UNITED

September 5, 2024

South Coast Air Quality Management District
WAIRE Program
21865 Copley Drive
Diamond Bar, CA 91765

Subject: Updated Custom WAIRE Plan for United Airlines, Inc.

Dear Sir or Madam:

Attached please find the custom Warehouse Actions and Investments to Reduce Emissions (WAIRE) Plan for the United Airlines cargo warehouse located at the Los Angeles International Airport (LAX) addressed at 5932 W Century Blvd, Los Angeles, CA 90045. This is an update to the Plan (CWP-01-2024) originally submitted April 30, 2024 in response to the additional information request received September 4, 2024 via email.

Please feel free to contact me at [redacted] if you have any questions or if you need any additional information regarding this submission.

Sincerely,

Alyson Dagly
Manger, California Air Compliance
United Airlines, Inc.

Introduction

United Airlines Inc. (UAL) hereby submits this custom Warehouse Actions and Investments to Reduce Emissions (WAIRE) Plan for the United LAX Cargo Warehouse (FID 199314) located at 5932 W Century Blvd, Los Angeles, CA 90045. This Custom WAIRE Plan follows the requirements set forth in the South Coast Air Quality Management District (SCAQMD) Rule 2305(d)(4)(A) as outlined in this Plan. Specifically, this Plan will outline the following:

1. Description of proposed actions
2. Quantification of emissions and WAIRE points for proposed actions
3. Verification Methodology for Proposed Actions
4. Schedule of Key Milestones
5. Location of Proposed Actions
6. Expected Permits and Approvals Required

Section 1: Description of Proposed Actions

UAL's LAX Cargo Warehouse is directly adjacent to the United Airlines Maintenance Center (FID 9755), which has a street address of 6010-6020 Avion Drive. Both buildings are part of UAL's operations at LAX. UAL is considering the warehouse facility (FID 199314) as part of facility 9755. UAL operates off-road tow tractors to move cargo containers between the facility warehouse, aircraft, and other warehouses and businesses located adjacent to LAX. The home base of the tow tractors is the United LAX Cargo Warehouse (refer to Appendix F for pictures demonstrating these tow tractors are domiciled at this location). The tow tractors are used exclusively to support goods movements to and from UAL's Cargo Warehouse. They operate exclusively within three miles of the warehouse building. UAL currently operates three electric tow tractors in lieu of operating diesel tow tractors. The tow tractors are housed within the warehouse at night at the dedicated chargers. These electric tow tractors were purchased as part of UAL's ongoing efforts to reduce emissions. Additionally, these electric tow tractors were not required to be purchased under any EPA, CARB, or South Coast AQMD regulations. These electric tow tractors are not being used to comply with any CARB regulation (e.g. these are not included in the off-road diesel fleet per 13 CCR §2449). See the CARB Off-road Diesel (ORD) Compliance verification and the full list of UAL's cargo tractors and baggage tugs in Appendix E to verify that these tow tractors are not required for ORD compliance.

Additional electric tow tractors may be added to UAL's LAX fleet at a future date to support warehouse operations as needed. However, this custom WAIRE plan (CWP-01-2024) only applies to the three existing electric tow tractors mentioned in this plan (i.e. serial #'s T137-12651, T137-12642, and T137-12666) which are currently in service.

Each tow tractor is equipped with an hour meter to monitor hours of operation. These tow tractors operate outdoors, and a route map indicating the typical path of the units is included in Appendix A. These tow tractors operate between the facility cargo building, terminals, other airline cargo buildings, and the USPS mail facility.

UAL currently operates three (3) electric tow tractors which are all Charlatte Model T137-V3 (refer to Appendix C for equipment specification sheets). The equipment ID and serial numbers of these tow tractors are shown in Table 2. This model is a self-propelled battery powered electric support vehicle designed to tow a variety of material handling carts and dollies. Power for the main drive is supplied by

an 80 Volt, 40 hp high efficiency AC motor which is coupled directly to the rear axle. Its drawbar capacity is 4000 lbs. These tow tractors are designed for off-road use as shown in their equipment specification sheet in Appendix C. Specifically, these tow tractors cannot be licensed for on-road use as their max speed is 18 mph, and the safety features are not adequate for on-road use.

These electric tow tractors are currently charged with dedicated chargers located within the south-east corner of United's LAX warehouse (refer to Appendix F for pictures proving that these chargers are at this location). UAL is installing three (3) dedicated electric Adveez meters to track the kw-hours the chargers dispense (CHGCC757B, CHGCC730, and CHGCC757A). Table 1 below shows the rated output and model number for each charger. Additional specifications are provided in Appendix C.

Table 1: Electric Charger Model and Rated Outputs

Charger ID	Model Number	Rated Output (kW)
CHGCC757B	MVS400	40
CHGCC730	DVS300	30
CHGCC757A	DVS400	40

These chargers and meters are not required to be purchased under any CARB, South Coast AQMD, or other environmental regulation.

UAL proposes to earn WAIRE points based on the hours of operation of the electric tow tractors and the electricity dispensed by the chargers.

Section 2: Quantification of Emissions and WAIRE Points for Proposed Actions – 15 Year Equipment Life

Electric Tow Tractors

Emission reductions from the operation of UAL's tow tractors will be quantified using the same methodology used to calculate emission reductions from the usage of yard trucks in the WAIRE Implementation Guidelines. The emissions for a diesel fuel yard truck follows equation 7 from the WAIRE Implementation Guidelines (shown below).

$$Emissions = hp * LF * ([Total\ Hours\ of\ Use * DR] + EF) * Annual\ Hours \div 453.59\ \frac{g}{lb}$$

UAL's baseline tow tractor from which emissions are calculated is a 53 HP, tier 4 final diesel engine. This baseline vehicle was determined based on United's current fleet of Tier 4 diesel cargo tractors within the Off-Road Diesel (ORD) fleet as reported per 13 CCR 2449 requirements. The average horsepower of all Tier 4 diesel cargo tractors (from which tow tractors are categorized) was taken across UAL's statewide fleet. Also, a tier 4 final diesel engine was assumed since according to 13 CCR 2449, new additions to the ORD fleet must be at least a tier 4 final engine as of January 1, 2024. United's most recent statewide fleet of Tier 4 diesel cargo tractors as reported within the ORD fleet is shown in Appendix B. The emission factors for a 50-75 hp tier 4 final engine are given in Table D-9 of the *Carl Moyer Program Guidelines*[1] and are listed below:

$$NOx\ EF = 2.74 \frac{g}{bhp * hr}$$

$$DPM\ EF = 0.009 \frac{g}{bhp * hr}$$

The average annual usage of these tow tractors is estimated based on the most recent usage data on in-use electric tow tractors as shown in Table 2 below:

Table 2: Electric Tow Tractor Usage from 10/10/2023 through 4/10/2024

Tow Tractor Equipment ID	Equipment Serial Number	Starting Reading (10/10/2023)**	End Reading (4/10/2024)**	6-Month Total	Annual Total
CT2376	T137-12651	10463	11414	951	1902
CT2384	T137-12642	10552	12258	1706	3412
CT2341	T137-12666	9304	10647	1343	2686
ROUNDED AVERAGE per tow tractor				1300	2600

** Refer to Appendix D for existing meter reading records. Upon plan approval, UAL will start a new process of taking hour meter readings involving photos of meters, and recording monthly usage from those. Any previous usage prior to this plan approval will not be used to earn WAIRE points as described in Section 4.

Averaging this data and converting to an annual average shows approximately 2600 hours per year are used per tow tractor. The lifespan of the tow tractors is conservatively assumed to be 15 years. This is a conservative assumption that under-estimates the lifespan of UAL's tow tractors in California. Appendix I shows UAL's DOORS fleet of diesel-powered cargo tractors. The fleet consists of cargo tractors that have

[1] https://ww2.arb.ca.gov/sites/default/files/classic/msprog/moyer/guidelines/2017/2017_cmpgl.pdf

model years between 1983 (41 years old) and 2013 (11 years old). The average model year of the tow tractors in the fleet is 2002, or 22 years old. In addition, Airlines for America (A4A) wrote a letter to the Los Angeles World Airports (LAWA) stating that "[ground support equipment] GSE typically has a useful life span ranging up to 30 years depending on the equipment type, maintenance routine, and workload. Ten years is a very short lifespan for GSE." (See Appendix H). Based on UAL's actual fleet data and A4A's letter, an average lifespan of a tow tractor is at least 20-30 years. Nevertheless, UAL is proposing to use a 15-year life for emission reduction calculations as an extremely conservative assumption to ensure emission reductions due to these proposed measures are not over-estimated.

The load factor for the tow tractors is 36 percent[2].

The deterioration rates (DR) are also taken from Table D-9 taken from the *Carl Moyer Program Guidelines*; NOx DR=0.000036 g/hp-hr-hr and DPM DR= 0.0000009 g/hp-hr-hr.

Using these emission factors, UAL calculates the following emission reductions:

$$NOx\ Emissions = 53hp * 0.36 * ([15 * 2600 * 0.000036] + 2.74) * 2600 \div 453.59\ \frac{g}{lb}$$

$$NOx\ Emissions = 453\ lbs$$

$$DPM\ Emissions = 53hp * 0.36 * ([15 * 2600 * 0.0000009] + 0.009) * 2600 \div 453.59\ \frac{g}{lb}$$

$$DPM\ Emissions = 4.8\ lbs$$

The WAIRE points calculation follows the procedure in Section 1 of the WAIRE Implementation Guidelines. WAIRE points are calculated using a point binning system. Points are earned for each $25,000 incremental cost, 25-pound NOx regional emission reduction, and 0.25-pound DPM local emission reduction. UAL is not proposing to quantify any incremental costs associated with the use of the tow tractors. WAIRE points for 2,600 hours of operation are:

0 points (cost) + 19 points (NOx) + 20 points (DPM) = 39 points per 2,600 hours of operation

Electric Chargers

Emission reductions from the operation of UAL's tow tractors will be quantified from the amount of electricity used from the dedicated chargers following the same methodology used in the *WAIRE Implementation Guidelines*[3], Appendix B, Section 3a. Within that section, equation 4 will be used to determine NOx reductions and equation 5 for DPM reductions as shown below.

The tow tractor has a motor rating of 30 kW (See Appendix C). Assuming an engine load of 0.36 (*Carl Moyer Program Guidelines,* Table D-7) and an annual hours of operation of 2,600 hours/year, the Annualized Unitary Metric (AUM) is 28,080 kWh/yr.

$$30\ kW\ \times 0.36\ \times 2{,}600\ \frac{hr}{yr} = 28{,}080\ \frac{kWh}{yr}$$

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[2] This is the load factor specified for airport cargo tractors by CARB's *Off-Road Diesel Models and Documentation*: https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

[3] https://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/waire-implementation-guidelines.pdf?sfvrsn=12

As additional justification for this calculated AUM, the tow tractor battery is rated at 500-625 AH at 80 Volts, which is equal to 500 Ah x 80 V = 40,000 Wh = 40 kWh. So, 28,080 kWh/year represents 702 full charging cycles per year, or approximately 1.9 per day. This is consistent with UAL's operating cycle, which includes operating the tow tractors for 3 shifts per day, with the tow tractors operating for 6-8 hours between charges.

$$NOx\ Reductions = \left(\frac{mile}{kWh}\right) * \left(\frac{g}{mile}\right) * 28{,}080\frac{kWh}{yr} \div 453.59(\frac{g}{lb})$$

$$DPM\ Reductions = \left(\frac{mile}{kWh}\right) * \left(\frac{g}{mile}\right) * 28{,}080\frac{kWh}{yr} \div 453.59(\frac{g}{lb})$$

LAX establishes speed limits of 10 to 20 miles per hour on roadways and service roads[4]. An average speed for the cargo tractors will be assumed to be 5 miles per hour, which results in an estimated total miles per year of operation of 13,000 miles.

Another method of estimating total miles per year is based on typical trips per day. Cargo operations staff conservatively estimate the following typical daily trips:

Table 3: Tow Tractor Mileage Estimate

Destination	**Round-Trip Distance (miles)**	**Combined Number of Daily Trips**	**Combined Total Distance**	**Average Number of Daily Trips per Tractor**	**Total Distance per Tractor**
Tom Bradley	3.4	2	6.8	0.66	2.3
Terminals 7 and 8	2.4	30	72	10	24
Mercury World Cargo Building	1.8	3	5.4	1	1.8
Lufthansa/Aerounion	2.2	6	13.2	2	4.4
USPS Mail	1.4	4	5.6	1.33	1.9
		Total Miles/Day	103		34.3
		Total Miles/Year	37,595		12,532

The combined total distance is for all three tow tractors; however, UAL will use the total distance per tractor for the calculations. UAL will use the lower value of 12,532 and round down by ten percent to use a conservative value of 11,278 miles/year. The estimated efficiency is 11,278 miles/year ÷ 28,080 kWh/year = 0.402 miles/kWh.

The same emission factors and deterioration rates are used as were used for the reductions due to tow tractor hours of operation[5]. A unit conversion from g/hp-hr to g/mile is as follows:

[4] https://www.lawa.org/-/media/lawa-web/lawa-rules-and-reg/lax-rules/section-11---airside-motor-vehicles-operations.ashx#:~:text=20%20mph%20on%20all%20vehicle%20roadways%20unless%20otherwise,all%20ramp%2Fapron%20areas%20inside%20the%20aircraft%20limit%20line.

[5] *The Carl Moyer Guidelines,* Table D-9 https://ww2.arb.ca.gov/sites/default/files/classic/msprog/moyer/guidelines/2017/2017_cmpgl.pdf

$$NOx\ g/hr\ = 53hp * 0.36 * \left(\left[15\ years * 2600\ \frac{hr}{year} * 0.000036 \frac{g}{hp - hr - hr}\right] + 2.74 \frac{g}{hp - hr}\right)$$

$$NOx \frac{g}{hr} = 79.07 \frac{g}{hr}$$

$$NOx\ g/mile\ = 79.07 \frac{g}{hr} * 2600\ \frac{hr}{year} \div 11{,}278\ \frac{miles}{year}$$

$$NOx\ = 18.2\ g/mile$$

$$DPM\ g/hr\ = 53hp * 0.36 * ([15 * 2600 * 0.0000009] + 0.009) \frac{g}{hp - hr}$$

$$DPM \frac{g}{hr} = 0.841 \frac{g}{hr}$$

$$DPM\ g/mile\ = 0.841 \frac{g}{hr} * 2600\ \frac{hr}{year} \div 11{,}278\ \frac{miles}{year}$$

$$DPM\ Emissions = 0.194\ g/mile$$

Given these values, UAL calculated the values below to determine point values based on emission reductions:

$$NOx\ Reductions = \left(0.402\ \frac{mile}{kWh}\right) * \left(18.2\ \frac{g}{mile}\right) * 28{,}080 \frac{kWh}{yr} \div 453.59(\frac{g}{lb})$$

$$\boldsymbol{NOx\ Reductions = 453.2 \frac{lb}{yr}\ with\ AUM\ of\ 28{,}080\ kWh}$$

$$DPM\ Reductions = \left(0.402 \frac{mile}{kWh}\right) * \left(0.194\ \frac{g}{mile}\right) * 28{,}080 \frac{kWh}{yr} \div 453.59(\frac{g}{lb})$$

$$\boldsymbol{DPM\ Reductions = 4.8 \frac{lb}{yr}\ with\ AUM\ of\ 28{,}080\ kWh}$$

UAL proposes to earn WAIRE points using the calculation in Section 1 of the WAIRE Implementation Guidelines. WAIRE points are calculated using a point binning system. Points are earned for each $25,000 incremental cost, 25-pound NOx regional emission reduction, and 0.25-pound DPM local emission reduction. UAL is not proposing to quantify any incremental costs associated with the use of the chargers. Points for every 28,080 kWh dispensed are:

0 points (cost) + 19 points (NOx) + 20 points (DPM) = 39 points per 28,080 kWh dispensed

Section 2: Quantification of Emissions and WAIRE Points for Proposed Actions – 10 Year Equipment Life

Electric Tow Tractors

Emission reductions from the operation of UAL's tow tractors will be quantified using the same methodology used to calculate emission reductions from the usage of yard trucks in the WAIRE Implementation Guidelines. The emissions for a diesel fuel yard truck follows equation 7 from the WAIRE Implementation Guidelines (shown below).

$$Emissions = hp * LF * ([Total\ Hours\ of\ Use * DR] + EF) * Annual\ Hours \div 453.59\ \frac{g}{lb}$$

UAL's baseline tow tractor from which emissions are calculated is a 53 HP, tier 4 final diesel engine. This baseline vehicle was determined based on United's current fleet of Tier 4 diesel cargo tractors within the Off-Road Diesel (ORD) fleet as reported per 13 CCR 2449 requirements. The average horsepower of all Tier 4 diesel cargo tractors (from which tow tractors are categorized) was taken across UAL's statewide fleet. Also, a tier 4 final diesel engine was assumed since according to 13 CCR 2449, new additions to the ORD fleet must be at least a tier 4 final engine as of January 1, 2024. United's most recent statewide fleet of Tier 4 diesel cargo tractors as reported within the ORD fleet is shown in Appendix B. The emission factors for a 50-75 hp tier 4 final engine are given in Table D-9 of the *Carl Moyer Program Guidelines*[6] and are listed below:

$$NOx\ EF = 2.74 \frac{g}{bhp * hr}$$

$$DPM\ EF = 0.009 \frac{g}{bhp * hr}$$

The average annual usage of these tow tractors is estimated based on the most recent usage data on in-use electric tow tractors as shown in Table 4 below:

Table 4: Electric Tow Tractor Usage from 10/10/2023 through 4/10/2024

Tow Tractor Equipment ID	Equipment Serial Number	Starting Reading (10/10/2023)**	End Reading (4/10/2024)**	6-Month Total	Annual Total
CT2376	T137-12651	10463	11414	951	1902
CT2384	T137-12642	10552	12258	1706	3412
CT2341	T137-12666	9304	10647	1343	2686
ROUNDED AVERAGE per tow tractor				1300	2600

** Refer to Appendix D for existing meter reading records. Upon plan approval, UAL will start a new process of taking hour meter readings involving photos of meters, and recording monthly usage from those. Any previous usage prior to this plan approval will not be used to earn WAIRE points as described in Section 4.

