Proposed Technical Projects for Victoria Fy 2010-2011

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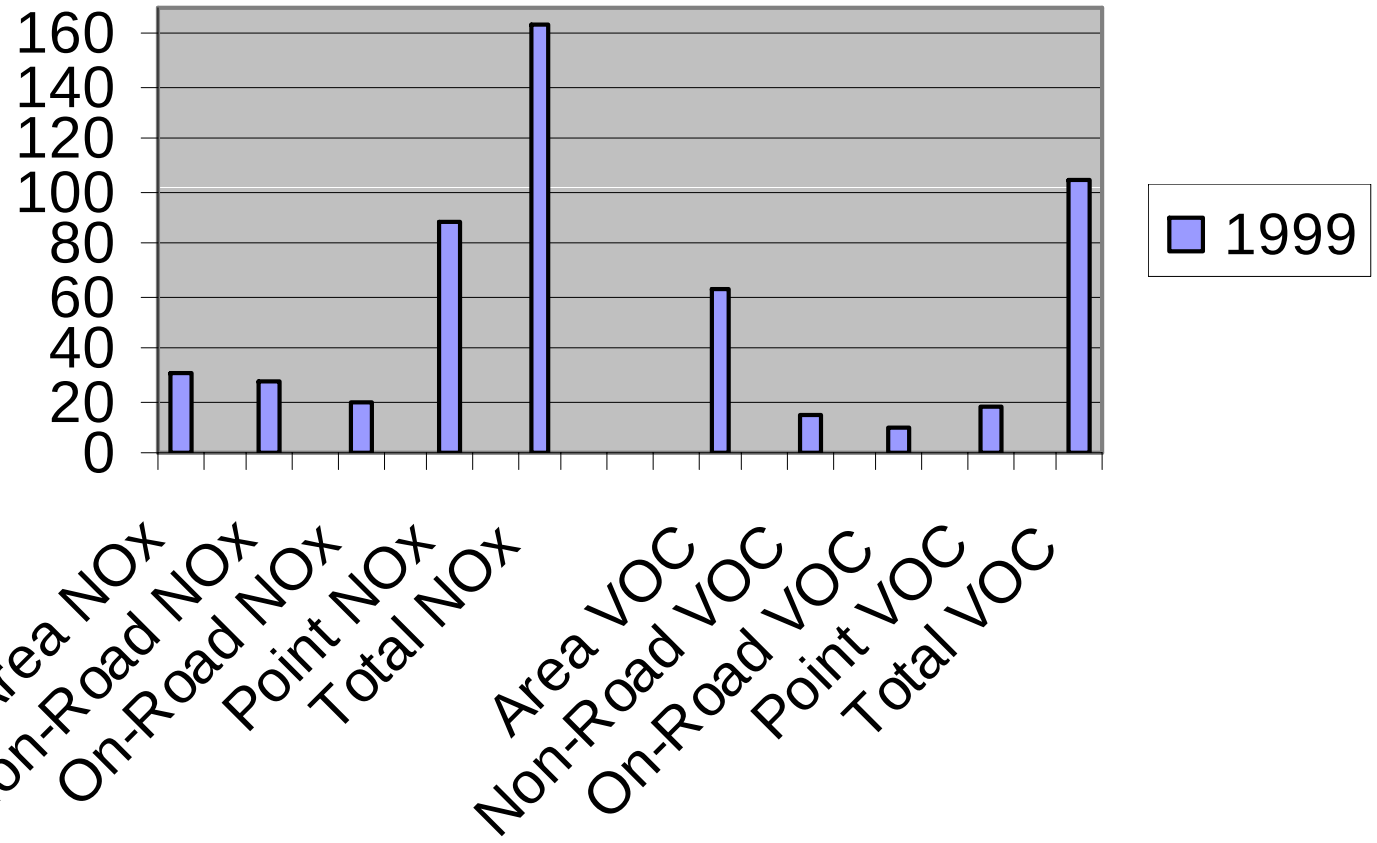
1999 Victoria Area Emissions, tons/day



Emission Inventory Development

Non Road Emissions = emission rate x
load factor x
horsepower x
time

Top Down – use emission rates and load factor averaged over all activities

Bottom up – use specific emission rates and specific load factors for each activity and then add emissions for each activity

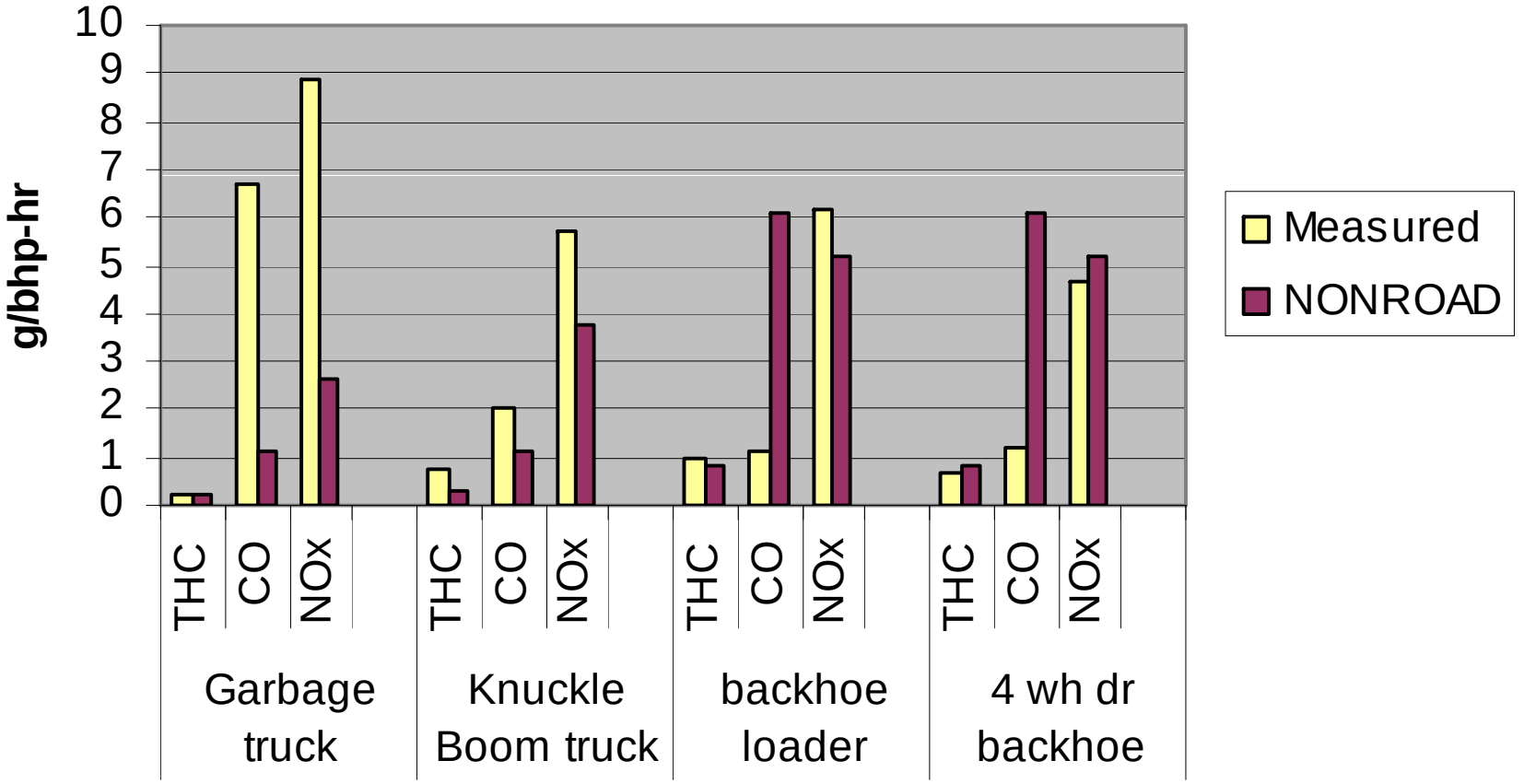
Example of Load factors and NOx emission rate for Garbage Trucks activities

activity	mode	hours	Load factor	NOx Em
Not working	idle	0.03	0.203	23.57
travel	idle	0.08	0.076	13.64
	acceleration	0.14	0.688	3.63
	decelerate	0.18	0.388	3.62
	low cruise	0.12	0.534	8.67
	med cruise	0.19	0.504	2.31
	high cruise	0.01	0.104	2.31

