

APPENDIX D

HIGHLINE FORUM

In addition to the scheduled workshops, the Port of Seattle (Port) staff and consultants attended community and civic meetings to provide updates on the Part 150 Noise Compatibility Study progress and explain the Study findings, recommendations, and process. These community meetings included the Highline Forum, a group of neighboring communities which have expressed continued interest in the study process.

A Southwest King County regional assembly, the Highline Forum includes elected representatives from Des Moines, Burien, Normandy Park, SeaTac, Tukwila and Federal Way and the Highline School District and Port. Members of the Forum listened to presentations and took part in discussions focused on the Part 150 Study at the following meetings:

- Highline Forum – November 18, 2009
- Highline Forum – March 24, 2010
- Highline Forum – May 26, 2010
- Highline Forum – September 22, 2010
- Highline Forum – November 17, 2010
- Highline Forum – January 26, 2011
- Highline Forum – March 23, 2011
- Highline Forum – May 25, 2011
- Highline Forum – June 29, 2011

Presentations and summaries from these meetings are included in this appendix.

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**Highline Forum
November 18, 2009**

Presentation
Meeting Summary

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Part 150 Update

Current Status

- ▶ Contract negotiations with consultant
- ▶ FAA must approve scope of work
- ▶ FAA must approve consultant contract and cost
- ▶ FAA requires an independent Level of Effort analysis of consultant rates



Elements of the study scope

- ▶ Inventory of existing conditions
 - Previous studies & reports
 - Facilities and operations
 - Airspace, ATC procedures
 - Noise Abatement procedures
 - Radar Data
 - Noise Monitor data
 - Engine run-up data
 - Complaint database
 - Land use maps
- ▶ Prepare aviation forecasts
- ▶ Additional Noise Measurements
- ▶ Create DNL contour with existing 3 runway use
 - ▶ Analyze other noise metrics that help to explain the environment
- ▶ Develop future 5 – year DNL Contour



Elements

- Evaluate the noise impacts within the DNL contours
 - Population
 - Housing units
 - Identify noise sensitive land uses per jurisdiction
- Evaluate Noise Abatement Procedures
- Hush House Evaluation

Elements

- Noise Monitoring and Flight Tracking system evaluation
- Land use evaluation
 - Prepare Noise Compatibility Plan (NCP) with recommended elements
 - Identify areas of potential mitigation

Key attributes of the public involvement plan for the Part 150

- Technical Review Committee
 - Comprised of:
 - Land Use Planners from the Highline area cities
 - Technical Airline Pilots
 - Puget Sound Regional Council Planner
 - Boeing Field Airport Noise Representative
 - Washington Department of Transportation Aviation Planner
 - FAA Air Traffic Control Manager
 - FAA Airports Division Environmental Manager

Key attributes of the public involvement plan for the Part 150

- Public workshops (open to all)
 - We expect to hold about five public workshops throughout the Part 150's two year timeframe
 - Designed to receive maximum amount of input and participation from community
 - Workshops will be held in conjunction with all key elements of the study

Key attributes of the public involvement plan for the Part 150

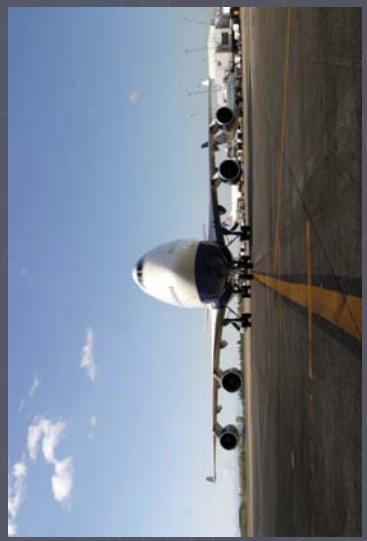
- FAA-required Public Hearing - held near the end of the process
- Targeted presentations - offered to councils, community groups and other organizations
- Highline Forum and Port Commission will receive regular updates on the Part 150 process

Key attributes of the public involvement plan for the Part 150

- Information distributed by other media
 - Airport's community newsletter (Air Mail)
 - Ads in local papers and Constant Contact, the Port's e-mail mailing list
- Website hosted by consultant
 - latest information and all the documentation related to the Part 150

Final Steps

- POS commission approval of final plan
- Submittal to FAA for 180 day review
- Develop implementation schedule and plan



Highline Forum – Minutes
Wednesday, November 18, 2009
2:30 P.M. - 4:30 P.M.
City of Normandy Park – The Cove

Attendees: **Burien:** Gordon Shaw, Rose Clark, Mike Martin; **SeaTac:** Ralph Shape, Todd Cutts; **Tukwila:** Joan Hernandez, Rhonda Berry; **Normandy Park:** Shawn McEvoy; **Des Moines:** Tony Piasecki; **Port of Seattle:** John Creighton, Pat Davis, Mark Reis, Kym Sulman, Diane Summerhays, Marco Milanese; **Highline Public Schools:** Julie Burr Spani

Presenter: Stan Shepherd, POS

Part 150 Noise Update

Stan Shepherd, Noise Programs Manager at Sea-Tac, provided the Forum with an update on the Part 150 process reporting negotiations with a consultant to manage the study are nearing completion. The FAA will then need to approve the scope of work and the contract with the consultant. He then explained the big buckets of work connected to the Part 150 Study acknowledging the work plan as described, though covering a good portion of what is expected to be covered in the study, is not set in stone. Elements of the study scope covered by Stan in his presentation included: the creation of current and five year DNL contours, the evaluation of noise abatement procedures, hush house evaluation, the identification of areas for potential mitigation and the consideration of additional areas for noise monitoring. Letter to the City Managers for appointing land-use planners to serve on the study's Technical Review Committee would be sent out soon. Stan also discussed the rigorous public outreach tied to the Part 150 which will include a series of public workshops and the various ways the public can stay connected with the study as it progresses. He ended with an explanation of a Noise Compatibility Plan's final steps leading to approval.

Stan received a few questions about the timeframe for the study and stated once a consultant was officially onboard, the goal was to have the consultants complete their work within two years. He also upon inquiring stated he believe ultimately the study would determine that the noise footprint continues to shrink. Mayor McEvoy ended the update by stating he wanted to see the study conducted in a way the allowed the cities to be as involved as they were the last time around.

**Highline Forum
March 24, 2010**

Presentation
Meeting Summary

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Part 150 Presentation

Highline Forum

March 24, 2010

Seattle Tacoma International Airport



1

Agenda

- Welcome and Introductions
- Overview of a Part 150 Study
- Outreach During the Study
- Review of February 24th Workshop
- Breakout Session: Assist in Scoping the Study



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Welcome and Introductions

Port of Seattle

- Owns and operates the airport
- Sponsor of the Part 150 Study
- Main contact: **Stan Shepherd**

Consultant Team

- Landrum & Brown will lead the Part 150 Study
- 60 years of aviation planning
 - Experts in aircraft noise and land use planning
- Main contact: **Rob Adams**



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Overview of Part 150 Study

Part 150 Studies are Planning Studies

- The focus of a Part 150 is to address **noise** and **land use** incompatibilities
- Develop solutions that help reduce noise impacts

Part 150 Studies must Follow FAA Guidelines

- FAA has established Part 150 guidelines
- Airports must follow those guidelines to obtain funding for the study and implementation of the study's recommendations
- Noise is expressed using DNL metric which is a 24-hour average of noise with a 10x penalty for nighttime events
- FAA guidelines use 65 DNL as the threshold for significant impacts
- Part 150 recommendations must show benefits within the 65 DNL



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Overview of Part 150 Study

Goals for this Part 150 Study

- Look forward**
 - Identify noise issues related to the 3rd runway
 - Look for opportunities that have not been thought of or that new technology will allow
 - Engage the public in a new way
- Conduct the Study in an open and engaging way**
 - Communicate often with the public about the Study
 - Be up front and honest about what can and cannot be addressed in the Part 150 Study
 - Develop better ways to gather and communicate information about the Part 150 Study
- Complete the Part 150 Study in two years (2011)**



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Outreach During the Part 150 Study

Opportunities for public involvement:

- Opportunities for public involvement:
 - Six Public Workshops with breakout sessions and Public Hearing after the Draft Part 150
 - Periodic updates to the Highline Forum
 - Special Presentations – The Port and the consultant team will attend other community group meetings
 - Project Website – www.airportsites.net/sea-part150
 - Air Mail newsletter will include Part 150 Study updates
 - Port's Constant Contact email service - *Part 150 topic*
 - Comments can be sent anytime during the study to: SEAp150-comments@landrum-brown.com



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Outreach During the Part 150 Study

Technical Review Committee

- Made up of:**
 - Land use planners from Federal Way, SeaTac, Tukwila, Burien, and Des Moines
 - King County
 - Puget Sound Regional Council
 - Alaska Airlines
 - Horizon Air
 - Boeing Field
 - WSDOT Aviation
 - FAA Airports and Air Traffic Division
 - Port of Seattle
 - Non-voting body
 - Not tasked with developing recommendations or making decisions about recommendations
 - Provide technical feedback to the team (land use planning and aviation safety and airspace planning)
 - Provide local land use data to the team



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SEA Part 150 Noise Compatibility Study

Review of February 24th Workshop

- Held at Mt. Rainier High School in Des Moines**
 - Approximately 150 people attended
 - Began with a presentation on Part 150
 - 15 Breakout stations where people were invited to provide direct input to assist in refining the scope
 - Breakout summary provided instant feedback
 - Ended with a Q&A session



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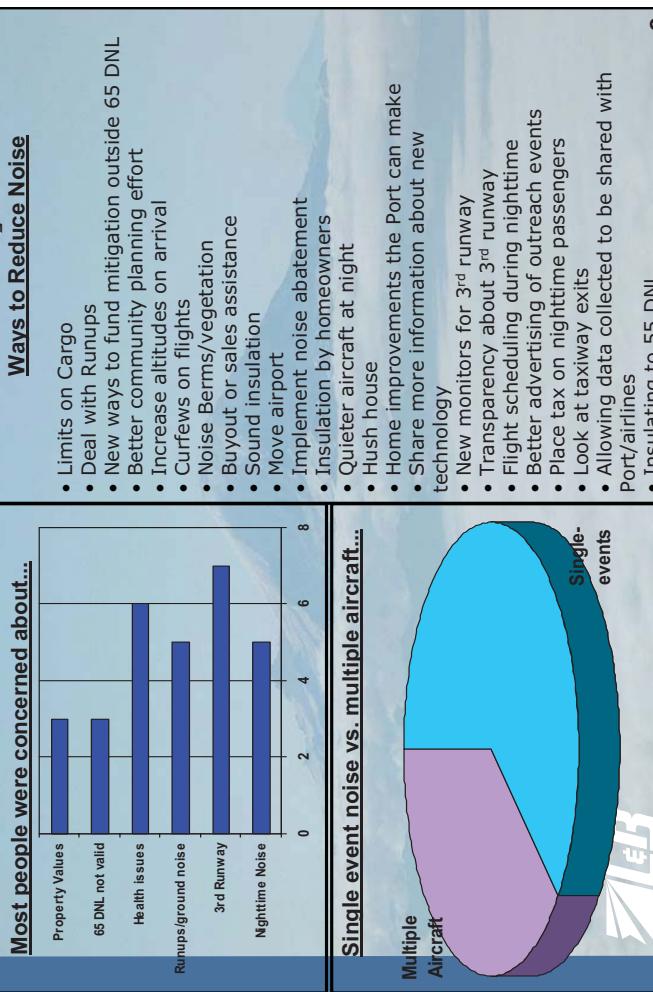


Aviation Planning at the Leading Edge

SEA Part 150 Noise Compatibility Study

SEA Part 150 Noise Compatibility Study

Breakout Session Summary



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Review of February 24th Workshop

- Feedback on Main Concerns
 - What concerns people
 - What information they want to come from the Study
 - Suggestions on ways to reduce noise
 - Ways to better communicate with them
- Action Items
 - Developing a Meeting Summary
 - Reviewing the input to determine what can or can't be implemented and reporting back to the public
 - Publish both on the website and discuss at the next workshop (June 9th)
- Feedback on Meeting Format
 - Overwhelmingly positive
 - Later start time and increase advertising/notification

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SEA Part 150 Noise Compatibility Study

Brainstorming Session

- Provide input on the following:
 1. Suggestions for reducing noise?
 2. Suggestions for improving the outreach?

SEA Part 150 Noise Compatibility Study

Brainstorming Session

Part 150 Studies can:

- Recommend operational changes that have community benefits without shifting noise, such as runway use procedures and use of navigation technology
- Recommend constructing noise berms/wall or hush houses
- Recommend land use mitigation programs
 - Funding is not guaranteed
 - Limited to areas within the 65 DNL noise contour

Part 150 Studies cannot:

- Recommend closing an airport or runway, or implementing mandatory restrictions on aircraft
- Recommend levying fines for not following procedures
- Limit access to the airport based on size, type, or noise created by aircraft

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Next Steps

- Continue airport activity data collection
- Review all of the suggestions made for inclusion in the Part 150 Study
- Next Public Workshop
 - June 9, 2010
 - Report back on how we will incorporate suggestions into the Part 150 Study
 - Discuss the data collection process
 - Continue to seek direct input



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Questions / Answers



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**Highline Forum –Minutes
Wednesday, March 24, 2010
2:30 P.M. - 4:30 P.M.
City of SeaTac – City Hall**

Attendees: **Burien:** Gordon Shaw, Rose Clark, Mike Martin; **SeaTac:** Mia Gregerson, Todd Cutts; **Tukwila:** Joan Hernandez, Steve Lancaster; **Normandy Park:** George Hadley, Shawn McEvoy, Doug Schulze; **Des Moines:** Tony Piasecki, Bob Scheckler; **Port of Seattle:** John Creighton, Kym Sulman, Diane Summerhays, Marco Milanese, Stan Shepherd, Elizabeth Leavitt; **Highline Public Schools:** Bernie Dorsey, Geri Fain

Presenter: Rob Adams, Landrum & Brown

Part 150 Presentation

Rob Adams, from Landrum & Brown, began with a brief overview on the Part 150 Noise Compatibility Study process. Rob went on to explain Landrum & Brown's and the Port's respective roles in the study and provided his company's previous history with similar noise studies at other airports.

