

**COMMERCIAL
AIRPORTS MOU
SUPPORT**

**MOU Schedule No. 1
Ground Support Equipment**

**Updated 2023 Survey and Inventory
Report**



**Hollywood
Burbank**
Airport

March 2025

**CDM
Smith**

Section 1

Project Information

Project Title: MOU Schedule No. 1 - Ground Support Equipment Survey Support

Airport Code: BUR

Airport Name: Hollywood Burbank Airport

Airport Owner: Burbank-Glendale-Pasadena-Airport Authority

Key Contacts:

Maggie Martinez
Director, Noise & Environmental
Affairs
Hollywood Burbank Airport
2627 N. Hollywood Way
Burbank, CA 91505
(818) 729-2226
mmartinez@bur.org

Tami McCrossen-Orr
Program Director
Trifiletti Consulting, Inc.
1545 Wilshire Blvd., Suite 700
Los Angeles, CA 90017
(213) 315-2121, 108
tami@trifiletticonsulting.com

Jeremy Gilbride
Chemical Engineer
CDM Smith, Inc.
32 Discovery, Suite 250
Irvine, CA 92618
(949) 930-9809
gilbridej@cdmsmith.com

1.1 MOU Background

In December 2019, the Burbank-Glendale-Pasadena-Airport Authority, the owner and operator of Hollywood Burbank Airport (BUR or the Airport), entered into a voluntary Memorandum of Understanding (MOU) with the South Coast Air Quality Management District (South Coast AQMD) for the purpose of reducing emissions of criteria air pollutants at the airport. Schedule No. 1 of the MOU establishes Ground Support Equipment (GSE) fleet-average oxides of Nitrogen (NO_x) performance targets to be achieved at the airport by January 1, 2023 and January 1, 2031.

The purpose of the MOU is to reduce emissions of oxides of Nitrogen (NO_x) at the Airport by encouraging adoption of low- and zero-emission GSE as an alternative to conventional high-emission fossil fuel equipment. The MOU sets NO_x fleet-average performance targets of 1.66 grams NO_x per brake horsepower-hour by 2023 and 0.74 grams NO_x per brake horsepower-hour by 2031. The MOU allows discretion in the means by which the airport is to achieve these targets, including but not limiting to enforcement through leases, licenses operational requirements, or other agreements.

Beginning on June 1, 2021 and continuing each year thereafter through 2032, BUR is required to collect and report information regarding GSE operating at the airport to the South Coast AQMD. BUR is also required to collect and report information pertaining to the sale or retirement of non-zero equipment retired under the MOU. Additionally, annual emissions inventories are required to be developed and reported based on the collected GSE data. This report details the results of the reporting year 2023 BUR GSE survey and associated emissions inventory.

Section 2

GSE Inventory

2.1 Methodology

Data collected for the 2023 GSE survey were analyzed, and emissions related to their operation were estimated using industry standard models and assumptions following a methodology consistent with the Technical Support Documentation for the MOU, as detailed below.

2.1.1 Collection of Data

In February 2024, reporting forms were distributed to all operators of GSE at the airport. Operators were supplied with the final versions of their fleet reporting forms from the previous MOU reporting year and were instructed to provide information on any equipment added to their fleet during the reporting year and to verify the data for the existing fleet, which include the model years, horsepower ratings, equipment categories, fuel types, and other identifying characteristics of the GSE in operation at the airport. Operators were instructed to specify the status of all previously reported equipment and, if the status of that equipment had changed, to indicate the nature of the change (such as a unit of GSE having been scrapped, relegated to emergency use, or relocated to a different airport). Operators were also instructed to provide specific dates for the status change. For equipment relocated to a different airport, operators were instructed to further report to which airport the equipment was relocated.

All operators had completed and submitted the reporting forms by the end of April. Additional follow-up with operators was completed throughout April and May.

Each unit of reported GSE was reviewed for accuracy and program applicability based on previously submitted data, MOU requirements, and professional judgement. Non-electric GSE with power ratings less than or equal to 25 horsepower are exempt from the California Air Resource Board (“CARB”) in-use off-road diesel-fueled (“ORD”) fleets, and large spark-ignition (“LSI”) fleets regulations, upon which the MOU’s GSE agreement is predicated and thus were excluded from the performance level calculations. Consistent with the MOU requirements, low-use equipment (defined as operating fewer than 200 hours per year), were also excluded from performance level calculations. Both non-electric GSE with power ratings less than or equal to 25 horsepower and low- and emergency-use equipment were retained in the inventory for the purposes of determining total annual NO_x emissions from GSE. Emergency-use equipment were evaluated as low-use equipment to ensure any emergency equipment use was adequately captured. Quality review was performed for each reported unit and adjustments were made to irregular data as needed. Such adjustments may include but are not limited to: adjustments to engine model year, horsepower, or fuel type data based on discussions with equipment operators or review of previously reported data; and the use of surrogate horsepower or model year data for equipment for which such data was not reported or otherwise attainable from manufacturer specifications or prior reports. For units which were reported without complete horsepower or model year data, the average horsepower or model year for similar equipment in-use at the airport were used.

