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COMMISSION

AGENDA MEMORANDUM Item No. 8e

ACTION ITEM Date of Meeting October 11, 2022

DATE: October 4, 2022

TO: Stephen P. Metruck, Executive Director

FROM: Keri Stephens, Director Aviation Facilities and Capital Programs

Eileen Francisco, Director Aviation Project Management

SUBJECT: Main Terminal Low Voltage System Upgrade (CIP #C800061)

Amount of this request: \$ 88,824,000

Total estimated project cost: \$119,557,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to 1) increase the project budget by \$19,257,000 for a final revised total budget of \$119,557,000; 2) authorize \$88,824,000 of the project budget and execute a construction contract with M.A. Mortenson Company; 3) execute future Amendments and Change Orders up to the executed Commission authorization amount for additional design, project and construction management services that exceed \$300,000 and/or exceed 60 calendar day time extension; 4) transfer \$521,000 and associated project scope from CIP #C800061 Main Terminal Low Voltage project to CIP #C801204 SEA Gateway/North Main Terminal Redevelopment program; and 5) authorize Port Construction Services to execute small works contracts and use Port crews to support MTLV construction.

EXECUTIVE SUMMARY

This project replaces the Main Terminal Low Voltage (MTLV) distribution system, which provides power to every floor of the main terminal and is at the end of its serviceable lifespan. It updates the low voltage electrical distribution equipment (480/277 Volts and 208/120 Volts) in the Main Terminal, includes the Main Terminal Emergency System, and brings the new equipment into compliance with National Electric Code (NEC) safety standards, which, in some cases, requires the construction of new rooms and relocating the updated panels. The project also includes the replacement of the Central Power Center, and moves it into a new, more serviceable, location. Since the last commission action in July 2018, the project has executed contracts with Casne, the designer, and Mortenson, our general contractor/construction manager (GC/CM) to work together on design, construction phasing, operational coordination, and completion of negotiations of the maximum allowable construction costs (MACC). This contracting approach helped minimize redesign during construction, construction coordination, and operational

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impacts and risks. The project has completed the design, which included a full physical inventory and condition assessment of the low voltage distribution system in the Main Terminal, as well as electrical panel circuit tracing to understand user impacts of the system replacement.

Coordination with the North Main Terminal Redevelopment (NMTR) program has resulted in the need for limited scope transfer between projects. The scope transfer from MTLV to NMTR is valued at \$521,000 and will facilitate coordination and eliminate the need for immediate rework of new panels and associated power feed circuits that would have been installed by the MTLV project. The project includes the delivery of a new of a new Power Center, replacement of 350 electrical panels, and 1,800 - 2,200 electrical power shutdowns. The project team has now completed negotiation of the MACC with the GC/CM. The budget is increasing by \$19,257,000 for a total estimated project cost of \$119,557,000. This project should create between 45-50 construction jobs to complete the work.

JUSTIFICATION

The Airport's medium voltage electrical distribution system and power centers (primary operating voltage levels of 5,000 to 15,000 volts) have all been renewed and replaced within the last decade. The next phase of the Airport's renewal and replacement program for the electrical system is the low voltage system (operating voltage distribution levels of 120 to 600 volts). This infrastructure is critical to airport operations.

Large portions of the existing low voltage electrical distribution system have reached the end of their useful operating life, raising concerns over their continued reliability. The useful operating life of electrical equipment primarily depends on age, with 30 years being a reasonable lifespan.

Some of the equipment included in this project is well over 40 years old. Equipment maintainability and availability of spare parts are increasing concerns with aging equipment. Much of the existing equipment is not compliant with the current National Electrical Code (NEC). There are areas in the low voltage electrical system where the available fault current exceeds the current ratings for the existing equipment, thus creating operating and working condition safety issues. Other safety-related NEC issues exist for these older installations, including dedicated equipment space, working clearances, illumination, identification, and the need for Underwriters Laboratory (UL) listing of all equipment. The MTLV project will correct all the issues in this area and bring the installation up to current standards and compliance with current codes. Having adequate capacity and reliability in the low voltage distribution system is also critical in supporting deployment of new technologies that can maximize facility throughput. The work will be carried out in a manner that minimizes disruptions to normal airport operations. Replacement of the equipment will allow renewal of the expected lifespan, compliance to all code requirements, increased reliability, and increased selectivity of outages. Replacement will include panel boards, motor control centers, feeders, meters, and transformers. New metering will be included for selected replaced panel boards along with connection to the airport-wide metering network. Additional electrical closets will be created due to relocation of the replaced panels due to code required working clearances.

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Throughout the design phase, the project team completed a full physical inventory and condition assessment of all electrical equipment in the main terminal. The condition assessment has driven the necessary renewals and project scoping. The major Project Elements include: 1) Normal Power renewal, replacement, optimization, and expansion. 2) Emergency Power renewal, replacement, optimization, and expansion. 3) Replacement of the Central Terminal Power Distribution Load Center. 4) Implement energy metering on select panels that feed tenant spaces in new work. 5) Minimize disruption to normal airport operations during construction.

The need for these major work elements is detailed below.

#### Emergency Power Work

The emergency power distribution system is of similar age, condition, and risk of failure as the normal building power: inadequate working clearance, no replacement parts, etc. In addition, the emergency power panels are often located in the same electrical closets as the normal building power which is not permitted per current codes.