The FAA, Rob explained, establishes the Part 150 guidelines. Airports must follow these guidelines in order to obtain funding for the study and implement the study's recommendations. FAA guidelines use 65 DNL as the noise threshold for defining areas significantly impacted by noise and all Part 150 recommendations must show benefits within that 65 DNL. Rob detailed the goals for the current Part 150 study:

- To identify noise from the airport and to specifically focus on the 3rd runway,
- To look for opportunities that have not been thought of, or that new technology will allow,
- To engage the public in an improved, more transparent public process,
- And to complete the study within a two year timeframe.

Rob presented an outline of the Port's various opportunities for public involvement including six separate public workshops, updates to the Highline Forum, special presentations before city councils and community groups, a dedicated Part 150 website, the "Airmail" community newsletter, the "Constant Contact" e-mail notification service, and a dedicated email for Part 150 comments or questions. A Technical Review Committee (TRC) has also been formed, Rob explained, not to develop recommendations or make decisions, but rather to provide technical feedback, and local land use data to the Part 150 team.

The first public workshop, held February 24th at Mount Rainier High School in Des Moines, was quite successful Rob explained. The overall consensus on the meeting format, based on a survey provided to the participants, was overwhelmingly positive, Rob said, citing only a handful of suggestions for a later start time and broader outreach for future meetings. With approximately 150 people in attendance, the workshop began with a presentation on the Part 150, included 15 separate breakout stations, managed by facilitators, to provide immediate feedback and assist with potential refinement to the study's scope of work. The facilitators received an outpouring of input at the meeting

and Rob and his team are still in the process of sorting through it all and determining what's possible within this Part 150 study and what falls outside. Data collected from the February 24th workshop showed areas of citizen concern in the following areas:

1. Third runway noise
2. Potential health risks
3. Run-ups and background noise
4. Nighttime noise
5. Concerns with the validity of the 65 DNL
6. Potential affect on property values

Rob ended his presentation by announcing the date for the next Public Workshop – June 9, 2010. The plan on June 9th is to report back on what was heard at the first meeting and in terms of next steps, give the attendees a sense of what's pursuable under this Part 150 and what isn't.

There were a number of questions and comments from the Forum members that came up during and after Rob's presentation including:

- Are run-ups included within the DNL metric? *Yes.*
- Are there are other metrics besides DNL that can be used to define noise? *Yes - but they can't be used as the basis of a noise mitigation program within the Part 150.*
- The Part 150's five year look forward isn't particularly helpful to the cities' long-term land-use planning. Can you consider extending the planning horizon date out further? *This Part 150 also includes a 10 year look forward. Anything more would be difficult because of the volatility in the aviation industry. However, there might be other information, not tied directly to the noise contours, we can offer the surrounding cities to help with their long-range planning.*
- Will there by opportunity for “give and take” at the next public meeting? *Yes, the public will have the opportunity to help refine the developing noise plan.*
- Will the comments and suggestions made at the last Commission meeting and today be included officially as part of the Part 150's public record? *Yes.*
- What's stopping the Forum members and the Port from going to DC “arm and arm” and lobbying for changes to FAA rules that presently prevent airports from setting curfews/restricting runway use?
- Can we provide incentives to airlines that make an effort to either fly quieter aircraft or take other actions that reduce their noise footprint? *Because of FAA restrictions, financial incentives would be tricky. But there might be other options that can be looked at as part of the Part 150.*
- Will you look at noise walls on the west side and the east side of the airport? *Yes.*
- A hush house would have a huge impact on engine run-ups and hence, the number of noise complaints the airport receives.
- There have been increased fights over Normandy Park and the Shorewood area since the third runway opened. Also aircraft are turning over Des Moines earlier than they have in the past. Also, more east-west traffic heading over Burien.
- Is the 4-post plan still being adhered to? *Yes.*
- It appears that the weather has an impact on noise. *Certain weather events lead to more noise while others lead to less.*

- The noise reducing “sling shot” takeoffs that occur at John Wayne Airport in Orange County should be applicable here.
- Low frequency noise does long-term damage to the body.
- The insulation program should be expanded to include rentals, apartments (multi-families), fire departments and churches.
- At the end of the public meeting when the facilitators were reporting back about what they heard, it appeared the facilitators in the interest of providing new information to the crowd looked for something different to say as opposed to relaying what they actually heard in the breakout sessions.
- Deputy Mayor Clark requested the possibility of a field trip to see the Noise monitors, to which Stan Shepherd agreed to arrange.

In terms of improving the Part 150 outreach:

- Have the cities put Part 150 meeting notices on their websites and use the cities' public access channels
- Consider social networking sites.
- Consider bilingual meetings and publishing meeting notices and handouts in other languages.
- Consider adding planning commissioners to the TRC.
- Provide presentations/Part 150 updates to city councils, school boards, sewer district boards, water district boards, etc.

At Close of Meeting

Shawn McEvoy would like to focus on the following Part 150 related items at the next Forum: an appropriate airport/noise foot print planning horizon that will help the cities with their long-term planning, clearly defining third runway noise and confirming airline compliance with existing noise abatement procedures.

John Creighton and Rose Clark suggested the idea of having the Highline Forum become the venue for discussing and prioritizing noise related items that fall outside of the Part 150.

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**Highline Forum
May 26, 2010**

Presentation
Meeting Summary

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Part 150 Presentation Highline Forum

May 26, 2010

Seattle Tacoma International Airport



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Agenda

- Welcome and Introductions
- Preview of June 9 Public Workshop
- Response to Questions from March 24 Highline Forum



2

Preview of June 9 Workshop

- 2nd Public Workshop for the Part 150**

- The focus of the workshop will be to respond to the concerns and major questions raised February 24th
- Continue to offer small working group opportunities for collecting input and discussing issues

- Three Main Topics**

- Report back on questions/comments and how they are being addressed inside or outside the Part 150
- Discuss a few of the proposed ways to reduce noise in more detail and to get further input on how to move forward
- Discuss noise modeling and summarize the input data collected to date

- Review Station**

- Offer the public the opportunity to continue to raise their concerns and offer ways to reduce noise

SEA Part 150 Noise Compatibility Study

- Preview of June 9 Workshop**
- Reporting Back on Questions/Comments**

- Public provided dozens of individual questions/comments at the workshop
- Analysis of the input from the workshop identified 16 common questions/comments
 - Each of these will be addressed in a written document available at the workshop and on the website
 - 4-5 will be addressed in the small group breakout session



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Preview of June 9 Workshop

Public Comment: Notices of Meetings

Participants said that they would like to be informed about opportunities to participate through a greater variety of outlets/channels.

- Various suggestions for outlets were provided
- A later start time was also asked for

Action Items for Part 150 Study:

- Develop and distribute flyers to local cities, libraries, senior centers, and community centers about meetings
- Continue to use local blogs
- Actively advertise constant contact and the project website and encourage people to sign up for updates
- Incorporate non-English advertising
- Start at a later time (6:30 pm)



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Preview of June 9 Workshop

Public Comment: Noise Modeling Process

Participants said they wanted to know more about the procedures for developing the noise contours

- Input data gathered to date
- Modeled vs. measured
- Information about the additional measurement sites

Action Items for Part 150 Study:

- Provide the public with a noise modeling and measurement overview at Public Workshop.
- Ask the public what they would like to see in terms of noise measurement data.
- Conduct temporary noise measurements and develop reports at sites to be chosen through input from the public.
- Apply for funds to upgrade existing Port noise monitors to provide additional data.



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SEA Part 150 Noise Compatibility Study

Preview of June 9 Workshop

Public Comment: General Noise Concerns

Participants expressed several concerns about noise

- Loss of sleep
- Inability to have "peace and quiet" in their homes
- Forced to keep their windows closed during the summer
- Requests for air conditioning so windows can be closed

Action Items for Part 150 Study:

- Identify noise metrics that relate to sleep awakening.
- Explore mitigation actions to keep windows closed year round (air conditioning or other options).
- Actively discourage flights during sensitive times through the fly-quiet program or other airline interaction.
- Provide reports/charts for operating periods at the airport, paying particular attention to the early morning, evening, overnight, and weekends.



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SEA Part 150 Noise Compatibility Study

Preview of June 9 Workshop

Noise Reduction Discussion

- Review 3-4 noise reduction topics that were brought up at the meeting
 - Discuss the suggestion, provide brief background, identify the main issues
 - Prepare questions for each suggestion to gather input from the public as we move forward



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Preview of June 9 Workshop

Noise Reduction: Reduce Ground Noise

Participants reported being disrupted by ground noise

- Engine run-ups, taxiway noise, and reverse thrust noise
 - Areas south and west of the Airport reported this
 - Suggestions included hush house and installation of noise berms/walls or vegetation
- Background:**
- Ground noise results from taxiing, reverse thrust, and engine run-ups
 - Most often noticed when other noise sources are reduced
 - Tends to travel along the ground and is affected by terrain or elevation changes
 - Solutions typically require land, can be costly, and have limitations on effectiveness



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Preview of June 9 Workshop

Noise Reduction: Reduce Ground Noise (continued)

Possible Recommendations:

- Identify noise metrics that relate to ground noise to help define the conditions
- Develop a hush-house feasibility study
- Develop a noise berm/wall feasibility study
- Consider voluntary actions that limit/discourage nighttime run-ups
- Consider voluntary actions that manage power settings on reverse thrust and taxi power (in particular on Runway 16R/34L)



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SEA Part 150 Noise Compatibility Study

SEA Part 150 Noise Compatibility Study

Preview of June 9 Workshop

Noise Reduction: Reduce Ground Noise (continued)

Feedback from Public:

- What areas are most affected by ground noise and from what activities?
- What information would be helpful for them to understand and be aware of the situation?
- Would the public support a cooperative program to maintain vegetation on a noise wall/berm?



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SEA Part 150 Noise Compatibility Study

Summarizing Noise Modeling Data and Process

- Discuss the Noise Modeling Process
 - Introduction to the Integrated Noise Model
 - Data that is required for the model
- Summarize data collected to date
 - Goal is to let people see the level of detail required but not to inundate them with data at the meeting
- Discuss how noise measurements will be used in the process
 - Use of the 25 permanent noise monitors
 - Development of a temporary noise measurement program based on input from the public



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Preview of June 9 Workshop

Overview of Integrated Noise Model

Categories of Input Data

- Airport Layout Plan
- Airport & FAA
- Radar Data & OAG
- Radar Data & FAA
- Radar Data & Port
- Flight Tracks

In-Aircraft Performance Database Model

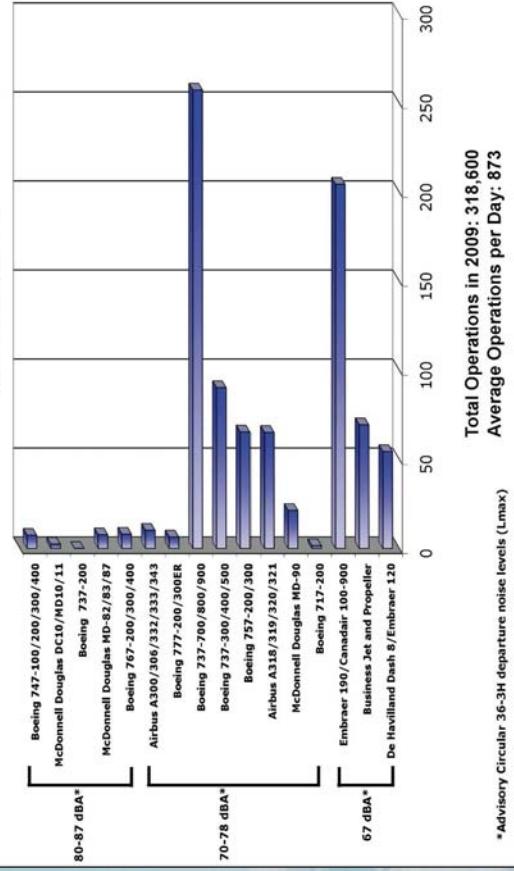
- Aircraft Noise Data



SEA Part 150 Noise Compatibility Study

Preview of June 9 Workshop

Operations per Day



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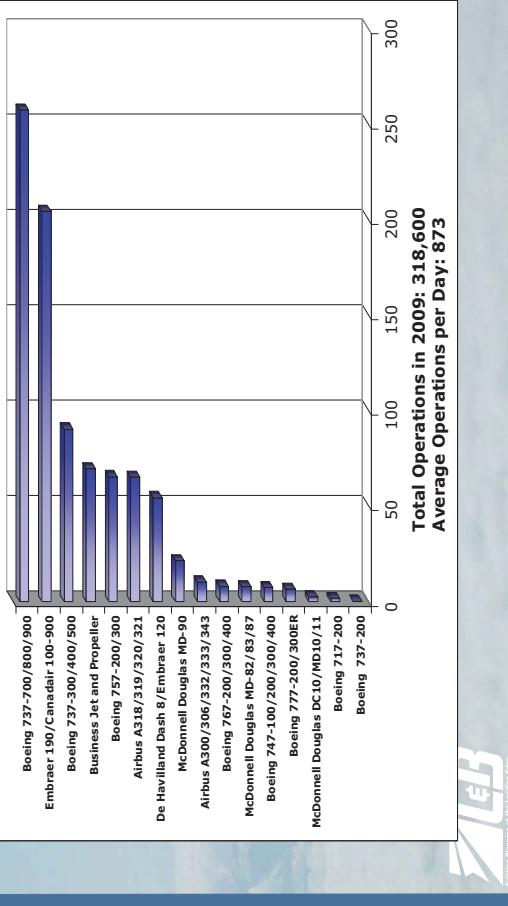
Preview of June 9 Workshop

Sources of Input Data

Input Data

- Airport Layout Plan
- Operating Levels
- Fleet Mix
- Runway Use
- Flight Tracks

Operations per Day



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SEA Part 150 Noise Compatibility Study

Preview of June 9 Workshop

Runway Use:

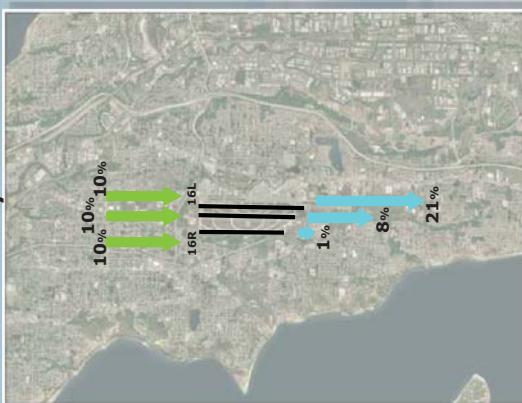
- Source:** Runway use data in yearly percentage used from ANOMS
- Analysis:** 2009 runway use will be analyzed for various conditions
 - Day versus night
 - By aircraft type
 - By north versus south flow
 - By 2 runway versus 3 runway conditions
- Initial Findings:**
 - South flow is the predominant flow at the airport (approx. 69% in 2009)
 - When 3 runways were available, the runway use was consistent with projections from the Third Runway EIS
 - When 2 runways were available, the Third Runway was used approximately 40% of the time

