

# **OTC High Electric Demand Day (HEDD) Workgroup**



July 16, 2009

# OTC HEDD Update

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- OTC Modeling Committee workgroup developing regional modeling to accurately reflect EGU NO<sub>x</sub> emissions on high electric demand days (HEDD).
  - HEDD Workgroup formed at request of OTC Modeling Committee 3/17/09.
  - Massachusetts participating in identification, modeling, and benefits assessments for emissions controls for HEDD units.



# OTC HEDD Workgroup Findings

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- HEDD unit categories
  - Major EGUs (boilers, combustion turbines)
  - Distributed generation units
- Load following boilers and peaking units contribute significantly to total NO<sub>x</sub> HEDD emissions.
- Higher NO<sub>x</sub> mass contribution from HEDD load following EGUs than base load EGUs.



# OTC HEDD Workgroup Findings

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- Distributed generation (DG) units (diesel generator sets, microturbines, fuel cells).
- DG units estimated to be important peak day emission sources in southern OTR.
  - Delaware, Pennsylvania and Virginia estimate DG units significant peak day emission sources;
  - Massachusetts may have > 7,000 DG units.



# OTC HEDD Workgroup Findings

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- Infrequently operated HEDD units typically have higher hourly NO<sub>x</sub> emission rates.
  - Load following EGU boilers 2x heat input rate (lb/mmBtu) than base load EGUs
  - Peaking units order of magnitude higher heat input rate (lb/mmBtu) than base load EGUs



