Testimony to the Aviation Subcommittee Hearing

on the third runway at Sea-Tac Airport

Des Moines Field House

March 18, 1996

by Dr. Lynn O. Michaelis

First, I must make perfectly clear that the comments contained in the testimony are my personal views and in no way reflect the opinion or position of my employer, the Weyerhaeuser Company. I am a professional economist that happens to have been adversely affected by the expansion of Sea-Tac airport and have actively followed the the third runway proposal. I am also a frequent flier and recognize the importance of a well run airport to the overall success of any regional economy.

Second, because of the time limitation of the testimony I have chosen to restrict my testimony to a few crucial issues. I will focus on whether the economics of the third runway are sound and whether federal funding is required. I believe that Federal funding is merely a way to avoid resolving the issue correctly--at the local level. The Port of Seattle has created an operations demand projection that is correct only if you use their current pricing scheme, which I feel is inappropriate for allocating a scarce resource--operating slots.

Finally, I feel that the overall subsidization of the airline industry is forcing some individuals to pay a disproportionate share of the cost of airport operations. Government generally plays the role of correcting implicit subsidies that involve high uncompensated costs, such as air pollution, noise pollution or water pollution. For some reason, the airline industry has been immune from the corrective action imposed on other private production processes that pollute.

The estimated shortage is based on faulty pricing scheme

The port of Seattle has created a scenario that scares local businessmen into believing that airport service will deteriorate dramatically in the next ten years if the third runway is not built. Because of a series of questionable assumptions, they estimate how many jobs will be lost, the extent of flight delays, and the flight "needs" of the Seattle area.

First, consider the estimated flight needs of the Seattle area. The pricing scheme employed by the Port (I assume a similar scheme is used at other airports as well since the FAA is involved) **will not determine if there is in fact a shortage**. The Port has gone to great lengths in defining the capacity of the airport and in showing that based on optimistic demand growth we will be out of capacity by the year 2000.. **The Port however fails to address the crucial issue that is creating the "shortage", the pricing mechanics at the airport. The airport prices landings on a per pound basis-a system I can only believe was devised in a socialist country. All operations are of equal value, whether they occur at 8 a.m. or 11 p.m., whether there are 8 passengers or 300 passengers.**

Under current pricing schemes there is no procedure for allocating space based on time of day or for more efficient operations to bid for landing space as in the open market. This approach is only possible in a government operation where costs are heavily subsidized. BPA estimated an energy shortage for the Northwest that led to the WPPS fiasco. Low prices of energy were used to forecast shortages and immanent doom for the Northwest unless we built a nuclear power system. Those projections also failed to take into account a variety of pricing schemes that would have dealt with the problem more efficiently, such as peak hour pricing. As it turned out, the plants were not needed.

There is a strong similarity to the third runway "crisis". Most of the growth at Sea-Tac has been in commuter traffic. Because of the extremely low cost of operations (about $80 for a round trip-takeoff and landing per plane), a small plane can take a time slot from a large international flight, for instance. **The pricing scheme encourages small inefficient plane operation. To demonstrate this fact, United Express and Horizon accounted for 35% of passenger operations in 1990, but only 8.7% of the passengers.** (More recent data was not available, but would surely confirm the trend.) In fact the average operation of a United Express carried less than 10 passengers in that year, while a Horizon operation carried about 12 people. Further, the pricing scheme encourages inefficient operations just to hold an operating time slot.

Federal money allows Port to duck local scrutiny of the project

Suppose there really is an impending shortage, since the Port apparently can not limit operations and eventually will have the airport so congested delays will be disastrous. (The absurdity of this assertion also needs to be scrutinized.) Also, let us assume they are correct that immense job losses will result if the runway is not built. (They conveniently forget to include revenue lost to the community since people fly out and spend their money somewhere else as well. Net benefits are lower than estimated.) **If all that is correct, then the local community should pass a bond levy for $500 million to build the runway**. They recently voted to build a baseball stadium that could not be nearly as important to the long term economic health of the region as another runway.