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Preview of June 9 Workshop

2 runways in use

3 runways in use



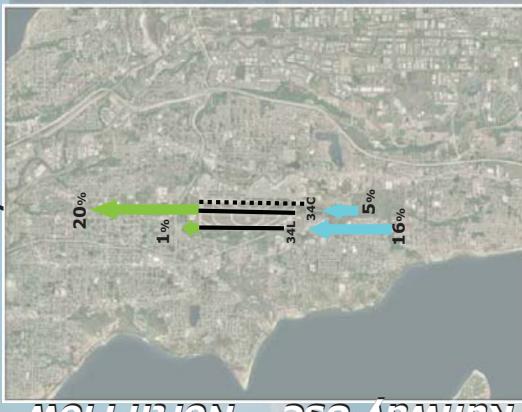
Jan-Mar 2009 and Oct-Dec 2009



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Preview of June 9 Workshop

2 runways in use



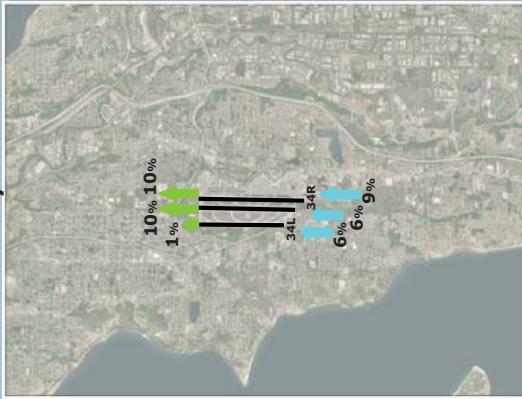
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Preview of June 9 Workshop

3 runways in use



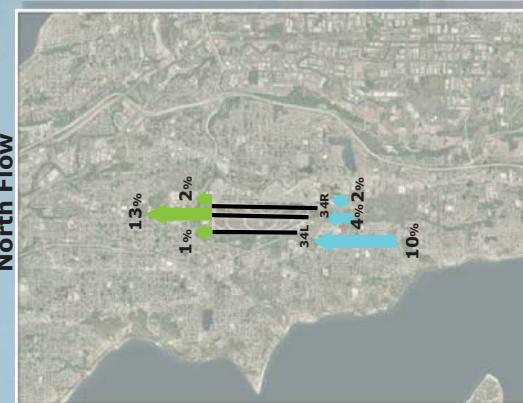
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Preview of June 9 Workshop

North Flow



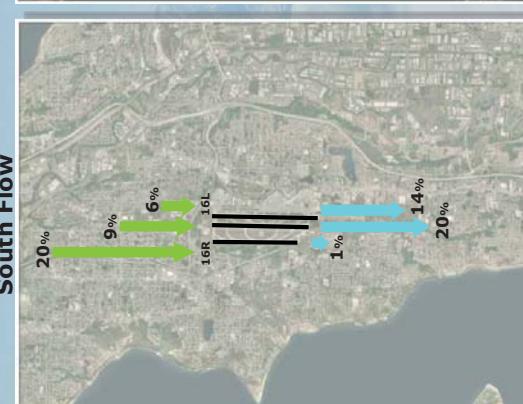
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Preview of June 9 Workshop

South Flow



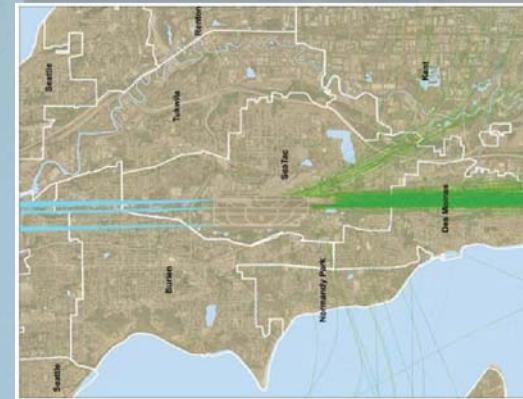
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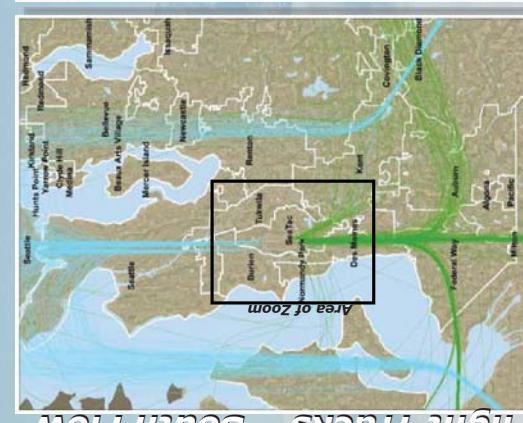
SEA Part 150 Noise Compatibility Study

Preview of June 9 Workshop



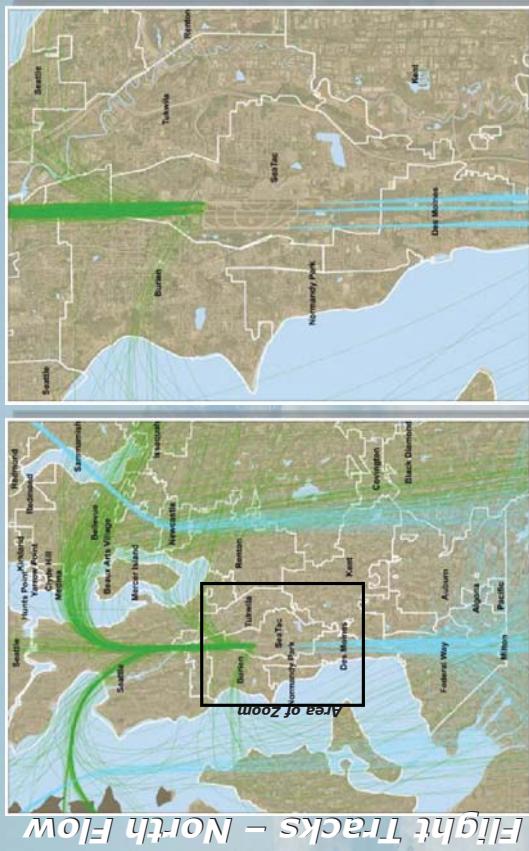
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SEA Part 150 Noise Compatibility Study



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Preview of June 9 Workshop



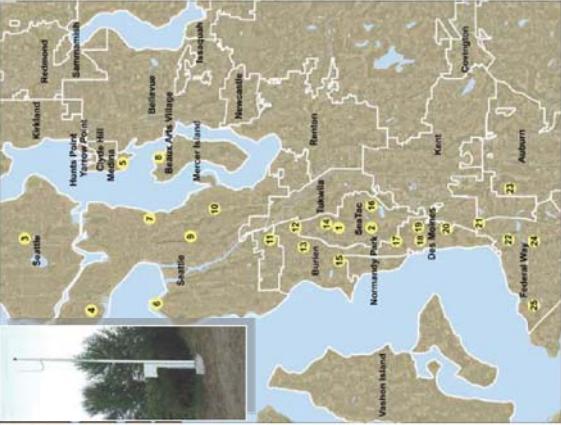
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Preview of June 9 Workshop

Noise Levels:

- **Source:** ANOMS
 - L_{max} is the highest noise level measured during a flyover
 - Scale is constant
 - The following shows a sample of the data collected at one of the sites
- **Findings:** Noise levels will depend on NMT location relative to flight pattern

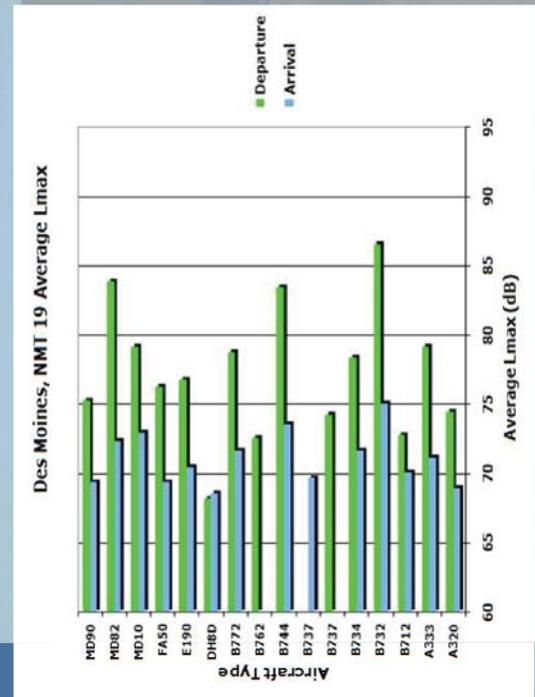
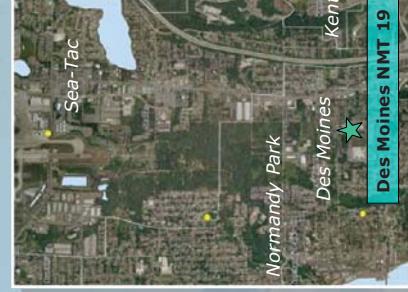
Preview of June 9 Workshop



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Noise Measurements:

- Port has 25 permanent noise monitor sites
- 10-12 additional sites will be measured on a short term basis
- Short term sites based on input from the public
- Data will be used to verify that the model is accurately predicting noise



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Response to Questions from March 24 Meeting

How will the study improve airline compliance with existing noise abatement procedures?

- By law, the Port cannot levy fines or take any formal action against airlines or pilots that do not comply with the existing procedures
- A handful of airports have non-voluntary procedures, but those were grandfathered in after the 1990 Airport Noise and Capacity Act
- The Port actively monitors and encourages compliance through periodic meetings with the FAA and through the Fly-Quiet Program
- This Part 150 Study will seek ways to improve the Fly-Quiet Program
- This Part 150 Study will identify new or emerging technologies that could be used to enhance compliance


AeroMACS Planning at the Leading Edge

Response to Questions from March 24 Meeting

Are there ways both within a Part 150 and outside of a Part 150 where issues such as nighttime noise can be addressed?

- Within Part 150:
 - Explore with the FAA and airlines voluntary programs that reduce noise at night, such as a runway use plan, flight tracks, limitations on ground activity, etc.
 - Expand the Fly-Quiet Program to specifically address nighttime activity
 - Explore the feasibility of a hush-house or noise wall
- Outside Part 150:
 - The Port continues to actively monitor and encourage the use of quieter aircraft and compliance with procedures through the Fly-Quiet Program
 - The Port continues to support technological and policy based initiatives that may result in noise reductions


AeroMACS Planning at the Leading Edge

Response to Questions from March 24 Meeting

How can the cities get a better sense of the airport's long-term operational expectations, development plans, and the corresponding noise environment?

- Per FAA guidelines, the Part 150 Study will focus on existing conditions and a five-year future condition
- A 10-year future condition will be prepared to support land use planning efforts
- Beyond 10 years, the forecasts of specific numbers of operations and fleet mix becomes increasingly difficult and can significantly over/under predict the noise environment
- We suggest that the Part 150 Study work with the local land use planners to develop a community-based planning approach that is based less on a noise contour and more on identifying those areas that will receive overflights for the foreseeable future


AeroMACS Planning at the Leading Edge

Next Steps

- Continue airport activity data collection
- Next Public Workshop
- June 9, 2010
 - Report back on how we will incorporate suggestions into the Part 150 Study
 - Discuss the data collection process
 - Continue to seek direct input
 - Conduct short term measurement program (June 2010)
- Produce Draft Noise Exposure Maps (July/August 2010)


AeroMACS Planning at the Leading Edge

Response to Questions from March 24 Meeting

What additional steps have been taken to increase public participation in the Part 150?

- General:
 - The project website is updated regularly and announcements about new information are sent out via the Port's Constant Contact system
- Specific:
 - In addition to the website, Air Mail, Constant Contact, and newspaper advertisements about the workshops, fliers will be distributed to libraries, city halls, and community centers
 - The start time has been moved to 6:30 pm in response to public suggestions
 - Continuing the breakout session approach based on positive feedback from the public
 - Including Port staff at each station to answer questions



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Questions / Answers



29

Highline Forum – FINAL Minutes
Wednesday, May 26, 2010
2:30 P.M. - 4:30 P.M.
City of Burien, Council Chambers

Attendees: **Burien:** Rose Clark, Gordon Shaw; Michael Lafreniere; **SeaTac:** Terry Anderson, Todd Cutts; **Tukwila:** Joan Hernandez, Steve Lancaster; **Normandy Park:** Shawn McEvoy, Doug Schulze; **Des Moines:** Bob Scheckler, Tony Piasecki; **Highline Public Schools:** Bernie Dorsey, Geri Fain; **Port of Seattle:** John Creighton, Mark Reis, Stan Shepherd, Marco Milanese, Kym Sulman

Presenters: Rob Adams, Landrum & Brown; Lloyd Hara, King County; Holly Moore, Highline School District

In Audience: **State House:** Mary Solderlind (Rep. Tina Orwall's office); **Burien:** Joan McGilton, Kathy Keene; **FAA:** Brian Schimpf; **Normandy Park:** Marion Yoshino; **SeaTac:** Rich Forschler

Part 150 Noise Study Update

Rob Adams, with Landrum & Brown and the lead consultant on the Part 150 Study, provided the Forum members with a status update on the Part 150 Study. Rob started with a preview of the next public workshop scheduled for June 9, 2010. The process, Rob said, would be similar to the February 25 workshop's process with three breakout sessions facilitated by members of the consulting team with themes formulated from issues identified at the February public workshop.

The topics of the three breakout sessions at the June 9 meeting are:

- Report back on questions/comments heard at the first workshop
- Suggestions for reducing noise
- A noise model/input data explanation

Rob then went into more detail on how the information gathered from the public at the February workshop led to the topics at the three breakout sessions. He cited some of the more common requests received at the last workshop (better meeting notification, request for further information on noise modeling and general noise concerns) and the next steps taken with each to further illustrate his point.