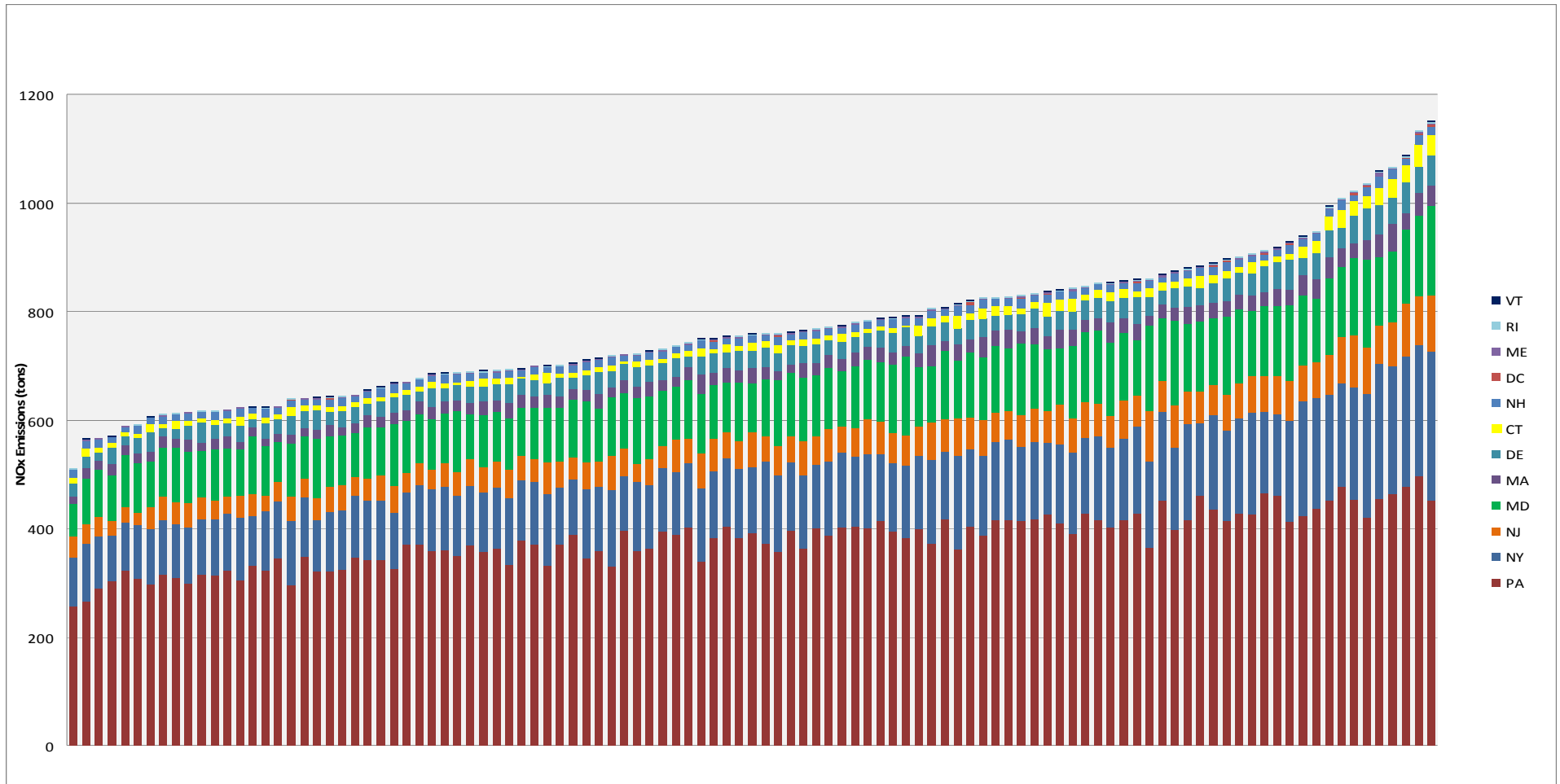
# OTC HEDD Workgroup Findings

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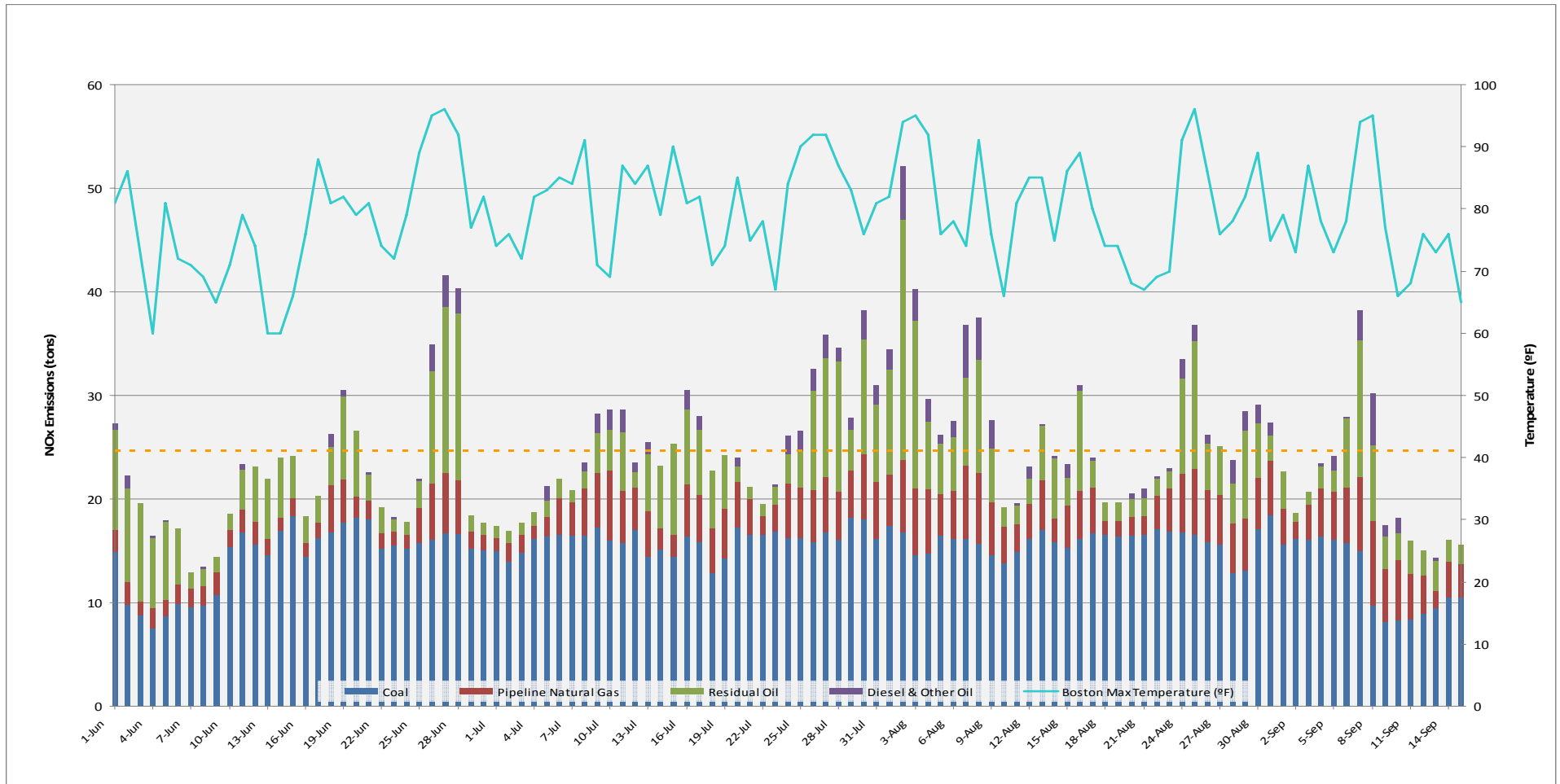
- Fuel use during peak demand episodes varies across OTR.
  - Residual oil and diesel units dispatched during peak demand episodes in New England;
  - Natural gas units dispatched during peak demand episodes in New York & New Jersey.



