

# NGVAMERICA

Natural Gas Vehicles for America

## Advancing Your Fleet Goals with Natural Gas NTEA Work Truck Show

3.07.19



# About NGVAmerica

NGVAmerica is the national organization dedicated to the development of a growing, profitable, and sustainable marketplace for vehicles powered by natural gas and biomethane and for promoting the use of more natural gas in transportation.



# 200+

NGVAmerica represents 200+ companies,  
LDCs, fleets, OEMS, environmental and  
government organizations.



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# NGV America Members

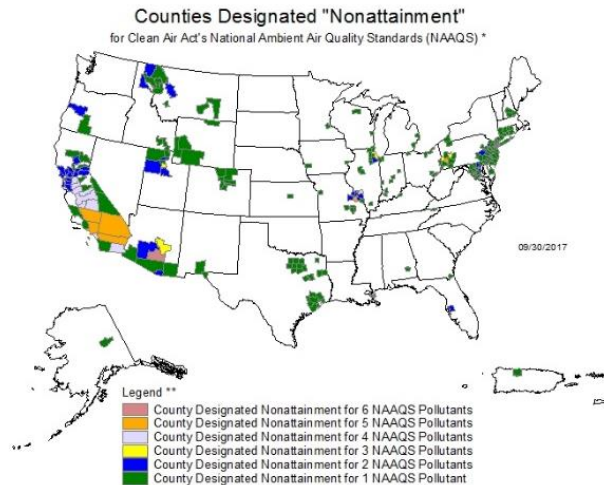


# The Problem

Urban Emissions & Public Health



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# Urban Emissions: Public Health Impacts

**134 million**

Americans live in areas with air that  
is unhealthy to breathe...

**4 out of every 10 Americans**

Breathing in particle pollution  
increases the risk of:

- Asthma
- Lung Cancer
- Heart Disease
- Premature Death

Source: American Lung Association, 2018



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# 25 million

Americans suffer  
from asthma...  
about 8% of our  
total population  
(1 in 12 people)

***Every day in the United States, due to asthma:***

- 30,000 people have an asthma attack
- 5,000 people visit the emergency room
- 11 people die.

Source: Centers for Disease Control and Prevention



# African Americans Disproportionately Affected

**71%** of African Americans live in counties in violation of federal air pollution standards

**Black children are 2x likely to be hospitalized for asthma and 4x likely to die from it than white children**

- From 2001-2009, the greatest rise in asthma rates was among black children – a 50% increase
- 1 in 6 black children had asthma in 2009

