



**COMMISSION
AGENDA MEMORANDUM**

Item No. 8c

ACTION ITEM

Date of Meeting December 10, 2019

DATE: December 4, 2019

TO: Stephen P. Metruck, Executive Director

FROM: Mike McLaughlin, Director, Cruise Operations
Sandra Kilroy, Director, Maritime Environment and Sustainability
Fred Chou, Capital Program Leader, Seaport Project Management
Paul Meyer, Sr. Manager, Maritime Environment and Sustainability

SUBJECT: Pier 66 Shore Power Capacity and Connection - an early Action of the Seattle Waterfront Clean Energy Strategic Plan

Amount of this request: \$960,000

Total estimated project cost: \$17,000,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to design, permit, and develop construction documents for the Pier 66 Shore Power Project. The amount requested under this authorization is \$960,000 of a total estimated project cost of \$17,000,000.

EXECUTIVE SUMMARY

The port is an industry and regional leader in economic development and sustainability. As Seattle’s cruise industry continues to grow, the port recognizes its responsibility and the importance of concerted efforts to balance economic growth with sustainability. The Seattle Waterfront Clean Energy Strategic Plan will provide a port investment strategy to protect the environment and improve community health. Through this approach the port seeks to achieve its vision of being the greenest, most energy efficient port in North America.

The provision of shore power for cruise ships, is the port’s greatest opportunity to reduce greenhouse gas (GHG) emissions and improve local air quality. Currently, the port’s Smith Cove Cruise Terminal at Terminal 91 (T91) which began operations in 2009, provides shore power at its two cruise vessel berths. The single berth facility at Pier 66’s Bell Street Pier Cruise Terminal, which opened in 1999, does not have shore power for cruise vessels.

To enable future shore power connections by the cruise ships that call on the Pier 66, the port engaged and is currently working closely with Seattle City Light (City Light) to plan and provide shore power to the Bell Street Pier Cruise Terminal. This project serves as an early-action toward implementing the larger Clean Waterfront Energy Plan. Based on City Light’s system

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impact study estimates that were provided in 2018, the port estimated the total investment required to bring power to the Pier 66 via landside infrastructure through the City's right of way would cost approximately \$30 million. Most of these estimated costs were attributed to infrastructure installation through the city right-of-way.

This year, after research and exploration of lower cost approaches, port staff proposed a submarine cable to bring the power to the facility. This alternative, which would avoid costly street trenching, will bring power along the seafloor of Elliott Bay from Terminal 46 (T46) directly to Pier 66. The port conducted a submarine cable feasibility study and found the approach to be feasible. Staff shared the submarine cable feasibility findings with City Light, who examined two options to bring power to Terminal 46 to feed the submarine cable and minimize construction impacts to waterfront right-of-way. The cost of the preferred landside feeder option via T46 and a submarine cable to Pier 66 resulted in a combined conceptual level project cost estimate of \$17 million—nearly a 50 percent cost reduction compared to the \$30 million landside option evaluated in 2018.

This request for funding will enable the design, development, and permitting phases of this project to begin, inclusive of both on-site and off-site infrastructure by the Port and City Light. The target date for shore power system completion for the project is by the start of the 2022 cruise season.

JUSTIFICATION

The Bell Street Pier Cruise Terminal at Pier 66 is a single berth cruise facility in the heart of downtown Seattle's waterfront. Pier 66 is the port's first cruise terminal—opened in 1999—and is homeport to Norwegian Cruise Line and its subsidiary Oceania Cruises. This terminal, along with the Smith Cove Cruise Terminal at T91 contributes significantly to the region's economy on an annual basis, generating more than 5,500 local jobs and \$893.6 million in business revenue each cruise season.

In addition to its economic development mission, the port is also an industry regional leader in sustainability and committed to addressing global climate change and improve local air quality. In 2017 the port's Commission adopted ambitious GHG reduction targets in alignment with the Paris Climate Agreement and is planning and implementing projects and programs to achieve these critical air emission reductions.

For instance, under the Northwest Ports Clean Air Strategy, the port was instrumental in efforts that decreased diesel particulate matter (DPM) and GHG emissions from port activities by 82 percent and 20 percent, respectively, since 2005. Looking to the future in which the port and Washington State envision a decarbonized maritime industry, the port has initiated a regional-scale planning effort known as the Seattle Waterfront Clean Energy Strategic Plan to enable and accommodate future needs and zero emission maritime operations. The plan envisions working in close partnership with the Northwest Seaport Alliance (NWSA), City Light and other key maritime energy users like Washington State Ferries and SSA Marine Inc. to holistically plan and

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develop strategies to ensure availability of clean, cost effective, resilient and reliable power for a carbon-free future.

The port's two shore power connected cruise berths are already resulting in significant emission reductions. In 2019, 89 percent of shore power capable ships at T91 successfully connected and avoided an estimated 4,300 metric tons (tons) of CO₂.

Expansion of shore power to Pier 66 advances the port's Century Agenda target to reduce Scope 3 greenhouse gas emissions from Scope 3 sources, by 80% by 2050 (from 2007), and be the greenest port in North America. The electricity demand needed to power ships berthed at Pier 66 is available from City Light without extensive infrastructure upgrades or transmission changes. This project does require the port to invest in the connection from the south, but the unique solution of utilizing a submarine cable for power delivery, instead trenching in the right of way, significantly reduces the overall cost.

