

Estimated Share of Emissions and Load from HEDD Units

**Presentation to
OTC HEDD Technical Group
December 5, 2006**

**Joseph A. Miakisz
M.J. Bradley & Associates**



Analysis Methodology

- **Examined high electric demand day (HEDD) unit database compiled by NJDEP (384 units)**
- **Substituted daily NO_x emissions from EPA Clean Air Markets database for annual NO_x data included in NJ inventory.**
- **Selected one high ozone day event in August 2002 episode (August 12) and July 2005 episode (July 27)**
- **For each of these high ozone event days, broke down gross electric load and total NO_x emissions from HEDD units by unit type**

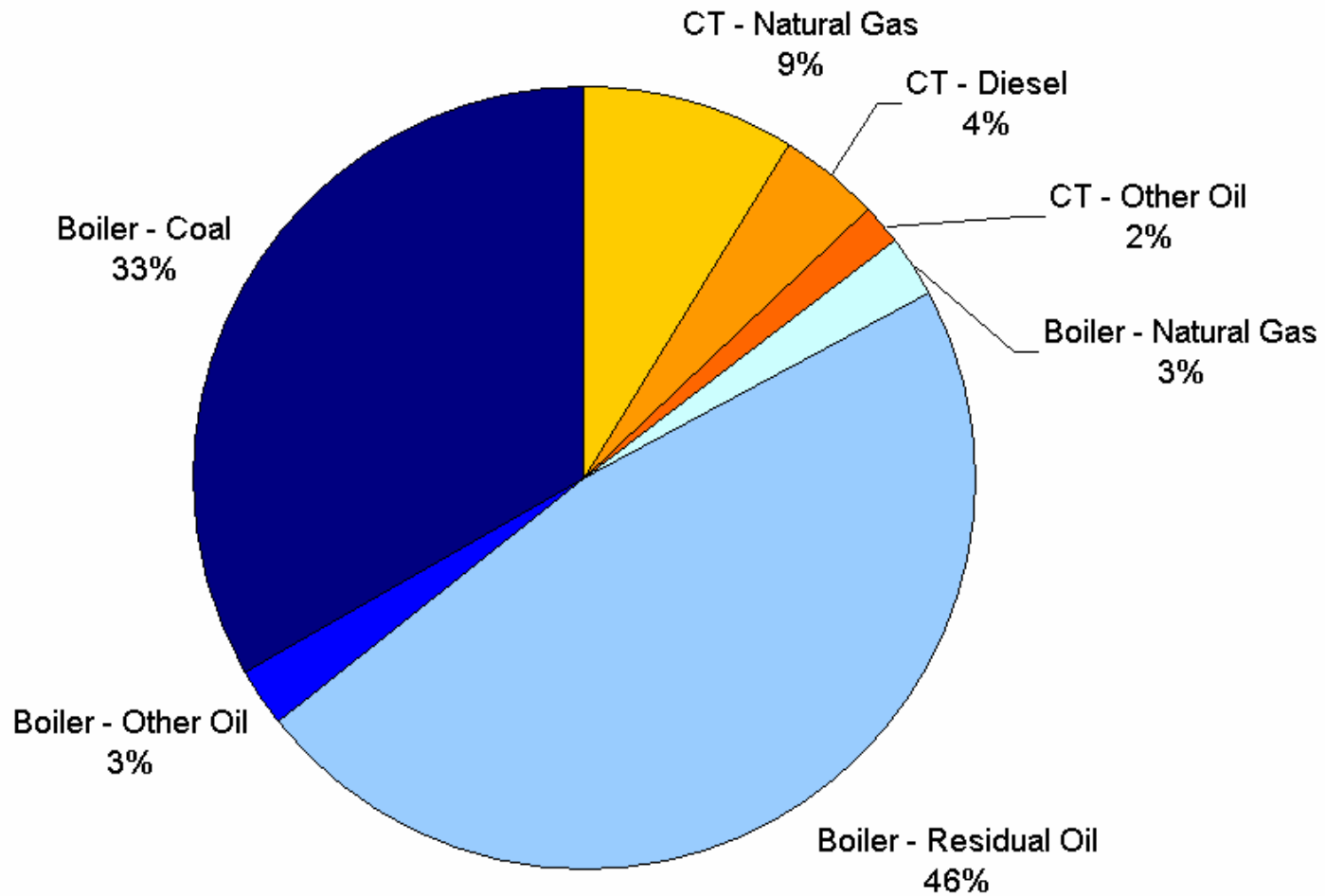
Analysis Methodology (Cont'd.)

