

**PORT OF SEATTLE**  
**MEMORANDUM**

**COMMISSION AGENDA**  
**ACTION ITEM**

**Item No.** 4c  
**Date of Meeting** December 9, 2014

**DATE:** December 1, 2014  
**TO:** Ted Fick, Chief Executive Officer  
**FROM:** David Soike, Director, Aviation Facilities and Capital Programs  
Wayne Grotheer, Director, Aviation Project Management Group  
**SUBJECT:** Design for Gate Improvements Loading Bridges Utilities, B Concourse 400Hz  
(CIP #C800019)

<b>Amount of This Request:</b>	\$0	<b>Source of Funds:</b>	Airport Development Fund and Future Revenue Bonds
<b>Est. Total Project Cost:</b>	\$15,648,312		
<b>Est. State and Local Taxes:</b>	\$567,000		

**ACTION REQUESTED**

Request Commission authorization for the Chief Executive Officer to complete the design for the Concourse B portion of the Gate Improvements Loading Bridges Utilities 400Hz project at Seattle-Tacoma International Airport.

**SYNOPSIS**

This project will complete the Gate Improvements Loading Bridges Project by completing the 400Hz ground power system on the B Concourse. Concourse B includes the remaining aircraft gates that require 400Hz electrical connections. Upon completion, the aircraft that use these gates will be able to plug-in to the terminal rather than burn fossil fuel to power the aircraft auxiliary jet engine that in turn powers the flight deck controls.

Staff notified the Commission in December 2012 that design and construction on Concourse B was delayed to focus on plug-in gate power for the South Satellite because ANA Airline's first new 787 aircraft was to begin service between Seattle and Tokyo. The 787 is the most electrified aircraft in the fleet and has unique plug-in power requirements. In addition, consideration was given to the possibility that the 787 might also come into greater use and possibly be used in the future on Concourse B, therefore for procurement reasons related to 400HZ equipment, it was decided to delay the work on Concourse B until staff knew what equipment might be needed.

Now that the electrical power requirements for the aircraft has been determined, staff is requesting to restart design process. The total amount expected to be expended on design is approximately \$850,000 and that value is within budget, however follow on construction is expected to require additional budget. Following design, staff will return to the Commission in

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the third quarter of 2015 with a cost estimate for construction and associated authorization request. The previous design effort for Concourse B 400Hz has been valued at \$218,000 and will be expensed given the many changes to Concourse B since the 2011 400Hz design was completed.

### **BACKGROUND**

This portion of the project was originally authorized in June 2007 under a project wide authorization. The design was completed to 90% in December 2008 and the project was placed on hold due to the economic environment. In July 2010 the project was reactivated. In December 2012, the B Concourse 400Hz ground power system portion of the scope was placed on hold since the aircraft types that might utilize that concourse was uncertain. The new generation of aircraft requires a higher level of electrical service due to recent technology advances, the Boeing 787 being one example. Since 2012, the B Concourse has undergone several significant changes. Gates B1 and B4 have been added, the preconditioned air (PC air) project on the B Concourse has been completed, and the National Electric Code has gone through two updates. The B Concourse 400Hz ground power system will need to be redesigned to ensure the system will provide the best possible service to the airlines and traveling public. Staff will return to request Commission authorization to advertise and execute a construction contract after the design has been completed.

### **PROJECT JUSTIFICATION AND DETAILS**

#### ***Project Objectives***

- Advance the Port's Century Agenda objective of reducing aircraft emissions and noise
- Provide sufficient power to the B Concourse gates to support the current and next generation aircraft
- Enable the Airport to maximize the use of each B Concourse gate
- Reduce the possibility of a carrier being assigned to a gate without the same amenities as the rest of the airport

#### ***Scope of Work***

The scope of work for this project includes the design and construction of a 400Hz ground power system for all 13 B Concourse airport-owned gates. The project will install two 400Hz motor generator sets, gate-boxes and other equipment to ensure adequate power is provided to all 13 B Concourse gates. The new 400Hz motor generator sets and gate boxes will provide adequate ground power for current and future generation aircraft that will utilize the B Concourse gates.

#### ***Schedule***

Design

January-July 2015

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### **FINANCIAL IMPLICATIONS**

<b><i>Budget/Authorization Summary</i></b>	<b>Capital</b>	<b>Expense</b>	<b>Total Project</b>
Original Budget	\$9,385,000	\$0	\$9,385,000
Previous budget changes (net)	\$2,265,480	\$516,520	\$2,782,000
Current budget increase	\$2,828,489	\$652,823	\$3,481,312
Revised Budget	\$14,478,969	\$1,169,343	\$15,648,312
Previous Authorizations (Original Scope)	\$8,686,969	\$734,343	\$9,421,312
Art Pool Transfer	(\$44,000)	\$0	(\$44,000)
Previous Authorizations (400Hz)	\$3,789,688	\$0	\$3,789,688
Remaining budget to be authorized	\$2,046,312	\$435,000	\$2,481,312
Total Estimated Project Cost	\$14,478,969	\$1,169,343	\$15,648,312

<b><i>Project Cost Breakdown</i></b>	<b>Capital</b>	<b>Expense</b>	<b>Total</b>
Design Phase	\$850,000	\$0	\$850,000
Construction Phase	\$4,604,000	\$435,000	\$5,039,000
State & Local Taxes (estimated)	\$382,000	\$0	\$382,000
Total	\$5,836,000	\$435,000	\$6,271,000

The costs in the budget/authorization table include all costs associated with the project. All elements of the project except the Concourse B 400Hz have been completed. The project cost breakdown reflects the costs associated with the remaining scope to be completed.

