

Noise Work Group Reference Appendices

Beyond 65 DNL Noise Work Group Process Proposal

Core Team:

- Port Noise Management Department – Lead Role/Project Management
- City of Portland Noise Office
- City of Vancouver
- City of Portland Bureau of Planning & Sustainability
- Port Long-Range Planning
- Port/City Legal Staff

Noise Follow-on Study Work Group

- CNAC Members
- OPIS/PAG Members
- Other (e.g., FAA, ORANG, City Noise Review Board, regional cities and counties)

Work Tasks:

- 1. Core Team develops work scope**
 - a. Noise Follow-on Study Work Group Input
- 2. Core Team Presents work scope**
 - a. CNAC Input/Endorsement
 - b. PAG Input/Endorsement
- 3. Execute work scope**
 - a. Core Team manages project with input from Noise Work Group
 - b. All meetings open to public
 - c. Periodic report outs to CNAC, PDX Community Advisory Committee, Cities, and others
- 4. Draft Report Prepared**
 - a. Input by Follow-on Noise Study Work Group (Noise Work Group)
 - b. Review/Input by CNAC, PDX Community Advisory Committee, Cities, and others
- 5. Final Report by Core Team**
 - a. CNAC, PDX Community Advisory Committee, City Councils, Port Commission

Purpose: Through a partnership between the City of Portland and the Port of Portland, convene a group to explore ideas related to noise strategies beyond the 65 DNL threshold of significance defined by the FAA, EPA and Oregon DEQ and recommend a comprehensive strategy mix to reduce noise impacts (outside the 65 DNL) to the greatest extent in the most cost effective manner. (Work Group will revisit purpose statement when establishing underlying goal of project in Work Plan Step 1)

Context & Recognition of Past Work: Due to the limited time frame for this follow-on study (between 6 months and one year), it will be essential for work group participants to begin the effort with as much background knowledge as possible. In an effort to provide that background, the core team will assemble binders for work group participants that include a briefing packet on aircraft noise management, applicable (federal, state, and local) regulations, an overview of the PDX Noise Program, and other pertinent studies, reports, information, and resources. Further, the core team will schedule a Special Information Meeting on the subject of Aircraft noise Management open to all work group participants and any other interested individuals. The Work Group will focus on principles of “Avoid, Minimize, Mitigate” when addressing noise impacts beyond the DNL 65.

Work Group Assumptions & Scope Boundaries (“sideboards”)

- PDX will not be moved
 - The population, and demand for air travel, will continue to grow, but slower than in the past
 - Technology will continue to reduce aircraft noise
 - There will be an increasing focus on greenhouse gas (GHG) emissions and potentially increased restrictions
 - Energy efficiency will be accelerated
 - Flight operations, airspace and Part 150 are not the focus of this Work Group but may be discussed
 - Land-use planning and regulations are essential in effective aircraft noise impact mitigation
1. Beyond 65 DNL Noise Work Group establishes underlying goal of project (PAG assignment: Explore ideas related to noise mitigation beyond 65 DNL).
 - a. Define impacts – discussion will include health effects, annoyance and factors which influence dose-response
 - b. Recommend measures to reduce noise exposure and noise impacts; both indoor and outdoor
 - c. Address acoustic and non-acoustic noise impacts

- d. Review of noise-annoyance mitigation at airports through acoustic and non-acoustic strategies. Approaches may include:
 - i. Increase community awareness of noise exposure, noise program, etc. *Focus on communities.* e.g. Neighborhood enhancement grants
 - ii. Reduce indoor noise exposure. *Focus on individuals* (e.g. Individual grants for sound insulation)
 - e. Review of noise-annoyance mitigation at airports through acoustic strategies
 - f. Explore/Research emerging technology and innovations
 - i. Regional noise mapping
 - ii. Partner with a university to create some form of noise institute, project or program to study noise issues, impacts and mitigation strategies
 - iii. Affordable technologies for indoor noise mitigation
2. Overview of Aircraft noise Management (Special Information Meeting – open to work group participants and other interested parties)
- a. Regulatory Overview
 - i. Why don't more airports look beyond 65 DNL? (Obstacles)
 - 1. Federal regulations
 - 2. Funding issues
 - b. Basics of airport operations
 - c. Acoustics and measuring sound
 - i. Metrics Day-Night Level (DNL)
 - ii. Time Above (TA)
 - iii. Number Above (NA)
 - d. Acoustic and non-acoustic impacts associated with aircraft noise
 - e. Noise annoyance mitigation at airports by acoustic and non-acoustic measures
 - f. Noise programs (within and beyond 65 DNL - US and abroad)
 - g. Overview of PDX Noise Program (within and beyond 65 DNL)