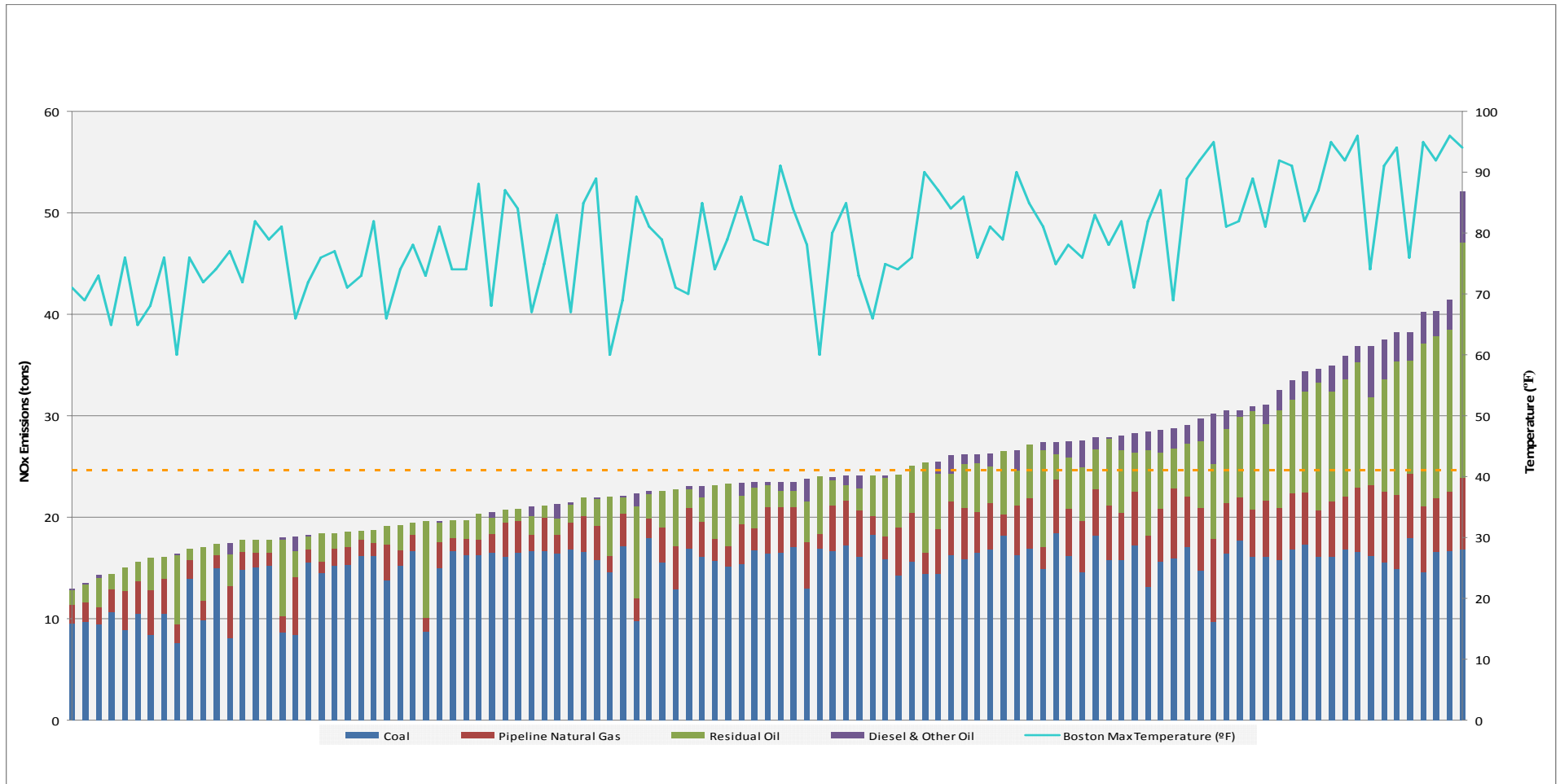
# Daily NO<sub>x</sub> Emissions for EGUs in OTR (excluding VA) Sorted by Total Daily NO<sub>x</sub> Emissions (June 1, 2007 – September 15, 2007)



