

# Opportunities and Constraints for Hydrogen and Fuel Cells at Ports

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HYDROGEN FUEL CELLS IN PORTS & SHIPPING WORKSHOP  
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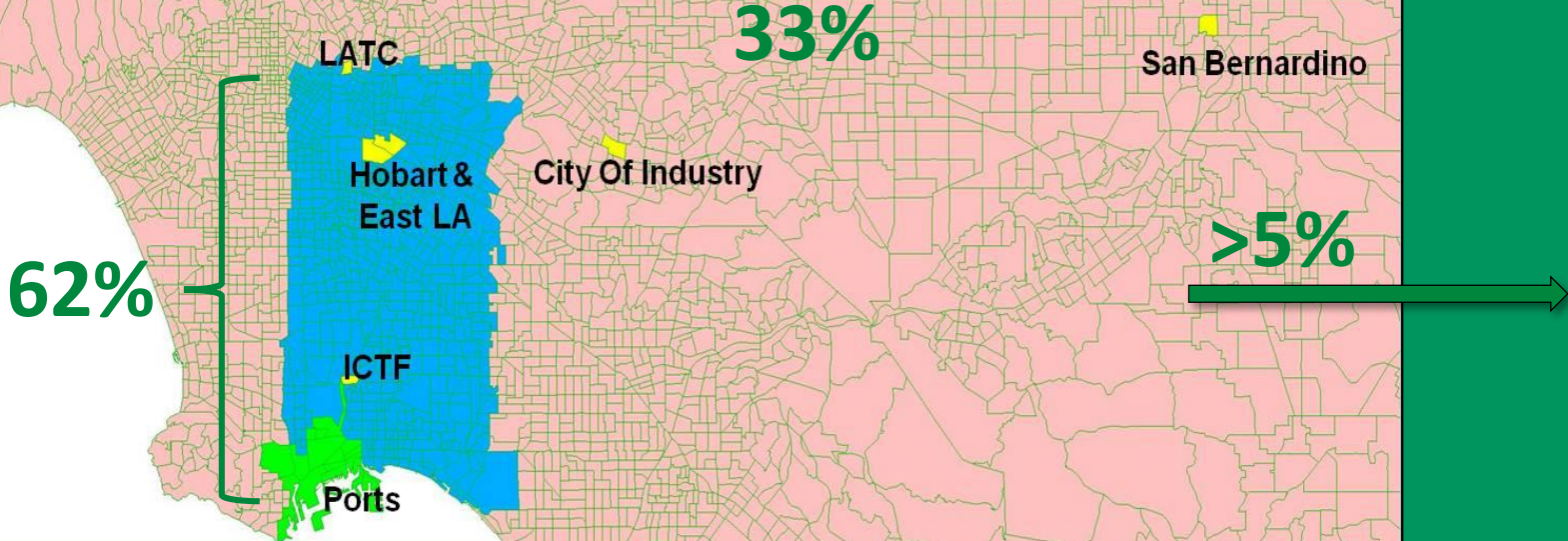
# ZERO EMISSIONS

A 3D rendered scene of a port yard. In the foreground, a yellow and white forklift is positioned, with the number '36015' and 'TAYLOR' visible on its side. Another forklift is visible in the background. The yard is filled with stacks of shipping containers in various colors, including yellow, red, and blue. The text 'ZERO EMISSIONS' is overlaid in large, bold, blue capital letters across the center of the image.

# HYDROGEN'S APPEAL

EMISSIONS, PERFORMANCE, RANGE

Origins and Destinations of Port Trucks



- Legend**
- Green – Ports Areas
  - Yellow - Intermodal Yards
  - Blue - Gateway Cities
  - Pink – Rest of SCAG Region

A close-up, slightly blurred photograph of a hand holding a fuel nozzle. A bright orange flame is visible at the nozzle's tip, suggesting a combustion process. The background is a soft, out-of-focus green, possibly representing a natural or industrial setting.

# HYDROGEN'S CHALLENGE

LACK OF INFRASTRUCTURE, HIGH COST

An aerial photograph of a port area at dusk or dawn. The water is dark blue, and the land is illuminated with warm orange and yellow lights. A large ship is docked in the foreground, and other smaller vessels are visible in the background. The overall scene is a busy port environment.

# TECHNOLOGY DEMONSTRATIONS

ON ROAD TRUCKS, 50 TO 100 TRUCK PILOT, TERMINAL EQUIPMENT



# ENERGY INITIATIVE

RESILIENCY, RELIABILITY, COST-COMPETITIVE AND GREEN



# CONCEPTUAL PILOT PROJECT

EFFICIENCIES, MICROGRID, STORAGE, SOLAR, H2 GENERATION





# TOYOTA LOGISTICS SERVICES IMPROVEMENT PROJECT

EFFICIENCY IMPROVEMENTS AND ENVIRONMENTAL BENEFITS

# THANK YOU



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