

2008 OZONE MAINTENANCE PLAN UPDATE

New Motor Vehicle Emissions Budgets

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TPB Technical Committee
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Background

- EPA released a new mobile emissions model, MOVES3, which is now required for use in transportation conformity and State Implementation Plan (SIP) development
- Using the same inputs, MOVES3 results in significant increases in estimated NO_x (over 50% in some analysis years) compared to MOVES2014, which was used to develop mobile inventories in the 2008 ozone maintenance plan
- To be consistent, one should use the same tool for estimating emissions and setting Motor Vehicle Emissions Budgets (MVEBs), unless two tools produce identical results, which is clearly not the case based on our tests regarding NO_x



MVEB Safety Margins: Current MVEBs

- Current Motor Vehicle Emissions Budgets (MVEBs) from 2008 ozone maintenance plan
- 2014 (attainment year), 2025 (interim year), 2030 (out year)
- Developed using 20% “safety margin” and 2 tiers: Tier 1 set at mobile inventory level and Tier 2 set 20% above mobile inventory level



2008 Ozone Maintenance Plan

From the 2008 ozone maintenance plan (2017):

“The MVEBs will be re-evaluated if there is a roll-back of federal emissions control programs and/or changes to USEPA’s emissions estimation model that result in significant changes in emissions inventories or to accommodate transportation planning issues when the Constrained Long-Range Plan horizon year is extended beyond 2040.”



Preliminary MOVES3 Sensitivity Tests

MOVES3 vs MOVES2014: Estimated NOx (tons/day)

Year	MOVES2014B	MOVES3.0.3	MOVES3.0.3 versus MOVES2014B
2021	66.824	67.442	1%
2023	54.016	56.382	4%
2025	42.566	46.377	9%
2030	27.536	34.666	26%
2040	19.140	29.183	52%
2045	19.131	29.434	54%



Updating Motor Vehicle Emissions Budgets

Motor Vehicle Emissions Budgets

§93.101 – Definition:

“Motor vehicle emissions budget is that portion of the total allowable emissions defined in ...the maintenance plan for a certain dateallocated to highway and transit vehicle use and emissions”

§93.118(e)(4) – Criteria & Procedures:

- iv. *“The motor vehicle emissions budget(s), when considered together with all other emissions sources, is consistent with applicable requirements for....maintenance;*
- v. *The motor vehicle emissions budget(s) is consistent with and clearly related to the emissions inventory in the submitted maintenance plan.”*

Source: Transportation Conformity Regulations, April 2012



Updating Motor Vehicle Emissions Budgets

Motor Vehicle Emissions Safety Margins

§93.101 – Definition:

“Safety margin means the amount by which total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for ...maintenance”

Source: Transportation Conformity Regulations, April 2012

There is widespread use of safety margins in maintenance plans



MVEB Safety Margins: Uncertainties*

- ✓ Changes to EPA Emissions Model (MOVES)
 - In addition to significant increases in estimated NO_x between MOVES2014 and MOVES3, there was more than 100% change in NO_x in the 2040 analysis year when we moved from EPA Mobile model to MOVES
 - MOVES3 model, released in 2020, which we are required to use, is already out of date, as it is based on the SAFE Vehicles Rule, superseded with more stringent emissions and CAFE standards in 2021
- ✓ Vehicle Fleet Changes
 - Vehicle registration data updated approx. every 3 years: next 2023 or 2024
 - Ageing vehicle fleet and trend towards larger vehicles
 - Inability to explicitly account for likely higher percentage of EVs and cleaner vehicles in forecast years, beyond what is already embedded in the MOVES model
- ✓ Updates to Cooperative Forecasts - economic growth

*Uncertainties = elements out of TPB control that can lead to mobile budget exceedances



2008 Ozone Maintenance Plan Update: Key Tools and Assumptions

- Tools:
 - MOVES3.0.4 Model
 - Gen2/Version 2.4 Travel Demand Model
- Input Assumptions:
 - Land Activity: Round 9.2 Cooperative
 - Transportation Networks: 2022 Update to Visualize 2045



Updated NOx and VOC Inventories for 2008 Ozone Maintenance Plan Update

Using the updated assumptions, updated NOx and VOC inventories and corresponding safety margins are provided below:

