

## NEIGHBORHOOD IMPACT MATRICES

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The assessment and evaluation of the proposed project's impacts were based on "neighborhoods" as defined by the cities of Burien, Des Moines, Federal Way, Normandy Park, and Tukwila. For the Highline School District, each area served by each elementary, middle and high school were assessed.

Each neighborhood matrix presents environmental, transportation, and socio-economic impacts. Each matrix is divided into the following columns:

- **Measure**      The type of impact being assessed. For example, aircraft noise (DNL and SEL), cultural resources, local streets, and public safety are just a few of the measures being considered.
- **Impact**        The quantifiable effect experienced in each neighborhood. For example, if one-third or more of a neighborhood is within a particular noise contour, the whole neighborhood is considered to be impacted by that contour.
- **Mitigation**    The action necessary to address the specific impact. For example, buying out and redeveloping a neighborhood is one form of mitigation.
- **Cost**            The estimated cost of implementing each specific mitigation action.

## NEIGHBORHOOD ENVIRONMENTAL IMPACTS

MEASURE	IMPACT	MITIGATION	COST
<b>NOISE AND VIBRATION</b>			
<b>DNL</b>	1) 1/3 or more of a neighborhood is in the 65 DNL contour (and higher) 2) 1/3 or more of a neighborhood is in the 60 to 65 DNL contour	1) Buyout and redevelop 2) Easement and insulation	1) \$760,000/acre 2) \$37,500/acre
<b>SEL</b>	Neighborhoods within the 400' topographic line that are also within 5 miles of the airport.	Easement and insulation	\$37,500/acre
<b>Threshold Analysis (Overflight)</b>	Number of minutes per average annual day above 60 dBA	1) Modify flight tracks 2) Easement and insulation	1) \$0 2) (mitigated by "DNL" or "SEL" improvements)
<b>Vibration</b>	Combination of DNL and SEL impacts. (Can be measured by number of minutes per average annual day below a defined frequency.)	Easement and insulation	\$37,500/acre (if not already mitigated by "DNL" or "SEL" improvements)
<b>Traffic Noise (dBA/Leq)</b>	Traffic on high-volume roads (principal and minor arterials)	1) Freeway noise barriers 2) Traffic management improvements on arterials	1) \$300/LF per side 2) \$1.4 million per mile
<b>AIR QUALITY</b>			
<b>Air Emissions (Aircraft)</b>	Regional impact - all neighborhoods impacted	Runway utilization improvements and accelerate introduction of Stage 3 aircraft	\$0
<b>Carbon Monoxide Air Emissions (Vehicles)</b>	Occurs at congested intersections	Intersection improvements and transportation management	\$500,000/intersection plus \$100,000 per city for traffic improvement studies.
<b>Hydro-carbon Air Emissions (Vehicles)</b>	Occurs on high-volume, high speed roads.	TCM (traffic control measures) and vapor recovery	Will be mitigated by "Leq" improvements.
<b>Air Toxics</b>	Neighborhoods located under flight tracks	Accelerate introduction of Stage 3 aircraft and modify flight tracks	\$0

## NEIGHBORHOOD ENVIRONMENTAL IMPACTS (continued)

MEASURE	IMPACT	MITIGATION	COST
<b>AIR QUALITY (continued)</b>			
<b>Fugitive Emissions</b>	Neighborhoods adjacent to north, south and west sides of airport.	Dust control plan	Should be required in contractor's permit.
<b>Point Sources</b>	Neighborhoods adjacent to north, south and west sides of airport.	Install on-airport air pollution control equipment	?
<b>SURFACE WATER QUALITY AND HYDROLOGY</b>			
<b>Runoff Volume</b>	Neighborhoods with a stream, creek or river	1) Stormwater management plan 2) Retention/detention	1) ? 2) ?
<b>Erosion and Sediment</b>	Neighborhoods with a stream, creek or river	1) Stormwater management plan 2) Retention/detention	1) ? 2) ?
<b>Spills</b>	Neighborhoods with a stream, creek or river	1) Operations controls 2) On-site containment	1) \$0 2) ?
<b>GROUND WATER QUALITY AND HYDROLOGY</b>			
<b>Aquifer Recharge</b>	Regional impact - permeable surface for aquifer recharge zone is decreased.	Replace recharge zones and develop stormwater management plan	?
<b>Contamination</b>	Regional impact - potential contamination of aquifer	On-site containment of pollutants	?
<b>WETLANDS</b>			
<b>Wetland Destruction</b>	Removal/destruction of existing wetlands.	Replace wetland within same watershed.	?
<b>FLOODPLAINS</b>			
<b>Encroachment</b>	Neighborhoods with a 100-year floodplain where stormwater runoff increases.	Retention/detention	?
<b>Reduced Flood Storage Capacity</b>	Neighborhoods with a 100-year floodplain where flood storage capacity is decreased.	Retention/detention	?

## NEIGHBORHOOD ENVIRONMENTAL IMPACTS (continued)

MEASURE	IMPACT	MITIGATION	COST
<b>FLOODPLAINS (continued)</b>			
Increased Flow Rates & Volumes	Neighborhoods with a 100-year floodplain where stormwater runoff increases.	Retention/detention	?
<b>AESTHETICS &amp; VISUAL</b>			
Ground Shadow	Neighborhoods adjacent to north, south and west sides of airport.	Remodel existing buildings	(mitigated by "SEL" improvements)
Visibility of Aircraft	Neighborhoods underneath arrival/departure flight tracks.	1) Modify flight tracks 2) Reforestation of affected areas 3) Improve airport landscape plan	1) \$0 2) ? 3) ?
Visibility of Fill	Neighborhoods west of airport and east of the ridgeline.	1) Reforestation of affected areas 2) Improve airport landscape plan	1) ? 2) ?
<b>OTHER ENVIRONMENTAL IMPACTS</b>			
Special Status Species and Habitats	Neighborhoods with EIS-identified habitats.	Locate and preserve species and habitats.	?
Cultural Resources	Neighborhoods with EIS-identified cultural resources.	Locate and preserve resources, or avoid impacts.	?
Coastal Zone	Neighborhoods adjacent to Puget Sound and with creek outfall into Sound.	Control point sources of potential pollutants.	?
DOT Section 4(F) Resources	Neighborhoods with EIS-identified 4(F) resources (parks).	Minimize or avoid impacts, or replace resources.	?



