

# **CATF Houston Study**

## **March 2006**

**Final Format 9/18/06**



# Methodology

## ➤ Data Sampling

- PM<sub>2.5</sub> - 1 sec data, with 10 sec time constant
- Ultrafine - 1 sec data
- Black Carbon - 1 min data
- PAH - 10 sec data

## ➤ Analysis: Statistics and Graphing

- 1 sec data is smoothed using 10 sec interval averages
- Data analyses using “net” concentrations
- Net concentrations represent the contributions of diesel pollution to the interior; an average value (constant) for ambient outdoor air is subtracted from the raw data
- Negative values do not indicate a negative concentration but a zero contribution from subtracting ambient constant.
- Annotations provided by field observations

# STAT Table

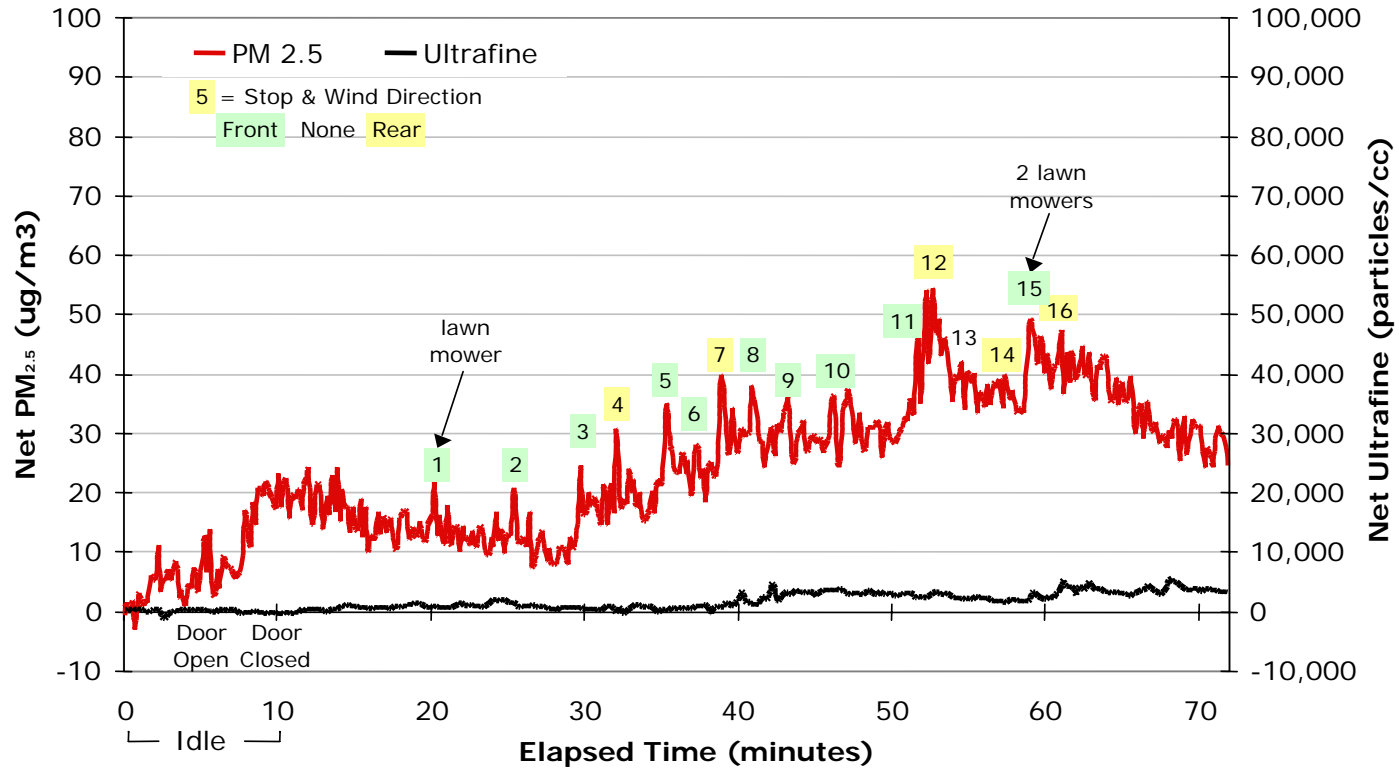
## Raw Data with Ambient Subtracted (10 sec averages from 1 sec data)

	PM <sub>2.5</sub> (ug/m3)				Ultrafine (particles/cc)				Black Carbon (ng/m3)				PAH (ng/m3)			
	Ambient	MEDIAN	MAX	MEAN	Ambient	MEDIAN	MAX	MEAN	Ambient	MEDIAN	MAX	MEAN	Ambient	MEDIAN	MAX	MEAN
Conventional Run 1 9:18-10:30 March 7, 2006	54	27	54	26	9,000	1,795	5,473	1,962	1,040	298	3,982	558	54	-10	320	6
Conventional Run 2 8:04-9:25 March 8, 2006	31	25	91	25	5,000	3,735	6,945	4,017	900	168	841	122	-	-	-	-
Spiracle 12:08-13:23 March 7, 2006	70	10	28	10	6,000	2,182	9,673	2,450	750	275	2,528	491	10	27	161	34
DPF-ULSD 14:20-15:39 March 8, 2006	49	16	53	18	7,000	616	3,427	830	790	7	397	18	12	11	378	20
DPF-Spiracle-ULSD 8:04-9:25 March 8, 2006	58	9	27	7	13,000	-1,909	3,564	-1,864	1,000	183	529	200	-	-	-	-

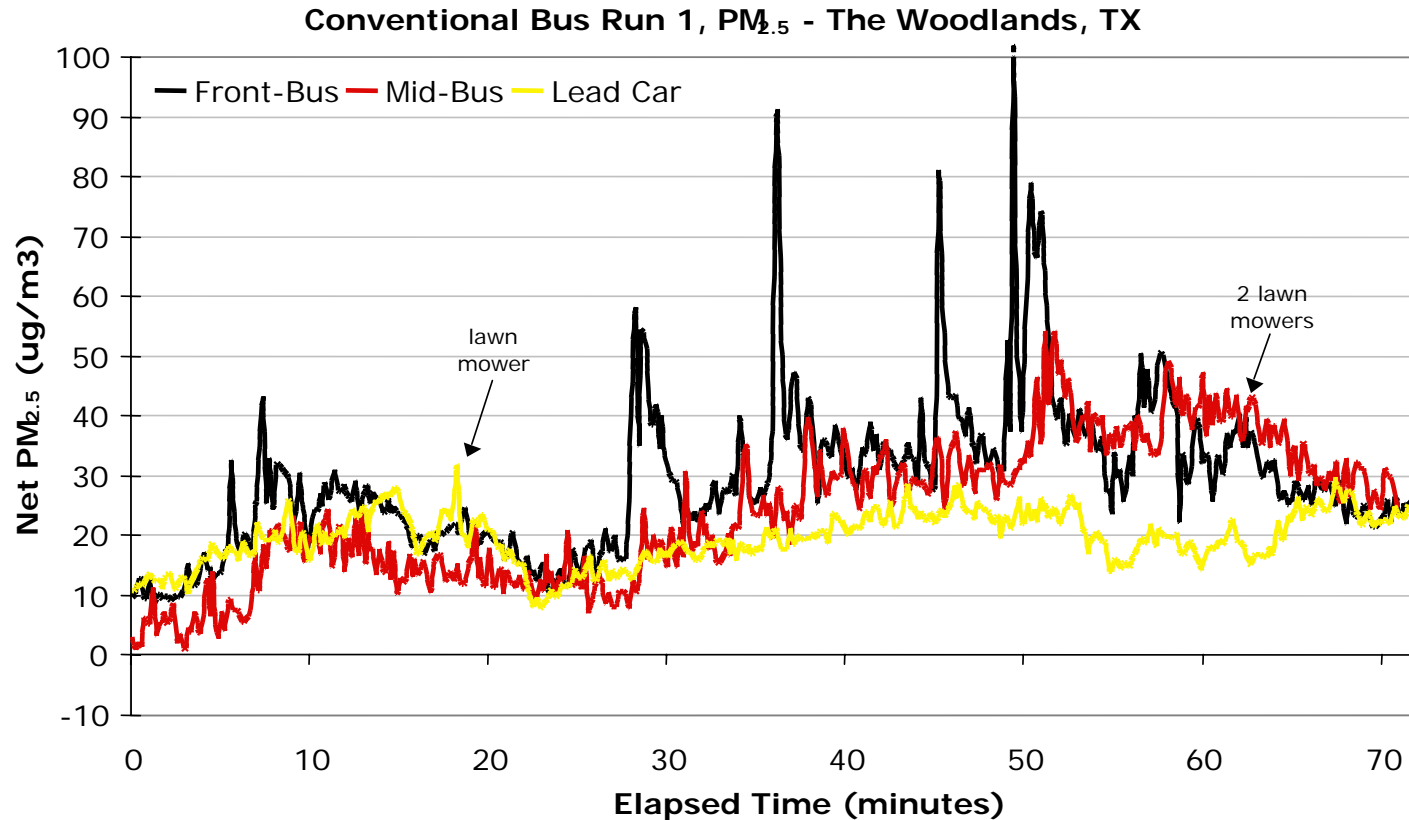
\*\*\*Negative value denotes zero contribution. Result of subtracted single constant value for outdoor ambient.

# Conventional Run 1 - PM<sub>2.5</sub> & Ultrafine

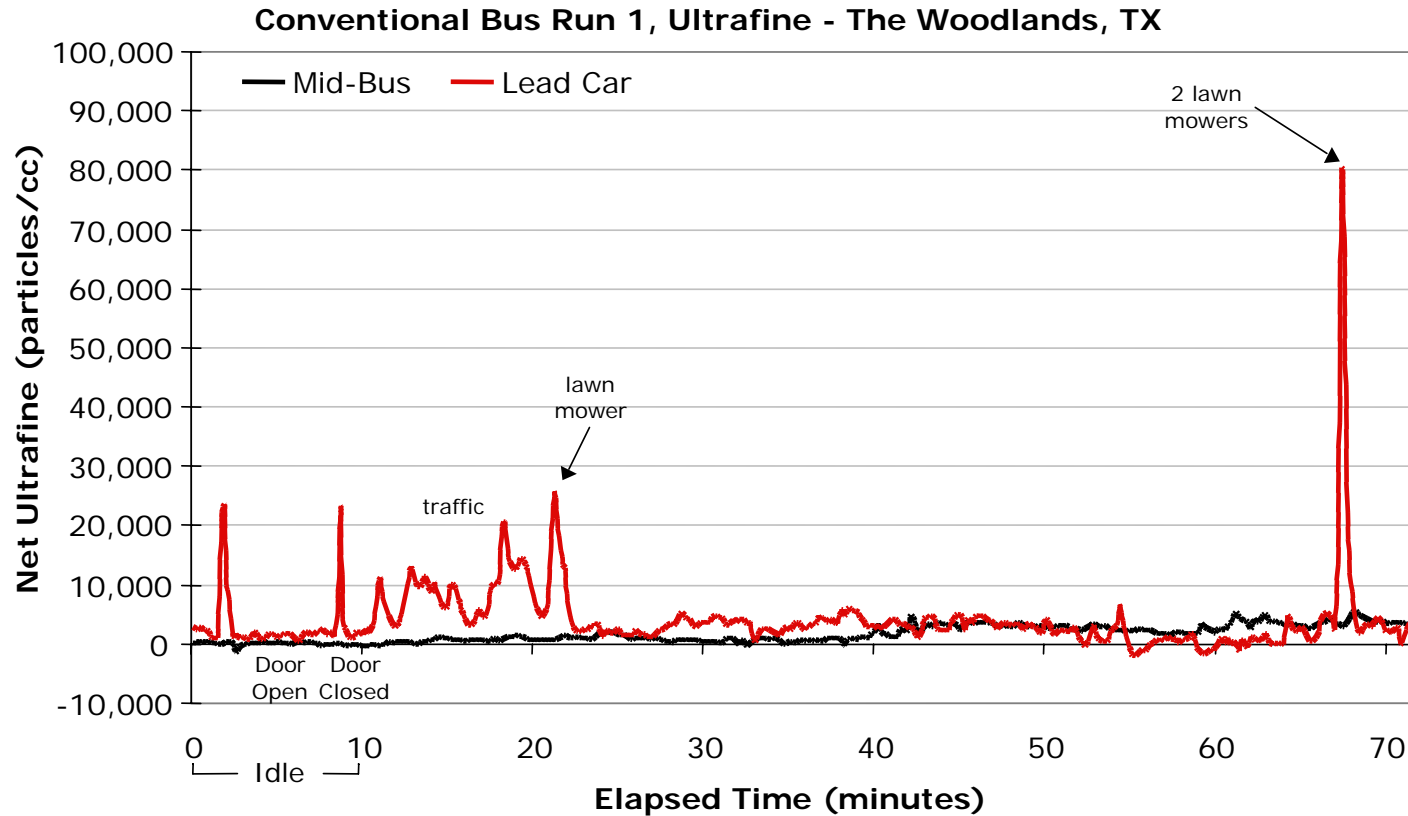
Conventional Bus Run 1, PM<sub>2.5</sub> & Ultrafine - The Woodlands, TX



