



LAWWA

BOLDLY MOVING TO ZERO

2021 - 2022 Airports MOU Implementation Progress Report

Los Angeles World Airports

South Coast AQMD Airports Working Group Meeting

May 2024

Year-End Progress Report on MOU Implementation

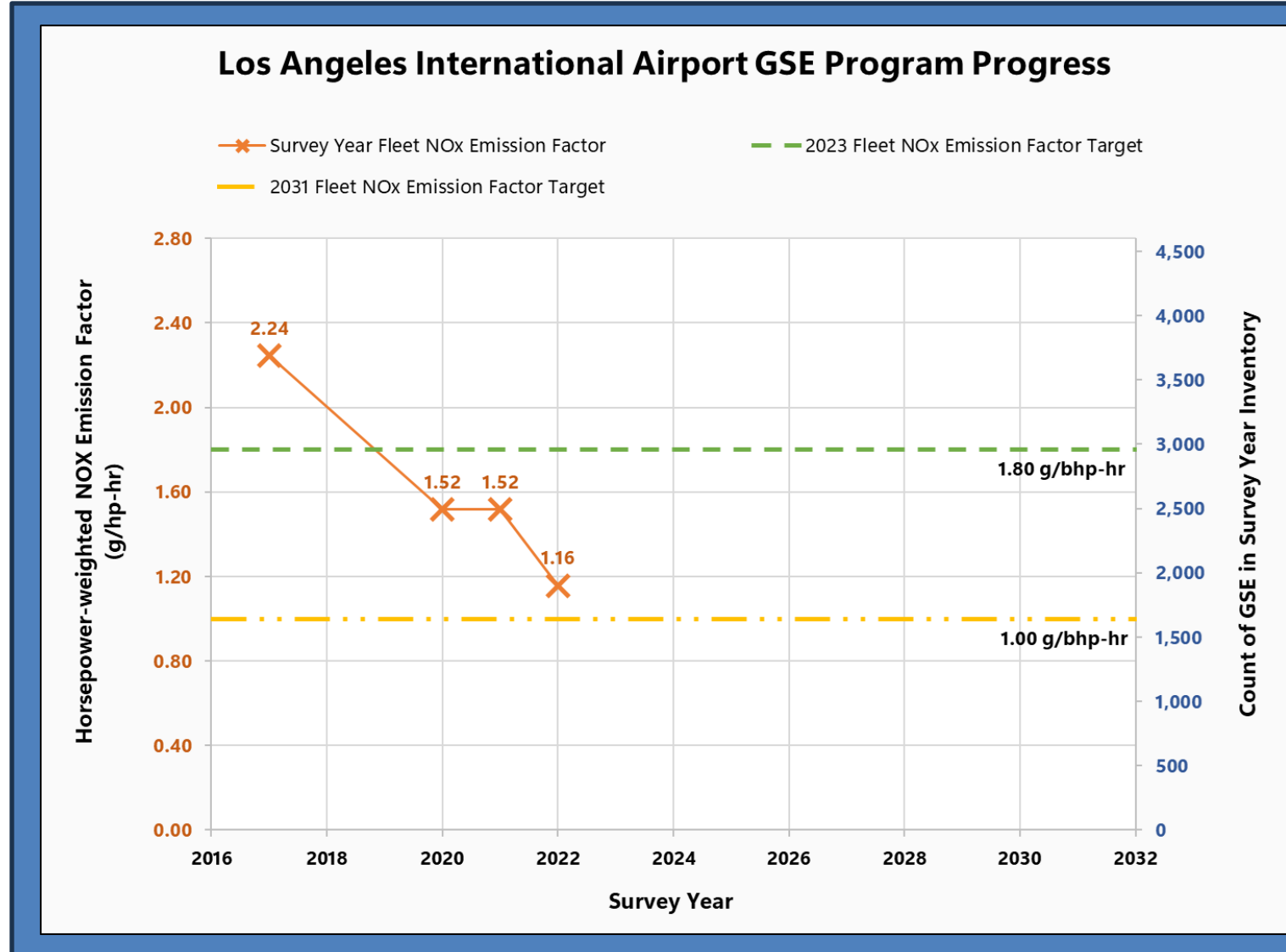
MOU Overview:

