Testimony of
Mark M. Reis
Managing Director, Seattle-Tacoma International Airport
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Aviation Subcommittee
Transportation and Infrastructure Committee
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Seattle-Tacoma International Airport
PO Box 68727
Seattle-Tacoma International Airport
Seattle, WA 98168-0727
(206) 433-5388

Mr. Chairman, thank you for the opportunity to testify today on the very critical issue of airport efforts to reduce greenhouse gas emissions. While I am here as the Managing Director of the Seattle-Tacoma International Airport and will focus my testimony on the progress we are making at our airport, I am also a member of the Board of Directors of Airports Council International-North America and will represent the interests of the broader airport industry.

Before I begin though, I want to express my sincere appreciation for the Subcommittee's leadership on H.R. 2881, the FAA Reauthorization Act. H.R. 2881 contains numerous environmental provisions that will help airports address environmental concerns. In particular, the pilot program to demonstrate measurable reductions or mitigation of aviation's impact on noise, air quality or water quality in the airport environment will allow promising environmental practices to be tested in an operational setting. Additionally, the Aircraft Departure Queue Management Pilot Program will help reduce aircraft idling time while in departure queues, reducing aircraft ground emissions and improving air quality. Additionally, I commend your efforts to extend authorization for the Airport Cooperative Research Program (ACRP) and increase funding to $15 million in FY 2009 through FY2011. ACRP has provided an invaluable resource for airports in helping to better understand and address many of the environmental issues facing the aviation industry, including a recently-initiated project to develop a guidebook for airports to use in inventorying their greenhouse gas emissions.

Environmental protection has for decades been an integral part of airports' responsibilities. As the "public face" of the aviation industry in our communities, airports must continue to play a leadership role in demonstrating environmental stewardship to the local and global communities we serve. Airports have and continue to implement proactive measures to reduce their environmental impacts, addressing such areas as noise, local air quality, water quality, wildlife management, waste minimization, and greenhouse gas emissions.

Greenhouse gas emission reduction strategies employed by airports have included: investing in and promoting the use of alternative fuel and low emission vehicles and energy saving equipment; recycling building and construction materials, waste and water; improving the operational efficiency of the airfield and landside system; acquiring green power; and providing emission-reducing services for aircraft at the gate.

ACI-NA recently conducted a survey of its member airports to benchmark initiatives to reduce greenhouse gas emissions. Based on responses from 73 airports representing almost 60 percent of traffic in both the United States and Canada, the survey found:

- 24 airports have an Environmental Management System.
- 9 airports are generating renewable energy.
- 19 airports purchase renewable energy.
- 48 airports have installed or upgraded improved HVAC systems.
- 59 airports are utilizing more efficient lighting.

- 32 airports have conducted an air emissions inventory.
- 15 airports have conducted a greenhouse gas emissions inventory.
- 17 airports have established GHG/climate goals.
- 34 airports have infrastructure to support clean vehicles.
- 48 airports have at least one loading bridge with 400 HZ power.
  - 2,187 out of 2,653 loading bridges at responding airports
- 38 airports have at least one loading bridge with pre-conditioned air.
  - 1,639 out of 2,653 loading bridges at responding airports
- 21 airports have employee trip reduction programs.
- 52 airports have public transit access.
- 26 airports have consolidated rental car facilities.
- 53 airports have a waste management program (recycling/reuse/composting).
- 33 airports have green purchasing programs.
- 5 airports have a LEED-certified building.
- 8 airports have a building for which they are seeking LEED certification.

Airports' contribution to aviation's global greenhouse gas emissions is small, and airports have little or no control over some of the larger contributors such as aircraft and off-airport vehicles. In spite of our small role, however, we recognize that every industry and every institution has a responsibility to reduce its contributions to climate change and that airports must plan how to modify the nation's airport infrastructure to withstand the climatic changes that will occur. Airports also play a critical role in facilitating greenhouse gas emission reductions across the entire aviation industry. By working with our airline partners, tenants, FAA, ground service providers and local communities, airports can help effectuate further reductions in those areas not directly within our control.

