



**COMMISSION
AGENDA MEMORANDUM**

Item No.

8c

ACTION ITEM

Date of Meeting

October 28, 2025

DATE: October 17, 2025

TO: Stephen P. Metruck, Executive Director

FROM: Eileen Francisco, Director Aviation Project Management
Keri Stephens, Director, Aviation Facilities and Capital Programs

SUBJECT: Snow Storage Expansion Phase II Construction Authorization

Amount of this request: \$14,403,000

Total estimated project cost: \$24,800,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to advertise and execute a construction contract for Snow Storage Expansion Phase II (C801171) adjacent to the Industrial Wastewater System (IWS) Lagoon 3.

The amount of this authorization request is \$14,403,000 with the total project value at \$24,800,000.

EXECUTIVE SUMMARY

The Snow Storage Expansion project expands the laydown area available for stockpiling and managing snow on the airfield during winter storm events to meet the operational and FAA certification needs. The Lagoon 3 snow storage site, in conjunction with the constructed North and South snow storage sites, will provide snow storage capacity for a 12" precipitation event on the airfield ramp. Snowmelt runoff containing aircraft deicers will be routed to the Port's IWS for treatment meeting regulatory requirements.

JUSTIFICATION

The Lagoon 3 Snow Storage Site constitutes the final and essential phase of the broader Snow Storage Expansion Project, which is a key infrastructure initiative aimed at enhancing the airport's ability to manage winter weather impacts. This site has been specifically designed to accommodate the accumulation and controlled handling of snow volumes generated by a 12-inch precipitation event across the airfield ramp, a critical operational area for aircraft movement and ground handling activities.

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By providing dedicated snow storage capacity in this location, the project significantly strengthens the airport's overall winter operations resilience. It minimizes the risk of weather-related operational disruptions, particularly those affecting airline schedules and ramp logistics, and supports continuous airfield availability during major snow events. The infrastructure is engineered to collect and channel meltwater along with any associated deicing chemicals into the Port's IWS, thereby ensuring full compliance with the Port's National Pollutant Discharge Elimination Systems (NPDES) permit requirements and advancing the airport's environmental stewardship objectives.

The completion of Lagoon 3 not only fulfills regulatory and operational needs but also delivers measurable benefits in terms of public safety, environmental protection, and service reliability.

Diversity in Contracting

The project staff, in coordination with the Diversity in Contracting Department, have set goals for this contract. This contract is not federally funded and as such will include a 12% Woman and Minority Business Enterprise (WMBE) aspirational goal.

DETAILS

This contract will involve limited interface with other projects and airline operations. Continual coordination, where required, with Airport Operations, Airlines, and related Tenants will ensure the least possible operational impact during construction.

Scope of Work

This scope of work in Phase II covers the development of the Lagoon 3 Snow Storage Site, which will supplement the North and South Snow Storage Sites constructed in Phase I.

Site Grading and Laydown Area Expansion:

Earthwork and grading will be performed to create a stable, appropriately sized laydown area suitable for the stockpiling, handling, and controlled melting of collected snow. The design will ensure drainage compatibility and structural resilience for continuous snow management operations.

Meltwater Collection and Conveyance System:

The site will be equipped with infrastructure to collect meltwater and associated deicing chemicals and direct these flows to the existing Port IWS. This system will be designed to comply with NPDES permit requirements for water quality and discharge standards.

Access Improvements – Vehicle Service Road, Gate, and Perimeter Fence:

Modifications will be made to the existing vehicle service road at the site entrance to achieve appropriate roadway geometry and surface grading. The perimeter gate and fencing will be

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widened and upgraded to accommodate large snow handling equipment, ensuring safe and efficient site access under winter operational conditions.

Perimeter Intrusion Detection System (PIDS) Modifications:

Existing PIDS infrastructure located near the modified gate area will be adjusted to maintain the integrity of the airport's perimeter security system. All adjustments will be coordinated to ensure no disruption to current security monitoring capabilities.

Site Lighting Installation:

New lighting fixtures will be installed at strategic locations to support safe nighttime and low-visibility snow management activities. The lighting design will comply with airport standards minimizing glare and light spill.

Schedule

Activity

Commission construction authorization	2025 Quarter 4
Construction start	2026 Quarter 2
In-use date	2026 Quarter 4

Cost Breakdown

	This Request	Total Project
Design	\$0	\$2,500,000
Construction	\$14,403,000	\$22,300,000
Total	\$14,403,000	\$24,800,000

ALTERNATIVES AND IMPLICATIONS CONSIDERED

As part of the planning and environmental review process for the Snow Storage Expansion Project, the Port conducted a comprehensive alternatives analysis to evaluate a range of viable options for managing snow accumulation on the airfield during major winter storm events. This evaluation considered technical feasibility, regulatory compliance, operational efficiency, environmental impacts, and life-cycle costs.

Alternative 1 – Status Quo

Status quo was considered as a baseline scenario. While this alternative would avoid capital expenditures and reduce infrastructure near sensitive wetland buffer areas, it presents

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significant risks, including potential violations of the Port's NPDES permit during heavy snow events if sufficient designated storage areas are not available.

Cost Implications: \$0

Pros:

- (1) The avoidance of capital expenditures, resulting in immediate cost savings for the Port.
- (2) By not constructing new infrastructure, this option minimizes disturbance to areas adjacent to existing wetlands and reduces potential impacts to sensitive wetland buffer zones.

Cons:

- (1) Potential NPDES permit violation if snow is stored outside of a snow storage site during heavy snow. NPDES violations could result in immediate fines, costly remediation mandates, long-term operational burden, and strategic risks to capital programs and grant funding.

