



Port of
LONG BEACH
The Green Port



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Sustainability in Port Engineering

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November 18, 2009
AAPA Port Facilities Seminar
Charleston, South Carolina

Introduction



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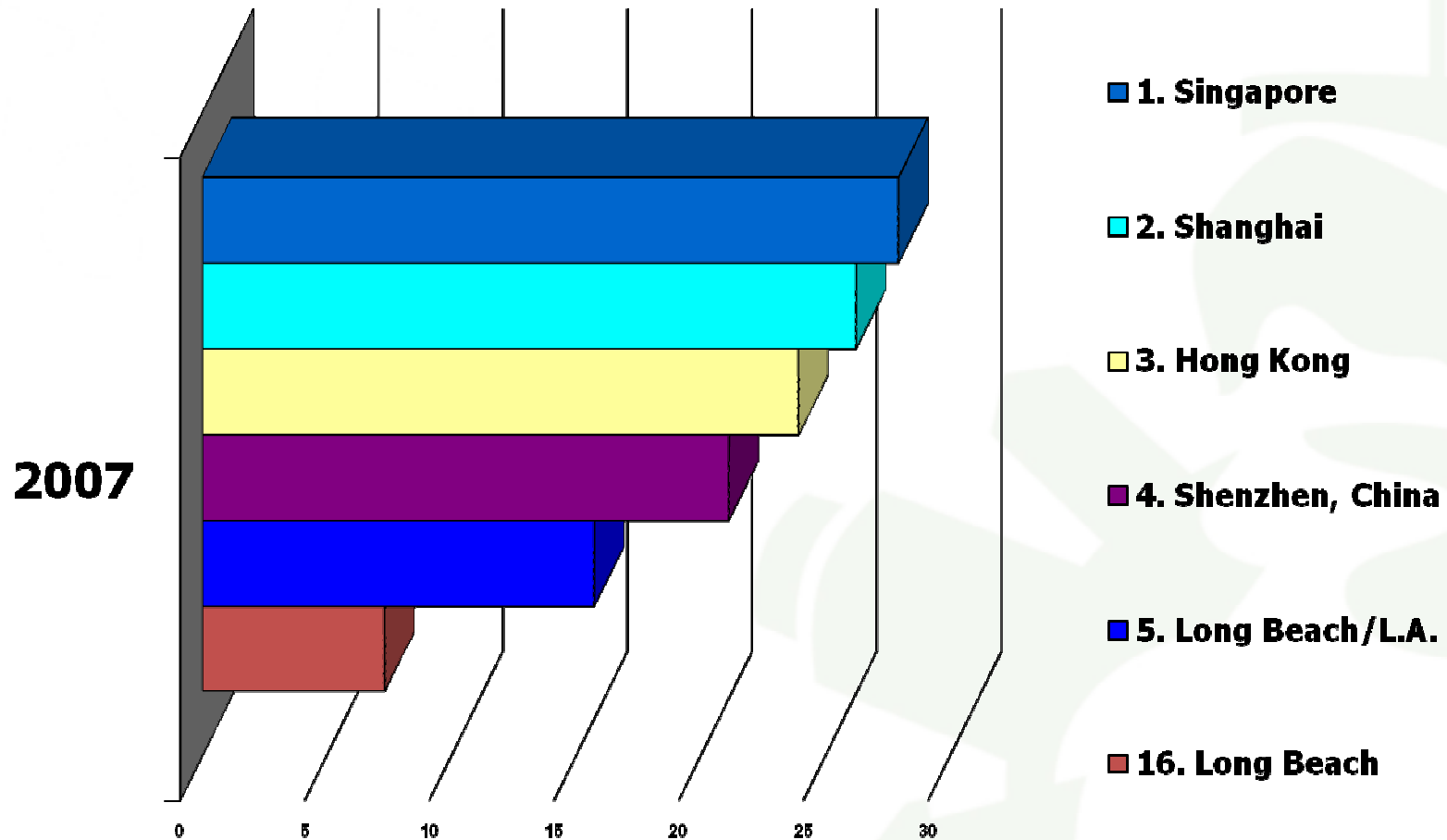
- Overview of the Port of Long Beach
- Review of Sustainability Initiatives and Programs
- Challenges Adapting Sustainability to Engineering
- Using an EMS to integrate Sustainability

