Port Infrastructure Sustainability Rating Systems

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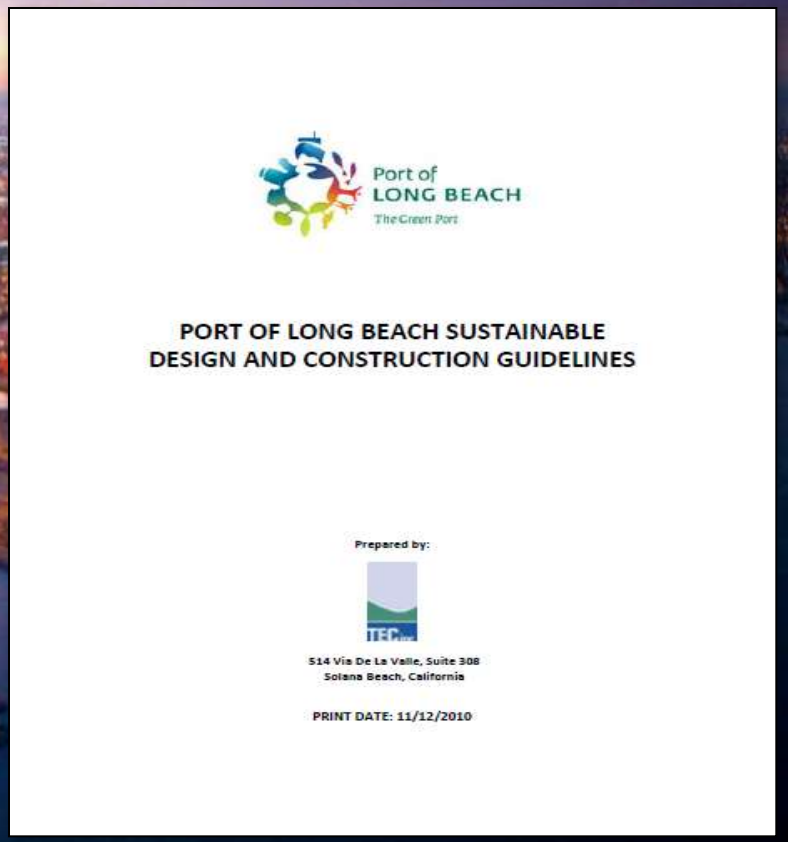
Presentation Overview

- POLB Sustainable Design and Construction Guidelines
- ISI *envision*™ 1.0 Infrastructure Project Rating System
- Joint West Coast Port Technical Committee (JWCPTC) for development of sustainable design and construction guidelines
- Next Steps

Why a Sustainable Project Rating System?

Can a reasonable port infrastructure sustainability rating system be developed?

Guiding Principles



A specific rating system for POLB projects…

is it adaptable?

POLB Sustainability Guidelines

Components Overview

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Checklists of sustainable strategies …
Flow charts for process control…
Implementation checklists for quality review…
Sustainability summary sheets as “report cards”…

POLB Sustainability Guidelines

Attributes/Projects

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ECONOMIC				ENVIRONMENTAL								
Economic Considerations and Documentation		Economic Growth		Site Development		Transport				Waste		
Life Cycle Cost Analysis: - Ongoing Costs (Maintenance/Operational Costs) - Capital Costs (Construction Costs) - Return on Investment - Triple Bottom Line - Energy Reduction/Optimization - Water Reduction - Waste Reduction - Non-Renewable Material Reduction - Sustainable Technologies	**Local/ Regional Materials and Suppliers**	**Supports Trade Growth**	**Beneficial to Real Estate Services**	**Site:** - Protect or Restore Habitat - Integrated Vegetation - Wildlife Management - Invasive Species	**Marine Environment:** - Sedimentation Control - Protect or Restore Habitat - Integrated Vegetation - Wildlife Management - Invasive Species - Preservation of Wetland Environments	**Alternative Recharging/ Refueling Stations**	**Low-Emitting, Fuel-Efficient and Alternative Fuel Vehicles**	**Provision of Car Parking for Alternative Fuel Vehicles, Carpool, etc.**	**Reduce Idling Vehicles/ Equipment**	**Pollution Prevention:** - Construction Waste Management - Provision of Facilities/Bins for Recycling and Waste (Project Site/Port) - Operational Collection/Disposal for Construction Site and Contractor Temporary Facilities	**Material Re-use, Recycled Content & Efficient use of Materials:** - Concrete/Aggregates - Steel - PVC Minimization - Sustainable Timber/Certified Wood, etc. - Non-hazardous Materials	