## NEIGHBORHOOD TRANSPORTATION IMPACTS

MEASURE	IMPACT	MITIGATION	COST
<b>CONGESTION</b>			
<b>Level of Service</b>	Neighborhoods with principal arterials which are reduced below LOS "E"	TIP capital improvements to increase LOS to "E".	?
<b>Accidents</b>	Neighborhood with major intersections	Intersection improvements to improve safety.	(mitigated by "Leq" improvements)
<b>School Bus Operations</b>	Impacts all neighborhoods through schedule deterioration.	Rerouting.	?
<b>Transit Operations</b>	Impacts all neighborhoods through schedule deterioration.	Rerouting.	?
<b>Police and Emergency Operations</b>	Impacts all neighborhoods through delayed response times.	Add new equipment and station locations.	?
<b>Parking and Pedestrians</b>	Impacts commercial areas and neighborhood with school zones.	Transportation system management and TIP capital improvements	? (plus some mitigated by "Leq" improvements)
<b>PHYSICAL DAMAGE</b>			
<b>Local Street System</b>	Neighborhoods in which the serviceability index of local principal arterials decreases.	Reconstruction	\$1.4 million per mile
<b>State Street System</b>	Neighborhoods in which the serviceability index of State-jurisdiction roadways decreases.	Reconstruction	\$1.4 million per mile
<b>Bridge Rating</b>	Neighborhoods in which the load rating for bridges on State system and creek crossings decreases load factor.	Bridge replacement	\$1.7 million per mile
<b>Increased Maintenance &amp; Reconstruction</b>	Neighborhoods in which the serviceability index and maintenance cycle for principal roadways decreases.	Increased resurfacing frequency and maintenance.	\$400,000 per mile (5 year life for resurfacing)

## NEIGHBORHOOD TRANSPORTATION IMPACTS (continued)

MEASURE	IMPACT	MITIGATION	COST
<b>CONSTRUCTION IMPACTS</b>			
<b>Truck Haul Routes</b>	Neighborhoods with principal and minor arterials.	Implement truck traffic controls.	\$50,000 per year per location
<b>Conveyor System</b>	Neighborhoods adjacent to Des Moines Creek.	1) Mitigation during operation 2) Restoration of corridor after operation	1) ? 2) ?
<b>Traffic Diversion</b>	Neighborhoods with decreased LOS and traffic volume diversions on principal and minor arterials.	Improve minor arterials prior to diversion.	\$200,000 per mile for minor arterials.
<b>Construction Staging and Phasing</b>	Neighborhoods adjacent to construction site.	Traffic management improvements on arterials	(mitigated by "Leq" improvements)
<b>Work Force Traffic</b>	Additional construction employee traffic on principal arterials.	Traffic management improvements on arterials	(mitigated by "Leq" improvements)
<b>Concurrent Construction Projects</b>	Regional impact - traffic delay on principal arterials if other major projects are underway simultaneously	Transportation system management	Additional 25% of each City's transportation budget for TSM projects.
<b>Traffic Control</b>	Neighborhoods with major intersections near airport	Modify/install traffic signals	(mitigated by "Leq" improvements)
<b>POST-CONSTRUCTION IMPACTS</b>			
<b>Additional Traffic</b>	Increased traffic congestion on neighborhoods with principal arterials.	Additional TIP capital improvements and transportation system management.	\$2.8 million per mile
<b>Increased O &amp; M Costs</b>	Increased operation and maintenance costs for neighborhoods with principal arterials.	Additional TIP capital improvements and transportation system management.	\$400,000 per mile
<b>Master Plan Update</b>	Increased traffic congestion on neighborhoods with principal arterials.	Additional TIP capital improvements and transportation system management.	\$2.8 million per mile (if not already addressed by "additional traffic" mitigation above)