At Sea-Tac, we take our responsibility seriously and have implemented extensive programs, placing us among the airports at the leading edge of our industry. However, it should be emphasized that the entire industry recognizes the importance of focusing on climate change. While I will be discussing the myriad initiatives we have undertaken at Sea-Tac to reduce those impacts, you can find many of these same initiatives in place at airports across the country.

GREENHOUSE GAS INVENTORY

Last year Sea-Tac Airport prepared a greenhouse gas emissions inventory for the year 2006. Because there was not an industry-accepted methodology to prepare such an inventory, we had to identify the appropriate boundaries for quantifying airport emissions. The protocol used in this analysis, while not complete, represents a substantial improvement in the data examined for Sea-Tac to date and is intended to guide emission reduction plans and future inventories. It relies on methods published by the Intergovernmental Panel on Climate Change (IPCC), the US Environmental Protection Agency, the World Resource Institute (WRI) and the Local Governments for Sustainability (ICLEI).

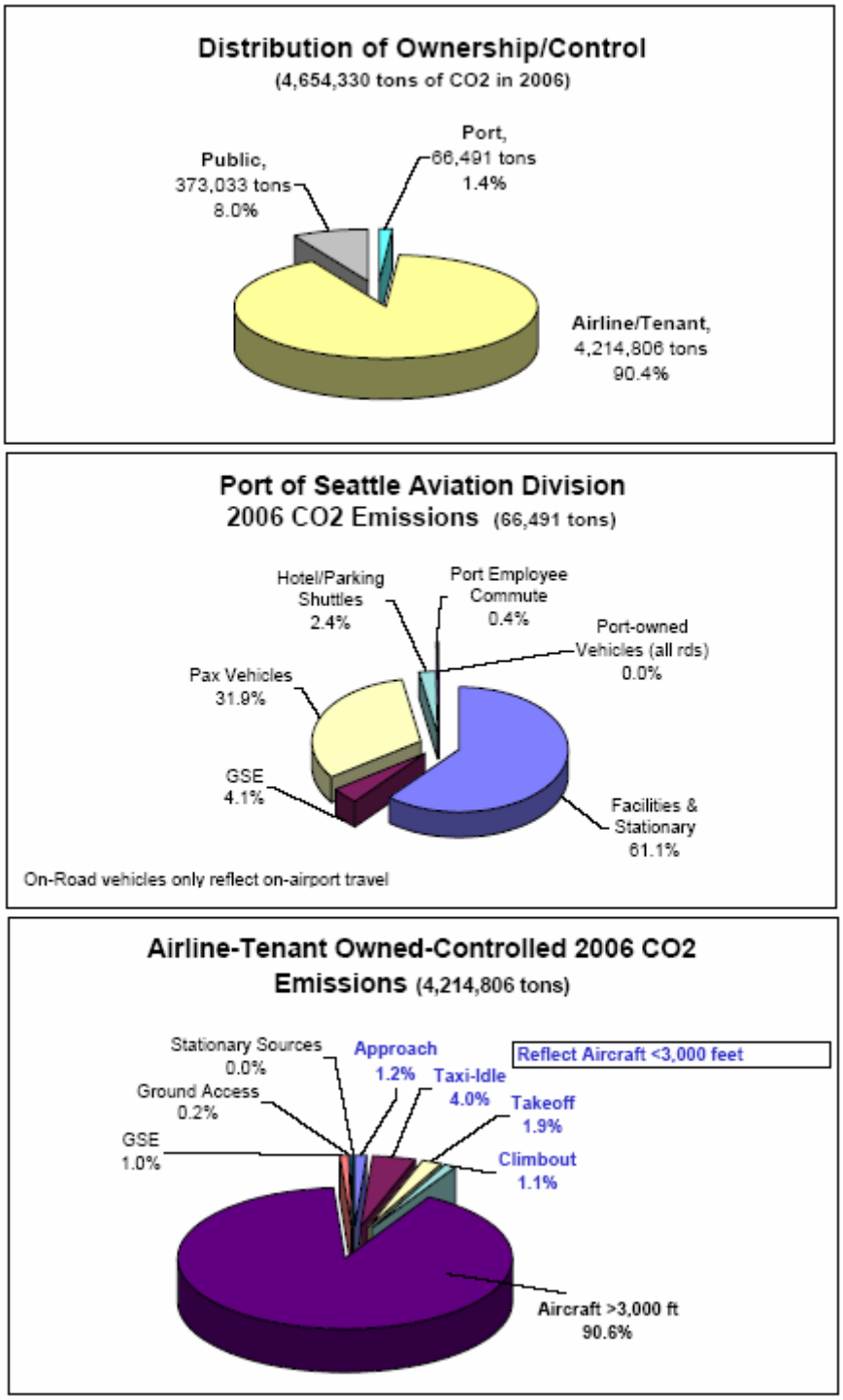
Our inventory accounts for emissions from aircraft operations, separated into two categories: (1) local emissions -- those taking place on the ground and up to 3,000 feet and (2) global, "en-route" emissions. This latter category was based on the emissions associated with the aviation fuel dispensed at Sea-Tac, no matter the location of the combustion and emissions. Because of the global nature of greenhouse gases, and the need to utilize a methodology that will neither undercount nor double count fuel burn emissions, we believe a "fuel dispensed" methodology is a sound one. It should be noted that the Airport Cooperative Research Program (ACRP) has underway an effort to develop a standard methodology. Should it differ materially from our methodology, we will utilize it in our next inventory.