POLB Sustainability Guidelines

Strategic Checklists

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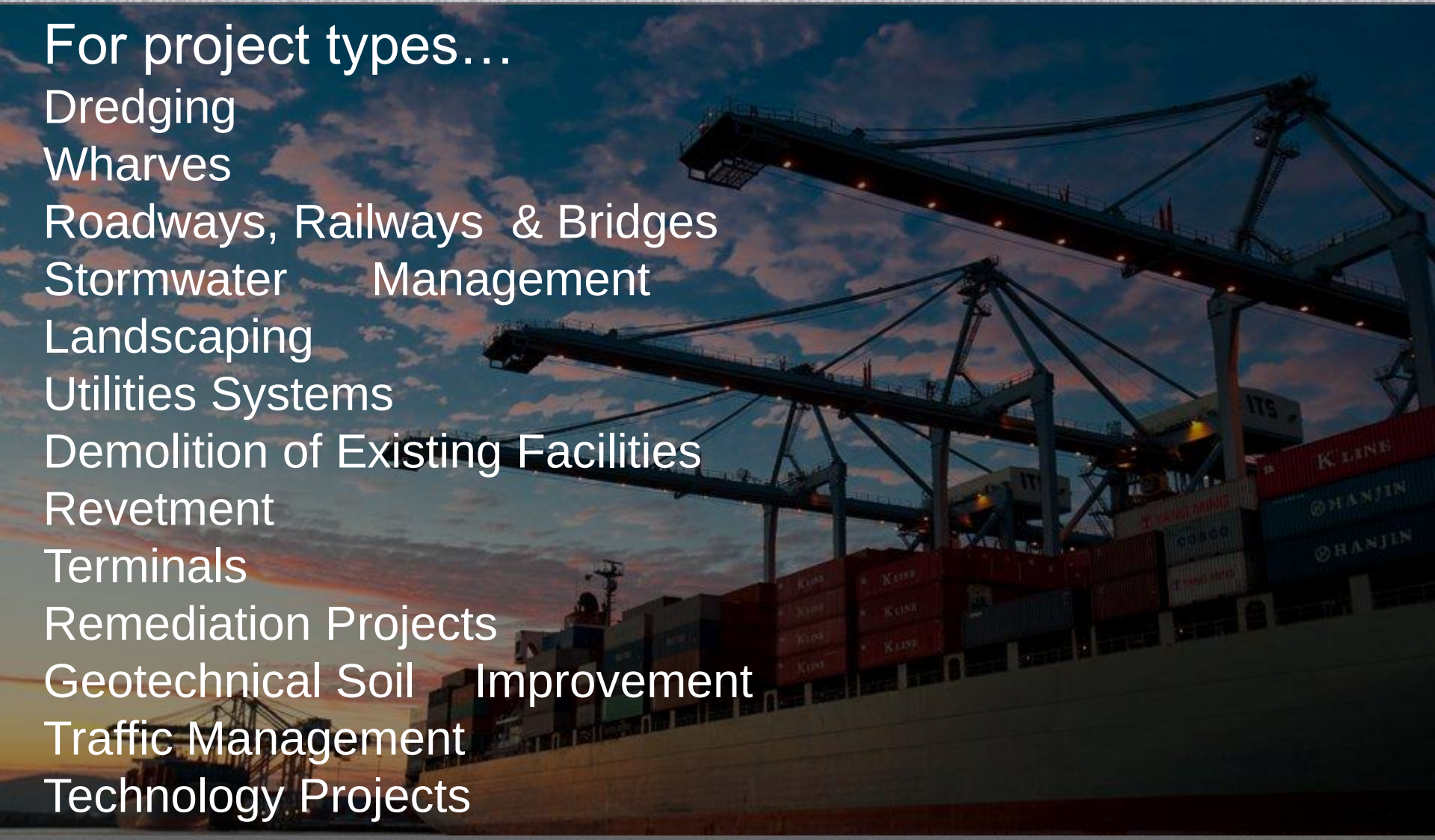
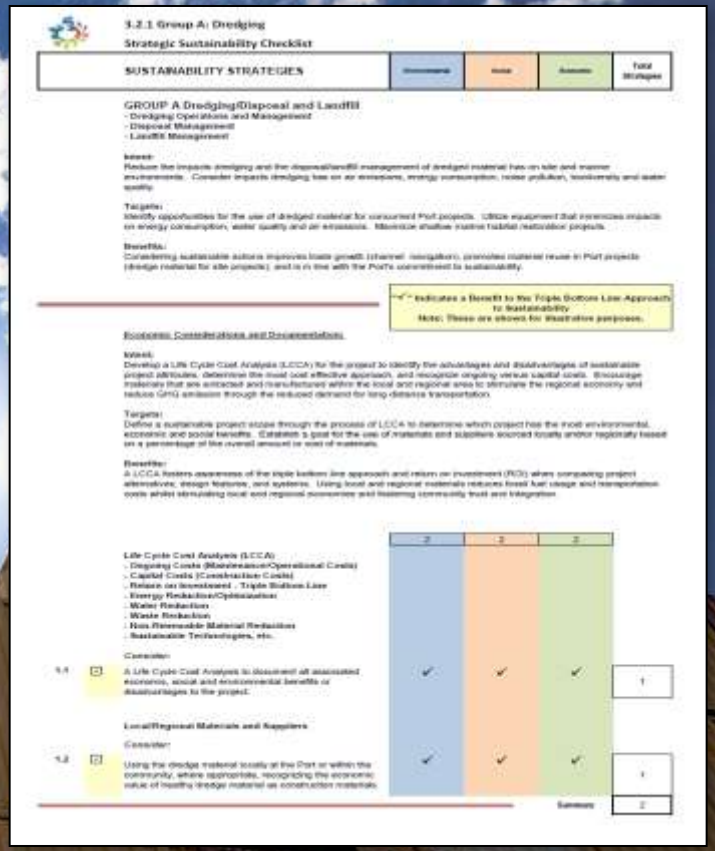


For project types…

- Dredging
- Wharves
- Roadways, Railways & Bridges
- Stormwater Management
- Landscaping
- Utilities Systems
- Demolition of Existing Facilities
- Revetment
- Terminals
- Remediation Projects
- Geotechnical Soil Improvement
- Traffic Management
- Technology Projects

Strategic Checklists



3.2.1 Group A: Dredging

Strategic Sustainability Checklist

SUSTAINABILITY STRATEGIES				
GROUP A Dredging/Disposal and Landfill - Dredging Operations and Management - Disposal Management - Landfill Management				

Intent:
Reduce the impacts dredging and the disposal/landfill management of dredged material has on site and marine environments. Consider impacts dredging has on air emissions, energy consumption, noise pollution, biodiversity and water quality.

Targets:
Identify opportunities for the use of dredged material for consumed Port projects. Utilize equipment that minimizes impacts on energy consumption, water quality and air emissions. Maximize shallow marine habitat restoration projects.

