BUSAN International Port Conference 2018

Port of Los Angeles Emission Reduction Programs

Michael DiBernardo| Deputy Executive Director | November 1, 2018

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San Pedro Bay Port Complex

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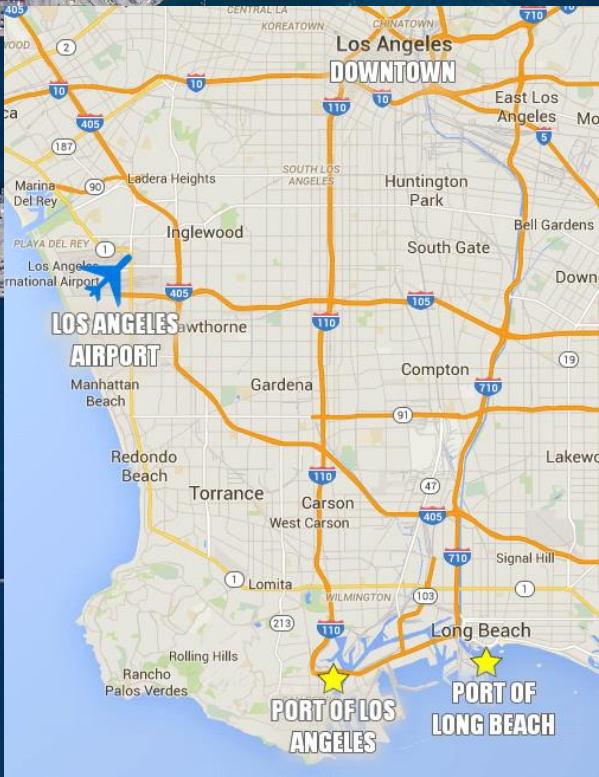
Wilmington

Downtown Long Beach

Port of Los Angeles

Port of Long Beach

San Pedro



Los Angeles Environmental Challenges

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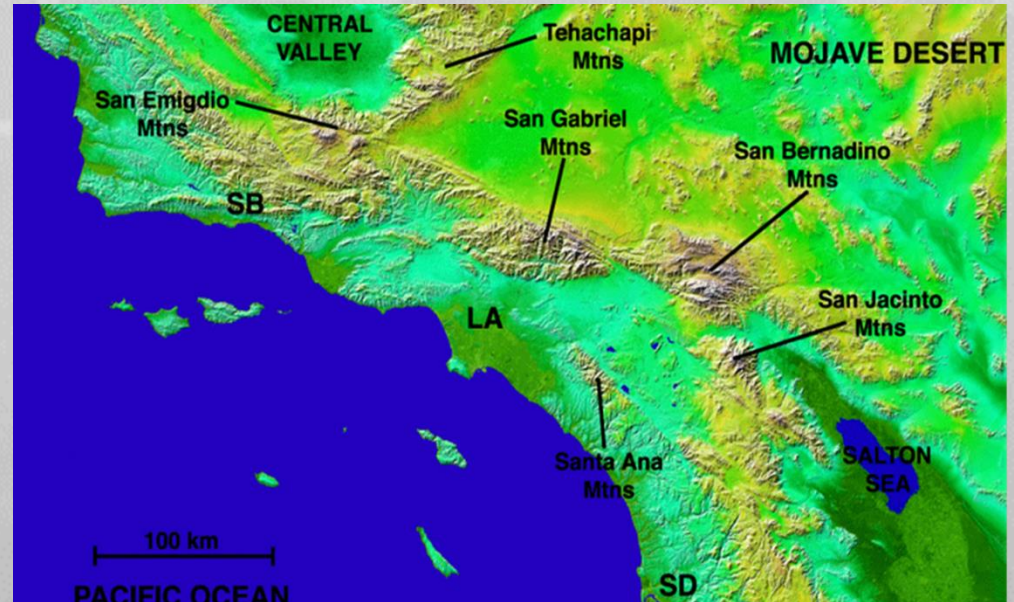
- **Los Angeles-Long Beach port complex is an important economic engine**
  - Over $300 Billion in cargo (40% of imported goods)
  - 1 in 9 jobs are connected to Global Trade through San Pedro Bay
- **Los Angeles Metro Area has some of the worst Air Quality in U.S.**
  - "Extreme" Nonattainment for Ozone (NOx, CO, VOCs are key ozone precursors)
  - "Serious" Nonattainment for Particulate Matter (diesel particulate matter contributes to health risk)
  - Greenhouse Gas now a critical concern due to Climate Change
- **Growth and environmental programs must occur together**



