AUTOGAS ANSWERS

Your Fleet Fueling Needs

Greg Zilberfarb

AUTOGAS ANSWERS 2019

Propane Education & Research Council

- Authorized by the U.S. Congress.
- Funded by 5/10-cent per gallon assessment.
- Governed by 21-member industry board of directors.
  - 9 appointed by National Propane Gas Association.
  - 9 appointed by GPA Midstream.
  - 3 public members.
- 29 staff and 100+ Member Advisory Committee.

Agility fuel solutions

ALKANE TRUCK COMPANY

Alliance AutoGas POWERED BY PROPANE

BLUE BIRD

CAMPBELL - PARNELL

COLLINS BUS CORPORATION

FREIGHTLINER Custom Chassis Driven By You

Greenkraft Inc The Green Automotive Future

ICOM NORTH AMERICA Alternative Fuel Systems

ISUZU Commercial Truck of America, Inc.

PSI POWER SOLUTIONS INTERNATIONAL

ROUSH CLEANTECH

Thomas BUILT BUSES Because every mile matters.℠

Westport Here and Now.


SCHOOL BUS

Juan

SANDY SPRINGS
FIRE-RESCUE

0
PROPANE

ThyssenKrup

EMERGE
911
POLICE




Powered by
Clean
Propane

Everyday, propane buses transport almost 1 million students across the U.S.

Over 18,300 propane school buses are on the road

Carrying approximately 1,118,700 students/day

In the fleets of approximately

930 school districts, private schools and bus contractors

The Lowest Total Cost-of-Ownership

- Complete lifecycle analysis.
- 3 F's: Fuel, Filters, and Fluids.
- Maintenance and repairs.
- Labor and wages.
- Fuel handling and storage.
- Garages and facilities
- Refueling infrastructure.

Non-toxic and a non-contaminant of air, soil, and water resources.

1980

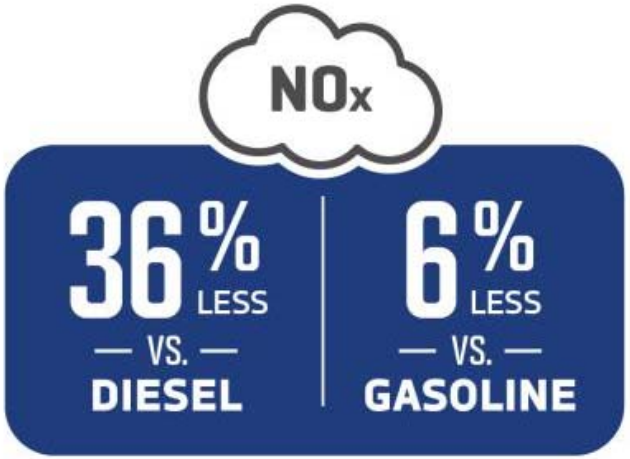
- Diesel is a great fuel.
- Diesel engines last forever.
- No one cares about emissions.
- Propane buses are not available.

2019

- Diesel is an endangered fuel.
- Diesel engines breakdown a lot.
- Everyone cares about emissions.
- Propane buses are available from all of the major OEMs.

Emissions Reduction

Light-Duty Trucks



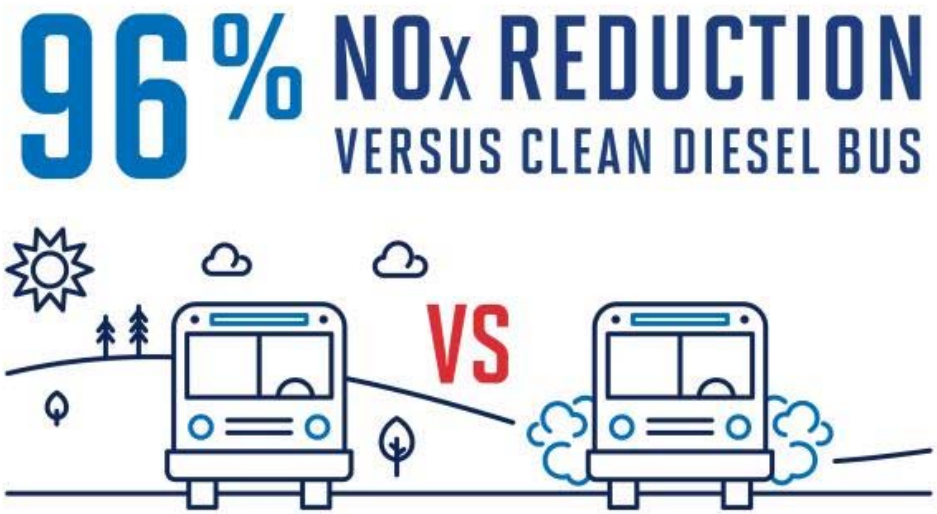
*Assumed annual mileage: 11,400. Fuel economies based on 2016 AFLEET data.