Next, giving the members of the Forum a greater sense of how the June 9 workshop will work, Rob picked a topic (reducing ground noise) and walked through how it would be tackled on June 9 – providing background information on ground noise, possible recommendations for reducing it and the specific questions that will be asked of the public.

The Part 150 Integrated Noise Model was then discussed and all the input factors (runway use, operating levels, fleet mix, etc.) associated with the model. A number of slides were presented detailing operational levels of aircraft by type, detailing how the three runways were used in 2009 and ending visually describing south and north-flow

flight tracks. Rob finished up his presentation by asking some specific questions of the Forum members:

- How will the study improve airline compliance with existing noise abatement procedures?
- How can the cities get a better sense of the airport's long-term operational expectations, development plans, and the corresponding noise environment?
- Are there ways both within a Part 150 and outside of a Part 150 where issues such as nighttime noise can be addressed?

There were a number of questions and comments from the Forum members that came up during and after Rob's presentation (many Mark Reis responded to) including:

- What has the Study team done to reach out to non-English speakers? *A plan is being developed and will be rolled out soon.*
- Is there a precedent for providing air conditioning to homeowners impacted by aircraft noise? *Yes, the FAA, through Part 150s, has helped fund the installation of air conditioning at other airport communities. However, participation does not include upgrading homes to be able to accept central air systems, so things like upgrading electric systems and running ductwork are normally not covered.*
- Please identify where noise monitors are currently located around the airport? *A slide at the Forum directly addressed this question.*
- Are there other carrots that can be used to improve airline compliance with noise abatement procedures or influence them from flying at night? *This is a topic the Part 150 study is considering. However, Mark Reis reminded the audience that when it comes to nighttime flights, the airlines have a business case for why they fly when they do.*
- The idea of joining forces and going to DC was brought up to lobby legislators and regulators to make it easier for airports to exercise greater control over their runways. *Mark Reis reminded the group of the power of airline lobby. The equitable treatment rule would be very hard to overcome.*
- There was interest in FAA Next Gen technology and how it could lead to more planes using the center runway and less of a reliance on the third, which means less noise for the communities on the west-side.
- Long range planning at the airport was discussed and the difficulty of making estimations beyond 10 years. A strong interest was expressed by some of the city representatives to come up with twenty year contours to help local cities when it comes to their long term land use plans.
- A member of the Forum requested the Commission to pledge to never build a 4th runway.
- A quick status report was given on the voluntary runway use plan currently being developed by the FAA.

Rob ended the briefing by inviting the members to attend the June 9 workshop.

Finally, Michael Lafreniere, with the City of Burien, recommended videotaping the June 9th Part 150 public workshop and distributing the video to local public access stations so people who couldn't attend, would have the opportunity to watch the proceedings at a later date. Port staff agreed to investigate this possibility and return to the next Forum with their findings.

**Highline Forum
September 22, 2010**

Presentation
Meeting Summary

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Part 150 Presentation

Highline Forum Meeting

September 22, 2010

Seattle Tacoma International Airport



1

Agenda

- Present 2009 Existing Noise Contours
- Review of Aviation Forecast
- Present 2016 Future Baseline Noise Contour
- Status of Alternatives Analysis
- Update on Public Outreach Efforts



2

Baseline Operations Data

Existing Conditions:

- Scenario 1: Actual 2009 Conditions
 - Combination of 2 and 3 runway configurations
 - Represents what actually occurred during 2009
- Scenario 2: 2009 Extrapolated 3 Runway Configuration
 - Represents what would have happened in 2009 with a 3 runway configuration
 - Provides a better indication of what the 'typical' operating mode will be



3

Baseline Data: Operations

Existing Conditions:

- **Source:** Calendar year 2009 aircraft operations data from Airport Noise and Operations Monitoring System (ANOMS) and FAA
- **Annual Operations:** 318,600 (873 average annual day)
- **Fleet Mix:**
 - Newer Boeing 737 700/800/900 are the most common aircraft
 - Boeing 747-400 is the largest aircraft



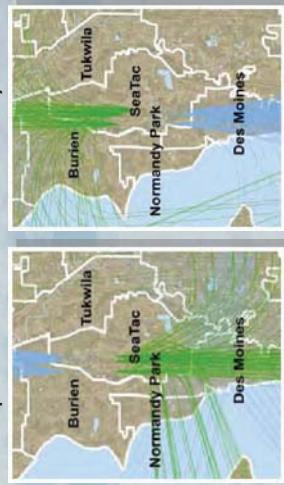
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SEA Part 150 Noise Compatibility Study

Baseline Data: Flight Tracks

Flight Tracks:

- **Source:** Flight track data from ANOMS
 - North Flow
 - South Flow
 - Three-Runway
 - Two-Runway
- **Analysis:** 2009 flight tracks were analyzed for location and number of operations in an area by various aircraft types



5

Baseline Data: Runway Use

Runway Use:

- **Source:** Runway use data in yearly percentage used from Airport Noise & Operations Monitoring System
- **Analysis:** 2009 runway use was analyzed for various conditions
 - Day versus night
 - By aircraft type
 - By north versus south flow
 - By 2 runway versus 3 runway conditions



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SEA Part 150 Noise Compatibility Study

Baseline Data: Runway Use

North Flow



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SEA Part 150 Noise Compatibility Study

Baseline Data: Runway Use

South Flow

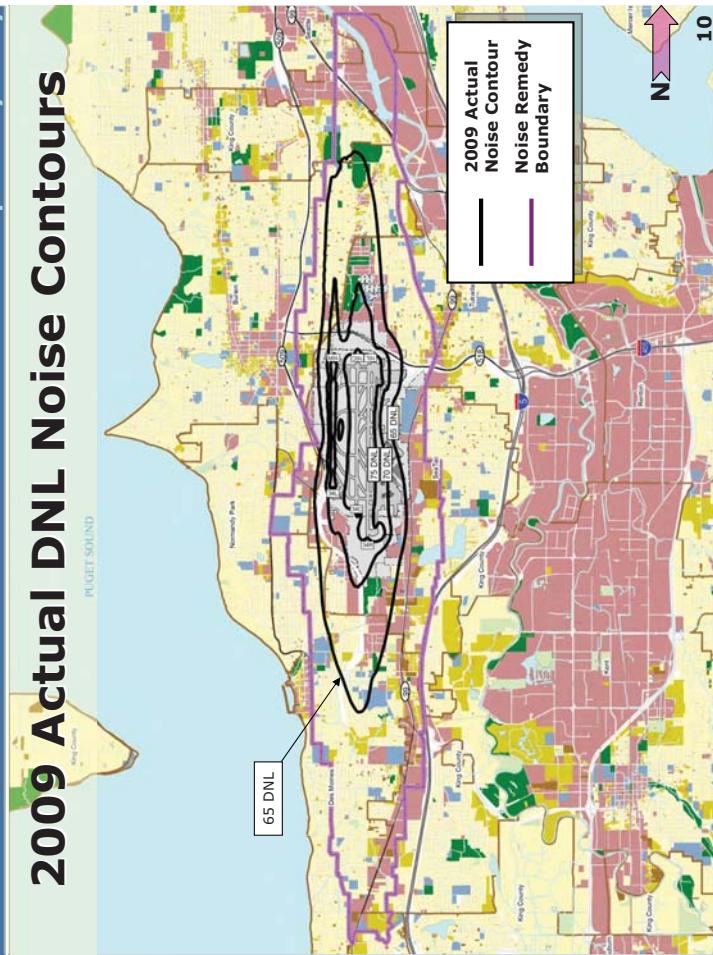


'Actual' includes 6 months of 2-runway use and 6 months of 3-runway use due to construction on Runway 16L/34R

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	2009	34L	34C	34R
Actual Arrival	19.3%	7.7%	4.4%	
3 Runway Arrival	9.9%	13.3%	12.1%	
Actual Departure	1.2%	25.6%	4.8%	
3 Runway Departure	0.6%	16.0%	17.8%	
Actual Total	10.2%	16.8%	4.6%	
3 Runway Total	5.3%	14.7%	15.0%	

2009 Actual DNL Noise Contours



9

Baseline Data: Engine Testing - Ground Run-Ups



Source:

- Noise Abatement Office Run-Up logs

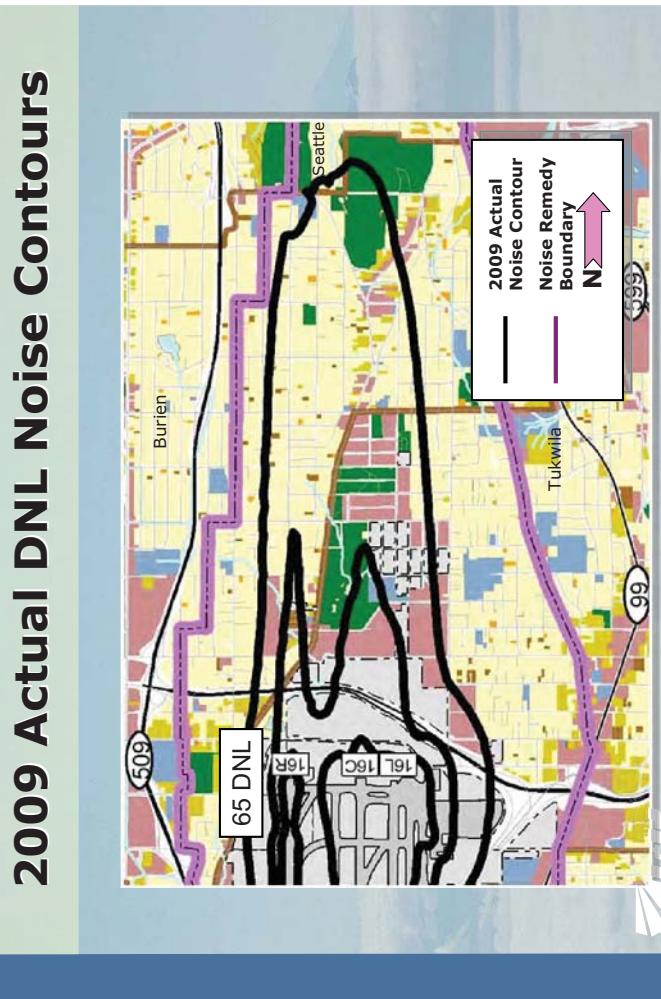
Findings:

- Conducted for engine testing
- Most jet run-ups occur during day
- Day run-ups are most commented on
- Most run-ups occur at south airfield pad



SEA Part 150 Noise Compatibility Study

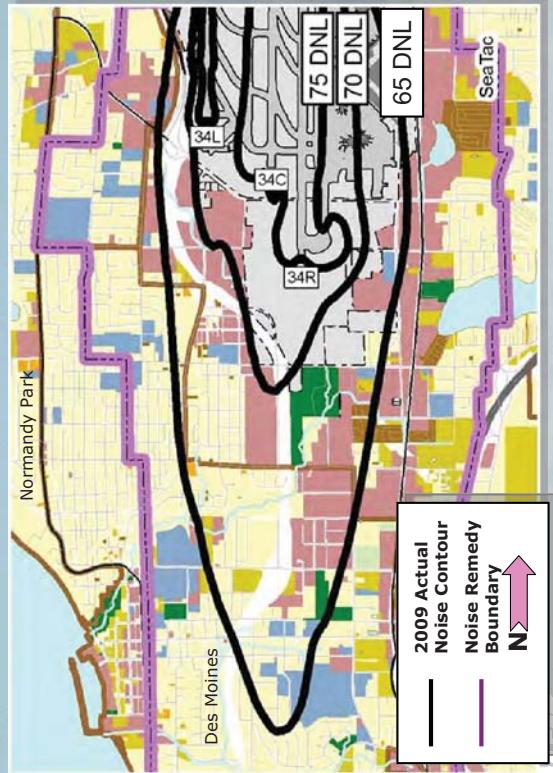
2009 Actual DNL Noise Contours



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SEA Part 150 Noise Compatibility Study

2009 Actual DNL Noise Contours



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2009 Baseline Noise Contours

2009 Actual Noise Contour:

- 2009 Actual noise contour is 6.29 square miles (65 DNL)
 - 2.96 square miles is over airport property
 - 1.29 square miles is over residential land use
- Preliminary counts of housing units within the contour
 - 65 DNL = 2,486 housing units (combination of single-family, multi-family, and mobile homes)
 - 70 DNL = 22 housing units
- Comparison of 2009 Actual versus 2010 projected from the last Part 150 shows notable reduction in size of contour
 - Due to actual aircraft operations being much lower than projected and overall quieter fleet mix



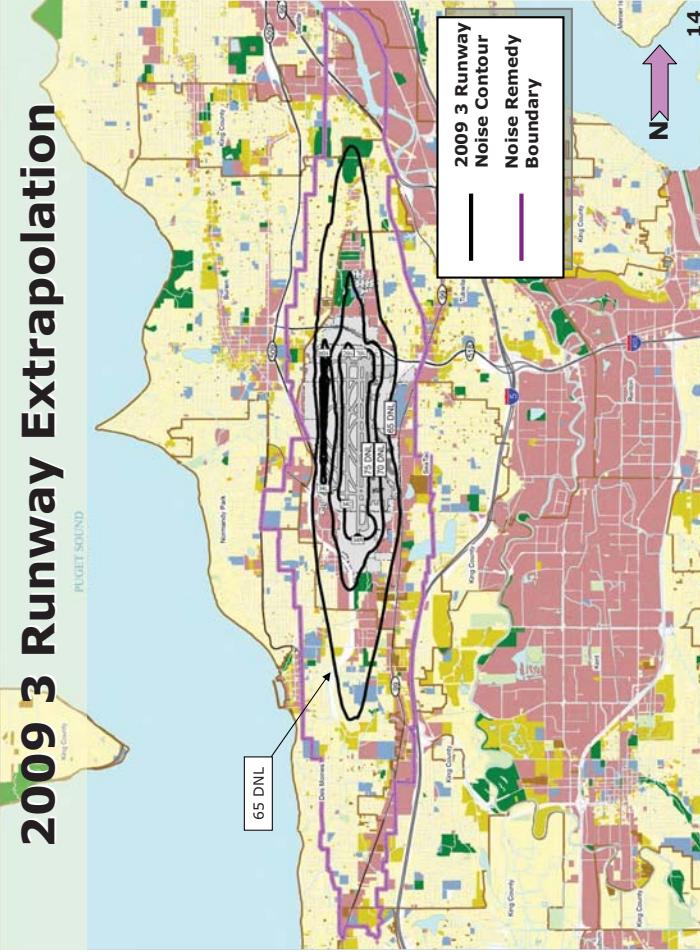
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2009 3 Runway Extrapolation