Benefits:
Considering sustainable actions improves trade growth (channel navigation), promotes material reuse in Port projects (dredge material for site projects), and is in line with the Port's commitment to sustainability.

Indicates a Benefit to the Triple Bottom Line Approach to Sustainability
Note: These are shown for illustration purposes.

Economic Considerations and Documentations

Intent:
Develop a Life Cycle Cost Analysis (LCCA) for the project to identify the advantages and disadvantages of sustainable project attributes, determine the most cost effective approach, and recognize ongoing versus capital costs. Encourage materials that are extracted and manufactured within the local and regional area to stimulate the regional economy and reduce GHG emission through the reduced demand for long distance transportation.

Targets:
Define a sustainable project scope through the process of LCCA to determine which project has the most environmental, economic and social benefits. Establish a goal for the use of materials and suppliers sourced locally and/or regionally based on a percentage of the overall amount or cost of materials.

Benefits:
A LCCA fosters awareness of the triple bottom line approach and return on investment (ROI) when comparing project alternatives, design features, and systems. Using local and regional materials reduces fossil fuel usage and transportation costs while stimulating local and regional economies and fostering community trust and integration.

	Life Cycle Cost Analysis (LCCA) - Ongoing Costs (Maintenance/Operational Costs) - Capital Costs (Construction Costs) - Return on Investment - Triple Bottom Line - Energy Reduction/Optimization - Water Reduction - Waste Reduction - Non-Renewable Material Reduction - Sustainable Technologies, etc.					
	Consider:					
3.2	A Life Cycle Cost Analysis to document all associated economic, social and environmental benefits or disadvantages to the project.	✓	✓	✓		1
	Local/Regional Materials and Suppliers					
	Consider:					
3.2	Using the dredge material locally at the Port or within the community, where appropriate, recognizing the economic value of reusing dredge material as construction materials.	✓	✓	✓		1
					Summary	2

Tracking sustainability strategies…

POLB Sustainability Guidelines

Process Flow Chart

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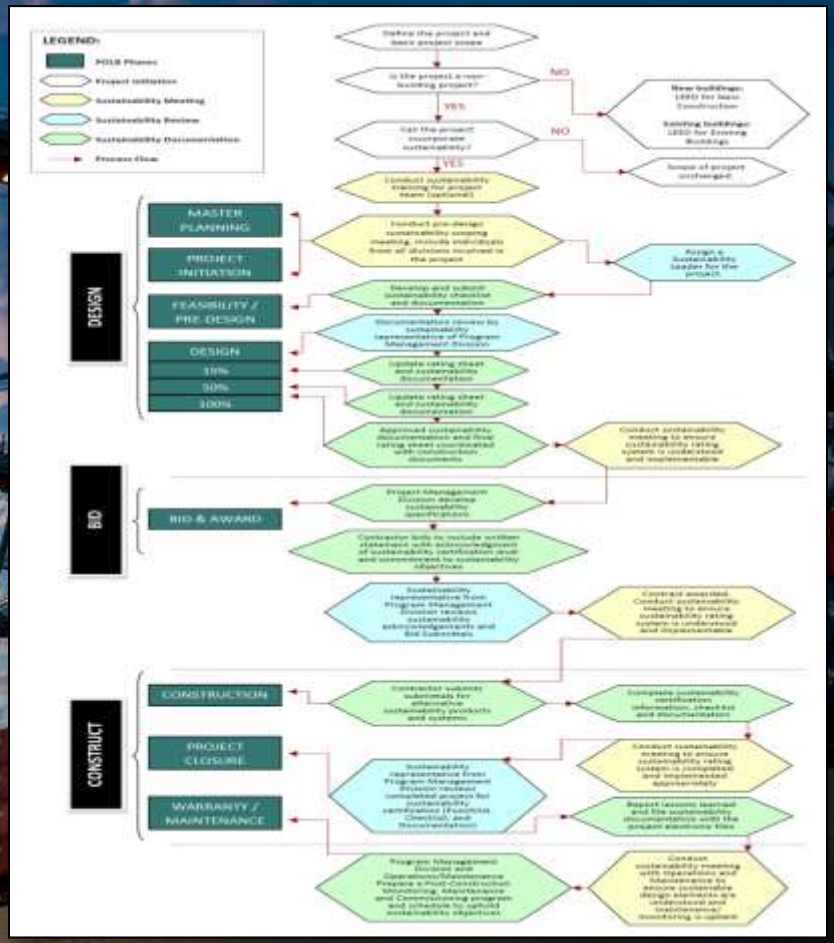
1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951

