Ontario International Airport Administration Offices
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Sang-Mi Lee, Planning and Rules Manager
South Coast Air Quality Management District
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Dear Dr. Lee,

Following consultation and coordination with you and your staff, Ontario International Airport (ONT or Airport) has prepared a revised annual progress report on the status of on-Airport ground support equipment (GSE) consistent with the 2019 Memorandum of Understanding (MOU) entered into by the South Coast Air Quality Management District (AQMD) and the Airport, acting by and through the Ontario International Airport Authority (OIAA) in its capacity as the proprietor and certificated operator of ONT. The purpose of this annual progress report is to provide information on the MOU's GSE measure, which provides that all GSE on the Airport "associated with commercial operations achieve a fleet average NOX emission factors of 2.2 and 1.0 g/bhp-hr by January 1 of 2023 and 2031, respectively." Since the execution of the MOU, the Airport has been working with its tenants to make progress toward the targets identified in the MOU through the accelerated turnover to cleaner equipment.

Consistent with MOU Attachment A (specifically Section III.B.1 therein), the Airport's annual progress report includes a list of GSE subject to the MOU's commitment coupled with the required equipment-specific information. Please see Table 1: 2021 Ground Support Equipment (GSE) Reporting Data included with this transmittal. Equipment emission factors are derived from OFFROAD2017 and the fleet average performance level is calculated as a straight average, as shown in Table 2: 2021 NOx Fleet-Average Emission Factor. Finally, the emissions inventory calculations are provided in Table 3: 2021 Emissions Inventory. Further information on these topics is provided below.

CALCULATION METHODOLOGIES

DATA COLLECTION METHODOLOGY

The GSE inventory was developed based on tenant-reported updates to annual equipment inventory information. Tenants provided GSE equipment specifications; reported dates and destinations of equipment changes; and, in cases where data was available, reported equipment activity data from hour meter readings. Annual activity data was derived from the OFFROAD2017 database when activity hours were not reported by the tenants.
The scope of the MOU covers GSE that is operated on-Airport property. There is one off-Airport operator that operates GSE temporarily during the peak holiday season on-Airport property. For purposes of this report, and based on the Airport's current understanding, activity data from these GSE was prorated based on two months of on-site use.

GSE that is licensed for on-road use is not included in the scope of the MOU's GSE reporting. Further, non-electric GSE with power ratings less than or equal to 25 horsepower are exempt from the California Air Resource Board's (CARB) in-use off-road diesel-fueled (ORD) fleets and large spark-ignition (LSI) fleets regulations, upon which the MOU's GSE measure is predicated. As such, these GSE also are not included in the overall fleet average performance level target calculation.

EMISSIONS INVENTORY CALCULATION

In July 2021, the methodology for calculating GSE emissions was modified as requested by AQMD to incorporate the latest emission standards for gasoline and liquefied petroleum gas (LPG) equipment based on existing, adopted regulations for LSI equipment. Revisions to the methodology were implemented as of 2021. The 2021 progress report uses the updated gasoline/LPG emission factors, deterioration rates, fuel correction factors, and load factors provided by South Coast AQMD.

Activity levels for the year were primarily sourced from the OFFROAD2017 dataset, except in instances where the GSE operator provided hours of operation based on hour meter readings. AQMD provided a standardized activity level approach to employ for the 2021 emissions inventory as described below:

For each GSE, activity shall be determined using the order of operations below:

1. Use actual operating hours from the tenant, if provided. If tenant provided hours only for one year, use those hours for both years (2021 and 2022).
2. Using off-road model defaults, if the same model year (MY) and hp are available for both years from the off-road model, use the corresponding operating hours unless there is a significant difference in hours between two years (i.e., because of low population). If the difference is greater than 25%, use 2022 hours for 2021.
3. If the exact match does not exist in the off-road model for the given fuel type, check if a match exists for any other fuel type for the given MY, hp, and GSE type and use those hours for both years.
4. If the same MY and hp is only available for one calendar year from the off-road model, use these hours for both years.
5. If MY and hp are not available for either year, use the closest hp unit for the given MY. If a match is still not available, use the closest MY. Use the same operating hours for both years.
    a. The match should be reasonable. For example, a 1999 MY forklift should not be using a 2010 MY

forklift as the off-road model surrogate.