- On December 6, 2019, a MOU was entered by the South Coast AQMD and Los Angeles World Airports (LAWA).
- Beginning in 2021, ending 2032
- **Measure No. 1 – Ground Support Equipment Emissions Reduction Policy**
 - Require that all ground support equipment at LAX achieve fleet average Oxides of Nitrogen (NOx) + Hydrocarbon (HC) emission factors of 1.8 grams and 1.0 grams per brake horsepower hour (g/hp-hr of NOx + HC) by January 1, 2023 and January 1, 2031
- **Measure No. 2 – LAX Alternative Fuel Vehicle Incentive Program**
 - Launch an incentive program to distribute up to \$500,000 in incentive funding to replace conventionally fueled vehicles over 14,001 pounds gross vehicle weight rating at LAX by December 31, 2021
- **Measure No. 3 – Zero-Emission Bus Program**
 - Replace 20% and 100% of LAWA-owned and operated buses with zero emission buses by January 1, 2023 and January 1, 2031

Measure No.1 Ground Support Emission Reduction Policy

Performance To Date:

- Completed reporting year 2021 & 2022 analysis of GSE at LAX
- Improved data collection protocol
- Achieved 2023 MOU target in 2020
 - Maintained and continued progress through 2022
- Initiated additional eGSE Incentive Program in July 2023
 - \$500,000 in funding for zero emission GSE



Measure No.1 Ground Support Emission Reduction Policy

Emissions To Date:

- Reduction of 26 tons NOx in 2022 compared to 2021
- Reduction of 51 tons NOx in 2022 versus baseline
- Despite growth of GSE fleet, NOx emissions continue to decrease
- Decreases driven by reduction in legacy GSE



Measure No.1 Ground Support Emission Reduction Policy

GSE Trends To Date:

- Operator's fleet trends:
 - Transition away from older (pre-Tier 4) diesel GSE
 - Transition to newer (2010 to present) gasoline GSE and to Tier 4 clean diesel GSE
- Legacy GSE substantially reduced relative to baseline
 - Legacy diesel down 53%
 - Legacy LPG/propane down 57%
 - Legacy gasoline down 37%
- Still more work to be done to meet LAWA's GSE goals

Reporting Year	Emission Factor (g/hp-hr)	NOx Emissions (tons)	Equipment Count			
2017 (baseline)	181.9	181.9	2,592			
2020	1.52	150.3	3,029			
2021	1.52	156.6	3,167			
2022	1.16	130.2	3,348			

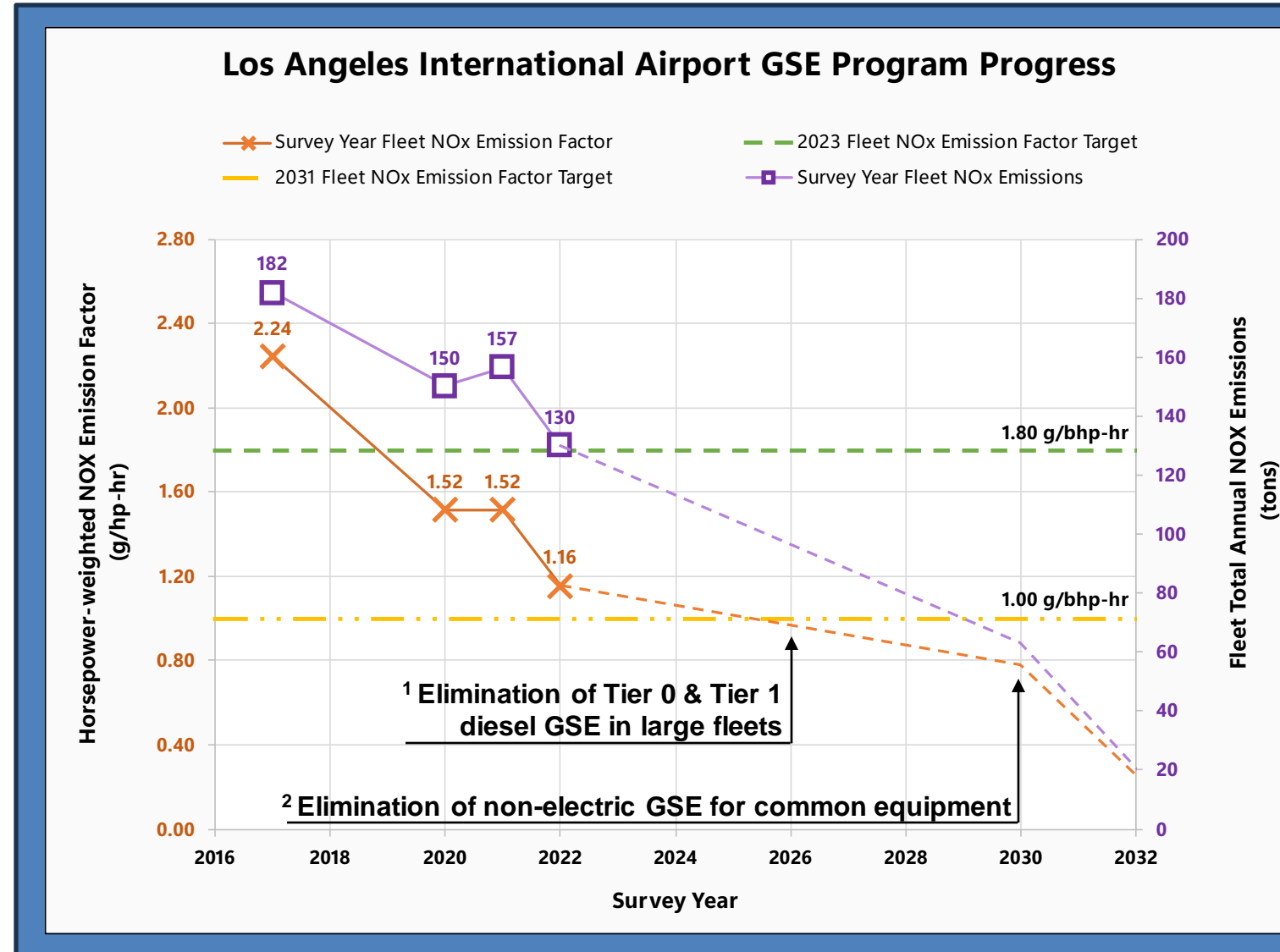
Reporting Year	Legacy GSE			2010 or Newer Gasoline	2010 or Newer LPG/Propane	Tier 4 Diesel
	Pre-2010 Gasoline	Pre-2010 LPG/Propane	Pre-Tier 4 Diesel			
2017 (baseline)	329	195	398	281	206	244
2020	237	110	255	602	392	391
2021	245	100	238	653	403	406
2022	207	109	189	721	469	461
Percent Change vs Baseline	-37%	-47%	-53%	+157%	+127%	+89%

