



**COMMISSION
AGENDA MEMORANDUM**

Item No. 8j

ACTION ITEM

Date of Meeting 12/15/2020

DATE: November 20, 2020

TO: Stephen P. Metruck, Executive Director

FROM: Stephanie Meyn, Sr. Environmental Program Manager
Alex Adams, Sr. Environmental Program Manager
Elizabeth Leavitt, Sr. Director, Engineering, Environment & Sustainability

SUBJECT: Energy and Sustainability Fund: National Renewable Energy Lab Analysis Support

Amount of this request: \$127,000 (Energy & Sustainability Fund)

Total estimated project cost: \$150,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to commit previously approved Energy and Sustainability Center of Expertise funds to analyze energy and technology alternatives for both aviation and maritime facilities in the amount of \$127,000.

EXECUTIVE SUMMARY

This expenditure furthers the Century Agenda Strategy 4: *Be the greenest, most energy efficient Port in North America*. In the 2018 budget the Commission directed the Executive Director to “Allocate no less than \$1,000,000 to the Energy and Sustainability Center of Expertise to implement the Energy and Sustainability Committee Policy Directives as adopted in the first quarter of 2017 by the Port of Seattle Commission.”

The Committee, in its oversight role, has reviewed this project and recommends the use of the Energy & Sustainability Funds to provide analysis support from the National Renewable Energy Lab (NREL) for aviation and maritime projects. While this authorization is below the \$300,000 threshold delegation requirement, the Committee requested that these funds be explicitly authorized to provide visibility to the Commission and public.

NREL has expertise across many disciplines critical to Port decision-making. NREL is a sought-after resource for energy efficiency, renewable energy, power systems, and resilience expertise. NREL has developed the REopt™ techno-economic decision support platform to optimize energy systems for buildings, campuses, communities, and microgrids. NREL’s unique expertise will allow the Port to meet its Century Agenda emissions and energy goals, increase resiliency, and improve community health and social equity.

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JUSTIFICATION

The Energy and Sustainability Committee, in coordination with staff, agreed upon two attributes to guide distribution of these funds: 1) that the project leverage matching funds and in-kind support and 2) increase partnership opportunities with government, non-governmental and/or educational institutions.

The partnership with a federal government (US Department of Energy) laboratory will provide technical analysis enabling the Port to further explore its net zero carbon strategies. These strategies are further supported by partnerships with regional entities, businesses, and utilities in both the maritime and aviation sector. The NREL work will leverage and integrate with Port long-term planning efforts including Maritime's Seattle Waterfront Clean Energy Strategic Plan (SWCESP) and SEA's Utility Master Plan (UMP).

NREL explicitly does not offer its services where commercial consultants or engineering firms can do the work. This partnership provides access to world-leading technology and energy source integration that isn't available elsewhere.

The selection of energy sources such as natural gas or electricity and technologies such as steam, water, or ground-source heat to the Port's buildings will have significant impacts on the cost (operating and capital) and environmental footprint of the Port for the next 50 years. As a result of these large impacts, NREL expertise is warranted to seek the optimum solutions that will save the Port money and reduce emissions.

DETAILS

The Port is currently planning capital expansions in both the Maritime and Aviation divisions, including the proposed Sustainable Airport Master Plan Near-Term Projects (SAMP NTP) and upgraded maritime terminals. While the Port is developing a UMP that examined the SAMP NTP and proposed new North Terminal, no further economic and environmental study in 2021 is planned. The Port is moving forward with planning and partial design for the utility corridor and other ongoing capital investments that could negatively impact the airport's ability to use a more economic, efficient, or low-carbon heating and cooling system.

Additionally, the SWCESP is a two-year project, and NREL's support in the first year of the planning work will ensure that microgrids, energy storage, energy load management approaches, and other leading-edge strategies are evaluated before implementation.

