PORT OF LONG BEACH GREEN BOND

FRAMEWORK OVERVIEW AND SECOND OPINION BY SUSTAINALYTICS

June 12, 2017
# TABLE OF CONTENTS

1. Preface 3

2. Introduction 3

3. Framework Overview 4
   3.1 Use of Proceeds 4
   3.2 Project Evaluation and Selection Process 4
   3.3 Management of Proceeds 5
   3.4 Reporting 5
   3.5 Compliance Review 5

4. Sustainalytics’ Opinion 6
   Conclusion 7

Appendices 8

Sustainalytics 16
1. PREFACE

Port of Long Beach (the “Port”) has developed a green bond framework under which it is considering to issue a green bond and use the proceeds to finance expenditures related to the Middle Harbor Terminal (MHT) Redevelopment Project. The Port has engaged Sustainalytics to provide a second opinion on its framework and the framework’s environmental credentials. As part of this engagement, Sustainalytics held conversations with various members of Port of Long Beach’s management team to understand the sustainability impact of their business processes and planned use of proceeds for the bond framework. Sustainalytics also reviewed relevant public and internal documents. This document contains two sections: Framework Overview – summary of Port of Long Beach’s Green Bond framework; and Sustainalytics’ Opinion – an opinion on the framework.

2. INTRODUCTION

The Port of Long Beach is a public agency managed and operated by the City of Long Beach Harbor Department. The Port is the second-busiest port in the United States and the 20th-busiest container cargo port in the world serving as a primary gateway of trade between the United States and Asia.

The Port of Long Beach is committed to becoming the most environmentally-friendly port in the world with a vision to be “the global leader in operational excellence and environmental stewardship”. Accordingly, in 2005 the Port adopted the Green Port Policy\(^1\) which sets the framework for its environmental protection efforts as well as its day-to-day operations. The Green Port Policy includes six basic program elements, one of which includes the reduction of harmful air emission from port activities.

Sources of port-related emissions include ocean-going vessels, heavy-duty trucks, harbor craft, cargo-handling equipment and railroad locomotives. Between 2005 to 2012, the Port had achieved reductions in diesel particulate matter by 81%, nitrogen oxides by 54% and sulfur oxides by 88%.

Moving forward, the Port is investing more than $4 billion over a decade as part of its strategic plan to build a modern, clean, and efficient gateway\(^2\). Fostering the development of zero-emission technologies to electrify operations is a key component of achieving its goal of being a zero-emissions port.

\(^1\) http://www.polb.com/environment/green_port_policy.asp

\(^2\) http://www.polb.com/civica/filebank/blobdload.asp?BlobID=13726
3. FRAMEWORK OVERVIEW

For the purpose of issuing a green bond, Port of Long Beach has developed the following framework which addresses the four key pillars of the Green Bond Principles (GBP): use of proceeds, project selection process, management of proceeds, and reporting.

3.1 Use of Proceeds

The proceeds of the green bond will be allocated towards financing and funding projects that meet the following eligibility criteria.

Eligibility Criteria

Port of Long Beach has identified the following projects aimed at reducing the amount of GHG emissions from its operational processes. This is expected to be completed through the electrification and use of zero emission equipment at the Port. Eligible projects include:

- **Pier E Berth E22 Wharf and Backland Redevelopment**: this project will lead to more efficient loading and unloading of operations through (a) the conversion from diesel-powered equipment to electrified rail-mounted gantry crane operations and (b) shore-to-ship power outlets to allow ships to turn off auxiliary generators in order to reduce emissions.

- **Pier E Container Yard / Intermodal Railyard**: the project will develop infrastructure to support electric automatic stacking cranes and electric automatic dial cantilever gantry cranes which leads to reduction in air emissions by removing the requirement of trucks. Supporting infrastructure will include (a) railway track expansion and (b) container storage yard.

Please refer to Appendix A for additional details of eligible projects.

