

MOVES3 VS MOVES2014

New Mobile Emissions Budgets

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Agenda Item #3



National Capital Region
Transportation Planning Board

TPB Long Range Transportation Plan

2024 LRTP Update

- TPB resolution to update projects in new 2024 LRTP to address climate change goals.
- Update needed to take advantage of funding in the Infrastructure Investment and Jobs Act (IIJA).
- Update needed to provide federally required 20-year horizon--current 2045 out-year must be updated to 2050.

Scheduled for TPB Adoption in 2024



MOVES3- Release

MOtor Vehicle Emissions Simulator (MOVES)

- EPA's latest emissions model, MOVES3, was officially released in the federal register¹ on January 7, 2021.
- EPA provided a 2-year grace period before MOVES3 must be used for conformity analyses. The grace period ends on January 9, 2023.

¹Federal Register Vol 86, No. 4/ Thursday January 7, 2021 "Official Release of the MOVES3 Motor Vehicle Emissions Model for SIPs and Transportation Conformity <https://www.govinfo.gov/content/pkg/FR-2021-01-07/pdf/2021-00023.pdf>



MOVES3 – EPA Notes Possible NOx Increases in Urban Areas

Regarding the potential increases in NOx emissions in urban areas, in the MOVES3 documentation, EPA notes that “as shown in Figure 6-5, urban counties with congested roads and little hotelling activity in MOVES2014b may see higher total NOx with MOVES3 than with MOVES2014b.”

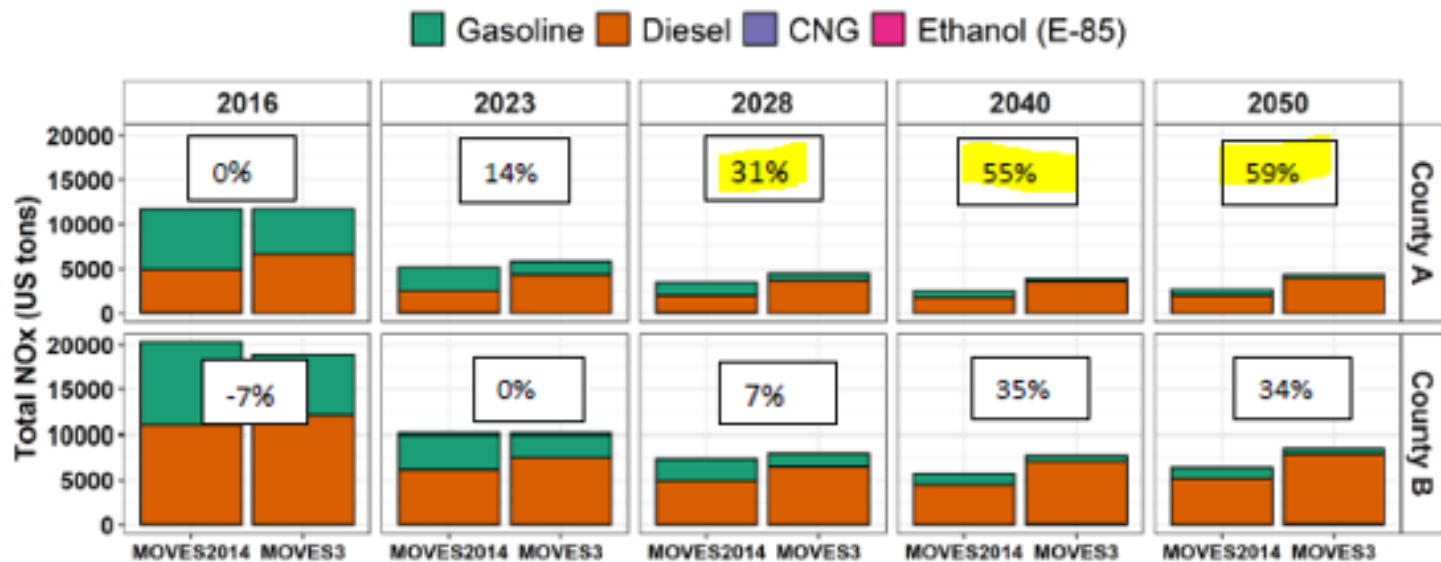


Figure 6-5—Onroad NOx from two sample urban counties in MOVES3 as compared to MOVES2014b

Source: Overview of EPA's Motor Vehicle Emission Simulator (MOVES3); March 2021



MOVES3 – Preliminary Sensitivity Tests

- TPB staff ran several preliminary sensitivity tests for MOVES3 using MOVES2014b inputs from the 2022 Update to Visualize 2045 air quality conformity analysis.
- MOVES3 and MOVES2014b runs used the same inputs (where possible).