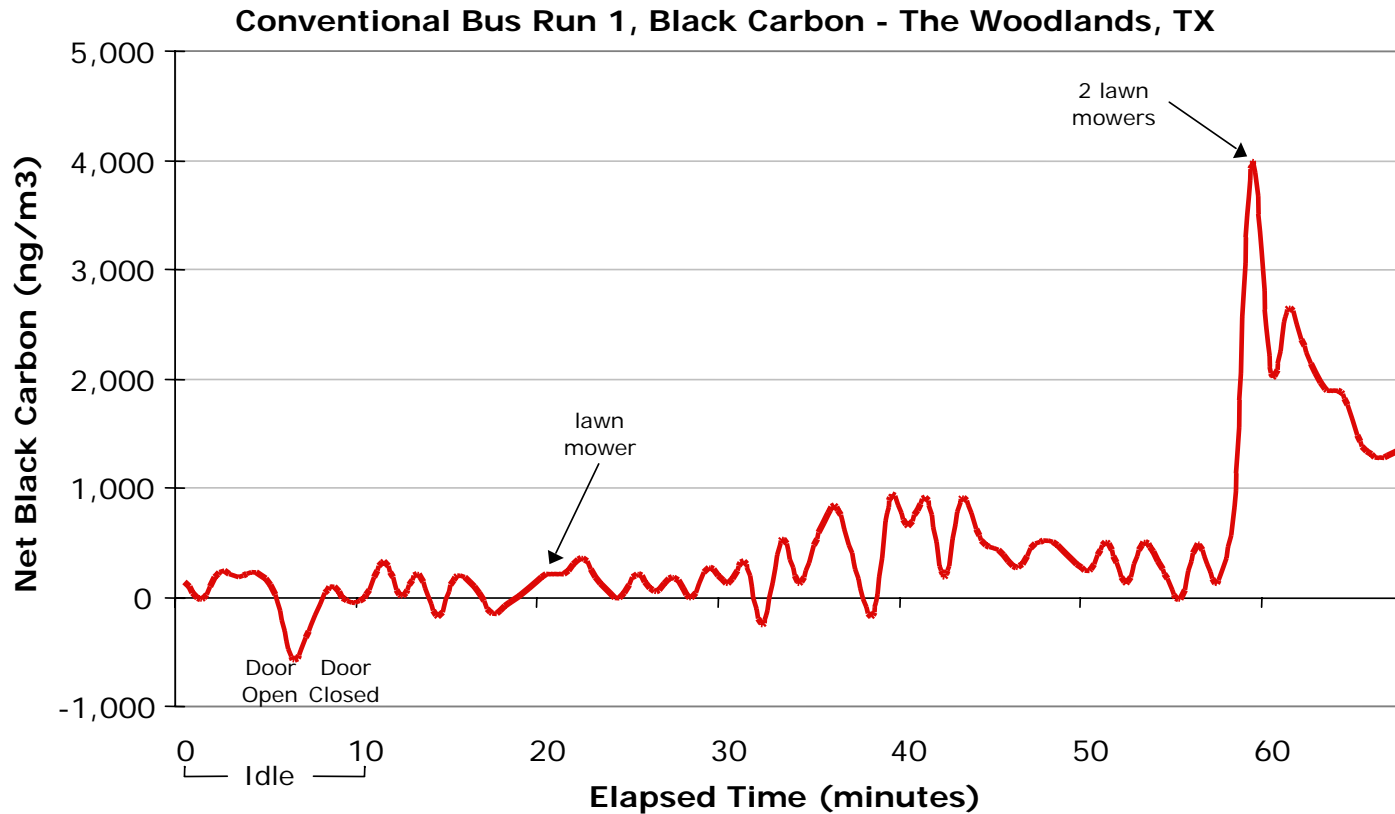
# Conventional Run 1 - PM<sub>2.5</sub>



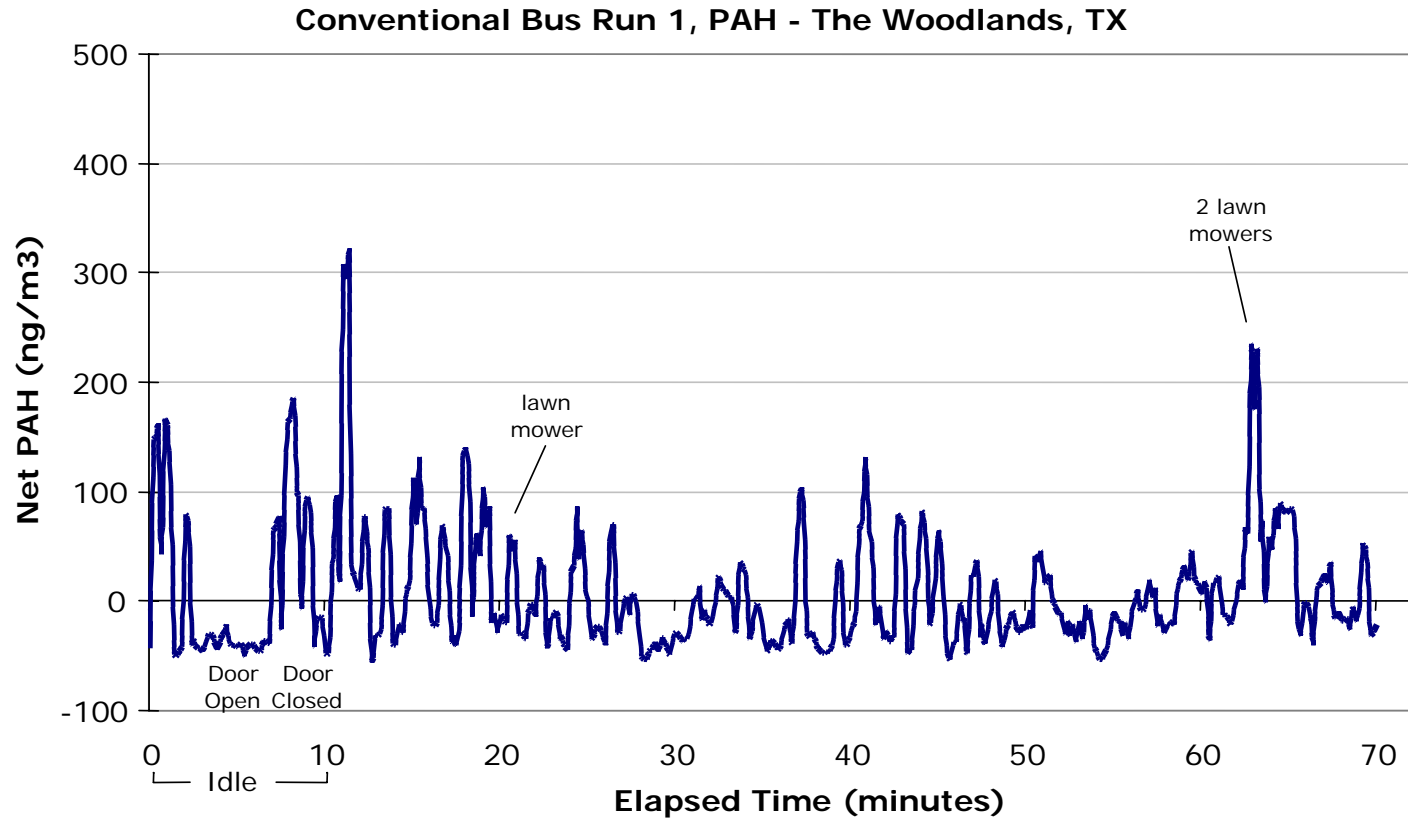
# Conventional Run 1 - Ultrafine



# Conventional Run 1 - Black Carbon

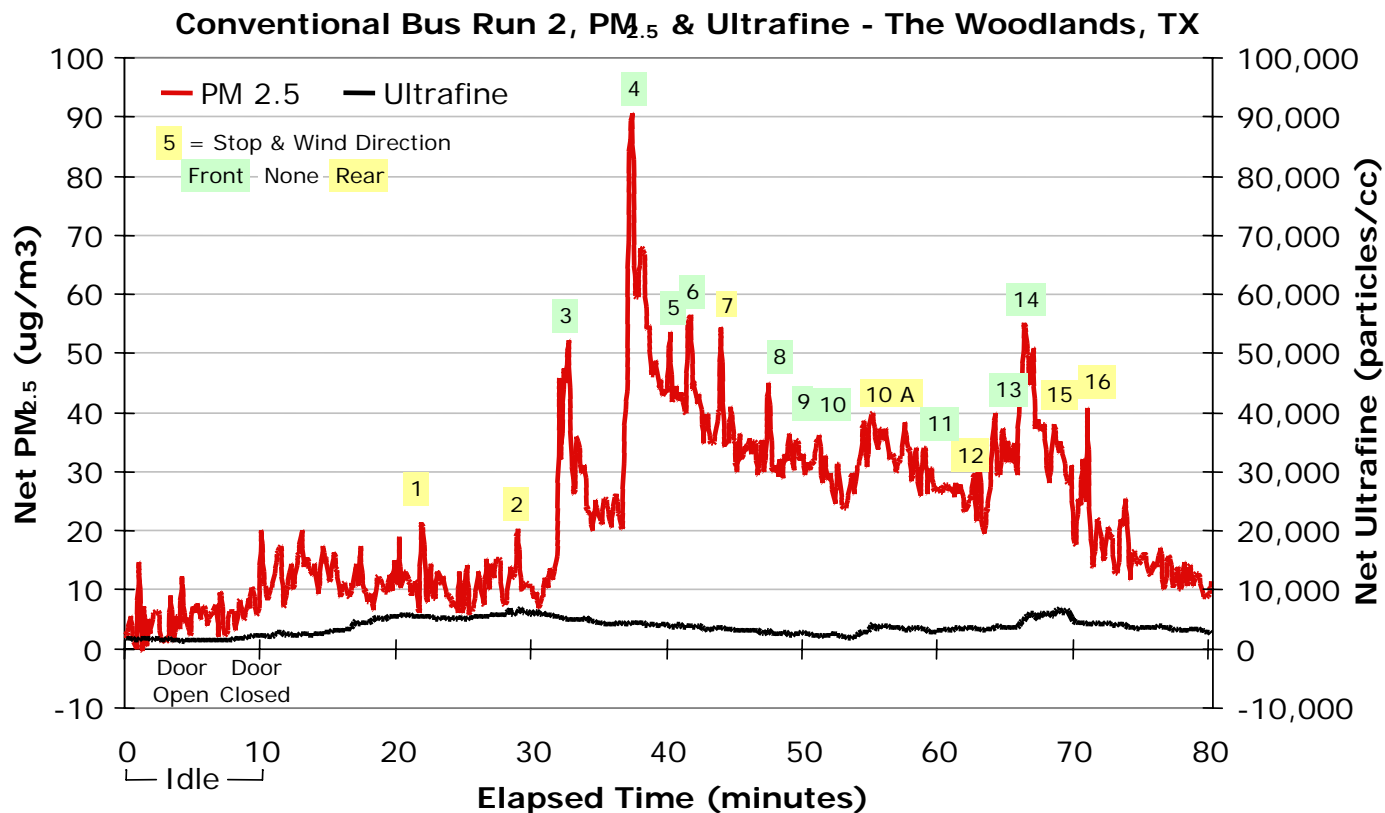


# Conventional Run 1 - PAH

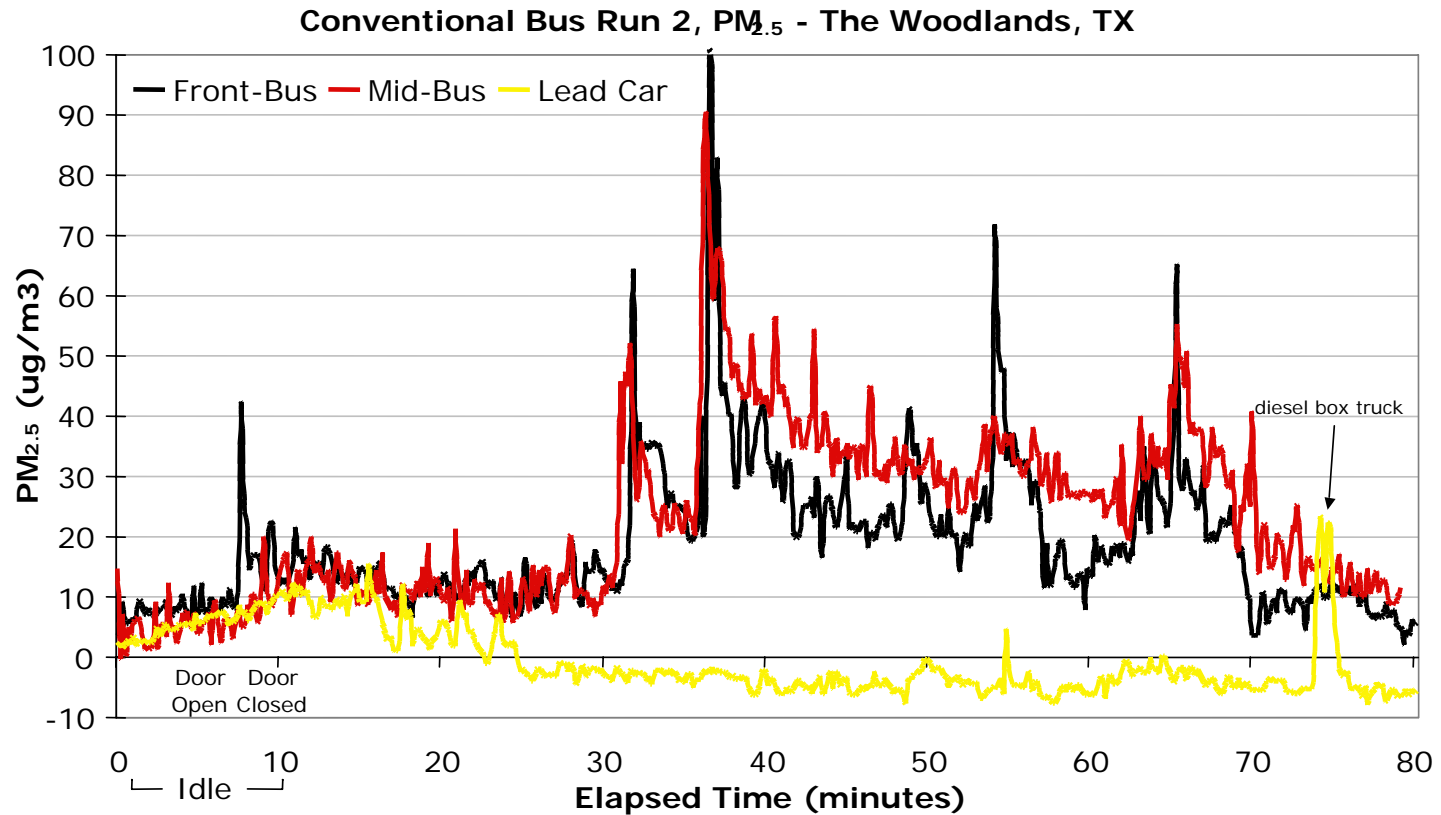




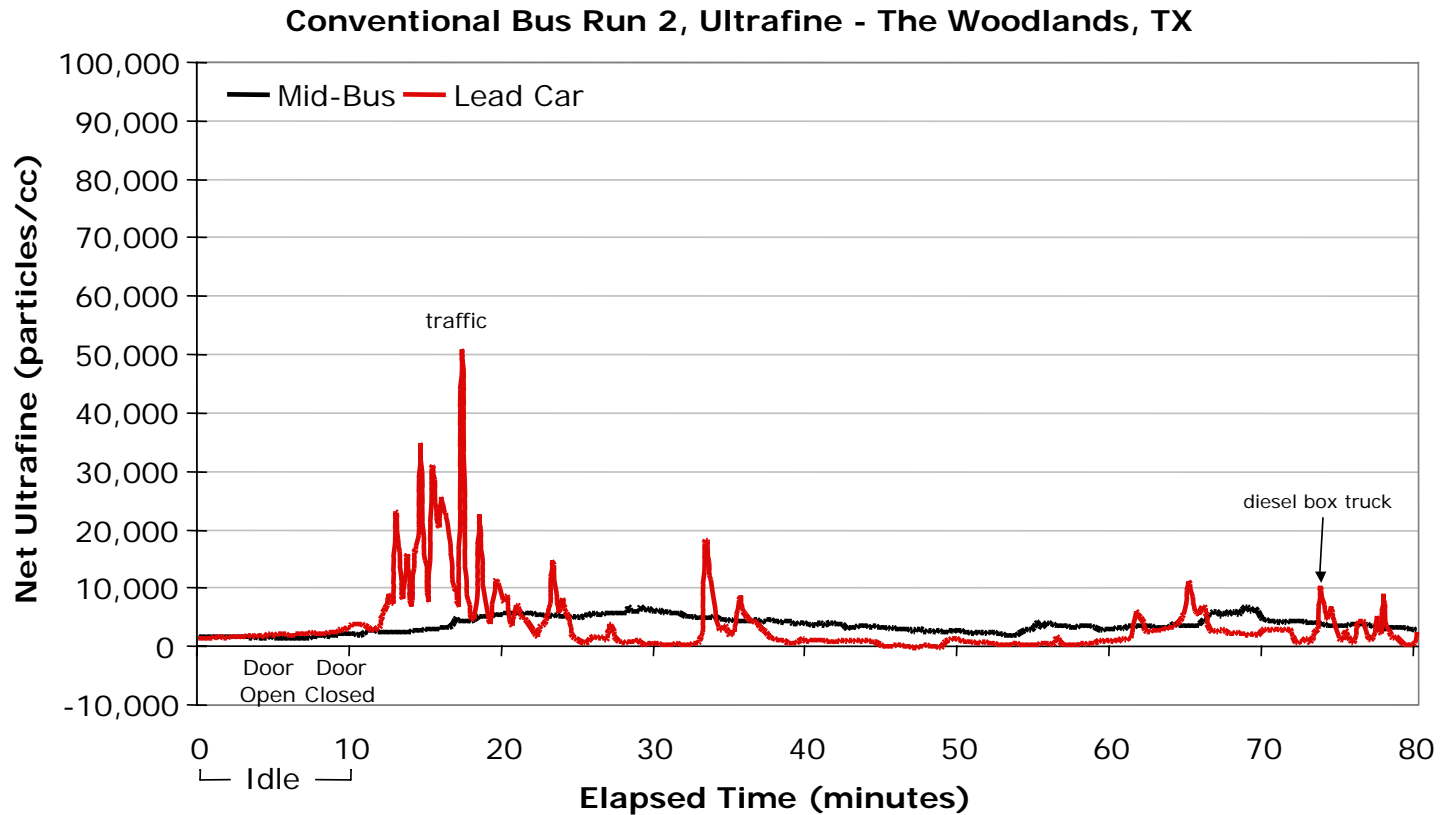
# Conventional Run 2 - PM<sub>2.5</sub> & Ultrafine



