

# Mobile Source Committee Update

## OTC Stakeholder Meeting

September 8<sup>th</sup>, 2011  
Linthicum, MD








**OZONE** TRANSPORT COMMISSION

# Overview





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1. Federal Measures
2. Nonroad Idling Model Rule
3. Inventory Analysis
4. Pleasure Craft
5. Goods Movement
6. Diesel I/M

# Status of OTC Federal Measure Asks

OTC Request	Action	
Mar 2009	Ships - Emission Control Area	
June 2009	Catalyst Replacements (April 2011 – OTC Program Design Recommendation)	
Nov 2009	Onroad Mobile Gasoline and Diesel Sources (November 2010 Statement on Tier 3)	
	Locomotive Engines	
	Marine Engines	

# Status of Federal Measure Commitments

Date	Action	
Dec 2010	RFS2 Anti-Backsliding	
2011	E15 Partial Waiver Decision MY 2001-2006 Motor Vehicles	
2012	Heavy Duty Truck Greenhouse Gas Standards	
2014	Clean Vehicles 75 ppb Ozone NAAQS Regulatory Impact Analysis	

# Light Duty GHG Standards

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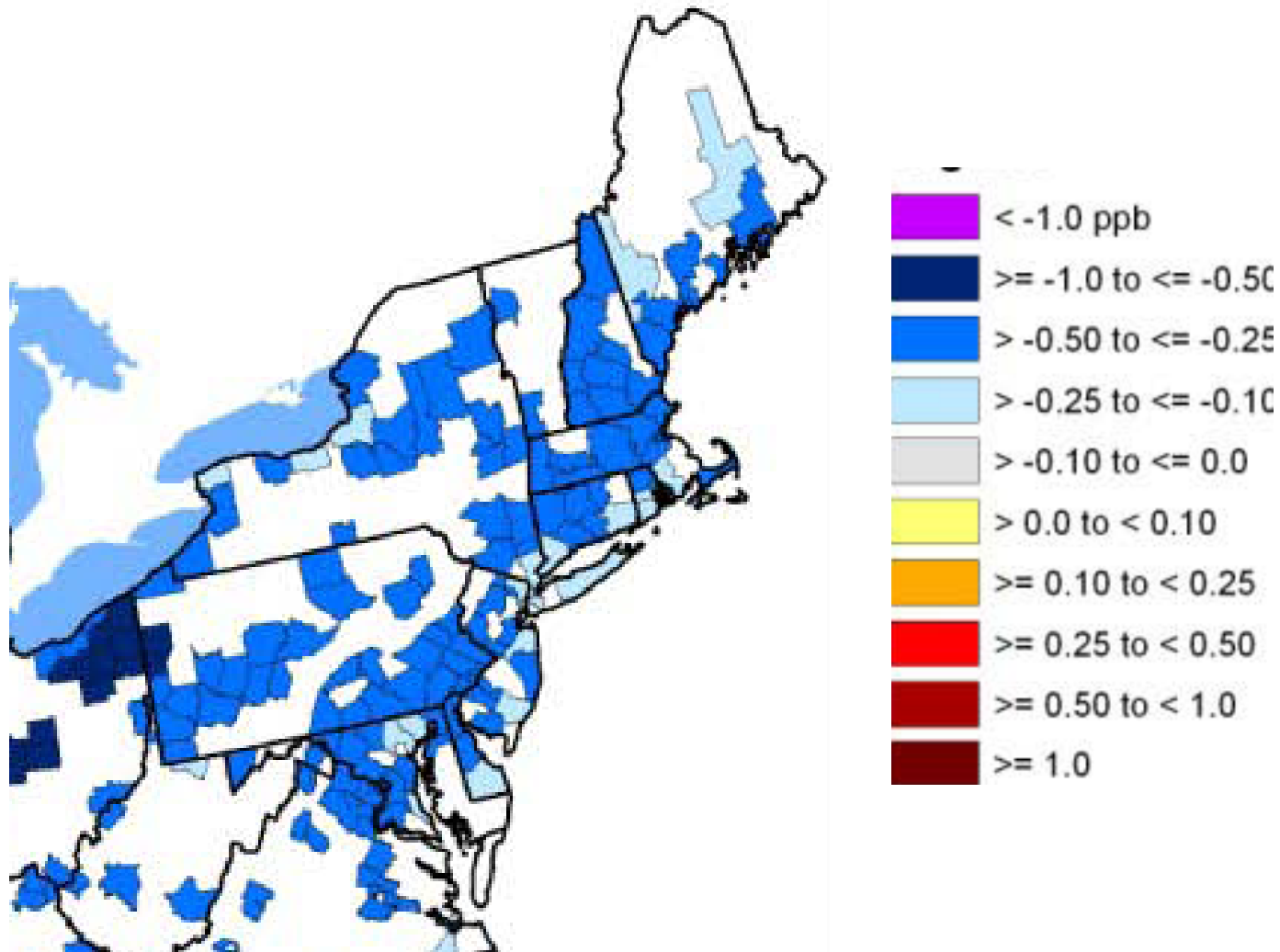
- On July 29, 2011, EPA and NHTSA issued a Supplemental Notice of Intent (NOI) for updated GHG and CAFE standards
- The proposed standard would
  - Apply to passenger cars and trucks
  - Affect MY2017-2025
  - Achieve 54.5 mpg by model year 2025

# Heavy-Duty Trucks Standards

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- First GHG Standards for Heavy-Duty Trucks
- EPA and NHTSA adopted the standards
- Fuel consumption will be reduced in MY 2018 by approximately:
  - 20% in certain combination tractors
  - 15% in heavy-duty pickup trucks and vans
  - 10% in vocational vehicles
- New standards are specifically designed to account for the different kind of work done by the three categories of vehicles

# Projected Change in 2030 8-hour O<sub>3</sub> Design Values Due to Heavy Duty Rule



# E15 Partial Waiver

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- January 21, 2011, EPA granted a second partial waiver for E15 for use in MY01-06 light-duty motor vehicles
- Problems with the implementing waiver
  - Misfueling may void a car's warranty
  - E15 may decrease the functionality of emission control systems



# Proposed Aircraft Engine Standards

- Affect commercial passenger and freight aircraft
- Aircraft gas turbine engines with rated thrusts greater than 26.7 kilonewtons
- Adopted by ICAO or agreed on at by ICAO in 2010
- 2 new tiers of emission standards for NO<sub>x</sub>
  - Tier 6 (or CAEP/6) standards
  - Tier 8 (or CAEP/8) standards
- An important mobile source in the OTR:

Nonattainment Area		2008 Total NO <sub>x</sub>	2008 % of Mobile NO <sub>x</sub>	2020 % of Mobile NO <sub>x</sub>
Baltimore	MD	1,148	1.3	4.4
Boston	MA-NH	2,032	1	2.7
New York-N. New Jersey-Long Island	NY-NJ-CT	10,093	2.3	6.3
Philadelphia-Wilmington-Atlantic City	PA-NY-MD-DE	2,308	1	2.8
Pittsburgh-Beaver Valley	PA	480	0.5	1.1
Providence	RI	232	1	2.3
Washington	DC-MD-VA	2,983	2	6.2

