

Proposed Technical Projects for Victoria Fy 2010-2011

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Fy 2010-2011 Work Plan

Phase I

April 1, 2010 to Aug 31, 2010

Phase II

Sep 1, 2010 to Aug 31, 2011

Phase I Task 1 Conceptual Description

Update conceptual description to include data through 2009

Base all analyses on three levels of the potential 8-hour ozone standard

- **60 – 64 ppb**
- **65 – 69 ppb**
- **>70 ppb**

Identify necessary conditions for formation of high ozone concentrations

Phase I Task 2 Ambient Monitoring

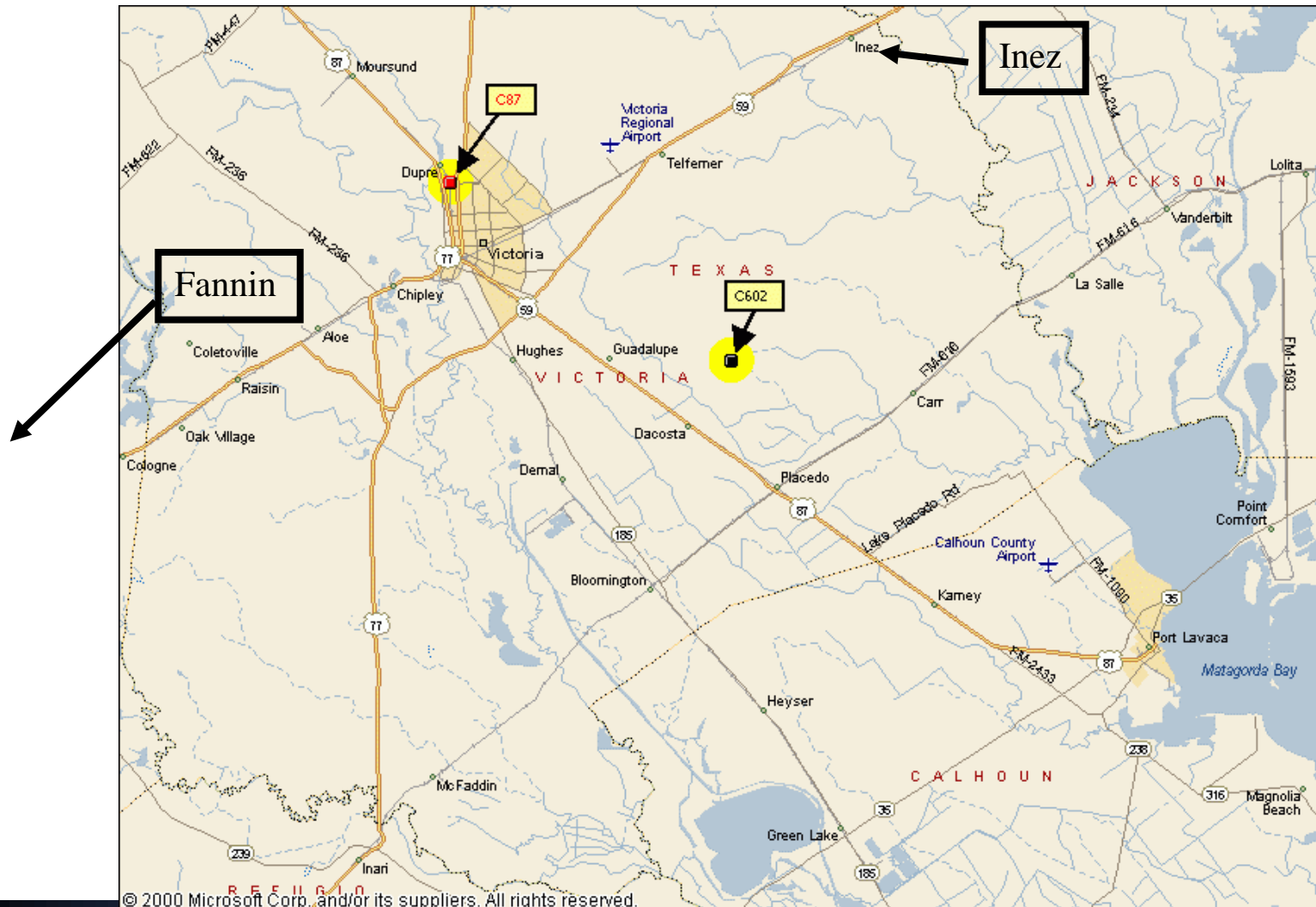
- **Two new enhanced upwind and downwind background monitoring sites**
- **Routine, seasonal, hourly ambient monitoring data**
- **In place April 15 to Nov 15**
- **Monitor for 2010 and 2011**
- **Data to TCEQ LEADS**
- **Measure**
 - **Ozone**
 - **NOx at one site**
 - **Wind speed**
 - **Wind direction**
 - **Temperature**