Averaging this data and converting to an annual average shows approximately 2600 hours per year are used per tow tractor. AQMD will assume the lifespan of the tow tractors is 10 years. This is a conservative assumption that under-estimates the lifespan of UAL's tow tractors in California. Appendix I shows UAL's DOORS fleet of diesel-powered cargo tractors. The fleet consists of cargo tractors that have

[6] https://ww2.arb.ca.gov/sites/default/files/classic/msprog/moyer/guidelines/2017/2017_cmpgl.pdf

model years between 1983 (41 years old) and 2013 (11 years old). The average model year of the tow tractors in the fleet is 2002, or 22 years old. In addition, Airlines for America (A4A) wrote a letter to the Los Angeles World Airports (LAWA) stating that "[ground support equipment] GSE typically has a useful life span ranging up to 30 years depending on the equipment type, maintenance routine, and workload. Ten years is a very short lifespan for GSE." (See Appendix H). Based on UAL's actual fleet data and A4A's letter, an average lifespan of a tow tractor is at least 20-30 years. Nevertheless, AQMD is proposing to use a 10-year life for emission reduction calculations. This under-estimates the emission reductions due to the use of electric tow tractors.

The load factor for the tow tractors is 36 percent[7].

The deterioration rates (DR) are also taken from Table D-9 taken from the *Carl Moyer Program Guidelines*; NOx DR=0.000036 g/hp-hr-hr and DPM DR= 0.0000009 g/hp-hr-hr.

Using these emission factors, UAL calculates the following emission reductions:

$$NOx\ Emissions = 53hp * 0.36 * ([10 * 2600 * 0.000036] + 2.74) * 2600 \div 453.59\ \frac{g}{lb}$$

$$NOx\ Emissions = 402\ lbs$$

$$DPM\ Emissions = 53hp * 0.36 * ([10 * 2600 * 0.0000009] + 0.009) * 2600 \div 453.59\ \frac{g}{lb}$$

$$DPM\ Emissions = 3.5\ lbs$$

The WAIRE points calculation follows the procedure in Section 1 of the WAIRE Implementation Guidelines. WAIRE points are calculated using a point binning system. Points are earned for each $25,000 incremental cost, 25-pound NOx regional emission reduction, and 0.25-pound DPM local emission reduction. UAL is not proposing to quantify any incremental costs associated with the use of the tow tractors. WAIRE points for 2,600 hours of operation are:

0 points (cost) + 17 points (NOx) + 14 points (DPM) = 31 points per 2,600 hours of operation

Electric Chargers

Emission reductions from the operation of UAL's tow tractors will be quantified from the amount of electricity used from the dedicated chargers following the same methodology used in the *WAIRE Implementation Guidelines*[8], Appendix B, Section 3a. Within that section, equation 4 will be used to determine NOx reductions and equation 5 for DPM reductions as shown below.

The tow tractor has a motor rating of 30 kW (See Appendix C). Assuming an engine load of 0.36 (*Carl Moyer Program Guidelines,* Table D-7) and an annual hours of operation of 2,600 hours/year, the Annualized Unitary Metric (AUM) is 28,080 kWh/yr.

$$30\ kW\ \times 0.36\ \times 2{,}600\ \frac{hr}{yr} = 28{,}080\ \frac{kWh}{yr}$$

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[7] This is the load factor specified for airport cargo tractors by CARB's *Off-Road Diesel Models and Documentation*: https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

[8] https://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/waire-implementation-guidelines.pdf?sfvrsn=12

As additional justification for this calculated AUM, the tow tractor battery is rated at 500-625 AH at 80 Volts, which is equal to 500 Ah x 80 V = 40,000 Wh = 40 kWh. So, 28,080 kWh/year represents 702 full charging cycles per year, or approximately 1.9 per day. This is consistent with UAL's operating cycle, which includes operating the tow tractors for 3 shifts per day, with the tow tractors operating for 6-8 hours between charges.

$$NOx\ Reductions = \left(\frac{mile}{kWh}\right) * \left(\frac{g}{mile}\right) * 28{,}080 \frac{kWh}{yr} \div 453.59(\frac{g}{lb})$$

$$DPM\ Reductions = \left(\frac{mile}{kWh}\right) * \left(\frac{g}{mile}\right) * 28{,}080 \frac{kWh}{yr} \div 453.59(\frac{g}{lb})$$

LAX establishes speed limits of 10 to 20 miles per hour on roadways and service roads[9]. An average speed for the cargo tractors will be assumed to be 5 miles per hour, which results in an estimated total miles per year of operation of 13,000 miles.

Another method of estimating total miles per year is based on typical trips per day. Cargo operations staff conservatively estimate the following typical daily trips:

Table 5: Tow Tractor Mileage Estimate

Destination	**Round-Trip Distance (miles)**	**Number of Daily Trips**	**Total Distance**	**Average Number of Daily Trips per Tractor**	**Total Distance per Tractor**
Tom Bradley	3.4	2	6.8	0.66	2.3
Terminals 7 and 8	2.4	30	72	10	24
Mercury World Cargo Building	1.8	3	5.4	1	1.8
Lufthansa/Aerounion	2.2	6	13.2	2	4.4
USPS Mail	1.4	4	5.6	1.33	1.9
		Total Miles/Day	103		34.3
		Total Miles/Year	37,595		12,532

The combined total distance is for all three tow tractors; however, UAL will use the total distance per tractor for the calculations. UAL will use the lower value of 12,532 and round down by ten percent to use a conservative value of 11,278 miles/year. The estimated efficiency is 11,278 miles/year ÷ 28,080 kWh/year = 0.402 miles/kWh.

[9] https://www.lawa.org/-/media/lawa-web/lawa-rules-and-reg/lax-rules/section-11---airside-motor-vehicles-operations.ashx#:~:text=20%20mph%20on%20all%20vehicle%20roadways%20unless%20otherwise,all%20ramp%2Fapron%20areas%20inside%20the%20aircraft%20limit%20line.

The same emission factors and deterioration rates are used as were used for the reductions due to tow tractor hours of operation[10]. A unit conversion from g/hp-hr to g/mile is as follows:

$$NOx\ g/hr\ = 53hp * 0.36 * \left(\left[10\ years * 2600\ \frac{hr}{year} * 0.000036 \frac{g}{hp-hr-hr}\right] + 2.74 \frac{g}{hp-hr}\right)$$

$$NOx \frac{g}{hr} = 70.1 \frac{g}{hr}$$

$$NOx\ g/mile\ = 70.1 \frac{g}{hr} * 2600\ \frac{hr}{year} \div 11{,}278\ \frac{miles}{year}$$

$$NOx\ = 16.2\ g/mile$$

$$DPM\ g/hr\ = 53hp * 0.36 * ([10 * 2600 * 0.0000009] + 0.009) \frac{g}{hp-hr}$$

$$DPM \frac{g}{hr} = 0.618 \frac{g}{hr}$$

$$DPM\ g/mile\ = 0.618 \frac{g}{hr} * 2600\ \frac{hr}{year} \div 11{,}278\ \frac{miles}{year}$$

$$DPM\ Emissions = 0.143\ g/mile$$

Given these values, UAL calculated the values below to determine point values based on emission reductions:

$$NOx\ Reductions = \left(0.402\ \frac{mile}{kWh}\right) * \left(16.2\ \frac{g}{mile}\right) * 28{,}080 \frac{kWh}{yr} \div 453.59(\frac{g}{lb})$$

$$\boldsymbol{NOx\ Reductions = 402 \frac{lb}{yr}\ with\ AUM\ of\ 28{,}080\ kWh}$$

$$DPM\ Reductions = \left(0.402\ \frac{mile}{kWh}\right) * \left(0.143\ \frac{g}{mile}\right) * 28{,}080 \frac{kWh}{yr} \div 453.59(\frac{g}{lb})$$

$$\boldsymbol{DPM\ Reductions = 3.5 \frac{lb}{yr}\ with\ AUM\ of\ 28{,}080\ kWh}$$

UAL proposes to earn WAIRE points using the calculation in Section 1 of the WAIRE Implementation Guidelines. WAIRE points are calculated using a point binning system. Points are earned for each $25,000 incremental cost, 25-pound NOx regional emission reduction, and 0.25-pound DPM local emission reduction. UAL is not proposing to quantify any incremental costs associated with the use of the chargers. Points for every 28,080 kWh dispensed are:

[10] *The Carl Moyer Guidelines,* Table D-9
https://ww2.arb.ca.gov/sites/default/files/classic/msprog/moyer/guidelines/2017/2017_cmpgl.pdf

0 points (cost) + 17 points (NOx) + 14 points (DPM) = 31 points per 28,080 kWh dispensed

Section 3: Verification Methodology for Proposed Actions

UAL proposes to track the total hours of operation of the electric tow tractors by reading the hour meter of each tow tractor at the end of each month and recording the readings in a log. The total hours of operation will be calculated as the difference between the hour meter readings taken each month. Annual usage will be added for the 12 months of log readings. A sample of the tow tractor electric charging logs is provided in Appendix G. The first hour meter pictures were taken on 8/20/2024 and are provided in Appendix F.

All the tow tractor activities are directly related to warehousing activities. Appendix A shows the possible locations the tow tractors may visit, and below is a description of their activities at each of those locations: Examples of cargo receipts for each location are attached in Appendix G.

1. Lufthansa and Aerounion: Goods are flown into LAX and transferred to United's Warehouse, then transferred to Lufthansa or Aerounion. Goods can be anything and are general air freight. Lufthansa takes the goods to other locations once delivered
2. Mail Facility: This facility is an International Mail Facility (IMF). Inbound international mail entering the US from airplanes is transferred to United's Warehouse and then to this IMF.
3. Tom Bradley International Terminal (TBIT): United's international flights bring in goods to TBIT. Examples of goods received from airplanes at here include pharmaceuticals, perishables, meat products, or other goods.
4. Terminals 7 and 8: Cargo tractors help move inbound and outbound freight from these terminals back to United's warehouse, and then to their proper final destinations. These goods can be anything from mail, perishable goods, temperature control units, Amazon products, or other goods.
5. Mercury World Cargo (ANA): Goods are transported into LAX via airplane and distributed to ANA after processing in the Warehouse.

It is United Company policy that Warehouse staff use these tow tractors exclusively for warehousing activities, so that no non-warehousing usage of the tow tractors will occur.

The charging of the electric tow tractors occurs when they are not in use. It is standard procedure to ensure the electric tow tractors are parked in United's LAX Warehouse when not in use. This means that charging occurs at all hours of the day whenever they are not in use. These electric tow tractors are solely assigned to the cargo warehouse as shown within UAL's fleet management database FleetFocus. Appendix G shows the three electric tow tractors are assigned to the Department ID "AIRPORT OPERATIONS-CARGO" meaning they are assigned to UAL's cargo warehouse which is the warehouse discussed in this plan. Additionally, Appendix F shows pictures of the tow tractors in the warehouse when not in use.

UAL will track the total kWh of charging on all the electric tow tractors from the dedicated electric chargers. Specifications on these chargers, including the kW ratings, are included as Appendix C. Other electric equipment within the warehouse (e.g. forklifts) use a different type of electric charger that is not compatible with the chargers on the tow tractors and are located in a separate location of the warehouse (Appendix A). Pictures displaying the different charger plugs are included in Appendix F showing that the forklifts cannot inadvertently use the chargers that are dedicated to the tow tractors.

A new telematic hardware system from Adveez has been installed which will allow for kw-hr data to be accessed as needed from the online software reporting database. A sample printout showing the data provided from this telematic hardware system is provided in Appendix G.

Section 4: Schedule of Key Milestones for Proposed Actions

The electric chargers have already been purchased, installed, and are in use at the facility. The electric tow tractors have already been purchased and are currently in operation at the facility. Upon approval of this plan, UAL will begin tracking hours of operation and electricity dispensed. UAL proposes to start earning WAIRE points on the date that this plan is approved. An example of the electric charging records and tow tractor hour meter readings are provided in Appendix G.

The key milestones under this custom WAIRE Plan during each compliance year after the first year are as follows:

Upon approval of the plan: Record hour meter reading of each tow tractor and total kw-hr dispensed from each electric charger monthly. Take photographs of hour meter readings and retain copies of the photographs.

January 1: Calculate total hours of operation and total kw-hr dispensed for the previous year as the difference from current reading and the reading on January 1 of the previous year.

January 31: Submit total hours of operation for each tow tractor and total kw-hr dispensed from each electric charger with the Annual WAIRE Report. With each annual WAIRE report UAL will evaluate whether any new or modified U.S. EPA, CARB, or South Coast AQMD rules or regulations have been amended or adopted that have established that would require the use of electric tow tractors.

June 30: Record hour meter reading of each tow tractor and total kw-hr dispensed from each electric charger. Calculate total hours of operation and total kw-hr dispensed for the previous six months as the difference from current reading and the reading on January 1 of the current year.

August 1: Submit interim progress report with the following information: Confirmation that each tow tractor and electric charger is still in dedicated use supporting warehouse operations, total hours of operation for the previous six months, and total kw-hr dispensed for the previous six months.

UAL proposes that this custom WAIRE Plan will remain in effect until December 31, 2030 and will resubmit for SCAQMD's approval in 2030.

