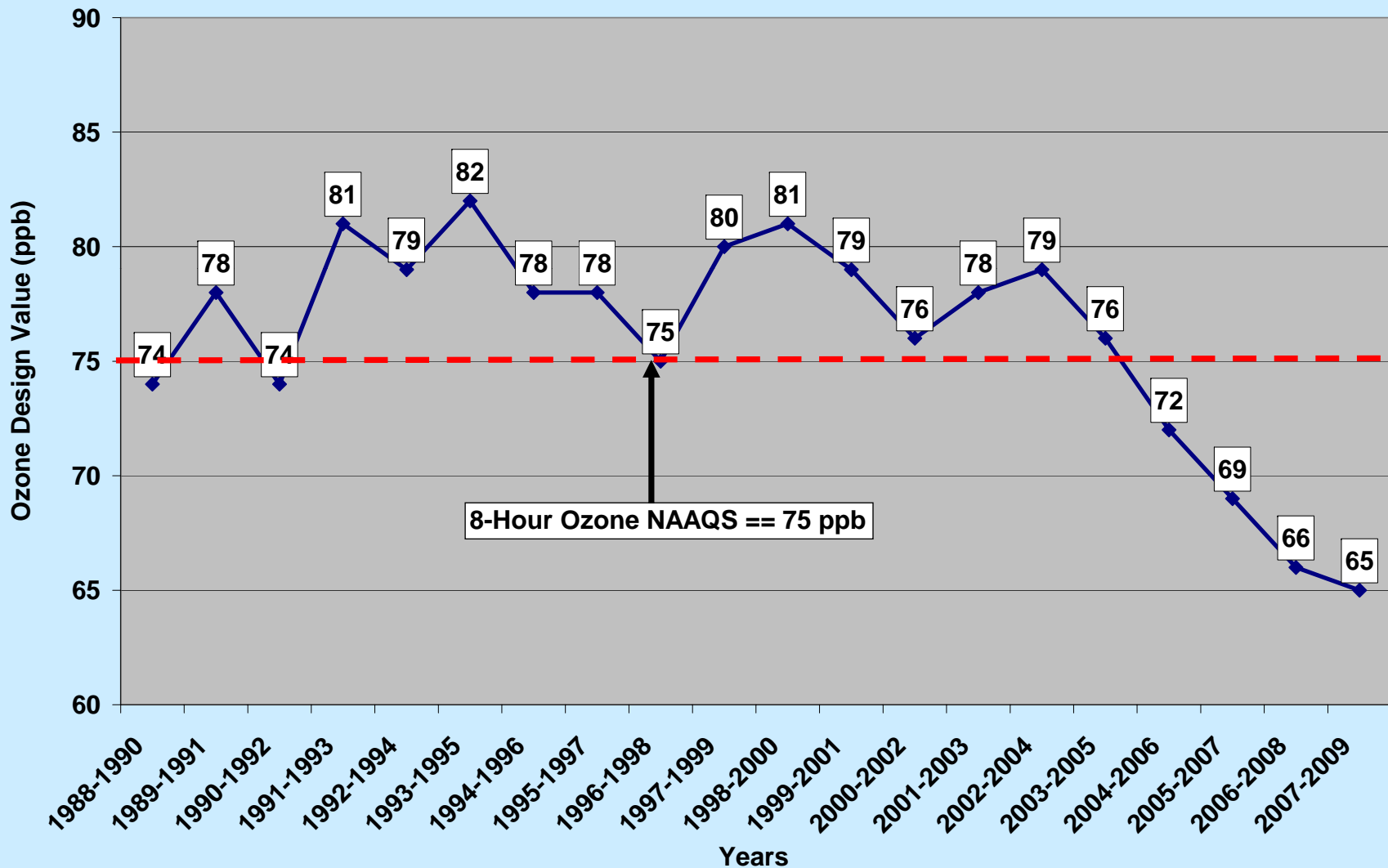
EPA Revises NAAQS for Ground-Level Ozone

- Previous (established 1997) primary and secondary NAAQS for ozone concentrations averaged over 8 hours was 0.08 parts per million (ppm).
 - Due to rounding, standard was effectively 85 ppb.
- On March 17, 2008, EPA revised the primary NAAQS for ozone concentrations averaged over 8 hours to 0.075 ppm (75 ppb). The secondary standard was set at a form and level identical to the primary standard.
- On September 16, 2009, EPA announced it would reconsider both the primary and secondary NAAQS for ozone.

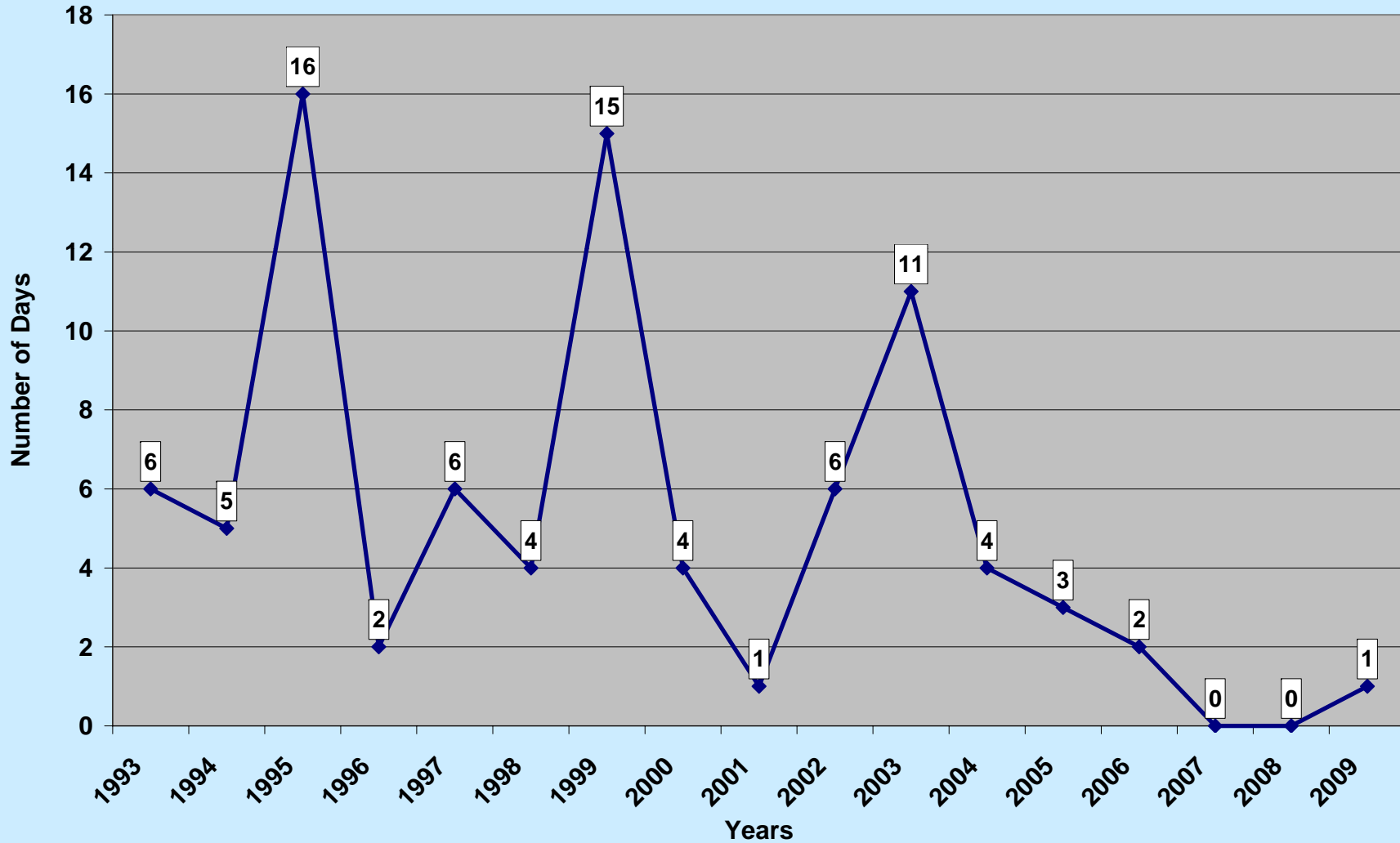
Implementation Schedule for the Revised Ozone NAAQS

