



**COMMISSION
AGENDA MEMORANDUM**

Item No. 8e

ACTION ITEM

Date of Meeting August 10, 2021

DATE: August 3, 2021

TO: Stephen P. Metruck, Executive Director

FROM: Eileen Francisco, Acting Director, Aviation Facilities and Capital Programs
Wayne Grotheer, Director, Aviation Project Management

SUBJECT: Building Controls Upgrade (CIP# C800944) - Construction

Amount of this request: \$6,901,000

Total estimated project cost: \$9,901,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to (1) advertise, award, and execute a major works construction contract for the Building Controls Upgrade Project at Seattle-Tacoma International Airport, and (2) use Port of Seattle crews for construction activities. The amount of this request is \$6,901,000 of an estimated total project cost of \$9,901,000.

EXECUTIVE SUMMARY

The building control system regulates and controls critical airport terminal building environmental features such as temperature, humidity, and air exchanges. In addition, the building control system performs smoke control functions and provides utility metering for water and natural gas use. This project will replace 107 obsolete building control panels that are installed throughout the Seattle-Tacoma International Airport (Airport). The project will also replace the copper data infrastructure with a fiber network expansion to handle the updated panels and system measurements.

JUSTIFICATION

The panels that will be replaced as part of this project are integral components in the Direct Digital Control (DDC) system throughout the airport. The DDC system was installed circa 1990s and is responsible for monitoring and controlling mechanical equipment at the airport. The equipment includes the Heating, Ventilation, and Air Conditioning (HVAC), chilled water, hot water, and preconditioned air systems and metering of water and natural gas distribution.

The existing control panels have reached obsolescence; the components are experiencing intermittent failures and replacement parts are difficult to obtain as they are no longer manufactured. Any operational loss of the control panels has a direct effect on the operation of

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the airport and a negative impact to customer experience. Since the installation of the DDC system, there have been significant improvements in control panel technologies that increase the reliability, reduce the size of equipment, and improve the processing capacity. This project will take advantage of the latest technology and give the Port the opportunity to rebalance the panels to provide space for planned future projects. The control panels will be purchased under the sole-source agreement with Siemens 2015-013.

The DDC system is connected and controlled on an independent backbone that keeps it isolated from any outside connections. The copper cable sections of the network have reached its performance limitations. During heavy demand periods, the system has increased latency, resulting in slow adjustment to the system needs. At times, if the data transfer requirement exceeds the network capacity, data can be lost, resulting in disruptions of service. This existing copper communications backbone cabling will be upgraded to fiber optic cable allowing for higher data throughput, increased reliability, and future expansion.

Diversity in Contracting

The project staff, in coordination with the Diversity in Contracting department, have set a ten (10) percent woman- and minority-owned business enterprise (WMBE) aspirational goal for this construction contract.

DETAILS

This project will replace 107 obsolete control panels that are distributed throughout the Airport. The existing equipment and field control points will remain in place and be migrated to the new panel hardware. As panels are being updated, the whole panel load and spacing will be reviewed, and configured where possible to add capacity for future expansions.

A fiber backbone on Concourses B, C and D will be installed in parallel with the existing copper backbone. Planned shutdowns will transition the network off the copper and onto the new fiber backbone. The obsolete copper backbone will be removed. This fiber network expansion will connect the existing fiber on Concourse A and Main Terminal with Concourses B, C, and D. Both the North and South satellites already have fiber runs in place that connect to the DDC system.

Scope of Work

The scope of work for this project includes:

- (1) Replacing 107 obsolete control panels.
- (2) Connecting new control panels to the DDC System.
- (3) Updating the DDC graphics to match the new panels and data points.
- (4) Provide wiring, testing, commissioning, and associated equipment for a fully functional system.
- (5) Install a fiber backbone expansion to connect the new and previously upgraded control panels to the DDC network.

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- (6) Provide fiber optic wiring, terminations, testing, commissioning, and associated equipment for a fully functional system.

Schedule

Activity

Construction start	2022 Quarter 1
In-use date	2023 Quarter 1

Cost Breakdown

	This Request	Total Project
Design	\$0	\$3,000,000
Construction	\$6,901,000	\$6,901,000
Total	\$6,901,000	\$9,901,000

ALTERNATIVES AND IMPLICATIONS CONSIDERED

This project is installing the required upgrades and improving the backbone for the system to be ready for future expansions such as increased capacity, smoke control, and greater data collection.

Alternative 1 – Do not proceed with this project

Cost Implications: Approximately \$525,000 would need to be expensed

Pros:

- (1) No capital investment required at this time.

Cons:

- (1) Panel failure will have a negative effect on the passenger and tenant experience at the airport.
- (2) Future projects will be limited on expansion capabilities until the panels and fiber network are replaced.
- (3) Future projects will be required to replace panels, adding time, complexity, and cost to the scope.
- (4) Replacing panels on a project-by-project basis will increase the unit cost of the panel replacement.
- (5) The fiber network will not be extended into Concourses B, C, and D.
- (6) The issue of intermittent data loss will not be addressed.

This is not the recommended alternative.

Alternative 2 – Replace obsolete control panels and install fiber backbone (as designed)

Cost Implications: \$9,901,000

Pros:

- (1) Replaces obsolete equipment and failing control panels.

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- (2) Extends the fiber network into Concourses B, C, and D.
- (3) Provides infrastructure for future projects with greater data requirements and future panels.
- (4) Mitigates existing data capacity issues on the copper backbone.

Cons:

- (1) This is the highest capital investment

This is the recommended alternative.

FINANCIAL IMPLICATIONS

<i>Cost Estimate/Authorization Summary</i>	Capital	Expense	Total
COST ESTIMATE			
Original estimate	\$4,976,000	\$128,000	\$5,104,000
Previous changes – net	\$4,903,000	(\$7,000)	\$4,896,000
Art (Transfer to art CIP)	(\$99,000)		(\$99,000)
Revised estimate	\$9,780,000	\$121,000	\$9,901,000
AUTHORIZATION			
Previous authorizations	\$2,879,000	\$121,000	\$3,000,000
Current request for authorization	\$6,901,000	0	\$6,901,000
Total authorizations, including this request	\$9,780,000	\$121,000	\$9,901,000
Remaining amount to be authorized	\$0	\$0	\$0

Annual Budget Status and Source of Funds

This project, CIP C800944, was included in the 2021-2025 capital budget and plan of finance with a budget of \$9,879,000. The funding source will be the Airport Development Fund and revenue bonds.

The original project request submitted in 2016 only included 49 panels that had reached obsolescence. From that initial request an additional 50 panels have been identified as needing replacement. Additionally, the current copper backbone has now reached its data limitations. The project cost increase is due to the delay in executing the original 2016 project, the increase of 50 additional obsolete panels, and the need for increased data on the backbone.

Financial Analysis and Summary

Project cost for analysis	\$10,000,000
Business Unit (BU)	Terminal Building
Effect on business performance (NOI after depreciation)	NOI after depreciation will increase due to inclusion of capital (and operating) costs in airline rate base.

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IRR/NPV (if relevant)	N/A
CPE Impact	\$.03 in 2024

ATTACHMENTS TO THIS REQUEST

- (1) Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

May 15, 2020 – The Commission authorized execution of a project specific design contract

December 10, 2019 – The Commission authorized design