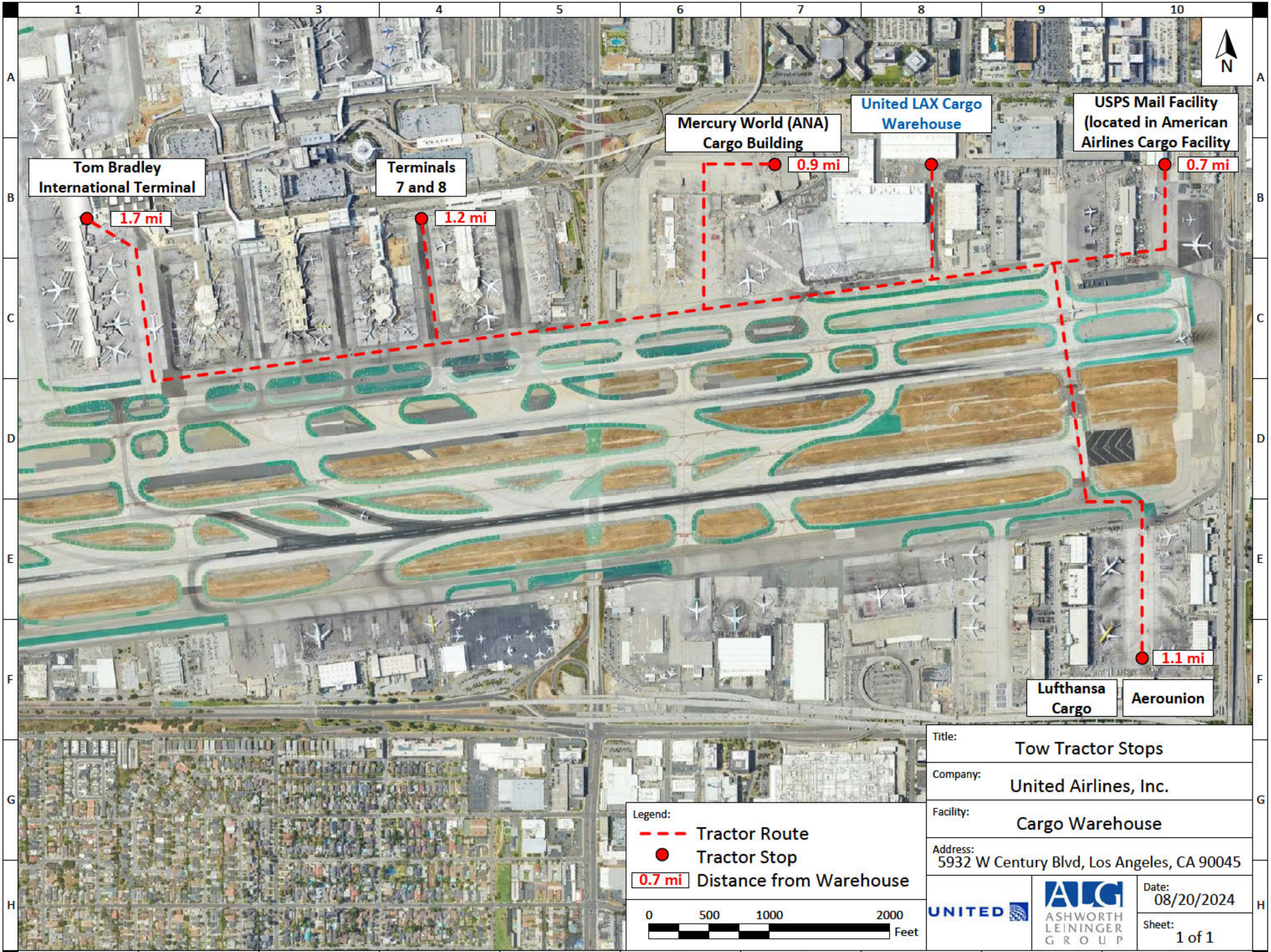
Section 5: Location of Proposed Actions

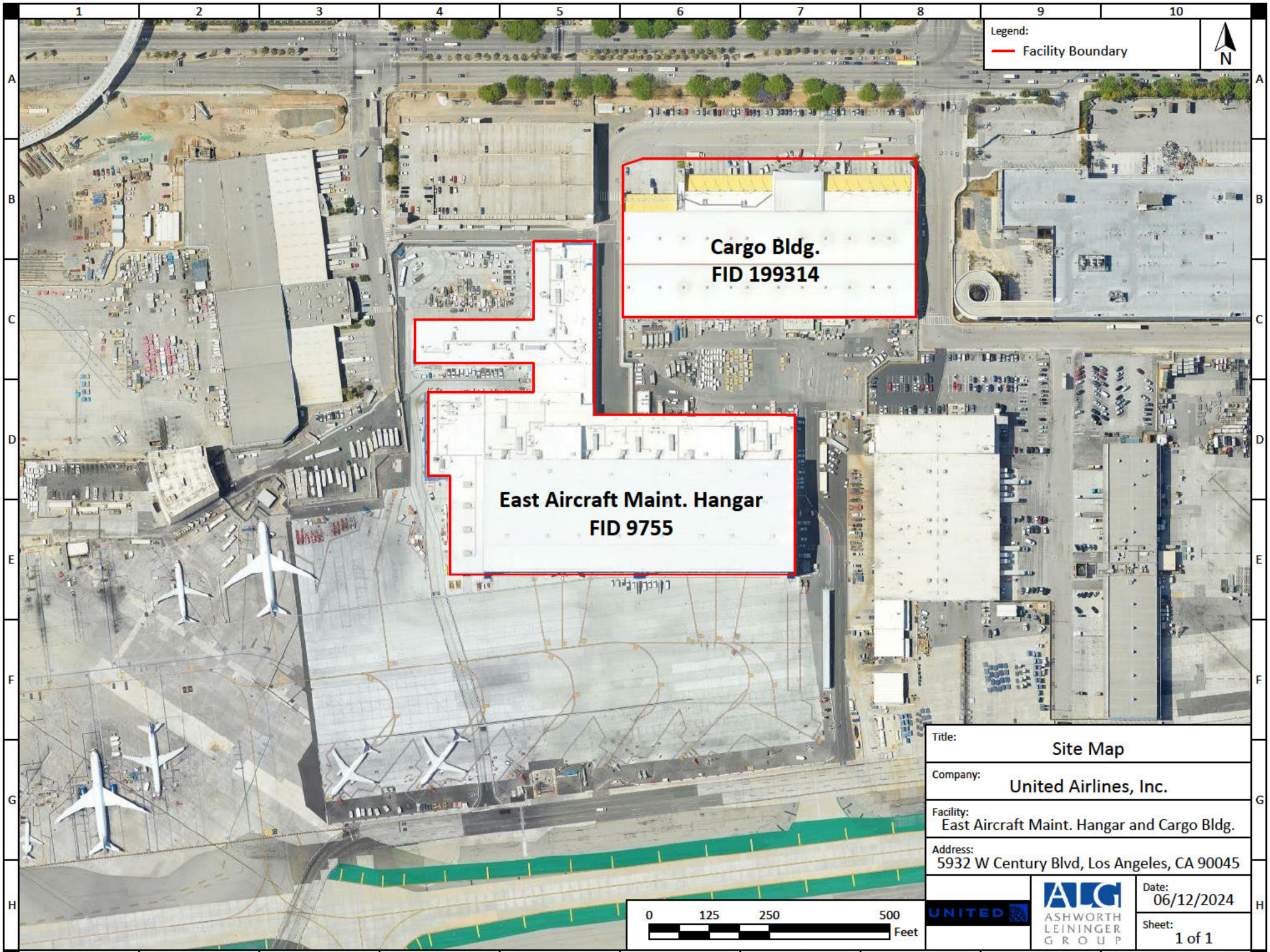
The location of the dedicated electric chargers and path of operation for the electric tow tractors is shown in Appendix A: .

Section 6: Expected Permits and Approvals Required for Proposed Actions

There are no expected permits or approvals required for the proposed actions.

Appendix A: Site Maps and Building Diagrams

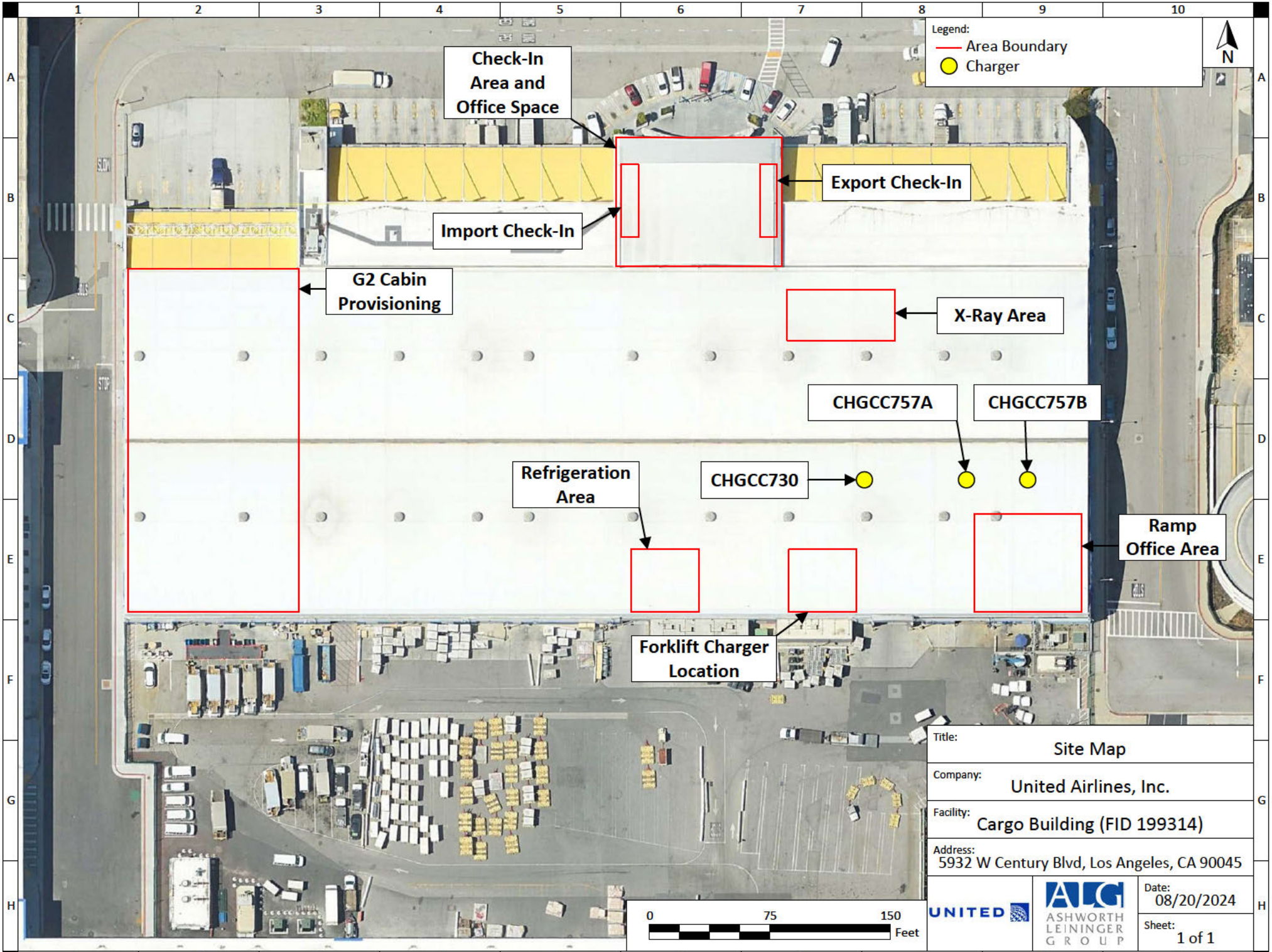

N
Tom Bradley International Terminal
1.7 mi
Terminals 7 and 8
1.2 mi
Mercury World (ANA) Cargo Building
0.9 mi
United LAX Cargo Warehouse
USPS Mail Facility (located in American Airlines Cargo Facility
0.7 mi
1.1 mi
Lufthansa Cargo
Aerounion
Legend:
Tractor Route
Tractor Stop
0.7 mi Distance from Warehouse
0 500 1000 2000
Feet
Title: Tow Tractor Stops
Company: United Airlines, Inc.
Facility: Cargo Warehouse
Address: 5932 W Century Blvd, Los Angeles, CA 90045
UNITED
ASHWORTH LEININGER GROUP
Date: 08/20/2024
Sheet: 1 of 1



Title:	Site Map
Company:	United Airlines, Inc.
Facility:	East Aircraft Maint. Hangar and Cargo Bldg.
Address:	5932 W Century Blvd, Los Angeles, CA 90045
Date:	06/12/2024
Sheet:	1 of 1

UNITED

ASHWORTH LEININGER GROUP



Title:	Site Map
Company:	United Airlines, Inc.
Facility:	Cargo Building (FID 199314)
Address:	5932 W Century Blvd, Los Angeles, CA 90045
Date:	08/20/2024
Sheet:	1 of 1

UNITED

ASHWORTH LEININGER GROUP

Appendix B: Baseline Tier 4 Tow Tractor Review of Off-Road Diesel Fleet

United's California Off-Road Diesel Fleet of Tier 4 Diesel Engine Cargo Tractors

Your Veh #	Veh Type	Eng Serial #	Eng Manufacturer	Eng Model	Eng MY	Eng HP	Eng Tier	Eng Family	Eng Displacemer	Fuel Type	Location
CT3019	Cargo Tractor (Airport GSE)	273137	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZIII	2013	53	T4		2.237	DSL	SFO
CT3013	Cargo Tractor (Airport GSE)	1DZ0273455	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ III	2013	53	T4		2.237	DSL	SFO
CT4875	Cargo Tractor (Airport GSE)	1DZ0274282	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ3	2013	53	T4		2.5	DSL	SFO
CT4077	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ-III	2013	51	T4		2.237	DSL	SFO
AVERAGE						53			2.3		

Appendix C: Equipment Specification Sheets

POSICHARGE™ MVS 400

eGSE

1 INTELLIGENT
Smart Battery Monitor and Identification Device (BMID) instantly recognizes voltage, state of charge, temperature

2 MULTI VOLTAGE / MULTI-AH CAPABILIT
Allow different vehicles/batteries to charg the same charger

3 CUSTOMIZED
Adapts charge rate according to charge acceptance limit and temperature for safest fast charge

4 BMID CONTROLLED EQ
Allows any battery to go to any charger and get a complete EQ each week

5 RUGGED NEMA 3R ENCLOSURE RATIN
Provides all environment/weather operat and conditions

6 SAFE
Automatic Start/Stop Anti arcing Disconnect & auto thermal shutdown

7 PARALLEL CHARGE
Can charge 2 vehicles simultaneously or one vehicle twice as fast

8 POWER SHARE
Can share power with the jet Bridge or other devices to reduce installation costs

9 EASY
Easy to install, easy to use

10 EFFICIENT
High efficiency IGBT technology

High Output. Reliable. Intelligent Multi-Vehicle Charge

PosiCharge™ systems bring you industry-leading fast charge solutions for airport ground support equipment, outdoor-rated to withstand extreme conditions.

The MVS400 is our multiple-port, multi-vehicle fast charge system, especially designed to lower utility costs and maximize available infrastucture. An MVS400 can charge up to 8 industrial vehicles (e.g. tow tugs, baggage tractors, belt loaders, etc.) at the same time. This cost saving alternative to conventional charging makes implementing and using electric GSE vehicles more cost effective. The more vehicles charged at once, the greater the cost benefit.

Like the DVS, MVS features the highest power quality and most diverse multi-voltage, multi-amperage flexibility of any fast charging system available today. MVS systems are installed all across the world's largest airports, as well as Fortune and Global 100 companies. And like all PosiCharge chargers, the MVS400 works with a broad range of battery voltages and has the same data management and onboard intelligence.

UP TO 8X

KEY OPTIONS

CEC CERTIFICATION - Chargers meet CEC round trip efficiency and idle power standards required by certain states.

BATTERY RX™ – Advanced battery monitor for maximum battery life with optional cellular connectivity and data services.

POSINET™ – Works with cellular Battery Rx to collect battery charge data and run usage reports.

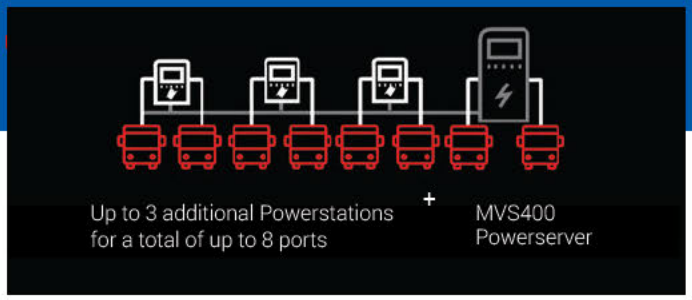
POWER SHARE - Allows you to share power with existing circuits and other devices at the jet bridge.

