Decarbonizing Trucking

April 28, 2026

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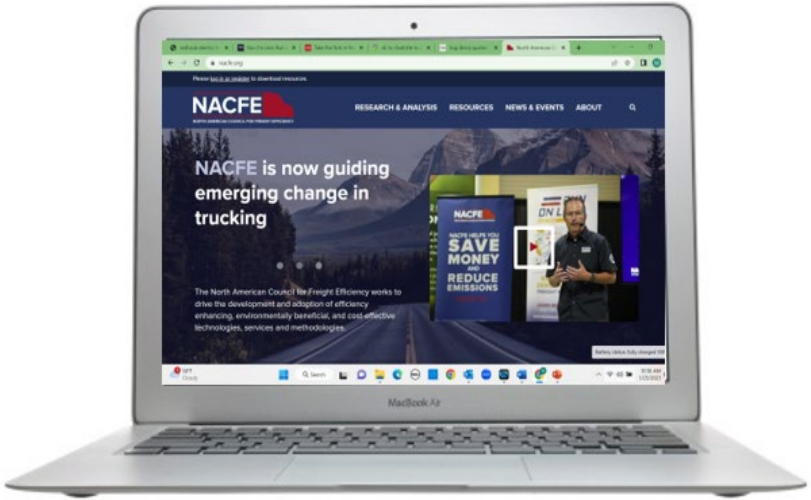
RUN ON LESS MESSY MIDDLE

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

North American Council for Freight Efficiency



- Unbiased, fuel agnostic, non-profit
- Mission to double freight efficiency
- All stakeholders
- Scale available technologies, guide emerging change and Run on Less demonstrations.

www.NACFE.org

www.RunonLess.com

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NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

IN PARTNERSHIP WITH

RMI
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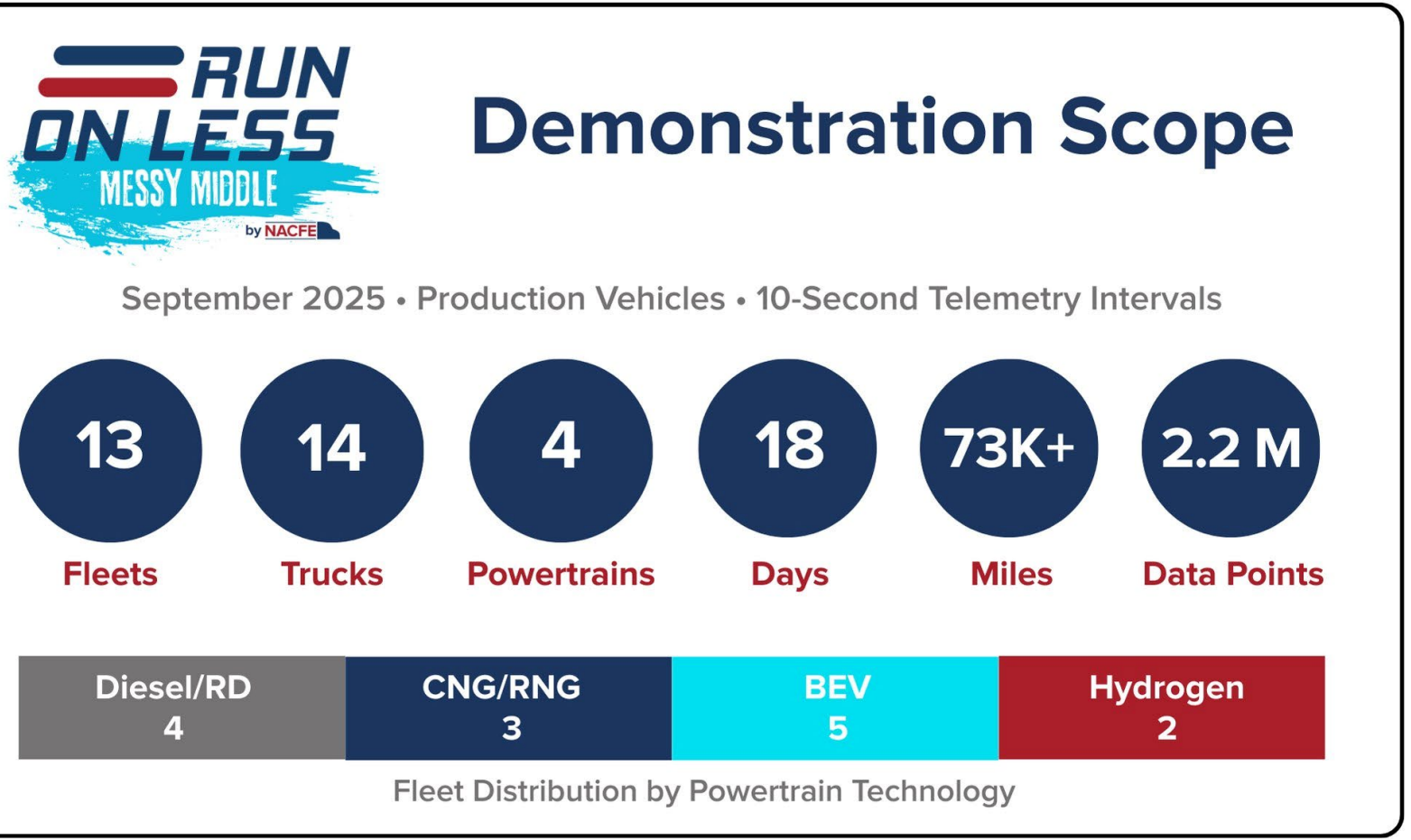
Run on Less – Messy Middle

