



LAWA

BOLDLY MOVING TO ZERO

***Striving for Zero: LAX Ground Support Equipment Emissions
Reduction Program
March 3, 2020***

BOLDLY MOVING TO ZERO

- LAWA's sustainability program focuses on the core environmental aspects of the triple bottom line. The ultimate goal is to zero environmental impacts from the airports' operations.



- ***Zero Carbon Electricity by 2045 for LAX and VNY***



- ***Zero Potable Water for non-potable uses such as landscaping and LAX's Central Utility Plant by 2045***

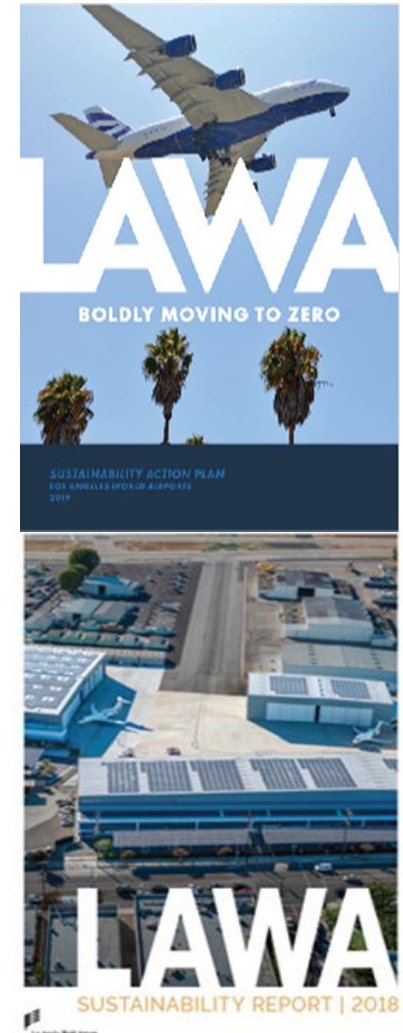


- ***Develop Road Map to Zero Waste Facilities by 2020***



- ***Carbon Neutral LAWA Operations by 2045***

- LAWA publishes annual sustainability reports and LAWA's Board recently adopted the Sustainability Action Plan.



Air Quality Initiatives

LAWA has one of the largest clean fleets in the nation....and growing!

- **Clean Fuel Programs**

- Alternative Fuel Vehicle Requirement – policy requires commercial medium and heavy duty operators to use clean vehicles at LAX
- Ground Service Equipment Emissions Reduction - policy requires reduction of emissions from GSE; has helped to reduce GSE emissions nearly 45%; GSE Incentive Program and GSE pooling underway
- EV Charger Installation – designing today for as much as 35% of new parking stalls to provide for future charging stations
- Gate Electrification – plan to provide ground power to aircraft at all aircraft parking positions to replace use of jet fuel to power auxiliary power units

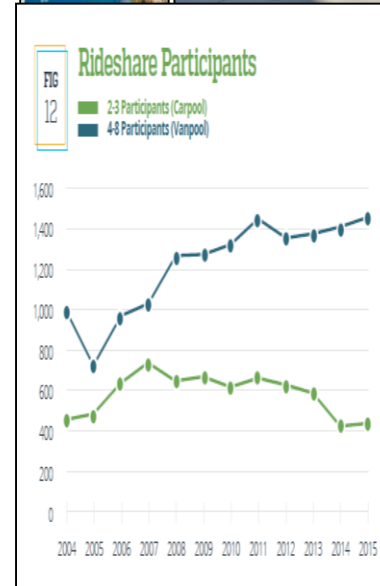


Air Quality Initiatives

- **Trip Reduction Programs**
 - Encouraging Employee Rideshare – 23% participate in rideshare
 - FlyAway – LAX Dedicated bus fleet from multiple locations across Southern California: nearly 1.9 million riders in 2018
- **Clean Construction**

Mitigation measures mandate:

 - Use of cleanest equipment available
 - Designated haul routes and hours of construction
 - Recycling of construction and demolition debris
 - Monitoring to ensure compliance



