



Leading the Team with Green Marine



The Port of Hueneme
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Table of Contents

Introduction – Paper Highlights.....	2
Goals and Objectives	3
Discussion.....	4
Background	4
Objectives and Methodology	9
Project Cost.....	10
How the Project Fulfills the Award Criteria	10
Level and nature of benefits to environmental quality, beautification, or community involvement.....	10
Level of independent involvement and effort by the Port	12
Creativity of the solutions or programs.....	12
Whether the Project or program results are apparent	13
The cost effectiveness of the activity or the program.....	14
The transferability of the technology or idea to the port industry.....	14
Conclusion.....	14
Tables	
Table 1 Summary of Project Objectives.....	9

Introduction – Paper Highlights

The Port of Hueneme (Port) is applying for the American Association of Port Authorities (AAPA) Environmental Award for demonstrating *Comprehensive Environmental Management*, by in 2016 being the first Port in California to complete certification under the Green Marine Environmental Program (Project) and for re-certifying under Green Marine again in 2017, continuing its role as an example of leadership in sustainability integrated seaport management. Green Marine is a comprehensive environmental certification program for the marine industry that is administered by a third-party organization. This transparent environmental program assesses the Port's overall environmental program, including environmental management policies and procedures to help guide the Port to reduce its environmental impacts by undertaking measurable actions.

To receive this certification, the Port benchmarked their annual environmental performance through the program's self-evaluation guides, had their results verified by an accredited external verifier, and agreed to the publication of their individual results. In 2015, the Port registered as a participant and an accredited member of the internationally recognized Green Marine Environmental Program, a wholly voluntary eco-accountability program that monitors and publically publishes its members' progress in environmental management. The Port's participation in this program served as a tool to audit the Port's existing environmental documents, policies, and operational procedures to verify and publically announce the Port's progress towards achieving their environmental goals and objectives as detailed in the Port's Environmental Management Framework (EMF) document and subsequent policies.

The Project involved assessing the Port's environmental management approach across six categories, including invasive species, greenhouse gas (GHG) and air pollutants, spill prevention, community impacts, environmental leadership, and waste management. The Project evaluated the Port's progress utilizing specific performance indicators in each of the six categories, and required a commitment to annually reduce the Port's environmental footprint and meet defined reduction targets

within each respective category. The Port completed the Project, including independent third-party verification, on May 12, 2017. In May of 2018 the Port had its 2017 efforts verified for a second year as the only port in California certified by Green Marine.

The results yielded a quantitative benchmark of their environmental performance, a qualitative inventory or status report for their environmental policies and project management tools, and a roadmap identifying where the Port can improve in subsequent years. The Port received a score between three and five (with five being the highest) for each of the applicable categories, as illustrated by Table 1. Overall, the Project fulfilled the Port's objectives to reinforce the Port's eco-centric culture, quantify an environmental management baseline, update existing policy documents, and develop new plans with clearly defined goals and measurable targets to minimize the impact of and enhance the environment through Port operations to demonstrate year-over-year improvements. *Figure 1* provides an overview of the 120-acre Port.

Goals and Objectives

The objective of the Project was to:

1. Develop a structure to assess the Port's environmental efforts to fulfill goals and objectives identified in its EMF, and
2. Discover and adopt methods, tools and opportunities to reduce environmental impacts, and
3. Provide transparency for the community to demonstrate all of the work done by the Port to integrate sustainability into our day-to-day operations,
4. Develop tools to quantify the environmental program benefits.

The Project was evaluated based on a series of categorically specific objectives and KPIs. A complete list of all Project objectives is summarized in Table 1, under *Discussion Objectives and Methodology*.

Discussion

This section includes an overview of the Port's environmental management strategies, including environmental management strategy documents that were evaluated pursuant to the Project objectives.

Background

In 2012, the Port completed a comprehensive EMF, establishing both long and short term goals as well as evaluation strategies to monitor and track the Port's progress toward achievement of each goal. Port staff are charged with the responsibility to implement, monitor, and evaluate the success of environmental projects, in partnership with Port tenants, regulatory agencies, and the community. Driven by their environmental goals detailed in the EMF, the Port identified the Green Marine Program as an opportunity to evaluate and measure the status and success of the EMF, and transparently track and gauge their progress towards achieving their established environmental objectives. Through the EMF, the Port developed a strategic set of environmental management goals in the key areas of air quality, water quality, marine resources, soil and sediment, energy management and climate change adaptation. The Green Marine program helped prioritize the Port's environmental management efforts and initiate the development of new detail oriented policies and targeted programs to reduce the Ports overall environmental impact. Through the Green Marine certification process, the Port completed an audit and reviewed all applicable environmental programs, policies, and objectives that preceded the Project and identified opportunities for the Port to improve or demonstrate annual improvements.