But this could be a problem. Right now the Port can promise the majority of citizens of the Puget Sound that they will receive better and more efficient airport operations at no cost to them. That is only true if money comes from Federal coffers. But it is just this approach that is creating the crisis at the Federal level**. Why should we use Federal money for a clearly local issue.** This allows projects that could not possibly make sense if people had to pay for them to get done. The Port can duck just how weak the economics of the third runway are. If the issue had to be debated publicly and people recognized had to vote a tax increase to pay for it, the outcome might not be favorable.

Consider the Economics of the Third Runway--on a narrow basis does not make sense

At the capital cost of $500 million, the revenue being generated would not generate a market return. If the third runway is being built to enable 100,000 commuter aircraft which carry only 1 million passengers to continue operation at Sea-Tac, then we are spending society's capital on a project that will generate less than $4 million in revenue, or less than a 1% return on capital. Since the runway requires operating expenses, the return would be far less than 1%. At a time that our society is trying to find solutions to our deficit and other social needs, such as better schools, diverting money to a project that can not even pay minimum rates of return is a serious issue.

At a time that the Federal Government is running huge deficits, it is also imperative, that we truly decide what is socially required**. Using $500 million of America's scarce savings on a project that can not even generate 1% return on investment is clearly not in societies near term interest.** But more important, building an ever bigger airport next to the heart of your city, probably is not even desirable in the longer term.

Now Consider the full social cost of the third runway-a really bad deal

The real debate of the third runway should involve not only if the local citizens are willing to pay for it, but if those that benefit from the airport operation are willing to compensate those who bear the cost. Airport operations are noisy and adversely affect those that live in the noise shadow. This is not an academic medical statement, but a very real personal experience. The night time operations drove us from a house that we lived in for over 20 years. It was a very nice quiet neighborhood when we moved in. Now it is difficult to sit outside on a summer evening or to get a complete nights rest.

So I would propose that any vote at the local level or even the additional runway should include a scheme to compensate individuals and local governments for the losses that will result from the additional operations. A study needs to be done to determine the exact cost. Declining property values have not even been considered. The Port of Seattle has been willing to purchase properties required for expansion, but does not compensate others that are adversely affected. I believe a careful assessment of adverse effects on home values in the South End in the Noise Shadow needs to be done. Data will show there has already been significant erosion in **relative values** as a consequence of the airport growth. With values of houses about $800,000 to $2,000,000 per acre, given home prices in some areas, I believe a 10% loss in relative appreciation over the next ten years **will cost homeowners in the South End at least $800,000,000 dollars in opportunity cost**.(This has to be refined. I assumed 21.5 sq. miles were adversely affect, which could be too small.) For some areas the likely decline could be significantly more than 10%.

An estimate of insulation and school construction costs have to be developed as well. Part of the final approval needs a more complete compensation scheme for affected individuals and communities. Highline School district has already submitted its estimates of costs associated with insulating existing schools. They have also estimated the higher costs required for newer schools to make them compatible with aircraft noise. Other school districts need to be solicited for their input and potential costs.

This current pricing scheme does not penalize for night time flights. These operations create extremely high costs for residents around an airport. If FAA restricts such pricing, then the rule needs to be changed. Heathrow airport prices night time flights at a very high level. Result: very few operations. Under the current system the Port is not required to compensate individuals that experience sleep loss or health loss as a result of night time operations. They merely see an empty runway going to waste. An operation at night may even be cheaper even though the social cost is much higher.

LOCAL FUNDING: The only way to arrive at the correct decision on the third runway

First, use ONLY local money or airport revenue to build the runway. The money should be raised via a local bond issue. If it is truly needed for local growth, then Seattle will pay for it.

Second, compensate the people that live in the noise shadow of the airport. Since other residents benefit from the additional operations, they should be willing to compensate those that will be adversely affected. It is unfair to keeping taxing the residents of the South End via an implicit noise tax to subsidize the rest of the county. Use the analysis on property value loss to determine how much to compensate South End residents for noise.

A GREAT IDEA: For instance, eliminate all property taxes for houses within the 80 ldn band and lower rates for other adversely affected areas proportional to operation impact. This reduction in taxes would be picked up by those other local areas that believe the airport is essential. If so, people in King Co. might be voting on much more than a mere $500 million bond issue, but a fundamental shift in tax burden.