A detailed breakdown of all reported GSE is included in **Attachment A** to this report.

2.1.2 Performance Calculations

The fleet performance factor was estimated using California regulatory standard emissions models, OFFROAD2017 and EMFAC2017, developed by CARB. For each unit of GSE, a representative equipment type was identified from either the OFFROAD2017 model (for off-road engine units) or EMFAC2017 model (for on-road engine units) based on Table 2-3 in the *Hollywood Burbank AQIP Technical Support Document*. Emission factors from the emissions models were queried for the Los Angeles (South Coast) region for CY 2023, assuming all adopted rules for exhaust controls. All fuel types, model years, and horsepower bins (OFFROAD2017 only) were selected, and an aggregated speed was assumed (EMFAC2017 only). Emission factors were assigned to each reported unit of GSE based on the GSE category, model year, horsepower rating, and fuel type of the equipment.

Emission factors were obtained in units of grams per brake horsepower-hour from OFFROAD2017, and in units of grams per mile from EMFAC2017. For equipment paired to the EMFAC2017 model, an average on-airport speed of 15 miles per hour was multiplied against the model's emission factor and the resulting factor was divided by a reported equipment's respective horsepower to convert to the appropriate grams per brake horsepower-hour unit. The resultant factors, with units of grams per brake horsepower-hour, were weighted by reported equipment horsepower and averaged to determine the NO_x fleet performance factor.

2.1.2 Emission Calculations

On July 12, 2021, it was determined that the publicly available version of CARB's OFFROAD2017 model did not incorporate the engine-standard requirements associated with CARB's 2006 LSI rulemaking and subsequent 2010 amendments. These standards required new LSI equipment certified for sale in the state of California to meet stringent emission standards for NO_x and hydrocarbons which far exceeded previous requirements. As a result, LSI engine emissions calculated using the OFFROAD2017 factors resulted in vastly overpredicted emissions, particularly for new equipment. South Coast AQMD was informed of this discrepancy and discussed the issue with CARB on July 14, 2021. Updated emission factors were developed by CARB based on actual historical engine certifications in the state of California since the 2006 rulemaking came into effect. These updated factors were provided initially on July 16, 2021, and updated on July 23, 2021, with final load factors and deterioration caps provided on August 13, 2021. These finalized LSI factors were used alongside CARB's ORDAS factors for diesel equipment (which also incorporated the most recent engine standard requirements) to develop the emissions inventory.

Although the emission factors were updated, the fundamental calculation methodology was not changed from the methodology used in the 2017 AQIP and MOU. Equipment categories were paired to each reported unit and emission factors were looked up based on the model year, fuel type, horsepower rating, and equipment category of a given unit. In the CY 2017 MOU calculations, base emission factors were back calculated from the OFFROAD2017 model's tons per year per equipment population outputs. The CARB-provided updated base factors were calculated using zero-hour emissions, emission deterioration rates, fuel correction factors, and load factors.

Per unit emissions were calculated using the following formula and summed across all equipment listed at the airport to determine the fleet-total emissions:

$$\text{Emissions (grams per year)} = \text{Activity (hours per year)} \times \text{Power Rating (horsepower)} \times \text{Load Factor (dimensionless)} \times \{ \text{Zero-hour Emission Factor (grams per brake horsepower-hour)} + [\text{Deterioration Rate (grams per brake horsepower-hour per hour)} \times \text{Equipment Lifetime Cumulative Operational Hours (hours)}] \} \times \text{Fuel Correction Factor (dimensionless)}$$

