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Current Use of Hydrogen and Near-Term Opportunities – MD/HD/Marine Applications

Port of Los Angeles

Mike Galvin
Director, Commercial and Waterfront Real Estate

May 5, 2022
Clean Air Action Plan

• Planning document that outlines a series of strategies and goals for reducing air emissions from Port operations

• Primary Carbon Reduction goals:
  • All terminal equipment to be zero emissions by 2030
  • All on-road trucks to be zero emissions by 2035
  • Reduce GHG emissions to 40% and 80% below 1990 levels by 2030 and 2050, respectively
Emissions Reductions (2005-2020)

- Diesel Particulate Matter: DOWN 89%
- Nitrogen Oxides: DOWN 64%
- Sulfur Oxides: DOWN 98%
- Greenhouse Gases: DOWN 12%
Decarbonizing the Port

• Summary of Mobile Emissions Source Categories (2020):
  • Ocean Going Vessels
    • 1,533 Arrivals; remain at berth 3-5 days
  • Heavy Duty Trucks
    • 18,048 registered for operation at POLA (December 2020)
  • Cargo Handling Equipment
    • 1915 operating equipment
      • Includes 966 Yard Tractors and 196 Top Handlers
  • Locomotives
    • 24 Switching Locomotive on-dock
  • Harbor Craft
    • 206 unique work vessels (tug, ferry, fishing)
Benefits of Hydrogen Technology

- Potential capability for Long Haul freight movement (potentially up to 400 miles) for trucks and longer duty cycles for Cargo Handling Equipment
- Hydrogen offers a comparable driver experience compared to diesel for all equipment types (fueling time and range)
- Fueling infrastructure efficient at large scale
- Vehicle weight comparable to standard options
Drayage Baseline Operational Data
Shore to Store Grant Project

- “Zero and Near Zero Emissions Freight Facilities” (ZANZEFF)
- $205 Million awarded to various projects in California
- Harbor Department received an award for $41,122,260
- Project focuses on connecting freight hubs throughout Southern California
Shore to Store Project (Cont.)

- 10 Hydrogen Fuel Cell Class 8 Trucks
- 2 Heavy Duty Hydrogen Fueling Stations
  - 1 near-port station in Wilmington
  - 1 Inland Empire station in Ontario

- Key Partners:
  - $42 million in cost share across public and private partners
Kenworth Toyota Trucks
Wilmington
Demonstration Update

- 10 truck fleet have recorded over 30,000 miles in-service
  - Overall excellent feedback from drivers and operators
    - Minor issues have arisen and been resolved on a routine basis, such as valve failures, software bugs, etc.
  - Test run to Port of Hueneme (140mi round trip) planned for August
  - Stations – Ontario station fully operational, Wilmington online this summer
    - Various issues with station reliability, part and software failures consistently have station operating at 50% capacity
Other Projects

• Yard Tractor Demonstration – GTI
  • TraPac Terminal, 2 Yard Tractor demo this summer

• Fenix Marine Services Top Handler Demonstration
  • 1 top handler, hydrogen fuel cell used as a range-extender
  • Demo this summer

• YTI Cargo Handling Equipment Demonstration
  • Sponsored by Japanese Energy Development Administration
  • Yard Tractor, Top Handler, and RTG deployment

• HyZET Design Project – CEC Funded Grant
  • Awarded to CALSTART, working with Crowley to design/scope a hydrogen tug boat
Looking Forward

• Demonstrations of the Port’s freight moving equipment (ships, trucks, cargo handling equipment, locomotives and harbor craft) provide opportunity to prove the technology’s viability in the heavy-duty sector.

• Need to bring overall costs down for freight moving equipment and H2.

• H2 Hub opportunity can be leveraged to partner public and private organizations to develop necessary infrastructure network.

• Creating large scale open market green hydrogen generation, storage and distribution network to and within market area is critical to expedited implementation.
THANK YOU