



# Data Gaps in the Nonroad Sector

Mobile Sources Technical Review Subcommittee Meeting  
April 2, 2019

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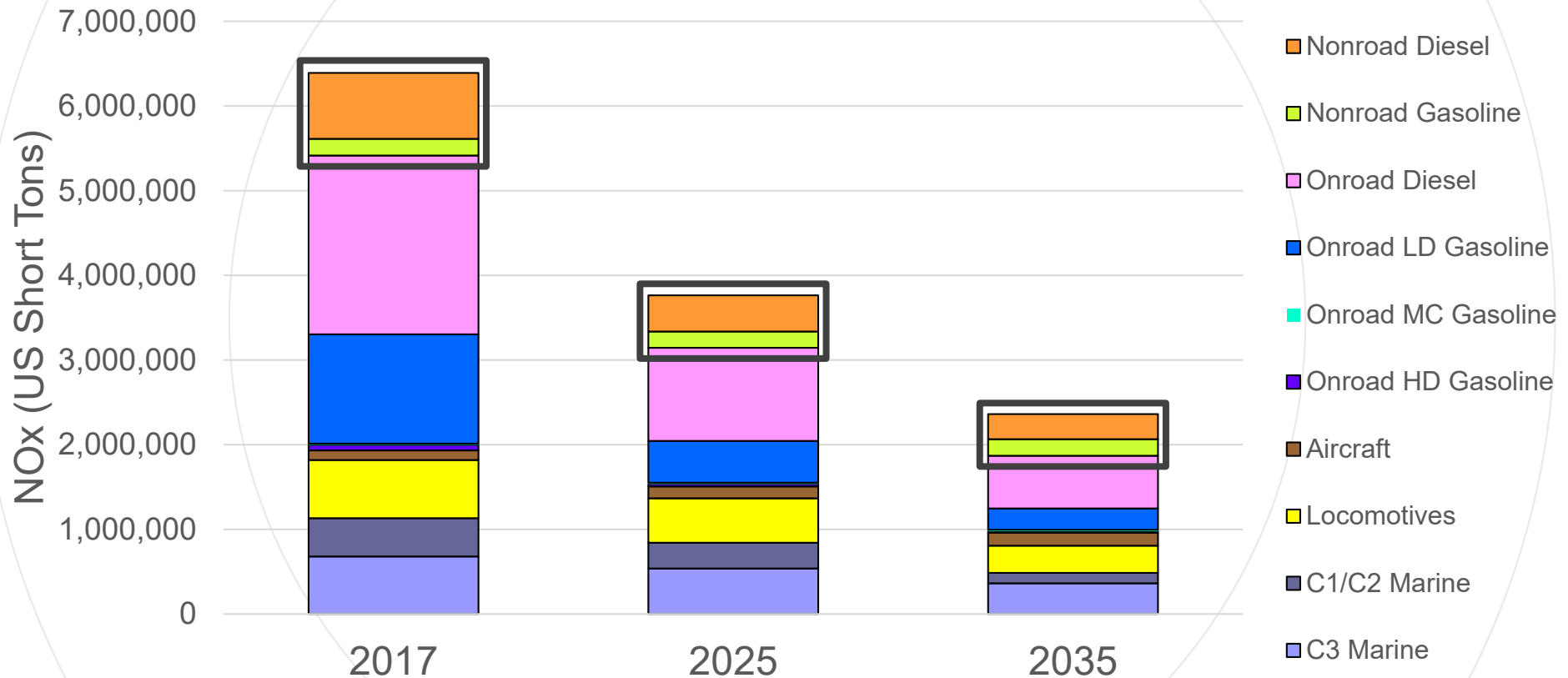


# Recap of MSTRS Meeting on May 22, 2018

- Key emissions data and modeling uses
  - Compliance activities
  - Inform regulations and future actions
  - Emission models and inventories
- Example of new data approaches
  - Telematics data for onroad vehicles
  - Marine vessel AIS
- **Data challenges with nonroad sector**