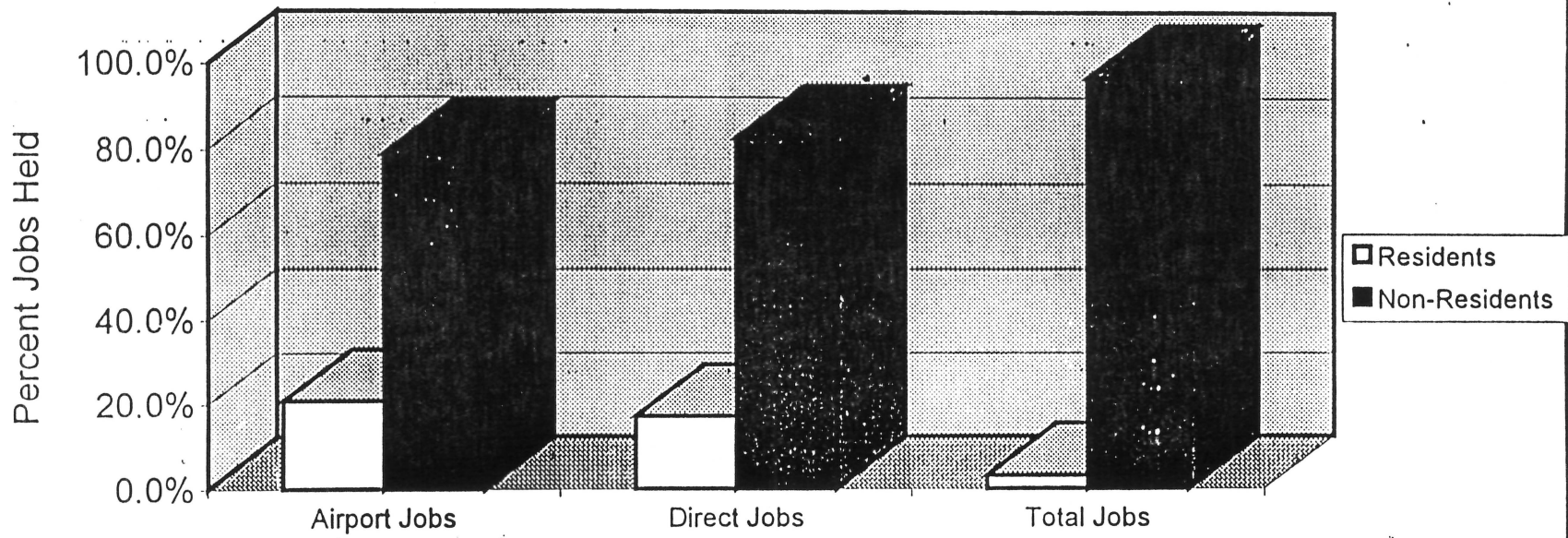
## NEIGHBORHOOD SOCIO-ECONOMIC IMPACTS

MEASURE	IMPACT	MITIGATION	COST
<b>TAX BASE CHANGES</b>			
<b>Depressed Property Values</b>	Compare neighborhoods with comparable home values in SW and NW King County.	<ol style="list-style-type: none"> <li>1) Property tax relief</li> <li>2) Add community-enhancing amenities and facilities</li> </ol>	<ol style="list-style-type: none"> <li>1) ?</li> <li>2) ?</li> </ol>
<b>Reduced School Revenues</b>	Compare neighborhoods with comparable home values in SW and NW King County.	<ol style="list-style-type: none"> <li>1) Property tax relief</li> <li>2) Off-setting payments directly to schools</li> <li>3) Increase commercial/industrial activity</li> </ol>	<ol style="list-style-type: none"> <li>1) ?</li> <li>2) ?</li> <li>3) ?</li> </ol>
<b>Reduced Local Government Revenues</b>	Compare neighborhoods with comparable home values in SW and NW King County.	<ol style="list-style-type: none"> <li>1) Property tax relief</li> <li>2) Off-setting payments directly to communities</li> <li>3) Increase commercial/industrial activity</li> </ol>	<ol style="list-style-type: none"> <li>1) ?</li> <li>2) ?</li> <li>3) ?</li> </ol>
<b>Land Use Changes</b>	Neighborhoods where owner-occupied homes are converted to renter-occupied homes, and where retail is converted to commercial and industrial.	<ol style="list-style-type: none"> <li>1) Home ownership assistance</li> <li>2) Redevelopment/revitalization</li> </ol>	<ol style="list-style-type: none"> <li>1) ?</li> <li>2) ?</li> </ol>
<b>SERVICE LEVEL CHANGES</b>			
<b>Public Safety</b>	Incident rates by population characteristic.	<ol style="list-style-type: none"> <li>1) Increase income, employment, and home ownership</li> <li>2) Off-setting payments to increase public safety facilities</li> </ol>	<ol style="list-style-type: none"> <li>1) ?</li> <li>2) ?</li> </ol>
<b>Community Cultural Services</b>	Service requirements by demographic groups.	<ol style="list-style-type: none"> <li>1) Increase income, employment, and home ownership</li> <li>2) Off-setting payments for additional staff and facilities</li> </ol>	<ol style="list-style-type: none"> <li>1) ?</li> <li>2) ?</li> </ol>
<b>Community Social Services</b>	Service requirements by demographic groups.	<ol style="list-style-type: none"> <li>1) Increase income, employment, and home ownership</li> <li>2) Off-setting payments for additional staff and facilities</li> </ol>	<ol style="list-style-type: none"> <li>1) ?</li> <li>2) ?</li> </ol>
<b>Educational</b>	Neighborhoods with higher student turn-over rates, lowers state test scores, and lower graduation rates.	<ol style="list-style-type: none"> <li>1) Increase income, employment, and home ownership</li> <li>2) Off-setting payments for additional staff and facilities</li> </ol>	<ol style="list-style-type: none"> <li>1) ?</li> <li>2) ?</li> </ol>
<b>Health</b>	Neighborhoods with higher incidence of illness.	Public health assessment	?

**NEIGHBORHOOD SOCIO-ECONOMIC IMPACTS (continued)**

MEASURE	IMPACT	MITIGATION	COST
<b>OTHER</b>			
<b>Environmental Justice</b>	Low-income neighborhoods with higher proportion of environmental impacts.	Monitor, review and remediate as necessary	?
<b>QUALITY OF LIFE</b>			
<b>Quality of Life</b>	Summary index of all benefits and costs of the airport on area neighborhoods.	Monitor, review and remediate as necessary	?

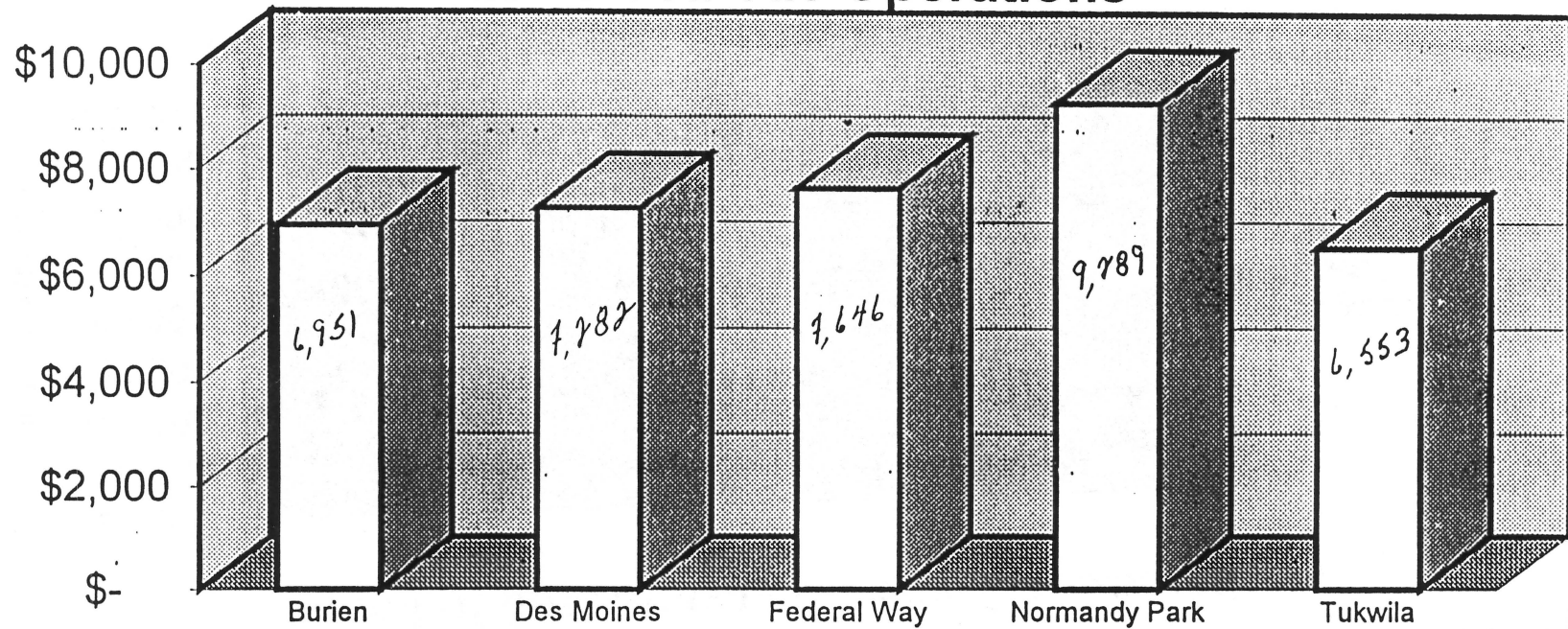
## Percent of Sea-Tac Jobs Held By Residents & Non-Residents