Pos Charge™ systems a product ne of Webasto Charg ng Systems Inc
1 866 767 4242 @pos charge pos charge com

PosiCharge™ Webasto

POSICHARGE™ MVS
Multi-Vehicle System
ADVANTAGE

- More charge power for heavy applications, compared to other multiple vehicle systems
- Charge 3x the equipment with the same power you were using for conventional chargers
- Lower infrastructure costs compared to large scale single-vehicle systems
- Lower maintenance & operational cost
- Flexible up to 8-vehicle charge option
- Requires no battery changing operations
- Designed to maximize available electrical infrastructure, keep fleet operational 24/7 and extend battery life
- Euro and Burton Output Connector/Cable Options



SPECIFICATIONS

MODEL MVS400: POWERSERVER	
POWER RATING	40kW
UTILITY REQUIREMENTS	480/600VAC, 3 PHASE
FULL LOAD AMP DRAW	56A / 45A
MAX CIRCUIT BREAKER RATING	70A / 60A
POWER FACTOR	0.96
EFFICIENCY	90%
WEIGHT	915 LBS
DIMENSIONS	60"H X 32.4"W X 21.9"D

POWERSTATION	
POWER RATING	60kW
BATTERY VOLTAGE RANGE	24V - 96V
MAX OUTPUT CURRENT (DUAL MODE)	250A
MAX OUTPUT CURRENT (SINGLE MODE)	500A
WEIGHT	304 LBS
DIMENSIONS	30"H X 30"W X 19"D
COMMUNICATION PORT	RS232

HIGHEST SAFETY STANDARDS: UL1012, CSA

Pos Charge™ systems a product ne of Webasto Charg ng Systems Inc
1 866 767 4242 @pos charge pos charge com

04302019

PosiCharge™ Webasto

POSICHARGE™ DVS 300/400

eGSE

1 INTELLIGENT
Smart Battery Monitor and Identification Device (BMID) instantly recognizes voltage, state of charge, temperature

2 MULTI VOLTAGE / MULTI-AH CAPABILITIES
Allow different vehicles/batteries to charge on the same charger

3 CUSTOMIZED
Adapts charge rate according to charge acceptance limit and temperature for safest fast charge

4 BMID CONTROLLED EQ
Allows any battery to go to any charger and get a complete EQ each week

5 RUGGED NEMA 3R ENCLOSURE RATING
Provides all environment/weather operation and conditions

6 SAFE
Automatic Start/Stop Anti arcing Disconnect & auto thermal shutdown

7 PARALLEL CHARGE
Can charge 2 vehicles simultaneously or one vehicle twice as fast

8 POWER SHARE
Can share power with the jet Bridge or other devices to reduce installation costs

9 EASY
Easy to install, easy to use

10 EFFICIENT
High efficiency IGBT technology

High Output. Reliable. Intelligent Dual Vehicle Charge

PosiCharge™ systems bring you industry-leading fast charge solutions for airport ground support equipment, outdoor-rated to withstand extreme conditions.

PosiCharge DVS300 is the stand-alone industrial charger that can charge one vehicle with up to 500 amps or two vehicles simultaneously at 250 amps. DVS features ultra-efficient IGBT power electronics and an integrated AC to DC power server, delivering our customers significantly lower up-front installation and ongoing utility costs compared to other fast chargers.

Our unique technology utilizes both temperature compensation and temperature foldback to accurately control battery temperatures during charging, adding an unparalleled layer of safety to fast charging.

And like all PosiCharge chargers, the DVS works with a broad range of battery voltages and has the same data management and on-board intelligence.

KEY OPTIONS

CEC CERTIFICATION - Chargers meet CEC round trip efficiency and idle power standards required by certain states.

BATTERY RX™ – Advanced battery monitor for maximum battery life with optional cellular connectivity and data services.

POSINET™ – Works with cellular Battery Rx to collect battery charge data and run usage reports.

POWER SHARE - Allows you to share power with existing circuits and other devices at the jet bridge.

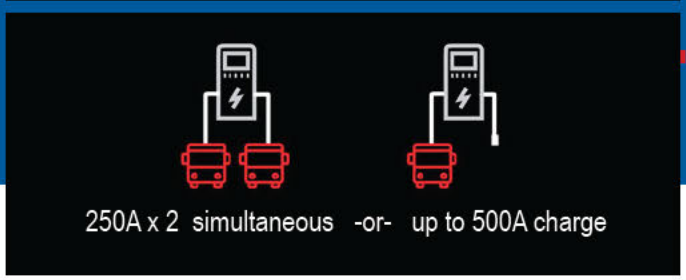
Pos Charge™ systems a product ne of Webasto Charg ng Systems Inc
1 866 767 4242 @pos charge pos charge com

04302019

PosiCharge™ Webasto

POSICHARGE™ DVS
Dual-Vehicle System
ADVANTAGE

- More charge power for heavy applications, compared to other multiple vehicle chargers
- Charge 3x the equipment with the same power you were using for conventional chargers
- Designed to maximize available electrical infrastructure, keep fleet operational 24/7 and extend battery life
- Lower infrastructure costs compared to large scale single-vehicle systems
- Lower maintenance & operational cost
- Flexible one- or two-vehicle charge option
- Requires no battery changing operations
- Affordable stand-alone solution for small or remote fleets
- Extended battery life & run time
- Euro and Burton Output Connector/Cable Options



SPECIFICATIONS

	DVS300	DVS400
POWER RATING	30kW	40kW
UTILITY REQUIREMENTS*	480/600 VAC, 3-PHASE	480/600 VAC, 3-PHASE
FULL LOAD AMP DRAW	40/32A	56/45A
MAX CIRCUIT BREAKER RATING	50/40A	70/60A
POWER FACTOR	0.96	0.96
EFFICIENCY	90%	90%
BATTERY VOLTAGE RANGE	24V - 96V	24V - 96V
MAX OUTPUT CURRENT (DUAL MODE)	250A	250A
MAX OUTPUT CURRENT (SINGLE MODE)	500A	500A
WEIGHT	905 LBS	915 LBS
DIMENSIONS	60"H X 32.4"W X 21.9"D	60"H X 32.4"W X 21.9"D
COMMUNICATION PORT	RS232	RS232

HIGHEST SAFETY STANDARDS: UL1012, CSA

Pos Charge™ systems a product ne of Webasto Charg ng Systems Inc
1 866 767 4242 @pos charge pos charge com

04302019

PosiCharge™ Webasto

A spec fica ons are subject to change mage shown s a representa on product on mode may vary s ght y n appearance

CHARLATTE AMERICA
FAYAT GROUP

T137-V3

AC Electric Tow Tractor

The Charlatte Model T137-V3 Tow Tractor is our newest design of our best selling T137 line of tractors. It is a self propelled battery powered electric support vehicle designed to tow a variety of material handling carts and dollies. Power for the main drive is supplied by a 40 hp (30 kw) high efficiency/low maintenance AC motor which is coupled directly to the rear axle. The unit has excellent visibility and has a maximum speed of 18 mph (29 km/h) when empty. Drawbar capacity is 4000 lb (1814 kg).

Options include: Complete cab assembly with heater/defroster, mirrors, wiper, and vinyl doors, and power assisted master cylinder.

STANDARD FEATURES

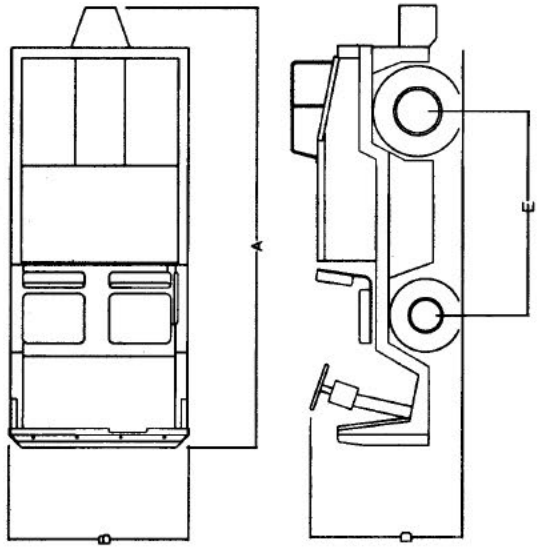
- Trusted Design With Improvements
- New All-Steel Dash For More Durable Operator Environment
- More Powerful Hydraulic Braking
- New Front Axle Design Improves Ground Clearance / Features Larger Brake Calipers
- Power Steering by Hydraulic Accumulator Provides Quiet Operation
- Highly Maneuverable – 117" Turning Radius
- Inching Device

T137-V3

TECHNICAL CHARACTERISTICS

Manufacturer	Manufacturer		Charlatte of America
Model	Manufacturer's Designation		**T137-V3**
Energy Source	Battery	Volts	80
Battery Capacity	Ampere Hour Range	AH	500 – 625
Battery Weight	Maximum	lb / kg	3327 / 1512
	Minimum	lb / kg	2556 / 1162
Controller	Manufacturer		Curtis
	Model		1238
	80 Volt AC MOSFET controller with CAN buss and serial communication		
Motor	Manufacturer		ABM
	Rating @ 80 Volts	hp / kw	40.0 / 30.0
	Rating Speed	rpm	1400
Dimensions	Length w/Hitch Extension (A)	in / mm	124.6 / 3164
	Length w/o Hitch Extension	in / mm	121.7 / 3090
	Width (B)	in / mm	52.0 / 1320
	Height with Cab (C)	in / mm	69.5 / 1765
	Height w/o Cab (D)	in / mm	48.4 / 1230
	Sitting Height	in / mm	30.3 / 770
	Outside Turning Radius	in / mm	117.1 / 2975
Performance	Speed Empty	mph / km/h	18.0 / 29.0
	Rated Tractive Effort w/3320# Battery	lb / kg	4000 / 1814
	Wt. Front/Rear w/3320# Battery	lb / kg	2877/1308–3973/1808
Chassis	Frame Mfg. W/ Jigs & Fixtures		Yes
	Auto Design Wiring Harness		Yes
	Wheels Front/Rear		Heavy Duty Split Ring
	Tires Front		6.00R X 9
	Tires Rear		7.00R X 12
	Wheel Base C/L (E)	in / mm	58.7 / 1490
	Track Width C/L Front/Rear	in / mm	43.3/1100-42.1/1070
	Ground Clearance	in / mm	5.9 / 150
	Service Brakes	Front	Disc
		Rear	Disc (Standard) Drum (Optional)
	Parking Brake		Rear Axle Brakes
	Suspension	Front	Leaf Springs / Shock Absorbers
		Rear	Leaf Springs
Drive Axle	Motor Direct Coupled To Axle		Yes
	Reduction In Differential		Yes
	Reduction		17.45:1

These descriptions are given as an indication only and do not represent a commitment



CHARLATTE AMERICA
FAYAT GROUP

Charlatte America
P.O. Box 968
600 Mountain Lane
Bluefield, VA 24605
Phone: (276) 326-1510
Fax: (276) 326-1602
e-mail: equipmentsales@charlatteus.com

Charlatte France
Z.I. – Route du Boutoir
89210 Brienon sur Armancon (France)
Phone: (33) 386 43 01 30
Fax: (33) 386 43 04 66
e-mail: contact@charlattemanutention.fayat.com

Charlatte United Kingdom
LSUK Building
Spindle Way
RH10 1TG Crawley West Sussex
United Kingdom
Phone: (44) 01 293 529 640
e-mail: ukparts@charlattemanutention.fayat.com

Appendix D: Electric Tow Tractor Meter Readings Data (October 2023 and April 2024)

Dagly, Alyson

Subject: FW: LAX CARGO CHARGERS

From: Kittredge, Pat <Patrick.Kittredge@united.com>
Sent: Wednesday, October 11, 2023 3:44 PM
To: Dagly, Alyson <alyson.dagly@united.com>
Cc: Paxton, Darren <Darren.Paxton@united.com>; White, Jim <jim.white@united.com>; Richards, Craig <craig.richards@united.com>
Subject: RE: LAX CARGO CHARGERS

Alyson,

Here is the hours info for the tractors.

Pat

From: Arredondo, Jason <jason.arredondo@united.com>
Sent: Tuesday, October 10, 2023 5:10 PM
To: Kittredge, Pat <Patrick.Kittredge@united.com>
Subject: RE: LAX CARGO CHARGERS

Pat,

Here's the info for the tractor hours:

6 total:
CT2376 – 10463.0 hrs.
CT2384 - 10552.4 hrs.
CT2341 – 09303.7 hrs.
CT5868 – 32304.6 hrs.
CT5875 – Could not locate at cargo.
CT5896 – 344873 hrs.

Rgds,

Jason Arredondo
Supervisor, Cargo Operations – LAX

United Cargo | Los Angeles International Airport
5932 West Century Blvd. | Los Angeles, CA 90045
Tel 310-431-3755 | [redacted] | jason.arredondo@united.com
unitedcargo.com

Dagly, Alyson

Subject: FW: LAX CARGO CHARGERS

From: Arredondo, Jason <jason.arredondo@united.com>
Sent: Wednesday, April 10, 2024 5:01 PM
To: Dagly, Alyson <alyson.dagly@united.com>
Cc: Kittredge, Pat <Patrick.Kittredge@united.com>
Subject: RE: LAX CARGO CHARGERS

Hello Alyson,

Please see the below info regarding the CT tractor hours. There's two CT tractors that are not in our equipment user checklist. This leads me to believe they may have been taken out of service completely.

CT2376 - 11414
CT2384 - 12258
CT5868 – Not in service
CT5896 - Not in service
CT2341 - 10647

The CT tractors last on a full charge roughly around 6-8 hours per shift depending how busy we are.

A.m. bank routes:

- A.M starting @ 0345 shift the normal route is from Cargo to terminal 7 & 8 and back.
- Additional route is Cargo to Tom Bradley and back. This is for one international arrival at 0500. And later back again to TBIT at 0600 for another INTL arrival and then back to cargo.
- We do two to three transfers to other airlines from Cargo to ANA (Mercury bldg. across GSE) and Aero union which is across the runway on the imperial HWY side.

P.m. bank routes:

- P.M starts at 1345 …Cargo to the terminal 7 & 8 and back through out the shift.
- Two to three other airline transfers from Cargo to Aero union, Lufthansa which is located across the runway on the imperial HWY side.
- Cargo to USPS mail facility from 1700 -2300 back and forth. I would say 4-5 trips from cargo and back. This facility is located in back of Southwest cargo (aviation blvd)
- P.M end shift @0145.

Please let me know if you require any additional info on the routes and distance.

Rgds,

Jason Arredondo
Supervisor, Cargo Operations – LAX

United Cargo | Los Angeles International Airport
5932 West Century Blvd. | Los Angeles, CA 90045
Tel 310-431-3755 | [redacted] | jason.arredondo@united.com
unitedcargo.com

Appendix E: ORD Compliance Snapshot and Verification Statement

June 28, 2024

South Coast Air Quality Management District
WAIRE Program
21865 Copley Drive
Diamond Bar, CA 91765

Subject: Verification Statement on Zero Emission Tow Tractors with CARB Regulations

Dear Sir or Madam:

Attached please find a snapshot from June 5, 2024, showing that United Airline's Off-Road Diesel (ORD) fleet is in compliance with the ORD regulation (13 CCR §2449). Additionally, United Airlines attests that the following electric tow tractors that are proposed in the WAIRE plan are not being used to comply with the ORD regulation or any other CARB regulation:

1. CT2376, serial # T137-12651
2. CT2384, serial # T137-12642
3. CT2341, serial # T137-12666

Please feel free to contact me at [redacted] if you have any questions or if you need any additional information regarding this submission.

Sincerely,

Alyson Dagly
Manger, California Air Compliance
United Airlines, Inc.

DOORS ID: **2123** Company Name: **UNITED AIRLINES, INC.** Fleet Type: **Off-Road Diesel**

-- **DOORS Disclaimer** --

Fleet Compliance Snapshot

As of Today (June 5, 2024) Refresh Fleet Data

Your fleet, as currently reported, has met the off-road regulation performance requirements through the January 1, 2026 compliance date. Please see the Compliance Summary table below for details.

*This determination is based on the make up of your CURRENT fleet in DOORS, which includes age and horsepower of engines, retrofits (if any), vehicles sold (credits, if any), exempt vehicles such as Low-Use (if any), subfleets (if any), and other credits (if any).