3.2 Project Evaluation and Selection Process

Port of Long Beach will allocate proceeds of the green bond towards eligible projects outlined above. The selection of eligible projects is a collaborative effort among the Engineering Bureau, Environmental Planning Division, and Finance Division. The Engineering Bureau, in collaboration with the Environmental Planning division which handles the California Environmental Quality Act (CEQA) and Environmental Impact Report (EIR) processes, reviews the capital program based on a 10-year cash flow forecast plan and identifies possible projects that meet the “green projects” criteria. The Finance Division reviews the funding need of eligible capital projects selected by the Engineering Bureau to determine its financing options. The evaluation and selection process takes approximately 1-2 months.
3.3 Management of Proceeds

The Finance Division will track green bond proceeds with assistance from the Engineering Bureau and Environmental Planning Division. The Finance Division will review project expenditures with the Engineering Bureau and Environmental Planning Division every month, identify the eligible project cost and fund the green projects every quarter. Pending allocation of the green bond proceeds to eligible green projects, the Finance Division will track and maintain an amount equal to the balance of unallocated green bond proceeds separately by setting up accounts under the subportfolio. At the end of fiscal year, Finance Division will reconcile the allocated green bond proceeds with the eligible green bond project costs.

3.4 Reporting

Annually, until the green bond proceeds are fully allocated, Port of Long Beach will report the annual use of proceeds allocated per eligible project as well as annual balance of outstanding bond proceeds. This disclosure will continue until such time as the proceeds of the bonds are fully allocated.

The Port anticipates a 28% reduction in GHG emissions upon the full completion of the Middle Harbor Terminal (MHT) Project as compared to a traditional diesel terminal. Each year, the Port completes an extensive emissions inventory in which it calculates GHG emissions associated with the Port operations. Going forward, the Port will quantify the actual GHG emissions from sources listed in Appendix B (in tons of CO2e avoided per year) from the MHT. The analysis will track annual operational emission reduction due to the electrification of the MHT with the final anticipated GHG reduction target.

3.5 Compliance Review

Before the first anniversary of the green bond issuance, Port of Long Beach will engage Sustainalytics to review projects funded by the green bond proceeds in order to assess the compliance of projects with the eligibility criteria. Sustainalytics will provide a report of the evaluation, which the Port may publically disclose. In an unlikely event that non-conformance is determined, the Port may reallocate the bond funds to a different project that meets the criteria.

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3 Note: The 28% reduction will not be achieved until full buildout of MHT and the full conversion of diesel to electric is complete. Furthermore, changes in the GHG emissions at the utility level may impact the KPI. This information will be gathered and the impact will be reported on a best effort basis.
4 SUSTAINALYTICS’ OPINION

Reduction of GHGs through Use of Proceeds

The growth of international trade has led to larger and more specialized vessels as well as a need to expand port capacity. Transportation activity at ports have a significant affect on the surrounding air quality releasing airborne emissions, such as diesel particulate matter (DPM), which is harmful to human health\(^4\). As a result, new or improved wharves and modern cargo handling facilities are required which limit adverse impacts on the surrounding environment\(^5\).

Ports have traditionally relied on the use of diesel engines in order to move containers. According to an OECD Case Study on the Port of Long Beach, substantial environmental advantages exist in using rail to transfer containers from vessels and by moving containers using rail rather than truck\(^6\). The study found that any cargo that is moved by train from the Port benefits the overall transportation system by reducing the truck trips, total truck mileage, and their associated impacts. Furthermore, diesel-powered trains are two to four times more fuel-efficient and emit two to three times less pollution than trucks on a ton-mile basis\(^7\). Accordingly, the Port of Long Beach intends to increase on-dock rail such that 30% of its cargo would be handled by on-dock facilities by 2030\(^8\).

Additionally, the Port will be able to achieve further emission reductions by building infrastructure to support autonomous technology through electric, self-driving cranes and carriers. The new equipment will double the volume of containers the terminal handles while cutting emissions in half\(^9\).

Sustainalytics is of the opinion that the two projects funded through the Port of Long Beach’s green bond will reduce air emissions at the Port by reducing the requirement of trucks.