San Pedro Bay Ports Clean Air Action Plan

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- **First Clean Air Action Plan (CAAP) was introduced in 2006**
- **CAAP established programs to reduce emissions for 5 major Port source categories (trucks, trains, ships, cargo equipment, and harbor craft)**
- **CAAP established Emission Reductions Standards**
  - Reduce NOx emissions by 22% by 2014 and 59% by 2023
  - Reduce SOx emissions by 93% by 2014 (and 2023)
  - Reduce DPM emissions by 72% by 2014 and 77% by 2023
- **Also established a Health Risk Reduction Standard**
  - 85% below 2005 levels by 2020
- **Progress tracked through annual emissions inventories**

Public-Private CAAP Investment

- **Over [US]$400M Port investment in emission reduction programs since 2006**
- **Largest port investment went to:**
  - **Shore-Power (AMP) Infrastructure** (24 berths equipped) – $225M
  - **On-road trucks** (“Clean Truck Program”) – $115M in port investment
    - Another nearly $200M in grants from State of California to truckers
    - More than $1.5B in private fleet investment
  - **Technology Advancement** – $25M from SP Bay Ports
    - Another $100M received in local, state and federal grants for technology development

Air Emission Reductions 2005-2018

2017 Clean Air Action Plan Update

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- **Continues 2010 Health Risk and Emission Reduction Standards (2020 and 2023)**
- **Adds GHG reduction requirements**
  - 40% below 1990 levels by 2030
  - 80% below 1990 levels by 2050
- **New strategies to reduce emissions, including efficiency measures and near-zero and zero-emissions technologies**

2017 CAAP Update -- Heavy-Duty Trucks

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- Advance the *Clean Truck Program* with goal to transition port drayage sector to to zero-emission (ZE) trucks by 2035
- Work as a “market maker” to help shape market demand for ZE trucks
- Develop a Near-Zero Emission (NZE) truck incentive program in partnership with local/state regulators
- Adopt a terminal reservation system to improve truck turn times

**Prototype of Toyota’s Zero-Emissions Hydrogen-Fuel-Cell /Electric truck being tested in LA*

2017 CAAP Update -- Terminal Equipment

- Transition to zero emissions terminal equipment by 2030 (testing already underway)
- Limit idling

2017 CAAP Update -- Ships

- Extend vessel speed reduction compliance to 40 nautical miles
- Use shore power (AMP) and other at-berth emission reduction technologies
- Incentivize energy efficiency upgrades and clean technologies
- Develop a *Clean Ship Program* to transition the most polluting ships out of the fleet (expanding on POLA's initial *Environmental Ship Index* program created through IAPH)

Status of LNG Bunkering in Los Angeles

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- **We have been studying LNG strategies for years via IAPH**
- **Our region has no LNG infrastructure (LNG is trucked in from out of state)**
- **Two Pasha Hawaii LNG vessels will be in service in 2020**
- **First bunkering effort in Los Angeles will be a "Truck to Ship" fuel transfer strategy currently in development**
  - Up to 40 [LNG] tanker trucks could be required to fuel a vessel
  - On the wharf, 4-6 tanker trucks at a time would connect to a "rack" (manifold-type system) at the stern of the ship for fuel transfer
  - Shipping line and fuel provider will need to undergo an extensive permitting process

Additional 2017 CAAP Update Highlights

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- Expand use of on-dock rail
- Accelerate deployment of cleaner harbor craft engines
- Encourage improvements in freight efficiencies
- Develop a “Green Terminal” recognition program
- Ensure energy infrastructure is available to support use of cleaner technologies

Technology Development Focus Points

- Demonstrations of Zero Emission On-road Trucks
- Demonstrations of Harbor Craft engine technologies
- Zero Emission Switcher Locomotives
- Vessel Energy Efficiency Improvements Evaluation
- Alternative At-berth Emission Reduction Technologies
- Demonstrations of Zero Emission Terminal Equipment Technologies