- Identified population of units that would result from a definition of HEDD units based on “percentage of total ozone season operating hours.” (20% and 40%)

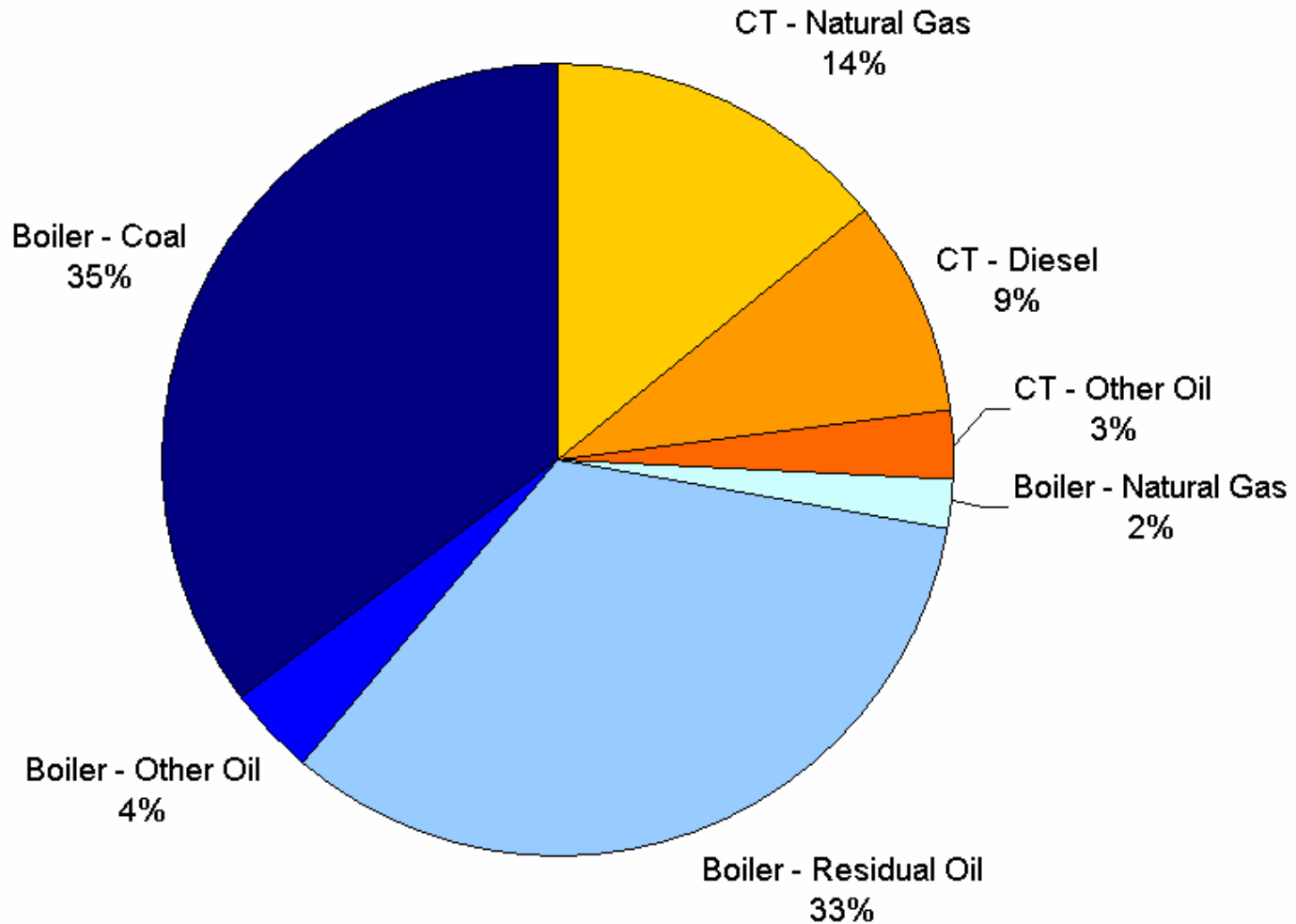
Disclaimer

- NJ database based on 2002 information (pre-NOx SIP call, some units now controlled, some units retired, etc.)
- “Reported” vs “actual” NOx emissions data issue (reference report prepared by Roger Caiazza of NRG)