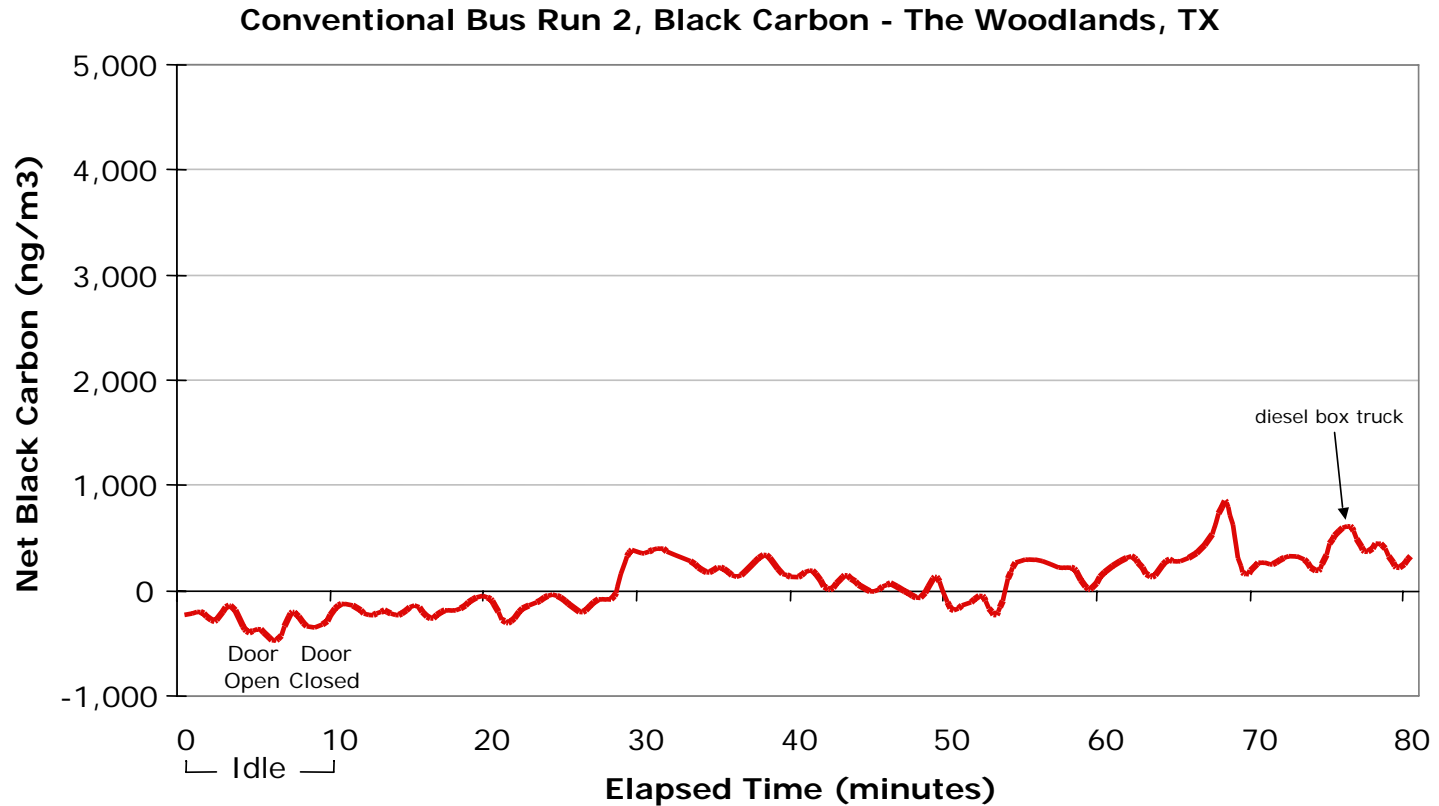
# Conventional Run 2 - PM<sub>2.5</sub>



# Conventional Run 2 - Ultrafine



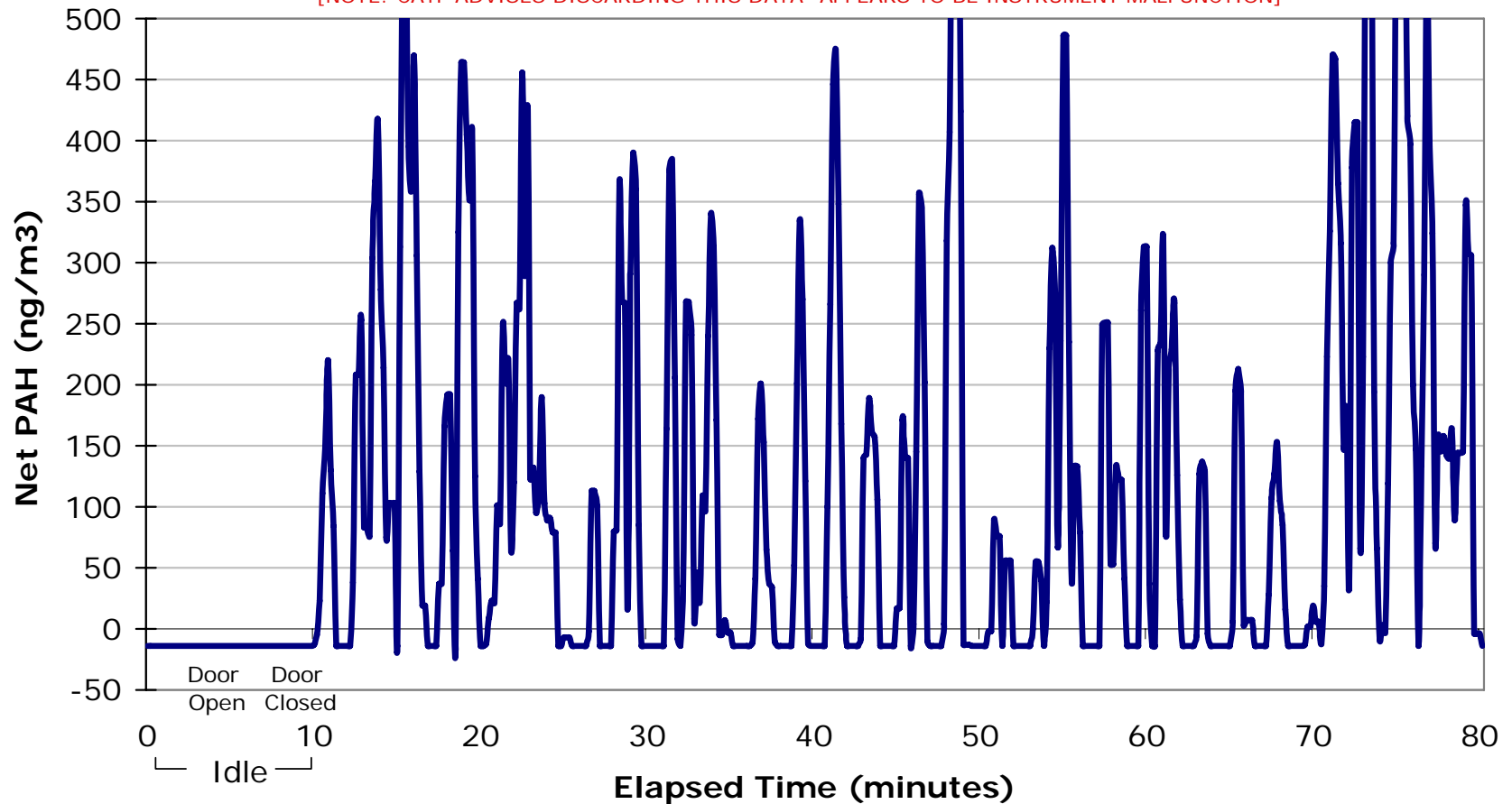
# Conventional Run 2 - Black Carbon



# Conventional Run 2 - PAH

## Conventional Bus Run 2, PAH - The Woodlands, TX

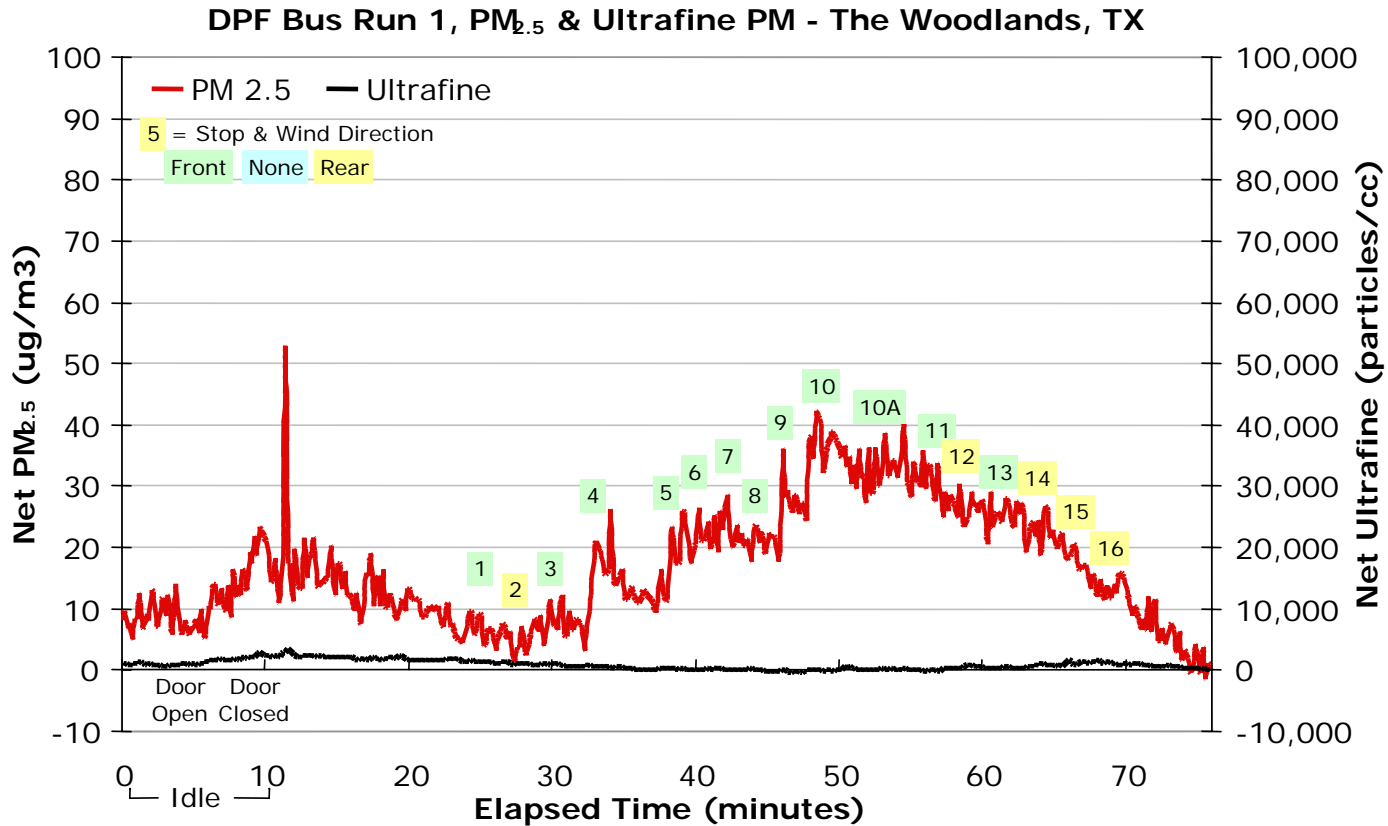
[NOTE: CATF ADVISES DISCARDING THIS DATA- APPEARS TO BE INSTRUMENT MALFUNCTION]



