

Selected Alternatives Evaluation

Introduction

This chapter presents additional more detailed evaluation of selected alternatives to determine applicability for noise reduction at King County International Airport. Using the Evaluation Criteria presented in the Alternatives Matrix, certain alternatives were selected for additional analysis utilizing four additional or “overlaid” criteria; legality, financial feasibility, realistic implementation time, simple to administer and simple to implement.

This conceptual evaluation is presented in the following paragraphs for residential sound attenuation and residential purchase. Facility and operational alternatives are considered in the second section of this Chapter.

Residential Sound Attenuation

This Alternative is to evaluate the feasibility of sound attenuating (insulation) residential and other noise sensitive uses within certain DNL noise contours. The Federal guideline and limit of funding eligibility is normally the 65 DNL contour. However, this Study will also evaluate the feasibility of sound attenuating such structures within the 60 DNL noise contours, as directed by the County Work Plan. The first step in evaluating sound attenuation is to determine which contour set should be used for evaluation, existing, future or mitigated future. Normally land use decisions are based on the future mitigated contour. However, for general decision guidance, the future base case noise contour will be used as it is the largest and represents the greatest number of persons within the contours.

Home Insulation Within KCIA 65 DNL Contour (Standard Program). This represents the standard, Federally eligible sound attenuation program. Based on the future base case noise contour, there are approximately 1,955 homes within the 65 DNL noise contour. At a cost of approximately \$30,000 per home, this would result in approximately \$59 million to sound attenuate the homes in the 65 and greater contour.

Legality. This Alternative is legal, is eligible for Federal funding and has precedence within the Seattle area.

Financial Feasibility. This Alternative is costly but is eligible for Federal funding at 90 percent. Over a five-year period, the cost would be approximately \$12 million, not

counting administrative costs, per year. This could result in Federal funding of approximately \$11 million per year with County funding of approximately \$1 million per year. In addition, Federal funding is not available for upgrading residences to bring them “up to code”, which is normally required by the local jurisdiction prior to sound attenuation. It is FAA policy that each airport is limited to \$5 million per year for residential sound attenuation or purchase, therefore the program will take 10 to 12 years to complete.

Realistic Implementation Time. The time required to fully implement this program would be several years. It takes a year or more to develop the administrative portions of the program, select the contractors and prioritize the structures. The actual sound attenuation work could take three to four years to complete.

Simple to Administer. Once the program is developed and set up, it is relatively simple to administer. It can be administered either with additional airport staff or a consultant hired to administer the program.

Simple to Implement. This type of program requires several contractors, administrative personnel and consultants to implement. Many varied issues will arise throughout the life of the program that will require some sophistication in addressing. The construction techniques themselves are not complicated, program implementation takes time.

Home Insulation Within Combined KCIA and SEA 65 DNL Contours (Standard Program). This represents a departure from the standard, Federally eligible sound attenuation program. Even though the homes are within what is normally considered eligible for Federal funding (the 65 DNL noise contour), the fact that many of the homes are not within the contour for a single airport is not standard. Based on the future base case noise contour, there are approximately 687 homes within the combined 65 DNL noise contour that are not within either the KCIA or SEA only noise contours. At a cost of approximately \$30,000 per home (687 homes), this would result in a cost of approximately \$20.6 million beyond the KCIA only 65 DNL noise and greater contours cost. The combined cost would be approximately \$80 million.

Legality. This Alternative is legal, may be eligible for Federal funding and has precedence within the Seattle area. This issue of “combined contour funding” has never arisen in the Seattle region before, and there may be questions of legality from a Federal funding perspective.

Financial Feasibility. This Alternative is costly but may be eligible for Federal funding at 80 or 90 percent (SEA receives funding at 80 percent and KCIA receives funding at 90 percent). Over a five-year period, the cost would be approximately \$4.1 million, not counting administrative costs, per year. This could result in Federal funding ranging from approximately \$3.3 million to \$3.7 million per year, depending on the funding ratio, with local funding (County, Port of Seattle, local community) ranging from approximately \$400,000 to \$800,000 per year, depending on the funding ratio. As stated above, the probability of Federal funding is undecided and there is the question of “bringing the structure up to code” that would have to be addressed.

Realistic Implementation Time. The time required to fully implement this program would be several years, including time to coordinate with the Port of Seattle and the Federal Aviation Administration. As this is a non-standard program, coordination and

evaluation time could be extensive. It takes a year or more to develop the administrative portions of the program, select the contractors and prioritize the structures. The actual sound attenuation work could take four to five years to complete.