# Nonroad Idling Model Rule

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- Goal: Reduce emissions by decreasing unnecessary idling from nonroad engines
- Nonroad diesel engines are major sources of:
  - Oxides of Nitrogen ( $\text{NO}_x$ )
  - Fine Particulate Matter ( $\text{PM}_{2.5}$ )
  - Toxic Air Pollutants
- Many states prohibit unnecessary idling of highway diesel trucks, but only a few prohibit it for non-road equipment

# Nonroad Idling: Stakeholder Outreach

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- Initial Model Rule posted on 9/2010
- Evaluated and incorporated stakeholder comments
- Drafted an accompanying guidance document
- Stakeholder Activities
  - Fall '10 Stakeholder Meeting
  - Hosted stakeholder calls on:
    - 11/22/10 with Associate General Contractors (AGC)
    - 12/02/10 with RRI Energy
    - 02/01/11 with EMA, AGC, and other Manufacturers
  - Posted Revised Draft on 3/11/2011
  - Spring '11 Stakeholder Meeting
  - Posted Revised Draft and TSD on 8/25/2011

# Nonroad Idling Emissions

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- Emission factors were re-estimated using more recent idling data obtained from NC State
- A range of estimated idling activity rates from 7.2 – 42% based on studies by CARB and John Deere exists

# Nonroad Idling Emissions

- Assumes all unnecessary idling in the OTR is reduced
- Estimated emission reductions:

Data Source	Idling Rate	NOx(tpy)	HC(tpy)	PM(tpy)
John Deere	42%	35,146	4,394	253
CARB	7.2%	6,151	769	44

- Estimated fuel savings:

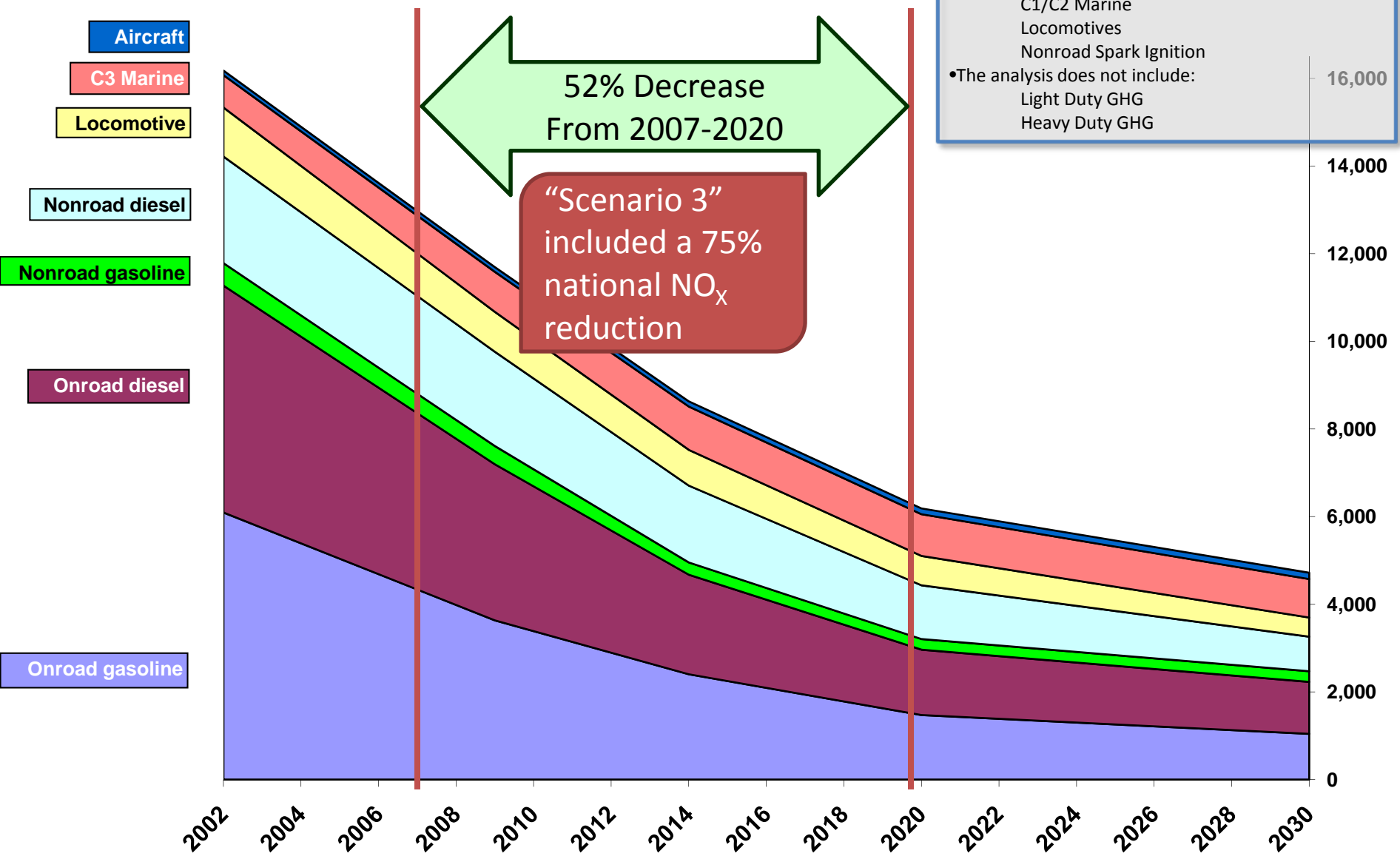
Data Source	Idling Rate	Fuel(gpy)	2009 \$
John Deere	42%	30,327,964	121,311,854
CARB	7.2%	5,307,394	21,229,575

# Nonroad Idling Next Steps

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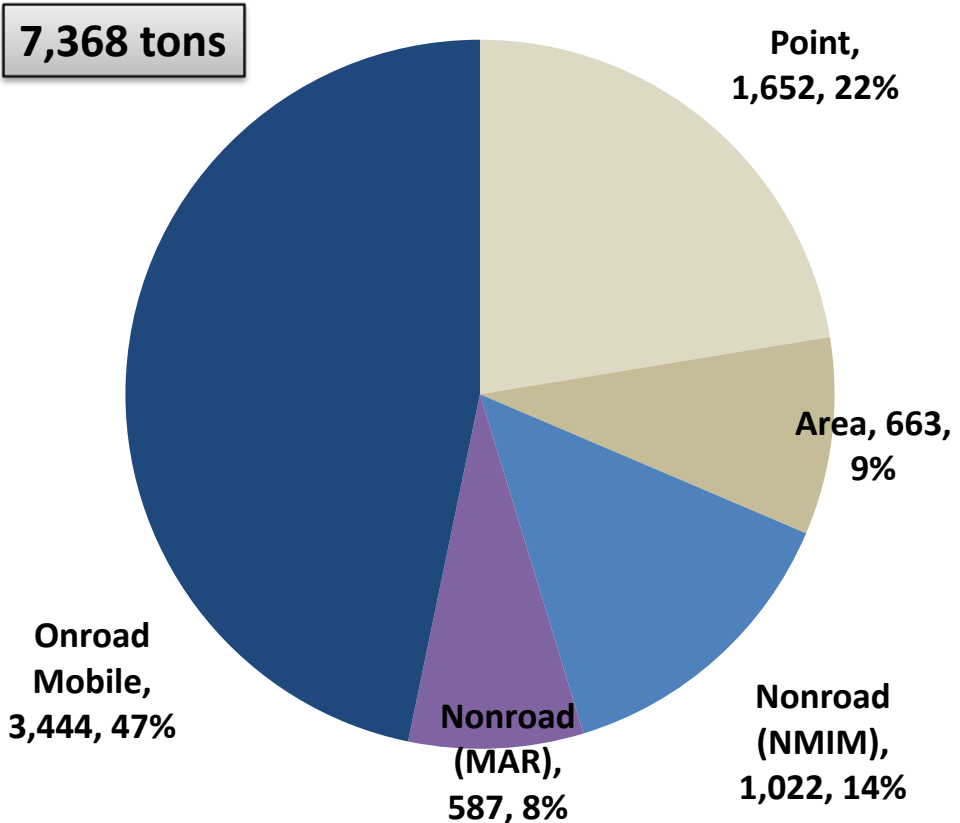
- Goal – Ready for Commission Action in November 2011
- Outstanding Issues:
  - Address Comments – Due September 30<sup>th</sup>
    - Model Rule Language
    - Guidance Document
    - Technical Support Document
  - Finalize Benefit Estimates