- e. Incorporate stakeholder comments (from Step 5d above) and finalize report
6. Final Report
- a. Submission to CNAC, PDX Community Advisory Committee, Port Commission, Cities (as applicable)

In an effort to define the time requirements of the project, schedule meetings and plan work responsibilities, staff developed the following work plan:

Noise Beyond DNL 65 Working Group – Proposed Work Plan

- Meeting #1
- a. Discussion of mitigation categories
 - b. Overview of airport and municipal programs (worldwide)
 - c. Role of airports vs. cities and land-use authorities

- Meeting #2
- 1. Identify mitigation strategies working group recommends as focus for PDX

- Meeting #3
- 2. Development of mitigation boundaries
 - a. Boundaries may be based on noise exposure level using a variety of metrics (measurable)
 - b. Boundaries may be based on expected impacts (difficult to measure)
 - c. Discuss whether or not mitigation strategies should vary depending on location, operations or noise exposure (tiered)

- Meeting #4
- 3. Match mitigation strategies/asures (identified in Step 2) and mitigation boundaries (identified in Step 3). Develop mitigation plan recommendations.

- Meeting #5
- 4. Finalize recommendations and produce report

2.0 UNDERSTANDING AIRCRAFT NOISE

2.1 Noise 101

In an effort to provide the Noise Work Group participants with a basic working knowledge of noise management, measurement, and regulatory framework the Port hosted a Noise Training Workshop and assembled an Aircraft Noise Resource Book. The training, attended by more than 20 participants, included stakeholders from the Noise Work Group, PAG, CNAC, Hillsboro Airport Issues Roundtable, Port and City Staff and members of the community. The training was conducted by Mary Vigilante, a nationally recognized expert in noise and environmental management. In addition to the overview provided by Ms. Vigilante, the Port provided a PDX-specific review of operations, noise exposure levels and the Noise Management Program.

Topics covered in the training included:

- 1) Noise and its measurement
 - a) Perception of sound
 - b) Variables affecting response to sound including potential effect of noise on health
 - c) Measurement/weighting
- 2) Airport activity and operations
 - a) Current and forecast operations
 - b) Airport geometry
 - c) Airspace management
 - d) Runway Use – Arrivals and Departures
 - e) Flight tracks
- 3) Aviation and noise regulation and policies
 - a) FAA Noise Policy
 - b) National Environmental Policy Act
 - c) Aviation Safety and Noise Abatement Act of 1979
 - d) Aircraft noise and Capacity Act of 1990
 - i) FAR Part 161
- 4) Reducing noise exposure and impacts
 - a) Direct effects
 - b) Indirect effects – health consequences
 - c) Part 150 Noise Management Study Process
- 5) An overview of the PDX noise management program

2.2 Resource Binder

In addition to the noise training, staff assembled a resource binder for all work group participants. The resource binder provided a wealth of more in depth reading on the subject of aircraft noise management, applicable (federal, state, and local) regulations, an overview of the PDX Noise Program, and other pertinent studies, reports, information, and resources. The resource binder included the following references:

- BCT Part 150 Noise 101
- ACRP Report – Effects of Aircraft Noise
- ACRP Report - Compilation of Noise Programs in Areas Outside DNL 65
- Ruud Vader Report - Noise Annoyance Mitigation at Airports by Non-Acoustic Measures
- PDX Part 150 Study (2006) – Executive Summary
- City of Portland Noise Ordinance and x Overlay
- City of Vancouver Noise Overlay
- FAA Airports Compliance Manual
 - Chapter 13 – Aircraft noise and Access Restrictions
 - Chapter 15 – Permitted and Prohibited use of Airport Revenue
- Vancouver International Airport Analysis of Noise Management Best Practices
- Aircraft Noise Report (Noise Beyond DNL 65 article)
- Presentation on ACRP Project – Guidebook on Community Response to Aircraft Noise
- PDX Noise Management – Evergreen Report
- Sample Noise Disclosure Information: California
- Oregon Dept. of Environmental Quality (DEQ) Noise Control Regulations
- City of Portland Noise Control Ordinance
- List of Online Resources
- FAA Airports Compliance Manual
- Vancouver International Airport Analysis of Noise Management Best Practices
- Ruud Vader Report - Noise Annoyance Mitigation at Airports by Non-Acoustic Measures
- ACRP Report – Effects of Aircraft Noise
- ACRP Report - Compilation of Noise Programs in Areas Outside DNL 65
- WHO Report - Night Noise Guidelines for Airports

