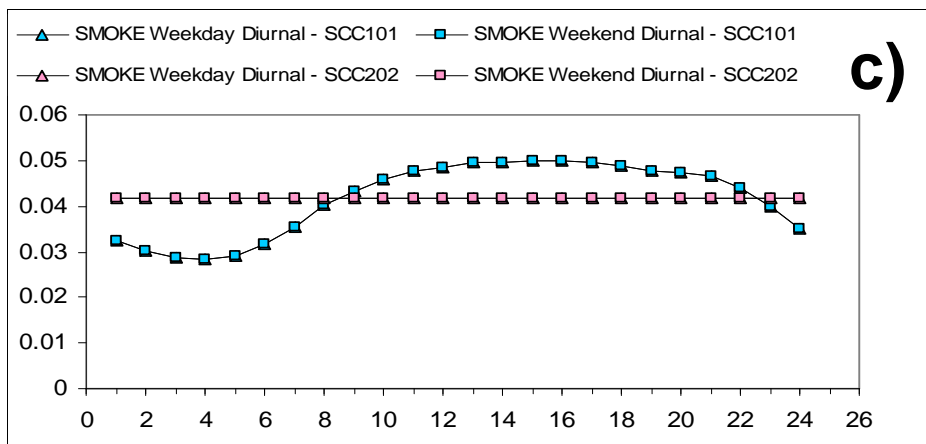
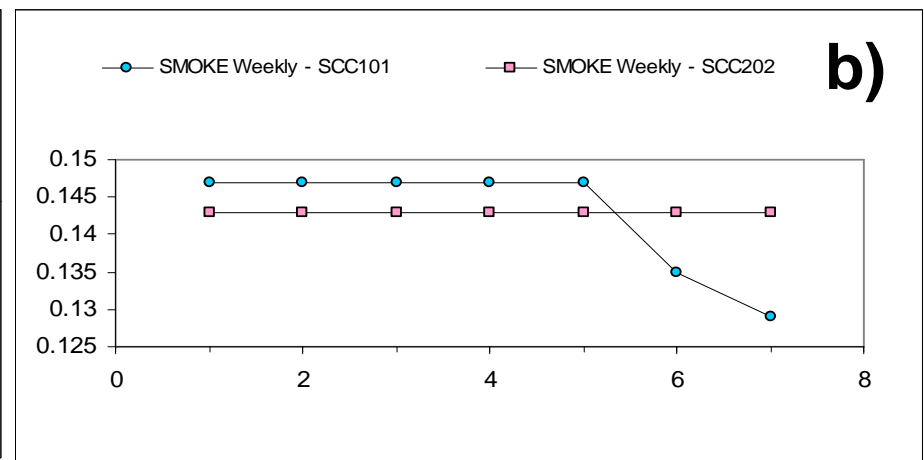
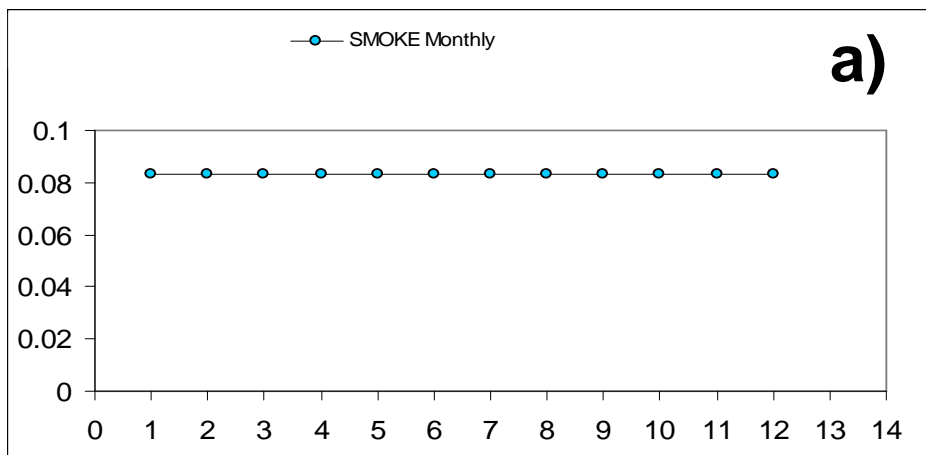