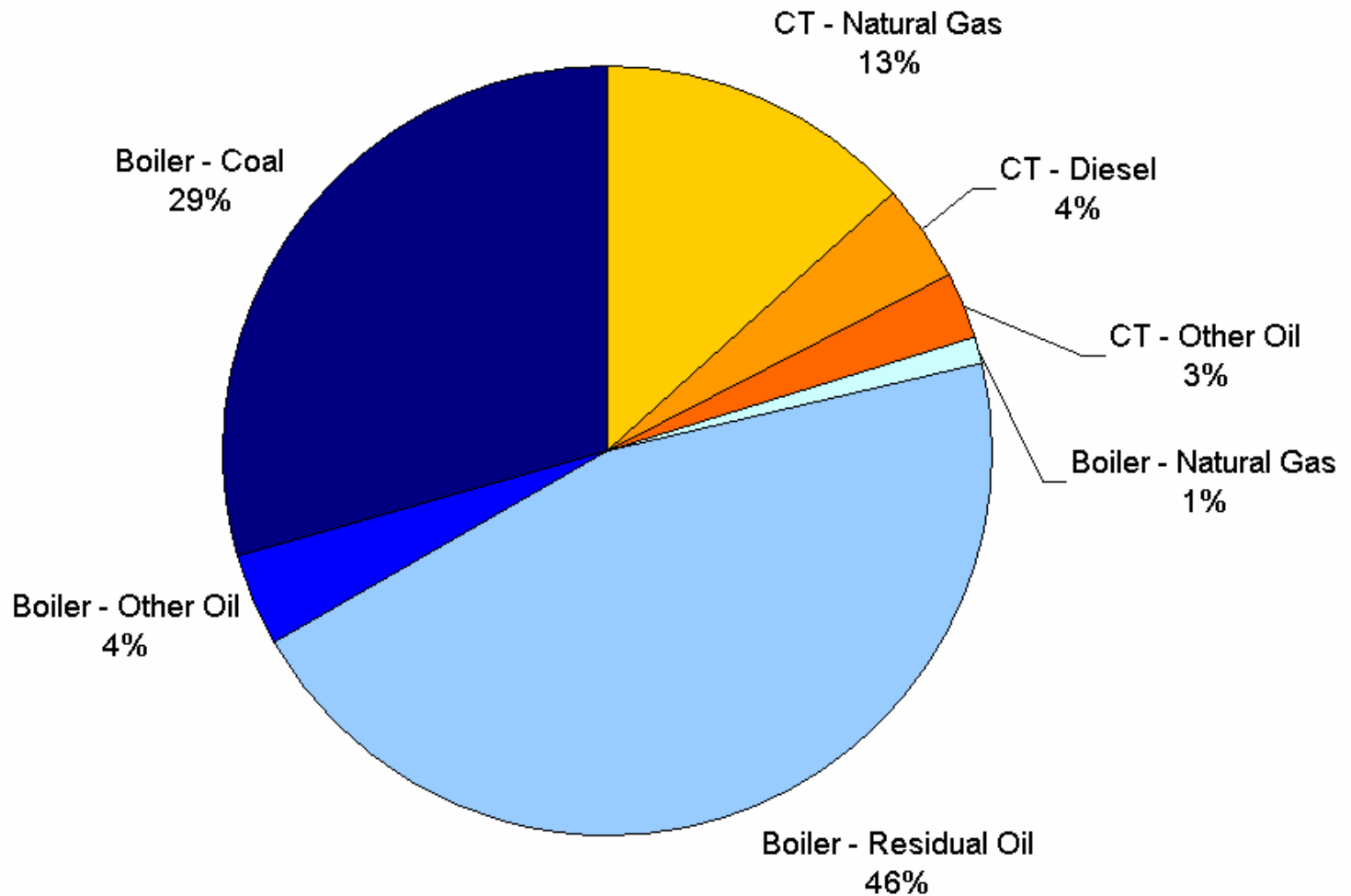
Percentage of Gross Load (MWh) from HEDD Units on August 12, 2002 by Unit Type (Based on EPA's CAMD Data)



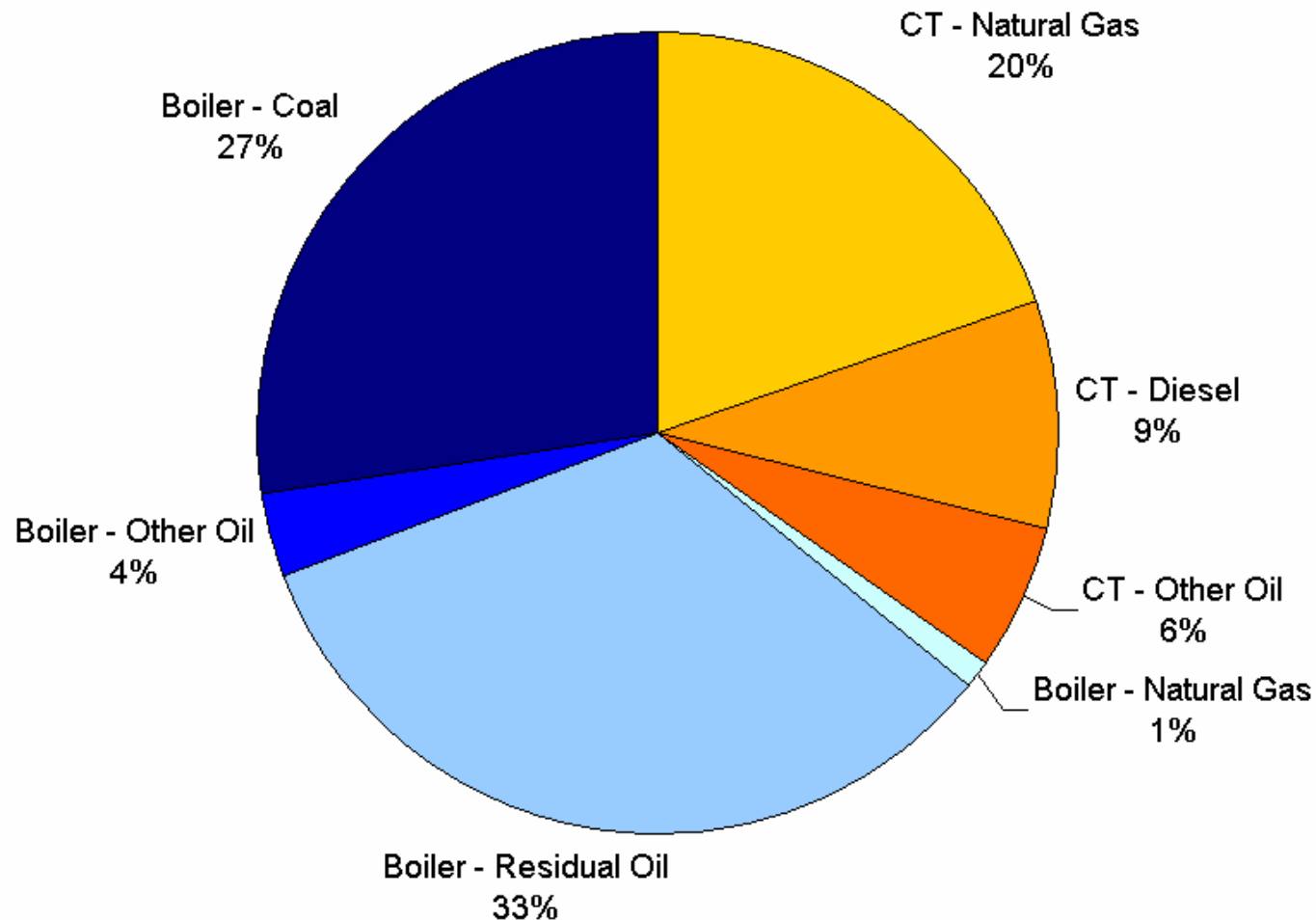
Percentage of NOx Emissions (Tons) from HEDD Units on August 12, 2002 by Unit Type (Based on EPA's CAMD Data)