Simple to Administer. This particular program could be difficult to administer, since it would most likely consist of two separate airports working together. However, if just King County administered the program, it would be much easier. It can be administered either with additional airport staff or a consultant hired to administer the program. One possibility could be that KCIA could contract with the Port of Seattle to provide administrative services since they have such services in place and have experience in sound attenuation administration.

Simple to Implement. This type of program would be more difficult to implement due to the several entities involved. Many varied issues will arise throughout the life of the program that will require some sophistication in addressing. The construction techniques themselves are not complicated, program implementation takes time.

Home Insulation Within KCIA 60 DNL Contours (Non-Standard Program). This represents a departure from the standard, Federally eligible sound attenuation program. The homes are within a contour that is normally considered *not* eligible for Federal funding (beyond the 65 DNL noise contour). Based on the future base case noise contour, there are approximately 6,827 homes within the 60 DNL noise contour. At a cost of approximately \$30,000 per home, this would result in a cost of approximately \$204.8 million to sound attenuate homes within the 60 DNL or greater contours.

Legality. This Alternative is legal, although the homes beyond the 65 DNL are not eligible for Federal funding and has no precedence within the Seattle area. The standards for sound attenuation reduction would have to be developed.

Financial Feasibility. This Alternative is costly as it would not be eligible for Federal funding. Over a five-year period, the cost would be approximately \$41 million, not counting administrative costs, per year. This would be the responsibility of the County and/or the local jurisdiction. In addition, there is the question of “bringing the structure up to code” that would have to be addressed.

Realistic Implementation Time. The time required to fully implement this program would be several years. It takes a year or more to develop the administrative portions of the program, select the contractors and prioritize the structures. The actual sound attenuation work could take five to seven years to complete.

Simple to Administer. Once the program is developed and set up, it is relatively simple to administer. It can be administered either with additional airport staff or a consultant hired to administer the program. However, sound attenuation standards would have to be developed and tested to achieve the desired attenuation.

Simple to Implement. This type of program requires several contractors, administrative personnel and consultants to implement. Many varied issues will arise throughout the life of the program that will require some sophistication in addressing. The construction techniques themselves are not complicated, program implementation takes time.

Home Insulation Within Combined KCIA and SEA 60 DNL Contours (Non-Standard Program). This represents a departure from the standard, Federally eligible sound attenuation program. There are two non-standard elements associated with this insulation program; homes are beyond the traditional 65 DNL contour and they are within a combined noise contour that would not be within the contour for either airport if considered independently. Based on the future base case noise contour, there are approximately 1,343 homes within the combined 60 DNL noise contour that are not within either the KCIA or SEA “only” noise contours. At a cost of approximately \$30,000 per home, this would result in a cost of approximately \$40 million beyond the KCIA only 65 DNL noise and greater contours cost.

Legality. This Alternative is legal, would most likely not be eligible for Federal funding for the portion beyond the 65 DNL and has no precedence within the Seattle area. This issue of “combined contour funding” has never arisen in the Seattle region before, and there may be questions of legality from a Federal funding perspective. The standards for sound attenuation would have to be developed.

Financial Feasibility. This Alternative is costly and would not be eligible for Federal funding of those homes beyond the 65 DNL contour. Over a five-year period, the cost would be approximately \$8 million, not counting administrative costs, per year. This would be the responsibility of the County, Port of Seattle or local jurisdictions. In addition, there is the question of “bringing the structure up to code” that would have to be addressed.

Realistic Implementation Time. The time required to fully implement this program would be several years. It takes a year or more to develop the administrative portions of the program, select the contractors and prioritize the structures. The actual sound attenuation work could take six to seven years to complete.

Simple to Administer. This program would be more difficult to administer due to the different entities involved. Once the program is developed and set up, it should be relatively simple to administer. It can be administered either with additional airport staff or a consultant hired to administer the program. One possibility could be that KCIA could contract with the Port of Seattle to provide administrative services since they have such services in place and have experience in sound attenuation administration.

Simple to Implement. This type of program is more difficult to implement due to two entities being involved. This type of program requires several contractors, administrative personnel and consultants to implement. Many varied issues will arise throughout the life of the program that will require some sophistication in addressing. The construction techniques themselves are not complicated, program implementation takes time.

Home Insulation Within Locations with Significant SEL Events (Non-Standard Program). This represents a departure from the standard, Federally eligible sound attenuation program. This would base sound attenuation eligibility on the Sound Exposure Level (SEL) of a critical aircraft, which is not recognized by the FAA. Sound attenuation standards are not developed for residential attenuation based on SEL levels. Based on the 90 SEL contour for the hush-kit DC-9 aircraft, there are approximately

5,000 homes within the contour. At a cost of approximately \$30,000 per home, this would result in a cost of approximately \$150 million.

