



**COMMISSION
AGENDA MEMORANDUM**

Item No. 8b

ACTION ITEM

Date of Meeting April 23, 2019

DATE: April 17, 2019

TO: Stephen P. Metruck, Executive Director

FROM: Jeffrey Brown, Director Aviation Facilities and Capital Program
Wendy Reiter, Director, Aviation Security
Wayne Grotheer, Director, Aviation Project Management

SUBJECT: Baggage Optimization Project Phase 2 (CIP #C800612, WP #U00424)

Amount of this request: \$213,000,000

Total estimated project cost: \$445,050,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to (1) advertise, award, and execute a construction contract for the Baggage Optimization Phase 2 project at Seattle-Tacoma International Airport; (2) employ a project labor agreement (PLA); and (3) utilize Port crews and small works contracts to perform construction work. The total amount requested under this authorization is \$213,000,000.

EXECUTIVE SUMMARY

Baggage Optimization is an airport-wide project that improves customer service for both airlines and passengers. This is a long-term, three-phase project that will be completed in 2025. This project was initially cost estimated and scheduled in 2013. Phase 1 is under construction, within budget, and will be substantially complete in early 2020.

The Baggage Optimization project replaces six individual baggage screening systems with a centralized system that optimizes operation of the checked baggage system at Seattle-Tacoma International Airport. The purpose of this project is to optimize the baggage system to achieve the maximum outbound baggage capacity within the current airport footprint. The project increases screening capacity for greater baggage volumes, increases flexibility to allow bags to be checked in from any ticket counter and be conveyed to serve any gate, meets the established minimum-connect-time goal, and increases energy efficiency. Additional benefits include increased reliability, redundancy, and security. Meeting travelers' baggage needs will significantly contribute to increased customer service, and address growing passenger demands of the region. The project is currently scoped to accommodate 60 million annual passengers (MAP).

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Phase 2 is now fully designed so estimated costs, construction sequencing, and duration can be compared to projections from 2013. Since then market conditions have changed for the following reasons: baggage equipment prices have raised, tariffs have been imposed which drove up steel prices, airline customer reviewers have added scope, and a hot construction market has escalated labor and material costs at a rate faster than general inflation. A sensitivity analysis using 100% Phase 2 design documents and 70% Phase 3 design documents indicates the increase in overall project cost ranges between \$40 and \$80 million atop the 2017 estimated cost of \$445 million. The Baggage Optimization schedule tied to that estimate was also set in 2017. Since that time the project has experienced a nine month delay. The schedule duration increases also contribute to the potential budget concerns by driving increased soft-costs and additional escalation costs.

The project budget is currently sufficient to cover Phase 2 costs but will likely require a budget increase prior to Phase 3 construction in 2022. The current budget will carry the project four years into the prior approved year capital plan of finance. The soonest that staff would be able to reevaluate overall cost ranges is mid-2022 when the latest costs and local construction economy can be assessed.

Port staff has met with contractors to gather market information and to increase the number of bidders for Phase 2 to reduce market conditions impacts on construction costs. Staff will return to request authorization of additional construction funds prior to Phase 3.

The cost associated with the requested action is \$213,000,000. The total Phase 2 construction estimate is \$247,673,000. The project has previous unused authorizations of \$34,937,200 which will offset this request so that the total amount of this authorization request at this time is \$213,000,000. Including this request, the total Baggage Optimization project authorization is \$349,312,200.

Following the Final Design of Phase 2, the construction sequencing was revised, adding approximately 3 months to the original Phase 2 construction duration. Phase 2 is currently scheduled to be complete Q2 2023. Phase 3 will follow with an estimated completion date of Q4 2025.

This project, C800612, was included in the 2019-2023 capital budget and plan of finance with a budget of \$444,900,000.

JUSTIFICATION

The highly utilized and aging baggage handling system (BHS) is one of the most complex systems in the Airport. All baggage screening systems were modified in rapid fashion immediately after the events of September 11, 2001 events; however, there are remaining portions of the systems that are over 25 years old.

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In its current state, the Airport's baggage system is not a single system, but rather six separate outbound systems. After the events of September 11, modifying the separate systems was the best way to rapidly increase security. At the time, each separate system was designed to include a nominal amount of passenger growth. Over the ensuing years as specific airline needs emerged or as airlines were relocated, the separate systems have been updated to meet the carriers' specific operating needs. Although various baggage projects have been implemented to address operating needs over the years, the systems continue to have limited capacity to meet both near and long term growth needs of the Airport.