POLB Overview



- 3230 Acres
- 7 Container Terminals
- 80 berths
- 76-foot-deep main channel
- 72 post-panamax cranes
- 2007 Cargo
 - 7.3M TEUs
 - \$140B value

World's Top Container Seaports

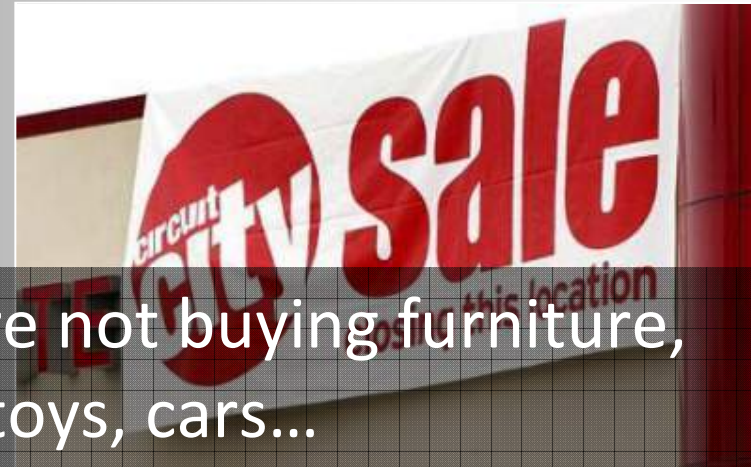


*Twenty-foot-equivalent units (TEUs)

The recession hits the shipping industry



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Anxious consumers are not buying furniture, clothing, toys, cars...

As a result...



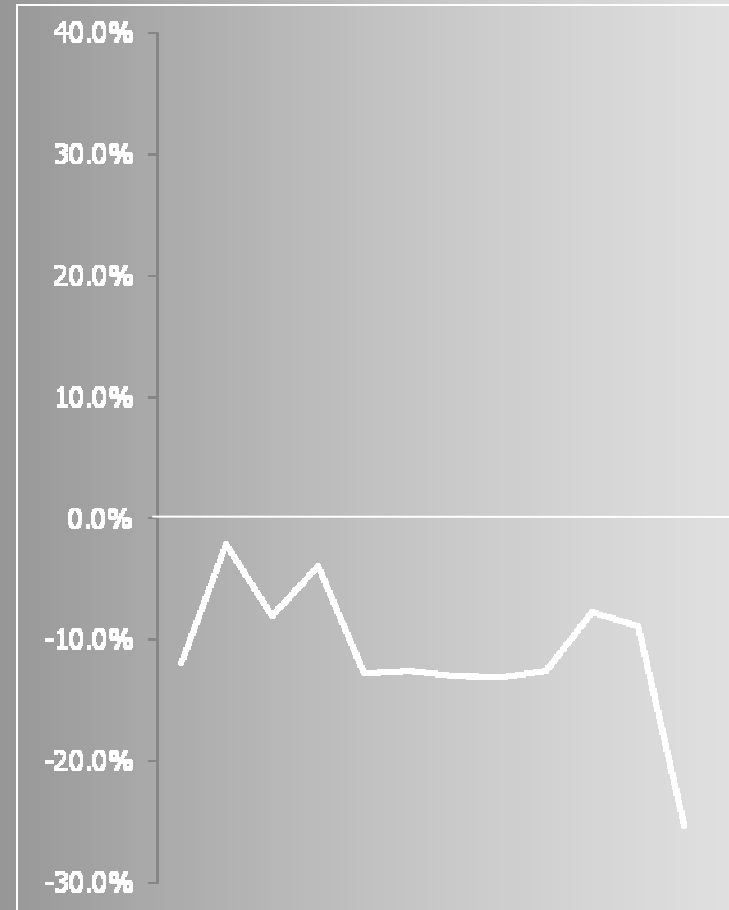
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6.5 million TEUs in 2008