- EPA will propose revisions to the primary and (potentially) secondary standards by December 2009 with a final decision by August 2010.
 - EPA notes that the standards set in 2008 were not as protective as recommended by EPA's Clean Air Scientific Advisory Committee (CASAC).
 - CASAC had recommended a primary standard (human health-based) in the range of 60 ppb to 70 ppb.
 - CASAC had recommended a cumulative form for the secondary standard (welfare-related) that limited the "W126" index within a range of 7 – 15 ppm-hours, accumulated over at least 12 "daylight" hours and the three maximum ozone months of the summer growing season.
- EPA and States to complete final designations by August 2011.
- States to submit SIPs outlining how they will reduce pollution to meet the revised ozone NAAQS by December 2013.

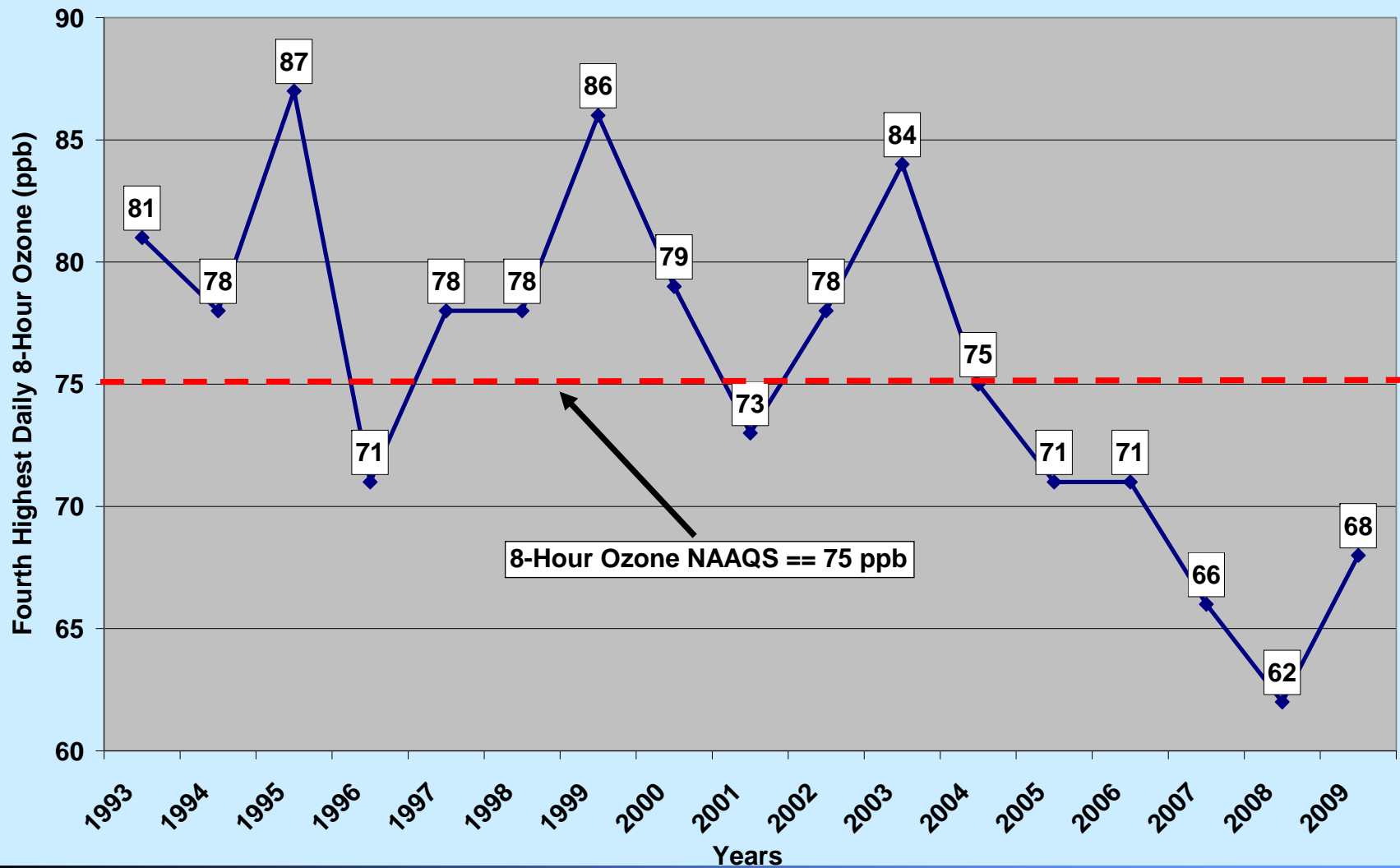
8-Hour Ozone Design Values at CAMS 87 compared to the March 2008 Ozone NAAQS of 75 ppb



Annual Number of Days with 8-Hour Ozone Concentrations of 75 ppb or Greater at CAMS 87