Nitrogen Oxides (NOx)

tons/day

	Inventory	Safety Margin	New MVEBs
2025	46.5	9.3	55.8
2030	34.3	6.9	41.2

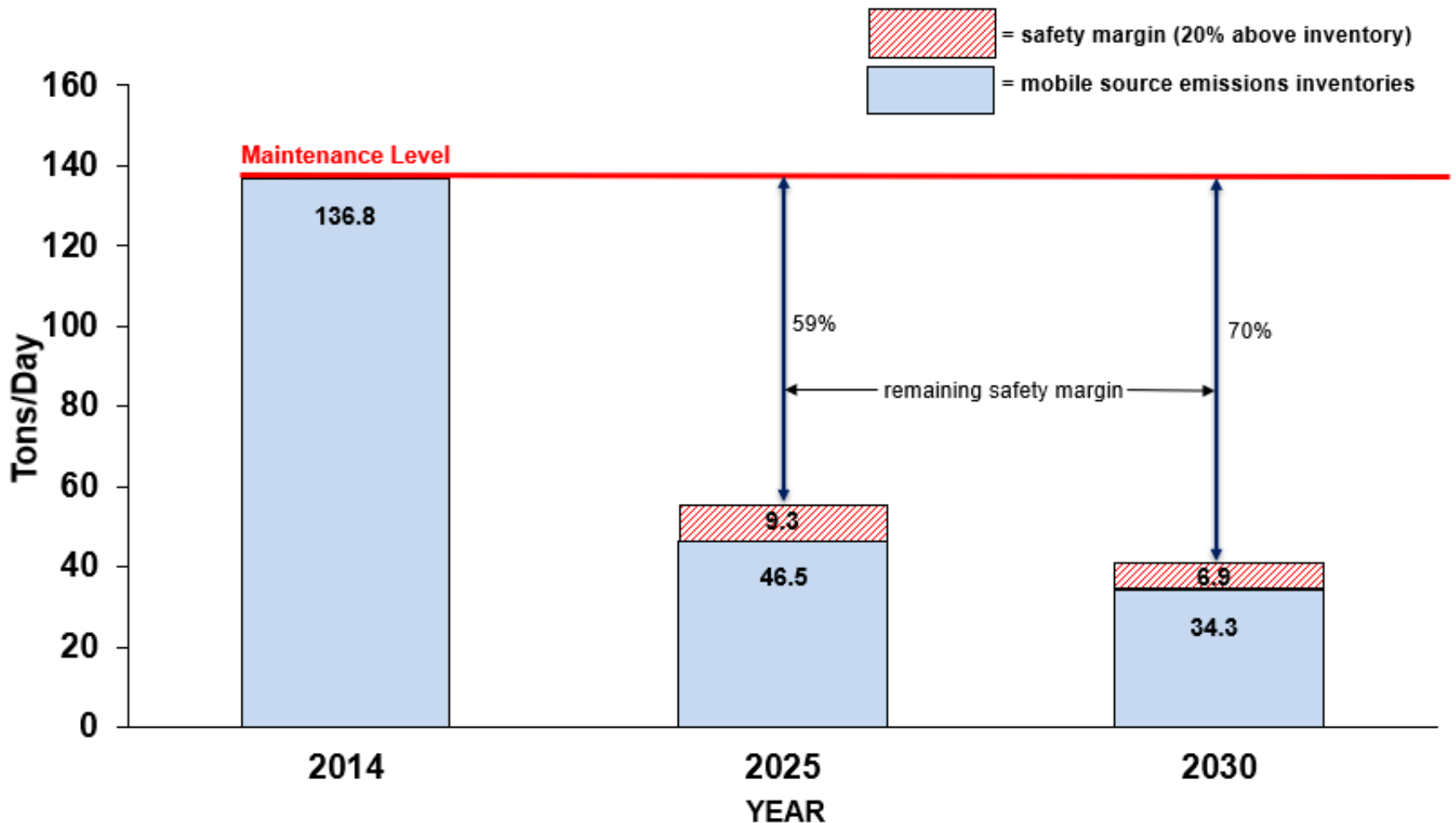
Volatile Organic Compounds (VOCs)

