

Sustainable Port Development: A practitioner's perspective

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Goals of the Presentation:

- Build on APPA Sustainability Task Force Progress
- Working definition of Sustainability & Sustainable Port development
- Examples of methodologies & tools used in sustainable port projects



PORT OF PORTLAND

Possibility. In every direction.

How have we defined Sustainability?

Business strategies and activities that meet the current and future needs of the port and its stakeholders, while protecting and sustaining human & natural resources

AAPA Sustainability Task Force, March 2007



Sustainable Development

Economic growth that will benefit the present and future generations without detrimentally affecting the resources or biological systems of the planet

President's Council on Sustainable Development, 1996



Key Drivers for Sustainability

- Supporting mission of organization
- Relationship with key stakeholders
- Resource limitations and costs



- To see a return on investment in sustainability, motivations for going green must be in line with stakeholder or customer requirements

Characteristics of Sustainable Development

- Long term-perspective
- Focus both on what you're doing and how you're doing it
- Strategic thinking, investments and decisions
- Gains derived from both incremental steps and bold departures
- Business case based on three classes of benefits:
 - Return on investment (capital cost, pay back, maintenance reductions, etc)
 - Environmental, social, community benefits
 - Implementation issues, schedule impact, risk reduction, capacity building
- Thoughtful restructuring, based on continuous learning and improvement
- Balancing priorities through stakeholder engagement

Common Project assessment methods and tools

- Cost-benefit analysis
- Economic Impact Assessment
- Ecological Footprint
- Environmental Impact Analysis
- Leadership in Energy and Environmental Design (LEEDS)
- Life Cycle Analysis
- Project Impact Assessment
- Risk Assessment
- Strategic Environmental Assessment

Case Study: TLS Facility, Portland



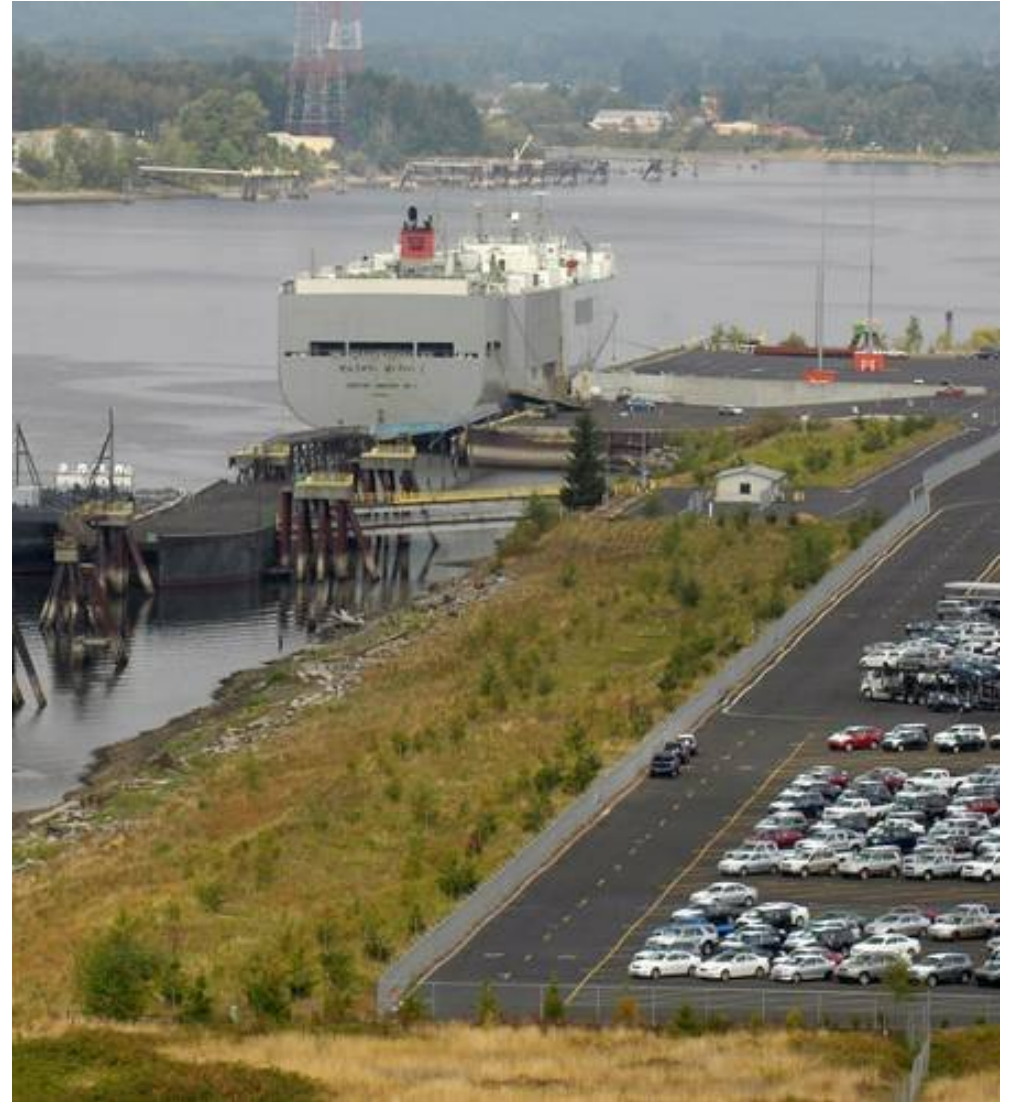
Multi-Step Evaluation of the Toyota facility

