



SEA-TAC STAKEHOLDER ADVISORY ROUND TABLE

StART FACILITATOR'S MEETING SUMMARY

Wednesday, December 19, 2018
6:00-8:00 pm, City of SeaTac City Hall

Member	Interest Represented		Member	Interest Represented	
John Parness	Burien	-	Tejvir Basra	SeaTac	-
Terry Plumb	Burien	X	Robert Akhtar	SeaTac	X
Brian Wilson	Burien	X	Joe Scorcio	SeaTac	X
Lisa Marshall (Alt)	Burien	-	Steve Pilcher (Alt)	SeaTac	X
John Resing	Federal Way	-	Katrina (Trina) Cook	Tukwila	X
Chris Hall	Federal Way	X	Joon (Thomas) Lee	Tukwila	-
Yarden Weidenfeld	Federal Way	X	Brandon Miles	Tukwila	X
Sheila Brush	Des Moines	X	Lance Lyttle	Port of Seattle	X
Ken Rogers	Des Moines	-	Mike Ehl	Port of Seattle	X
Michael Matthias	Des Moines	X	Clare Gallagher	Port of Seattle	
Eric Zimmerman	Normandy Park	X	Marco Milanese	Port of Seattle	X
Earnest Thompson	Normandy Park	X	Tony Gonchar	Delta Airlines	
Mark Hoppen	Normandy Park	-	Scott Ingham (Alt)	Delta Airlines	X
Jennifer-Ferrer-Santa Ines (Alt)	Normandy Park	X	Scott Kennedy	Alaska Airlines	X
Laura Sanders	Lynden (air cargo)	X	Matt Shelby (Alt)	Alaska Airlines	-
Non-Member			Non-Member		
Randy Fiertz	Federal Aviation Agency	-	Joelle Briggs	Federal Aviation Agency	-
Stan Shepherd	Port of Seattle	X	Jason Richie	FAA	X

Additional Participants:

Fernando Ruiz, Legislative Assistant, U.S. Representative Adam Smith (on phone)

Lyndall Bervar, District Representative, U.S. Representative Adam Smith

Vince Mestre, Aviation Noise Consultant (on phone)

Eric Schinfeld, Port of Seattle; Marco Milanese, Port of Seattle; Clare Gallagher, Port of Seattle

Chris Schaffer, FAA

David Suomi, FAA

Shelly Larson, FAA

Kyle Moore, City of SeaTac

Facilitator: Phyllis Shulman, Civic Alchemy

Note Taker: Megan King, Floyd Snider

Meeting Objectives:

To confirm next steps based on the work of the Aviation Noise Working Group. To hear and discuss Federal Congressional efforts related to airports and airport communities. To propose and discuss an additional Working Group.

Welcome

Lance Lyttle, Sea-Tac Airport Managing Director

Lyttle welcomed the group to the final meeting of the year, and stated his praise for the accomplishments that have been achieved in 2018. Lyttle applauded the participants, community members, city representatives, as well as public participants for their participation and stated that he is looking forward to ongoing progress from StART in 2019.

Facilitator's Update

Phyllis Shulman, Civic Alchemy

The facilitator noted that the Port and City of SeaTac are hosting a Noise 101 Symposium and pre-registration is required. She also stated that the schedule for 2019 StART meetings will be the same as 2018 – the 4th Wednesday of every other month, beginning in February. Shulman asked the StART members to fill out a 2019 StART Priorities Worksheet and to turn it in to her at the meeting or by email.

Federal Congressional Briefing – Aviation Issues

Fernando Ruiz, Legislative Assistant, U.S. Representative Adam Smith

Lyndall Bervar, District Representative, U.S. Representative Adam Smith

Lyttle introduced the briefing by proposing a new StART Federal Policy Working Group (FP Working Group), as recommended by StART member Sheila Brush. The focus of the new FP Working Group would be on federal aviation-related noise and air quality policy and advocacy including pushing for policies already passed into law as part of the FAA Reauthorization bill as well as new legislation proposed by U.S. Representative Adam Smith.

Ruiz provided an update on the following legislation that Rep. Smith is drafting:

- The Protecting Airport Communities from Particle Emissions Act (PEA):
 - Originally initiated by a community concern about ultrafine particles generated by aircraft emissions.
 - Would direct the FAA to report on ultrafine particles and their health impacts for communities around the 20 largest U.S. airports.
 - Study would analyze the potential impacts of mitigation options, emissions reductions, and the increased use of aviation biofuels.
 - The Environmental Protection Agency (EPA) would coordinate the studies.
 - Reporting would be due in 2-years.
- Aviation Impacted Communities Act:
 - Would create an official federal designation of an “aviation impacted community” as “a community that is located not greater than 1 mile from any point at which a commercial or cargo jet route is 3,000 feet or less above ground level”.

- Provides opportunities for interface with airports, the FAA, and legislators.
- Provides engagement funding, and opportunities for communities outside the typical 65 DNL noise mitigation boundary.
- Communities receive notification if they fall within the Act's area, and the communities can then apply to be defined as an impacted community.
- Action plans would then be required to address issues identified by the communities, including a request for noise monitors or other actions.
- Allows for residential sound mitigation (insulation) to be requested/applied within the 55 DNL boundary.

Rep. Smith is honing these proposals for the 2019 legislative process. The Protecting Airport Communities from Particle Emissions Act was attempted to be included in a bill last year, but ultimately was not. Rep. Smith is working to obtain input from the FAA and Congressional transportation committees, and is attempting to gain as much support as possible for the Acts.

Rep. Smith is encouraged by the amendments included in the FAA Re-authorization Act. Rep. Smith's office is analyzing how those amendments can best be implemented.

Discussion and questions included:

- Ruiz was thanked for including involvement by Quiet Skies in the development of the PEA language expressed hope that smaller neighborhoods will be able to gain the same protections and support as larger communities in both Acts. Since multiple cities participating in StART are already involved in these Bills, it was suggested that StART engage with Rep. Smith's office to provide input.
- Would the PEA apply to all airports?
Response: PEA is applicable to all airports.
- To what extent is outreach to Republican senators and Presidential staff occurring?
Response: Rep. Smith has spoken with Republican Senators, and has not yet identified any Republican support for the Bill. He will continue to pursue support in addition to beginning working with Sen. Murray and Sen. Cantwell.
- Are there any updates on the bill that focuses on secondary sound insulation?
Response: This will be a priority for the Rep. Smith in the next Congress.
- Will the ultrafine particulate study conducted by the University of Washington be used as a baseline condition for Seattle?
Response: The Bill would not require use of existing studies, but the study could be utilized, if applicable. The Bill could be written to include or expand existing data sets collected by universities or other organizations.
- It was recommended that ultrafine particulate studies outside the US be a source for information, and noted that the European Union had recently released a report on ultrafine particulate matter.
- Why was the PEA not passed in the last Congressional session?
Response: There was resistance from Congressional and FAA leadership, based on existing efforts and potential duplication.
- It was stated that requesting FAA input on a bill that will direct the FAA seems unnecessary.
Response: Ruiz clarified that the input from the FAA was technical, and that they were not involved in scoping.

Proposal for Additional Work Group

Lance Lyttle, Port of Seattle

Lyttle recommended that the new StART Federal Policy (FP) Working Group review the studies and policies that are part of the recently passed FAA Reauthorization Bill and identify areas where input and participation from StART can help shape the scope and implementation of the research and studies identified in the bill. He also recommended that the FP Working Group could provide value by offering input on relevant legislation proposed by our Congressional representatives.

StART member Brush clarified that since the last StART meeting, some StART members have had additional discussions about getting Sea-Tac Airport classified as a metroplex to take better advantage of provisions in the FAA Reauthorization Bill. After additional research, she suggested that the metroplex status would be a detriment, and would not be a path Sea-Tac Airport should pursue.

There was general support by StART members for creating the new Working Group. A potential additional benefit for this working group will be the opportunity to provide language and input on the next reauthorization five-years from now. It was mentioned that anyone considering working on the FP Working Group should be patient, as the schedules associated with legislative process is difficult to predict. It was noted that it will be important for StART to identify what issues/actions the Port and the communities have in common as their interests and priorities are not always the same. It was suggested that a process be utilized to identify areas of agreement and areas of difference. It was also stated that it will be important to keep abreast of what is happening in Congressional committees and with Congressional legislation. Rep. Smith's representatives volunteered to attend the FP Working Group and provide the connectivity to the Representative's office, and the federal level.

Members discussed that it would be beneficial to review the FAA Reauthorization Act in order to understand what is applicable to our local communities. A representative from the FAA stated that the FAA would be interested in participating in the discussions about the legislation. There are some immediate deadlines, as well as longer term requirements that the FAA has already begun to work through.

