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Hollywood Burbank Airport (BUR)

Air Quality Improvement Plan
2017, 2023 and 2031 Emissions Inventories
With AQIP Potential Emission Reductions
Draft

Prepared for:

Burbank-Glendale-Pasadena Airport Authority

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Introduction and Summary

1.1 Introduction

Burbank-Glendale-Pasadena Airport Authority (BGPAA) has developed a voluntary Air Quality Improvement Plan (AQIP) for the Hollywood Burbank Airport (BUR) as part of a collaborative effort with the South Coast Air Quality Management District (SCAQMD) and other airports in the South Coast Air Basin (Basin) (i.e., Long Beach Airport, Ontario International Airport, John Wayne International Airport, and Los Angeles International Airport) to minimize and reduce air emissions related to mobile source activities at the Airport. The BUR AQIP was developed specifically as it relates to SCAQMD Measure MOB-04 from the 2016 Air Quality Management Plan (2016 AQMP). MOB-04 is a measure in the 2016 AQMP to address mobile emissions from airports.

Emissions of the criteria pollutants carbon monoxide (CO); volatile organic compounds (VOC); oxides of nitrogen (NO_x); sulfur oxides (SO_x), respirable particulate matter (PM_{10}); and fine particulate matter, ($PM_{2.5}$); as well as the major greenhouse gas pollutant carbon dioxide (CO_2) are presented in this report. The emissions inventories are provided for calendar years 2023, and 2031, per SCAQMD's request to match various attainment dates for the ozone National Ambient Air Quality Standards (NAAQS). The Baseline year (2017) was selected as the most recent, complete year for developing inventories for the airports. The inventories for 2023 and 2031 are provided in the report for the Business-As-Usual (BAU) scenario. The BAU scenario assumes that existing programs at BUR will be maintained at the current (2017) level of implementation. The report also provides potential emission reductions associated with the measures and initiatives developed for the BUR AQIP.

The remaining portion of Section 1 of this report lsits the AQIP measures and initiatives and provides a summary of the potential AQIP emission reductions in 2023 and 2031. Section 2 provides the 2017 Baseline emissions inventory and assumptions; Section 3 provides the 2023 BAU emissions inventory and assumptions; Section 4 outlines the assumptions used to develop estimates of the 2023 AQIP emission reduction benefits and provides resulting emission benefit calculation results; Section 5 provides the 2031 BAU emissions inventory and assumptions; and Section 6 outlines the assumptions used to develop estimates of the 2023 AQIP emission reduction benefits and provides resulting emission benefit calculation results.

1.2 AQIP Measures and Initiatives

The BUR AQIP includes a number of measures and initiatives designed to reduce emissions from various mobile sources that operate at or use BUR. The measures include programs that will implement the use of cleaner equipment at the airport – Clean Fleets Programs, reduce vehicles miles traveled for trips to the airport – Trip Reduction Programs, and reduce energy consumption at the airport – Sustainable Design Programs. The Clean Fleets Programs will include:

- Ground Support Equipment (GSE) Emissions Policy – Provides airport-wide emission factor targets for GSE in 2023 and 2031. The targets assumed for this report are 1.92 grams per horsepower-hour (g/hp-hr) of NOx+hydrocarbons (HC) by 2023 and 0.82 g/hp-hr of NOx+HC by 2031.

- Clean Construction Policy – Requires that contractors working on capital improvement projects (CIP) use on-road trucks with engines that comply with USEPA 2010 model year on-road truck emission standards and use off-road construction equipment with engines that comply with USEPA Tier 4 Final off-road equipment emission standards.

- Airport-Owned Clean Fleet Program – BUR will begin incorporating electric vehicles into the airport-owned light duty vehicle fleet starting in 2021. In addition, the airport-owned medium and heavy duty vehicles will be converted to super ultra-low emission vehicles (SULEV) when purchasing new vehicles.

- Electric Vehicle Charging Infrastructure – BUR committed to incorporating electric vehicle charging systems (EV chargers) into new airport parking structures. In addition, BUR will develop a program to add EV chargers in existing, permanent parking structures and lots at the airport.

The Trip Reduction Programs include:

- Regional Intermodal Transportation Center (RITC) – BUR recently developed the RITC to provide a consolidated rental car facility, create a direct rail connection, include ground level bus station and a new parking structure. The program reduces trips and vehicle miles traveled.

- Burbank Employee Rideshare Policy - BUR will join the Burbank Transportation Management Organization (BTMO), which will serve all Airport employees and all Airport tenant employers, including employers with less than 250 employees. BUR will also encourage Airport tenant employers to actively participate and join the BTMO as individual members as well.

- Burbank-Metrolink Shuttle Connection Program - BUR encourages employees and air passengers to take the Metrolink train to and from the Airport. Under the AQIP, BUR will continue the BUR-Metrolink Shuttle Program, which includes the continuation of a pilot shuttle service to nearby Metrolink stations and on-demand shuttle services from the passenger terminal to Metrolink Stations.

The Sustainable Design Programs include:

- BUR Replacement Terminal Project - BUR will develop a Sustainable Design Standard Policy for the Airport's Replacement Terminal Project, requiring the project to achieve LEED Silver certification or better, or the CalGreen equivalent of LEED Silver or better.

- BUR Sustainable Hangar Project – BUR has completed the world's first solar powered, LEED Platinum-rated aircraft hangar. The maintenance of the hangar will be included in the AQIP.

- RITC Solar Facility – As an element of the AQIP, BUR will coordinate the installation of a solar system on the roof of the RITC with Burbank Water and Power (BWP). BWP will permit, install, and operate the system.

1.3 Summary of AQIP Potential Emission Reductions

The potential emission reductions for several of the AQIP Measures and Initiatives are summarized in **Table 1-1** for 2023 and in **Table 1-2** for 2031. Note that these reductions are relative to the 2023 and 2031 BAU emission inventories presented in Sections 3 and 5.

Table 1-1. Traffic-Related Emission Reductions

	Pollutant Emissions, tpy						CO2e
AQIP Measure/Initiative	**CO**	**VOC**	**NOx**	**SO2**	**PM10***	**PM2.5***	**MT/yr**
GSE Policy	NA	0.10	0.65	NA	NA	NA	NA
Airport-Owned Clean Fleet	0.07	0.02	0.04	NA	0.01	<0.01	NA
Burbank-Metrolink Shuttle Connection Program	4.78	0.47	0.33	0.01	0.22	0.09	1,213
Employee Ride Share Policy	0.58	0.06	0.04	<0.01	0.03	0.01	144
Electric Bus Policy	NA	NA	NA	NA	NA	NA	NA
Reductions from 2023 BAU	**5.43**	**0.65**	**1.06**	**0.01**	**0.26**	**0.1**	**1,357**

Table 1-2. Traffic-Related Emission Reductions

	Pollutant Emissions, tpy						CO2e
AQIP Measure/Initiative	**CO**	**VOC**	**NOx**	**SO2**	**PM10***	**PM2.5***	**MT/yr**
GSE Policy	NA	1.43	8.65	NA	NA	NA	NA
Airport-Owned Clean Fleet	NA	NA	NA	NA	NA	NA	NA
Burbank-Metrolink Shuttle Connection Program	3.85	0.35	0.21	0.01	0.25	0.10	1,103
Employee Ride Share Policy	0.82	0.08	0.05	<0.01	0.05	0.02	233
Electric Bus Policy	1.34	0.16	0.09	<0.01	0.07	0.03	425
Reductions from 2031 BAU	**6.01**	**2.02**	**9.00**	**0.01**	**0.37**	**0.15**	**1,761**

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Section 2

BUR 2017 Baseline Emissions Inventory and Assumptions

2.1 Summary of 2017 Baseline Emissions Inventory

A summary of the BUR 2017 Baseline emissions inventory is presented in **Table 2-1**.[1] The emissions by major source categories are shown graphically on **Figure 2-1**. The remaining sections of this report provide an overview of the input parameters and assumptions used to develop this inventory.

Table 2-1. BUR 2017 Baseline Emissions Inventory

Airport Emission Source	Pollutant Emissions, tons per year						CO_2 (MT/yr)
	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$	
Ground Support Equipment Total	**147.57**	**3.14**	**17.85**	**0.02**	**0.38**	**0.33**	**2,113**
Traffic & Parking							
Regional Traffic	239.44	23.01	20.90	0.47	6.61	2.81	42.817
On-Airport Roadways and Parking Lots	6.13	0.59	0.54	0.01	0.32	0.08	1,094
On-Airport BUR Fleet Vehicles	1.17	0.14	1.27	<0.01	0.07	0.06	248
Paved Road Dust	--	--	--	--	12.89	3.22	--
Traffic & Parking Total	**246.74**	**23.74**	**22.71**	**0.48**	**19.89**	**6.17**	**44,159**
Construction Total	**1.46**	**0.25**	**2.37**	**<0.01**	**0.33**	**0.25**	**276**
GRAND TOTAL	**295.77**	**27.13**	**42.93**	**0.50**	**20.60**	**6.75**	**46,548**

[1] Emissions of criteria pollutants (carbon monoxide, CO; volatile organic compounds, VOC, oxides of nitrogen, NOx, sulfur oxides, SOx, respirable particulate matter, PM-10; and fine particulate matter, PM-2.5) and the major greenhouse gas pollutant carbon dioxide (CO_2) are presented in this report. Criteria pollutant emissions are presented in short tons per year, while CO_2 emissions are presented in metric tons (tonnes) per year.

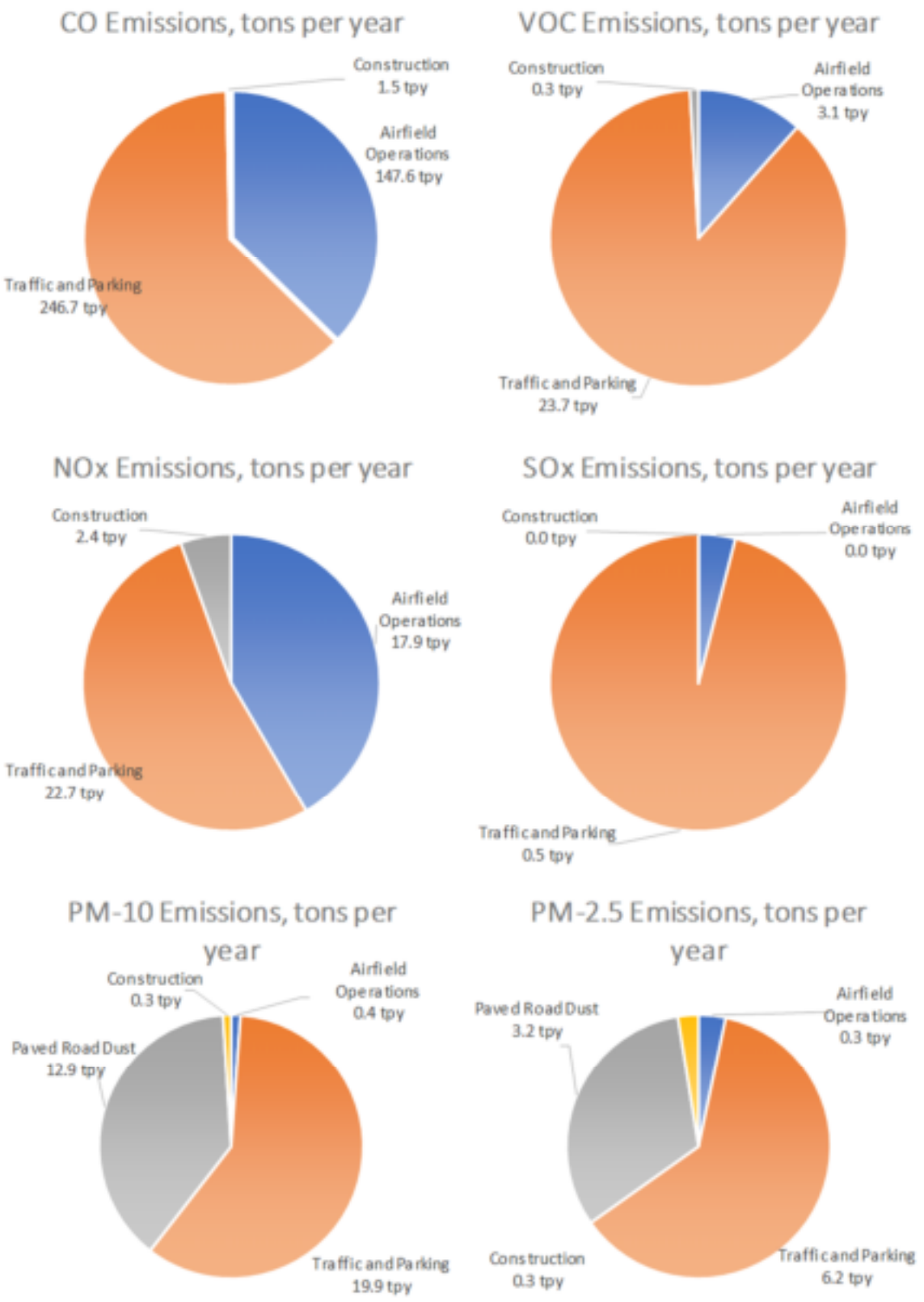

Figure 2-1. BUR 2017 Baseline Emissions by Major Source Category

2.2 BUR 2017 Baseline Ground Support Equipment Emissions

2.2.1 GSE Inventory, Activity, and Emissions Modeling

Ground support equipment (GSE) at airports includes the vehicles and equipment that service aircraft at the gates, as well as certain equipment used to maintain the airfield. In early 2019, BGPAA in collaboration with Airlines for America (A4A) and other airport stakeholders, conducted a survey of the GSE operating at BUR. The results of that survey allowed the development of airport-wide GSE inventory by equipment type, equipment age, and fuel type, and was assumed to representative of the GSE fleet in 2017. The data collected for this inventory (equipment counts) is summarized in **Table 2-2.** Approximately 50 percent of the GSE at BUR is either electric powered or runs on alternative fuels (mostly liquefied petroleum gas/propane).