Source: Centers for Disease Control and Prevention, May 2011

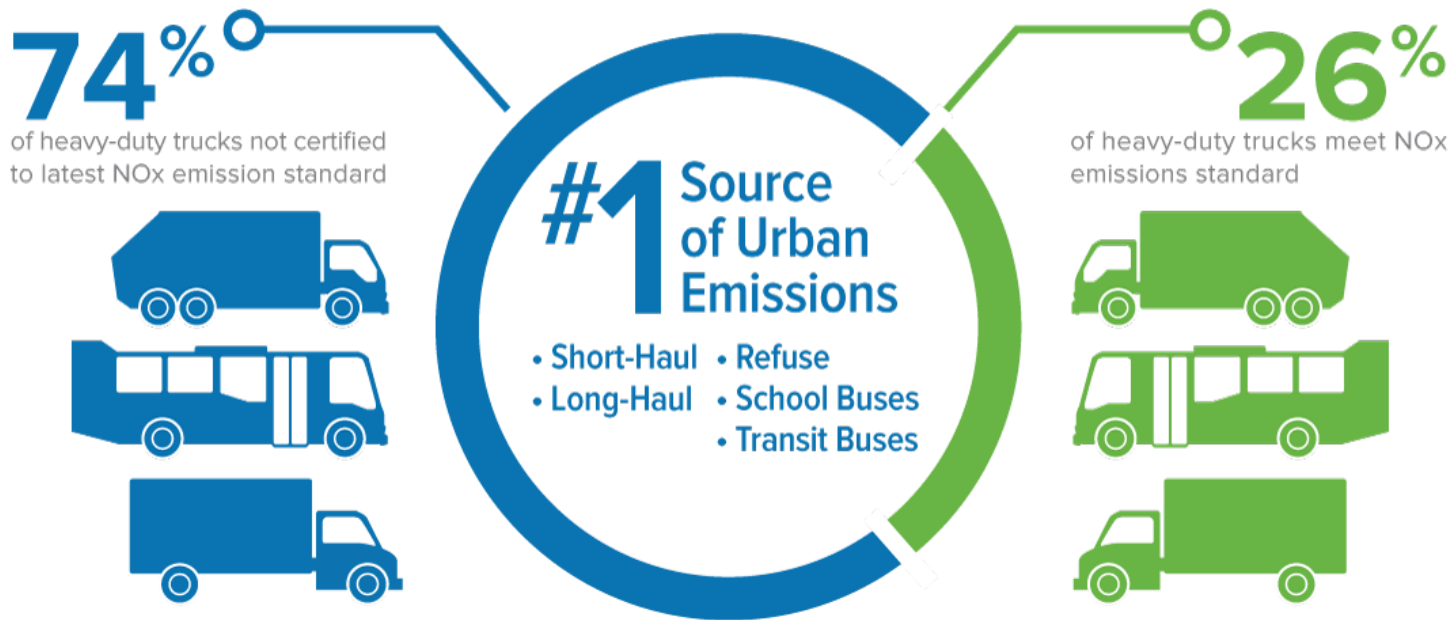
Source: EPA, July 2016



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# Urban Emissions: Leading Sources



Source: DTF Analysis on IHS Vehicles in Operation Data, December 2015



# The Solution

**Increased Natural Gas Use in Transportation:  
Sustainable, Responsible, Available & Domestic**



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# Natural Gas is Now

(video at <https://www.ngvamerica.org/resource/the-cleanest-commercial-engine-in-the-world-see-how-natural-gas-is-now/>)



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Natural Gas Vehicles for America



## Jeff Clarke Director of Regulatory Affairs & General Counsel



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# Jelena Rowe

## National Sales Manager



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**Paul Osbourn**  
**National Sales Manager**



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# Paul Shaffer

## Executive Vice President



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**Rick Mendoza**  
**Director, Facility**  
**Modification Services**



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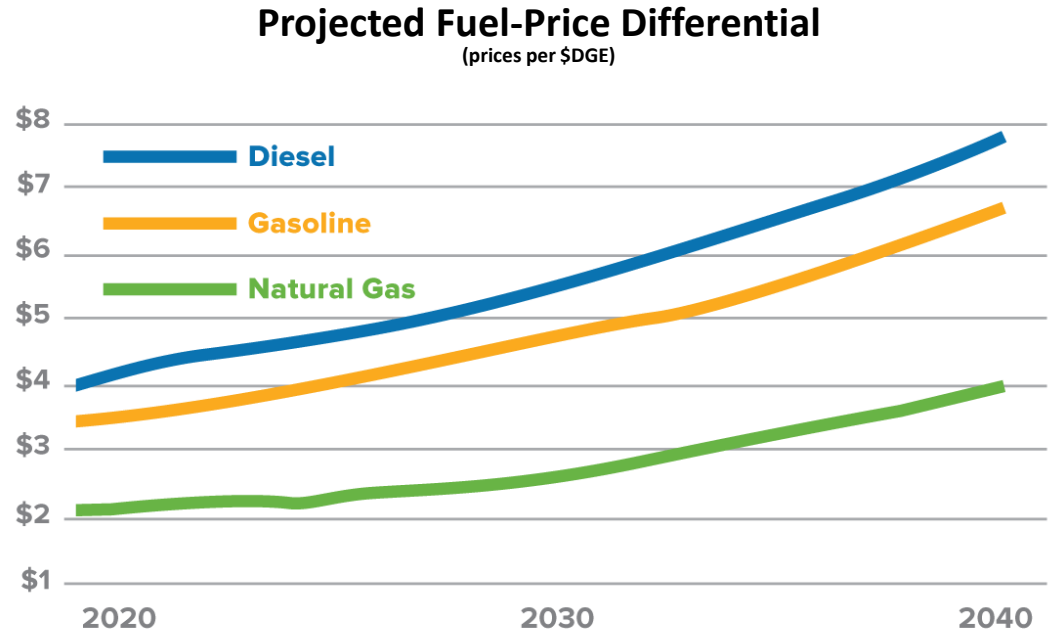
# Myth #1:

With oil prices so low, it just doesn't make economic sense to drive natural gas.