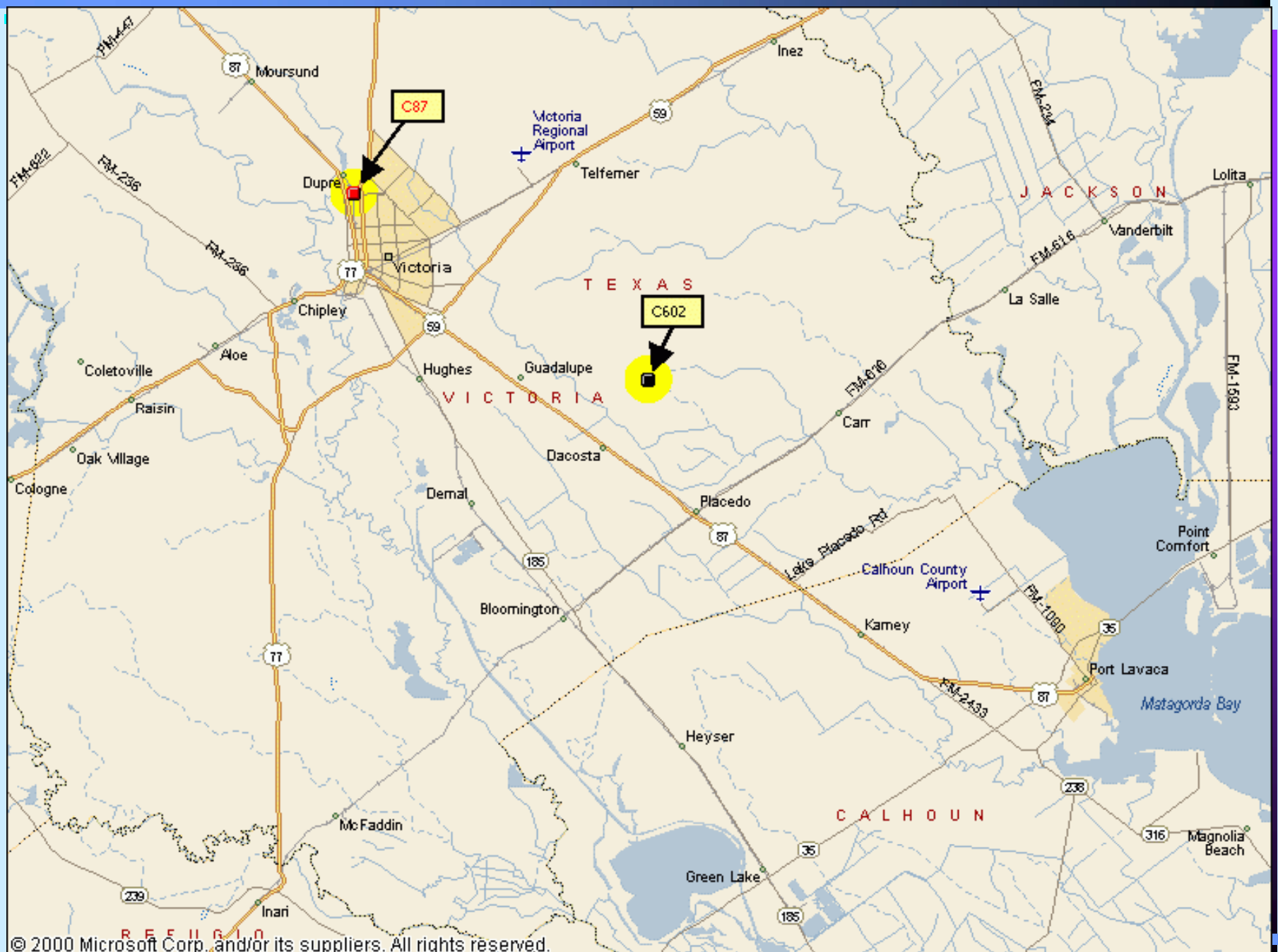


Annual Fourth Highest Daily 8-Hour Ozone Concentration at CAMS 87 compared to the March 2008 Ozone NAAQS