Table 2-2. BUR 2017 GSE Inventory of Equipment by Fuel Type

	Fuel Type				
Equipment Type	**Diesel**	**Gasoline**	**LPG/Propane**	**Electric**	**Totals**
Air Conditioner	3	0	0	2	5
Air Start	1	0	0	0	1
Aircraft Tug	9	6	0	8	23
Backhoe	1	0	0	0	1
Bag Tug	2	7	1	21	31
Belt Loader	4	8	1	30	43
Cargo Loader	9	1	0	0	10
Cargo Tractor	0	16	0	2	18
Fork Lift	1	2	9	2	14
Fuel Truck	13	1	0	0	14
Generator	5	0	0	1	6
Golf Cart	0	0	0	27	27
GPU	8	0	0	0	8
Lavatory Cart	0	3	0	3	6
Lavatory Truck	0	1	0	0	1
Lift	1	0	0	4	5
Other GSE	3	0	0	0	3
Passenger Stairs	0	4	0	7	11
Push Back	4	0	0	0	4
Service Truck	0	4	0	0	4
Skid Steer Loader	2	0	0	0	2
Sweeper	1	0	2	0	3
Total	***67***	***53***	***13***	***107***	***240***

Source: CDM Smith, 2019

The California Air Resources Board (ARB) OFFROAD2017[2] model was used to obtain GSE emission factors, deterioration factors, load factors, and activity levels (hours/year/unit). OFFROAD2017 emission factors were obtained by selecting the following options from the model menu: Los Angeles

[2] California Air Resources Board. 2017. OFFROAD2017 Web Database. Available at: https://www.arb.ca.gov/orion/ (accessed February 13, 2019); and California Air Resources Board. 2017. 2017 Off-Road Diesel Emission Factor Update for NOx and PM. Available a: https://www.arb.ca.gov/msei/ordiesel/ordas_ef_fcf_2017.pdf (accessed February 13, 2019).

Sub Area of the South Coast Air Basin; 2017 Calendar Year; Adopted Rules – Exhaust Scenario; All Equipment Types; All Model Years; All Horsepower Bins; and All Fuel Types.

The GSE survey conducted for the 2017 calendar year obtained sufficient manufactured date for equipment that equipment ages could be determined. Aged emission factors were determined for each piece of equipment in the inventory, and load factors and activity levels were applied to create the emission inventory. Each GSE was matched to OFFROAD2017 equipment types based on the designated Fuel Types and Equipment Types. LPG/Propane GSE was assumed to be equivalent to Natural Gas equipment as listed in the OFFROAD database. When possible, the Equipment Categories AirGrSupp and OFF – AirGrSupp were utilized to pair non-diesel equipment, although Portable Equipment, Light Commercial, or other OFFROAD categories were necessary pairings for Pumps or Generator Sets. The full pairing is listed below in **Table 2-3**.

Table 2-3. BUR GSE Type Pairing with OFFROAD2017 Equipment and Fuel Types

GSE Cat	OFFROAD Cat (Diesel)	OFFROAD Cat (Gasoline & Nat Gas)
Air Conditioner	Portable Equipment - Non-Rental Generator	OFF - AirGrSupp - Air Conditioner
Air Start	Portable Equipment - Non-Rental Generator	OFF - AirGrSupp - Air Start Unit
Aircraft Tug	AirGrSupp - A/C Tug Narrow Body	OFF - AirGrSupp - A/C Tug Narrow Body
Backhoe	ConstMin - Tractors/Loaders/Backhoes	ConstMin - Tractors/Loaders/Backhoes
Bag Tug	AirGrSupp - Baggage Tug	OFF - AirGrSupp - Baggage Tug
Belt Loader	AirGrSupp - Belt Loader	OFF - AirGrSupp - Belt Loader
Cargo Loader	AirGrSupp - Cargo Loader	OFF - AirGrSupp - Cargo Loader
Cargo Tractor	AirGrSupp - Cargo Tractor	OFF - AirGrSupp - Cargo Tractor
Fork Lift	AirGrSupp - Forklift	OFF - AirGrSupp - Forklift
Fuel Truck	AirGrSupp - Other GSE	OFF - AirGrSupp - Fuel Truck
Generator	Portable Equipment - Non-Rental Generator	OFF - AirGrSupp - Generator
Golf Cart	Portable Equipment - Non-Rental Generator	OFF - AirGrSupp - Cart
GPU	AirGrSupp - Other GSE	OFF - AirGrSupp - Ground Power Unit
Lavatory Cart	AirGrSupp - Other GSE	OFF - AirGrSupp - Lav Cart
Lavatory Truck	AirGrSupp - Other GSE	OFF - AirGrSupp - Lav Truck
Lift	AirGrSupp - Lift	OFF - AirGrSupp - Lift
Other GSE	AirGrSupp - Other GSE	OFF - AirGrSupp - Other GSE
Passenger Stairs	AirGrSupp - Passenger Stand	OFF - AirGrSupp - Passenger Stand
Push Back	AirGrSupp - A/C Tug Narrow Body	OFF - AirGrSupp - A/C Tug Narrow Body
Service Truck	AirGrSupp - Other GSE	OFF - AirGrSupp - Service Truck
Skid Steer Loader	ConstMin - Skid Steer Loaders	ConstMin - Skid Steer Loaders
Sweeper	ConstMin - Sweepers/Scrubbers	OFF - AirGrSupp - Sweeper

Source: CDM Smith, 2019

Based on its category and fuel type, each piece of equipment was matched to the nearest model year and horsepower pairings available in the OFFROAD database. When matching horsepower, the lowest horsepower bin that was greater than the identified horsepower was utilized. When no such horsepower bin existed for the specific category / fuel type pairing, the highest horsepower bin that was smaller than the identified horsepower was utilized. Model year was matched in a similar manner if an exact match did not exist in the database.

In airport-provided equipment lists, some GSE lacked identifying model years and/or engine horsepower ratings. In this case, equipment was conservatively paired to the oldest model year equipment for the category / fuel type pairing identified in the OFFROAD database. Horsepower ratings were somewhat more subjective, utilizing either a horsepower-hours per year-weighted average horsepower for the equipment type /fuel type pairing or an estimated horsepower rating based high conformity of horsepower ratings for other GSE of the same category used on the airfield.

2.2.2 GSE Emissions Modeling Results

The emission calculation results for BUR 2017 GSE by equipment type are presented in **Table 2-4**. **Table 2-5** summarizes the emissions for GSE by fuel type.

Table 2-4. GSE Emissions by Equipment Type at BUR in 2017

GSE Type	Equipment Count	Pollutant Emissions, tons per year						CO2
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	Tonnes/yr
Air Conditioner	5	0.51	0.01	0.41	<0.01	0.01	0.01	142.81
Air Start	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.91
Aircraft Tug	23	6.61	0.41	3.41	<0.01	0.11	0.11	223.41
Backhoe	1	0.11	<0.01	0.11	<0.01	<0.01	<0.01	11.91
Bag Tug	31	50.91	0.61	3.11	<0.01	0.11	0.01	510.21
Belt Loader	43	14.51	0.21	1.11	<0.01	0.01	0.01	180.71
Cargo Loader	10	2.21	0.11	0.81	<0.01	0.01	0.01	135.01
Cargo Tractor	18	56.41	0.91	3.01	<0.01	0.01	0.01	385.61
Fork Lift	14	3.41	0.01	0.31	<0.01	<0.01	<0.01	48.91
Fuel Truck	14	0.41	0.01	0.61	<0.01	0.01	0.01	64.11
Generator	6	0.31	0.11	0.41	<0.01	0.01	0.01	37.01
Golf Cart	27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
GPU	8	0.41	0.01	0.51	<0.01	0.01	0.01	65.91
Lavatory Cart	6	1.41	0.01	0.01	<0.01	<0.01	<0.01	2.11
Lavatory Truck	1	2.71	0.11	0.71	<0.01	<0.01	<0.01	44.61
Lift	5	0.11	0.01	0.21	<0.01	0.01	0.01	7.11
Other GSE	3	0.21	0.01	0.41	<0.01	0.01	0.01	33.71
Passenger Stairs	11	0.31	0.01	0.11	<0.01	<0.01	<0.01	8.01
Push Back	4	0.31	0.01	0.41	<0.01	0.01	0.01	35.21
Service Truck	4	6.31	0.31	1.81	<0.01	<0.01	<0.01	119.71
Skid Steer Loader	2	0.11	0.01	0.11	<0.01	<0.01	<0.01	7.21
Sweeper	3	0.51	<0.01	0.21	<0.01	<0.01	<0.01	48.91
Total	***240***	***147.57***	***3.00***	***17.85***	***0.02***	***0.38***	***0.33***	***2,113***

Source: CDM Smith 2019

Table 2-5. GSE Emissions by Fuel Type at BUR in 2017

Fuel Type	Equipment Count	Pollutant Emissions, tons per year						CO2
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	Tonnes/yr
Diesel	66	3.51	0.51	5.01	<0.01	0.31	0.31	660.11
Gasoline	53	140.71	2.51	12.21	0.01	0.11	0.11	1,343.71
LPG/Propane	13	3.31	<0.01	0.71	<0.01	<0.01	<0.01	109.11
Electric	108	--	--	--	--	--	--	--
TOTALS	***240***	***147.57***	***3.00***	***17.85***	***0.02***	***0.38***	***0.33***	***2,113***

Source: CDM Smith 2019

2.3 BUR 2017 Baseline Traffic & Parking Emissions

2.3.1 Regional Airport-Related Trips and Miles Traveled

Ground vehicles trips, including passenger cars, taxis, limos, shuttles, buses, and cargo trucks, traveling to or from BUR were estimated for 2017. The basis for the trip estimates and vehicle miles traveled was the Bob Hope Airport Ground Access Study included in Appendix F.10 of the Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR).[3] The study provided trip volumes, ground access travel mode split, average vehicle occupancy factors, weighted average trip distances, and both employee and passenger daily trip generation values.

The types of vehicles traveling to and from each trip end-point were segregated into light duty public vehicles (LDA, LDT1, and LDT2 technology categories in the CARB EMFAC model); light duty commercial vehicles (LDA); and medium duty commercial vehicles (MDV). Data from the Operations Network (OPSNET)[4] published by the FAA for 2017, alongside 2016, 2023, and 2025 daily trip and passenger data from the EIR for a Replacement Airline Passenger Terminal at BUR, were used to interpolate average daily person trips by vehicle type. The total number of trips for vehicles traveling to and from BUR in 2017 is presented in **Table 2-6**.

Table 2-6. Estimated Total Vehicle Trips to BUR in 2017

		Vehicle Trips to or from BUR		
Transit Mode		**One-Way Trips**	**Two-Way Trips**	**Total Daily Trips**
Drive Self	Self-park at Terminal	1,170	-	1,170
Drive Self	Self-park at Remote Lot	705	-	705
Drive Self	Valet Park	482	-	482
Get a Ride	Friend or Family	-	4,823	9,646
Subtotal Light Duty Public Vehicles (LDA + LDT1 + LDT2)		***2,357***	***4,823***	***12,003***
Drive Self	Rental Car	3,014	-	3,014
Get a Ride	Taxi	-	344	688
Get a Ride	TNC	-	693	1,386
Subtotal Light Duty Commercial Vehicles (LDA)		***3,014***	***1,037***	***5,088***

[3] Burbank-Glendale-Pasadena Airport Authority, 2016. Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR). State Clearinghouse No. 2015121095. June.

[4] Federal Aviation Administration. FAA Operations Network (OPSNET) Tool, Available at: https://aspm.faa.gov/opsnet/sys/Airport.asp (accessed February 27, 2019).

Table 2-6. Estimated Total Vehicle Trips to BUR in 2017

		Vehicle Trips to or from BUR		
Transit Mode		**One-Way Trips**	**Two-Way Trips**	**Total Daily Trips**
Get a Ride	Hotel Shuttle	-	193	386
Get a Ride	Airport Shuttle / Van	-	54	108
Subtotal Medium Duty Commercial Vehicles (MDV)		**-**	***247***	***494***

Source: CDM Smith 2019

The weighted average trip distance traveled for passengers traveling to and from the airport was also detailed in the Ground Access Study. The trip volumes were multiplied by this weighted average trip distance of 20.2 miles per trip for all transit modes except for shuttle trips, which were estimated at 5 miles per trip, as shown in **Table 2-7**. The resulting annual VMT for each transit mode is presented in **Table 2-8**.

Table 2-7. BUR 2017 Passenger Traffic Mode Split

Traffic Category	Mode Split	Average Trip Distance	EMFAC Vehicle Category
Self-park at Terminal	10%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Self-park at Remote Lot	6%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Valet Park	4%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Rental Car	25%	20.2 miles	LDA
Friend or Family	40%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Taxi	3%	20.2 miles	LDA
TNC	6%	20.2 miles	LDA
Hotel Shuttle	4%	5.05 miles	MDV
Airport Shuttle / Van	2%	5.05 miles	MDV

Source: CDM Smith 2019.