SEA Part 150 Noise Compatibility Study

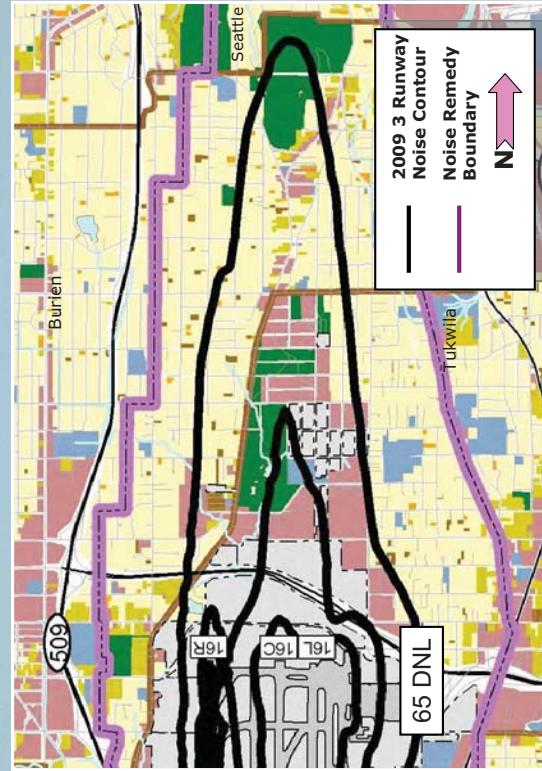
2009 3 Runway Extrapolation

2009 3 Runway Extrapolation



2009 3 Runway
Noise Contour
Noise Remedy
Boundary

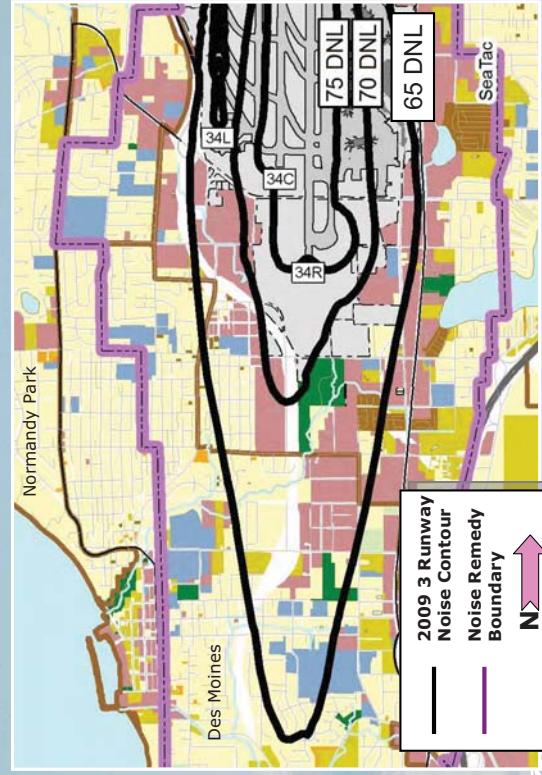
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2009 3 Runway
Noise Contour
Noise Remedy
Boundary

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2009 3 Runway
Noise Contour
Noise Remedy
Boundary

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2009 Baseline Noise Contours

2009 3 Runway Extrapolation Noise Contour:

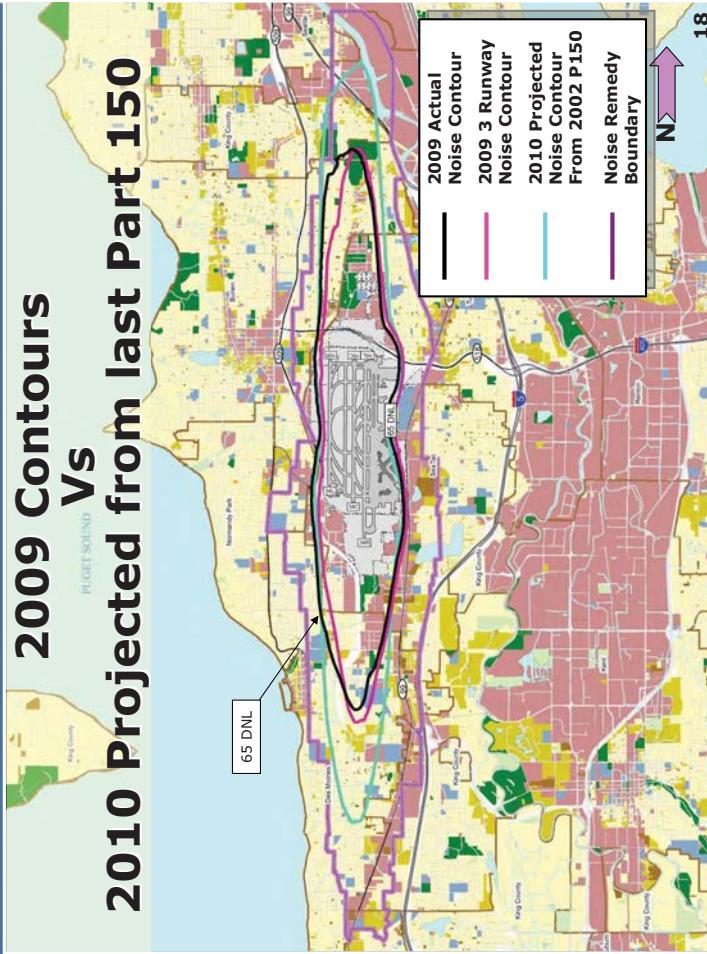
- 2009 3 Runway noise contour is 5.99 square miles
 - 2.97 square miles is over airport property
 - 1.03 square miles is over residential land use
- Preliminary counts of housing units within the contour
 - 65 DNL = 2,035 housing units (combination of single-family, multi-family, and mobile homes)
 - 70 DNL = 0 housing units
- Comparison of 2009 3 Runway versus 2010 projected from the last Part 150 shows notable reduction in size of contour
 - Due to actual aircraft operations being much lower than projected and overall quieter fleet mix



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2009 Contours Vs

2010 Projected from last Part 150



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Review of Aviation Forecast

L&B prepared independent forecast

- Forecasted passengers and operations activity levels through 2021
- Linear regression based correlation to regional socio-economic factors
- Domestic and international passenger levels forecasted separately
- Aircraft operations are derived from passenger forecast, projected load factors, and airline fleet
- Aircraft operations forecast is the foundation for future year noise contours



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Review of Aviation Forecast

L&B's passenger forecast growth rates for 2009 to 2021 are similar to other forecasts

- Port of Seattle Business Case (2010)
- FAA Terminal Area Forecast (2009)

- Average aircraft size to increase somewhat over time
- Average load factor to reduce slightly over time



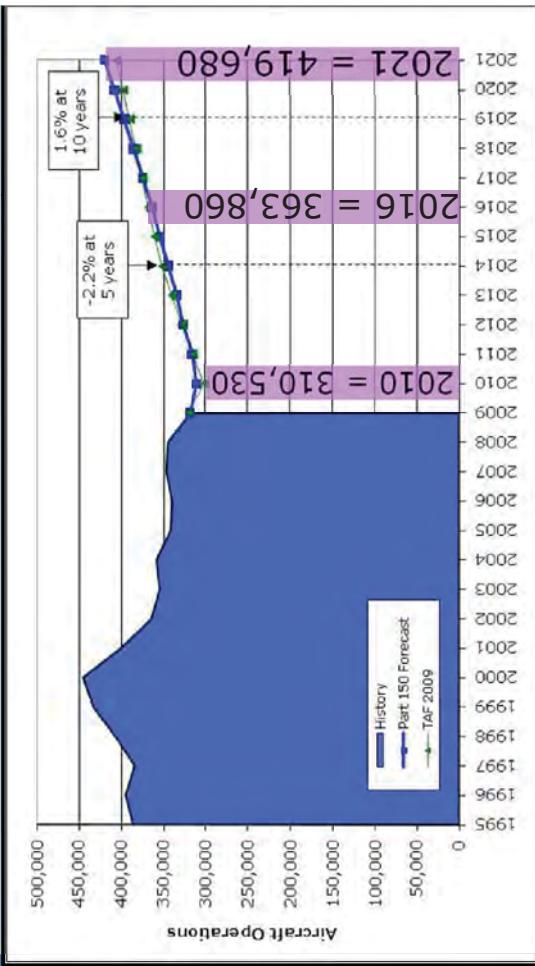
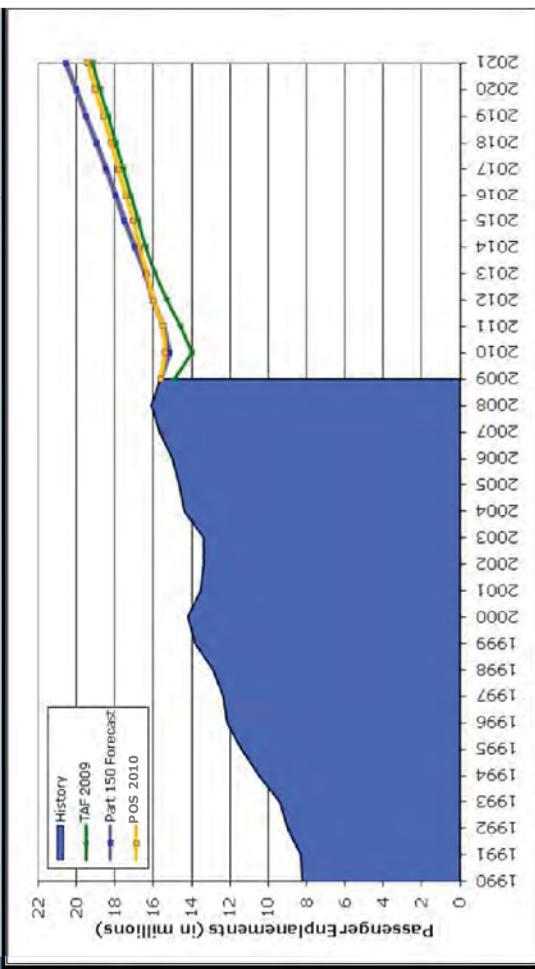
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SEA Part 150 Noise Compatibility Study

Review of Aviation Forecast

SEA Part 150 Noise Compatibility Study

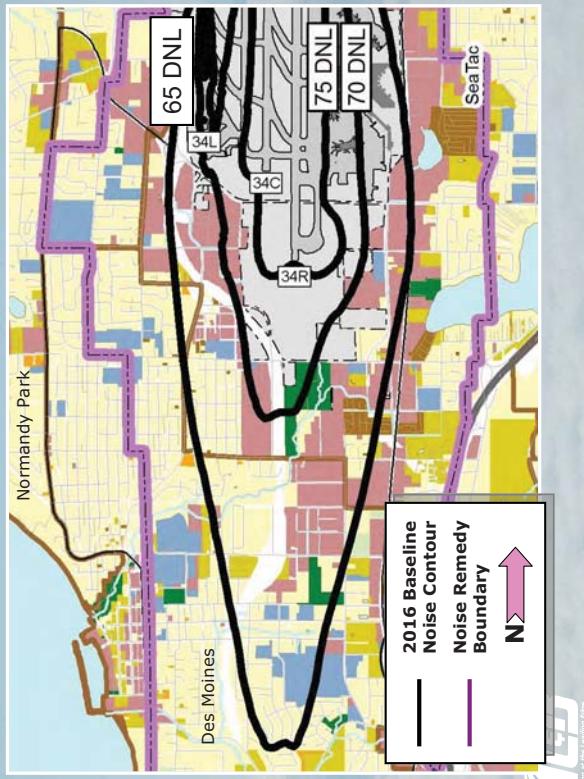
Review of Aviation Forecast



□ 2016 Future Baseline Noise Contour:

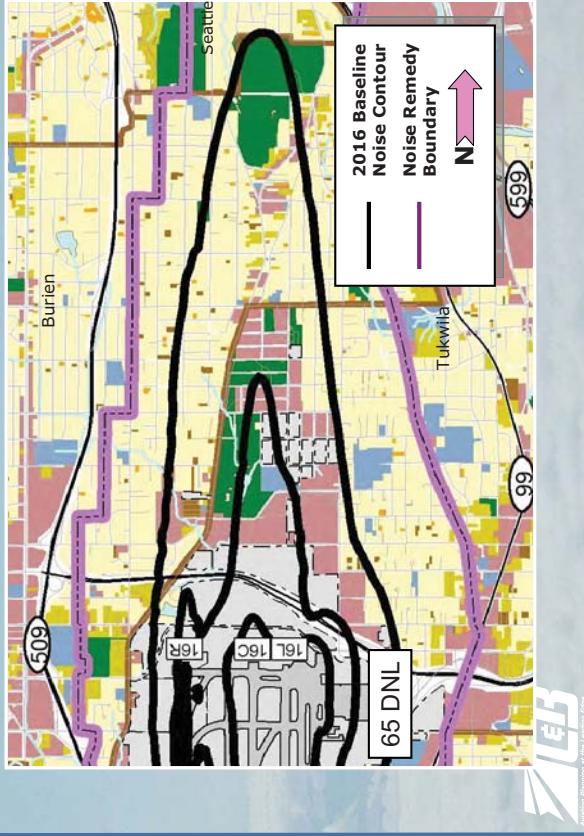
- 363,860 total operations
 - 14.2% increase over 2009 total operations (318,600)
 - Updated aircraft types to take into account changes that are anticipated to occur by 2016
- Other Operating Assumptions:
 - Used the same runway use as 2009 3-Runway extrapolation
 - Used the same flight tracks and run up areas as 2009 3-Runway extrapolation
 - Included future procedures that are anticipated to be implemented by 2016

2016 Future Baseline



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2016 Future Baseline



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2016 Future Baseline Noise Contour