Down 11.3% compared to 2007

Worst yearly decline in more than 20 years

Every month in 2008 was worse than the same month in 2007



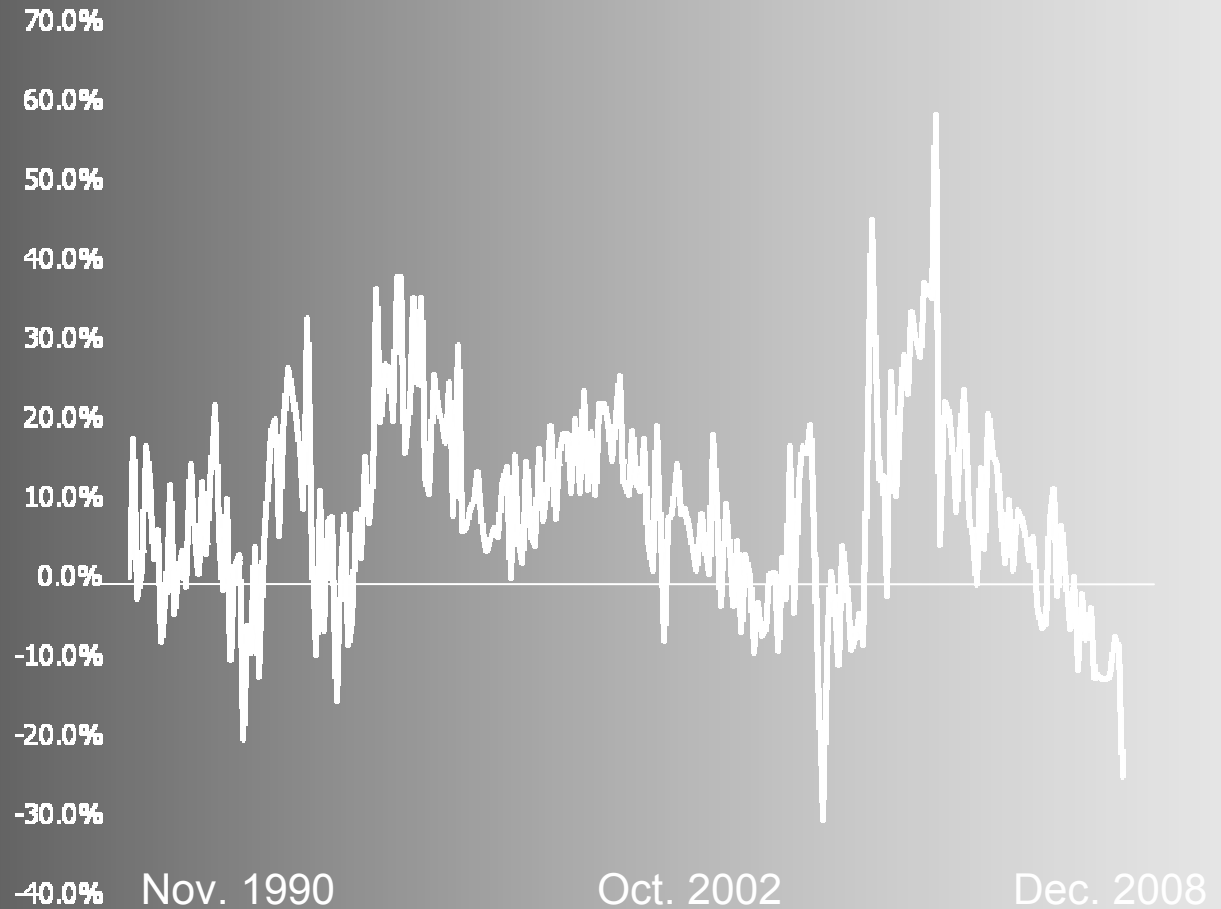
% change in monthly TEUs vs same month a year ago