6. If the closest MY or hp is not reasonable, continue to search previous calendar years' data in offroad model until a reasonable match is found (i.e., 2020, then 2019, then 2018, etc.).

This represents a departure from the activity level calculation methodology used in the 2020 inventory, where activity levels were determined by averaging values for GSE types as reported in the baseline. A note has been included to provide clarification on activity data that required additional steps beyond the methodology described above. When engine model year were not available in OFFROAD 2017, a match in OFFROAD 2021 was used using the closest calendar year database.

Furthermore, activity levels were prorated to account for on-site equipment additions or removals, with proration based on the specific month in which the equipment was added or taken out of service.

EMISSION FACTOR CALCULATION

For ONT, the NOx emission factor fleet average is calculated as a straight average of emission factors derived from the OFFROAD2017 database for San Bernardino County. Emission factors were derived from the database for the 2021 calendar year, matched for each piece of equipment by GSE type, fuel type, model year and horsepower bin. Where an exact match was not available, the fuel type was prioritized for selecting the default value for the corresponding GSE type. Model year-specific emission factors from OFFROAD2017 are derived by dividing total emissions by the total annual horsepower-hours and GSE-type load factor.

PERFORMANCE LEVEL SUMMARY

ONT's NOx fleet average emission factor for GSE operating on Airport property during 2021 was 2.56 g/bhp-hr. Ontario Airport continues to assess the main contributors within the GSE inventory and is working with airlines and tenants to identify fleet improvement strategies.

Of note, the number of pieces of GSE at the Airport increased from 412 GSE in 2020 to 446 GSE in 2021. While there was an increase in GSE count, through the Airport's collaboration with its tenants and the targeted retirement of outdated equipment, there was a reduction in NOx emissions and a reduction in the fleet average emission factor. The main reason emissions were reduced was the replacement of aging equipment with newer and cleaner fueled-equipment, which is reflected by the increase number of electric GSE and a decrease in older GSE. For more details on the GSE equipment, please refer to Attachment A: Equipment Summary Tables.

LOOKING FORWARD

Ontario Airport was awarded a grant by the California Energy Commission and is developing a Zero Emissions Blueprint which develops an actional roadmap toward 100% MHD ZEV infrastructure equipment at Ontario Airport. This plan is designed to identify and address barriers to ZEV adoption which affects electric GSE capabilities and is important to our emission reduction strategy.

Ontario Airport is continuing to work with our tenants and coordinate with airlines and third-party operators to evaluate and assess fleet turnover. With the 2020 and 2021 GSE inventories complete, we can better assess the main contributors

within the inventory and will work closely with the tenants to identify reduction strategies and assist with implementation. We have also incorporated GSE emission goals into license agreements and airline contracts to advance commitments in fleet emissions reduction. We are continuing to provide outreach to airlines and cargo carriers to identify potential infrastructure issue and to identify and research grant funding and partnership opportunities for assistance with installing EV charging infrastructure.

In closing, ONT is committed to maintaining its collaborative efforts with South Coast AQMD and the airlines and tenants to make necessary adjustments to reach its fleet average performance level targets. The Airport is actively pursuing solutions to increase the electrification of GSE, including infrastructure development to support electric GSE.

Please feel free to contact me at (909) 544-5255 or kkavanagh@flyontario.com with questions regarding this report. Thank you for your consideration and partnership in pursuing viable clean air initiatives in the airport sector.

Sincerely,

Karen Kavanagh
Interim Chief Capital Development Officer
Ontario International Airport