Details on meeting frequency and time will be determined by the FP Working Group members at its first meeting. A number of StART members volunteered to participate.

Aviation Noise Working Group Briefing and Discussion

Stan Shepherd, Port of Seattle

Vince Mestre, Aviation Noise Consultant

The StART Aviation Noise Working Group (Working Group) provided a recap of the last three meetings. Working Group meeting summaries for the last three meetings are attached as Appendix B. The Working Group discussed and refined three potential action items and considers these actions as ready for moving to eventual implementation:

- Runway Use Agreement: Update to an existing agreement between the Port and FAA, which clarifies preferred use of the runways.
 - Updated language reduces use of third runway during late-night hours
 - Updated language on preferential use of north flow during nighttime hours
- Late Night Noise Limitation Program

- Revision of name to align with intended outcomes – not a curfew, but a voluntary incentive program
 - In effect from 12AM-5AM, and will be incorporated into the existing Fly Quiet Program by adding an additional category that assigns a penalty score to any airlines for single event noise monitor exceedances
 - This new category will measure ‘loudness of fleet during quiet hours’
 - Four monitors to be utilized– two north and two south of airport
 - A penalty score will be applied to any aircraft that exceeds a pre-determined noise threshold.
 - Current Fly Quiet scoring includes:
 - Compliance with noise abatement corridors
 - Average noise score for 24-hour period
 - Penalty for run-ups at night that do not comply with rules
 - NEW – Penalty score for flights that exceed the late night noise thresholds
 - Current Fly Quiet Program currently only recognizes the quietest air carriers. New plan would include more regular reporting to the FAA and the public about rankings. Goal is to encourage air carriers to reschedule late night flights, or transition to quieter aircraft. Air carriers are constantly promoting green and sustainable operations. This would provide them with another opportunity to promote their environmental credentials.
- A320 Aircraft Whistle Noise on Approach:
 - Whistle noise caused by a fuel vent on the wing that generates an air vortex. A retrofit exists, but requires taking the aircraft out of service for major maintenance
 - Working Group concurred with the Port recommendation to try to increase retrofitting and noise reduction by writing a letter to air carriers asking for their plan/schedule for retrofitting and encouraging it happens soon.

The Working Group also reported on their discussion and analysis on the possible raising of Runway 34R’s glide slope as a potential action that could modestly reduce noise. The Working Group is looking at options of how and when the 34R glide slope can be raised to the standard 3 degrees or 3.1 degrees. Additional discussion will occur on this topic in 2019. The Working Group provided a Draft Rolling Work Plan that continues into 2019, which includes a ground noise analysis and opportunities for mitigation.

Working Group member’s comments included:

- Considers the time spent on the Working Group to be very educational. Concerned that the “penalties” in the Late Night Noise Limitation Program have no teeth and pessimistic that any airlines will stop late night flights because of the Program. It is understood that the Federal Government must be the one to make the change to allow airports to implement night-time curfews, but is frustrated by this group’s inability to make that actual change.
- Some progress is better than no progress. Does not consider the Working Group or these efforts as worthless. Believes there is something beneficial to making incremental progress. The cities also have a responsibility to publicize information about the Fly Quiet Program to their residents. Thinks it may behoove the new Federal Policy Working Group to look at what it would take to prepare for a Part 161 submission, or to advocate to change federal law to allow for night- time curfews.

- The Working Group is not done, and this is a status report. If change were easy, the change would have occurred already. StART needs to understand why things are hard. The 34R glide slope is outdated, and has not been addressed, because no one was asking the question. Now someone is asking the question, and now it is going to be seriously looked into. Challenging issues require time and effort, and will require a unified effort by all the communities. Believes the Working Group has made great progress, laying the foundation for continued progress in 2019. It's going to take time. Encouraged the group to not back off.
- Shared a federal code that requires reduction in noise as an FAA requirement. A FAA memorandum from 2005 was referenced, which was re-stamped in 2008 from Flight Standards at the FAA, which stated that the glide slope angle is below the ideal path because the airport did not currently have the time or money to adjust the glide path. Frustration with being told the glide slope could not be adjusted due to funding reasons. Statements have been made that a Part 161 Study is too expensive, but disagrees that it would not be approved, if attempted.
- Request was made to first allow questions based on the presentation before StART members make comments.

Questions included:

- Can the status of a fleet be used to allow or disallow flights to use SeaTac?

Response: No. All airlines in operation meet federal noise standards. The regulation does not limit the time of day flights can land or depart.

- Who will check the data for noise violations for compliance/non-compliance? Stated the current Port website is not as effective as it could be at providing data on noise violations.

Response: Every complaint that enters the Port office is logged into a database – from web, emails, phone, etc. The Port is in the process of acquiring a new system in 2019 that increases transparency.

- We currently have a voluntary curfew. What types of penalties are currently being applied?

Response: The airport does not have a voluntary curfew, and has never had a voluntary curfew.

- How would the noise penalty in the revised Fly Quiet Program be applied? A 90 DNL is very high.

Response: Port clarified that DNL isn't the noise measurement being utilized. It is a one-time measurement of DB, not DNL– different forms of measure. The DNL is an annual average versus Sound Exposure Level (SEL) DB, which is a one-time event.

- Asked for clarification about north flow arrivals, as recent publications have said that Greener Skies has not had a measurable effect.

Response: Port clarified that the Greener Skies approach is for south flow arrivals, not north flow.

- How is scoring in the Fly Quiet Program balanced between major airlines versus smaller airlines?

Response: Averaged by looking at the fleet-average noise level. Not weighted by the number of operations. This avoids a small fleet with loud aircraft to score the same as a large fleet with quieter aircraft.

- Passenger Facility Charge (PFC) is a charge that is used to fund FAA-approved projects. How is this fund currently being used?

Response: Sea-Tac has used that funding for residential insulation and for Highline School District insulation programs. Mitigation funded by the PFC can only be applied within the 65 DNL contour. Airport Improvement Funds can also be used for noise mitigation.

- Will the Port enter into a Part 150 Study?

Response: The Port has not yet decided when it might conduct an update to its Part 150 Study.

- If the Port does enter into a Part 150 Study, it needs to consider how the DNL contour is drawn, and if it is still representative of current conditions. Their understanding is that contour was drawn prior to the recent growth in air traffic.

Response: Part of the Sustainable Airport Master Plan will be to look at the DNL contour, and make sure it is appropriately set based on current aircraft fleet noise levels.

- There is no noise monitoring occurring on the south end of the airport, as the noise monitor is located at Saltwater State Park. Southern neighborhoods are not being currently monitored.

Response: The noise monitors are not used to determine the 65 DNL line – the line is based off known data about aircraft noise generation.

Public Comment

Compiled public comment are included here as Appendix A.

Meeting Wrap Up

Lance Lyttle, Port of Seattle

Lyttle thanked the community members and StART participants for their time and contribution. He stated that the goal is to implement the Runway Use Agreement, and the Late Night Noise Limitation Program by mid-2019.

Next Meeting:
February 27, 2019, 6:00 pm – 8:00 pm
Location: *Conference Center Sea-Tac Airport*

Appendix A

Summary of Public Comments

1. Dana Hollaway (oral comments):
 - Upset with flight frequency.
 - Due to the frequency, filling out online noise complaint forms is time consuming and ineffective. Web apps (AirNoiseIO) make this easier – is able to provide details in real-time.

2. David Goebel (Vashon Quiet Skies) (oral comments):
 - Seattle Times Article by Dominic Gates reports that Next Gen has not achieved environmental goals, and may actually show opposite effects. Should pay attention to the FAA scorecard data. The Next Gen reports no change, rather than reducing greenhouse gas emissions as intended. Will be interesting to do peer review of that data to confirm findings.

3. Bernedine Lund (Federal Way) (oral comments):
 - Began hearing aircraft noise this year after 33 years. Has provided written comments. (Appendix C). FAA policy needs to be updated. Things can change. We need to get our legislators to work with us.
 - There is no way to reach CO2 recommendation from the US or UNFCCC because everything that is done to mitigate emissions is outweighed by frequency. Airline advertising encourages demand for more flights.
 - Suggests promoting job growth and alternate transportation, and siting of an additional airport.

4. Rodger Kadeg (SeaTac Advisory Committee) (oral comments):
 - Thanked the FAA for their presence, and stated that their involvement is important. Citizens are beyond upset; they feel like they have no voice, and no chance.
 - It is important to look at some of the things that came out of the meeting tonight.
 - Expressed concern that glide slope was not adjusted previously.
 - Encourages the public to keep the pressure on elected officials to get together to solve these problems. The communities are running into a brick wall and need the FAA's help.