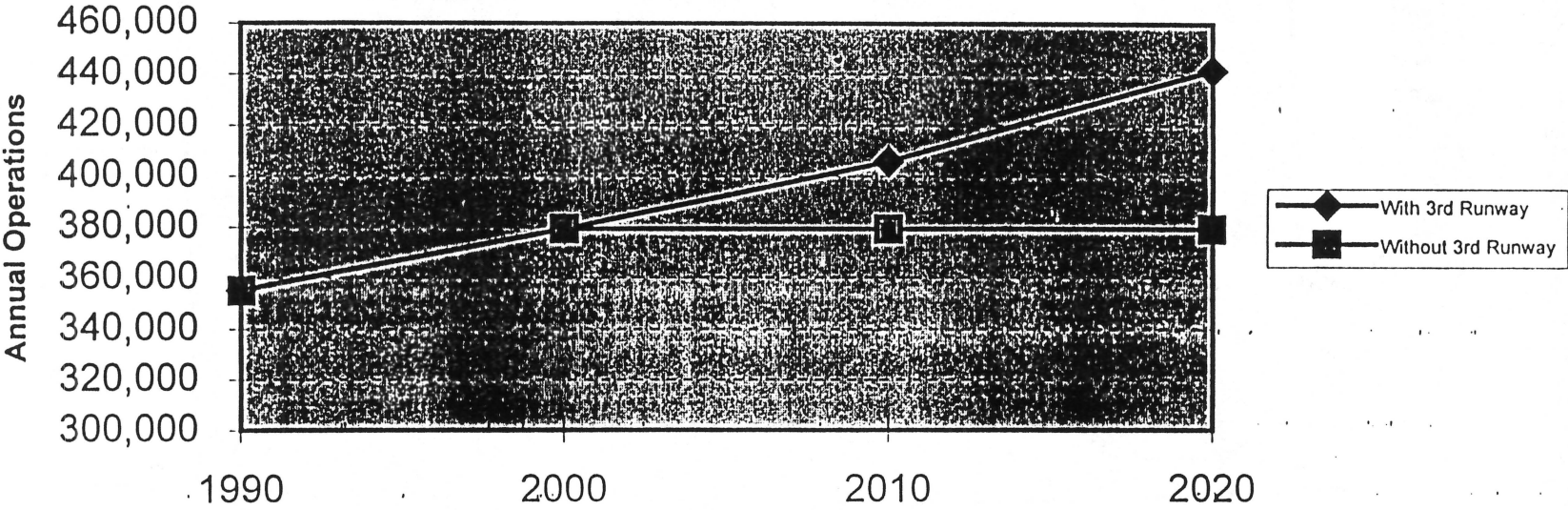


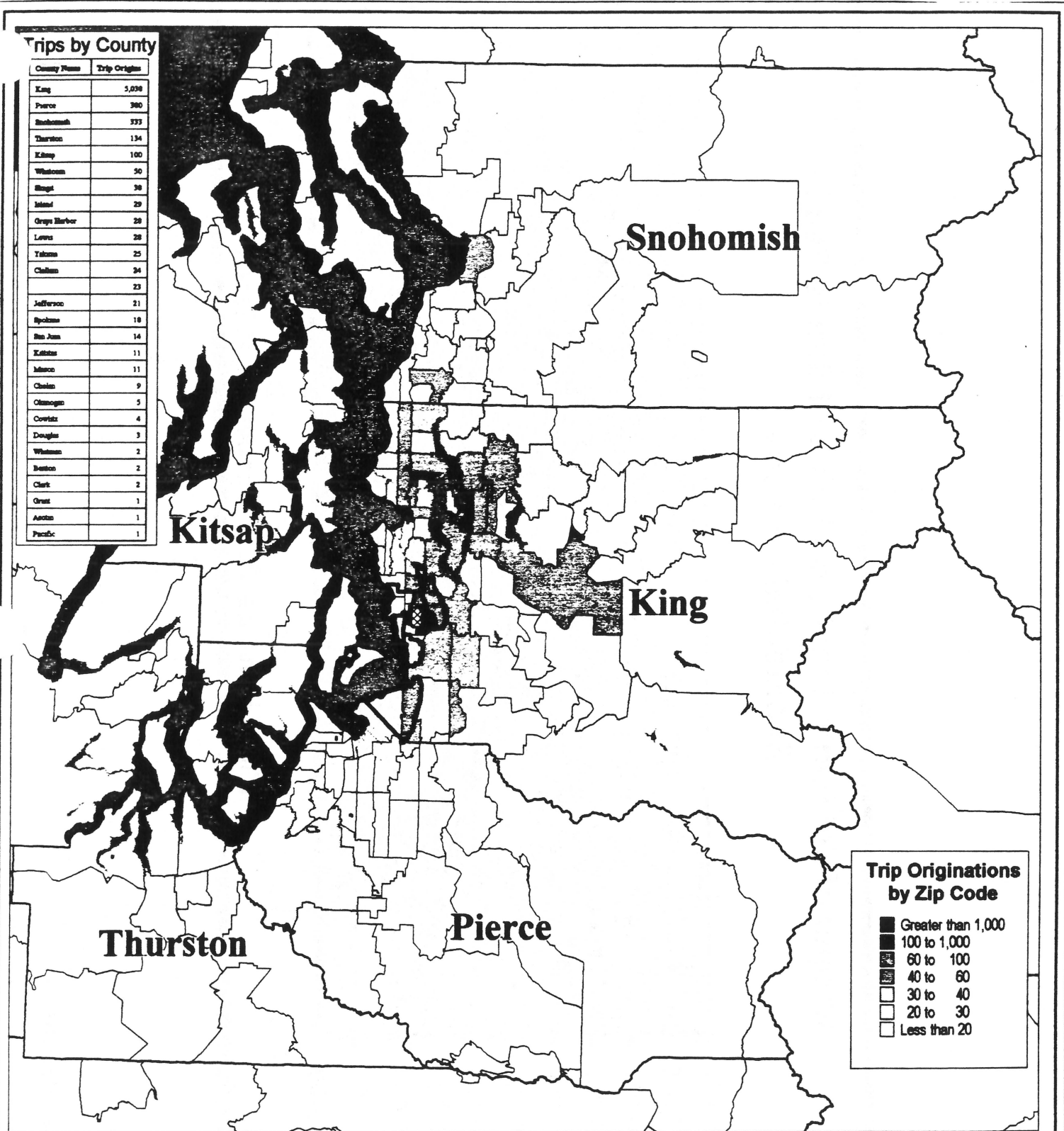


## Loss of Value of Single Family Residence From Future Sea-Tac Operations



# Impact of 3rd Runway on Sea-Tac Operations

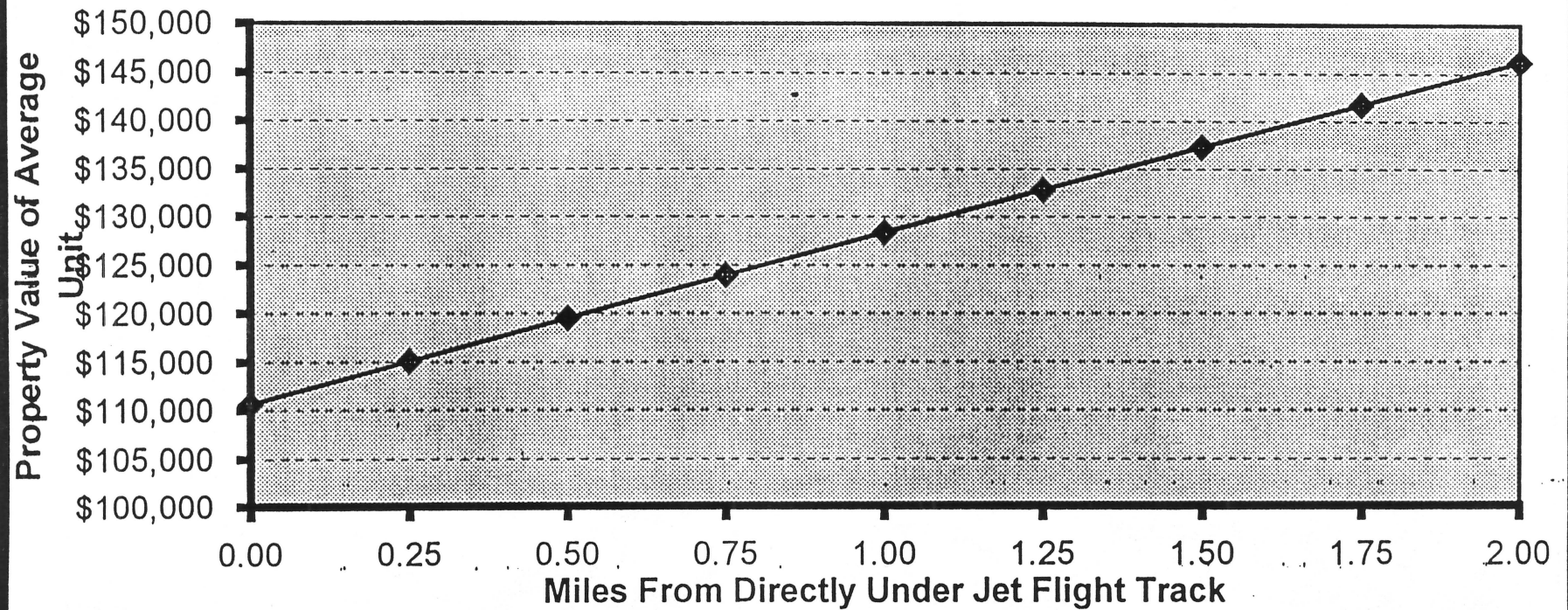