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# Natural Gas Provides Long-Term Fuel Cost Savings



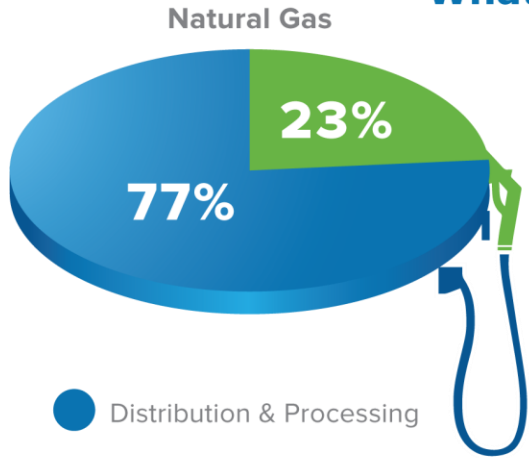
Source: U.S. Energy Information Administration

## Natural Gas vs. Oil:

- Historically 8:1 or better price advantage over oil on a Btu basis
- Pump prices today \$0.75 to \$1 lower than diesel

# Natural Gas Provides Fuel Price Stability

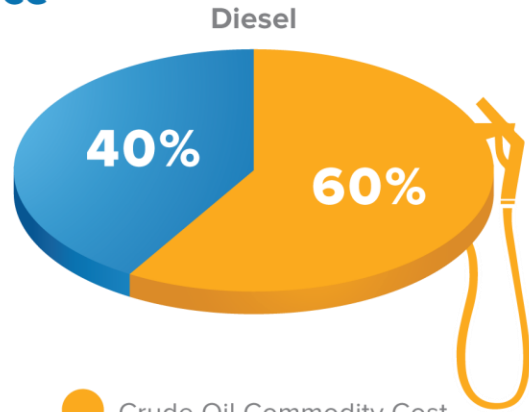
What makes up the total price  
at the pump?



Distribution & Processing



Natural Gas Commodity Cost



Crude Oil Commodity Cost

## Natural Gas:

- Decades of affordable domestic reserves
- Natural gas sourced from North America
- Commodity cost makes up 23% of sales price

## Diesel:

- History of volatile price swings
- Crude oil sourced fuel from high-conflict regions
- Commodity cost makes up 60% of sales price

# Myth #2:

Natural gas technology is antiquated and unreliable.



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# CWI North American Products

- EPA/ARB Ultra Low emissions certification
- Lowest Emission HD engines in North America
- On-Board Diagnostics (OBD) applied for optimal emissions system performance
- Base warranty identical to diesel counterpart



## ISX12N™

**Near-Zero Certified (0.02g NOx)**

Peak rating: 400 hp, 1450 lb-ft

GVW: Up to 80,000 lbs



## L9N™

**Near-Zero Certified (0.02g NOx)**

Peak rating: 320 hp, 1000 lb-ft

GVW: Up to 66,000 lbs



## B6.7N™

**Near-Zero Certified (0.10g NOx)**

Peak rating: 240 hp, 560 lb-ft

GVW: Up to 33,000 lbs

# Myth #3:

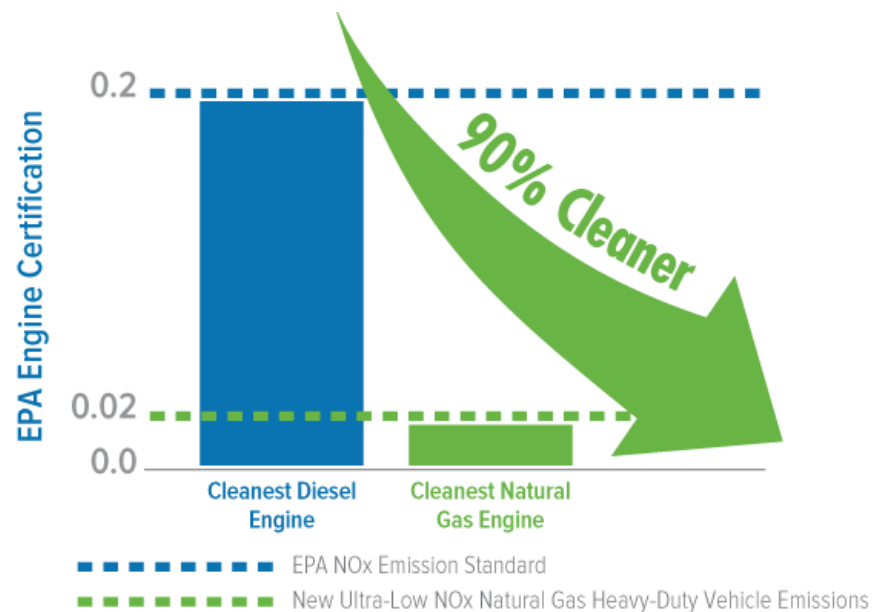
Natural gas technology's environmental benefits are overblown.



