Westchester County Airport
Air Emissions Inventory Management Plan

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TABLE OF CONTENTS

1.0 Introduction 1

1.1 References 1
1.2 Inventory Principles 2
1.3 Corporate Organization 2
2.0 Inventory Boundaries 4

2.1 Organizational Boundaries 4
2.2 Operational Boundaries 4
2.2.1 Greenhouse Gases 5
2.2.2 Direct Emissions – 6
2.2.3 Emissions from Combustion of Biomass 7
2.2.4 Energy Indirect Emissions 7
2.2.5 Other Indirect Emissions 7
2.2.6 GHG Sinks 8
2.3 De Minimis Emissions 8
3.0 Inventory Base Year 9

3.1 Base Year Selection and Reduction Targets 9
3.2 Base Year Adjustments 9
3.2.1 Organic Growth and Decline 9
3.2.2 Structural Changes 9
3.2.3 Quantification Methodologies Changes and Data Improvement 9
3.2.4 Discovery of Errors 10
4.0 Inventory Data Collection Methodologies 11

4.1 Direct Emission Sources 11
4.1.1 Stationary Combustion Sources 11
4.1.1.1 Boilers and Furnaces 11
4.1.1.2 Emergency Generators and Fire Pumps 12
4.1.1.3 Training Fires 12
4.1.1.4 Aircraft Engine Testing 13
4.1.1.5 Auxiliary power units (APUs) 13
4.1.2 Mobile Combustion Emission Sources 14
4.1.2.1 Aircraft 14
4.1.2.2 Ground Support Equipment (GSE) 15
4.1.2.3 Rental Cars, Taxis and Limousines 16
4.1.3 Fugitive Emissions 16
4.1.3.1 Fuel Tanks 16
4.1.3.2 Air Conditioner Systems 17
4.1.3.3 Surface Coating and Painting 17
4.1.3.4 De-Icing and Anti-Icing 17
4.2 Indirect Emissions 18
4.2.1 Purchased Electricity 18
4.3 Best Practices 18
4.3.1 Emergency Generators and Fire Pumps 18
4.3.2 Ground Support Equipment (GSE) 18
4.3.3 Training Fires 19
5.0 Emissions Quantification 19

5.1 GHG Emissions Quantification 19
5.1.1 Stationary Combustion 19
5.1.1.1 Stationary combustion of No. 2 fuel oil in boilers and furnaces 19
5.1.1.2 Stationary combustion of propane in boilers and furnaces 20
5.1.1.3 Stationary combustion of propane during training fires 20
5.1.1.4 Stationary combustion of diesel used for Emergency Generators & Fire Pumps 20
5.1.1.5 Stationary combustion of gasoline used for Emergency Generators & Fire Pumps 21
5.1.1.6 Stationary combustion of Jet A fuel during aircraft engine testing 21
5.1.1.7 Stationary combustion of Jet A Fuel used to operate Auxiliary Power Units (APUs) 22
5.1.2 Mobile Combustion 22
5.1.2.1 Mobile combustion of Jet A Fuel in the operation of Aircraft 22
5.1.2.2 Mobile combustion of Aviation Gasoline in the operation of Aircraft 22
5.1.2.3 Mobile combustion of diesel in ground service equipment (GSE) 23
5.1.2.4 Mobile combustion of gasoline in ground service equipment (GSE) 23
5.1.2.5 Mobile combustion of gasoline in rental cars, taxis 23
5.1.3 Fugitive Emissions 24
5.1.3.1 Fugitive emissions of HFCs from stationary air conditioning units 24
5.1.4 Electricity Indirect Emissions 24
5.2 Global Warming Potentials 24
5.3 Non-GHG Emissions 25
5.4 Changes to Quantification Methodologies 25
6.0 Quality Assurance 26
6.1 Inventory Processes and Systems 26
6.2 Methods 27
6.3 Data Management 27
6.4 Documentation 27
6.5 Uncertainty 28
7.0 Reporting 29
8.0 Inventory Verification 30

1.0 Introduction

Westchester County Airport's (WCA) Air Emissions Inventory Management Plan (IMP) is intended to guide the airport in the maintenance and compilation of its Air Emissions Inventory. An Air Emissions Inventory identifies an organization's GHG emission sources and quantifies them according to a set of acknowledged conventions using established estimation methodologies.

WCA uses its Air Emissions Inventory to:

- Understand the airport's relationship to the issue of climate change;
- Develop strategies for managing GHG issues in the future, including participation in policy development and implementation of emissions controls on its operations;
- Report its environmental performance, both internally and externally; and
- Respond to existing regulatory requirements and prepare for future regulatory responsibilities.

WCA is committed to compiling and reporting its GHG emissions in a consistent manner. This IMP drives the airport toward the creation of a robust data collection system, integrated into the WCA Environmental Management System (AEMS) that ensures consistency, comparability, and transparency throughout the organization.

In summary, WCA's Air Emissions Inventory Management Plan document has the following purpose:

- To guide WCA employees and tenants who are responsible for compiling the Air Emissions Inventory.
- To allow WCA to effectively assess its environmental performance with respect to GHG emissions in a credible and open manner.
- To inform WCA employees, regulators, and other stakeholders on WCA's Air Emissions Inventory.

1.1 References

WCA's Air Emissions Inventory Management Plan is derived from guidance provided by the ISO 14064 standard, *Greenhouse gases – Part 1: Specification for the quantification, monitoring and reporting of emissions and removals*.

WCA's Air Emissions Inventory Management Plan is also consistent with *The GHG Protocol* (2004), an effort of the World Resources Institute and the World Business Council for Sustainable Development (WRI/WBCSD), which used the expertise of business, consultants, government, and non-government agencies to identify best practices regarding how a Air Emissions Inventory should be conducted.

Finally, this Management Plan is aligned with The Climate Registry's (TCR's) *General Reporting Protocol* (GRP), version 1.1. This protocol builds on the California Climate Action

Registry's *General Reporting Protocol*, and, like *The GHG Protocol*, has been widely vetted by Air Emissions Inventory experts.

At the time of its development, the content of WCA's Air Emissions Inventory Management Plan is compatible with and does not contradict the substance and intent of the above mentioned guidance documents. WCA's Air Emissions Inventory Management Plan is, however, tailored to match WCA's specific operations and industry conditions.

1.2 Inventory Principles

WCA's Air Emissions Inventory and reporting is based on the principles of relevance, completeness, consistency, transparency, and accuracy. Adherence to these principles is necessary to ensure that inventoried and reported data are free of significant errors and capable of being relied and depended upon by users of this information.

Relevance
Relevance refers to information that is significant and useful for decision making by stakeholders. Relevance has implications on reporting content, as well as timeliness.

Completeness
WCA's Air Emissions Inventory and reporting are complete and therefore include all emissions within WCA's operational and organizational boundaries that are important and significant to users.

Consistency
WCA's GHG information is quantified and reported to allow for valid year-to-year comparisons. Changes to the inventory, its approach or methods, or the way in which it is reported are appropriately documented and justified to ensure consistency.

Transparency
WCA's Air Emissions Inventory Report is intended to provide users with a clear understanding of the contained information through a factual, neutral, and coherent presentation of information. At a minimum, the reported data is supported by the approach and the methodologies used and the identification of any assumptions made. All reported information is based on a clear audit trail.