The Airport baggage system is faced with three problems: 1) existing separate systems have major subsystems, such as controls, that are aging and must be replaced; 2) there is limited ability for the current systems to be expanded in their current configuration to adequately meet growing passenger demands; 3) separate systems lack interconnectivity between ticket counters and all of their aircraft gates. Passenger growth has increased in unprecedented amounts and is expected to continue. This is a major and near-term challenge for the Airport due to both the complexity of keeping operations ongoing during construction and major space constraints on expanding the systems' capacity to meet future growth.

DETAILS

The purpose of this project is to optimize the BHS to achieve the maximum outbound baggage capacity within the current airport footprint.

When complete, this project will have achieved the following outcomes:

- Increased outbound system capacity up to 60 MAP;
- Increased system reliability, redundancy, and security;
- Flexibility in Airline ticket counter use and related gate assignments;
- Reduced minimum connect times where possible; and
- Long term energy savings.

Scope of Work

The Phase 2 scope of work will expand the centralized baggage screening area in the airport's Central Terminal by adding more Explosive Detection Systems (EDS) machines and increasing the Checked Baggage Resolution Area (CBRA). This phase will also replace conveyor systems to the north portion of the bagwell, construct the final baggage sortation matrix, and add more capacity to the South Satellite baggage system. Concession storage and the conveyance maintenance shop will be relocated to their final locations. The following activities support the Phase 2 construction:

- (1) Demolish and replace existing C1, C25, C88 and C96 Baggage Handling Systems (BHS);
- (2) Construct the final BHS sortation matrix;
- (3) Install, test and certify Transportation Security Administration (TSA) provided EDS machines in the Basement Level. This consists of two (2) new EDS pods with two (2) machines in each pod;

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- (4) Demolish and replace the entire C25 BHS from the underground tunnel to the Ramp level at the South Satellite. This adds additional outbound lines in the existing baggage tunnel, replaces two (2) makeup units, provides future availability for manual encode and demolishes the existing claims in the Federal Inspection Services (FIS) area;
- (5) Construct the new North-End odd-size BHS (Zone 7);
- (6) Demolish C22 odd size BHS;
- (7) Construct C92 BHS final connections;
- (8) Remove and decommission various existing BHS components;
- (9) Demolish and install BHS make-up devices;
- (10) Construct a new tenant storage area in the C1 building basement;
- (11) Relocate the existing tenant storage area from the Central Terminal Expansion (CTE) basement level to the new area in the C1 building;
- (12) Relocate, modify and add new structural, architectural and utility systems;
- (13) Construct a new maintenance conveyor shop;
- (14) Relocate and demolish the existing maintenance conveyor shop;
- (15) Construct, modify and demolish various construction elements, such as wall, ceiling, flooring and finish work; and
- (16) Perform various Regulated Material abatement.

Schedule: Phase One

Based on the most current contractor schedule, Phase 1 is approximately 3 months behind schedule. Holding this schedule would place Phase 1 Substantial Completion in 2019 Quarter 4. The contractor delay can be attributed to late conveyor submittals and lagging equipment fabrication, along with further delay caused by a failed factory acceptance test, and water damaged EDS machine replacement.

While the contractor schedule shows the project approximately 3 months behind schedule, the Port project team feels that the project is six months behind schedule due to the contractor delays. This does not include any delays resulting from the damaged EDS machines. These delays are being assessed and are critical to the project schedule. Delays will be added to the project schedule once they are determined.

While the current delay to the project is likely unrecoverable, the project team is working to eliminate further delay. To address the performance and schedule concerns, the team has implemented the following:

- Three additional design review meetings were held to help the contractor understand the project requirements.
- Port staff was sent to Denver to meet with both the contractor and designer in order to speed up critical submittal reviews.
- Multiple letters have been issued documenting the delay caused by the contractor.
- The project team now meets on-site with the contractor's executives quarterly to discuss ways to mitigate the schedule delays. Actions resulting from these meetings:

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- Baggage handling system (BHS) installation foremen were swapped with other projects to help speed production,
 - Night shift hours were adjusted to provide for more Port oversight,
 - The contractor added a field engineer to assist with field layout,
 - BHS subcontractor field staff were increased to speed installation and improve quality,
 - Three additional BHS installation crews were added (total of five) to mitigate submittal and fabrication delays,
 - Work days were extended from Monday through Friday to include Saturday, and
 - BHS manufacturer added a crew to help with conveyor installation quality control.
- To avoid further delay resulting from another failed factory acceptance test, the team required the contractor to provide a recovery schedule showing weekly milestones leading up to the re-test. Beginning September 19, a Port representative along with a member of the design consulting firm traveled weekly to the BHS contractor headquarters in Michigan to verify successful completion of the designated milestones. This extra attention allowed all the required tests to be demonstrated ahead of the official factory acceptance test and greatly contributed to a successful retest.
 - Laydown area to store uninstalled conveyor had become a point of contention. The Port secured and provided warehouse space to the contractor to free the area of stored conveyor and speed installation at the site. This has resulted in a more organized and efficient work area.

Schedule: Phase Two

Phase 2 design efforts started on October 31, 2017, 100-percent design documents were received August 2018 and are currently being reviewed by the Airport Building Department. Planned Phase 2 construction advertisement in Q3 2019 was contingent upon on-time Phase 1 completion and will now be delayed for three to six months to avoid overlapping of Phase 1 and 2 work. The South Satellite portion of Phase 2 cannot begin construction until the International Arrivals Facility is fully operational. The Baggage Optimization project will need to be advertised with the latest IAF completion date shown in the bid documents, which may be a Baggage Optimization change order risk should there be a delay to the IAF completion date.

Phase 1 Substantial Completion (based on estimated 6-month Contractor delay)	2020 Quarter 1
Phase 2 Substantial Completion (includes resequencing duration increase)	2023 Quarter 2
Phase 3 Substantial Completion	2025 Quarter 4

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Diversity in Contracting

The project manager, along with the Diversity in Contracting Department determined a Woman and Minority Business Enterprise (WMBE) participation aspirational goal for this project of two percent. These affirmative efforts are in accordance within the Diversity in Contracting policy directive that was established by Resolution No. 3737 and may be amended from time to time.

ALTERNATIVES AND IMPLICATIONS CONSIDERED

Alternative 1 – Delay Phase 2 with the hope that market conditions become more favorable due to slowing economy.

Cost Implications: Potential decrease in construction costs.

Pros:

- (1) Potential decrease in Phase 2 and Phase 3 expenditures.
- (2) Potential to increase project interests with bidders.
- (3) Abandoning project at the end of Phase 1 does not negatively impact the existing system.

Cons:

- (1) This option will cause an overall project delay.
- (2) Potential TSA OTA funding expires and the project would lose the funds.
- (3) Due to the aging system and lack of capacity to keep up with Airport growth, the existing baggage system will experience increased operational demand and stress that will likely cause older subsystems to fail causing impacts to airlines and passengers.

This is not the recommended alternative.

Alternative 2 – Proceed with constructing Phase 2 as originally planned and prepare for Phase 3.

Cost Implications: Requested amount of \$213,000,000.

Pros:

- (1) Deliver a baggage system with increased capacity and higher reliability.
- (2) Prepare for Phase 3 to complete the intended design that will meet the growing Airport demands.

Cons:

- (1) BHS market conditions are likely at its peak. Budget increase to complete Phase 3 is likely, if market conditions do not change.

This is the recommended alternative.

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FINANCIAL IMPLICATIONS

The total cost of Phase 2 construction is estimated at \$247,673,000; of which \$24,937,200 was previously authorized, in June 2017, to provide project management and design support, and small works early construction. The Phase 1 Estimate at Completion (EAC) is projected to have a savings of \$10,000,000, which was included in the Phase 1 Construction authorization request in July 2016. The available previous authorizations (totaling \$34,937,200) will offset this request so that the total rounded amount of this authorization request at this time is \$213,000,000.

	Capital	Expense/ERL	Total
COST ESTIMATE			
Original estimate	\$317,000,000	\$150,000	\$317,150,000
Previous changes	\$127,900,000	\$0	\$127,900,000
<i>Budget Transfer (SSAT Make-up)</i> \$14,000,000 <i>Budget Transfer (CTE Elevators)</i> \$1,900,000 <i>Savings Returned</i> (\$24,000,000) <i>Additional Capacity Budget</i> \$136,000,000			
Current request	(\$220,000)	\$220,000	\$0
Revised estimate	\$444,680,000	\$370,000	\$445,050,000
AUTHORIZATION			
Previous authorizations	\$136,162,200	\$150,000	\$136,312,200
Current request for authorization	\$212,780,000	\$220,000	\$213,000,000
<i>Phase 2 Estimate</i> \$247,673,000 <i>Transfer Auth from Ph 1</i> (\$10,000,000) <i>Previous Authorization</i> (\$24,937,200)			
Total authorizations, including this request	\$348,942,200	\$370,000	\$349,312,200
Remaining amount to be authorized	\$95,737,800	\$0	\$95,737,800