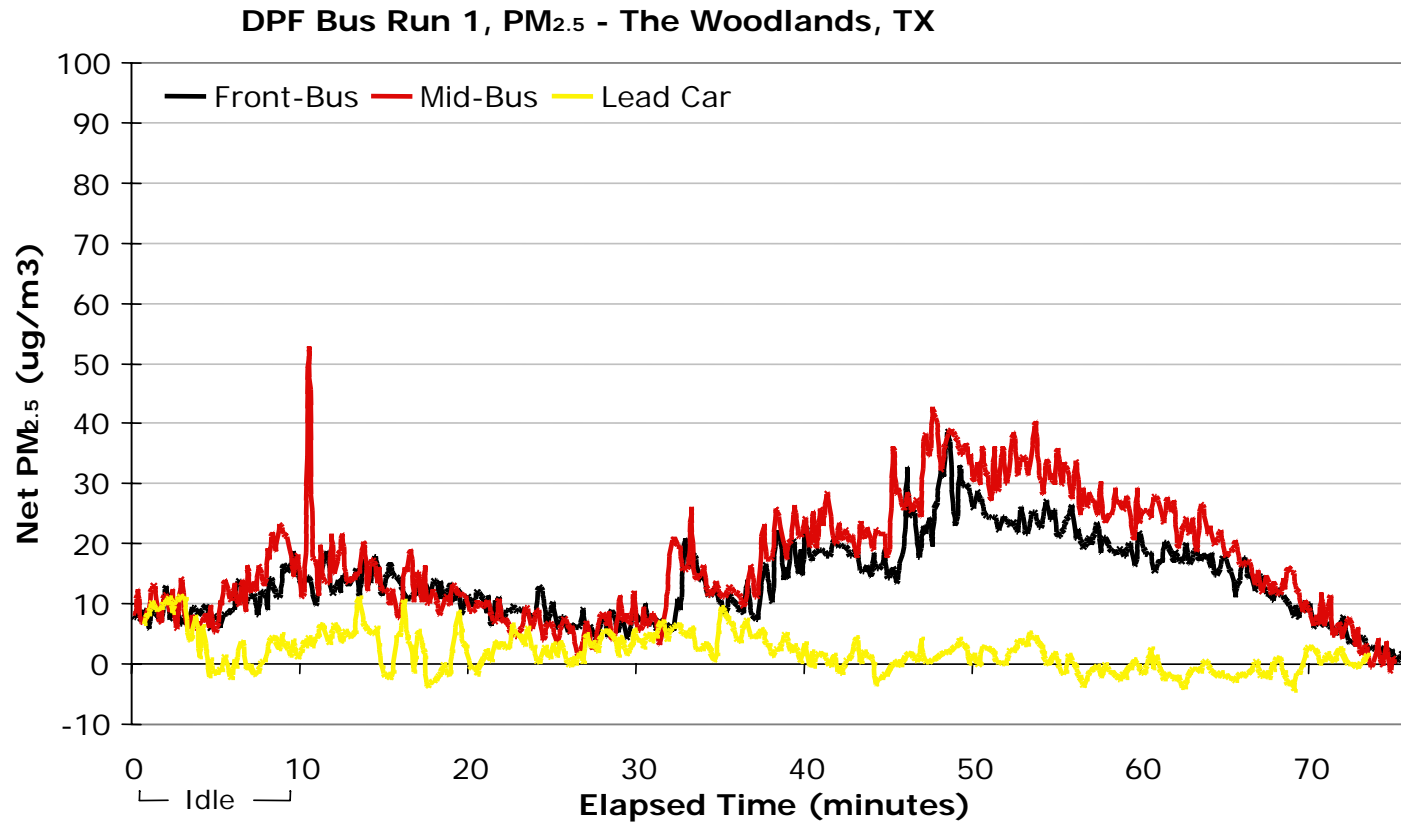
CLEAN AIR TASK FORCE



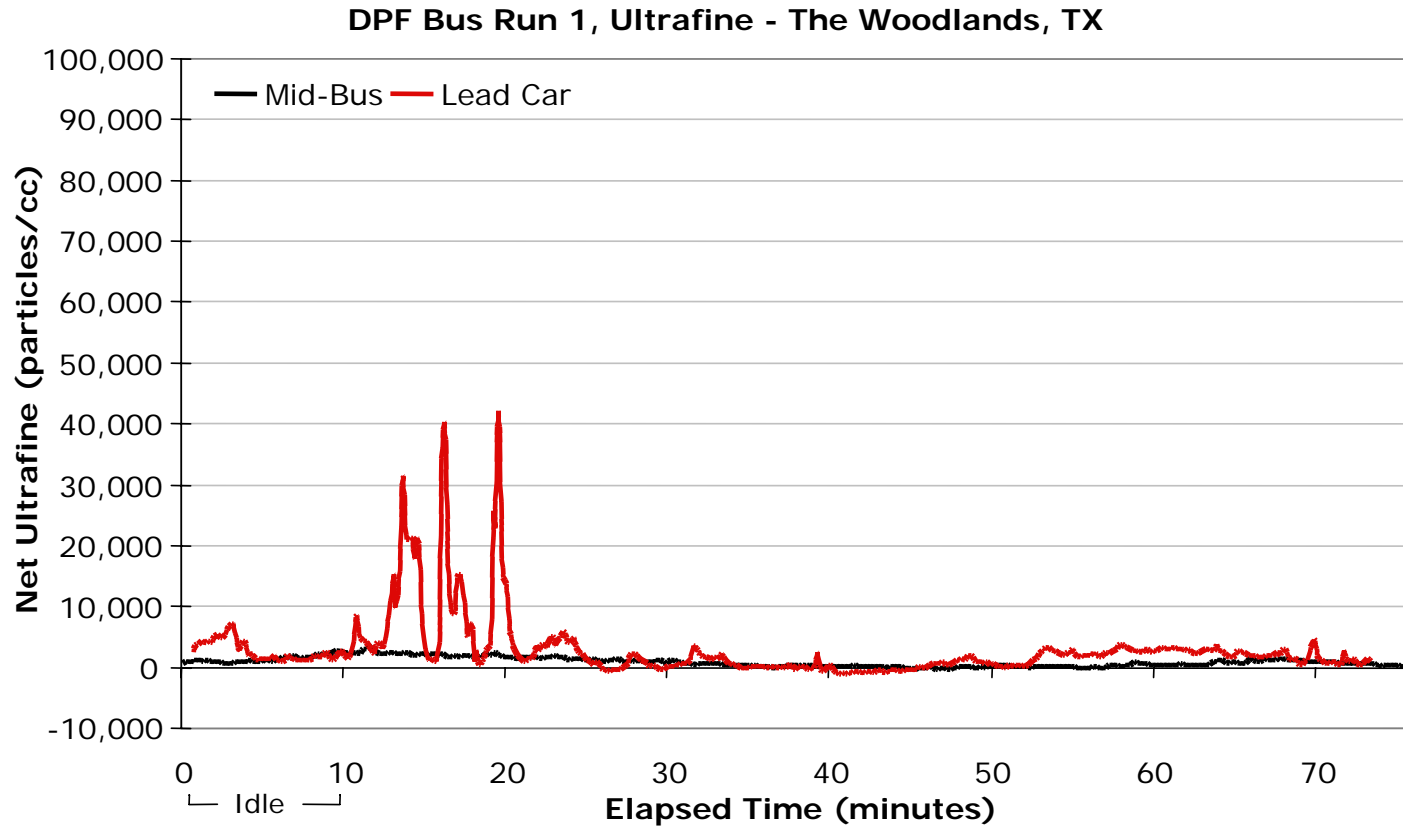
# DPF Run 1 - PM<sub>2.5</sub> & Ultrafine