Phase I Task 2 Ambient Monitoring

Two new sites

- **Sites based on results from conceptual description, photochemical modeling and surface mobile sampling**
- **High ozone concentrations measured when the winds are from the east to east northeast**
- **Upwind site at Inez**
 - **West Industrial Independent School District Elementary School**
- **Downwind site at Fannin**
 - **Coletto Creek Power Plant**
 - **Near railroad maintenance facility**

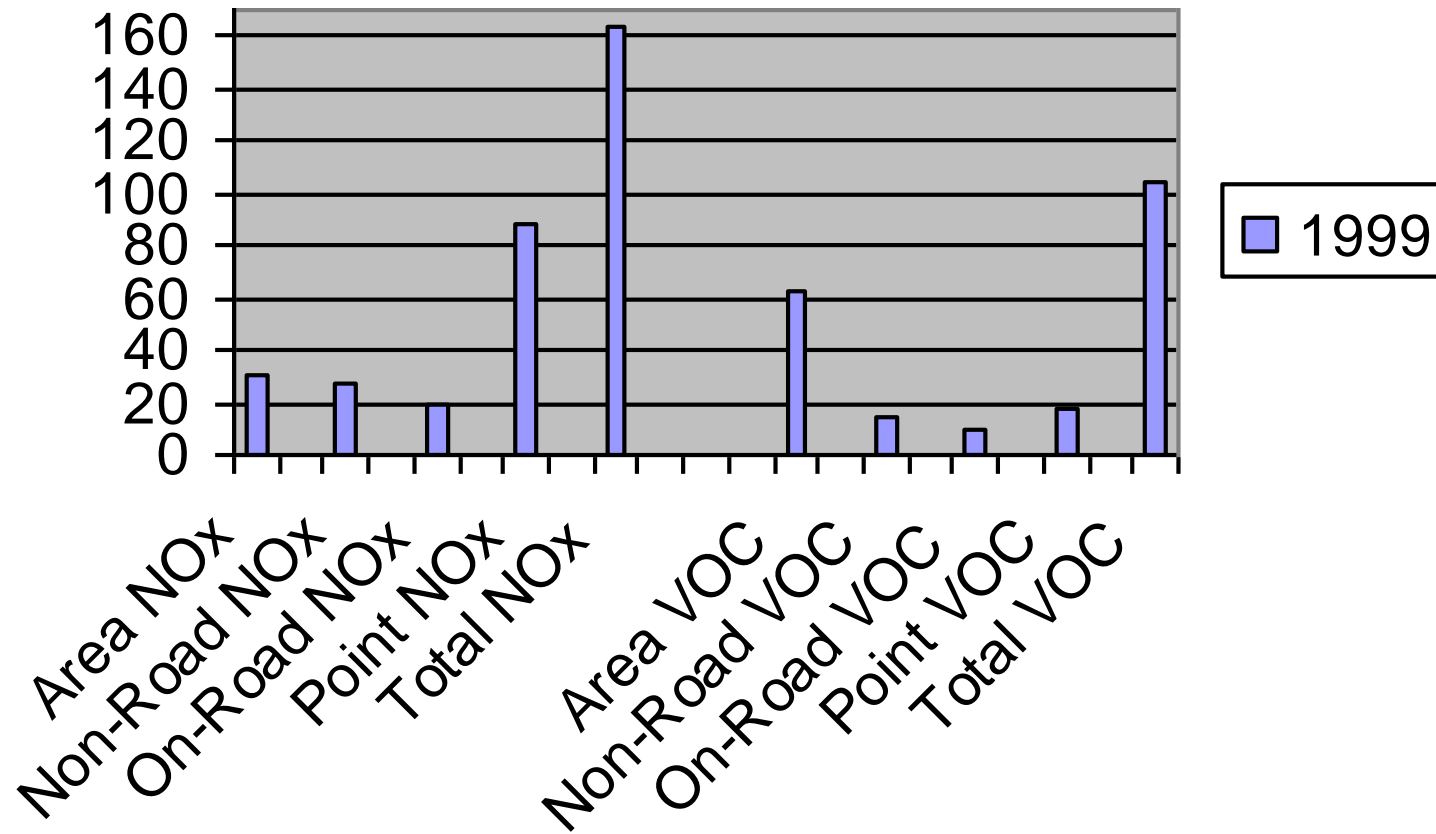
Phase I Task 2 Ambient Monitoring



Task 3.1 Emissions Inventory Review

- **Review area and non-road portions of 2005 and 2008 National Emissions Inventories**
- **Provided by TCEQ**
- **Identify significant source categories that believe**
 - **under or over estimated**
 - **Can provide more accurate emissions inventory**

