Welcome!


WISCONSIN
CLEAN CITIES
propane
autogas
ENERGY FOR EVERYONE
South Shore
Clean Cities, Inc.
NORTHERN INDIANA
Propane Autogas
Answers Virtual Event
August 19, 2021 | 10 a.m.-11:30 a.m. CDT
LPG
LPG ONLY
MacBook Pro

THANK YOU!

Propane Autogas Answers Virtual Event Sponsor

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ENERGY FOR EVERYONE

AGENDA

- Propane Autogas Overview
- Refueling Infrastructure
- Off-Road Market Overview
- Infrastructure Deployment
- Fleet Experiences
- South Shore & Wisconsin Clean Cities Updates
- Q&A Session

South Shore Clean Cities, Inc.
NORTHERN INDIANA

WISCONSIN CLEAN CITIES
Established 1994

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ENERGY FOR EVERYONE

Propane Education & Research Council

Autogas Answers

South Shore & Wisconsin Clean Cities

Stephen Whaley

Director of Autogas Business Development

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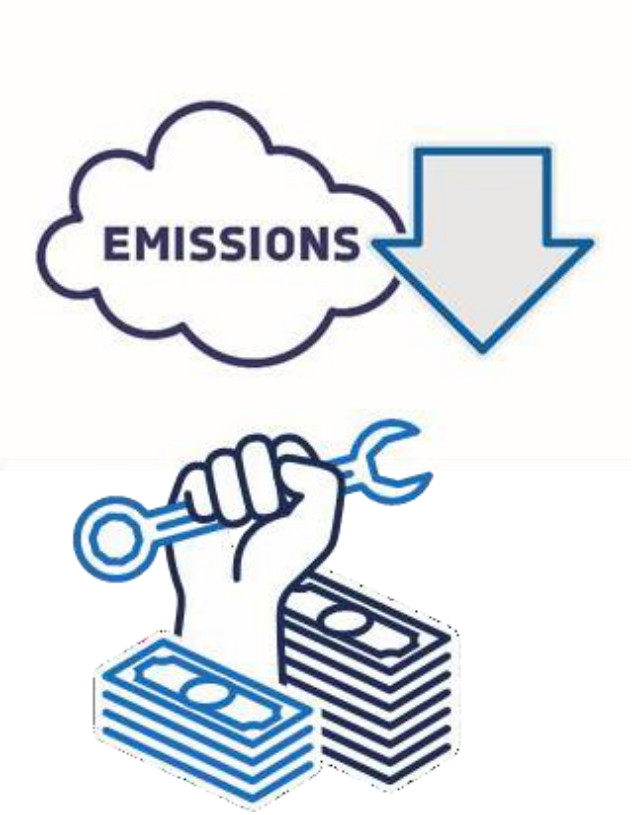
ENERGY FOR EVERYONE propane

Successful Alternative Energy Adoption

What Makes an Alternative Energy Adoption Successful?



- Reduced emissions without increasing cost or losing efficiency.
- TCO reduction or ROI realized before the end of the lifecycle.
- Similar (or better) performance than the original fuel without compromising range.
- High-volume supply of energy domestically sourced.

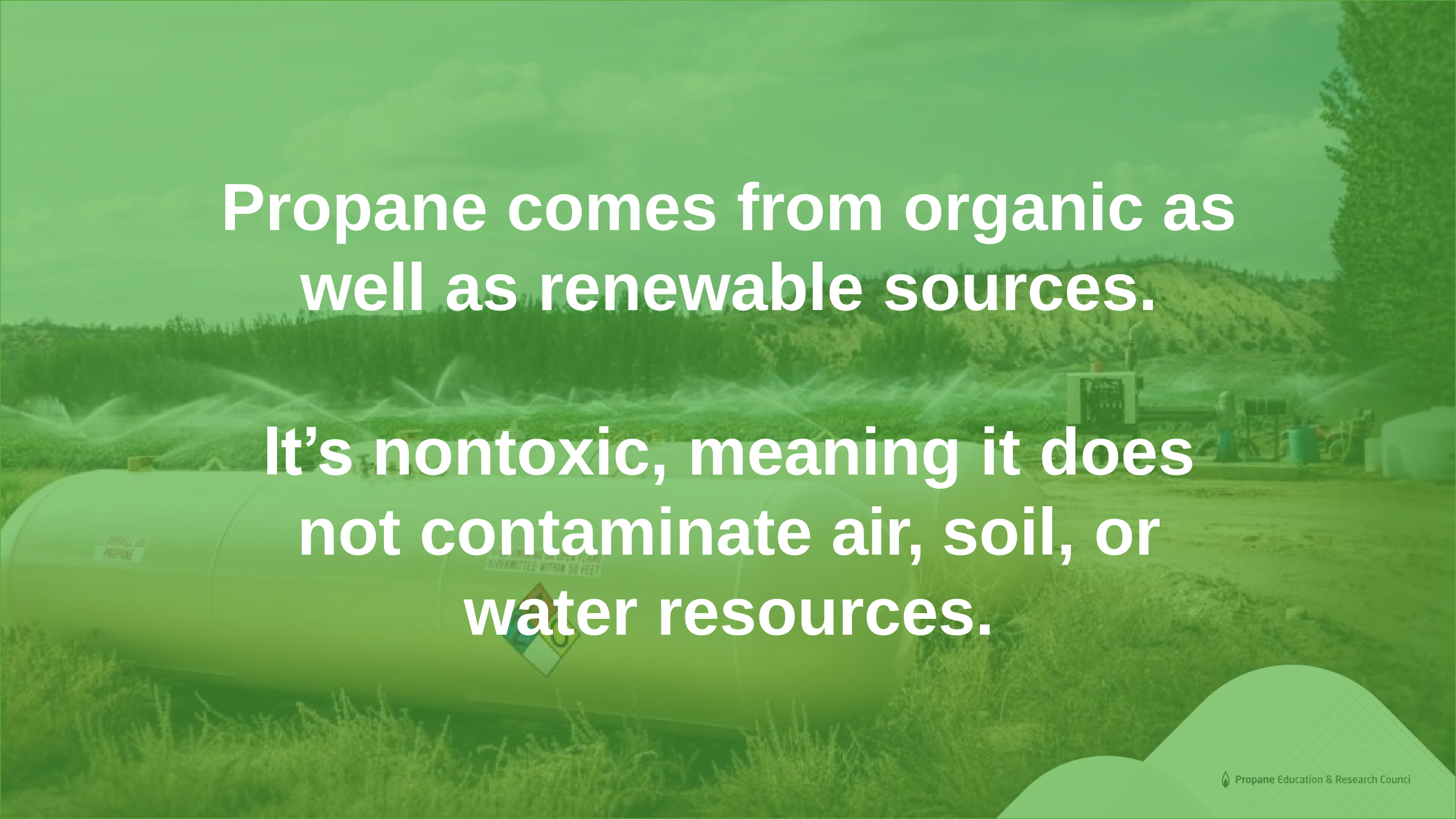
How Does Autogas Fit Into the Conversation?