Current Fleet Statistics	
Fleet Size:	**Large**
Number of Vehicles: In Fleet Average: Low-Use: Exempt Not Low-Use: Vehicles in Funding Contracts:	 740 0 0 34
Vehicles in Fleet:	773
Vehicles with Non-diesel or Non-standard engines in fleet average:	559
Electric Vehicle Horsepower in Fleet** (in fleet average, but not in fleet size):	24,018
Horsepower** (in fleet average):	57,098
Total Fleet Horsepower:	62,778
Family Horsepower (including all child fleets)***:	0
First Compliance Date:	January 1, 2014

** HP for electric GSE vehicles purchased before 1/1/2007 is multiplied by 0.2.

** A fleet is part of a fleet family if there are subfleets (Parent and Child fleets) which connect fleets together. See Reporting Multiple Fleets, Private Fleet Size, Public Fleet Size FAQs for more explanation of subfleets. Actually, the term "subfleets" is the commonly used term, however "fleet portions" is the specific term in the Off-Road regulation (the term "subfleets" is not in the Off-Road regulation).

*** Total family horsepower is the sum of the horsepower of any parent company, subsidiary, or other fleet related to the current fleet. Click the "Show Fleet Family" option button on the reporting home page for more information.

Fleet Target and Average Emission Rates (g/bhp-hr)											
January 1, Year	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Target	6.4	6.0	5.6	5.1	4.6	4.0	3.5	3.1	2.6	2.2	2.2
Average	5.6	4.4	3.8	3.4	3.3	2.5	2.2	2.0	1.9	1.8	1.7

Beyond 2023, Fleet Target Rates will no longer decrease each year, but will still be recalculated using the **final year target values** to account for changes in fleet composition.

Requirements	
Your Current Fleet Average:	1.7

To be in compliance each year, the fleet average must be lower than or equal to the fleet target, OR the fleet must meet the required BACT amount. For more information, please see the FAQs on Fleet Average and BACT.

Compliance Summary						
Compliance Date	**Begin Credit**	**Credit Use/Expired**	**End Credit**	**In Compliance?**	**Compliance Method**	**BACT Requirement**
2014-01-01	6,013	0	6,013	yes	met fleet average	na
2015-01-01	6,408	0	6,408	yes	met fleet average	na
2016-01-01	8,134	0	8,134	yes	met fleet average	na

2017-01-01	9,644	0	9,644	yes	met fleet average	na
2018-01-01	11,582	0	11,582	yes	met fleet average	na
2019-01-01	11,844	0	11,844	yes	met fleet average	na
2020-01-01	15,027	0	15,027	yes	met fleet average	na
2021-01-01	22,056	0	22,056	yes	met fleet average	na
2022-01-01	23,408	0	23,408	yes	met fleet average	na
2023-01-01*	24,261	0	24,261	yes	met fleet average	na
All existing BACT credits expire after the 1/1/2023 compliance date.						
2024-01-01	706	0	706	yes	met fleet average	na
2025-01-01	706	0	706	yes	met fleet average	na
2026-01-01	706	0	706	yes	met fleet average	na

Recent Year Fleet Size											
Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Fleet Size	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large

- View Snapshot Calculation Detail
- View Sold Vehicles With No Credit
- The Early Credit FAQ provides an explanation of the early credits (which are credits 2449.1(b)13 – 18), and shows example calculations.

If you have questions about this page, please contact ARB at doors@arb.ca.gov or call 1(877) 59-DOORS.

Back to Top | All ARB Contacts | A-Z Index

Appendix F: Pictures of Equipment

Arredondo, Jason
To Dagly, Alyson

Reply | Reply All | Forward

Tue 8/20/2024 8:04 PM

Retention Policy United-Mailbox-RPT-1yr (1 year) Expires 8/20/2025

Start your reply all with: Thank you! | No problem, thank you! | No problem, thanks! | Feedback

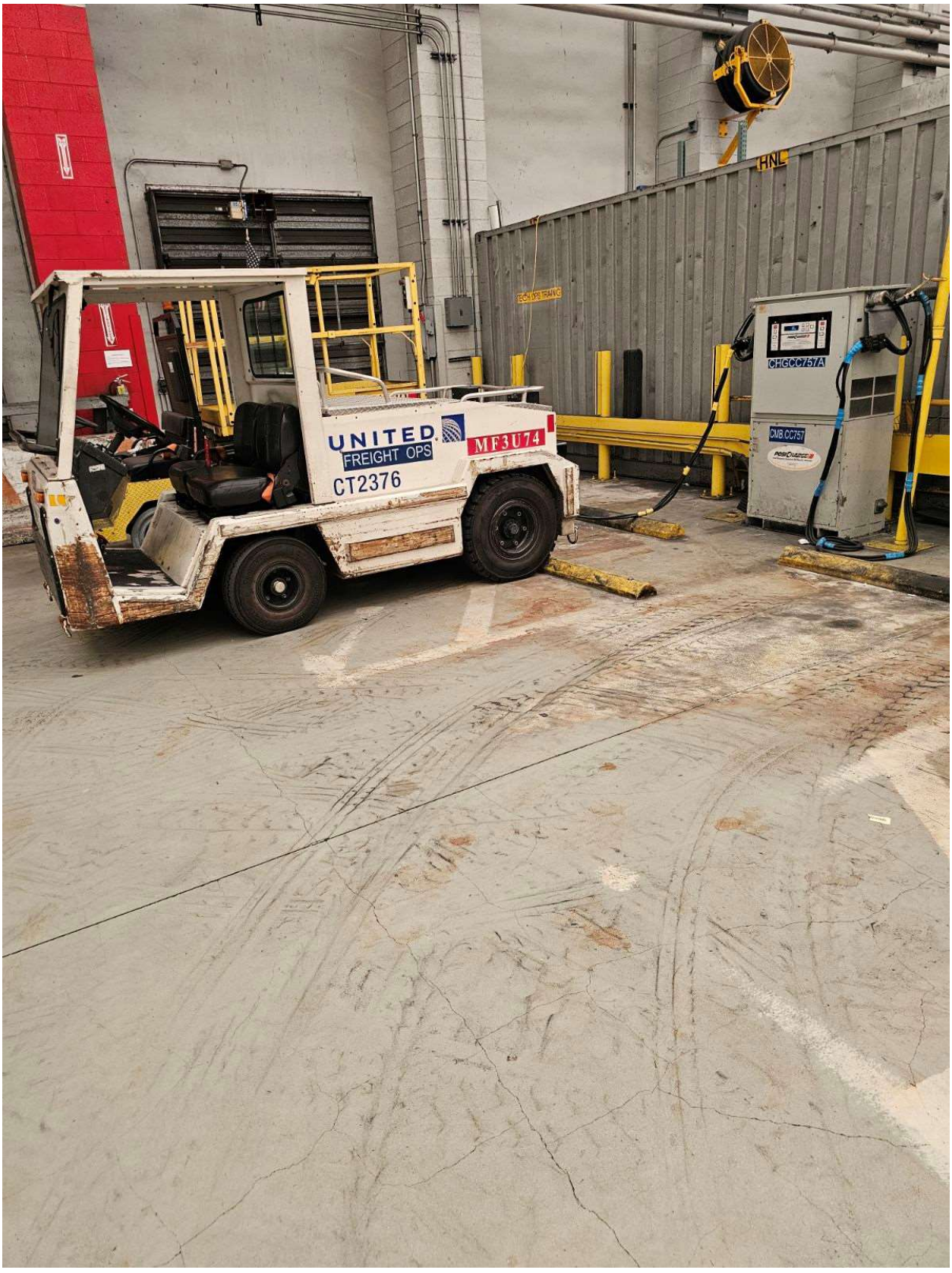
Hi Alyson,

My mistake...here you go.

CT-2384 - 13298

CT 2341 - 11758

CT 2376 - 12122


UNITED
FREIGHT OPS
MF3U74
CT2376
HNL
CHGCC757A
CMB.CC757


CHGCC757B
UNITED
CA7L88
F9
AIR FREIGHT
CT2341
FL0819


UNITED
FREIGHT OPS
CT2384
HNL
1080

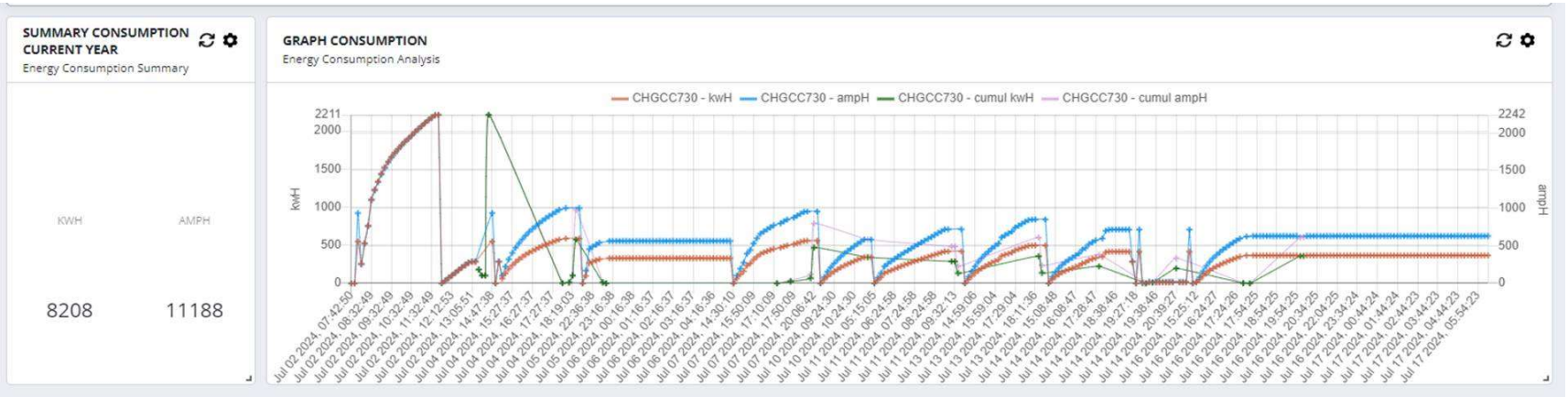
Forklift Chargers

Tow Tractor Chargers

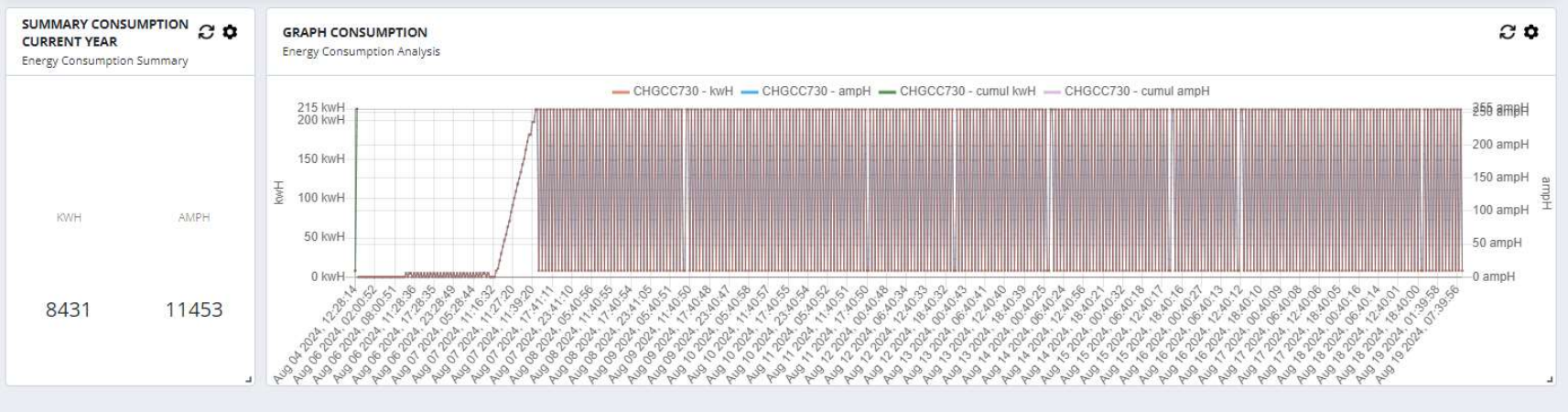
Appendix G: Operational Records & Location Designation

Electric Charger Output Example

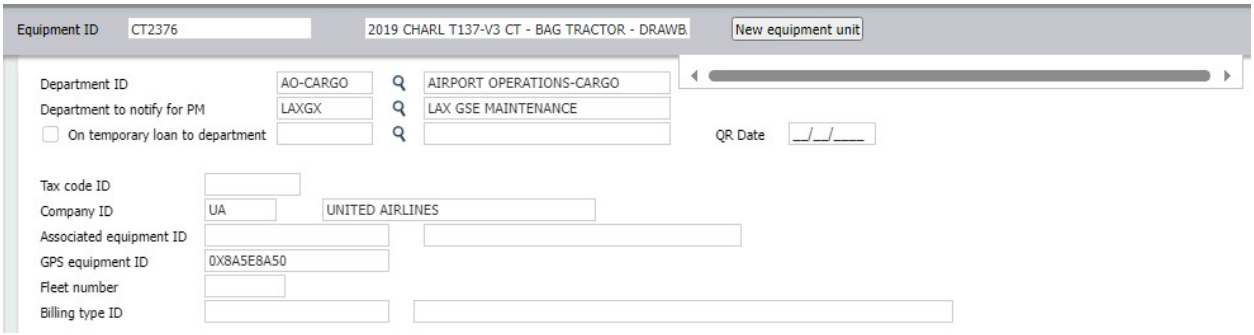
7/18/2024 Reading:

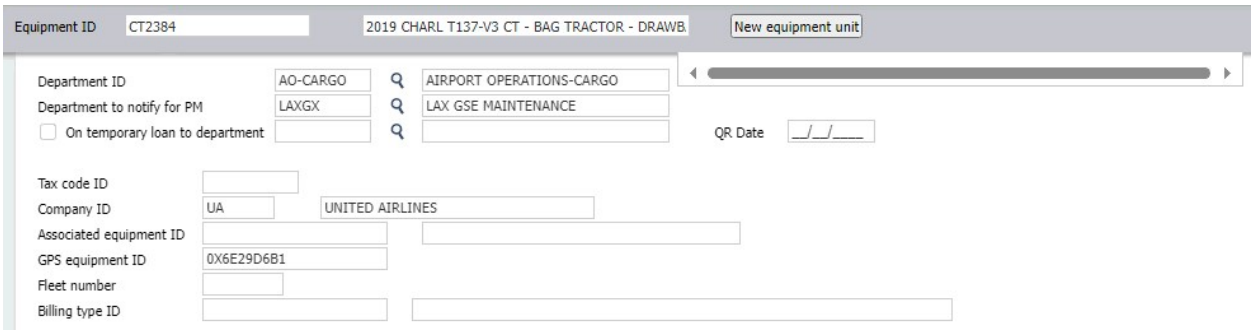


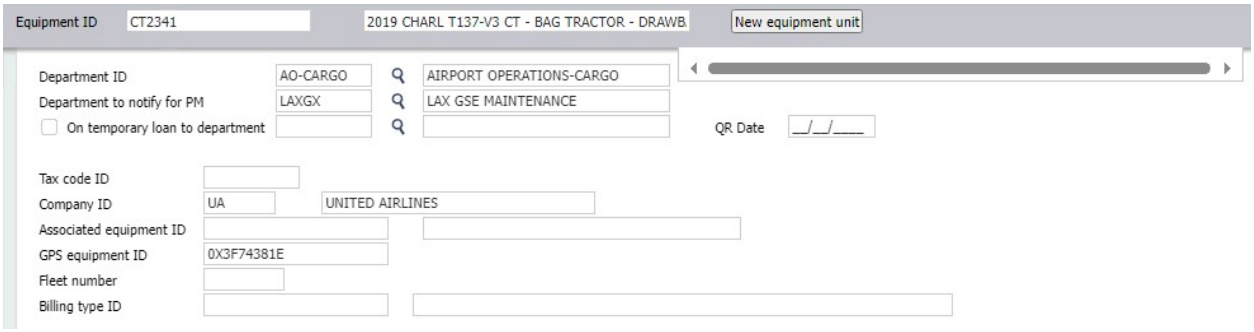
8/19/2024 Reading:



FleetFocus Outputs







Aerounion Air Cargo Transfer Manifest

CGO002 CARGO TRANSFER MANIFEST
REV. 3/12
00-0734-3-0012

AIR CARGO TRANSFER MANIFEST

UNITED CARGO 016 No _____ (SERIAL NUMBER)

AIRPORT LAX DATE 8/11/24 TRANSFERRED TO Aerounion (NAME OF RECEIVING CARRIER)

	AIRBILL OR AIR WAYBILL NUMBER	AIR WAYBILL DESTINATION AIRPORT	NO. OF PIECES	WEIGHT (LBS.)	REMARKS
1	016 ORD 9729 1283	NLU	3	577kgs	PMC99673FF
2					
3					
4	NO ID Needed				
5	or sticker				11 AUG 15:22
6	Origin Chicago.				
7					

"UNITED AIRLINES IS IN COMPLIANCE WITH ITS TSA-ACCEPTED SECURITY PROGRAM AND ALL APPLICABLE SECURITY DIRECTIVES. ALL CARGO IS FROM A KNOWN SHIPPER OR AN UNKNOWN SHIPPER IN ACCORDANCE WITH TSA REQUIREMENTS OR FROM AN ENTITY OPERATING UNDER A TSA-APPROVED OR TSA-ACCEPTED SECURITY PROGRAM. THIS CERTIFICATION IS (i) MADE WITH THE UNDERSTANDING THAT ANY INTERNATIONAL FALSIFICATION MAY BE SUBJECT TO BOTH CIVIL AND CRIMINAL PENALTIES UNDER 49 CFR 1540.103 AND TITLE 18 USC 1001, AND (ii) SUBJECT TO TSA RECORD KEEPING REQUIREMENTS APPROVED BY TSA."