1. Toyota Design Goals
2. EMS Aspects & Impacts
3. Eco-Charrette
4. Life Cycle Cost Development
5. LEEDS



Evaluating Concepts - The Criteria

- Implementability
- Reduced Capital Cost
- Reduced O&M Cost
- Lower Permit Impacts
- Meets Toyota's Global Commitment
- Funding Availability
- Addresses Multiple Objectives
- Flexibility & Continuous Improvement
- Meets Port's Environmental Goals
- Meets Toyota's Design goals



LEEDS Sustainable Sites

- Erosion control
- Appropriate site selection
- Urban redevelopment
- Brownfield redevelopment
- Light pollution reduction
- Storm water management
- Conserve & restore damaged areas
- Incentives for alternative transportation
- Reduce potable water for irrigation



Special Features

- Indoor air quality
- Sustainable design
- Employee amenities
- Future compliance issues
- Community relations
- Columbia Water Taxi
- Expedited construction
- Permit & tax relief
- Mass transit commuting incentives



Regrading and Erosion Control



Planted Swales & Temp Irrigation



TLS Facility, Portland- Results:



- Riverbank Restoration of 7 acres
- LEED Gold Certified Buildings
- Industry Leading recycling Rate of 95%
- Water reduction of 75%
- Electricity reduction of 33%
- Every environmental gain had to achieve positive ROI

Some Lessons:

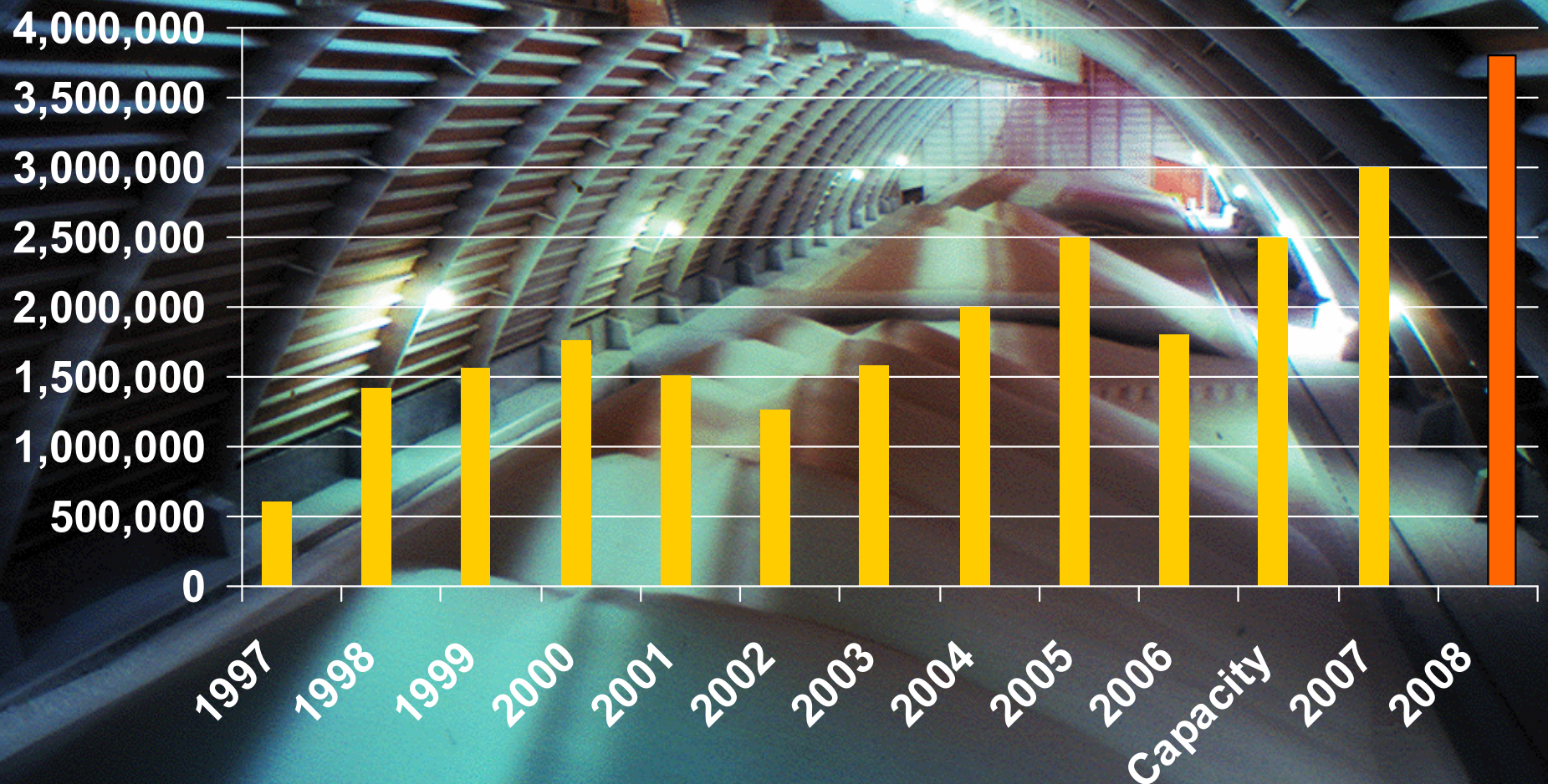
- Needs a tenant to make redevelopment happen
- Payback is long-term
- Integrating permitting strategy with design essential
- Incentives help too
- Brownfield redevelopment is achievable
- Didn't adequately plan for growth
- Underestimated community impacts
- Results are replicable