Table 1. GSE Category Pairing with OFFROAD2017 Equipment and Fuel Types

GSE Category ¹	OFFROAD Category (Diesel)	GSE Category ¹	OFFROAD Category (Gasoline & Nat Gas)
Air Conditioner	Portable Equipment - Non-Rental Generator	Air Conditioner	OFF - AirGrSupp - Air Conditioner
Aircraft Tug	AirGrSupp - A/C Tug Narrow Body	Aircraft Tug	OFF - AirGrSupp - A/C Tug Narrow Body
Air Start Unit	Portable Equipment - Non-Rental Generator	Air Start Unit	OFF - AirGrSupp - Air Start Unit
Baggage Tug	AirGrSupp - Baggage Tug	Baggage Tug	OFF - AirGrSupp - Baggage Tug
Belt Loader	AirGrSupp - Belt Loader	Belt Loader	OFF - AirGrSupp - Belt Loader
Cargo Loader	AirGrSupp - Cargo Loader	Cargo Loader	OFF - AirGrSupp - Cargo Loader
Cargo Tractor	AirGrSupp - Cargo Tractor	Cargo Tractor	OFF - AirGrSupp - Cargo Tractor
Cart	AirGrSupp - Cart	Cart	OFF - AirGrSupp - Cart
Catering Truck	AirGrSupp - Other GSE	Catering Truck	OFF - AirGrSupp - Catering Truck
Forklift	AirGrSupp - Forklift	Forklift	OFF - AirGrSupp - Forklift
Fuel Truck	AirGrSupp - Other GSE	Fuel Truck	OFF - AirGrSupp - Fuel Truck
Generator	Portable Equipment - Non-Rental Generator	Generator	OFF - AirGrSupp - Generator
Ground Power Unit	AirGrSupp - Other GSE	Ground Power Unit	OFF - AirGrSupp - Ground Power Unit
Lavatory Cart	AirGrSupp - Other GSE	Lavatory Cart	OFF - AirGrSupp - Lav Cart
Lavatory Truck	AirGrSupp - Other GSE	Lavatory Truck	OFF - AirGrSupp - Lav Truck
Lift	AirGrSupp - Lift	Lift	OFF - AirGrSupp - Lift
Maintenance Truck	AirGrSupp - Other GSE	Maintenance Truck	OFF - AirGrSupp - Maint. Truck
Other GSE	AirGrSupp - Other GSE	Other GSE	OFF - AirGrSupp - Other GSE
Passenger Stand	AirGrSupp - Passenger Stand	Passenger Stand	OFF - AirGrSupp - Passenger Stand
Service Truck	AirGrSupp - Other GSE	Service Truck	OFF - AirGrSupp - Service Truck
Sweeper	ConstMin - Sweepers/Scrubbers	Sweeper	OFF - AirGrSupp - Sweeper
Water Truck	AirGrSupp - Other GSE	Water Truck	OFF - AirGrSupp - Water Truck

Notes:

1. The OFFROAD2017 model does not include emission factors for every combination of vehicle category, fuel type, and engine model year. For units in which no appropriate vehicle category, fuel type, and model year pairing exists, the "Other GSE" vehicle category was used in the estimation of emission factors.

2.2 Reporting Year 2023 GSE Inventory

The reporting year 2023 GSE inventory for the Airport is presented below.

2.2.1 GSE Operators

Table 2 presents airport tenants identified as GSE operators in the reporting year.

Table 2. BUR GSE Operators

GSE Operator	GSE Operator	GSE Operator	GSE Operator
Alaska Airlines	Earth Star	Jet Aviation	Star Aviation
Ameriflight	FedEx Express	Jet Suite X	The Yucaipa Companies
Atlantic Aviation	GAT	Million Air	Unifi DGS
Avelo Airlines	Glendale Burbank PD	Netflix	UPS
CAS	GTC Management	Southwest	

2.2.2 Equipment Breakdown

Table 3 presents a summary of GSE by category and fuel type for the reporting year.

Table 3. Count of Equipment by GSE Category and Fuel Type

GSE Category	Total Reported Equipment ¹	Electric	Diesel	Gasoline	LPG/Propane
Aircraft Tug	28	20	8	--	--
Air Conditioner	8	--	8	--	--
Air Start Unit	5	--	5	--	--
Baggage Tug	45	24	1	18	2
Belt Loader	41	17	6	18	--
Cargo Loader	8	--	5	3	--
Cargo Tractor	10	1	--	9	--
Cart	18	16	--	2	--
Catering Truck	1	--	--	1	--
Forklift	11	--	--	1	10
Fuel Truck	20	--	19	1	--
Generator	3	3	--	--	--
Ground Power Unit	47	15	32	--	--
Lavatory Cart	11	11	--	--	--
Lavatory Truck	1	--	--	1	--
Lift	6	6	--	--	--
Maintenance Truck	3	--	--	3	--
Other GSE	1	1	--	--	--
Passenger Stand	10	5	1	4	--
Service Truck	3	--	--	3	--
Sweeper	2	2	--	--	--
Total	282	121	85	64	12

Key: GSE = ground support equipment; LPG = liquefied petroleum gas

Note:

1. Equipment counts exclude non-electric equipment less than 25 horsepower and low-use equipment.

2.2.3 Emissions Inventory

Table 4 presents the summary of emissions by GSE category for the reporting year.