Accuracy
WCA's Air Emissions Inventory Report is sufficiently accurate and precise to enable intended users to make decisions based on the reported information with reasonable confidence. Quality systems and other controls have been implemented to identify and eliminate any systematic and/or random errors. Uncertainties associated with GHG information have been reasonably and appropriately identified and communicated.

1.3 Corporate Organization

The Airport is a general and commercial aviation airport located in White Plains, New York. The Airport is managed by AvPorts, a private contractor to the Westchester County Department of Transportation (DOT). Tenant operations include commercial, private, and corporate aviation. Additionally, tenants and vendors provide support operations such as

aircraft fueling and servicing, deicing, ground support, catering, vehicle operations, food services, car rental, and parking operations.

2.0 Inventory Boundaries

2.1 Organizational Boundaries

The setting of organizational boundaries allows WCA to identify which facilities and operations should be included in its Air Emissions Inventory. Two methods have emerged as best practice according to the protocols referenced in Section 1.2 above:

Control
A company reports 100 percent of the emissions from facilities over which it has financial or management control and zero emissions from assets it does not control.

Equity Share
A company reports GHG emissions according to its share of equity in partially and wholly owned facilities. Equity share is the percentage of economic interest in or benefit derived from a facility.

Consistent with this IMP, WCA has chosen to report is emissions based on the management control method. Accordingly, it will be reporting 100% of emission from all sources within the airport's physical boundaries associated with aviation related services except for those emissions generated by the general public in their use of WCA for transportation related services.

The organizational boundaries of the WCA emissions inventory include air transportation and air transportation support operations at the airport whether provided by AvPorts, tenants or vendors. Aircraft engine emissions up to an altitude of 3,000 feet are included, as are rental car usage and limo service on the Airport property. Based on recommendations from the Port Authority of New York and New Jersey, aircraft engine emissions up to an altitude of 10,000 feet are also estimated for illustrative purposes.

2.2 Operational Boundaries

Operational boundaries in a Air Emissions Inventory refer to the specific types of emission sources that an entity (as defined by the organizational boundary) possess and will include in its inventory and report. All entities have a variety of emissions sources. To simplify the varying array of sources, organizations create groups and categories of common sources that provide a general framework for the organization of the inventory. This framework facilitates the identification of appropriate quantification methodologies for emission sources, collection of data, as well as reporting of inventory results.

A key distinction in setting operational boundaries is whether GHG emissions sources are categorized as direct emissions or indirect emissions. Direct emissions result from emission sources that are owned or operated by the organization. Direct emissions are principally the result of combustion of fossil fuels in stationary sources, chemical process emissions, fugitive emissions from electrical and refrigeration equipment, and combustion of fossil fuels in mobile sources. Carbon dioxide emissions from the combustion of biogenic fuels in stationary sources are also considered direct emissions, but are typically reported separately from those emissions from the combustion of fossil fuels.

Indirect emissions are those for which the reporting organization is responsible but occur from sources owned or controlled by another company. Indirect emissions are further divided into Energy Indirect Emissions and Other Indirect Emissions. Energy indirect emissions include purchased electricity, steam, and heating/cooling. Examples of other indirect emission sources include business travel and transport of goods and materials.

For the purposes of establishing an inventory that would help it in fully understanding its GHG impacts, WCA defined the operational boundaries of its inventory as follows:

Organization/ Airport Uses[1]	***Direct (Scope 1, WRI/WBCSD)***	***Indirect (Scope 2, WRI/WBCSD)***		
		Purchased Electricity	*Business Travel (off Airport) and employee commuting for the organization*	*Transport of Goods and Services (such as fuel, chemicals, deicing fluid) for the use of the organization*
Avports/DOT	Yes	Yes	No	No
Tenants	Yes*	Yes	No	No
Airlines	Yes**	Yes	No	No
Contractors	No	Yes	No	No
General Public	No	na	na	na

* Includes Aircraft operations between 0-3,000 feet and rental car operation and taxi/limousine service to boundary of airport
**Includes Aircraft operations between 0-3,000 feet.

Westchester County will review its operational boundaries yearly.

2.2.1 Greenhouse Gases

WCA's Air Emissions Inventory includes and quantifies emissions of the following greenhouse gases:

- Carbon Dioxide (CO_2),
- Methane (CH_4),
- Nitrous Oxide (N_2O),
- Hydrofluorocarbons (HFCs),
- Perfluorocarbons (PFCs), and
- Sulfur Hexafluoride (SF_6).

[1] Organizations may choose to report the emissions of other organizations associated with their operations. Reporting of these other emissions, defined as Scope III emissions (WRI/WBCSD), is optional; however, WCA elected to include these other emissions as they relate to Airport activities and services to determine their magnitude in relation to WCA's total GHG footprint.

Additionally, the inventory also includes and quantifies emissions of the following non-GHGs:

- Carbon Monoxide (CO),
- Total Hydrocarbons (THC),
- Non-methane Hydrocarbons (NMHC),
- Volatile Organic Compounds (VOC),
- Nitrogen Oxides (NO_x),
- Sulfur Oxides (SO_x)
- Particulate Matter (PM2.5 and PM10)

2.2.2 Direct Emissions –

The following direct emissions of GHGs were identified for WCA:

- CO_2, CH_4, and N_2O emissions from stationary combustion of No. 2 fuel oil and propane in boilers and furnaces;
- CO_2, CH_4, and N_2O emissions from stationary combustion of diesel and gasoline fuel in emergency generators and fire pumps;
- CO_2, CH_4, and N_2O emissions from stationary combustion of propane used during training fires;
- CO_2, CH_4, and N_2O emissions from stationary combustion of Jet A fuel and Aviation Gasoline used in Aircraft Engine Testing;
- CO_2, CH_4, and N_2O emissions from stationary combustion of Jet A fuel used in Auxiliary Power Units;
- CO_2, CH_4, and N_2O emissions from mobile combustion of Jet A fuel and Aviation Gasoline in aircraft engines;
- CO_2, CH_4, and N_2O emissions from mobile combustion of gasoline and diesel in ground service equipment (GSE)[2];
- CO_2, CH_4, and N_2O emissions from mobile combustion of gasoline and diesel in on-road vehicles; (includes Airport customer vehicle rentals)
- Fugitive emissions of HFCs[3] from stationary air conditioning units; and
- Fugitive emissions of SF_6 from high voltage circuit breakers.

The following direct emission of non-GHGs were identified for WCA:

- CO, THC, NMHC, VOCs, NO_x, SO_x, PM 2.5, and PM 10 emissions from stationary combustion of No. 2 fuel oil and propane in boilers and furnaces;

[2] Although a minority of GSE is properly classified as stationary combustion sources, all equipment is modeled as mobile combustion sources in order to provide a complete report of service equipment as a category.
[3] R-410a and R-134a were the only applicable refrigerants identified within the airport's operational boundaries.
[4] R-410a and R-134a were the only applicable refrigerants identified within the airport's operational boundaries.