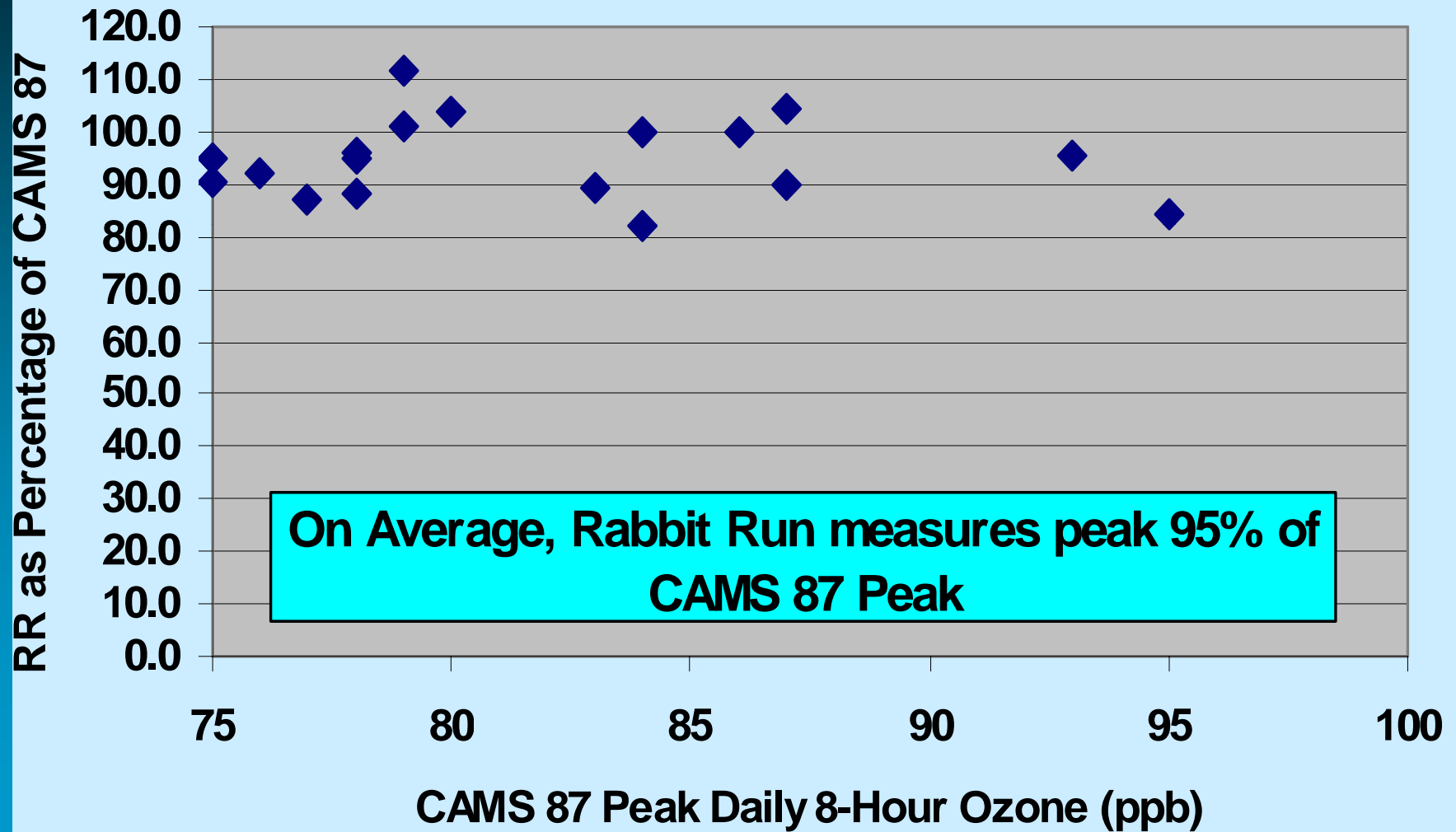


Regional Transport

- The regional transport of ozone into Victoria plays an important role in ozone measured at CAMS 87.
- Multiple observational and modeling studies performed over the past decade support the importance of ozone transport for Victoria.
- For example, ozone concentrations found upwind of Victoria are frequently similar to concentrations measured at CAMS 87.
 - As measured at ground monitoring stations (e.g., Rabbit Run, TexAQS II stations)
 - As measured by mobile sampling platforms (suburban vehicle and aircraft)



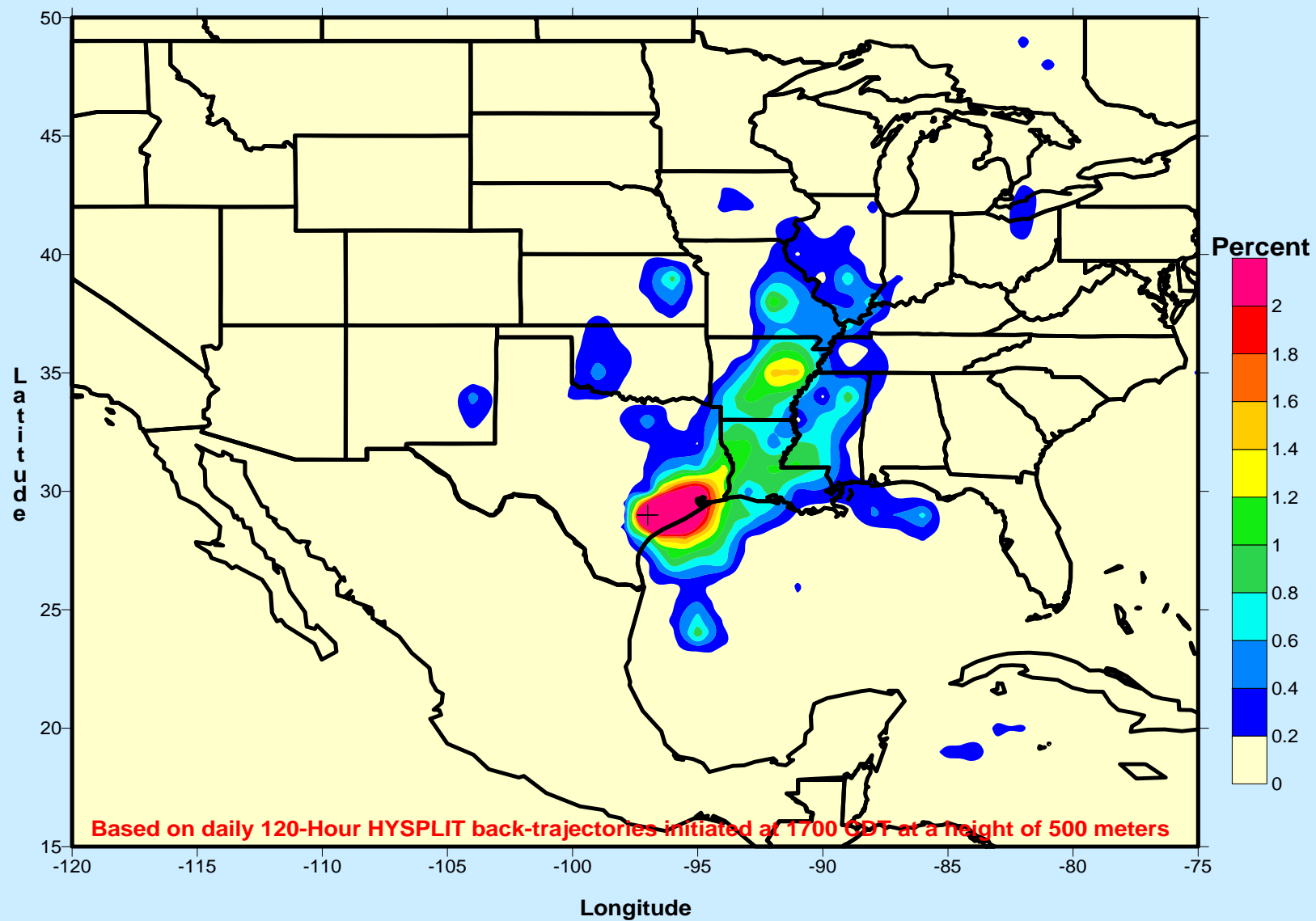
Rabbit Run as a Percentage of CAMS 87 Peak on Days When CAMS 87 ≥ 75 ppb