tons/day

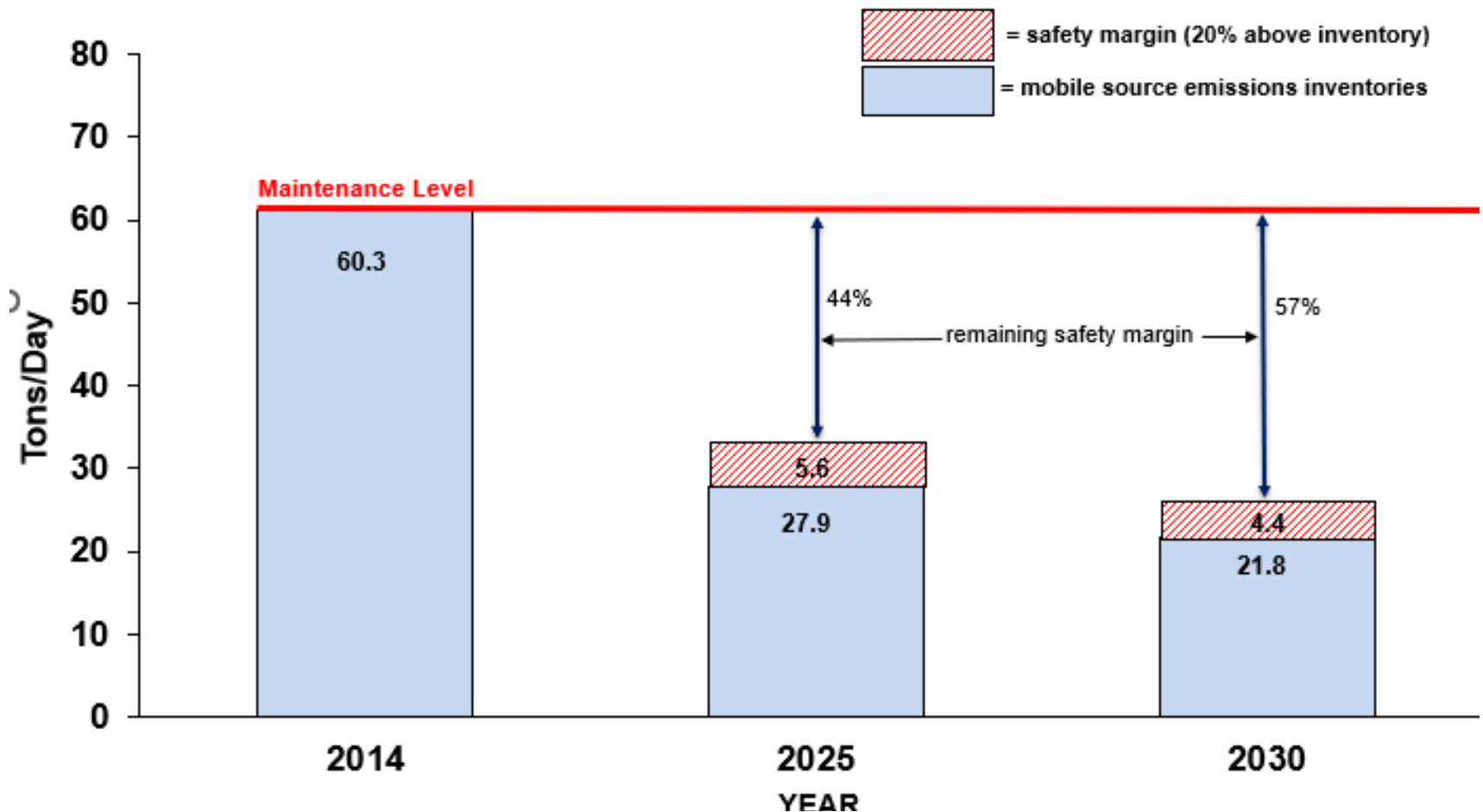
	Inventory	Safety Margin	New MVEBs
2025	27.9	5.6	33.5
2030	21.8	4.4	26.2