Emissions Reduction

Medium-Duty Trucks

*Assumed annual mileage: 20,000. Fuel economy based on propane industry data.

Emissions Reduction



Source: 2018 West Virginia University study, comparing 2015 LPG Blue Bird School bus (6.8L, 10 Cylinder) with 2014 ultra-low sulfur diesel Blue Bird school bus (6.7L 6 cylinder).

Emissions Reduction

A Georgia State study says diesel school bus fumes drive down test scores

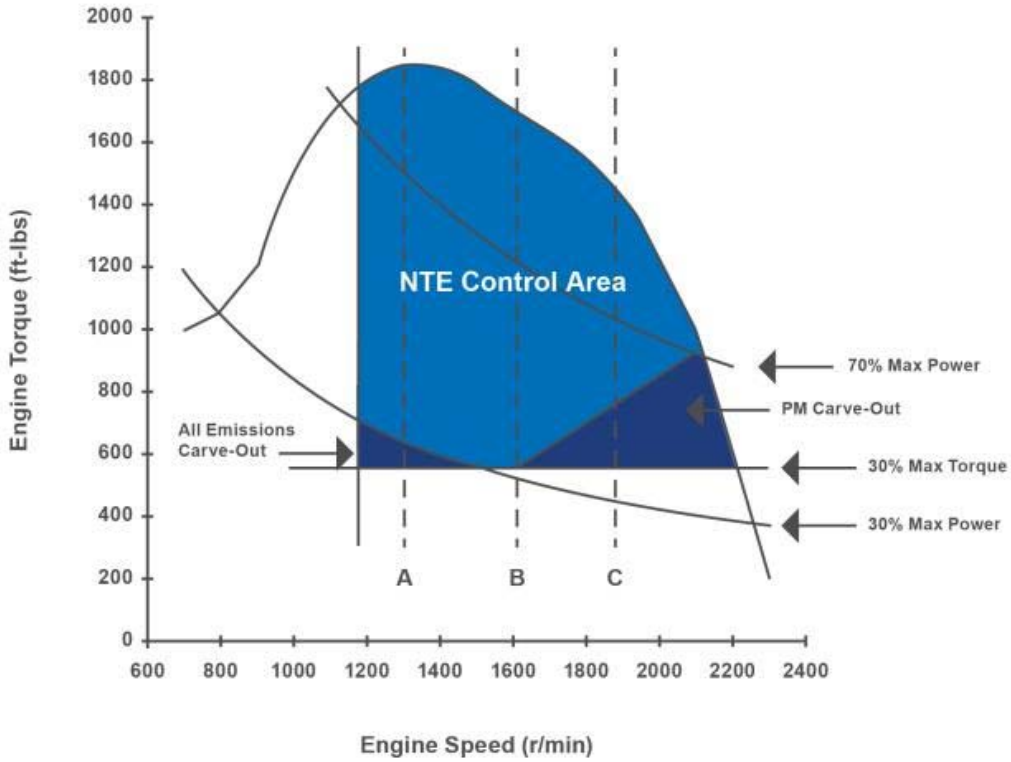
Source: July 18, 2019 Atlanta Journal-Constitution).