Also, Generate a set of demand scenarios that vary with price

Estimate demand for take-off and landings at various price levels. Also, implement a peak hour pricing system. If these methods are used, the shortage will not be as critical and will allow time to consider other alternatives with more complete information. For instance, ask how many commuter operations there would be at $500 per landing or at $1000 per landing or even, $3-4000, which would be closer to what it would take to cover the interest cost on those marginal flights.

Long term forecasts are risky at best. To reflect the uncertainty of long term forecasts, a number of scenarios need to be developed considering the a range of assumptions, such as:

- Slower U.S. economic growth in the Decades ahead
- New technologies that will reduce the need for business travel
- Demographic trends that could reduce air travel
- Changes in consumer preference
- Slower growth in the Northwest than in last two decades

CONCLUDING COMMENTS:

Because there is so much at stake for the long term economic health of Seattle and the South King County area, the economic data has to be fundamentally reworked. It has to be developed to include all costs, direct and indirect. The short term impacts and benefits have to be balanced with the longer term benefits. **The airport has to internalize the cost of the pollution it is generating just like the rest of the manufacturing businesses.**

Only when this is done, will we know the true demand for the product. Just like when a sawmill was free to burn its waste, neighbors bore the cost. Environmental regulation made us stop and find a way of disposing of the waste differently. In a similar vein, the airport takes as a free good, its right to generate flight operations and the associated noise pollution. **The cost associated with those operations have been shifted to the neighboring residents and communities. This has resulted in the price being set too low for airplane operations and has created excess demand.**

Use of Federal money distorts the decision process. If the need is truly there, then either local people will pay for it or the airlines will be happy to pay higher fees to reduce delays. Passengers will be willing to pay higher ticket prices knowing flight operations will be more dependable. The incorrect use of Federal money is encouraged when it is viewed as a free resource that is easy to get and not have to meet standard market tests for rate of return.

If local communities need a project, especially prosperous communities like Seattle, then the community should pay for it. Also, we need to insure that those parts of a community that benefit from a project that creates large external costs are willing to compensate those that are adversely affected. It is just this type of decision and payment process the Port apparently hopes to avoid.

TESTIMONY OF DR. STEPHEN HOCKADAY BEFORE THE SUBCOMMITTEE ON AVIATION OF THE HOUSE OF REPRESENTATIVES COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

March 18, 1996

INTRODUCTION AND SUMMARY

My name is Stephen Hockaday. I am a Professor of Civil and Environmental Engineering at California Polytechnic State University. I received my Ph.D. in Air Transportation from the University of California, Berkeley, with a dissertation on the separation of landing aircraft in instrument weather conditions. I have been active in airport planning and air traffic control for twenty five years. I am a registered professional civil engineer, environmental engineer, and traffic engineer.

I believe that a third air carrier runway at Seattle-Tacoma International Airport ("Sea-Tac") is not a sensible part of the solution to the Puget Sound region's airport capacity needs, and in fact is harmful to the development of a good long-term solution. This belief derives from the following facts:

* The need for a new runway at Sea-Tac airport has been overstated significantly.

* The proposed third runway would have major operational problems which would constrain its effectiveness.

* The proposed third runway would be used only rarely.

* Approval of a third runway would undermine the search for a good long-term solution to regional air transportation capacity needs.

The Port of Seattle is proposing to spend a half billion dollars to construct a third dependent runway at Sea-Tac which it claims it will use approximately 15 percent of the time. When the extent of capacity-limiting weather conditions is accurately calculated and the benefits of existing technology are considered, it appears that there is no need for a third runway at Sea-Tac. Moreover, development of a third runway would undermine the search for a good solution to long-term regional needs for additional air transportation capacity. The search for a such a solution must give proper consideration to the full range of alternatives available (including other alternatives for development of Sea-Tac, use of existing regional airports, development of a small new regional airport, use of other modes of transportation, and system management). The use of scarce national and local resources on a poor short-term fix will harm the region and hurt the development of a good aviation system to serve the state and region in the twenty-first century.