NUMBER OF ITEMS UNDER 16 OUNCES (453.6 GRAMS):____

TRANSFERRED BY United Airlines (TRANSFERRING CARRIER)

BY Suey Rebello (SIGNATURE) (EMPLOYEE NUMBER)

ORIGINAL — TRANSFERRING CARRIER
DUPLICATE
TRIPLICATE — RECEIVING CARRIER
QUADRUPLICATE

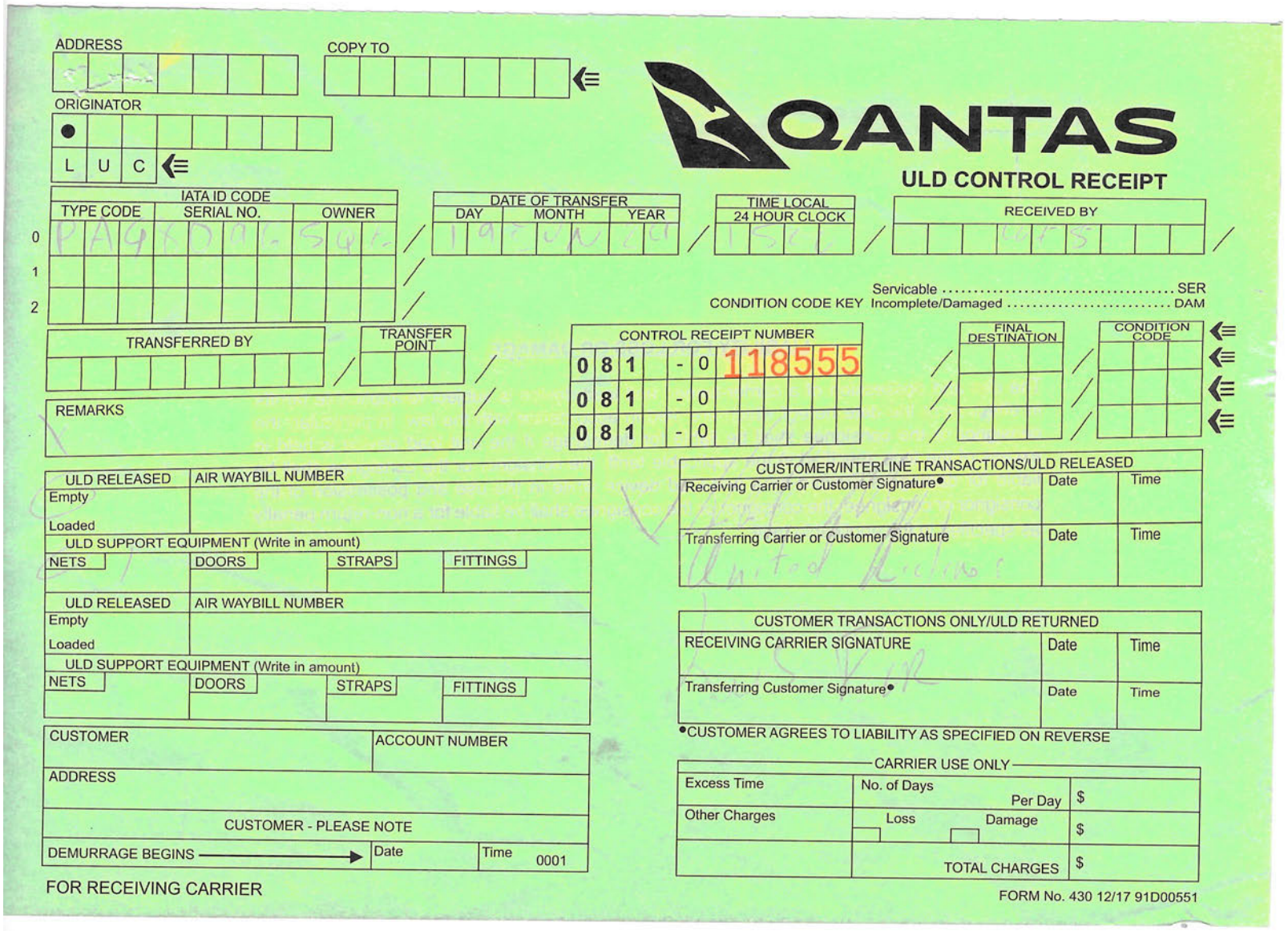
ABOVE SHIPMENT(S) RECEIVED IN FULL AND APPARENT GOOD ORDER AND CONDITION EXCEPT AS NOTED IN "REMARKS" COLUMN.

RECEIVED BY Sara Ortiz (NAME OF RECEIVING CARRIER)

BY Edgar Ramirez (SIGNATURE)

TIME 4:53pm DATE 8/11/2024

TBIT Incoming Freight Receipt



ADDRESS

COPY TO

ORIGINATOR

● L U C

QANTAS

ULD CONTROL RECEIPT

	IATA ID CODE TYPE CODE	SERIAL NO.	OWNER	DATE OF TRANSFER DAY	MONTH	YEAR	TIME LOCAL 24 HOUR CLOCK	RECEIVED BY
0	PAG	6D	AC-SQ	19	JUN	24	1516	
1								
2								

CONDITION CODE KEY
Servicable ..... SER
Incomplete/Damaged ..... DAM

TRANSFERRED BY

TRANSFER POINT

CONTROL RECEIPT NUMBER

0	8	1		-	0	1	1	8	5	5
0	8	1		-	0					
0	8	1		-	0					

FINAL DESTINATION

CONDITION CODE

REMARKS

ULD RELEASED	AIR WAYBILL NUMBER
Empty	
Loaded	

ULD SUPPORT EQUIPMENT (Write in amount)

NETS	DOORS	STRAPS	FITTINGS

ULD RELEASED	AIR WAYBILL NUMBER
Empty	
Loaded	

ULD SUPPORT EQUIPMENT (Write in amount)

NETS	DOORS	STRAPS	FITTINGS

CUSTOMER/INTERLINE TRANSACTIONS/ULD RELEASED

	Date	Time
Receiving Carrier or Customer Signature●		
Transferring Carrier or Customer Signature		

CUSTOMER TRANSACTIONS ONLY/ULD RETURNED

	Date	Time
RECEIVING CARRIER SIGNATURE		
Transferring Customer Signature●		

●CUSTOMER AGREES TO LIABILITY AS SPECIFIED ON REVERSE

CUSTOMER	ACCOUNT NUMBER
ADDRESS	

CUSTOMER - PLEASE NOTE

DEMURRAGE BEGINS →	Date	Time 0001

CARRIER USE ONLY

Excess Time	No. of Days Per Day	$
Other Charges	Loss ☐ Damage ☐	$
	TOTAL CHARGES	$

FOR RECEIVING CARRIER

FORM No. 430 12/17 91D00551

Mercury World Cargo (ANA) Air Cargo Transfer Manifest

CGO002 CARGO TRANSFER MANIFEST
REV. 3/12
00-0734-3-0012

AIR CARGO TRANSFER MANIFEST

UNITED CARGO 016

No _____ (SERIAL NUMBER)

AIRPORT LAX DATE 8/10/24 TRANSFERRED TO (NH) ANA (NAME OF RECEIVING CARRIER)

	AIRBILL OR AIR WAYBILL NUMBER		AIR WAYBILL DESTINATION AIRPORT	NO. OF PIECES	WEIGHT (LBS.)	REMARKS
1	205	30142980	LAX	54	2301.	PLA 21384 NH
2	"	" "	"	15	640.	PMC 12058 NH
3	205	30145544	"	87	3015.	" " "
4						
5						
6						
7						

"UNITED AIRLINES IS IN COMPLIANCE WITH ITS TSA-ACCEPTED SECURITY PROGRAM AND ALL APPLICABLE SECURITY DIRECTIVES. ALL CARGO IS FROM A KNOWN SHIPPER OR AN UNKNOWN SHIPPER IN ACCORDANCE WITH TSA REQUIREMENTS OR FROM AN ENTITY OPERATING UNDER A TSA-APPROVED OR TSA-ACCEPTED SECURITY PROGRAM. THIS CERTIFICATION IS (i) MADE WITH THE UNDERSTANDING THAT ANY INTERNATIONAL FALSIFICATION MAY BE SUBJECT TO BOTH CIVIL AND CRIMINAL PENALTIES UNDER 49 CFR 1540.103 AND TITLE 18 USC 1001, AND (ii) SUBJECT TO TSA RECORD KEEPING REQUIREMENTS APPROVED BY TSA."

NUMBER OF ITEMS UNDER 16 OUNCES (453.6 GRAMS):____

TRANSFERRED BY UNITED (TRANSFERRING CARRIER)

BY REGINA 248138 (SIGNATURE) (EMPLOYEE NUMBER)

ORIGINAL DUPLICATE TRANSFERRING CARRIER

TRIPLICATE QUADRUPLICATE RECEIVING CARRIER

ABOVE SHIPMENT(S) RECEIVED IN FULL AND APPARENT GOOD ORDER AND CONDITION EXCEPT AS NOTED IN "REMARKS" COLUMN.

RECEIVED BY ANA (NAME OF RECEIVING CARRIER)

BY Michael Bay (SIGNATURE)

TIME 0845 DATE 8/10/24

UNITED

Lufthansa Cargo Documention

ULD control receipt

Address

Originator

1 LUC ⬅=

17 JAN 09:02

IATA ID code

	Type code	Serial no.	Owner
0	PMC	45441	LH
1			
2			
3			

Date of transfer: Day 17 / Month JAN / Year 24

Time local (24 hour clock):

Received by: Lufthansa / Air

Condition code key

Serviceable ..... SER
Unserviceable or incomplete ..... UNS
Damaged but still serviceable ..... DAM

Transferred by: united

Transfer point: LAX

Control receipt number: 0 1 6 - 0 7145898

Final destination: LAX

Condition code ⬅=: SER

Damage / remarks

ULD released
Empty ☐ Loaded ☐
Air waybill number

ULD support equipment (write in amount)
Nets | Doors | Straps | Fittings

ULD returned
Empty ☐ Loaded ☐
Air waybill number

ULD support equipment (write in amount)
Nets | Doors | Straps | Fittings

Customer

Account number

Address

Customer - please note
Demurrage begins → Date | Time

CGOAC20 (1/12)
00-0734-3-0017

Customer / interline transactions / ULD released

Receiving carrier or customer signature*	Date	Time
Transferring carrier or customer signature UA	Date 1.17	Time 1600

Customer transactions only / ULD returned

Receiving carrier signature	Date 1.17.24	Time 1600
Transferring customer signature	Date	Time

*Customer agrees to liability as specified on reverse

Carrier use only

Excess time	No. of days Per day	$
Other charges	☐ Loss ☐ Damage	$
	Total charges	$

CONTROL CENTER/ACCOUNTING COPY

Lufthansa

IN

ULD CONTROL RECEIPT

Transfer By	**YY**	Received By	**LH**	Transfer Point	**LAX**
Date of Transfer	**17 Jan 2024**	Time	**15:55**	Charge Code	

date and time are local times

Remarks	

ULD ID Code	Control Receipt No	Condition	Air Waybill	Empty/Loaded	Final Dest.	Net Serial No.	#Nets	Condition	#Straps
PMC45441LH	**020-0-4673111**	**SER**		**Empty**				**SER**	

Total ULDs	Total Nets	Total Straps
1	**0**	**0**

Transferring Party	**LAX141**
UTi United States Inc. (or authorized agent)	
Agent Name:	**Robert A Goodman**
Licence Plate:	**A1939248**

1-17-24 1600

Date/Time

Signature

Receiving Party	**LH**
Lufthansa Cargo AG (or authorized agent)	
Agent Name:	**Jeffrey Robinson**

Date/Time

Signature

Liability for loss and damage

The use and possession of a carrier-owned unit load device is subject to applicable tariffs in effect as of the date hereof which are filed in accordance with the law. In particular, the shipper or the consignee shall be liable for demurrage if the unit load device is held in excess of the time specified in the applicable tariff, the shipper or the consignee shall be liable for damage sustained by a unit load device while in the use and possession of the shipper or consignee; the shipper or the consignee shall be liable for a non-return penalty as specified in the applicable tariff.

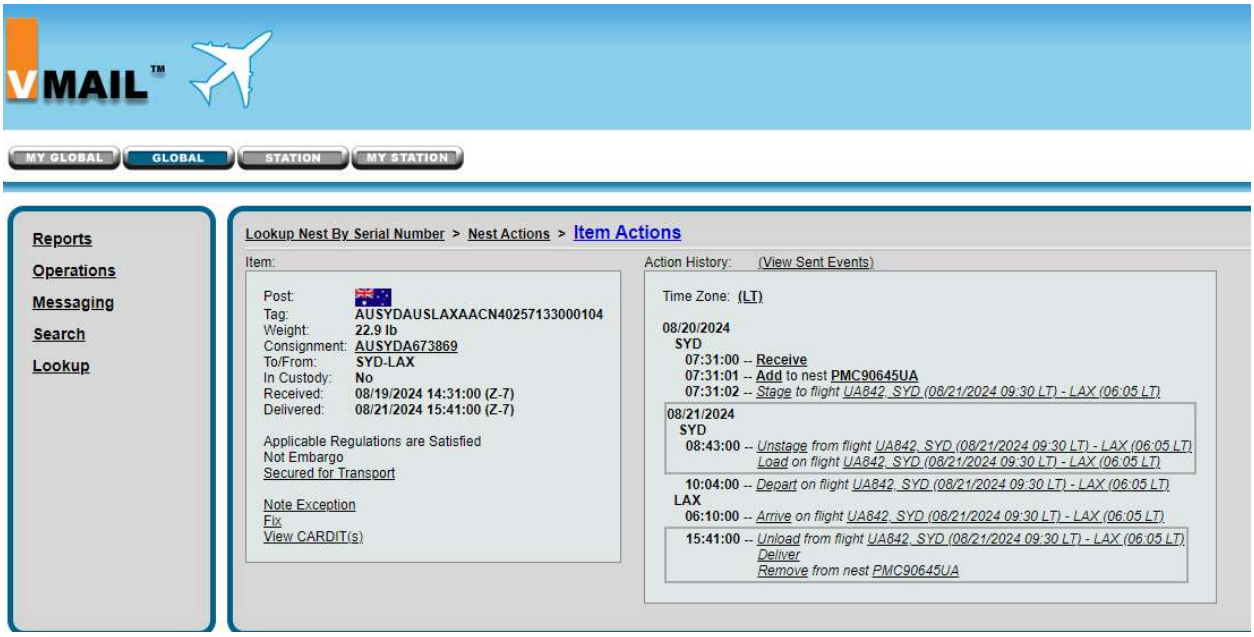
Condition Codes	
SER	Serviceable
DAM	Damaged

