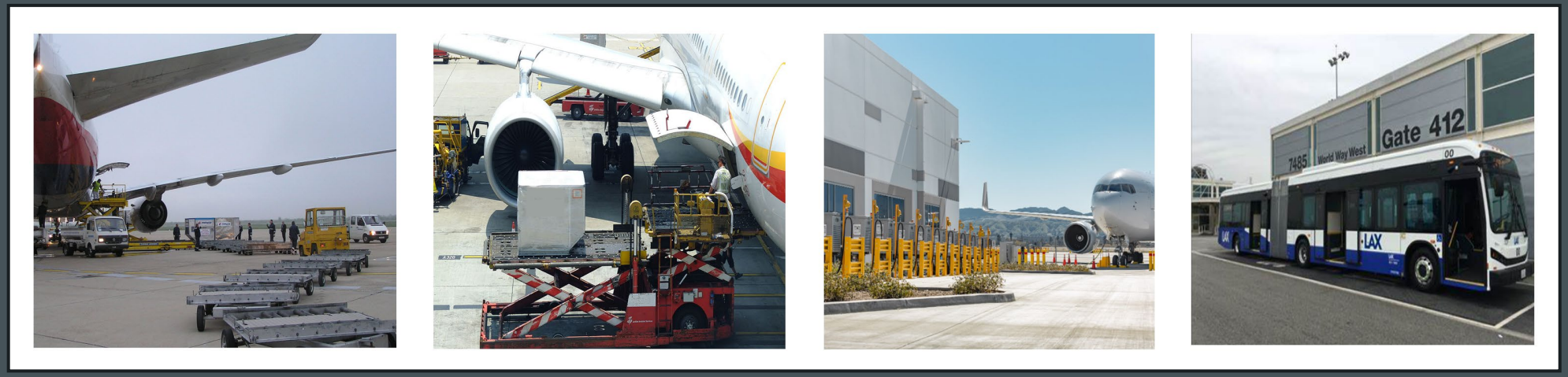


REPORTS ON AIRPORTS MOUS IMPLEMENTATION PROGRESS FOR CALENDAR YEAR 2023

Working Group Meeting
November 18, 2025

South Coast AQMD

LAWA LOS ANGELES WORLD AIRPORTS

JOHN WAYNE AIRPORT ORANGE COUNTY

long beach airport

ONTARIO INTERNATIONAL AIRPORT

Hollywood Burbank Airport

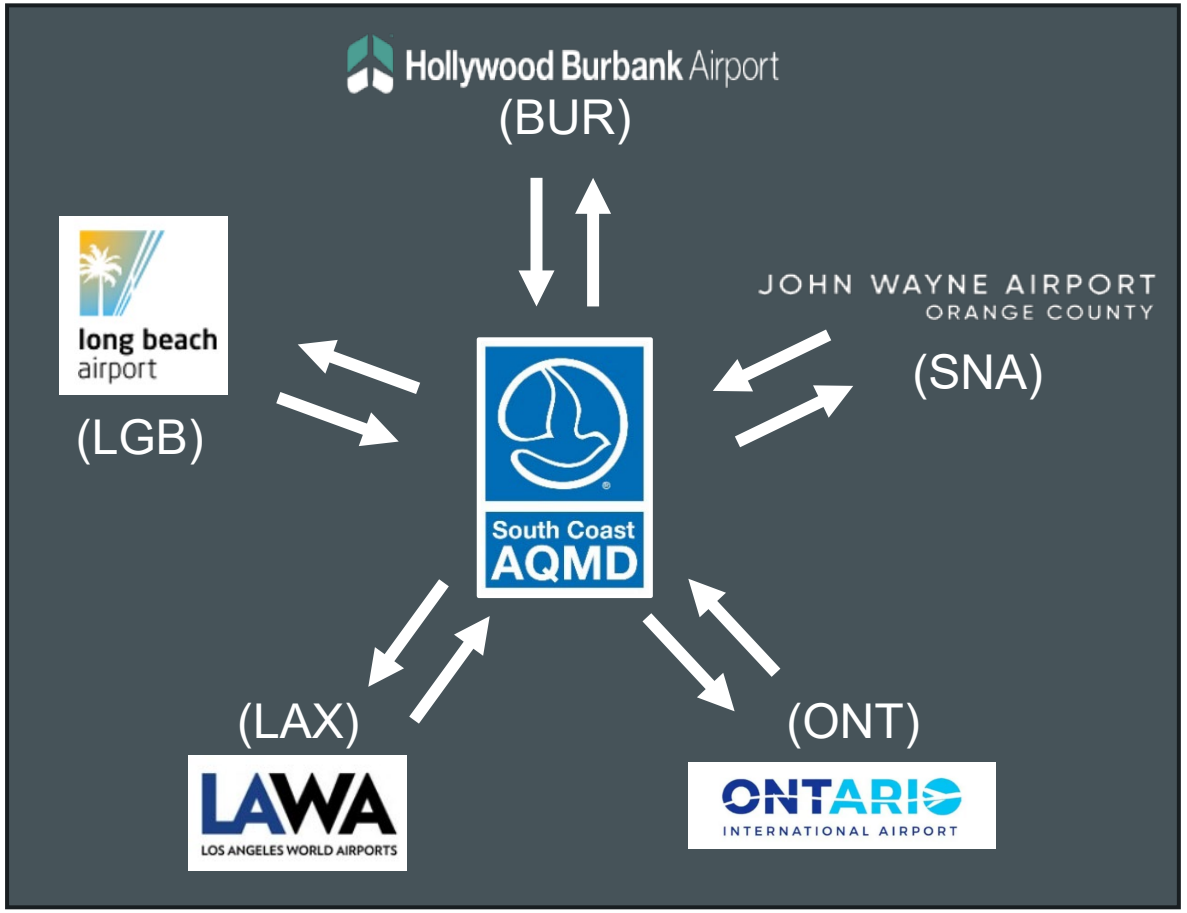
AGENDA

- South Coast AQMD Presentation
- Hollywood Burbank Airport (BUR) Presentation
- Los Angeles World Airports (LAX) Presentation
- Long Beach Airport (LGB) Presentation
- Ontario International Airport (ONT) Presentation
- John Wayne Airport (SNA) Presentation
- Public Comments

OVERVIEW OF AIRPORTS MOUS

BACKGROUND

- Five commercial airports in the South Coast Air Basin signed individual MOUs with South Coast AQMD
- Reducing non-aircraft emissions
  - Term of MOUs: 2019 - 2031
  - Performance targets set for years 2023 and 2031



MAIN MOU COMMITMENTS

Commercial Airports	South Coast AQMD
• Meet performance targets by timely implementing specific measures that vary by airports	• Commit to SIP creditable emission reductions with EPA based on projected MOU measures implementation • Report to U.S. EPA and the public
• Provide data and annual emissions inventory reports to South Coast AQMD	• Technical analysis and monitoring of MOUs implementation progress

SIP = State Implementation Plan

MOU MEASURES WITH 2023 AND 2031 PERFORMANCE TARGETS

Ground Support Equipment (GSE) Fleet Performance[1]

Shuttle Bus Electrification[2]

Heavy-Duty Vehicle (HDV) Emission Reductions[3]

[1] *In all five Airports' MOUs*
[2] *In BUR, LAX, and SNA MOUs*
[3] *In LAX and SNA MOUs*

LATEST IMPLEMENTATION STATUS: AIRPORTS COMMITMENTS

STATUS OF AIRPORTS COMMITMENTS (GSE)