- Most cost-effective energy source to reduce NOx emissions.
- Lowest total cost-of-ownership of any fuel.
- Comparable or improved performance without compromising range.
- U.S. production = 28 billion gallons in 2019.
  - 9 billion used domestically.
  - 19 billion gallons exported.

WHAT IS PROPANE?

- Affordable, Clean, American-Made Fuel
  - C3H8
  - Byproduct of natural gas processing.
  - 100% Domestic
  - Commonly used for space and water heating, cooking, and as engine fuel.

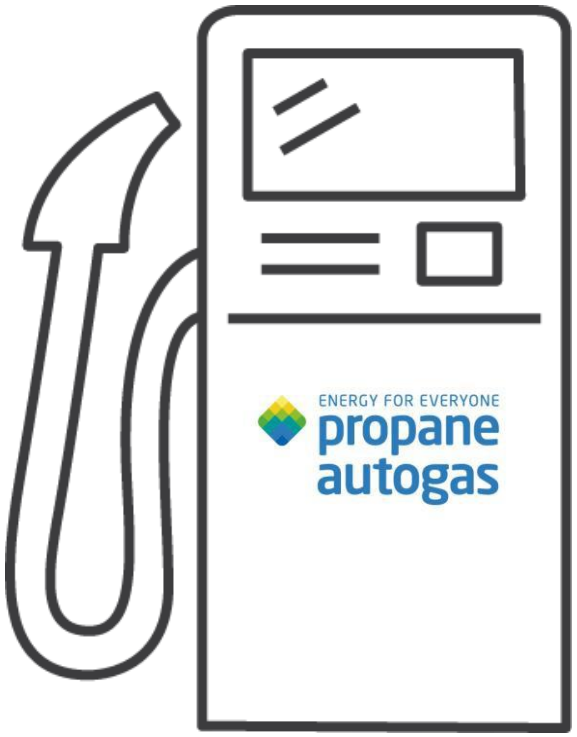
- Using Propane
  - 48 million Households
  - 900,000 Farms
  - 600,000 Forklifts
  - 25,000 Commercial Mowers



Propane comes from organic as well as renewable sources.

It’s nontoxic, meaning it does not contaminate air, soil, or water resources.