Updated 2008 Ozone Maintenance Plan: 20% Safety Margins for NOx



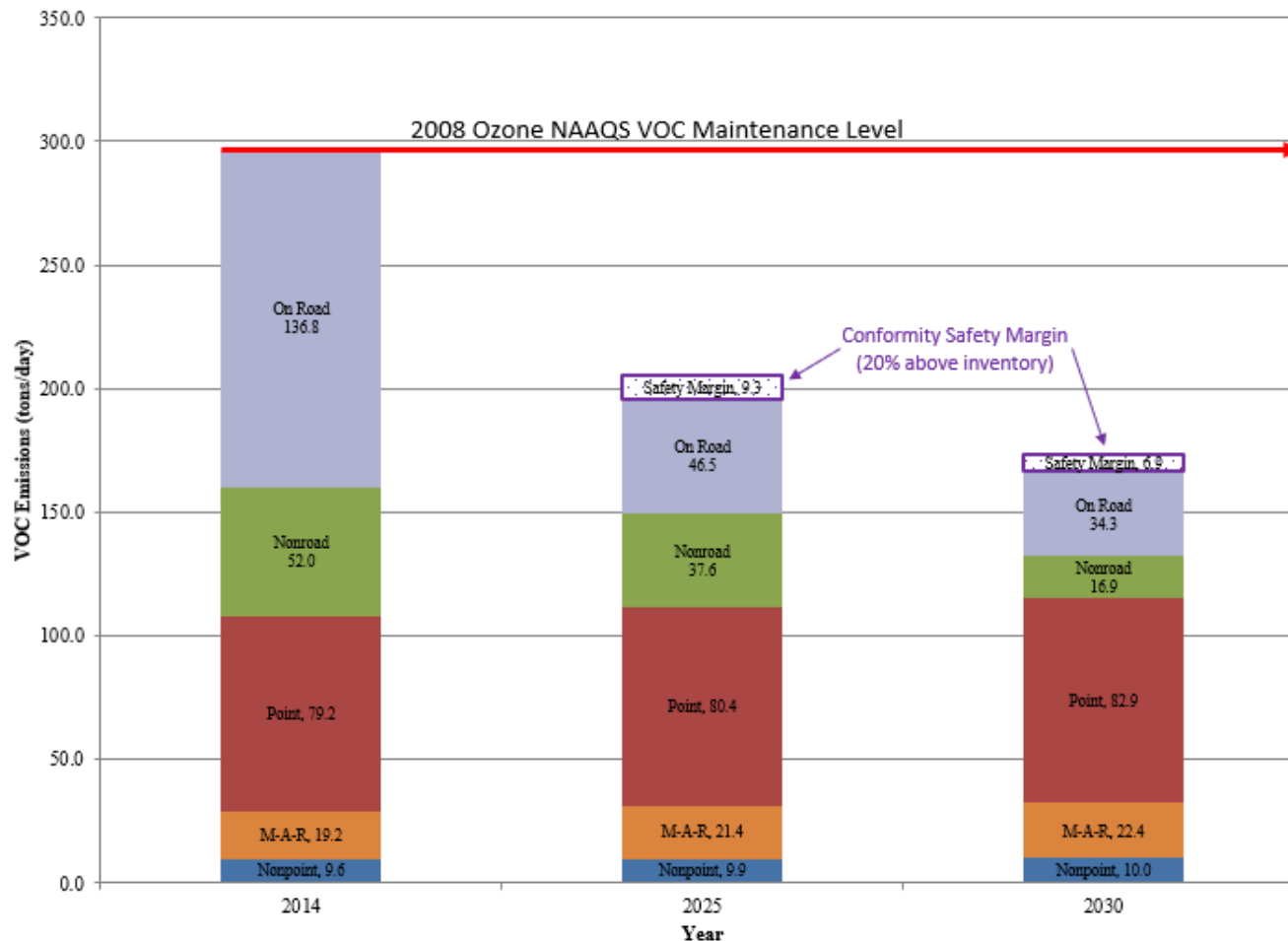
Updated 2008 Ozone Maintenance Plan: 20% Safety Margins for VOC