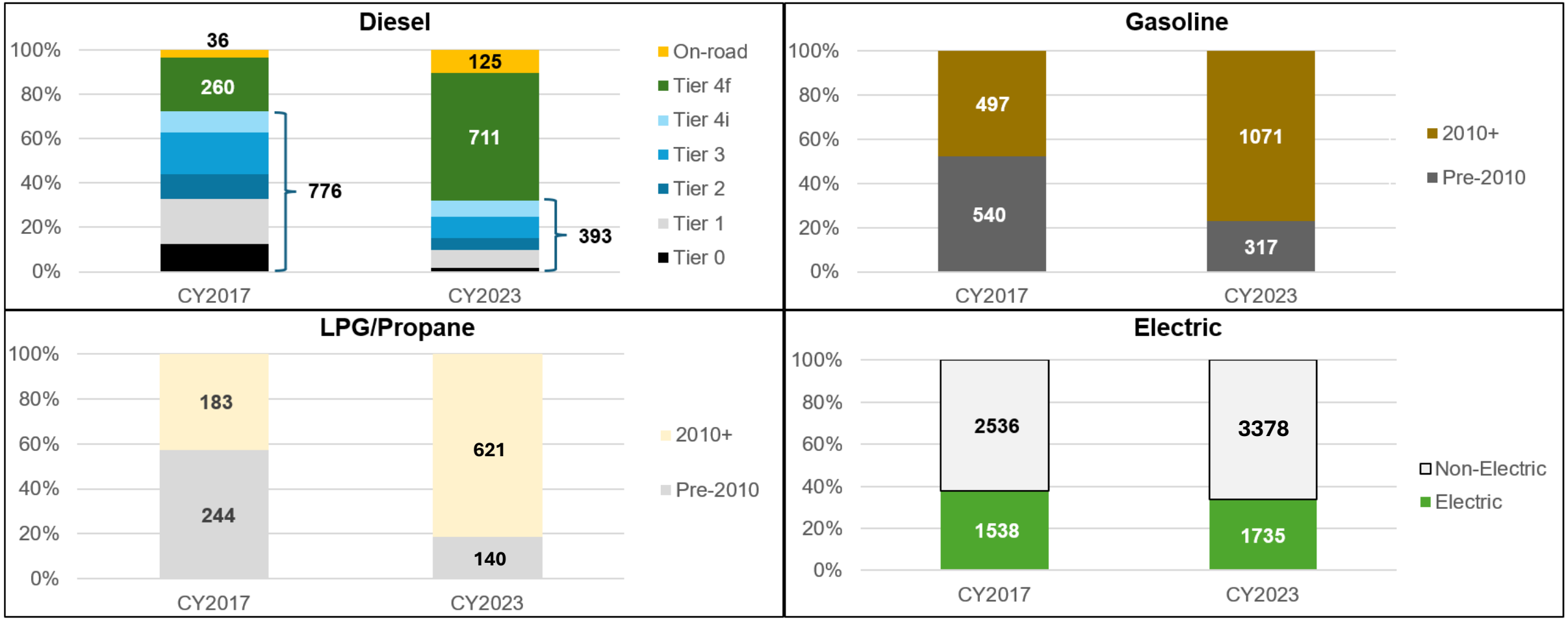
Airport	2023 Fleet Emission Rate Performance Target[1]	2023 Fleet Emission Rate Actual Performance[1]
BUR	≤1.66	**0.87**
LAX	≤1.8	**1.04**
LGB	≤0.93	**0.55**
ONT[2]	≤2.2	**2.60**
SNA[3]	≤1.7	**1.84**

Met 2023 Target in CY 2023
Did not meet 2023 Target in CY 2023

- *Table shows airport-specific GSE fleet performance for CY2023*
- *Airport-to-Airport performance factors not comparable with each other due to variations in calculation methodology[4]*

[1] *In grams per brake horsepower-hour (g/bhp-hr)*
[2] *ONT is projected to meet the 2023 GSE fleet performance target in 2025*
[3] *SNA is anticipated to meet the 2023 GSE fleet performance target in 2024*
[4] *Pg. 42 of the Final Staff Report for Facility-Based Mobile Source Measure for Commercial Airports (December 2019): Link here*

Overall Result: Cleaner and Newer GSE Fleet in South Coast Air Basin



STATUS OF AIRPORTS COMMITMENTS (SHUTTLES)

Airport	2023 Shuttle Fleet Target (ZE % of Fleet)	2023 Operating Shuttle Fleet (ZE % of Fleet)
LAX	20%	**50%**
BUR[1]	50%	**0%** *(vehicles procured but not deployed due to infrastructure delay)*
SNA[2]		

Met 2023 Target in CY 2023
Did not meet 2023 Target in CY 2023

- *Fleet percentages for CY 2023*

[1] *In March 2025, four EV shuttles (50% of total fleet) and supporting chargers were delivered to BUR*
[2] *In May 2025, SNA installed temporary chargers and began operation of five EV shuttles (~50% of total fleet); permanent chargers pending installation of infrastructure upgrades*