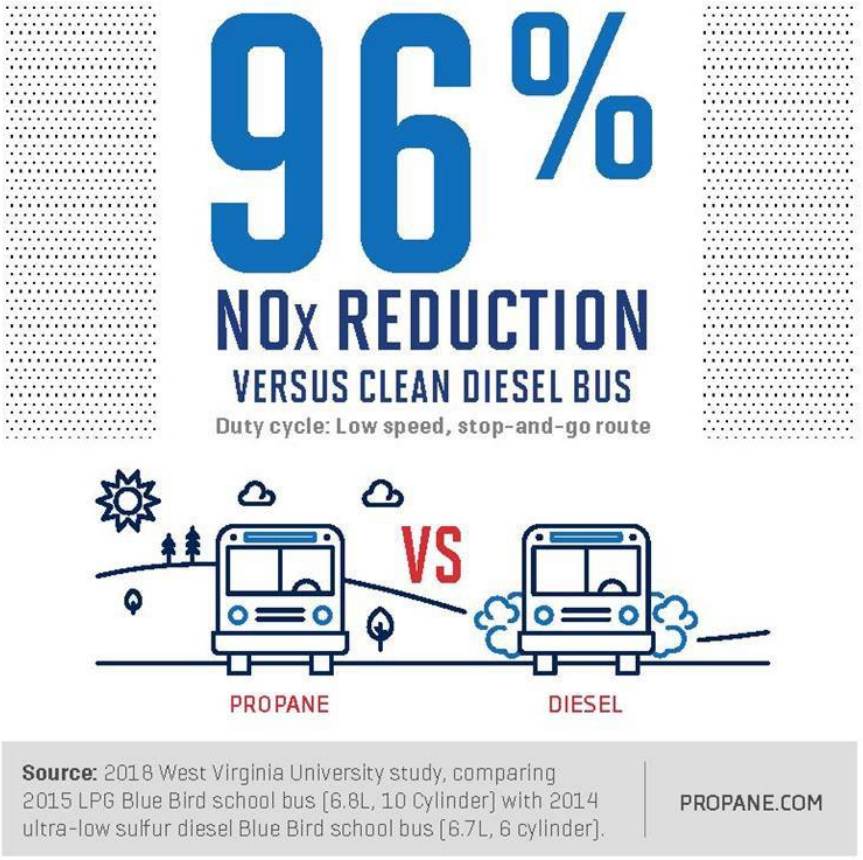
Why Fleets Choose Propane Autogas



- Total Cost-of-Ownership
- Lower Emissions
- Reduce Noise
- Less Maintenance/Increased Uptime
- Improve Corporate Image
- Employee Morale/Driver Retention

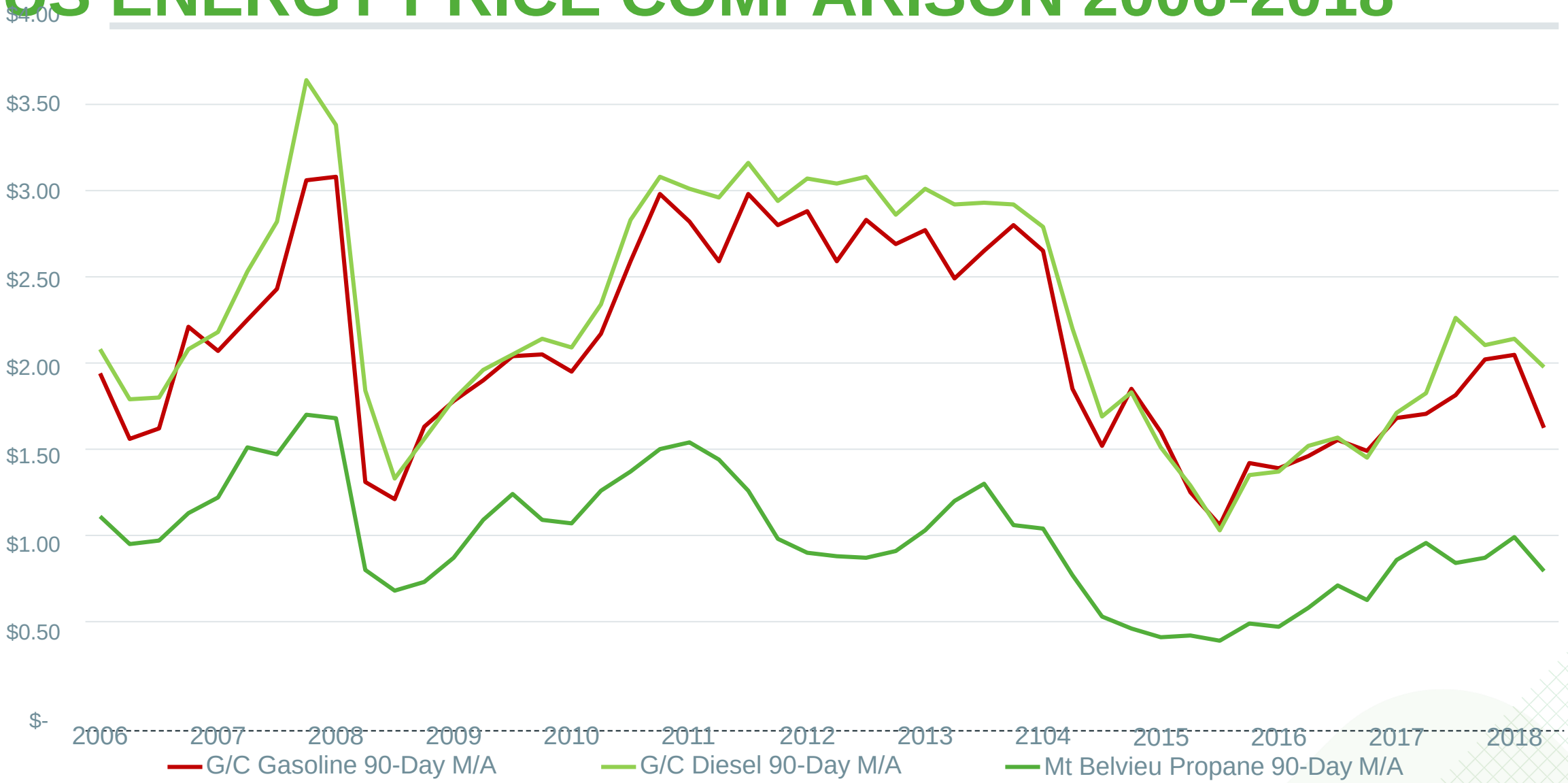
Path to Zero Emissions

- Particulate Matter
  - Virtually zero
- NOX
  - 96% reduction from best in class diesel
  - Certifying to .02, operating at 0.01, full duty cycle
- GHG
  - New technologies 25% reduction from next best technology