In 2015, the Port completed their 2020 Strategic Plan, which includes objectives to minimize or avoid negative environmental impacts while growing business within the Port's EMF and focus on long-range sustainability. Through the Green Marine certification program, the Port evaluated the extent to which defined goals were achieved, and generated an inventory of novel plans such as the Port Modernization Plan, for example, as illustrated by *Figure 2*, which includes the development of several efficiency upgrade projects in the terminal. The Project transformed the EMF and 2020 Strategic Plan

roadmap into the implementation of projects and programs that move the Port beyond compliance. This ambitious management approach included the rollout of several strategic implementation plans that would advance environmental values important to the Port, including air and water quality, protection of marine resources, healthy soil and sediment, and climate change adaptation.

The primary documents analyzed by the Project include, but are not limited to the EMF, 2020 Strategic Plan, Purchasing Policies, Maintenance Procedures, Port Modernization Plan, as well as the development of creative new plans such as Urban Habitat: Green Corridor Management Plan, Zero Waste Policy, Environmentally Preferable Purchasing Policy, Preventive Maintenance Plan, Community Impact Management Strategy, and a Key Performance Indicator Tracking Matrix, as illustrated in *Figure 3*. These plans help promote the goals of the EMF by creating clearly defined action plans that specify the detailed activities that must be completed to achieve goals, track the outcomes, and publically communicate the results. For example, during the evaluation of the existing operational waste policies, the Port identified the zero waste goal as an opportunity to improve. To support this aggressive goal, the Port developed an Environmentally Preferred Purchasing Policy which set the goal of seeking opportunities to reduce waste at the source through strategic procurement. Additionally, a waste audit characterization study and zero waste plan which provided a detailed analysis complete with recommended actions such as standardized bin labeling system to increase diversion rates, reduce GHG emissions, and improve the appearance and functionality of the system.

Training

The Port voluntarily initiated the Project, which involved auditing and documenting how personnel are trained on the environmental management program. Port personnel include administrative staff, the maintenance crew, and harbormasters. Port personnel are trained and supported by the Port's Chief Operating Officer (COO) through regular project update and operational meetings. The COO also organizes formal trainings for more specific projects such as the Green Marine Project, the zero waste

goal or communicating the waste audit results. Port personnel have been trained on how the changes will affect their daily operations, and new trainings will be provided after each subsequent implementation phase is completed. Regular staff trainings are lead and coordinated by the COO. Additionally, customized trainings on specific aspects of the environmental management program are led by environmental experts, who provide guidance for integrating sustainability programs into daily operations at the Port. For example, Port staff are developing a curated environmentally preferred office supply purchasing list in partnership with an environmental consultant and the Port's supply vendors. The maintenance crew receives training from the COO and the Maintenance Supervisor. The COO can issue trainings or maintenance requests through a software program that will automatically alert staff of the activity. Harbormasters conduct daily safety and pollution prevention patrols of the Port both on land and in the harbor. Notes from the daily inspections are recorded and retained in records. Harbormasters receive training from the Harbormaster Supervisor, as well as the COO. Recently, in support of the Project, Port personnel received a sustainability training from an environmental consultant, during which personnel were informed about what the Green Marine Environmental Program entailed, how the Project would affect them, and the changes they could anticipate to see as a result. The environmental management training included explaining the Port's EMF goals, the Project level achievement, and key sub-projects within each of the following six applicable categories, as follows:

- *Aquatic Invasive Species* explained how the Port's Maritime Advanced Systems and Technology (MAST) laboratory partnered with the Smithsonian Environmental Research Center (SERC) to conduct research regarding the aquatic invasive species in the Port's harbor.
- *Greenhouse Gases and Air Pollutants* informed how the Port is developing a tool to calculate GHG emissions annually, and set goals to reduce Port-wide emissions. Portions of the GHG inventory required staff feedback, activity data, and an employee commute survey.