- CO, THC, NMHC, VOCs, NO_x, SO_x, PM 2.5, and PM 10 from stationary combustion of diesel and gasoline fuel in emergency generators and fire pumps;
- THC, NMHC, VOCs, PM 2.5, and PM 10 emissions from stationary combustion of propane used during training fires;
- CO, THC, NMHC, VOCs, NO_x, SO_x, PM 2.5, and PM 10 from stationary combustion of Jet A fuel and Aviation Gasoline in aircraft engine testing;
- CO, THC, NMHC, VOCs, NO_x, SO_x, PM 2.5, and PM 10 from stationary combustion of Jet A fuel in auxiliary power units;
- CO, THC, NMHC, VOCs, NO_x, SO_x, PM 2.5, and PM 10 from mobile combustion of Jet A fuel and Aviation Gasoline in aircraft engines;
- CO, THC, NMHC, VOCs, NO_x, SO_x, PM 2.5, and PM 10 from mobile combustion of gasoline and diesel in ground service equipment (GSE);
- Fugitive emissions of VOCs from runway coating and painting;
- Fugitive emissions of VOCs from the application of de-icing and anti-icing agents;
- Fugitive emissions of VOCs from solvent degreasing; and
- Fugitive emissions of THC, NMHC, and VOCs from Jet A and aviation gasoline fuel tanks.

While sand and salt was a potential source of fugitive emissions of PM 2.5 and PM 10, the sand and salt piles are stored in silos at the airport, eliminating particulate matter emissions due to wind erosion.

2.2.3 Emissions from Combustion of Biomass

As discussed above, CO_2 emissions from the combustion of biomass are reported separately from those emissions from the combustion of fossil fuels. At present, the airport does not produce any CO_2 emissions from biogenic sources. Any biogenic emission sources would be identified in this section of the IMP at such time that they fall within WCA's operational boundaries.

2.2.4 Energy Indirect Emissions

As described above, energy indirect emissions result from the purchase of electricity, steam, heating, or cooling produced.

The following direct emissions of GHGs were identified for WCA:

- CO_2, CH_4, and N_2O emissions from the consumption of electricity

2.2.5 Other Indirect Emissions

Selected tenant and vendor emissions are included in the inventory, but compiled under either Direct or Energy Indirect Emissions, as appropriate, in order to more fully characterize the airport operations and associated emissions.

2.2.6 GHG Sinks

At present, no GHG sinks are present within WCA's operational boundaries. Any GHG sinks would be identified in this section of the IMP at such time that they fall within WCA's operational boundaries.

2.3 De Minimis Emissions

De minimis emissions are GHG emissions that are small enough that, once established as being below a chosen materiality threshold, do not require further examination. WCA has not established a threshold for its total direct (Scope 1) and indirect (Scope 2) emissions. WCA and will annually re-evaluate this decision and if de minimis thresholds are established, will maintain records of its estimation of de minimis emissions to ensure that they remain de minimis.

3.0 Inventory Base Year

A common general objective of GHG management is performance improvement. It is therefore useful to have a starting point or a reference by which to identify targets for improvement, as well as evaluate progress toward such goals. This starting point, or base year, is a year corresponding to a set of GHG emissions data that represent typical operations. The emissions quantities associated with a base year inventory are the reference points from which future inventories are compared.

3.1 Base Year Selection and Reduction Targets

WCA has selected 2007 as its base year. Upon review, adequate data was determined to be available. The Airport made the decision to use this year based on the availability of the data required to complete the inventory and the year's reflection of typical operations. WCA, as part of its AEMS, will evaluate its inventory yearly to identify appropriate GHG objectives and targets. If reduction targets are set, they will be set relative to the base year emissions.

3.2 Base Year Adjustments

WCA is a dynamic organization whose structure and operations change in response to both internal and external drivers. To allow for the meaningful comparison of emissions over time as the corporation changes, adjustments to WCA's base year inventory emissions occur according to the following conventions:

3.2.1 Organic Growth and Decline

WCA recognizes that increasing or decreasing levels of operation and the opening and closing of facilities are situations related to the organic growth and retraction of the Airport and therefore are *not* considered reason to adjust the base year emission totals. Similarly, base year emissions are not adjusted in response to the shut downs of existing operating units or the start-ups of new operating units.

3.2.2 Structural Changes

WCA recognizes that significant structural changes in the Airport could impair the comparability of GHG reports. Therefore, in cases of significant structural change, including acquisitions and divestitures of facilities that existed in the base year or their use for purposes other than those related to transportation, WCA will adjusts its base year emissions if the impact of those acquisitions and/or divestitures are judged to be significant. WCA adheres to an annual cumulative significance threshold of 10 percent of the base year direct (Scope 1) and electricity indirect (Scope 2) emissions total as the appropriate justification for making base year emissions adjustments related to structural changes.

3.2.3 Quantification Methodologies Changes and Data Improvement

Base year emissions are adjusted if improvement in quantification methodologies or inventory data result in a 10 percent or greater change in the WCA Air Emissions Inventory base year direct (Scope 1) and electricity indirect (Scope 2) emissions total. WCA may also

elect to adjust its base year emissions as appropriate to align with any future regulatory requirements or requirements with any registries in which WCA elects to participate.

3.2.4 Discovery of Errors

Base year emissions are adjusted in response to the discovery of an error or cumulative errors in the base year emissions if correction of the discovered errors or cumulative errors result in a 10 percent change in the WCA Air Emissions Inventory base year direct (Scope 1) and electricity indirect (Scope 2) emissions total.

4.0 Inventory Data Collection Methodologies

4.1 Direct Emission Sources

4.1.1 Stationary Combustion Sources

4.1.1.1 Boilers and Furnaces

GHG: CO_2, CH_4, N_2O
Type of Activity Data: Fuel Consumption in gallons

Activity data for the AvPorts boilers and furnaces is obtained through fuel delivery invoices and tank level readings. Other tenant activity data is obtained through the tenant forms. The gallons of fuel consumed are used to quantify the GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
Tenant Fueled	Fuel consumption	Tenant Forms[5]	Tenant
AvPorts Fueled for Tenants	Fuel consumption	Fuel delivery invoices, tank level readings	AvPorts
AvPorts	Fuel Consumption	Fuel delivery invoices, tank level readings	AvPorts

Pollutants: CO, THC, NMHC, VOC, NO_x, SO_x, PM 2.5, PM 10
Type of Activity Data: Fuel Consumption in kiloliters

Activity data for the AvPorts boilers and furnaces is obtained through fuel delivery invoices and tank level readings. Tenant activity data is obtained through the tenant forms. The total kiloliters of fuel consumed are entered into EDMS.

Organization/Airport User	Data	Data Source	Records Location
Tenants	Fuel consumption	Tenant Forms	Tenants
AvPorts Fueled for Tenants	Fuel consumption	Fuel delivery invoices, tank level readings	AvPorts
AvPorts	Fuel Consumption	Fuel delivery invoices, tank level readings	AvPorts

[5] Tenant Forms are generated from the AEMS database. The forms are then returned to the tenants for confirmation that the data on the forms is correct or completion of any data that is missing. The data is checked in this way with the tenants annually.

