



Item 17: Innovative Hydrogen Refueling Solutions for Heavy Transport - GFO-22-502

October 18, 2023 Business Meeting

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Energy Research and Development Division
Energy Systems Research Branch



Solicitation Overview

GFO-22-502: Innovative Hydrogen Refueling Solutions for Heavy Transport

- Group 1: Mobile Off-Road Equipment
- Group 2: Emerging Off-Road Applications
- Group 3: MDHD On-Road Vehicles

Group 2 Project Funding

- 2 Projects
- \$8.5M CEC funds with \$3.3M in match

GRANT FUNDING OPPORTUNITY

Innovative Hydrogen Refueling Solutions for Heavy Transport

Gas R&D Program and Clean Transportation Program



GFO-22-502 Addendum 02

<https://www.energy.ca.gov/funding-opportunities/solicitations>

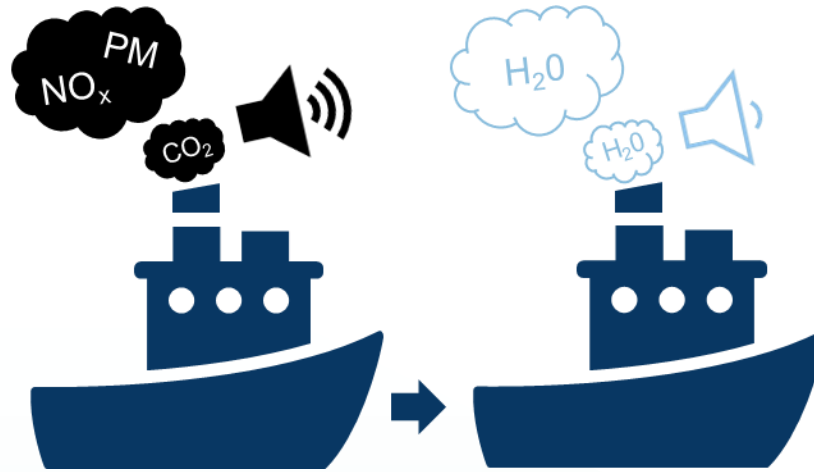
State of California
California Energy Commission
[October 2022] February 2023