Table 4. Emissions by GSE Category

GSE Category	Emissions (tons per year; metric tons per year for CO ₂ e)						
	CO	ROG	NO _x	PM ₁₀	PM _{2.5}	SO _x	CO ₂ e
Aircraft Tug	0.9	0.1	1.2	0.04	0.03	187	177
Air Conditioner	0.3	<0.1	0.3	0.01	0.01	112	112
Air Start Unit	0.1	<0.1	0.1	<0.1	<0.1	41	41
Baggage Tug	13.8	2.2	1.2	0.06	0.05	758	758
Belt Loader	9.4	0.6	1.4	0.06	0.05	563	563
Cargo Loader	2.9	0.1	0.4	0.03	0.03	339	339
Cargo Tractor	7.6	1.1	1.4	0.04	0.03	465	465
Cart	0.1	<0.1	<0.1	<0.1	<0.1	18	18
Catering Truck	<0.1	<0.1	<0.1	<0.1	<0.1	34	34
Forklift	1.9	0.2	0.5	0.01	0.01	81	81
Fuel Truck	0.5	<0.1	0.6	0.02	0.01	213	213
Generator	0.6	0.1	0.3	0.01	0.01	47	47
Ground Power Unit	3.4	0.3	2.0	0.07	0.06	651	648
Lavatory Cart	<0.1	<0.1	<0.1	<0.1	<0.1	1	1
Lavatory Truck	0.1	<0.1	<0.1	<0.1	<0.1	10	10
Lift	0.7	0.1	0.1	<0.1	<0.1	8	8
Maintenance Truck	0.1	<0.1	<0.1	<0.1	<0.1	14	14
Other GSE	<0.1	<0.1	<0.1	<0.1	<0.1	2	2
Passenger Stand	0.5	0.1	0.2	<0.1	<0.1	23	23
Service Truck	1.0	0.3	0.3	0.01	0.01	86	86
Sweeper	--	--	--	--	--	--	--
Total	44.1	5.3	9.8	0.36	0.31	0.01	3,652

Key: CO = carbon monoxide; CO₂e = carbon dioxide equivalents; GSE = ground support equipment; NO_x = oxides of nitrogen; PM₁₀ = particulate matter with an aerodynamic diameter less than or equal to 10 microns; PM_{2.5} = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns; ROG = reactive organic gases; SO_x = oxides of sulfur

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2.2.4 Fleet-Wide Performance Factor and Emissions

The Airport's fleet-wide NO_x performance factor for the 2023 reporting year was 0.87 grams per brake-horsepower hour, below the 2023 target of 1.66 grams per brake horsepower-hour and above the 2031 target of 0.74 grams per brake-horsepower hour.

The Airport's fleet-wide NO_x emissions for the 2023 reporting year totaled to 9.8 tons of NO_x, reflecting a 48.5 percent reduction relative to the fleet-wide emissions at GSE program inception. **Figure 1** presents the historical fleet-wide NO_x performance factor and emissions by survey year.