4.1.1.2 Emergency Generators and Fire Pumps

GHG: CO_2, CH_4, N_2O
Type of Activity Data: Fuel Consumption in gallons or hour meter readings

Total gallons of fuel used over the year is obtained from the tenants. The total hours of operation of the AvPorts Emergency Generators was obtained from generator readings. The total quantity of fuel consumed, when available, or hours operated are used to quantify the GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
Tenants	Fuel consumption	Tenant Forms	Tenant
AvPorts	Hours*	AvPorts	Generator

* see Section 4.3 Best Practice for the ideal data to be collected.

Pollutants: CO, THC, NMHC, VOC, NO_x, SO_x, PM 2.5, PM 10
Type of Activity Data: Hours Operated

The total hours of operation of each generator are entered into EDMS.

Organization/Airport User	Data	Data Source	Records Location
Tenant	Hrs of operation	Tenant Forms	Tenant
AvPorts	Hrs of operation	Hour meter	AvPorts

4.1.1.3 Training Fires

GHG: CO_2, CH_4, N_2O
Type of Activity Data: Type of fuel, total gallons of fuel consumed

The Airport operations staff estimates the quantity of fuel used for the training fires by the average drop in their 500-gallon propane tank due to each training fires. This quantity, in gallons, is then used to quantify the GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Fuel Consumption	Estimate of fuel usage*	Needed

* see Section 4.3 Best Practice for the ideal data to be collected.

Pollutants: NMHC, VOCs, NO_x, PM 2.5, PM 10
Type of Activity Data: Type of fuel, total gallons of fuel consumed

The activity data required to quantify the pollutant emissions is the same as the activity data used to quantify the GHG emissions. The total quantity, in gallons, is then entered into EDMS to quantify the non-GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Fuel Consumption	Estimate of fuel usage*	Needed

* see Section 4.3 Best Practice for the ideal data to be collected.

4.1.1.4 Aircraft Engine Testing

GHG: CO_2, CH_4, N_2O
Type of Activity Data: duration of test (minutes), power setting, engine type, fuel type

EDMS is used to quantify the total volume of fuel consumed for the Engine Run-Up tests at the following standard power settings: 7%, 30%, 85%, or 100%. For the tests run at these standard settings, the total fuel consumption calculated by EDMS is used to calculate the GHG emissions. However, for engine run-up tests run at power settings other than the four standard settings, the total volume of fuel consumed per test is estimated with guidance from the FAA. A linear relationship is graphically developed for each engine type between the standard power settings and its corresponding fuel consumption. The fuel consumption in kilograms of fuel per second at the actual power setting is obtained from each engine's power setting/fuel consumption curve. Using the average density of Jet A fuel and Aviation Gasoline, which is used to convert from the mass of the fuel consumed and the volume of fuel consumed, and the duration of the test, the volume of fuel consumed is calculated and used to quantify the GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
Tenants and Airlines	Test duration, power settings, engine type, fuel type	AvPorts (Operations) Engine Run up Logsheets	AvPorts (Operations)

Pollutants: CO, THC, NMHC, VOC, NO_x, SO_x, PM 2.5, PM 10
Type of Activity Data: duration of test (minutes), power setting, engine type

The activity data required to quantify the pollutant emissions is the same as the activity data used to quantify the GHG emissions. Each test is entered into EDMS, given its duration, power setting, and engine type.

For engines tested at power settings other than the standard settings, the non-GHG emissions were calculated using the FAA-recommended method discussed above.

Organization/Airport User	Data	Data Source	Records Location
Tenants and Airlines	Test duration, power settings, engine type	AvPorts (Operations) Engine Run up Logsheets	AvPorts (Operations)

4.1.1.5 Auxiliary power units (APUs)

GHG: CO_2, CH_4, N_2O

Type of Activity Data: Total annual quantity of landings and take-offs (LTOs)

Once the aircraft LTOs have been entered into EDMS (see the Aircraft data collection methodology under Mobile Emissions in this section), default APUs are assigned to the appropriate aircraft and EDMS calculates the associated emissions from the non-GHGs. Depending on the output size of the APU, each APU is assigned an approximate fuel flow from Table 5-9 in EPA's Procedure for Emission Inventory Preparation, Volume IV: Mobile Sources, 1992 (EPA420-R-92-009) or the most current version. Using the fuel flow, the total fuel consumption in gallons is calculated and used to quantify the GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Landings and Takeoffs (LTOs)	LTO Database, FAA Aircraft Registration Database	AvPorts

Pollutants: CO, THC, NMHC, VOC, NO_x, SO_x, PM 2.5, PM 10
Type of Activity Data: Total annual quantity of landings and take-offs (LTOs)

The activity data used to quantify the emissions from the eight pollutants is the same as for the GHG emissions. EDMS will automatically quantify the non-GHG emissions once this information is entered.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Landings and Takeoffs (LTOs)	LTO Database, FAA Aircraft Registration Database	AvPorts

4.1.2 Mobile Combustion Emission Sources[6]

4.1.2.1 Aircraft

GHG: CO_2, CH_4, N_2O
Type of Activity Data: Total annual quantity of landings and take-offs (LTOs)

The LTO database provides the tail numbers and/or flight numbers of each aircraft that arrived and departed from the Airport. It is then combined with the FAA Aircraft Registration Database obtained from the FAA website. The combined database should link the aircraft types and engine information from the FAA database to the tail numbers in the Airport's LTO database. A query is then performed using this combined database, which will give the number of LTOs of each aircraft/engine type. The total LTOs of each aircraft/engine type are then entered into FAA's Emission and Dispersion Modeling System (EDMS) program. Once entered, EDMS will calculate the total fuel consumption in gallons that is used to calculate the GHG emissions.

[6] GSE has been included as one category under mobile sources. Technically some GSE is classified as portable stationary sources.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Landings and Takeoffs (LTOs)	LTO Database, FAA Aircraft Registration Database	AvPorts

Pollutants: CO, THC, NMHC, VOC, NO_x, SO_x, PM 2.5, PM 10
Type of Activity Data: Total annual quantity of landings and take-offs (LTOs)

The activity data used to quantify the emissions from the eight pollutants is the same as for the GHG emissions. Once the total LTOs are entered into EDMS, EDMS automatically calculates the non-GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Landings and Takeoffs (LTOs)	LTO Database, FAA Aircraft Registration Database	AvPorts

4.1.2.2 Ground Support Equipment (GSE)

GHG: CO_2, CH_4, N_2O
Type of Activity Data: equipment hour meter or odometer readings at beginning and end of year for each piece of equipment.

The hour meter readings or odometer readings of the GSE are read at the beginning and ending of each year. The total hours/miles the equipment operated is then entered into EDMS, which creates an all-inclusive GSE_POP database that includes the total annual hours of each GSE type, its year of manufacture, horsepower, and fuel type. The GSE_POP database and EPA's NONROAD table included within EDMS is then used to calculate the fuel consumption, dependent on the engine's year of manufacture, fuel type, and horsepower. The total fuel consumption is then calculated and used to quantify the GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
Tenants	Hrs of operation or distance*	Hour meter/odometer	Tenants
AvPorts	Hrs of operation or distance*	Hour meter/odometer	AvPorts

* see Section 4.3 Best Practice for the ideal data to be collected.

