COMMISSION
AGENDA MEMORANDUM **Item No.** 6d

ACTION ITEM **Date of Meeting** December 12, 2017

DATE: December 4, 2017

TO: Dave Soike, Interim Executive Director

FROM: David McFadden, Managing Director, Economic Development
Nick Milos, Manager, Corporate Facilities
Terrance Darby, Energy and Sustainability Program Manager
Catherine Chu, Capital Project Manager

SUBJECT: Pier 69 Solar Energy Implementation (CIP #C80888)

Amount of this request:	$515,000
Total estimated cost to the Port:	$332,500

ACTION REQUESTED

Request Commission authorization for the Executive Director to accept a Washington State Department of Commerce grant for a maximum of $317,000, and develop, advertise, and execute a Public Works Building Engineering Systems Contract for the Pier 69 Solar Energy Project, with an estimated total project cost of $515,000.

EXECUTIVE SUMMARY

This project will involve the installation of a roof-mounted photovoltaic (PV) system at Pier 69, the Port of Seattle Headquarters. The PV system is designed to generate approximately 100,000 kWh annually. The total estimated project cost is $515,000. Washington State Department of Commerce awarded a grant to the Port for up to $317,000 to be equally matched by Port funds for eligible costs. A Public Works Building Engineering Systems contract will be procured under state public works law to implement the project, which has potential to further improve project efficiency, reduce risks, and minimize costs. The Pier 69 Solar project directly supports the Century Agenda Goals to meet future energy needs through conservation and to reduce greenhouse gas emissions.

JUSTIFICATION

Economic Development

- Supports jobs in the solar energy industry by using in-state sourced solar panels and local installation contractors.
- Demonstrates the Port's leadership in producing clean energy

Environmental Responsibility

- The array replaces nearly 100,000kWh grid-produced electricity use annually and generates 3,300 MWh of renewable energy over the life of the panels
- Reduces greenhouse gas emissions by 1.5 MtCO2 annually and by 49 MtCO2 for life of project
- Complements other sustainability projects at the facility

Community Benefits

- Demonstrates the Port's commitment to be the greenest and most energy efficient port in North America

DETAILS

The proposed project would install a roof-mounted PV system, which would generate nearly 100,000 kWh annually. The estimated life span of the project is 33 years. The system provides approximately 4% of the annual power demand for the P69 facility. Using the current electricity utility base rates, the PV system will offset approximately $11,000 annually in electricity costs. The estimated payback period for the project is 24 to 30 years depending on future electricity rate increases. Over the life of the PV system, the project will save the Port between $586,000 (3%/yr. increase) to $885,000 (5%/yr. increase) in utility payments depending on the annual electricity rate increases.

Scope of Work

The scope of the project includes installation of approximately 328 monocrystalline solar panels produced in Washington State. The panels will mount on the sloped, metal-clad portion of the roof. The scope also includes installation of inverters, remote monitoring, metering, and other electrical infrastructure work to run solar power to the main electrical panels adjacent to the lobby on the first floor.

The work will be competitively procured as a building engineering systems contract. In accordance with RCW 39.04.290, the Port may award contracts of any value for the design, fabrication, and installation of building engineering systems, by using a competitive bidding process or request for proposals process where bidders are required to provide final specifications and a bid price for the design, fabrication, and installation of building engineering systems, with final specifications being approved by the Port. This procurement strategy was chosen because a simplified and self-contained turn-key solution is available and equipment represents a large percentage of the project cost. Further, this provides opportunities for quality, efficiency, and risk reduction for the Port. Port staff will provide project administration and oversight.

Small Business

Elements within the scope of work may provide small business opportunities. The project team is coordinating with the small business team in the Office of Economic Development to help identify and outreach to those small businesses that may be interested in this project.

Schedule

Commission authorization	December 2017
Construction start	Q2 2018
In-use date	Q4 2018

Cost Breakdown

Port Staff (not grant eligible)	$150,000
Construction (incl. sales tax)	$365,000
Total Project Cost	**$515,000**
Expected Grant Reimbursement (50% of construction costs)	($182,500)
Total Cost to the Port	**$332,500**

ALTERNATIVES AND IMPLICATIONS CONSIDERED

Alternative 1 – Continue using grid based power sources and decline Department of Commerce grant.

Cost Implications: No additional investments.

Pros:

No use of Port Capital Development funds and grant funds.