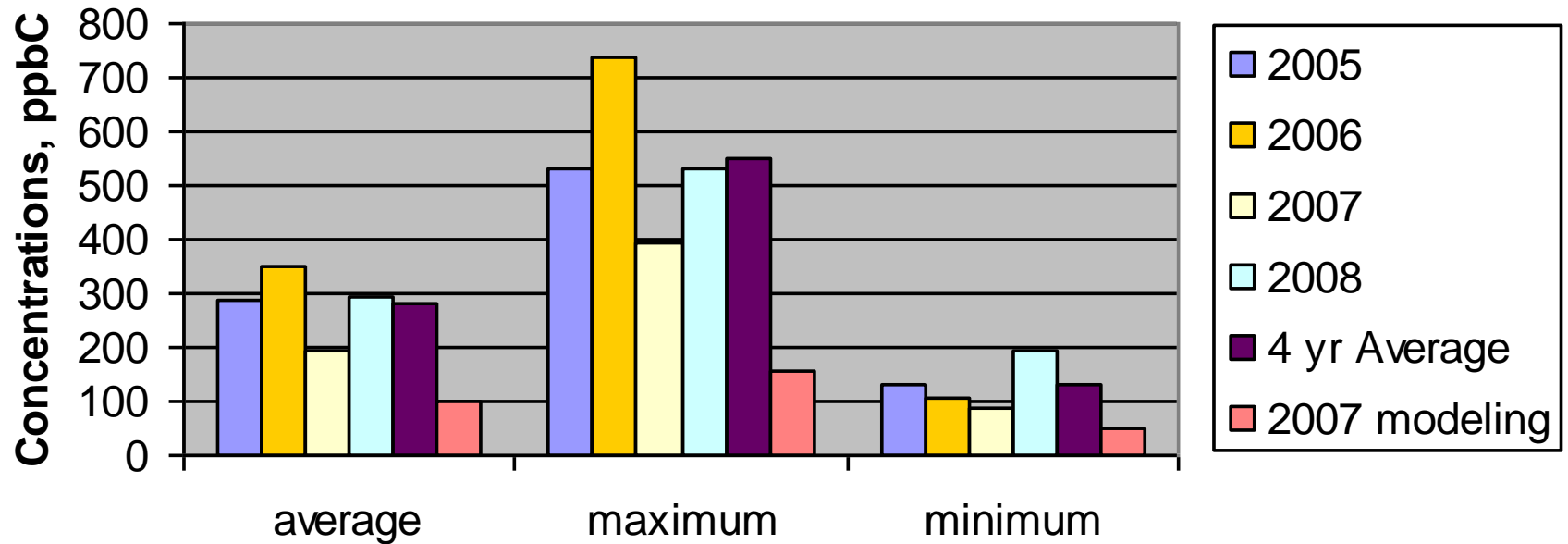
1999 Victoria Area Emissions, tons/day



Task 3.2 Bottom Up research on two emission source categories

- **Develop plan**
- **Identify research activities**
- **Use local surveys**
- **Design surveys**
- **Two likely source categories**
 - **Diesel equipment used by City and County**
