



COMMISSION
AGENDA MEMORANDUM

Item No. 8c

ACTION ITEM

Date of Meeting April 27, 2021

DATE : April 19, 2021

TO: Stephen P. Metruck, Executive Director

FROM: Stephanie Meyn, Sr. Environmental Program Manager (Aviation)
David Fujimoto, Sr. Environmental Program Manager (Maritime)
Arlyn Purcell, Interim Senior Director, Engineering, Environment and Sustainability
Sandy Kilroy, Director, Sustainability and Environmental (Maritime)

SUBJECT: **Interlocal Agreement with National Renewable Energy Laboratory**

Amount of this request: \$0

ACTION REQUESTED

Request Commission authorization for the Executive Director to enter into an interlocal agreement with National Renewable Energy Laboratory to analyze energy and technology alternatives for both aviation and maritime facilities to help meet Century Agenda environmental and energy goals.

EXECUTIVE SUMMARY

This interlocal agreement (ILA) is with the National Renewable Energy Laboratory (NREL), a not-for-profit federally-funded agency. NREL is managed for the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy by the Alliance for Sustainable Energy LLC, a partnership between Battelle and MRIGlobal.

Airports and seaports look to NREL for decision support and actionable insights to inform their long-term facility, infrastructure, and energy planning efforts. Adapting complex, legacy energy systems and transportation networks to minimize costs, emissions, and inefficiencies requires new, innovative solutions that NREL is uniquely positioned to offer.

NREL has helped other major transportation airports and seaports like Los Angeles World Airports, Dallas Fort Worth International Airport, the Port Authority of New York and New Jersey, and the Port of Long Beach understand the full range of options for achieving ambitious energy-saving goals, improving regional air quality, and optimizing the movement of people and goods.

NREL's expertise will allow the Port to make progress toward its Century Agenda emissions and energy goals, increase resiliency, and improve community health and social equity.

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The budget for this work was approved by the Commission on December 15, 2020. This action is exclusively for the approval to enter into the agreement with NREL. The value of this ILA is for \$150,000 of work over an approximate 1-year period.

JUSTIFICATION

This partnership with a federal laboratory will provide technical analysis enabling the Port to further explore its carbon reduction strategies. The NREL work will leverage and integrate with Port long-term planning efforts including Maritime’s Waterfront Clean Energy Strategic Plan 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, technologies such as steam, water, or ground-source heat to the Port’s buildings, and energy resources such as efficiency, storage or microgrids will have significant impacts on the cost (operating and capital), ability to support industry clean energy transition 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, pursue smart investments and reduce emissions.

DETAILS

For the maritime-related work, the goal of NREL’s work is to identify energy asset combinations (e.g., on-site renewable generation, energy storage, and other considerations such as transportation vehicle loads or on-site generation of renewable fuels) to address energy costs, network constraints, and sustainability initiatives. The initial focus of the work will be on Terminal 91 - which has a diverse mix of use cases, planned redevelopment and energy distribution constraints. NREL will technically validate and financially evaluate options in conjunction with the Seattle Waterfront Clean Energy Strategic Plan.

For the aviation-related work, the primary goal of NREL’s work is to identify opportunities to reduce emissions of the airport’s central plant (e.g., conversion of heating system from steam to hot water, geothermal ground source heat pumps, heat pumps using heat recovery chillers) over the long term while expanding the thermal generation capacities for projected future loads as a complement to the UMP assessment. This is particularly important to assess before the RNG contract term is completed in late 2030.

Scope of Work

While the maritime and aviation scopes will examine different technologies and alternatives for their specific application, the general nature of the work will follow a similar methodology. NREL has developed a techno-economic assessment tool known as Re-Opt (Renewable Energy Integration and Optimization) which recommends the optimal choice or mix of renewable

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energy, conventional generation, and energy storage technologies to meet cost savings, resilience, and energy and emission performance goals.

The Scopes for both aviation and maritime will follow these general tasks and deliverables:

- (1) Data Gathering and Review
- (2) Examine Assumptions and Limitations
- (3) Develop & Refine Alternatives
- (4) Techno-economic Analysis of Refined Alternative(s)
- (5) Final Recommendations and Report

Schedule

Task/Deliverable	Date
Commission ILA authorization	Q2 2021
Data Gathering	Q2-Q3 2021
Evaluation of Alternatives & Technologies	Q3-Q4 2021
Final Recommendations	Q1 2022

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, options that may not have been considered by the Utilities Master Plan will not be evaluated for sustainability or Century Agenda goals. For Terminal 91, the detailed analysis of energy options would be delayed.
- (2) Port will not meet Century Agenda goals.

This is not the recommended alternative.

Alternative 2 – Support the NREL partnership

Cost Implications: \$150,000 (previously approved by Commission Dec 15, 2020)

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 electrification of our waterfront. 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.

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- (2) Supports Century Agenda goals.

Cons:

- (1) Financial cost.
- (2) Staff effort across multiple Port departments.

This is the recommended alternative.

Annual Budget Status and Source of Funds

The previously approved budget includes \$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.

ATTACHMENTS TO THIS REQUEST

- (1) Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

December 15, 2020 – The Commission authorized for the Executive Director to commit previously approved Environment and Sustainability Center of Expertise funds to analyze energy and technology alternatives for both aviation and maritime facilities in the amount of \$127,000.