I. THE CONSTRUCTION OF A THIRD RUNWAY AT SEA-TAC IS AN ILL-CONCEIVED AND COSTLY PROJECT

A. The Port Has Failed to Demonstrate The Level of Demand That Requires The Construction of a Third Runway

The Port of Seattle, supported by the FAA, is proposing to construct a third, dependent runway at Sea-Tac. The runway would be located 2,500 feet west of the most distant existing runway. The Port estimates that the runway would cost nearly a half billion dollars,[1] which would make it the most expensive runway ever built in the United States.[2]

The Port states that a third runway would be used infrequently: only 12.1 percent of the aircraft arriving to the south and 3.3 percent of the aircraft arriving to the north would use the third runway,[3] for a total use of 15.4 percent. The runway would *not* be used by 85 percent of aircraft operations at Sea-Tac, because pilots would, to the extent possible, avoid using the third runway with its long taxi times and required crossings of two active runways. A closer examination of the Port's assumptions reveals that the proposed new runway would be used for even *less* than 15.4 percent of aircraft operations.

The Port has stated that "poor weather" conditions occur at Sea-Tac 44 percent of the time;[4] that such conditions presently cause significant delays to arriving aircraft;[5] and that projected future growth in the number of aircraft operations and enplaned passengers will cause delays to increase beyond all reasonable bounds.[6]

The Port's calculations of future capacity and projected delays at Sea-Tac in its present configuration are based upon its own definition of "poor weather" conditions which does not match the FAA's definition of capacity limiting weather conditions.[7] Visual flight rules ("VFR") conditions near an airport are defined by FAA to occur when the cloud ceiling is 1,000 feet or more and the visibility is 3 miles. Instrument flight rules ("IFR") conditions

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[1] See U. S. Dep't of Transp., Fed. Aviation Admin. and Port of Seattle, Final Environmental Impact Statement for Proposed Master Plan Update Development Actions at Seattle-Tacoma International Airport ("FEIS") at II-43 (Feb. 1996).

[2] See Fed. Aviation Admin., Aviation Capacity Enhancement Plan, app. D (Nov. 1994).

[3] See FEIS at C-48, Table C-20.

[4] Id. at I-13.

[5] Id. at I-15 to I-17.

[6] Id. at I-16 and Tables I-4, I-5.

[7] See P & D Aviation, Airport Master Plan Update For Seattle-Tacoma International Airport, Technical Report No. 4 ("Technical Rep't No. 4") at 2-13, 2-15 (Oct. 1994).

occur when the cloud ceiling is less than 1,000 feet and/or the visibility is less than 3 miles.[8/] The Port misuses the term IFR by applying it to weather conditions with cloud ceilings of less than 2,500 feet.[9/]

Since the purpose of a third runway is to provide additional arrival capacity in poor weather conditions, the question arises: *How much of the time does poor weather occur*?

The Port asserts that "poor weather" conditions occur 44 percent of the time. According to the Port's Master Plan Technical Report, however, IFR conditions occur only 9.4 percent of the year.[10/] This 9.4 percent figure also overestimates the occurrence of IFR conditions, because it is based on 10 summers and 11 winters.[11/] When this bias is removed, IFR conditions are found to occur 7.9 percent of the year.[12/] In peak demand periods, poor weather occurs as little as 3 percent of the time. As a result, delays to aircraft at Sea-Tac are less than those shown in the FEIS.

B. The Port Did not Take Advantage of an LDA Approach to Arrive at the Need for an Additional Runway to Increase Capacity

Localizer Directional Aid ("LDA") approaches have been operational at Lambert-St. Louis and San Francisco International Airports for several years. Use of an LDA approach permits arrival streams to two runways at lower ceiling and visibility conditions. In St. Louis, the weather minima required for such approaches have been set at a 1200 feet ceiling and at 4 miles visibility. The use of an LDA approach at Sea-Tac under similar weather conditions would reduce the amount of time that the Airport is limited to a single arrival stream from 44 percent, as indicated in the FEIS, to approximately 10 percent of the year (or, approximately 4 percent of the time during peak periods).