 - **Architectural Coatings (paint)**
 - **Oil and gas production**

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



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**

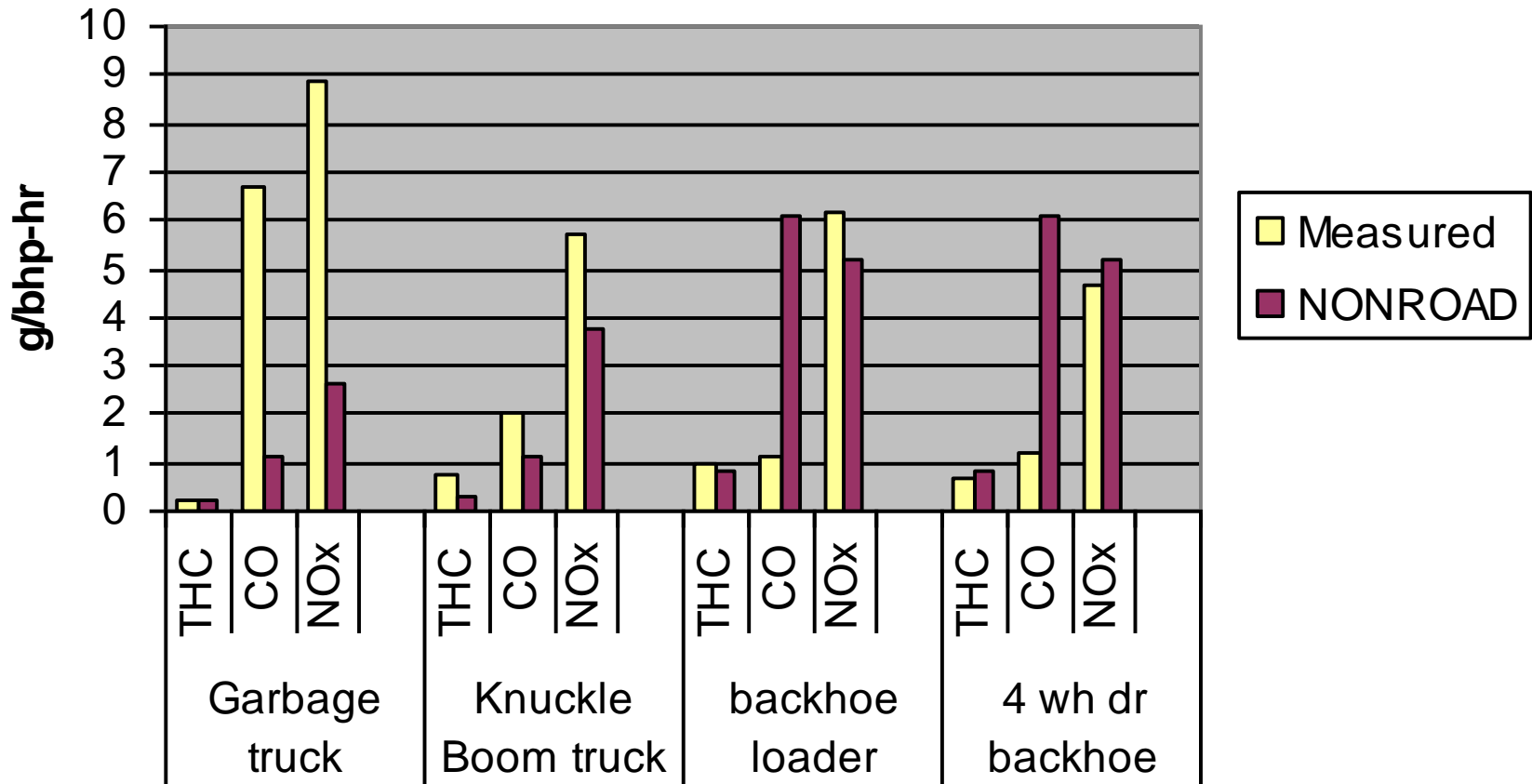
Example of Load Factors and NOx Emission Rates for Garbage Truck Activities