# U.S. Mobile Source NO<sub>x</sub> Emission Projections (ktons per year)

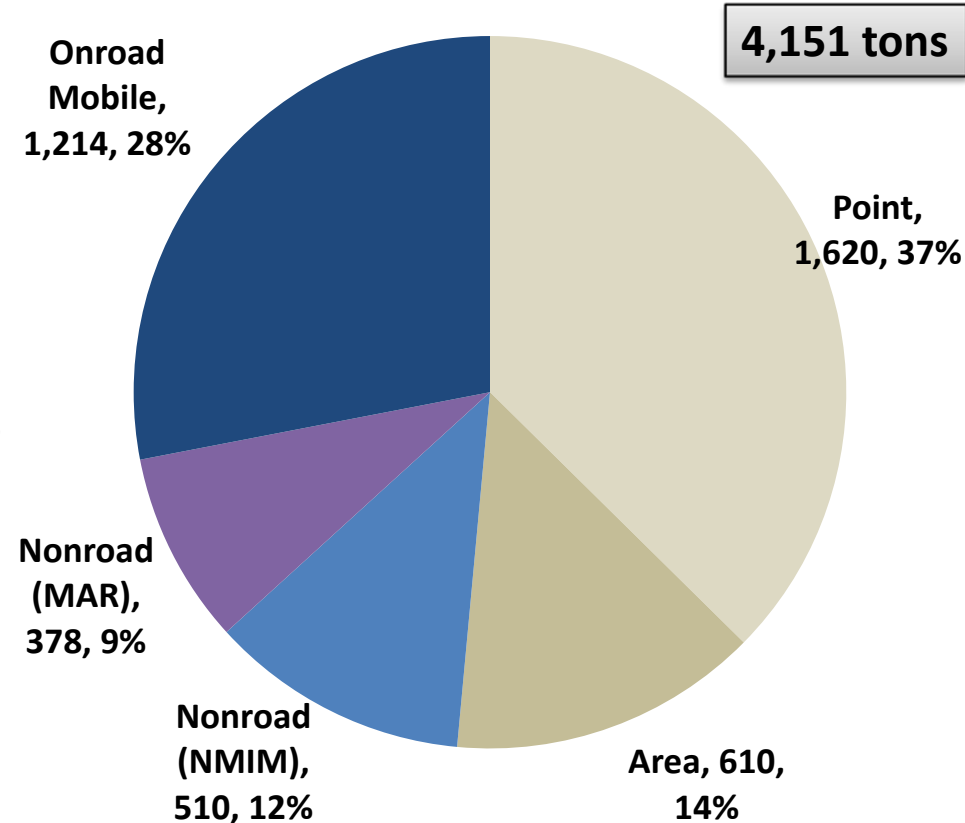


# NO<sub>x</sub> July Avg. Daily Tons (OTR +VA)

NO<sub>x</sub> 2007 Average July Day



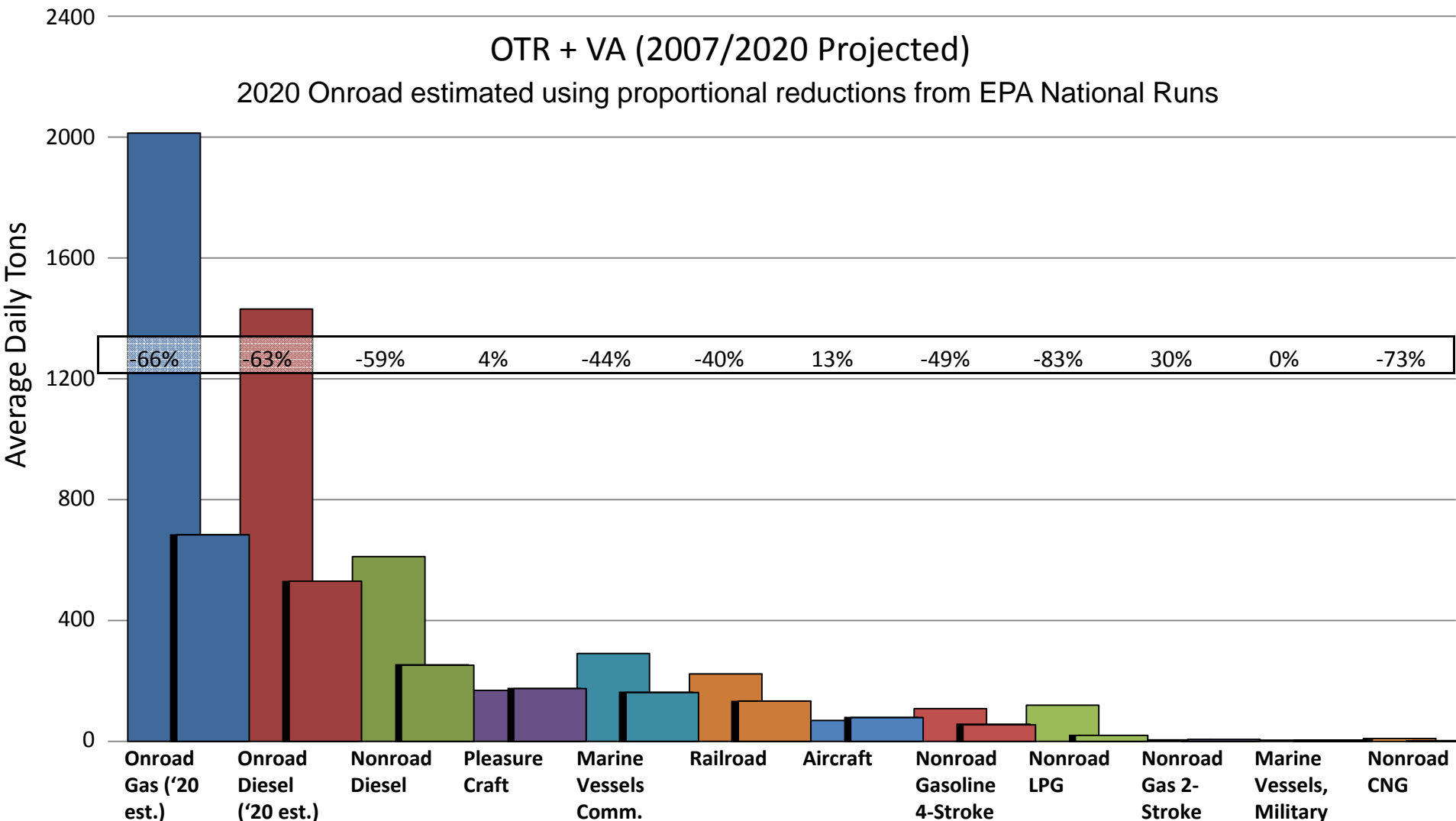
NO<sub>x</sub> 2020 Projected Average July Day



