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April 23, 2024

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: 2022 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: 2022 NOx Fleet-Average Emission Factor. Finally, the emissions inventory calculations are provided in Table 3: 2022 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 and remain unchanged for the 2022 progress report calculation methodology. The 2022 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 2022 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.
6. 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.

7. 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.).

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, to account for on-site utilization, activity levels were pro-rated based on the month that each piece of pertinent equipment was added or removed from the Airport.

EMISSION FACTOR CALCULATION

For ONT, the NO_x 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 2022 calendar year and 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 when selecting the default value for the matching 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 NO_x fleet average emission factor for GSE operating on Airport property during 2022 was 2.53 g/bhp-hr. By the end of 2022, 19 GSE were removed from the overall fleet, which improved the NO_x fleet average emission factor to 2.43 g/bhp-hr. While the Airport was able to achieve emissions reductions and continuously improve its performance level in 2020, 2021 and 2022, the NO_x fleet average emission factor at the conclusion of 2022 remains shy of the 2.2 g/bhp-hr performance level target set for January 1, 2023. The Airport has continued to work with the airlines and tenants that have the oldest GSE and is continuing to work with the airlines and tenants to remove and replace the older GSE. Of note, the number of pieces of GSE at the Airport increased from 446 GSE in 2021 454 GSE in 2022. 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 NO_x emissions and a reduced 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 of the number of electric GSE and a decrease in the older GSE. For more details on the GSE equipment, please refer to Attachment A: Equipment Summary Tables.

LOOKING FORWARD

The Airport is also working to expand its current Motor Vehicle Operating Permit (MVOP) program to better track and encourage the improvement of the GSE at the Airport. The Airport is interested in using this program to encourage tenants to replace and/or eliminate older GSE, ensure that any new GSE brought to the airport meet specified standards and improve equipment tracking on the Airport's premises. This program is expected to facilitate ONT's achievement of the MOU's fleet average emission factor targets. The Airport is targeting to have the tracking part of this program in place in 2024 and engaging with the tenants through this program to accelerate improvements to the GSE fleet.

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. For example, ONT has specific discussion with tenants on replacing Tier 0, Tier 1 GSE equipment. The Airport is actively pursuing solutions to increase the electrification of GSE, including infrastructure development to support electric GSE. The Airport is in process of evaluating future infrastructure requirements, the first phase of this comprehensive study was completed in 2023.

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,

A handwritten signature in blue ink, appearing to read "Karen L. Kavanagh". The signature is fluid and cursive, with a large, stylized initial "K".

Karen Kavanagh
Interim Chief Capital Development Officer
Ontario International Airport