Monthly TEUs v. previous year



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25.3% drop in
December 2008
was the second
worst monthly
decline in more
than 20 years

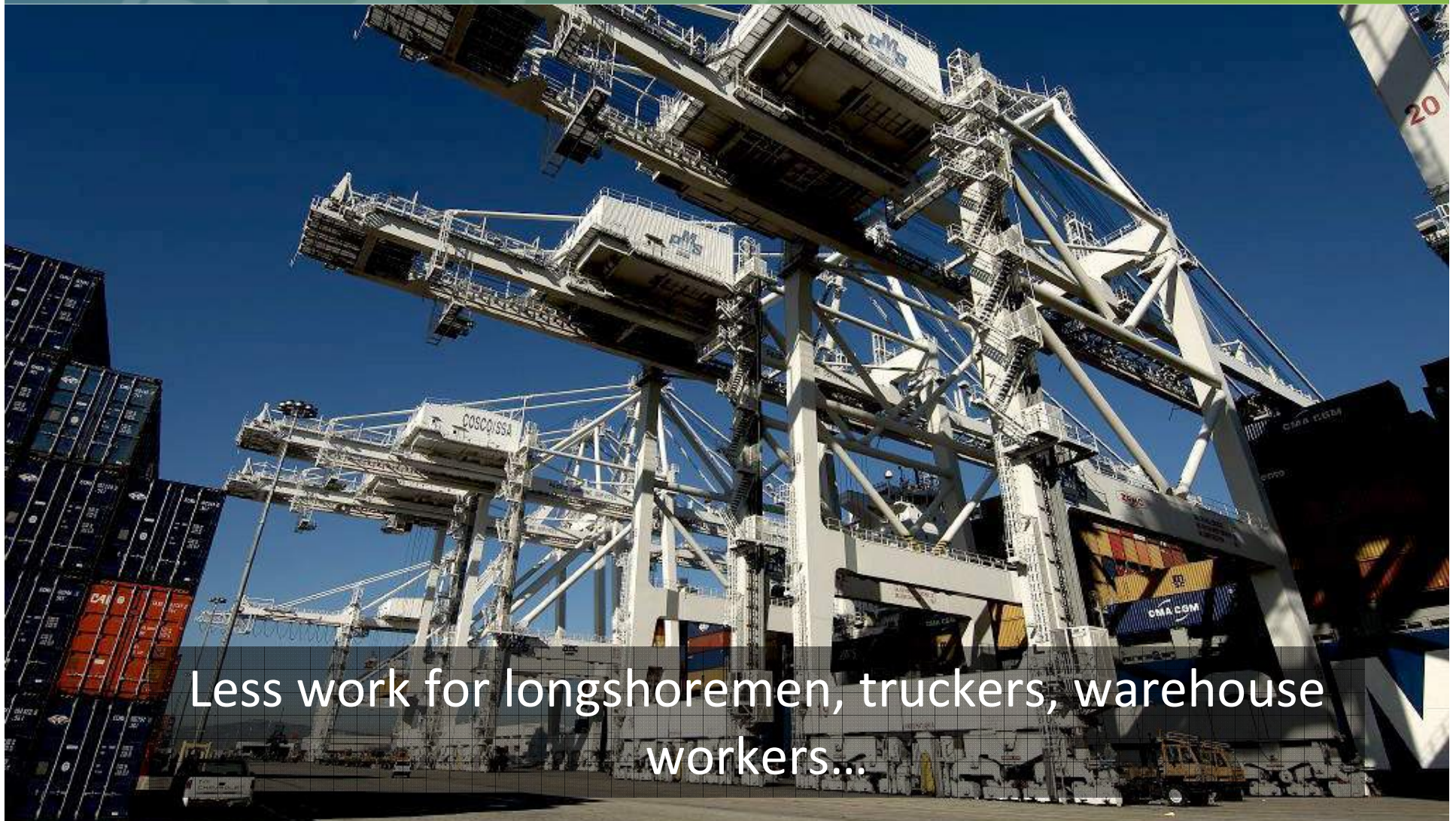


% change in monthly TEUs vs same month a year ago

Rising unemployment...