5. Ann Kroeker (oral comments):
 - Questioned why, with continued growth, isn't Sea-Tac Airport putting effort into dedicated bus and rail infrastructure, and other people movers like hyperloop? Other major cities are looking at other transportation options. Airports in Canada are owned by the government and are implementing these types of efforts. Other transportation options would be popular, and would relieve air traffic.

6. Blanche Hill (Normandy Park) (oral comments):
 - Moved to Normandy Park 1.5 years ago, after previously living in Des Moines. She is well aware of noise complaints. Aside from the unacceptable noise, the air pollution produced by airplanes has been proven to cause medical conditions including cancer.

With increasing amount of air traffic, air pollution has also increased, and this is unacceptable.

- The only solution to this is to develop hyperloop – it doesn't generate noise, pollution, and it is able to move massive numbers of people.

7. Christopher Mitchell (Des Moines) (oral comments):

- In the summer, his neighbors are unable to be outdoors. Questions why Paine Field is not being used to mitigate traffic at Sea-Tac Airport. Is this a possibility? (StART members replied – yes, is happening – flights will begin operating at Paine Field shortly).

8. JC Harris (SeaTac) (oral comments):

- Runs website called SeaTac Noise, and tracks history of the airport expansion over the decades. Also, tracks questions asked by the community. The most common question is 'who are the good guys, and who are the bad guys?' –which flights create the most noise?
- Every few years when the airport decides to expand, elected officials act as if this is an out of the blue occurrence. There should be a continuity of knowledge so we are not repeating the same patterns every time the airport expands.

9. Debi Wagner (Burien) (oral comments):

- Airport expansions have always been bad for citizens, and good only for the airport.
- Ms. Wagner has developed notes and pictures that show flight paths. (Appendix D). Graphics identify flight paths and low-income neighborhoods. Health impacts also align with low-income neighborhoods. She shared concern that these residents are being harmed.

10. Larry Cripe (oral comments):

- In 2019, the Port will hear from citizens in 15 surrounding neighborhoods/cities because of what is going on. This community group will be making an announcement after the New Year, because they have reached a point where they cannot take it anymore.

11. Marianne Markkanen (SeaTac) (oral comments):

- Filters are needed in houses and cars to address ultrafine particles. These particles should be captured and analyzed to determine what the community is being exposed to.
- Voluntary measures are not enough. Citizens are not supportive of a voluntary program, and want it to be mandatory. All employees of the Port and FAA are paid by taxpayer dollars, and should be listening to what taxpayers want. What they want is to not be woken up in the middle of the night by airplanes.

Appendix B

Aviation Noise Working Group Facilitator's Meeting Summary

Monday, October 29, 2018

5:30-7:30PM, Conference Center SeaTac Airport

Member	Interest Represented
Terry Plumb	Burien
Chris Hall	Federal Way
John Resing	Federal Way
Earnest Thompson (phone)	Normandy Park
Mark Hoppen	Normandy Park
Eric Zimmerman (phone)	Normandy Park
Robert Akhtar	SeaTac
Joe Scorcio	SeaTac
Tom Fagerstrom	Port of Seattle
Robert Tykoski	Port of Seattle
Tim Toerber	Port of Seattle
Steven Osterdahl	Alaska Airlines
Stan Shepherd	Port of Seattle
Marco Milanese	Port of Seattle
Scott Ingham	Delta Airlines
Tony Gonchar	Delta Airlines
Randy Fiertz	FAA
Vince Mestre	L&B

- **Facilitator: Phyllis Shulman, Civic Alchemy**
Note Taker: Megan King, Floyd Snider

Meeting Objectives:

To review and provide feedback on approaches to a voluntary nighttime curfew and runway use agreement. To review analysis of night-time operations. To discuss and consider constructive next steps regarding noise abatement departure procedures and a glide slope analysis.

Meeting Summary:

The main focus of the meeting was to review data and to discuss options for a voluntary night-time curfew and elements of a potential revised Runway Use Agreement. In order to provide informed direction, the Working Group also reviewed an analysis of night-time operations. Noise abatement departure procedures were introduced as an additional option for reduction of the impacts of noise. The discussion began with reviewing comments from the October 24 StART meeting.

Voluntary Night-time Curfews:

Two main topics were discussed: clarification of what is a voluntary curfew and a comparison of aircraft single event noise levels. There was discussion that the primary incentive for compliance is positive or negative publicity. The goal of the incentives would be to work in partnership with the aircraft operators to review and revise their night-time operations in order to reduce the impacts of noise on the surrounding communities. Implementation methods would include modifications to the Port's Fly Quiet Program to include curfew operations, publish the results of the Fly Quiet Program more prominently, and develop materials and hold discussions with airlines on the type of aircraft flown and scheduling considerations at night. Hollywood Burbank Airport in Burbank, California was showcased as an airport that currently has a voluntary night-time curfew.

Runway Use Agreement:

The discussion focused on reviewing variations on types of runway use agreements and the pros and cons of each option. Based on this information, it was stated that for SeaTac Airport's circumstances a formal agreement between the Port and local FAA is likely the most favorable alternative, but is also the most challenging because of the formal legal review process. It was noted that there is an advisory circular (dated 1981) that provides guidance on how to draft formal agreements.

The noise consultant presented an aircraft noise profile comparison based on aircraft type. It was noted that the aircraft noise footprint for certain aircraft, for example Boeing 747s, is less affected by which runway is used when compared to quieter aircraft. The aircraft footprint for some other aircraft, for example, Boeing 737s, would have a measureable reduction of noise for surrounding communities depending on which runway the aircraft landed on. It was also noted that an aircraft footprint varies based on aircraft weights and the nature of the flight. In summary, for louder aircraft a voluntary curfew and fleet mix may be more important than preferential runway use. For quieter aircraft preferential runway use may be important. This information helps to identify what potential changes to aircraft or runway use would be most beneficial and the trade-offs regarding community impacts (e.g. less noise for one community, but potentially more noise for another).

Night-time Operations:

Port staff presented data on night-time flight arrivals and departures by runway, by type of aircraft, and by airline. The data set showed operations on all 3 runways from August 8 – September 8, 2018. Some outliers were noted where certain arrivals were the result of flight delays and typically did not arrive during 12:00 AM – 5:00 AM time block.

Noise Abatement Departure Procedures (NADP):

The noise consultant reviewed the process for implementing NADPs. The Work Group has yet to evaluate whether NADP are a preferable option to consider. This will be discussed at a future meeting. Some key findings regarding NADP and possible trade-offs included:

- Distant NADP results in higher noise for close-in airport communities, because aircraft operators do not cutback power as quickly, and flaps remain extracted through the climb.
- Distant NADP also saves fuel.

- Close-in NADP is better for close-in airport communities, but increases noise to communities farther out along the aircraft's flight path.

Preview of Glideslope Analysis (34R):

An emerging option for noise reduction is considering whether a change in glideslope from a 2.75 degree to a 3 degree or greater could reduce noise. Port staff is just beginning to evaluate the possibilities and provided a brief introduction to the topic for consideration at a later meeting. It was requested that information also be provided as to what it might take to increase the glideslope above 3 degrees.

Discussion and Next Steps:

- It was confirmed that ground operations are in the Working Group's scope of what will be analyzed and discussed to identify noise reduction options. This will be on the agenda at an upcoming meeting before the end of the year.
 - Are there other incentives that the Port could offer besides publicity for a voluntary night-time curfew?
 - Financial incentives are not an option. The law is very explicit that fees cannot be changed.
 - Airline Operators stated interest in continuing the discussion on night-time voluntary curfews and were asked to share initial concerns with a voluntary night-time curfew:
 - A voluntary night-time curfew could push flights into other hours where the schedule is already full.
 - Criteria used for Fly Quiet ratings should consider relative size of fleet, as well as weather or other impacts that cause unexpected schedule delays, which push flights into night-time hours.
 - It was suggested that the Work Group develop a set of criteria that can be used to evaluate possible alternatives for action. One member proposed that the criteria consider use of energy (dB-seconds) and the number of people impacted and the degree to which they are affected. Port staff will provide some suggestions based on the discussion.
 - It was suggested that it would be important to include both positive and negative scores in publicity related to the Fly Quiet Program.
 - Port staff will begin discussions with the FAA on potential elements of a revised Letter of Agreement including firming up language related to the use of the outboard runway especially during night-time operations.
 - Port staff will develop initial materials to bring to discussions with airlines about a voluntary night-time curfew.
 - FAA was requested to explore the reasoning behind the regulations that only allows 3 procedures (standard, distant, and close in procedures) and whether it would be possible to add a 4th.
 - Work Group members stated appreciation for hearing direct feedback from the airlines and encouraged the airlines to continue to be partners in StART. It was stated that their involvement is critical to the success of this effort.
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Aviation Noise Working Group Facilitator's Meeting Summary

Monday, November 26, 2018

5:30-7:30PM, Conference Center Sea-Tac Airport

Member	Interest Represented
John Resing	Federal Way
Yarden Weidenfeld	Federal Way
Ken Rogers	Des Moines
Earnest Thompson	Normandy Park
Mark Hoppen	Normandy Park
Eric Zimmerman	Normandy Park
Joe Scorcio	SeaTac
Tom Fagerstrom	Port of Seattle
Robert Tykoski	Port of Seattle
Tim Toerber	Port of Seattle
Scott Kennedy	Alaska Airlines
Marco Milanese	Port of Seattle
Scott Ingham	Delta Airlines
Tony Gonchar	Delta Airlines
Jason Ritchie	FAA
Vince Mestre	L&B

Facilitator: Phyllis Shulman, Civic Alchemy

Note Taker: Megan King, Floyd/Snider

Other Attendees: Lance Lytle, Port of Seattle; Arlyn Purcell, Port of Seattle; Dave Kaplan, Port of Seattle

Meeting Objectives:

Meeting Objectives: To review and provide feedback on drafts of a voluntary late-night curfew and a Runway Use Agreement. To analyze the potential options for changes in Runway 34R's glide slope as a means to reduce aviation noise. To provide guidance on the Working Group's work plan.