The Port and the FAA examined the potential for using an LDA approach in the FEIS, and have indicated that the an LDA approach might be used at Sea-Tac.[13/] In a separate report, the FAA also stated that an LDA at Sea-Tac would only be used with a minimum ceiling of 2,500 feet, and that an LDA, therefore, would not reduce delays in poor weather

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[8/] See, e.g., 14 C.F.R. §§ 91.155; U.S. Dep't of Transp., Fed. Aviation Admin., Advisory Cicular 150/5060-5, Airport Capacity and Delay at 2 ¶ 1-3.d(1), (2) (Sept. 1983); Fed. Aviation Admin. Order 7110.65, Air Traffic Control.

[9/] Technical Rep't No. 4 at 2-13.

[10/] Technical Rep't No. 4 at 2-15.

[11/] Id. at 2-14.

[12/] Port of Seattle, Sea-Tac Airport Layout Plan (Feb. 1992).

[13/] See FEIS at R-53.

conditions sufficiently to obviate the need for a third runway.[14] In fact use of an LDA approach with a 1,200-foot minimum ceiling -- in accordance with the practice used in St. Louis -- would further reduce delays at Sea-Tac. The adoption of such an approach would eliminate the need for a third runway, and defer the need for additional regional runway capacity to beyond 2020.[15]

II. A THIRD RUNWAY WOULD HAVE MAJOR OPERATIONAL PROBLEMS WHICH WOULD CONSTRAIN ITS EFFECTIVENESS

The use of a third runway would be limited by (a) the constraints imposed on runways which are separated by only 2,500 feet, (b) problems caused by aircraft taxiing across active runways, (c) airspace conflicts with nearby King County International Airport (also known as Boeing Field), and (d) inability to accommodate long-term demand.

A. Aircraft Approaching Runways Separated by 2,500 Feet Are Dependent on Each Other

Under existing FAA Air Traffic Control (ATC) rules, runways separated by less than 3,400 feet are dependent runways, meaning that they do not allow simultaneous arrival streams during IFR weather conditions. A third runway at Sea-Tac would not convey the full benefit of an additional runway because it would be located 2,500 feet from the furthest existing runway, thus requiring staggered arrivals in poor weather conditions -- the only time that the Port plans to use the third runway.

B. Aircraft Taxiing to and From the New Runway Cause Congestion and Safety Problems

Aircraft using a third runway would have to cross both of the existing runways taxiing to, or from, the terminal building. It is well recognized in the airport planning industry that crossing active runways is a cause of significant congestion and delay, and can result in inadvertent occupancy of active runways. Therefore, it is generally regarded as poor airport planning practice to design an airport in such a way as to require aircraft to cross two active runways.

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[14] Sarah Dalton, Fed. Aviation Admin., Delay Benefit Calculation for an LDA Procedure at Seattle-Tacoma International Airport at 2 (Dec. 21, 1995); Evaluation of "Implementation of an LDA/DME Approach to Runway 16R in Lieu of a Third Runway at Sea-Tac Airport" at 3 (Dec. 20, 1995).

[15] The Port estimates that approximately 40 percent of the cost of its proposed Sea-Tac expansion project would be financed by federal AIP funds and federally-authorized Passenger Facility Charges. See P & D Aviation, Airport Master Plan Update For Seattle-Tacoma International Airport, Technical Report No. 8 at 6-10 (Jan. 1996).

C. Airspace Conflicts With Boeing Field Eliminate Most of the Benefit of a Third Runway

Conflicts between aircraft using Boeing Field and Sea-Tac eliminate most of the potential benefits of a third runway. Aircraft using the proposed third runway at Sea-Tac in poor weather conditions would conflict with aircraft using Boeing Field and reduce the effectiveness of the new runway at Sea-Tac. Thus, the benefits of the proposed third runway are overstated significantly. Details of the interaction between aircraft using Boeing Field and those which would use a third runway at Sea-Tac are set forth in a February 1993 letter from the FAA Planning and Capacity Office which accompanied "Impact of Boeing Field Interactions on the Benefits of a Proposed New Runway at Seattle-Tacoma International Airport," a final report prepared for the FAA. The FAA material shows that airspace interactions affecting north and south flow aircraft at Boeing Field and Sea-Tac in both good and poor weather would seriously compromise the effectiveness of any potential third runway.