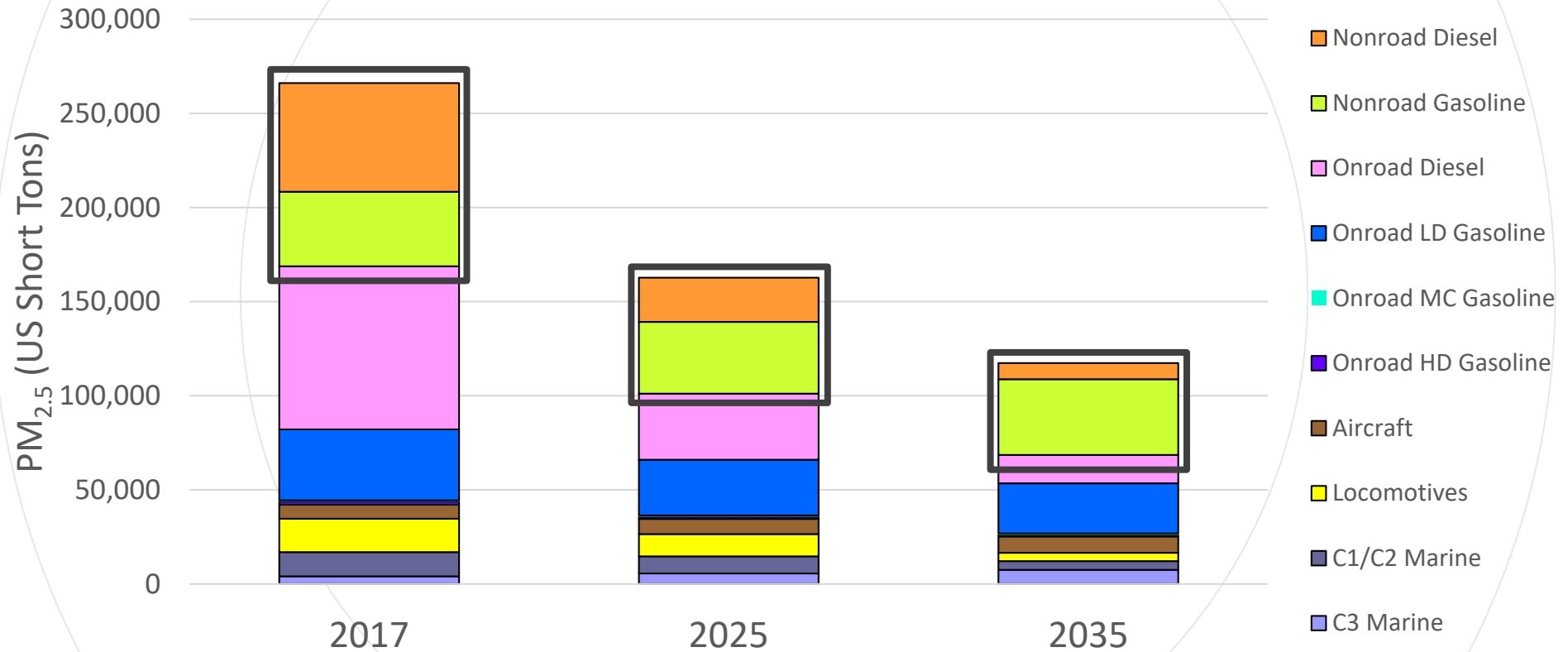


# NOx from Mobile Sources