Meeting Summary:

The meeting was focused on reviewing progress and providing guidance on three potential strategies for aviation noise reduction: a voluntary late night curfew, updated runway use agreement, and potential glide slope changes to Runway 34R.

Voluntary Late Night Curfew Review – Proposed Adjustments to Existing Fly Quiet Program:

The noise consultant reviewed the federal limits (Airport Noise and Capacity Act of 1990) that restrict airports from instituting mandatory curfews. Voluntary curfews can be requested by an airport as long as they do not include fees or financial incentives for compliance. Since the last StART Aviation Noise Working Group meeting, the Port and the noise consultant have put together a draft program and outlined next steps to reduce late-night aircraft noise through discussions with airlines about their schedules and adjustments to the Fly Quiet Program by adding a penalty for any flight over a single event noise threshold. Specific information was shared regarding which aircraft and airlines that arrive and depart during late-night hours are the loudest.

The following component was suggested as the make-up of the program:

- Publicize with airlines and the public who is the “best” quiet airline and who is the “worst” The ratings would be based on the current Fly Quiet Program with modifications.

Questions and responses to questions included:

1. What is the number that would result in a penalty, and how much of current late-night flights exceeds this threshold?

Response: The number needs to be less than the noise created by the Boeing-747, but higher than the 777/737 number, so operators could potentially utilize existing quieter aircraft in their fleets. The calculation also needs to account for averaging that can make these wide-body aircraft appear less noisy than they are.

2. Do airlines take the Fly Quiet Program seriously? What is the likelihood that airlines will care?

Response: The Fly Quiet Program currently is communicated to the community through outreach, advertised in trade magazines, part of the Port’s environmental award program, and airlines use it in their promotional material to the public. In the past, the Fly Quiet Program has focused solely on positive messaging on an annual basis and the Program has not focused on which airlines are doing poorly in the program. In going forward, the Port would increase Program visibility, publicize all carriers’ scores and work with the airlines that are rated highly to advertise their positive contributions.

3. Has anyone studied whether rating poorly in a Fly Quiet Program has a negative financial impact on airlines?

Response: No studies are known of, but winners for Fly Quiet Programs often use their award as part of their advertising.

4. Who specifically would be attending meetings with the airlines to discuss with them the late-night hours noise reduction objective?

Response: Specific Port staff has not been identified yet, but it was stated that the Managing Airport Director’s involvement is critical to give weight to the message.

5. Since the use of airport revenues/funds cannot be utilized as incentives for the Fly Quiet Program, can funds from the Port levy be utilized?

Response: Do not know enough to comment on this.

6. Why should we not be working with legislators to try to make a change to federal law to allow airports to create mandatory curfews?

Response: This Working Group members stated that they wanted to focus initially on identifying near-term actions. There are currently other community and national groups focused on trying to influence federal law.

Discussion focused on developing realistic expectations of the program's influence, noting that cargo carriers may be less concerned about their Fly Quiet Program score. It was brought up that even given this possibility, cargo carriers might be flexible about which aircraft they use at Sea-Tac Airport and they may want to see themselves as good neighbors. Community representatives stated that they have an important role to play in drawing attention to those airlines that are flying the noisiest late-night flights and to help raise awareness. The Working Group acknowledged the challenge of voluntary measures succeeding, but communicated their support to move this effort forward with the hope that there will be an impact.

Next steps include:

- Analyze late-night noise data to determine the noise threshold for identifying the noisiest aircraft and share the recommended threshold at the next Aviation Noise Working Group meeting.
- Develop Fly Quiet letter(s), brochure(s), and other materials to utilize for discussion with air carriers.
- Develop a more robust Fly Quiet website and communication materials that highlights air carrier ratings
- Meet with operators to discuss reduction of late-night flights, change of aircraft, and modifications to the Fly Quiet program.
- Continue developing other potential incentives to encourage compliance/involvement including considering whether Port levy funds could be utilized to enhance the likelihood of success.
-

Draft Runway Use Agreement:

The discussion began with a presentation reviewing a draft of a new Runway Use Agreement highlighting the new language. It was stated that the new agreement would include a process for monthly monitoring and check-in between the Port and the FAA. This monthly meeting would provide the opportunity to discuss compliance and challenges. It was also stated that a new Runway Use Agreement might need to have to undergo an environmental review before completion. The Working Group provided some edits to the draft. The Working Group recommended that prior to initiating formal discussions with the FAA regarding the Runway Use Agreement, the full StART group should

review the draft agreement. It was also suggested that additional clarity about what changes might occur regarding noise with a new agreement's implementation.

Questions and responses to questions included:

1. If there needed to be some kind of environmental review, what would be the purpose? Is there some threshold in which changes to runway use are not permissible?

Response: Since the new agreement would be moving aircraft operations from the 3rd runway to an internal runway, it may require environmental review, due to the increased traffic on the internal runway. FAA staff is looking into whether an official environmental review would be required. Even if not required, it may be beneficial to analyze whether there are any unintended consequences of making this adjustment. Change is acceptable unless there is a 1.5 dB DNL within the 65dB area.

2. Why does existing North Flow preferential language in the Draft Runway Use Agreement only apply to departures?

Response: If departures are north flow, arrivals must be as well. Cannot arrive/depart in opposite directions.

3. Is it possible to quantify observance of North Flow procedures?

Response: Yes, there is currently 95-96% observance.

Next Steps include:

- Solicit comments from StART at the December 19 meeting.
- Provide additional information, if known, about what an environmental review may entail and whether it is warranted.
- Send draft to FAA for review/input and initiate discussion with air traffic control about feasibility.
- Provide information on if the Runway Use Agreement was 100% observed what % of the 3rd Runway operations would likely move to the other runways as well as analysis on how that would impact noise.

Runway 34R Glide Slope Modification:

The discussion began with a presentation regarding possible options for increasing the glide slope from 2.75° to 3° on 34R and what it might take to implement each option. Three options were presented with varying timelines and costs for implementation. Each option will require additional analysis and discussion to determine its feasibility and pros and cons. The FAA resource person provided guidance on what information would be needed by the FAA to get through the approval process, also stating that there are over 40,000 current procedure requests nationwide, so the more information and data provided on the rationale the better. Working Group members commented that a short-term temporary solution, costing less, might be beneficial, particularly if some of these changes may be made as part of

the Sustainable Airport Master Plan process. One concern that was expressed was that planes approaching at a steeper angle would require more reverse thrust to reduce their speed.

Next Steps include:

- Additional analysis and discussion with the FAA.

Discussion and Next Steps:

A draft Aviation Noise Work Group Work Program for the next few months was reviewed. Working Group members provided feedback on the schedule and wording of the Work Program. The Working Group agreed that the Work Program is a “rolling” program and that items and the schedule will change over time. The 2019 schedule for the Working Group will be discussed at the next Work Group meeting.

The next Aviation Noise Working Group meeting will be 12/10/18 at 5:30-7:30pm at the airport.