Alignment with California’s environmental commitment

Through the Global Warming Solutions Act of 2006, California committed to reduce statewide GHG emissions to 1990 levels by 2020, about a 15% reduction from business as usual, and to reduce emissions by 80% below 1990 levels by 2050\(^10\). In order to meet targets, the state adopted a ‘Scoping Plan’ that contains an extensive list of measures to reduce GHG emissions, a number of which are specific to ports and the movement of goods. Updates to the Scoping Plan in 2014 stated that California has reduced diesel

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\(^4\) http://www.unescap.org/sites/default/files/pub_1234_ch2.pdf

\(^5\) http://www.unescap.org/sites/default/files/pub_1234_intro.pdf


\(^10\) https://www.arb.ca.gov/cc/ab32/ab32.htm and https://www.gov.ca.gov/news.php?id=1861
particulate matter (PM) emissions at the largest ports by 70% since 2005 however, much more needs to be done to continue to reduce the impacts from air pollution, including diesel PM\textsuperscript{11}. Furthermore, the Scoping Plan states that investments are necessary for projects which “include, but are not limited to: zero emission port trucks for near-dock rail pilot projects; pilot projects to deploy zero emission and hybrid vehicles and equipment at distribution centers located in areas most affected by air pollution; and development and demonstration of advanced technology locomotives, marine vessels, and cargo handling equipment”\textsuperscript{12}.

Sustainalytics is of the opinion that the Port of Long Beach are aligned with California’s priorities, commitments and goals to reduce GHG emissions through its eligible green bond projects.

Alignment with Green Bond Principles 2016
Sustainalytics has determined that Port of Long Beach’s Green Bond Framework aligns to the four pillars of the Green Bond Principles 2016. For detailed information please refer to Appendix C: Green Bond/Green Bond Programme External Review Form.

Conclusion
Sustainalytics is of the view that the projects funded through the Port of Long Beach’s use of proceeds will effectively contribute to reducing air emission in the surrounding region. Additionally, the Port’s initiatives to reduce air emissions at its port will contribute to important state-level priorities and goals.

The Port’s Green Bond Framework is in alignment with the four pillars of Green Bond Principles 2016. The Framework defines a clear eligibility criteria, demonstrates a structured and transparent project selection process, and outlines clear and transparent processes for the management of proceeds and reporting with KPIs that capture the reduction of GHG emissions. Based on the above considerations, Sustainalytics is of the view that the Port’s green bond is robust, credible and transparent.

\textsuperscript{11} https://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf

\textsuperscript{12} https://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf
APPENDICES
Appendix A: Eligible Projects

Proceeds from the Port of Long Beach green bond will be used to finance the following projects:

<table>
<thead>
<tr>
<th>Theme / Impact Area</th>
<th>Proposed Projects</th>
<th>Total Project Cost</th>
<th>Description of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Efficiency</td>
<td>HD-S2365, Pier E Berth E22 Wharf and Backland Redevelopment</td>
<td>$118M</td>
<td>A new concrete pile supported wharf of approximately 134 feet wide and 1,411 feet long including crane rail, marine fender and mooring systems located along the designated berth E22. Wharf will be equipped with electrical power for gantry cranes and shore-to-ship power outlets to provide power at 6.6kV for shipboard electrical equipment and allow a ship to turn off its auxiliary generators while at berth. A total of 5 of these power outlet locations will be provided in this milestone bringing the total to 15 for the terminal.</td>
</tr>
<tr>
<td></td>
<td>HD-S2368, Pier E Container Yard/Intermodal Railyard</td>
<td>$151M</td>
<td>An Intermodal rail yard expansion project with expanded on-dock rail facilities contributing to operational improvements. Working track area extended to a new total length of approximately 34,974 track feet of usable track on 7 tracks. Plus a new arrival/departure/storage yard area adjacent to the working tracks consisting of approximately 17,875 track feet of usable track on 4 tracks. All tracks connected to the Port’s mainline tracks in the north and to the off-terminal storage tracks in the south. A sufficient tail track provided within the terminal for switching and escape for Class 1 railroad locomotive power consisting of up to 5 locomotives. Switches to be automated and de-rail provisions included. Construction of the final phase of container storage yard stacks bringing the total blocks to 36 capable of stacking containers up to six-high. Infrastructure for the Container Yard and Intermodal Rail Yard will be constructed to support the respective 72 electric automatic stacking cranes and the 5 electric automatic dual cantilever gantry cranes.</td>
</tr>
</tbody>
</table>
Appendix B: Emissions Sources to be Reported