- *Spill Prevention* demonstrated how the preventive maintenance, pollution prevention patrols, water sampling activities, and installment of storm water best management practices contribute to the health and safety of the community and the Port.
- *Community Impacts* explained that all operational activity data including policies would be audited for the Project in order to document how the Port manages its environmental, social, and economic impact on the community.
- *Environmental Leadership* informed staff about the changes being made at the Port and how they will affect the community. For example, the shore power system for vessels resulted in a reduction of air pollutants by a magnitude of 92% for particulate matter, 98% for nitrous oxide, and 55% carbon dioxide emissions over the next 30 years.
- *Waste Management* explained how the waste management system was being upgraded to a zero waste goal and provided an opportunity to recognize staff members for their leadership roles in initiating recycling and take-back-programs. Staff feedback and ideas were collected at and incorporated into the implementation strategies for the Project.

Culture

The Project was initiated to help track and document the Port's environmental management efforts. The Port strives to foster a culture of sustainability and eco-centrism among staff and through public events. Whether it is through installing an end-of-trip facility equipped with lockers and showers for staff who cycle to work, installing an employee gym, hosting green community events, or implementing publically accessible electric vehicle (EV) charging stations, the Port is always striving to cultivate a sense of environmental stewardship and responsibility. The Port's reputation for having an eco-centric culture is upheld by the Project and is reinforced by passionate staff, formal and informal training opportunities, incentive programs, and informational posters located in strategic areas throughout the Port. The Project also encourages tenants to participate in the Green Marine Program,

independently develop environmental programs, or collaborate with the Port on projects that reduce GHG emissions, reduce pollution, or create beneficial outcomes for the local community.

Examples of the Port's efforts to develop an environmentally focused culture in and around the Port include:

- A collaborative project between the Port and a tenant involved designing a zero emission electric drayage truck pilot project to reduce particulate matter pollution and improve local air quality for the community. The Port worked closely with the tenant, the technology provider, and environmental experts to quantify the GHG emissions reductions, economic efficiency benefits, and improvements for the local disadvantaged communities that would result from replacing diesel drayage trucks with zero-emission electric trucks.
- Other tenants are upgrading vessels with technologies to filter pollutants or plug into the Port's shore power system to reduce particulate matter. Wallenius & Wilhelmsen Logistics operates a series of cargo vessels which have on-board air scrubbers which remove up to 70% of particulate matter from the air emissions compared to conventional vessels.

Community

The Green Marine program emphasizes community engagement and documents how the Port actively engages the local community through the sponsorship of community events and associations, providing Port tours, internship programs, offering a Global Trade and Logistics course, presenting to various community groups, and by promoting industry outreach efforts. The Port hosts a variety of events throughout the year to bring the community together, and offers an opportunity to showcase the Port's environmental programs in an open-house style event including the MAST expo and the Banana Festival. The MAST program (see *Figure 4*) establishes opportunities for collaborations between the scientific community, regulatory agencies, local governments, the Port, and the local community.

Objectives and Methodology

As summarized in Table 1, the objectives for the Project included a determination of the Port’s environmental footprint baseline, including the extent to which the Port’s policies, plans, and operational activities minimize environmental impacts or create beneficial impacts, and demonstrate annual improvements in subsequent years compared to the baseline assessment.

Table 1 Summary of Project Objectives

Category	Objective	Level Achievement
Project-Level	Assess the Port’s environmental footprint, identify the extent to which the Port has fulfilled the goals and objectives identified in the Port’s EMF and subsequent policies and plans	
	Evaluate the effectiveness of operational activities, and identify opportunities to further minimize environmental impacts, and quantify the beneficial impacts resulting from Port recently initiated environmental programs and projects	
	Demonstrate environmental leadership including implementation of the best environmental practices, and a sustainable development approach	
	Minimize or reduce environmental impacts associated with Port operations	
	Establish a goal to document continuous, year-over-year improvements of the Port’s environmental performance, utilizing key performance indicators	
	Promote sustainability to Port employees, tenants, and the community	
	Establish meaningful policies that result in measurable, observable, and economically achievable GHG emission reduction targets, air quality or operational improvements	
	Reduce the Port’s impact on the community by maintaining positive relationships, open communication, and a degree of transparency with stakeholders, governments, and community groups	
	Demonstrate a measurable achievement within six applicable categories and rank the overall achievement based on KPIs on a scale of 1-5 (five being the highest level of achievement)	
Aquatic Invasive Species	Reduce the risk of introducing and propagating harmful aquatic organisms by means of a ship’s ballast water	N/A
GHG Emission & Air Pollutants	Reduce GHG and air pollutant emissions	3
Spill Prevention	Reduce spills and leakages of dangerous chemicals into the environment	5