Aviation Noise Work Group Meeting Summary
Monday, December 10, 2018
5:30-7:30PM, Conference Center Sea-Tac Airport

Member	Interest Represented	
John Resing	Federal Way	X
Yarden Weidenfeld	Federal Way	X
Earnest Thompson	Normandy Park	X
Mark Hoppen	Normandy Park	X
Eric Zimmerman	Normandy Park	X
Tom Fagerstrom	Port of Seattle	X
Robert Tykoski	Port of Seattle	X
Scott Kennedy	Alaska Airlines	X
Marco Milanese	Port of Seattle	X
Scott Ingham	Delta Air Lines	X
Vince Mestre	L&B	X
Stan Shepherd	Port of Seattle	X
Chris Schaffer	FAA	X
Chris Hall	Federal Way	X
Lance Lyttle	Port of Seattle	X

Facilitator: Phyllis Shulman, Civic Alchemy;
Note Taker: Kristen Legg, Floyd | Snider
Other Attendees: Dave Kaplan, Port of Seattle

Meeting Objectives

Objectives: To complete discussions on the Voluntary Curfew and Draft Runway Use Agreement in order to solicit feedback from StART and begin implementation steps. To identify and discuss additional near-term noise reduction actions and to prepare for the 2019 Work Plan.

Meeting Summary:

The facilitator suggested that, at the next full StART meeting, Stan Shepherd provide a concise overview of the evolution of thought and a summary of the three Aviation Noise Working Group meetings that have been held during the last two months. The Working Group agreed that was an appropriate way to update the larger StART group. The Working Group asked for confirmation that the discussion of possible actions to reduce ground noise would be on the Working Group's agenda in 2019. It was confirmed that this discussion would begin at the January Working Group meeting. The Port staff will begin analysis on discussion topics for ground noise as well as work with the airlines to request a reverse thrust discussion related to this topic.

Continuation of Review of Draft “Fly Quiet Late Night Noise Limitation Program” (Program):

The noise consultant reviewed the latest iteration of the Program and the suggested renaming of the effort from “Voluntary Curfew” to “Fly Quiet Late Night Noise Limitation Program”. It was noted by the Working Group that the name “Voluntary Curfew” did not completely correspond to the components of the effort being suggested. It was also noted that other airports utilize a variety of names for similar efforts around the country. The objective of the Program is to reduce late night aviation noise, particularly focusing on the noisiest aircraft. The Program would have three components:

1. A request to all late-night carriers to move late-night operations to less sensitive hours;
2. Include a late-night noise penalty in the Fly Quiet Program computations to incentivize airlines to transition to quieter aircraft; and
3. publicize on a more regular basis all four Fly Quiet Program category rankings for all air carriers.

The general guidelines for the Program include:

- It is intended for the hours of 12:00am to 5:00am.
- It will utilize the Port’s current Fly Quiet Program and add a new 4th category for loud aircraft noise during the late night hours.
- It’s specific to aircraft whose noise profile is above a defined threshold.

The noise consultant reviewed how the Program would be implemented. Only aircraft types flying above an average single event noise threshold will receive a Fly Quiet Program penalty score. The average noise SEL threshold is intended to be set so that noisier aircraft in the late night hours are penalized in the FQA scoring system. A penalty is based on the maximum of the four noise monitors. The noise consultant shared example data for measurement and arrival and departure noise comparisons to show which aircraft would likely be penalized and what SEL would likely be used as part of the Fly Quiet Program. Additional analysis to determine the exact SEL still needs to occur, but it appears that the Departure SEL would likely fall around 89 to 90 SEL at Noise Monitor Site 19. Additional data regarding arrival noise was reviewed. Arrival noise is quieter than departure noise; therefore, the penalty would likely be instituted around 84 to 85 SEL at Noise Monitor Site 12.

The preliminary methodology for the penalty would include a noise threshold that would be set for each of the four noise monitors with the maximum noise from the loudest of the four monitors used to determine the amount of penalty. The penalty would only be for aircraft above the threshold. The noise consultant provided examples of what the late-night penalty scores would look like given average SEL and examples of the effect of the penalty on current air carriers who fly during the late-night hours. The next steps for this Program include reviewing the Draft Program with the larger StART group, developing the specific threshold for each site, creating communication materials that explain the process, revising the FQA Scoring Spreadsheet, and meeting with the airline operators to educate them on the Program.

Discussion focused on questions related to how the Fly Quiet Program would be changed and how the scoring would work. Questions and responses to questions included:

1. What are the current three categories in the Fly Quiet Program and how will this new program affect that?

Response:

- How successful they are staying in the corridor on arrival and departure? We give a score for each airline based on their compliance with the airport's noise abatement corridors.
- How quiet is their fleet? A score is given with the quietest airline getting the highest score and others ranked according to the overall noise level of their operations.
- Nighttime engine maintenance run-up regulations are in place at Sea-Tac. Run-ups that do not adhere to the nighttime rules result in a deduction of points to the total score.

2. What is the difference between the current FQA scoring and what the Working Group is currently discussing?

Response: We are adding a fourth scoring category. It would result in the deduction of points for any flights between the hours of midnight and 5 am that exceed a given threshold.

3. Is there a way to make the Fly Quiet Program include the reduction of ground noise, which is more of a problem for SeaTac, Burien, and Normandy Park? It seems like it could be good tool.

Response: This can be explored when the Working Group discusses ground noise in 2019

Discussion also focused on whether this effort was moving away from an actual curfew to more of a noise limitation program. Responses from StART community representatives to this concern included:

- The guidance from StART is acting within the envelop of realistic possibility. This would represent progress and StART can take pride in its implementation.
- There is a long-term objective to be pursued, but it seems unlikely that Congress will change the law regarding an airport's ability to set mandatory curfews any time soon. Tangible results are good to reach now.
- In creating StART, it seems like even something modest like this program will demonstrate that StART can work and it can be built upon.
- The proposed Program is just one of the building blocks. There will be additional efforts related to ground noise, reverse thrust etc. At the end of the day, there will be a number of approaches coming together and it will be impactful.
- This effort demonstrates progress. It's modest, but it represents a big step for an airport, especially a large international one, to take.

Review of Revised Draft of Runway Use Agreement

Port staff reviewed changes made to the Draft Runway Use Agreement based on the Working Group's comments from the previous meeting. Examples of south-flow and north flow runway usage at night and a high level overview of what it means to move flights from the 3rd runway to the other runways, from 12:00am to 5:00am, were shown. It was noted that the new agreement would include monthly monitoring. Next steps included discussing the revised draft at the next StART meeting, engage the FAA

in reviewing and providing input, identifying whether environmental review will be required, and additional steps leading to the finalization of the new Runway Use Agreement.

Questions and responses to questions included:

1. How much time will it take to get through the FAA review?

Response: A number of months. It took 4 to 5 months to go through the process in 2010. Much of the language from the 2010 agreement still exists in the new draft, which may expedite the process.

2. How receptive has the FAA been so far to establishing a new agreement?

Response: The conversations between the Port staff and the FAA have been pretty positive so far. The draft has been shared with the FAA so they are aware of its contents. It will require legal review. Air Traffic Control still has to weigh in on the content.

3. A few meetings back, the FAA representative stated that the Air Traffic Control Tower had informally begun employing some of the tactics outlined in the Draft Agreement. Is that true?

Response: Barring periodic nighttime runway closures, it's true from 1 AM to 5 AM. However, from 12 AM to 1 AM, a number of landings are occurring on the third runway on a regular basis.

4. When does the new Cathy Pacific flight start and how often will they be flying?

Response: The new flight is replacing a flight that was flown by Delta Air Lines. Starting in 2019, they intend to depart around 1:00am approximately 4 times a week. They will be flying an A350, which is a quiet aircraft. It will usually depart from the east runway.

Discussion focused on the tension that exists between adding new flights and major projects at the airport and reducing noise impacts to the surrounding communities. It is difficult for communities to support new projects/flights without first witnessing the airport's commitment to noise reduction. Concern was expressed regarding the Port's marketing strategies and whether it would be in the interest of StART to discuss this tension around marketing. It was noted that StART might also desire to provide guidance on longer-term initiatives on the Congressional/Federal level. A community representative also noted that it is important to take into account how ideas for reducing noise may affect the larger regional economy. It was stated that it is important to acknowledge the benefits that the airport also brings, that people in the region desire, including economical travel, delivery of goods (for example, the shift to more on-line ordering), and jobs. The objective is to be able to provide guidance to the airport on how to channel the growth with as little impact to the communities as possible.

A320 Vortex

Port staff described that the A320, A319, and A321 whistle noise occurs between 7-30 miles from landing and is caused by a circular vent hole under the wing. Airlines flying the A320 fleet at Sea-Tac include:

- American
- Air Canada
- Alaska
- Delta
- United
- Jet Blue
- Spirit
- Allegiant
- Frontier
- Volaris

Retrofitting the aircraft with a specific part can mitigate the noise. Retrofits can happen when the aircraft is receiving heavy maintenance, typically every two years. Fuel tanks and systems have to be fully drained for the work to occur. It is unknown how many aircraft have already been retrofitted, but a visual spot check suggests that about 50% of A320's at Sea-Tac have been retrofitted. It is unknown what plans the airlines have to retrofit their fleets.