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# The cleanest heavy-duty truck engine in the world is powered by natural gas

- Certified in 2018 by the U.S. Environmental Protection Agency and California Air Resources Board

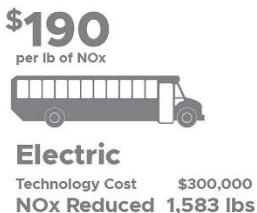
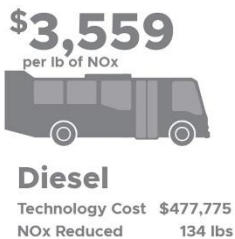
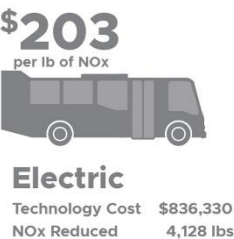
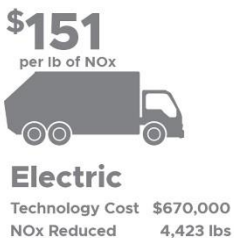


The Cummins Westport Ultra-Low NOx engine is certified to a 0.02 g/bhp-hr standard, which is:

- 90% cleaner than the EPA's current NOx standard
- 90% cleaner than the latest available diesel engine

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# NGVs Deliver the Largest & Most Cost-Effective NOx Emissions Reductions

## Examples:

- ✓ Heavy Duty Trucks
- ✓ Refuse Trucks
- ✓ Transit Buses
- ✓ School Buses

**Data Source:** Emission comparisons based on ANL - HDVEC tool with low-NOx engines and higher in-use diesel emissions taken into account. Useful life, cost and mileage vary by applications. Additional details available from NGVA upon request.



Fueling with  
natural gas  
reduces CO<sub>2</sub> and  
greenhouse gas  
emissions



## Natural Gas Reduces WTW Greenhouse Gas Emissions

Compared to Diesel:



Source: NGV America Emissions Whitepaper based on CARB LCFS  
\*Numbers compared to diesel emissions (well-to-wheel)

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Renewable  
natural gas (RNG)  
provides even  
greater CO<sub>2</sub> and  
greenhouse gas  
emission  
reductions



Carbon Intensity Rating of Key Transportation Fuels

Transportation Fuel	EER-Adjusted Carbon Intensity
Diesel (conventional)	102.01
Natural gas (conventional)	88.60
Hydrogen (from natural gas)	55.61
Electricity (California grid)	38.95
RNG - Landfill gas	33.89 to 65.64
RNG - Wastewater biogas	8.61 to 34.36
RNG - Food/green waste biogas	-25.48
RNG - Dairy biogas (prospective)	-303.30



## WTW Greenhouse Gas Emissions Reductions

Compared to Diesel:



**40-125% reduction**

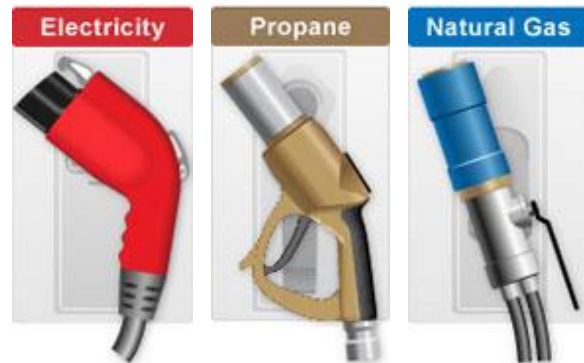
Source: [www.arb.ca.gov/fuels/lcfs/fuelpathways/pathwaytable.htm](http://www.arb.ca.gov/fuels/lcfs/fuelpathways/pathwaytable.htm),  
CARB, February 2017. Adjusted for heavy-duty truck applications.