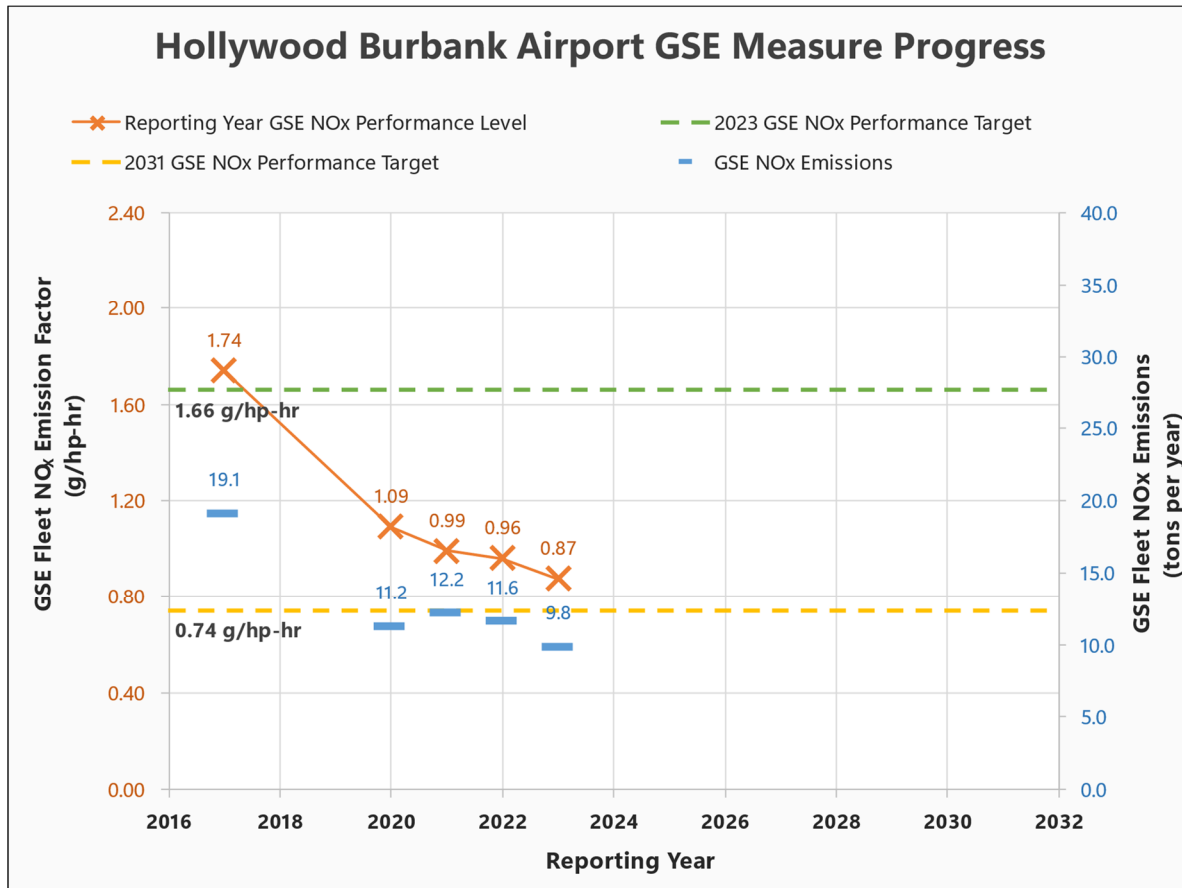


Figure 1. GSE Program Fleet-Wide NO_x Performance Factor and Emissions by Survey Year

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Attachment A

2023 Detailed Reported GSE Data and Emission

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2023 BUR GSE Inventory by Equipment Type

	Count of Equipment [excluding ≤25hp non-electric and low-use equipment]				
	Diesel	Gasoline	LPG	Electric	Total
Overall Fleet	85	64	12	121	282
Overall Fleet Percent	30.1%	22.7%	4.3%	42.9%	--
A/C Tug Narrow Body	8	0	0	20	28
Air Conditioner	8	0	0	0	8
Air Start Unit	5	0	0	0	5
Baggage Tug	1	18	2	24	45
Belt Loader	6	18	0	17	41
Cargo Loader	5	3	0	0	8
Cargo Tractor	0	9	0	1	10
Cart	0	2	0	16	18
Catering Truck	0	1	0	0	1
Forklift	0	1	10	0	11
Fuel Truck	19	1	0	0	20
Generator	0	0	0	3	3
Ground Power Unit	32	0	0	15	47
Lav Cart	0	0	0	11	11
Lav Truck	0	1	0	0	1
Lift	0	0	0	6	6
Maint. Truck	0	3	0	0	3
Other GSE	0	0	0	1	1
Passenger Stand	1	4	0	5	10
Service Truck	0	3	0	0	3
Sweeper	0	0	0	2	2

2023 BUR GSE Inventory by Equipment Type

	Fleet Inventory Equipment Count [including ≤25hp non-electric and low-use equipment]			
	In-Use (any fuel)	Low-Use (any fuel)	Total (any fuel)	Electric
Overall Fleet	299	50	354	146
Overall Fleet Percent	85.7%	14.3%	--	41.2%
A/C Tug Narrow Body	28	11	41	24
Air Conditioner	8	3	11	2
Air Start Unit	5	2	7	0
Baggage Tug	45	4	49	24
Belt Loader	41	1	42	17
Cargo Loader	8	0	8	0
Cargo Tractor	10	0	10	1
Cart	18	10	28	26
Catering Truck	1	1	2	0
Forklift	11	2	13	1
Fuel Truck	20	0	20	0
Generator	14	0	14	3
Ground Power Unit	47	3	51	18
Lav Cart	13	3	16	11
Lav Truck	1	0	1	0
Lift	9	3	12	9
Maint. Truck	3	5	8	0
Other GSE	2	0	2	1
Passenger Stand	10	0	12	5
Service Truck	3	0	3	0
Sweeper	2	2	4	4