- 2016 Future Baseline Noise Contour:**

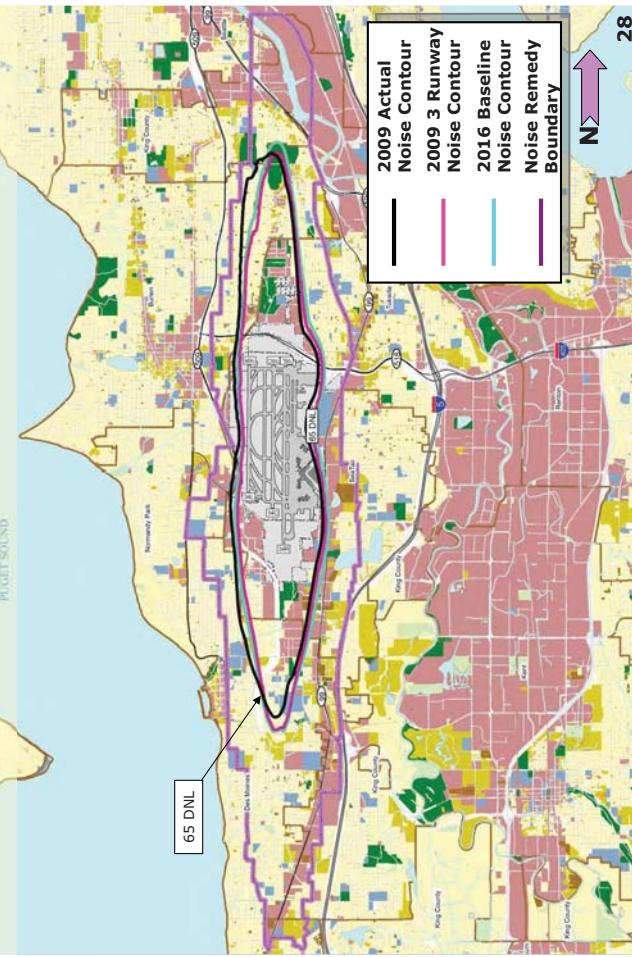
- 2016 Future Baseline noise contour is 6.51 square miles
 - 3.04 square miles is over airport property
 - 1.24 square miles is over residential land use
- Preliminary counts of housing units within the contour
 - 65 DNL = 2,452 housing units (combination of single-family, multi-family, and mobile homes)
 - 70 DNL = 0 housing units
- Comparison of 2016 Future Baseline versus 2009 Baseline noise contours
 - 2016 larger than both 2009 noise contours
 - Increased activity is offset by quieter overall fleet

	2009 Actual	2009 3 Runway	2016 Future Baseline
65 DNL	6.29 sq. miles	5.99 sq. miles	6.51 sq. miles
70 DNL	0	0	0

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SEA Part 150 Noise Compatibility Study

2009 Baselines vs 2016 Future



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Next Steps in the Process

Noise contours are smaller than previous contours due to fewer operations by aircraft that in general are quieter than predicted

No areas outside of the Noise Remedy Boundary are exposed to 65 DNL

FAA policy for approving Part 150 programs requires demonstrating benefits within 65 DNL

Noise Abatement Alternatives

- Changes to flight tracks are not likely to result in a positive change in the 65 DNL
- Hush house, walls/berms still an option to help reduce ground noise

Runway use plan still an option to help manage the use of the third runway



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Next Steps in the Process

Land Use Alternatives

- Need to review eligibility of homes within the 65 DNL that have not received sound insulation
- Review other programs that could be offered within the 65 DNL (e.g., air conditioning, sales assistance)

Program Management Alternatives

- Identify ways to improve adherence to existing procedures through Fly-Quiet program
- Review the noise monitoring system for improvements/additional monitoring locations
- Evaluate ways to improve communication with the Port and the communities during and after the Part 150 is complete



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Next Steps in the Process

Runway Use Plan

- Port and FAA have been working on runway use plan
- Goal is to clearly state how and under what conditions the runways are expected to be used
- Acknowledges that wind, weather, and operational conditions may require deviations from the plan
- Basics of the plan:
- Provides a clear direction for FAA Air Traffic Controllers when assigning aircraft to runways
- Based on preferred runway use in north and south flows
- Plan will help voluntarily minimize use of the new 3rd runway during low demand conditions
- Will be a Letter of Agreement (LOA) between the Port of Seattle and FAA Air Traffic Control.



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SEA Part 150 Noise Compatibility Study

Fly Quiet Program

- Program established in 2003
- Positive incentive for airlines to reduce noise
- Elements include:
 - Monitoring aircraft noise from close-in noise monitors
 - Compliance to jet aircraft noise abatement procedures
 - Compliance with engine testing run-up rules and regulation
- Annual award to top 3 airlines
 - Plaque & award at POS Commission meeting
 - Newspaper ads
 - Banners in the terminal



SEA Part 150 Noise Compatibility Study

Runway Use Plan

- Port and FAA have been working on runway use plan
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- Will be a Letter of Agreement (LOA) between the Port of Seattle and FAA Air Traffic Control.



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Update on Public Outreach

Next Public Workshop:

- October 27, 2010
- Mt. Rainier High School
- 6:30 pm – 8:30 pm
- Topics to be covered
 - 2009 Baseline noise contours
 - 2016 Future Baseline noise contour
 - Forecast of activity
 - Runway use plan
 - Brainstorming of additional alternatives



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Update on Public Outreach

Limited-English Speaking Outreach:

- Hiring interpretive services for written and oral communication
- 4 other languages (based on Highline School data)
 - Spanish
 - Vietnamese
 - Somali
 - Cambodian
- Publicizing phone number for those in need of interpretive services
- Distributing flyers to places or organizations that have contact with limited-English speakers
- Part 150 website can be converted into other languages
- Will continue to monitor the response to see if additional services are needed



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SEA Part 150 Noise Compatibility Study

Questions/Answers



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Highline Forum – FINAL Minutes
Wednesday, September 22, 2010
2:30 P.M. - 4:30 P.M.
City of Des Moines Activity Center
2045 South 216th Street, Des Moines

Attendees: Burien: Rose Clark; SeaTac: Todd Cutts; Normandy Park: Shawn McEvoy; Des Moines: Bob Sheckler, Tony Piasecki; Highline Public Schools: Geri Fain; Port of Seattle: Mark Reis, Stan Shepherd, Marlys St. Laurent, Kym Sulman

Presenters: Rob Adams, Landrum & Brown; Holly Moore, Highline Schools Foundation for Excellence

In Audience: State Legislature: Mary Solderlind (Rep. Tina Orwall's office), John Elder (Senator Karen Keiser's Office)

Part 150 Noise Study Update

Rob Adams, with Landrum & Brown and the lead consultant on the Part 150 Study, provided the Forum members with a status update on the Part 150 Study. Rob started with an explanation of the baseline 2009 noise contours – both the actual conditions and the extrapolated conditions that would have occurred if all three runways were in operation for the entire year. A comparison of the 2009 noise contours to what was projected for 2010 in the last Part 150 Study showed a noticeable reduction in the size of the contours.

Rob then ran through the aviation forecast for Sea-Tac Airport – the basis for the 2016 noise contours. The 2016 contours are expected to be slightly larger than the 2009 contours due to the forecasted increase in aircraft operations. Overall the 2016 and the 2009 contours are smaller than contours produced in the last Part 150 study because of fewer operations and quieter aircraft. Both set of contours are wholly contained within the Port's original noise remedy boundary.

Rob next discussed what type of noise abatement alternatives are being considered now that contours have been established. A review of the eligibility of homes within the 65 DNL that have not received insulation will be conducted along with the consideration of other programs that could be offered within the 65 DNL, such as insulation for multi-family dwellings and air conditioning. Examples of other alternatives being considered:

- A Ground Run-up Enclosure
- Looking at ways to improve aircraft adherence to the Fly Quiet Program
- Possible new locations for noise monitors
- Evaluate ways to improve communication between airport's neighbors and the Port regarding airport noise programs.

Rob updated the members of the Forum on the work that continues on the Runway Use Program which will state clearly how and when each of the runways is expected to be used by the FAA. Stan Shepherd, the Manager of Noise Programs, provided the group with a summary of how the current Fly Quiet Program operates. Rob ended with a

reminder of the upcoming Part 150 Public Workshop on October 27 and the limited-English outreach that's being done in conjunction with the workshop.

Questions/comments that arose during Rob's update and after he was finished presenting:

- There was interest in the 1985 noise contours and the subsequent noise remedy boundaries based on the 1985 contours. Port's current noise remedy boundaries are still based on the '85 noise contours.
- Are there any residences left within the 70 DNL? *The 2009 actual contour has 22 falling within the 70 DNL.*
- What independent data did Landrum & Brown use to build the aviation forecast? *Rob referenced the different criteria used to generate the forecast, including interviews of airlines, aircraft lease/acquisition data, and socio-economic data for the region.*
- The decision by the Port to provide a 20 year forecast was discussed and how it would help inform the local communities in terms of long-term land-use planning.
- The reasons for higher load factors on aircraft and why airlines are offering fewer flights were discussed. Higher load factors do not mean noisier aircraft.
- Where most of the third runway complaints were coming from (north and south of the runways) was referenced.
- With the 65 DNL entirely contained within the current noise remedy boundary, new neighborhoods won't be qualifying for insulation. However, other noise mitigation program possibilities were detailed.
- Information discussed at the July 29 Noise Data Review Session with Vince Mestre was quickly summarized.
- It was stressed by a member of the Forum that it is important to help people understand where their houses are in relation to the noise contours. It would help clear up a lot of the confusion that currently exists in the community.
- One member of the public accused the Port of being nearly finished with the Part 150 Study and with no plans to come up with any noise reduction recommendations. The Port responded that we are only about a third of the way through the process and with the data collection phase nearly completed, work can now begin on analyzing noise mitigation options.

Highline Forum
November 17, 2010

Meeting Summary

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Highline Forum – FINAL Minutes
Wednesday, November 17, 2010
2:30 P.M. - 4:30 P.M.
City of Tukwila Community Center

Attendees: Burien: Rose Clark, Mike Martin; SeaTac: Todd Cutts; Normandy Park: Shawn McEvoy; Des Moines: Bob Scheckler, Tony Piasecki; Highline Public Schools: Geri Fain; Port of Seattle: John Creighton, Elizabeth Leavitt, Mark Reis, Kym Sulman, Diane Summerhays, Marco Milanese; City of Tukwila: Joan Hernandez, Steve Lancaster

Presenters: Stan Shepherd, Port of Seattle; David South, Washington State Department of Ecology

In Audience: Mary Soderlind (Rep. Tina Orwall's office), Stuart Creighton (RCAA), Jack Mayne (B-Town Blog), Kimberly Matej (Tukwila)

Part 150 Noise Study Discussion

Stan Shepherd began his update of the Part 150 Study by providing the Forum members with a quick summary of the format for the recently held/October 27th Part 150 Public Workshop. Attendance surpassed expectations with over 150 participants.

Stan updated the Forum on the work that continues on the Runway Use Agreement which will state clearly how and when each of the runways is expected to be used by the FAA. With the document near finalization, he's been working on how best to communicate the information to the public and asked the Forum members to get back to him with any suggestions.

In terms of next steps connected to the Part 150 Study, Stan stated work continues on the hush house analysis; the compatible land-use analysis is in progress; work will soon start on whether current noise abatement procedures can be improved and finally, an evaluation of the Port's current flight tracking system is expected to commence shortly. The study is on schedule with the next public workshop planned for this upcoming winter.

Stan estimates work on the study to be complete by the end of 2011, at which point it will go to the commission for approval and then be subject to a 180 day review period by the FAA. Separately, the Port's Part 150 consultants are also coming up with a long range forecast (2030). When complete, the information will be shared with the Forum members.

Commissioner Creighton asked what the primary focus of the upcoming public workshop would be. Stan replied it would be soliciting feedback from residents on noise mitigation alternatives.

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Highline Forum
January 26, 2011

Presentation
Meeting Summary

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Part 150 Presentation

Highline Forum Meeting

January 26, 2011

Seattle-Tacoma International Airport

Agenda

- General Update on Noise Issues**
 - Update on Runway Use Plan
 - Long-Range Forecasts
- Update on Part 150 Initiatives**
 - Status of Hush House Evaluation
 - Update on Public Outreach Efforts



1

SEA Part 150 Noise Compatibility Study

Update on Runway Use Plan

Communicating the Runway Use Plan

- Port and FAA have developed a runway use plan
- Indicates how and under what conditions the runways are expected to be used
- **Acknowledges that wind, weather, and operational conditions will require deviations from the plan**



3

SEA Part 150 Noise Compatibility Study

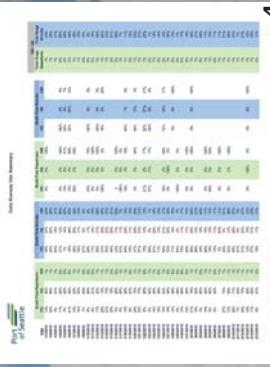
Update on Runway Use Plan

Communicating the Runway Use Plan

- Port's website has runway use plan and statistics on use of the runways and specifically use of the new 3rd runway
- Goal of the Part 150 is to make this information more available and useful
 - Identify more and better ways to communicate the runway use plan
 - Look for ways to alert the public about runway closures and other conditions that may alter the operation of the airport
 - Port to work with FAA on monitoring the use of the runways and reporting back
 - Work with FAA to gain access to wind/weather/visibility data



4



Long-Range Forecasts

- Requests have been made to look at long-range (>10 years) noise levels and operating levels
- This work is being done outside the scope of the Part 150 study because the Port recognizes the value in providing this information
- **Forecast scenarios for 2030**
 1. Positive economic situation for airlines
 - Increased operations
 - Newer aircraft
 2. Less positive economic situation for airlines
 - Fewer operations
 - Airlines defer purchasing newer aircraft
 3. Under each of these conditions, when does the airport reach 550,000 operations?