Cons:

1) Will not reduce annual electricity costs requiring starting at approximately $11,000 in the first year or $586,000 (3%/yr. increase) to $885,000 (5%/yr. increase) in utility payments over the life of the project;
2) Will not encourage clean energy industry in state of Washington;
3) Will not reduce greenhouse gas emissions by 1.5 MtCO2 annually and by 49 MtCO2 for life of project; and
4) Will not build a locally produced, clean, renewable electricity production facility and will not demonstrate in a concrete fashion observable to the community the Port's leadership in producing clean energy while utilizing Washington-based industries.

This is not the recommended alternative.

Alternative 2 – Accept grant and install 100kW solar array on P69 using traditional design-bid-build project delivery system.

Cost Implications: Most likely greater than $515,000 in total capital investments.

Pros:

1) This is a traditional project delivery method;
2) Port has existing processes defining each step; and
3) Award of construction contract is based on low bid which makes the process easier.

Cons:

1) Low bid companies may not be the best qualified;
2) Increased potential for conflicts between the designer and contractor;
3) Less efficient process when separating design from construction;
4) Less opportunity for contractors' innovation and input during design; and
5) Port may specify non-optimal solutions and forego best ideas from those most familiar with these types of projects.

This is not the recommended alternative.

Alternative 3 – Accept grant and install 100kW solar array on P69 using Building Engineering Systems project delivery process.

Cost Implications: Estimated at $515,000 total with net cost of $332,500 to the Port after grant reimbursements.

Pros:

1) Provides an additional opportunity for the Port to invest in solar energy;
2) Demonstrates Port's efforts towards meeting Century Agenda Goals;
3) Solar panels will be purchased from a Washington-based company; encouraging and sustaining local renewable energy industry;
4) Project offsets 100,000 kWh grid-produced electrical energy annually and defers generating 3,300 MWH over the life of the project with renewable energy source;
5) Reduces greenhouse gas emissions by 1.5 MtCO2 annually and by 49 MtCO2 for life of project;
6) Reduces electrical energy costs for the facility in the first year by approximately $11,000. Cumulatively, the project will save $586,000 (3%/yr. increase) to $885,000 (5%/yr. increase) depending on the rate of electricity cost increases. Solar would provide 4% of total energy usage for the P69 facility;
7) Produces 7.7 jobs from buying solar panels in WA State and using local installation contractors; and
8) Building Engineering Systems delivery process allows the Port to combine design and construction into one contract and select a contractor with best combination of qualifications and cost.

Cons:

1) Investment cost to produce kWh ($3.23/kW) still much greater than cost to provide from existing grid with similar renewable energy credit;
2) Investment cost per ton CO2 emissions avoided for life of project varies from $3,000 MtCO2 to $4,000 MtCO2 for life of project based on range of projected electricity increases of 3% to 5% yearly; and

3) Other energy efficiency projects may provide increased environmental benefits for less cost.

This is the recommended alternative.

FINANCIAL IMPLICATIONS

Cost Estimate/Authorization Summary

	Capital	Expense	Total
COST ESTIMATE			
Estimate	$515,000	$0	$515,000
AUTHORIZATION			
Previous authorizations	$ 50,000	0	$50,000
Current request for authorization	$465,000	0	$465,000
Total authorizations, including this request	$515,000	0	$515,000
Remaining amount to be authorized	$0	$0	$0

Annual Budget Status and Source of Funds

This project was included in the 2017 Plan of Finance under CIP 800888 P69 Solar Panel System at an estimated total cost of $1.2M. This project will be funded by the General Fund.

Financial Analysis and Summary

Project cost for analysis	$332,500 Assumes reimbursement of $182,500 from WA Department of Commerce grant.
Business Unit (BU)	Pier 69 Facilities Management
Effect on business performance (NOI after depreciation)	On average, this project is expected to increase NOI after depreciation by approximately $2,000 to $11,000 annually, over the project's 33 year life, depending on the expected growth in grid-based electricity rates.*
IRR/NPV (if relevant)	IRR: 3.4% to 4.7% NPV: ($149,000) to ($203,000) *Range reflects assumed annual electricity rate increase of 3% and 5%
CPE Impact	N/A

Future Revenues and Expenses (Total cost of ownership)

The project assumes annual energy production of 100,000 kWh per year over the expected 33 year life of the system. Energy savings are based on an initial rate of $0.1003/kWh and growing at 3% to 5% per year. Future expenses included annual maintenance for cleaning and an inverter replacement at year 15.

ATTACHMENTS TO THIS REQUEST

PowerPoint Presentation

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

None