2.3 Online Resources

AAAE Annual Aircraft noise Mitigation Symposium

<http://www.noise-mitigation-symposium.com/>

University of California Aviation Noise and Air Quality Symposium (2000-2006)

<http://www.techtransfer.berkeley.edu/aviation/>

University of California Aviation Noise and Air Quality Symposium (2007)

http://airquality.ucdavis.edu/pages/events/2007/aviation_presentations/index.html

University of California Aviation Noise and Air Quality Symposium (2008)

http://airquality.ucdavis.edu/pages/events/2008/flying_presentations/index.html

University of California Aviation Noise and Air Quality Symposium (2009)

<http://airquality.ucdavis.edu/pages/events/2009/revolution.html>

Boeing Aircraft noise Regulation Information

<http://www.boeing.com/commercial/noise/index.html>

Federal Interagency Committee on Aviation Noise (FICAN)

<http://www.fican.org/>

International Commission on Biological Effects of Noise (ICBEN)

<http://www.icben.org/>

NoiseQuest

<http://www.noisequest.psu.edu/>

Partnership for Air Transportation Noise and Emissions Reduction (PARTNER)

<http://web.mit.edu/aeroastro/partner/>

Global Survey of Noise Abatement and Mitigation Measures

In preparation for work group discussion, staff conducted a global survey of aircraft noise abatement and mitigation measures. The research was provided to the Noise Working Group and served the purpose of informing the discussion. This work served as the basis for the Noise Work Group's recommendations to PAG, development and prioritization of potential action items and development of the work plan.

Global Survey of Noise Abatement and Mitigation Measures (Overview)

*(Adapted from: "Noise Annoyance Mitigation by Non-Acoustic Measures,"
Ruud Vader – Researcher)*

1. **Community Outreach/Information Sharing:** Information sharing (e.g. outreach programs, community presentations, open-houses, noise mapping)
2. **Community Outreach/Public Involvement:** Engaging the public to solicit feedback used in decision-making. Giving the public a "voice" in airport decisions which may impact their community. (e.g. Advisory Boards, Cargo Feeder Study, CNAC, Noise Working Group, community input opportunities)
3. **Community Enhancement Programs: Financial** - Expanding/magnifying the positive impacts of the airport within the community through (direct) financial investment.
 - i. Community-focused (e.g. contributing to building a park, playground, park benches, green spaces, to be shared by the community).
 - ii. Individual-focused (e.g., Sound insulation (complete or partial) easements, other benefits provided to specific individuals).
4. **Community Enhancement Programs: Resource Investment –**
Expanding/magnifying the positive impacts of the airport within the community using airport (and partner) resources (e.g. volunteering, community event hosting, vocational training)
5. **Energy and Sustainability Programs** - Federal, State and Local (e.g. Energy Star)
 - i. Provide expert advice to residents about strategies and materials for mitigating noise within their home
 - ii. Provide information and support to residents regarding local, state, and federal programs which encourage improvements in residential energy efficiency and potential sources of funding and/or financial incentives

6. Land Use Planning and Management

- i. Relocation
- ii. Value guarantees
- iii. Notification, Disclosure, Easements

7. Airport Facilities – Includes facilities such as ground run-up enclosures, noise barriers, blast fences, and airport layout enhancements such as high-speed exits (to reduce the use of reverse thrust). (*Typically associated with FAR Part 150 or Master Planning and outside intended scope of the work group*).

8. Regulatory or Financial Penalties - applied to operators/industry (*Preempted in US by federal regulations and outside intended scope of the workgroup*).