- “EPA National Run” reductions are used to produce estimate for 2020 Onroad Mobile
- No growth or reduction is assumed from 2007 to 2020 for EGUs
- Mobile and EGUs are estimates of an average July day
- M/A/R, Non-EGU Point, and Area are estimates of an average annual day



# NO<sub>x</sub> July Avg. Daily Tons

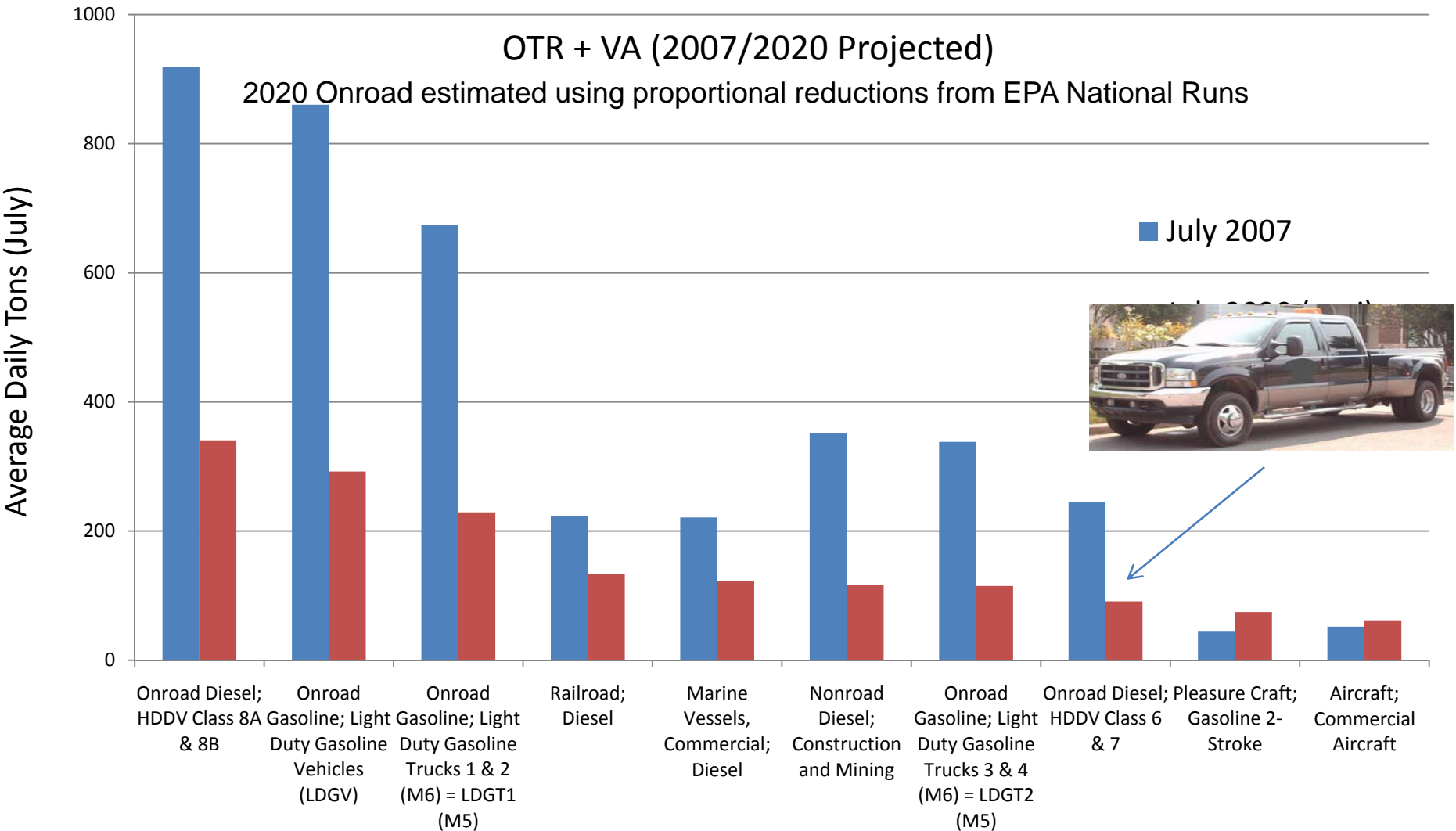


Draft Version 2 of MARAMA Inventory

2007 Onroad: 06/07/2011, Marine/Air/Rail: Updated 02/17/2011, Other Nonroad: Updated 09/29/2010 17

2020 Onroad: "EPA National Run" reduction on 2007, Marine/Air/Rail: Updated 02/17/2011, Other Nonroad: Updated 01/05/2011

# NOx: Top Sub-categories in 2020



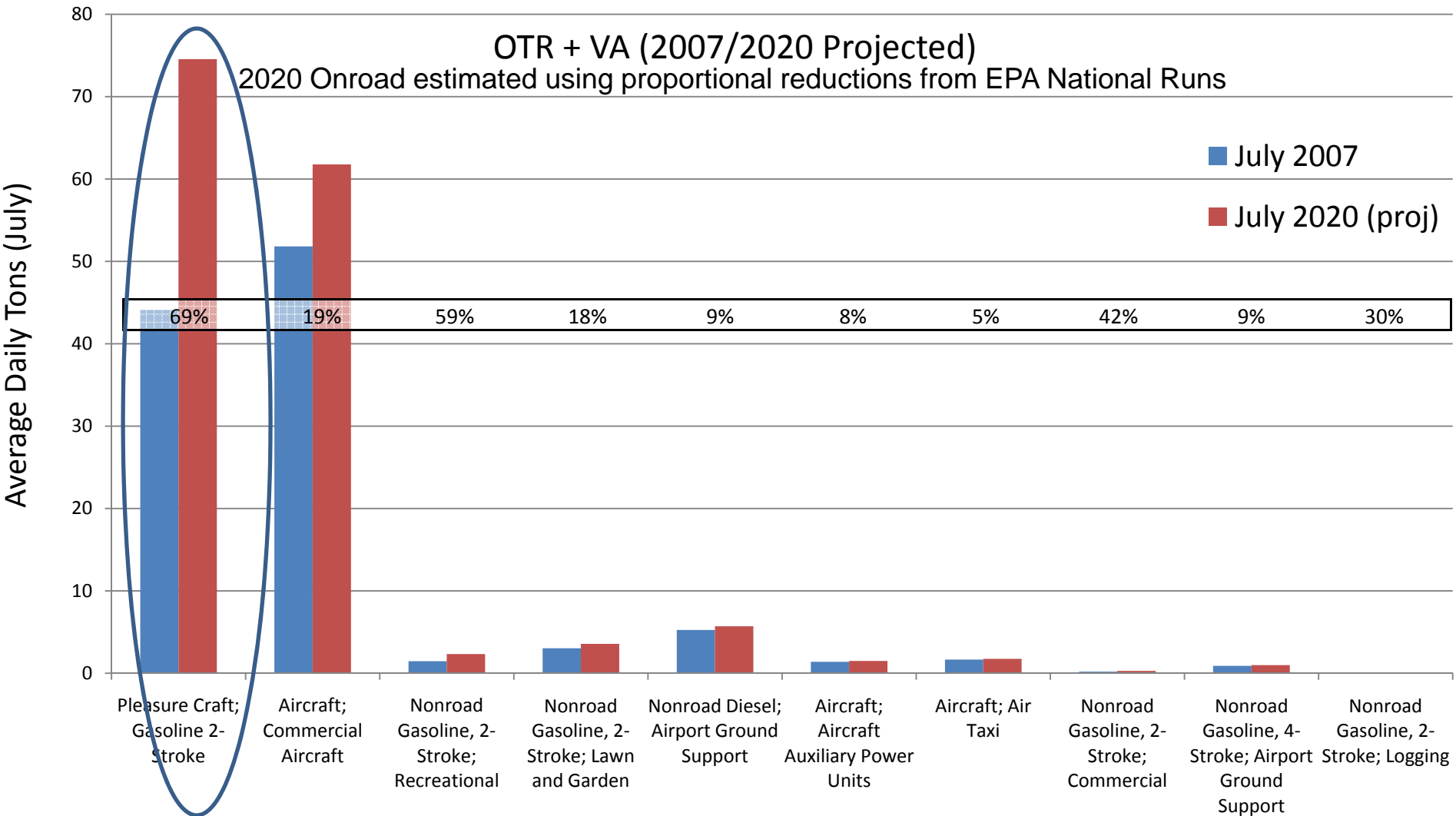
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2020 Onroad: "EPA National Run" reduction on 2007, Marine/Air/Rail: Updated 02/17/2011, Other Nonroad: Updated 01/05/2011

