

PORT OF SEATTLE
MEMORANDUM

COMMISSION AGENDA

Item No. _____ 8a

Date of Meeting _____ January 13, 2009

DATE: December 23, 2008

TO: Tay Yoshitani, Chief Executive Officer

FROM: Michael Ehl, Director, Airport Operations
Robert F. Riley, Director, Aviation Capital Improvement Program
Richard Ottele, General Manager, Aviation Facilities and Infrastructure

SUBJECT: Authorization to perform design totaling \$3,770,000 for the Pre-Conditioned Air Project at Seattle-Tacoma International Airport.

ACTION REQUESTED:

Request Port Commission authorization to procure and execute service agreements with consultants to perform design; to prepare contract documents; and perform contract administration for the Pre-Conditioned Air project at Seattle-Tacoma International Airport (Airport) in the amount of \$3,770,000. The ultimate project value is estimated to be \$33,360,000, of which \$21.84 million will be reimbursed by a FAA grant.

SYNOPSIS

This memorandum requests authorization for design and associated Port staff costs for a new Central Pre-Conditioned Air (PCA) project. The PCA project will allow flight crews to turn off aircraft auxiliary engines and plug in to the Airport infrastructure to receive both heated and cooled air. This will lower costs to the airlines while producing significant 'green' results by reducing thousands of tons of carbon dioxide air pollution each year. This project is a cost effective way to aid the airlines while improving the quality of the environment at the Airport and the surrounding areas. The airlines have approved this project. The cost per enplanement is anticipated to increase by \$0.12; however, these costs will be more than offset by decreased airline operating costs.

BACKGROUND

While parked at a gate, an aircraft's heating and air conditioning is provided by either the aircraft's on board Auxiliary Power Unit (APU) or a ground based supply system. Utilization of the aircraft's APU is expensive (although less so during this current time of depressed fuel prices). It also generates significant carbon dioxide (CO2) and other air emissions. Currently, some gates at the Airport have a ground based (mobile cart) or Point of Use (POU) system alternative to APU utilization.

COMMISSION AGENDA

T. Yoshitani, Chief Executive Officer

December 23, 2008

Page 2 of 6

The dual goals of reducing environmental impacts and reducing airline operating costs have led the staff to study the feasibility of installing an airport-wide PCA system. The study evaluated APU operating costs against two ground based supply systems (Point of Use (POU)/mobile carts and a centralized system). The centralized system produced the most cost effective and environmentally sound results. Estimates for the reduction of CO₂ and other emissions are calculated to be in excess of 69,000 metric tons per year.

Federal Aviation Administration (FAA) grant funding support for this project has been identified through the Voluntary Airport Low Emissions (VALE) Grant Program. This program provides funding for up to 80% of construction costs but excludes design and other soft costs. The project will be accomplished in three phases in order to maximize the available VALE funds. Phase I will be design only and will use all Port funds. Phase II will include construction of the Central Plant, portions of the Chilled and Heated Water Distribution System, and installation of the gate delivery equipment to selected gates. Phase III will complete construction of the Central Plant, the remainder of the Chilled and Heated Water Distribution System and the remaining PC Air gate equipment. Phase I will be completed in early 2010, Phase II will be completed in 2011, and Phase III will be completed in 2012. The FAA has programmed \$21.84 million in grant funding for Phases II and III.

PREVIOUS COMMISSION ACTION

None

PROJECT DESCRIPTION/SCOPE OF WORK

Project Statement:

Design and construct a centralized pre-conditioned air system, with an associated central plant including individual PC Air gate units at all passenger loading bridges.

Project Objectives:

- Decrease the amount of energy used to heat and cool the aircraft.
- Significantly reduce the amount of CO₂ and other air emissions produced.
- Provide aircraft with cabin heating and cooling while eliminating the need for using the onboard APU which consumes jet fuel.
- Minimize life-cycle costs.
- Minimize fuel consumption.
- Minimize ramp noise.

COMMISSION AGENDA

T. Yoshitani, Chief Executive Officer

December 23, 2008

Page 3 of 6

Scope of Work:

The PCA project will provide temperature-controlled outside air to all passenger loading bridges. The system will include a central plant with chillers and central ice storage, a distribution piping system, individual air handlers at each gate that connect to the aircraft, and direct digital controls. The central plant will be connected to the Airport's existing cooling towers and direct digital control system.

This requested action authorizes preliminary engineering, site investigation, final design, commissioning and other costs related to the design of the central PCA project.

STRATEGIC OBJECTIVES

The Central PCA Project supports the following Port strategies:

Ensure Airport Vitality

This project will provide a cost effective and efficient heating and cooling system for aircraft parked at the gates. It will have a positive effect on the airline's operating costs by reducing fuel consumption through reduced APU operation.

Exhibit Environmental Stewardship through Our Actions

This project significantly supports the Port's goal of becoming the cleanest, greenest and most energy-efficient port in the United States, and will dramatically reduce CO2 emissions that are generated by APUs. A centralized PCA system is the most cost effective and energy efficient long term means of providing preconditioned air to gated aircraft.