Zero Emission (ZE) Challenges

- **ZE technology still in early stages of development (uncertain performance, high cost)**
  - Air agencies don't want to wait for the technology to become mature (we have immediate air quality and health problems)
  - Extremely expensive ZE infrastructure must be developed and deployed throughout the region
- **Some stakeholders believe low-emission hybrid and alt fuel vehicles are reasonable alternatives (versus zero emissions)**
- **Zero emissions may still be the only long-term solution to Greenhouse gas problem**

Efficiency Gains - Technology

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PORT INFORMATION PORTAL

- Increased cargo visibility
- Predictability
- Productivity
- Collaboration
- Increase cargo velocity
- Improve service delivery
- Environmental benefits

GE Port Optimizer User Interface

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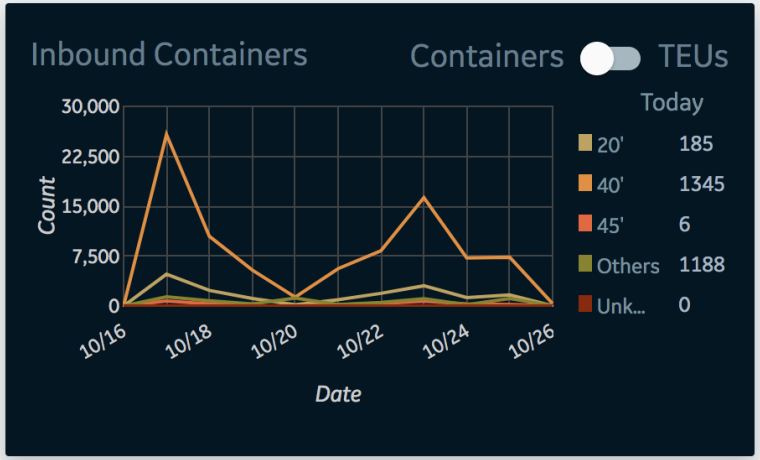
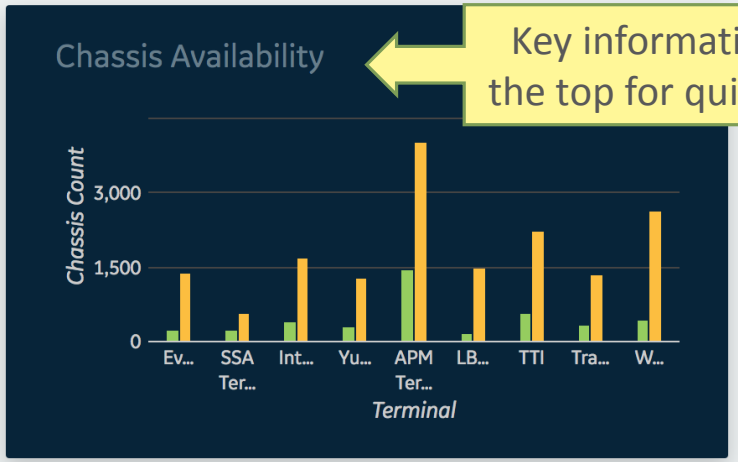
Port of LA





Key information highlighted at the top for quick and easy access

	ETA / ATA	STATUS
NYK DELPHINUS	10/12 21:00	Docked
OOCL MIAMI	10/13 00:10	Docked
COSCO PORTUGAL	10/13 06:30	Docked
MOL BRILLIANCE	10/12 21:40	Docked
CONTI CRYSTAL	10/14 07:20	Docked

INBOUND/DOCKED CONTAINER VOLUME

This week

Ability to search by multiple criteria to view data specifically how you want

PORT	VESSEL NAME	TERMINAL	STATUS	TOTAL CONTAINERS	ETA/ATA	ETD/ATD	OTHERS	20' CONTAINERS					40' CONTA		
Filter	Filter	Filter	Filter					DRY	REEFER	OPEN TOP	OTHERS	UNKNOWN	DRY	REEFER	OPEN T
LA	EVER EXCEL	ETS	INBOUND	2621	10/21/2018 07:30	10/23/2018 12:00	116	198	0	0	0	0	2201	33	0
LA	MANUKAI	UKN	INBOUND	112	10/21/2018 01:00	10/23/2018 21:00	51	5	0	0	1	0	32	9	0