# **Incorporating Actual Temporal Profiles for EGUs into AQ Regional Modeling**

**Tonalee Key, Shan He, Danny Wong, NJDEP  
OTC Committee Meeting  
Buffalo, NY  
September 2-3, 2009**

# Current Modeling Practice



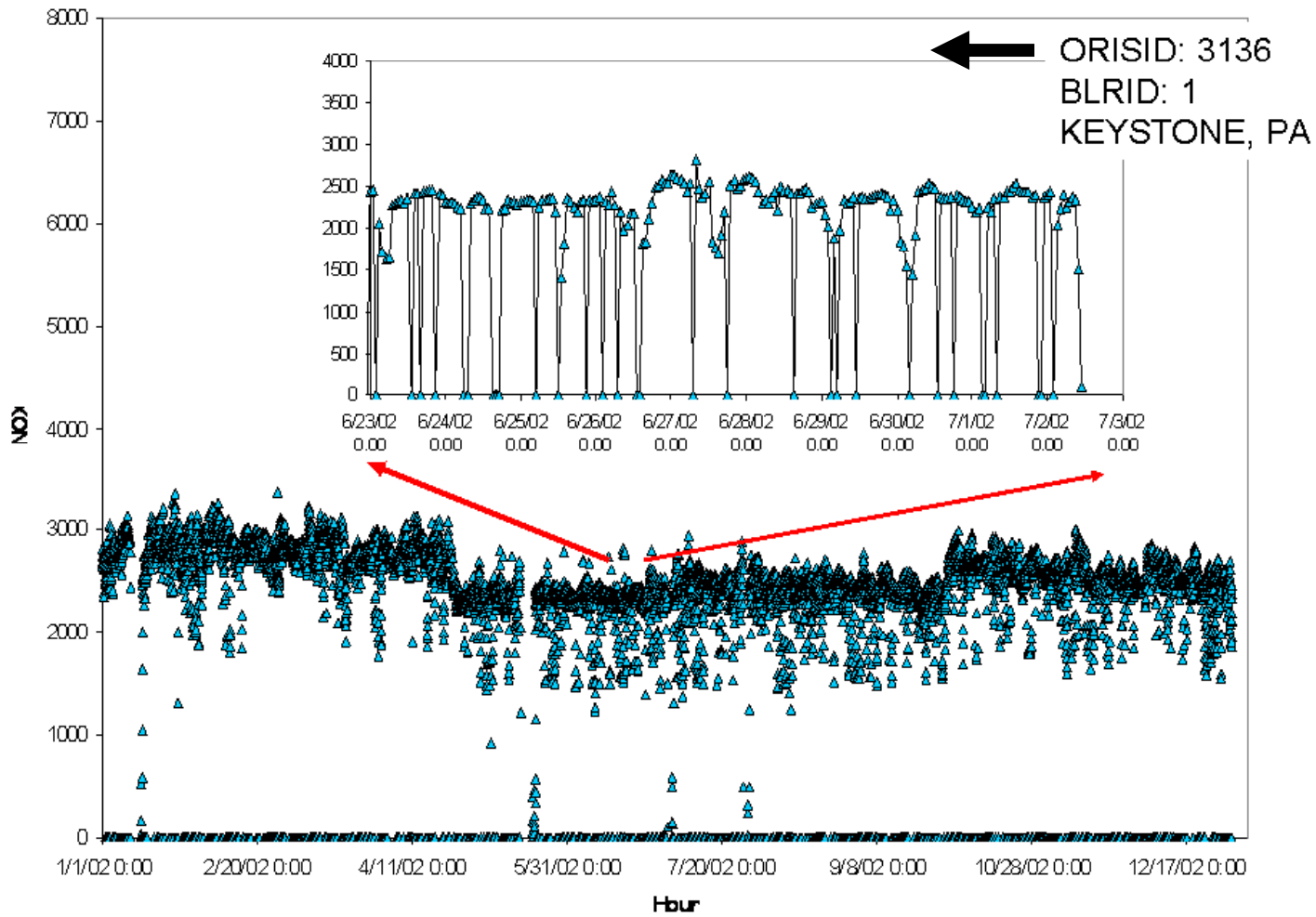
## Default Temporal Profiles for Electric Generating Units Used in SMOKE