# NOx: Sub-categories that Increase



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# U.S. Mobile Source VOC Emission Projections (ktons per year)

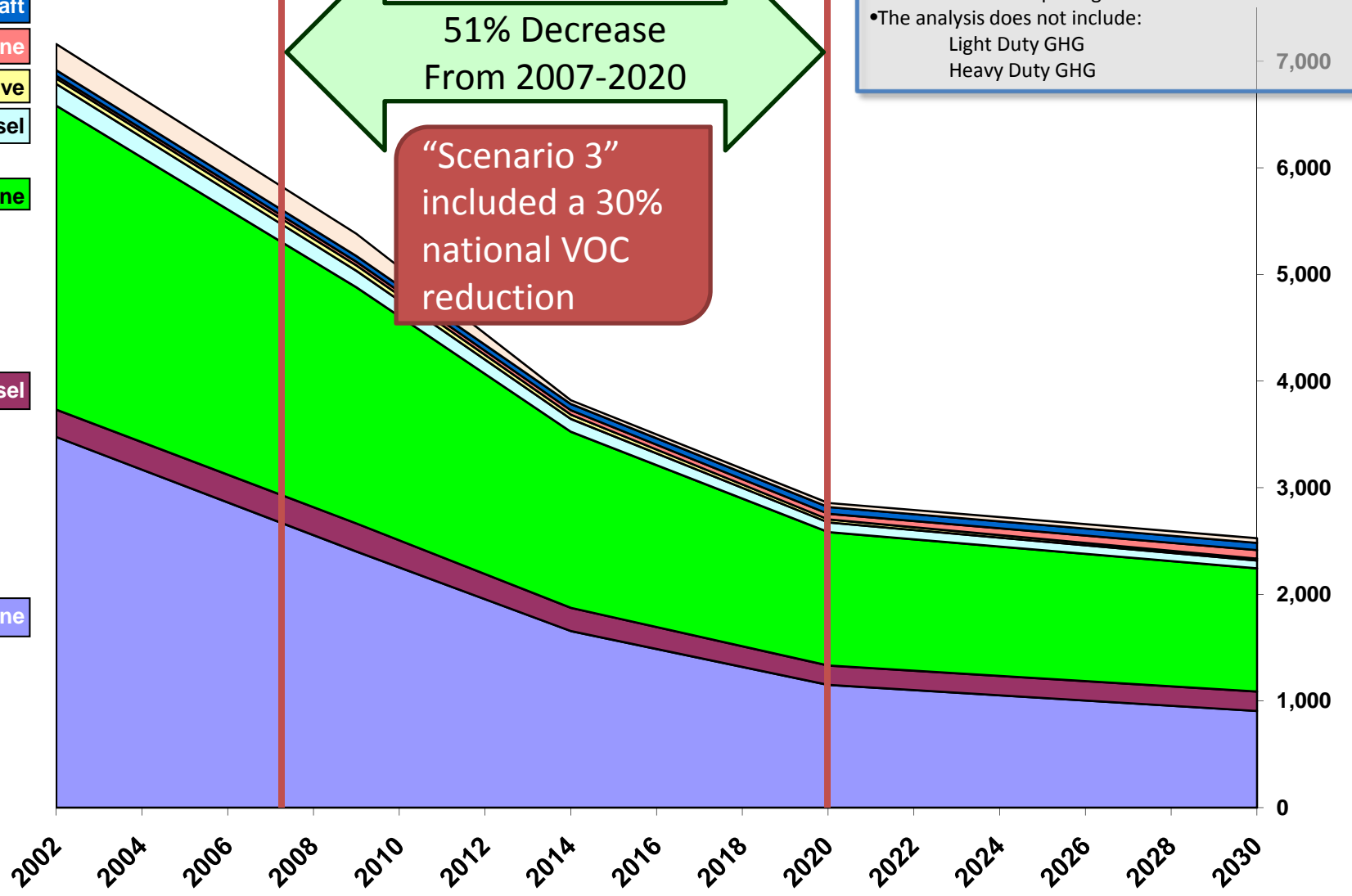
- PFCs
- Aircraft
- C3 Marine
- Locomotive
- Nonroad diesel
- Nonroad gasoline
- Onroad diesel
- Onroad gasoline

•Includes federal rules that are on the books as of March '10:  
 C3 Marine  
 C1/C2 Marine  
 Locomotives  
 Nonroad Spark Ignition