Table 2-8. Regional Miles Traveled for All Trips to or from BUR in 2017

Transit Mode		Total Annual Vehicle Miles Traveled to or from BUR
Drive Self	Self-park at Terminal	8,626,410
Drive Self	Self-park at Remote Lot	5,197,965
Drive Self	Valet Park	3,553,786
Get a Ride	Friend or Family	71,119,958
Subtotal Light Duty Public Vehicles (LDA + LDT1 + LDT2)		***88,498,119***
Drive Self	Rental Car	22,222,222
Get a Ride	Taxi	5,072,624
Get a Ride	TNC	10,218,978
Subtotal Light Duty Commercial Vehicles (LDA)		***37,513,824***
Get a Ride	Hotel Shuttle	704,450
Get a Ride	Airport Shuttle / Van	197,100
Subtotal Medium Duty Commercial Vehicles (MDV)		***901,550***

Source: CDM Smith 2019

2.3.2 On-Airport Roadways and Parking Lots

Using the trip volumes in Table 8, distances traveled on airport roadways and in airport parking lots was estimated to be approximately 0.5 miles per one-way trip for all transit modes. This estimated distance was developed from reviewing airport roadways and parking lots in Google Earth Pro. The resulting total distance traveled is summarized in **Table 2-9**.

Table 2-9. On-Airport Miles Traveled for All Trips to or from BUR in 2017

Transit Mode		Total Annual Vehicle Miles Traveled On-Airport at BUR
Drive Self	Self-park at Terminal	213,525
Drive Self	Self-park at Remote Lot	128,663
Drive Self	Valet Park	87,965
Get a Ride	Friend or Family	1,760,395
Subtotal Light Duty Public Vehicles (LDA + LDT1 + LDT2)		***2,190,548***
Drive Self	Rental Car	550,055
Get a Ride	Taxi	125,560
Get a Ride	TNC	252,945
Subtotal Light Duty Commercial Vehicles (LDA)		***928,560***
Get a Ride	Hotel Shuttle	70,445
Get a Ride	Airport Shuttle / Van	19,710
Subtotal Medium Duty Commercial Vehicles (MDV)		***90,155***

Source: CDM Smith 2019

Note: A weighted average trip distance of 0.5 miles was utilized for all transit mode trips on-airport at BUR.

2.3.3 On-Airport Burbank Vehicle Fleet

In addition to on-airport public vehicle traffic, BGPAA operates a fleet of vehicles for maintenance, administrative, security, and other operational purposes. The actual 2017 airport fleet makeup was provided by BGPAA and used as a basis for generation of 2017 fleet emissions. For administrative vehicle activity, ARB EMFAC2017 default annual activity levels were assumed. For all other categories, a basis of 5 miles of on-airport travel per day was assumed. Vehicle types and emission factors were assigned based on EMFAC2017 gross vehicle weight ratings (GVWR) as defined by the California Air Resources Board (ARB)[5] and the vehicles age. The 2017 annual VMT for BGPAA operated vehicles are summarized in **Table 2-10**.

Table 2-10. 2017 On-Airport Fleet Vehicle Miles Traveled by Type

Vehicle Category	Count	Total Annual Vehicle Miles Traveled On-Airport at BUR
LDA	9	62,026
LDT1	3	5,475
LDT2	8	14,600
LHD1	7	12,775
LHD2	11	20,075
MDV	27	49,275
T6 utility	1	1,825
T7 utility	4	7,300
Total	***70***	***173,351***

Source: CDM Smith 2019.

Note: Emission factors for Burbank fleet vehicles were developed from the ARB EMFAC2017 model and vary depending on a vehicle's engine age, vehicle category, and other variables.

2.3.4 BUR 2017 Traffic and Parking Emissions

Emission factors from the ARB EMFAC2017 model were used to estimate traffic and parking lot emissions. Emission factors were aggregated by speed and by model years were obtained for all technology categories. The light duty vehicle factors were developed from distance traveled

[5] California Air Resources Board (ARB). 2017. EMFAC2017 User's Guide, Appendix 4, Vehicle Categories. Available at: https://www.arb.ca.gov/msei/downloads/emfac2017_users_guide_final.pdf (accessed February 28, 2019).

(VMT)-weighted averages of the LDA, LDT1 and LDT2 vehicle types. Medium duty vehicle (MDV) factors were used for all shuttles entering the airport.

The emission factors were developed from EMFAC2017 emission inventories for the South Coast Air Basin portion of Los Angeles County for calendar year 2017. The total pollutant emission inventories (in tons per day) for each of the vehicle technology categories noted above (LDA, LDT1, LDT2, and MDV) were divided by the EMFAC VMT data for the corresponding vehicle technology category. The final 2017 emission factors, in grams per mile, for each pollutant are summarized in **Table 2-11**. In addition, re-entrained road dust was estimated the method described in Chapter 13.2.1 Paved Roads in U.S. EPA's Compilation of Air Pollutant Emission Factors (AP-42).

Table 2-11. 2017 Emission Factors from EMFAC2017

Vehicle Category	2017 Calendar Year Emission Factors, grams/mile						
	CO	VOC	NOx	SOx	PM10	PM2.5	CO2e
LDA[a]	1.521	0.142	0.119	0.003	0.047	0.020	317
LDAT[b]	1.781	0.173	0.161	0.003	0.047	0.020	344
MDV[c]	2.751	0.272	0.313	0.005	0.048	0.020	504
Paved Road Dust	--	--	--	--	0.090	0.022	--

Source: CDM Smith 2019.

a. LDA = Light Duty Autos. Emission factors developed from LDA total emissions (South Coast portion of Los Angeles County in 2017).

b. LDAT = Light Duty Autos and Trucks. Emission factors developed from LDA, LDT1, and LDT2 total emissions (South Coast portion of Los Angeles County in 2017).

c. MDV = Medium Duty vehicles. Emission factors developed from MDV total emissions (South Coast portion of Los Angeles County in 2017).

The BUR 2017 total traffic emission inventories are summarized in **Table 2-12**.

Table 2-12. Grand Total – BUR 2017 Traffic Emissions

Airport Destination	Pollutant Emissions, tpy						CO2e
	CO	VOC	NOx	SO2	PM10*	PM2.5*	MT/yr
Regional Emissions	239.44	23.01	20.90	0.47	6.61	2.81	42,817
On-Airport Traffic & Parking Emissions	6.13	0.59	0.54	0.01	0.32	0.08	1,094
On-Airport Burbank Vehicle Fleet Emissions	1.17	0.14	1.27	<0.01	0.07	0.06	248
Paved Road Dust	--	--	--	--	12.89	3.22	--
TOTAL Traffic-Related Emissions	***246.74***	***23.74***	***22.71***	***0.48***	***19.89***	***6.17***	***44,159***

Source: CDM Smith 2019.

2.4 Construction Source Emissions

2.4.1 Construction Emission Documents

The construction emissions inventory for BUR in 2017 is based on actual construction data provided by BUR staff for airport maintenance projects conducted during 2017. The Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank

Bob Hope Airport (BUR)[6] was also reviewed. No emissions associated with the Replacement Terminal project were assumed to occur during 2017.

2.4.2 Construction Equipment Emissions

The emissions inventory for BUR 2017 construction activity is presented in **Table 2-13**.

Table 2-13. BUR 2017 Construction Activity Emissions Inventory

	Pollutant Emissions, tons per year						Tonnes
Construction Source Category	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**
Replacement Airline Passenger Terminal Project	-	-	-	-	-	-	-
Miscellaneous Airport Maint.	1.46	0.25	2.37	<0.01	0.33	0.25	276
Total	***1.46***	***0.25***	***2.37***	***<0.01***	***0.33***	***0.25***	***276***

Source: CDM Smith 2019

[6] Burbank-Glendale-Pasadena Airport Authority, 2016. Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR). State Clearinghouse No. 2015121095. June.

Section 3

BUR 2023 Business-As-Usual Emissions Inventory and Assumptions

3.1 Summary of 2023 Business-As-Usual Emissions Inventory

A summary of the BUR 2023 BAU emissions inventory is presented in **Table 3-1**.[7] The emissions by major source categories are shown graphically on **Figure 3-1**. The remaining sections of this report provide an overview of the input parameters and assumptions used to develop this inventory.

Table 3-1. BUR 2023 BAU Emissions Inventory

	Pollutant Emissions, tons per year						
Airport Emissions Source	**CO**	**VOC**	**NOx**	**SOx**	**PM-10**	**PM-2.5**	**CO_2 (MT/yr)**
Ground Support Equipment	167.79	2.78	17.46	0.02	0.30	0.25	2,272
GSE Total	***167.79***	***2.78***	***17.46***	***0.02***	***0.30***	***0.25***	***2,272***
Traffic and Parking							
Regional Traffic	156.96	15.48	10.78	0.43	7.25	3.04	39,822
On-Airport Roadways & Parking Lots	3.99	0.40	0.28	0.01	0.35	0.09	1,014
On-Airport Burbank Fleet Vehicles	1.12	0.08	0.78	<0.01	0.04	0.03	212
Paved Road Dust Total	--	--	--	--	14.29	3.57	--
Traffic and Parking Total	***162.07***	***15.96***	***11.84***	***0.44***	***21.93***	***6.73***	***41,048***
Construction Activities	9.53	2.16	7.76	0.02	1.39	0.45	1,631
Construction Total	***9.53***	***2.16***	***7.76***	0.02	***1.39***	***0.45***	***1,631***
GRAND TOTAL	***339.39***	***20.90***	***37.06***	***0.46***	***23.62***	***7.43***	***44,951***

Source: CDM Smith 2019.

[7] Emissions of criteria pollutants (carbon monoxide, CO; volatile organic compounds, VOC, oxides of nitrogen, NOx, sulfur oxides, SOx, respirable particulate matter, PM-10; and fine particulate matter, PM-2.5) and the major greenhouse gas pollutant carbon dioxide (CO_2) are presented in this report. Criteria pollutant emissions are presented in short tons per year, while CO_2 emissions are presented in metric tons (tonnes) per year.

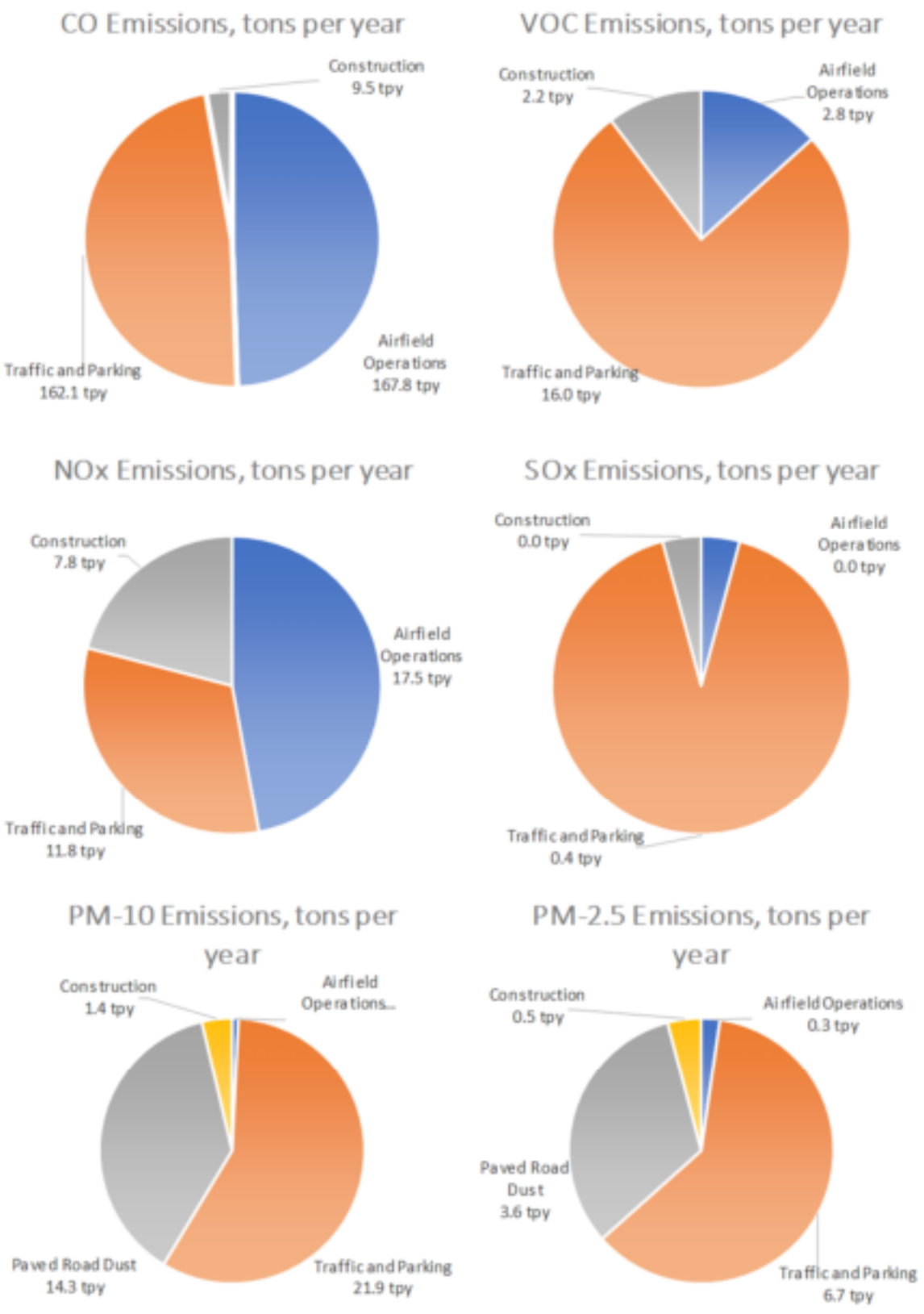

Figure 3-1. BUR 2023 Business-As-Usual Emissions by Major Source Category

3.2 BUR 2023 BAU Ground Support Equipment Emissions

3.2.1 GSE Inventory, Activity, and Emissions Modeling

As noted in Section 2.2.1 above, GSE data collected for this analysis was used to develop the GSE equipment counts and emissions for the 2017 Baseline inventory. The same GSE equipment and fuel mix (see Table 2-2) was used as the starting point for developing the 2023 BAU GSE emissions.