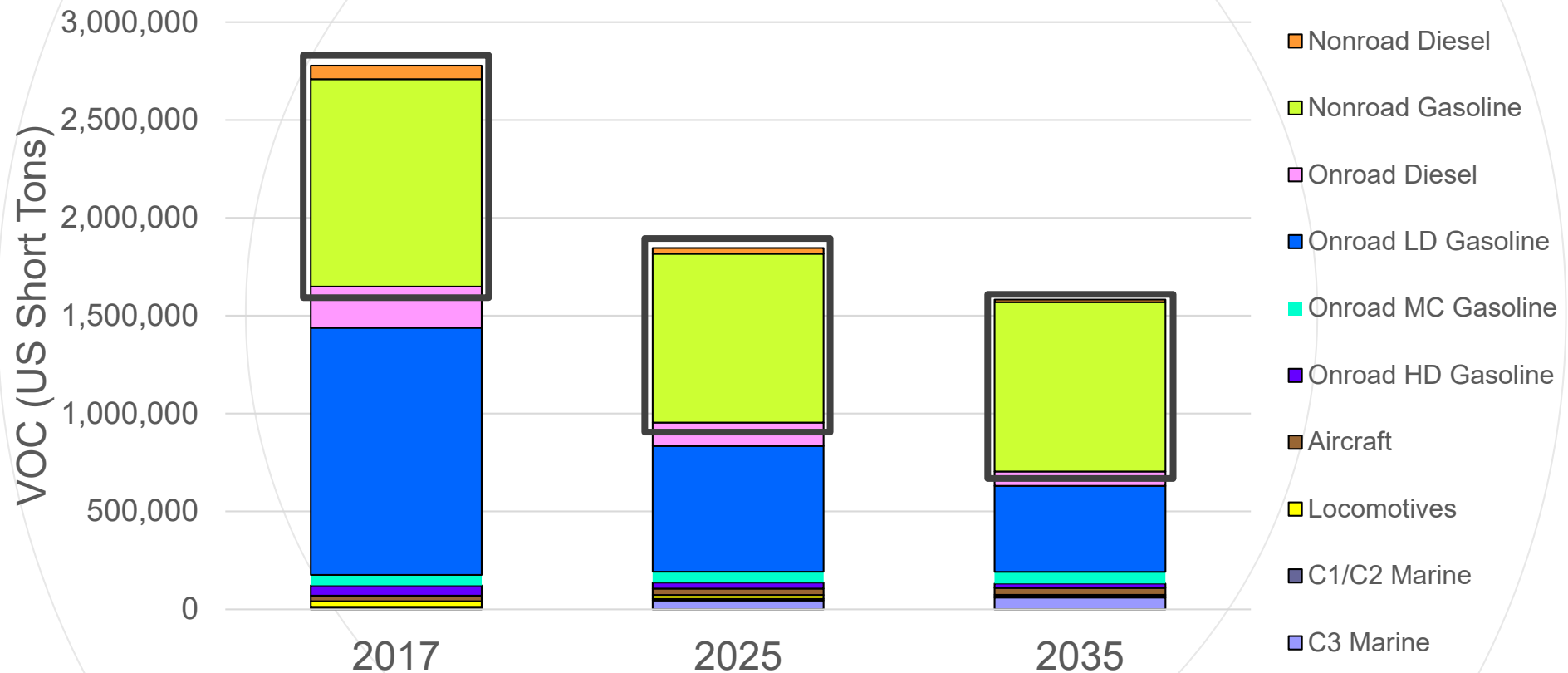
❖ Nonroad becomes increasingly important over time