Legality. This Alternative is legal, would most likely not be eligible for Federal funding for the portion beyond the 65 DNL and has no precedence within the Seattle area. This issue of “SEL contour funding” has never arisen in the Seattle region before, and there may be questions of legality from a Federal funding perspective. The standards for sound attenuation would have to be developed.

Financial Feasibility. This Alternative is costly and would not be eligible for Federal funding of those homes beyond the 65 DNL contour. Over a five-year period, the cost would be approximately \$30 million, not counting administrative costs, per year. This would be the responsibility of the County or local jurisdictions.

Realistic Implementation Time. The time required to fully implement this program would be several years. It takes a year or more to develop the administrative portions of the program, select the contractors and prioritize the structures. The actual sound attenuation work could take seven to ten years to complete.

Simple to Administer. Once the program is developed and set up, it is relatively simple to administer. It can be administered either with additional airport staff or a consultant hired to administer the program.

Simple to Implement. This type of program requires several contractors, administrative personnel and consultants to implement. Many varied issues will arise throughout the life of the program that will require some sophistication in addressing. The construction techniques themselves are not complicated, program implementation takes time.

Residential Purchase

This Alternative is to evaluate the feasibility of purchasing residential uses within certain DNL noise contours. The Federal guidelines limit funding eligibility to residential structures within the 65 DNL contour. In addition, most airports with a residential purchase program limit such purchases to the most highly impacted contours. There are various options to consider when evaluating a residential purchase program. The first is to determine which contour to use to identify eligibility; the 65, 70 or 75 DNL. The next is to determine if the purchase program is voluntary or mandatory. What if not all of the residents want to be purchased, how do you address those situations? How do you determine the actual purchase area boundaries to prevent community deterioration? What about Sales Assistance Program instead of outright purchase?

A Sales Assistance Program is a program where the airport guarantees the fair market value of the residence, but the homeowner sells the residence to a new buyer and the airport never takes title to the home. This way the seller receives fair market value for his/her home. In this transaction, the seller grants an aviation easement to the airport prior to closing the sale. This does not remove the home from the noise contour, but it does let the market dictate the value of the home and allows a resident to purchase the home at a reduced cost knowing that the home is subject to an aviation easement.

These are some of the issues which must be addressed when discussing a residential purchase program. Again, for general decision guidance, the future base case noise contour will be used in this evaluation as it is the largest and represents the greatest number of persons within the contours. The housing costs illustrated in the following analysis do not include relocation costs, closing costs or other administrative cost. They represent recent average sales for homes within close proximity to the airport.

Residential Purchase Within KCIA 65 DNL Contour. This represents the largest, Federally eligible residential purchase program available for the airport. Based on the future base case noise contour, there are approximately 1,955 homes within the 65 DNL noise contour. At a cost of approximately \$180,000 per home, this would result in approximately \$359.1 million to purchase the homes in the 65 and greater contour.

Legality. This Alternative is legal, is eligible for Federal funding although it has little precedence within the Seattle area.

Financial Feasibility. This Alternative is costly but is eligible for Federal funding at 90 percent. Over a five-year period, the cost would be approximately \$72 million, not counting administrative costs, per year. This could result in Federal funding of approximately \$65 million per year with County funding of approximately \$7 million per year. However, FAA policy is that they can only fund up to approximately \$5 million per airport each year, excluding public buildings.

Realistic Implementation Time. The time required to fully implement this program would be several years. It takes a year or more to develop the administrative portions of the program, select the contractors and prioritize the structures. The actual purchasing of the properties could take six to seven years to complete.

Simple to Administer. Once the purchase program is developed and set up, it is relatively simple to administer. It can be administered either with additional airport staff or a consultant hired to administer the program. However, once the property is purchased, the maintenance and upkeep of the properties requires constant supervision and attention, especially during the process of purchasing the homes prior to full purchase of the neighborhoods.

Simple to Implement. This type of program requires several realtors, contractors, administrative personnel and consultants to implement. Many varied issues will arise throughout the life of the program that will require some sophistication in addressing. There are significant Federal guidelines and requirements that must be met, including relocation benefits and appraisal processes.

Residential Purchase Within Combined KCIA and SEA 65 DNL Contour. This represents a potentially Federally eligible residential purchase program which may be available for the airport, although it is not known for certain as to what may be eligible. Based on the combined noise contour, there are approximately 687 additional homes within the combined 65 DNL noise contour that are not within the KCIA 65 DNL noise contour. At a cost of approximately \$180,000 per home, this would result in an additional approximately \$124 million to purchase the homes in the combined 65 DNL noise contour.

Legality. This Alternative is legal, may be eligible for Federal funding although it has little precedence within the Seattle area.