**Thomas/Lane Associates**  
October, 1996.

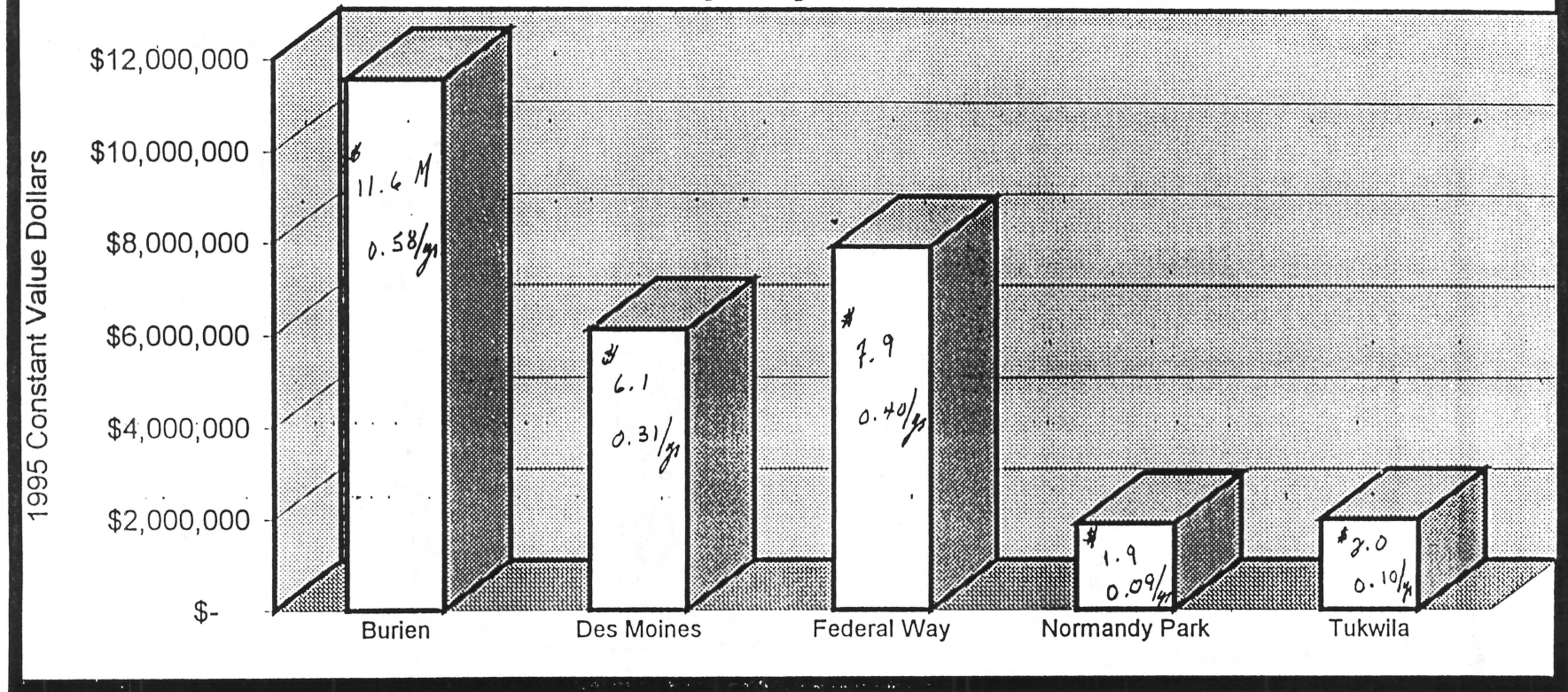
**SEA-TAC IMPACT MITIGATION STUDY**  
for  
**CITIES OF BURIEN, DES MOINES, FEDERAL WAY**  
**NORMANDY PARK, TUKWILA**