#### ***Budget Status and Source of Funds***

This project, C800019, was included in the 2015 – 2019 capital budget and plan of finance with a budget of \$11,650,480. The budget increase will be transferred from the Aeronautical Allowance CIP (C800404), resulting in no net change to the airport capital budget. The funding sources will include the Airport Development Fund and future revenue bonds. The Port anticipates issuing revenue bonds in 2015 to fund a number of projects. The expense portion of the budget includes previous design costs that were written off and charged to expense in 2014 (\$218,000) as well as costs for regulated materials.

#### ***Financial Analysis and Summary***

<b>CIP Category</b>	Renewal/Enhancement
<b>Project Type</b>	Renewal & Replacement
<b>Project cost for analysis</b>	\$6,271,000
<b>Business Unit (BU)</b>	Terminal – Airline Equipment
<b>Effect on business performance</b>	NOI after depreciation will decrease
<b>CPE Impact</b>	CPE will increase by \$.03 in 2017. The Airlines will realize lower operating and maintenance costs as a result of this project.

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### ***Lifecycle Cost and Savings***

Annual operating and maintenance costs have been calculated by Aviation Maintenance at approximately \$4,723 per gate per year. This results in a total cost for the entire system of 13 gates at Concourse B of \$61,400 for the first year. We anticipate an estimated 3% inflation escalation thereafter. This is based on the level of repair currently being performed on the systems from actual costs for 2012 – 2014 year to date. The additional gate equipment added will result in an additional work load equivalent to one half of a Full Time Equivalent (FTE). Any request for FTE will be incorporated in the overall Aviation Maintenance budgeting process, and is not included in this request.

## **STRATEGIES AND OBJECTIVES**

The Gate Improvements Loading Bridges Project supports several of the Port Strategies and Objectives, notably;

This project promotes the Port's Century Agenda objective of meeting the region's air transportation needs at the Airport for the next 25 years. Flexible gate operations will allow for more efficient utilization of the airport's existing facilities. This project will reduce aircraft emissions and noise by providing 400Hz ground power so that the aircraft need not operate the onboard auxiliary power units.

## **TRIPLE BOTTOM LINE**

### ***Economic Development***

This project supports the Airport's initiative to standardize equipment and provides the flexibility the airport needs to assign gates and to operate more efficiently.

### ***Environmental Responsibility***

This project will reduce the amount of emissions and noise generated by aircraft by eliminating the need to use the aircrafts onboard auxiliary power units to operate the aircrafts electronics before and after gate arrival.

### ***Community Benefits***

This project supports the Airport's strategy to operate a world class international airport by anticipating and meeting the needs of our tenants, passengers and the region's economy. Minimizing new facilities construction requirements by making new operational improvements with up-to date equipment and technology helps to minimize costs to the airlines, thereby supporting the Airport's strategy to reduce airline costs. The program manager will collaborate with the Office of Social Responsibility (OSR) to maximize small business participation throughout this project.

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### **ALTERNATIVES AND IMPLICATIONS CONSIDERED**

**Alternative 1)** – Do nothing: do not install a 400Hz Ground Power System on the 13 gates at the B Concourse. This alternative will result in the airlines on B Concourse not having the same level of service as all the other concourses and gates here at the Airport. Airlines will continue to use emission and noise producing systems to generate aircraft power. This is not the recommended alternative.

**Alternative 2)** – Install a 400Hz Ground Power System at all 13 gates on the B Concourse in order to optimize gate flexibility, accommodate growth and provide the ground power systems that the current and future aircraft will require. Provide the best level of service possible for our airlines and the traveling public. **This is the recommended alternative.**

### **ATTACHMENTS TO THIS REQUEST**

- Computer slide presentation.

### **PREVIOUS COMMISSION ACTIONS OR BRIEFINGS**

- December 4, 2012 Commission authorized the advertisement, award and execution of a major construction contract not to exceed \$8,242,000.
- March 6, 2012 the Commission authorized \$328,000 expense funding to CIP 800019.
- October 11, 2011 Commission authorized a major construction contract in the amount of \$6,144,000 of the authorized \$12,883,000.
- June 14, 2011 Commission authorized an additional \$3,489,000 to CIP 800019 increasing the total project budget to \$12,883,000.
- June 28, 2007 Commission authorized \$9,385,000 (CIP 80019) to replace the 400Hz Ground Power systems at the South Satellite and B Concourse plus upgrade 29 gates with 400Hz equipment and Potable Water Cabinets.
- December 10, 2002 Commission authorized \$2,614,000 (CIP) 102102 to replace and upgrade the 400Hz Ground Power system at the North Satellite