Fuel & Maintenance Cost Reductions

US ENERGY PRICE COMPARISON 2006-2018



Source: EIA.gov

Today’s Propane Autogas

Average Price Per Gallon for the week of April 23, 2021

These prices are based on National averages. To receive a custom quote with your local autogas pricing, contact us today.

Learn more about the savings and stability of autogas.

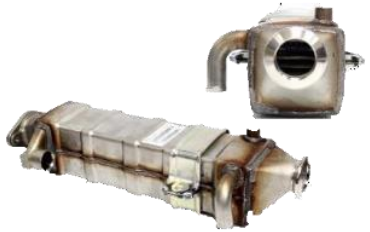
*Autogas price estimates do not reflect the current federal tax credit.

$1.54	$1.56	$1.54	$1.62	$1.59	$1.66	$1.60
West Coast	Rocky Mountain	Gulf Coast	Midwest	Lower Atlantic	Central Atlantic	New England

Increased Inventory

- Propane eliminates the need for DEF and the possibility of putting the wrong fluid in a tank.

The Diesel We Know Today











Engine Components: Diesel

Cummins ISB 6.7L

Part	Quantity	Price	Total	
NOx Sensor	1	$480.00	$480.00	
NOx Sensor	1	$560.00	$560.00	
Pressure Sensor	1	$140.00	$140.00	
Doser Injector	1	$290.00	$290.00	
Catalyst Assembly w/ DPF	1	$10,554.11	$10,554.11	
Temperature Sensor	1	$78.90	$78.90	**TOTAL $21,051.24**
Temperature Sensor	2	$84.90	$169.80	
Turbo	1	$2,731.20	$2,731.20	
Injector	6	$755.56	$4,533.36	
EGR Valve	1	$590.15	$590.15	
EGR Cooler	1	$923.72	$923.72	

Preventative Maintenance

Ford 6.8L V10

Part	Quantity	Price	Total	
Element Air Cleaner	1	$15.75	$15.75	TOTAL $70.94
Oil Spin On Filter	1	$4.11	$4.11	
Element, PSR, 510 Filter	1	$24.90	$24.90	
Mobil Special 5W-20	7	$3.74	$26.18	

Cummins ISB 6.7L

Part	Quantity	Price	Total	
Oil Filter	1	$13.75	$13.75	TOTAL $277.15
Fuel Spin-On Filter	1	$37.90	$37.90	
Power Steering Spin Filter	1	$9.86	$9.86	
Fuel Filter	1	$20.53	$20.53	
Allison Control Filter	1	$8.49	$8.49	
Mobil Fleet 15W-40	18	$2.59	$46.62	
Cleaner, Air Element	1	$140.00	$140.00	

Current Autogas Vehicle Offerings


SCHOOL BUS


Juan


SANDY SPRINGS
FIRE-RESCUE


0
PROPANE


EMERGE
911
POLICE


Powered by
Clean
Propane


///Agility®


ALKANE
TRUCK COMPANY


'Arlianc AutoGas
POWEJU!D BY!RO?AJNE


C P


COLLINS
BUS CORPORAnON


FREIGHTLINER
Custom Chassis
Driven By You


Greenkraft Inc
The Green Automotive Future


ISUZU
Commercial Truck of America, Inc.


PSI
POWER SOLUTIONS
INTERNATIONAL


ROUSH
CLEANTECH


Thomas
BUILT BUSES
Because every mile matters.


Westport

OEM Propane Options

- Light & medium duty Ford trucks & vans, school bus.
- Factory Ford warranty maintained.
- No loss of HP / torque / towing capacity.
- Serviceable with existing diagnostic equipment.
- EPA & CARB Certified.

ROUSH® CLEANTECH

Ford F-53 / F-59

Ford E-350/450

Ford F-450/550

Ford F-650/750

Blue Bird Vision

Micro Bird G5

OEM Propane Options

- Updated and improved to increase reliability.
- The entire powertrain is sold, warranted, and supported by Freightliner Custom Chassis.

Alliance AutoGas
POWERED BY PROPANE

2020 Model Year Products

Ford

F150
- 3.3 PFDI
- 5.0 PFDI
- 2.7/3.5 PFDI (SUMMER 20)

F250-F350
- 6.2 PFI

F450-F750
- 7.3 PFI (2021 MY)

E450
- 6.2 PFI
- 7.3 PFI (2021 MY)

TRANSIT
- 3.5 PFDI
- 3.5 ECOBOOST (FALL 20)

EXPLORER
- 3.3 PFDI

GM

SILVERADO 1500
- 5.3 DI

SILVERADO 2500/3500
- 6.6 DI

EXPRESS/SAVANA
- 6.0 PFI

FCA

FIAT CHRYSLER AUTOMOBILES

DURANGO
- 5.7 PFI

CHARGER
- 3.6 PFI

RAM
- 5.7 PFI
- 3.6 PFI (SUMMER 20)

Icom's certified Medium Duty Platforms

The Icom JTG II system is EPA Certified & CARB approved for over 1,200 2009-2019 vehicle platforms including many Ford and GM models.