Financial Feasibility. This Alternative is costly and may be eligible for Federal funding at either 80 or 90 percent Federal participation. Over a five-year period, the cost would be an additional approximate \$25 million, not counting administrative costs, per year. This could result in Federal funding eligibility of approximately \$20 to \$22.5 million per year with County, Port of Seattle or local funding of approximately \$3 to \$5 million per year. However, FAA policy is that they can only fund up to approximately \$5 million per airport each year, excluding public buildings.

Realistic Implementation Time. The time required to fully implement this program would be several years. It takes a year or more to develop the administrative portions of the program, select the contractors and prioritize the structures. It would require coordination between the County, the Port of Seattle and the FAA for implementation. The actual purchasing of the properties could take six to seven years to complete.

Simple to Administer. Once the purchase program is developed and set up, it will still be difficult to administer due to the several entities involved. Some properties may be eligible for Federal funding and others may not. In addition, this is not consistent with existing Port of Seattle residential purchase policies and may not be jointly administered or funded by the Port. It can be administered either with additional airport staff or a consultant hired to administer the program. However, once the property is purchased, the maintenance and upkeep of the properties requires constant supervision and attention, especially during the process of purchasing the homes prior to full purchase of the neighborhoods. Again, one possibility could be that KCIA could contract with the Port of Seattle to provide administrative services since they have such services in place and have experience in sound attenuation administration.

Simple to Implement. This type of program requires several realtors, contractors, administrative personnel and consultants to implement. In addition, with implementation will be more difficult because it will require participation by not on the FAA and County, but also the Port of Seattle. Many varied issues will arise throughout the life of the program that will require some sophistication in addressing. There are significant Federal guidelines and requirements that must be met, including relocation benefits and appraisal processes.

Residential Purchase Within KCIA 60 DNL Contours (Non-Standard Program). This represents a departure from the standard, Federally eligible residential purchase program. The homes are within a contour that is normally considered *not* eligible for Federal funding (beyond the 65 DNL noise contour). Based on the future base case noise contour, there are approximately 6,827 homes within the 60 DNL noise contour. At a cost of approximately \$180,000 per home, this would result in a cost of approximately \$1,229 billion to sound purchase homes within the 60 DNL or greater contours.

Legality. This Alternative is legal, although the homes beyond the 65 DNL are not eligible for Federal funding and has no precedence within the Seattle area.

Financial Feasibility. This Alternative is costly as it would not be eligible for Federal funding. Over a five-year period, the cost would be approximately \$246 million, not

counting administrative costs, per year. This would be the responsibility of the County and/or the local jurisdiction. However, those homes within the 65 or greater DNL contour would be eligible for Federal funding which would reduce the overall non-Federal share.

Realistic Implementation Time. The time required to fully implement this program would be many years, most likely decades. It takes a year or more to develop the administrative portions of the program, select the contractors and prioritize the structures. The funds to acquire such properties are extraordinary and not within the budgetary constraints of the Federal government to help fund.

Simple to Administer. Once the program is developed and set up, it is relatively simple to administer. It can be administered either with additional airport staff or a consultant hired to administer the program. However, the purchase, removal and upkeep of the vacant properties would be very difficult to administer.

Simple to Implement. This type of program requires several contractors, administrative personnel and consultants to implement. Many varied issues will arise throughout the life of the program that will require some sophistication in addressing. A major issue confronting implementation would be the removal of such a significant number of structures from the County tax roles and the impact that it may have on the revenue of the County should be considered.

Residential Purchase Within Combined KCIA and SEA 60 DNL Contours (Non-Standard Program). This represents a departure from the standard, Federally eligible residential purchase program. There are two non-standard elements associated with this purchase program; homes are beyond the traditional 65 DNL contour and they are within a combined noise contour that would not be within the contour for either airport if considered independently. Based on the future base case noise contour, there are approximately 1,343 homes within the combined 60 DNL noise contour that are not within either the KCIA or SEA “only” noise contours. At a cost of approximately \$180,000 per home, this would result in a cost of approximately \$241.7 million beyond the KCIA only 65 DNL noise and greater contours cost.

Legality. This Alternative is legal, would most likely not be eligible for Federal funding for the portion beyond the 65 DNL and has no precedence within the Seattle area. This issue of “combined contour funding” has never arisen in the Seattle region before, and there may be questions of legality from a Federal funding perspective. The standards for sound attenuation would have to be developed.

Financial Feasibility. This Alternative is costly and would not be eligible for Federal funding of those homes beyond the 65 DNL contour. Over a five-year period, the cost would be approximately \$48 million, not counting administrative costs, per year. This would be the responsibility of the County, Port of Seattle or local jurisdictions. In addition, this does not include the cost to purchase those homes within the KCIA “only” 60 DNL noise contour.