This inventory also defines the local emissions that result (1) directly from Sea-Tac Airport operations (terminal buildings, mobile sources, and the power required to operate these resources) and (2) the indirect emissions that are a consequence of the airport's activities, but occur at sources owned and controlled by other parties. These indirect emissions are associated with the airlines, tenants, and general public that use the airport. Based on these boundaries, in 2006 nearly 4.7 million metric tons of CO_2 were generated as a result of direct and indirect airport activities.

At Sea-Tac, airport-owned/controlled emissions represent about 66,491 metric tons of CO_2. The largest portion of the "airport's" greenhouse gas emissions were those associated with lighting and heating airport facilities, followed by passenger vehicles on airport roads, Port ground vehicles, and hotel and parking lot shuttles traveling on-airport roads.

Sea-Tac's airline/tenant-owned and -controlled emissions represent 4.2 million metric tons of CO_2. As would be expected, aircraft represent the single largest source of these emissions. Over 90% of the airline emissions were from aircraft operating above 3,000 feet. All of the publicly-owned and -controlled emissions (373,033 metric tons of CO_2 or 8% of the total) reflect on-road travel associated with airport activity: either through vehicular access by passengers, hotel/parking lot shuttles off-airport, and airport employee work commute.

FIGURE ES-1
SOURCES OF EMISSIONS



The strategic value of this inventory, of course, is that it provides Sea-Tac with the information needed to identify opportunities to reduce greenhouse gas emissions and measure our progress.

GREENHOUSE GAS EMISSION REDUCTION EFFORTS

Sea-Tac has taken a multi-faceted approach to greenhouse gas emissions. We started these efforts some years ago and continually search for new opportunities. Below is a summary of many of these initiatives. Some are relatively traditional energy conservation-oriented investments. Others have very substantial additional benefits – improved customer service, cost savings, safety improvements, and operational efficiencies. And, on some, we are working collaboratively with our airline partners to reduce aircraft emissions. Not all of these may be relevant to every airport or every community but they are indicative of the type of steps airports can consider as we determine how best to be part of the solution to climate change.

Early Initiatives to Reduce Greenhouse Gas Emissions

Sea-Tac Airport initiated its focus on greenhouse gas emission reductions long before we conducted the emissions inventory. In addition to the greenhouse gas emission reductions, we sought to improve (local) air quality, conserve energy use and reduce costs. These early actions reduced the emission of approximately 60,000 tons of CO_2.