Category	Objective	Level Achievement
Community Impacts	Reduce the amount of noise, dust, odor, and light to which people residing close to the Port facilities are exposed	5
Environmental Leadership	Recognize the significant influence of Port authorities as land owners and or managers over the environmental practices of their tenants and or Port users	5
Waste Management	Reduce waste arising from administrative activities and site operations and increase recycling	4

Collectively, all environmental policies and documents (as discussed under *Policy*) were organized, analyzed, and broken down into manageable tasks, actionable goals, and assigned measurable KPIs, which provide a quantitative metric for assessing progress and achievement of each goal. Then, after each policy, plan, or strategy was evaluated a numeric level achievement was assigned to each of the categories, the entire process was evaluated by a third party auditor to confirm accuracy, and the results have been publically communicated through the Green Marine Environmental Program.

Project Cost

Becoming a registered partner with the Green Marine Environmental Program required paying membership fees, paying a third party to verify the result, and contracting with environmental experts to conduct studies and quantify results. Though the membership costs will continue on an annual basis due to the ongoing nature of the Project, the Port has hired its own Environmental Manager and will be able to achieve its goal to minimize the environmental impact of Port operations and enhance the environment for the communities it serves. *Figure 5* illustrates the Green Marine Environmental Program Membership Fees.

How the Project Fulfills the Award Criteria

Level and nature of benefits to environmental quality, beautification, or community involvement

The Project involved the voluntary assessment and third party verification audit of the Port's environmental impacts based on seven categories and five levels of achievement within each category.

The Project generated short and long-term benefits ranging from

- the improvement of local air quality,
- reduction of GHG emissions,
- increased waste diversion rate,
- reduction in waste generation,
- increased awareness of aquatic invasive species,
- increased community awareness of Port-initiated environmental programs,
- the implementation of an EV charging station,

and a host of other environmental policies, plans, and support documents that will lead to improvements in operational efficiency.

The Project helped the Port determine measurable targets to improve each year. For example, based on the results of the waste audit, the standardization of the new bin labeling system, staff participation, trainings, and outreach campaigns, the Port is transforming the current diversion rate of 31% into a zero waste trajectory with an attainable goal to divert 75% by 2020. Additionally, the Port has developed a GHG emission calculation tool to calculate emissions directly associated with Port activities, and is developing targeted approaches to reduce emissions through internal changes, coordinating with Tenants, vessels, and local agencies to upgrade and modernize equipment and vehicles with more efficient technologies. Please refer to Table 1 which summarizes the Green Marine categories and level achievement attained by the Port confirmed by an independent third party verifier.

The Project evaluated the Port's *Community Impacts* and *Environmental Leadership*, resulting in the Port receiving a perfect score (five out of five) in both categories. Achieving these scores required auditing the EMF, subsequent policies, and operational activity data related to community engagement

strategies, and developed novel plans and tracking documents to maintain the trajectory for achieving annual improvements. For example, a Community Impact Management Plan was drafted to define the communication channels available for the community to engage with the Port and to track, monitor, and record complaints issued by the community.

Level of independent involvement and effort by the Port

The Port voluntarily initiated in this Project by registering as a participant in the Green Marine Program which included a contractual agreement to subject the Port to a comprehensive audit and third party verification. Although this process was extensive and required a substantial effort from Port personnel, the results well outweighed the challenges. The process of completing the Project enabled the Port to update outdated policies, develop novel programs that will increase operational efficiency, reduce waste and pollution, improve environmental quality, and reinforce the eco-centric culture at the Port. The Project also required substantial support from Port personnel and tenants throughout the audit and coordination with local and state agencies to confirm environmental compliance. The Port has a positive relationship with the Ventura County Air Pollution Control District and was recently awarded grant funding to implement two dual cord EV charging stations. The Port also frequently corresponds with the California Energy Commission and the California Air Resources Board regarding changes in regulations, grant opportunities, or to strategize equipment upgrades to modernize the Port. As a result, the Project confirmed awareness of and compliance with all applicable local, state, and federal policies that pertain to environmental management, consistent with the Port's EMF goals.