Charge Codes	
HHH	Demurrage to be charged as from transfer date
ZZZ	No Demurrage (free of charge / courtesy move)

powered by jettainer

LUC Transaction created at 18 Jan 2024 00:02 UTC

Velocity Mail Report



Inbound Arrival Cargo Transfer Log

Note: TBIT gates are included (Gate 139 and 154)

UNITED CARGO

Cargo Lead: C/6550 RR

Date: 08/20/2024

Flight	Gate	ETA	Block Time	Stamp Time	Driver	A	M	X	Q	S/P
842	152	0545			Hibbler Nixon Murphy Williams	—	2867	19,694	—	DocBox
1670	139	0620			—	—	—	—	—	—
534	77	0631			Young | Ricketts	—	—	12,279	2120	AOM AOM
2431	82	0640			—	—	—	—	—	—
1138	141	0701			—	—	—	—	—	—
2670	85	0715			—	—	—	—	—	Cap
1416	70A	0725			—	—	—	—	—	—
502	71A	0726			—	—	—	—	—	—
741	83	0740			—	—	—	—	—	AOG
3907	74	0814			—	—	—	—	—	—
1845	75B	0822			—	—	—	—	—	—
2237	73	0838			—	—	—	—	—	AOM AOM AOM AOM
2623	72A	0838			—	—	—	—	—	—
2361	80	0843			—	—	—	—	—	—
1482	84	0849			Young	—	—	242	—	—
2434	77	0858			Peralta Arnold Williams	—	—	18,537	4810	DocBox
221	71A	0912			—	—	—	—	—	—
2209	70A	0915			—	—	—	—	—	—
1093	71B	0916			—	—	—	—	—	AOG AOG
1400	70B	0931			—	—	—	—	—	—
1251	83	1043			—	—	—	—	—	AOM
1340	72A	1050			Ricketts	—	—	2922	—	—
1235	71A	1058			—	—	—	—	—	—
33	74	1102			Murphy Hibbler Nixon	—	—	25,138	—	—
1519	75A	1108			—	—	—	—	—	—
405	70B	1135			Murphy	—	267	—	—	—
311	82	1137			Ricketts	—	—	245	Live Mice 20	AOM AOM
2377	71B	1138			Hibbler	—	338	—	155	AOM
2190	70A	1145			—	—	—	—	—	—
2487	80	1153			—	—	—	—	—	—

UNITED CARGO

Cargo Lead: Colosso RL

Date: 08/20/2024

Flight	Gate	ETA	Block Time	Stamp Time	Driver	A	M	X	Q	S/P
38	76A	1225			Peralta/Arnold	—	—	15,134	—	—
1897	81	1242			—	—	—	—	—	—
2679	75B	1246			—	—	—	—	—	—
2234	73	1300			Ricketts	—	8	—	—	—
1013	72A	1307			—	—	—	—	—	—
2675	71A	1356			Peralta	—	—	112	—	AOG
230	74	1411			Arnold/Peralta	—	—	10,239	22,674	—
2304	71B	1429			—	—	—	—	—	—
1962	81	1453			[redacted]	—	—	13	—	AOG
547	75A	1455			—	—	—	—	—	—
1252	83	1508			—	—	—	—	—	—
2455	82	1518			—	—	—	—	—	—
1363	77	1525			[redacted]	—	—	8038	2879	DOCBOX

Daily Warehouse Equipment Check

DAYS 8-10-24

Check motorized equipment at least once per shift. Keep local records of these checks for at least one month. NOTE: When equipment is not used on a daily basis or when equipment was not used during the

	Vehicle	Unit #	O.O.S.	Hour Meter Record Hours	Tires Yes	Tires No	Tires N/A	Hitch Yes	Hitch No	Hitch N/A	Present and Functional Yes	Present and Functional No	Present and Functional N/A	Lights Yes	Lights No	Lights N/A	Primary and Parking Yes	Primary and Parking No	Primary and Parking N/A	Oil Yes	Oil No	Oil N/A	Fuel or Battery Level Yes	Fuel or Battery Level No	Fuel or Battery Level N/A	Comments	Employee Name	Employee #
1	Bobtail	BT0036			✓			✓			✓			✓			✓			✓			✓				BICKETT, S	
2	Bobtail	BT0083																										
3	Tractor	CT2341			✓			✓			✓			✓			✓					—	✓				HOUSE, L	
4	Tractor	CT2376			✓			✓			✓			✓			✓					—	✓				HERRERA, O	
5	Tractor	CT2384			✓			✓			✓			✓			✓					—	✓				LANE, R	
6	Tractor	FT0515			✓			✓			✓			✓			✓			✓			✓				CALDER, R	
7	Tractor	FT0524			✓			✓			✓			✓			✓			✓			✓				WILLIAMS, E	
8	Tractor	FT0525																										
9	Tractor	FT0526			✓			✓			✓			✓			✓			✓			✓				GREEN, A	
10	Tractor	FT0527																										
11	Tractor	FT0528																										
12	Tractor	FT0539			✓			✓			✓			✓			✓			✓			✓				LACANILAO, P	
13	Tractor	FT0544																										
14	Tractor	FT0545			✓			✓			✓			✓			✓			✓			✓				SCOGGINS, S	
15	Tractor	FT0547																										
16	Tractor	FT0548																										
17	Tractor	FT1106																										
18	Tractor	FT1108			✓			✓			✓			✓			✓			✓			✓				WILLIAM, B	
19	Tractor	FT1109																										
20	Tractor	FT8700																										
21	Tracrtor	FT8702																										

Standard Task Description	Check that the tires are properly inflated, and have sufficient tread wear and overall condition. Check for lug nut (loose-missing-broken) when possible - Check for FOD	Check hitch is working properly, no operational defects - ensure hitch locks properly	Seatbelts are present and operate as designed.	Check the lights to ensure they illuminate front and rear (Headlight, tail lights, brake lights, backup lights, Panel lights)	Check the pedal and pad/ non slip surface for wear and to ensure they are operating and not damaged.	All units visually check for any fluid leaks underneath unit and report any identifiable leaks with color description DO NOT remove radiator cap	Fill fuel tank with proper fuel or charge unit as required. Add the quantity of fuel added in the "Yes" box.
					Check for holding action of parking brake at idle in gear. Check for holding ability	Check engine oil level. (except where access is 48" above the ground and no safety equipment is available) Report any oil fill in excess of 1 quart.	

Revised: 18JAN24

TAG TYPE	RED	RED	RED	YELLOW (DAY) / RED (NIGHT)	RED	RED

LEAD: HERRERA, O

SUPERVISOR: _____

DATE: 8-10-24 SHIFT: DAY

** This sheet covers the basic required checks. There are some pieces of equipment with unique features that shall be checked daily. **

Appendix H: Airlines for America letter to Los Angeles World Airports

December 20, 2023

Via Email

Los Angeles World Airports
Los Angeles International Airport
1 World Way
Los Angeles, CA 90045

To Whom It May Concern:

Airlines for America (A4A), the trade association for the leading U.S. passenger and cargo airlines[1] appreciates the opportunity to provide feedback to Los Angeles World Airports (LAWA) on the Draft LAX Zero-Emission Ground Support Equipment Policy (ZE GSE Policy) that was circulated via email on November 30, 2023.

A4A and our members embrace our responsibility to address the environmental impacts associated with aviation and have a very strong environmental record that demonstrates our commitment to reducing such impacts even as we continue to provide air transportation services critical to maintaining the growth and vitality of the national, state, and local economies. A4A's commitment extends to reducing greenhouse gases (GHGs) emissions and criteria pollutant emissions that can affect local air quality including particulate matter (PM) and oxides of nitrogen (NOx). Commercial airlines are dedicated to providing air transportation services to the public that, above all, ensure the safety of our passengers, crew, and the larger public.

We view responsible environmental stewardship as essential to our business and have embraced the need to work proactively to address environmental concerns and achieve concomitant public health objectives. A4A and our members look forward to a continued partnership with LAWA to lower greenhouse gas and criteria air pollutant emissions through the electrification of ground support equipment (GSE). A4A members continue to support the emission goals within the Memorandum of Understanding between the South Coast Air Quality Management District (SCAQMD) and Los Angeles International Airport (LAX), the Ground Support Equipment Emissions Policy, and were pleased to see that the 2020 Annual Progress Report for the SCAQMD and LAX Memorandum of Understanding (MOU) indicated that the fleet averaged NOx emission factor for commercial GSE at LAX for calendar year 2020 was 1.52 g/bhp-hr, which exceeded the 2023 target.[2]

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[1] A4A's members are: Alaska Airlines, Inc.; American Airlines, Inc.; Atlas Air, Inc.; Delta Air Lines, Inc.; Federal Express Corporation; Hawaiian Airlines, Inc.; JetBlue Airways Corp.; Southwest Airlines Co.; United Airlines Holdings, Inc.; and United Parcel Service Co. Air Canada, Inc. is an associate member.

[2] Los Angeles International Airport South Coast Air Quality Management District Memorandum of Understanding (MOU) Annual Report for Calendar Year 2020, September 2, 2021, p. 1 (available at: lawa-2020-scaqmd-lax-mou-reports-09-02-2021-final---signed.pdf)

We look forward to working with LAWA to address the specific items outlined below:

- When possible, use definitions consistent with California Air Resources Board (CARB) fleet regulations and the SCAQMD-LAX MOU.
- Utilize the proposed Technology Working Group (TWG) to determine whether specific equipment falls under the definition of GSE, and is listed as Commercially Available, Operationally Feasible, or exempt.

I. Federal Preemption / NAAQS Compliance / SIP Credit

A critical aspect of the cooperative effort between A4A's members and LAWA to arrive at a mutually acceptable ZE Emissions GSE Policy is that the Policy is not only premised on operational feasibility, commercial availability, and necessary infrastructure, but also that it is legally sound. Because the Policy speaks to "requirements" for ZE GSE at LAX, it counsels in favor of careful consideration in that regard. Zero emission equipment and vehicle mandates can effectively be considered "standards relating to control of emissions" which are subject to preemption under the federal Clean Air Act (CAA) when enforced outside the scope of the federal regulatory scheme for mobile sources.[3]

More particularly, Section 209(a) of the CAA prohibits a state or any political subdivision thereof from adopting or attempting to enforce any standard relating to the control of vehicle and equipment emissions.[4] The Supreme Court has interpreted the term "standard" broadly to include any restriction that was "established by authority, custom, or general consent, as a model or example; criterion; test."[5] In that regard, A4A further notes that, while mobile source emissions reductions are generally consistent with federal, state and local goals relating to the achievement of National Ambient Air Quality Standards (NAAQS), the ZE GSE Policy's provisions may not be deemed to satisfy EPA's prerequisites for qualifying for SIP credits.

Additionally, it is worth noting that the Airline Deregulation Act (ADA), 49 U.S.C. § 41713(b) prohibits States or political subdivision of a State from adopting or enforcing a regulation or other provision having the force and effect of law that relates to a price, route, or service of an air carrier. The Courts have read this as an expansive prohibition and consistently struck down measures that substitute regulatory measures for the market forces that Congress intended to drive airlines' competitive decisions regarding operations, equipment, and the delivery of air transportation services.[6] Similarly, Congress has vested FAA with exclusive authority to regulate airline operations and equipment.[7] While the ADA does not prevent state or local authorities that own or operate an airport from carrying out proprietary powers and rights related to the general

---

[3] See generally Sections 202 and 209 of the CAA, 42 U.S.C. §§ 7521 & 7543.
[4] 42 U.S.C. § 7543(a).
[5] See *Engine Mfrs. Ass'n v. S. Coast Air Quality Mgmt. Dist., 541 U.S. 246, 252-53, 255 (2004)* (striking down as preempted a local government rule that used fees or economic sanctions to effectively coerce the purchase of lower emission vehicles); *see also Metropolitan Taxicab Bd. of Trade v. City of New York*, 633 F. Supp. 2d 83, 100 (S.D.N.Y. 2009) (finding New York City rule increasing the maximum allowable taxi lease rate in order to coerce taxi owners to purchase hybrid vehicles a preempted state or local "mandate to switch to hybrid vehicles").
[6] See *Rowe v. New Hampshire Motor Transport Association*, 552 U.S. 364, 371-373 (2008).
[7] See *Arapahoe County Public Airport Authority v. Federal Aviation Administration*, 242 F.3d 1213 (10th Cir. 2001) ("it is "difficult to visualize a more comprehensive scheme of combined regulation, subsidization, and operational participation than that which Congress has provided in the field of aviation").

operation of an airport,49 U.S.C. § 41713(b)(3), ZE GSE requirements do not appear to fall within the ambit of those powers.[8]

Finally, it is important that any enforcement of the Policy does not involve proposed sanctions or measures that are not only preempted by law, but also that conflict with existing contractual and lease agreements between the commercial air carriers and LAWA.

II. Definitions

A. Commercial Availability

LAWA proposes to define "Commercially Available" as an "on-road Vehicle [that] can be procured at a reasonable cost (taking into consideration purchase price, operating costs and pay-back period) on a reasonable timetable within the United States…"[9] Unfortunately, there will be a significant cost to meet the requirements of the proposed policy. Airlines are currently unable to procure electric upper and lower cargo deck loaders and heavy-duty forklifts for a "reasonable cost". For example, the incremental cost for a heavy-duty forklift is more than two and a half (2.5) times the cost of a combustion engine model. A4A and its members suggest that LAWA coordinate with the airlines as part of the TWG process to define "reasonable costs", "reasonable timetable", and to develop and update the list of Commercially Available equipment.

B. Ground Support Equipment (GSE)

A4A and its members supported the LAX Ground Support Equipment Emissions Policy (GSE Emissions Policy) and suggest that LAWA rescind the 2019 policy in tandem with finalizing this proposed policy to avoid confusion or conflicting requirements;[10] The GSE Emissions Policy defines GSE as "any vehicle or equipment used to support aircraft operations that is subject to, or included in compliance plans to meet, the requirements of the California Air Resources Board (CARB) In-Use Off-Road Diesel (ORD) Vehicle Regulation Program, CARB Off-Road Large Spark-Ignition (LSI) Engine Fleet Requirements Regulation Program, or CARB Portable Equipment Registration Program and associated Portable Diesel Engine Airborne Toxic Control Measure"[11]; yet the Draft ZE GSE Policy defines GSE as "equipment that are subject to annual permit requirements at LAX: self-propelled equipment/vehicles and non-motorized equipment/vehicles that are equipped with powered equipment. Categories of GSE include air conditioners, air start units, aircraft tractors/tugs, baggage tractors/tugs, belt loaders, bobtails, cabin service trucks, cargo/deck loaders, cargo tractors/tugs, carts (i.e., personnel carts), catering trucks, deicers, forklifts, fuel trucks, generators (i.e., light stands, portable units), ground power units, hydrant carts/trucks, lavatory carts/trucks, lifts, passenger stands, service

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[8] *See generally Arapahoe* County, 242 F.3d at 1221-22 (explaining the interactions of FAA's preemptive authority and an airport's "proprietary powers").
[9] XIX. Amended Rules for Zero-Emission Airside Vehicles at LaGuardia Airport, John F. Kennedy International Airport, and Newark Liberty International Airport, Section 7 (July 27, 2022).
[10] Draft LAX Zero-Emission Ground Support Equipment Policy ("Draft ZE GSE Policy"), p. 1.
[11] Ground Support Equipment Emissions Policy ("GSE Emissions Policy"), October 22, 2019, p. 1.

vehicles (i.e., vans, box trucks, pickup trucks, SUVs less than 8,500 pounds Gross Vehicle Weight Rating), sweepers, and water trucks."[12]

The new definition introduces confusion and uncertainty regarding the individual definition of each piece of equipment. For example, "carts" and "service vehicles" are not defined and may include several different pieces of equipment, some of which would be inappropriately reported as GSE. As carriers have been working with LAWA to report GSE emissions under the existing MOU and other CARB fleet requirements, and as the Draft ZE GSE Policy states that it does not "replace or supersede"[13] the GSE Emissions Policy, one would have to conclude that the existing definition of GSE is still in place. To prevent inconsistency, A4A and its members recommend that LAWA remove the draft GSE definition and reference the definition of GSE within LAWA's existing GSE Emissions Policy.