# DPF Run 1 - PM<sub>2.5</sub>



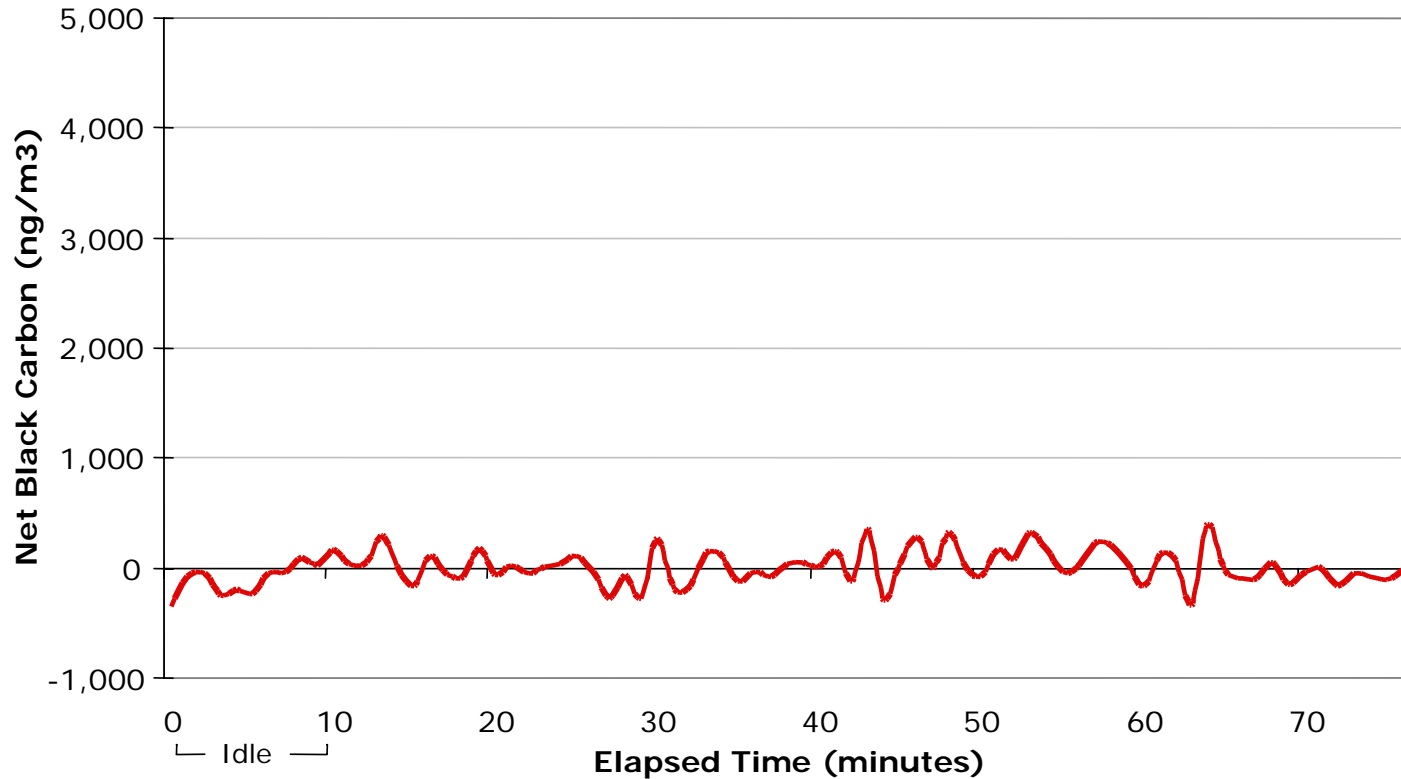
# DPF Run 1 - Ultrafine



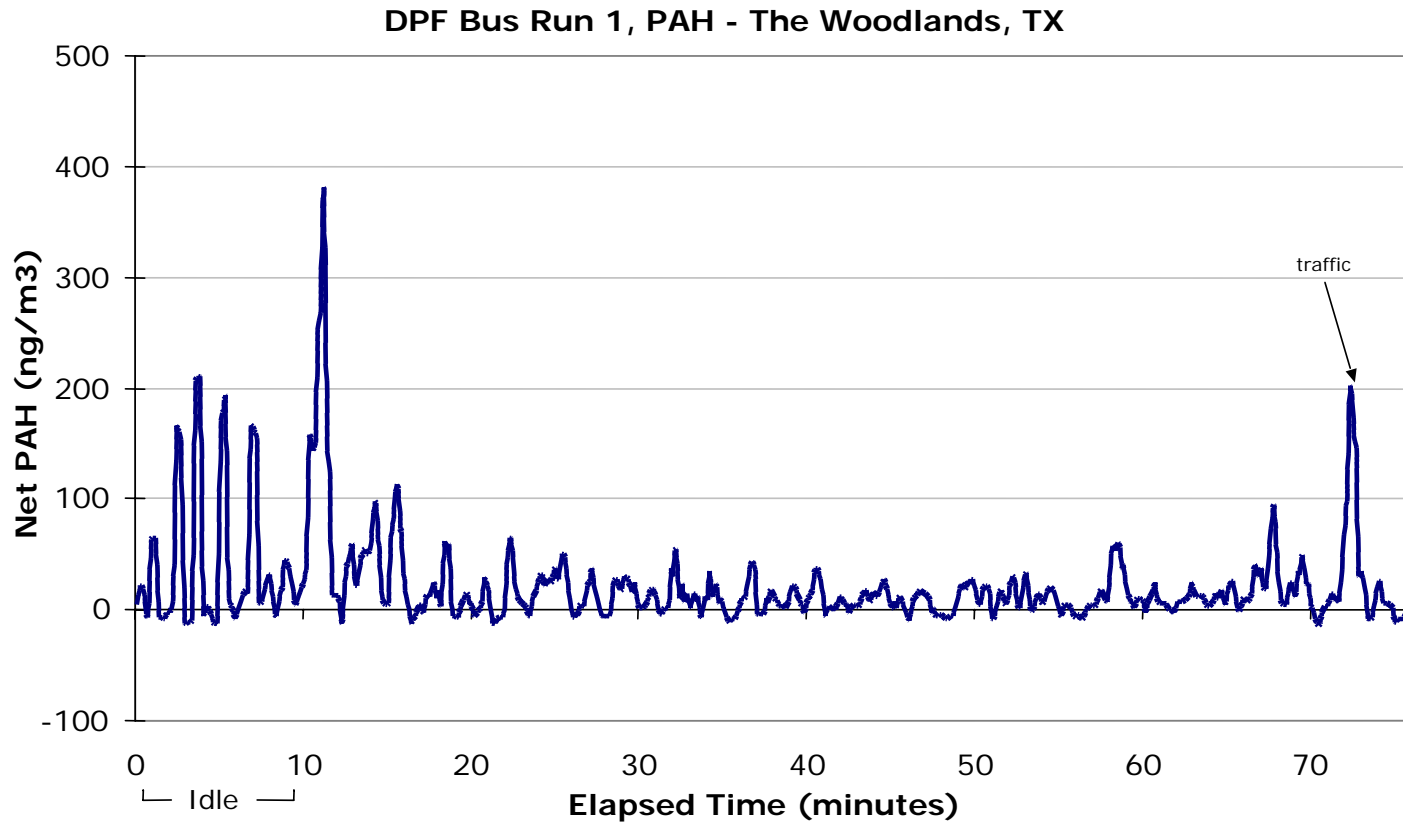


# DPF Run 1 - Black Carbon

DPF Bus Run 1, Black Carbon - The Woodlands, TX



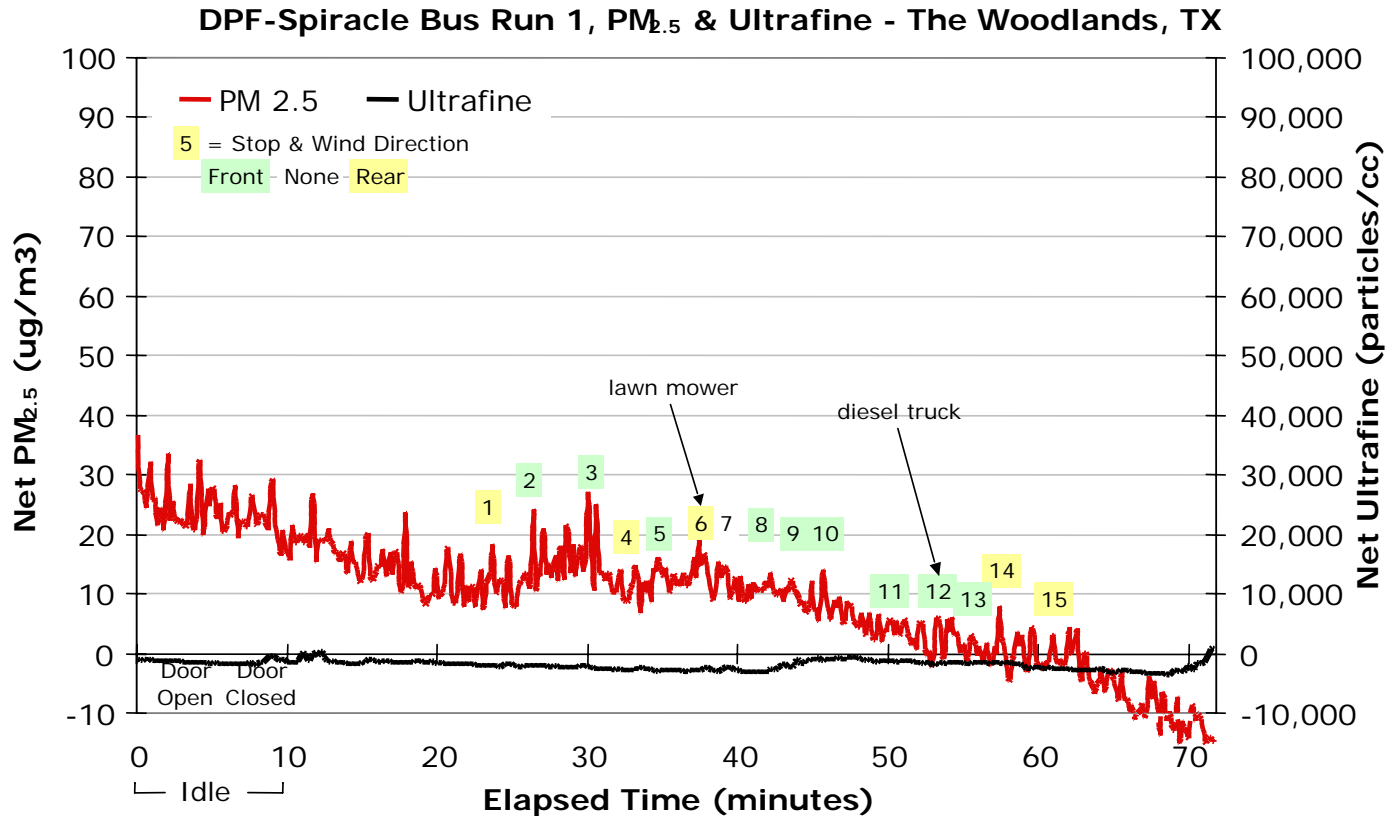
# DPF Run 1 - PAH



CLEAN AIR TASK FORCE

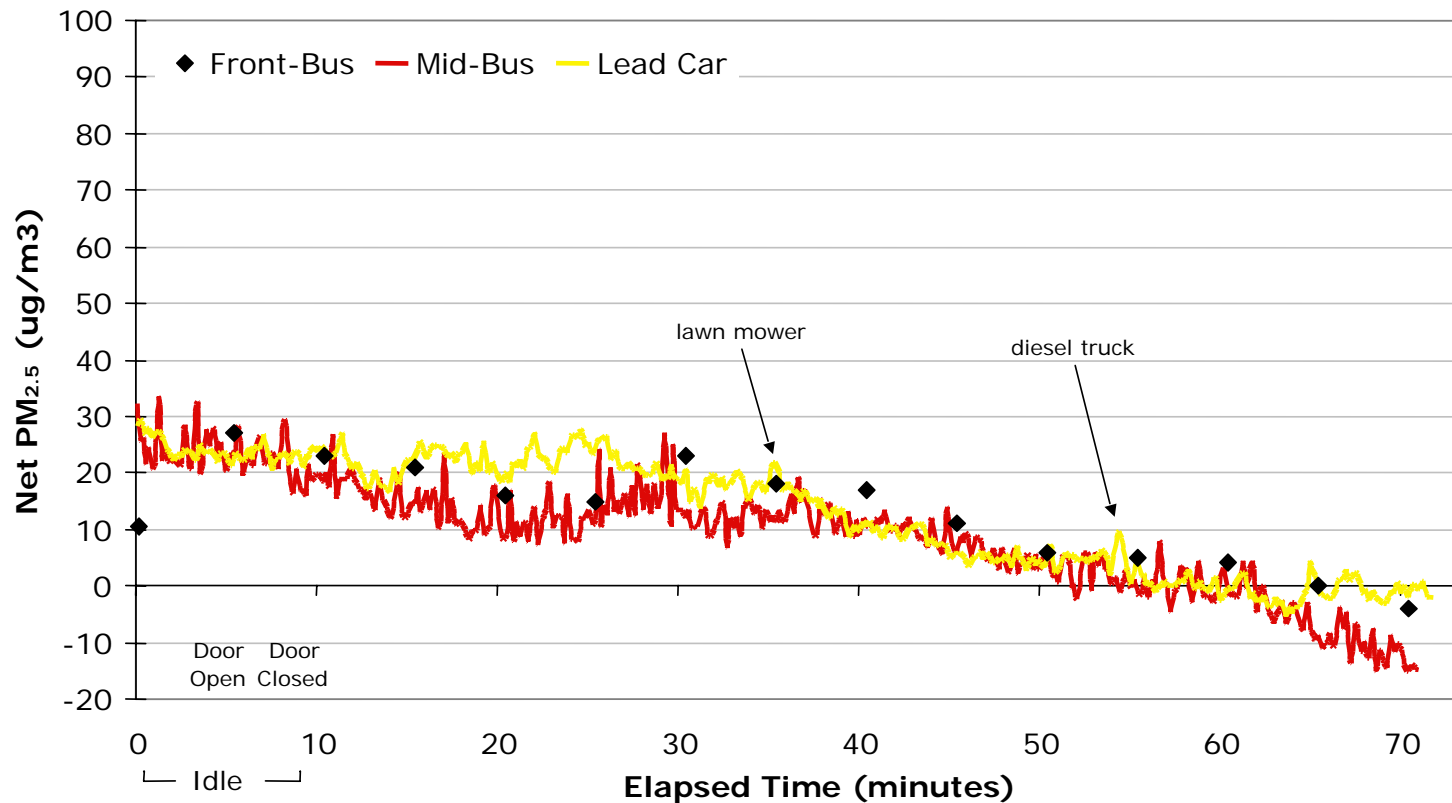


# DPF Spiracle Run 1 - PM<sub>2.5</sub> & Ultrafine



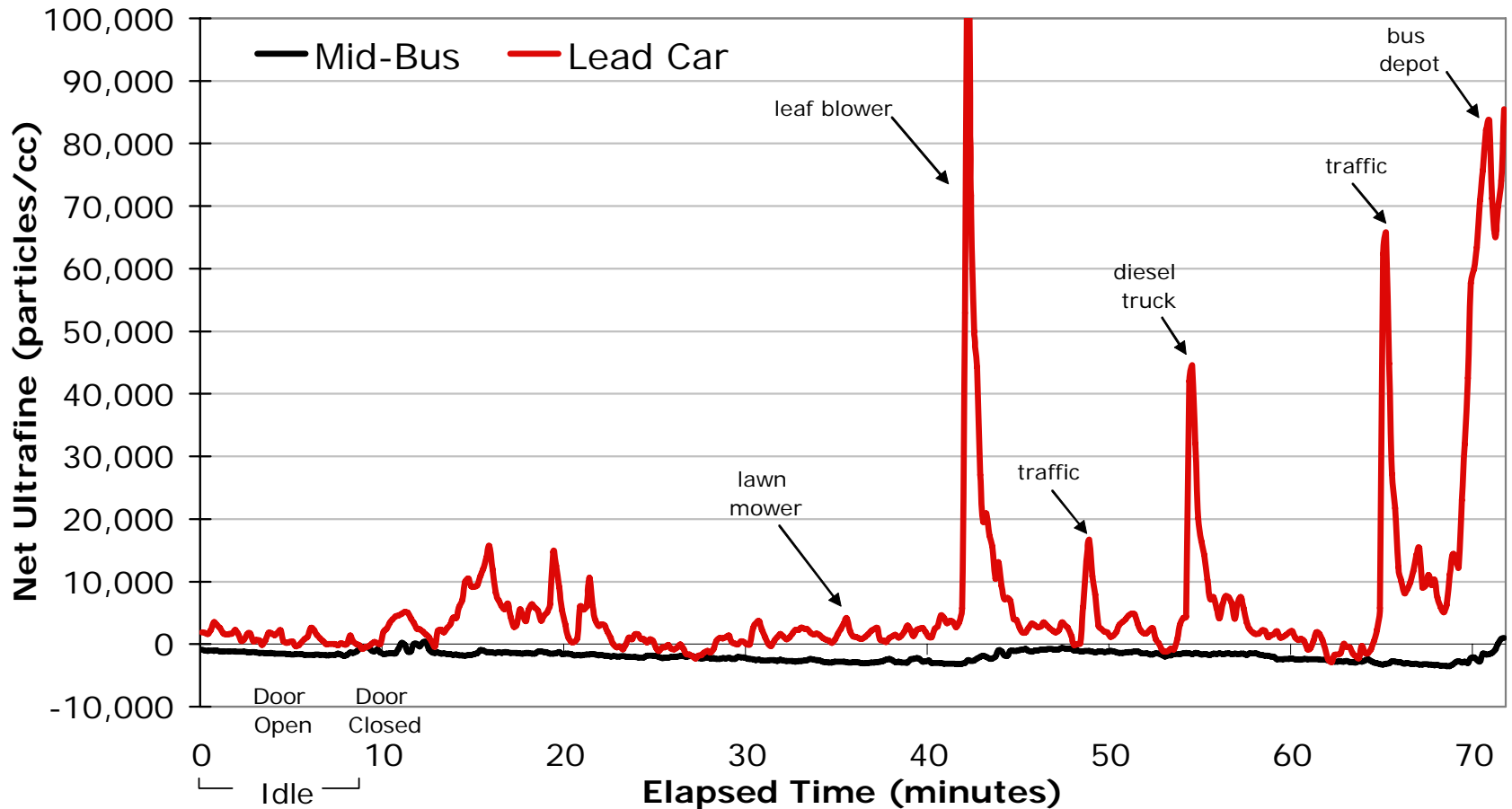
# DPF Spiracle Run 1 - PM<sub>2.5</sub>

DPF-Spiracle Bus Run 1, PM<sub>2.5</sub> - The Woodlands, TX

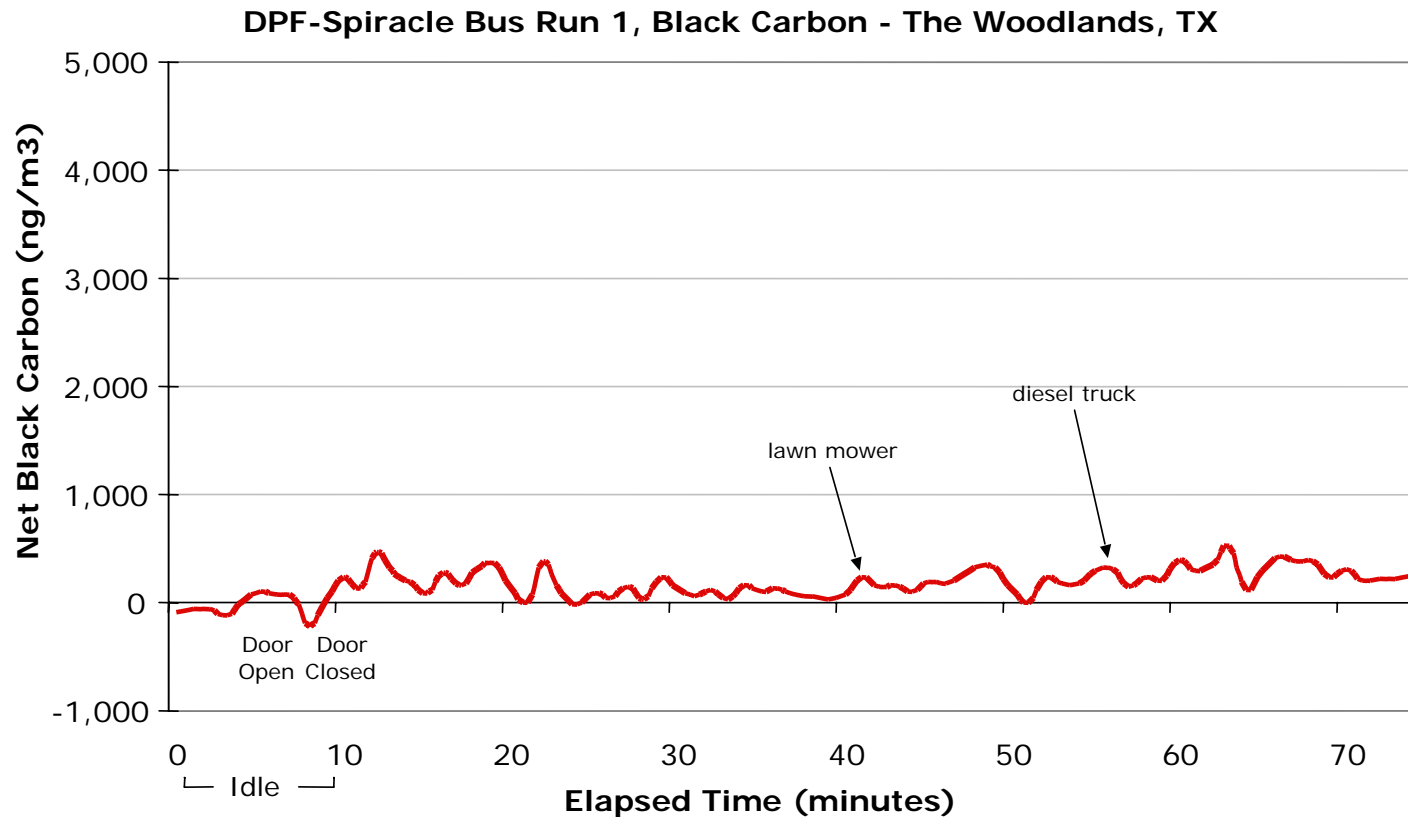


# DPF Spiracle Run 1 - Ultrafine PM

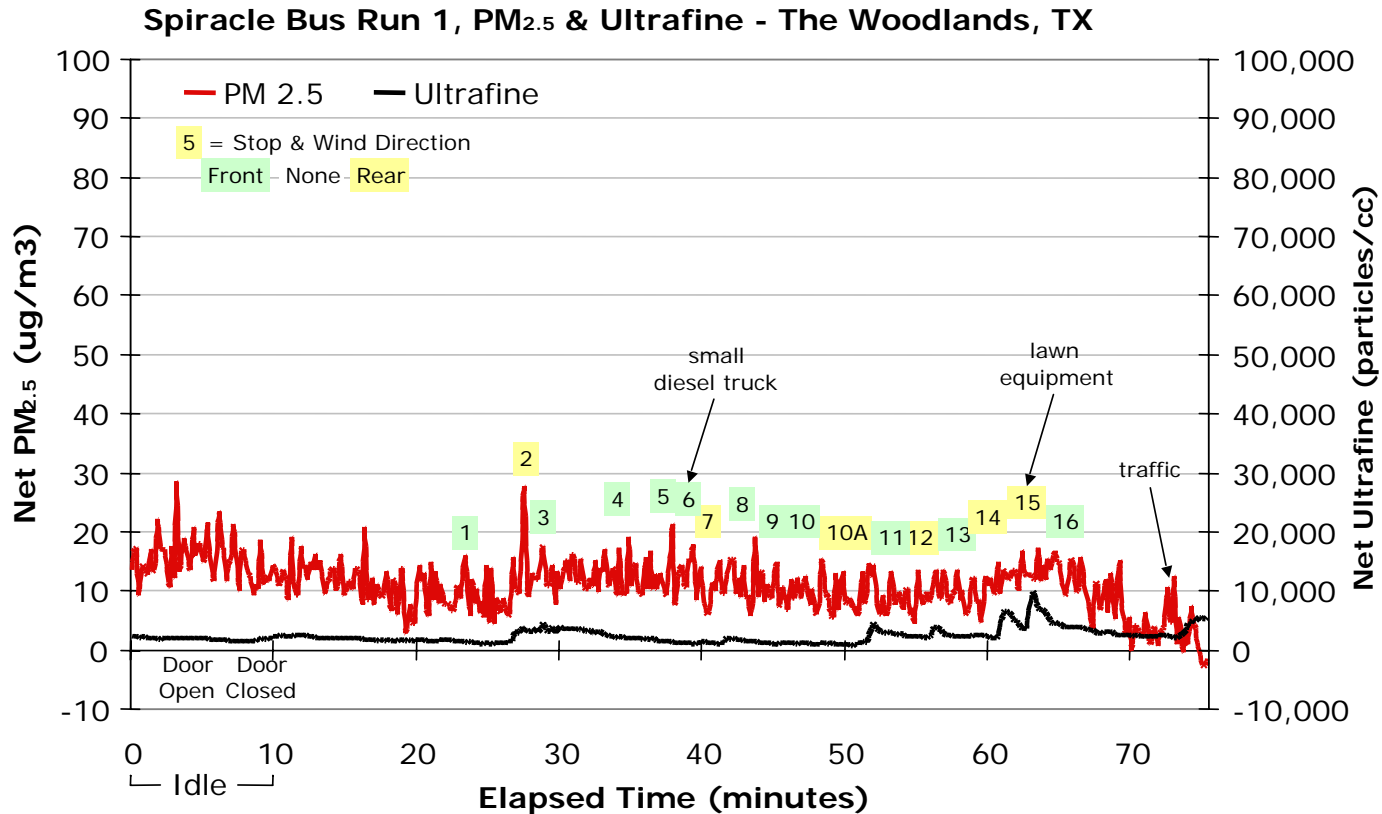
DPF-Spiracle Bus Run 1, Ultrafine - The Woodlands, TX