9. Aviation Operations – (*Typically associated with FAR Part 150 and outside intended scope of the work group*).

- i. Noise abatement procedures
- ii. Fly Quiet Programs (pilot outreach)

Acoustic vs. Non-Acoustic Approaches

Acoustic: Efforts to reduce impacts through a focus on reducing exposure by reducing noise at the source or reducing the amount of noise exposure at the receptor.

Examples include: Land-use planning (keep noise sensitive land-uses away from high-noise areas), quieter aircraft designs, noise abatement procedures (keep noisy aircraft away from noise-sensitive areas), continuous descent approach, sound insulation (also applicable as a 'hybrid' approach), noise barriers, curfews, etc.

Non-Acoustic: Efforts to reduce impacts by focusing on factors or conditions other than acoustics or sound energy that may influence the dose-response relationship.

Examples include: Public involvement programs, public outreach/information sharing, community enhancement, noise disclosures, and noise or aviation easements (compensation offered to a resident in exchange for acceptance of aircraft noise/overflights. Residents may feel they were compensated (in exchange) for the noise impacts associated with aviation operations).

Hybrid: Efforts to reduce impacts by addressing a combination of factors which include both acoustic and non-acoustic measures.

Global Survey of Noise Abatement and Mitigation Measures (Examples)

Sources include websites, airport reports, and input from airports and airport personnel from around the world. Please note: some programs and program measures described may not be applicable in the USA (or at PDX) due to federal, state, and local regulations.

Community Outreach Programs

- **Tri-Annual Drill Community Involvement:** Volunteers for tri-annual disaster drill exercise (Ted Stevens Anchorage Int'l Airport) (Bring the community "inside the fence")
- **Airport Tours:** Tours are provided to groups such as civic associations, schools, scouting organizations, church clubs, etc. Tours can be customized to fit the interest of different groups.
- **Mutt Strut & Runway Race** The Mutt Strut & Runway Race is sponsored by the Houston Airport System (HAS) and the Houston Society for the Prevention of Cruelty to Animals. The walk is conducted on a closed runway at the Airport. (Similar program at Toronto Airport – "Runway Run" event to raise money for charity).
- **DFW "Welcome Home a Hero" Program:** DFW's Welcome Home a Hero program has evolved into one of the largest on-going service projects in the North Texas area. DFW is one of only two airports in the country that hosts Rest and Recuperation flights, and its grassroots volunteer program has been nationally recognized as a model for civic involvement and community participation. (DFW)
- **Aircraft Observation Area:** Designated aircraft viewing area for the public, located on airport property. It is the perfect location to watch aircraft taking off and landing. Loud speakers continuously broadcast the radio transmissions between the tower and the aircraft and lend an element of realism to the experience. The Observation Area is a great place to spend a lunch hour or to introduce kids to the joy of flight. (FLL, YVR)
- **Community Outreach Vehicle:** The purpose of the Community Outreach Vehicle (COV) is to address public concerns and to promote the initiatives of the Chicago Airport System and the Midway and O'Hare Noise Compatibility Commission at community events, festivals, schools, and libraries. Video presentations and computer demonstrations of the Aircraft noise Management System are provided. The COV is powered by compressed natural gas and is equipped with an ADA compliant automatic hydraulic wheelchair lift. (ORD)
- **School Christmas banner competition:** Schools from around the region decorate the festive banners that hang at Melbourne Airport during the Christmas season. These banners are produced as part of the Melbourne Airport School Christmas Banner Competition, and provide a friendly welcoming message to the

thousands of passengers arriving and departing at Melbourne Airport during December. The winning schools are presented with over \$3000 worth of prizes in books and sporting equipment for their schools. (Melbourne)

- **Annual Public Meeting:** Annual report back to the community about how the authority is operating the. As well as presenting our annual report and financial results, we also provide an open microphone opportunity for community members to ask questions and hear directly from our executives about the issues that matter to the public. (YVR)
- **Airport Open-Houses and “Family Fun” days**

