### Air Quality Working Group

### Kris Russell, Chair John Trendowski, P.E., LEED AP, Co-Chair

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# Agenda

 » Introductions
 » Kirk Shaffer, FAA
 » CORSIA Update
 » Construction Emissions Best Practices  » ACA Program Update
 » Grant Funding Update
 » Open Discussion— Topics and Questions



# FAA UPDATE



### **D. Kirk Shaffer**

FAA Associate Administrator for Airports





# CORSIA Update



### Megan Neiderhiser, PE Senior Managing Consultant RAMBOLL



ICAO GLOBAL AVIATION TRAINING ENVIRONMENT					
Components of the MRV System					
Monitoring	Monitoring Monitoring of CO <sub>2</sub> emissions is either based on a Fuel Use Monitoring Method, or the use of the ICAO CORSIA CERT.				
Reporting	CO <sub>2</sub> emissions will be reported from their State Authority, and from States	aeroplane operators to to ICAO.			
Verification	CO <sub>2</sub> emissions information is accurate	and free of errors.			

















### John R. Trendowski, P.E. Principal Engineer





»Not a recent issue

» Conceptually straightforward...?

» Emissions = equipment activity  $\times$  emission factor



» ACRP Report 102 – Guidance for Estimating Construction Airport Construction Emissions

» Airport Construction Emissions Inventory Tool (ACEIT)



The goal of the ACRP report and associated tool was to "...develop a guidance document and interactive electronic tool to assist airports, consultants, and other stakeholders in accurately and consistently estimating airport construction emissions."

» Project Categories (Site/Civil or Vertical) » Projects » Construction Activities » Equipment Mix

» Units



#### <u>Default Data</u>

- Project activities
- Equipment and usage
- Emission factors
- Minimum data

#### <u>Minimum Data</u>

- Project type and size
- Project location and dates
- Season and Temperatures

#### <u>Data Levels</u>

- Level 1: All defaults
- Level 2: Some specific activity data
- Level 3: Most or all projectspecific activity data



- » Depends on use
- » Emission factors from
   Non-Road and Moves no
   longer applicable (Use
   MOVES 2014b)
- » Fugitive emissions derived from AP-42 still valid
- » Construction activities, equipment mix, and units can be used
- » Project site information always more representative of expected emissions than default values.





### **Robert N. Gross, P.E.** Air Quality Scientist







# **Elements of Construction Emissions**





# **Construction Projects**

#### **Common Projects:**

- Runway redevelopment
- Taxiway construction
- New terminal building
- Parking garage
- Roadways
- Apron construction
- Demolition
- Parking facilities



#### **Less Common Projects:**

- Substation
- Deicing facility
- Rail/Transit system





# Construction Schedules

Example Project 1		2020			2021			2022				
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Construction Mobilization												
Building Demolition												
Apron Demolition												
Concrete Foundation												
Structural Steel Framing												
Interior Build-out												
Building Enclosure												
Concrete Foundation												
Structural Steel Framing												
Interior Build-out												
Building Enclosure												

#### Schedule Issues:

- Levels of detail vary
- Schedules may shift
- Projects lack description





# Construction Equipment/Vehicles, Fugitives, and Emission Factors







### Questions?



# Construction Emissions at SAN



### **Chad Reese**

Environmental Affairs Manager Planning & Environmental Affairs







### **Envisioning a New Terminal One** Components of the Airport Development Plan Phases 1a & 1b



# Air Quality (AQ)

Equipment	НР
Agricultural - Construction Equipment	100
Agricultural - Others	600
Bore/Drill Rigs	175
Cranes	300
Excavators	175
Graders	300
Off-Highway Trucks	600
Other Construction Equipment	175
Other Construction Equipment	600
Pavers	175
	50
Paving Equipment	175
Rollers	100
Rough Terrain Forklifts	100

The following equation was used to obtain emission estimates for off-road construction equipment:

Construction Equipment Emissions (tons/year) = Emission Factor (grams/hp-hour) x Horsepower (hp) x hours per year x Load Factor x (1 pound/453.59 grams) x (1 ton/2,000 pounds)



# **AQ Impact Analysis Models and Databases**

Models/Databases	Sources	Proposed Project Applications
Airport Construction Emissions Inventory Tool (ACEIT)	National Academies of Sciences (NAS), Transportation Research Board (TRB)	Construction requirements of on- and off/non-road construction vehicles, equipment, and other supporting activities.
Aviation Environmental Design Tool (AEDT)	Federal Aviation Administration (FAA)	Emission factors and operational data for aircraft engine and auxiliary power units (APU). Also used for atmospheric dispersion modeling.
Compilation of Emission Factors Database (AP-42)	U.S. Environmental Protection Agency (USEPA)	Emission factors for stationary sources and construction activities.
EMission FACtors (EMFAC2017)	California Air Resources Board (CARB)	California-based on-road motor vehicle emission factors.
OFFROAD 2017	CARB	California-based off/non-road motor vehicle, airport GSE, and construction equipment emission factors.
California Emissions Estimator Model (CalEEMod)	California Air Pollution Control Officers Association (CAPCOA)	Uniform platform for government agencies, land use planners, and environmental professionals to estimate potential emissions associated with both construction and operational use of land use projects.



# Questions?

# www.san.org/plan

# ACA Program Update



Kris Russell Environmental Program Manager Environmental Affairs



# ACA Program Update

 » Accounting for emissions from the use of biofuels
 » Market-based reporting on Scope 2 emissions approved for all levels

» Off-site verification will be granted on a case-bycase basis

» New ACA website dashboarding and benchmarking under development

»New accreditation level under development



IPCC Special Report on 1.5°

» Current policy action is not sufficient to achieve the objectives of the Paris Agreement (1.5°C) INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

### **Global Warming of 1.5°C**

An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty



# IPCC Special Report on 1.5°

» 1°C of warming has already occurred
» Climate risks/impacts are much higher if we exceed 1.5°C

» Current Paris Agreement national commitments result in warming of  $3^{\circ}C$ 

IPCC Special Report on 1.5° » Achieve a 45% absolute reduction in emissions by 2030 (2010 Baseline)

» Achieve Net-Zero Emissions by 2050

» IPCC Net-Zero Definition:  $CO_2$  emissions are balanced by  $CO_2$  removals (carbon capture and sequestration)

» June 2019 - "Europe's airport industry commits to net zero  $CO_2$  emissions by 2050"

# Grant Funding Opportunities

#### »FAA Programs

» Patrick Magnotta, Airport Planning and Environmental Division (APP-400)



Questions & Discussion Thank you



Kris Russell Chair

DFW



John Trendowski, P.E., LEED AP

Co-Chair