Green Energy Power Purchases: Airports are large consumers of power. Sea-Tac, for example, will consume approximately 148,000 megawatt hours of electricity in 2008, the equivalent of 19,000 homes. For the past several years we have purchased "green" (primarily wind) power from the Bonneville Power Administration to serve 25% of our electrical load.

Energy Conservation Investments: In addition, we have reduced our electrical energy consumption by 25% over the past 12 years, saving more than 10,000 tons of CO_2 and $1.67 million annually. These savings were accomplished by:

- Completing a six phase program, providing twice as much light with 20% less energy and improved lighting controls for approximately 3,000,000 square feet of space in public and non-public areas of the airport terminal.
- Adjusting Sea-Tac's heating (natural gas operated) and cooling (electrically powered) systems which are responsible for approximately 40% of the Airport's current electrical consumption. The current, more efficient HVAC system creates a more consistently comfortable environment for our passengers.
- Adjusting (slowly) building thermostats to a wider range – closer to the range of temperatures one might find in other buildings – and anticipate savings of 3,000,000 kWhs and $108,000 per year
- Retrofitting our escalators with "ecostart" energy efficiency kits that slow down escalators during periods of slow demand. The kits save 1,560,000 kWhs annually.

Compressed Natural Gas Distribution Station and Usage Requirements: In 2002, the airport commissioned the first publicly available compressed natural gas (CNG) fuel facility in the state of Washington and began a program of transitioning the airport fleet -- and using our business and regulatory authorities to facilitate the transition of the fleets of our business partners -- to CNG usage. CO_2 emissions from CNG vehicles are 20-25% less than their traditionally-fueled counterparts. The Port now has a fleet of 74 natural gas (light and heavy duty) vehicles, including all of our employee buses. In addition, all of the taxi cabs authorized to pick-up passengers at Sea-Tac are either CNG-fueled or hybrid vehicles. The airport CNG fueling station dispenses more than 1.25 million gasoline gallon equivalents and generates almost $100,000 in royalties that help the Port offset the costs to our airline customers.

Price Signals Work: Putting Economics to Work

Fundamental to the business and operations at any airport are (1) the lease / operating agreement that defines the relationship between the airport and its airline tenants and (2) the lease arrangement between the airport and the concessionaires – specifically, in this case, the food and beverage concessionaires. While there are a plethora of issues involved, key here is the question of price signals. It goes without saying that businesses will pay attention to what they pay for. However, the traditional, "residual" airport/airline agreement is characterized by combining every cost (including debt service on all facilities) of operating an airport in one bucket for the purposes of developing airline rates and charges. Subtracted from this collection of costs are most to all of the other revenues (parking, concessions, terminal rents, etc.) the airport receives. The airlines are then obligated to cover the remaining ("residual") amount.

In this scheme, the airlines pay in their landing fees, for example, the natural gas costs of the concessionaires. The heating costs for the hangar on the airfield (owned and operated by individual airline) are divided up among all the airlines. Sea-Tac long had such a system and, as a result, we were unable to signal the real costs of certain functions to the entity that used that function.

As a result, in 2001, we established several airport utilities – electrical, gas, water, sewer and even a waste grease utility. Wherever it made economic sense we metered the use of each commodity and took the costs out of the airline rate base. We established the utility rates with exactly the methodology used by regulated utilities so that we recovered not only the cost of the commodity (e.g., water, power, natural gas) but the capital and operating costs of our distributing those commodities to the actual users. With this system in place, we could evaluate on behalf of the utility consumers the cost-effectiveness of conservation measures and fairly straightforwardly convince them of the wisdom of conservation investments.

Similarly, we have taken over waste hauling throughout the terminal, replacing the many separate contracts airlines and concessionaires had with a variety of waste companies with a single comprehensive system. We put in place pairs of electronically-controlled compactors – one for garbage and one for recyclables. Our tenants pay a dump fee every

time they open (with individualized codes) the garbage compactor but pay nothing for recycling. When the compactors are near capacity, a signal is automatically sent to the hauling company which brings in a replacement compactor on a "just in time" basis. The tenants are sharing significant financial savings, the airport is achieving a dramatic decrease in waste and we have reduced traffic on the airfield which improves ramp safety.