The FAA materials demonstrate that potential benefits from a third runway have not been confirmed, and that further detailed airspace analysis is needed before it may be asserted with a sufficient degree of confidence that a third runway would produce *any* benefits. In fact, there is some indication that aircraft operations on a third runway actually could reduce the capacity of Sea-Tac in poor weather conditions.

D. A Third Runway Can Not Accommodate Long-Term Regional Demand

The FEIS states that sometime after 2020, when aircraft operations at Sea-Tac are projected to reach 525,000, there would be arrival delays of more than 13 minutes, even with a new third runway.[16/] In this situation, congestion and delay at Sea-Tac would exceed the level which the Port has indicated would be "acceptable,"[17/] and the Airport would be unable to accommodate regional aviation demand.

Recent data prepared by the Port[18/] show that there were 386,536 operations at Sea-Tac in 1995. This number of operations is significantly higher than was projected in the FEIS for 1995. According to the FEIS, this number of operations is not forecast to occur until 2002.[19/] If operations at Sea-Tac were to increase at the present level of national aviation growth (i.e., 1.7 percent a year), then there would be 588,000 annual aircraft

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[16/] FEIS at R-42.

[17/] U.S. Dep't of Transp., Fed. Aviationa Admin. and Port of Seattle, Draft Environmental Impact Statement for Proposed Master Plan Update Development Actions at Seattle-Tacoma International Airport ("DEIS") at II-5 (Apr. 1995).

[18/] See Port of Seattle, Compliance Report Prepared for the Puget Sound Regional Council Expert Arbitration Panel on Noise and Demand/System Management in Response to the Preliminary Order on Phase II Noise Issues, December 18, 1995) § 1.0 at 3 (Jan. 30, 1996).

[19/] FEIS at I-9, Exhibit I-4A.

operations at Sea-Tac in 2020. (See Table 1 below).

The magnitude of delay at Sea-Tac with 588,000 operations would be significantly higher than the 13 minutes of delay projected in the FEIS and Sea-Tac would be completely unable to accommodate the regional demand, even with a third runway. Under these conditions, Sea-Tac would run out of capacity before 2020 -- prior to the completion of its proposed expansion project -- and the region would need additional runway capacity even with a third runway at Sea-Tac.

If the forecasts in the FEIS are correct, there is no urgency to build a third runway, because it is not needed. If, on the other hand, demand increases faster than forecast, the Puget Sound region would need more runway capacity than Sea-Tac could provide with a third runway. Consequently, the region needs to move ahead quickly to determine how it plans to meet any additional need. A third runway at Sea-Tac would not be part of a reasonable long-term solution to regional air capacity needs.

TABLE 1

Year	FEIS Forecast	Recent Port Data	Possible Future Traffic Levels**
1993	39,500		339,500
1995		386,000	386,000
2000	379,200		420,000
2010	405,800		497,000
2020	441,600		588,000

** Based on 1.7% growth per year from 1995 (National average growth in 95)

III. APPROVAL OF A THIRD RUNWAY WOULD UNDERMINE THE SEARCH FOR A GOOD LONG-TERM SOLUTION TO POTENTIAL FUTURE NEED FOR INCREASED AIR TRANSPORTATION CAPACITY IN THE PUGET SOUND REGION

The Port recognizes that a third runway is only a short-term fix, and that additional regional air transportation capacity would be needed in the future as demand continues to grow.

The search for a good long-term solution has not been completed, and it appears that involvement by the State of Washington will be required to assure that the needs and concerns of all of the region's residents are addressed. Neither the Port of Seattle, nor the four counties of the Puget Sound region, can be expected to respond to the needs of areas outside their jurisdiction, and to date none of these entities has been willing to address anything other than their own narrow and often short-term interests.

Use of scarce national and local resources on an ineffective, short-term fix will harm the region and undermine the development of a good aviation system to serve the state and region in the twenty-first century. The financial and political resources used to construct the third runway will reduce the availability of those resources to implement a meaningful, long-term regional solution to future air transportation needs.

Other low cost alternatives (e.g. an LDA approach) could, if required, achieve most of the benefits of a third runway without using these resources.