2023 BUR GSE Inventory by Equipment Type

	Fleet Inventory Annual Emissions [including ≤25hp non-electric and low-use equipment]						
	ROG (short tons)	CO (short tons)	NO _x (short tons)	PM ₁₀ (short tons)	PM _{2.5} (short tons)	CO ₂ e (metric tons)	SO _x (short tons)
Overall Fleet	5.3	44.1	9.8	0.36	0.31	3,652	0.01
Overall Fleet Percent	--	--	--	--	--	--	--
A/C Tug Narrow Body	0.1	0.9	1.2	0.04	0.03	187	<0.01
Air Conditioner	<0.1	0.3	0.3	0.01	0.01	112	<0.01
Air Start Unit	<0.1	0.1	0.1	<0.01	<0.01	41	<0.01
Baggage Tug	2.2	13.8	1.2	0.06	0.05	758	<0.01
Belt Loader	0.6	9.4	1.4	0.06	0.05	563	<0.01
Cargo Loader	0.1	2.9	0.4	0.03	0.03	339	<0.01
Cargo Tractor	1.1	7.6	1.4	0.04	0.03	465	<0.01
Cart	<0.1	0.1	<0.1	<0.01	<0.01	18	<0.01
Catering Truck	<0.1	<0.1	<0.1	<0.01	<0.01	34	<0.01
Forklift	0.2	1.9	0.5	0.01	0.01	81	<0.01
Fuel Truck	<0.1	0.5	0.6	0.02	0.01	213	<0.01
Generator	0.1	0.6	0.3	0.01	0.01	47	<0.01
Ground Power Unit	0.3	3.4	2.0	0.07	0.06	651	<0.01
Lav Cart	<0.1	<0.1	<0.1	<0.01	<0.01	1	<0.01
Lav Truck	<0.1	0.1	<0.1	<0.01	<0.01	10	<0.01
Lift	0.1	0.7	0.1	<0.01	<0.01	8	<0.01
Maint. Truck	<0.1	0.1	<0.1	<0.01	<0.01	14	<0.01
Other GSE	<0.1	<0.1	<0.1	<0.01	<0.01	2	<0.01
Passenger Stand	0.1	0.5	0.2	<0.01	<0.01	23	<0.01
Service Truck	0.3	1.0	0.3	0.01	0.01	86	<0.01
Sweeper	--	--	--	--	--	--	--

2023 BUR GSE Inventory by Fuel Type

	Fleet Inventory Equipment Count (including <25hp non-electric and low-use equipment)		
	In-Use (any fuel)	Low-Use (any fuel)	Total (any fuel)
Overall Fleet	299	55	354
Overall Fleet Percent	84.5%	15.5%	--
Diesel	97	12	109
<i>Tier 4</i>	68	8	76
<i>Tier 4i</i>	3	0	3
<i>Tier 3</i>	8	1	9
<i>Tier 2</i>	12	0	12
<i>Tier 1</i>	4	1	5
<i>Tier 0</i>	2	2	4
<i>On-Road</i>	0	0	0
Gasoline	69	17	86
<i>Pre-2010</i>	27	6	33
<i>2010 and Newer</i>	42	11	53
LPG	12	1	13
<i>Pre-2010</i>	6	1	7
<i>2010 and Newer</i>	6	0	6
Electric	121	25	146

2023 BUR GSE Inventory by Fuel Type

Fleet Inventory Annual Emissions (including <25hp non-electric and low-use equipment)							
	ROG (short tons)	CO (short tons)	NO _x (short tons)	PM ₁₀ (short tons)	PM _{2.5} (short tons)	CO ₂ e (metric tons)	SO _x (short tons)
Overall Fleet	5.3	44.1	9.8	0.360	0.305	3,652	0.0132
Overall Fleet Percent	--	--	--	--	--	--	--
Diesel	0.6	6.2	4.9	0.181	0.167	1,379	0.0067
<i>Tier 4</i>	0.2	4.5	1.9	0.045	0.041	967	0.0047
<i>Tier 4i</i>	0.0	0.1	0.2	0.008	0.007	65	0.0003
<i>Tier 3</i>	0.1	0.5	1.0	0.039	0.036	158	0.0008
<i>Tier 2</i>	0.1	0.8	1.2	0.059	0.054	146	0.0007
<i>Tier 1</i>	0.1	0.2	0.3	0.013	0.012	27	0.0001
<i>Tier 0</i>	0.0	0.1	0.3	0.018	0.016	16	0.0001
<i>On-Road</i>	0.0	0.0	0.0	0.000	0.000	0	0.0000
Gasoline	4.5	35.5	4.4	0.163	0.123	2,094	0.0065
<i>Pre-2010</i>	4.0	16.3	3.6	0.060	0.045	764	0.0024
<i>2010 and Newer</i>	0.5	19.1	0.8	0.104	0.078	1,330	0.0042
LPG	0.2	2.4	0.5	0.016	0.016	179	0.0000
<i>Pre-2010</i>	0.1	1.1	0.4	0.003	0.003	40	0.0000
<i>2010 and Newer</i>	0.0	1.3	0.0	0.012	0.012	138	0.0000
Electric	0.0	0.0	0.0	0.000	0.000	0	0.0000