MOVES3 – Preliminary Sensitivity Tests

MOVES3 vs MOVES2014: VOC (tons/day)

Year	MOVES2014B	MOVES3.0.3	MOVES3.0.3 versus MOVES2014B
2021	42.341	35.046	-17%
2023	37.741	31.402	-17%
2025	34.165	28.099	-18%
2030	25.633	22.145	-14%
2040	19.559	18.017	-8%
2045	19.074	17.774	-7%



MOVES3 – Preliminary Sensitivity Tests

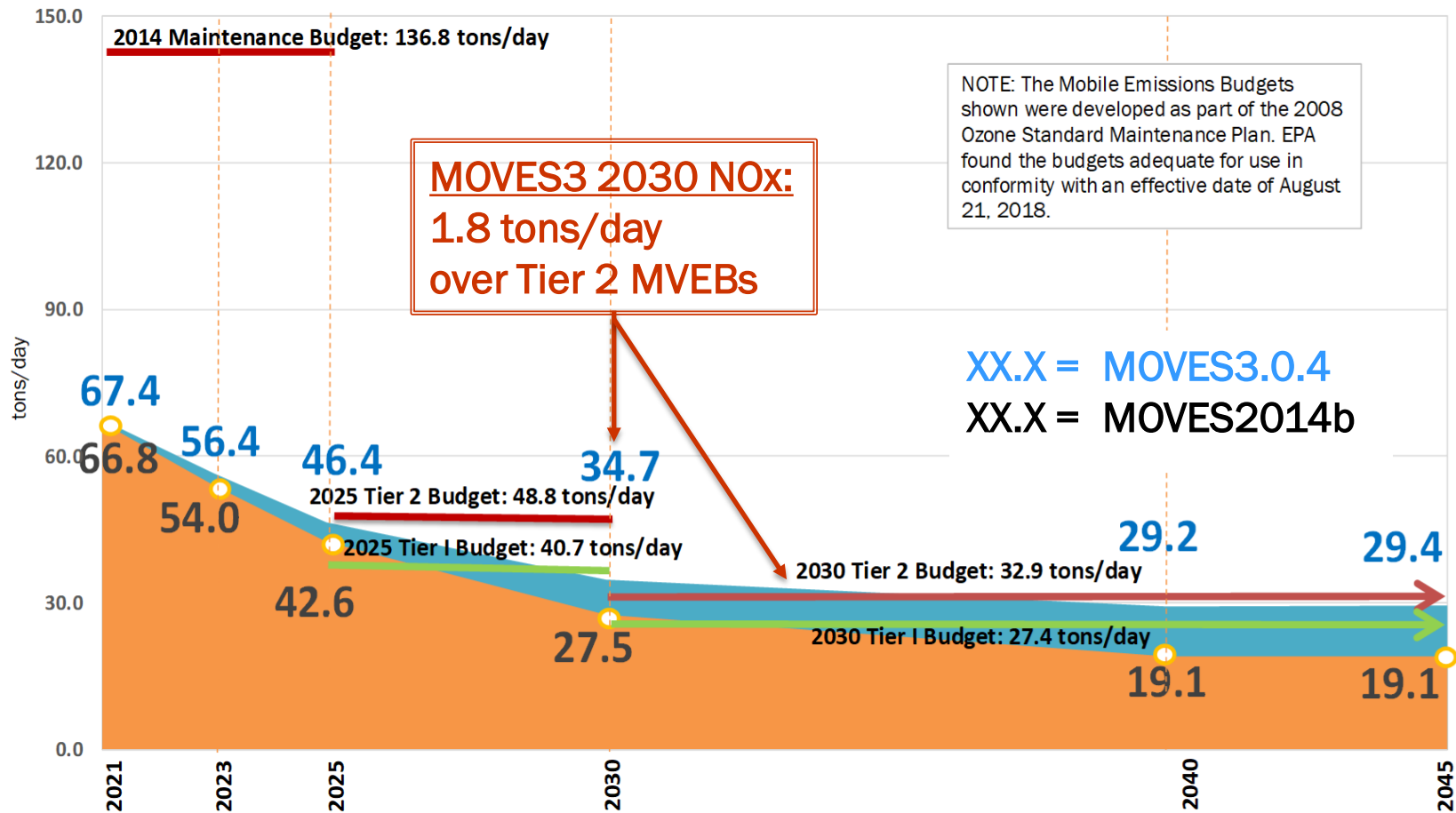
MOVES3 vs MOVES2014: NO_x (tons/day)