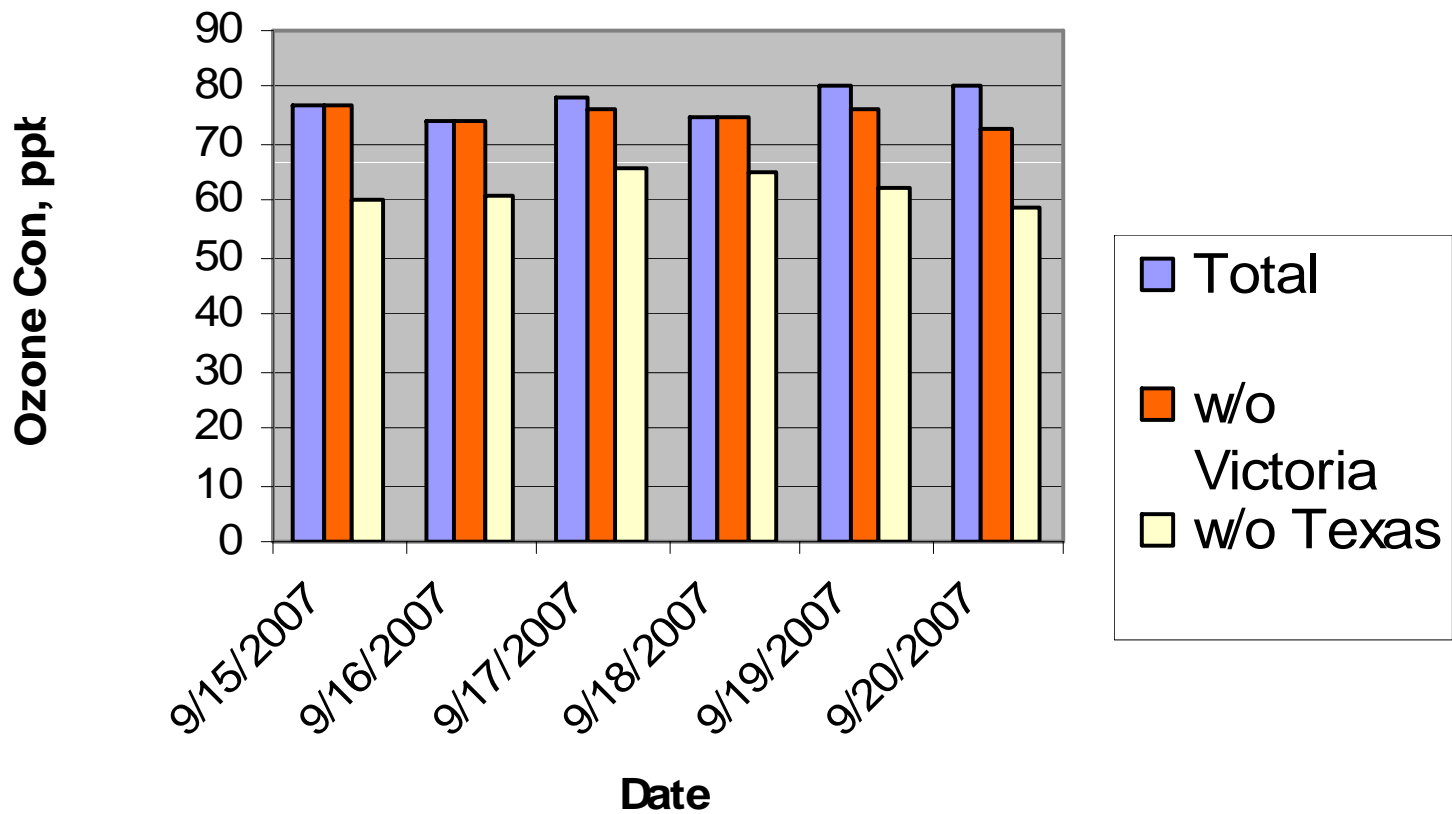
Regional Transport (continued)

- The conceptual model has found that the large-scale weather patterns during high ozone events are associated with regional transport conditions that are consistent with transport of ozone and/or its precursor compounds into Victoria from other Texas areas and regions outside Texas.
- Transport studies have found that HGBPA and states located to the east and northeast of Texas are often upwind of Victoria prior to high ozone episodes.
 - As identified by 3-day and 5-day HYSPLIT back-trajectories prior to high ozone days at CAMS 87.
- Previous modeling analyses using the Sept 15 – 20, 1999 episode found that the majority of ozone predicted in Victoria County was attributed to emission sources located in regions upwind of Victoria.

Trajectory Residence Time in Percent for Days with 8-Hour Ozone \geq 75 ppb Years 2001 - 2005: VICTORIA