Controlling the process…



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Process Checklists

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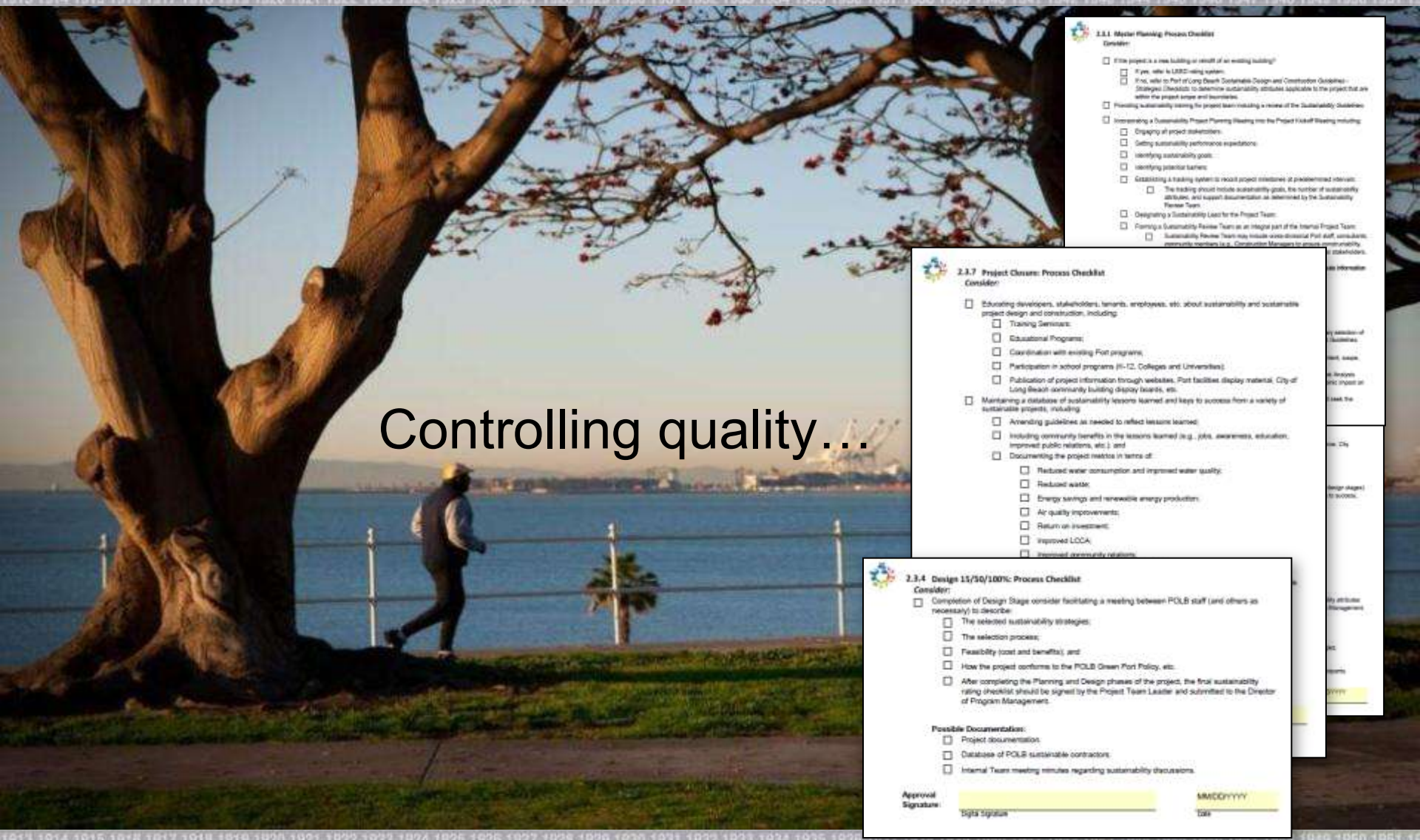

POLB Sustainability Guidelines

Summary Sheet

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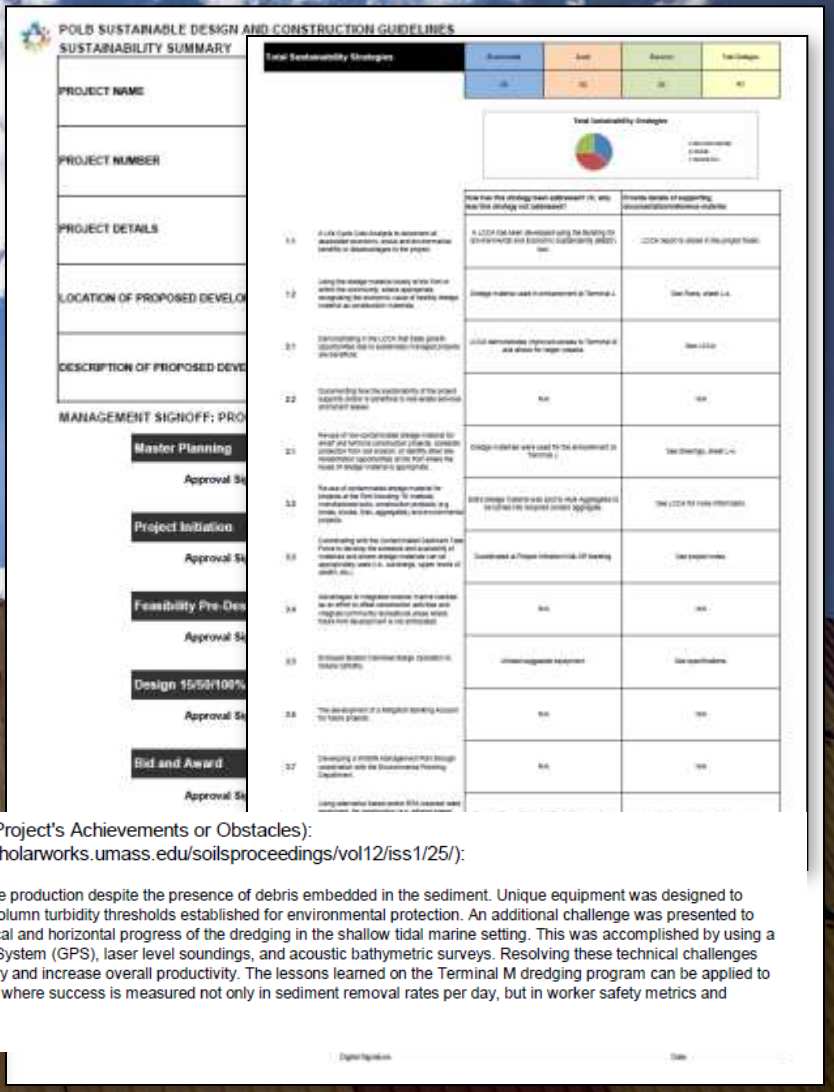
Reporting and metrics…