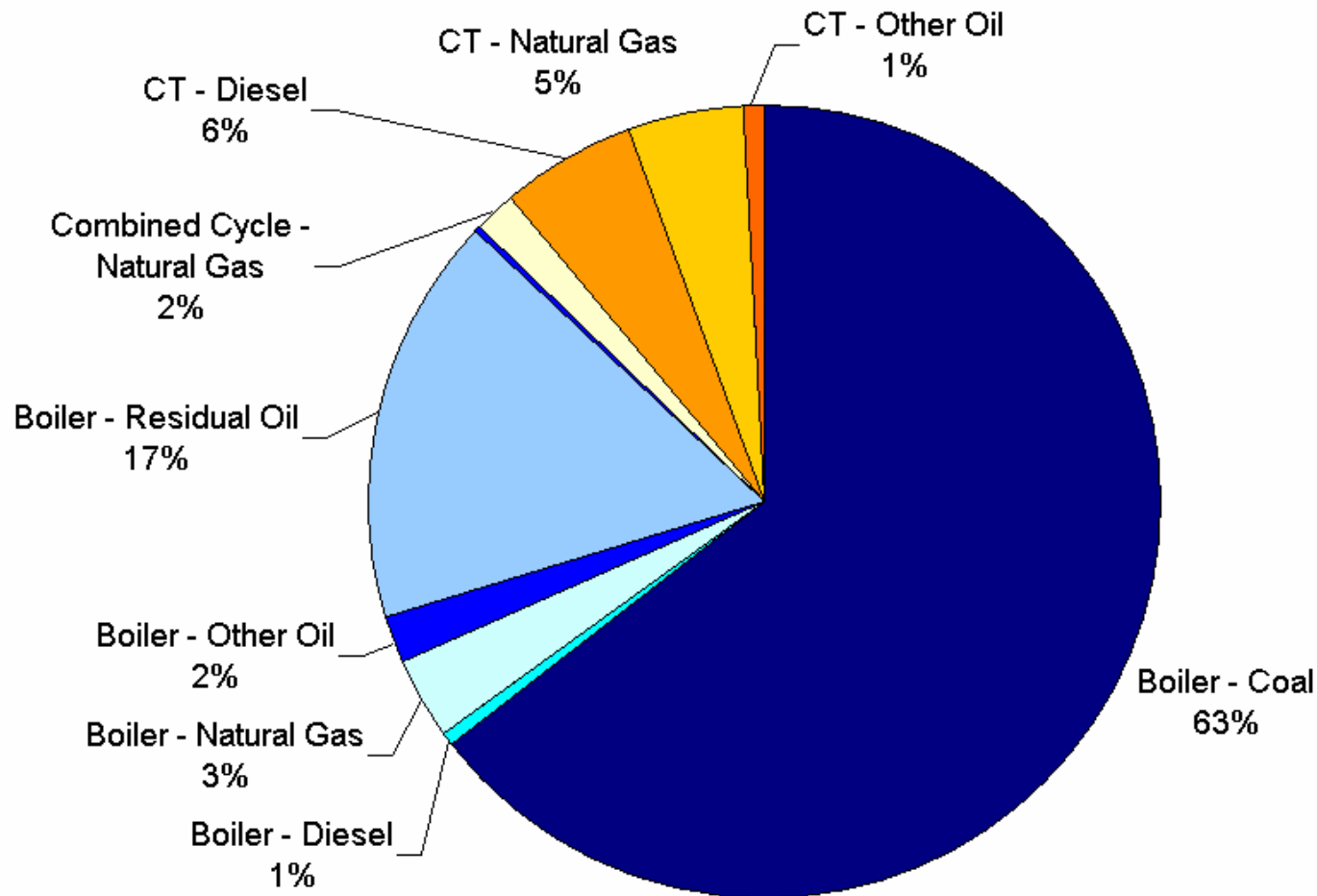
Percentage of Gross Load (MWh) from HEDD Units on July 27, 2005 by Unit Type (Based on EPA's CAMD Data)