Annual Budget Status and Source of Funds

This project, C800612, was included in the 2019-2023 capital budget and plan of finance with a budget of \$444,900,000. The \$220,000 Regulated Materials was transferred into the Aeronautical Allowance C800753. The funding sources will include the Airport Development Fund, TSA funding, existing revenue bond funds and future revenue bonds.

Financial Analysis and Summary

Project cost for analysis	\$445,050,000
Business Unit (BU)	Baggage System
Effect on business performance (NOI after	NOI after depreciation will

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depreciation)	increase.
IRR/NPV (if relevant)	N/A
CPE Impact	\$1.18 by 2026

ADDITIONAL BACKGROUND

The Baggage Optimization project was scoped in 2012 to accommodate 45 MAP with an expandable design to accommodate future growth. At the time, growth forecasts were flat and predicted that 45 MAP would be adequate through 2027. The decision was made to proceed in building an expandable 45 MAP system with the expectation that an expansion would occur in the future in time to accommodate growth up to the 60 MAP level. Due to unprecedented growth at the airport, the 45 MAP threshold was met in 2016, over ten years earlier than anticipated. In June 2017, the Commission authorized the project to incorporate a capacity expansion of the Baggage Optimization project in order for the new outbound baggage system to accommodate 60 MAP. The additional capacity will be incorporated into Phases 2 and 3 and added 14 months to the overall project schedule and a net budget increase of \$126 million. The \$126 million increase is included in the overall budget of \$445 million.

ATTACHMENTS TO THIS REQUEST

- (1) Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

- February 26, 2019 – Baggage Optimization Quarter 4 Project Briefing
- October 23, 2018 – Baggage Optimization Quarter 3 Project Briefing
- June 12, 2018 – Baggage Optimization Quarter 2 Project Briefing
- January 9, 2018 – Baggage Optimization Quarter 4 Project Briefing
- September 26, 2017 – Baggage Optimization Quarter 3 Project Briefing
- June 27, 2017 – Commission authorization to (1) authorize additional design and project management funds to expand the capacity to 60 million annual passengers (MAP); (2) use Port crews and small works contracts to perform additional construction work; and (3) amend Service Agreement P-00317641 to add \$10,160,000
- October 25, 2016 – Baggage Optimization Quarter 4 Project Briefing
- July 12, 2016 – Commission authorization to advertise and execute a contract for construction Phase 1
- June 28, 2016– Baggage Program Briefing
- May 17, 2016 – Checked Baggage Optimization Project Briefing
- March 8, 2016 – Commission authorization for the Chief Executive Officer to amend the Baggage Optimization Design Services contract
- June 23, 2015 – Checked Baggage Optimization Project Briefing
- September 10, 2013 – The Commission authorized the execution of an Other Transaction Agreement (OTA) with TSA for reimbursable costs for design; construction, and to authorize

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\$15 million to continue from 30% to 100% design; and execute a consultant service agreement for program management support services

- August 20, 2013 – Response to questions from Commissioners asked during August 6, 2013 Commission Meeting
- August 6, 2013 – The Commission was briefed on the near-term and long-term challenges related to handling checked baggage at the Airport
- January 22, 2013 – The Commission authorized \$5 million for staff to begin design through 30%, and to enter into an agreement to allow reimbursement from the federal government to the Port for eligible elements of the 30% design effort
- January 8, 2013 – Baggage Systems Briefing
- August 14, 2012 – Baggage system recapitalization/optimization was noted in the 2013 business plan and capital briefing as a significant capital project not included in 2013-17 capital program
- August 7, 2012 – Baggage system recapitalization/optimization was referenced as one of the drivers for the need to develop an Airport Sustainability Master Plan
- June 26, 2012 – The Airport’s baggage systems were discussed during a briefing on terminal development challenges
- May 10, 2012 – TSA’s interest in a national recapitalization/optimization plan for all baggage-screening operations was referenced in a design authorization request for the C60-C61 Baggage Handling System Modifications Project