GE Port Optimizer User Interface

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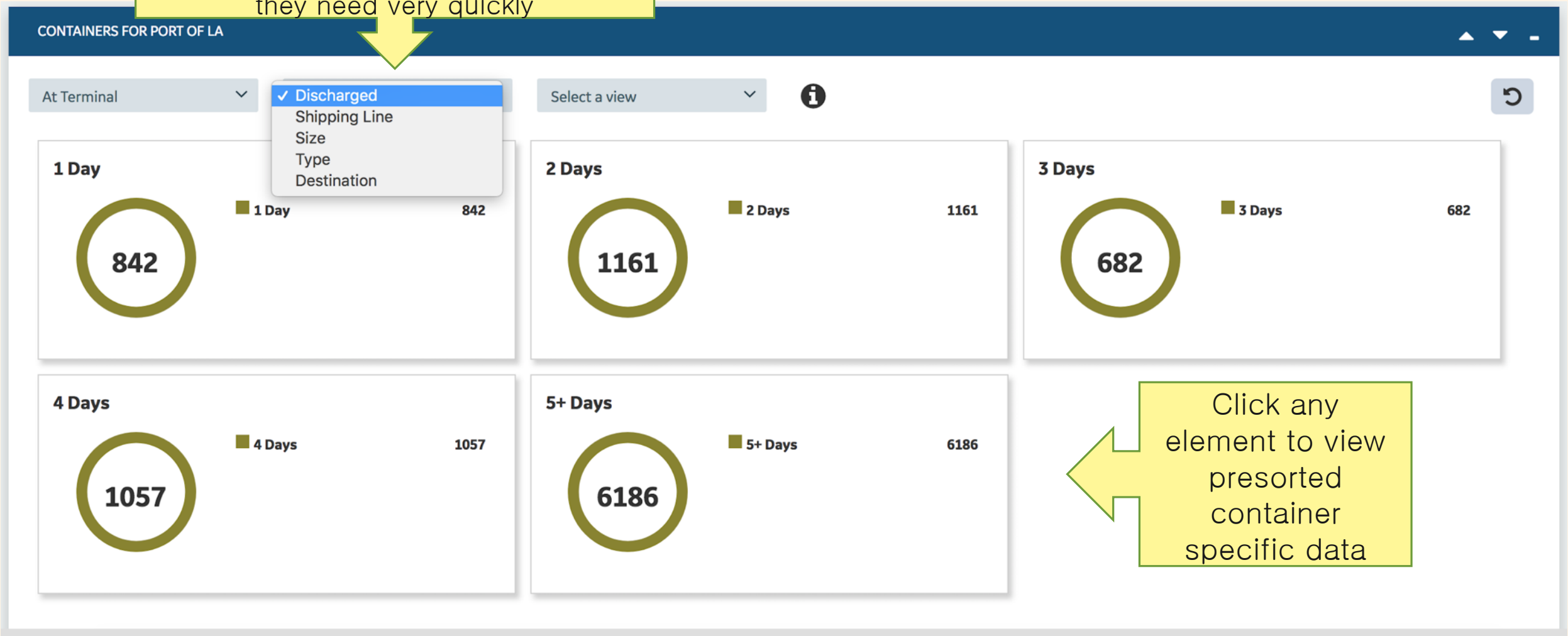
Highly sortable views allow users to drive down to the specific information they need very quickly



Click any element to view presorted container specific data

Port Optimizer Roadmap

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Scale up:
Port of LA &
Port of Long Beach

- All shipping lines, all terminals @ Port of LA
- Pilot at Long Beach
- Expand stakeholder engagement – all users
- Feature/function build-out

Now

Enhance

- Advanced Analytics: predictive ETAs
- Landside Optimization
- Rail Capabilities: equipment planning, block planning, visibility in /out, empty railcar availability, train visit arrival visibility
- Imports + Exports

Dec

Expand

New Features:

- Chassis tracking
- Truck Appointments
- Truck turn times
- Ship stowage visualization
- Predictive Analytics: Ship arrival time, gate traffic

New Regions: global

2019+


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America's Port
THANK YOU