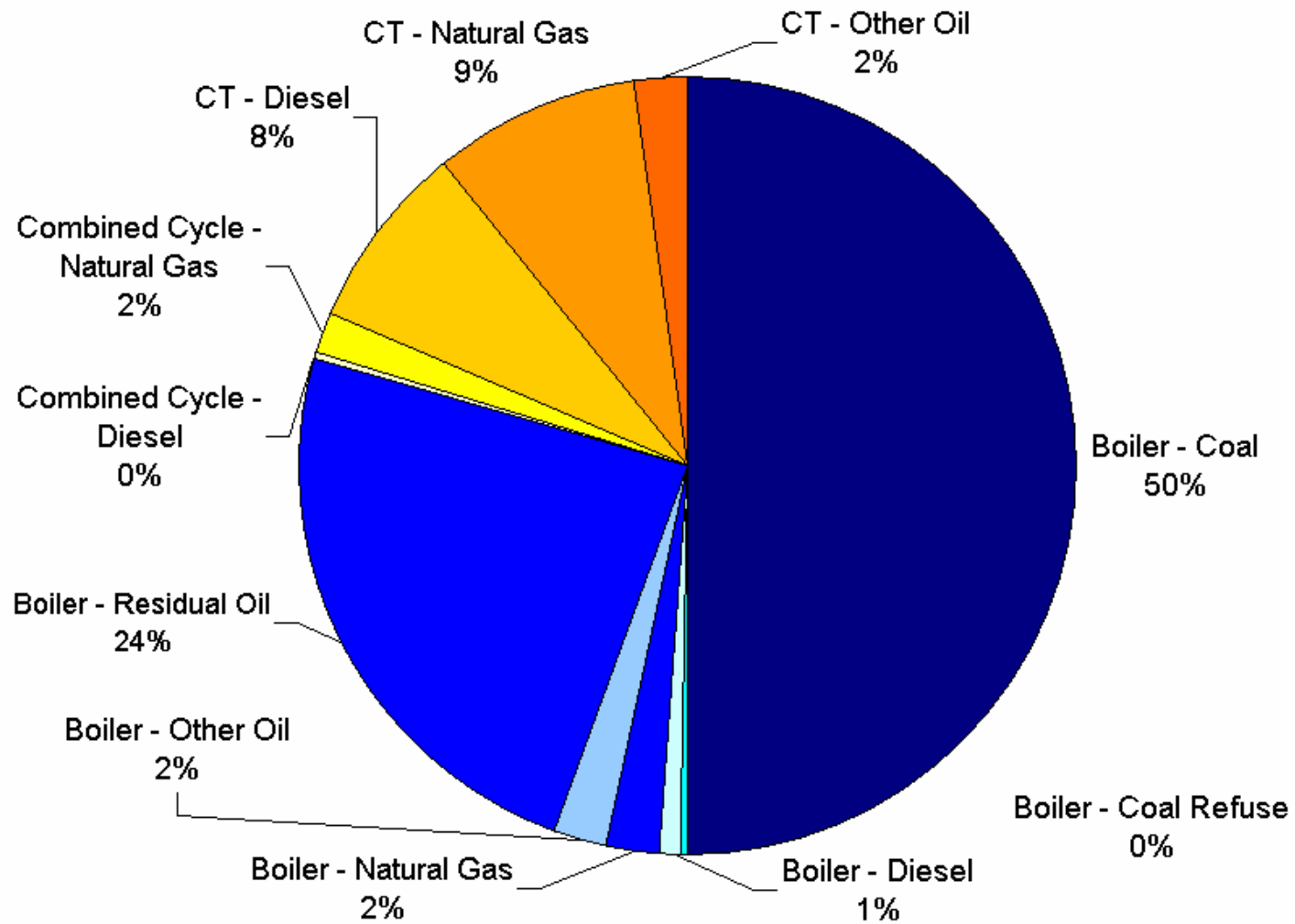
Percentage of NOx Emissions (Tons) from HEDD Units on July 27, 2005 by Unit Type (Based on EPA's CAMD Data)



Percentage of NOx Emissions (Tons) from OTR Electric Units on August 12, 2002 by Unit Type (Based on EPA's CAMD Data)