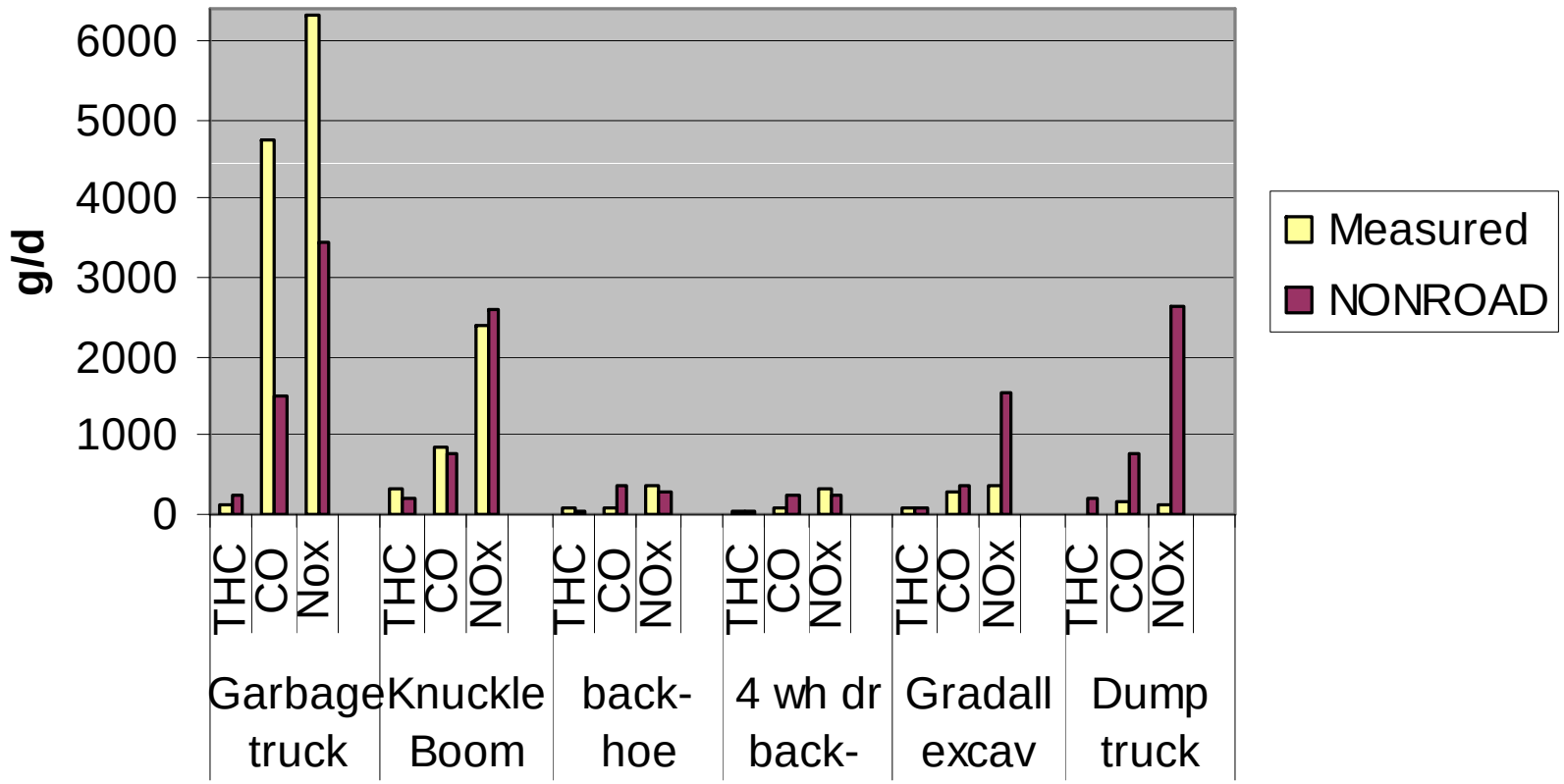
Example of Load factors and NOx emission rate for Garbage Trucks activities

activity	mode	hours	Load factor	NOx Em
collection	idle	1.99	0.214	6.56
	acceleration	1.52	.556	3.65
	decelerate	0.79	0.414	3.25
	low cruise	0.32	0.583	4.68
	med cruise	0.05	0.498	2.49
	high cruise	0.03	0.137	2.83
	compaction	0.82	0.230	17.57

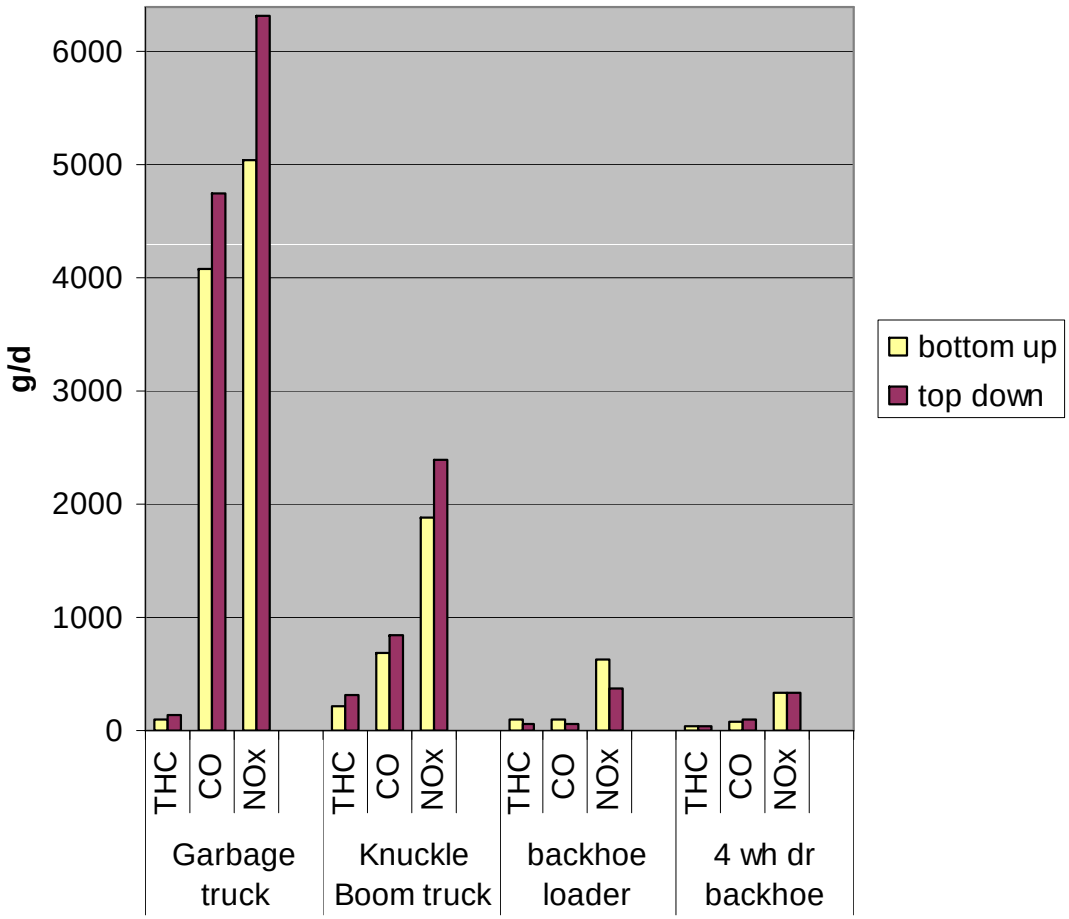
Emission Factors for Diesel Equipment Sampled with PEMS in Victoria, Texas in 2008