# DPF Spiracle Run 1 - Black Carbon

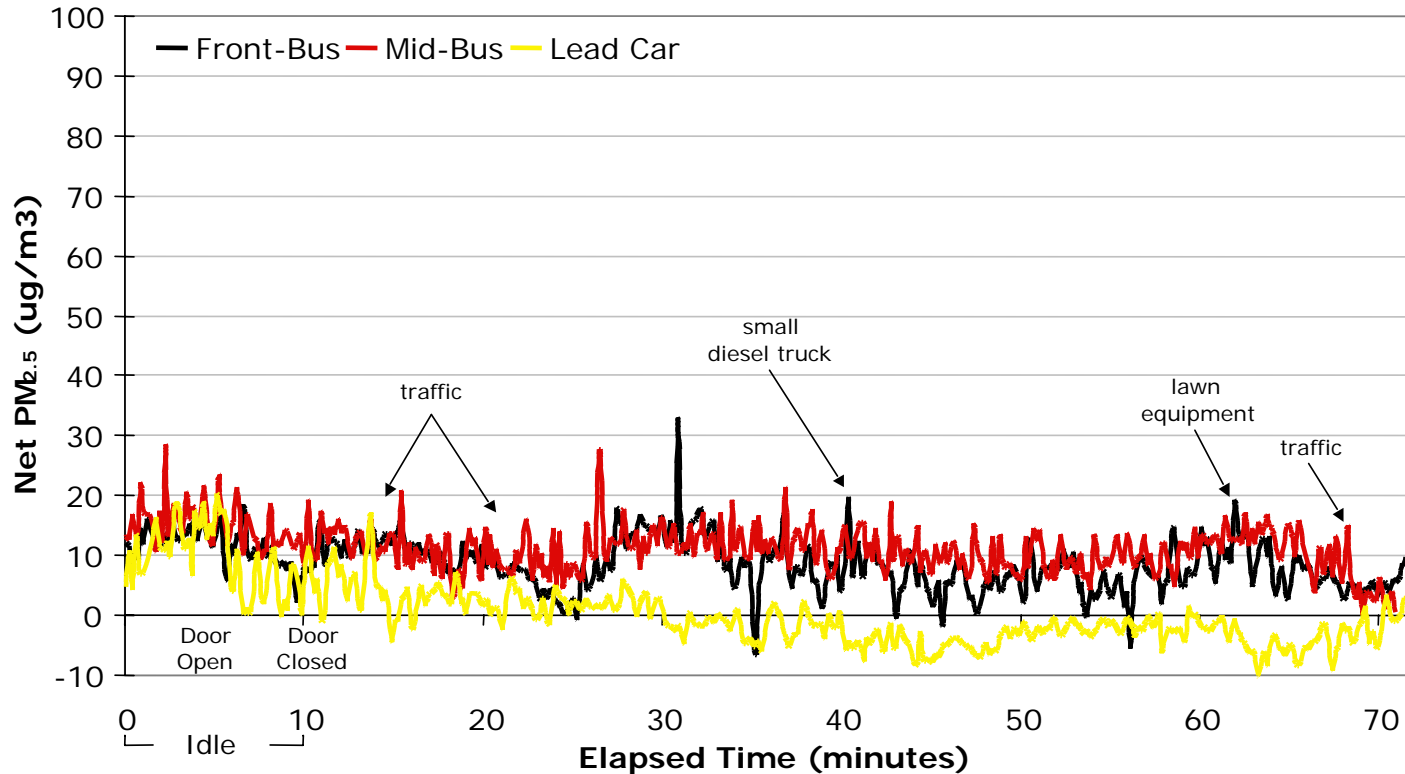


# Spiracle Run 1 - PM<sub>2.5</sub> & Ultrafine



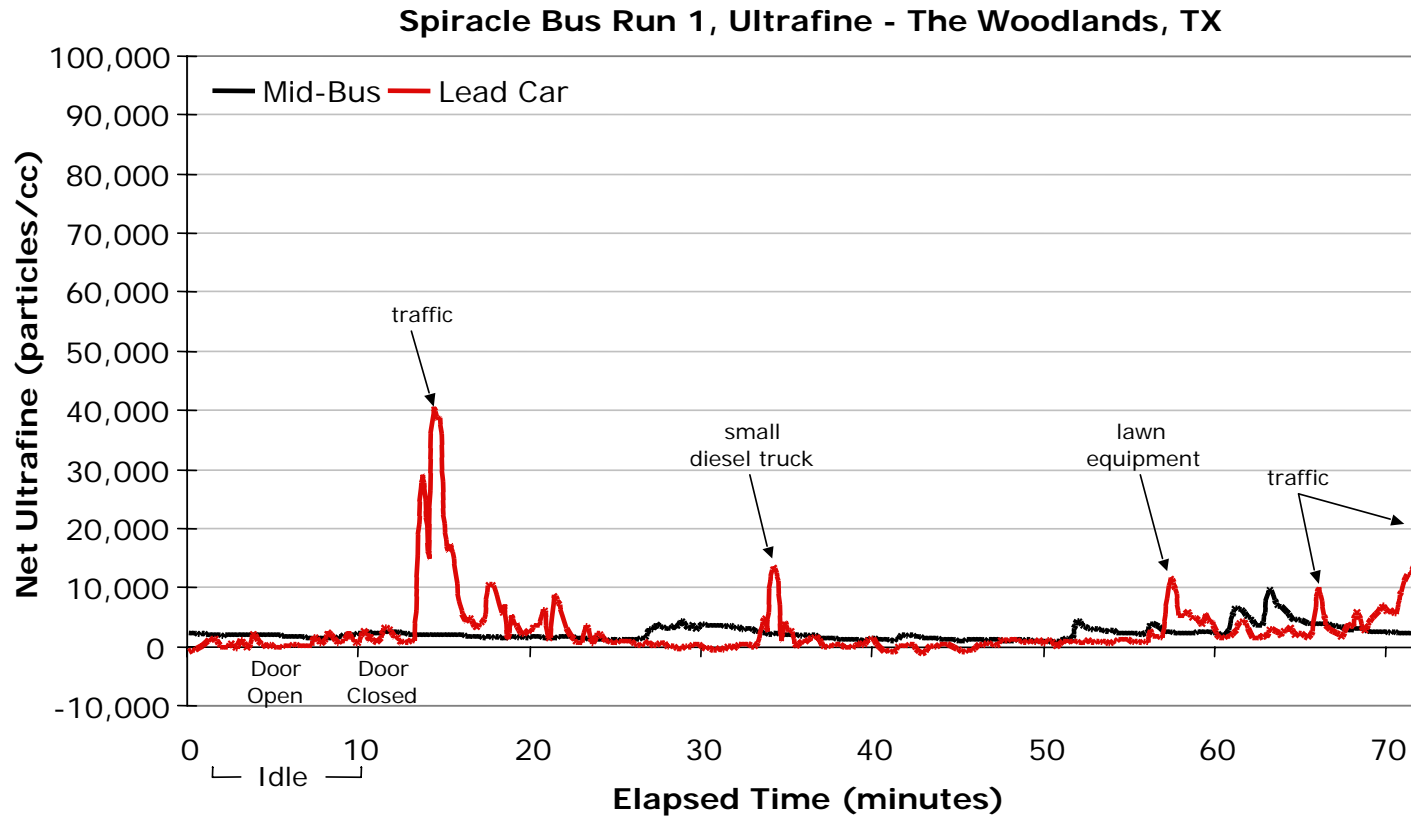
# Spiracle Run 1 - PM<sub>2.5</sub>

Spiracle Bus Run 1, PM<sub>2.5</sub> - The Woodlands, TX



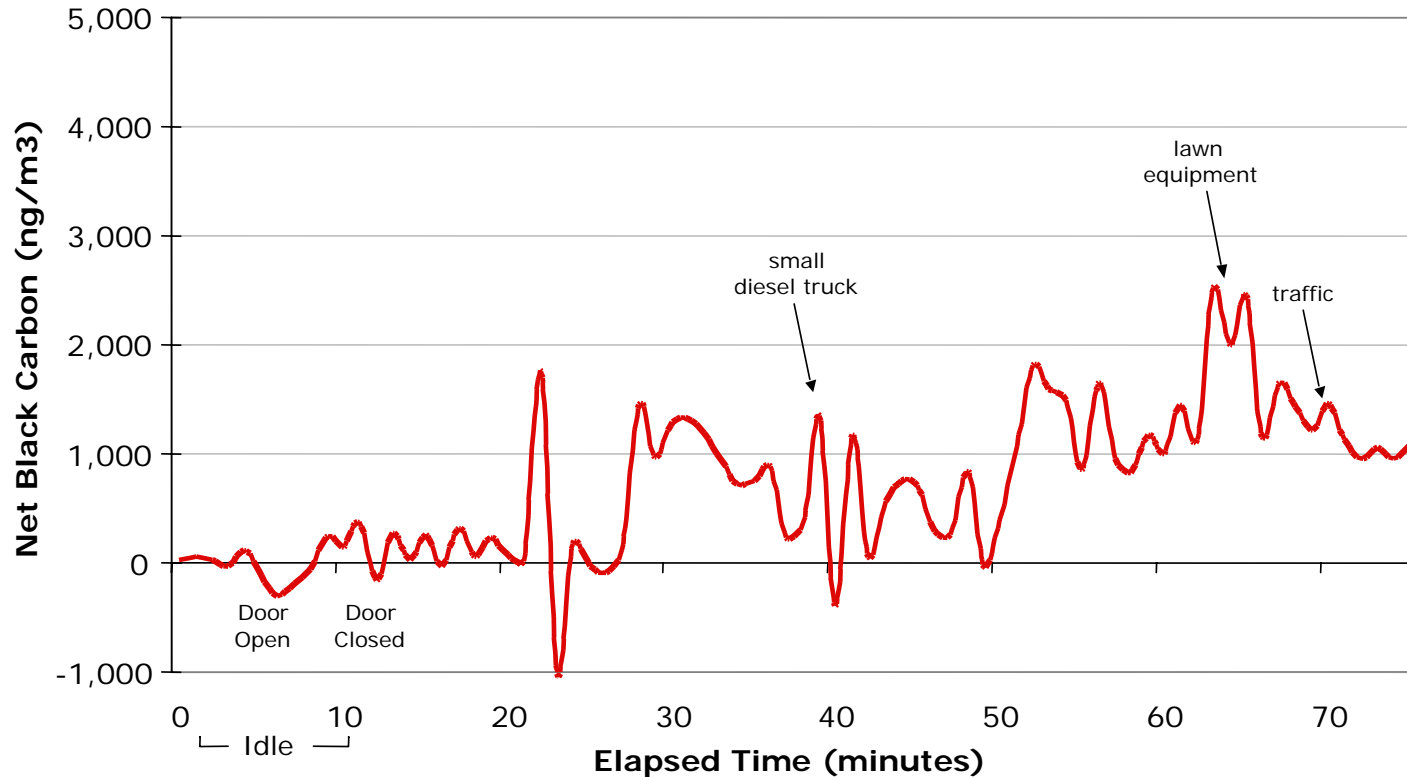


# Spiracle Run 1 - Ultrafine



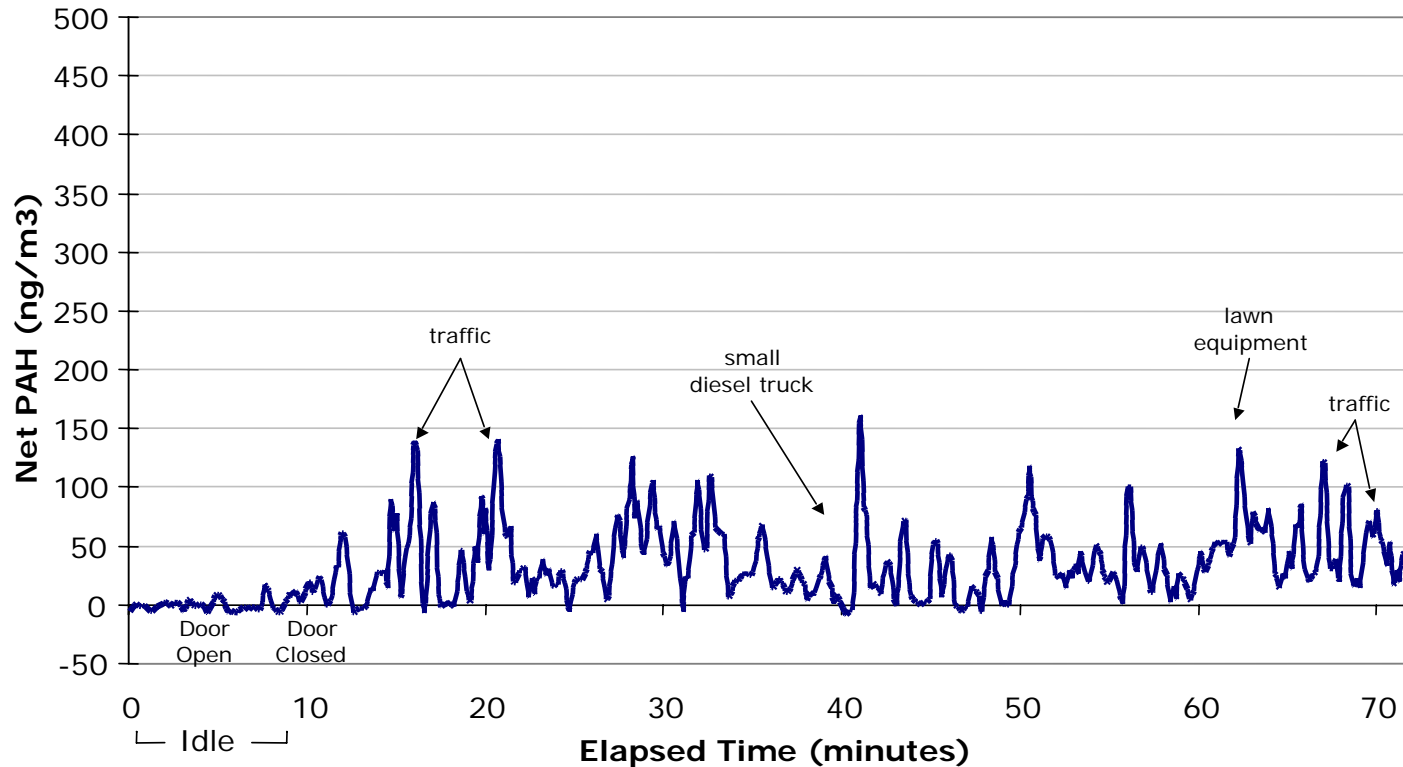
# Spiracle Run 1 - Black Carbon

Spiracle Bus Run 1, Black Carbon - The Woodlands, TX

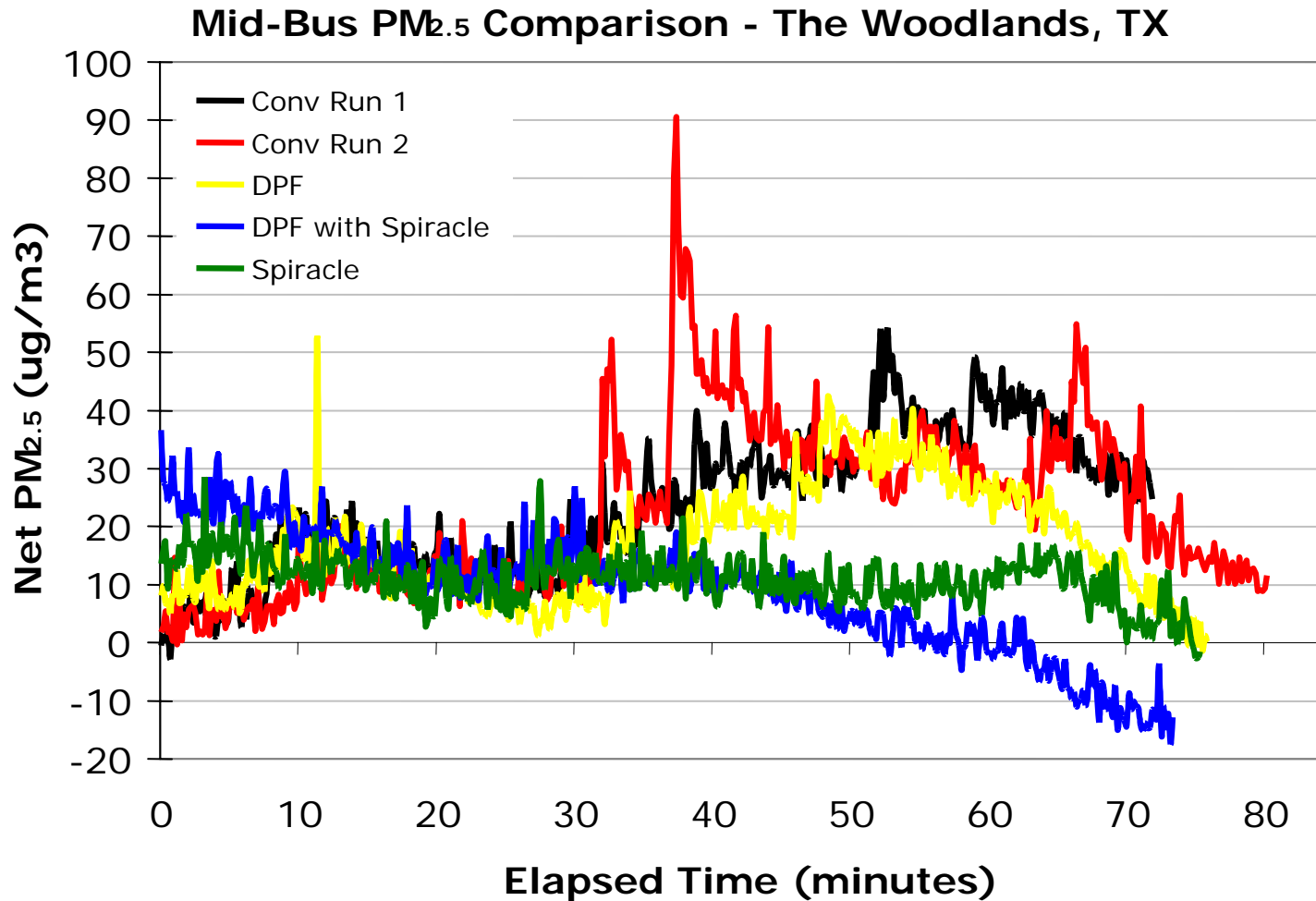


# Spiracle Run 1 - PAH

Spiracle Bus Run 1, PAH - The Woodlands, TX