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Less work for longshoremen, truckers, warehouse workers...

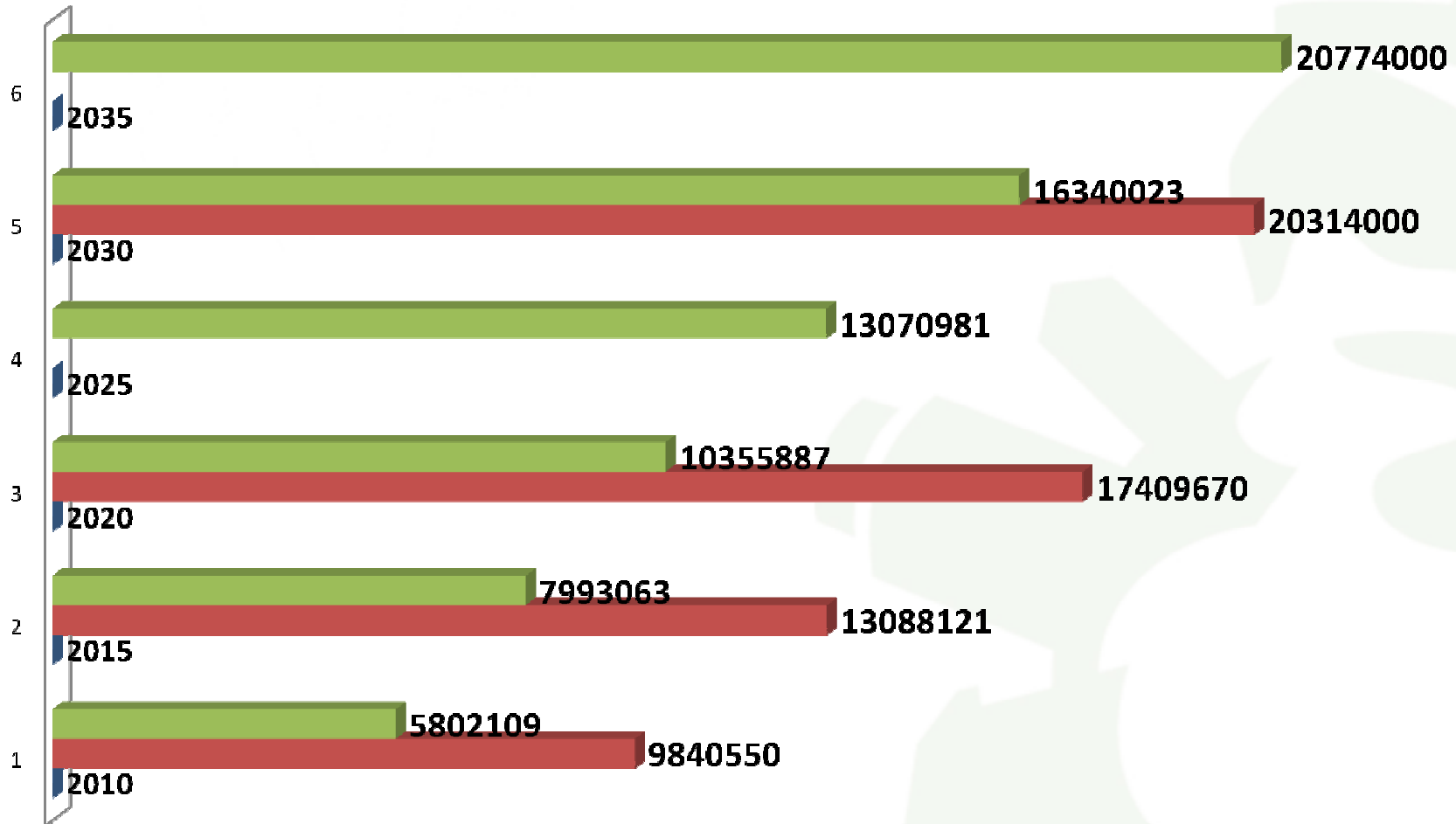
TEU Forecast Comparison



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■ 2009 Forecast TEU

■ 2006 Forecast TEU



Port's Response to Growth Trends



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- **Efficiency Improvements**
 - Technology
 - Densification and Consolidation of Smaller Terminals
 - More On-Dock rail
- **Capital Improvements**
 - Terminal Expansions
 - Infrastructure and Navigation Projects
 - Rail Enhancement Program
- **Revised EIR Processes and Mitigations**
 - Clean Air Action Plan (CAAP)
 - Throughput Limitations