POLB SUSTAINABLE DESIGN AND CONSTRUCTION GUIDELINES

SUSTAINABILITY SUMMARY

PROJECT NAME

PROJECT NUMBER

PROJECT DETAILS

LOCATION OF PROPOSED DEVELO

DESCRIPTION OF PROPOSED DEVE

MANAGEMENT SIGNOFF: PRO

Master Planning

Approval Si

Project Initiation

Approval Si

Feasibility Pre-Des

Approval Si

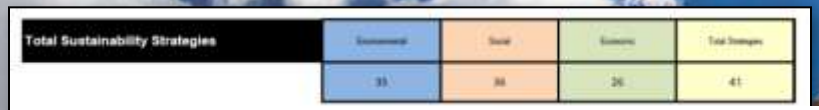
Design 15/50/100%

Approval Si

Bid and Award

Approval Si

Total Sustainability Strategies


Total Sustainability Strategies

33 36 26 41

How has this strategy been addressed/ was this strategy not addressed?

1.1 A Life Cycle Cost Analysis to document all associated economic, social and environmental benefits or disadvantages to the project.

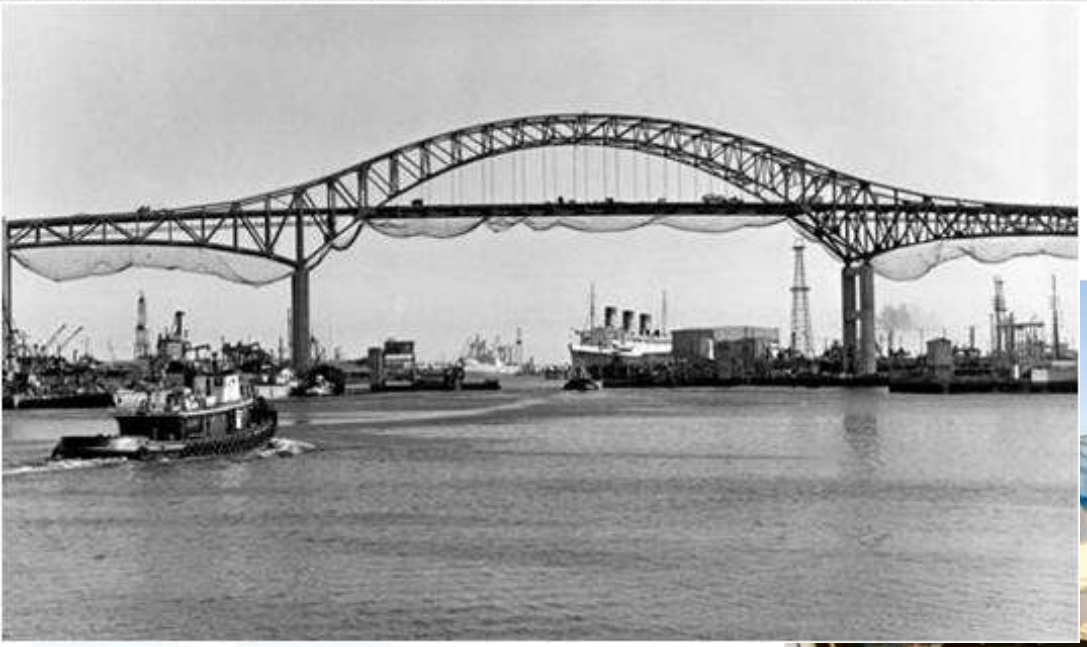
A LCCA has been developed using the Environmental and Economic Sustaina tool.

Lessons Learned (Short Summary of the Project's Achievements or Obstacles):
Sample Lessons Learned (Source: http://scholarworks.umass.edu/soilsproceedings/vol12/iss1/25/):

A challenge involved maintaining the required dredge production despite the presence of debris embedded in the sediment. Unique equipment was designed to remove the debris while maintaining the low water column turbidity thresholds established for environmental protection. An additional challenge was presented to the Team regarding accurate monitoring of the vertical and horizontal progress of the dredging in the shallow tidal marine setting. This was accomplished by using a combination of tools, including a Global Positioning System (GPS), laser level soundings, and acoustic bathymetric surveys. Resolving these technical challenges allowed the Team to reduce the risk of personal injury and increase overall productivity. The lessons learned on the Terminal M dredging program can be applied to other freshwater and marine dredging environments where success is measured not only in sediment removal rates per day, but in worker safety metrics and process quality control.