Discussion focused on what the Port could do to encourage retrofitting of aircraft. The suggestions included:

- Provide incentives in the Fly Quiet Program and/or encourage the airlines to retrofit.
- Identify, if possible, how many aircraft are still needing the retrofit.
- Add to the Fly Quiet Program a voluntary program that communicates to the airlines that Sea-Tac will deduct points if they don't retrofit their planes.
- Ask Port staff to come up with a draft letter of inquiry to all the airlines, not just the ones in StART. Ask airlines to provide information on:
 - How many A320's do they have in their fleets that fly into Sea-Tac?
 - How many aircraft have been retrofitted?
 - What is the plan and timeline to complete the retrofit?
 - What is the cost per aircraft to complete the retrofit?
- Ask StART airlines representatives what they think would be the best way to encourage the retrofitting. Letter from the Port? Letter from StART?
- Provide to the Working Group the Jet Blue presentation on the costs of their retrofit program.
- Request Alaska Airlines and Delta Air Lines StART representatives to share, at the next StART meeting, whether they have plans for retrofitting their fleets and if so, the timeline.

This topic will be summarized at the StART meeting and additional feedback from StART will be solicited.

Continuation of Glide Slope Angle Analysis

Port staff recapped information regarding the Instrument Landing System and existing conditions. Instrument Landing Systems are composed of two primary ground components: the Localizer, which provides horizontal information, and the Glideslope (GS), which provides vertical information. Three degrees GS is the standard. Existing GS angles and crossing heights were reviewed as well as the three categories of ILS (CAT I, CAT II, CAT III). Port staff provided information and case studies in the US and

Germany where the GS is greater than three degrees. Port staff reviewed some options and what measures might need to be taken to increase the GS. It was discussed whether anything greater than three degrees would require a waiver from the FAA. Additional analysis would need to be done to determine the feasibility of a greater than three degree GS. It was noted that potential impacts to surrounding airports and airspace would need to be analyzed.

Questions and responses to questions included:

1. What other airports in the US have a greater than three degree GS?

Response: Cleveland and Newark, but more information would need to be gathered to understand their situation. There is no CAT III in the US with a greater than three degree GS.

2. How many CAT I approaches are there at Sea-Tac?

Response: The answer would require additional data review.

3. Given the significant fuel savings to the airlines with the CAT III precision, wouldn't all airports be going to CAT III equipment over the next few years?

Response: There are other strategies that play into the decision. There are a number of considerations that would go into changing the approaches.

4. Why does the 34 R runway have an inboard GS of 2.75 degrees?

Response: It was established a long time ago and never modified. It is uncertain what the Incentive for the FAA to change the GS to 3 degrees would be. The change has limited noise reduction benefit as it changes the angle about 20 feet vertically per mile.

5. What is the angle of a plane at take off at a 3.1 degree GS? Could the plane be landed at the same angle as takeoff?

Response: The angle at takeoff depends on the aircraft. Landing does not occur at the exact same angle as a departing plane.

6. Would all runways have to have the same GS?

Response: With the exception of Runway 34R, all runway ends have a three degree GS

Discussion focused on identifying what the Working Group's goal might be regarding the GS. Would the preference be to explore a change to a 3.1 degree GS? The Port stated it is willing to explore the costs and benefits of a change. It was noted that it would be important to consider the impacts of a GS change as a higher GS may require additional use of reverse thrust to slow down landing aircraft.

Next steps include:

- Consider asking one of the StART airline representatives to do a "back of the envelope" calculation of what fuel savings are accomplished with a change in GS.

- Discuss a preferred GS goal at the next Aviation Noise Working Group meeting.
- Ask StART representatives from Delta Air Lines, Alaska Airlines, and the FAA what their perspectives and concerns are regarding increasing GS above 3 degrees.
- Provide additional analysis through a visual that shows what the difference in aircraft height over houses and neighborhoods for different GS approaches and takeoffs would be and what the decibel change might be.
- Consider bringing in an FAA employee from the flight procedure office to provide information on all the ins and outs of take off/landing/airport flow.

2019 Scheduling

The facilitator confirmed that the Aviation Noise Working Group would continue in 2019. Upon discussion it was decided that the Working Group would move its meetings to the second Monday of each month from the fourth Monday of each month so as to overlap with StART meetings. A meeting invitation for the next six months will be sent to Working Group participants. Unless a Working Group participant notified the facilitator that they would like to not be on the Working Group, it is assumed that all current participants will remain engaged.

The next Aviation Noise Working Group will be on 01/14/19 at the airport.

Appendix C

START Meeting 12-19-18: Public Comment: Bernedine Lund

Overview of Recommended Actions:

Update FAA policy: The FAA policy dictates much of what the Port of Seattle (PoS) can and cannot do with revenues from the Port.

Airlines are not currently responsible for the noise and air pollution that is harming the local residents, and local and global environment with noise and air pollution (toxic chemicals and CO₂).

- Currently the PoS is paying to clean up toxic sites left from previous businesses.
- It seems logical that the costs of mitigation and environmental clean-up should come from the flying public and/or airlines.
- This can be done with added cost to each ticket, or gate fee at the PoS. A change in the policies will have to be done to make this happen.

Regulate airline growth: The large growth in the airline industry is not regulated, and in the words of one article the emissions are "...frying the planet".

- The airline industry needs to curtail this unrestrained growth, at the PoS and other airports across the world, to meet the CO₂ limits set by the state, the US, and the UNFCCC.
- The legislature needs to develop a realistic CO₂, CO, ozone, etc. emissions calculation that includes all the jet fuel used, not just that included for take offs and landings.
- Other activities that cannot grow fast enough to reduce the emissions from the large airline growth include: 1) increased fuel efficiency, 2) CO₂ offsets, 3) biofuels, 4) electric planes.

Address public demand for airline growth: The large growth is being pushed by the airline industry and airports.. There are many ways this happens, just as the tobacco companies used to push cigarette smoking.

- Larger and larger airports are being built to be very appealing to the public, almost serving as small cities, e.g., the almost \$1 billion International Building at PoS.
- The cost of flights is artificially low, and does not cover the overall costs; e.g., the PoS is increasing King County property taxes to pay for some additional activities, and the costs do not include mitigation costs.
- The dangers of flying to the public and airline staff should also be made more prominent (like a disclosure statement) when the public purchases tickets.
- Increase in ticket prices due to mitigation and costs of multiple health damages will help drive down the demand (e.g., there is a direct correlation between increased tobacco costs and reduced tobacco use).

Independently, there are several public movements to limit airline use: people in Sweden are using a word for mileage shaming; some are recommending setting mileage limits; and some airlines have stopped offering frequent flyer miles. Real change will most likely have to come from legislation. For example, legislation restricted tobacco company advertising and asbestos use has stopped; however, these companies are still being sued for the harm they have done to people's health.

Promote job growth in alternative transportation: The PoS says that job creation from the airline growth is positive for the local area.

- Building and maintaining other transportation options could have similar job opportunities. For example, high speed trains or hyperlink could transport people up and down the coast using renewable energy. Right now, train tickets are more expensive than airline flights.

Site a region wide freight and/or passenger airport - i.e. one used for the entire region, including nearby states, not just Seattle, with trains carrying the freight to/from the airport.