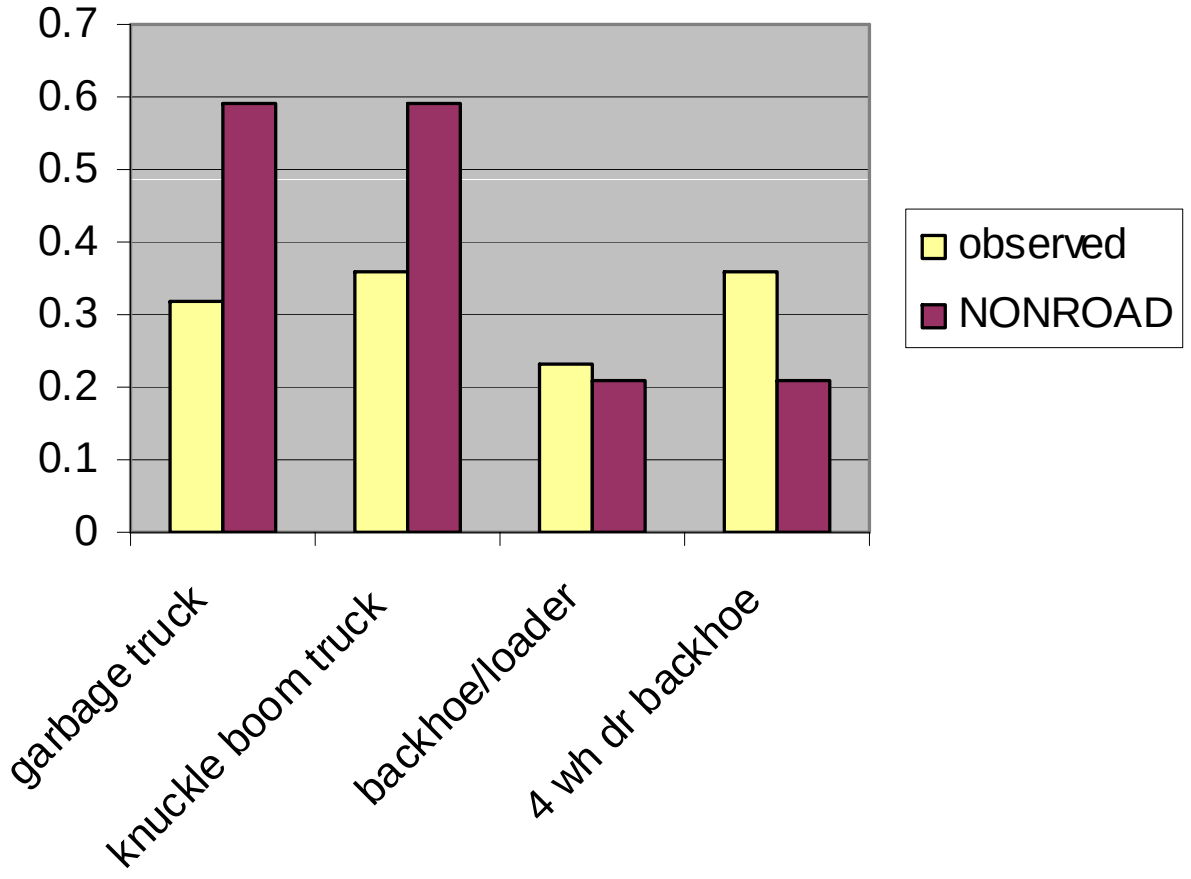
Top Down Total Emissions for Diesel Equipment Sampled with PEMS in Victoria, Texas in 2008



Total Emissions for Diesel Equipment Sampled with PEMS in Victoria, Texas in 2008 Bottom UP Approch compared to Top Down Approach



Load Factors for Diesel Equipment Sampled with PEMS in Victoria, Texas in 2008



Emission Inventory Development

Task 1.1 Emission Inventory Development

Collect activity data for diesel equipment

- Utilities – backhoes/front end loader, dump trucks
- Street dept – gradall, dump trucks
- Knuckle boom recycling trucks
- Garbage trucks
- Wheeled loaders

Task 1.2 Emissions calculations

- Use activity data in Task 1.1 and PEMS data to calculate annual emissions.

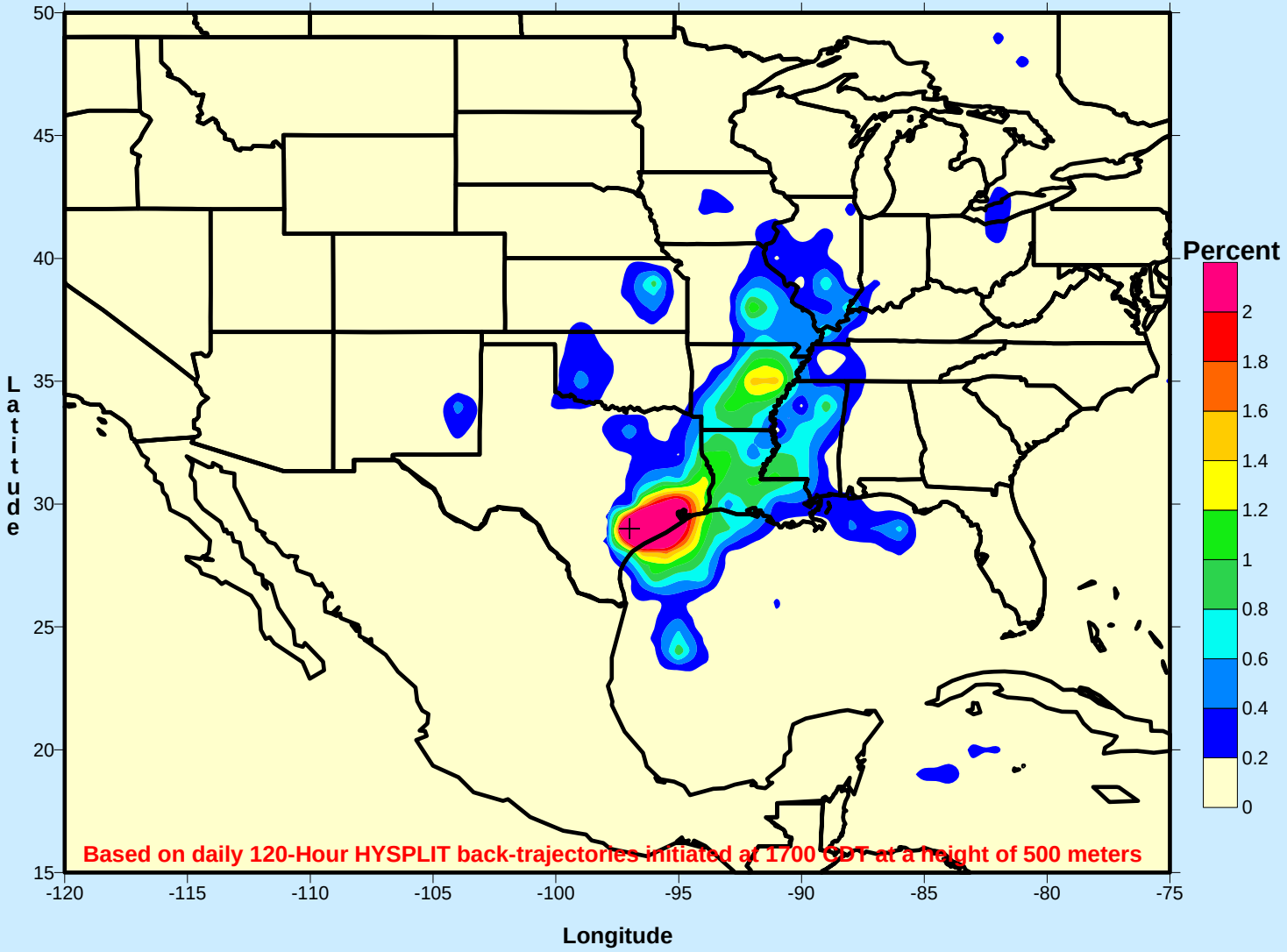
Photochemical Modeling

Task 2.1 Update conceptual model for Victoria to include data for the 2009 and 2010 seasons.