Operational and Customer Service Programs Bring Emission Reductions

Happily, we have found that, when we reduce greenhouse gas emissions through improved operational efficiency, we can also improve customer service and help our customers save money and time. The following three projects are examples.

Pay on Foot (POF) / Parking Floor Count: A decade ago, Sea-Tac was one of the first airports to inaugurate a "pay on foot" system which has subsequently become more common at airports and major parking facilities. Our focus was threefold: reduce the queues at our parking garage toll plaza; decrease operating costs; and improve the air quality in the garage by avoiding so many idling cars waiting to exit.

We have just put into operation a "space count" system that informs our arriving garage patrons in what sections of which floor they will have the easiest time finding a parking space. Again, customer service and efficient use of our 13,000 stall garage were the primary motives. The estimated CO_2 emission savings leverage by the POF system is 60 tons per year. We anticipate the garage space count system could help save up to 25 tons of CO_2 per year.

Fuel Hydrant System: In 2004, we completed an underground fuel hydrant system, bringing fuel to ramp hydrants at each gate and allowing us to remove 20 fuel trucks from the airfield. Ramp safety, reducing the risk of fuel spills and operational efficiency were all key reasons to undertake this significant investment, but a very valuable by-product is the 1,000 tons of CO_2 that will be saved every year.

Hotel Van Consolidation: Sea-Tac passengers are served by shuttles from 61 hotels, generating nearly 500,000 trips to the airport. As the airport has grown, we are beset with congestion on the roadways and drives at the airport. As a result, we have just initiated a collaborative effort with the hotels (with none of which do we have a business relationship) to consolidate their shuttle operations. In doing so, we expect to reduce traffic on our drives, costs to the hotels, and air pollution. We estimate that the initial phase of a consolidated van operation could lead to the reduction of 160,000 trips from the system. The trip reductions and use of low carbon fueled shuttles resulting from such a program could reduce CO_2 emissions by 1,000 tons per year.

Airport / Airline Collaboration on Aircraft Emission Reduction

We are working closely with our airline partners to identify opportunities to reduce fuel burn and, thus, emissions from aircraft operating on the ground at Sea-Tac. For every minute a narrow body aircraft taxis at an airport, more than 3.5 gallons of fuel is consumed and 110 pounds of CO_2 is emitted. These values can more than triple for a wide body aircraft.

Ramp Control Tower: In collaboration with our airline customers, Sea-Tac opened a ramp tower in 2006 and added a "taxi lane" under the control of the tower that has significantly improved the efficiency of ramp operations. These efficiencies are a product of decongesting aircraft arrivals and departures, monitoring ground service equipment (GSE) and generally improving aircraft traffic flow. We estimate that aircraft ramp movements are five percent more efficient and that this efficiency has potentially saved the airlines 800,000 gallons of fuel per year and reduced GHG emissions by 8,500 tons per year.

Gate Ground Power (400Hz): By providing airlines the option to power aircraft electrical needs (lighting, instruments, etc) with gate-side electricity, the need for operation of the aircraft's auxiliary power unit (APU) can be reduced. We have added this capability to all by five gates at Sea-Tac. For every half hour that ground power is used in place of an aircraft APU, on average, 13 gallons of fuel is saved and 280 pounds of CO_2 is not emitted. Because over 80 percent of the electrical power consumed at the airport comes from low carbon sources such as hydroelectric and wind sources, a reasonable expectation is that use of ground power could reduce CO_2 emissions by 18,000 tons per year.

Pre-Conditioned Air Conditioning (PC Air): Our airline customers are in the final stages of providing approval for Sea-Tac's investment in a centralized PC Air system that will provide temperature-controlled fresh air to aircraft at gates from a central refrigeration plant. The arrangement is suitable for Sea-Tac because of a high cooling load needed by the number of aircraft we service and because our terminal and gate layout is conducive to a centralized system. We expect to use a system that can take advantage of lower-cost off-peak electricity by creating ice that can be used for cooling during peak electrical demand periods. Based on current operations, we anticipate a fuel savings of at least 5 million gallons of aircraft fuel per year. This is a great example of a project with both substantial economic and environmental payoffs: The $31 million project has a payback period of only 2.6 years and saves 40,000 tons of CO_2 per year.