Community Enhancement Programs

- **Speakers Bureau:** Staff makes presentations to interested business or community groups on a variety of topics including but not limited to the latest developments at their airport (SAC, SJC)
- **Capital Development Program (CDP) Communications Program:** The Airport Development Department launched a strong public outreach communications program to promote the DFW Capital Development Program’s infrastructure and the innovations, technologies and environmental stewardship that are the foundation of the program. The CDP outreach program includes World of Wings, frequent site tours, presentations, and consistent media events/coverage. This well-rounded communication plan features many no-cost or low-cost projects and provides the best community awareness of the \$2.7 Billion CDP project. (DFW)
- **Casual for a Cause:** Every Friday, employees donate \$2 to wear jeans for our Casual for a Cause campaign. The charity changes monthly to raise money for many organizations. (Toronto)
- **Up in the Air – Environmental Education Project:** East Midlands Airport and South Derbyshire Environmental Education Partnership have produced an award-winning education resource pack that links environmental education to airport activities. The pack takes the form of a ‘loan box’ which includes all the equipment and activity cards needed for teachers to run a ‘self lead’ education day, as well as activities that can be undertaken before and after visiting the airport. The topics covered in the pack include Sound, Trees and Landscape, Flight, Weather and Creatures; featuring a number of fun and interactive activities to really help children get involved. (East Midlands Airport, UK)
- **Schiphol College:** Focuses on training (young) people who are unqualified and do not hold a diploma to prepare them for a job in the aviation sector. This is done in collaboration with the Regional Training Centre in Amsterdam. (**Schiphol Airport**)
- **Eco-Business Zone:** Greater Toronto Airport Authority collaborates with the Toronto and Region Conservation Authority, our neighboring municipalities, and

over 200 businesses in the region. Companies working together are able to do more to increase green business with less individual risk. We continue to develop programs to reduce green resource costs, uncover new opportunities and address everyday operational challenges. In addition, partners benefit from access to regular information sessions, business assessments, best practices and a green business directory. And stakeholders celebrate successes together (Toronto)

- **Industry days:** –Students participate in receive interactive presentation from airport staff (London-Stansted Airport)
- **Mentoring Program:** Staff volunteers are matched with students to act as a ‘listening ear’ and support them as requested. (London-Stansted Airport)
- **Teacher training days:** Teachers and career counselors are provided training on a variety of subjects and topics related to aviation. This includes application of concepts from mathematics, science, etc. (London-Stansted Airport)
- **Community Champions:** Manchester Airport they want to maximize the benefits that the airport brings to the region (such as jobs, new routes and investment) while minimizing the harm which we cause to our neighbors. To aid this process, they have set up “Community Champions” who act as a contact point and part of a wider group, able to coordinate and facilitate our community involvement. Each champion is appointed by their peers and we have representatives from each department (Manchester Airport)
- **Community and Special Events:** In addition to hosting its own airport-related special events, airports supports their communities by sponsoring and participating in (industry-and aviation-related) community events. This may include staffing exhibits at and publicizing events that tie into the airport's activities and help increase awareness of the airports’ community outreach and educational programs and services
- **Community Enhancement Grant Program (LAX, BWI)**
- **Staff volunteering programs:** Airport operator allocates up to six days paid leave annually, for staff working on volunteer projects (London-Stansted Airport). Other airports allow a number of work hours per week to be used for community volunteering or provide “flex-time” for volunteer hours. (Schipol Airport, Pinellas County, Florida)
- **Wetland Mitigation Bank:** (Paine Field, WA)
- **Trees for miles:** Eindhoven Airport encourages passengers to make a donation to plant trees in compensation for the CO₂ that is produced by transporting him or her from Eindhoven to a destination. Eindhoven Airport The Netherlands (Eindhoven Airport, The Netherlands)
- **Trees/greenery to mitigate noise/obstruct view of airport** (Anchorage)
- **Employee volunteering awards:** Awards to celebrate the achievements of staff volunteers who give time and commitment to a variety of community projects. Staff who enter the awards scheme can win grants for the charity of their choice