Creativity of the solutions or programs

With an existing culture of sustainability visibly touted by Port staff, implementing new projects is met with optimism, creative idea-sharing and vocalized support. For example, while the Port's EMF states a goal to reduce waste, the Project improved this goal by elevating the ambition to a zero waste goal. This small change alone required substantial creativity and participation from staff to effectively communicate

what this change meant to Port staff, tenants, and the community in a logical, cohesive, and intuitive way. Implementing the goal required performing a waste audit, designing and implementing new standardized signs and bin labels, providing educational trainings, and coordinating with the local City Waste Hauler. This small portion of the Project improved the goal of waste reduction and created a quantitative metric for measuring success. The audit results indicate a 31% diversion rate, and the Zero Waste Plan established a new goal to achieve a 75% diversion rate by 2020 and zero waste by 2050. Collectively, these efforts were measured by the Green Marine Category, *Waste Management* and the Port was able to improve their level achievement from a level 2 to a level 4 within a year (*Figure 6*). A critical element of achieving zero waste is understanding the Port's unique position within supply chains (see *Figure 7*), and creativity must be utilized to make large scale changes with support from Port tenants. During the Project audit, tenants were eager to share information, and explained how partnerships with the Port resulted in the development of programs that improve local air quality or reduce GHG emissions. Results include the shore power program for vessels, or novel initiatives such as implementing EV charging stations or implementing a zero-emission electric drayage truck demonstration project.

Whether the Project or program results are apparent

Overall, the results are clear given the numeric value of the level achievement. Due to the nature of the Project and the commitment to demonstrate continuous improvements among all applicable categories and KPIs, there are portions of the Project that have clearer results than others. For example, the GHG emission inventory has quantifiable and qualitative results, but the Project itself, is not completed because the calculations will be performed annually. The zero waste plan has been completed, but zero waste goal will be an ongoing effort with audits to occur once every two years. Other planning documents such as the Preventive Maintenance Plan or GHG Reduction Plan will require ongoing efforts to implement the recommended actions and will not have quantifiable results until future reporting years.

The cost effectiveness of the activity or the program

Through implementation of the Project, the Port was effectively able to document an achievement baseline, assess the current status of all applicable or relevant environmental policies, strategy documents, plans, goals, and operational activities. The ability to conduct these activities and their long-term benefits help justify the overall financial value of the Project. Having a clearly defined baseline has already helped the Port identify new objectives and reduction goals, areas to improve and increased operational efficiency. The Project will continue to offer value as the Port reduces its environmental impacts and increases operational efficiencies. The Port is committed to protecting the environment and supporting a healthy quality of life. The Port plays a valuable role in the health and viability of the local and regional economies and takes very seriously its role as an active community partner and as an environmental steward. Promoting the Port's environmental stewardship efforts is a proven way to build support and trust from the local community and is why community engagement is a component of the Port's environmental policy framework.

The transferability of the technology or idea to the port industry

The Green Marine Program is an assessment tool available to a variety of participants including ship owners, ports, seaway corporations, terminals and shipyards. The Port's successful execution of this Project has left it well positioned to serve as an example for other ports to follow. The results of the Project are publicly communicated, and information about the Green Marine Program is available online. The technologies and operational programs are promoted by the Port's marketing team and many aspects are highlighted in detail on the Port's website, making it simple for other organizations in the maritime industry to access this data for inspiration, guidance, or informational purposes.

Conclusion

The Port is applying for the AAPA Environmental Award for demonstrating *Comprehensive Environmental Management*, for completing the Green Marine Project, which assessed the Port's

environmental footprint based on six categories, including a voluntary audit of the Port's environmental management documents, and operational activities. The Port first achieved this certification in 2016 and has sought to annually improve its program and continue with its recent re-certification under Green Marine. The Project objectives included identifying the extent to which the Port's policies, plans, and operational activities minimize environmental impacts, and evaluating the beneficial impacts resulting from Port initiated environmental programs and projects.

The Project generated quantitative baseline and involved laying the groundwork for reporting annual improvements by creating new policies, programs, plans, and action items. The Project reinforces the Port's eco-centric culture and is upheld by passionate staff, training opportunities, incentive programs, and visible informational posters strategically located throughout the Port. The level and nature of the benefits resulting from this Project include increased awareness of aquatic invasive species present in the Port's harbor, a GHG emission inventory and a tool to complete the calculations annually, confirmation that the Port is compliant with all applicable environmental regulations, and various creative policies and plans to help the Port achieve zero waste and improve supply chain efficiency. The Project assessed the Port's environmental management approach across six categories, including invasive species, GHG and air pollutants, spill prevention, community impacts, environmental leadership, and waste management. Overall, the Port received a score between three and five, (with five being the highest) for each of the applicable categories and the results have been publically communicated through the Green Marine Environmental Program.