#### Central Terminal Power Distribution Load Center

The Central Terminal Power Center is nearing the end of its useful life and is already enveloped by new baggage conveyance systems making replacement at a future date exceedingly difficult and costly. It is the only passenger terminal power center that was not upgraded in the mid 2000's and is the only power center that is not configured for maximum reliability.

#### Energy Metering

Branch circuit metering will allow the Port of Seattle to identify and implement future energy saving projects to comply with Washington State Energy Code for 2015 as adopted by Port Resolution 3745.

#### Regulated Materials

Most of the work locations for this project are in areas where regulated materials are present. Due to the large geographic areas this project covers, asbestos abatement costs will be significant.

#### Diversity in Contracting

Given the scope items for this project, the Diversity in Contracting department has established a 7% WMBE aspirational goal associated with this contract.

#### DETAILS

##### Scope of Work

This project covers the renewal and replacement of end-of-life low voltage electrical distribution switchboards, feeders, panels, and tenant metering in the Main Terminal served by the five Main

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Terminal Power Distribution Load Centers. The work will be carried out in a manner that minimizes disruptions to normal airport operations.

Specific Scope Items:

- (1) Normal Power renewal, replacement, optimization, and expansion.
- (2) Emergency Power renewal, replacement, optimization, and expansion.
- (3) Replacement of the Central Terminal Power Distribution Load Center.
- (4) Implement branch circuit level energy metering in new work.
- (5) Minimize disruption to normal airport operations during construction.
- (6) Abatement of regulated materials as incident to the overall scope.

Schedule

Construction start 2022 Quarter 4

In-use date 2026 Quarter 1

Cost Breakdown This Request Total Project

Design \$0 \$16,935,000

Construction \$88,824,000 \$102,622,000

Total \$88,824,000 \$119,557,000

ALTERNATIVES AND IMPLICATIONS CONSIDERED

Alternative 1 – Status Quo, Do not proceed with replacement of the main terminal low voltage distribution system

Cost Implications: \$11,000,000 spent to date (approximate)

Pros:

- (1) Defers significant capital spending

Cons:

- (1) Renewal and replacement of the system will be deferred.
- (2) Continued risk of injury to personnel.
- (3) Increased risk of extended unplanned electrical outages.
- (4) Future equipment replacement will cost more as a result of escalation.
- (5) Increased costs to projects in Main Terminal as individual upgrades are needed.
- (6) Existing work will be expensed.

This is not the recommended alternative.

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Alternative 2 – Proceed with full scope of replacement design

Cost Implications: \$119,557,000

Pros:

- (1) Power distribution system will be replaced in a planned manner.
- (2) Increased reliability of normal and emergency power systems.
- (3) Outages (planned and unplanned) will be minimized.
- (4) Safe work environment for personnel.
- (5) Increased capacity for support of future projects.
- (6) Detailed metering for revenue and energy conservation.

Cons:

- (1) Higher Capital Cost required to complete project
- (2) Operations must be maintained during construction.
- (3) Operational impacts during circuit cutovers

This is the recommended alternative.

FINANCIAL IMPLICATIONS

Cost Estimate/Authorization Summary Capital Expense Total

COST ESTIMATE

Original estimate \$19,640,000 \$1,090,000 \$20,730,000

Previous changes – net \$67,120,000 \$12,450,000 \$79,570,000

Current change \$26,871,000 (\$7,614,000) \$19,257,000

Current Budget \$113,631,000 \$5,926,000 \$119,557,000

AUTHORIZATION

Previous authorizations \$30,193,000 \$540,000 \$30,733,000

Current request for authorization \$83,438,000 \$5,386,000 \$88,824,000

Total authorizations, including this request \$113,631,000 \$5,926,000 \$119,557,000

Remaining amount to be authorized \$0 \$0 \$0

Annual Budget Status and Source of Funds

The Main Terminal South Low Voltage System Upgrade #C800061 is included in the 2022-2026

capital budget and plan of finance with a budget of \$86,760,000. The capital budget increase of \$26,871,000 was transferred from the Aeronautical Allowance CIP C800753 resulting in no net change to the Airport capital budget. The regulated material expense will be included in the operating budget in the year when the remediation obligated event occurs. The funding sources will be the Airport Development and future revenue bonds. This project was presented to the airlines at an Airport Airlines Affairs Committee and the Majority in Interest (MII) ballot was approved on May 14, 2018. MII Management Reserve will be utilized, if needed, for the budget increase.

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Financial Analysis and Summary

Project cost for analysis \$119,036,000

Business Unit (BU) Terminal Building

Effect on business performance NOI after depreciation will increase due to inclusion of (NOI after depreciation) capital (and operating) costs in airline rate base.

IRR/NPV (if relevant) N/A

CPE Impact \$.28 in 2027

Future Revenues and Expenses (Total cost of ownership)

Renovation is expected to reduce future repair costs and increase the power available and operational availability of the system. The new major assets will include electrical panels, electrical power distribution load center, and miscellaneous electrical equipment. This equipment has a useful lifespan of thirty years.

ATTACHMENTS TO THIS REQUEST

(1) Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

July 10, 2018 – The Commission approved full design funds and GC/CM award.

June 12, 2018 – The Commission was briefed on the contents of the July 2018 action.

August 5, 2014 – The Commission approved project consolidation and design.

June 28, 2007 – The Commission approved design and construction of a project which is much more limited scope and budget and is now included in the larger current effort.

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