(When 400 Hz Ground Power is utilized in conjunction with PC Air infrastructure, an aircraft's auxiliary power unit can be completely shut down.)

Ground Support Equipment (GSE) Electrification: Airline ground support equipment (baggage cart tugs, etc.) are commonly fueled by gasoline or diesel. However, fully electric GSE is now a viable technology and the potential environmental benefits are substantial. The airport is working with its airlines and Fixed Base Operators to provide

the infrastructure necessary to support a larger electric GSE fleet. Because much of the airport's electricity comes from hydroelectric and other renewable energy sources, the potential emission savings and positive climate impacts are significant. Full conversion to electric GSE could reduce emissions at Sea-Tac by 20,000 tons per year.

Required Navigation Procedure (RNP) Approaches: Sea-Tac is working closely with Alaska Airlines and the Pacific Northwest Mountain Region of the FAA to explore accelerated implementation of offset RNP procedures that could reduce fuel burn and GHG emissions. Preliminary estimates are that each such approach at Sea-Tac could cut emissions by approximately 300 pounds of CO_2 per landing.

Opportunities to Support Expansion of Airport Emission Reduction Efforts

Mr. Chairman, we believe there are several opportunities for the Congress to facilitate an expansion of the current airport efforts to reduce greenhouse gas emissions. We respectfully offer our thoughts below.

Pilot Program on Best Environmental Practices: In order to enhance the environment by encouraging the proactive adoption of best environmental practices, ACI-NA would propose the establishment of a pilot program within the Airport Improvement Program (AIP). Such a program could allow not more than ten public-use airports to use AIP funds to plan, design and construct new terminal facilities or retrofit existing terminal facilities with equipment, systems or other means of reducing adverse environmental impacts. In selecting applicants for the pilot, the Secretary might give priority to those airports that will achieve the greatest air quality or other environmental benefits. The pilot program would provide an opportunity to develop and employ innovative green systems and for DOT to assess the benefits of such projects.

Environmental Management Systems: The Committee should also consider expanding AIP eligibility to cover both the development of Environmental Management Systems (EMS) and the implementation of measured identified in such EMSs. Development of an EMS is a necessary first step, but the real environmental benefits will be achieved by implementation of measured identified in the EMS. We encourage the Committee to amend the definitions of both airport planning (for creation of EMSs) and airport development (for implementation of measures identified in such systems).

Low-Emission Vehicles: Additionally, airports encourage the Committee to remove the requirement in the current AIP program that only allows airports in non-attainment or maintenance areas to acquire low emission vehicles or convert existing vehicles to low emission vehicles. By doing so, the federal government will encourage airports to proactively convert their fleets regardless of location.

Alternative Fuel Facilities: Finally, AIP eligibility should be expanded to include compressed natural gas (CNG) and electric recharging facilities that can service low emission technology vehicles operating at airports. If construction of these facilities can be promoted through AIP eligibility, it will not only facilitate conversion of more airport

vehicles but also make it easier for third parties (e.g., rental car companies, parking lots operators) to convert their fleets that are so integrally connected with airport operations.

Conclusion

In closing, let me reiterate that greenhouse gas emissions are just one of many environmental challenges airports and aviation face every day. We must carefully balance the need to reduce greenhouse gas emissions with the need to reduce impacts from noise and local air quality. In the end, it is important for airports to play the role of overall environmental steward within our communities to continue to meet the growing demand for air travel.

As you can see, there are a significant number of programs and initiatives that can be put in place at airports to reduce the overall greenhouse gas emissions associated with airport operations, including those emissions outside the airport's direct control. As an industry, we are continuing to share best practices in order to implement measures such as these at airports across the country and identify new and innovative steps to achieve even further emission reductions.