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%



MOVES3- NOx emissions vs MVEBs

Ozone Season NOx: MOVES2014b Vs. MOVES3.0.4



NOx emissions from 2022 Update to Visualize 2045



MOVES3- Other Urban Areas

- TPB staff reached out to other metropolitan planning organizations representing urban areas to see if they have experienced a significant NO_x increase when using MOVES3 relative to MOVES2014b.
- Several other metropolitan areas around the country have seen significant NO_x increases. Atlanta Regional Commission and North Central Texas COG (Dallas) shared specific results:
 - Atlanta >80% increase in NO_x in 2050
 - Dallas 40% increase in NO_x in 2045



Motor Vehicle Emissions Budgets

- 2024 LRTP update will need an air quality conformity analysis.
- Update needed for current Motor Vehicle Emission Budgets (MVEBs) (from 2008 ozone standard maintenance plan) to pass conformity.
- New MVEBs for 2015 ozone standard requirements will not override need for new MVEBs associated with the 2008 ozone maintenance plan.



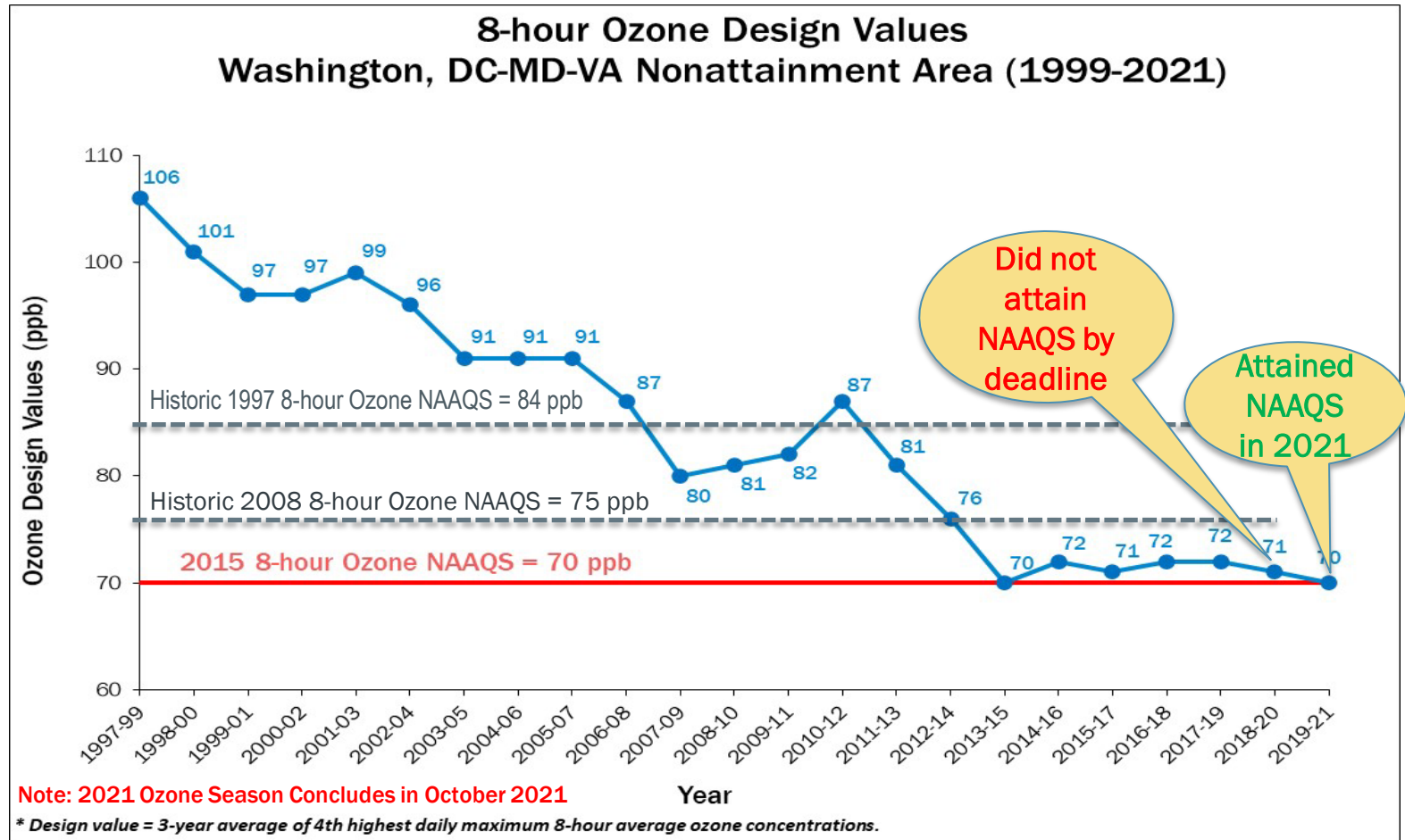
Motor Vehicle Emissions Budgets

2008 Ozone NAAQS Maintenance Plan:

*“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.”*

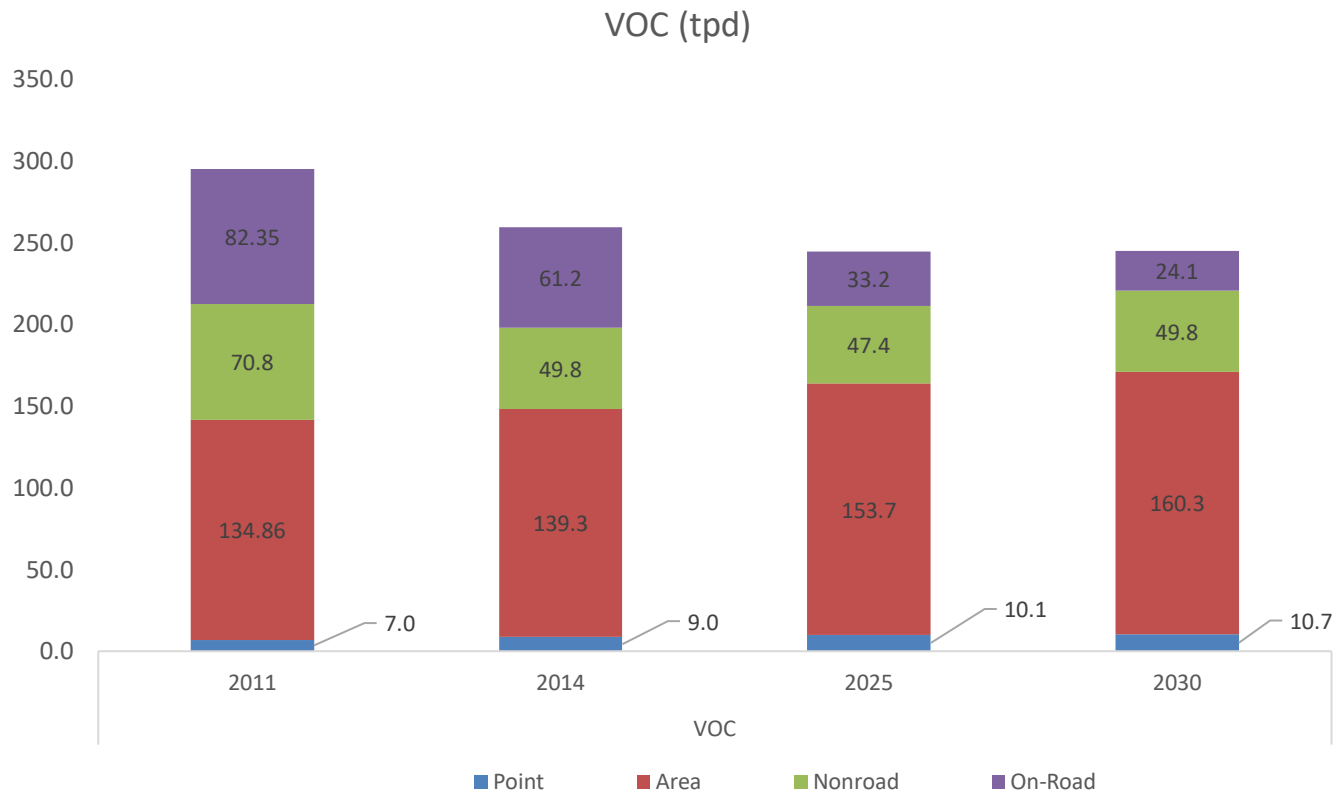


Observed Ozone Levels Over Time



Emissions Inventories

Volatile Organic Compounds (VOCs)