The Total Solution for anv Tvpe of Fleet!

E450 - CARB approved 2016-2017

F350 F450 F550

F750

***FORD NEW 7.3L engine available Spring 2020!**
Taking orders now!

F53 F59 (BAKERY, LINEN, FEDEX TYPE BOX TRUCKS)

6.0L HD

Chevy Cutaway
Coming soon!

ICOM Alternative Fuel Systems

Propane Education & Research Council

CAMPBELL PARNELL AND ISUZU NPR

- Bi-Fuel conversions Pre or Post delivery
- 5 year warranty and maintenance packages available
- Plug and Play for ease of installation and service
- CP works directly with the OEM for product development
- EPA and Carb Certification

CAMPBELL-PARNELL

www.UseAltFuels.com


SCHOOL BUS
SCHOOL BUS
R415
STOP


SCHOOL BUS


SCHOOL BUS


SCHOOL BUS

SNAPSHOT OF PROPANE AUTOGAS SCHOOL BUS MARKET

1,250,000
STUDENTS TRANSPORTED
DAILY

14 STATES WITH

500+ BUSES

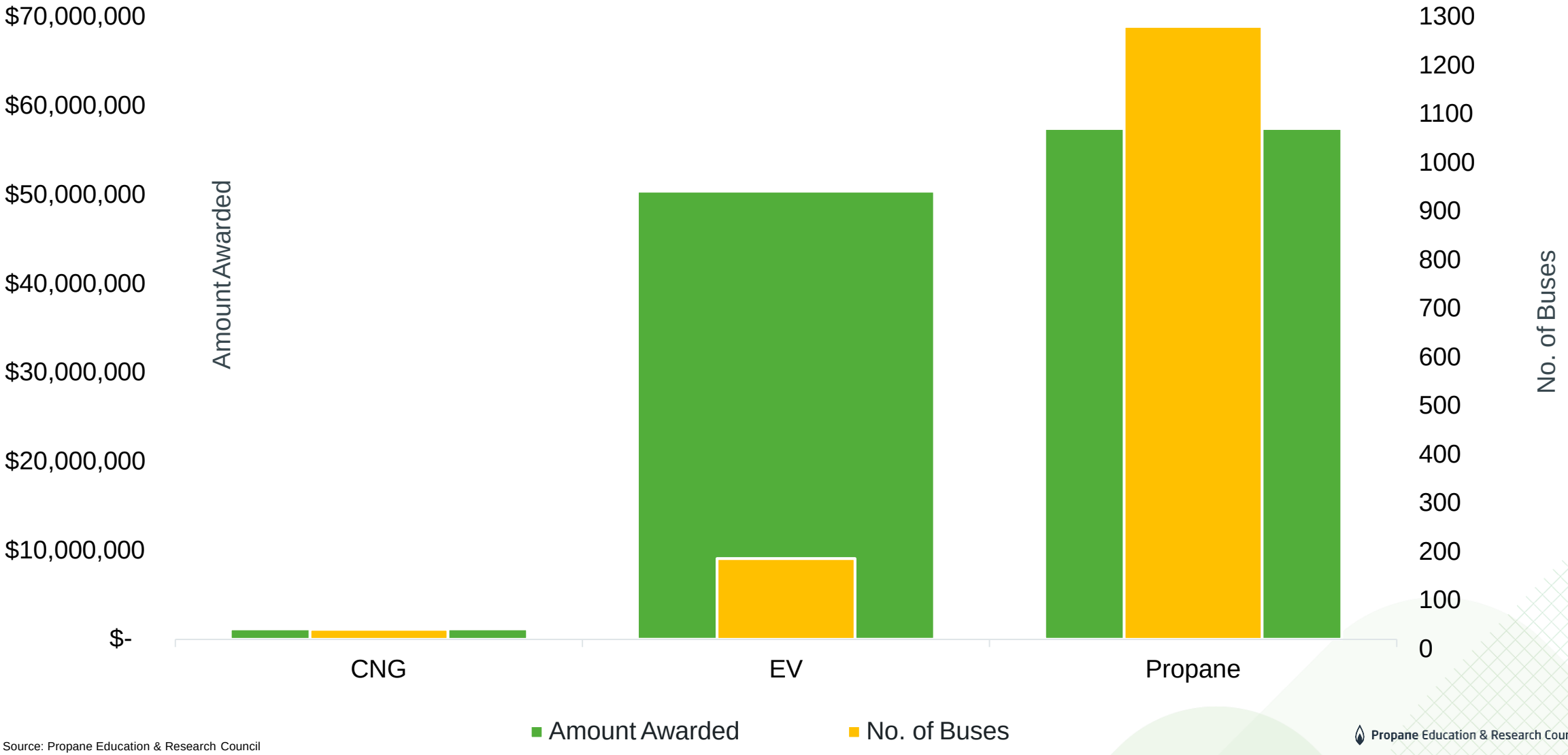
1,000 **DISTRICTS & CONTRACTORS** OPERATE PROPANE AUTOGAS BUSES

22,000+
PROPANE AUTOGAS BUSES
ON THE ROAD

Similarly Equipped Blue Bird Type C Bus

Diesel, Cummins, ISB, 6.7L	$100,000.00
LPG, Ford/Roush, 6.8L	$106,000.00
CNG, Ford/Roush, 6.8L	$134,000.00
Electric, Cummins	$350,000.00