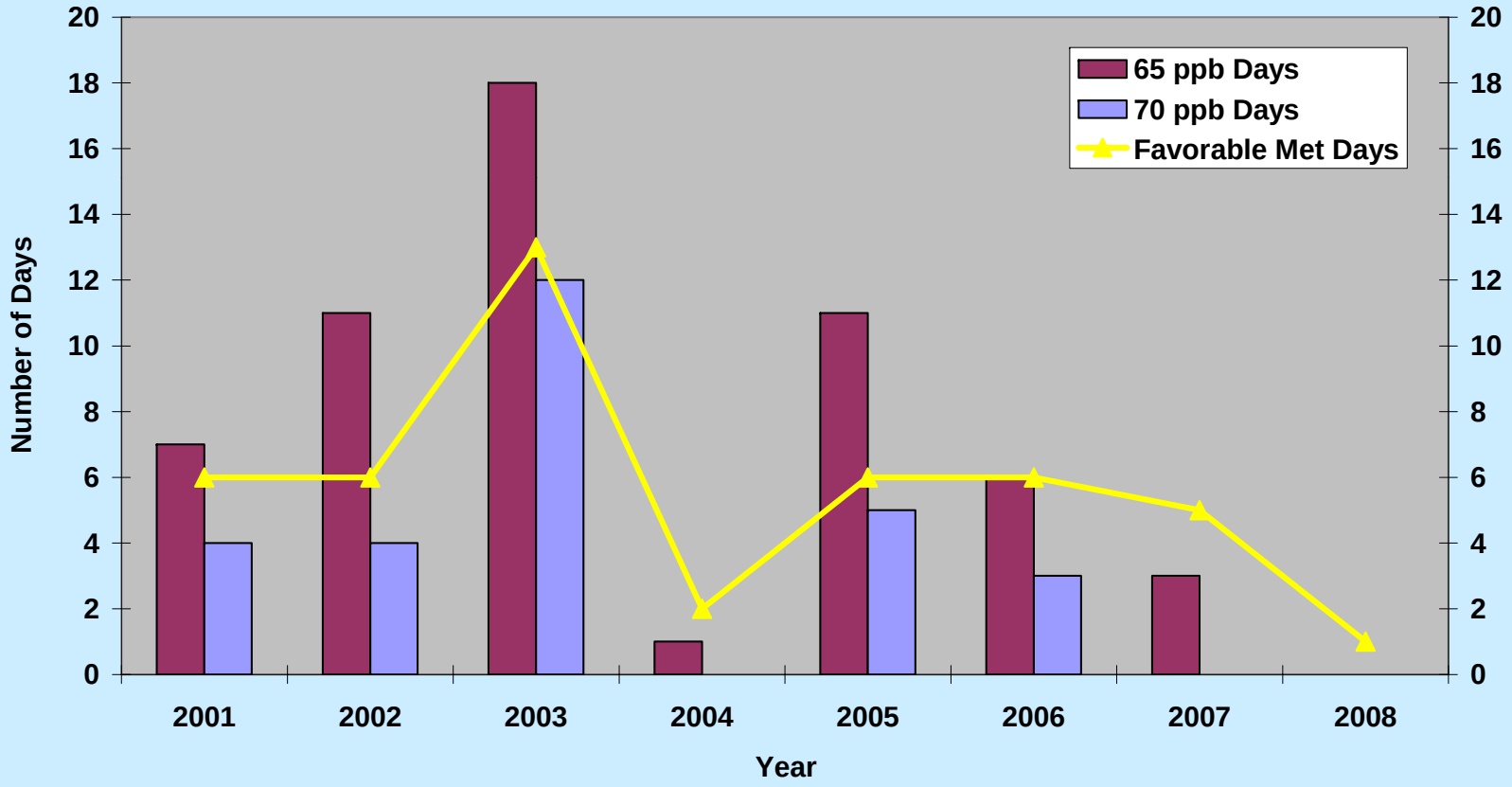
1. Analyze meteorology for days with high ozone during 2009 and 2010 to determine if the meteorological conditions agree with those from the past events.
2. Analyze patterns of 5 day trajectories for high days.
3. Use conceptual model to identify days that are conducive for formation of high ozone in 2009 and 2010 and compare to monitored values.

Trajectory Residence Time in Percent for Days with 8-Hour Ozone >= 75 ppb

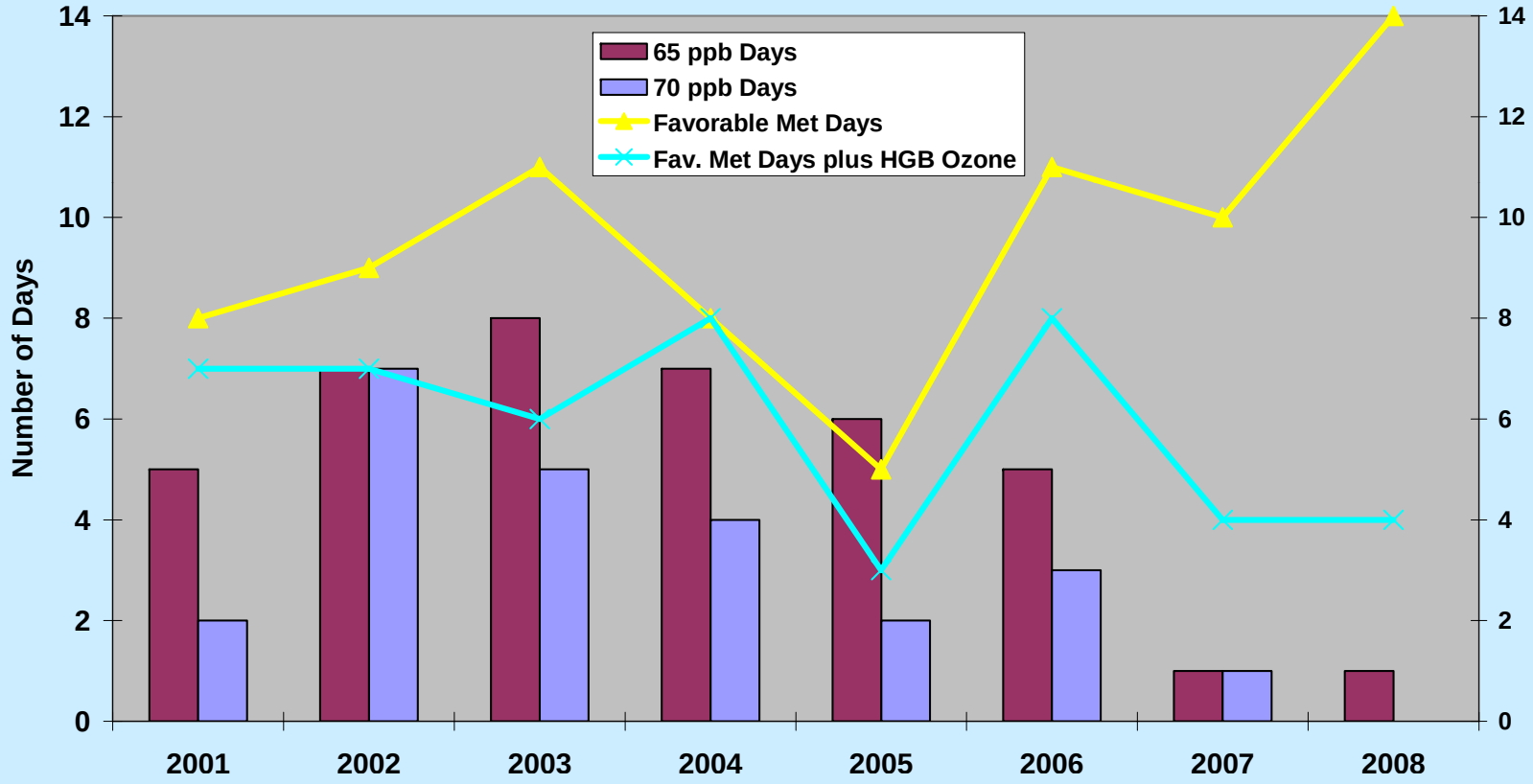
Years 2001 - 2005: VICTORIA



Results: Met Favorable Days
Late April – June
2001 - 2008



Results: Met Favorable Days and South HGB Max >= 74 ppb Late August – Early October