ALTERNATIVES CONSIDERED/RECOMMENDED ACTION

Alternative 1 – Airlines continue using onboard APUs to heat and cool aircraft parked at the aircraft gates. This method generates CO2 emissions from APUs, and uses a significant amount of costly aircraft fuel to operate. It is not cost effective for airlines, and negatively affects the environment. This alternative is not recommended.

Alternative 2 – Proceed with a POU preconditioned air system installed at each passenger loading bridge, which would be individual electrical driven units at each gate. This alternative reduces CO2 emissions. However, this alternative is not the most cost effective on a first cost or life cycle cost basis and would consume almost all of the spare power capacity available from several power centers in the Airport's existing electrical distribution system. This alternative is not recommended.

Alternative 3 - Proceed with the Centralized Preconditioned Air project. The system features a central plant that efficiently shares the load for all gates and distributes cooling or heating as

COMMISSION AGENDA

T. Yoshitani, Chief Executive Officer

December 23, 2008

Page 4 of 6

needed. The system includes an ice storage system that allows the system to run at off peak times increasing the energy efficiency. **This is the recommended alternative.**

FINANCIAL IMPLICATIONS

Budget/Authorization Summary

Original Budget	\$31,087,000
Budget Increase	\$2,273,000
Revised Budget	\$33,360,000
Previous Authorizations	\$0
Current request for authorization	\$3,770,000
Total Authorizations, including this request	\$3,770,000
Remaining budget to be authorized	\$29,590,000

Project Cost Breakdown

This Request

Total Project

<u>Project Cost Breakdown</u>	<u>This Request</u>	<u>Total Project</u>
Construction costs	\$0	\$25,092,000
Sales tax	\$0	\$2,258,000
Outside professional services	\$2,509,000	\$2,509,000
Other	\$1,261,000	\$3,501,000
Total	\$3,770,000	\$33,360,000

The budget increase is due to the project phasing and producing 100% design documents that are required to receive the VALE grant.

Source of Funds

This project (CIP 800238) is included in the 2009-2013 capital budget and plan of finance. The funding plan is predicated upon the Port receiving \$21.84 million in VALE program grants, with the remaining costs funded with revenue bonds to be issued in 2009 or 2010. If revenue bonds prove not to be a prudent option, airport development funds will be used.

COMMISSION AGENDA

T. Yoshitani, Chief Executive Officer

December 23, 2008

Page 5 of 6

Financial Analysis Summary

CIP Category	New/Enhancement
Project Type	Infrastructure
Risk adjusted Discount rate	10.0%
Key risk factors	Realization of savings due to lower jet fuel usage.
Project cost for analysis	\$11,520,000 (excludes VALE grant funded portion)
Business Unit (BU)	Terminal cost center
Effect on business performance	NOI after depreciation will decrease due to recognizing depreciation on the full cost yet recovering capital costs for the non VALE funded portion only.
IRR/NPV	NPV range of net savings to airlines: \$6 million to \$47 million
CPE Impact	CPE will increase by \$.12 in 2012; however, this cost will be more than offset by decreased airline operating costs.

ECONOMIC IMPACTS

From a financial analysis perspective, the positive net present value for this project is based on viewing the Airport and airlines together, as the Port will incur capital and operating costs, while the airlines will realize the cost savings. The extent of the savings is dependent on: 1) the price of jet fuel 2) the number of days per year the system is actually used, and 3) the number of carriers that use the system rather than their own POU system. The Airport will incur increased Operations and Maintenance (O&M) costs of about \$800,000 per year. In addition, the Port will incur annual debt service costs of about \$1.2 million per year. The financial analysis assumes a \$2 for the price of jet fuel (recent prices have ranged from ~\$1.50 to ~\$3.50), use during summer only (17 weeks) and it assumes Alaska Airlines and Southwest Airlines continue to use their POU systems. These conservative assumptions generate a positive NPV of \$6 million and generate net savings to the airlines from the first year of operations. The savings increase each year, making this a financially sound project

ENVIRONMENTAL SUSTAINABILITY/COMMUNITY BENEFITS

There are significant air quality improvements achieved by installing a centralized pre-conditioned air system. CO2 emissions and other emissions could be reduced by more than 69,000 metric tons per year which represents 2% of emissions from aircraft at the Airport.

TRIPLE BOTTOM LINE SUMMARY

This project is expected to help reduce the overall operating costs of the airlines while providing an environmentally viable solution to maintaining comfortable aircraft cabin temperatures at the gate. Decreased air emissions and decreased fuel consumption is consistent with the Port's commitment to responsible environmental stewardship.

COMMISSION AGENDA

T. Yoshitani, Chief Executive Officer

December 23, 2008

Page 6 of 6

PROJECT SCHEDULE

- Start Preliminary Design Feb 2009
- Complete Design Jan 2010
- Seek approval from Commission to advertise Feb 2010
- Award Contract Apr 2010
- Anticipated Start Phased Construction July 2010
- Anticipated Project Completion Dec 2012