 - Shore Side Power
- **Green Port Policy**

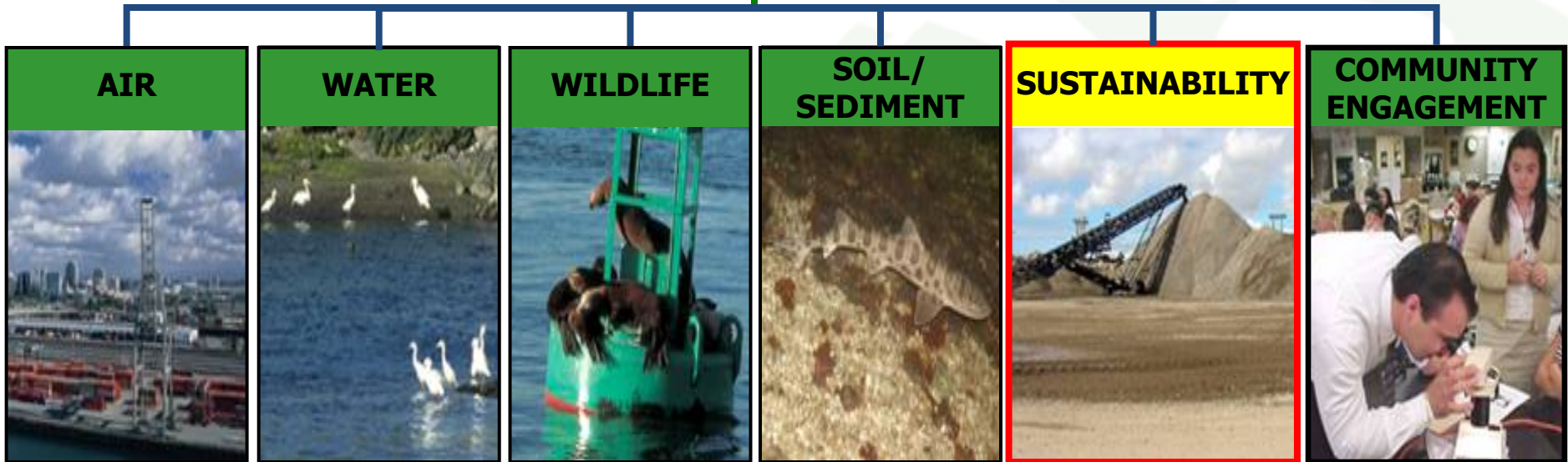
Green Port Policy



GREEN PORT POLICY

- **Protect the community from harmful side effects of Port operations**
- **Distinguish Port as leader in environmental stewardship and compliance**
- **Promote sustainability**
- **Employ best available technology to minimize environmental impacts**
- **Engage and educate the community**

SIX KEY STRATEGIES



Clean Air Action Plan Strategies



- Clean Trucks Program
- Clean Vessels Program
 - Vessel Speed Reduction (Reaching 94% Compliance)
- Shore-side power for ships
- Clean Locomotives Programs
- Clean Cargo Handling Equipment
- Clean Harbor Craft
- Alternative technology Program



