AIRPORTS COUNCIL INTERNATIONAL

Energy Efficiency and Greenhouse Gas Emissions Management

ACI 2nd Airport Environmental Seminar
Quito Ecuador
24-26 November 2010

Xavier Oh
Airports Council International – Environment Manager

Session 3 – Energy Efficiency and GHG Management

Xavier Oh (ACI)
- Drivers
- Inventory
- Mitigation Actions - Aircraft emissions reduction
- Power Generation and Fleet Vehicles

David Ernst (ICFI)
- Ground Transport and Ground Service Equipment

Lena Wennberg (Swedavia)
- Case study from Sweden
- Building energy efficiency
- Achieving Carbon Neutral status

Outline

Drivers

Inventory
- Guidance Material
- Aviation versus Airport Emissions
- Categorizing Emissions - Scope 1, 2 and 3

Mitigation

Accreditation

Drivers – Why take action?

Voluntary
- Energy Efficiency
- Community Expectations or Pressure
- Corporate Social Responsibility

Regulated
- Kyoto Protocol
- Emissions Trading Scheme
- Local requirements (EPA)

Guidance Manual

- Definitions – Aviation/Airport emissions – Scopes 1, 2, 3A and 3B
- Drivers – Voluntary or Regulatory
- Inventory – Complete, categorized, calculated
- Goal Setting – Airport and non-airport operator sources
- Measures to reduce GHG emissions
- Offsetting and achieving Carbon Neutrality
- Reviewing, Reporting and Certification

- www.aci.aero/environment

Airport vs Aviation Emissions

Aviation Emissions
- Aircraft engine and APU emissions on ground and in-flight
- Kyoto Protocol excluded International Aviation

Airport and Airport-Related Emissions
- Terminals, aircraft maintenance buildings, airside vehicles, GSE/GH
- Landside (off site) ground access vehicles, trains
- Aircraft – LTO, taxiing, queuing, APU, run-ups

Categorizing Emissions

World Resources Institute GHG Protocol

Scope 1 Emissions
- From sources owned or controlled by the airport operator

Scope 2 Emissions
- From the off-site generation of electricity purchased by the airport operator

Scope 3 Emissions
- From airport-related activities from sources not owned or controlled by the airport operator

Airport Scope 1 and 2 Inventories

Scope 1 Emissions
- Power plant / emergency generators
- Fleet vehicles
- Airport maintenance/landscaping
- Airport-owned Ground Support Equipment
- Fire training

Scope 2 Emissions
- From the off-site generation of electricity purchased by the airport operator

Scope 3A and 3B Emissions

Subdivision of Scope 3 emissions
- Scope 3A are Scope 3 emissions which an airport operator can influence, even though it does not control the sources. These would be included in an airport's Emissions Management Plan
- Scope 3B are Scope 3 emissions which an airport operator cannot influence to any reasonable extent

Airport Scope 3A and 3B Inventories

Scope 3A Emissions
- Aircraft engines during LTO, taxiing, queuing
- Aircraft Auxiliary Power Units (APU)
- Airline/contractor GSE and airside vehicles
- Ground access vehicles on site incl parking lots
- Corporate travel / Construction

Scope 3B Emissions
- Aircraft engines during cruise
- Ground access vehicles off site
- Aircraft maintenance
- Rail traffic
- Off-site waste disposal

Energy Efficiency – Scope 1 and 2 Emissions

Reduce Electricity Use
- Energy efficient buildings and lighting
- Energy efficient operations

Reduce Fuel Use
- Modernize power/heating plants
- Fleet vehicle modernization and use of alternative fuels/hybrid/electric
- Driver education and no-idling policy

Generate electricity from renewable sources
- solar, wind, hydroelectric, biomass

Case Study - Vancouver

- 100 Solar panel hot water heaters – 3200 litres/hr
- LED (light emitting diodes) installed on taxiways
- Terminal exterior and interior lighting replacements
- 30% reduction in use of Natural Gas since 2001.

Case Study – La Palma, Spain

- First airport in Spain with wind generator for terminal's needs
- 2 x 660 kW wind generators
- Annual reduction of 1800 tonnes CO2

Mitigation of Scope 3A Emissions - Aircraft

- Provide (and enforce) fixed electrical ground power (FEGP) and pre-conditioned air (PCA)
- Provide efficient taxiway and airport layout
- Continuous Descent Approach
- Departure management – CDM

Mitigation of Scope 3A Emissions – Non Aircraft

- Enhance public transport
- Hotel and car rental shuttle bus consolidation
- Green vehicle preferential taxi queue and general parking
- Infrastructure for petrol alternatives including staff bicycles

Zurich Airport

- CNG fueling station

Schiphol Amsterdam

- Compressed air vehicles

Airport Carbon Accreditation

Voluntary ACI scheme for airports to gain certification of achievements in GHG emissions management

Four levels of achievement

1: Inventory (Scopes 1, 2 and some 3)

2: Reduction of emissions (Scopes 1 and 2)

3: Optimisation – involving stakeholders (Scope 3A)

3+: Offsetting and Carbon Neutrality (Scopes 1, 2 and some 3A)

www.airportcarbonaccreditation.org

What should I remember from this?

- Address your own emissions, Influence your stakeholders emissions
- Electricity and Fuel savings are GHG Emissions reduction
- Cost of modernizing equipment can be offset by energy use reductions
- Voluntary action can help you avoid future Regulation

AIRPORTS COUNCIL INTERNATIONAL

Thank you

Xavier Oh
Senior Manager – Environment and ICAO Liaison
Airports Council International
Montreal, Canada

xoh@aci.aero

www.enviro.aero™