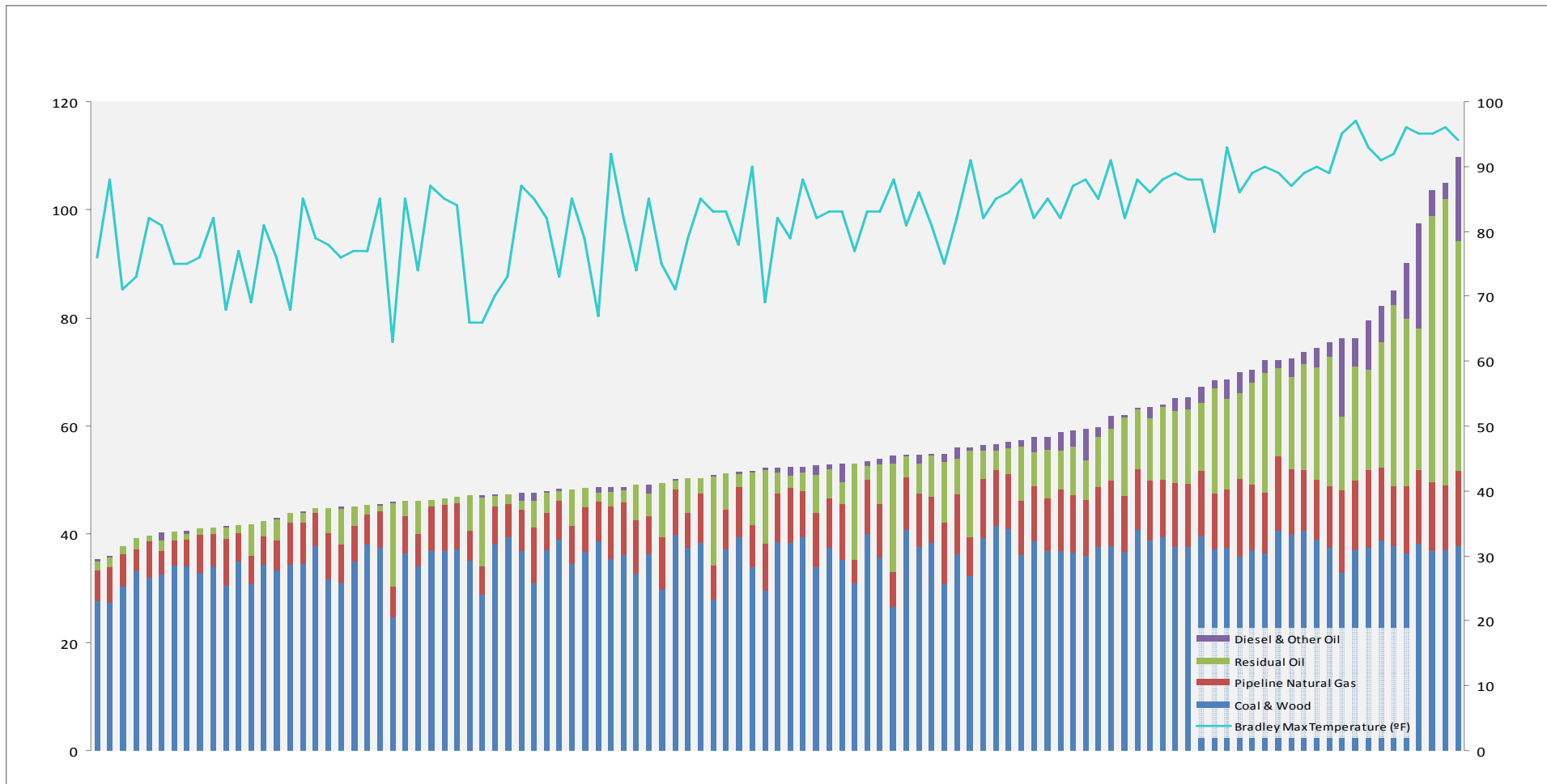
# Daily NO<sub>x</sub> Emissions for Massachusetts EGUs (June 1, 2007 – September 15, 2007)