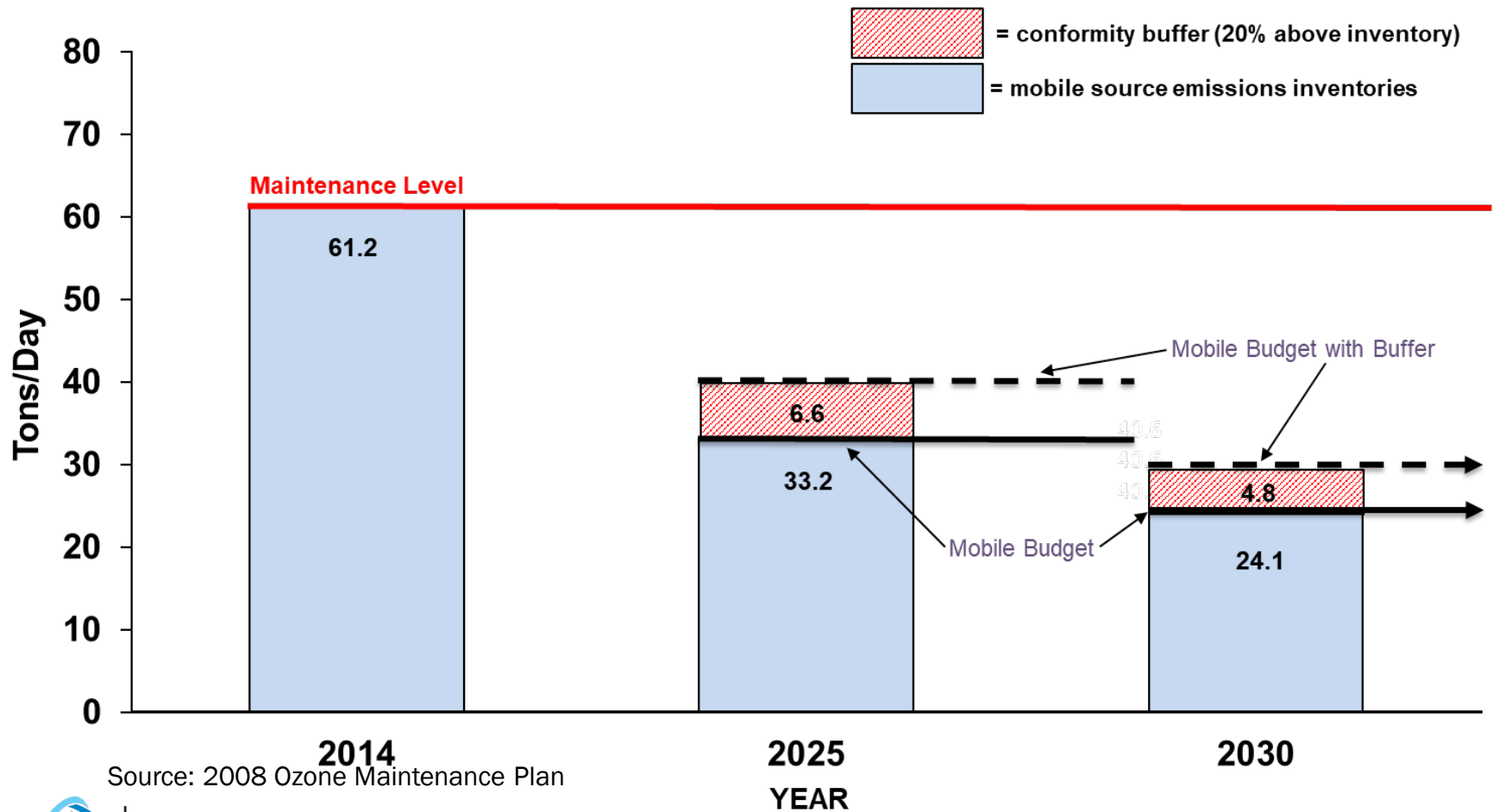


Source: 2008 Ozone Maintenance Plan



Emissions Inventories

Volatile Organic Compounds (VOCs)



Emissions Inventories

Nitrogen Oxides (NOx)