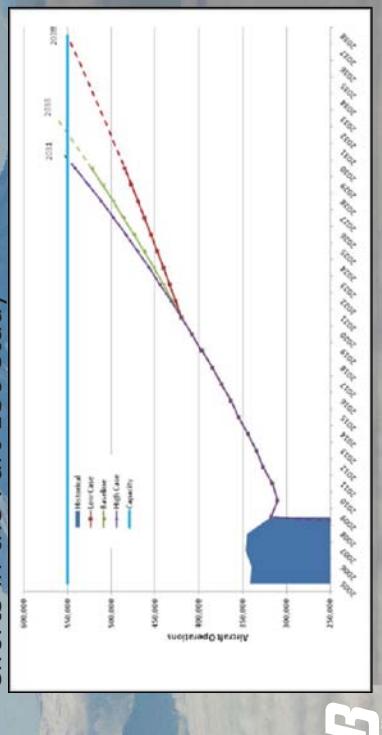


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Long-Range Forecasts

Forecasting and Noise Analysis for 2030

- **Noise analysis**
 - Reflect changes in operating levels and fleet mix
 - Will assume no changes in the airfield
 - Can help to inform the long-term land use planning efforts in the Part 150 study



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SEA Part 150 Noise Compatibility Study

Hush House Evaluation

- **Hush House Facts:**
 - A Hush House is a term used for an enclosed, noise suppressed, aircraft engine test facility
 - Typically consists of 3 walls that deflect jet blast
 - Hush House will typically reduce single event noise by 15-20 dB



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SEA Part 150 Noise Compatibility Study

Hush House Evaluation

- **Hush House Facts:**
 - Typical Hush Houses cost \$3 - \$6 million
 - Site factors determine exact costs
 - Number of factors to consider when siting a Hush House
 - What aircraft are you designing for (size/height)
 - Orientation (based on prevailing wind)
 - Accessibility
 - Cost for site prep
 - Jet blast/other object free surfaces



8



9



Hush House Evaluation

- Assumptions:
 - Prevailing winds from south/southwest
 - The design aircraft is the Boeing 737-800
 - Would accommodate 96% of engine run ups
 - User preference is to allow aircraft to power in/out
 - Height would be approximately 35 - 45 feet

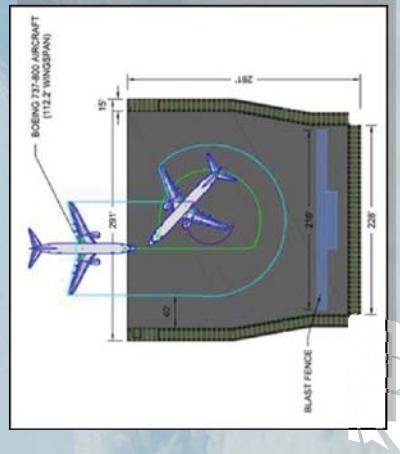
- Evaluations:
 - 2 types of hush house facilities
 - Typical 3-sided
 - Circular (only one in operation)
 - Evaluated 6 sites on airfield
 - Detailed noise evaluation still being completed



9

Hush House Evaluation

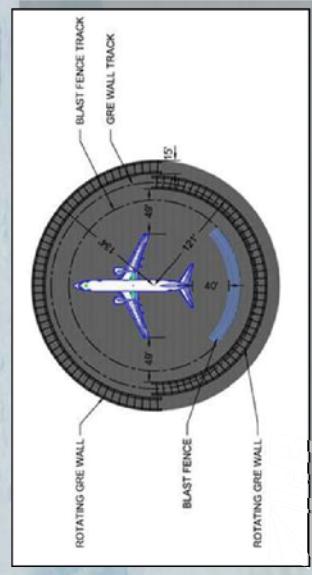
- 3-Sided Facility
 - Fixed orientation with the wind
 - SEA-TAC facility would need to open to the south so that aircraft would face the south during run up
 - Slightly larger footprint than circular
 - Popular design (Portland, Chicago, Indianapolis...)



10

Hush House Evaluation

- Circular Facility
 - Allows for operation with any wind direction
 - Smaller physical footprint than 3-sided facility
 - Requires clear areas on two sides for aircraft to pass through or a tug operation
 - Only one built (in France for the A380)
 - Costs for maintenance are higher than 3-sided facility



11

Hush House Evaluation

- 3-Sided Facility
 - Fixed orientation with the wind
 - SEA-TAC facility would need to open to the south so that aircraft would face the south during run up
 - Slightly larger footprint than circular
 - Popular design (Portland, Chicago, Indianapolis...)



12



Update on Public Outreach

Next Public Workshop:

- Saturday, March 19, 2011 (tentative)
- SEA-TAC Airport – Arrivals Hall
- 10:00 am – 4:00 pm
- Open house format with topic-based stations
- Airport tours



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Questions/Answers

FINAL Highline Forum –Minutes
Wednesday, January 26, 2011
2:30 P.M. - 4:30 P.M.

Seattle-Tacoma International Airport – Amsterdam Conference Room

Attendees: **Burien:** Gordon Shaw, Rose Clark; **SeaTac:** Todd Cutts, Terry Anderson, Jeff Robinson; **Tukwila:** Joan Hernandez, Kimberly Matej; **Normandy Park:** Clarke Brant, Shawn McEvoy; **Des Moines:** Tony Piasecki, Bob Sheckler; **Port of Seattle:** John Creighton, Rob Holland, Mark Reis, Kym Sulman, Diane Summerhays, Marco Milanese

Presenters: Rob Adams, Landrum & Brown

Part 150 Noise Study Discussion

Mark Reis introduced Landrum & Brown's Rob Adams – the Port's Part 150 consultant. Rob began his talk with an update on the recently finalized Runway Use Plan, a collaborative effort between the Port of Seattle and FAA. The plan indicates how and under what conditions the runways are expected to be used. Next steps with the plan will be analyzed as part of the Part 150 and will focus on how the plan can be better communicated and monitored.

Next up, Rob focused on the work being done on the airport's long range forecast. The plan is to develop a 30 year forecast that reflects two operating scenarios – a positive economic situation and a less positive economic situation. Under each scenario, when does the airport reach 550,000 operations? 550,000 is presently Sea-Tac's best guess at what represents airfield capacity for a reasonably operating airport. There was plenty of discussion about what constitutes capacity at Sea-Tac and the other factors including vehicle numbers, larger aircraft, air cargo that need to be taken into consideration when talking about capacity. Once a thirty year forecast is finalized, Rob stated the next step is developing noise contours.

Rob next discussed the study's Hush House evaluation and reminded the members how one works and the two design options (three-sided and circular versions). Members of the Forum expressed their desire to have Rob come to future council meetings to brief them on the hush house analysis. Rob said he and Port staff would work to make that happen. Members of the Forum had questions about the timeframe for the hush house's possible construction and questions about their overall impact on the noise contours. Members of the Forum made the offer to assist the Port should they need help in securing funding for the project from the FAA.

Rob ended the presentation by talking briefly about the tentative plan for the next Part 150 public event which will have more of an open house format.

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**Highline Forum
March 23, 2011**

Presentation
Meeting Summary

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Agenda

- Welcome and Introductions
- Discuss Limitations on Alternatives
- Review of Current Land Use Measures
- Present Analysis of Part 150 Proposed Eligible Land Use Measures
- Update on Public Outreach Efforts



1

Current Land Use Measures from 2002 Part 150

Mobile Home Park Acquisition

- Purchase mobile home parks within the 70 DNL of the 1998 noise contour (Complete 2009)

Residential Acquisitions

- Purchase residential properties experiencing noise levels of 65 DNL or greater located within the Approach Transition Zones (ATZ) of the third runway (North ATZ complete)

Cooperative Development Agreements / Zoning Ordinances

- All of the residential parcels purchased by the Port have been re-zoned as "airport noise compatible" or are in process of being re-zoned



3

Updated Noise Remedy Boundary

Background

- Current Noise Remedy boundary was based on noise contours that included more and louder aircraft than what operate today; or are anticipated to operate in the foreseeable future
- FAA policies concerning funding for noise mitigation eligibility require updating of program boundaries periodically to reflect the most current conditions
- The Port has made sound insulation offers to all the eligible single-family homes within the current Noise Remedy boundary



4

Updated Noise Remedy Boundary

Discussion of Potential Next Steps

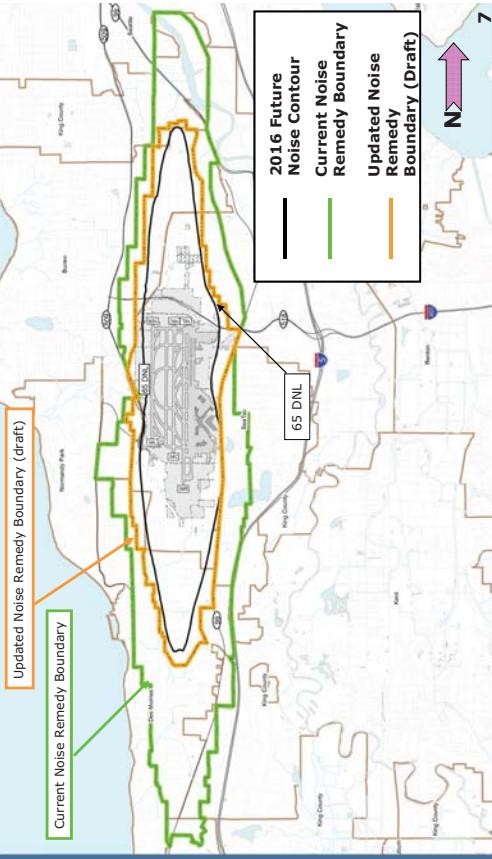
- Update the Noise Remedy boundary to reflect the 2016 Future noise contour
- Launch final public outreach effort targeting single-family property owners within the current Noise Remedy boundary that have yet to participate
- Communicate the program changes – make people living within the updated Noise Remedy boundary aware of the potential new options



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Updated Noise Remedy Boundary

FURTHER SOUNDS



Potential Next Steps

Single Family Sound Insulation

- Make one final offer to property owners outside of the updated Noise Remedy boundary that have not participated
- Continue the program for those living within the updated Noise Remedy boundary that did not participate before

Multi-Family owner-occupied Sound Insulation

- Offer sound insulation to owner occupied dwellings built before 1986/7 inside the updated Noise Remedy boundary
- Up to 28 condominiums within the updated Noise Remedy boundary



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Potential Next Steps

Multi-Family tenant-occupied Sound Insulation

- Offer sound insulation to tenant occupied dwellings built before 1986/7 inside the updated Noise Remedy boundary
- Up to 470 apartment units within the updated Noise Remedy boundary
- May be difficult to obtain FAA funding



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Potential Next Steps

Purchase residential properties experiencing noise levels of 65 DNL or greater located within the South Approach Transition Zones (ATZ) of the third runway

- Voluntary acquisition program in South ATZ
 - 16 single-family and 6 apartment buildings remain in the south ATZ



11

Potential Next Steps

Purchase Aviation Easements for mobile / manufactured homes on private land within the updated Noise Remedy boundary

- Approximately 75 mobile homes are located on private land within the updated Noise Remedy boundary
- Methodology still under development



10

ATZ Voluntary Acquisition



12



Potential Next Steps

Prepare cooperative development agreements with local jurisdictions (ATZs and other areas as needed)

- Continue to work with jurisdictions as the ATZ areas are acquired
- Continue to look for opportunities where cooperation will benefit the community as a whole

Amend zoning ordinances for property purchased by the Port

- Continue to implement this program as new areas are acquired (in particular in the ATZ areas)



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Potential Next Steps

Assist local jurisdictions with long-term land use planning

- Typical approach to airport land use compatibility uses projected noise contours
- Rely on forecasts of aviation activity
- Business decisions by airlines that effect noise levels are not always within the control of the airport
- Even when operations and fleet are relatively stable at an airport, noise contours will grow and shrink
- Suggest Port works with communities to continue to explore options for implementing long-term land use planning



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Potential Next Steps

Install air conditioning for single-family homes within the updated Noise Remedy boundary

- Previous Port sound insulation did not include air conditioning
- Residents have noted that warm weather requires windows to be open, which reduces the benefits of the insulation
- Federal grant funding is unlikely for homes that have already received sound insulation treatments



14

Update on Public Outreach

Next Public Workshop:

- Saturday, April 9, 2011
- SEA-TAC Airport – Arrivals Hall
- 10:00 am – 4:00 pm
- Open house format with topic-based stations



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Questions/Answers



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FINAL Highline Forum –Minutes
Wednesday, March 23, 2011
2:30 P.M. - 4:30 P.M.
SeaTac City Hall Council Chambers

Attendees: **Burien:** Jack Block, Jr., Rose Clark; **SeaTac:** Gene Fisher, Todd Cutts; **Tukwila:** Joan Hernandez, Steve Lancaster; **Normandy Park:** Clarke Brant; **Des Moines:** Tony Piasecki, Bob Sheckler; **Highline Public Schools:** Geri Fain, Bernie Dorsey; **Port of Seattle:** John Creighton, Rob Holland, Mark Reis, Kym Sulman, Diane Summerhays, Stan Shepherd

Presenters: Rob Adams, Landrum & Brown

Part 150 Noise Study Discussion

Stan Shepherd, Manager of the Noise Programs office, introduced Landrum & Brown's Rob Adams – the Port's Part 150 consultant and stated that the study is slated to be complete and submitted to the FAA by the end of the year. Rob gave a brief overview of what topics he would cover in the presentation and explained that since he covered the Hush House evaluation at the January Highline Forum, he wouldn't focus on it in today's presentation.

Items covered in Rob Adams' presentation:

- The 2016 noise contour – how it was generated and why any recommended programs that develop out of the Part 150 will be limited to those who live within the new noise remedy boundary defined by the 2016 noise contour.
- A review of the current land-use noise mitigation programs from the 2002 Part150 Study.
- The updated, draft noise remedy boundary – Once finalized, one final outreach effort will be initiated to those home-owners within the old noise remedy boundary but outside of the new noise remedy boundary inviting them to participate in the insulation program.
- Potential new land-use noise mitigation programs – Rob covered multi-family owner occupied and tenant-occupied sound insulation, purchasing aviation easements for mobile homes on private lands, south Approach Transition Zone (ATZ) property voluntary acquisitions, air conditioning in single-family homes that have not been previously sound insulated by the Port, and long-term land-use planning with the local jurisdictions.
- The upcoming Part 150 Public Open House on April 9th.

Questions/comments that arose during and after Rob Adams' presentation:

Mayor Sheckler questioned why anyone who is eligible for insulation wouldn't take advantage of it. Stan explained the various different reasons homeowners chose not to participate. SeaTac City Manager Todd Cutts and Burien Councilmember Rose Clark offered the services of their cities when it comes to reaching out to homeowners who have yet to participate in the program.

Rob and Stan explained why the noise contour has continued to shrink over the years primarily because of the quicker than initially anticipated retirement of older/more noisy aircraft by the airlines. Rob also offered up how the noise remedy boundary is crafted using natural boundaries like streets as opposed to being tied specifically to the noise contour.

Commissioner Creighton asked if the 2016 noise contour reflects the yet to be implemented operational changes connected to the Greener Skies initiative. Rob explained Greener Skies' noise reduction impact is noticeable farther out and not in the vicinity of the airport. Rob also reminded the members that the noise contour also reflects engine run-ups.