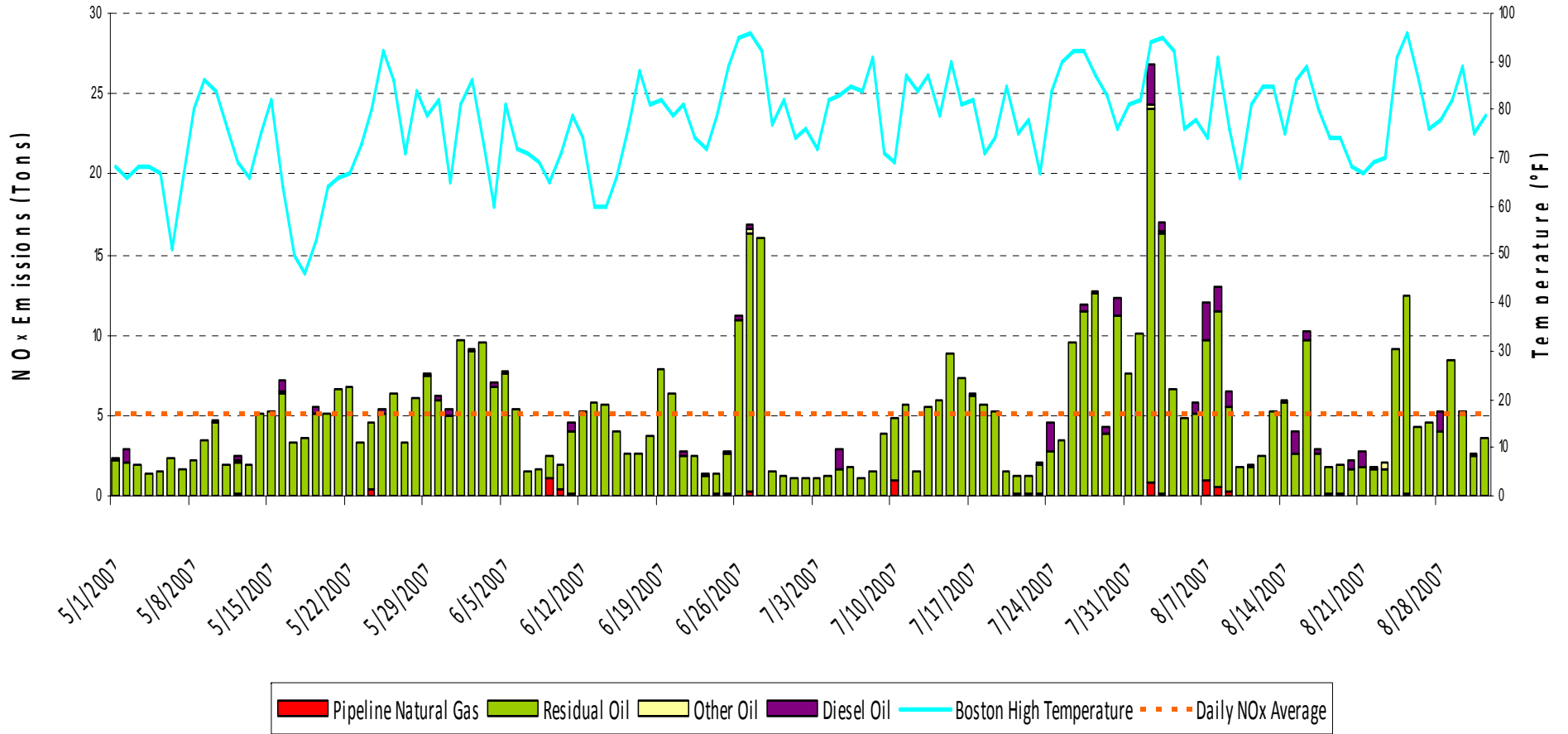
# Daily NO<sub>x</sub> Emissions for Massachusetts EGUs Sorted by Total Daily NO<sub>x</sub> Emissions (June 1, 2007 – September 15, 2007)