Realistic Implementation Time. The time required to fully implement this program would be decades. It takes a year or more to develop the administrative portions of the program, select the contractors and prioritize the structures. The number of structures is extraordinary and is without precedence in the Seattle area.

Simple to Administer. This program would be more difficult to administer due to the different entities involved. Once the program is developed and set up, it should be relatively simple to administer. It can be administered either with additional airport staff or a consultant hired to administer the program. However, the purchase, removal and upkeep of the vacant properties would be very difficult to administer. Again, one possibility could be that KCIA could contract with the Port of Seattle to provide administrative services since they have such services in place and have experience in sound attenuation administration.

Simple to Implement. This type of program is more difficult to implement due to two entities being involved. This type of program requires several contractors, administrative personnel and consultants to implement. Many varied issues will arise throughout the life of the program that will require some sophistication in addressing. A major issue confronting implementation would be the removal of such a significant number of structures from the County tax roles and the impact that it may have on the revenue of the County should be considered.

This section presents additional more detailed evaluation of selected operational and facility alternatives to determine applicability for noise reduction at King County International Airport.

Ground Run-up Enclosure

This Alternative is to evaluate the feasibility of constructing a Ground Run-up Enclosure on the airport for aircraft maintenance run-up operations. The GRE does provide significant noise reduction to close-in neighborhoods. The major concerns are two fold: one, is there a significant number of such operations to justify a GRE, both now and in the future; and two, is there sufficient area on the airport to accommodate such a facility without losing use of existing facilities and complying with FAA design standards?

Legality. This Alternative is legal, as long as it does not violate airport design and height requirements, and could be eligible for Federal funding (one at Oakland County Airport, Michigan is being funded with AIP funds).

Financial Feasibility. This Alternative is within reasonable cost parameters to construct, between one and two million dollars, depending upon apron and taxiway improvements needed.

Realistic Implementation Time. The time required to fully implement this program would be approximately two to three years. It will take time to identify and agree on a location, provide plans and specifications, take bids, select a contractor and the construct the facility.

Simple to Administer. This program would be rather easy to administer with existing staff and design consultants. Rules and regulations could be amended to require use of the facility.

Simple to Implement. This type of facility is rather simple to implement, once a location is identified, the facility constructed and rules adopted for its use.

Noise Wall on North End of Airport

This Alternative is to evaluate the feasibility of constructing a noise wall on the north end of the airport to reduce ground generated noise impacts to the residences adjacent to the airport. The noise wall does provide ground generated noise reduction to close-in neighborhoods.

Legality. This Alternative is legal, as long as it does not violate airport design and height requirements, and is eligible for Federal funding.

Financial Feasibility. This Alternative is within reasonable cost parameters to construct, approximately 3-500,000 dollars.

Realistic Implementation Time. The time required to fully implement this program would be approximately one year. It will take time provide plans and specifications, take bids, select a contractor and the construct the facility.

Simple to Administer. This program would be rather easy to administer with existing staff and design consultants.

Simple to Implement. This type of facility is rather simple to implement, just like any other construction project.

Noise and Compliance Monitoring System

This Alternative is to amend the existing noise complaint and monitoring system to be more responsive to citizen concerns and to provide additional information concerning significant loud noise events. This Alternative is tied to an expanded Fly Quiet Program.

Using the capabilities of the noise monitoring system, the process would include the ability to investigate special complaints by determining what the named operation was including the aircraft type, time of occurrence, flight track, altitude, aircraft operator and noise level. This information could be communicated to the person lodging the complaint by means of a basic report. Only unusual occurrences would receive this full analysis treatment. Airport staff would determine which events would be analyzed in this manner.

All complaints would be recorded and quantified quarterly and annually so that there would be a tally by neighborhood, time of day, and period of the year. This tally would be presented to the KCIA Roundtable on a quarterly basis.

Legality. This Alternative is legal, as long as it does not result in a fine or any type of mandatory flight procedure. Many elements are eligible for Federal funding.

Financial Feasibility. This Alternative can be within reasonable cost parameters, depending upon the sophistication of the system desired.

Realistic Implementation Time. The time required to fully implement this program would be approximately one to two years. It will take time to fully develop the program in conjunction with the Fly Quiet Program and may require time to upgrade some equipment.

Simple to Administer. This program would be rather easy to administer with existing staff, although as the system grows, additional staff may be necessary.

Simple to Implement. This type of program can vary in ease of implementation, once a program is decided upon. However, the program can also be rather sophisticated, requiring greater demands for implementation.