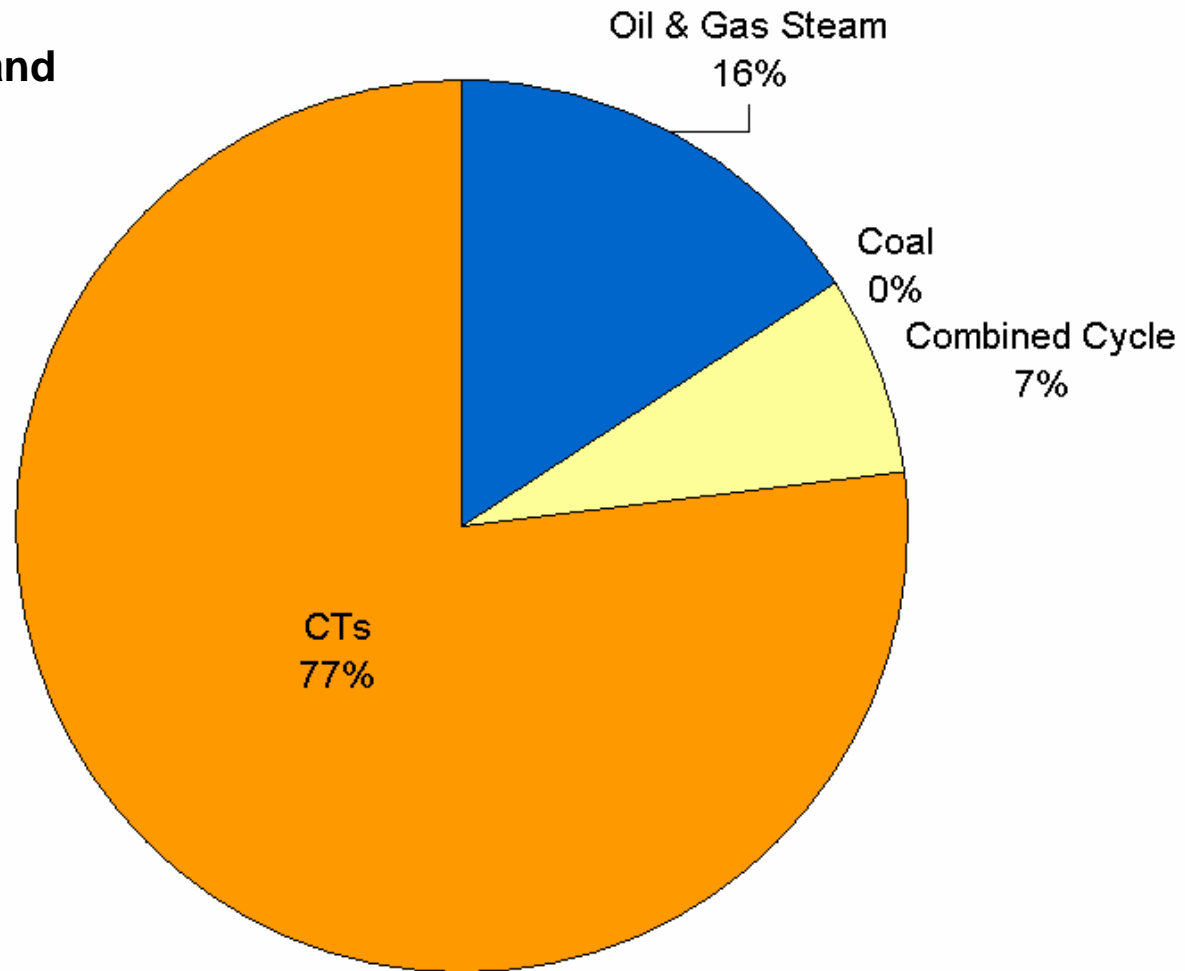


Percentage of NOx Emissions (Tons) from OTR Electric Units on July 27, 2005 by Unit Type (Based on EPA's CAMD Data)



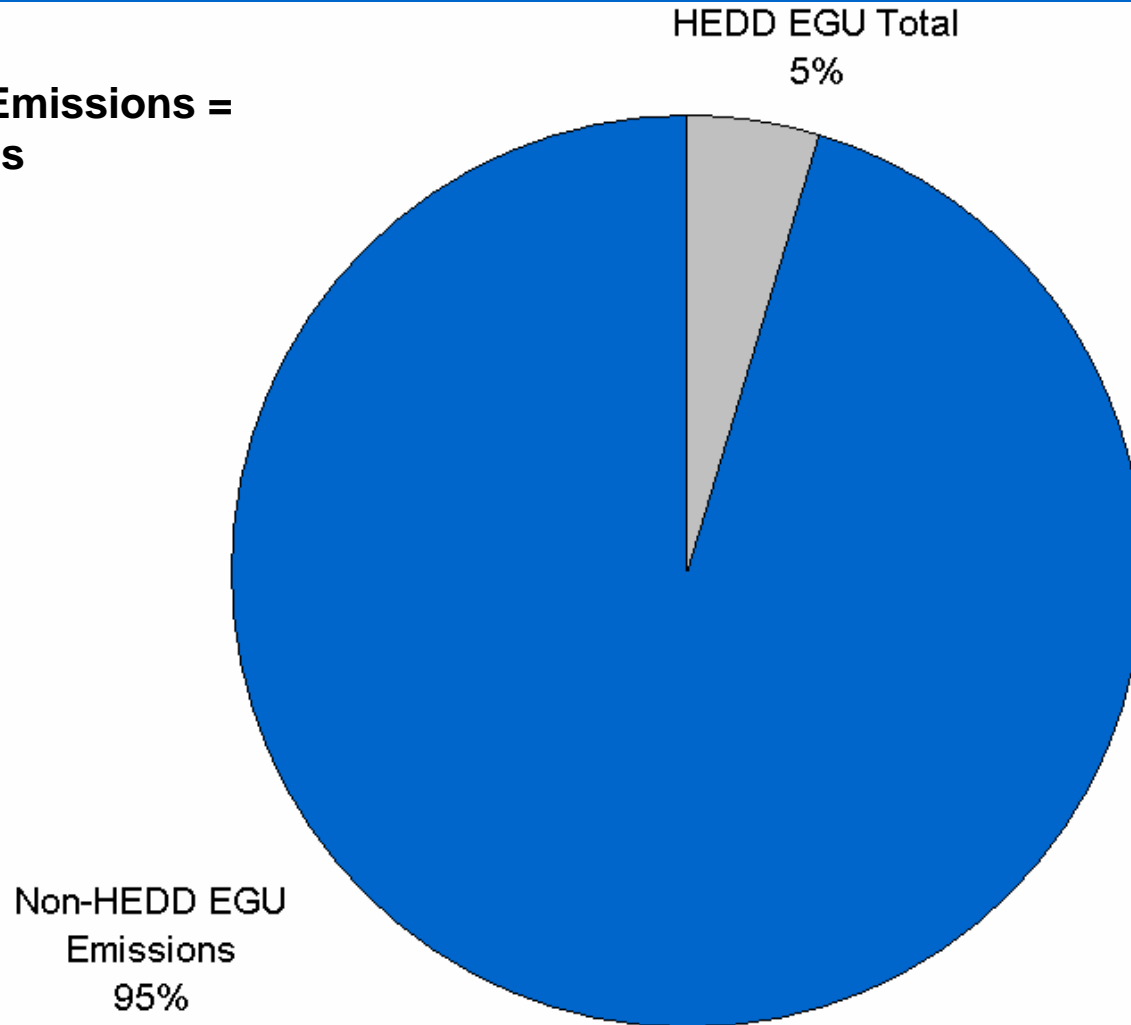
NOx Emissions from EGUs Operating 20% of the Time During the 2005 Ozone Season (Based on EPA's CAMD Data)