Photochemical Modeling

Task 2.2 Develop a future year emissions inventory for modeling.

1. The ozone standard is likely to be lowered.
2. Develop a future emissions inventory that is consistent with the future attainment date for the new standard.
3. This emissions inventory will be used to evaluate the effect of transport, the effectiveness of proposed control strategies and proposed new sources.

Photochemical Modeling

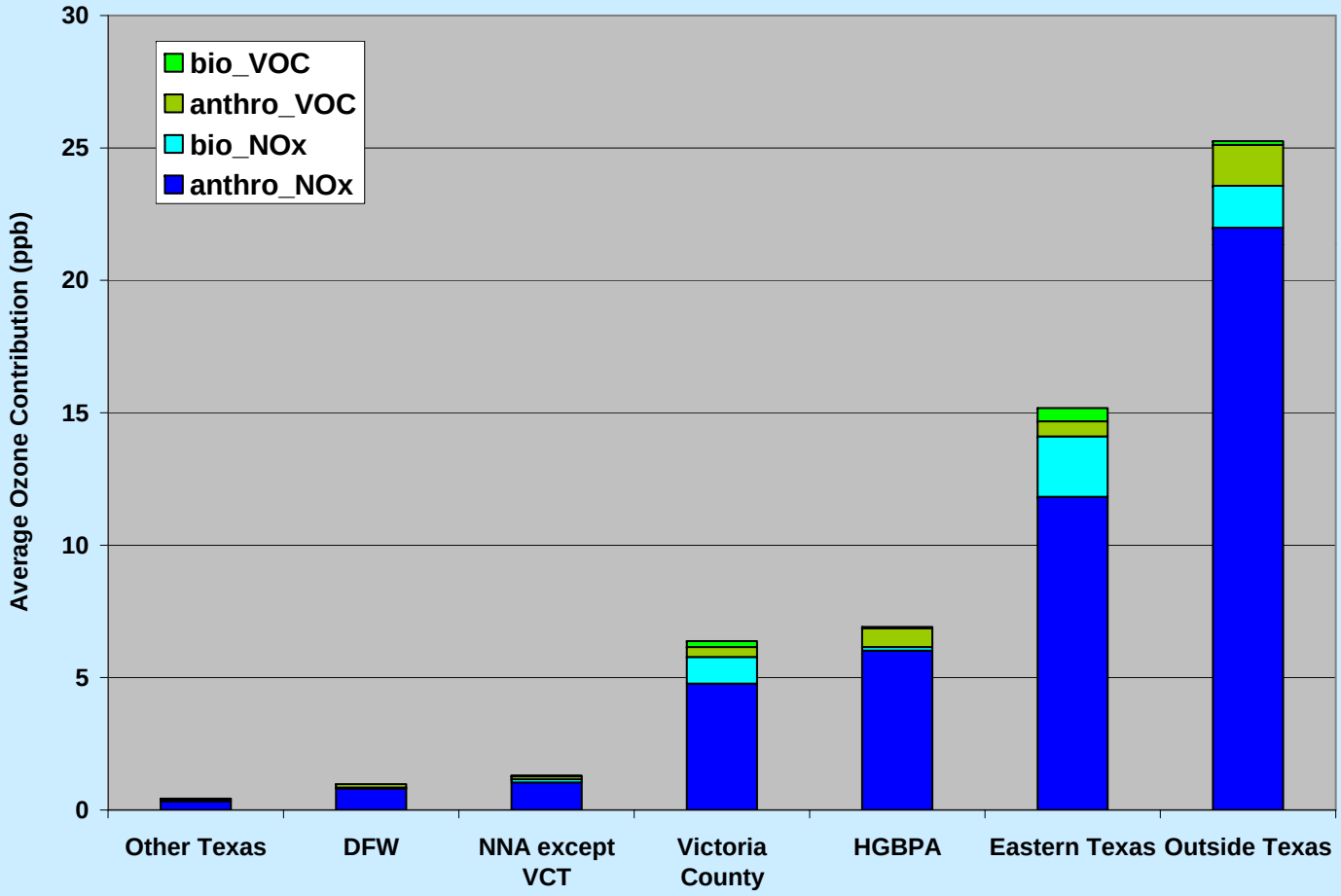
Task 2.3 Evaluation of industrial growth, emission inventory improvements and regional transport on Victoria air quality.

The 2002 seasonal model will be used with the future year emissions inventory to:

1. Evaluate proposed new sources.
2. Determine if the reduction of NOx or VOC emission in Victoria is more effective in reducing ozone concentrations in Victoria.
3. Determine which source categories in Victoria make the most contributions to ozone concentrations.

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

by (Anthropogenic or Biogenic) and (NOx or VOC)