a) monthly profile

b) weekly profile

c) diurnal profile

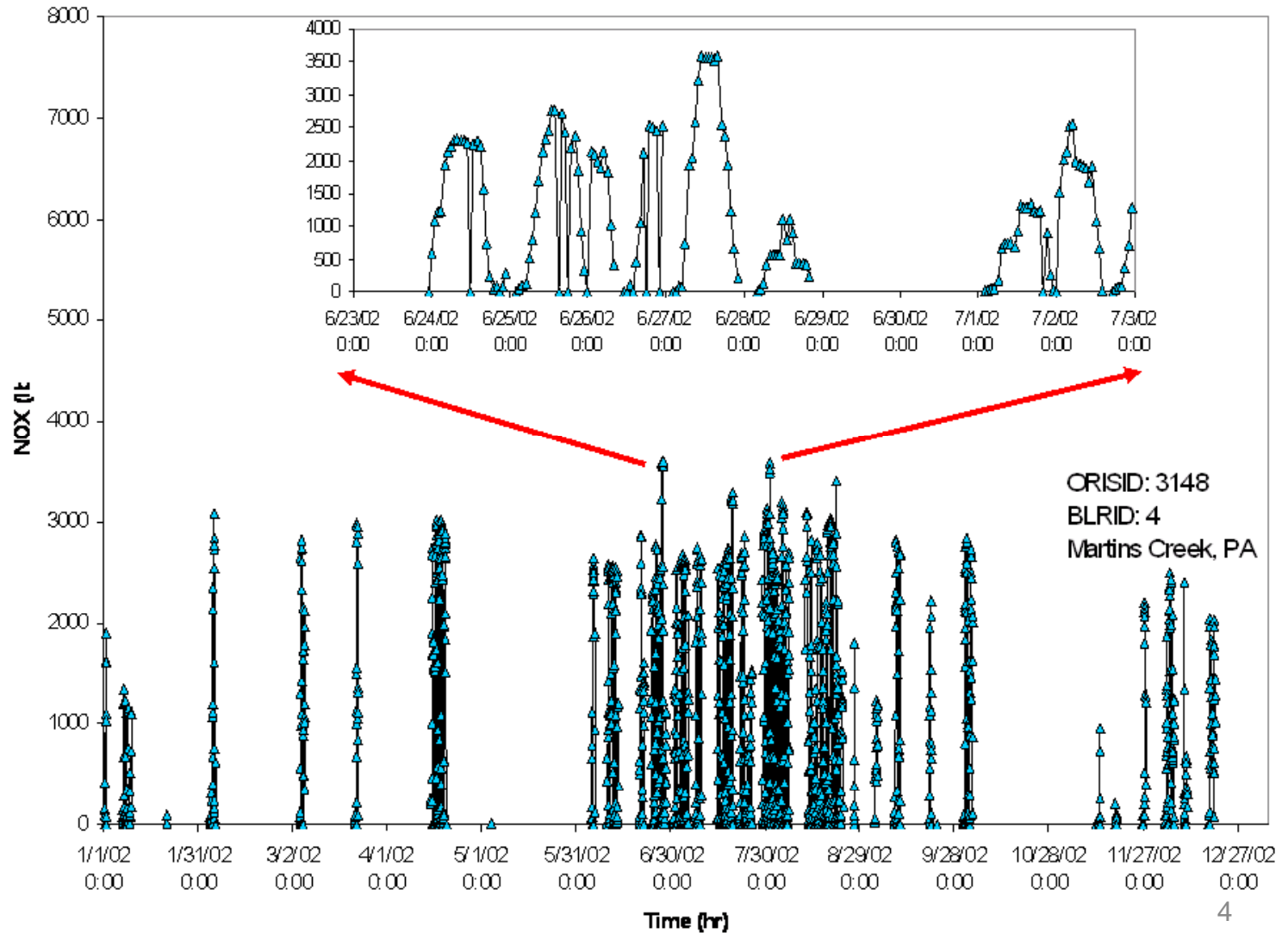
# Actual Operational Profiles



**Operation Profile  
for a  
Continuously  
Operated Unit.  
This unit  
operated 97% of  
the time in 2002.**

# Actual Operational Profiles (continued)

**Operation Profile for an Occasionally (Peaking) Operated Unit. This unit operated 25% of the time in 2002.**

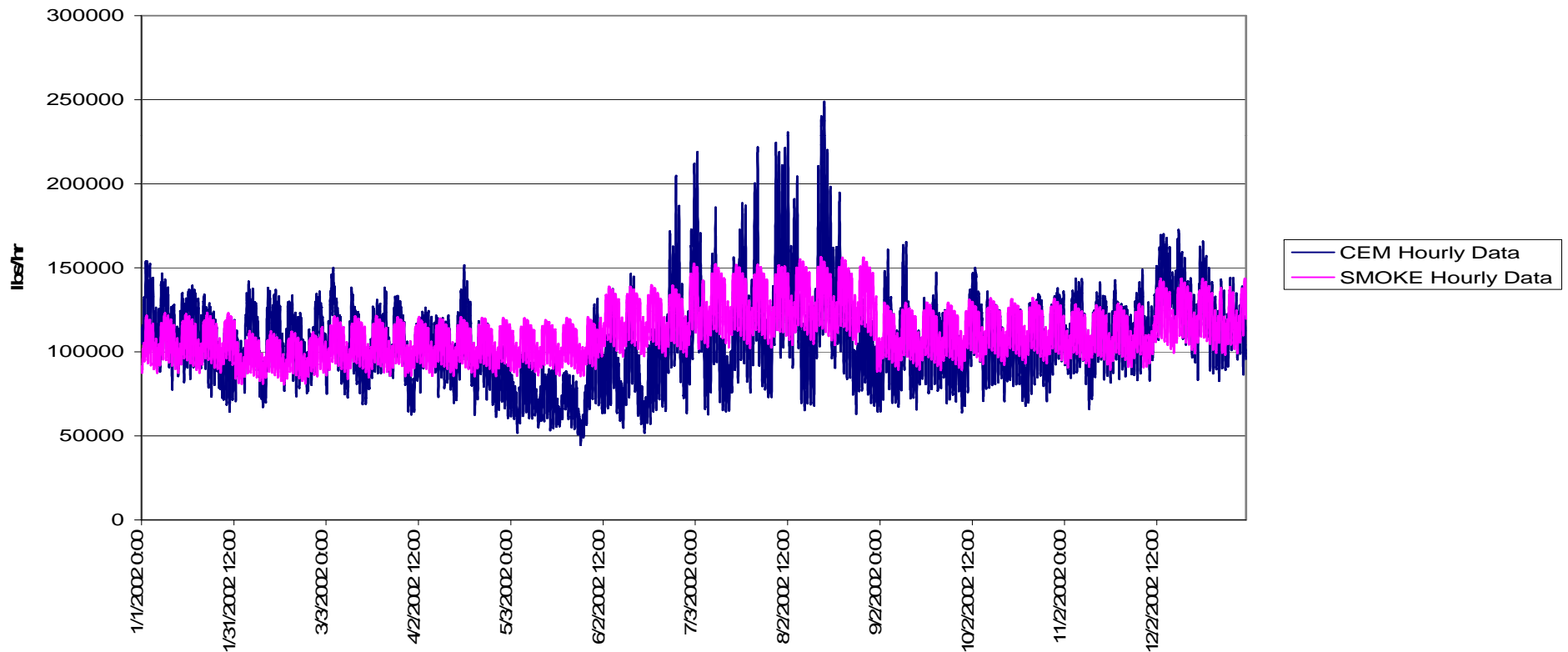


# Do We Have Data On Actual Operational Profiles for EGUs?

- Yes
- USEPA's CAMD collects hourly data from the units in the Acid Rain and NO<sub>x</sub> Budget Programs

# 2002 SIP Modeling Platform

2002 Hourly NO<sub>x</sub> Emissions in the MANE-VU Region from CEM Data and SMOKE-Processed Point Source Files (Adjusted to Remove the Effect of non-CEM-matched Point Sources)



State specific temporal profiles based on 2002 CEM data, developed by VISTAS

# What NJ Is Doing

- Preparing for next SIP HEDD modeling
  - Identifying the steps in the process
  - Problem solving
- Using:
  - 2005 met, inventory, CMAQ
- Modeling:
  - 2005 base case using temporal defaults
  - 2005 using CAMD temporal profiles

# Steps

- Existing program that reads a year's worth of hourly CAMD data and creates an output file which is used by another program to normalize CAMD emissions to annual inventory (NEI) emissions
  - Why normalize the CAMD emissions to the NEI emissions?
    - Some of the units only report ozone season emissions to CAMD