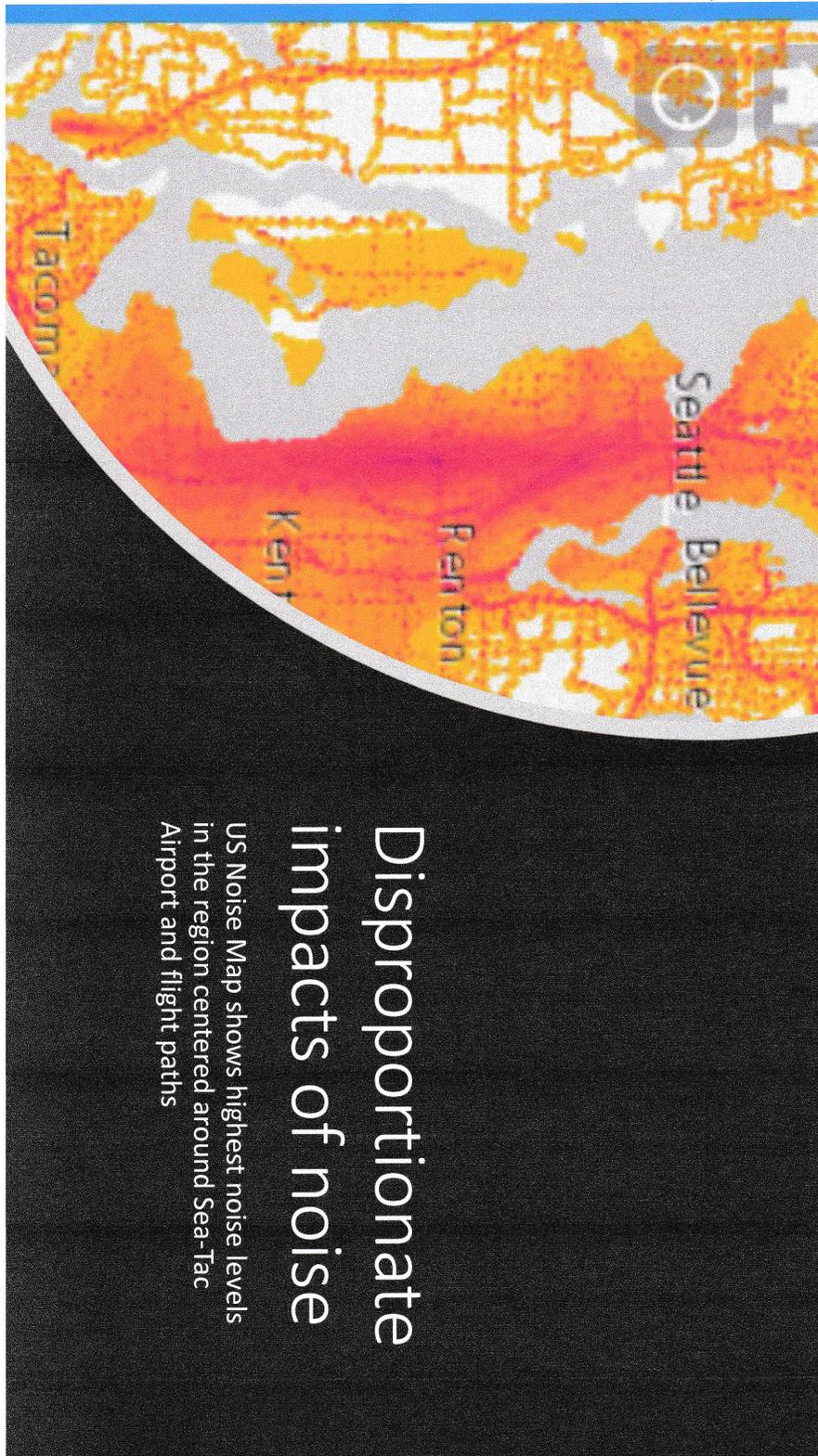
- Another airport is still needed to accommodate the overcrowding at the current PoS.
- Stop further building at PoS until the overall airline growth is addressed.

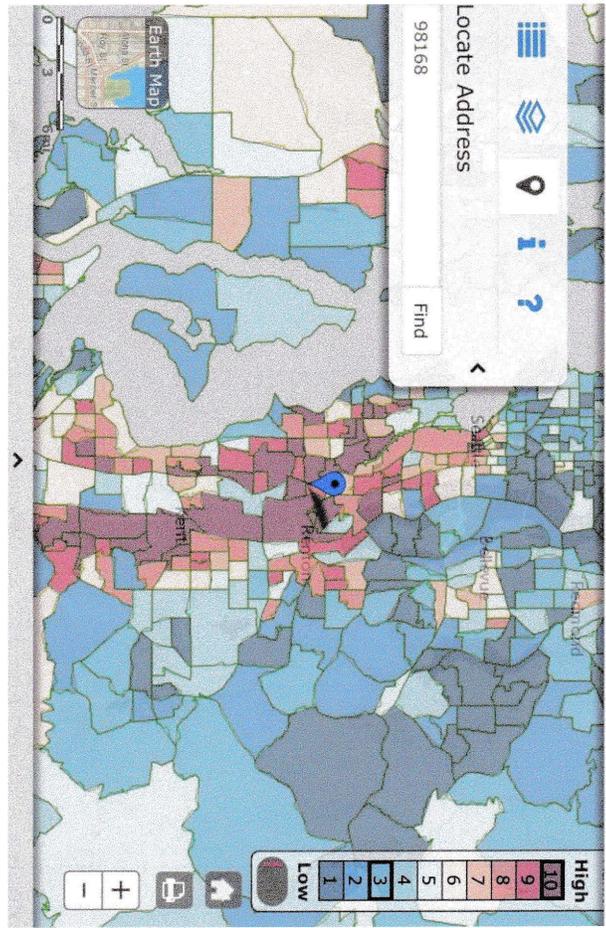
Appendix D

Debbie Wagner Written Comments

Disproportionate Impacts Maps: King County Health, State Department of Health, EPA EJ Screen, Port of Seattle, Flight Pattern Kids

- Cities in South King County experience a high level of disproportionate impacts from Sea-Tac Airport operations which include:
 - Low income residents, highest poverty levels in the county
 - Language barriers
 - Higher illness rates
 - Lower life expectancy
 - Less access to healthcare
 - Highest noise levels in the county
 - Highest concentrated emissions in the county

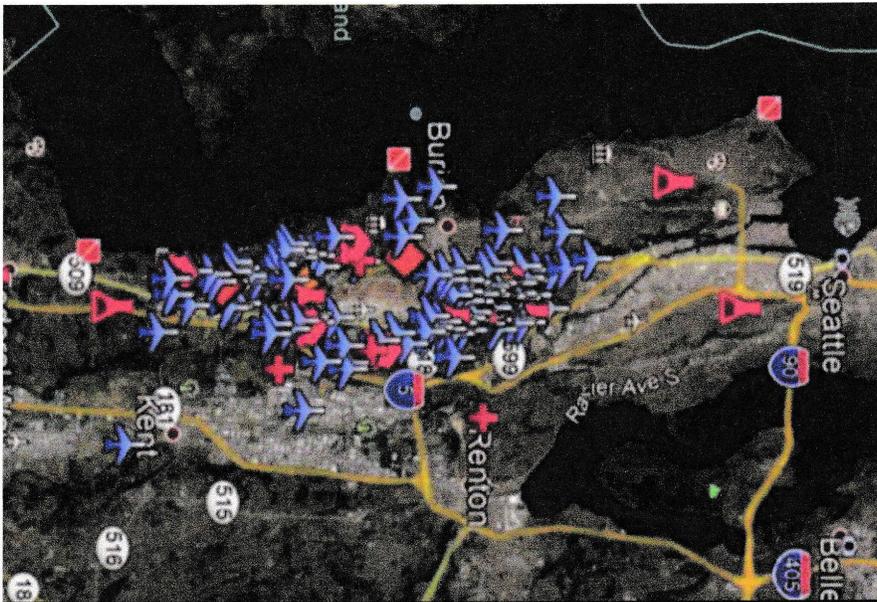




Highest health disparities in the region mirror the areas with the highest noise impact and follow the flight path

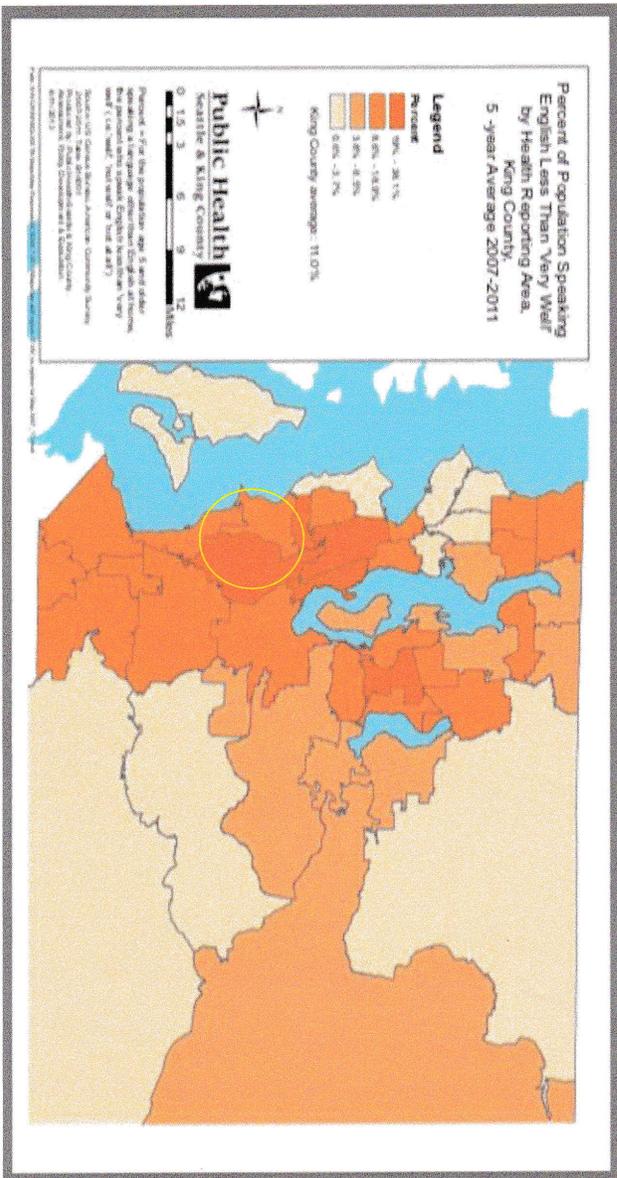


Note the concentration of flight paths matches the high noise, health impacts, social detriments, low income and minority and disparities.