Based on 497 Units and
6683 Tons of NOx



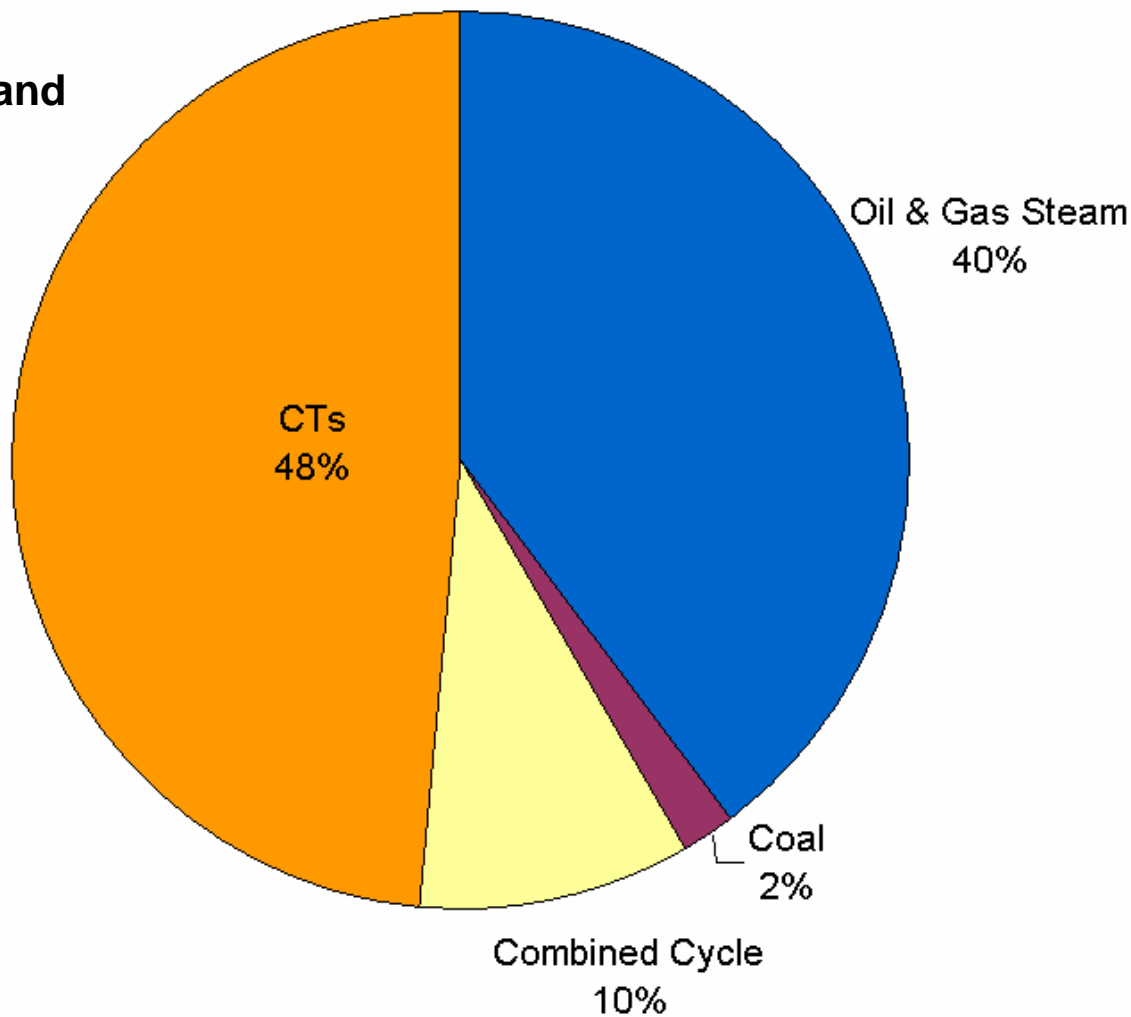
Fraction of 2005 Ozone Season NO_x Emissions from 20% HEDD Units in the OTR (Based on EPA's CAMD Data)