VW: Alt Fuel School Bus Funding & No. of Buses Through January 31, 2021



Source: Propane Education & Research Council

Propane Education & Research Council

Study: Comprehensive Alt-Fuel Approach Better Than Single Technology Focus

	Texas	California	Result
On-Road Funds Spent	$561 million	$816 million	CA spent 46% more
NOx Reduced	61,610 tons	35,299 tons	CA accomplished 43% less
Total # of Investment Years (2005-19)	15 years	15 years	TX reduced more emissions while spending less

California regulators spent 46% more public money while accomplishing 43% less than Texas.

Photo: NGVAmerica

https://www.worktruckonline.com/10129055/study-shows-comprehensive-alternative-fuels-approach-achieves-greater-emissions-reductions-than-single-technology-focus

High Growth Vehicle Markets

High Growth Vehicle Market Attributes

- Medium duty trucks.
  - Class 3-7.
- High volume fuel consumption.
  - 300 to 900+ gallons per month.
- Regional routes.
  - 75 to 300+ miles per day.

GROWING MARKETS

Food/Beverage

- Major companies have already validated propane autogas in this market.
  - ReadyRefresh by Nestlé Waters.
    - Schwan’s Home Delivery.

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GROWING MARKETS

Paratransit

- 51,000 paratransit vehicles nationwide.
- 600 gallons per month average fuel consumption.
- ADA requires every county in the U.S. to provide service.

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Same Equipped 14 Passenger Shuttle Bus

Gasoline, 7.3L Engine	$71,569.00
Propane, Roush, 7.3L Engine	$86,784.00
Electric 88kWh Battery (100 mi)	$233,603.00

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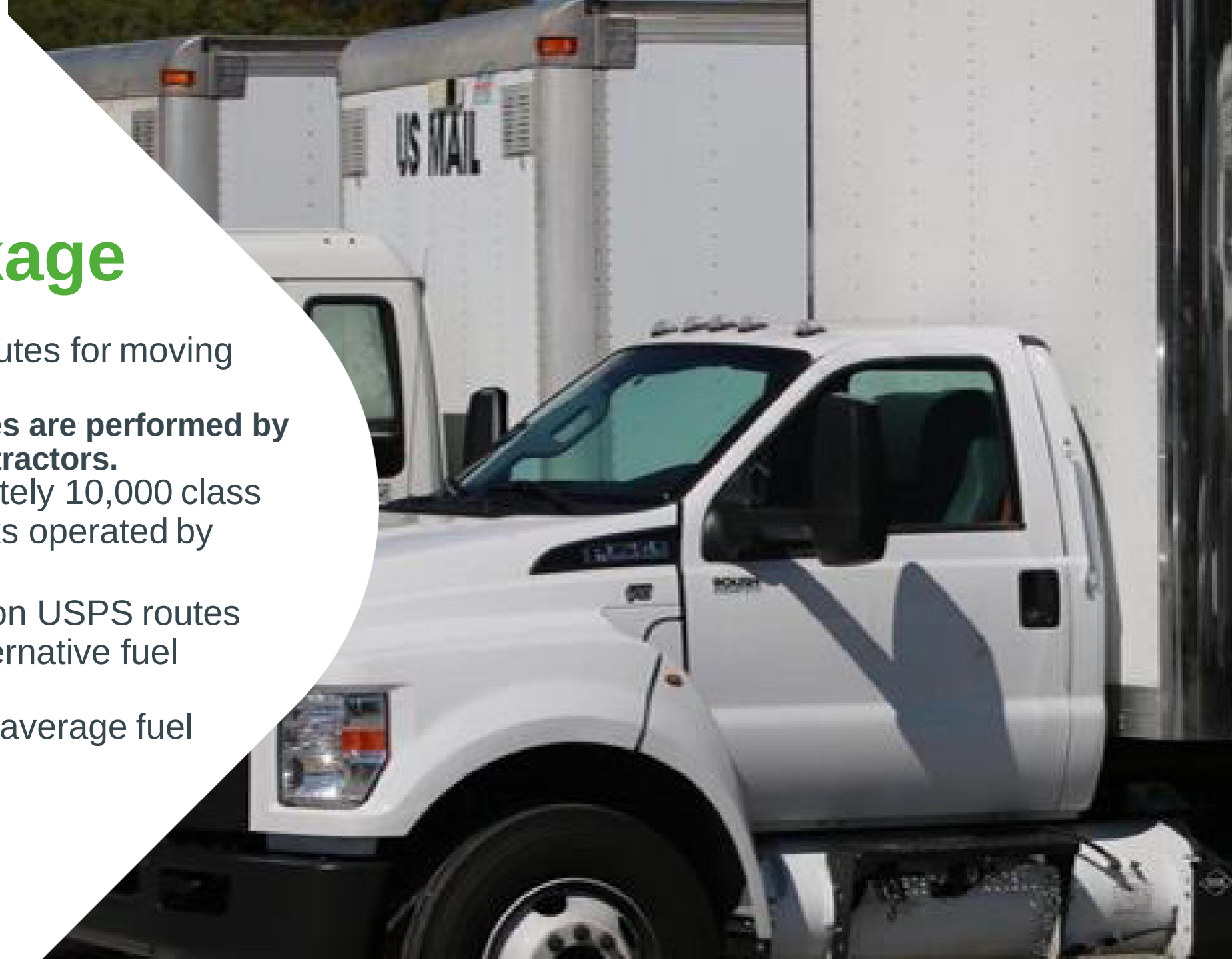
EMERGING MARKETS

