

"Green" Terminal Design

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"Green" Terminal Design

- a framework of issues specific to:

"Green" Terminal Design &
Procedures for Improved Air
Quality.



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"Green" Terminal Design

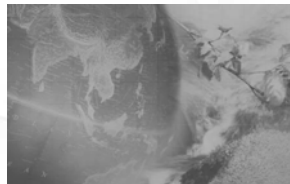


State of Terminals Today



"Green" Terminal Design

- facing Critical Issues:
 - Air Quality
 - Energy
 - Infrastructure
 - Congestion
 - Safety
 - Security
 - Efficiency



“Green” Terminal Design

- assessing Facilities & Infrastructure
 - land usage
 - energy consumption
 - water use & quality
 - resources and materials
 - environmental quality



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“Green” Terminal Design

- establishing Sustainable Objectives:
 - creating policy
 - establishing programs
 - monitoring impacts
 - furthering goals



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“Green” Terminal Design

- competing in a Global Marketplace
 - creating policy
 - establishing programs
 - monitoring impacts
 - furthering goals



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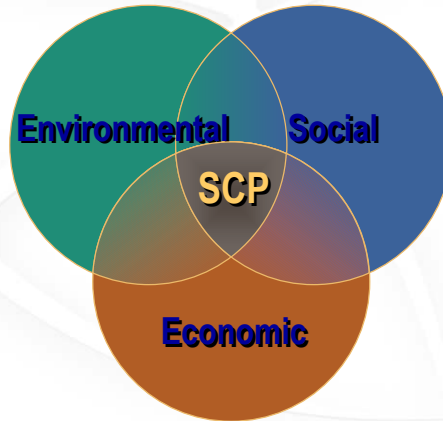


The Need for “Green” Terminals



"Green" Terminal Design

- integrated Response to Collective Issues
The "3 anchors of Sustainability"
 - Economic
 - Financial
 - Environmental



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"Green" Terminal Design

- the Economic Anchor
 - economic impacts/opportunities
 - achieving lifecycle capital, O&M efficiencies – technology, asset and cost management
 - increased bonding capability
 - a platform for integrated planning and communications
 - lower, long-term infrastructure costs
 - fiduciary responsibility

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“Green” Terminal Design

- the Environmental Anchor
 - reduced emissions – particulate matter, Sulfur Oxides, NOx, Reactive Organic Compounds
 - improved air quality
 - reduced fuel consumption



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“Green” Terminal Design

- the Social Anchor
 - community benefits
 - political benefits
 - market benefits (includes liability issues and risk aversion)
 - ability to attract strong work force, businesses, tax base
 - may inspire formation of new businesses



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“Green” Terminal Design

- a **vision** for Ports that build **economic prosperity** on a foundation of smart infrastructure, finite natural resources, and social health in all its forms
- a developed human environment that functions in harmony with human and natural **constituencies**
- an approach that **designs** smart & green infrastructure (buildings, sites, wharfs and vessels)
- a concept of Ports that **foster** human health and well-being
- a goal for policy and regulations that secures a Port’s **vibrant future** & ability to compete in a global environment

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Measuring “Green”



“Green” Terminal Design

- reduced emissions
 - particulate matter
 - Sulfur Oxides
 - NOx
 - Reactive Organic Compounds



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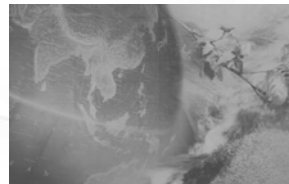
- reduced energy consumption
 - equipment
 - yard vehicles
 - trucks
 - marine engines
 - facilities



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“Green” Terminal Design

- reduced operating & maintenance cost
 - equipment
 - yard vehicles
 - trucks
 - marine engines
 - facilities



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“Green” Terminal Design

- improved work environment
 - more healthful
 - more productive
 - good neighbor

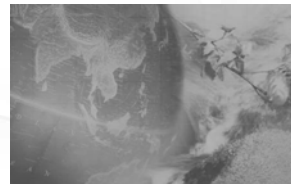


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“Green” Terminal Design

- greater “sustainability”
 - longer lifespan
 - improved functionality
 - improved flexibility

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“Green” Terminal Design



What is a “Green” Terminal?



“Green” Terminal Design

- “green” terminals:
 - are designed in harmony with their locations
 - promote high efficiency
 - improve economics
 - enhance the overall infrastructure
 - provide a link to the community



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“Green” Terminal Design

- “green” terminals have:
 - beneficial site planning
 - lower water usage
 - greater energy efficiency
 - better materials and systems
 - improved environmental quality



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“Green” Terminal Design

- terminal facilities and infrastructure
 - land use
 - transportation
 - wharfs
 - infrastructure
 - buildings



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“Green” Terminal Design

- terminal operations
 - equipment
 - vehicles
 - efficiency



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“Green” Terminal Design

- vessel operations
 - alternative marine power
 - fuel types
 - efficient operation



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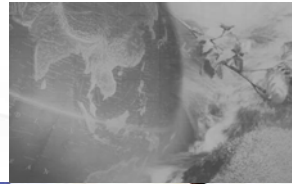


Getting to “Green”



“Green” Terminal Design

- an “integrated design” approach
 - The big-picture perspective with long-range goals
 - Synergistic, efficient, cost-effective solutions
 - Best practices, culled from extensive work and case studies



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“Green” Terminal Design

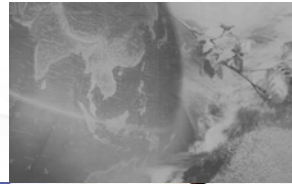
- strategic planning
 - port-wide
 - facilities
 - environment
 - transportation
 - operational



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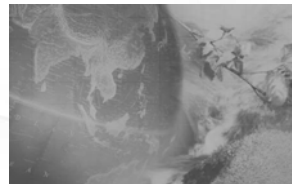
- innovative solutions
 - looking at all elements
 - finding “holistic” answers
 - facilities
 - environment
 - transportation
 - operations



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“Green” Terminal Design

- seek and apply:
 - three “anchors” of sustainability
 - applicable case studies
 - best practices
 - partnering opportunities
 - new technologies
 - opportunism



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Thank you!

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