LAX GSE Emissions Reduction Policy

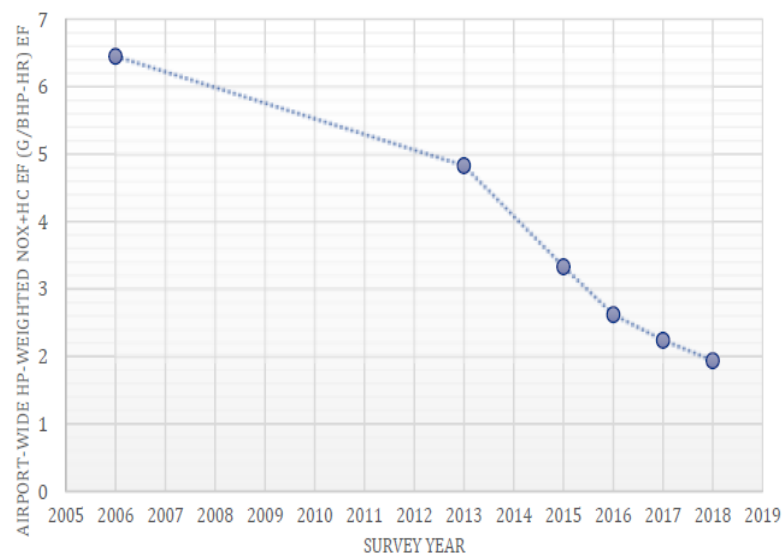
- Developed GSE Policy in collaboration with airlines and GSE Operators
- 2015 Policy required Operators at LAX to meet statewide CARB target of 2.65 grams per horsepower-hour of hydrocarbons plus nitrogen oxides (g/bhp-h of HC + NO_x) at LAX no later than December 31, 2021
 - Target originated with 2006 South Coast GSE MOU
 - Mandate to develop a policy included in LAX Community Benefits Agreement, 2005
- LAWA updated the Policy in 2019. Updated policy requires operators reduce GSE emission factors to
 - 1.8 g/bhp-h of HC + NO_x by Dec. 31, 2022; and
 - 1.0 g/bhp-h of HC + NO_x airport-wide emission factor by December 31, 2030
- Policy also requires that operators
 - Must maintain target (no backsliding)
 - Must submit annual report on fleet mix and emissions



LAX GSE Inventory

	2015	2016	2017	2018
Total Airport Equipment	2,325	2,606	2,717	2,608
Airport Average Emission Factor (g/bhp-h of HC + NOx)	3.31	2.62	2.24	1.94
Ground Service Providers (# of equipment)	423	438	414	644
Ground Service Providers Average Emission Factor (g/bhp-h of HC + NOx)	3.58	3.46	3.48	2.52
Airlines Equipment (# of equipment)	1,847	1,884	1,647	1,626
Airlines Average Emission Factor (g/bhp-h of HC + NOx)	3.01	2.33	1.87	1.81
Others Equipment (# of equipment)	55	281	656	338
Others Average Emission Factor (g/bhp-h of HC + NOx)	3.23	2.04	2.13	1.5

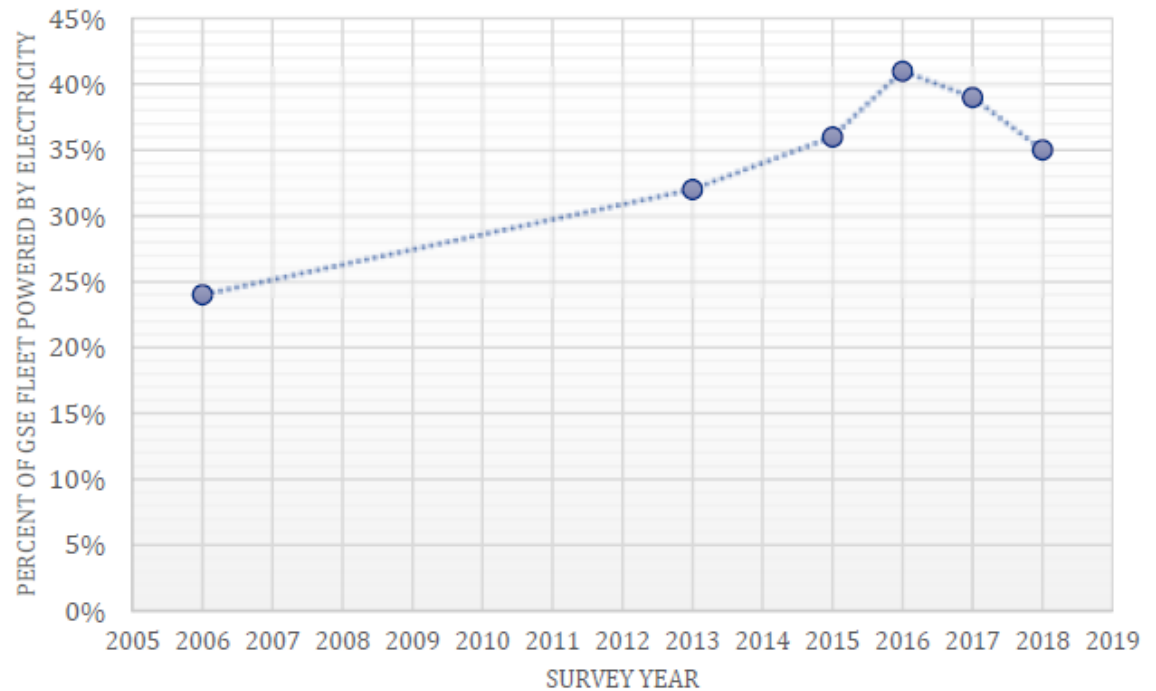
Airport-Wide hp-Weighted GSE Fleet Average NOx+HC EF by Survey Year