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

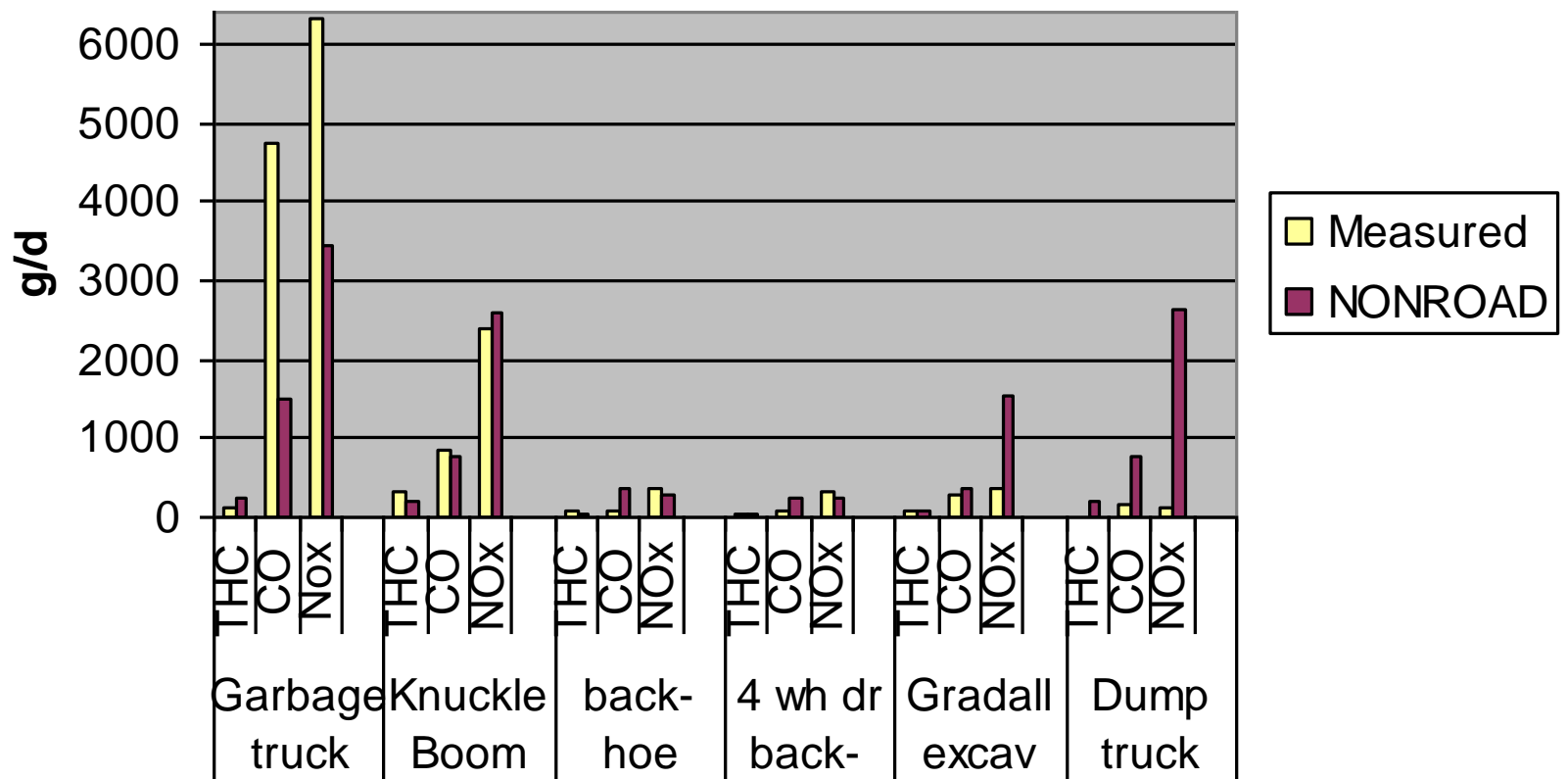
Example of Load Factors and NOx Emission Rates for Garbage Truck Activities