## Impact of Jet Flight Tracks on Value of Single Family Residential Property



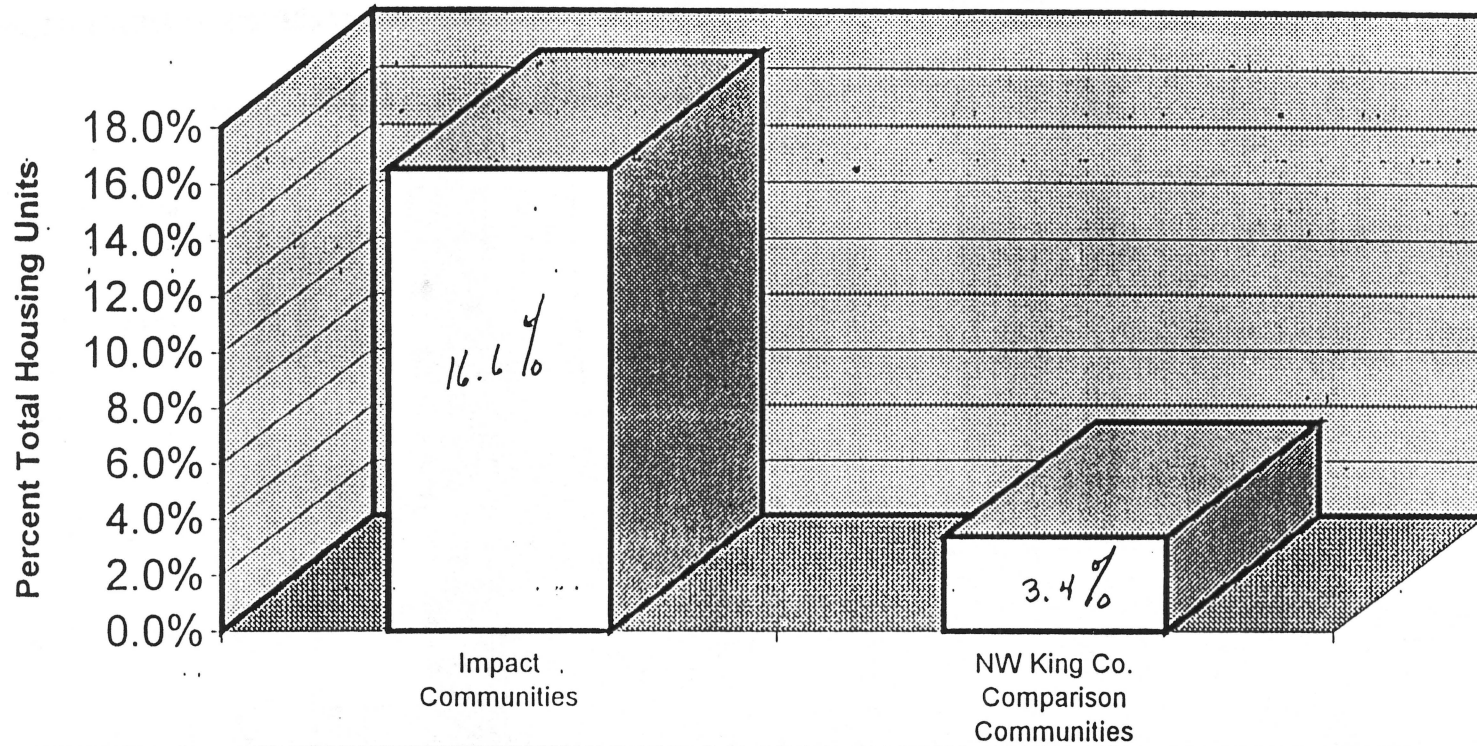


## Total Cumulative Property Tax Losses 2000-2020



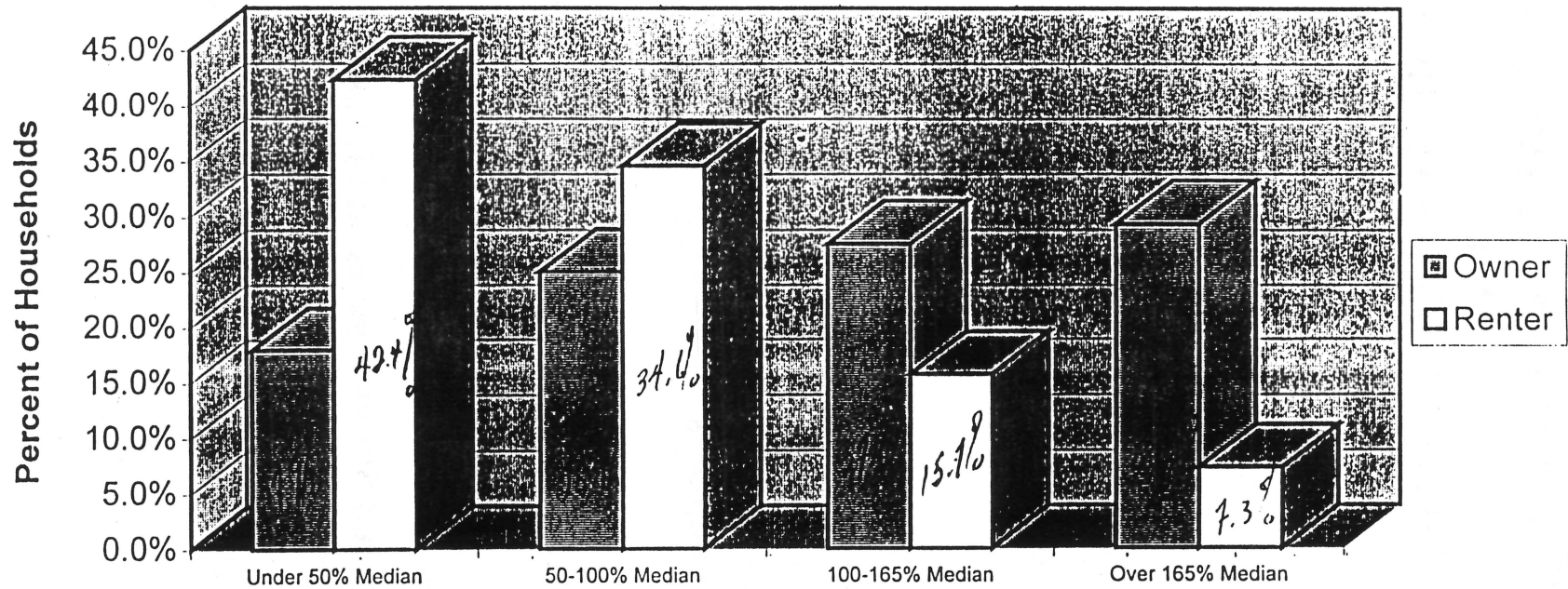
5-CITY TOTAL - \$29.6 M  
1.48%/yr.