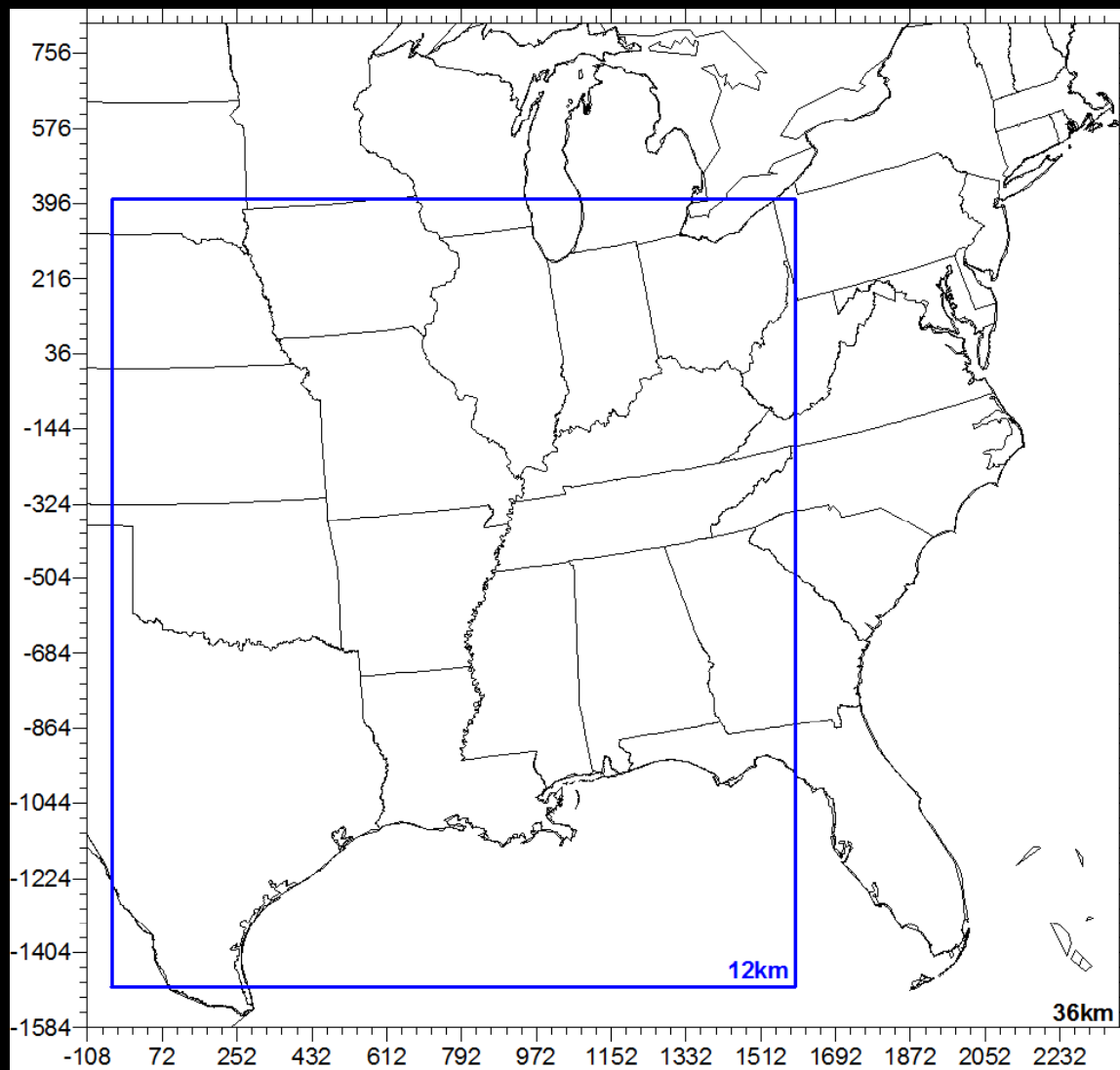


Transport into Victoria, Maximum 8-Hour Ozone Sep 1999 Episode



Preliminary APCA Results for the 2002 Seasonal Model

- One of the primary goals of the seasonal model is to investigate the role of ozone transport on Victoria air quality.
- The basecase 2002 seasonal modeling has recently been completed and APCA results are currently being processed using the daily maximum 8-hour ozone concentration in Victoria County for May – Sep 2002.
- For the purposes of today's presentation, high ozone days were defined by a predicted max 8-hour concentration ≥ 65 ppb.
 - 14 total high ozone days (1 day in May, 3 days in June, 1 day in July, 4 days in August, and 5 days in September)
- The average maximum predicted ozone concentration in Victoria County for the 14 high ozone days with max concentrations ≥ 65 ppb was 74.5 ppb.
 - For comparison, the average daily maximum 8-hour ozone concentration at CAMS 87 on the 14 predicted high ozone days was 72.8 ppb.



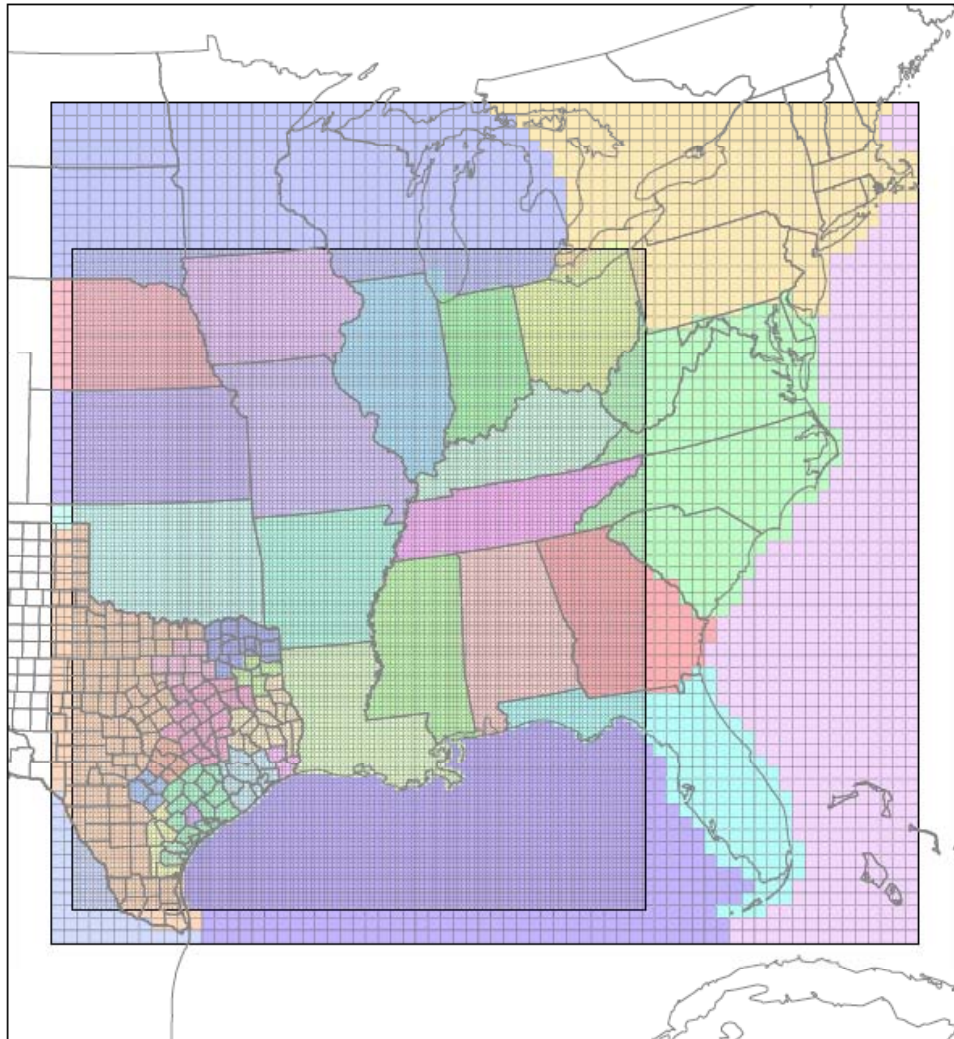
The 36km
outer and
12km inner
(blue)
horizontal
grid domains.

Victoria CAMx Domains

36km: 69 x 67 (-108, -1584) to (2376, 828)

*12km: 137 x 158 (-48, -1488) to (1596, 408)