Run on Less – Messy Middle: Will bring clarity to long-haul decarbonization by focusing on heavy-duty Class 8 sleepers and day cabs in long-haul return-to-base and over-the-road duty cycles.

High Level Numbers

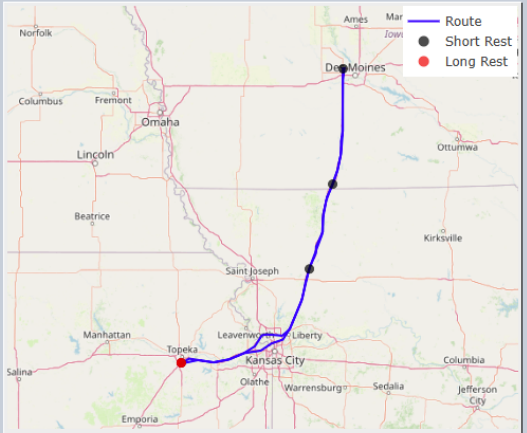


Analysis and Reports

Results: Frito-Lay Biodiesel

RUN ON LESS MESSY MIDDLE

FUEL TYPE: BIODIESEL (B100)
Frito Lay VNL



Filter the Metrics

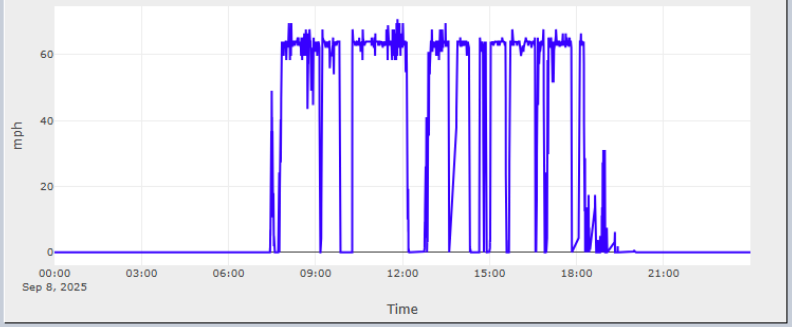
FROM	TO	UNITS	
Day 1	Day 1	US	APPLY

« RETURN TO INDEX

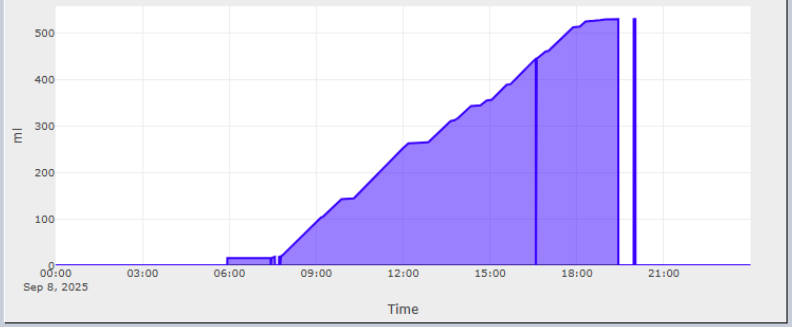
LINK TO THIS

DISTANCE	515 MI	ESTIMATED DELIVERIES	4	ESTIMATED GVW	N/A