•The analysis does not include:  
 Light Duty GHG  
 Heavy Duty GHG

51% Decrease  
 From 2007-2020

“Scenario 3”  
 included a 30%  
 national VOC  
 reduction



7,000

6,000

5,000

4,000

3,000

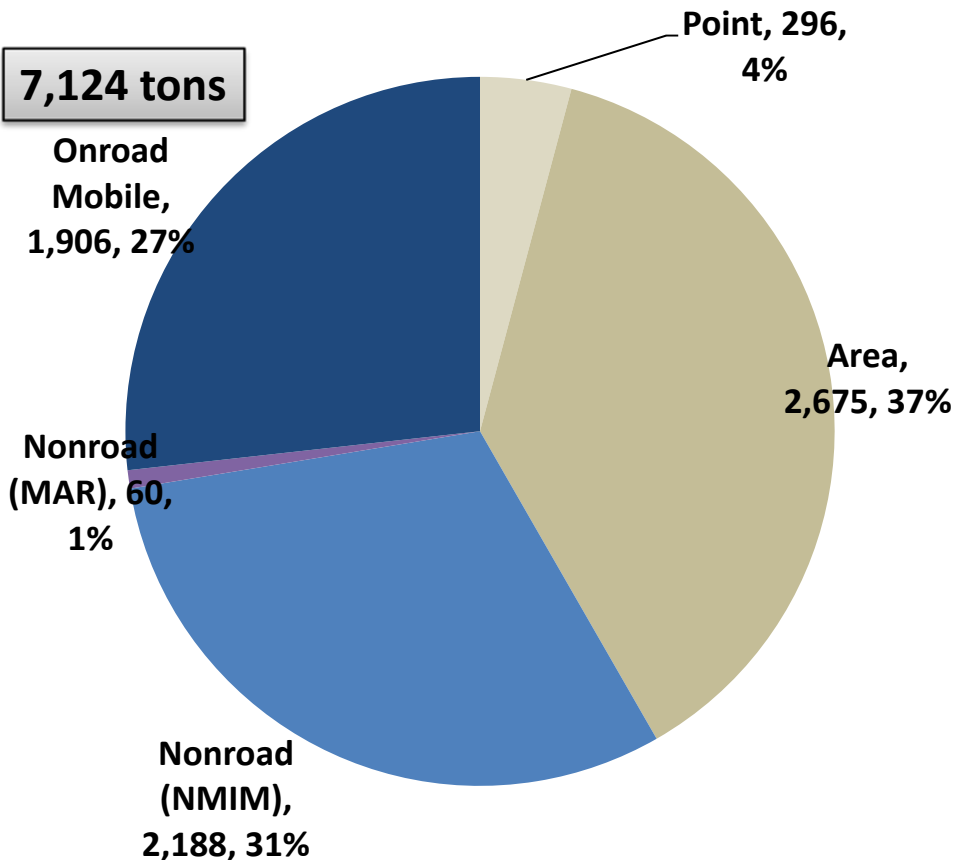
2,000

1,000

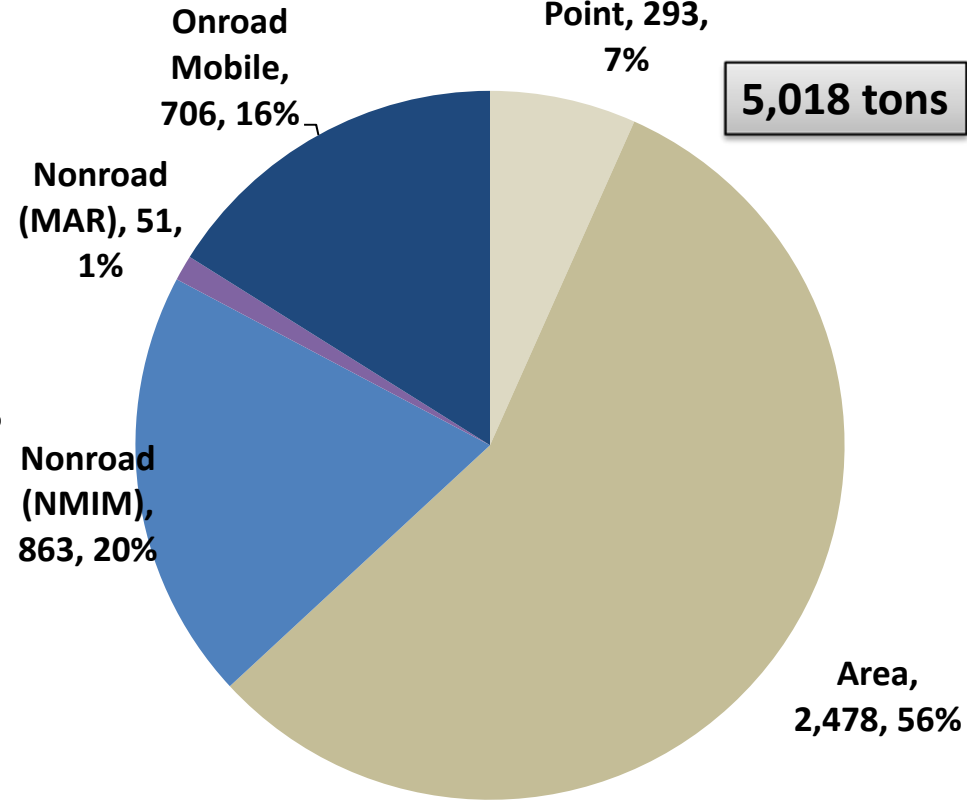
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# VOC July Avg. Daily Tons (OTR +VA)