The California Air Resources Board (ARB) OFFROAD2017[8] model was used to obtain GSE emission factors, deterioration factors, load factors, and activity levels (hours/year/unit). These data were obtained from OFFROAD2017 by using the following model option: Los Angeles Sub Area of the South Coast Air Basin; 2031 Calendar Year; Adopted Rules – Exhaust Scenario; All Equipment Types; All Model Years; All Horsepower Bins; and All Fuel Types.

The 2017 BUR GSE fleet emissions documented in the 2017 BUR AQIP Emission Inventory report[9] was used as the starting point for developing 2023 BUR GSE emissions. To estimate the model year for each piece of GSE, the 2023 average fleet age was assumed to be the same as the BUR 2017 GSE fleet age used in the 2017 BUR AQIP Emission Inventory.[3] This was accomplished by increasing the model year for each GSE in the 2017 database by 6 years (i.e., 2023 minus 2017).

Growth in GSE activity level (hours/year/unit) was developed utilizing the default OFFROAD per-equipment activities for each year. The model includes built-in factors for each equipment type detailing the total hours of operation per year per piece of equipment. The model also includes built-in factors for total population (count) for each equipment type per year. A combination of default activity and population was accounted for when developing future equipment activities. Except for air start units, the model showed increasing or flat (no) growth across most equipment categories for each future scenario. This growth is used to account for growth expected at the airfield. GSE activity assumptions are listed in **Table 3-2**.

Table 3-2. OFFROAD GSE Activity per Unit of Equipment per Year

GSE Cat	2017 Activity (hrs/yr)	2023 Activity (hrs/yr)	Change Relative to 2017
Air Conditioner	1,272	1,432	11%
Air Start	80	85	6%
Aircraft Tug	320	348	8%
Backhoe	559	651	14%
Bag Tug	714	776	8%
Belt Loader	499	542	8%
Cargo Loader	459	499	8%
Cargo Tractor	651	707	8%
Fork Lift	368	400	8%
Fuel Truck	83	92	10%
Generator	900	999	10%

[8] California Air Resources Board. 2017. OFFROAD2017 Web Database. Available at: https://www.arb.ca.gov/orion/ (accessed February 13, 2019); and California Air Resources Board. 2017. 2017 Off-Road Diesel Emission Factor Update for NOx and PM. Available a: https://www.arb.ca.gov/msei/ordiesel/ordas_ef_fcf_2017.pdf (accessed February 13, 2019).

[9] Burbank-Glendale-Pasadena-Airport Authority. 2019. Hollywood Burbank Airport (BUR) Air Quality Improvement Plan 2017 Emission Inventory - Draft. (June).

Table 3-2. OFFROAD GSE Activity per Unit of Equipment per Year

GSE Cat	2017 Activity (hrs/yr)	2023 Activity (hrs/yr)	Change Relative to 2017
Golf (Utility) Cart	152	167	9%
GPU	798	883	10%
Lavatory Cart	151	166	9%
Lavatory Truck	1,158	1,282	10%
Lift	404	439	8%
Other GSE	464	505	8%
Passenger Stairs	47	51	8%
Push Back	320	348	8%
Service Truck	883	977	10%
Skid Steer Loader	325	379	14%
Sweeper	339	373	9%

Sources: California Air Resources Board 2017; CDM Smith 2019.

3.2.2 GSE Emissions Modeling Results

The BAU emission calculation results for BUR 2023 GSE by equipment type are presented in **Table 3-3**. **Table 3-4** summarizes the emissions for GSE by fuel type.

Table 3-3. GSE Emissions by Equipment Type at BUR in 2023 – BAU Scenario

GSE Type	Equipment Count	Pollutant Emissions, tons per year						CO2 Tonnes/yr
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	
Air Conditioner	5	0.41	0.01	0.31	<0.01	<0.01	<0.01	51.51
Air Start	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.01
Aircraft Tug	23	10.31	0.61	4.71	<0.01	0.01	0.01	292.71
Backhoe	1	0.11	<0.01	0.11	<0.01	<0.01	<0.01	13.91
Bag Tug	31	55.31	0.51	2.91	<0.01	0.01	0.01	551.51
Belt Loader	43	15.91	0.11	1.01	<0.01	0.01	0.01	199.71
Cargo Loader	10	2.51	0.11	0.61	<0.01	0.01	0.01	146.71
Cargo Tractor	18	64.81	0.81	3.11	<0.01	0.01	0.01	418.91
Fork Lift	14	3.71	0.01	0.31	<0.01	<0.01	<0.01	53.11
Fuel Truck	14	0.71	0.01	0.61	<0.01	0.01	0.01	71.81
Generator	6	0.31	0.01	0.31	<0.01	0.01	0.01	43.81
Golf Cart	27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
GPU	8	0.51	0.01	0.41	<0.01	<0.01	<0.01	72.91
Lavatory Cart	6	1.51	0.01	0.01	<0.01	<0.01	<0.01	2.41
Lavatory Truck	1	3.11	0.11	0.21	<0.01	<0.01	<0.01	49.81
Lift	5	0.11	0.01	0.11	<0.01	<0.01	<0.01	4.31
Other GSE	3	0.31	0.01	0.31	<0.01	0.01	0.01	36.21
Passenger Stairs	11	0.41	0.01	0.21	<0.01	<0.01	<0.01	12.11
Push Back	4	0.41	0.11	0.41	<0.01	0.01	0.01	54.21
Service Truck	4	7.01	0.21	1.71	<0.01	0.01	<0.01	132.81
Skid Steer Loader	2	0.11	0.01	0.21	<0.01	<0.01	<0.01	8.41

Sweeper	3	0.61	<0.01	0.21	<0.01	<0.01	<0.01	54.01
Total	***240***	***167.79***	***2.78***	***17.46***	***0.02***	***0.30***	***0.25***	***2,272***

Source: CDM Smith 2019

Table 3-4. GSE Emissions by Fuel Type at BUR in 2023 – BAU Scenario

Fuel Type	Equipment Count	Pollutant Emissions, tons per year						CO2
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	Tonnes/yr
Diesel	66	4.21	0.41	3.61	<0.01	0.21	0.21	625.21
Gasoline	53	160.01	2.41	13.31	0.01	0.11	0.11	1,527.21
LPG/Propane	13	3.61	<0.01	0.51	<0.01	<0.01	<0.01	119.21
Electric	108	--	--	--	--	--	--	--
TOTALS	***240***	***167.79***	***2.78***	***17.46***	***0.02***	***0.30***	***0.25***	***2,272***

Source: CDM Smith 2019

3.3 BUR 2023 BAU Traffic and Parking Emissions

3.3.1 Regional Airport-Related Trips and Miles Traveled

Ground vehicles trips, including passenger cars, taxis, limos, shuttles, buses, and cargo trucks, traveling to or from BUR were estimated for 2023. The basis for the trip estimates and vehicle miles traveled was the Bob Hope Airport Ground Access Study included in Appendix F.10 of the Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR).[10] The study provided trip volumes, ground access travel mode split, average vehicle occupancy factors, weighted average trip distances, and both employee and passenger daily trip generation values.

The types of vehicles traveling to and from each trip end-point were segregated into light duty public vehicles (LDA, LDT1, and LDT2 technology categories in the CARB EMFAC model); light duty commercial vehicles (LDA); and medium duty commercial vehicles (MDV). Data from the Terminal Area Forecast (TAF)[11] published by the FAA for 2023, alongside 2016, 2023, and 2025 daily trip and passenger data from the EIR for a Replacement Airline Passenger Terminal at BUR, were used to interpolate average daily person trips by vehicle type. The total number of trips for vehicles traveling to and from BUR in 2023 is presented in **Table 3-5**.

Table 3-5. Estimated Total Vehicle Trips to BUR in 2023

		Vehicle Trips to or from BUR		
Transit Mode		**One-Way Trips**	**Two-Way Trips**	**Total Daily Trips**
Drive Self	Self-park at Terminal	1,079	-	1,079

[10] Burbank-Glendale-Pasadena Airport Authority, 2016. Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR). State Clearinghouse No. 2015121095. June.

[11] Federal Aviation Administration. 2017. Terminal Area Forecast. Available at: https://taf.faa.gov/ (accessed February 28, 2019).

Table 3-5. Estimated Total Vehicle Trips to BUR in 2023

		Vehicle Trips to or from BUR		
Transit Mode		**One-Way Trips**	**Two-Way Trips**	**Total Daily Trips**
Drive Self	Self-park at Remote Lot	670	-	670
Drive Self	Valet Park	522	-	522
Get a Ride	Friend or Family	-	5,221	10,442
Subtotal Light Duty Public Vehicles (LDA + LDT1 + LDT2)		***2,271***	***5,221***	***12,713***
Drive Self	Rental Car	3,263	-	3,263
Get a Ride	Taxi	-	279	558
Get a Ride	TNC	-	1,218	2,436
Subtotal Light Duty Commercial Vehicles (LDA)		***3,263***	***1,497***	***6,257***
Get a Ride	Hotel Shuttle	-	209	418
Get a Ride	Airport Shuttle / Van	-	36	72
Subtotal Medium Duty Commercial Vehicles (MDV)		***-***	***245***	***490***

Source: CDM Smith 2019

The weighted average trip distance traveled for passengers traveling to and from the airport was also detailed in the Ground Access Study. The trip volumes were multiplied by this weighted average trip distance of 20.2 miles per trip for all transit modes except for shuttle trips, which were estimated at 5 miles per trip, as shown in **Table 3-6**. The resulting annual VMT for each transit mode is presented in **Table 3-7**.

Table 3-6. BUR 2023 Passenger Traffic Mode Split

Traffic Category	Mode Split	Average Trip Distance	EMFAC Vehicle Category
Self-park at Terminal	8%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Self-park at Remote Lot	5%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Valet Park	4%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Rental Car	25%	20.2 miles	LDA
Friend or Family	40%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Taxi	2%	20.2 miles	LDA
TNC	9%	20.2 miles	LDA
Hotel Shuttle	4%	5.05 miles	MDV
Airport Shuttle / Van	1%	5.05 miles	MDV

Sources: BGPAA 2016; CDM Smith 2019.

Table 3-7. Regional Miles Traveled for All Trips to or from BUR in 2023

Transit Mode		Total Annual Vehicle Miles Traveled to or from BUR
Drive Self	Self-park at Terminal	7,955,467
Drive Self	Self-park at Remote Lot	4,939,910
Drive Self	Valet Park	3,848,706
Get a Ride	Friend or Family	76,988,866
Subtotal Light Duty Public Vehicles (LDA + LDT1 + LDT2)		***93,732,949***
Drive Self	Rental Car	24,058,099
Get a Ride	Taxi	4,114,134
Get a Ride	TNC	17,960,628
Subtotal Light Duty Commercial Vehicles (LDA)		***46,132,861***
Get a Ride	Hotel Shuttle	762,850
Get a Ride	Airport Shuttle / Van	131,400

Subtotal Medium Duty Commercial Vehicles (MDV)	***894,250***

Source: CDM Smith 2019

3.3.2 On-Airport Roadways and Parking Lots

Using the trip volumes in Table 6, distances traveled on airport roadways and in airport parking lots was estimated to be approximately 0.5 miles per one-way trip for all transit modes. This estimated distance was developed from reviewing airport roadways and parking lots in Google Earth Pro. The resulting total distance traveled is summarized in **Table 3-8**.

Table 3-8. On-Airport Miles Traveled for All Trips to or from BUR in 2023

Transit Mode		Total Annual Vehicle Miles Traveled On-Airport at BUR
Drive Self	Self-park at Terminal	196,918
Drive Self	Self-park at Remote Lot	122,275
Drive Self	Valet Park	95,265
Get a Ride	Friend or Family	1,905,665
Subtotal Light Duty Public Vehicles (LDA + LDT1 + LDT2)		***2,320,123***
Drive Self	Rental Car	595,498
Get a Ride	Taxi	101,835
Get a Ride	TNC	444,570
Subtotal Light Duty Commercial Vehicles (LDA)		***1,141,903***
Get a Ride	Hotel Shuttle	76,285
Get a Ride	Airport Shuttle / Van	13,140
Subtotal Medium Duty Commercial Vehicles (MDV)		***89,425***

Source: CDM Smith 2019

Note: A weighted average trip distance of 0.5 miles was utilized for all transit mode trips on-airport at BUR.