Environmental teams in both Maritime and Aviation divisions will partner with other internal utility, tenant, and planning teams to examine options through this NREL study to help ensure that the Port will meet the following two Century Agenda goals:

- Reduce air pollutants and carbon emissions by 50 percent below 2005 levels by 2030 and achieve net zero carbon or be carbon negative by 2050; and

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- Meet all increased energy needs through conservation and renewable sources.

While the final scope will be developed after Commission authorization, NREL will support analysis such as:

- Identify opportunities for reducing emissions while ensuring sufficient future energy supply for Port locations. To this end, NREL will work with Port staff to identify and review plans for existing and future energy generation and use for Port facilities, both now and in the future.
- Apply its “REopt tool” to identify energy alternatives at the airport including opportunities for thermal storage, battery storage, onsite generation and resiliency should utility sources be disrupted.
- Evaluate opportunities for distributed energy, storage, grid modernization, and microgrids in maritime applications.
- Assess options for emergency back-up systems and redundancy and energy resilience.
- Assess proposed alternatives in relation to any existing overall energy strategy and potential reductions in emissions (e.g. potential emissions in relation to Century Agenda goals, potential electricity demand in relation to infrastructure limitations, etc).

Schedule

The work is expected to be developed over the next year following the proposed schedule listed below.

| Project Step | Estimated Completion |
|--|-----------------------------|
| Scope Definition | 12/31/2020 |
| Commission Authorization to Enter into MOU | 2/16/2021 |
| Agreement with NREL signed | 2/17/2021 |
| Data Gathering | 3/31/2021 |
| Evaluation of Alternatives & Technologies | 11/30/2021 |
| Final Recommendations | 12/31/2021 |

The budget will be \$127,000 from the Energy and Sustainability Committee Fund, and \$23,000 from the Environment and Sustainability Center of Expertise operating budget, for a total of \$150,000.

Cost Breakdown

| | This Request | Total Project |
|------------------------------------|------------------|------------------|
| NREL agreement and supporting work | \$127,000 | \$150,000 |
| Total | \$127,000 | \$150,000 |

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ALTERNATIVES AND IMPLICATIONS CONSIDERED

Alternative 1 – Do not support an NREL partnership.

Cost Implications: \$0

Pros:

- (1) Cost savings. Conserves staff resources for other work.

Cons:

- (1) If this study is not conducted, the proposed airport central utility plant expansion may not be able to meet the Century Agenda goals. Additionally, NREL’s expertise is needed in the first year (2021) of the two-year SWCESP. Because the planning horizon for capital projects is long, energy supply work must be done in advance of traditional project-footprint level planning
- (2) Port will not meet Century Agenda goals.

This is not the recommended alternative.

Alternative 2 – Support the NREL partnership

Cost Implications: \$127,000

Pros:

- (1) This study will examine several alternatives that will offer more innovative, low carbon, and efficient options as we expand our heating and cooling needs in the airport, and plan for net zero emission maritime industries. By conducting the study in 2021, we reduce the risk of proceeding with capital project designs that do not factor in more efficient and low-carbon options.
- (2) Supports Century Agenda goals.

Cons:

- (1) Cost of \$127,000 from Energy and Sustainability Committee Fund
- (2) Staff effort across multiple Port departments (though inclusion of cross-Port stakeholders in energy supply and optimization planning helps to integrate sustainability across the enterprise).

This is the recommended alternative.

FINANCIAL IMPLICATIONS

The requested \$127,000 funding for NREL’s technical support will utilize the Energy and Sustainability Fund. An additional \$23,000 will come from Environment and Sustainability Center of Expertise operating budget, which is not part of this request.

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Annual Budget Status and Source of Funds

Commission directed that money be made available in the 2018 Environment and Sustainability Center of Excellence expense funds to support and promote innovative projects that foster efforts to reduce greenhouse gases, advance sustainability efforts and promote regional collaboration. In the 2021 annual budget, this specific project was identified as a line-item for those already budgeted funds.

ATTACHMENTS TO THIS REQUEST

- (1) Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

February 28, 2017 – The Commission was briefed on adding Energy and Sustainability funding in the amount of \$1,000,000.