Low-use, electric, on-road, and <25 horsepower equipment excluded from summary for comparison purposes.

Measure No.1 Ground Support Emission Reduction Policy

Next Steps:

- LAWA eGSE Incentive Program
 - Accelerate electric GSE adoption
- CARB ORD rule update¹
 - Eliminate Tier 0 and Tier 1 diesel in large fleets by 2026
- LAWA Zero Emission GSE Policy²
 - Eliminate non-zero emission GSE for common equipment by 2030
 - Eliminate non-zero emission GSE for all commercially feasible equipment by 2033
- Operator feedback indicates 2031 target likely to be achieved by 2026 or sooner



Measure No.2

Alternative Fuel Vehicle Incentive Program

Progress To Date:

- LAWA has distributed \$325,000 for 15 vehicles to LAX tenants to date
- All incentive funded vehicles meet the low-NOx emission standard of 0.02 grams NOx per brake horsepower hour
- Currently there is \$175,000 of grant funding remaining

Next Steps:

- Some grant recipients who were previously awarded a contract declined to receive incentive funding due to the effects of the pandemic, including supply chain shortages, financial constraints, or changes to the company's operational needs.
 - As a result, there is a remaining \$175,000 that has not been spent.
- LAWA is currently developing an updated Alternative Fuel Vehicle Incentive Program which will fund only heavy-duty zero emission trucks and exclude near-zero emission heavy-duty trucks that have now become more commercially available since the introduction of the incentive program.
- LAWA to re-issue an updated Incentive Program in Fiscal Year (FY) 24 to spend up to \$175,000
- Funds expected to be spent in the FY 2025

Measure No.3 Zero-Emission Bus Program

Progress To Date:

- Since Implementation of the MOU, LAWA scrapped 11 diesel and 39 CNG buses (engine year 1996-2009). 36 of the 39 CNG buses were retired in 2022
- Board of Airport Commissioners approved purchase of twenty (20) all-electric airfield buses in April 2018.
 - LAWA received all (20) electric buses by May 2020
- In 2021, the 20 buses comprised 16% of the total LAWA-owned bus fleet of 126 buses
- In 2022, the 20 buses comprised 40% of the total LAWA -owned bus fleet of 50 buses

Next Steps

- LAWA plans to purchase 13 zero-emission buses, planned operations will be Q4-2024/Q1-2025
- When the Automated People Mover begins to operate, it is anticipated that LAWA will continue to decrease its bus fleet size
- ABM (the entity that manages parking lots at LAX) is planning to deliver up to 11 electric buses to service LAX employee parking lots

Thank You



LAWA