The Goal is Reduce pollution by 45% within five years

Other Sustainability Programs



- Green Port Integrating Committee
- Green Leases
- Solid waste recycling programs
- Green Port Fest
- Educational Partnerships
- “Let’s Talk Port” Community Outreach
- Urban Reforestation Program
- Sustainable Landscaping Palettes



Transporting Sustainability from Environmental to Engineering



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- General perception was:
 - Sustainability is primarily an environmental program
- Implementation centers on environmental issues first
- Sustainable environmental initiatives evolve into sustainable operations
- Sustainable operations requires sustainable engineering practices
- Sustainable development focuses on the building industry
 - Commercial and residential accounts for 40% of total US energy consumption
- What about **Sustainable Infrastructure**?
- How do we apply sustainability to the engineering environment?

Port Engineering Applications



- LEED “Green Building” Program
- Materials Recycling/Reuse/Reduction
- Railroad Sustainability Standards
- “Green” Construction Methodologies
- Engineering Bureau Purchasing and Procurement Environmental Management System



LEED “Green Building” Program



- City of Long Beach Green Building Ordinance
- Security Command and Control Center
- New Port Administration Building/Maintenance Facility Complex
 - Gold certified
- Pier G Silver LEED Terminal
 - All buildings Silver LEED Certified
- Targeted Effect:
 - Energy Efficiency reduction in greenhouse gases
 - Green energy
 - Water conservation
 - Stormwater Management
 - Resource conservation



PIER G CONTAINER TERMINAL

Sustainable Development in Action



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- The Pier G (ITS) Terminal Will Include Over 270 Acres
- All Terminal Buildings Will Be Silver LEED Certified
- All Concrete, Asphalt, and Base are recycled on site or within the Port District resulting in major savings
- Savings for Base Recycling Alone to Date: \$15 million
- First Shore Side Container Berth in Long Beach (2008)
- \$25 Million Electrical Infrastructure to power ships on all berths for Piers G and J Terminals
- Planning for Total Terminal Automation

Materials Recycling/Reuse/Reduction



- Operational recycling programs
 - Office paper, cardboard, magazines, food/beverage containers
- Construction Waste Recycling Program
 - COLB ordinance (60% diversion from landfill)
 - LEED points (90%+ achievable)
 - Specs require recycling of concrete, asphalt & rock rubble
 - Soil import/export guidelines
- Locally purchased materials
- Recycled building products
- Reused materials
- Targeted Effect:
 - Materials conservation
 - Energy efficiency reduction in greenhouse gases
 - Reduced resource consumption



Railroad Sustainability Standards



- \$2B Rail Enhancement Program
- More on-dock and near-dock rail
- Truck trip reduction strategy relies on more rail
- Hybrid and alternative fuel locomotives
- Developing Sustainable Design Standards
 - Modeled after LEED Standards
 - Defining broad categories rather than individual points
 - Incorporate into design development process
- Targeted Effect:
 - Materials conservation
 - Hazard materials reduction
 - Air quality improvements
 - Energy use



Green Construction Methodologies



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- Ultra Low Sulfur Diesel
- USEPA Tier 3 non-road standards equipment
- Fugitive dust controls
 - Soil stabilizers
 - Wheel washouts
 - Wind fencing
- Truck idling reduction measures
- Storm water management
 - SWPPP
 - BMP's

Storm Water Management Elements



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- Construction SWPPP SOP
 - Increased inspections
 - Improved record keeping
 - Periodic auditing
- Design Phase SWM SOP
 - Design checklists for construction and operational BMP's
 - Integrated into the design process
- Orphaned Areas/Inactive Construction Sites SOP
 - SWPPP Capital Project for Orphaned Areas
 - Annual inventory of orphaned areas & inactive construction sites

Thank You!



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