- **Sound reduction by nature:** A mile long stretch of trees, a Greenbelt, and walking trails. (Fort Lauderdale/Hollywood International Airport, Florida with a similar program in Melbourne)
- **Team LAWA:** Team LAWA is a group of Los Angeles World Airport employees who volunteer their time for various projects in the communities surrounding LAX. Whether it is planting flowers at a local school or painting benches at a local park, Team LAWA is out there to improve our communities (LAX)
- **AIRCademics:** This education program includes an eight-week curriculum promoting learning in the subjects of science, math and reasoning while providing youth an introduction to aviation
- **Greening of Our Schools Program:** A 'greening the schools' program, turning asphalt or degraded landscaping into a pleasant environment where children can play and learn has been introduced into a number of local schools. (Sydney)
- **Coin Collection programs:** Visible coin collection kiosks are located throughout the airport. These kiosks are conveniently located for customers flying out of YVR who wish to donate change to a charitable cause. Each year the airport authority allocates 100% of the funds collected from these kiosks to local charities (Vancouver, BC)
- **Environmental Partners Club:** The purpose of these structures is to commit companies operating at the airports to implementing an Environmental Management System covering their operations and to thereby make Paris-Charles de Gaulle and Paris-Orly truly environmentally friendly airports. Today, these Clubs, in addition to offering a resource centre for best environmental practices, are becoming the new driving forces behind the airport Environmental Management Systems (Paris)
- **Project School Flight:** members of the local Experimental Aircraft Association (EAA) chapter have taught 90 young people from four area high schools about aviation. A number of these kids, inspired by their experience at the Airport, have continued to pursue aviation coursework at the college level (Truckee-Tahoe Airport)
- **Facilities for Free:** Provide conference rooms and meeting spaces to public/community organizations free (Truckee-Tahoe Airport)

Information Sharing

- **Develop noise mitigation brochure** (for homeowner-sponsored sound mitigation)
- **Homebuyer Task Force:** A coalition of real estate developers, business leaders and airport officials was convened by the DIA Partnership, an organization of local business leaders dedicated to enhancing economic opportunity and quality of life in the DIA area. The Task Force has created a brochure and a guide

containing factual information about buying a home in the DIA area for prospective homebuyers' consideration (Denver)

- **Develop mapping system:** Educating stakeholders including prospective homebuyers on aircraft noise impacts (and other noise sources)
- **Web-based noise information for prospective home buyers:** Airports provide information specifically intended for home buyers and realtors to help learn about flight patterns, peak travel months, and potential noise impact areas from aircraft operations. They may provide modeled computer generated flight tracks that show predominant aircraft flight patterns with the operation of both planned parallel runways. They also encourage home buyers to visit properties at several different times of the day and during various seasons (RSW, RDU)
- **Web-based information for real estate agents** (RDU)
- **Information and meals** (Paris, Charles de Gaulle)
- **Fly Quiet Program Reports:** Inform community stakeholders how airlines perform/participate in support of the noise management programs (SEA)
- **Community newsletters:** A quarterly community newsletter is sent to over 15,000 of the airport's closest neighbors. This aims to keep local residents up to date with developments at the airport and responds to local concerns. The airport also holds regular public information drop in sessions, where local residents can learn more about future plans and have their questions answered. 'Airport' includes information on current and future developments, details of new flights from the capital, and a round-up of community projects supported by BAA Edinburgh. London (London-Edinburg Airport).
- **Noise Center:** was established in the center of the Airport's Administration Building with many windows to invite the public to come in and learn about the operations at DFW Airport and its program to address noise affects. The Noise Center has educated over 300 guests from the business community and public. (DFW)
- **Stakeholder Network Educational Presentations:** DFW Airport staff are active participants in discipline-specific stakeholder functions in the US and internationally. DFW's environmental innovations are cutting-edge and provide a model for airports and industry
- **Noise Advisories:** Advisories provided to community stakeholders describing conditions which may result in a change in community noise exposure or impacts. Advisories may be provided via Web, email, social media, etc. (PDX, DEN, MCO)
- **Construction Guidelines for Builders:** Guidelines for builders of new homes with a focus on strategies for mitigating aircraft noise impacts (MSP)
- **Nighttime Airport Construction Awareness Bulletins:** Web or paper brochures used to notify residents/communities about construction schedules that may result in changes in runway use, operations, or aircraft noise. (ORD)
- **Web-based operations, flight track, and noise program information for citizens**

- **Weekly community newspaper column:** advertising space purchased to inform the community/public of airport news (Brisbane)
- **Airport Community Forum:** Web-based (and community event) Q&A for community/public questions/concerns. Appears to be similar to a “blog” (Brisbane)
- **Community Noise Mapping/Disclosure:** Noise overlay implemented in Vancouver (WA) to account for and inform the public about noise exposure associated with transportation sources: rail, aviation, and vehicle traffic in proximity to downtown