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

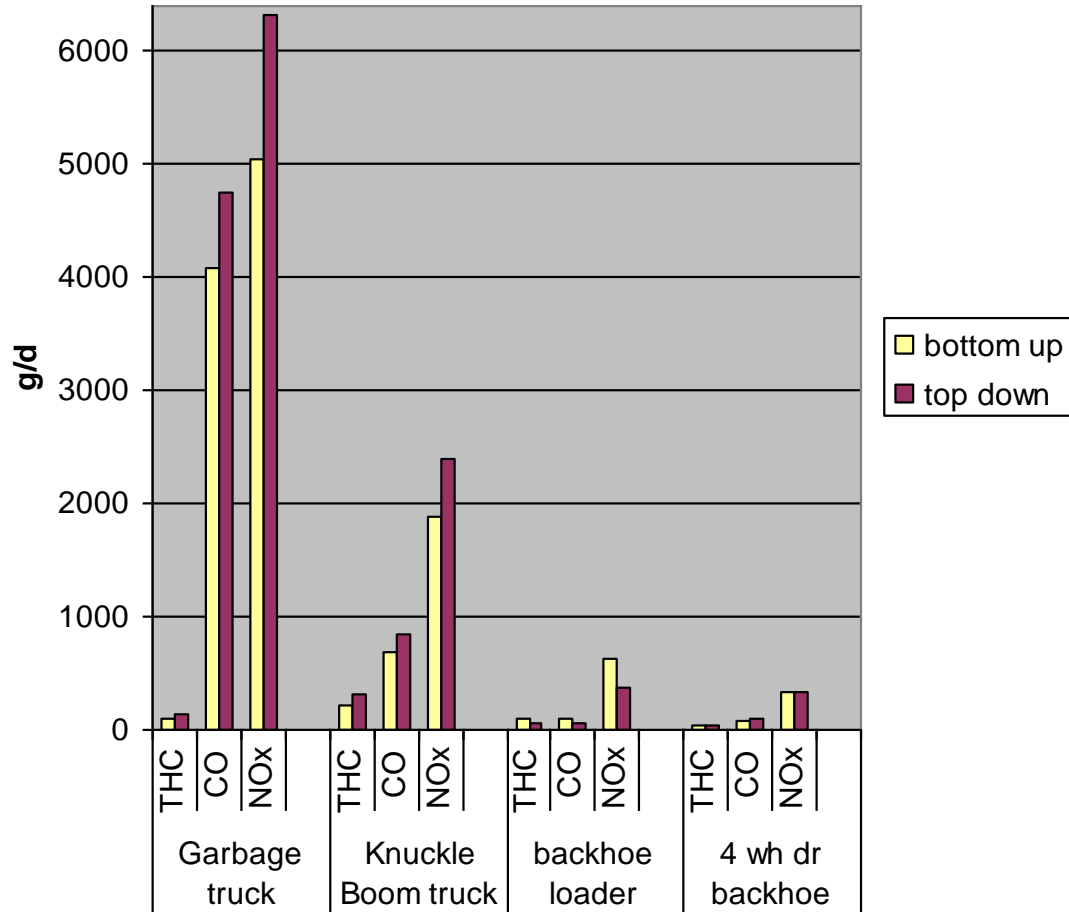
Emission Factors for Diesel Equipment Sampled with PEMS in Victoria, Texas in 2008