TEMPERATURE	66 F	WIND	0 MPH N	CONDITIONS	CLEAR

Speed



Distance



- Long out and back – 515 miles
- Nearly 100% cabon-free Biodiesel
- 9.5 MPG v. 7.0 Nat'l Avg

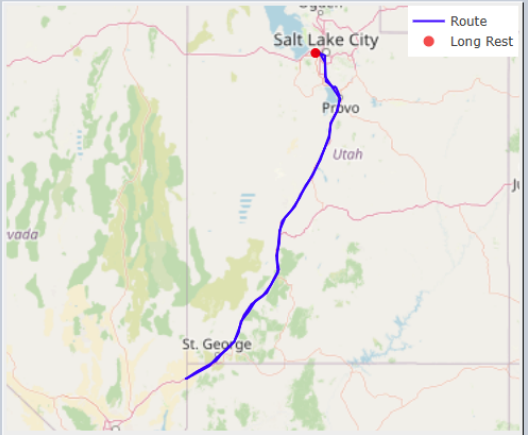
Results: UPS RNG

RUN ON LESS
MESSY MIDDLE

FUEL TYPE: NATURAL GAS
UPS T680

DISTANCE	ESTIMATED DELIVERIES	ESTIMATED GVW
699 MI	5	N/A

TEMPERATURE	WIND	CONDITIONS
74 F	1 MPH W	CLEAR



Filter the Metrics

FROM	TO	UNITS	
Day 10	Day 10	US	APPLY

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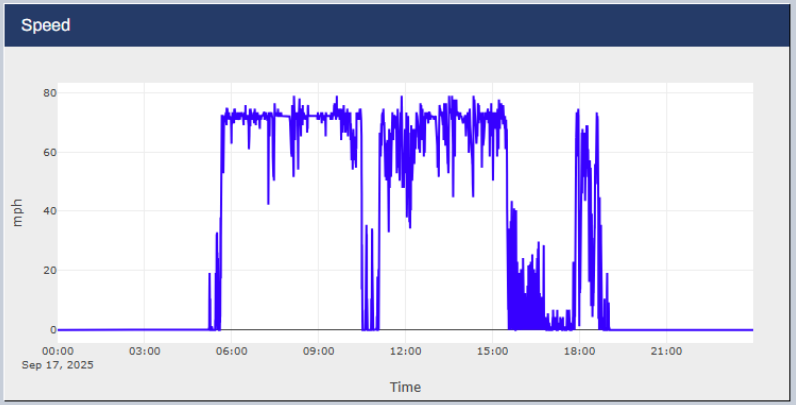
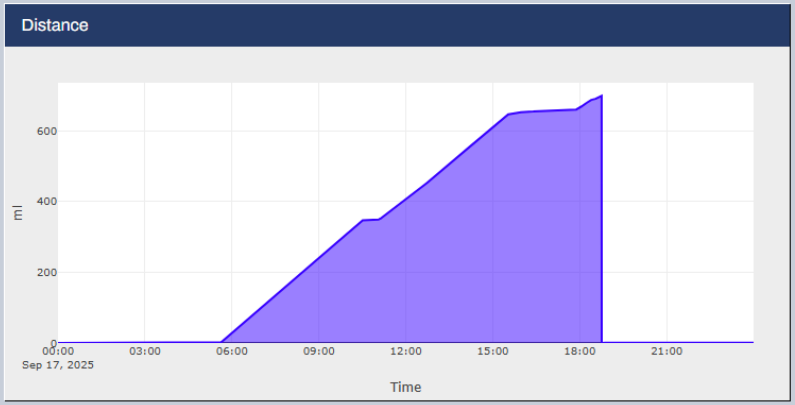