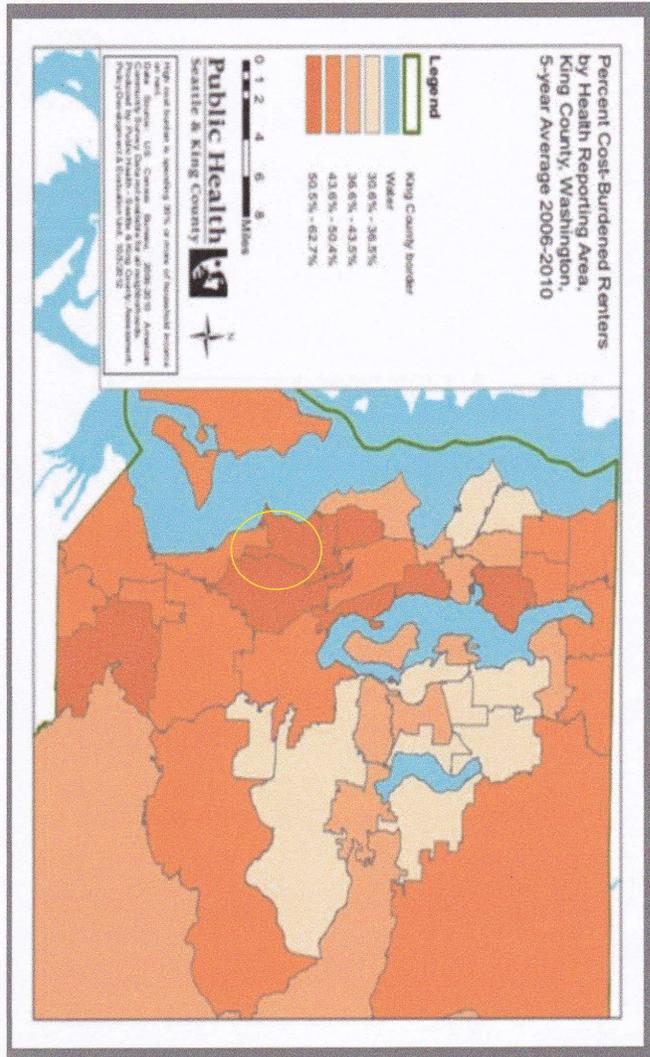


Flight Pattern Kids household health questionnaire shows reported cancer and immune disease concentrated in the highest noise/health impacted areas around the airport and flight path

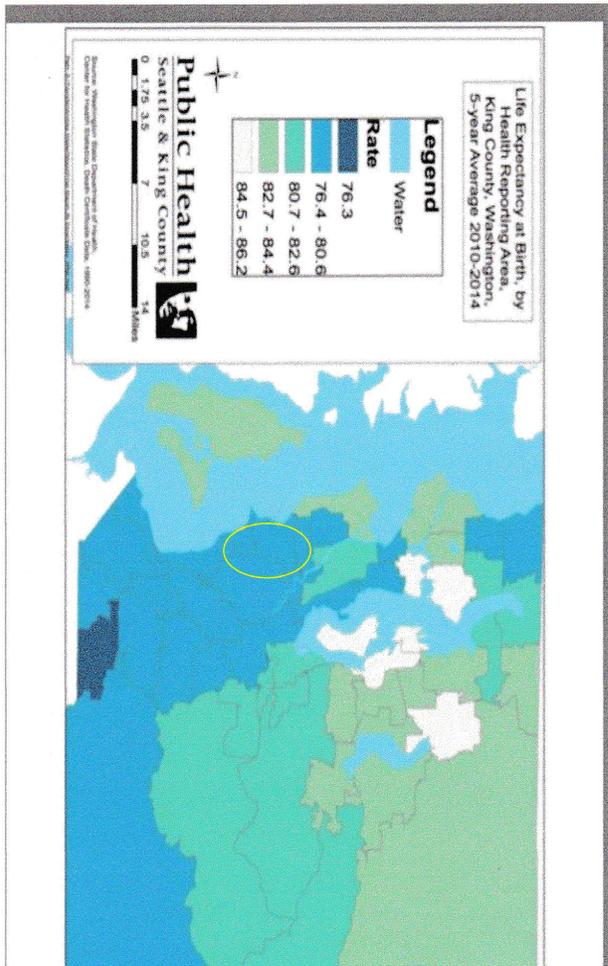
King County Health and Economic Maps: Language barriers



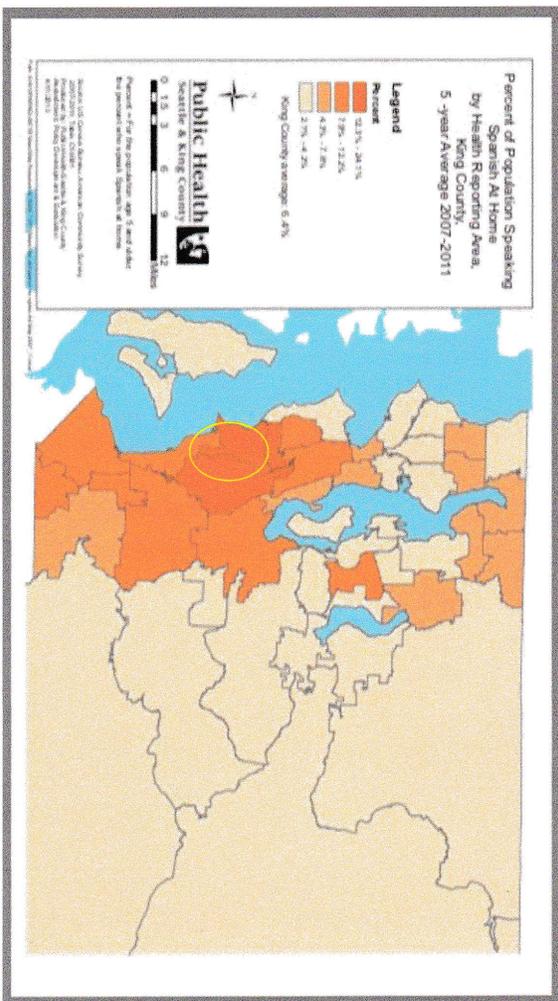
King County Health Maps: Cost Burdened Renters



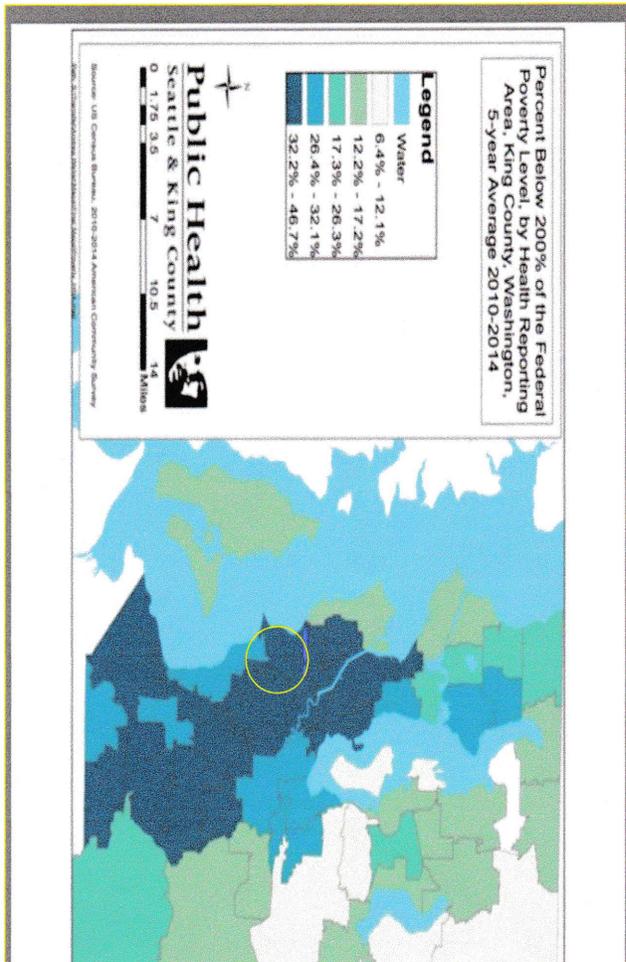
King County Health Maps: Life Expectancy



King County Health Maps: English as a second language



King County Health Maps: Poverty



King County Health Maps:
Low Income

