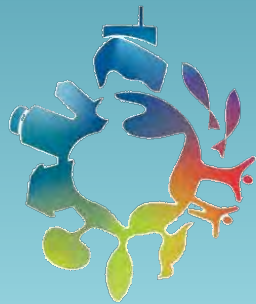


Zero Emission Technologies



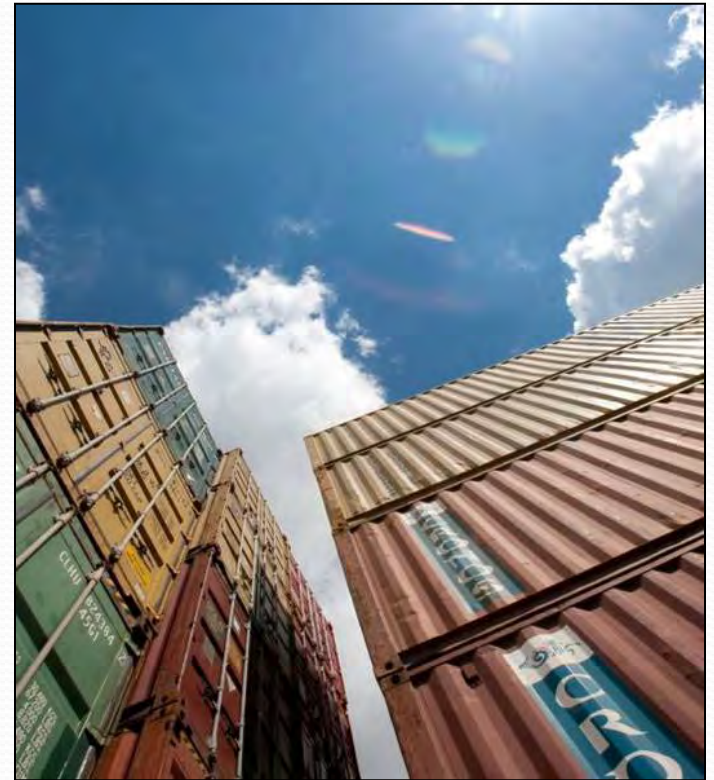
Port of
LONG BEACH
The Green Port



Presented To:
West Coast Collaborative Partners
May 30, 2012

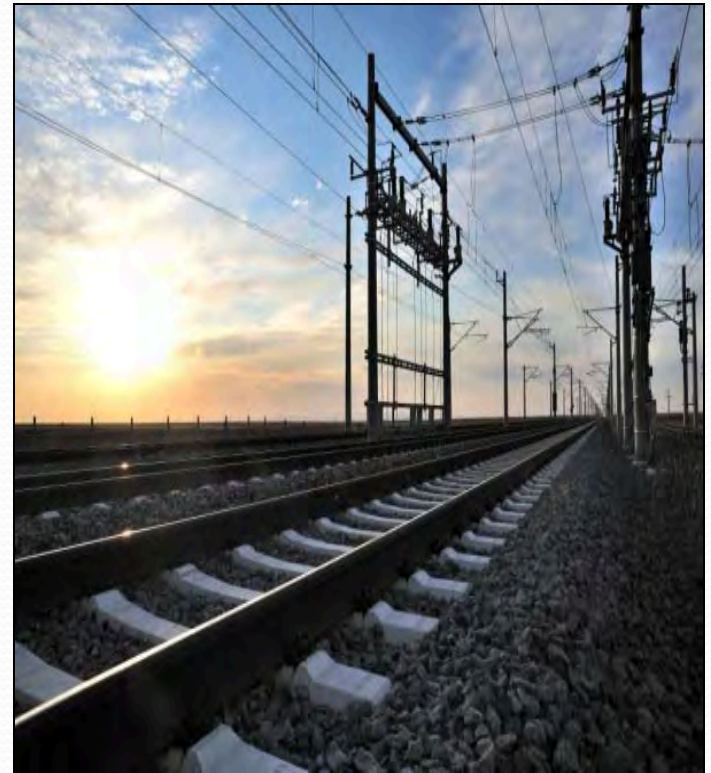
What are Zero Emission Technologies?

- Definition
- Background
 - ZECMS



Need for Zero Emission Technologies

- Increasing throughput
- Localized impacts
 - Criteria pollutants
 - Emission Reduction Standard
 - Reduce DPM emissions by 72% (2014) and by 77% (2023);
 - Reduce NOx emissions by 22% (2014) and by 59% (2023);
 - Reduce SOx emissions by 93% for both 2014 and 2023
 - Health Risk Reduction Standard
 - By 2020, reduce health risk from port sources by 85%



Ports' Zero Emissions Roadmap

- Presented at a joint ports' Harbor Commission workshop on July 7, 2011
- Target local and regional areas
- No "silver bullets" or "one-size-fits-all"
- Flexibility for future innovations
- Evaluation framework
- Success requires collaboration

Roadmap for Moving Forward with
Zero Emission Technologies
at the Ports of Long Beach and Los Angeles



Technical Report

Updated August 2011

FINAL

Target Sources

- Focus on technologically feasible and economically viable options:
 - Drayage
 - Terminal Equipment
 - Locomotives
- What about ships and harbor craft?



TAP

- Current Projects:
 - Vision Motor Corp Hydrogen Fuel Cell Plug-In Hybrid Electric On-Road Truck
 - Vision Motor Corp Hydrogen Fuel Cell Plug-In Hybrid Electric Yard Truck
 - Artisan Vehicle Systems GP8e Electric On-Road Truck
 - Balqon Lithium-Ion Battery On-Road Truck
 - Balqon Lithium-Ion Battery Yard Tractor



Challenge #1

Expectations



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Challenge #2

Programmed Testing

Challenge #3

Funding



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Challenge #4

Industry Acceptance

Thank You

- For more information on the Zero-Emission Technology Roadmap please visit:

www.cleanairactionplan.org