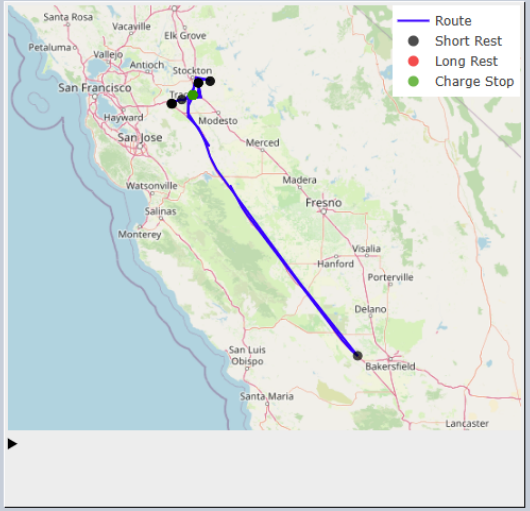


- Very Long out and back – 699 miles
- RNG
- 6.7 mi/DGE v. 7.0 Nat'l Avg

Results: SAIA BEV

RUN ON LESS MESSY MIDDLE

FUEL TYPE: BATTERY ELECTRIC
SAIA Tesla 2



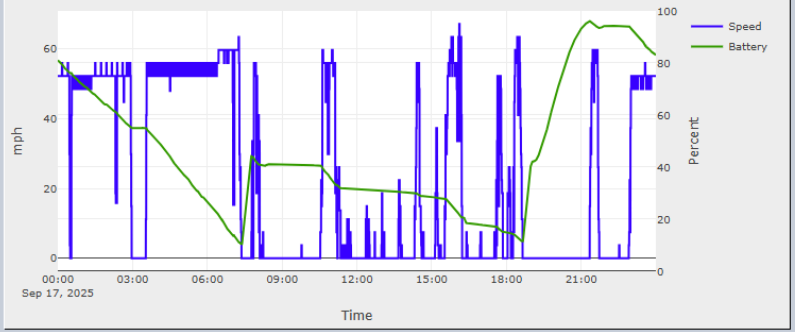
Filter the Metrics

FROM	TO	UNITS	
Day 10	Day 10	US	APPLY

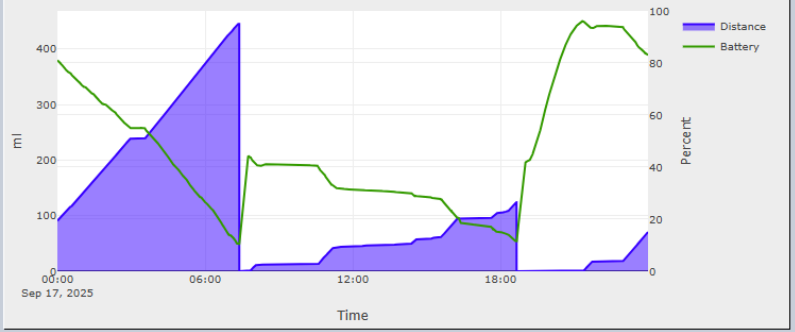
« RETURN TO INDEX | LINK TO THIS

DISTANCE	549 MI	ESTIMATED DELIVERIES	13	ESTIMATED GVW	N/A
TEMPERATURE	79 F	WIND	13 MPH W	CONDITIONS	CLEAR

Battery Charge and Speed



Battery Charge and Distance



- Slip seat, two shifts, common LTL - Line haul and local delivery
- BEV
- 0.53 mi/kWh v. 7.0 Nat'l Avg