* includes CAMx buffer cells



Detailed APCA Geographic Source Areas

8 Texas NNA/NA Areas

6 Other Texas Areas

16 States

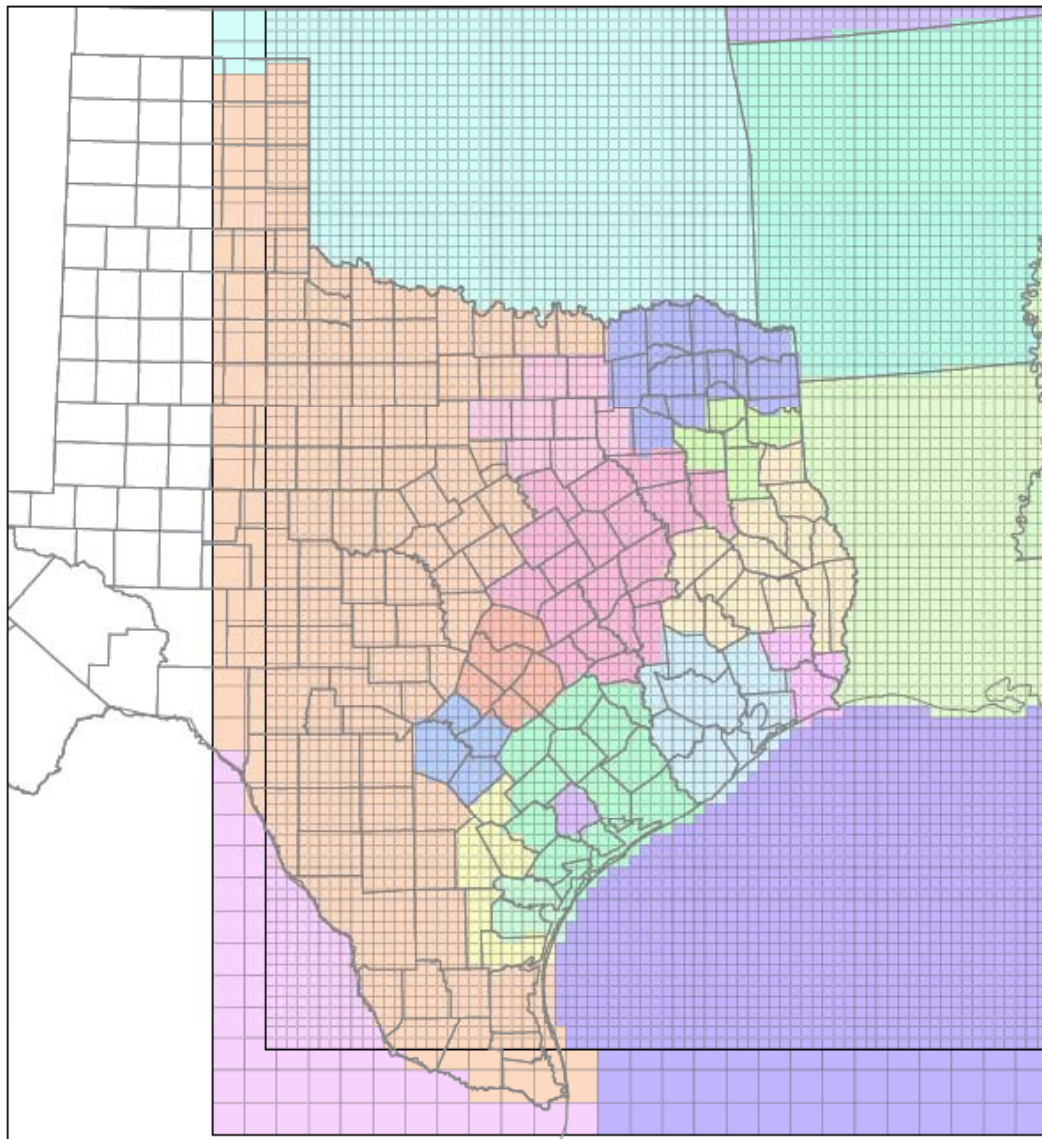
Gulf of Mexico

4 Surrounding Land Areas

Atlantic Ocean

APCA Source Region (v 1.0)

Texas, NNA/NA Areas		Texas, Other Regions		Nearby States		Other Areas	
Texas, Austin	Texas, Rural Northeast	Alabama	Kentucky	Northeastern Mexico			
Texas, BPA	Texas, Rural East	Arkansas	Louisiana	North Central USA			
Texas, Corpus Christi	Texas, Rural Central	Florida	Mississippi	Northeastern USA and Canada			
Texas, DFW	Texas, Rural Victoria	Georgia	Missouri	South Atlantic USA			
Texas, HGB	Texas, Rural Corpus Christi	Illinois	Nebraska	Water			
Texas, TLM	Texas, Other Texas	Indiana	Ohio	Atlantic Ocean and the Bahamas			
Texas, San Antonio		Iowa	Oklahoma	Gulf of Mexico			
Texas, Victoria		Kansas	Tennessee				



APCA Source Region (v 1.0)

Texas, NA/NNA Areas	Texas, San Antonio	Texas, Rural Corpus Christi	Other Areas
Texas, Austin	Texas, Victoria	Texas, Other Texas	Gulf of Mexico
Texas, BPA	Texas, Other Regions	Nearby States	Ohio River Valley States
Texas, Corpus Christi	Texas, Rural Northeast	Arkansas	Gulf Coast States
Texas, DFW	Texas, Rural East	Louisiana	Mid-Atlantic USA
Texas, HGB	Texas, Rural Central	Oklahoma	Other
Texas, TLM	Texas, Rural Victoria		