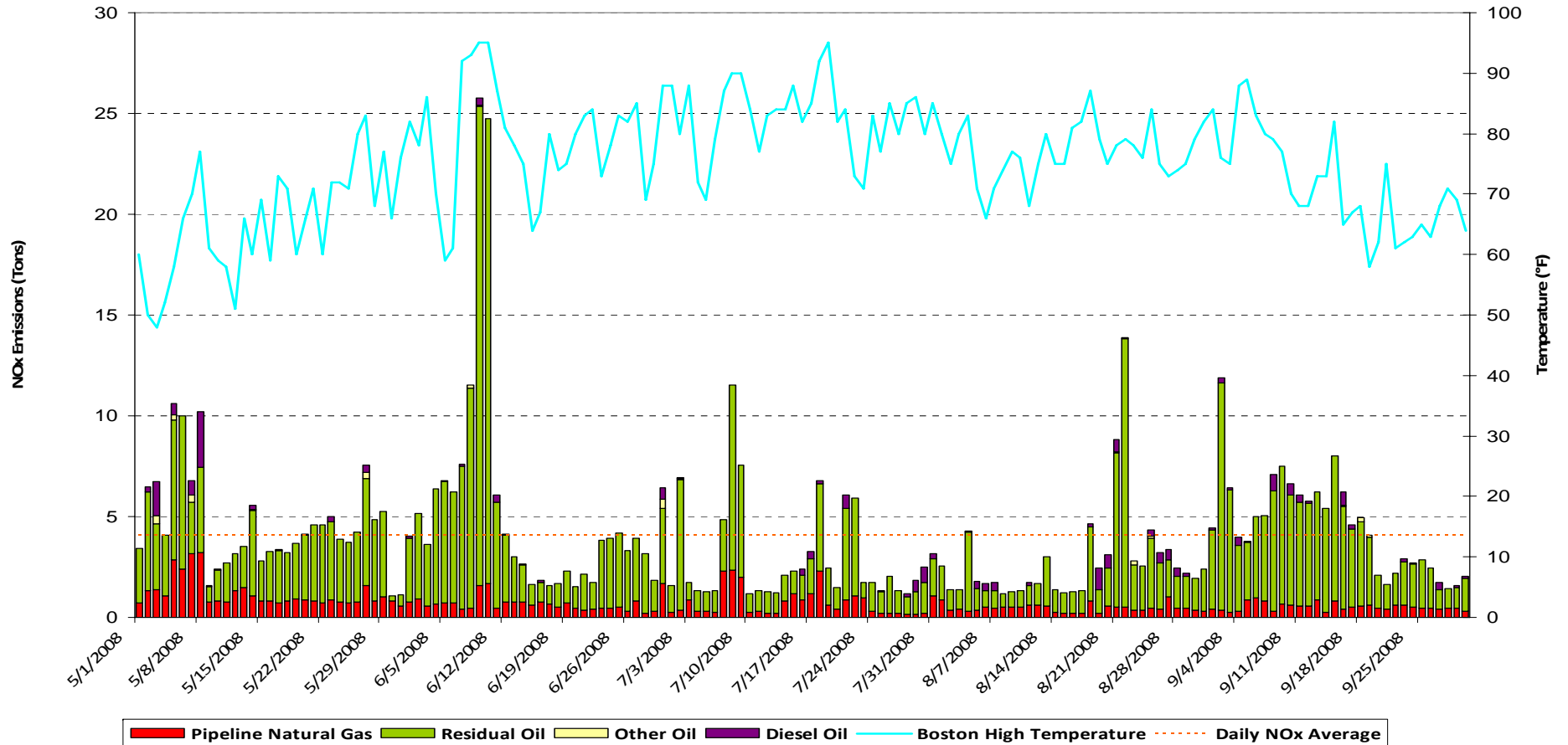
# Daily New England NO<sub>x</sub> Emissions Sorted by Total Daily NO<sub>x</sub> Emissions (June 1, 2007 – September 15, 2007)



# Massachusetts Potential HEDD EGUs Daily NOx Emissions (May 1, 2007-September 1, 2007)



# Massachusetts Potential HEDD EGUs Daily NOx Emissions (May 1, 2008-September 30, 2008)



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