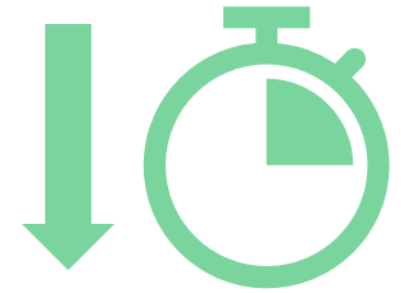
Benefit to Californians



Reduced hydrogen costs



Reduced harmful emissions



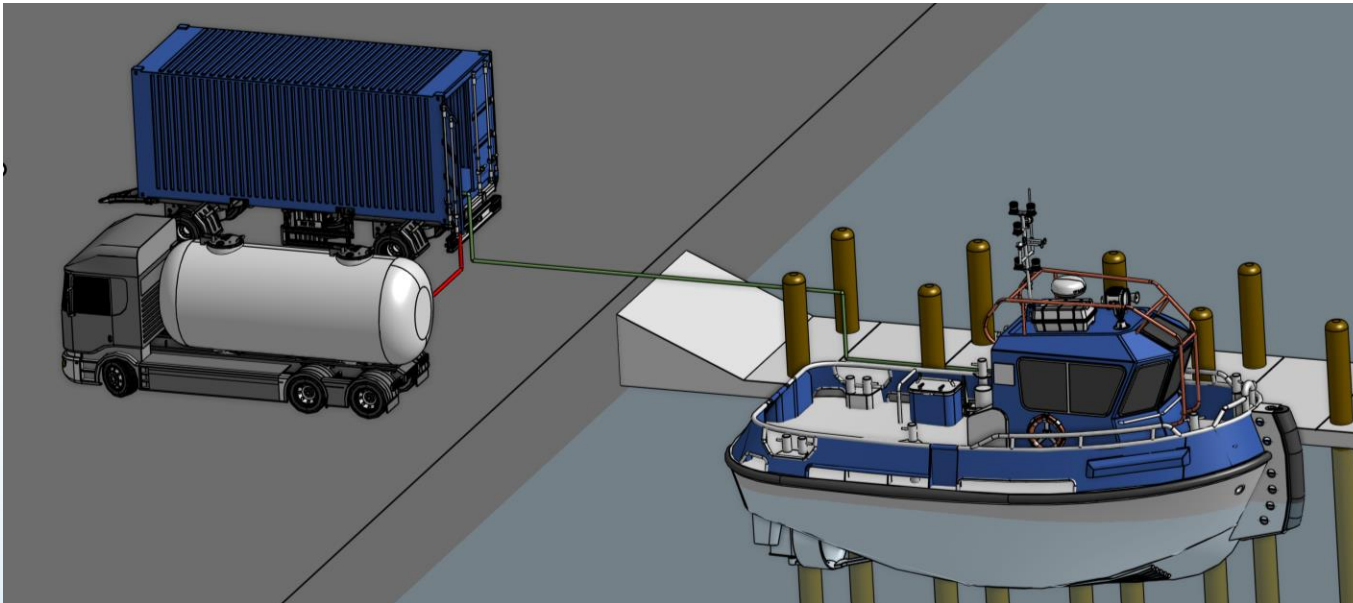
Increased refueling efficiency



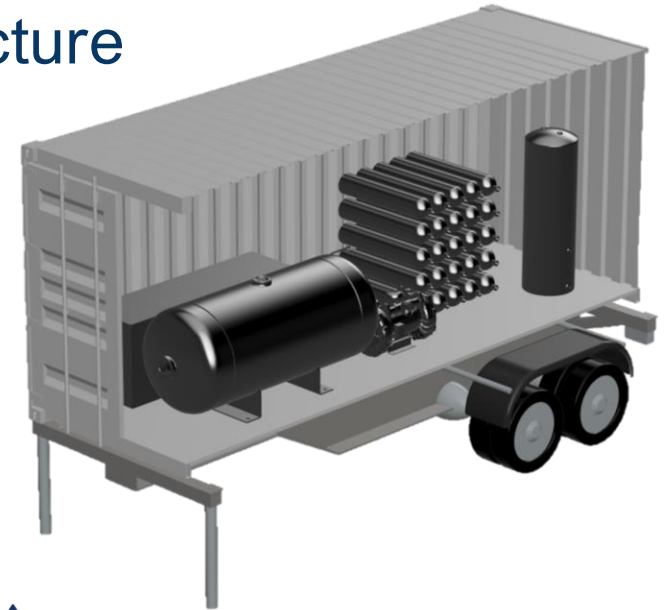
17a. Zero Emission Industries, Inc.

Portable Zero Boil-off Liquid Hydrogen Bunkering System

- ~10% the cost of fixed liquid hydrogen refueling infrastructure
- Mobile solution → No dedicated berth space required
- Boil off gas will be captured and will power the refueler



Source: Zero Emission Industries, Inc.



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17b. ZeroAvia Federal, Inc.

Liquid Hydrogen Refueler for Hydrogen-Electric Aircraft Applications

- Mobile system
- High fuel flow rate
- Refueling system powered by boil-off-gas
- Airside and Department of Transportation certifications



Source: ZeroAvia Federal, Inc.



2025

ZA600

9–19 seats

500 NM RANGE



2027

ZA2000

30–90 seats

1,000 NM RANGE



2029

ZA2000RJ

30–90 seats

1,000 NM RANGE



2032

ZA10000

100–200 seats

3,000 NM RANGE



2040

ZA10000

200+ seats

5,000 NM RANGE

Source: ZeroAvia Federal, Inc.



Staff Recommendation

- Adopt staff's determination that the projects are exempt from CEQA
- Approve item 17 grant agreements