Emissions' Analysis

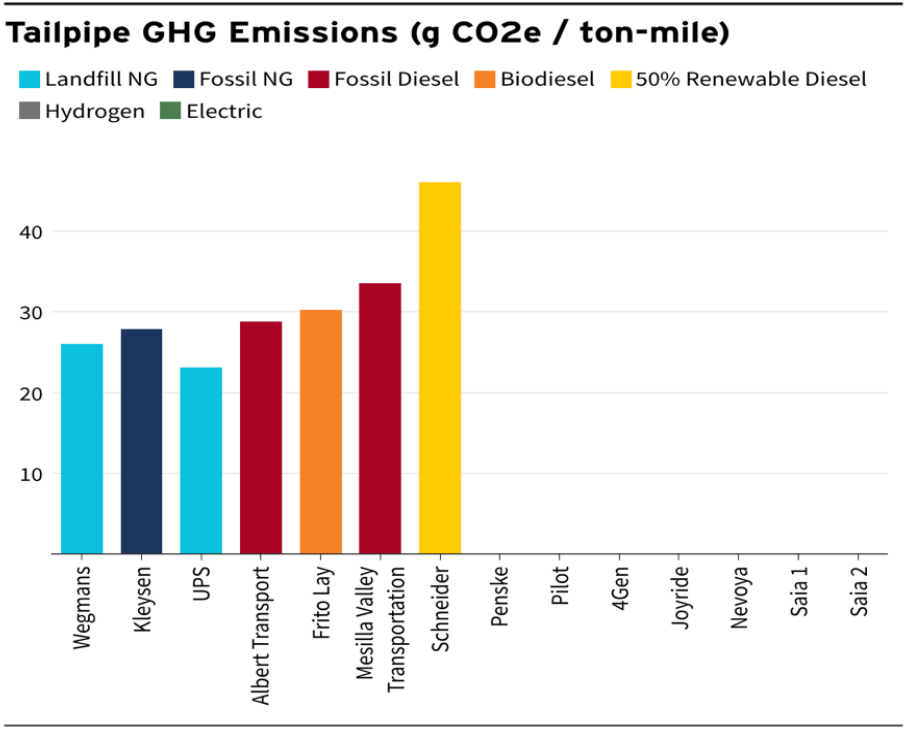


Figure 25: Downstream Tailpipe GHG Emissions

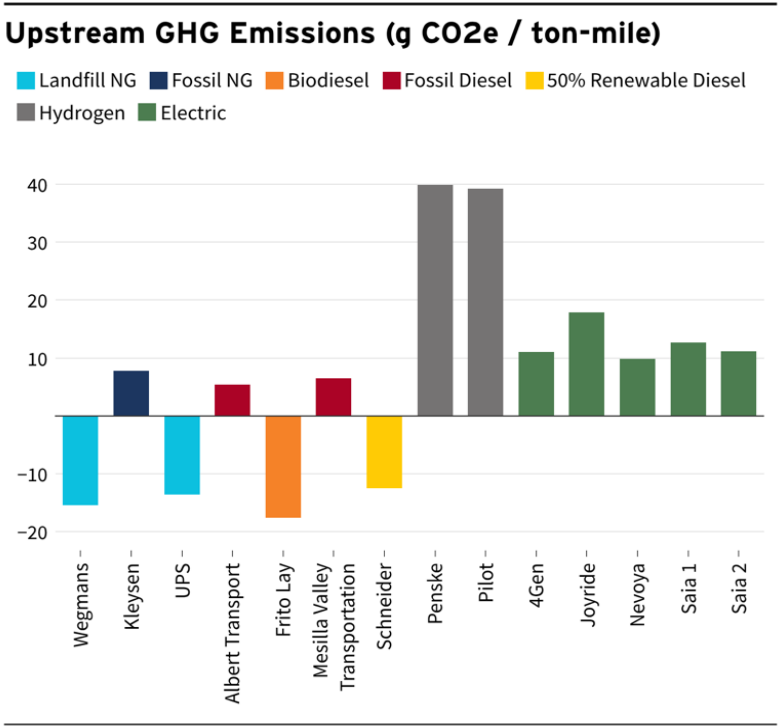


Figure 24: Upstream GHG Emissions

Emissions' Analysis

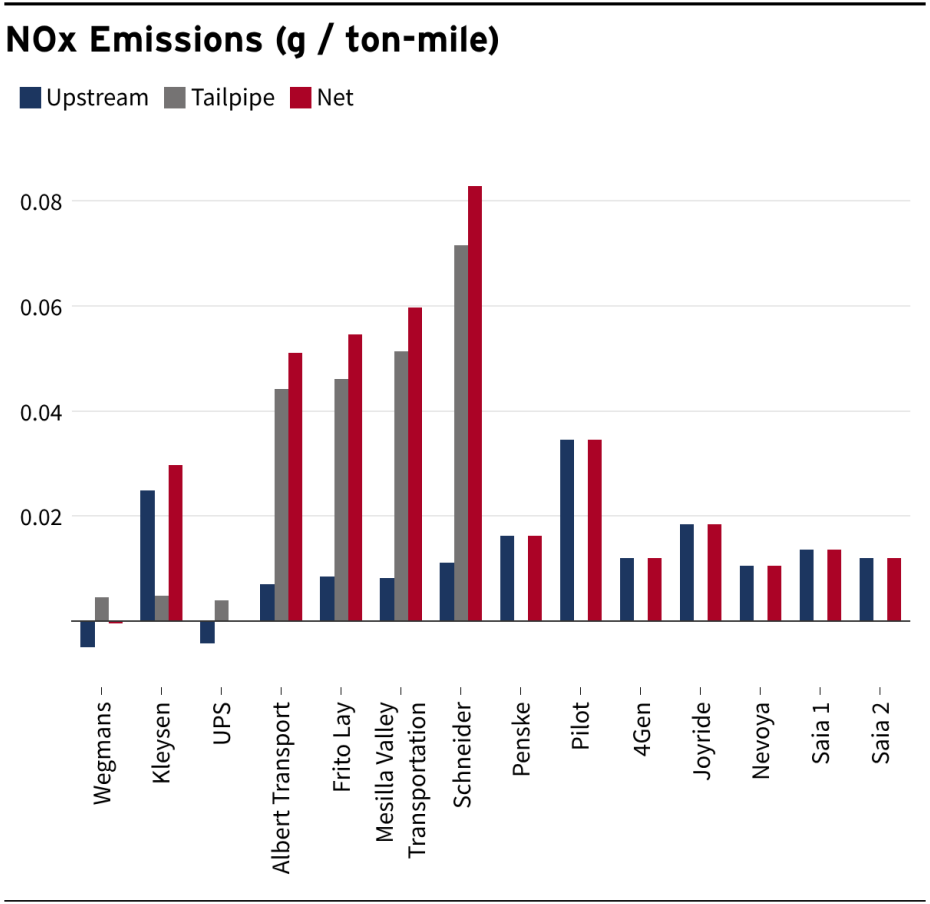
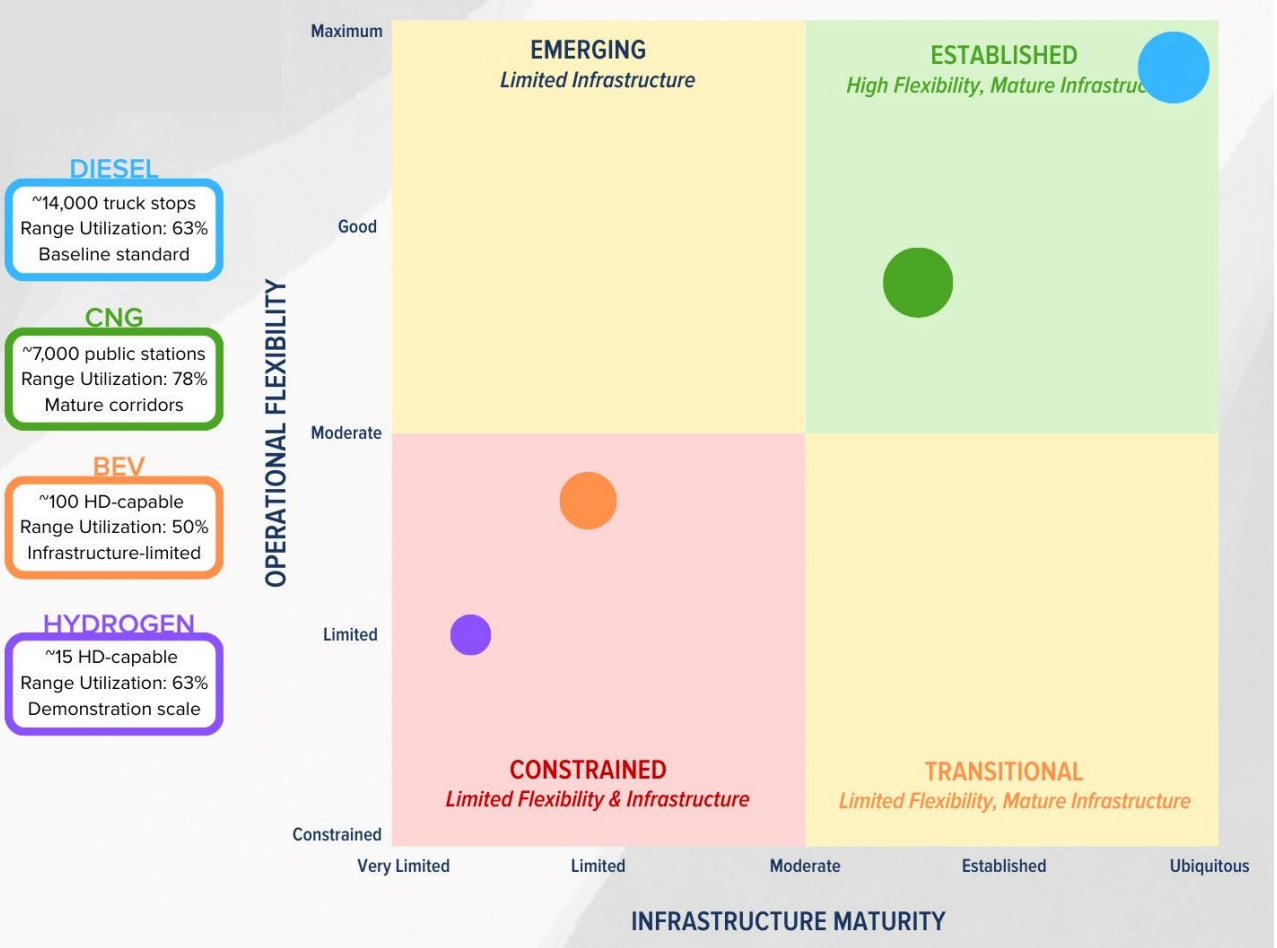


Figure 26: NOx Emissions by Fleet

Technology Positioning Matrix



Infrastructure Maturity vs. Operational Flexibility

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Note: Bubble size reflects relative fleet deployment in Run on Less – Messy Middle

KEY ACQUISITION CONSIDERATIONS

RUN ON LESS MESSY MIDDLE by NACFE

INFRASTRUCTURE INVESTMENT

Concurrent commitments for depot charging, CNG stations and hydrogen agreements

DUTY CYCLE MATCH

Align powertrain with daily mileage,terrain, route predictability, payload and infrastructure

REGULATORY ENVIRONMENT

Federal and state emissions standards, vehicle mandates, and incentives seem volatile

TCO UNCERTAINTY

Real-world TCO models for newer technologies remain limited, despite operational insights

RESIDUAL VALUE UNCERTAINTY

Used markets for alternative powertrain Class 8 trucks are not yet established, impacting resale

TECHNOLOGY MATURATION

Anticipate rapid evolution, software updates, and evolving operational practices for BEV and H2

MAINTENANCE & SERVICE NETWORKS

Alternative powertrains may require specialized service arrangements beyond established diesel networks

Based on Run on Less – Messy Middle Findings

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