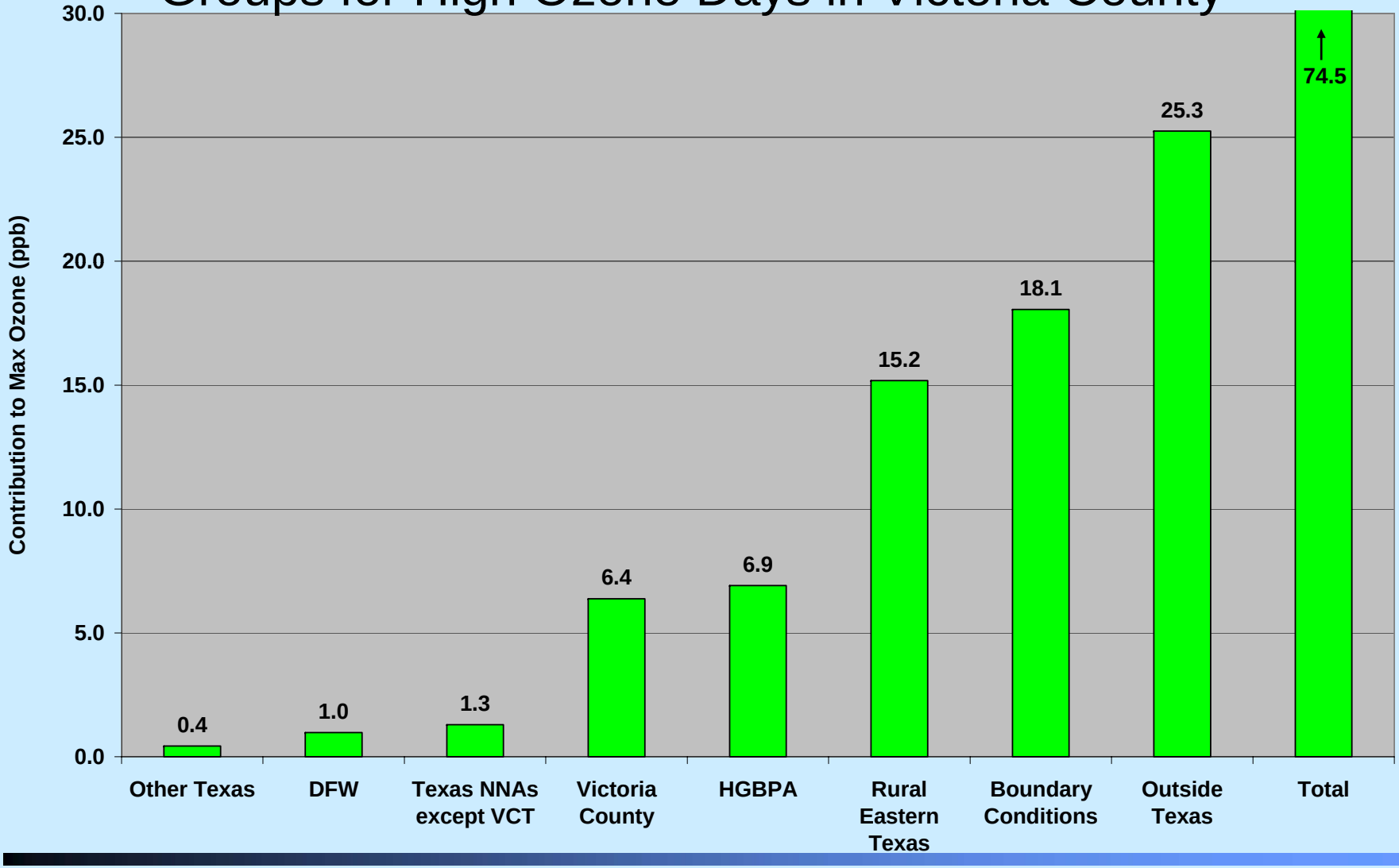
Photochemical Modeling

Task 2.4 Evaluation of transport on the Victoria area using the future year emissions inventory.

Use the 2002 seasonal model with future year emissions to evaluate the role of transport in Victoria, including:

1. The impact of various geographic source areas.
2. The impact of various source categories in each of the geographic source areas.
    - Point
    - Area
    - On-road mobile
    - Non-road mobile

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



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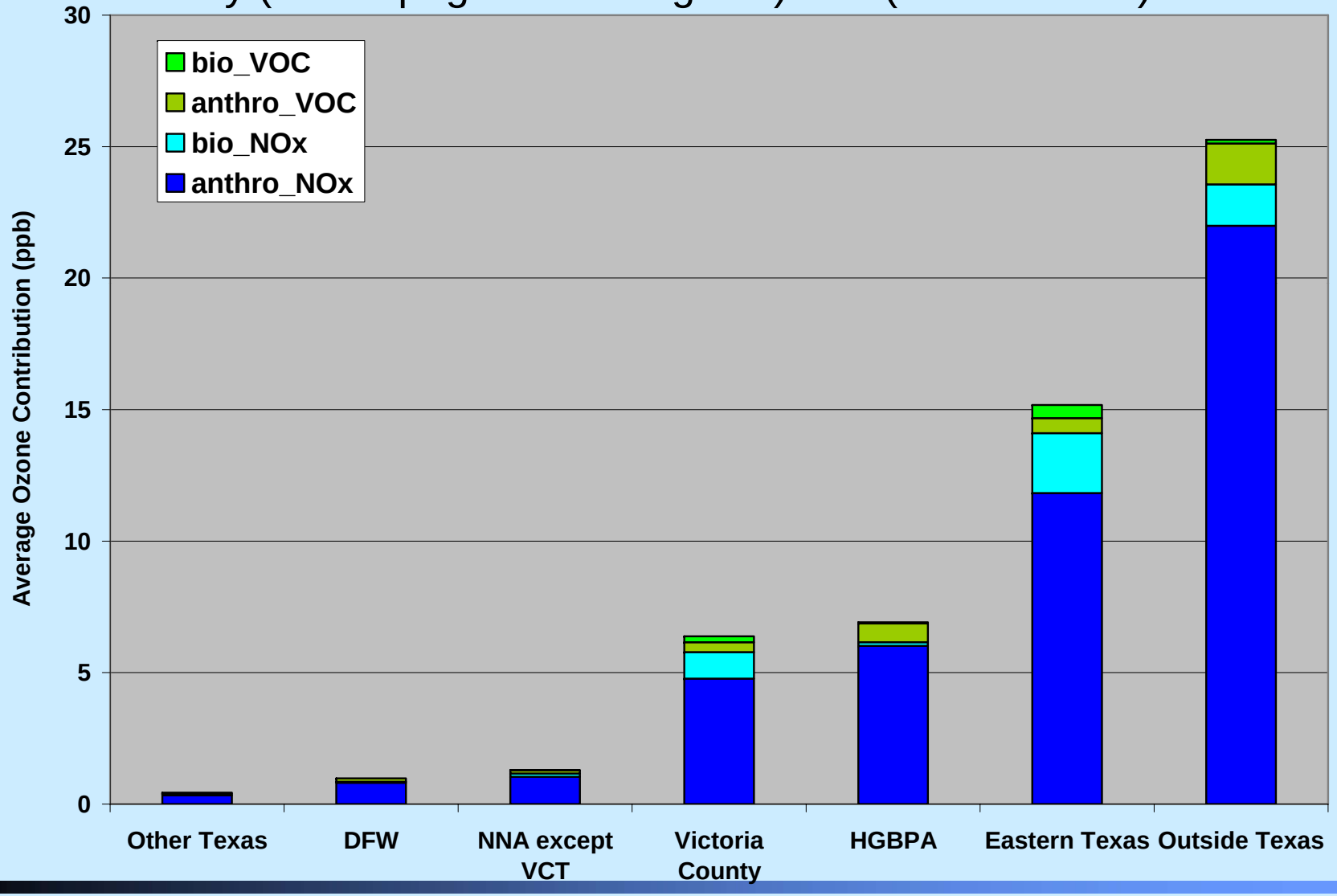
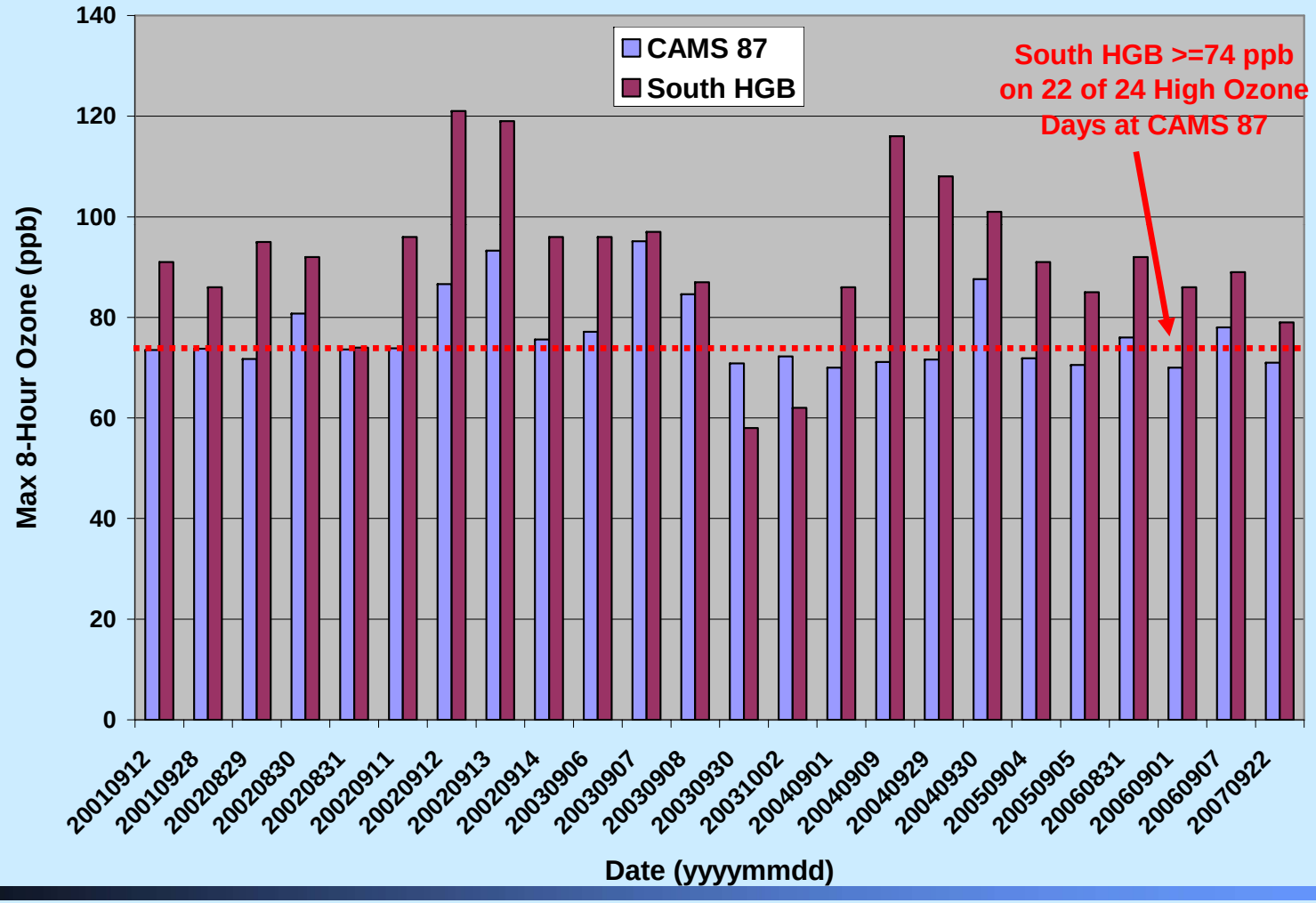