Pollutants: CO, THC, NMHC, VOC, NO_x, SO_x, PM 2.5, PM 10
Type of Activity Data: equipment hour meter or odometer readings at beginning and end of year

The hour meter readings or odometer readings of the GSE are read at the beginning and ending of each year. The activity data used to quantify the emissions from the eight

pollutants is the same as for the GHG emissions. Once entered into EDMS, EDMS will calculate the non-GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
Tenants	Hrs of operation	Hour meter	Tenants
AvPorts	Hrs of operation	Hour meter	AvPorts

4.1.2.3 Rental Cars, Taxis and Limousines

GHG: CO_2, CH_4, N_2O
Type of Activity Data: Total number of cars rented for inventory year, average fleet mix

The total number of cars rented and the average fleet mixes provided by the rental car companies is used to categorize the vehicles into three main categories: compact, mid-size, and SUV. Fuel efficiencies for each category are obtained from www.fueleconomy.gov and used to determine the total fuel consumption, given the cars drive approximately 1.4 miles to and from the rental car facilities on the airport property (2.8 miles round-trip). Taxis and limousines are estimated based on the number of trips reported by the vendor. The total fuel consumption is then used to quantify the GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
Rental Cars	Number of rentals, fleet mix	Rental Car Companies	Rental Car Companies
Taxis and Limousines	Number of daily trips	Vendor estimate	Needed

Pollutants: NA

4.1.3 Fugitive Emissions

4.1.3.1 Fuel Tanks

GHG: N/A

Pollutants: THC, NMHC, VOCs
Type of Activity Data: Dimensions of Fuel Tanks, type of fuel, type of tank

The data required to quantify the non-GHG emissions from the fuel tanks is the tank type, type of fuel contained in the tank, and the tank dimensions. This information is entered into EDMS, which then calculates the fugitive emissions from each tank.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Dimensions of Fuel Tanks, type of fuel, type of tank	AvPorts AEMS datatbase	AvPorts
Tenants	Dimensions of Fuel Tanks, type of fuel, type of tank	AvPorts AEMS database	AvPorts

4.1.3.2 Air Conditioner Systems

GHG: HFC
Type of Activity Data: Quantity of recharge

For any air conditioner system using an associated HFC as the refrigerant, the quantity of recharge is the only activity data needed. The quantity is then converted to metric tons and multiplied by its Global Warming Potential (GWP) to obtained CO_2equivalent.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Quantity of HFC recharge	Maintenance Dept.	AvPorts Maintenance
Tenants	Quantity of HFC recharge	Tenant Forms	Tenants

Pollutants: N/A

4.1.3.3 Surface Coating and Painting

GHG: N/A

Pollutants: VOCs
Type of Activity Data: Quantity (metric tons), Type, and density of paint used

The data collected consists of the total metric tons of paint and the type of paint used in all painting operations. This data is then entered into EDMS, which quantifies the non-GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Amount of paint, type, density	Airport Painting and Stripping Contractor	AvPorts (Operations).

4.1.3.4 De-Icing and Anti-Icing

GHG: N/A

Pollutants: VOCs
Type of Activity Data: Quantity (kiloliters) and Type of de-icing and anti-icing chemicals used

The data collected consists of the total quantity of de-icing and anti-icing chemicals used in all de-icing and anti-icing operations. The total quantity of de-icing and anti-icing chemicals in kiloliters is then entered into EDMS, which quantifies the non-GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
Airlines	Quantity of Deicing/Anti-Icing Fluids	AvPorts Operations	AvPorts Operations
Tenants	Quantity of Deicing/Anti-Icing Fluids	Tenant Forms	Tenants

4.2 Indirect Emissions

4.2.1 Purchased Electricity

GHG: CO_2, CH_4, N_2O
Type of Activity Data: Consumption of electricity in kWh

Annual purchased electricity in kilowatt-hours is obtained from the information provided on the tenant forms and/or from purchased electricity invoices. This data is then used to quantify the GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Annual purchase of electricity	Invoices	AvPorts
Tenants	Annual purchase of electricity	Tenant Forms	Tenants

4.3 Best Practices

4.3.1 Emergency Generators and Fire Pumps

Due to the unavailability of the total quantity of fuel consumed in 2007, the data collected for the AvPorts generators consisted of the hour meter readings. For future inventories, the best practice is to collect the total quantity of fuel consumed. In the GHG calculation, the fuel is then multiplied by the default emission factors to obtain the estimated GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
Tenants	Fuel consumption	Tenant Forms	Tenant
AvPorts	Fuel Consumption	AvPorts	AvPorts

4.3.2 Ground Support Equipment (GSE)

Due to the unavailability of the total quantity of fuel consumed in 2007 by the GSE, the data collected for both AvPorts and tenant-operated GSE consisted of the hour meter readings. For future inventories, the best practice is to collect both the total quantity of fuel consumed by fuel type and hour meter readings. In the GHG calculation, the fuel is then multiplied by the fuel type's default emission factor to obtain the estimated GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
Tenants	Fuel Consumption	Tenant Forms	Tenants
AvPorts	Fuel Consumption	AvPorts	AvPorts

4.3.3 Training Fires

Fuel consumed during the training fires is not recorded and thus the quantity of fuel supplied to the training fires was estimated for the 2007 inventory. For future inventories, the best practice is to record the tank level readings both before and after the training fire to track the quantity of fuel consumed. In the GHG calculation, the fuel is then multiplied by the fuel type's default emission factor to obtain the estimated GHG emissions.

Organization/Airport User	Data	Data Source	Records Location
AvPorts	Tank level readings before and after the training fire	AvPorts	AvPorts

5.0 Emissions Quantification

5.1 GHG Emissions Quantification

5.1.1 Stationary Combustion

5.1.1.1 Stationary combustion of No. 2 fuel oil in boilers and furnaces

CO_2 emissions are quantified using a default emission factor of 10.15 kilograms of CO_2 per gallon of No. 2 fuel oil obtained from TCR's General Reporting Protocol, v1.1, Table 12.1.

CH_4 emissions are quantified using a default emission factor of 1.4 grams of CH_4 per MMBtu of No. 2 fuel oil obtained from TCR's General Reporting Protocol, v1.1, Table 12.8. Gallons of No. 2 fuel oil are converted to MMBtu using conversion factors of 5.825 MMBtu per barrel of No. 2 fuel oil obtained from the TCR's General Reporting Protocol, v1.1, Table 12.1 and 42 gallons per barrel.

N_2O emissions are quantified using a default emission factor of 0.3 grams of N_2O per MMBtu of No. 2 fuel oil obtained from TCR's General Reporting Protocol, v1.1, Table 12.8. Gallons of No. 2 fuel oil are converted to MMBtu using conversion factors of 5.825 MMBtu per barrel of No. 2 fuel oil obtained from the TCR's General Reporting Protocol, v1.1, Table 12.1 and 42 gallons per barrel.

Total gallons of No. 2 fuel oil used are obtained from fuel purchase records, adjusting total volumes for start and end of year inventories.

5.1.1.2 Stationary combustion of propane in boilers and furnaces

CO_2 emissions are quantified using a default emission factor of 5.74 kilograms of CO_2 per gallon of propane obtained from TCR's General Reporting Protocol, v1.1, Table 12.1.

CH_4 emissions are quantified using a default emission factor of 0.9 grams of CH_4 per gallon of propane obtained from TCR's General Reporting Protocol, v1.1, Table 12.8.