**Total NO_x Emissions =
141,037 tons**



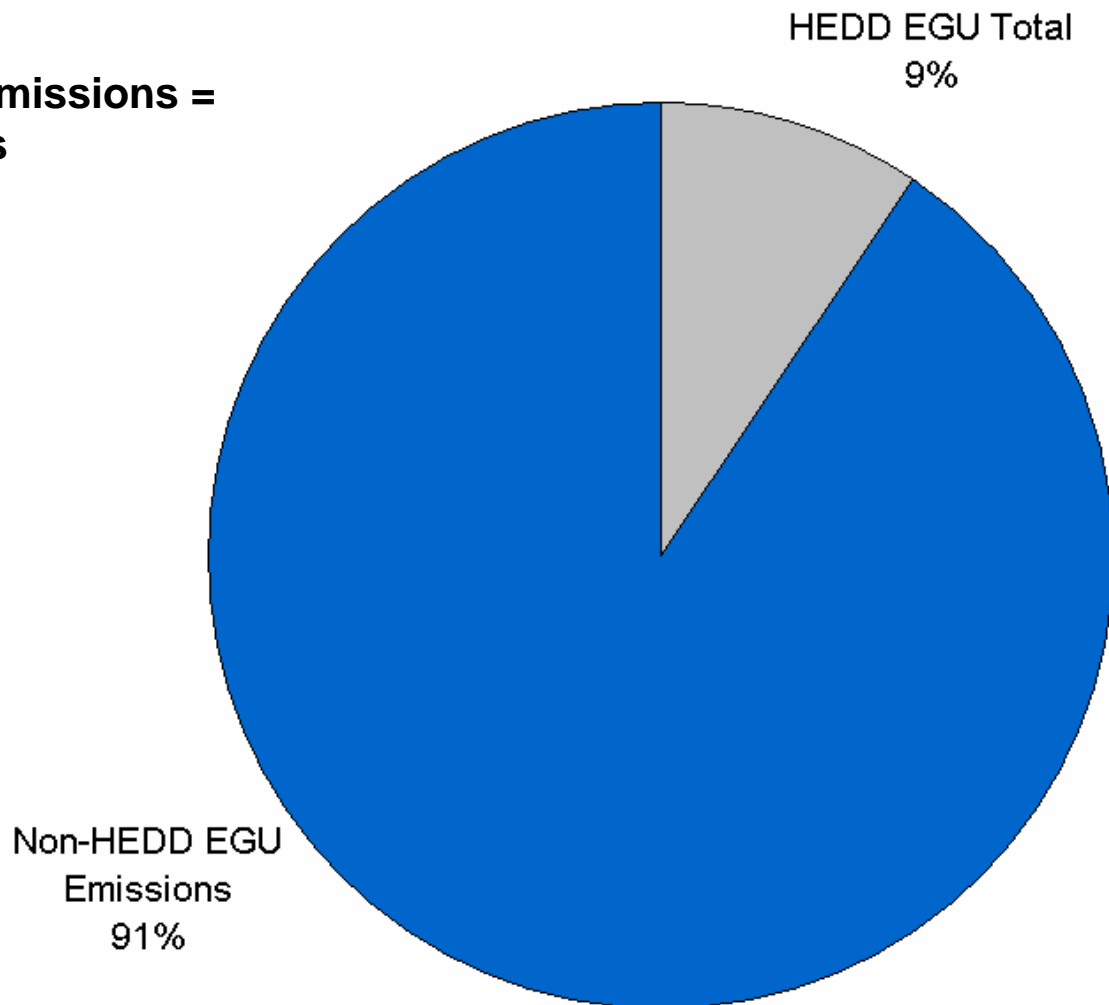
NOx Emissions from EGUs Operating 40% of the Time During the 2005 Ozone Season (Based on EPA's CAMD Data)

Based on 620 Units and
13,316 Tons of NOx



Fraction of 2005 Ozone Season NO_x Emissions from 40% HEDD Units in the OTR (Based on EPA's CAMD Data)

**Total NO_x Emissions =
141,037 tons**



Key Takeaways from Analysis

- On high ozone day events in the OTR, NO_x emissions from combustion turbines represent 25-35% of total NO_x emissions from all EGUs included in the New Jersey HEDD database. The majority of the emissions are from oil/gas steam units and coal units.

Key Takeaways from Analysis (Cont'd.)

- While this is true for the region as a whole, the situation in each state is different. For example, NO_x emissions from CTs on high ozone days in NJ and NY represent 82% and 100% of total NO_x emissions from HEDD units, respectively. In contrast, only 12% of the NO_x emissions from HEDD units in CT are from CTs and none of the emissions from HEDD units in MA and PA are from CTs.

Key Takeaways from Analysis (Cont'd.)

- When you look at total NO_x emissions from *all* EGUs in the region on high ozone days (i.e., not just HEDD units from the New Jersey database), 10-20% of the emissions emanate from CTs.

Key Takeaways from Analysis (Cont'd.)

- Using a 20% or 40% of total ozone season operating hours threshold appears to be a better way of defining population of HEDD units in OTR than approach used by NJ, particularly the 40% threshold which brings in a substantial number of oil-gas steam units in New England (without bringing in baseload coal units)