Fly Quiet Program

This Alternative is to develop a tracking system where operators at KCIA would be compared according to how well they complied with specific noise abatement procedures at the airport. Among the issues to be evaluated would be:

- Quality (noise level) of cargo operator's fleet
- FBO (Fixed Base Operator) pilot education/information program for itinerant aircraft
- FBO and Airline program for adherence to noise abatement flight tracks for based operators

Fly Quiet would use the information produced from the Noise Monitoring System to create quarterly reports which rank operations in three categories:

1. Cargo Airlines
2. FBO itinerant
3. Based aircraft

Fly Quiet reports would emphasize the positive in that they would reward those operators and/or FBOs which adhere the most consistently to the noise abatement procedures.

Positive accomplishments would be publicized by the airport by means of public information at the Roundtable, in airport publications and through information to elected officials in the City of Seattle and King County.

Legality. This Alternative is legal, as long as it does not result in a fine or any type of mandatory flight procedure.

Financial Feasibility. This Alternative can be within reasonable cost parameters, although it would require staff and/or Consultant time to fully implement. It may also

require additional software upgrades will be required. An annual cost of approximately \$50,000 is anticipated.

Realistic Implementation Time. The time required to fully implement this program would be approximately six months to one year. It will take time create the report format from the Noise Monitoring System software and to define the appropriate numeric ranking system, so that operators are fairly compared.

Simple to Administer. This program would be rather easy to administer with existing staff although it may require some start-up time.

Simple to Implement. This process is rather simple to implement.

Pursuing Flight Paths to Reduce Noise

This Alternative is to alter existing flight paths (tracks) to reduce noise over residential areas. This Alternative was evaluated under several different scenarios, including the use of the Charted Visual Approach and Elliot Bay Departures. Each of these will be addressed separately.

Charted Visual Approach for arrivals to Runway 13R to shift arrivals to the Bay.

Legality. This Alternative is legal, although it requires FAA concurrence and development of the procedure. The Airport cannot implement this on its own.

Financial Feasibility. This Alternative does not result in any significant financial burdens to avoid implementation.

Realistic Implementation Time. This Alternative is in the implementation stage at the present time. The procedure has been developed and is being processed. In addition, it may require the preparation of an environmental document prior to actual use.

Simple to Administer. This Alternative is simple for the airport to administer, as no action is required by the Airport, but it may be an administration issue for the FAA.

Simple to Implement. This Alternative is simple to implement, as it just requires publication once it is developed and does not result in a drastic change in flight tracks.

Greater Use of Elliot Bay Departures.

Legality. This Alternative is legal, although it requires FAA concurrence and development of the procedure. The Airport cannot implement this on its own.

Financial Feasibility. This Alternative does not result in any significant financial burdens to avoid implementation.

Realistic Implementation Time. This Alternative would require additional procedure development and evaluation by the FAA to determine feasibility. It would also most likely require the use of FMS on board the aircraft for more precise guidance.

Simple to Administer. This Alternative is not difficult for the airport to administer as no action is required by the Airport, but it would require actions by FAA and aircraft owners and pilots.

Simple to Implement. This Alternative is not simple to implement, as it requires additional evaluation by the FAA and on board equipment for each aircraft. In addition, it would require publication once it is developed.

Make Policies Promoting Flying Over Non-Residential Areas

This Alternative is to publicize and encourage flying over non-residential areas on a voluntary basis. This is especially helpful for VFR flights.

Legality. This Alternative is legal as long as they are voluntary policies. There is no enforcement mechanism as such, although an accountability program can be developed through a Fly Quiet Program.

Financial Feasibility. This Alternative does not result in any significant financial burdens to avoid implementation.

Realistic Implementation Time. This Alternative can be implemented very quickly, with publication of the policies and specific guidelines taking the longest period of time.

Simple to Administer. This Alternative is simple for the airport to administer and no action is required by the Airport except a policy.

Simple to Implement. This Alternative is simple to implement, as it just requires publication once it is developed, as it does not result in a drastic change in flight tracks.

Increase Minimum Altitude over West Seattle

This Alternative is to increase the altitude over West Seattle for VFR flights approaching the airport.

Legality. This Alternative is legal, although it will be up to the FAA to publish and advise on the minimum altitude on approach.

Financial Feasibility. This Alternative does not result in any significant financial burdens to avoid implementation.

Realistic Implementation Time. This Alternative can be implemented as long as it does not interfere with other airspace issues. It may take some review time by the FAA to evaluate feasibility.

Simple to Administer. This Alternative is simple for the airport to administer, as no action is required by the Airport.

Simple to Implement. This Alternative is simple to implement. It just requires publication once it is developed, as it does not result in a drastic change in flight tracks.