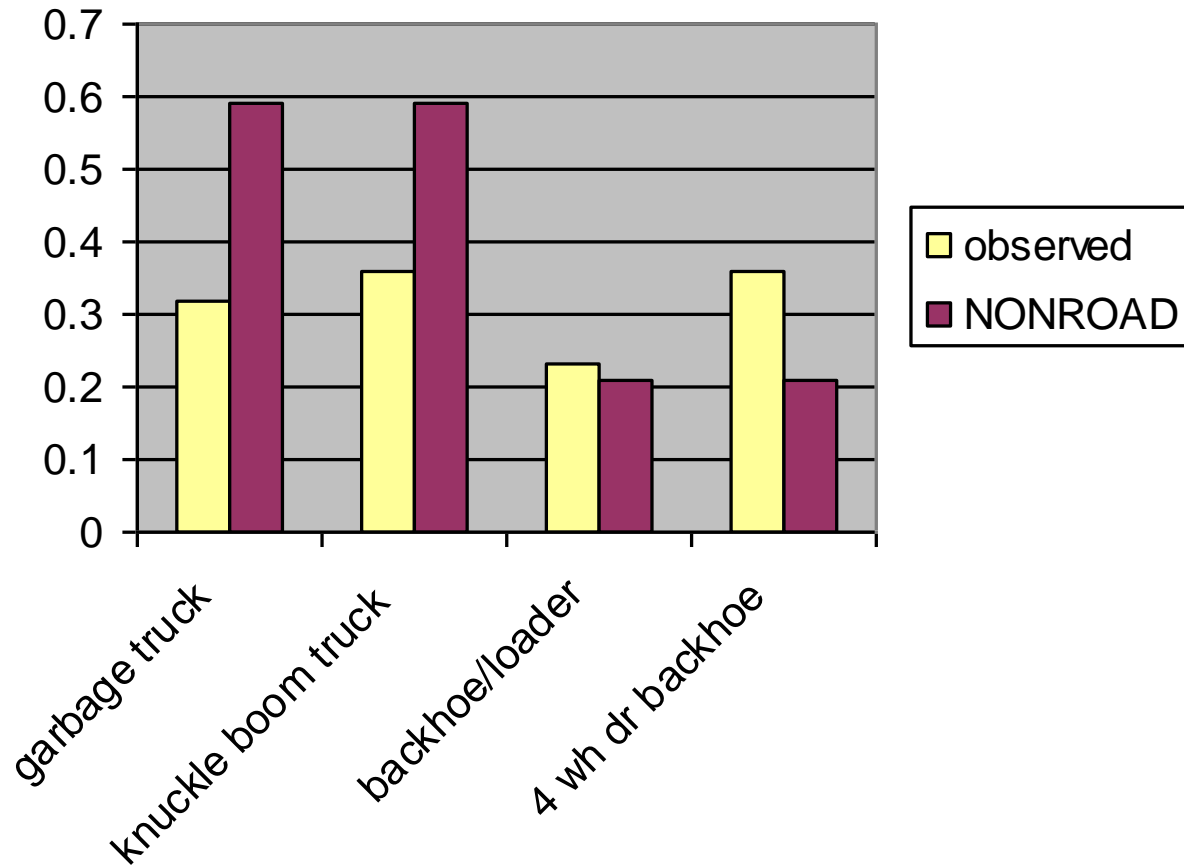
Top Down Total Emissions for Diesel Equipment Sampled with PEMS in Victoria, Texas in 2008



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



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



Phase II Task 2 Conceptual Description

TCEQ is requiring that the conceptual model be updated each year.