STATUS OF AIRPORTS COMMITMENTS (HDVS)

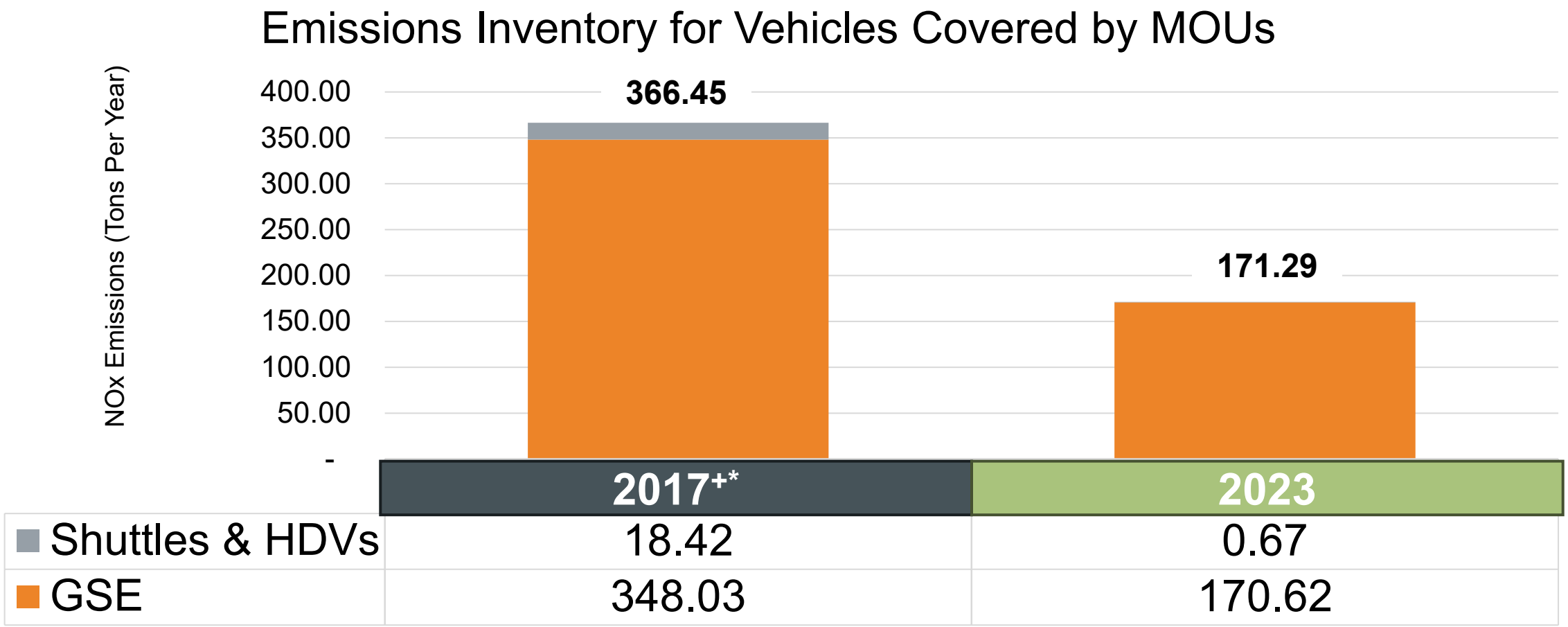
Airport	2023 Performance target	2023 Actual Progress
LAX	Distribute up to $500,000 to incentivize adoption of zero or near-zero emission vehicles with vehicle weight ≥14,000 lbs	**$500,000 made available; $325,000 distributed as of 2020[1]; and remaining $175,000 directed towards updated incentive program[2]**
SNA	Eliminate routine commercial passenger jet fuel deliveries by truck through the installation of a fuel pipeline	**Jet fuel pipeline became operational in October 2019; supplied all routine fuel deliveries in 2022 and 2023**

Met 2023 Target in CY 2023
Did not meet 2023 Target in CY 2023

- *LAX and SNA included measures aimed at lowering emissions from HDV traffic at airports*
- *Goal progress reflected for CY 2023*