Parcel/Package

- USPS has 92,000 routes for moving mail.
- **Over 70,000 routes are performed by independent contractors.**
- There are approximately 10,000 class 6-7 straight box trucks operated by USPS contractors.
- Contractors bidding on USPS routes score higher with alternative fuel vehicles.
- 1,000 gallons/month average fuel consumption.



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Autogas Infrastructure

Fueling Infrastructure – Mobile Refueling

- **Best Option**: Fleet has limited space for on-site infrastructure.

Your fleet can take advantage of propane autogas even if your plans are uncertain about investing in infrastructure in the near future.

- Mobile refueling is arranged with your local propane retailer.
- At a scheduled time, your retailer will refuel your fleet vehicles on-site, one by one.

Costs and situations vary; talk to an area propane retailer for more details.

Temporary Refueling Set-up

- **Best Option:** Fleet is in the process of building permanent refueling infrastructure.
- **Includes:** Exact setup varies, but generally includes a dispenser and fuel tank mounted on a trailer.

This option keeps fleets fueled with a temporary, self-contained refueling setup.

- A propane retailer owns all the equipment, and your fleet refuels using the tank and dispenser for as long as necessary.

Costs and situations vary; talk to an area propane retailer for more details.

Standard Private Station

- **Best Option:** Fleet of 50 vehicles or fewer.
- **Includes:** A 1,000-3,000-gallon tank, plus a single autogas fuel dispenser**.**

Like an advanced private station, you or your propane provider own the infrastructure.

- If your propane provider owns the infrastructure, you're responsible for site preparation (crash protection and electrical).
    - Propane provider owns the infrastructure — Your cost: $1,500-$15,000 (site preparation)
- If you own the infrastructure, you purchase the propane tank, pump, motor, and dispenser for a convenient central refueling location.
    - Fleet owns the infrastructure — Your cost: $1,500-$15,000 (site preparation) + $20,000-$60,000 (infrastructure)

Advanced Private Station

- **Best Option:** Fleet of 50 vehicles or more**.**
- **Includes:** A high-capacity tank, a canopy, and multiple fuel dispensers.

With this setup, either you or your propane provider own the infrastructure:

- If your propane provider owns the infrastructure, you're responsible for site preparation (crash protection and electrical).
    - Propane provider owns the infrastructure — Your cost: $5,000-$75,000 (site preparation)
- If you own the infrastructure, you pay for the cost of a canopy, propane tank, pump, motor, and dispenser with card lock and vehicle tracking capability.
    - Fleet owns the infrastructure — Your cost: $5,000-$75,000 (site preparation) + $60,000-$225,000 (infrastructure)