N_2O emissions are quantified using a default emission factor of 4.0 grams of N_2O per gallon of propane obtained from TCR's General Reporting Protocol, v1.1, Table 12.8.

Total gallons of propane used are obtained from fuel purchase records, adjusting total volumes for start and end of year inventories.

5.1.1.3 Stationary combustion of propane during training fires

CO_2 emissions are quantified using a default emission factor of 5.74 kilograms of CO_2 per gallon of propane obtained from TCR's General Reporting Protocol, v1.1, Table 12.1.

CH_4 emissions are quantified using a default emission factor of 11 grams of CH_4 per gallon of propane obtained from TCR's General Reporting Protocol, v1.1, Table 12.9.

N_2O emissions are quantified using a default emission factor of 0.6 grams of N_2O per gallon of propane obtained from TCR's General Reporting Protocol, v1.1, Table 12.9.

Per Section 4.3 Best Practice, fuel consumption should be obtained from tank level readings both before and after each training fire. If these readings are not available, estimations are made based on the tank size and average fuel consumption during each training fire.

5.1.1.4 Stationary combustion of diesel used for Emergency Generators & Fire Pumps

With total quantity of fuel consumed (Best Practice):

CO_2 emissions are quantified using a default emission factor of 10.15 kilograms of CO_2 per gallon of diesel obtained from TCR's General Reporting Protocol, v1.1, Table 12.1.

CH_4 emissions are quantified using a default emission factor of 11 grams of CH_4 per MMBtu of diesel obtained from TCR's General Reporting Protocol, v1.1, Table 12.9. Gallons of diesel are converted to MMBtu using conversion factors of 5.825 MMBtu per barrel of diesel obtained from the TCR's General Reporting Protocol, v1.1, Table 12.1 and 42 gallons per barrel.

N_2O emissions are quantified using a default emission factor of 0.6 grams of N_2O per MMBtu of diesel obtained from TCR's General Reporting Protocol, v1.1, Table 12.9. Gallons of diesel fuel are converted to MMBtu using conversion factors of 5.825 MMBtu per barrel of diesel fuel obtained from the TCR's General Reporting Protocol, v1.1, Table 12.1 and 42 gallons per barrel.

Total gallons of diesel used are obtained from fuel purchase records, adjusting total volumes for start and end of year inventories.

With total hours of operation:
If the total quantity of fuel consumed is not available, the fuel consumption can be back-calculated using Fuel Consumption factors from AP-42, Fifth Volume, Chapter 3, Table 3.3-1. The total NO_x, CO, and SO_x emissions calculated by EDMS using the hours of operation are multiplied by the AP-42 Fuel Consumption factors (lb pollutant/MMBtu Fuel) to obtain an average estimate of the total fuel consumed. Once the total quantity of fuel consumed was obtained, the GHG emissions are calculated using the same method as mentioned above (with total quantity of fuel consumed).

5.1.1.5 Stationary combustion of gasoline used for Emergency Generators & Fire Pumps

With total quantity of fuel consumed (Best Practice):
CO_2 emissions are quantified using a default emission factor of 8.81 kilograms of CO_2 per gallon of gasoline obtained from TCR's General Reporting Protocol, v1.1, Table 12.1.

CH_4 emissions are quantified using a default emission factor of 11 grams of CH_4 per MMBtu of gasoline obtained from TCR's General Reporting Protocol, v1.1, Table 12.9. Gallons of gasoline are converted to MMBtus using conversion factors of 5.218 MMBtu per barrel of gasoline obtained from the TCR's General Reporting Protocol, v1.1, Table 12.1 and 42 gallons per barrel.

N_2O emissions are quantified using a default emission factor of 0.6 grams of N_2O per MMBtu of gasoline obtained from TCR's General Reporting Protocol, v1.1, Table 12.9. Gallons of gasoline are converted to MMBtus using conversion factors of 5.218 MMBtu per barrel of gasoline obtained from the TCR's General Reporting Protocol, v1.1, Table 12.1 and 42 gallons per barrel.

Total gallons of gasoline used are obtained from fuel purchase records, adjusting total volumes for start and end of year inventories.

With total hours of operation:
If the total quantity of fuel consumed is not available, the fuel consumption can be back-calculated using Fuel Consumption factors from AP-42, Fifth Volume, Chapter 3, Table 3.3-1. The total NO_x, CO, and SO_x emissions calculated by EDMS using the hours of operation are multiplied by the AP-42 Fuel Consumption factors (lb pollutant/MMBtu Fuel) to obtain an average estimate of the total fuel consumed. Once the total quantity of fuel consumed was obtained, the GHG emissions are calculated using the same method as mentioned above (with total quantity of fuel consumed).

5.1.1.6 Stationary combustion of Jet A fuel during aircraft engine testing

CO_2 emissions are quantified using a default emission factor of 9.57 kilograms CO_2 per gallon of Jet A Fuel obtained TCR's General Reporting Protocol, v1.1, Table 12.1.

CH_4 emissions are quantified using a default emission factor of 0.27 grams of CH_4 per gallon of Jet A Fuel obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

N_2O emissions were quantified using a default emission factor of 0.31 grams of N_2O per gallon of Jet A Fuel obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

Total gallons of Jet A consumed in engine testing is derived from fuel flow rates as determined by EDMS and the length of engine tests.

5.1.1.7 Stationary combustion of Jet A Fuel used to operate Auxiliary Power Units (APUs)

CO_2 emissions are quantified using a default emission factor of 9.57 kilograms CO_2 per gallon of Jet A Fuel obtained TCR's General Reporting Protocol, v1.1, Table 12.1.

CH_4 emissions are quantified using a default emission factor of 0.27 grams of CH_4 per gallon of Jet A Fuel obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

N_2O emissions were quantified using a default emission factor of 0.31 grams of N_2O per gallon of Jet A Fuel obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

Total fuel consumption is obtained from the following method:

EDMS calculates the eight pollutants emitted from the APUs but does not calculate the fuel flow associated with their operation, which is necessary to calculate GHG emissions. Fuel Flow estimates are obtained from EPA's Procedures for Emission Inventory Preparation, Volume IV: Mobile Sources, which lists fuel flows from five different types of APUs. These fuel flows are then linked to the appropriate APUs in the EDMS model, and the fuel consumption is calculated using the average density of Jet A fuel and the total length of time EDMS estimates the APUs are used at the gate.

5.1.2 Mobile Combustion

5.1.2.1 Mobile combustion of Jet A Fuel in the operation of Aircraft

CO_2 emissions are quantified using a default emission factor of 9.57 kilograms CO_2 per gallon of Jet A fuel obtained TCR's General Reporting Protocol, v1.1, Table 12.1.

CH_4 emissions are quantified using a default emission factor of 0.27 grams of CH_4 per gallon of Jet A Fuel obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

N_2O emissions were quantified using a default emission factor of 0.31 grams of N_2O per gallon of Jet A Fuel obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

Total fuel consumption is obtained from the EDMS output.

5.1.2.2 Mobile combustion of Aviation Gasoline in the operation of Aircraft

CO_2 emissions are quantified using a default emission factor of 8.32 kilograms CO_2 per gallon of Aviation Gasoline obtained from TCR's General Reporting Protocol, v1.1, Table 13.1.