[1] *Supported deployment of 15 vehicles at LAX in 2019*
[2] *On April 2025, LAWA reauthorized the LAX Alternative Fuel Vehicle Incentive Program with $175K in remaining funds to incentivize ZE HDV adoption*

PROGRESS IN NOX EMISSION REDUCTIONS

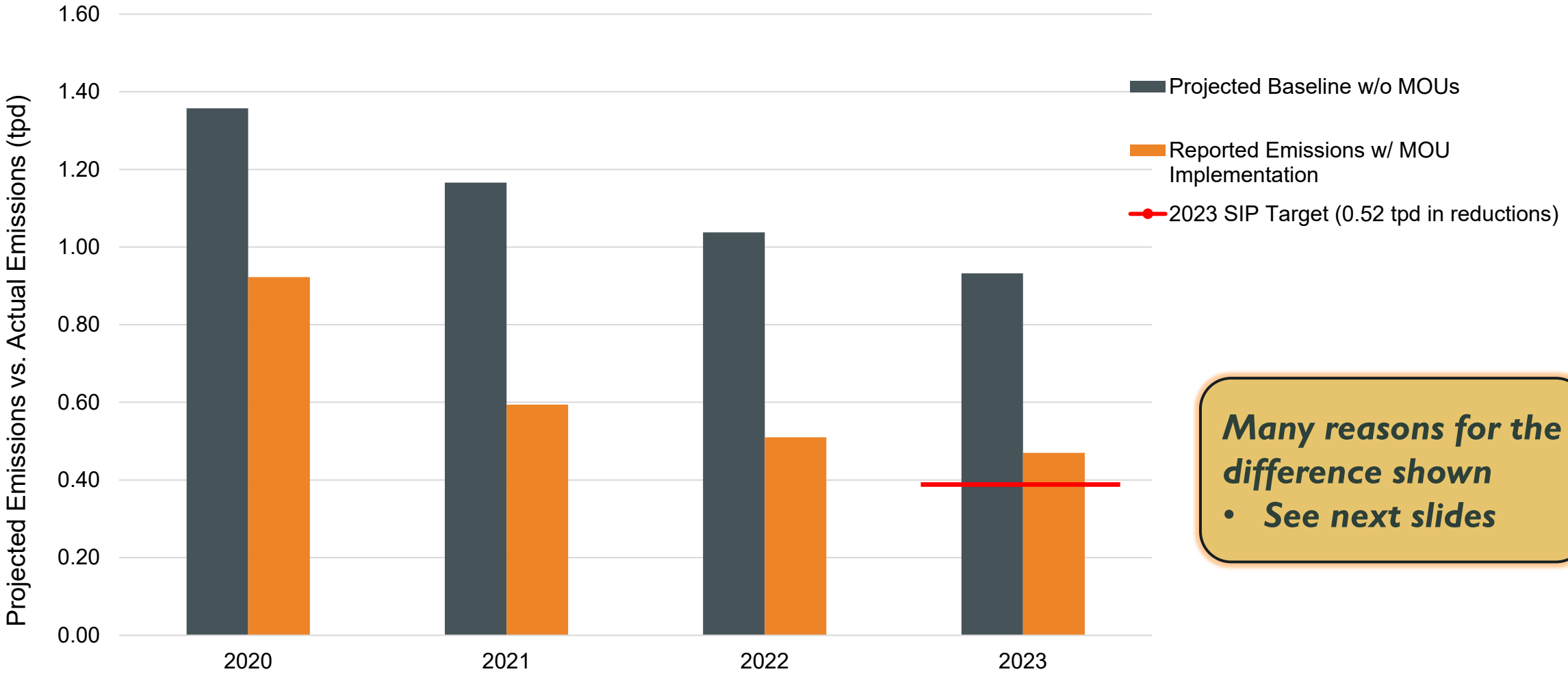


+ 2017 non-GSE emissions baseline were calculated using airport reported emissions from the 2020 progress report before accounting for reductions from implementation of shuttle and HDV measures

** GSE emissions reflect latest revised emission inventory reported by each airport and may differ from original emission inventory reported in the 2019 Airport MOUs Staff Report*

