

# DOE Vehicle Technologies Office Annual Merit Review

Drive Clean Colorado

Bonnie Trowbridge, Executive Director

## **Delivering Clean Air in Denver: Propane Truck and Infrastructure in Mail Delivery Application**

June 13, 2023

Project ID: ti134



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# Overview

- **Timeline**

- Start: Oct 1, 2020
- End: Dec 31, 2023
- 85% complete

- **Barriers**

- Limited understanding of propane transportation solutions and benefits
- Lack of data documenting performance and operations of propane vehicles in delivery application, including emissions reductions
- Lack of comprehensive cost analysis for propane delivery trucks

	DOE Share	Cost Share
Total Project Cost	\$ 1,000,010.00	
Total Shares (Prime + FFRDCs + Subcontractors)	\$ 500,005.00	\$ 500,005.00

	DOE Share	Cost Share	Total
Budget Period 1	\$404,499	\$402,500	\$806,999
Budget Period 1 Expended	\$381,886	\$389,500	\$771,386
Budget Period 2	\$49,892	\$56,000	\$105,892
Budget Period 2 Expended	\$68,105	\$59,404	\$127,510
Budget Period 3	\$45,614	\$41,505	\$87,119
Budget Period 3 Expended as of Q1	\$39,604	\$1,309	\$40,913
Budget Period 1-3	\$500,005	\$500,005	\$1,000,010
Total Project Cost YTD	\$489,595	\$450,214	\$939,809



HI PRO, INC



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**LEAD**

# Project Objectives

## Overall Concept

Proof-of-concept demonstration of alternative fuel vehicles (AFVs) in a selected vehicle fleet.

Share data, best practices, and lessons learned to catalyze other fleets nationwide to adopt propane trucks for mail delivery (and other applications).

## Market Transformation

Improve understanding of the

- Costs
- operational issues
- performance attribute that will inform technology adoption decisions for market transformation

## Environmental Benefits

- Air quality improvement
- Reduce greenhouse gas emissions
- Catalyze nationwide fleets to adopt low-carbon operations for our USPS mail delivery system nationwide.

# Approach

## Fleet Support

Support the purchase, installation, and operability of the propane fueled trucks and fueling infrastructure.

## Data Collection

Data collection and analysis are prioritized throughout all periods of the project.

## Education & Outreach

Education, outreach, and marketing activities are prioritized through both virtual and in-person events.



# Project Milestones

## Budget Period 1

Oct 01, 2020 - Dec 31, 2021

- Truck Delivery (Go/No-Go)
- Refueling Infrastructure & Installation
- Project Webinar #1 (delayed)

## Budget Period 2

Jan 01, 2022 - Dec 31, 2022

- Trucks Operating on Routes (Go/No-Go)
- Data Collection
  - Winter and Summer collection
- Project Webinar #2 (delayed)
- Trade Show Participation
  - Work Truck Show
- Outreach
  - Postal Contractor Association Meeting Attendance

## Budget Period 3

Jan 01, 2023 - Dec 31, 2023

- Data Analysis (Go/No-Go)
  - Total Cost of Ownership
- Outreach
  - Postal Contractor Association Meeting Attendance
  - Video overview of project
- Project Webinar #3

# Project Accomplishments & Progress



## TRUCK DELIVERY

- Trucks ordered: March 2021
- Cost increased \$7,500 per truck
- Original expected delivery: Oct 2021
- Actual Delivery: August 2022
- Trucks Operational: November 2022

## FUELING INFRASTRUCTURE

- Permitting delays due to administrative backlog
- Fuel infrastructure installation: August 2022

## OUTREACH

- Public press releases and newsletters in April 2022
- Ribbon Cutting: August 2, 2022
- Webinar: Delayed to Summer 2023 due to lack of data analysis & operations information.
- Conference participation in 2022 and 2023

## DATA COLLECTION

- Winter diesel data - collected February 2021
- Summer diesel data - collected August 2021
- Propane & diesel data - ongoing collection in March 2023



# Collaboration and Coordination Among Project Team



- All project partners met bi-weekly for first few months of project.
- Currently meeting quarterly with email communications for updates.
- All project partners remain engaged and committed to the project.
- Ribbon Cutting (Aug 2, 2022) brought partners together
- Quarterly Progress Reports to VTO
- Continuation Application to VTO

# Market Impact and Sustainability

- Market impact is currently unknown, as trucks are collecting performance data to be analyzed in late 2023.
- We expect maintenance, fueling, and repair savings from propane truck operation.
- End of project TCO analysis will prove our expectations.

# Contribution to Energy Equity and Environmental Justice Progress

- Trucks will reduce poor air quality in Denver, which is facing a demotion to “severe” status under the National Ambient Air Quality Standards (NAAQS).
- Trucks will operate in high emissions zones in Denver, including in disproportionately impacted communities.
- Trucks operate out of the zip code 80216, home to some of the dirtiest air quality in the country. Any reduction of diesel in this area is significant and beneficial.



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# Summary

## Major setbacks:

Trucks required frequent service & repairs which were delayed by service staff shortages and a lack of clear responsibility for service parties.

Data Collection was delayed due to truck service needs.

## We're sharing our experience!

We presented information on our project at the Postal Contractors Association meeting in August 2022, our Drive Clean Colorado Summit & Expo in October 2022, the Clean Cities Annual Conference in November 2022, and the Work Truck Show in March 2023.

## We celebrated together.

Drive Clean Colorado co-hosted a ribbon cutting ceremony with Hi Pro, Inc. to celebrate the trucks arrival on August 2, 2022, bringing all project partners together.

## We're looking forward to our analysis.

We look forward to returning next year to share our operational and air quality findings with you!





# Thank you

Thanks to our project partners' commitment and DOE's support, we know next year will be even better than the last!



**Bonnie Trowbridge**  
**Executive Director**  
**Drive Clean Colorado**