- **Update Conceptual Description to Include Data through 2010**
- **Similar to Conceptual Description for Phase I**

Phase II Task 3.1 Ambient Monitoring

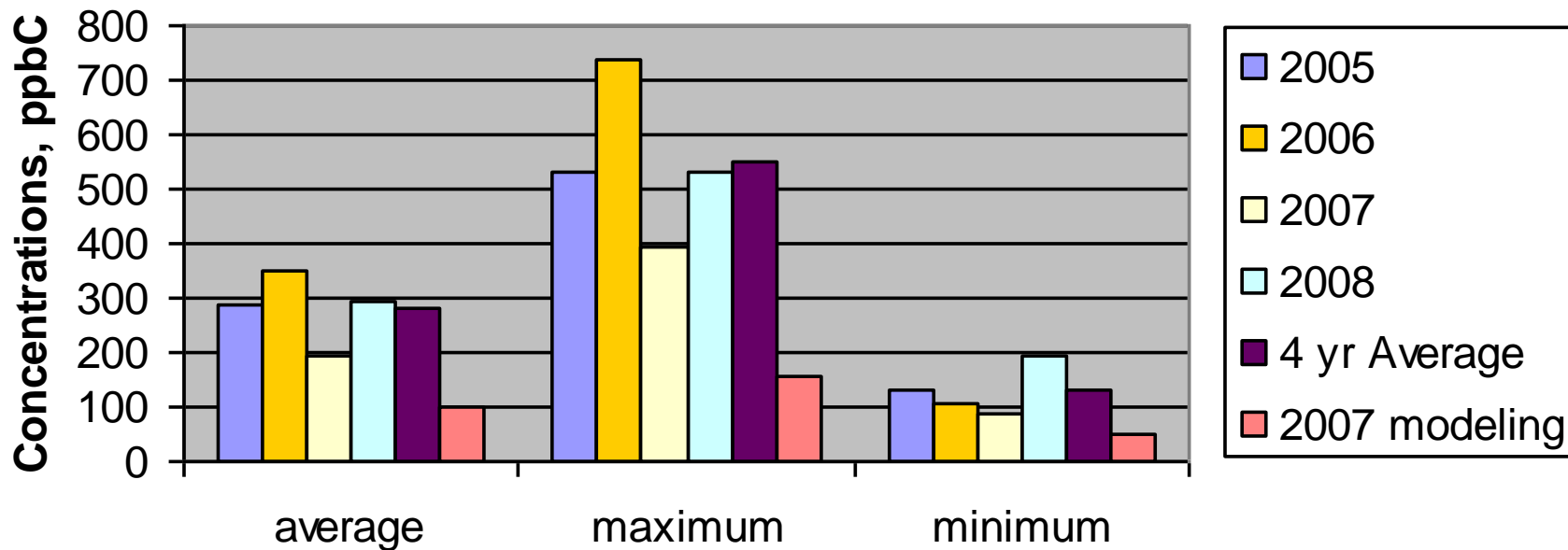
- **Continue enhanced upwind and downwind background monitoring sites at Inez and Fannin**
- **Routine, seasonal, hourly ambient monitoring data**
- **In place April 15 to Nov 15**

Phase II Task 3.2 Ambient Monitoring

Analysis of Volatile Organic Compounds Trends in the Victoria area

- **Collect 12 VOC canister samples at 4 sites for 3 consecutive days**
 - **Memorial Square Park**
 - **CAMS87**
 - **Inez**
 - **Fannin**
- **Sampling in early September**

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



Phase II Task 3.3 Ambient Monitoring

Hydrocarbon and Ozone Flux Measurements

Surface Mobile Sampling

- **Transport during when elevated ozone if forecast**
- **Measurements around source areas**

Phase II Task 4 Photochemical Modeling

Task 4.1

Obtain June 2006 episode and evaluate its performance.

This is the episode prescribed for use by TCEQ.

Task 4.2

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

Task 4.3

Evaluation of future transport on the Victoria area.

Phase II Task Emissions Inventory

Task 5.1

Heavy-Duty Vehicle Emissions Characterization

- **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 loader
- **Emissions Estimates**
 - Use activity data collected and PEMS data to calculate annual emissions.

Phase II Task Emissions Inventory

Task 5.2

- **Estimation of Architectural Coatings Emissions**
 - Activity Data Collection
 - Texanol Concentrations Measured while collecting VOC canister samples
 - Emissions estimates

Questions?