3.3.3 On-Airport Burbank Vehicle Fleet

In addition to on-airport public vehicle traffic, BGPAA operates a fleet of vehicles for maintenance, administrative, security, and other operational purposes. The actual 2017 airport fleet makeup was provided by BGPAA and used as a basis for generation of 2023 fleet emissions. For administrative vehicle activity, ARB EMFAC2017 default annual activity levels were assumed. For all other categories, a basis of 5 miles of on-airport travel per day was assumed. Vehicle types and emission factors were assigned based on EMFAC2017 gross vehicle weight ratings (GVWR) as defined by the California Air Resources Board (ARB)[12] and the vehicles age. The 2023 annual VMT for BGPAA operated vehicles are summarized in **Table 3-9**.

Table 3-9. 2023 On-Airport Fleet Vehicle Miles Traveled by Type

Vehicle Category	Count	Total Annual Vehicle Miles Traveled On-Airport at BUR
LDA	9	57,206
LDT1	3	5,475
LDT2	8	14,600
LHD1	7	12,775
LHD2	11	20,075
MDV	27	49,275
T6 utility	1	1,825
T7 utility	4	7,300
Total	***70***	***168,531***

[12] California Air Resources Board (ARB). 2017. EMFAC2017 User's Guide, Appendix 4, Vehicle Categories. Available at: https://www.arb.ca.gov/msei/downloads/emfac2017_users_guide_final.pdf (accessed February 28, 2019).

Source: CDM Smith 2019.
Note: Emission factors for Burbank fleet vehicles were developed from the ARB EMFAC2017 model and vary depending on a vehicle's engine age, vehicle category, and other variables.

3.3.4 BUR 2023 BAU Traffic and Parking Emissions

Emission factors from the ARB EMFAC2017 model were used to estimate traffic and parking lot emissions. Emission factors were aggregated by speed and by model years were obtained for all technology categories. The light duty vehicle factors were developed from distance traveled (VMT)-weighted averages of the LDA, LDT1 and LDT2 vehicle types. Medium duty vehicle (MDV) factors were used for all shuttles entering the airport.

The emission factors were developed from EMFAC2017 emission inventories for the South Coast Air Basin portion of Los Angeles County for calendar year 2023. The total pollutant emission inventories (in tons per day) for each of the vehicle technology categories noted above (LDA, LDT1, LDT2, and MDV) were divided by the EMFAC VMT data for the corresponding vehicle technology category. The final 2023 emission factors, in grams per mile, for each pollutant are summarized in **Table 3-10**. In addition, re-entrained road dust was estimated the method described in Chapter 13.2.1 Paved Roads in U.S. EPA's Compilation of Air Pollutant Emission Factors (AP-42).

Table 3-10. 2023 Emission Factors from EMFAC2017

Vehicle Category	2023 Calendar Year Emission Factors, grams/mile						
	CO	VOC	NOx	SOx	PM10	PM2.5	CO2e
LDA[a]	0.921	0.085	0.057	0.003	0.047	0.020	269
LDAT[b]	1.052	0.106	0.075	0.003	0.047	0.020	289
MDV[c]	1.477	0.167	0.138	0.004	0.047	0.020	414
Paved Road Dust	--	--	--	--	0.090	0.022	--

Source: CDM Smith 2019.
a. LDA = Light Duty Autos. Emission factors developed from LDA total emissions (South Coast portion of Los Angeles County in 2023).
b. LDAT = Light Duty Autos and Trucks. Emission factors developed from LDA, LDT1, and LDT2 total emissions (South Coast portion of Los Angeles County in 2023).
c. MDV = Medium Duty vehicles. Emission factors developed from MDV total emissions (South Coast portion of Los Angeles County in 2023).

The BUR 2023 total traffic emission inventories are summarized in **Table 3-11**.

Table 3-11. Grand Total - BUR Traffic Emissions – BAU Scenario

Airport Destination	Pollutant Emissions, tpy						CO2e
	CO	VOC	NOx	SO2	PM10*	PM2.5*	MT/yr
Regional Emissions	156.96	15.48	10.78	0.43	7.25	3.04	39,822
On-Airport Traffic & Parking Emissions	3.99	0.40	0.28	0.01	0.35	0.09	1,014
On-Airport Burbank Vehicle Fleet Emissions	1.12	0.08	0.78	<0.01	0.04	0.03	212
Paved Road Dust	--	--	--	--	14.29	3.57	--
TOTAL Traffic-Related Emissions	***162.08***	***15.96***	***11.83***	***0.45***	***21.93***	***6.73***	***41,048***

Source: CDM Smith 2019.

3.4 BUR 2023 BAU Construction Emissions

3.4.1 Construction Emissions Documents

The construction emissions inventory for BUR in 2023 is based on actual construction data provided by BUR staff for airport maintenance projects conducted during 2017. The Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR)[13] was also reviewed. The emissions calculations for the Replacement Terminal Project were updated using CalEEMod2016.3.2 emission factors and are presented below.[14]

3.4.2 Construction Equipment Emissions

The emissions inventory for BUR 2023 BAU construction activity is presented in **Table 3-12**. This construction inventory assumes that the level of routine maintenance construction in 2023 was similar to that for 2017. In addition, it was assumed that the Terminal Replacement project would be under construction in 2023.

Table 3-12. BUR 2023 Construction Activity Emissions Inventory – BAU Scenario

	Pollutant Emissions, tons per year						Tonnes
Construction Source Category	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**
Replacement Airline Passenger Terminal Project	8.07	1.91	5.39	0.02	1.06	0.20	1,355
Miscellaneous Airport Maint.	1.46	0.25	2.37	<0.01	0.33	0.25	276
Total	***9.53***	***2.16***	***7.76***	***0.02***	***1.39***	***0.45***	***1,631***

Source: CDM Smith 2019

[13] Burbank-Glendale-Pasadena Airport Authority, 2016. California Emissions Estimator Model® (CalEEMod). Available at: http://www.caleemod.com/ (Accessed 4/19/2019).

[14] California Air Resources Board, 2016. Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR). State Clearinghouse No. 2015121095. June.

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Section 4

BUR 2023 AQIP Emission Reductions

4.1 Summary of 2023 AQIP Emissions Benefits (Reductions)

A summary of the BUR 2023 AQIP emissions benefits as compared to the 2023 Business-As-Usual emissions inventory is presented in **Table 4-1**. The remainder of this section provides a brief overview of the input parameters and assumptions used to develop these benefits.

Table 4-1. BUR 2023 AQIP Inventory as Compared to 2023 Business-As-Usual

Airport Emission Source	Pollutant Emissions, tons per year						CO_2 (MT/yr)
	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$	
GSE BAU Emissions	167.79	2.78	17.46	0.02	0.30	0.25	2,272
GSE AQIP Emissions[a]	167.79	2.68	16.81	0.02	0.30	0.25	2,272
GSE Benefits	**NA**	**0.10**	**0.65**	**NA**	**NA**	**NA**	**NA**
Traffic & Parking Benefits	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Additional AQIP Emission Reductions	**5.43**	**0.55**	**0.41**	**0.01**	**0.26**	**0.10**	**1,357**
Construction Benefits	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
TOTAL PROGRAM BENEFITS	**>= 5.43**	**>= 0.65**	**>= 1.06**	**>= 0.01**	**>= 0.26**	**>= 0.10**	**>= 1,357**

Source: CDM Smith 2019

a. Although emission estimates were calculated assuming an increase in electrification of GSE, operators would have the option of achieving airport-wide g/bhp-hr NOx+HC emission factor goals through other means, such as the implementation of ultra-low NOx or alternative fueled non-electric equipment.

4.2 BUR 2023 AQIP Ground Support Benefits

4.2.1 GSE Inventory, Activity, and Emissions Modeling

As noted in Section 2.2.1 above, GSE data collected under a joint effort from the airport, A4A, and other airport stakeholders was used to develop the GSE equipment counts and emissions for the 2017 Baseline inventory. The calculation methodology for GSE emissions under the AQIP policy mirrored the methodology of the 2023 BAU scenario. The same GSE equipment and relative fuel mix (see Table 2-2) was used as the starting point for developing the 2023 AQIP GSE emissions. A factor representing the effective percent of newly electrified equipment was calculated and was used to modify the fleet fuel mix as a means of determining AQIP benefits, as described below.

For the 2023 AQIP scenario, a practically achievable fleet-wide horsepower-weighted NOx +HC emission factor goal, in g/bhp-hr, was determined. Determination of this factor was based on historical precedent, current fleet makeup, current fleet-wide factor, and input pertaining to practical and economic feasibility from GSE stakeholders. The fleet-wide NOx+HC g/bhp-hr emission factor for the 2017 baseline inventory was calculated to be 2.00 g/bhp-hr NOx+HC. The fleet-wide emission factor goal for 2023 was determined to be 1.90 g/bhp-hr NOx+HC.

To determine the realistic fleet composition which would achieve the fleet-wide emission factor goal, the following procedure was followed. For each equipment type, the percent of that equipment which was electrified in the baseline was calculated and then normalized across all equipment types. For each equipment type, the count of electrified equipment was scaled up relative to the normalized baseline electrification value for that equipment type. This method of determining an effective future electrification of equipment allowed for equipment which was already heavily electrified under baseline conditions, such as baggage tractors, belt loaders, and carts, to be electrified more rapidly under the future conditions. Assumed effective electrification of equipment under the 2023 AQIP scenario, as compared to the 2017 Baseline, is presented in **Table 4-2**. Although emission estimates were calculated assuming an increase in electrification of GSE, operators would have the option of achieving airport-wide g/bhp-hr NOx+HC emission factor goals through other means, such as the implementation of ultra-low NOx or alternative fueled non-electric equipment.

Table 4-2. Assumed Effective Electrification of Equipment

GSE Cat	Total Count of Equipment	Baseline Count of Electrified Equipment	AQIP Effective Count of Electrified Equipment
Air Conditioner	5	2	2
Air Start	1	0	0
Aircraft Tug	23	8	9
Backhoe	1	0	0
Bag Tug	31	21	25
Belt Loader	43	30	35
Cargo Loader	10	0	0
Cargo Tractor	18	2	2
Fork Lift	14	2	2
Fuel Truck	14	0	0
Generator	6	1	1
Golf Cart	27	27	27
GPU	8	0	0
Lavatory Cart	6	3	4
Lavatory Truck	1	0	0
Lift	5	4	5
Other GSE	3	0	0
Passenger Stairs	11	7	8
Push Back	4	0	0
Service Truck	4	0	0
Skid Steer Loader	2	0	0
Sweeper	3	0	0

Source: CDM Smith 2019

4.2.2 GSE Emission Modeling Results

The emission calculation results for BUR 2023 GSE by equipment type are presented in **Table 4-3**. **Table 4-4** summarizes the emissions for GSE by fuel type.

Table 4-3. GSE Emissions by Equipment Type at BUR in 2023 – AQIP Scenario[a]

GSE Type	Equipment Count	Pollutant Emissions, tons per year						CO2
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	Tonnes/yr
Air Conditioner	5	0.41	0.01	0.31	<0.01	<0.01	<0.01	51.51
Air Start	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.01
Aircraft Tug	23	10.31	0.61	4.51	<0.01	0.01	0.01	292.71
Backhoe	1	0.11	<0.01	0.11	<0.01	<0.01	<0.01	13.91
Bag Tug	31	55.31	0.51	2.81	<0.01	0.01	0.01	551.51
Belt Loader	43	15.91	0.11	0.91	<0.01	0.01	0.01	199.71
Cargo Loader	10	2.51	0.11	0.61	<0.01	0.01	0.01	146.71
Cargo Tractor	18	64.81	0.81	3.01	<0.01	0.01	0.01	418.91
Fork Lift	14	3.71	0.01	0.21	<0.01	<0.01	<0.01	53.11
Fuel Truck	14	0.71	0.01	0.51	<0.01	0.01	0.01	71.81
Generator	6	0.31	0.01	0.31	<0.01	0.01	0.01	43.81
Golf Cart	27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
GPU	8	0.51	0.01	0.41	<0.01	<0.01	<0.01	72.91
Lavatory Cart	6	1.51	0.01	0.01	<0.01	<0.01	<0.01	2.41
Lavatory Truck	1	3.11	0.11	0.21	<0.01	<0.01	<0.01	49.81
Lift	5	0.11	0.01	0.11	<0.01	<0.01	<0.01	4.31
Other GSE	3	0.31	0.01	0.31	<0.01	0.01	0.01	36.21
Passenger Stairs	11	0.41	0.01	0.21	<0.01	<0.01	<0.01	12.11
Push Back	4	0.41	0.01	0.41	<0.01	0.01	0.01	54.21
Service Truck	4	7.01	0.21	1.61	<0.01	0.01	<0.01	132.81
Skid Steer Loader	2	0.11	0.01	0.21	<0.01	<0.01	<0.01	8.41
Sweeper	3	0.61	<0.01	0.21	<0.01	<0.01	<0.01	54.01
Total	**240**	**167.79**	**2.68**	**16.81**	**0.02**	**0.30**	**0.25**	**2,272**

Source: CDM Smith 2019

a. Although emission estimates were calculated assuming an increase in electrification of GSE, operators would have the option of achieving airport-wide g/bhp-hr NOx+HC emission factor goals through other means, such as the implementation of ultra-low NOx or alternative fueled non-electric equipment.

Table 4-4. GSE Emissions by Fuel Type at BUR in 2023 – AQIP Scenario[a]

Fuel Type	Equipment Count	Pollutant Emissions, tons per year						CO2
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	Tonnes/yr
Diesel	67	4.21	0.41	3.51	<0.01	0.21	0.21	625.21
Gasoline	53	160.01	2.31	12.81	0.01	0.11	0.11	1,527.21
LPG/Propane	13	3.61	<0.01	0.51	<0.01	<0.01	<0.01	119.21
Electric	107	--	--	--	--	--	--	--
TOTALS	**240**	**167.79**	**2.68**	**16.81**	**0.02**	**0.30**	**0.25**	**2,272**

Source: CDM Smith 2019

a. Although emission estimates were calculated assuming an increase in electrification of GSE, operators would have the option of achieving airport-wide g/bhp-hr NOx+HC emission factor goals through other means, such as the implementation of ultra-low NOx or alternative fueled non-electric equipment.