APCA Texas Regions

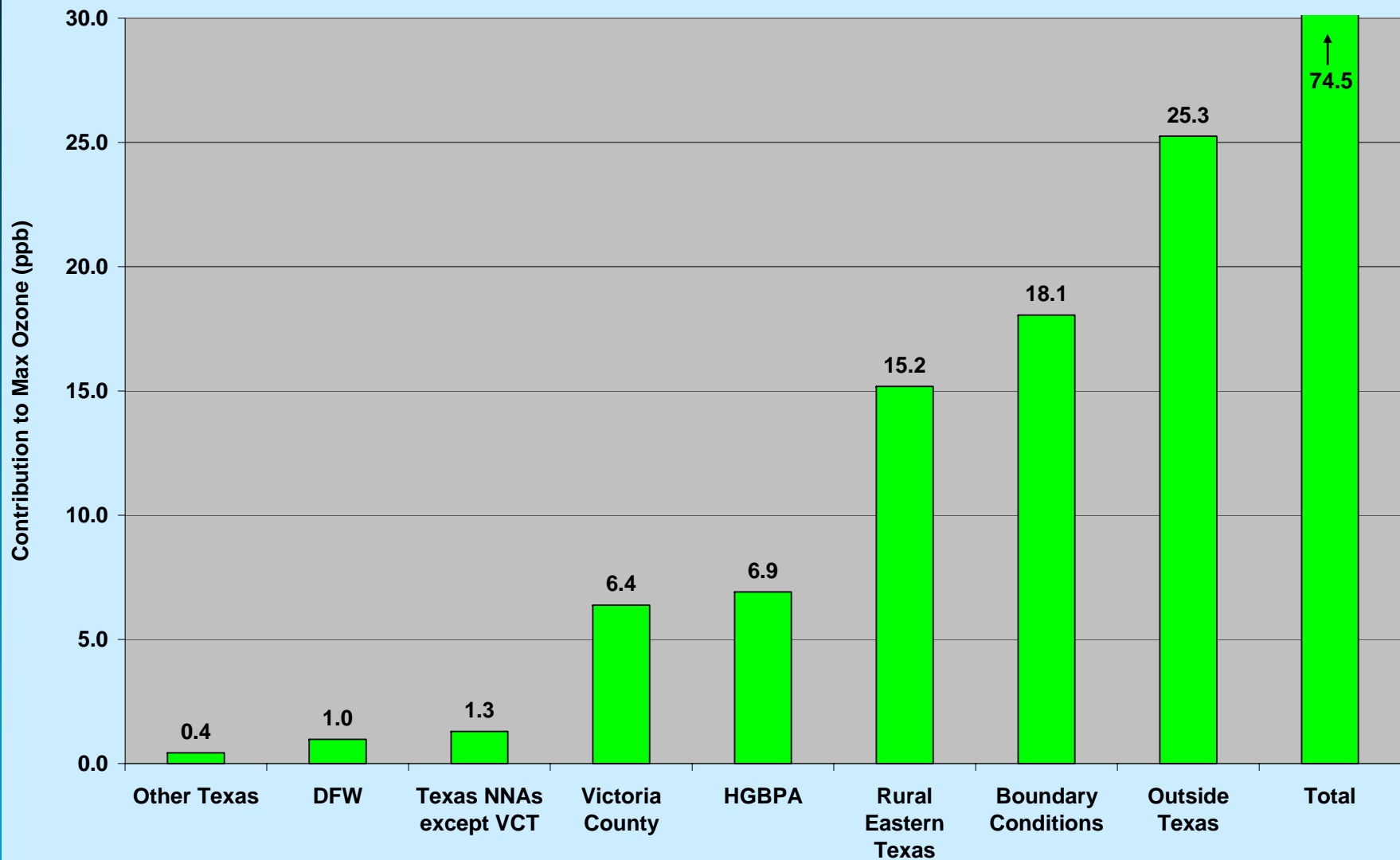
Ozone NA Areas
HGB, DFW, BPA

Ozone NNA Areas
Victoria, Corpus Christi,
Austin, San Antonio

5 East Texas Rural Regions
Northeast, East, Central,
Victoria, Corpus Christi

All Other Texas

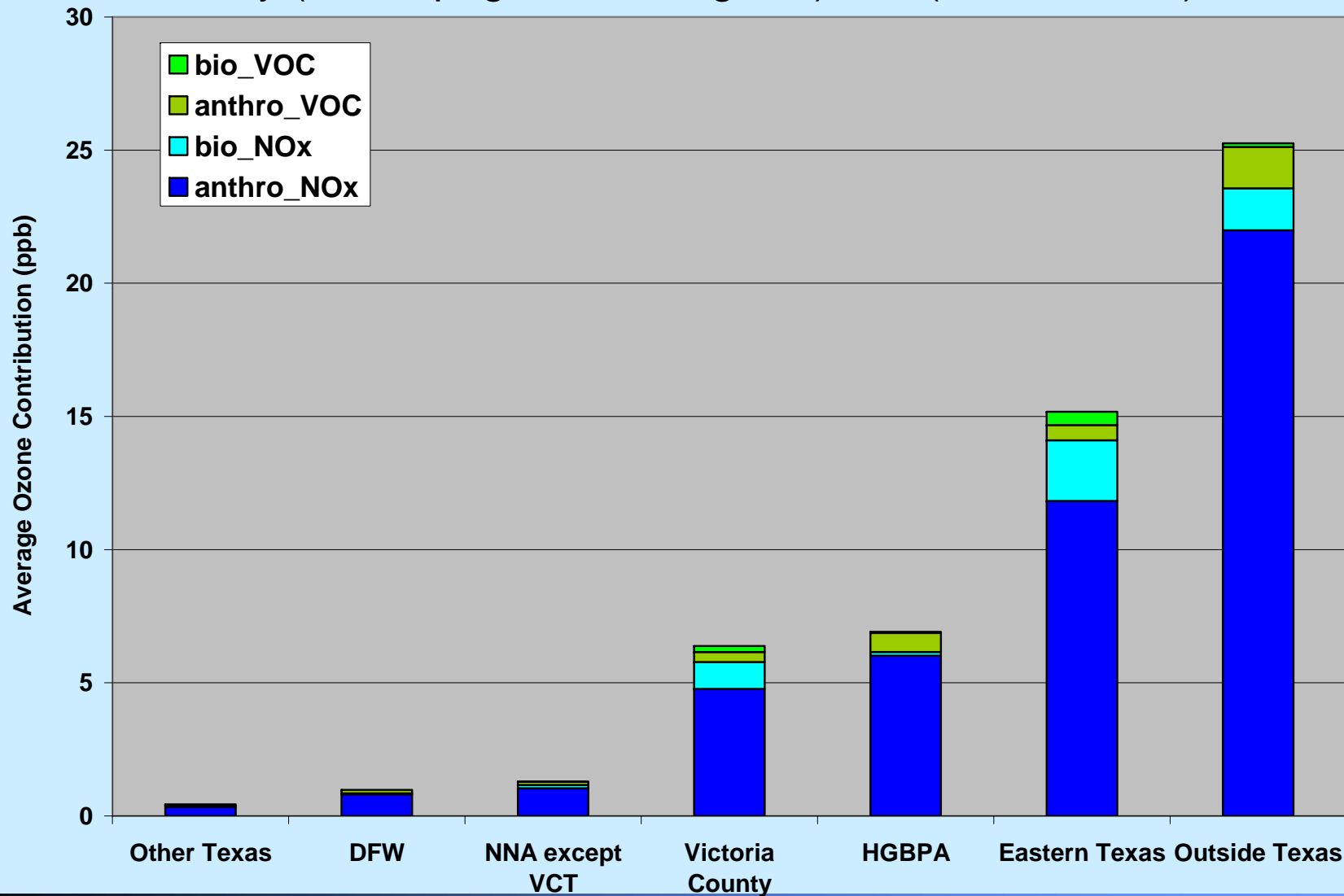
Average Ozone Contributions for Selected Aggregated Source Groups for High Ozone Days in Victoria County



Preliminary APCA Results for the 2002 Seasonal Model (continued)

- **APCA uses ozone reaction tracers to track ozone precursor emissions of VOC and NO_x as well as ozone formed from these emissions.**
 - **The above methodology provides an estimate of the fractions of ozone arriving at a receptor that were formed under VOC- or NO_x-limited conditions.**
- **APCA assigns ozone contributions to biogenic emission sources only from the interaction of biogenic VOC with biogenic NO_x.**
 - **APCA results are relevant to the design of emissions control strategies.**

Average Ozone Contributions for Selected Aggregated Source Groups for High Ozone Days in Victoria County by (Anthropogenic or Biogenic) and (NO_x or VOC)



Summary

- EPA will likely lower the current primary (and possibly secondary) NAAQS for ozone concentrations averaged over 8 hours of 0.075 ppm.
 - Revision will be announced in December 2009.
- The proposed technical work plan for FY 2010-2011 will address issues raised by a lowered standard, including transport and follow-on APCA modeling.

Questions?