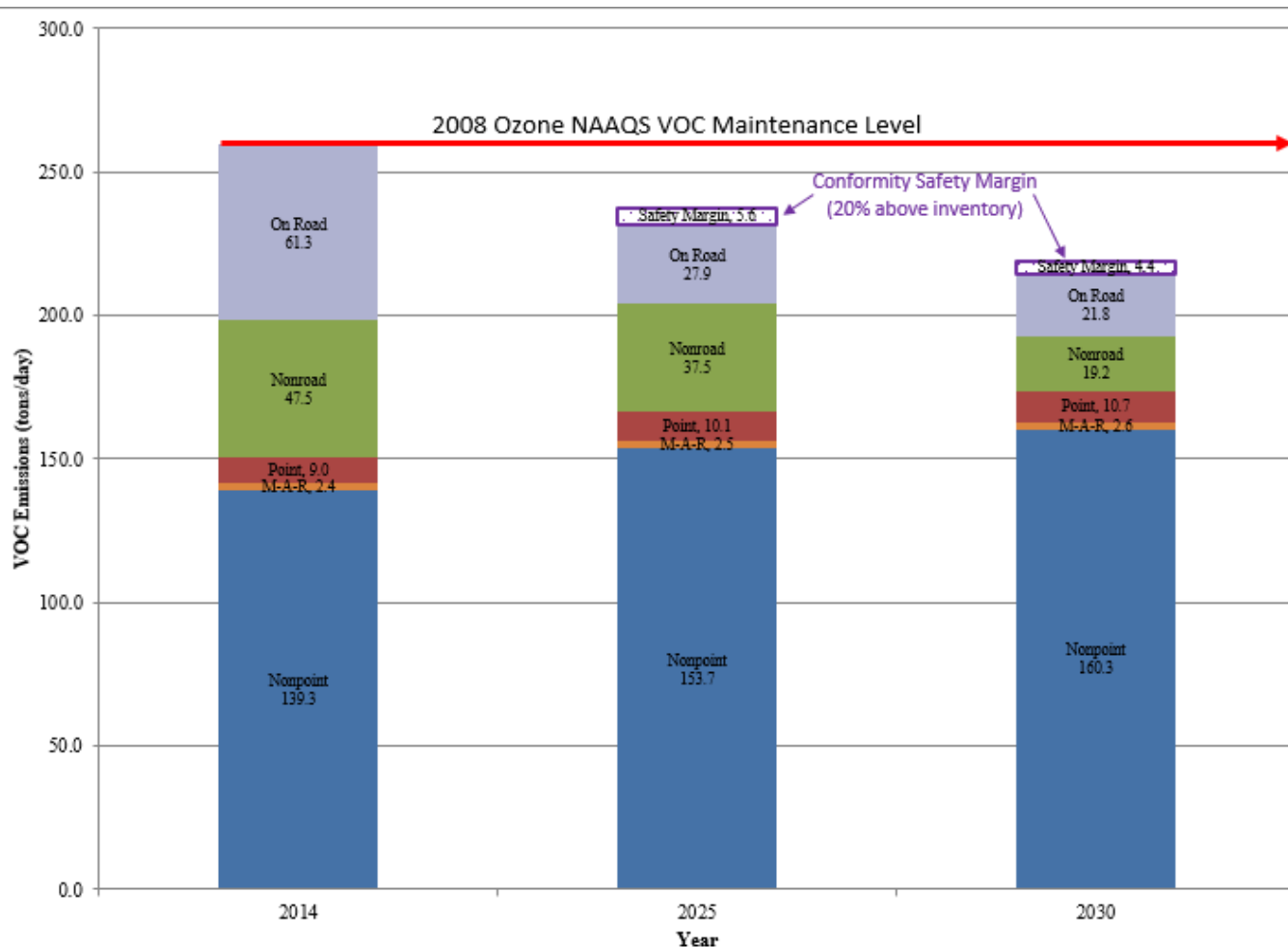
SOURCE: 2025 and 2030 inventories were re-estimated using MOVES3.04 for the 2023 update of the 2008 ozone maintenance plan. The 2014 inventory is from the original 2008 ozone maintenance plan (December 20, 2017).



Updated 2008 Ozone Maintenance Plan: NOx with 20% Safety Margins



Updated 2008 Ozone Maintenance Plan: VOC with 20% Safety Margins



2023 Schedule

March	TPB Transmits Mobile Emissions Inventories to MWAQC
March - April	MWAQC Develops New Motor Vehicle Emissions Budgets (MVEBs)
March- April	MWAQC Prepares 2008 Ozone Maintenance Plan (MP) Update Document
May	MWAQC Releases 2008 Ozone MP Update with New MVEBs For Comment
June-August	Public Hearings and Comment Period
September	MWAQC Approves Final 2008 Ozone MP Update with New MVEBs
October	State Air Agencies Submit 2008 Ozone MP Update to EPA
???	EPA Approves Updated 2008 Ozone MP or Finds MVEBs Adequate for Use in Conformity



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