Port of Long Beach will track yearly emissions achieved to the final anticipated reduction in Year 2030 for the following emission sources:

<table>
<thead>
<tr>
<th>Category</th>
<th>Emission Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ships</td>
<td>Ships - Hoteling: Auxiliary Engine</td>
</tr>
<tr>
<td></td>
<td>Ships - Hoteling: Boiler</td>
</tr>
<tr>
<td>OGV: Cold-Ironing Electrical Consumption</td>
<td>RTG (CY)</td>
</tr>
<tr>
<td></td>
<td>Top-Pick (CY)</td>
</tr>
<tr>
<td></td>
<td>Side-Pick (CY)</td>
</tr>
<tr>
<td></td>
<td>Yard Tractor (CY)</td>
</tr>
<tr>
<td>Railyard Equipment</td>
<td>RTG (RY)</td>
</tr>
<tr>
<td></td>
<td>Yard Tractor (RY)</td>
</tr>
<tr>
<td>Terminal Electricity Consumption</td>
<td></td>
</tr>
<tr>
<td>Reefers Refrigerant Loss</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Green Bond/Green Bond Programme External Review Form

Green Bond / Green Bond Programme
External Review Form

Section 1. Basic Information

Issuer name: Port of Long Beach

Green Bond ISIN or Issuer Green Bond Framework Name, if applicable: [specify as appropriate]

Review provider’s name: Sustainalytics

Completion date of this form: June 12, 2017

Publication date of review publication: [where appropriate, specify if it is an update and add reference to earlier relevant review]

Section 2. Review overview

SCOPE OF REVIEW

The following may be used or adapted, where appropriate, to summarise the scope of the review.

The review assessed the following elements and confirmed their alignment with the GBPs:

☒ Use of Proceeds  ☑ Process for Project Evaluation and Selection
☒ Management of Proceeds  ☑ Reporting

ROLE(S) OF REVIEW PROVIDER

☒ Consultancy (incl. 2nd opinion)  ☐ Certification
☐ Verification  ☐ Rating
☐ Other (please specify):

Note: In case of multiple reviews / different providers, please provide separate forms for each review.

EXECUTIVE SUMMARY OF REVIEW and/or LINK TO FULL REVIEW (if applicable)

Please refer to Green Bond Framework and Second Opinion Document above.
Section 3. Detailed review
Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Overall comment on section (if applicable):
Sustainalytics is of the opinion that the projects described in the framework will contribute to mitigating climate change by reducing GHG emissions, and contributing to achieving reduction targets according to California’s Global Warming Solutions Act of 2006.

Use of proceeds categories as per GBP:

☐ Renewable energy
☐ Pollution prevention and control
☐ Terrestrial and aquatic biodiversity conservation
☐ Sustainable water management
☐ Eco-efficient products, production technologies and processes
☐ Unknown at issuance but currently expected to conform with GBP categories, or other eligible areas not yet stated in GBPs

☒ Energy efficiency
☐ Sustainable management of living natural resources
☐ Clean transportation
☐ Climate change adaptation
☐ Other (please specify):

If applicable please specify the environmental taxonomy, if other than GBPs:

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section (if applicable):
Port of Long Beach will allocate proceeds of the green bond towards eligible projects and select eligible projects through a collaborative effort between the Engineering Bureau, Environmental Planning Division, and Finance Division. Sustainalytics is of the opinion that the process to select eligible projects is credible.
Evaluation and selection
☐ Defined and transparent criteria for projects eligible for Green Bond proceeds
☐ Documented process to determine that projects fit within defined categories
☐ Summary criteria for project evaluation and selection publicly available
☐ Other (please specify): 

Information on Responsibilities and Accountability
☐ Evaluation / Selection criteria subject to external advice or verification
☐ In-house assessment
☐ Other (please specify): 

3. MANAGEMENT OF PROCEEDS

Overall comment on section (if applicable):

The Finance Division will track green bond proceeds with assistance from the Engineering Bureau and Environmental Planning Division. Pending allocation of the green bond proceeds to eligible green projects, the Finance Division will track and maintain an amount equal to the balance of unallocated green bond proceeds separately by setting up accounts under the subportfolio. At the end of fiscal year, Finance Division will reconcile the allocated green bond proceeds with the eligible green bond project costs. As The Port has sufficient oversight over the management of proceeds; this process is in line with industry norms.