Implement Building Design Standards for Noise Reduction

This Alternative is to develop and implement design standards for building constructed on the airport so that they will aid in noise reduction to close-in communities.

Legality. This Alternative is legal and can be implemented by the airport and County as a unilateral action.

Financial Feasibility. This Alternative should not result in any significant financial burdens to avoid implementation.

Realistic Implementation Time. This Alternative can be implemented very quickly. It is more of a declaration of policy to require new buildings to consider noise reduction/containment in their placement and orientation.

Simple to Administer. This Alternative is simple to administer, although it will require review time by airport staff.

Simple to Implement. This Alternative is simple to implement, as it is a policy declaration for new building construction.

Access Restrictions on Stage 2 Jets

This Alternative represents a restriction on Stage 2 jets, under 75,000 pounds, at the airport.

Legality. This Alternative is legal only after the completion of an approved FAR Part 161 Study. The approval is required concerning the methodology and the parameters, not the restriction itself.

Financial Feasibility. This Alternative requires a significant financial commitment, in the range of \$300,000 to \$1,500,000 in preparing the Part 161 Study and responding to FAA comments. This will most likely be without FAA participation.

Realistic Implementation Time. This Alternative would most likely take a minimum of two to three years to implement.

Simple to Administer. This Alternative can be rather difficult to administer. It would require publication and continued monitoring of aircraft operations by either airport employees or FBO's. If there is a violation of the restriction, a fine of some type would have to be levied.

Simple to Implement. Implementation of this Alternative is not difficult once it is approved, as several airports have such programs in place currently. It will take staff time to monitor and enforce, and could best be enforced when utilizing an improved flight tracking system.

Allow True Stage 3 Only

This Alternative represents a restriction on Stage 2 hush kitted jets, either under 75,000 pounds or over 75,000 pounds. Although there are few hush kitted jets under 75,000 pounds currently, hush kits are being manufactured and certified for use.

Legality. This Alternative is most likely not legal. The Federal government has determined that a hush kitted Stage 2 qualifies as a Stage 3. Therefore, it would be discriminatory to differentiate between hush kitted Stage 2 and manufactured Stage 3. In addition, it would require approval of the restriction by the FAA through a Part 161 Study.

Financial Feasibility. This Alternative requires a significant financial commitment, most likely more than the \$300,000 to \$1,500,000 for a Stage 2 ban, in preparing the Part 161 Study and responding to FAA comments. It would also most likely result in a loss of airport grant funds, and finding of being in non-compliance with grant assurances.

Realistic Implementation Time. This Alternative would most likely take a minimum of two to three years to implement, not including court time.

Simple to Administer. This Alternative is rather simple to administer although it would require publication and continued monitoring of aircraft operations.

Simple to Implement. Implementation of this Alternative is not difficult once it is approved. It will take staff time to monitor and enforce, and could best be enforced when utilizing an improved flight tracking system.

Restrict Certain Types of Aircraft

This Alternative represents a restriction on certain types of aircraft at the airport.

Legality. This Alternative would most likely not be considered legal, as it discriminates between aircraft types or users.

Financial Feasibility. This Alternative requires a significant financial commitment (\$300,000-\$1,500,000) in preparing the Part 161 Study and responding to litigation or administrative actions.

Realistic Implementation Time. This Alternative would most likely never be implemented.

Simple to Administer. This Alternative would be difficult to administer.

Simple to Implement. Implementation of this Alternative would be very difficult, if not impossible to implement.

Complete or Partial Curfew

This Alternative represents a restriction on Stage 2 jets during certain hours.

Legality. This Alternative is legal only after the completion of an approved FAR Part 161 Study. The approval is required concerning the methodology and the parameters, not the restriction itself.

Financial Feasibility. This Alternative requires a significant financial commitment, in the range of approximately \$300,000 to \$1,500,00, in preparing the Part 161 Study and responding to FAA comments.

Realistic Implementation Time. This Alternative would most likely take a minimum of two to three years to implement.

Simple to Administer. This Alternative is rather simple to administer although it would require publication and continued monitoring of aircraft operations.

Simple to Implement. Implementation of this Alternative is not difficult once it is approved, as several airports have such programs in place currently. It will take staff time to monitor and enforce, and could best be enforced when utilizing an improved flight tracking system.

Limiting Run-ups to Certain Hours

This Alternative represents a restriction on the time of day when run-ups can occur at the airport. The airport currently has a restriction that limits such run-ups to daytime hours.

Legality. This Alternative is legal as long as it applies to all operators so as not to be discriminatory.

Financial Feasibility. This Alternative requires little financial commitment by the airport. However, it could result in significant financial burden to operators.

Realistic Implementation Time. This Alternative would most likely take a minimum of six to nine months to implement.