On a cost per ton basis, assuming a 28-year infrastructure life (2022-2050) and \$17 million cost, staff estimates the cost in 2019 dollars of the cumulative carbon reduction by 2050 to be \$269 per ton if 50% of all calls to Pier 66 connected and \$134 per ton if 100% of all calls to Pier 66 connected. If every single one of the shore power capable ships that called at Pier 66 in 2019 connected each year through 2050, the cost of emission avoided would be \$192. As a measure of comparison, the estimated cost per ton of CO₂ reduced from the port's purchase of Green Direct wind power from Puget Sound Energy was \$61 per ton and the cost per ton of conservation achieved through the Airport's Stage 3 Mechanical Upgrades was \$300 per ton.

During the design development phase of this project, additional innovative solutions as well as funding support from state and federal agencies committed to supporting clean electricity substitution for combustion will be explored. Cost sharing strategies with our leasehold partner, Norwegian Cruise Line Holdings, are also being explored and will be further developed once design has sufficiently developed. Furthermore, staff will explore cost savings opportunities during design efforts and coordinate with the new cruise terminal project development at Terminal 46.

Diversity in Contracting

For planning and design services, we are leveraging existing indefinite delivery/indefinite quantity contracts which are fulfilling the port's previous small business program requirements. For the future construction phase, the project manager will work with the Diversity in Contracting Department to establish direct women and minority business enterprise (WMBE) aspirational goal for the project.

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DETAILS

Scope of Work

The major components of the P66 shore power project’s work scope include the following:

- (1) Pier 66 onsite shore power infrastructure/equipment inclusive of shore power cable management system
- (2) Approximately one mile of armored submarine cable
- (3) Terminal 46 onsite shore power infrastructure/switch gears
- (4) Offsite shore power related infrastructure and feeders by City Light
- (5) Design development/permitting and environmental review for project
- (6) Develop shared funding strategy

Schedule

The preliminary project schedule is shown below:

Commission design authorization	December 2019 (This Action)
Design and Permitting	12 months
Commission construction authorization	Early 2021
Construction start	Mid-year 2021
In-use date	2022 Cruise Season

Cost Breakdown

	This Request	Total Project
Design*	\$960,000	\$1,255,000
Construction**		\$15,745,000
Total	\$960,000	\$17,000,000

* Inclusive of cost of service agreement obligation with City Light

** Staff will seek grant and funding partnership opportunities that would reduce the overall construction/project costs.

ALTERNATIVES AND IMPLICATIONS CONSIDERED

Alternative 1 – Not invest in shore power infrastructure -- cruise ships at berth would continue to burn fuel to generate onboard electricity, while emitting greenhouse gases and air pollutants.

Cost Implications: \$0

Pros:

- (1) No capital investment is required.

Cons:

- (1) Cruise ships berthing at Pier 66 would generate electricity onboard from fossil fuel generators.

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- (2) The port would not advance progress toward Century Agenda emission reduction targets.

This is not the recommended alternative.

Alternative 2 – Bring shore power to Pier 66 through upland/landside infrastructure and install shore power equipment on Bell Street Pier.

Cost Implications: \$30 million

Pros:

- (1) Reduce cruise ship air emissions while ships are at berth.
- (2) Advance the port’s Century Agenda target to reduce greenhouse gas emissions.

Cons:

- (1) Requires high initial capital cost.
- (2) Significant impact to street/communities during construction.
- (3) Significant design and underground construction work through city right of way and potential to encounter differing site conditions and higher change order rate would be anticipated.

This is not the recommended alternative.

Alternative 3 – Bring shore power through landside infrastructure into and through Terminal 46, install a submarine cable that runs along the Elliott Bay seafloor from T46 to the Bell Street Pier. Install shore power equipment on Pier 66 Bell Street Cruise Terminal to provide enough power for the largest ships expected to call on the port.

Cost Implications: \$17 million

Pros:

- (1) Lower costs compared with full landside shore power infrastructure installation option under Alternative 2.
- (2) Reduce cruise ship air emissions while ships are at berth.
- (3) Advance the port’s Century Agenda target to reduce greenhouse gas emissions by 80% by 2050, from 2007 and be the greenest port in North America.

Cons:

- (1) Requires initial capital cost.
- (2) Additional risks in permitting related to submarine cable installation.

This is the recommended alternative.

FINANCIAL IMPLICATIONS

Cost Estimate/Authorization Summary

	Capital	Expense	Total
COST ESTIMATE			
Original estimate	\$17,000,000	\$0	17,000,000

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AUTHORIZATION			
Previous authorizations	\$295,000	0	\$295,000
Current request for authorization	\$960,000	0	\$960,000
Total authorizations, including this request	\$1,255,000	0	\$1,255,000
Remaining amount to be authorized	\$15,745,000	\$0	\$15,745,000

Annual Budget Status and Source of Funds

This project, C800120 P66 Waterfront Electrification/Shore Power, was included in the 2019 Capital Plan with an estimated total project cost of \$30,000,000. The project has been included in the 2020 Capital Plan with an updated estimated total project cost of \$17,000,000.

This project will be funded by the Tax Levy.

Financial Analysis and Summary

Project cost for analysis	\$17,000,000
Business Unit (BU)	Cruise Operations
Effect on business performance (NOI after depreciation)	<ul style="list-style-type: none"> • No incremental operating revenue or cost-savings is directly associated with this project. • On-going maintenance expenses, if any, are not yet known. • Estimated useful life of shore power infrastructure is 28 years, resulting in a depreciation expense of approximately \$600,000 annually. NOI after depreciation will reduce by that respective amount.
IRR/NPV (if relevant)	N/A
CPE Impact	N/A

Future Revenues and Expenses (Total cost of ownership)

Potential opportunities for grant revenue and cruise line project investment will be explored to offset the port’s cost-share of the project. On-going maintenance costs and possible support from relevant leasehold partners will be explored through the design process.

ATTACHMENTS TO THIS REQUEST

- (1) Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

None