Terminal 5 – Portland Bulk Terminals



Canpotex/PBT5 site

Potash Exports (Port FY)



PORT OF PORTLAND

Possibility. In every direction.

PBT5 \$18 million Expansion- Supported by ROI



Return on Asset Evaluation: Taking the long view in sustainable development

- Potash Terminal with recent site investments:
 - Capacity improvements
 - Environmental enhancements
- Inspection identified degradation of the dock due to construction flaws and chloride ion corrosion
- \$8 million unexpected fix



Evaluation Technique: Return on total Assets

- Definition: $\text{Net Income (NI)} / \text{Average Total assets (TA)}$
- Measures how efficient management is at using its assets to generate earnings/net income
- Higher the ROA % the better business line is in making a profit on its investment.
- “. . . management's most important job is to make wise choices in allocating its resources. Anybody can make a profit by throwing a ton of money at a problem, but very few managers excel at making large profits with little investment.” (<http://www.investopedia.com/terms/r/returnonassets.asp>)

Terminal 5 Dock repair & Corrosion Protection

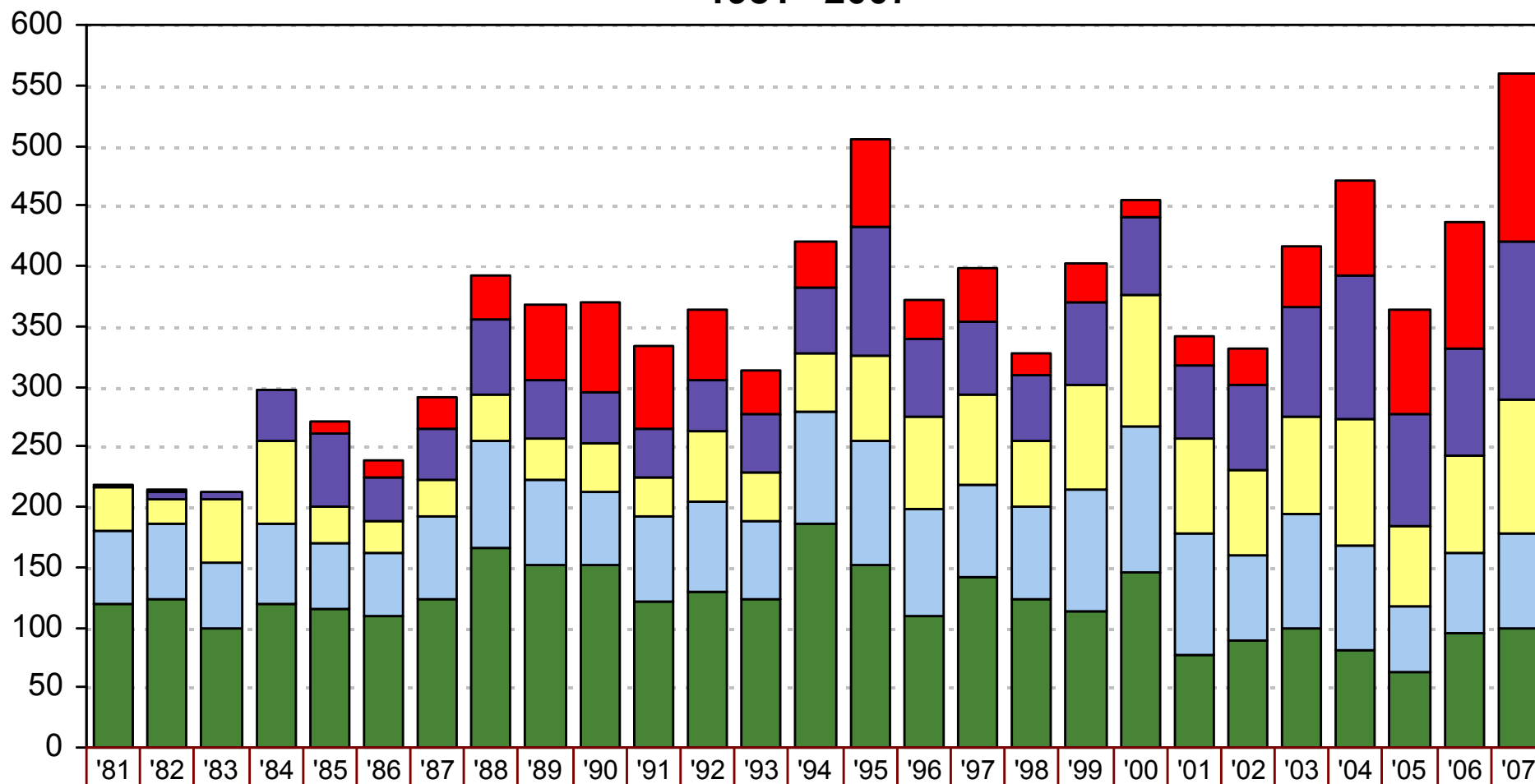
- Sustainability considerations:
 - Long-term solution required
 - Integrated permitting considerations into project approach
 - Balance investment with stakeholder concerns
- Business Case relied on:
 - Maintenance reductions
 - Risk mitigations
 - Asset preservation
 - Return on Asset



Sustaining navigation in a 40' channel



Columbia River Vessel Transits With Drafts of 36 feet or More 1981 - 2007