Max 8-Hour Ozone at CAMS 87 and South HGB stations
Days with CAMS 87 >= 70 ppb: Late August – Early October



Photochemical Modeling

Task 2.5 Evaluation of future control strategies.

- A set of contingency control measures has been identified in the State Implementation Plan for Victoria.
- These contingency control measures would be implemented only if the design value exceeds the standard.
- If the area has to implement some of the contingency control measures, evaluate the proposed controls with modeling to determine which ones will be effective in reducing ozone concentrations.

Contingency Measures for Victoria

- **Locally enforced idling limitations**
  Extend this control measure to the Victoria area which limits idling of gasoline and diesel-powered engines in heavy-duty motor vehicles. NOx reductions.

- **Texas Emission Reduction Plan (TERP)**
  Extend the existing rules for TERP to the Victoria area. NOx reductions

- **Control rich-burn, gas-fired, reciprocating internal combustion engines.**
  Control rich-burn, gas-fired, reciprocating internal combustion engines located in the Victoria area to meet NOX emission specifications. NOx reductions

Contingency Measures for Victoria

- **Control of crude and condensate storage tanks**

  Install controls on crude and condensate storage tanks at upstream oil and gas exploration and production sites or midstream pipeline breakout stations with uncontrolled flash emissions greater than 25 tons per year. VOC reductions

- **Controls for tank fittings on floating roof tanks**

  Apply more stringent controls for tank fittings on floating roof tanks, such as slotted guidepoles and other openings in internal and external floating roofs. VOC reductions

- **Limit emissions from landings of floating roofs**

  Limit emissions from landings of floating roofs in floating roof tanks. VOC reductions

Contingency Measures for Victoria

- **Control of VOC emissions from degassing operations for storage tanks**

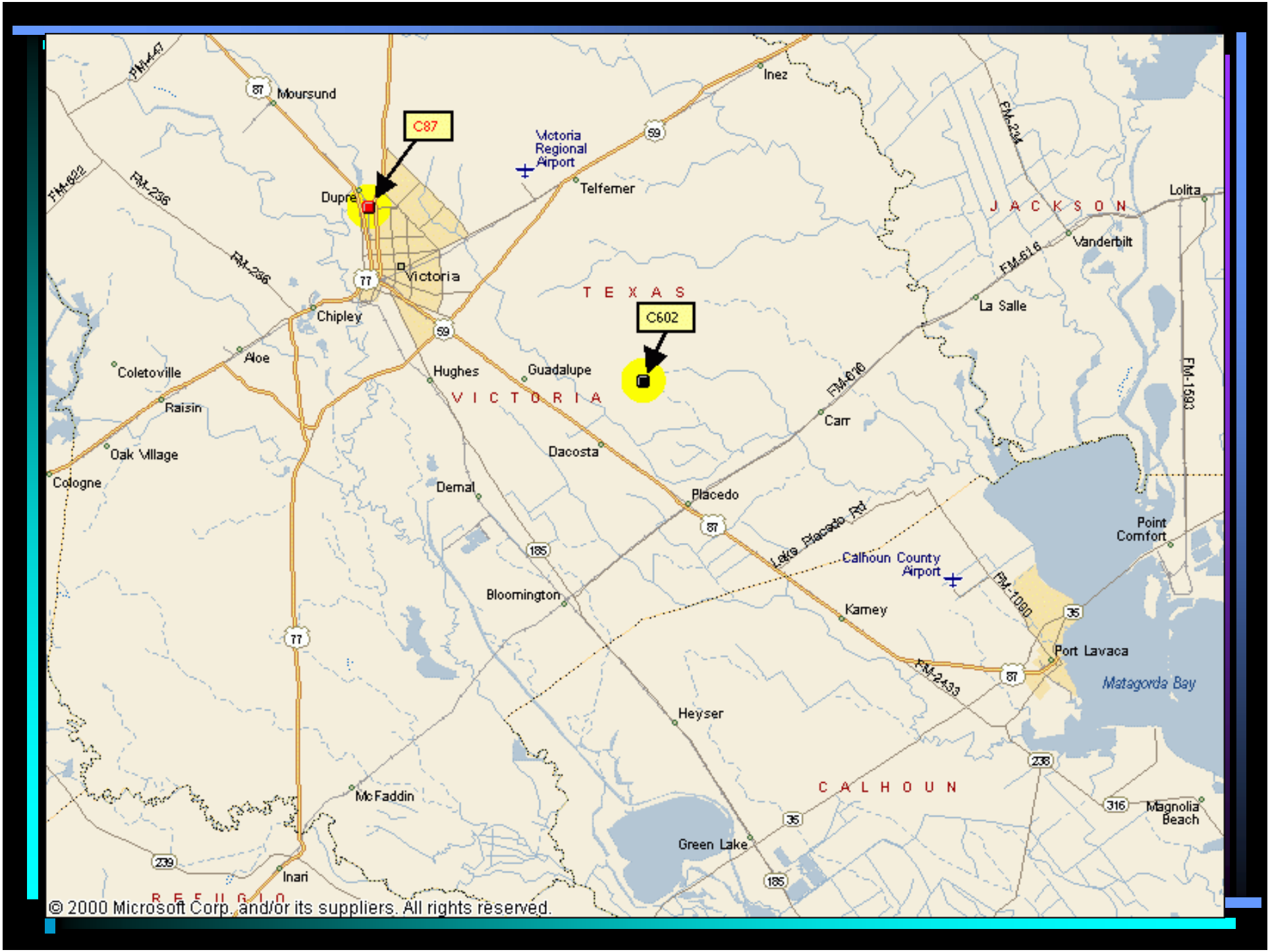
  VOC reductions
- **TxLED for marine diesel**

  NOx reductions

Ambient Air Quality Monitoring, Data Assimilation and Data Analysis

Task 3.1 Routine ambient air monitoring at two new sites:

- Sites would be located upwind of the urban area to the northeast and downwind of the urban area to the southwest.