## Renter Occupied Single Family Housing Units





## Washington State Income Distribution of Owners & Renters



$\leq 50\%$   
 State Median  


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 43.0%      OWNER  
 17.0%      RENTER

# **ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

- **NOISE AND VIBRATION**
  
- **AIR QUALITY**
  
- **WATER RESOURCES**
  - ⇒ **Surface Water Quality and Hydrology**
  - ⇒ **Ground Water Quality and Hydrology**
  - ⇒ **Wetlands**
  - ⇒ **Floodplains**
  
- **AESTHETICS AND VISUAL**
  
- **OTHER**
  - ⇒ **Special Status Species and Habitat**
  - ⇒ **Cultural Resources**
  - ⇒ **Coastal Zone**
  - ⇒ **Parks and Recreation and Wildlife Areas**

## **CONSTRUCTION MITIGATION MEASURES**

- **COMPLY WITH APPROPRIATE REGULATIONS**
- **RE-EVALUATE CUMULATIVE IMPACTS**
- **PERMITS/APPROVALS INFORMATION**
  - ⇒ **Table**
  - ⇒ **Status**
  - ⇒ **Schedule**
  - ⇒ **Copies Of Draft/Final Permits/Approvals**
- **NOISE AND VIBRATION**
  - ⇒ **Evaluate Interaction Of Aircraft And Construction Noise**
  - ⇒ **Re-evaluate Roadway Noise Analysis for Actual Haul Routes**
  - ⇒ **Evaluate Potential Impacts Of Vibration From Construction Activities**
  - ⇒ **Hours Of Operation: 7:00 A.M. - 9:00 P.M., M-F; 9:00 A.M. - 9:00 P.M., Saturday; No Operations On Sundays Or Holidays**
  - ⇒ **Noise Control Devices On Equipment**
  - ⇒ **Procedures For Handling Noise Complaints**

## **CONSTRUCTION MITIGATION MEASURES (CONT'D)**

- **AIR QUALITY**

- ⇒ **Re-evaluate Construction Vehicle Air Quality Analysis For Actual Haul Routes**
- ⇒ **Obtain PM<sub>10</sub> Data Which Is More Representative Of Puget Sound Region**
- ⇒ **Monitor PM<sub>10</sub> And CO In Vicinity Of Fill Sources, Along Haul Routes And Airport Construction Area**
- ⇒ **Construction Methods To Control Fugitive Emissions**
- ⇒ **Emissions Control Devices On Equipment And Methods Of Operations**
- ⇒ **Covers On Trucks To Control Fugitive Emissions**

## **CONSTRUCTION MITIGATION MEASURES (CONT'D)**

- **WATER QUALITY AND HYDROLOGY**
  - ⇒ **Geotechnical Engineer To Monitor Fill Placement/Compaction And Areas Of Seismically Unstable Soils**
  - ⇒ **Certification That Fill Is Free Of Toxic And Hazardous Materials**
  - ⇒ **Prior To Construction Provide Copies Of:**
    - ◇ **Construction Stormwater Pollution Prevention Plan**
    - ◇ **Spill Prevention, Control And Countermeasures Plan**
    - ◇ **Construction Management Plan**
    - ◇ **Geotechnical Report**
    - ◇ **Reclamation Plan for Fill Sources**
    - ◇ **Earthwork Specifications And Drawings**
    - ◇ **Governor's Water Quality Certificate**
  
- **ESTABLISH PERMANENT LONG TERM SURFACE AND GROUND WATER MONITORING STATIONS**
  
- **PROVIDE MORE DETAIL ON CONSTRUCTION/OPERATION OF STORMWATER MANAGEMENT FACILITIES**

## **CONSTRUCTION MITIGATION MEASURES (CONT'D)**

- **WETLANDS**
  - ⇒ **Additional Justification For Wetlands Mitigation Plan**
  - ⇒ **Approved Wetlands Mitigation Plan**
  - ⇒ **Information On How Wetlands Will Be Protected During Construction**
  
- **FLOODPLAINS**
  - ⇒ **Information on Relationship Between 100 And 500 Year Floodplains**
  - ⇒ **Final Creek Relocation Specifications And Drawings**
  - ⇒ **Final Monitoring Plan For Evaluating Effectiveness Of Creek Relocations**
  
- **AESTHETICS AND VISUAL**
  - ⇒ **Color Photographs Of Existing And Future Conditions From Additional Viewpoints**
  - ⇒ **Landscape Plans For Burrow Source Areas And Third Runway Fill Area**
  - ⇒ **Plant Temporary Vegetation/Cover Crop As Construction Proceeds**
  - ⇒ **Low Maintenance Native Vegetation With Mixture Of Seedlings And Mature Plants**



## **OPERATION MITIGATION MEASURES**

- **COMPLY WITH APPROPRIATE REGULATIONS**
- **RE-EVALUATE CUMULATIVE IMPACTS**
- **NOISE AND VIBRATION**
  - ⇒ **Aircraft Noise Effects**
    - ◇ **Run Version 5.1 Of INM**
    - ◇ **More Detailed Evaluation Of SELs**
    - ◇ **More Detailed Evaluation Of TA**
    - ◇ **Clarify Noise And Air Quality Assumptions For Average Daily And Peak Hour Operations**
    - ◇ **Expand Number Of Noise Monitoring Stations**
    - ◇ **Use Third Runway Only For Landings**
    - ◇ **Participate In FAR Part 150 Reviews**
    - ◇ **Use Hush Houses For Engine Maintenance Activities**
    - ◇ **Continue Aircraft Noise Reduction Abatement Programs**
    - ◇ **Information On Use Of Noise Barriers**
    - ◇ **Status Of Recommendations From 1994 Ground Noise Study Phase II**

## **OPERATION MITIGATION MEASURES (CONT'D)**

- **NOISE AND VIBRATION (CONT'D)**
  - ⇒ **Surface Transportation Noise Effects**
    - ◇ **Reevaluate Surface Transportation Noise Based On Roadway Noise Monitoring Sites And More Accurate Traffic Information**
  
  - ⇒ **Vibration**
    - ◇ **Re-evaluate / Expand To Include Qualitative And Quantitative Information**

## **OPERATION MITIGATION MEASURES (CONT'D)**

- **AIR QUALITY**
  - ⇒ **Additional Air Toxics Studies**
  - ⇒ **Study to See If Can Reduce Emissions Due To Queuing and Taxing Operations**
  - ⇒ **Correct For Inconsistencies in Roadway Intersection Analysis Noted By EPA**
  - ⇒ **Information On Clean Air Act Conformity**
    - ◇ **Draft And Final Plans**
    - ◇ **Copies Of Approvals**
  - ⇒ **Governors Air Quality Certificate**
    - ◇ **Copy of Document Submitted**
    - ◇ **Copy of Certificate**
  - ⇒ **Establish Additional Monitoring Stations**
    - ◇ **Re-evaluate Air Quality Dispersion Analysis After Collect Data For 1 year**
  - ⇒ **Airport Vehicles Shall Comply with Required Emissions Inspections/Maintenance Programs**