4.3 BUR 2023 AQIP Traffic and Parking Emission Reductions

As noted in Section 1.2, a number of programs and policies in the AQIP reduce traffic volume and vehicle emissions. The potential emission reductions for several key elements in the AQIP that address traffic emissions are analyzed in this subsection.

BUR's Airport-Owned Clean Fleet policy, Shuttle Connection Program, Employee Ride Share Policy, and Electric Bus Policy are expected to generate additional emission reductions from the use of cleaner vehicles and reduced vehicle miles traveled and idling time.

4.3.1 Airport-Owned Clean Fleet

The Airport-Owned Clean Fleet policy will require airport-owned fleet vehicles to meet or exceed CARB's LEV III or Optional Low-NOx standards. Vehicle data, vehicle description, engine model year, and vehicle use designations were used as a basis to develop vehicle emissions based on grams per mile factors corresponding to a vehicle's CARB EMFAC technology category.

Due to the small fleet-size and relatively infrequent replacement cycle of equipment, no fleet replacement was assumed to occur without the AQIP policy. For the purposes of calculating emissions, administrative vehicles were assigned daily VMT based on EMFAC default mileage. All other vehicles were assumed to travel an average of five (5) miles per day.

Emissions associated with BAU airport-owned fleet are subsumed within the regional traffic emissions estimated in Section 3.3. Emissions benefits were calculated as the difference between airport-owned fleet emissions without implementation of the clean fleet program versus with implementation of the program and are presented in **Table 4-5**.

4.3.2 Burbank-Metrolink Shuttle Connection Program

The Burbank-Metrolink Shuttle Connection Program would increase shuttle frequencies and promote awareness of shuttle services connecting the airport to Metrolink services. Under the AQIP, this program would result in a three (3) percent decrease in total annual airport passenger trips over the 2023 BAU scenario due to increased ridership. Benefits associated with this measure were calculated assuming aggregated grams per mile emission factors for the light-duty vehicle (LDA, LDT1, and LDT2) technology categories in the CARB EMFAC model and a weighted average trip distance of 20.2 miles. These benefits are presented in **Table 4-5**.

4.3.3 Employee Ride Share Policy

The Employee Ride Share Policy under the AQIP would incorporate all Burbank Airport employees into the Burbank Transportation Management Organization. This program provides benefits to employees which reduce dependency on single-occupancy vehicle travel and encourage the use of public transit, carpooling, and other alternative means of commuting to and from the airport. Implementation of this policy was estimated to reduce VMT associated with employee commuting by three (3) percent annually by 2023. Benefits associated with this measure were calculated assuming aggregated grams per mile emission factors for the light-duty vehicle (LDA, LDT1, and LDT2) technology categories in the CARB EMFAC model, 2,200 airport employees, and a weighted average trip distance of 20.2 miles. These benefits are presented in **Table 4-5**.

4.3.3 Electric Bus Policy

Under the AQIP, BUR would implement an electric bus policy requiring airport shuttles to be powered by electricity by 2031. This policy would result in no benefits in 2023.

Table 4-5. Traffic-Related Emission Reductions

	Pollutant Emissions, tpy						CO2e
	CO	VOC	NOx	SO2	PM10*	PM2.5*	MT/yr
Airport-Owned Clean Fleet	0.07	0.02	0.04	NA	0.01	<0.01	NA
Burbank-Metrolink Shuttle Connection Program	4.78	0.47	0.33	0.01	0.22	0.09	1,213
Employee Ride Share Policy	0.58	0.06	0.04	<0.01	0.03	0.01	144
Electric Bus Policy	NA	NA	NA	NA	NA	NA	NA
Reductions from 2023 BAU	**5.43**	**0.55**	**0.41**	**0.01**	**0.26**	**0.1**	**1,357**

Source; CDM Smith 2019.

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Section 5

BUR 2031 Business-As-Usual Emissions Inventory and Assumptions

5.1 Summary of 2031 Business-As-Usual Emissions Inventory

A summary of the BUR 2031 BAU emissions inventory is presented in **Table 5-1**.[15] The emissions by major source categories are shown graphically on **Figure 5-1**. The remaining sections of this report provide an overview of the input parameters and assumptions used to develop this inventory.

Table 5-1. BUR 2031 AQIP BAU Emissions Inventory

	Pollutant Emissions, tons per year						
Airport Emissions Source	**CO**	**VOC**	**NOx**	**SOx**	**PM-10**	**PM-2.5**	**CO_2 (MT/yr)**
Ground Support Equipment	189.99	2.77	16.72	0.02	0.19	0.15	2,528
GSE Total	***189.99***	***2.77***	***16.72***	***0.02***	***0.19***	***0.15***	***2,528***
Traffic and Parking							
Regional Traffic	125.96	11.61	7.02	0.39	8.02	3.30	36,159
On-Airport Roadways & Parking Lots	3.18	0.29	0.18	0.01	0.39	0.10	916
On-Airport Burbank Fleet Vehicles	1.08	0.06	0.44	<0.01	0.02	0.01	219
Paved Road Dust Total	--	--	--	--	16.04	4.01	--
Traffic and Parking Total	***130.22***	***11.96***	***7.64***	***0.40***	***24.47***	***7.42***	***37,294***
Construction Activities	1.46	0.25	2.37	<0.01	0.33	0.25	276
Construction Total	***1.46***	***0.25***	***2.37***	<0.01	***0.33***	***0.25***	***276***
GRAND TOTAL	***321.67***	***14.98***	***26.73***	***0.42***	***24.99***	***7.82***	***40,098***

Source: CDM Smith 2019.

[15] Emissions of criteria pollutants (carbon monoxide, CO; volatile organic compounds, VOC, oxides of nitrogen, NOx, sulfur oxides, SOx, respirable particulate matter, PM-10; and fine particulate matter, PM-2.5) and the major greenhouse gas pollutant carbon dioxide (CO_2) are presented in this report. Criteria pollutant emissions are presented in short tons per year, while CO_2 emissions are presented in metric tons (tonnes) per year.

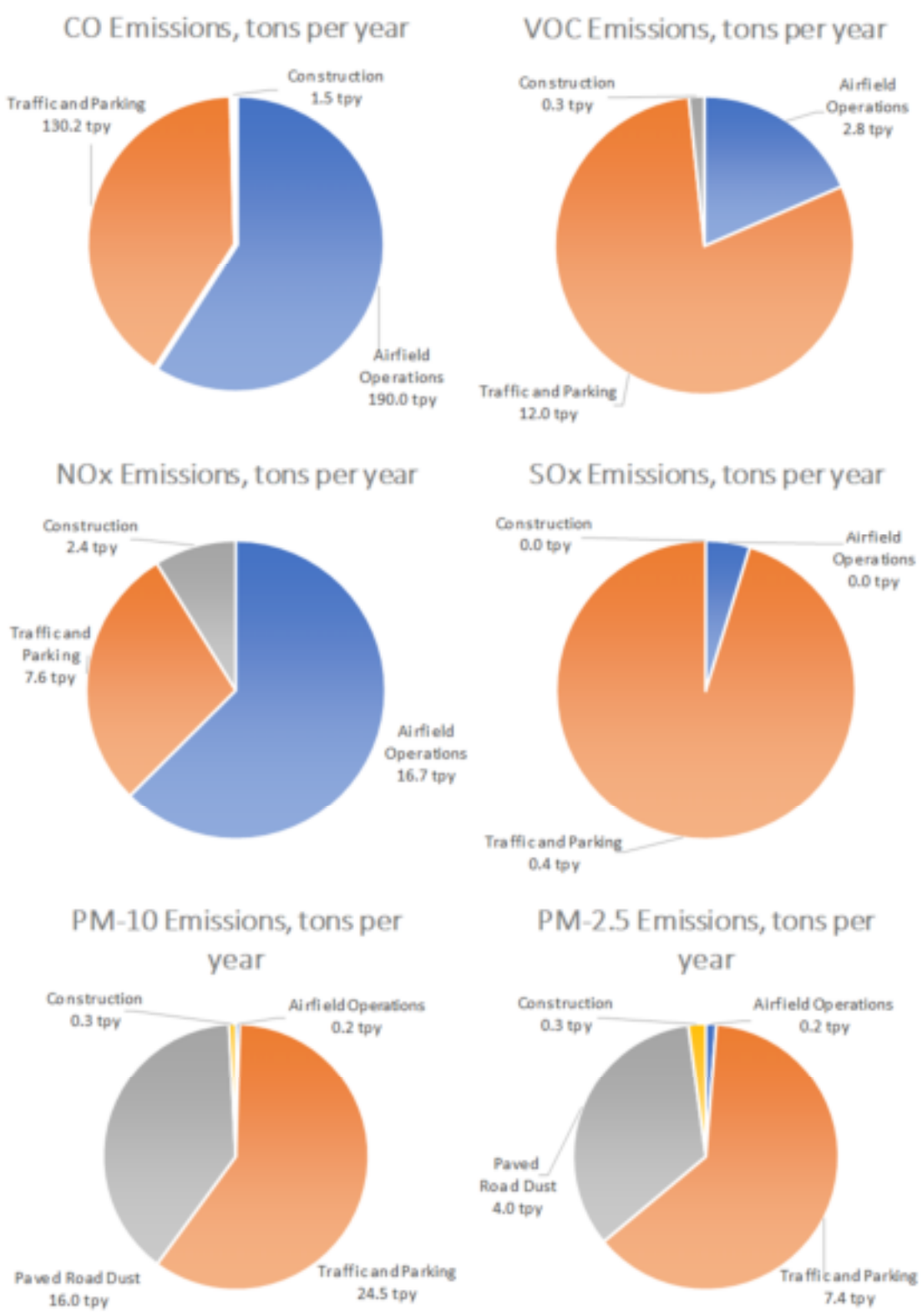

Figure 5-1. BUR 2031 Business-As-Usual Emissions by Major Source Category

5.2 BUR 2031 BAU Ground Support Equipment Emissions

5.2.1 GSE Inventory, Activity, and Emissions Modeling

As noted in Section 2.2.1 above, GSE data collected for this analysis was used to develop the GSE equipment counts and emissions for the 2017 Baseline inventory. The same GSE equipment and fuel mix (see Table 2-2) was used as the starting point for developing the 2023 BAU GSE emissions.

The California Air Resources Board (ARB) OFFROAD2017[16] model was used to obtain GSE emission factors, deterioration factors, load factors, and activity levels (hours/year/unit). These data were obtained from OFFROAD2017 by using the following model option: Los Angeles Sub Area of the South Coast Air Basin; 2031 Calendar Year; Adopted Rules – Exhaust Scenario; All Equipment Types; All Model Years; All Horsepower Bins; and All Fuel Types.

The 2017 BUR GSE fleet emissions documented in the 2017 BUR AQIP Emission Inventory report[17] was used as the starting point for developing 2031 BUR GSE emissions. To estimate the model year for each piece of GSE, the 2031 average fleet age was assumed to be the same as the BUR 2017 GSE fleet age used in the 2017 BUR AQIP Emission Inventory.[3] This was accomplished by increasing the model year for each GSE in the 2017 database by 14 years (i.e., 2031 minus 2017).

Growth in GSE activity level (hours/year/unit) was developed utilizing the default OFFROAD per-equipment activities for each year. The model includes built-in factors for each equipment type detailing the total hours of operation per year per piece of equipment. The model also includes built-in factors for total population (count) for each equipment type per year. A combination of default activity and population was accounted for when developing future equipment activities. Except for air start units, the model showed increasing or flat (no) growth across most equipment categories for each future scenario. This growth is used to account for growth expected at the airfield. GSE activity assumptions are listed in **Table 5-2**.

Table 3-2. OFFROAD GSE Activity per Unit of Equipment per Year

GSE Cat	2017 Activity (hrs/yr)	2031 Activity (hrs/yr)	Change Relative to 2017
Air Conditioner	1,272	1,678	24%
Air Start	80	85	6%
Aircraft Tug	320	385	17%
Backhoe	559	703	20%
Bag Tug	714	858	17%
Belt Loader	499	600	17%
Cargo Loader	459	552	17%
Cargo Tractor	651	782	17%
Fork Lift	368	443	17%
Fuel Truck	83	101	17%

[16] California Air Resources Board. 2017. OFFROAD2017 Web Database. Available at: https://www.arb.ca.gov/orion/ (accessed February 13, 2019); and California Air Resources Board. 2017. 2017 Off-Road Diesel Emission Factor Update for NOx and PM. Available a: https://www.arb.ca.gov/msei/ordiesel/ordas_ef_fcf_2017.pdf (accessed February 13, 2019).

[17] Burbank-Glendale-Pasadena-Airport Authority. 2019. Hollywood Burbank Airport (BUR) Air Quality Improvement Plan 2017 Emission Inventory - Draft. (June).