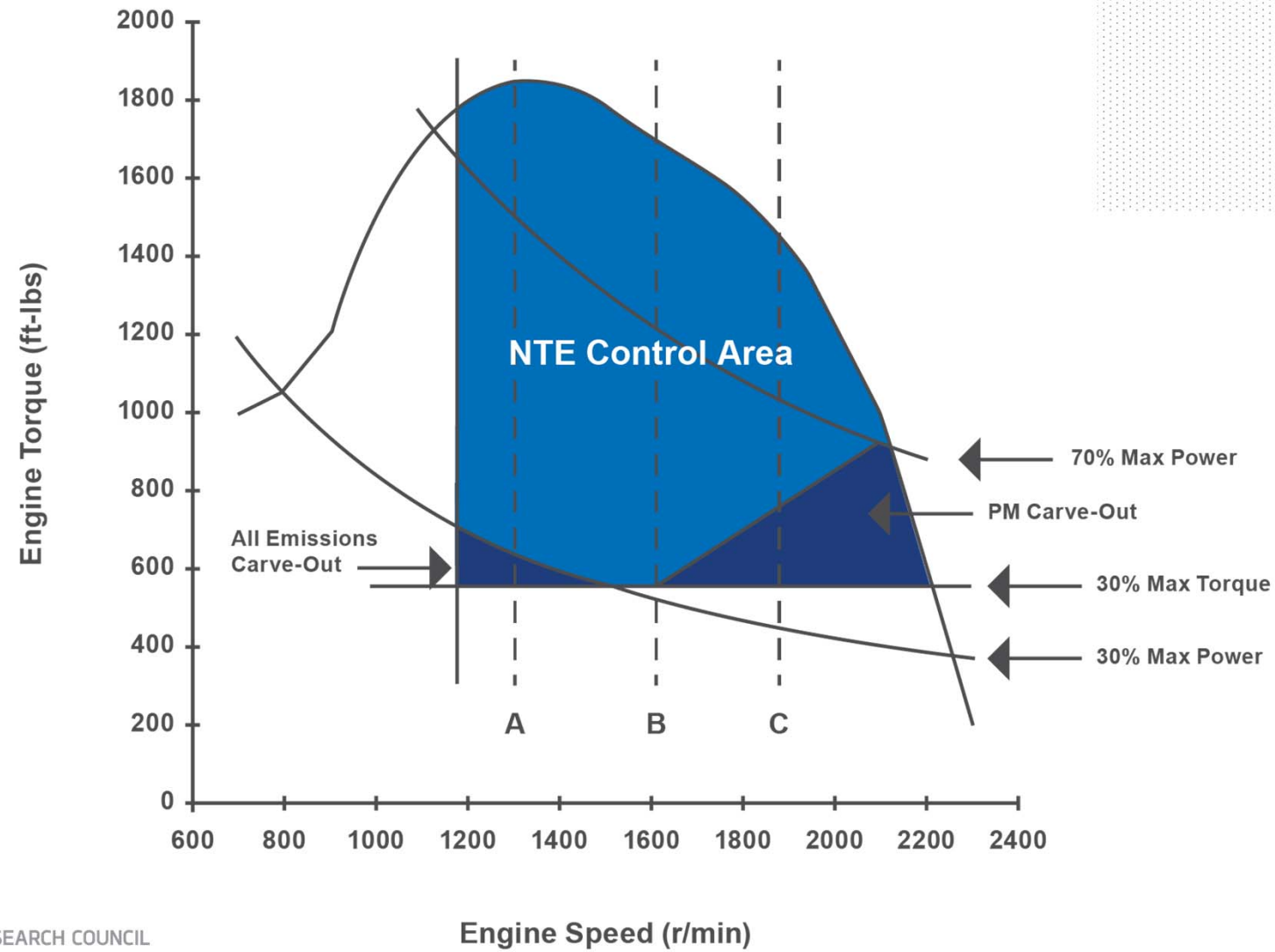
Why Propane Vehicles Work Great

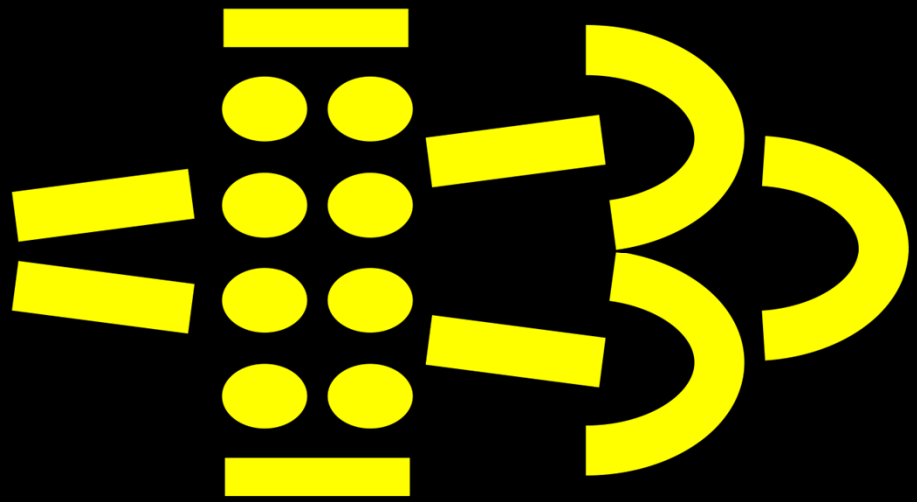
- Propane is an excellent choice for Class 4-7 medium-duty trucks and buses.
- Propane provides the lowest NOx in these classes.
- Propane maintains NOx control under real-world conditions, even at low temperatures.
- Propane improves the performance of direct injection engines.
- The next generation of purpose-built propane engines will be class-leading.

Not-To-Exceed Control Area

- Diesels subject to Not-to-Exceed (NTE) limits during in-use testing.
- Outside the NTE Control Area, in-use emissions are essentially unregulated.
- Low engine speeds and loads are outside NTE area.
- NOx aftertreatment becomes ineffective when exhaust temperature is low.




Engine Torque (ft-lbs)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
600
800
1000
1200
1400
1600
1800
2000
2200
2400
Engine Speed (r/min)