Source: Port of Portland from data provided by the Columbia River Pilots

Vessel Voyage Planning

- Transit is 6-8 hrs at 12-15 mph
- Window of arrival at Bar a consideration
- Transit will always pass low tide on river
- LOADMAX helps inform where low tide will be
- Pilot can determine likely under-keel clearance for entire transit



LOADMAX River Level Forecast System

- Carriers
- Container Barging
- Intermodal Rail Transportation
- Bulk and Breakbulk Terminals**
- Terminal 2
- Terminal 4
- Terminal 5
- Logistics Services**
- Import Advantages
- Drayage Trucking Companies
- Local Freight Forwarders and Custom Brokers
- Freight Stations and Warehouses
- Columbia River**
- Navigation
- River Depth Forecasting**
- Inside Marine**
- Facilities Map
- Newsroom
- Port Dispatch
- Tariff
- Statistics

Clearance: 3.5 ft.
Minimum Depth: 43.5 ft.
Note: Outbound results calculated from Vancouver

Trip Parameters

☒ U.S.
☐ Metric

Date: 6/9/2008

Time: 1:00 p.m.

Destination: Outbound

Draft: 40 feet

Speed: 15 knots

Submit

Forecast Last Updated On: 6/9/2008

LOADMAX Sustainability Features



- Cost to enter PORTS network was LT \$250,000
 - Equipment upgrade met key stakeholder concerns:
 - Reliability
 - Credibility
 - Lower maintenance
- = Sustainable operation & service

Some Lessons:

- Benefits are huge, but have never been quantified
- Cost/benefit analysis would be useful communications tool
- Greater coalition building and partnerships are warranted
- Ripe for continuous improvement
- Needs to be integrated into other navigation systems in use on Columbia

Thank you.