Table 3-2. OFFROAD GSE Activity per Unit of Equipment per Year

GSE Cat	2017 Activity (hrs/yr)	2031 Activity (hrs/yr)	Change Relative to 2017
Generator	900	1,089	17%
Golf (Utility) Cart	152	182	17%
GPU	798	965	17%
Lavatory Cart	151	182	17%
Lavatory Truck	1,158	1,401	17%
Lift	404	485	17%
Other GSE	464	558	17%
Passenger Stairs	47	56	17%
Push Back	320	385	17%
Service Truck	883	1,068	17%
Skid Steer Loader	325	409	20%
Sweeper	339	411	17%

Sources: California Air Resources Board 2017; CDM Smith 2019.

5.2.2 GSE Emissions Modeling Results

The emission calculation results for BUR 2031 GSE by equipment type are presented in **Table 5-3**. **Table 5-4** summarizes the emissions for GSE by fuel type.

Table 5-3. GSE Emissions by Equipment Type at BUR in 2031 – BAU Scenario

GSE Type	Equipment Count	Pollutant Emissions, tons per year						CO2 Tonnes/yr
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	
Air Conditioner	5	0.51	0.01	0.31	<0.01	<0.01	<0.01	60.11
Air Start	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.81
Aircraft Tug	23	15.31	0.81	5.51	<0.01	0.01	0.01	362.31
Backhoe	1	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	15.01
Bag Tug	31	61.21	0.61	3.11	<0.01	0.01	0.01	616.91
Belt Loader	43	17.41	0.21	1.01	<0.01	0.01	0.01	213.01
Cargo Loader	10	2.71	0.01	0.31	<0.01	<0.01	<0.01	162.31
Cargo Tractor	18	71.81	0.61	2.91	<0.01	0.01	0.01	463.51
Fork Lift	14	4.11	0.01	0.31	<0.01	<0.01	<0.01	58.81
Fuel Truck	14	0.71	0.01	0.21	<0.01	<0.01	<0.01	79.11
Generator	6	0.41	0.01	0.31	<0.01	0.01	<0.01	52.01
Golf Cart	27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
GPU	8	0.51	0.01	0.41	<0.01	<0.01	<0.01	79.71
Lavatory Cart	6	1.71	0.01	0.01	<0.01	<0.01	<0.01	2.71
Lavatory Truck	1	3.31	0.11	0.31	<0.01	<0.01	<0.01	54.11
Lift	5	0.11	0.01	0.11	<0.01	0.01	0.01	6.41
Other GSE	3	0.21	0.01	0.11	<0.01	<0.01	<0.01	40.11
Passenger Stairs	11	0.61	0.01	0.31	<0.01	<0.01	<0.01	14.31
Push Back	4	0.21	0.01	0.21	<0.01	<0.01	<0.01	33.91
Service Truck	4	8.51	0.31	1.21	<0.01	0.01	<0.01	144.91
Skid Steer Loader	2	0.11	0.01	0.11	<0.01	<0.01	<0.01	9.11
Sweeper	3	0.51	<0.01	0.11	<0.01	<0.01	<0.01	58.71

Total	***240***	***189.99***	***2.77***	***16.72***	***0.02***	***0.19***	***0.15***	***2,528***

Source: CDM Smith 2019

Table 5-4. GSE Emissions by Fuel Type at BUR in 2031 – BAU Scenario

Fuel Type	Equipment Count	Pollutant Emissions, tons per year						CO2
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	Tonnes/yr
Diesel	66	4.41	0.21	2.21	<0.01	0.11	0.11	697.31
Gasoline	53	181.61	2.51	13.91	0.01	0.11	0.11	1,699.61
LPG/Propane	13	4.01	<0.01	0.61	<0.01	<0.01	<0.01	130.91
Electric	108	--	--	--	--	--	--	--
TOTALS	***240***	***189.99***	***2.77***	***16.72***	***0.02***	***0.19***	***0.15***	***2,528***

Source: CDM Smith 2019

5.3 BUR 2031 BAU Traffic and Parking Emissions

5.3.1 Regional Airport-Related Trips and Miles Traveled

Ground vehicles trips, including passenger cars, taxis, limos, shuttles, buses, and cargo trucks, traveling to or from BUR were estimated for 2031. The basis for the trip estimates and vehicle miles traveled was the Bob Hope Airport Ground Access Study included in Appendix F.10 of the Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR).[18] The study provided trip volumes, ground access travel mode split, average vehicle occupancy factors, weighted average trip distances, and both employee and passenger daily trip generation values.

The types of vehicles traveling to and from each trip end-point were segregated into light duty public vehicles (LDA, LDT1, and LDT2 technology categories in the CARB EMFAC model); light duty commercial vehicles (LDA); and medium duty commercial vehicles (MDV). Data from the Terminal Area Forecast (TAF)[19] published by the FAA for 2031, alongside 2016, 2031, and 2025 daily trip and passenger data from the EIR for a Replacement Airline Passenger Terminal at BUR, were used to interpolate average daily person trips by vehicle type. The total number of trips for vehicles traveling to and from BUR in 2031 is presented in **Table 5-5**.

Table 5-5. Estimated Total Vehicle Trips to BUR in 2031

		Vehicle Trips to or from BUR		
Transit Mode		**One-Way Trips**	**Two-Way Trips**	**Total Daily Trips**
Drive Self	Self-park at Terminal	903	-	903
Drive Self	Self-park at Remote Lot	593	-	593
Drive Self	Valet Park	568	-	568
Get a Ride	Friend or Family	-	5,680	11,360
Subtotal Light Duty Public Vehicles (LDA + LDT1 + LDT2)		***2,064***	***5,680***	***13,424***
Drive Self	Rental Car	3,550		3,550

[18] Burbank-Glendale-Pasadena Airport Authority, 2016. Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR). State Clearinghouse No. 2015121095. June.

[19] Federal Aviation Administration. 2017. Terminal Area Forecast. Available at: https://taf.faa.gov/ (accessed February 28, 2019).

Table 5-5. Estimated Total Vehicle Trips to BUR in 2031

		Vehicle Trips to or from BUR		
Transit Mode		**One-Way Trips**	**Two-Way Trips**	**Total Daily Trips**
Get a Ride	Taxi	-	167	334
Get a Ride	TNC	-	2,003	4,006
Subtotal Light Duty Commercial Vehicles (LDA)		***3,550***	***2,170***	***7,890***
Get a Ride	Hotel Shuttle	-	227	454
Get a Ride	Airport Shuttle / Van	-	6	12
Subtotal Medium Duty Commercial Vehicles (MDV)		***-***	***233***	***466***

Source: CDM Smith 2019

The weighted average trip distance traveled for passengers traveling to and from the airport was also detailed in the Ground Access Study. The trip volumes were multiplied by this weighted average trip distance of 20.2 miles per trip for all transit modes except for shuttle trips, which were estimated at 5 miles per trip, as shown in **Table 5-6**. The resulting annual VMT for each transit mode is presented in **Table 5-7**.

Table 5-6. BUR 2031 Passenger Traffic Mode Split

Traffic Category	Mode Split	Average Trip Distance	EMFAC Vehicle Category
Self-park at Terminal	6%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Self-park at Remote Lot	4%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Valet Park	4%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Rental Car	25%	20.2 miles	LDA
Friend or Family	40%	20.2 miles	LDA/LDT1/LDT2 EMFAC Mix *
Taxi	1%	20.2 miles	LDA
TNC	14%	20.2 miles	LDA
Hotel Shuttle	4%	5.05 miles	MDV
Airport Shuttle / Van	0%	5.05 miles	MDV

Sources: BGPAA 2016; CDM Smith 2019.

Table 5-7. Regional Miles Traveled for All Trips to or from BUR in 2031

Transit Mode		Total Annual Vehicle Miles Traveled to or from BUR
Drive Self	Self-park at Terminal	6,657,819
Drive Self	Self-park at Remote Lot	4,372,189
Drive Self	Valet Park	4,187,864
Get a Ride	Friend or Family	83,757,280
Subtotal Light Duty Public Vehicles (LDA + LDT1 + LDT2)		***98,975,152***
Drive Self	Rental Car	26,174,150
Get a Ride	Taxi	2,462,582
Get a Ride	TNC	29,536,238
Subtotal Light Duty Commercial Vehicles (LDA)		***58,172,970***
Get a Ride	Hotel Shuttle	828,550
Get a Ride	Airport Shuttle / Van	21,900
Subtotal Medium Duty Commercial Vehicles (MDV)		***850,450***

Source: CDM Smith 2019

5.3.2 On-Airport Roadways and Parking Lots

Using the trip volumes in Table 6, distances traveled on airport roadways and in airport parking lots was estimated to be approximately 0.5 miles per one-way trip for all transit modes. This estimated distance was developed from reviewing airport roadways and parking lots in Google Earth Pro. The resulting total distance traveled is summarized in **Table 3-8**.

Table 3-8. On-Airport Miles Traveled for All Trips to or from BUR in 2031

Transit Mode		Total Annual Vehicle Miles Traveled On-Airport at BUR
Drive Self	Self-park at Terminal	164,798
Drive Self	Self-park at Remote Lot	108,223
Drive Self	Valet Park	103,660
Get a Ride	Friend or Family	2,073,200
Subtotal Light Duty Public Vehicles (LDA + LDT1 + LDT2)		***2,449,880***
Drive Self	Rental Car	647,875
Get a Ride	Taxi	60,955
Get a Ride	TNC	731,095
Subtotal Light Duty Commercial Vehicles (LDA)		***1,439,925***
Get a Ride	Hotel Shuttle	82,855
Get a Ride	Airport Shuttle / Van	2,190
Subtotal Medium Duty Commercial Vehicles (MDV)		***85,045***

Source: CDM Smith 2019

Note: A weighted average trip distance of 0.5 miles was utilized for all transit mode trips on-airport at BUR.

5.3.3 On-Airport Burbank Vehicle Fleet

In addition to on-airport public vehicle traffic, BGPAA operates a fleet of vehicles for maintenance, administrative, security, and other operational purposes. The actual 2017 airport fleet makeup was provided by BGPAA and used as a basis for generation of 2031 fleet emissions. For administrative vehicle activity, ARB EMFAC2017 default annual activity levels were assumed. For all other categories, a basis of 5 miles of on-airport travel per day was assumed. Vehicle types and emission factors were assigned based on EMFAC2017 gross vehicle weight ratings (GVWR) as defined by the California Air Resources Board (ARB)[20] and the vehicles age. The 2031 annual VMT for BGPAA operated vehicles are summarized in **Table 3-9**.

Table 3-9. 2031 On-Airport Fleet Vehicle Miles Traveled by Type

Vehicle Category	Count	Total Annual Vehicle Miles Traveled On-Airport at BUR
LDA	9	53,522
LDT1	3	5,475
LDT2	8	14,600
LHD1	7	12,775
LHD2	11	20,075
MDV	27	49,275
T6 utility	1	1,825
T7 utility	4	7,300
Total	***70***	***164,847***

Source: CDM Smith 2019.

Note: Emission factors for Burbank fleet vehicles were developed from the ARB EMFAC2017 model and vary depending on a vehicle's engine age, vehicle category, and other variables.

[20] California Air Resources Board (ARB). 2017. EMFAC2017 User's Guide, Appendix 4, Vehicle Categories. Available at: https://www.arb.ca.gov/msei/downloads/emfac2017_users_guide_final.pdf (accessed February 28, 2019).

5.3.4 BUR 2031 Traffic and Parking Emissions

Emission factors from the ARB EMFAC2017 model were used to estimate traffic and parking lot emissions. Emission factors were aggregated by speed and by model years were obtained for all technology categories. The light duty vehicle factors were developed from distance traveled (VMT)-weighted averages of the LDA, LDT1 and LDT2 vehicle types. Medium duty vehicle (MDV) factors were used for all shuttles entering the airport.

The emission factors were developed from EMFAC2017 emission inventories for the South Coast Air Basin portion of Los Angeles County for calendar year 2031. The total pollutant emission inventories (in tons per day) for each of the vehicle technology categories noted above (LDA, LDT1, LDT2, and MDV) were divided by the EMFAC VMT data for the corresponding vehicle technology category. The final 2031 emission factors, in grams per mile, for each pollutant are summarized in **Table 5-10**. In addition, re-entrained road dust was estimated the method described in Chapter 13.2.1 Paved Roads in U.S. EPA's Compilation of Air Pollutant Emission Factors (AP-42).

Table 5-10. 2031 Emission Factors from EMFAC2017

Vehicle Category	2031 Calendar Year Emission Factors, grams/mile						
	CO	VOC	NOx	SOx	PM10	PM2.5	CO2e
LDA[a]	0.675	0.058	0.036	0.002	0.046	0.019	218
LDAT[b]	0.750	0.071	0.043	0.002	0.046	0.019	234
MDV[c]	0.933	0.109	0.061	0.003	0.046	0.019	326
Paved Road Dust	--	--	--	--	0.090	0.022	--

Source: CDM Smith 2019.
a. LDA = Light Duty Autos. Emission factors developed from LDA total emissions (South Coast portion of Los Angeles County in 2031).
b. LDAT = Light Duty Autos and Trucks. Emission factors developed from LDA, LDT1, and LDT2 total emissions (South Coast portion of Los Angeles County in 2031).
c. MDV = Medium Duty vehicles. Emission factors developed from MDV total emissions (South Coast portion of Los Angeles County in 2031).

The BUR 2031 total traffic emission inventories are summarized in **Table 5-11**.