Rating System

Rating System Goals



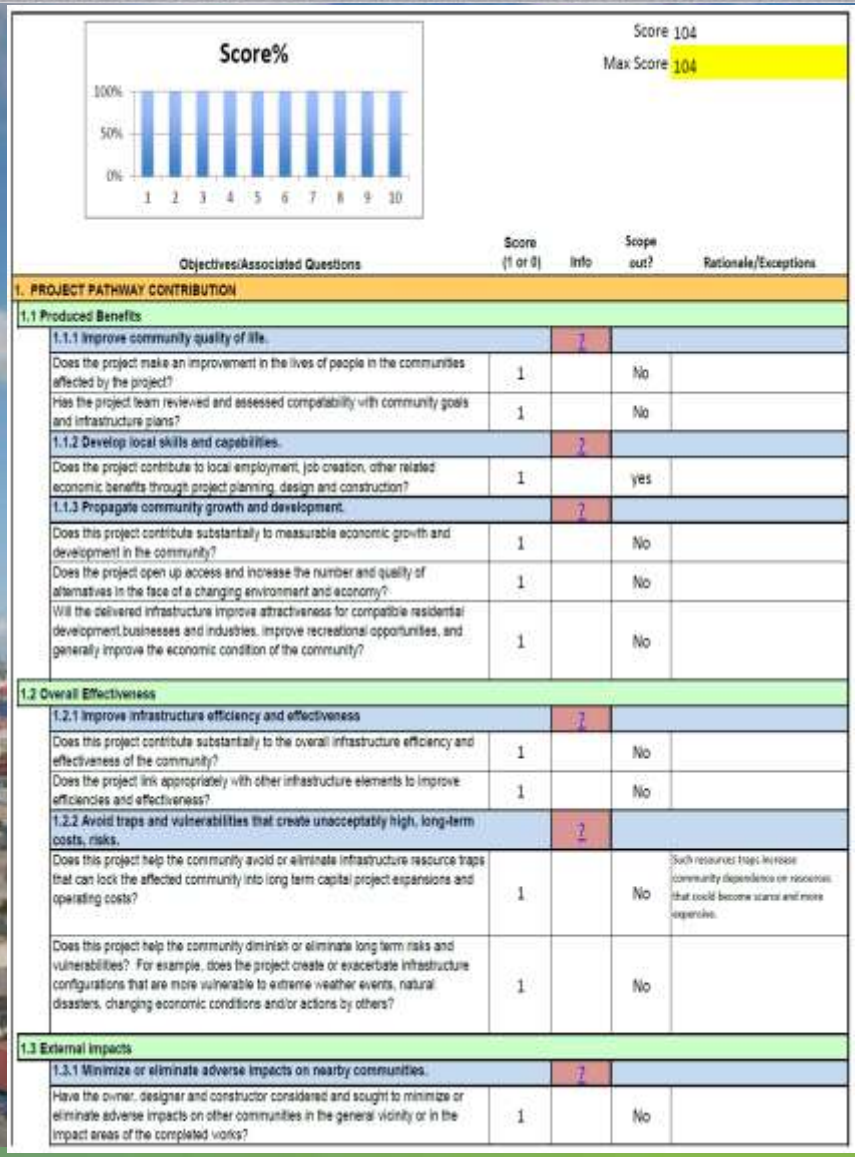
Take it to a higher level…

for the horizontal market.

Rating System Elements

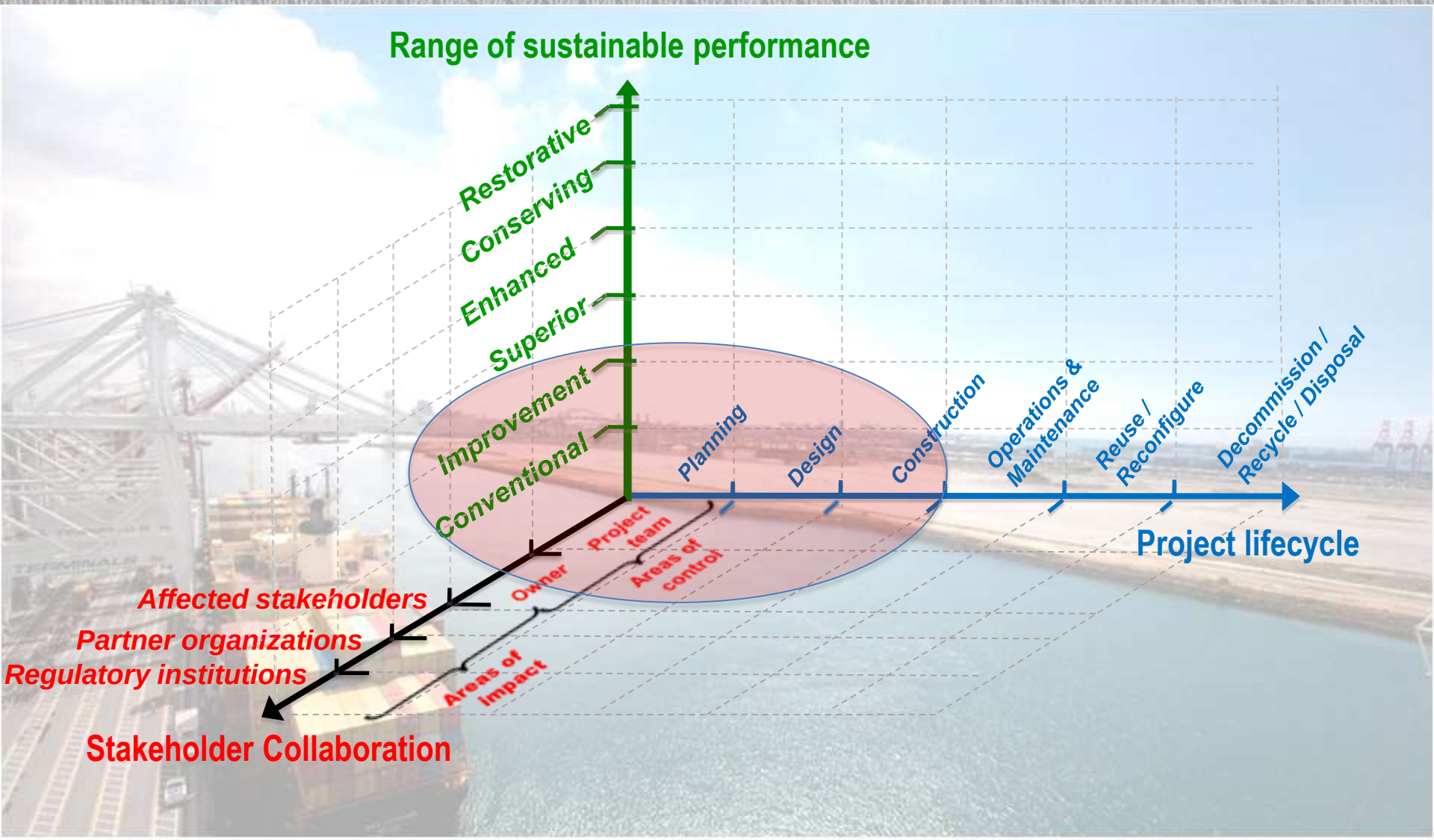
Doing the right project
vs.
doing a project right…