This is not the recommended alternative.

Alternative 2 – Snow Melters with Snow Storage Pad

This alternative involves a capital investment of approximately \$26,261,000 for the procurement and installation of snow melting equipment and associated infrastructure, along with ongoing operating expenses, including fuel, maintenance, staffing, and transportation logistics. While the initial capital outlay may appear comparable to the snow storage site alternative, the recurring operational costs over the system's life cycle contribute to a higher total cost of ownership.

Cost Implications: Capital cost of 26,261,000 & annual expense cost

Pros:

- (1) Avoidance of full infrastructure build-out if snow events are infrequent: One potential benefit of deploying snow melters is that the equipment could remain idle in years with lower-than-average snowfall, thereby delaying or avoiding some operational expenses. In such years, the overall expenditure could be lower than for a dedicated snow storage facility that requires ongoing maintenance regardless of snowfall volume.
- (2) Operational flexibility and potential rapid snow removal: Snow melters provide a mechanical means of quickly reducing snow volumes without requiring extensive land area for storage. In certain scenarios, this method may expedite snow disposal compared to traditional haul-and-dump operations, particularly when space is constrained.

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Cons:

- (1) High fuel consumption and long-term operational burden: Snow melters require significant fuel inputs to operate, particularly under heavy load conditions. This leads to substantial greenhouse gas emissions, increased dependency on fuel supply chains, and elevated operating costs. Infrequent use can further degrade equipment life expectancy, resulting in more frequent replacement cycles and higher long-term capital reinvestment needs.
- (2) Infrastructure and site constraints limit feasibility: Port lacks the necessary ramp-side infrastructure and spatial layout to support the effective use of snow melters on or near the airfield. There is insufficient room for the staging, maneuvering, and operation of these units in high-traffic aircraft movement areas. Consequently, snow would still need to be trucked—sometimes long distances—off the ramp to a melting location such as Lagoon 3, thereby negating much of the time and labor savings typically associated with this equipment. This added complexity undermines operational efficiency and adds further logistical burden.

This is not the recommended alternative.

Alternative 3 – Lagoon 3 Snow Storage

This alternative represents the currently planned approach and carries a total Capital Improvement Program (CIP) cost of \$23,800,000, which includes design, permitting, construction of the Lagoon 3 snow storage site, and integration with the previously constructed North and South sites. While this represents a substantial capital investment, the cost is aligned with the scale of infrastructure needed to meet regulatory and operational demands for airfield snow management.

Cost Implications: Total CIP cost of \$24,800,000

Pros:

- (1) Ensures NPDES regulatory compliance during major snow events: This alternative provides dedicated infrastructure to collect and manage snow and meltwater in a controlled environment, ensuring that runoff containing deicing agents and other pollutants is properly routed to the Port's IWS. This design is purpose-built to maintain full compliance with the Port's NPDES permit, specifically for storm events of up to 12 inches of precipitation—a threshold based on historical snowfall data and operational modeling.
- (2) Improved operational efficiency, reliability, and resilience: Purpose-built snow storage sites significantly improve airfield snow removal efficiency by offering strategically located, high-capacity laydown areas that minimize travel distances for snow-hauling equipment. This reduces turnaround time during active weather events, enhances ramp safety, and improves airline and ground crew operating conditions. The infrastructure also supports 24/7 operations with lighting and access improvements, enabling consistent response during low-visibility or night-time conditions.

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Cons:

- (1) Capital costs.

This is the recommended alternative.

FINANCIAL IMPLICATIONS

<i>Cost Estimate/Authorization Summary</i>	Capital	Expense	Total
COST ESTIMATE			
Original estimate	\$17,450,000	50,000	\$17,500,000
Previous changes	7,300,000	0	7,300,000
AUTHORIZATION			
Previous authorizations	\$10,347,000	\$50,000	\$10,397,000
Current request for authorization	\$14,403,000	0	\$14,403,000
Total authorizations, including this request	\$24,750,000	\$50,000	\$24,800,000
Remaining amount to be authorized	\$0	\$0	\$0

Annual Budget Status and Source of Funds

This project, CIP 801171, was included in the 2025-2029 capital budget and plan of finance with a budget of \$24,750,000. The funding sources include the Airport Development Fund and revenue bonds. This project received Majority-In-Interest (MII) approval from the airlines on October 20, 2021.

Financial Analysis and Summary

Project cost for analysis	\$24,800,000
Business Unit (BU)	Airfield Movement Area
Effect on business performance (NOI after depreciation)	NOI after depreciation will increase due to inclusion of capital (and operating) costs in airline rate base
IRR/NPV (if relevant)	N/A
CPE Impact	\$0.08 in 2027

Future Revenues and Expenses (Total cost of ownership)

Aviation Maintenance does not anticipate any material increase in operating expenses as a result of the added pavement surface.

ATTACHMENTS TO THIS REQUEST

- (1) Presentation slides

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PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

October 25, 2022 – The Commission authorized the Executive Director to advertise a construction contract, and include a project labor agreement, for Snow Storage Expansion project Phase 1 at Seattle-Tacoma International Airport (SEA) for a Total Request Amount of \$6,900,000 and a total project authorization of \$10,347,000, and the Estimated Overall Project Cost of \$17,500,000.

October 26, 2021 – The commission authorized the Executive Director to design and prepare construction documents for the Snow Storage Expansion project at Seattle-Tacoma International Airport (SEA) for a Total Request Amount of \$2,500,000 and a Total Project Authorization of \$2,794,000, and the Estimated Overall Project Cost of \$17,500,000.