NTE Control Area
70% Max Power
PM Carve-Out
30% Max Torque
30% Max Power
All Emissions
Carve-Out
A
B
C



Navigate Your Refueling Options

- Whether you have 10 fleet vehicles or 100, propane autogas has a refueling infrastructure option to fit your needs.
- Whichever setup you choose, you’re sure to save money on total cost-of-ownership and keep your fleet efficient.

Call your infrastructure provider for more information about any of these options, and your local propane retailer for information regarding fuel.


FRANK AMPARELLI
23
1075
2
AUTOGAS
PROPANE
SCHOOL BUS
HS290
S18·443
COMMERCIAL
WE STOP AT RR CROSSINGS


PROPANE
NO SMOKING
PROPANE VEHICLE FUEL
SUPERIOR ENERG
WWW.SUPERIO
POWER
PROPANE AUT

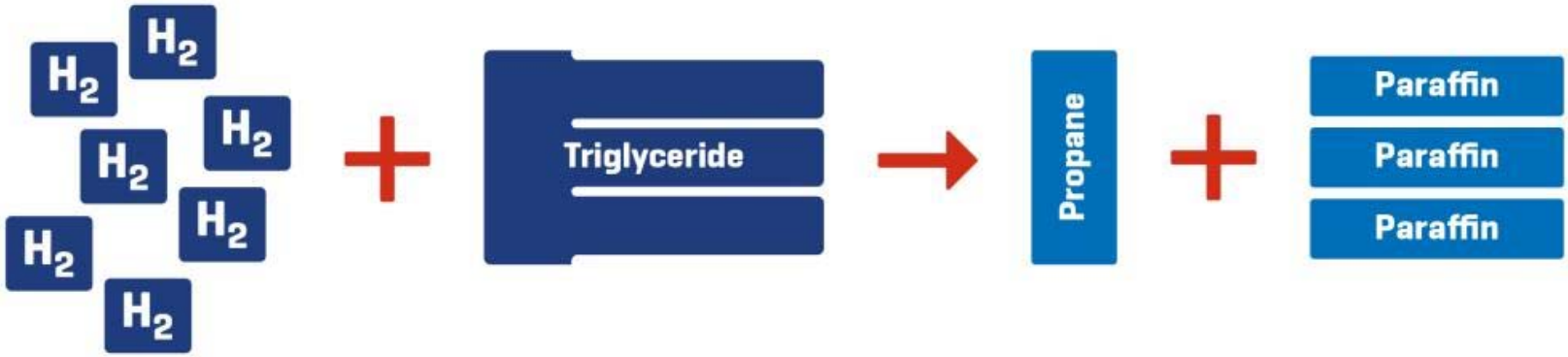

PROPANE
AUTOGAS
CLEAN AMERICAN ENERGY
PROPANE EDUCATION & RESEARCH COUNCIL

PROPANE EDUCATION & RESEARCH COUNCIL


PROPANE EDUCATION & RESEARCH COUNCIL

How Do We Make Renewable Propane?