Tracking of proceeds:
☐ Green Bond proceeds segregated or tracked by the issuer in a systematic manner
☐ Disclosure of intended types of temporary investment instruments for unallocated proceeds
☐ Other (please specify): 

Additional disclosure:
☐ Allocations to future investments only
☐ Allocations to both existing and future investments
☐ Allocation to individual disbursements
☐ Allocation to a portfolio of disbursements
☐ Disclosure of portfolio balance of unallocated proceeds
☐ Other (please specify): 

SUSTAINALYTICS
### 4. REPORTING

**Overall comment on section (if applicable):**

Annually, until the proceeds are fully allocated from the green bonds, Port of Long Beach will report the annual use of proceeds allocated per eligible project as well as annual balance of bond proceeds outstanding. This disclosure will continue until such time as the proceeds of the bonds are fully expended. The Port will track annual operational emission reduction due to the electrification of the MHT with the final anticipated GHG reduction target.

<table>
<thead>
<tr>
<th>Use of proceeds reporting:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ Project-by-project</td>
<td>☐ On a project portfolio basis</td>
</tr>
<tr>
<td>☐ Linkage to individual bond(s)</td>
<td>☐ Other (please specify):</td>
</tr>
</tbody>
</table>

**Information reported:**

- ☒ Allocated amounts
- ☐ Other (please specify):

**Frequency:**

- ☒ Annual
- ☐ Semi-annual
- ☐ Other (please specify):

<table>
<thead>
<tr>
<th>Impact reporting:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Project-by-project</td>
<td>☒ On a project portfolio basis</td>
</tr>
<tr>
<td>☐ Linkage to individual bond(s)</td>
<td>☐ Other (please specify):</td>
</tr>
</tbody>
</table>

**Frequency:**

- ☒ Annual
- ☐ Semi-annual
- ☐ Other (please specify):

**Information reported (expected or ex-post):**

- ☒ GHG Emissions / Savings
- ☐ Energy Savings
- ☐ Other ESG indicators (please specify):

**Means of Disclosure**

- ☐ Information published in financial report
- ☐ Information published in sustainability report
Information published in ad hoc documents
☐ Reporting reviewed *(if yes, please specify which parts of the reporting are subject to external review)*: allocation and KPIs

Where appropriate, please specify name and date of publication in the useful links section.

**USEFUL LINKS** *(e.g. to review provider methodology or credentials, to issuer’s documentation, etc.)*

www.polb.com
www.emma.msrb.org

**SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE**

Type(s) of Review provided:
- ☒ Consultancy (incl. 2\textsuperscript{nd} opinion)
- ☐ Certification
- ☐ Verification / Audit
- ☐ Rating
- ☐ Other *(please specify)*:

Review provider(s):  
Date of publication:

**ABOUT ROLE(S) OF REVIEW PROVIDERS AS DEFINED BY THE GBP**

(i) Consultant Review: An issuer can seek advice from consultants and/or institutions with recognized expertise in environmental sustainability or other aspects of the issuance of a Green Bond, such as the establishment/review of an issuer’s Green Bond framework. “Second opinions” may fall into this category.

(ii) Verification: An issuer can have its Green Bond, associated Green Bond framework, or underlying assets independently verified by qualified parties, such as auditors. In contrast to certification, verification may focus on alignment with internal standards or claims made by the issuer. Evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria.

(iii) Certification: An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against an external green assessment standard. An assessment standard defines criteria, and alignment with such criteria is tested by qualified third parties / certifiers.

(iv) Rating: An issuer can have its Green Bond or associated Green Bond framework rated by qualified third parties, such as specialised research providers or rating agencies. Green Bond ratings are separate from an issuer’s ESG rating as they typically apply to individual securities or Green Bond frameworks / programmes.
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As the Opinion is based on information made available by the client, Sustainalytics does not warrant that the information presented in this Opinion is complete, accurate or up to date.

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SUSTAINALYTICS

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