CH_4 emissions are quantified using a default emission factor of 7.04 grams of CH_4 per gallon of Aviation Gasoline obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

N_2O emissions were quantified using a default emission factor of 0.11 grams of N_2O per gallon of Aviation Gasoline obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

Total fuel consumption is obtained from the EDMS output.

5.1.2.3 Mobile combustion of diesel in ground service equipment (GSE)

CO_2 emissions are quantified using a default emission factor of 10.15 kilograms of CO_2 per gallon of diesel fuel obtained from TCR's General Reporting Protocol, v1.1, Table 13.1.

CH_4 emissions are quantified using a default emission factor of 0.58 grams CH_4 per gallon of diesel fuel obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

N_2O emissions are quantified using a default emission factor of 0.26 grams N_2O per gallon of diesel fuel obtained from TCR's General Reporting Protocol, v1.1, Table 13.6.

The total fuel consumption is obtained from AvPorts and tenant records (Best Practice) or derived using an EDMS output table and the EPA NONROAD model, as described in Section 4.1.2.2.

5.1.2.4 Mobile combustion of gasoline in ground service equipment (GSE)

CO_2 emissions are quantified using a default emission factor of 8.81 kilograms CO_2 per gallon for gasoline-fueled equipment obtained from TCR's General Reporting Protocol, v1.1, Table 13.1.

CH_4 emissions are quantified using a default emission factor of 0.50 grams CH_4 per gallon for gasoline-fueled equipment obtained from TCR's General Reporting Protocol, v1.1, Table 13.6

N_2O emissions are quantified using a default emission factor of 0.22 grams N_2O per gallon for gasoline-fueled equipment obtained from TCR's General Reporting Protocol, v1.1, Table 13.6

The total fuel consumption is obtained from AvPorts and tenant records (Best Practice) or derived using an EDMS output table and the EPA NONROAD model, as described in Section 4.1.2.2.

5.1.2.5 Mobile combustion of gasoline in rental cars, taxis

CO_2 emissions are quantified using a default emission factor of 8.81 kilograms CO_2 per gallon of gasoline obtained from TCR's General Reporting Protocol, v1.1.

CH_4 emissions are quantified using a default emission factor of 0.0147 grams CH_4 per mile traveled obtained from TCR's General Reporting Protocol, v1.1.

N_2O emissions are quantified using a default emission factor of 0.0079 grams N_2O per mile traveled obtained from TCR's General Reporting Protocol, v1.1.

The total fuel consumption is calculated using the rental company's average fleet, divided into three categories: compact, mid-size, and SUV. An average fuel economy for each category was determined from the Environmental Protection Agency's miles-per-gallon

estimates and, given the distance the cars traveled on the Airport's property, each car's fuel consumption was calculated. The same approach is used for taxis and limousines.

5.1.3 Fugitive Emissions

5.1.3.1 Fugitive emissions of HFCs[7] from stationary air conditioning units

Any HFC-based refrigerants are quantified by the recharge amount.

5.1.4 Electricity Indirect Emissions

CO_2 emissions are quantified using a grid-based default emission factor for the EPA's 2006 eGRID NPCC NYC/Westchester Subregion of 0.92222 pounds of CO_2 per kilowatt-hour (kwh) consumed. Total kwh from each facility are obtained from utility invoices. This methodology is consistent with TCR's General Reporting Protocol, v1.1, Chapter 14.

CH_4 emissions are quantified using a grid-based default emission factor for EPA's 2006 eGRID NPCC NYC/Westchester Subregion of 0.000038 pounds of CH_4 per kWh consumed. Total kwh from each facility are obtained from utility invoices. This methodology is consistent with TCR's General Reporting Protocol, v1.1, Chapter 14.

N_2O emissions are quantified using a grid-based default emission factor for EPA's 2006 eGRID NPCC NYC/Westchester Subregion of 0.000006 pounds of N_2O per kWh consumed. Total kwh from each facility are obtained from utility invoices. This methodology is consistent with TCR's General Reporting Protocol, v1.1, Chapter 14.

5.2 Global Warming Potentials

For the conversion of inventory emissions from GHGs into the common unit of carbon dioxide equivalents (CO_2e), WCA employs the 100-year global warming potentials (GWPs) identified in *Climate Change 1995: The Science of Climate Change*, also known as the Second Assessment Report, of the Intergovernmental Panel on Climate Change (IPCC). WCA recognizes the changes to GWPs in the IPCC's Third and Fourth Assessment Reports, however, the Second Assessment GWPs have been retained as most of the existing national inventories, trading schemes, and Kyoto mechanisms refer to this document. WCA will review the applicability of the Second Assessment GWPs on an annual basis.

The most frequently used Global Warming Potentials in WCA's GHG calculations are as follows:

Carbon Dioxide (CO_2) - 1
Methane (CH_4) - 21
Nitrous Oxide (N_2O) – 310
HFC (HFC-134a) – 1,300

[7] R-410a and R-134a were the only applicable refrigerants identified within the airport's operational boundaries.

5.3 Non-GHG Emissions

All non-GHG emissions are quantified using the Federal Aviation Administration's (FAA's) *Emission and Dispersion Modeling System* (EDMS). For all sources, the activity data is entered into EDMS, the program is run, and the emissions are quantified.

5.4 Changes to Quantification Methodologies

WCA recognizes that GHG estimation methods are under continual improvement and subject to periodic revision. While it is WCA's intent to remain consistent with current approaches, it may not be practical to implement new quantification methodologies to respond to frequent and/or minor revisions. Therefore, implementation of updates and revised quantification methodologies are *considered* when the base year is adjusted due to significant structural changes as defined above, or at least every three years from the time when such changes were previously considered.

When deciding to revise its quantification methodologies, WCA considers the number and significance of changes to the quantification methodologies. WCA also considers the effects of these changes on the WCA Air Emissions Inventory base year and current inventory. A change of 10% percent to total GHG emissions is recognized as significant.

6.0 Quality Assurance

Air Emissions Inventory quality refers to the general accuracy and consistency between an organization's actual GHG emissions and quantified GHG emissions. The difference between actual and quantified GHG emissions results from uncertainty introduced by activities such as data collection, data management, calculations, and reporting. Inventory quality is impacted as data progresses from individual sources to the final report.

A Air Emissions Inventory is a data product upon which a variety of stakeholders may make decisions and take actions. Overall GHG emissions quality affects the confidence that these stakeholders have in the final inventory. Issues of quality and confidence have increased significance when the decisions or actions are related to issues of regulatory compliance or financial management, such as emission trading.

Regardless of the end use of the inventory data, all GHG data management systems must employ mechanisms to improve the quality of the collected and reported data. Inventory quality activities generally include use of best practice processes, emissions calculations and factors, and implementation of reviews and accuracy checks on activity data.

WCA takes many steps to ensure inventory quality at points throughout the data collection, documentation, calculation and roll-up processes. These checks begin at the source of emissions and follow the data to its final aggregated form.

Specific actions regarding WCA's inventory quality are applied to the following major components of its GHG management system:

- Inventory process and systems,
- Methods,
- Data, and
- Documentation.