2022 BUR GSE Inventory by Fuel Type - Comparison to Prior Reporting Years

2023 (change vs 2022)

Fleet Inventory Equipment Count

(including <25hp non-electric and low-use equipment)

	In-Use (any fuel)	Low-Use (any fuel)	Total (any fuel)
Overall Fleet	299 (-8)	55 (+3)	354 (-5)
Diesel	97 (-4)	12 (+3)	109 (-1)
<i>Tier 4</i>	68 (+8)	8 (+1)	76 (+9)
<i>Tier 4i</i>	3 (-)	0 (-)	3 (-)
<i>Tier 3</i>	8 (-8)	1 (-)	9 (-8)
<i>Tier 2</i>	12 (-3)	0 (-)	12 (-3)
<i>Tier 1</i>	4 (-1)	1 (-)	5 (-1)
<i>Tier 0</i>	2 (-)	2 (+2)	4 (+2)
<i>On-Road</i>	0 (-)	0 (-)	0 (-)
Gasoline	69 (-3)	17 (+1)	86 (-2)
<i>Pre-2010</i>	27 (-4)	6 (+1)	33 (-3)
<i>2010 and Newer</i>	42 (+1)	11 (-)	53 (+1)
LPG	12 (-1)	1 (-)	13 (-1)
<i>Pre-2010</i>	6 (-1)	1 (-)	7 (-1)
<i>2010 and Newer</i>	6 (-)	0 (-)	6 (-)
Electric	121 (-)	25 (-1)	146 (-1)

2022

Fleet Inventory Equipment Count

(including <25hp non-electric and low-use equipment)

In-Use (any fuel)	Low-Use (any fuel)	Total (any fuel)
307	52	359
101	9	110
60	7	67
3	0	3
16	1	17
15	0	15
5	1	6
2	0	2
0	0	0
72	16	88
31	5	36
41	11	52
13	1	14
7	1	8
6	0	6
121	26	147

2022 BUR GSE Inventory by Fuel Type - Comparison to Prior Reporting Years

2023 (change vs 2019)

Fleet Inventory Equipment Count

(including <25hp non-electric and low-use equipment)

	In-Use (any fuel)	Low-Use (any fuel)	Total (any fuel)
Overall Fleet	299	55	354 (+118)
Diesel	97	12	109 (+46)
Tier 4	68	8	76 (+59)
Tier 4i	3	0	3 (+1)
Tier 3	8	1	9 (-7)
Tier 2	12	0	12 (-1)
Tier 1	4	1	5 (-7)
Tier 0	2	2	4 (+1)
On-Road	0	0	0 (-)
Gasoline	69	17	86 (+33)
Pre-2010	27	6	33 (-8)
2010 and Newer	42	11	53 (+41)
LPG	12	1	13 (-)
Pre-2010	6	1	7 (-3)
2010 and Newer	6	0	6 (+3)
Electric	121	25	146 (+39)

2013 (based on 2017 fleet survey)

Fleet Inventory Equipment Count

(including <25hp non-electric and low-use equipment)

	In-Use (any fuel)	Low-Use (any fuel)	Total (any fuel)
Overall Fleet	--	--	236
Diesel	--	--	63
Tier 4	--	--	17
Tier 4i	--	--	2
Tier 3	--	--	16
Tier 2	--	--	13
Tier 1	--	--	12
Tier 0	--	--	3
On-Road	--	--	0
Gasoline	--	--	53
Pre-2010	--	--	41
2010 and Newer	--	--	12
LPG	--	--	13
Pre-2010	--	--	10
2010 and Newer	--	--	3
Electric	--	--	107

2023 BUR GSE Detailed Inventory - Comparison to Prior Reporting Years

Comparison of Engine Tier & Horsepower Rating by Reporting Year (Diesel-Fueled Equipment)

Low-use equipment **excluded** in equipment counts.