Normandy Park Mayor Pro Tem Clarke Bryant suggested the Port consider insulating single family homes outside of the 2016 noise contour even though the project would not qualify for FAA funding. Burien Councilmember Jack Block Jr. went on to express concern about the FAA's reservations about offering insulation funding for apartment complexes within the 2016 contour. He said it should be one of the Port's highest priorities. Port of Seattle Aviation Managing Director Mark Reis explained the difficulties the FAA has with approving such projects because of how it could lead to public money potentially increasing the value of commercial/rental property. Mayor Sheckler requested the number of apartments in each of the communities that could potentially qualify for insulation funding.

The potential addition of air conditioning as part of the future insulation package was discussed among the Forum members. Some questioned the general fairness of offering air conditioning to those who have yet to participate in the insulation program.

Commissioner Creighton ended the Part 150 discussion by letting the cities know about the tentative plans for an upcoming Mayoral Roundtable with the Port of Seattle Commission on the Part 150 in either late May or early June.

Highline Forum
May 25, 2011

Meeting Summary

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FINAL Highline Forum –Minutes
Wednesday, May 25, 2011
2:30 P.M. - 4:30 P.M.
Burien City Hall Council Chambers

Attendees: **Burien:** Jack Block, Jr., Rose Clark; Gordon Shaw, Mike Martin; **SeaTac:** Todd Cutts; **Tukwila:** Joan Hernandez, Steve Lancaster; **Normandy Park:** Shawn McEvoy, Doug Schulze; **Highline Public Schools:** Geri Fain; **Port of Seattle:** John Creighton, Rob Holland, Diane Summerhays, Stan Shepherd, Marlys St. Laurent, Russ Simonson, Dave Soike

Presenters: Craig Kenworthy and Eric Saganic, Puget Sound Clean Air Agency

Part 150 Noise Study Discussion

Stan Shepherd, the Manager of Airport Noise Programs, covered the following topics during his brief presentation:

- Review of how the fourth public meeting (April 9th) went, the open house format and what topics were covered at the meeting's information stations.
- The specific outreach plan implemented to inform the public about the April 9th meeting was described.
- Other efforts to engage with community stakeholders including local city councils and limited English communities were described by Stan.
- Stan reminded the audience about the tentative mayoral roundtable with the Port of Seattle Commission on the Part 150 on June 28th.
- Finally, he ran through the Part 150 schedule for the rest of the year ending with the plan's submittal to the FAA in December.

Stan's presentation generated the following questions and comments:

- Some of the members expressed an interest in having a presentation at one of their upcoming city council meetings.
- A number of specific flights were sighted for the early hour they fly or the perception they aren't remaining in the flight corridors or adhering to the FAA's four-post plan. The early morning EVA flight over Federal Way received particular attention. The members were reminded that aircraft in the air fall under the jurisdiction of the FAA, not the Port, and that aircraft continue to get quieter. The Greener Skies initiative may also eventually help with noise but the benefits will mostly be felt by those communities much farther outside of the airport vicinity.
- A night-time curfew came up and why it's so difficult for one to be imposed. Some of the members suggested working together at the federal level to make it easier for airports to impose curfews.
- One member recommended focusing on converting land in close proximity to the airport to uses more compatible with aircraft operations.
- The various opportunities by the public to offer input during the Part 150 process prior to the plan's submittal to the FAA in December.

- It was further described that each of the recommendations would need to be approved by the Port Commission, who should advocate on the community's behalf, before FAA submittal. And those recommendations that are not included in the Part 150 will also be discussed with the Commission and shared with the public including the reasoning for why they weren't included.
- It was suggested that noise-related items that fall outside of the formal Part 150 process should be considered by the Highline Forum and once a determination is made on how to deal with the item, they should be brought to the Commission and FAA for further discussion and consideration in a separate process from the Part 150.
- Members of the Highline Forum suggested that they evaluate the recommendations and take a position on each of them. Port staff suggested moving up the next Highline Forum to June to give the members a chance to evaluate the recommendations prior to their Part 150 roundtable with the full Port Commission later in the summer.
- The conversation ended with a dialogue on the need for other noise metrics, outside of DNL, to describe aircraft noise.

Highline Forum
June 29, 2011

Presentation
Meeting Summary

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Highline Forum –Minutes
Wednesday, June 29, 2011
2:30 P.M. - 4:30 P.M.
Seattle-Tacoma International Airport
Beijing Conference Room

Attendees: **Burien:** Rose Clark; Gordon Shaw; **Des Moines:** Bob Sheckler, Tony Piasecki; **Normandy Park:** Shawn McEvoy; **SeaTac:** Todd Cutts; Terry Anderson; **Tukwila:** Joan Hernandez, Kimberly Matej; **FAA:** Ronald Fincher, Cayla Morgan; Janell Barriileaux; **Federal Way:** Linda Kochmar; **Port of Seattle:** Rob Holland, Mark Reis, Marco Milanese, Diane Summerhays, Stan Shepherd, Kym Sulman, Elizabeth Leavitt, Kurt Beckett

Presenters: Rob Adams, Landrum & Brown

In Audience: Marion Yoshino (Normandy Park), Ralph Shape (SeaTac)

Part 150 Study Recommendations

Noise Programs Manager Stan Shepherd introduced Rob Adams, the Port's Part 150 Study consultant.

Rob started by giving the members of the Forum a general sense of how the Part 150 process works and more specifically, what it means to carry a recommendation forward unchanged, carry a recommendation forward with modification and withdraw a recommendation. Items covered in Rob's presentation included:

- Updated, proposed Noise Remedy Boundary based on the 2016 forecast – within the updated Noise Remedy Boundary is ultimately where the noise reduction recommendations need to show a benefit as required by the FAA
- Noise reduction recommended options under review:
 - Residential and condominium sound insulation
 - Pilot project for apartments
 - Air conditioning added to new insulation work
 - Aviation easements for mobile homes
 - Church insulation feasibility study
 - Voluntary South Approach Transition Zone acquisitions
 - Hush House evaluation
- Program management recommended options under review
 - Updated noise monitoring system
 - Enhancements to the Fly Quiet Program
 - Updating Noise Exposure Maps when necessary
- Finally, Rob ended with a high level review of the steps leading to FAA approval of the Part 150.

Following Rob's presentation, Port Commissioner Rob Holland opened the floor to questions. Questions and comments that arose after Rob's presentation (some responded to by Rob and some responded to by Port staff):

- Federal Way Councilmember Linda Kochmar questioned the 65 DNL as the basis for the Noise Remedy Boundary. The Congressional process that led to the adoption of the 65 DNL was explained.
- Councilmember Kochmar asked about what ever happened to plans for a second regional airport. It was explained that the PSRC identified Sea-Tac Airport's Third Runway as where added capacity could be met.
- Councilmember Kochmar expressed frustration with what she perceives as planes turning too early over Federal Way (particularly the Marine Hills neighborhood) and not abiding by the noise abatement corridor over the City.
- Councilmember Kochmar ended by expressing a general frustration with all aircraft traffic over Federal Way. The Port responded that flight track changes are outside of the parameters of the Part 150.
- Burien Councilmember Rose Clark expressed confusion about the number of flights over her house. Ron Fincher with the FAA explained go-arounds happen occasionally for safety reasons.
- Normandy Park Mayor Shawn McEvoy also noted an increased number of flights over his city. If there are safety related reasons for the over-flights, he understands. But if the over-flights are turning over Normandy Park for reasons not related to safety, he has concerns.
- Des Moines Mayor Bob Scheckler asked about the notification process planned for those who live within the current noise remedy boundary but outside of the proposed, updated boundary. It was explained that the Port, as the lead agency, is in the process of identifying who the target audience is. Once complete, a final correspondence will be sent by the Port.
- Burien Councilmember Gordon Shaw commented on the complexities of insulating apartments and why some apartment complexes might not be able to be insulated for a variety of reasons.
- During the Hush House discussion, SeaTac City Manager Todd Cutts asked for which location would work best for the community from a noise reduction standpoint. Councilmember Shaw had some questions about a number of the considered sites particularly those at a lower elevation than the runways. Sea-Tac Airport's Managing Director Mark Reis explained there aren't admittedly any perfect locations and that an analysis evaluating the various possibilities is ongoing. Some comments from SeaTac Mayor Terry Anderson prompted a decision to look at the Port-City of SeaTac ILA to see if it specified anything related to the location of a Hush House. Many of the Forum members spoke up in support of the Hush House's construction and urged its inclusion in the final Part 150 packages submitted to the FAA.
- Des Moines City Manager Tony Piasecki questioned if Sea-Tac could have tiered landing fees as a way to incentivize airlines not to fly at night. The Port responded that operational restrictions could only be used to reduce congestion and Congress would be reluctant to institute any other type of restrictions.
- Burien Councilmember Clark received advice on how best a City can articulate their feedback to the FAA and the Commission on the recommendations. She also challenged the members of the Forum to come up with noise reduction ideas for those residents outside of the noise remedy boundary.

Part 150 Presentation

Highline Forum

June 29, 2011

Seattle-Tacoma International Airport



1

Agenda

- Status of Current Noise Abatement Measures
- New Potential Noise Abatement Measures
- Status of Current Land Use Measures
- New Potential Land Use Measures
- New Potential Program Management Measures



2

SEA Part 150 Noise Compatibility Study

**Smaller noise contours =
smaller program boundaries**

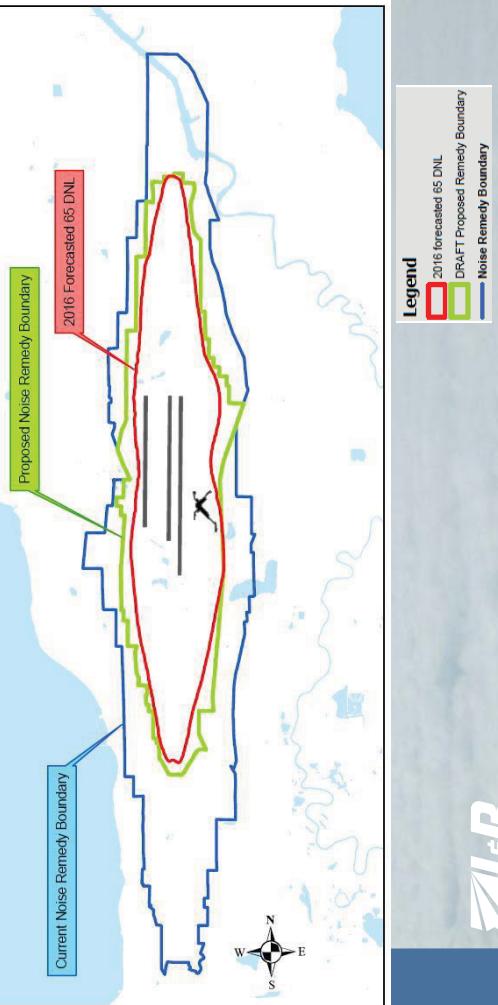
- FAA funding eligibility requires periodic updating of contours & program boundary
- Existing boundary based on contours reflective of more and louder aircraft than existing & projected fleet
- Proposed program boundary based on projected 5 year forecasted contour
- Sound insulation offers made to all eligible single-family homes within existing program boundary



3

SEA Part 150 Noise Compatibility Study

**Updated Noise Program Boundary
Based on Forecasted 2016 Contour**



4



Options Under Review

SEA Part 150 Noise Compatibility Study

South Approach Transition Zone

- Residential sound insulation within new boundary

- Single-family homes,
- Condominiums
- Pilot project for apartment buildings

- Air conditioning in new insulation work

- Aviation easements for individual mobile homes on private land

- Church sound insulation feasibility study

- Partner with local jurisdictions on long-term, land use and noise compatibility planning

5

- Voluntary acquisition and relocation services for residential properties south of the third runway (Approach Transition Zone)



6

SEA Part 150 Noise Compatibility Study

Hush House

- A Hush House is a term used for an enclosed, noise suppressed, aircraft engine test facility
- Typically consists of 3 walls that deflect jet blast
- Hush House will typically reduce noise by 15-20 dB

- Typical Hush Houses cost \$3 - \$6 million (structure only)

- Site factors determine exact costs

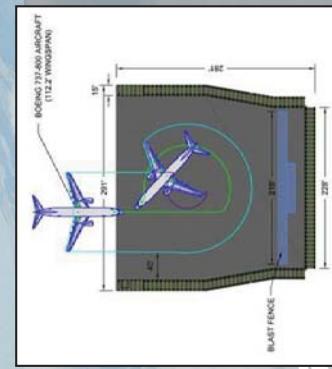


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SEA Part 150 Noise Compatibility Study

Hush House Evaluation

- Fixed orientation with the wind
- SEA-TAC facility would need to open to the south so that aircraft would face the south during run up
- Popular design (Portland, Chicago, Indianapolis...)

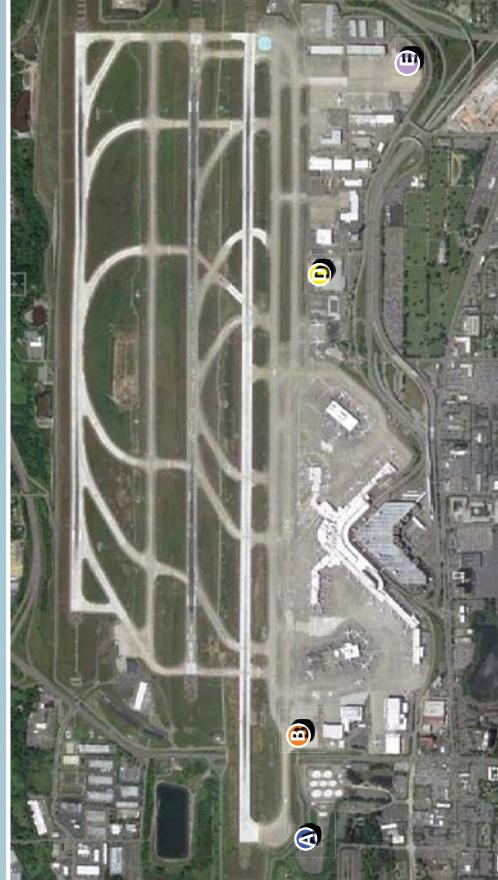


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Hush House Evaluation

Options Under Review



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- **Noise Monitoring System**
 - Evaluating the need to add terminals
 - Evaluating new reporting techniques
- **Fly Quiet Program**
 - Identifying possible enhancements
 - Expanding the program to include ATCT reporting of operational modes for comparison to runway use goals
- **Updating the Noise Exposure Maps as necessary**

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Questions/Answers



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