LATEST IMPLEMENTATION STATUS: SOUTH COAST AQMD COMMITMENTS

DIFFERENCE BETWEEN PROJECTED BASELINE AND ACTUAL REPORTED EMISSIONS



Many reasons for the difference shown

- ***See next slides***

TOTAL NOX REDUCTIONS FOR CY 2023
COMPARED TO PROJECTED BASELINE EMISSIONS

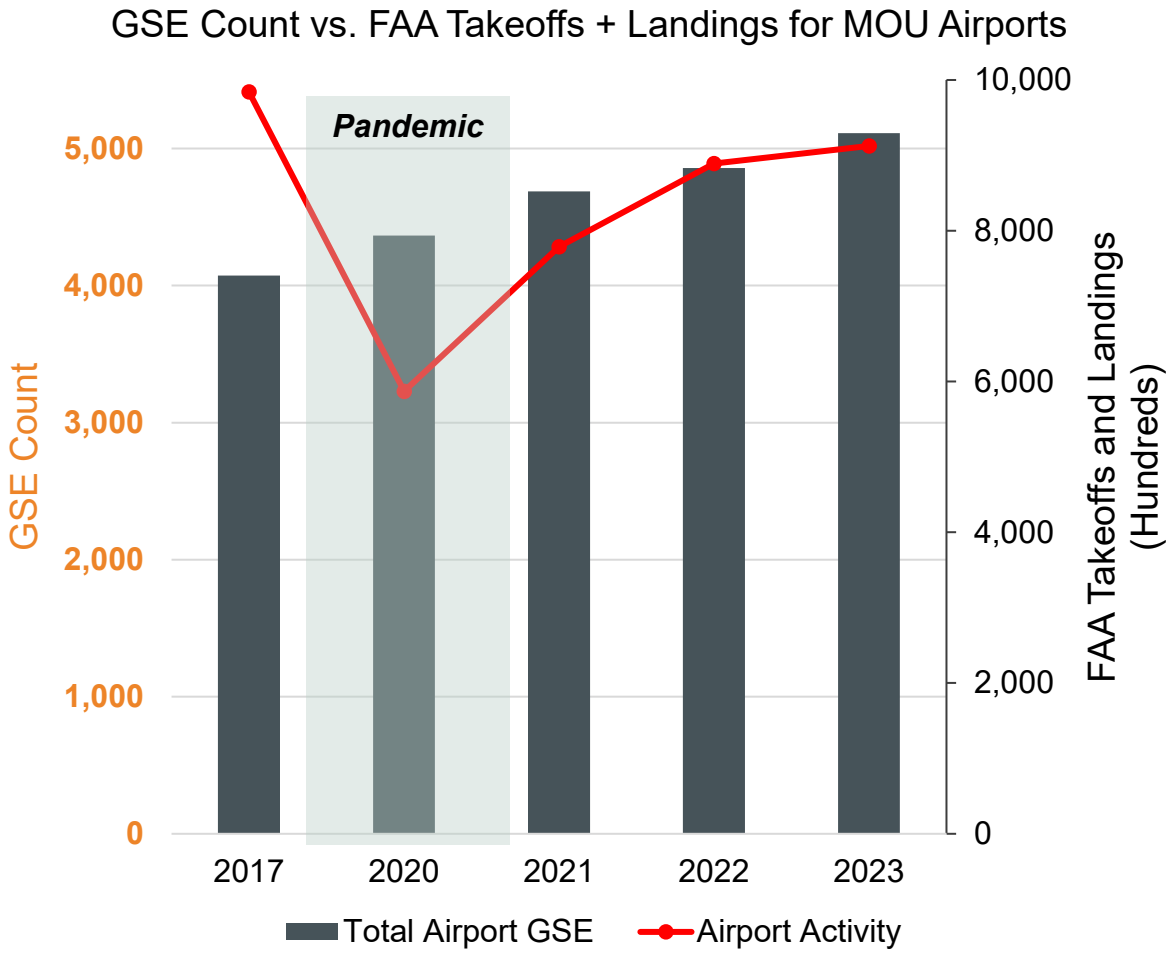
MOU Measure*	Reductions Projected in the 2019 Staff Report (A)	Reductions Based on 2023 Reported Emissions (B)	Difference (B-A)
Ground Support Equipment	180.2	166.9	- 13.3
Shuttle Bus Electrification (LAX, SNA, BUR)	7.9	0.07	- 7.8
HDV Measures (LAX, SNA)	1.9	1.9	-
Total	190.0	168.9	- 21.0