VOC 2007 Average July Day

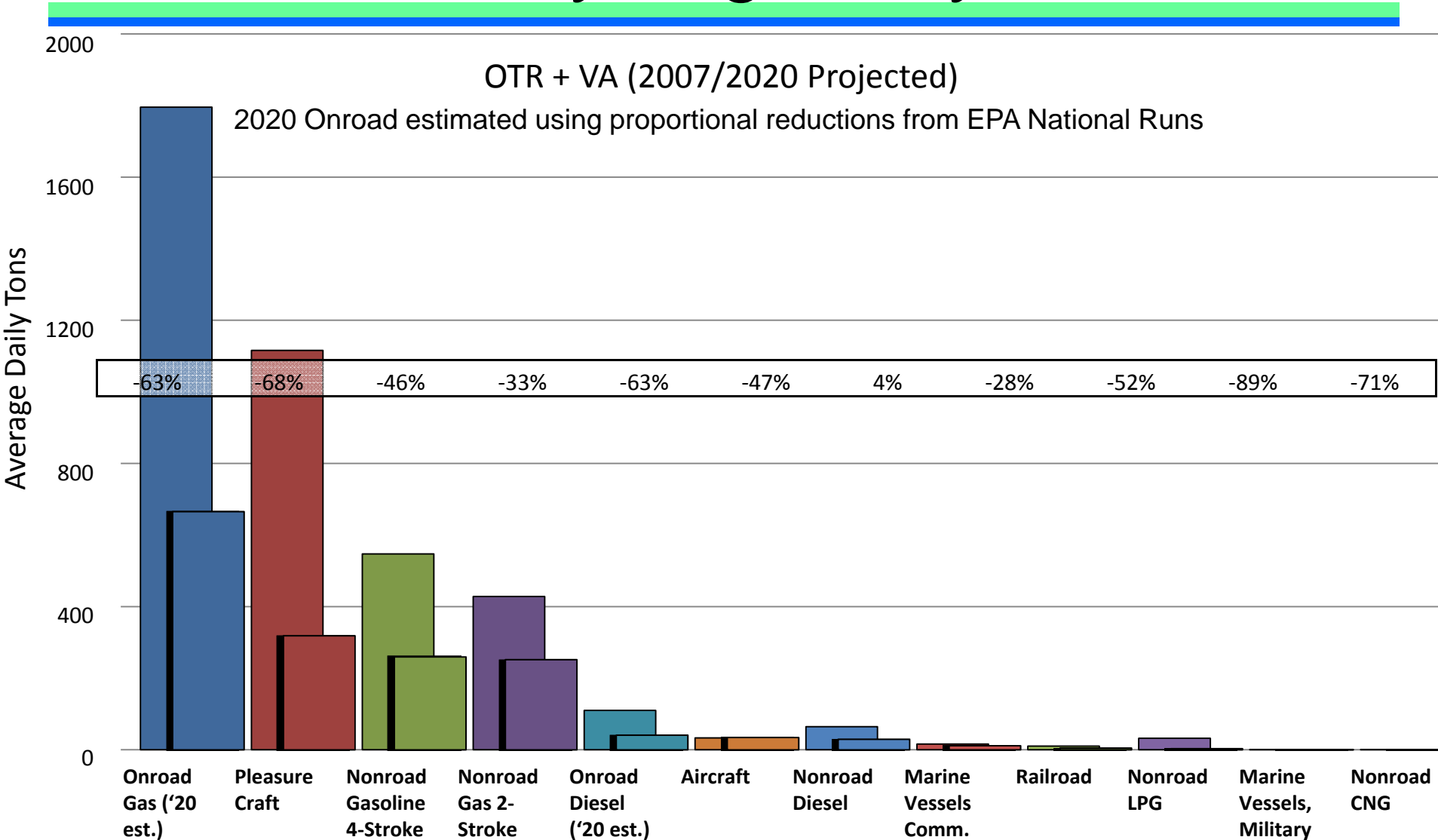


VOC 2020 Projected Average July Day



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# VOC July Avg. Daily Tons

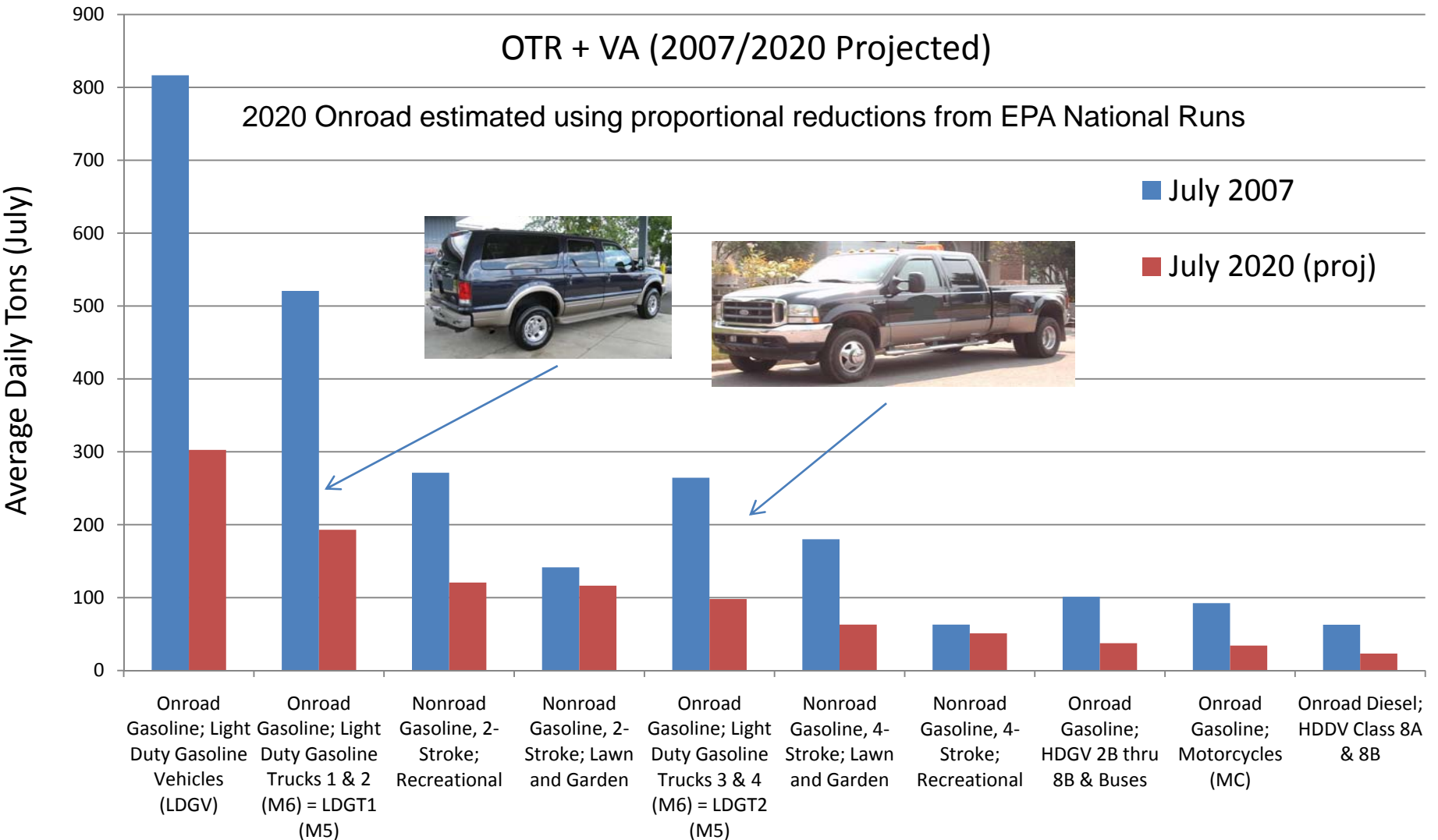


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# VOC: Top Sub-categories in 2020