Consultation/Public involvement in decision-making (two-way communication)

- **Going forward:** Our principal objectives for 2006/07 will be to continue to consult with those who live and work in local communities on the growth of the airport. We will continue to support educational and business link projects to maximize opportunities for the community and for business organizations to enjoy the benefits of the airport
- **Consultation on airport expansion – project specific public involvement** (London- Stansted Airport)
- **Consultative Committees and Roundtables:** ongoing public involvement committees. These are common around the US and abroad. (Manchester Airport, SFO, PDX, ORD)
- **Micro Climate Approach; Community-specific consultation.** Informal discussions with local residents in several small communities in 2005 and 2006. They involved the local inhabitants in identifying what noise at what time was most annoying. During a follow up session the residents were given voice in prioritizing proposed measures. They were advised that some measures, like relocating a SID waypoint, may have only very limited effect on actual noise pressure levels. The projects have yet to be evaluated, but first impressions are that the local residents highly appreciate the initiatives. As the chairman of one village council said: “I don’t think we have less noise yet, but I am convinced that our annoyance has gone down by 50% after this project was started.” (Amsterdam Airport Schiphol). (Similar to the Cargo Feeder Study conducted by PDX)

Financial penalties applied to operators/industry (May be preempted by FAA Regulations)

- **Fines for aircraft that fly outside departure procedure bandwidth:** (London- Stansted Airport)
- **Noise surcharge:** Fines applied when an operator exceeded a pre-determined noise level (Paris, Charles de Gaulle)

Sound insulation

- Residential sound insulation programs are used throughout the USA and abroad. US regulations limit FAA/airport-sponsored sound insulation programs to within the 65 DNL contour in most cases
- Provide homeowners who are ineligible for airport sponsored sound insulation with information for do-it-yourself sound insulation. May apply to the entire home or specific areas (e.g. most sensitive areas such as bedrooms)

Land-use planning and management

- **Encourage local jurisdictions with land-use authority to incorporate the most current PDX noise exposure maps in their comprehensive land-use planning**
- **Encourage local jurisdictions to incorporate both height and noise restrictions in zoning ordinances:** Encourage communities to adopt height restrictions in accordance with FAR Part 77
- **Establish Noise Overlays/Ordinances specific to aviation noise.**
- **Development of Noise Ordinance with Fair (Noise) Disclosure requirements**
- **Public policy objectives and conflicts:** Where applicable, encourage land-use planning that is compatible with aircraft noise impacts.
- **Land Use Grant Programs:** Grant program designed to help communities near major airports develop plans that reduce existing non-compatible land uses and prevent the introduction of additional non-compatible land uses. Grants are for airport-friendly zoning. (ORD)

Property-specific measures (i.e. relocation, value guarantee, etc.).

- **Tax incentives:** Tax relief for (homeowner-sponsored) sound insulation
- **Noise Disclosure for home buyers:** Require notice/noise disclosure to prospective home buyers within a specified area based on operations or noise exposure level
- **Manufactured Homes:** Prohibit new manufactured homes within areas impacted by aircraft noise Vancouver and Portland Noise District/Zone Boundary or require sound attenuation and/or certification
- **Prohibit new noise sensitive uses:** within the Noise District/Zone and along the extended centerlines of Runway 3-21
- **Develop Land-use Fair (Noise) disclosure brochure**
 - Regional focus – Neighborhoods within a specified area based on operations or noise exposure level
- **Aviation easements**

- **Property value guarantee:** Homeowners near the airport receive a property value guarantee for 15 years. “Safety Net” for potential property devaluation (considered by FLL during 2006 Part 150 update)
- **Real Estate “Due Diligence” Resource:** DFW Airport’s Environmental Affairs Department is a community resource for local realtors, developers and the general public with regard to real estate transactions. People that are relocating to the Dallas/Fort Worth Metroplex or are relocating within the Metroplex often contact DFW’s Noise Compatibility Office to learn of aircraft flight activity in the vicinity of the area they are considering for purchase. The Noise Office counsels people by phone or in person and also presents information to the local realtor community to ensure that DFW’s resources can be of benefit (DFW)