”pathway” vs. “performance”



Objectives\Associated Questions	Score (1 or 0)	Info	Scope out?	Rationale/Exceptions
1. PROJECT PATHWAY CONTRIBUTION				
1.1 Produced Benefits				
1.1.1 Improve community quality of life.		?		
Does the project make an improvement in the lives of people in the communities affected by the project?	1		No	
Has the project team reviewed and assessed compatability with community goals and infrastructure plans?	1		No	
1.1.2 Develop local skills and capabilities.		?		
Does the project contribute to local employment, job creation, other related economic benefits through project planning, design and construction?	1		yes	
1.1.3 Propagate community growth and development.		?		
Does this project contribute substantially to measurable economic growth and development in the community?	1		No	
Does the project open up access and increase the number and quality of alternatives in the face of a changing environment and economy?	1		No	
Will the delivered infrastructure improve attractiveness for compatible residential development,businesses and industries, improve recreational opportunities, and generally improve the economic condition of the community?	1		No	
1.2 Overall Effectiveness				
1.2.1 Improve infrastructure efficiency and effectiveness		?		
Does this project contribute substantially to the overall infrastructure efficiency and effectiveness of the community?	1		No	
Does the project link appropriately with other infrastructure elements to improve efficiencies and effectiveness?	1		No	
1.2.2 Avoid traps and vulnerabilities that create unacceptably high, long-term costs, risks.		?		
Does this project help the community avoid or eliminate infrastructure resource traps that can lock the affected community into long term capital project expansions and operating costs?	1		No	Such resources traps increase community dependence on resources that could become scarce and more expensive.
Does this project help the community diminish or eliminate long term risks and vulnerabilities? For example, does the project create or exacerbate infrastructure configurations that are more vulnerable to extreme weather events, natural disasters, changing economic conditions and/or actions by others?	1		No	
1.3 External Impacts				
1.3.1 Minimize or eliminate adverse impacts on nearby communities.		?		
Have the owner, designer and constructor considered and sought to minimize or eliminate adverse impacts on other communities in the general vicinity or in the impact areas of the completed works?	1		No	

Three Project Dimensions



Application Levels

Stage	Description	Benefits
1	Overall Guidance and Checklists	Basic application of principles of sustainability to infrastructure projects.
2	Assessment and Recognition	Project awards and recognition: self-assessment or third party
3	Operational Imperatives	Sector-specific project recognition
4	Decision Support	Sustainability –based alternatives analysis