LAX Aggregated Nox + HC Emission Factor Trend

Year	% Elec
2006	24
2013	37
2015	39.8
2016	41
2017	38.7
2018	35.2

Percent of Reported GSE Fleet Powered by Electricity by Survey Year



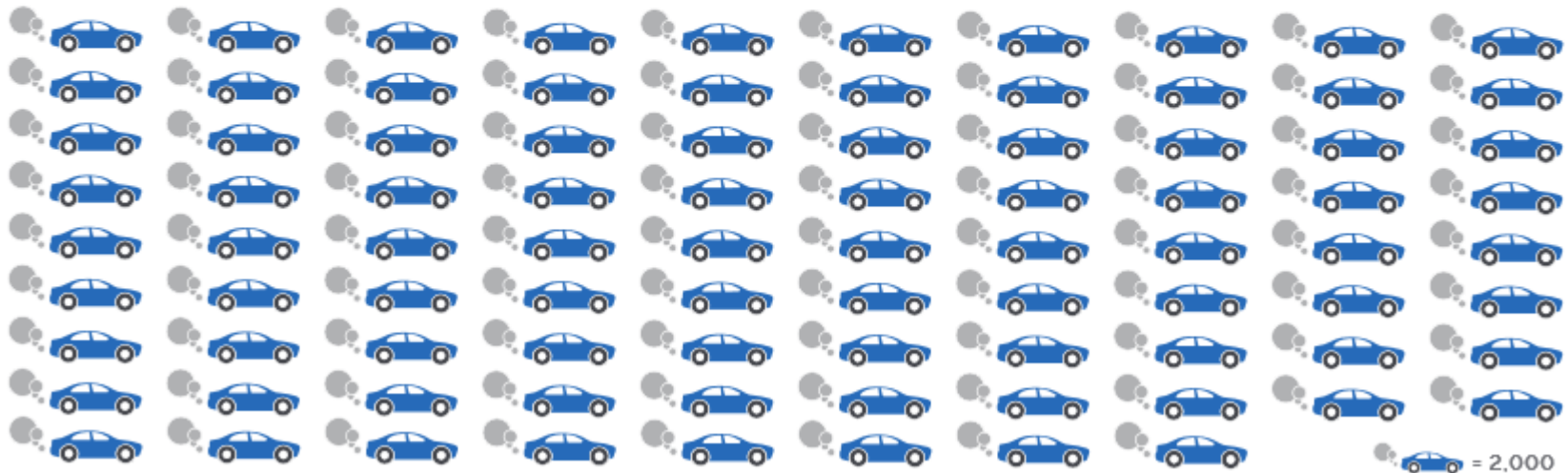
Electric GSE Contribution to LAX GSE Fleet

Reduced Emissions

Year	NOx Emissions (tons per year)	% Reduction from 2017
2017 (baseline)	184.91	---
2023	150.71	18%
2031	121.31	34%

To date, the GSE Policy has helped reduce the airport-wide GSE emission factor by 1.39 g/bhp-hr, equivalent to removing approximately

176,000
PASSENGER VEHICLES DAILY



Additional GSE Programs/Next Steps

- LAWA Adopted a **Zero-Emission GSE Incentive Program** in 2019
 - LAWA will provide \$500,000 in funding to help operators replace conventionally-fueled equipment with zero-emission equipment
 - Program is currently over 50% subscribed
- LAWA is developing a **GSE Pooling Program** for common use gates
 - Airlines and GSE Operators will share equipment that will remain at the gate
 - Expected to reduce the number of GSE on the airfield and the need to relocate equipment after every flight
- LAWA will be conducting a **GSE Electric Infrastructure Study** to determine need for and location of GSE charging infrastructure at the gates