**Emissions expressed as tons per year. Numbers may not sum up due to rounding.*

- Difference for GSE discussed in next slides
- Difference for shuttle buses electrification
  - Delays in charging infrastructure (common for transportation electrification)
  - Subsequent significantly lower emissions factors due to updates in CARB's EMFAC model and largely decreased vehicle miles traveled reported for airport shuttle buses

UNEXPECTED GROWTH IN GSE POPULATION

- 17% growth in reported GSE population between 2017 and 2023
  - Projected NOx reductions in the 2019 staff report assumed minimal changes
- Growth not fully explained by flight activity
  - Flight activity not yet recovered to pre-pandemic level by 2023
- Growth partially explained by increased recordkeeping accuracy from MOUs implementation
  - Fleet performance includes all GSE units reported under the MOUs



WHAT IF GSE POPULATION HAD BEEN TRACKED ACCURATELY BEFORE MOU IMPLEMENTATION?

- Staff recalculated projected NOx reductions for GSE measures by:
  - Using the 2023 GSE performance targets (unchanged)
  - Additionally taking into account GSE population as reported in 2023 (instead of using 2017 reported population for year 2023)
- Result: Reported actual reductions related to GSE measures would have been more than projection

Measurements shown in tons per year (TPY)

All Airports	Originally Projected NOx Reductions[1]	Population-Adjusted Projected NOx Reductions [A]	2023 Reported Actual Reductions [B]	Adjusted Difference [B-A]
Total	180.2	**139.6**	166.9	**+ 27.4**

[1] Source: Table C-6a in Appendix B of the Final Staff Report for Facility-Based Mobile Source Measure for Commercial Airports (December 2019): https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/facility-based-mobile-source-measures/airports-final-appendix-b.pdf

RECENT ACTIVITIES AND LOOKING AHEAD

RECENT ACTIVITIES

Updated Methodology*

- Standardize/streamline GSE performance factor calculations

Updated Records

- Off-Airport GSE for ONT and General Aviation GSE for LGB inadvertently included in previous records (not covered by MOUs)

Staff Discussions with CARB

- Airports MOU data inform CARB's GSE inventory updates and zero-emission GSE rulemaking
- Potentially more updates to GSE methodology if CARB's Offroad model is modified

**South Coast AQMD Methodology for Calculating Ground Support Equipment Fleet Average Emission Factor (2024): https://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/methodology-for-calculating-ground-support-equipment-fleet-average-emission-factor.pdf*

HIGHLIGHTS OF RECENT AIRPORT INITIATIVES

New GSE programs

- LAX adopted
  - Zero-Emission GSE Policy: 100% ZE by 2033
  - eGSE incentives
- SNA completed lease amendments requiring GSE improvement
- ONT implemented GSE Motor Vehicle Operating Permit (GSE MVOP) Program

Infrastructure improvement projects

- All airports are planning or implementing various projects, e.g., electrical infrastructure upgrades, equipment/vehicle charging, gate/terminal electrification.

LOOKING AHEAD – PRELIMINARY 2024 REPORTS

Ontario International Airport

- Progress made in 2024 towards reaching 2023 GSE fleet performance
- Projected to meet GSE target in 2025 with implementation of GSE MVOP program

John Wayne Airport

- Reported achieving 2023 GSE fleet performance target in 2024 (subject to South Coast AQMD staff audit)

NEXT STEPS FOR SOUTH COAST STAFF

- Finalize updates to South Coast AQMD's Airports MOU Implementation Progress for CY 2021-2023 report
- Mobile Source Committee Meeting January 23, 2026
- Submit the CY 2021-2023 South Coast AQMD Report to U.S. EPA
- Evaluate CY 2024 Airport Reports and Prepare Progress Report

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For more information, visit the Airports MOU Progress Reports webpage.	