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# Heavy-Duty Vehicle Emissions Calculator (HDVEC)

- Simple online tool based on AFLEET to help analyze AFVs for funding opportunities
- Examines medium-duty & heavy-duty vehicle:
  - Vehicle operation  $\text{NO}_x$  &  $\text{PM}_{2.5}$
  - Well-to-Wheel GHGs
  - Emission reduction cost effectiveness
- Contains 4 fuel/vehicle technologies:
  - Diesel
  - Electric vehicle
  - Propane
  - Natural Gas
- HDVEC available at:

[afleet-web.es.anl.gov/hdv-emissions-calculator/](https://afleet-web.es.anl.gov/hdv-emissions-calculator/)



# Myth #4:

Moving to natural gas is too complicated.



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- Designer, developer, manufacturer and service provider of alternative energy systems and storage cylinders
- Global market presence with OEMs and major fleets
- Solutions include Hydrogen, CNG, LNG, Electric and Propane
- **#1 market position**, first mover in rapidly expanding market
- ~500 employees, including ~70 Agility engineers and technicians
- **10 locations** worldwide
- Provided cylinders and/or fuel systems for **over 60,000 commercial vehicles**
- Aftermarket service network across North America
- Wholly-owned subsidiary of Hexagon Composites ASA (OSLO: HEX), which is 25% owned by Mitsui – strong profitability and capital resources

## Medium & Heavy Duty Trucks, Bus, and Refuse

Heavy Duty



School Bus



Transit Buses



Step Vans



Refuse Trucks



Medium Duty Trucks



# Powertrain Systems: End-to-End Systems Capability

## Customer Value



Single supplier for everything the fuel touches – “pump to tailpipe” – Agility as Manufacturer of Record



Ownership of entire powertrain system design resulting in a complete engineered & certified system



World class engineers designing innovative OEM & Aftermarket vehicle systems

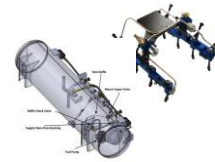


After sales service for technical support, service parts, maintenance, warranty – all at a single contact number



Less lost time; improved customer experience will result in conquest sales growth

## Products & System Applications



**CNG & LPG Fuel Systems**



**CNG & LPG Engine**



**Service Parts**



**CNG FCCC Chassis**



**LPG FCCC Truck**



**LPG Thomas Bus**



**Propane Dispensers**



**Field Service**



**Training**





# Powertrain Systems

## Customer Care Call Center

### World Class Customer Call Center

- Agents trained to assist in parts, tech service, and warranty
- Metrics measured to ensure customer experience
- Escalation to subject matter experts as needed
- Flexibility for integration to OEM call center

### Field Service Support

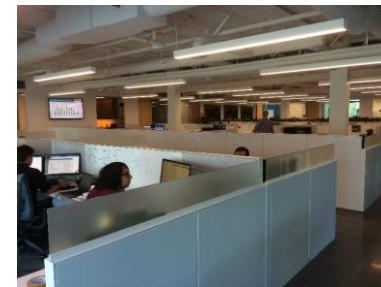
- Technicians stationed in CA, MI, FL ready to deploy
- Service trucks able to de-fuel propane tanks

### Service Parts

- Part fulfillment from NC, CA, MI warehouses
- Common parts available in on-line store (coming soon)



