

Ontario International Airport Administration Offices

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September 21, 2021

Zorik Pirveysian, Planning and Rules Manager
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

Dear Mr. Pirveysian,

Ontario Airport has prepared this summary of the GSE emission calculation methodology as requested by the South Coast Air Quality Management District ("AQMD") in Item 1 of an email sent on August 18, 2021. We have submitted this information to support AQMD's evaluations for the 2022 AQMP. This letter summary contains a brief description of the methodology used to estimate the GSE inventory, including CARB's updated emission factors and load factors and deterioration cap assumptions.

BASELINE EQUIPMENT INVENTORY

GSE emissions are based on an inventory of GSE equipment, provided by Airlines for America (A4A) in 2017 and by individual airlines and GSE operators at Ontario Airport in 2020. The 2020 GSE inventory identified equipment which was determined to be applicable to the 2017 inventory including diesel equipment with model years prior to 2014 and gasoline equipment with engine model years prior to 2010. The inventories were reconciled and resulted in revisions to the 2017 and 2020 inventories subsequent to Ontario Airport's GSE Inventory submitted on June 1, 2021. This adjustment resulted in an increase of equipment counts, inventory emissions and fleet averages for the baseline year from the original AQIP BAU values and for the annual GSE inventory in 2020.

2017 AND 2020 EMISSION INVENTORIES

Because Ontario Airport is a large cargo-handling airport, the NOX fleet average and overall NOX emissions appear higher relative to other airports the basin. Ontario Airport implemented changes to the emission inventory calculations per District guidance and in alignment with all participating airports.

Model-year specific emission factors were calculated based on the new engine standards for spark-ignited engines for gasoline-fueled equipment, and CARB's 2017 Off-road Diesel Emission Factors for diesel-fueled equipment. NOx and ROG emission factors for combustion equipment were calculated by summing the zero-hour pollutant emission factor with

the product of the deterioration rate and cumulative hours, and multiplying by the pollutant-specific fuel correction factor. Model-year specific gasoline fueled emission factor constants were provided by AQMD. Model-year specific diesel fueled emission factor constants were referenced from CARB's 2017 Off-road Diesel Emission Factors for diesel-fueled equipment.

The cumulative hours of operation for each unit were calculated by multiplying the equipment age (taken as the difference between the inventory year and engine model year) by the annual equipment usage. Activity hours were obtained from tenant-reported information, and where the data was not available, hours were derived from OFFROAD data and activity averages for tenant-reported equipment per GSE type to reflect operations at Ontario. Cumulative hours of operation were capped according to guidance transmitted by the South Coast AQMD on August 13, 2021. Engine displacement information for GSE was not provided by the GSE owner/operator, therefore deterioration caps for gasoline-fueled GSE were determined solely based on model year.

The revised emission factor methodology provides emission factors for hydrocarbon (HC) emissions. HC emission factors were converted to ROG emission factors by multiplying by a ROG to HC ratio of 1.21 for gasoline-fueled units and 0.9198 for diesel fueled units, both derived from OFFROAD2017 for the airport ground support equipment sector.

PERFORMANCE LEVELS

For GSE equipment at Ontario Airport, emission factors were obtained from CARB's OFFROAD output for each engine's retrospective GSE category, fuel type, horsepower and model year and alternative emission factors were obtained from engine-specific information, engine family data, or engine tier certifications when available. The NOx fleet average emission factor is calculated as a straight average of the equipment emission factors, excluding <25 HP equipment and including low-use units.

PROGRESS UPDATES

The revised 2020 GSE NOx fleet average NOx emission factor is 5.14 g/bhp-hr. Despite increases in air cargo handling operations, Ontario Airport decreased NOx emissions by 25% from 2017 to 2020. Ontario Airport continues to assess the main contributors within the GSE inventory and is working with airlines and GSE tenants to identify fleet reduction strategies to remain on track to achieve the 2.2 NOx fleet average emission target by 2023. License agreements have been prepared for four GSE operators and will be executed upon expiration of existing license agreements. Progress remains ongoing to provide outreach to airlines and cargo carriers to identify potential infrastructure issues and to identify and research grant funding and partnership opportunities for assistance with installing EV charging infrastructure.

Please feel free to contact Nicole Walker at (909) 544-5211 with questions regarding this report.

Sincerely,



Nicole Walker
Environmental Planning Manager