# PM<sub>2.5</sub> from Mobile Sources



❖ Nonroad gasoline becomes the largest contributor in the future

# VOC from Mobile Sources

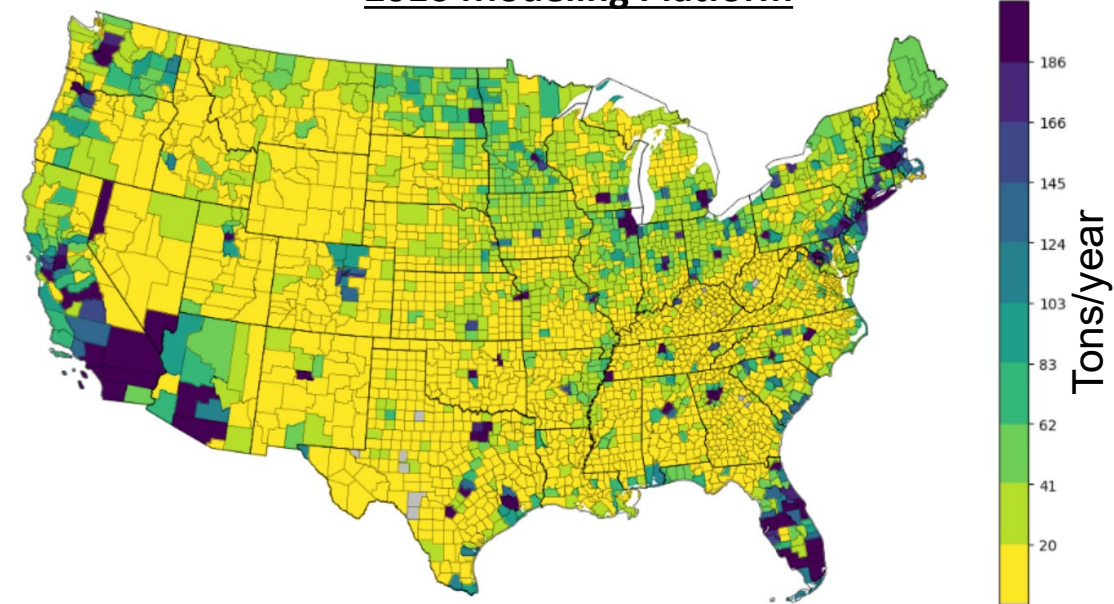


❖ Nonroad gasoline becomes the largest source of VOC in the future

# EPA's Efforts to Improve the NONROAD Model

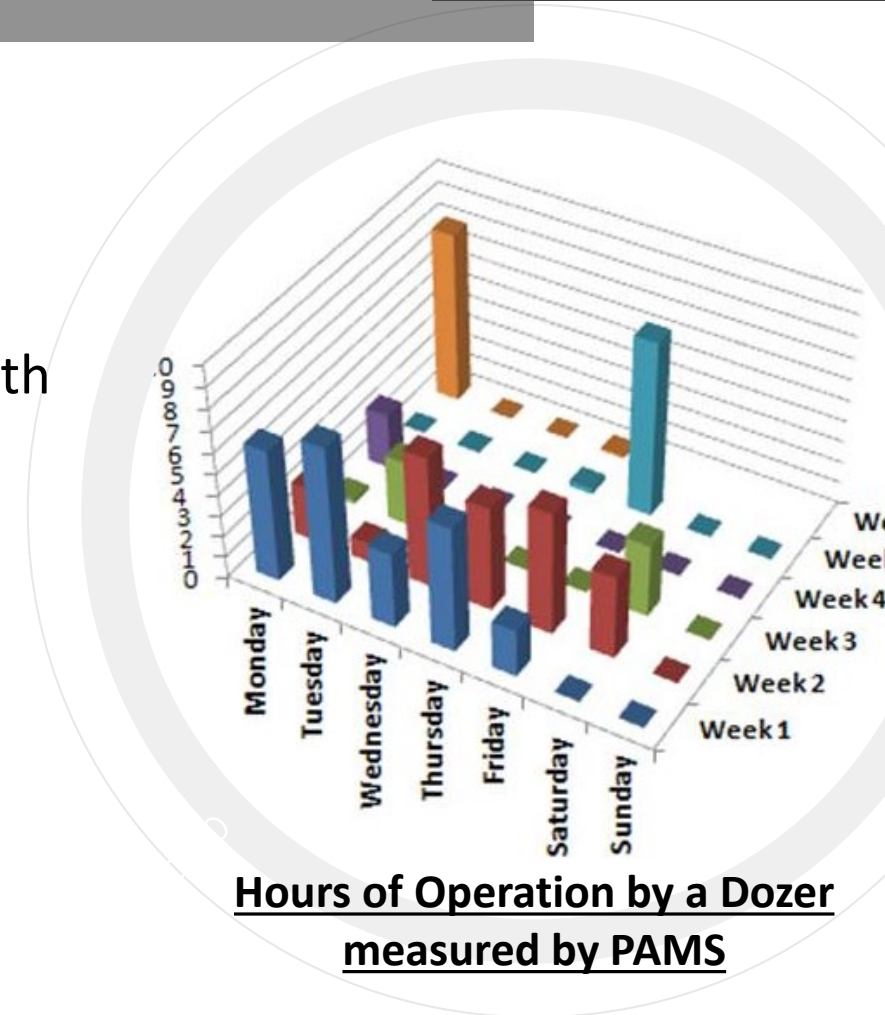
- Motivation: to better characterize the emissions impacts of nonroad sector on air quality
- Released MOVES2014b in summer 2018 that updated engine population growth rates, Tier 4 emission rates/speciation profiles, and diesel fuel sulfur levels
- Develop a new NONROAD model based on real-world data in the next 2+ years
  - Prototypes being developed now
  - Actively collaborating with other agencies, industry, and academia to improve the data and science in the model

**Nonroad PM2.5 Inventory**  
**2016 Modeling Platform**



# Nonroad Data – Challenges and Opportunities

- Challenges
  - Limited availability of equipment population, activity, and emissions data
  - Large diversity of equipment types and usage patterns both within and between equipment categories
- Opportunities
  - Broader application of Portable Emissions Measurement Systems (PEMS)/micro-PEMS to measure emissions and engine load during real-world operations
  - Increased use of on-board telematics, Portable Activity Measurement Systems (PAMS), and fleet management software to collect real-world activity data
  - Use of surveys and surrogate data to develop engine population estimates and growth projections



**Hours of Operation by a Dozer measured by PAMS**