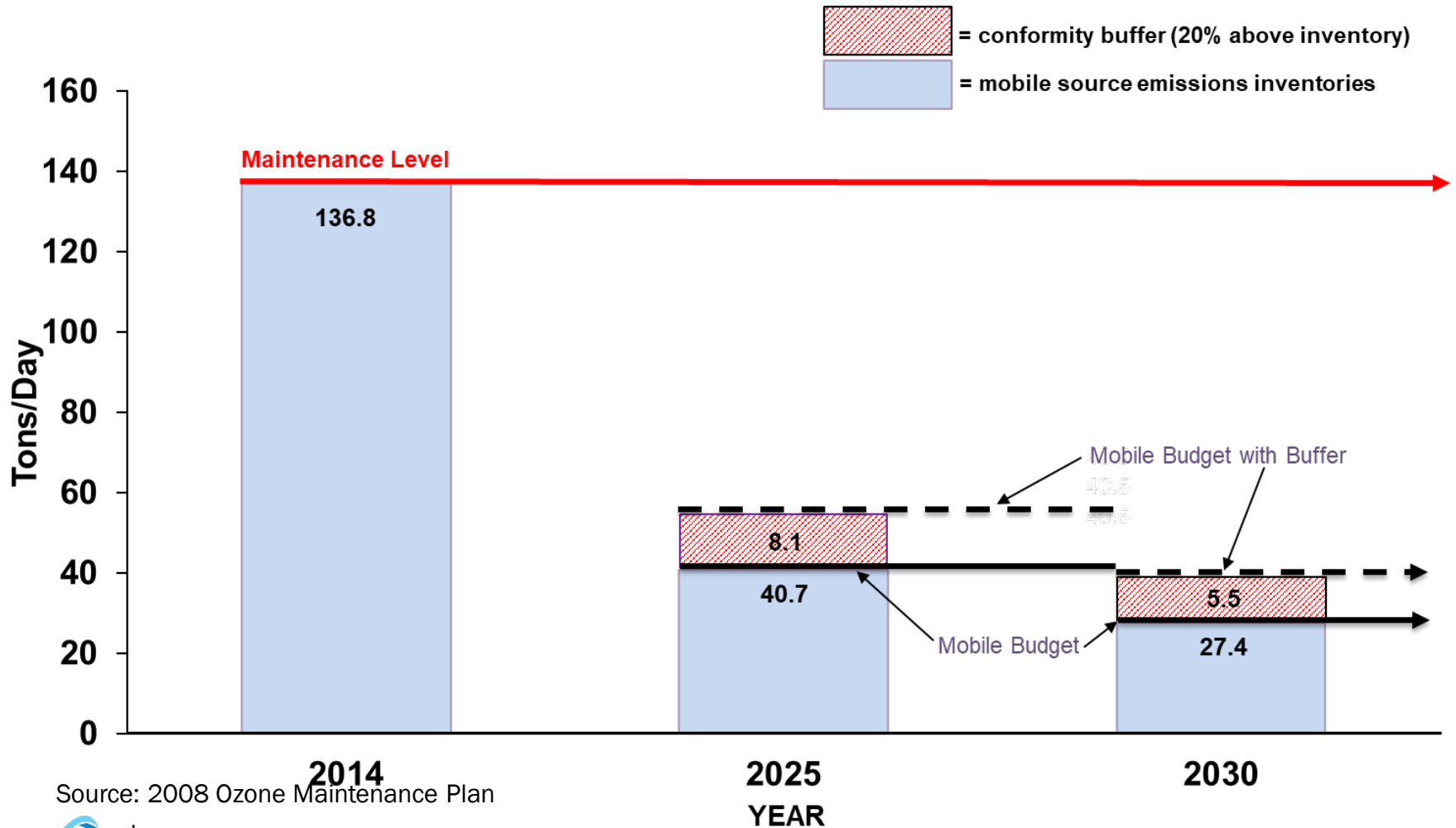


Source: 2008 Ozone Maintenance Plan



Emissions Inventories: On-Road Mobile

Nitrogen Oxides (NOx)



Source: 2008 Ozone Maintenance Plan



Conclusion:

- Approved updated MVEBs for the 2008 ozone maintenance plan will be needed by the end of 2023 for use in the air quality conformity analysis of the 2024 LRTP update. Without these new MVEBs the new LRTP will not pass the conformity test and the region's current and new (IIJA) funding will be jeopardized.
- New MVEBs associated with the 2015 ozone standard requirements will not override the need for new MVEBs for the 2008 ozone maintenance plan.
- Will EPA allow just MVEB update, or will new emissions inventories be required for all sectors?



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