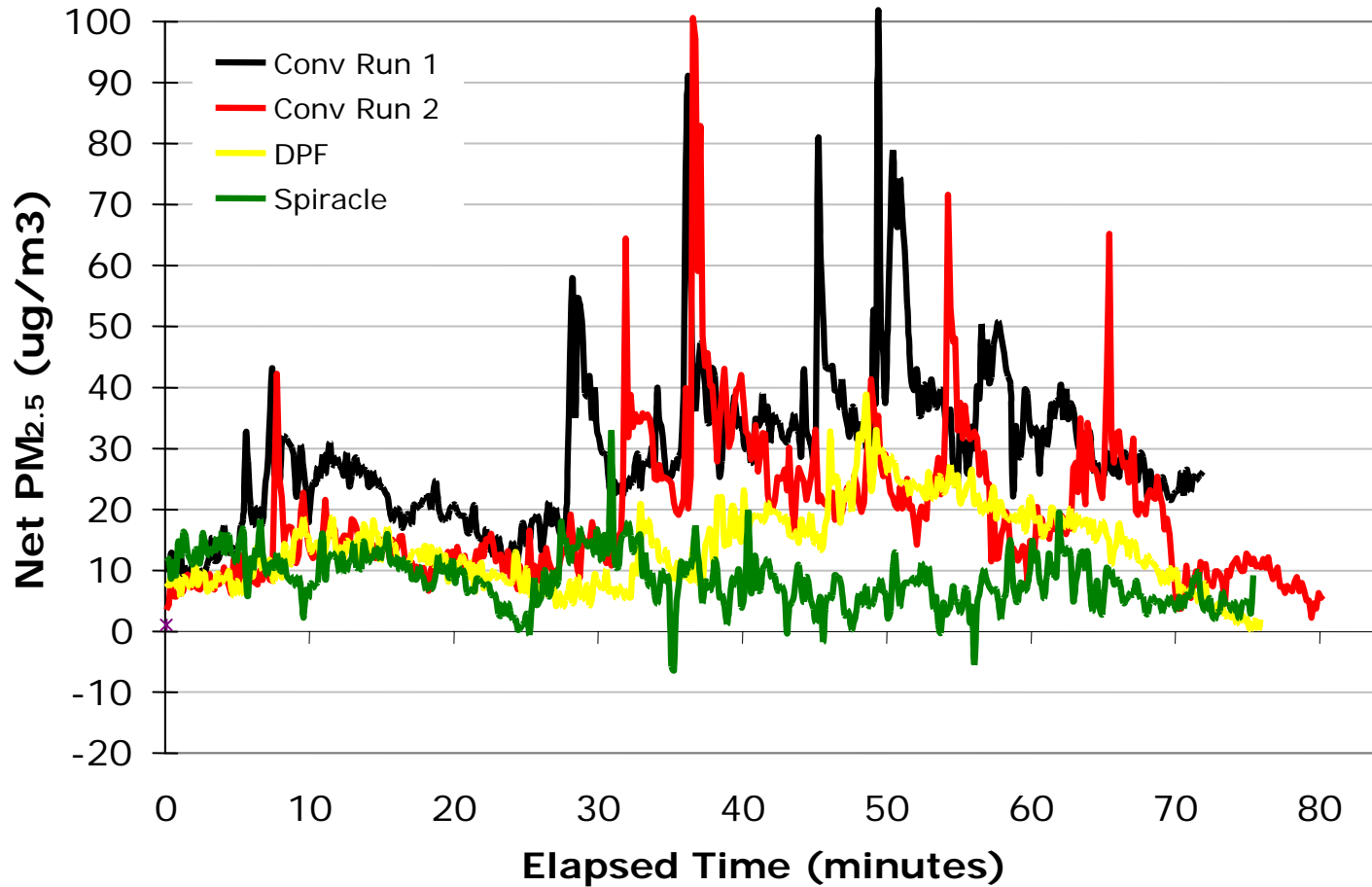


# PM<sub>2.5</sub> Comparison - MIDDLE



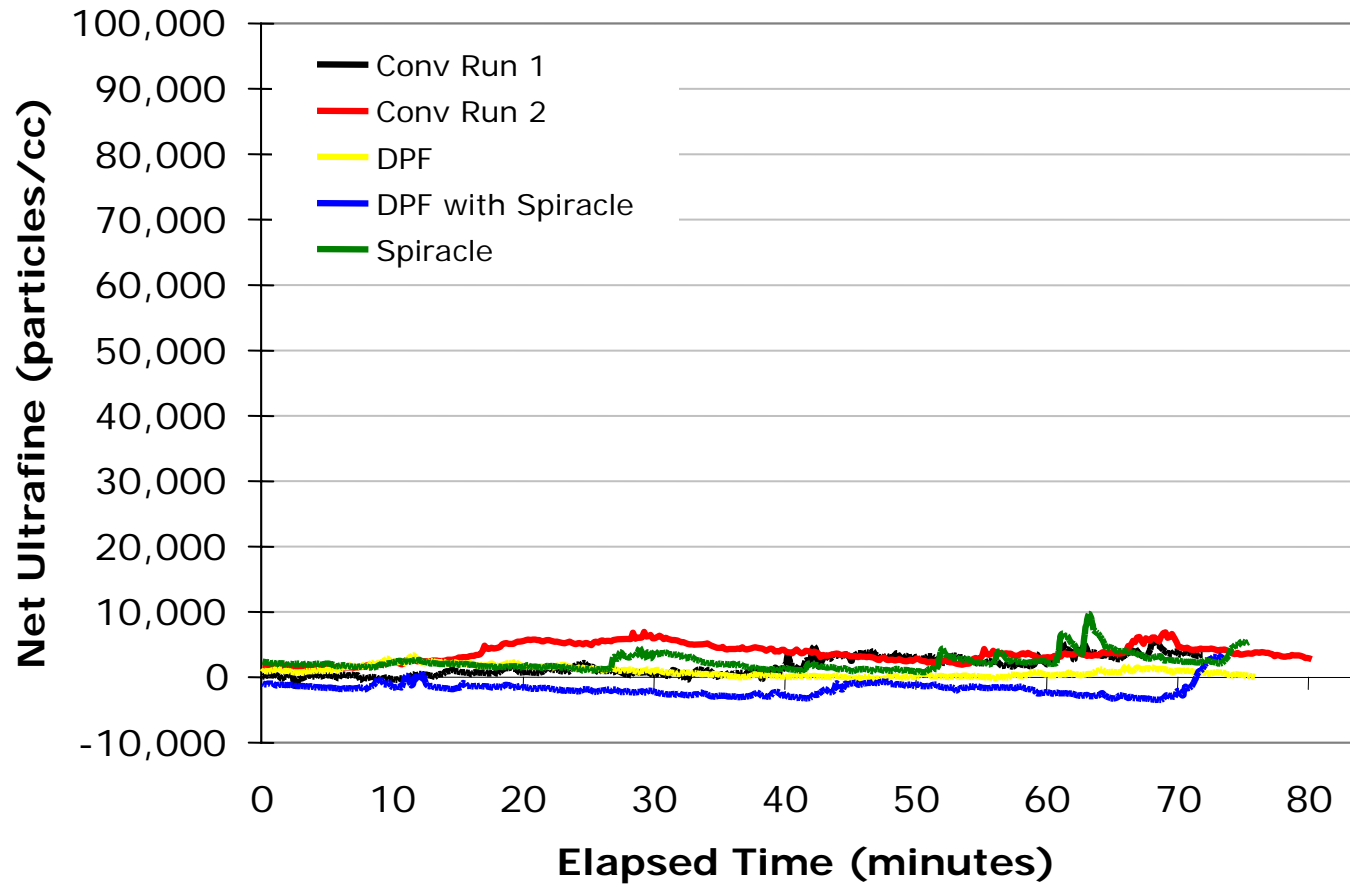
# PM<sub>2.5</sub> Comparison - FRONT

## Front-Bus PM<sub>2.5</sub> Comparison - The Woodlands, TX



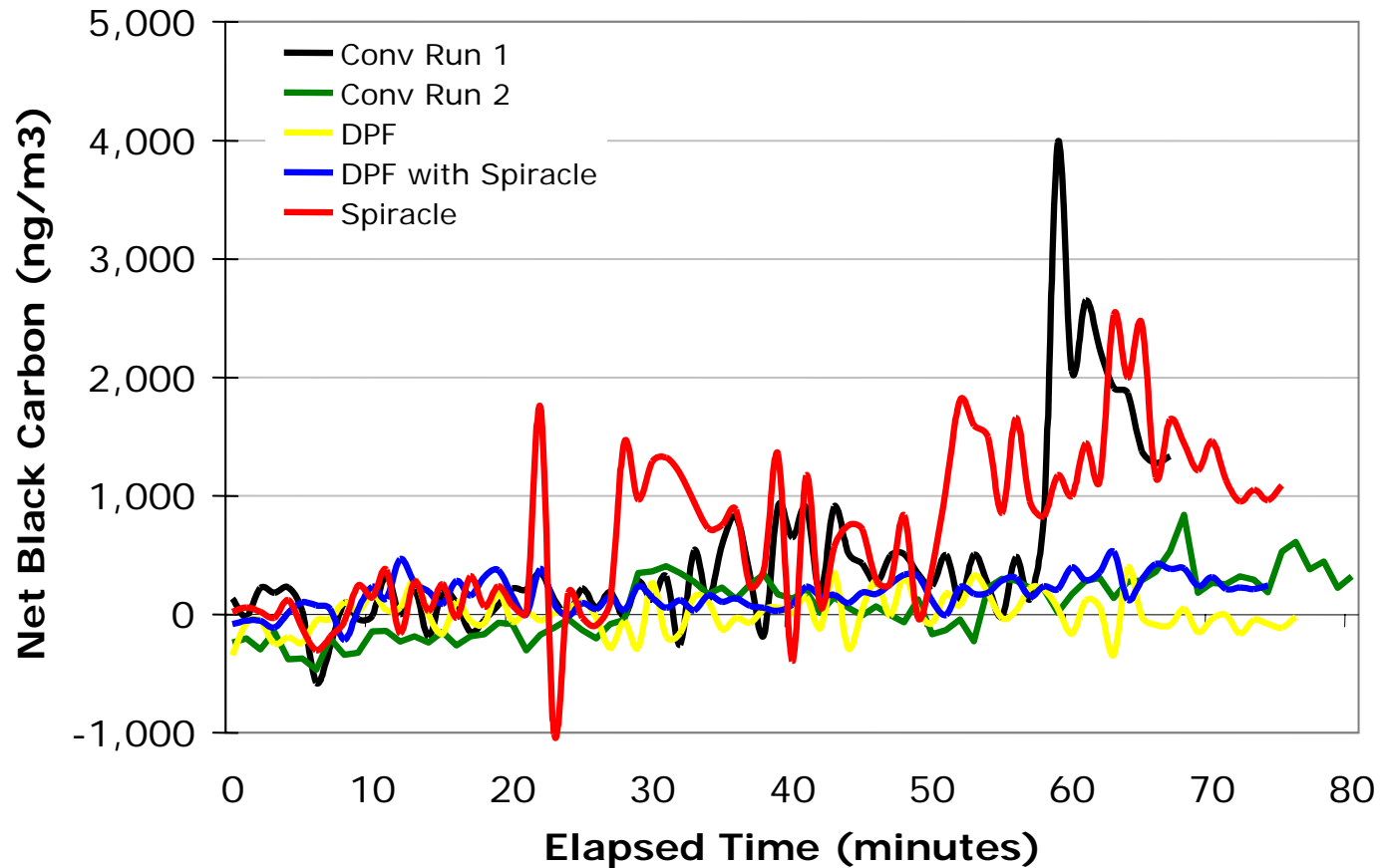
# Ultrafine Comparison

## Ultrafine Comparison - The Woodlands, TX

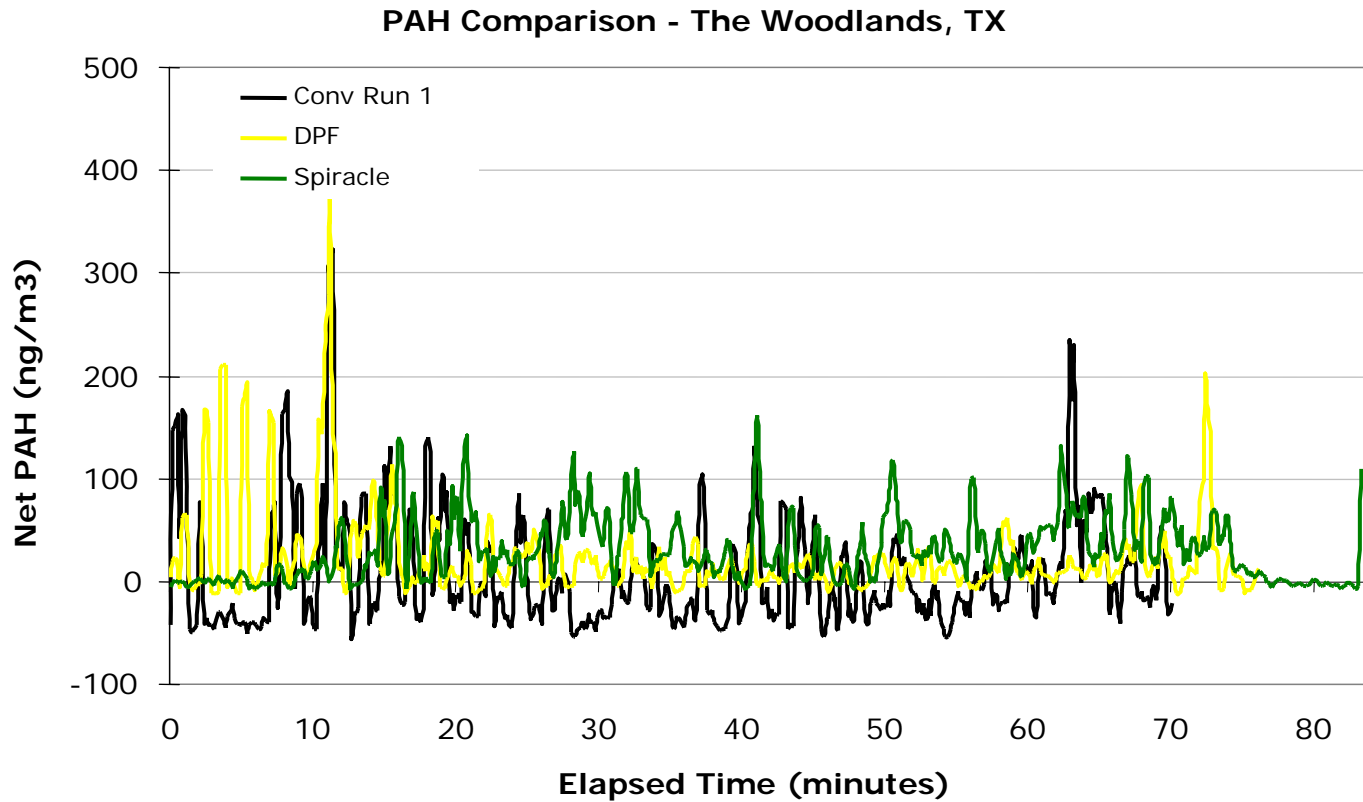


# Black Carbon Comparison

## Black Carbon Comparison - The Woodlands, TX



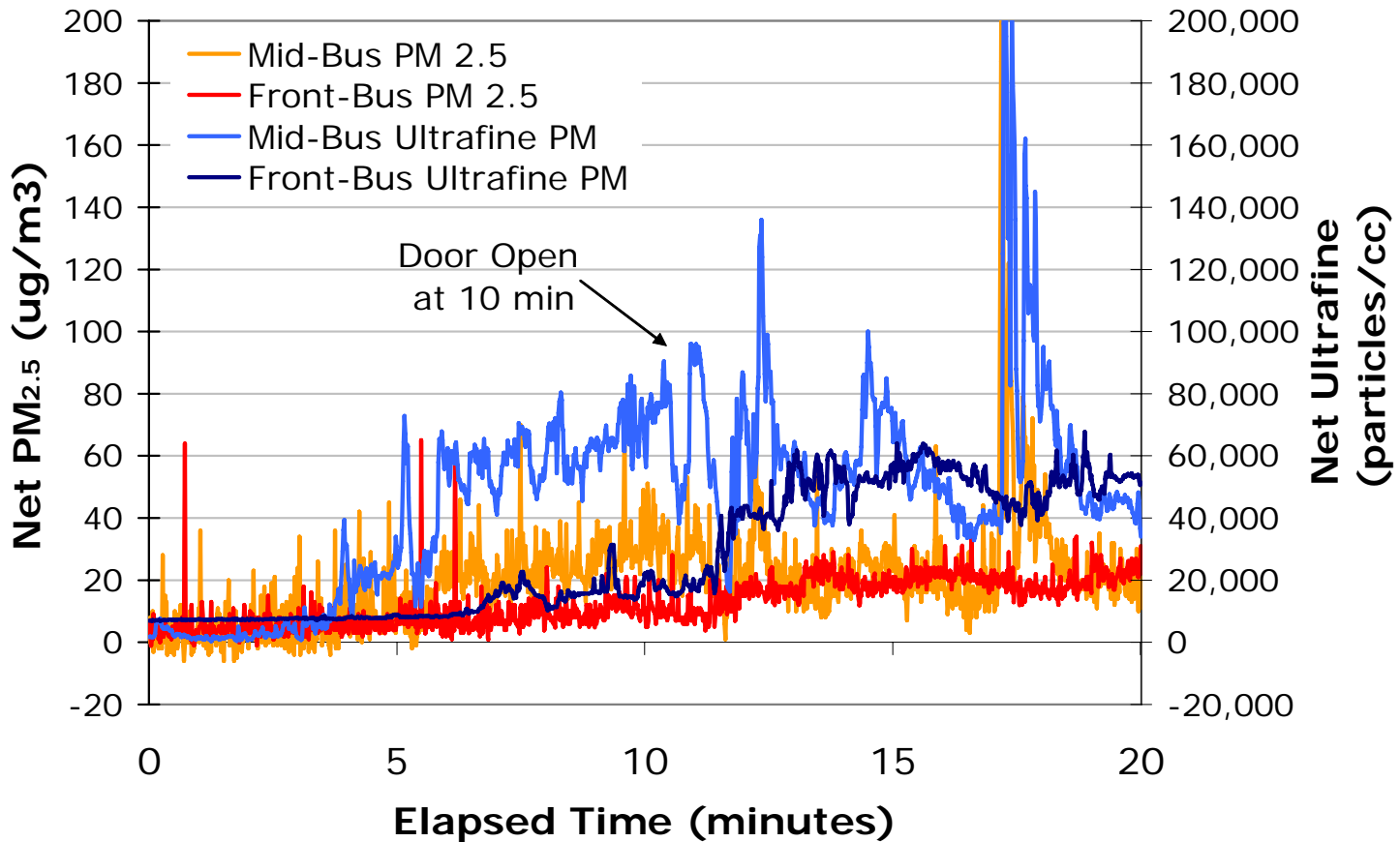
# PAH Comparison





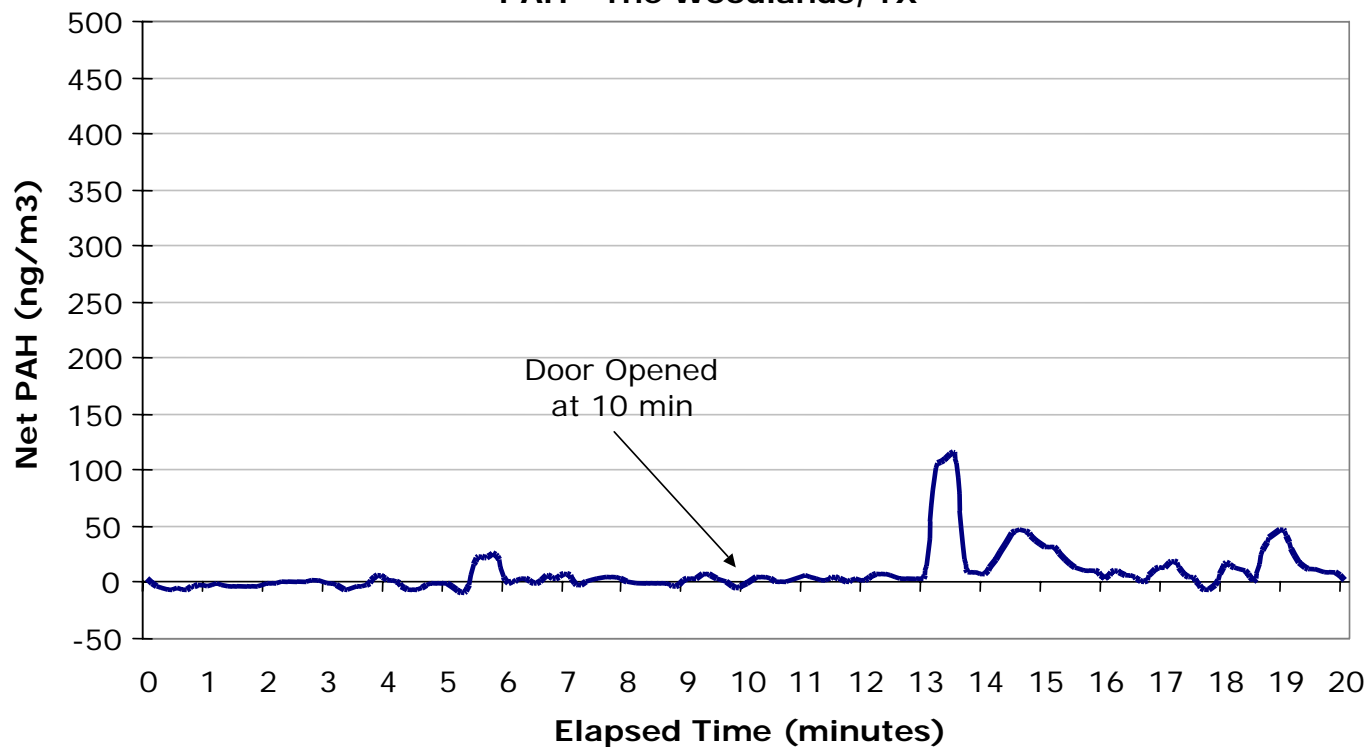