Progress to Date

Version 1 comments…

Project assessors & project verifiers…

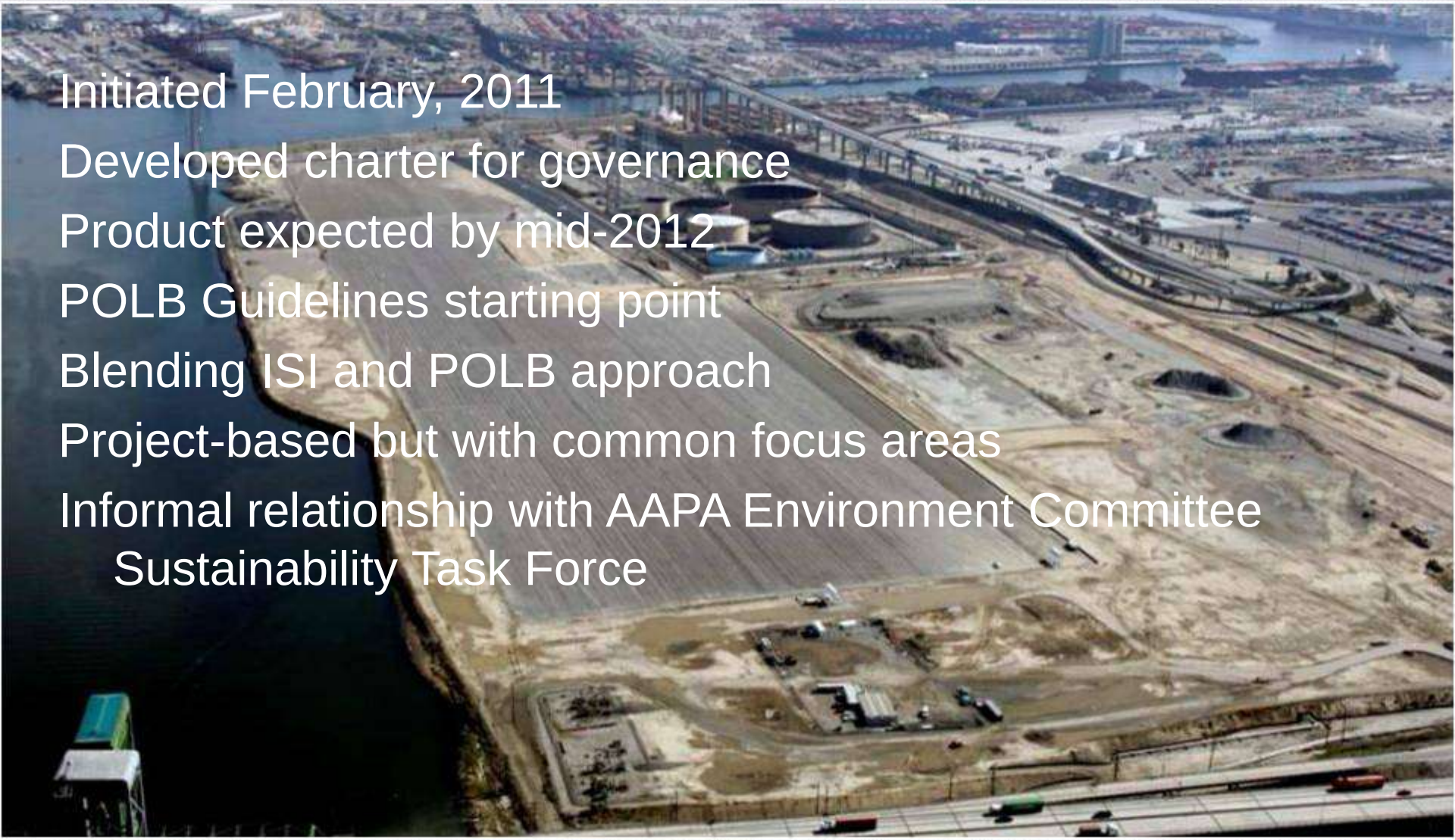
Live release…

Member Agencies

Joint West Coast Port Technical Committee (JWCPTC)…for development of sustainable design and construction guidelines

- Port of Long Beach
- Port of San Diego
- Port of Los Angeles
- Port of Seattle
- Port of Oakland
- Port of Tacoma
- Port of Portland
- Port of Vancouver (US)

Overview



- Initiated February, 2011
- Developed charter for governance
- Product expected by mid-2012
- POLB Guidelines starting point
- Blending ISI and POLB approach
- Project-based but with common focus areas
- Informal relationship with AAPA Environment Committee Sustainability Task Force

Work Plan/Progress

- Expand existing focus areas (completed)
- Expand sustainable criteria (in progress)
- Develop standardized Life Cycle Cost approach
- Develop training
- Expand project types, sustainable criteria & BMP's
- Review and modify process checklists
- Develop standard metrics and/or templates

Next Steps

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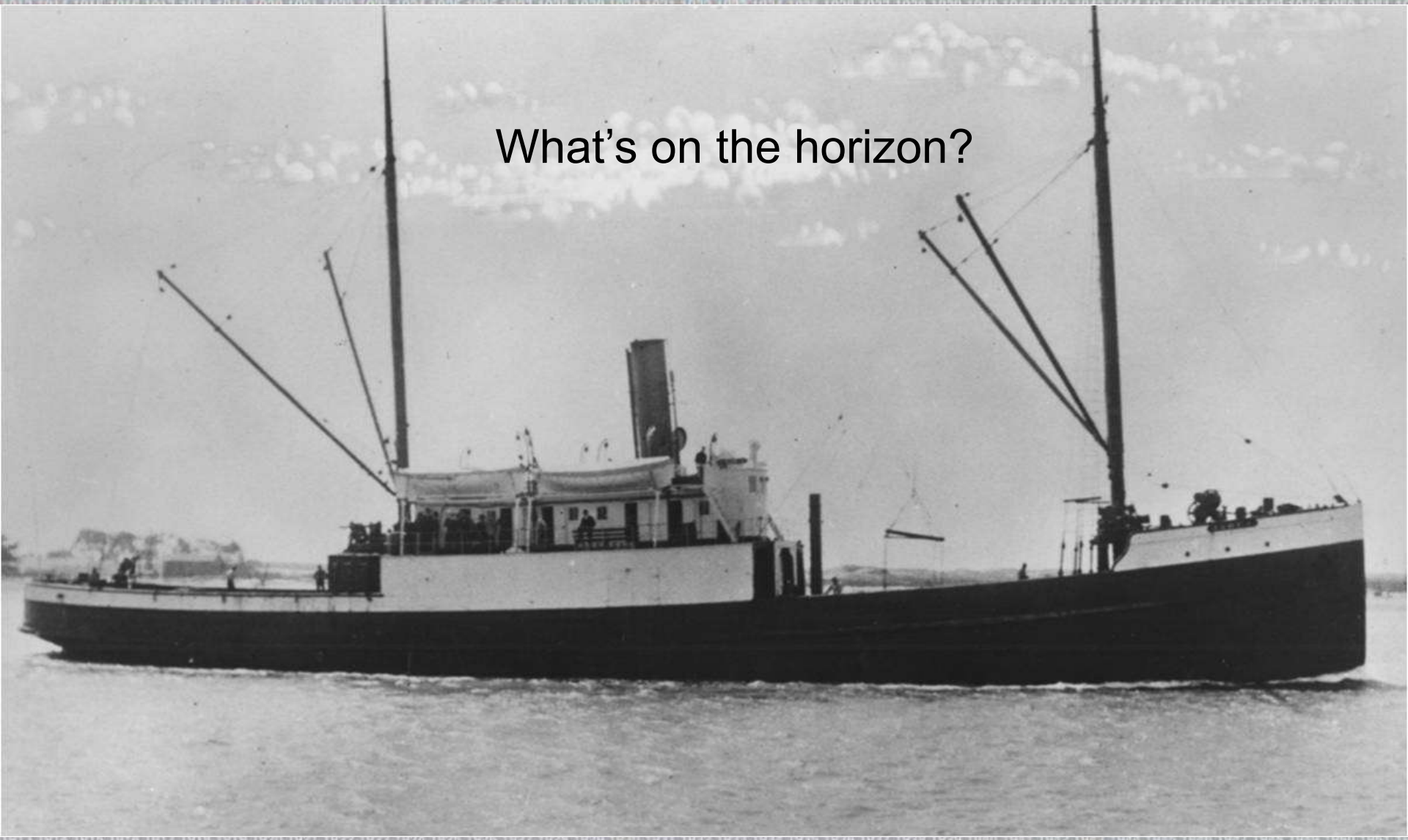

Thank you…

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