6.1 Inventory Processes and Systems

Inventory processes and systems refer to the approach and structure implemented to prepare a quality inventory. WCA personnel are also a key component of the Air Emissions Inventory process and system.

The WCA Air Emissions Inventory process is based upon recognized best practices including the GHG Protocol, the Draft TCR Protocol, and methodologies in the Federal Aviation Administration's (FAA's) *Emission and Dispersion Modeling System* (EDMS). WCA recognizes that these reference documents compile the insights of a broad group of industry, environmental, and government experts and have adhered to the guidance provided to implement quality-based inventory process and systems. Key to the inventory process and systems are the identification of the inventory principles, which provide direction to all aspects of the effort. The Inventory Process is managed within the Westchester County AEMS.

6.2 Methods

Inventory methods include all the technical aspects of conducting the Air Emissions Inventory. The methods used in WCA Air Emissions Inventory have been carefully chosen and effectively implemented to ensure quality results.

WCA Air Emissions Inventory boundaries consider aspects of operational control and equity share to ensure that whatever approach is recognized as best practice, the WCA inventory is prepared to reflect this preferred method.

WCA has selected industry best practice emissions quantification methods recognized as high quality approaches. These quantification methods are applied consistently to all facilities within the organizational boundaries and are described in more detail in preceding sections of this plan.

WCA will continue to assess both the Air Emissions Inventory methods used, as well as new and improved methods identified, and adopt when appropriate to ensure that its Air Emissions Inventory employs methods that support high inventory quality.

6.3 Data Management

Throughout the Air Emissions Inventory process, system and methods create an environment that supports data quality. To ensure this, the Air Emissions Inventory process includes data quality management at several points.

WCA quantification methodologies use submitted activity data to estimate emissions for particular facility sources. Data collection processes and procedures are designed to maximize clarity and understanding of expectations and minimize errors in these efforts.

WCA conducts a variety of data checks of submitted data, including but not limited to:

- Periodic samples of activity data are sampled and assessed during internal audits to confirm accuracy and quality.
- Different activity data for particular sources are requested so that amounts can be cross-referenced.
- Previous years' data is compared with current data to identify inconsistencies.

WCA also confirms that quantification methods are accurately performed in the following ways, including but not limited to:

- Review of the emission factors employed, and
- Independent recalculation of sampled computations.

6.4 Documentation

Inventory documentation is key to inventory quality in terms of execution and assessment. Clear documentation of the system, processes, and methods ensure that the inventory is performed to support quality. Documentation, including records and work products, from the

performance of inventory tasks allows for the review, confirmation, clarification, and verification that these tasks meet quality expectations.

WCA Air Emissions Inventory documentation includes this Air Emissions Inventory Management Plan, which provides an overview of the approach and the process. Additional documentation, including emissions factor sources, activity data sources, and assumptions made are included in the calculation worksheets.

WCA maintains detailed records of its primary and secondary inventory data, including but not limited to invoices, analytical results, and fuel inventory and usage records.. It also maintains clear records of calculations and assumptions used in the generation of data and supporting text. This documentation is necessary to explain changes over time and forms part of the audit trail necessary for potential third party verification. The location, record retention policy and record ownership are specified in the AEMS records matrix

6.5 Uncertainty

All GHG inventories are subject to uncertainty, both inherent and systemic. Inherent uncertainty refers to random errors or the difference between a true amount and a quantified amount resulting from a quantification approach. Although inherent uncertainty can be minimized, it always exists and must be recognized in data products. Systemic uncertainty refers to errors resulting from the inventory process. Systemic uncertainty is minimized by careful inventory design and the implementation of quality assurance and control measures.

WCA recognizes that its Air Emissions Inventory is subject to uncertainty and that while uncertainty cannot be eliminated, it should be identified and managed. Quality control and assurance measures identified in the previous subsection are intended to address and minimize systemic and inherent uncertainty in the WCA Air Emissions Inventory.

7.0 Reporting

WCA currently plans to report the details of its Air Emissions Inventory internally. WCA may elect to report summary emissions data, including total GHG direct, electricity indirect, other indirect, and biogenic emissions to customers and/or the public through a sustainability report or other appropriate document.

8.0 Inventory Verification

Many registries and programs, including EPA Climate Leaders and The Climate Registry, require third party verification of GHG emissions. Although WCA has decided to not have its Air Emissions Inventory verified by a third party, it has developed its Air Emissions Inventory process to facilitate the third party verification process should it wish to do so in the future.

A primary criterion in determine whether to include sources in the inventory is whether the Westchester Department of Transportation occupies or exercises management control over the occupant of the new facility.

Table 1. Summary of Westchester County Airport's GHG Emissions Sources

Source Description	Location(s)	Activity Data Source	Data Manager & Information Location	Emission Factor Reference
Direct Emissions - Stationary Combustion				
Boilers and Furnaces	- AvPorts operated: Building 10, Building 2, Building 5, Hangar D, Main Terminal x2, Hangar T - Tenants: numerous locations, refer to Boiler/Furnace logsheet	- AvPorts: fuel purchase invoices and tank readings - tenants: fuel usage from tenant forms		TCR General Reporting Protocol
Emergency Generators and Fire Pumps	- AvPorts operated: terminal, airfield blockhouse, building 10, hangar D pumphouse, hangar E pumphouse, Security #1 Building 11, Security #2 Hangar 26, Security #3 Hangar D, Security #4 Hangar A, Security #5 Lincoln Ave, Security #6 Hangar E, New ARFF, Old Blockhouse - Tenants: NetJets, Avitat, JP Morgan, Citigroup, Panorama, IBM, Hangar F	AvPorts: - hour meter readings Tenants: - tenant forms		TCR General Reporting Protocol
Training Fires	Various Locations	- Airport Ops estimated propane usage		

Source Description	Location(s)	Activity Data Source	Data Manager & Information Location	Emission Factor Reference
Aircraft Engine Testing	- any hangars where aircraft engine maintenance may be performed	- Engine Run-Up Logsheets		TCR General Reporting Protocol
Auxiliary Power Units (APUs)	- Aircraft while at the gate	- Landing/Take off (LTO) data from aircraft - EDMS default time at gate of 13 minutes for both arrivals and departures	- Megadata Corporation's LTO database (PASSUR database)	TCR General Reporting Protocol
Direct Emissions - Mobile Combustion				
Aircraft	Emissions from Aircraft operations during Landing/Takeoff (LTO) cycle	- LTO database - EDMS		TCR General Reporting Protocol
Ground Support Equipment (GSE)	In and around the Airport gates	- Hour meter readings - EDMS		TCR General Reporting Protocol
Rental Cars	- Rental car facility - road leading to and from rental car facility on the Airport's property	- Rental car companies (average fleet mix, total number of cars rented in inventory year)		TCR General Reporting Protocol
Direct Emissions – Fugitive (Scope 1)				
Air Conditioner Systems	Various locations	Tenant forms		
SF_6 (insulator gas) usage	- Airport substation equipment	- Airport Ops recharge quantity		
Electricity Indirect Emissions (Scope 2)				

Source Description	Location(s)	Activity Data Source	Data Manager & Information Location	Emission Factor Reference
Purchased electricity	Various locations	-Airport operated buildings: purchase electricity invoices - Tenants: tenant forms		
Other Indirect Emissions (Scope 3)				