# Conventional Bus Queue - PM<sub>2.5</sub> & Ultrafines

20 Minute Idle in 3-Bus Conventional Queue,  
PM<sub>2.5</sub> & Ultrafine - The Woodlands, TX



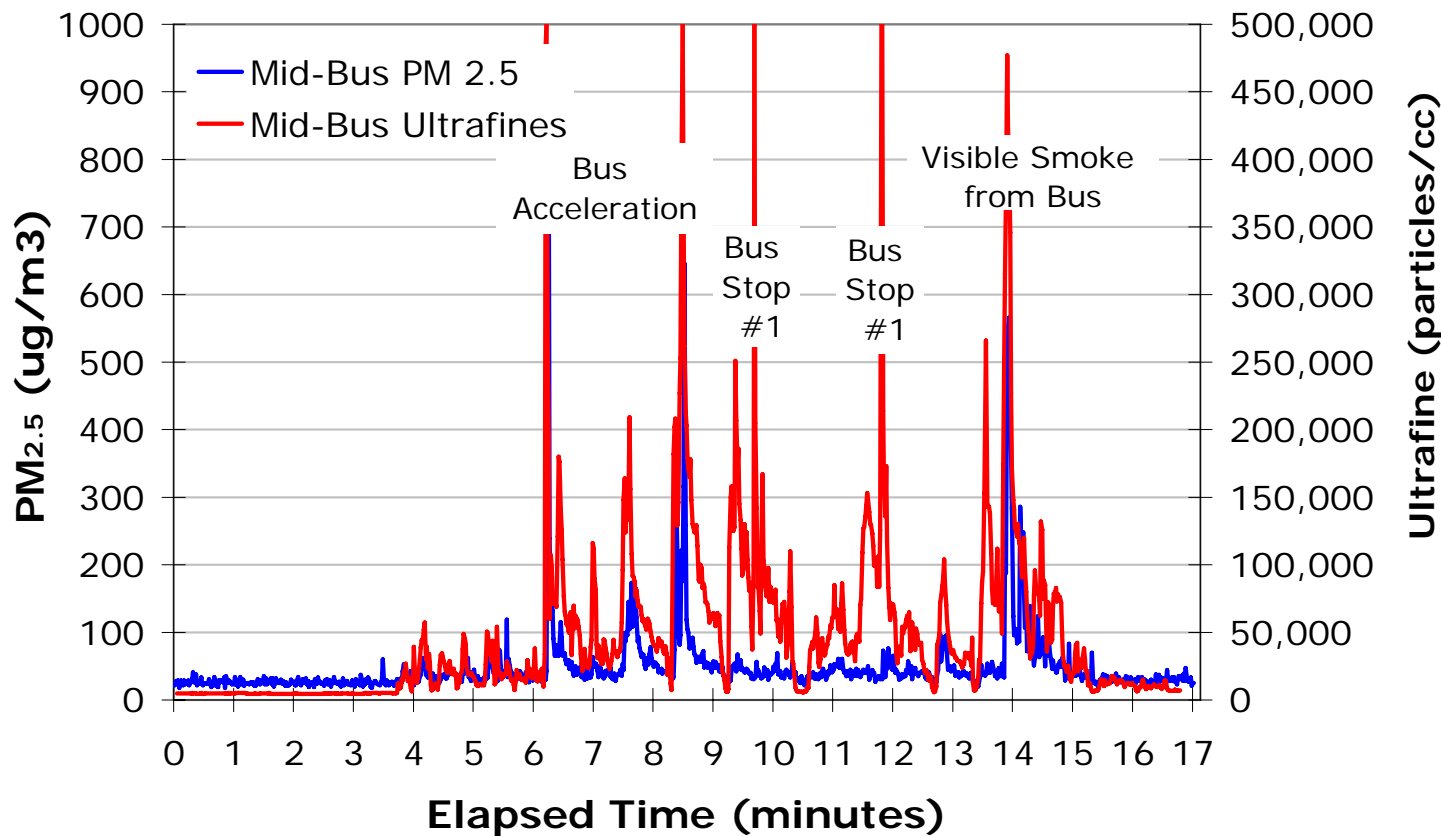
# Conventional Bus Queue - PAH

20 Minute Idle in 3-Bus Conventional Queue,  
PAH - The Woodlands, TX



# Conventional Bus Follow - PM<sub>2.5</sub> & Ultrafine

Following Conventional Bus,  
PM<sub>2.5</sub> & Ultrafine - The Woodlands, TX



# Conventional Bus Follow - PAH

Following Conventional Bus, PAH - The Woodlands, TX