C. Motorized and Non-Motorized Vehicles

The proposed definition of GSE creates additional confusion as it proposes to include "self-propelled equipment/vehicles and non-motorized equipment/vehicles that are equipped with powered equipment"[14]; however, the terms "self-propelled", "non-motorized" and "equipped with powered equipment" are not defined. Under Section IV, Phased Requirements, there is reference to "motorized GSE operating at LAX", "[c]onventional GSE in the categories of carts, baggage tractors/tugs, belt loaders, and aircraft tractors/tugs"[15] (all of which are undefined), with no reference to "non-motorized GSE". Therefore, it is unclear if both motorized and non-motorized are subject to the same or different registration requirements, how these categories equate to "conventional GSE", and which specific GSE are subject to each of the annual phased requirements. To avoid this confusion, our recommendation is to reference the existing GSE Emissions Policy definition for GSE, and to change the Phased Requirements to reference the Commercially Available GSE list, to be determined as part of the TWG process.

We note that alternative language appears in Attachment A: "both motorized and non-motorized, and motor vehicles associated with GSE operations"[16] and "motorized GSE and associated vehicles".[17] The terms "associated with GSE operations" and "associated vehicles" are undefined, and, again, it is unclear how certain equipment is categorized under the various terminology.

D. Conventional GSE

A4A and its members note that the proposed definition of conventional GSE includes "hybrids and alternative fuel vehicles".[18] While we understand that the goal of this policy is to implement zero-emission equipment, A4A and its members encourage LAWA to consider hybrids and alternative fuel vehicles as part of the bridge solution to reducing interim emissions as hybrids are available for certain equipment, while fully EV options for certain equipment have yet to be produced by manufacturers. As drafted, this definition would require operators to comply with the exemption process for equipment not yet available. Further, the definition appears to

[12] Draft ZE GSE Policy, p. 2.
[13] Draft ZE GSE Policy, p. 1.
[14] Draft ZE GSE Policy, p. 2.
[15] Draft ZE GSE Policy, p. 3.
[16] Draft ZE GSE Policy, Attachment A, Section 15.9.1, p. 9.
[17] Draft ZE GSE Policy, Attachment A, Section 15.9.3, p. 9.
[18] Draft ZE GSE Policy, p. 1.

eliminate Near-Zero Emission Vehicles (NZEV), which significantly reduce criteria pollutants, air toxic contaminants and greenhouse gas emissions, and are currently part of California's overall emission reduction strategy.[19] Further, hydrogen is considered an alternative fuel, and when used in a fuel cell, has zero tailpipe emissions, yet appears to be similarly excluded by this definition.

E. Operationally Feasible

The definition of Operationally Feasible states that the ZE GSE is "capable of safely performing the **same tasks** as its Conventional equivalent [emphasis added]"[20], yet A4A members note that safety is not the sole consideration of operational feasibility. This definition assumes that the tasks performed by a conventional vehicle can be performed by a single replacement ZE GSE; i.e., that a single replacement ZE GSE can perform the "same tasks" as the conventional vehicle it replaces. Unfortunately, current battery technology limits the duty cycles of many ZE GSEs, so more than one ZE GSE is required to perform the "same tasks" previously performed by the replaced conventional vehicle. For example, while airlines have successfully implemented electric forklifts, cargo loaders, baggage tractors, and some utility carts, they have not been able to implement portable electric GPUs or cargo tractors in certain locations due to operational infeasibility. A4A and its members recommend that, instead of LAWA solely determining Operational Feasibility on a case-by-case basis which may lead to inconsistency or confusion, equipment be approved or exempted as Operationally Feasible as part of the TWG process.

F. Small Equipment

As noted above, due to the wide range of equipment that is proposed to be included within the definition of GSE, the definition of "small equipment" with an engine that is less than 25 horsepower is also unclear. A4A and its members recommend that the TWG define a list of specific equipment that falls within this category in order to ensure that a clear standard is defined and implemented.

G. Temporary Conventional GSE

Under the definition of 'temporary conventional GSE', the term "peak demand" is unclear. The term "peak demand" is sometimes referred to as peak passenger demand or peak demand for electricity. A4A and its members recommend that LAWA clarify the intent of the phrase and allow the TWG to define periods when temporary conventional GSE may be utilized.

III. Applicability

Section III(B)(iv) notes that new Conventional GSE is exempt "so long as the subject GSE meets the most stringent state or federal emissions standards applicable at the time for new equipment vehicles, *and does not need to be replaced by 2034* [emphasis added]"[21] and

[19] For example, the California Air Resources Board Advanced Clean Fleets regulation allows for Near-Zero Emissions Vehicles, or hybrids, in lieu of Zero-Emission vehicles. See § 2015(e) which states "2035 and earlier model year NZEVs are counted the same as ZEVs for purposes of this article, except as specified…" (Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffro21.pdf)
[20] Draft ZE GSE Policy, p. 2.
[21] Draft ZE GSE Policy, p. 3.

provides for a 10-year replacement timeframe. GSE typically has a useful life span ranging up to 30 years depending on the equipment type, maintenance routine, and workload.[22] Ten years is a very short lifespan for GSE. Further, under California's Health and Safety code, "the retirement, replacement, retrofit, or repower of a self-propelled commercial motor vehicle … shall not be required until the later of the following: (1) Thirteen years from the model year the engine and emission control are first certified for use … (2) When the vehicle reaches the earlier of either 800,000 vehicles miles traveled or 18 years from the model year the engine and emission control are first certified for use …".[23] Further, the Advanced Clean Fleets High Priority and Federal Fleets ZEV Milestones Option requires fleet owners to waive Health & Safety Code § 43021(a).[24]

LAWA should adhere to the California requirements for retirement and replacement of commercial vehicles and, additionally, consider the overall lifecycle gains of utilizing equipment for its useful life versus disposing of equipment that is operational. Further, we recommend incorporating a policy for the retention of Conventional GSE if it still meets the most stringent or federal emissions standards applicable at the time of registration.

IV. Phased Requirements

Under the annual permit requirement, to avoid duplicative procedures and confusion while also promoting administrative efficiency, A4A and its members suggest utilizing the current registration system to the extent possible. We also suggest adding certain exemptions to Section III (Applicability) which would apply to all of Section IV, including lack of available infrastructure, lack of appropriate charging equipment, lack of airfield space for recharging. Similar to the comments above, we note that certain equipment under the 2030 requirement is not defined ("aircraft tractor") and recommend referring the listing of particular equipment to the TWG.

As the permit requirement states that "[b]eginning January 1, 2026, all motorized GSE operating at LAX must be registered with the LAWA Airfield Permits Unit"[25], we recommend that LAWA clarify if the registration process begins on that date, or if not, the date in 2025 when the registration process will begin.

V. Reporting

A4A and its members recommend providing the initial reporting deadline under this policy. While Section V(B)(i) states that the annual report is due before January 22nd of each year, it is unclear which calendar year is the first reporting period.

Similar to the comments provided above, to ensure consistency in terms of how GSE and equipment are defined, we recommend that the TWG develop the specific equipment lists to be considered as part of the respective action plan periods.

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[22] South Coast Air Quality Management District Memorandum of Understanding Biannual Progress Report, John Wayne Airport, January 4, 2021, p. 2.
[23] CA Health & Safety Code § 43021(a) (2023).
[24] 13 CCR 2015.2.
[25] Draft ZE GSE Policy, p. 3.

VI. Technology Working Group

A4A and its members support the implementation of a TWG to ensure continued coordination between LAWA and GSE Operators and recommend that all LAWA GSE operators are offered the opportunity to participate. Further, we recommend that the TWG convene prior to 2025 to ensure clarity and consistency prior to the implementation of the policy and the respective compliance periods, ideally to be convened within 30 days of the finalization of the ZE GSE policy. Certain equipment may have a two-year lead time between ordering, delivery, and implementation, and this does not account for the annual budget cycle. The earlier that carriers have clarity and specificity as to the requirements, the higher the likelihood of success in achieving certain milestones.

VII. Infrastructure and Equipment

A4A and its members recommend that the infrastructure and equipment guidelines proposed in Section VII be removed as many of these proposals are ambiguous or are lacking in specificity with respect to metrics and processes with respect to their implementation that is necessary to ensure consistency and compliance with current lease agreements. We further recommend that LAWA provide details regarding infrastructure and charging equipment planning and installation during the quarterly TWG meetings.

VIII. Enforcement

A4A and its members note that the provisions of Section IX(D), Default, appear problematic with respect to existing agreements with A4A's carrier members and federal preemption. As noted above, any enforcement provisions in the Policy should not involve proposed sanctions or measures that are not only preempted by law, but also that conflict with existing contractual and lease agreements between the commercial air carriers and LAWA.

H. Conclusion

A4A commends LAWA on its ongoing commitment to sustainability and reducing emissions. As the proposed policy results in meaningful implications for aviation operations, and as we have a common goal to develop a meaningful, clear and consistent policy, A4A requests that LAWA consider making further clarifications to address the issues outlined above. Thank you for your consideration of our comments. Please do not hesitate to contact us if you have any questions.

Sincerely,

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Appendix I: UAL State-Wide Diesel Tow Tractor Fleet to Support Equipment Life Assumption

Your Veh #	Veh Type	Eng Serial #	Eng Manufacturer	Eng Model	Eng MY	Eng HP	Eng Tier	Eng Family	Eng Displacemer	Fuel Type	Location
CT5560	Cargo Tractor (Airport GSE)	154675	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	2.5 1DZ	2006	53	T2	6TALL02.51DZ	2.5	DSL	SFO
CT5640	Cargo Tractor (Airport GSE)	156289	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	2.5 1DZ	2006	53	T2	7TALL02.51DZ	2.5	DSL	SFO
CT4242	Cargo Tractor (Airport GSE)	152404	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	02.5 1DZ	2006	53	T2	6TALL02.51DZ	2.5	DSL	SFO
CT5573	Cargo Tractor (Airport GSE)	154968	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	2.5 1DZ	2006	53	T2	6TALL02.51DZ	2.5	DSL	SFO
CT5557	Cargo Tractor (Airport GSE)	154191	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	2.5 1DZ	2006	53	T2	6TALL02.51DZ	2.5	DSL	SFO
CT5572	Cargo Tractor (Airport GSE)	154921	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	2.5 1DZ	2006	53	T2	6TALL02.51DZ	2.5	DSL	SFO
CT5571	Cargo Tractor (Airport GSE)	154795	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	2.5 1DZ	2006	53	T2	6TALL02.51DZ	2.5	DSL	SFO
CT4779	Cargo Tractor (Airport GSE)	1DZ0210692	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ-III	2012	51	T4I		2.4	DSL	SFO
CT5639	Cargo Tractor (Airport GSE)	1DZ001592	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	2006	55	T2	6TALL02.51DZ	2.4	DSL	SFO
CT5644	Cargo Tractor (Airport GSE)	DZ0156081	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ-II	2006	66	T2		0	DSL	SFO
CT5645	Cargo Tractor (Airport GSE)	DZ0154747	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ-II	2006	66	T2		0	DSL	SFO
CT5866	Cargo Tractor (Airport GSE)	1DZ0179921	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZIII	2008	51	T4I	8TALL02.51DZ	2.5	DSL	SFO
CT5621	Cargo Tractor (Airport GSE)	1DZ056468	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZII	2006	66	T2		0	DSL	SFO
CT5622	Cargo Tractor (Airport GSE)	1DZ015649	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZII	2006	66	T2		0	DSL	SFO
CT5624	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.		2007	50	T2	7TALL02.51DZ	0	DSL	SFO
CT5680	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO
CT5695	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO
CT5696	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO
CT5716	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO
CT5718	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO

Your Veh #	Veh Type	Eng Serial #	Eng Manufacturer	Eng Model	Eng MY	Eng HP	Eng Tier	Eng Family	Eng Displacemer	Fuel Type	Location
CT5720	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO
CT5721	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO
CT5722	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO
CT5724	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO
CT5827	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	2.486	DSL	SFO
CT5723	Cargo Tractor (Airport GSE)	11298-26651-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	IDZ-II	2008	50	T4I	7TALL02.51DZ	0	DSL	SFO
CT5897	Cargo Tractor (Airport GSE)	11298-16630-71	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.		2008	56	T4I	8TALL02.51DZ	2.486	DSL	SFO
CT5746	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.		2007	56	T2	7TALL02.51DZ	2.486	DSL	SJC
CT2130	Cargo Tractor (Airport GSE)		PERKINS ENGINES COMPANY LTD.	F2061	1983	67	T0		3.87	DSL	LAX
CT2868	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1999	54	T1	XTALL02.51DZ	2.5	DSL	SJC
CT3016	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1998	55	T1	WTALL02.51DZ	2.5	DSL	SFO
CT1333	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZII	1997	55	T0		2.5	DSL	SFO
CT2997	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1999	55	T1	XTALL02.51DZ	2.5	DSL	SFO
CT1251	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1998	55	T1	WTALL02.51DZ	2.5	DSL	SJC
CT4129	Cargo Tractor (Airport GSE)	1DZ 0342512	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1991	55	T0		2.5	DSL	SFO
CT2862	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1999	55	T1	XTALL02.51DZ	2.5	DSL	SFO
CT5125	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1994	55	T0		2.5	DSL	SAN
CT7690	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1997	55	T0		2.5	DSL	SFO
CT7735	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1997	55	T0		2.5	DSL	SFO
CT3015	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1998	55	T1	WTALL02.51DZ	2.5	DSL	SFO

Your Veh #	Veh Type	Eng Serial #	Eng Manufacturer	Eng Model	Eng MY	Eng HP	Eng Tier	Eng Family	Eng Displacemer	Fuel Type	Location
CT2922	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1999	55	T1	XTALL02.51DZ	2.5	DSL	SFO
CT7742	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ-II	1997	66	T0		2.5	DSL	SFO
CT4288	Baggage Tug (Airport GSE)	1DZ0152421	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ-II	2006	55	T2	6TALL02.51DZ	2.486	DSL	SFO
CT3019	Cargo Tractor (Airport GSE)	273137	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZIII	2013	53	T4		0	DSL	SFO
CT3018	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1998	55	T1	WTALL02.51DZ	2.5	DSL	SFO
CT1201	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1997	55	T0		2.5	DSL	SFO
CT7691	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1997	55	T0		2.5	DSL	SFO
CT7741	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1997	55	T0		2.5	DSL	SJC
CT4085	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1990	55	T0		2.5	DSL	SFO
CT3017	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1998	55	T1	WTALL02.51DZ	2.5	DSL	SFO
CT1334	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1997	55	T0		2.5	DSL	SFO
CT3013	Cargo Tractor (Airport GSE)	1DZ0273455	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ III	2013	53	T4		0	DSL	SFO
CT0481	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1998	55	T1		2.5	DSL	SMC
CT7736	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1997	55	T0		2.5	DSL	SFO
CT2230	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1991	55	T0		2.5	DSL	SJC
CT4808	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1993	55	T0		2.5	DSL	SFO
CT1250	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	TDZII	1998	55	T1	WTALL02.51DZ	2.5	DSL	SFO
CT1204	Cargo Tractor (Airport GSE)	1DZ 0316105	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	DZ 132	2012	55	T4I	CTiEL02.51Dz	2.5	DSL	SFO
CT1252	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1998	54	T1	WTALL02.51DZ	2.5	DSL	SJC
CT2921	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1999	54	T1	XTALL02.51DZ	2.5	DSL	SJC

Your Veh #	Veh Type	Eng Serial #	Eng Manufacturer	Eng Model	Eng MY	Eng HP	Eng Tier	Eng Family	Eng Displacemer	Fuel Type	Location
CT2867	Cargo Tractor (Airport GSE)	112982336071A	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1999	59	T1	XTALL02.51DZ	2.5	DSL	SJC
CT3012	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1998	55	T1	WTALL02.51DZ	2.5	DSL	SFO
CT4875	Cargo Tractor (Airport GSE)	1DZ0274282	TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ3	2013	53	T4		2.5	DSL	SFO
CT2863	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1999	55	T1	XTALL02.51DZ	2.5	DSL	SMF
CT2996	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1999	55	T1	XTALL02.51DZ	2.5	DSL	SMC
CT1337	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1997	55	T0		2.5	DSL	SFO
CT7740	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ	1997	55	T0		2.5	DSL	SJC
CT4077	Cargo Tractor (Airport GSE)		TOYOTA INDUSTRIAL EQUIPMENT MFG., INC.	1DZ-III	2013	51	T4		2.237	DSL	SFO
AVERAGE					2002	55			2.2		