Renewable propane is **hydrocarbons** made from biological oils and fats (**triglycerides**) by **hydrotreating.**



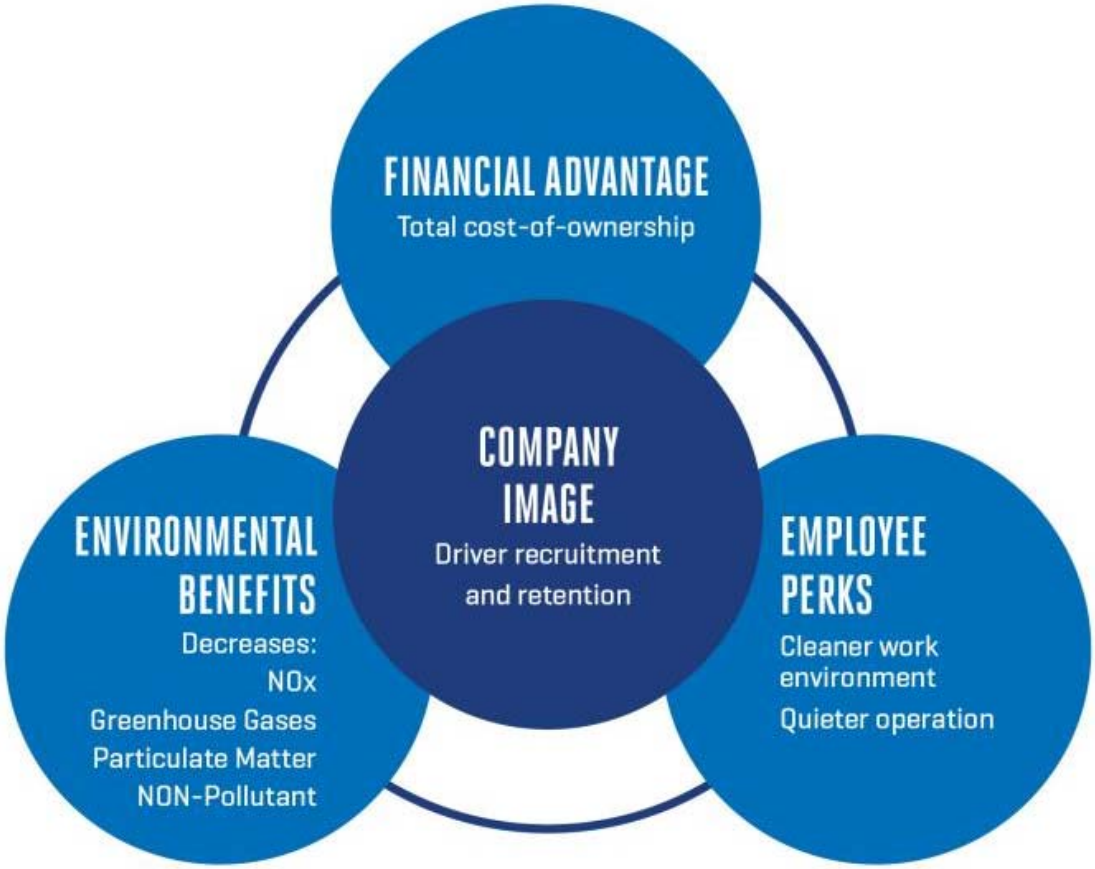
Raw Materials

Products

Customer Testimonial

"Propane gives us the ability to buy a vehicle that performs almost exactly like all of our [conventionally fueled] technologies. It's almost seamless for us."

Bill Spraul
Chief Operating Officer
San Diego Metropolitan Transit System


FINANCIAL ADVANTAGE
Total cost-of-ownership
COMPANY IMAGE
Driver recruitment and retention
ENVIRONMENTAL BENEFITS
Decreases:
NOx
Greenhouse Gases
Particulate Matter
NON-Pollutant
EMPLOYEE PERKS
Cleaner work environment
Quieter operation

For more information contact:

Michael Taylor, *Director of Autogas Business Development*

michael.taylor@propane.com

202-452-8975

Greg Zilberfarb

greg@tsncommunications.com

703-779-4890