Statistics displayed in call center



Costa Mesa Call center

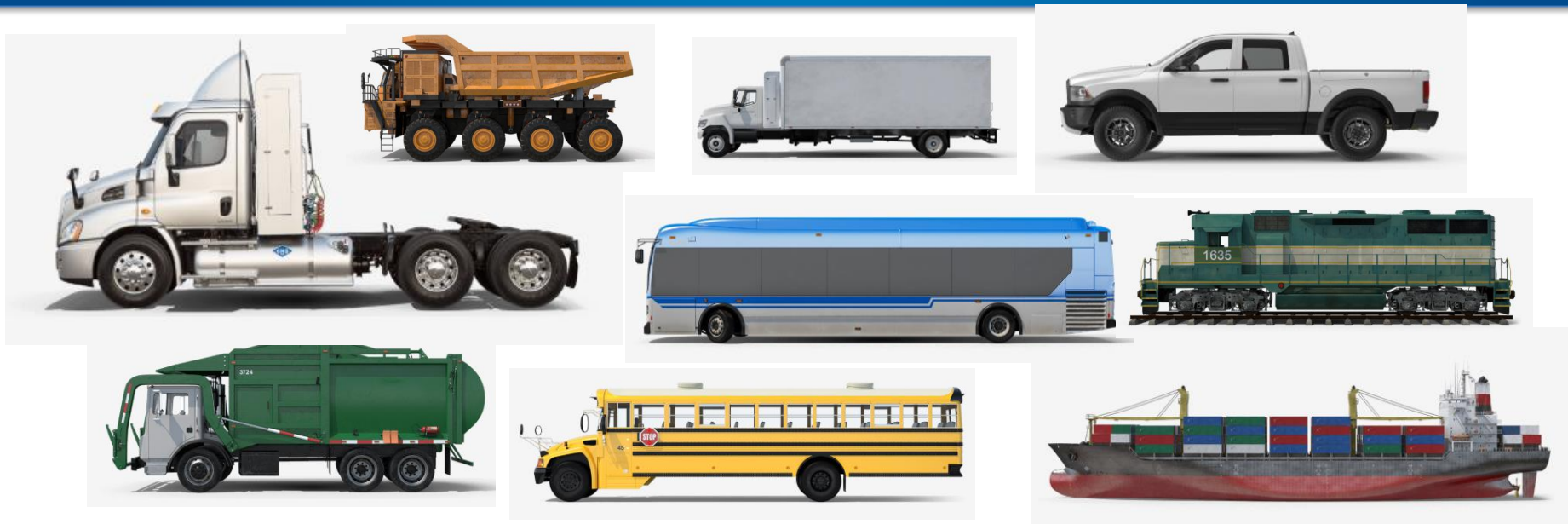


Service warehouse



Agents ready to take calls

# NG Fits Every Application



Ready-Right-Now Technology On and Off the Road Today.

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# Myth #5:

Natural gas vehicles might work for my fleet,  
but adding private refueling infrastructure is  
too expensive and public access is too  
inconvenient.



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# Diverse network of natural gas station developers

- Natural gas retail fuel sellers
- LDCs
- C-Stores
- Truck Stops
- Grocery/Warehouse stores
- Leasing companies
- Gas exploration & production
- Midstream pipeline





# Natural gas fuel station infrastructure is continually expanding



≈2,000 Natural Gas Stations



# Myth #6:

**Upgrading my vehicle maintenance facilities to safely accommodate natural gas is too difficult and cost prohibitive.**



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	2,000,000+ SQ FT BUILDING MODIFICATIONS COMPLETE
	1,000+ FLEET CUSTOMERS
	575+ FUELING STATIONS
	46,700+ NGVS FUELED DAILY
	9,000+ TRANSACTIONS PER DAY







## PROTECT YOUR PEOPLE

Every **NGV Easy Bay™** system is:



The lowest cost code-compliant solution in the industry



Designed & installed with your daily operations in mind



Scalable, retractable & reconfigurable



Certified by **Clean Energy**, the most trusted name in natural gas fueling

Installation Video: [NGV Easy Bay](#) **NGVAMERICA**

*Join Us Next:*

# Alternative Fuel Garage Workshop

11:15 a.m. – 12:15 p.m.

*Indiana Convention Center, Room 140*



Superior Energy Systems  
(440) 234-8009



U.S. DEPARTMENT OF  
**ENERGY**



# The Next Big Thing Isn't Always New... But our website is.

Check out the new

[ngvamerica.org](https://ngvamerica.org)

The cleanest HD engines in the world run on natural gas.



**NGVAMERICA**

Natural Gas Vehicles for America



**NGVAMERICA**  
Natural Gas Vehicles for America

WHY NGV? ENVIRONMENT VEHICLES FUEL POLICY OPPORTUNITIES



## ENVIRONMENT

### If we want cleaner air, we need cleaner vehicles.

Natural Gas Vehicles are 90% cleaner than the EPA's current NOx standard and emit up to 21% fewer GHG emissions than comparable gas and diesel vehicles. When fueling with Renewable Natural Gas, GHG emissions can be reduced up to 125%.

[Learn More](#)



# NGVAmerica.org

Your source for all NGV industry news  
and information.



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