    - Emissions for units which report 12 months of data to CAMD should be equal to annual NEI emissions for the units. However, this is not always the case.



# Steps (Continued)

- Matching NEI data to CAMD data
  - State permit systems and USEPA CAMD use different Facility/Unit ID numbers
  - Match units via crosswalks prepared by the states/regional organizations
  - Two reasons to match NEI and CAMD units:
    - Emissions
    - Stack parameters

# Matching Results

	CAMD to NEI Match		
	NJ 2005	MANEVU 2005	MWRPO 2005
<b>CAMD to NEI Match: units matched</b>	100%	92%	
<b>CAMD to NEI Match: total NOx tons matched</b>	100%	95%	98%
<b>Of <u>Matched</u>: tons associated with 12 month reporting units</b>	94%	96%	
<b>Percent of units reporting 12 months of data to CAMD</b>	50%	76%	

# Matching Results (Continued)

	All <u>MATCHED</u> Units CAMD Reported vs NEI Annual		
	2005 NJ	2005 MANEVU	2005 MWRPO
<b>NEI &amp; CAMD emissions the same (ratio =1)</b>	<b>23,708</b>	<b>315,651</b>	<b>438,063</b>
<b>Percent of NEI emissions correctly accounted for in CAMD</b>	<b>81%</b>	<b>79%</b>	<b>52%</b>
<b>Ratio <math>\geq 0.95</math> but <math>\leq 1.05</math></b>	<b>25,533</b>	<b>349,140</b>	<b>682,880</b>
<b>Percent of NEI emissions correctly accounted for in CAMD</b>	<b>87%</b>	<b>87%</b>	<b>81%</b>

# Next Steps

- **Run 2005 base case (default temporal profiles)**
- **Run 2005 with CAMD based hourly profiles for units in MANEVU, MWRPO, VISTAS**