2023 Fleet (difference as compared to 2022)

Tier	Horsepower Bin									Total
	<25	25 - 49	50 - 74	75 - 99	100 - 174	175 - 299	300 - 599	600 - 749	≥ 750	
Tier 0	1 (-)	0 (-)	0 (-)	0 (-)	1 (-)	0 (-)	0 (-)	0 (-)	0 (-)	2 (-)
Tier 1	0 (-)	0 (-)	0 (-)	1 (+1)	0 (-1)	3 (-1)	0 (-)	0 (-)	0 (-)	4 (-1)
Tier 2	0 (-)	0 (-)	0 (-)	8 (+2)	2 (-3)	1 (-)	1 (-2)	0 (-)	0 (-)	12 (-3)
Tier 3	0 (-)	0 (-)	0 (-)	1 (-)	2 (-5)	4 (-1)	1 (-2)	0 (-)	0 (-)	8 (-8)
Tier 4i	0 (-)	0 (-)	1 (-)	0 (-)	0 (-)	2 (-)	0 (-)	0 (-)	0 (-)	3 (-)
Tier 4	11 (+7)	3 (-2)	7 (-1)	2 (+1)	25 (-)	14 (+2)	6 (+1)	0 (-)	0 (-)	68 (+8)

2023 Fleet (difference as compared to 2019 reporting year [based on 2017 fleet])

Tier	Horsepower Bin									Total
	<25	25 - 49	50 - 74	75 - 99	100 - 174	175 - 299	300 - 599	600 - 749	≥ 750	
Tier 0	1 (+1)	0 (-)	0 (-1)	0 (-2)	1 (+1)	0 (-)	0 (-)	0 (-)	0 (-)	2 (-1)
Tier 1	0 (-1)	0 (-)	0 (-)	1 (-3)	0 (-3)	3 (+3)	0 (-4)	0 (-)	0 (-)	4 (-8)
Tier 2	0 (-)	0 (-1)	0 (-2)	8 (+7)	2 (-5)	1 (+1)	1 (-1)	0 (-)	0 (-)	12 (-1)
Tier 3	0 (-)	0 (-)	0 (-)	1 (-1)	2 (-9)	4 (+1)	1 (+1)	0 (-)	0 (-)	8 (-8)
Tier 4i	0 (-)	0 (-)	1 (+1)	0 (-1)	0 (-)	2 (+1)	0 (-)	0 (-)	0 (-)	3 (+1)
Tier 4	11 (+11)	3 (-1)	7 (+3)	2 (+1)	25 (+23)	14 (+12)	6 (+2)	0 (-)	0 (-)	68 (+51)

2023 BUR GSE Detailed Inventory - Comparison to Prior Reporting Years

Comparison of Engine Model Year & Fuel Type by Reporting Year

Low-use and <25 horsepower non-electric equipment **excluded** in equipment counts.

2023 Fleet (difference as compared to 2022)

Model Year	Fuel Type				Total
	Gasoline	LPG/Propane	Electric	Diesel	
≤ 2007	19 (-3)	6 (-1)	82 (-2)	20 (-9)	127 (-15)
2008 - 2009	6 (-)	0 (-)	4 (-)	2 (-3)	12 (-3)
2010 - 2015	13 (-1)	3 (-)	7 (-)	18 (-2)	41 (-3)
2016 - 2020	20 (-)	1 (-)	22 (-)	35 (-2)	78 (-2)
≥ 2021	6 (+1)	2 (-)	6 (+2)	10 (+5)	24 (+8)
Total:	64 (-3)	12 (-1)	121 (-)	85 (-11)	282 (-15)

2023 Fleet (difference as compared to 2019 reporting year [based on 2017 fleet])

Model Year	Fuel Type				Total
	Gasoline	LPG/Propane	Electric	Diesel	
≤ 2007	19 (-14)	6 (-3)	82 (-3)	20 (-10)	127 (-30)
2008 - 2009	6 (-1)	0 (-1)	4 (+1)	2 (-9)	12 (-10)
2010 - 2015	13 (+5)	3 (+1)	7 (-6)	18 (+11)	41 (+11)
2016 - 2020	20 (+18)	1 (-)	22 (+16)	35 (+21)	78 (+55)
≥ 2021	6 (+6)	2 (+2)	6 (+6)	10 (+10)	24 (+24)
Total:	64 (+14)	12 (-1)	121 (+14)	85 (+23)	282 (+50)