C87
C602
Victoria Regional Airport
Calhoun County Airport
Moursund
Inez
Dupre
Telferner
Victoria
Chipley
Aloe
Coletoville
Raisin
Oak Village
Cologne
Hughes
Guadalupe
Dacosta
Demal
Placedo
Carr
La Salle
Vanderbilt
Lolita
Point Comfort
Port Lavaca
Karnes
Bloomington
Heyser
McFaddin
Inari
Green Lake
Magnolia Beach
Matagorda Bay
Lake Placedo Rd
FM-447
FM-622
FM-236
FM-616
FM-1593
FM-1090
FM-2433
FM-234
TEXAS
VICTORIA
JACKSON
CALHOUN
REFUGIO
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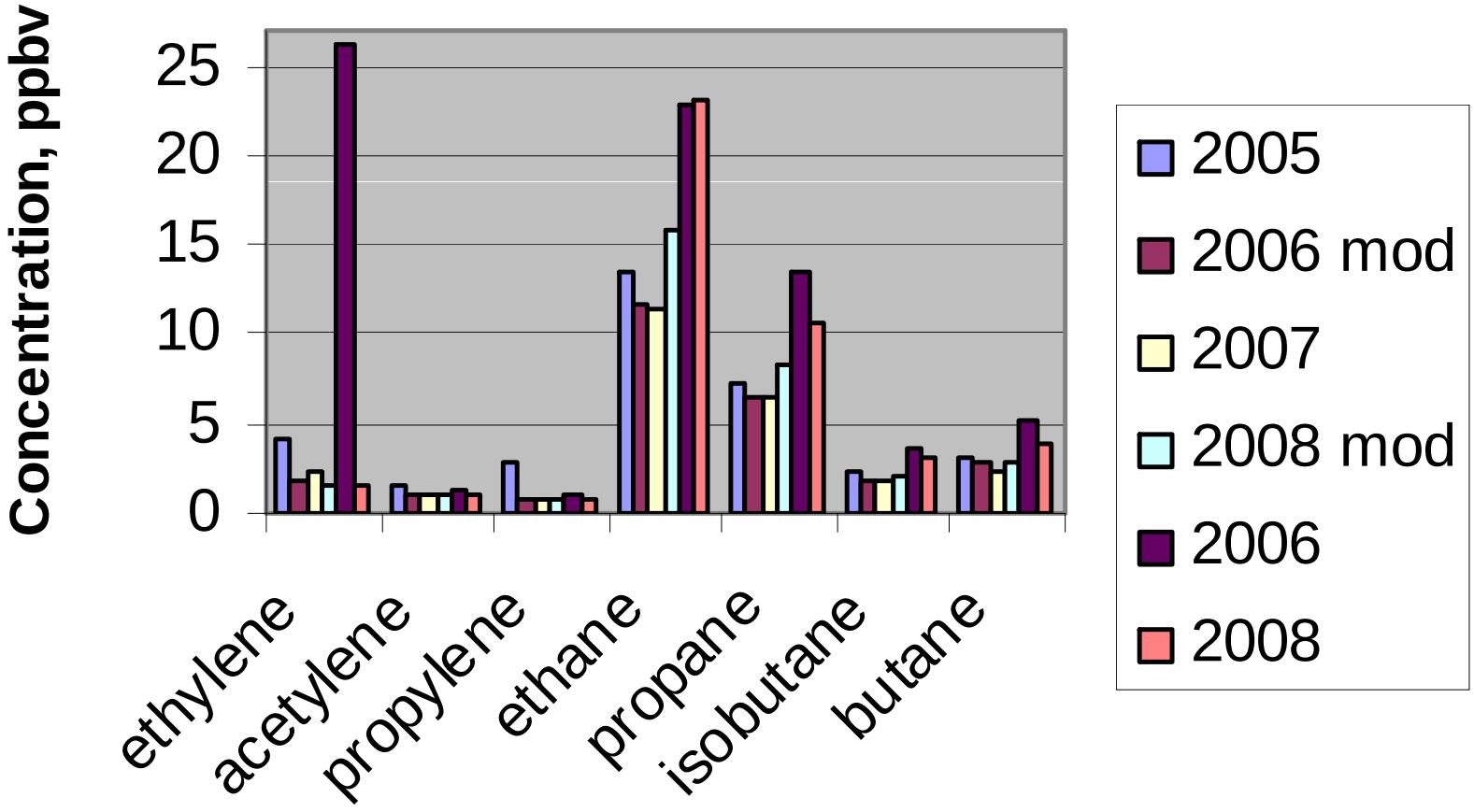
Ambient Air Quality Monitoring, Data Assimilation and Data Analysis

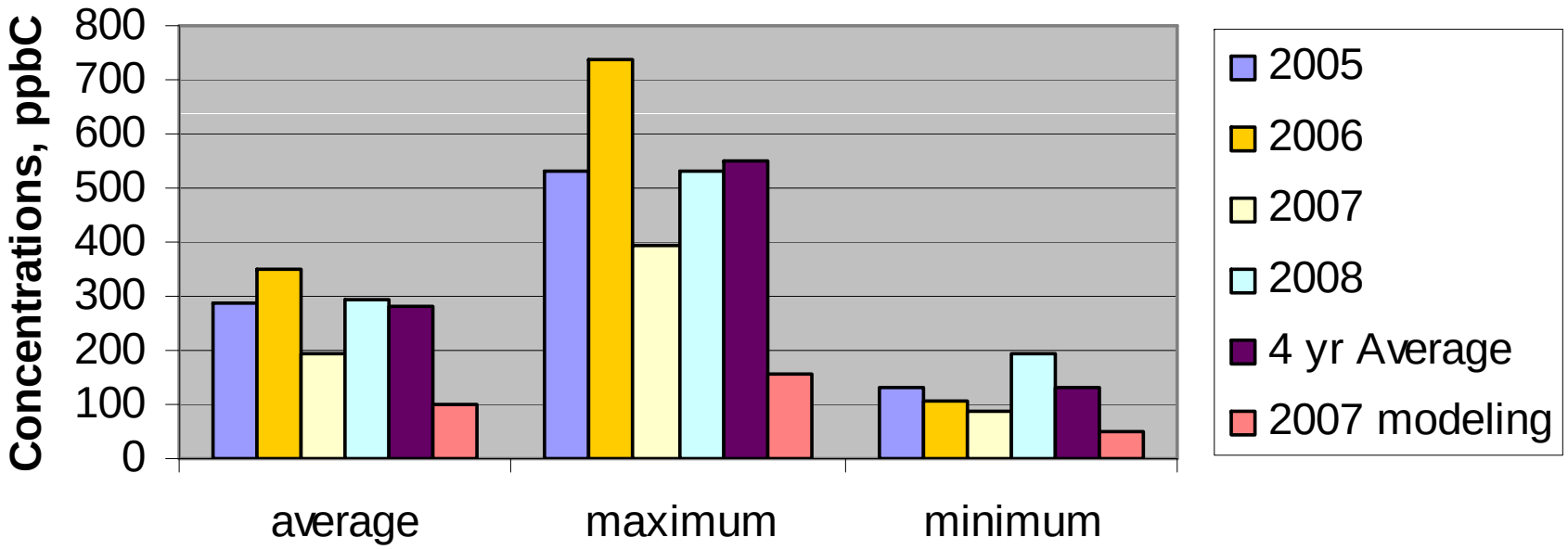
Task 3.2 Analysis of VOC trends in the Victoria area

- Collect VOC canister samples on 7 days at 4 sites

Average Concentrations in Victoria for Selected Compounds



Total Measured VOC Concentrations Compared to Total VOC Concentrations Used in 2007 Modeling



Ambient Air Quality Monitoring, Data Assimilation and Data Analysis

Task 3.3 Hydrocarbon, NOx and Ozone Flux Measurements with mobile sampling vehicle

Questions?