Simple to Administer. This Alternative is rather simple to administer although it would require publication and continued monitoring of aircraft operations.

Simple to Implement. Implementation of this Alternative is more difficult. It can be difficult to monitor and enforce. It will take staff time to monitor and enforce, which may not be the most efficient use of time.

Prohibit Ground Testing at Night

This Alternative represents a continuation of the existing prohibition of engine run-up testing at night. Since this is an existing situation, no additional analysis is required.

Noise Complaint/Citizen Liaison Program

This Alternative represents an update and revisions to the current program in place at the airport. It should be incorporated with a Fly Quiet Program to achieve the best results.

Legality. This Alternative is legal and completely within the purview of the airport to implement.

Financial Feasibility. This Alternative requires some financial commitment by the airport in terms of both staff and equipment. The airport currently has committed staff to this program.

Realistic Implementation Time. This Alternative would most likely take a minimum of six to nine months to implement.

Simple to Administer. This Alternative is not difficult to administer although it would require commitment of staff personnel, which is currently the case.

Simple to Implement. Implementation of this Alternative is not difficult. The major problems are just time and resources.

Land Use Controls

This Alternative represents the implementation of various land use controls to ensure future land use compatibility with the airport.

Legality. This Alternative is legal and completely within the purview of the various jurisdictions to implement.

Financial Feasibility. This Alternative requires little financial commitment as each jurisdiction currently has planning and zoning personnel on staff.

Realistic Implementation Time. This Alternative would most likely take a minimum of nine to twelve months to implement, depending upon the adoption process of each jurisdiction.

Simple to Administer. This Alternative is simple to administer once it is adopted, using existing staff.

Simple to Implement. Implementation of this Alternative is not difficult. All of the jurisdictions have experience in implementing land use controls and procedures in place to expedite such implementation.

Alter the Angle of Climb/Descent

This Alternative represents an effort to reduce noise by altering the angle of climb after departure or the angle of descent prior to arrival.

Legality. This Alternative is legal only if it is voluntary and coordinated with the FAA. The airport cannot mandate where and how aircraft operate.

Financial Feasibility. This Alternative requires little financial commitment by the aircraft users and no significant burden to them.

Realistic Implementation Time. This Alternative would most likely take a minimum of several months to implement, based on FAA agreement to help implement such procedures. However, it may require publication and notification in publications for full implementation.

Simple to Administer. This Alternative is difficult to administer to ensure adherence due to the varied nature of the aircraft, the pilots, airspace considerations and weather conditions. Each aircraft has safety parameters for that specific aircraft which will define acceptable angles of climb or descent. When using the ILS, the glide slope is set at an approximate 3 degree approach angle, which is what most aircraft are designed to utilize.

Simple to Implement. Implementation of this Alternative is could be difficult due to the voluntary nature of the procedure, aircraft operating variations, weather conditions and airspace considerations.

Delay Point of Lowering Flaps and Gear

This Alternative represents an effort to reduce noise by delaying the point where aircraft would lower flaps and gear to somewhere past Magnolia, over the Bay.

Legality. This Alternative is legal only if it is voluntary and coordinated with the FAA. The airport cannot mandate where and how aircraft operate.

Financial Feasibility. This Alternative requires little financial commitment by the aircraft users and no significant burden to them.

Realistic Implementation Time. This Alternative would most likely take a minimum of three to six months to implement, based on FAA agreement to help implement such a

procedure. However, it may require publication and notification in publications for full implementation.

Simple to Administer. This Alternative is difficult to administer to ensure adherence due to the varied nature of the aircraft, the pilots, airspace considerations and weather conditions.

Simple to Implement. Implementation of this Alternative is could be difficult due to the voluntary nature of the procedure, aircraft variations, weather conditions and airspace considerations.

Administrative Actions/Use of Ground Leases/Fees to Influence Operation Types

This Alternative represents an effort to use ground leases/landing fees to influence the types of operations that occur at the airport.

Legality. This Alternative is most likely legal in certain aspects and questionable in others. If leases/landing fees are used to influence noise levels, it can be accomplished only through the Part 161 process.

Financial Feasibility. This Alternative requires some financial commitment by the airport in terms of staffing requirements and time.

Realistic Implementation Time. This Alternative would most likely take a minimum of one to three years to complete the Part 161 process and implement. If lease provisions are involved, it will take even longer due to long term lease provisions.

Simple to Administer. This Alternative is difficult to administer, which is one reason most general aviation airports do not have such landing fee provisions. Lease provisions are easier to administer, except for cases where there are long term leases involved that are not all on the same terms.

Simple to Implement. Implementation of this Alternative is difficult, and would most likely require successful completion of a Part 161 Study.