## **OPERATION MITIGATION MEASURES (CONT'D)**

- **WATER QUALITY AND HYDROLOGY**
  - ⇒ **Continue Surface And Ground Water Monitoring**
  - ⇒ **Provide Operations Erosion And Sediment Control Plan And Stormwater Pollution Prevention Plan**
  - ⇒ **Upgrade and Modernize Fuel Handling System**
  
- **WETLANDS**
  - ⇒ **Wetlands Monitoring Program**
  - ⇒ **Yearly Reports On Program**
  
- **FLOODPLAINS**
  - ⇒ **Floodplain Monitoring Plan/Yearly Reports On Monitoring Program**
  - ⇒ **Evidence No Reduction Of 100-Year Floodplain Or Base Flood Storage Volume/Capacity**
  
- **AESTHETICS AND VISUAL**
  - ⇒ **Landscape Maintenance Plan**

# **TRAFFIC IMPACTS AND MITIGATION MEASURES**

- **IMPACTS**

- ⇒ **Impact Assessment Factors**
- ⇒ **Roadway Network**
- ⇒ **Type of Improvements**
- ⇒ **Cost Summary**

- **MITIGATION**

- ⇒ **Current**
- ⇒ **During Construction**
- ⇒ **Post Construction**

## TRAFFIC IMPACTS

- **IMPACT ASSESSMENT FACTORS**

- ⇒ **Congestion**

- ◇ **Level Of Service**
- ◇ **Accidents**
- ◇ **School Bus Operations**
- ◇ **Transit Operations**
- ◇ **EMS, Police, Fire Operations**
- ◇ **Parking/Pedestrians**

- ⇒ **Physical Damage**

- ◇ **Local Street System**
- ◇ **State System**
- ◇ **Bridge Ratings / Pavt Condition**
- ◇ **Maintenance**
- ◇ **Reconstruction**

- ⇒ **Construction Impacts**

- ◇ **Truck Haul Routes**
- ◇ **Barge/Rail/Conveyor**
- ◇ **Diversion Routes**
- ◇ **Construction Staging**
- ◇ **Work Force**
- ◇ **Concurrent Construction**
- ◇ **Traffic Control**

- ⇒ **Post Construction Impacts**

- ◇ **Additional Traffic**
- ◇ **O & M**
- ◇ **Master Plan Implementation**



## ROADWAY NETWORK

- **STATE SYSTEM**
  - ⇒ **Expressways** **31 miles**
  
- **LOCAL SYSTEM**
  - ⇒ **Principal Arterials**
    - ◇ **Burien** **6 miles**
    - ◇ **Des Moines** **9 miles**
    - ◇ **Federal Way** **19 miles**
    - ◇ **Normandy Park** **3 miles**
    - ◇ **Tukwila** **9 miles**
  
  - ⇒ **Minor Arterials**
    - ◇ **Burien** **9 miles**
    - ◇ **Des Moines** **7 miles**
    - ◇ **Federal Way** **21 miles**
    - ◇ **Normandy Park** **7 miles**
    - ◇ **Tukwila** **11 miles**
  
  - ⇒ **Major Intersections**
    - ◇ **Burien** **10**
    - ◇ **Des Moines** **9**
    - ◇ **Federal Way** **20**
    - ◇ **Normandy Park** **5**
    - ◇ **Tukwila** **10**

## **TYPE OF IMPROVEMENTS**

- **CONGESTION**

- ⇒ **Minor TSM Type - Signals, Turn Lanes, Etc.**
- ⇒ **No Capacity Increases**
- ⇒ **Corridor Approach**

- **PHYSICAL DAMAGE**

- ⇒ **Bridges / Roadways**
- ⇒ **Resurfacing**
- ⇒ **Reconstruction**
- ⇒ **Operational vs. Capacity**
- ⇒ **Maintenance vs. Capital**

## UNIT COSTS

- **SIGNAL INTERCONNECT**                      **200K Per Mile**
  
- **SIGNALS & TURN LANES**                      **500K Per Mile**
  
- **CORRIDOR IMPROVEMENTS**                      **1,400K Per Mile**
  
- **BRIDGES**
  - ⇒ **Decks**                                      **500K**
  - ⇒ **Rehabs**                                      **600K**
  - ⇒ **Replacements**                              **1,800K**
  - ⇒ **Seismic Retrofits**                              **1,000K**
  
- **RESURFACING**                                      **400K Per Mile**
  
- **RECONSTRUCTION**                                      **1,300K Per Mile**

**IMPROVEMENT COST SUMMARY**

- **Burien** \$ 91 Million
- **Des Moines** \$ 61 Million
- **Federal Way** \$108 Million
- **Normandy Park** \$ 42 Million
- **Tukwila** \$148 Million

**TOTAL** \$450 Million

## MITIGATION PLAN

- **CONSTRUCTION IMPACTS**

- ⇒ **Fill Material Haul Study**

- ◇ **Trucks**
- ◇ **Barge / Conveyor**
- ◇ **Rail / Conveyor**

- ⇒ **TRUCK SYSTEM**

- ◇ **Trucks Must Remain On Expressways**
- ◇ **Direct Access Connection to Site**
- ◇ **Diversion Model**
- ◇ **Arterial Improvements**
- ◇ **Pavement Condition Survey**
- ◇ **Bridge Ratings**
- ◇ **Incident Management Plan**
  - \* **Accidents**
  - \* **Spills**
  - \* **ITS Based**
- ◇ **Operational Restrictions**
  - \* **Truck Climbing Lanes**
  - \* **Rt. Lane Only**
  - \* **Time of Day**
  - \* **Weight/Length**

## MITIGATION PLAN (CONT'D)

- ◇ **Permitting / Fines**
- ◇ **Monitoring**
  - \* **Weight In Motion**
  - \* **Bridge Deck Instrumentation**
- **BARGE/RAIL/CONVEYOR SYSTEMS**
  - ⇒ **Noise, Visual, Safety**
  - ⇒ **Environmental Impacts**
  - ⇒ **Cut and Cover**
  - ⇒ **Permitting/Fines**
  - ⇒ **Monitoring**
  - ⇒ **Restoration**

# MITIGATION PLAN

- **POST CONSTRUCTION IMPACTS**

- ⇒ **Additional Traffic**
  - ◇ **Monitoring LOS**
  - ◇ **TSM Approach**
  
- ⇒ **Operations**
  - ◇ **ITS Implementation**
  
- ⇒ **Maintenance**
  - ◇ **Agreements**

# MITIGATION PLAN

- **CURRENT IMPACTS**
  - ⇒ **Area Wide Traffic Study**
    - ◇ **Impacted Cities**
    - ◇ **Arterial Network**
  
  - ⇒ **Cost Allocation Model**
    - ◇ **O-D Study**
    - ◇ **Select Link / Screen Line**