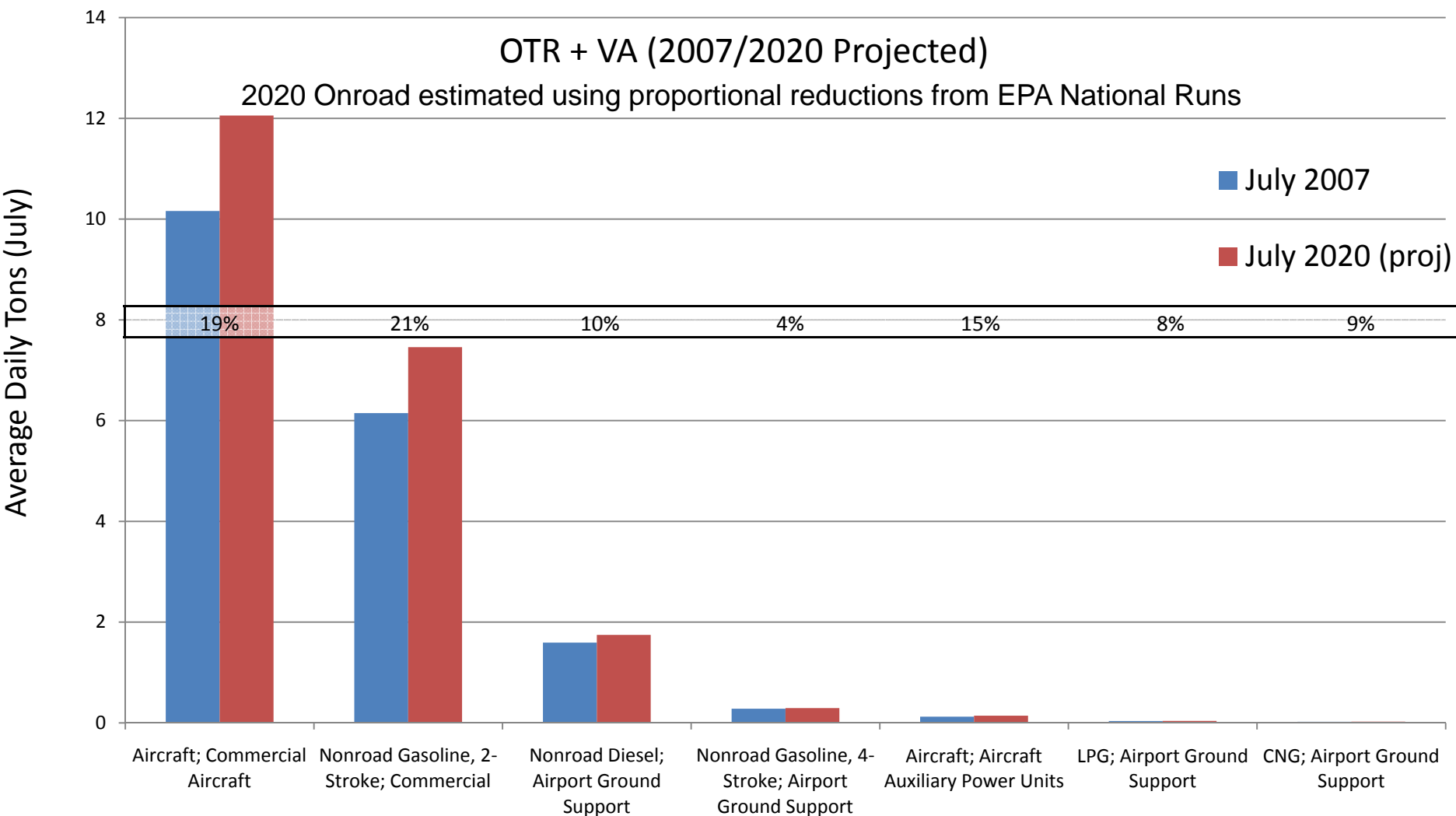


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# VOC: Sub-categories that Increase



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# Inventory Analysis: Summary

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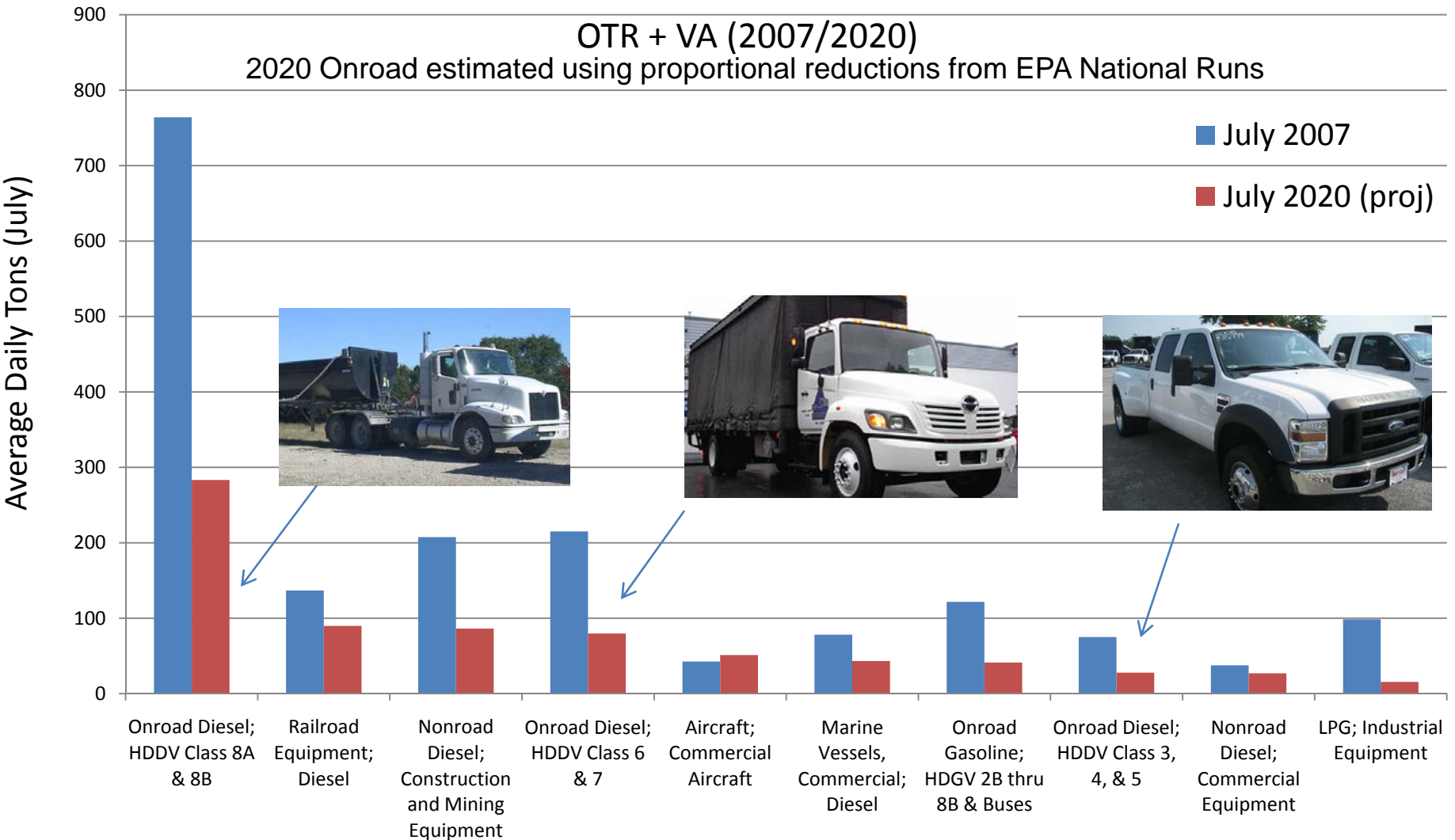
- Significant emission reductions are expected by 2020 in all Mobile Source Sectors
- Mobile Sources are a large part of the OTR inventory
  - 2007 Mobile Source estimates are high for VOCs due to issues with SMOKE-MOVES that will be corrected
  - 2020 Mobile Source projections not yet ready
- **Nonroad:** Important categories during Ozone Season
  - NO<sub>x</sub> - Construction, Pleasure Craft, Marine
  - VOC - Pleasure Craft, Lawn/Garden, Recreational
- **Onroad:** Important categories during Ozone Season
  - NO<sub>x</sub> - Heavy duty diesel trucks, light duty gas vehicles
  - VOC - Light duty cars and trucks
- Emission Increases are projected for:
  - Pleasure Craft – 2-Stroke Gasoline – NO<sub>x</sub> (69%)
  - Aircraft - NO<sub>x</sub> (14%), VOC (4%)

# Pleasure Craft

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- Technology Change
- Emission Inventory – Activity Levels
  - State Specific Data
  - USEPA Nonroad Model Default Data
  - National Maritime Manufacturers Association (NMMA) 2006 Survey

# Goods Movement NO<sub>x</sub>: Sub-categories



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# Goods Movement Strategy: Next Steps

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- Continued Analysis of Inventory
- Further develop the strategy based on this additional analysis

# Diesel I/M

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- Lead: NESCAUM Heavy Duty Workgroup
- Goal: SIP Credit for Existing Programs
- Developing Work Plan → White Paper for the Late Winter Stakeholder Meeting

# Summary of the Next Steps

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- Non-Road Idling
  - Stakeholder Comments due September 30<sup>th</sup>
  - Fall Commission Meeting
- Goods Movement
  - Continued Inventory Analysis
- Inventory Analysis
  - Incorporate Onroad MOVES 2020 Projections