Table 5-11. Grand Total - BUR Traffic Emissions – 2031 BAU Scenario

Airport Destination	Pollutant Emissions, tpy						CO2e
	CO	VOC	NOx	SO2	PM10*	PM2.5*	MT/yr
Regional Emissions	125.96	11.61	7.02	0.39	8.02	3.30	36,159
On-Airport Traffic & Parking Emissions	3.18	0.29	0.18	0.01	0.39	0.10	916
On-Airport Burbank Vehicle Fleet Emissions	1.08	0.06	0.44	<0.01	0.02	0.01	219
Paved Road Dust	--	--	--	--	16.04	4.01	--
TOTAL Traffic-Related Emissions	***130.22***	***11.96***	***7.64***	***0.40***	***24.47***	***7.42***	***37,294***

Source: CDM Smith 2019.

5.4 BUR 2031 BAU Construction Emissions

5.4.1 Construction Emission Documents

The construction emissions inventory for BUR in 2031 is based on actual construction data provided by BUR staff for airport maintenance projects conducted during 2017. The Final Environmental Impact Report (EIR) for a Replacement Airline Passenger Terminal at Burbank Bob Hope Airport (BUR)[21] was also reviewed. No emissions associated with the Replacement Terminal project were assumed to occur during 2031.

5.4.2 Construction Equipment Emissions

The emissions inventory for BUR 2031 construction activity is presented in **Table 5-12**. The construction activity level in 2031 was assumed to be the same as the maintenance construction activity level reported for 2017.

Table 5-12. BUR 2031 Construction Activity Emissions Inventory – BAU Scenario

	Pollutant Emissions, tons per year						Tonnes
Construction Source Category	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**
Replacement Airline Passenger Terminal Project	--	--	--	--	--	--	--
Miscellaneous Airport Maint.	1.46	0.25	2.37	<0.01	0.33	0.25	276
Total	***1.46***	***0.25***	***2.37***	***<0.01***	***0.33***	***0.25***	***276***

Source: CDM Smith 2019

[21] Burbank-Glendale-Pasadena Airport Authority, 2016. California Emissions Estimator Model® (CalEEMod). Available at: http://www.caleemod.com/ (Accessed 4/19/2019).

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Section 6

BUR 2031 AQIP Emission Reductions

6.1 Summary of 2031 AQIP Emissions Benefits (Reductions)

A summary of the BUR 2031 AQIP emissions benefits as compared to the 2031 Business-As-Usual emissions inventory is presented in **Table 6-1**. The remainder of this section provides a brief overview of the input parameters and assumptions used to develop these benefits.

Table 6-1. BUR 2031 AQIP Inventory as Compared to 2031 Business-As-Usual

Airport Emission Source	Pollutant Emissions, tons per year						CO_2 (MT/yr)
	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$	
GSE BAU Emissions	189.99	2.77	16.72	0.02	0.19	0.15	2,528
GSE AQIP Emissions[a]	189.99	1.34	8.07	0.02	0.19	0.15	2,528
GSE Benefits	**NA**	**1.43**	**8.65**	**NA**	**NA**	**NA**	**NA**
Traffic & Parking Benefits	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Additional AQIP Emission Reductions	**6.01**	**0.59**	**0.35**	**0.01**	**0.37**	**0.15**	**1,761**
Construction Benefits	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
TOTAL PROGRAM BENEFITS	**>= 6.01**	**>= 2.02**	**>= 9.00**	**>= 0.01**	**>= 0.37**	**>= 0.15**	**>= 1,761**

Source: CDM Smith 2019

a. Although emission estimates were calculated assuming an increase in electrification of GSE, operators would have the option of achieving airport-wide g/bhp-hr NOx+HC emission factor goals through other means, such as the implementation of ultra-low NOx or alternative fueled non-electric equipment.

6.2 BUR 2031 AQIP Ground Support Benefits

6.2.1 GSE Inventory, Activity, and Emissions Modeling

As noted in Section 2.2.1 above, GSE data collected under a joint effort from the airport, A4A, and other airport stakeholders was used to develop the GSE equipment counts and emissions for the 2017 Baseline inventory. The calculation methodology for GSE emissions under the AQIP policy mirrored the methodology of the 2031 BAU scenario. The same GSE equipment and relative fuel mix (see Table 2-2) was used as the starting point for developing the 2031 AQIP GSE emissions. A factor representing the effective percent of newly electrified equipment was calculated and was used to modify the fleet fuel mix as a means of determining AQIP benefits, as described below.

For the 2031 AQIP scenario, a practically achievable fleet-wide horsepower-weighted NOx +HC emission factor goal, in g/bhp-hr, was determined. Determination of this factor was based on historical precedent, current fleet makeup, current fleet-wide factor, and input pertaining to practical and economic feasibility from GSE stakeholders. The fleet-wide NOx+HC g/bhp-hr emission factor for the 2017 baseline inventory was calculated to be 2.00 g/bhp-hr NOx+HC. The fleet-wide emission factor goal for 2031 was determined to be 0.82 g/bhp-hr NOx+HC.

To determine the realistic fleet composition which would achieve the fleet-wide emission factor goal, the following procedure was followed. For each equipment type, the percent of that equipment which was electrified in the baseline was calculated and then normalized across all equipment types. For each equipment type, the count of electrified equipment was scaled up relative to the normalized baseline electrification value for that equipment type. This method of determining an effective future electrification of equipment allowed for equipment which was already heavily electrified under baseline conditions, such as baggage tractors, belt loaders, and carts, to be electrified more rapidly under the future conditions. Assumed effective electrification of equipment under the 2031 AQIP scenario, as compared to the 2017 Baseline, is presented in **Table 6-2**. Although emission estimates were calculated assuming an increase in electrification of GSE, operators would have the option of achieving airport-wide g/bhp-hr NOx+HC emission factor goals through other means, such as the implementation of ultra-low NOx or alternative fueled non-electric equipment.

Table 6-2. Assumed Effective Electrification of Equipment

GSE Cat	Total Count of Equipment	Baseline Count of Electrified Equipment	AQIP Effective Count of Electrified Equipment
Air Conditioner	5	2	5
Air Start	1	0	0
Aircraft Tug	23	8	23
Backhoe	1	0	0
Bag Tug	31	21	31
Belt Loader	43	30	43
Cargo Loader	10	0	0
Cargo Tractor	18	2	12
Fork Lift	14	2	12
Fuel Truck	14	0	0
Generator	6	1	6
Golf Cart	27	27	27
GPU	8	0	0
Lavatory Cart	6	3	6
Lavatory Truck	1	0	0
Lift	5	4	5
Other GSE	3	0	0
Passenger Stairs	11	7	11
Push Back	4	0	0
Service Truck	4	0	0
Skid Steer Loader	2	0	0
Sweeper	3	0	0

Source: CDM Smith 2019

6.2.2 GSE Emission Modeling Results

The emission calculation results for BUR 2031 GSE by equipment type are presented in **Table 6-3**. **Table 6-4** summarizes the emissions for GSE by fuel type.

Table 6-3. GSE Emissions by Equipment Type at BUR in 2031 – AQIP Scenario[a]

GSE Type	Equipment Count	Pollutant Emissions, tons per year						CO2
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	Tonnes/yr
Air Conditioner	5	0.51	0.01	0.21	<0.01	<0.01	<0.01	60.11
Air Start	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.81
Aircraft Tug	23	15.31	0.41	2.61	<0.01	0.01	0.01	362.31
Backhoe	1	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	15.01
Bag Tug	31	61.21	0.31	1.51	<0.01	0.01	0.01	616.91
Belt Loader	43	17.41	0.11	0.51	<0.01	0.01	0.01	213.01
Cargo Loader	10	2.71	0.01	0.11	<0.01	<0.01	<0.01	162.31
Cargo Tractor	18	71.81	0.31	1.41	<0.01	0.01	0.01	463.51
Fork Lift	14	4.11	0.01	0.11	<0.01	<0.01	<0.01	58.81
Fuel Truck	14	0.71	0.01	0.11	<0.01	<0.01	<0.01	79.11
Generator	6	0.41	0.01	0.11	<0.01	0.01	<0.01	52.01
Golf Cart	27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
GPU	8	0.51	0.01	0.21	<0.01	<0.01	<0.01	79.71
Lavatory Cart	6	1.71	0.01	0.01	<0.01	<0.01	<0.01	2.71
Lavatory Truck	1	3.31	0.01	0.11	<0.01	<0.01	<0.01	54.11
Lift	5	0.11	<0.01	0.11	<0.01	0.01	0.01	6.41
Other GSE	3	0.21	<0.01	0.01	<0.01	<0.01	<0.01	40.11
Passenger Stairs	11	0.61	0.01	0.11	<0.01	<0.01	<0.01	14.31
Push Back	4	0.21	<0.01	0.11	<0.01	<0.01	<0.01	33.91
Service Truck	4	8.51	0.11	0.61	<0.01	0.01	<0.01	144.91
Skid Steer Loader	2	0.11	<0.01	0.11	<0.01	<0.01	<0.01	9.11
Sweeper	3	0.51	<0.01	0.11	<0.01	<0.01	<0.01	58.71
Total	**240**	**189.99**	**1.34**	**8.07**	**0.02**	**0.19**	**0.15**	**2,528**

Source: CDM Smith 2019

a. Although emission estimates were calculated assuming an increase in electrification of GSE, operators would have the option of achieving airport-wide g/bhp-hr NOx+HC emission factor goals through other means, such as the implementation of ultra-low NOx or alternative fueled non-electric equipment.

Table 6-4. GSE Emissions by Fuel Type at BUR in 2031 – AQIP Scenario[a]

Fuel Type	Equipment Count	Pollutant Emissions, tons per year						CO2
		CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$	Tonnes/yr
Diesel	67	4.41	0.11	1.11	<0.01	0.11	0.11	697.31
Gasoline	53	181.61	1.21	6.71	0.01	0.11	0.11	1,699.61
LPG/Propane	13	4.01	<0.01	0.31	<0.01	<0.01	<0.01	130.91
Electric	107	--	--	--	--	--	--	--
TOTALS	**240**	**189.99**	**1.34**	**8.07**	**0.02**	**0.19**	**0.15**	**2,528**

Source: CDM Smith 2019

a. Although emission estimates were calculated assuming an increase in electrification of GSE, operators would have the option of achieving airport-wide g/bhp-hr NOx+HC emission factor goals through other means, such as the implementation of ultra-low NOx or alternative fueled non-electric equipment.

6.3 BUR 2031 AQIP Traffic and Parking Emission Reductions

As noted in Section 1.2, a number of programs and policies in the AQIP reduce traffic volume and vehicle emissions. The potential emission reductions for several key elements in the AQIP that address traffic emissions are analyzed in this subsection.

BUR's Airport-Owned Clean Fleet policy, Shuttle Connection Program, Employee Ride Share Policy, and Electric Bus Policy are expected to generate additional emission reductions from the use of cleaner vehicles and reduced vehicle miles traveled and idling time.

6.3.1 Airport-Owned Clean Fleet

The Airport-Owned Clean Fleet policy will require airport-owned fleet vehicles to meet or exceed CARB's LEV III or Optional Low-NOx standards. This policy would result in no benefits in 2031.

6.3.2 Burbank-Metrolink Shuttle Connection Program

The Burbank-Metrolink Shuttle Connection Program would increase shuttle frequencies and promote awareness of shuttle services connecting the airport to Metrolink services. Under the AQIP, this program would result in a six (6) percent decrease in total annual airport passenger trips over the 2031 BAU scenario due to increased ridership. Benefits associated with this measure were calculated assuming aggregated grams per mile emission factors for the light-duty vehicle (LDA, LDT1, and LDT2) technology categories in the CARB EMFAC model and a weighted average trip distance of 20.2 miles. These benefits are presented in **Table 6-5**.

6.3.3 Employee Ride Share Policy

The Employee Ride Share Policy under the AQIP would incorporate all Burbank Airport employees into the Burbank Transportation Management Organization. This program provides benefits to employees which reduce dependency on single-occupancy vehicle travel and encourage the use of public transit, carpooling, and other alternative means of commuting to and from the airport. Implementation of this policy was estimated to reduce VMT associated with employee commuting by six (6) percent annually by 2031. Benefits associated with this measure were calculated assuming aggregated grams per mile emission factors for the light-duty vehicle (LDA, LDT1, and LDT2) technology categories in the CARB EMFAC model, 2,200 airport employees, and a weighted average trip distance of 20.2 miles. These benefits are presented in **Table 6-5**.

6.3.3 Electric Bus Policy

Under the AQIP, BUR would implement an electric bus policy requiring airport shuttles to be powered by electricity by 2031. This program would reduce passenger vehicle trips on and around the airport. Vehicle specific information for the bus fleet was provided by bus operators including vehicle counts, and average daily miles traveled which served as the basis for calculating the benefits associated with this policy. Benefits associated with this measure were calculated using grams per mile emission factors for the medium-duty vehicle (MDV) technology category in the CARB EMFAC model and provided operations data. These benefits are presented in **Table 6-5**.

Table 6-5. Traffic-Related Emission Reductions

	Pollutant Emissions, tpy						CO2e
	CO	VOC	NOx	SO2	PM10*	PM2.5*	MT/yr
Airport-Owned Clean Fleet	NA	NA	NA	NA	NA	NA	NA
Burbank-Metrolink Shuttle Connection Program	3.85	0.35	0.21	0.01	0.25	0.10	1,103
Employee Ride Share Policy	0.82	0.08	0.05	<0.01	0.05	0.02	233
Electric Bus Policy	1.34	0.16	0.09	<0.01	0.07	0.03	425
Reductions from 2031 BAU	**6.01**	**0.59**	**0.35**	**0.01**	**0.37**	**0.15**	**1,761**

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