Advanced Private Station

Dispenser Options

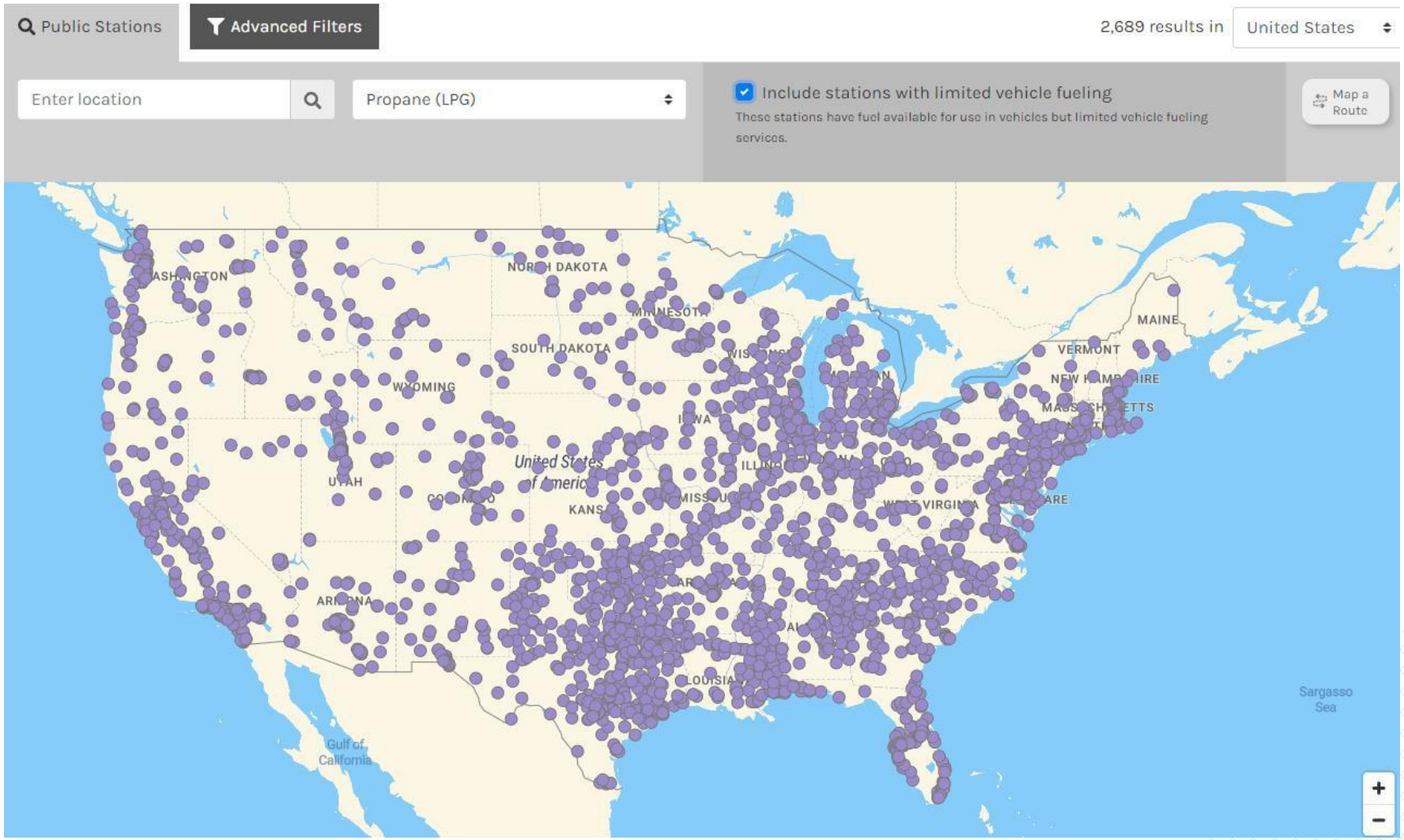
- Credit card reader
- Transaction receipt printer
- Hose retractor
- Quick connect (Euro) nozzles
- Fully integrated, customizable fuel management system
- Third party fuel management system connections
- Telemetry


PROPANE EDUCATION & RESEARCH COUNCIL

Fueling Infrastructure Cost for 10 Shuttles

- Diesel = $0k (already existing)
- Propane = $40k
- CNG = $200k (ten fixed time fill hoses)
- Electric = $250k (ten fixed plug in lines)

Dept of Energy Alt Fuel Station Locator



Dept of Transportation Alt Fuel Corridors for Propane Autogas

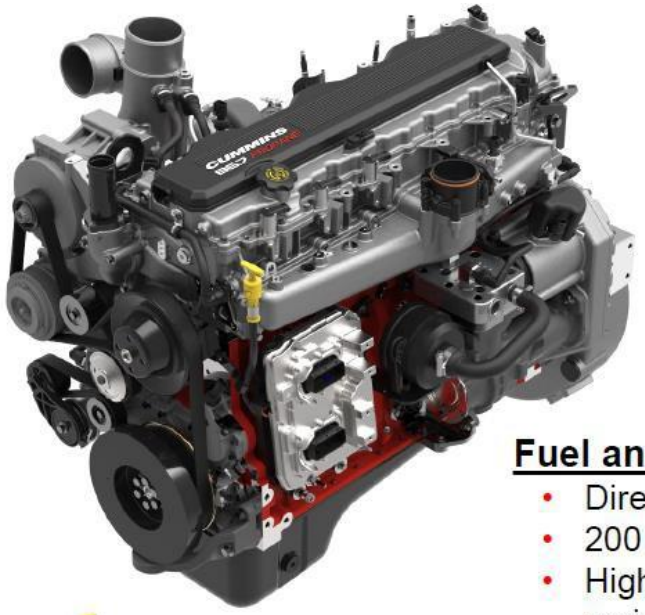
Technological Innovations

Cummins 6.7L Propane Demonstration Engine

6.7L Propane Demonstration Engine Architecture

Base Engine

- 6.7L Displacement
- 107 mm Bore x 124 mm Stroke
- 12:1 CR
- Late Intake Valve Closing cam
- 4 Head Bolt Gray Iron Block
- Dual Overhead Camshaft Valve Train
- 4 Valve Aluminum Cylinder Head
- 174 bar PCP Limit
- High Efficiency Pent Roof Combustion Chamber
- High Tumble Charge Motion Intake Ports
- Leverages B6.7 Diesel Components Where Applicable for Increased Reliability and Durability



Fuel and Ignition System

- Direct Propane Injection
- 200 bar Rail Pressure Capability
- High Pressure pump w/ recirculation
- M14 Spark Plug w/ single coil on plug inductive ignition system

Air Handling System

- Twin Entry, Dual Scroll, Wastegate Turbocharger with Command WG

Cummins Aftertreatment System

- On-Engine Close Coupled Three Way Catalyst

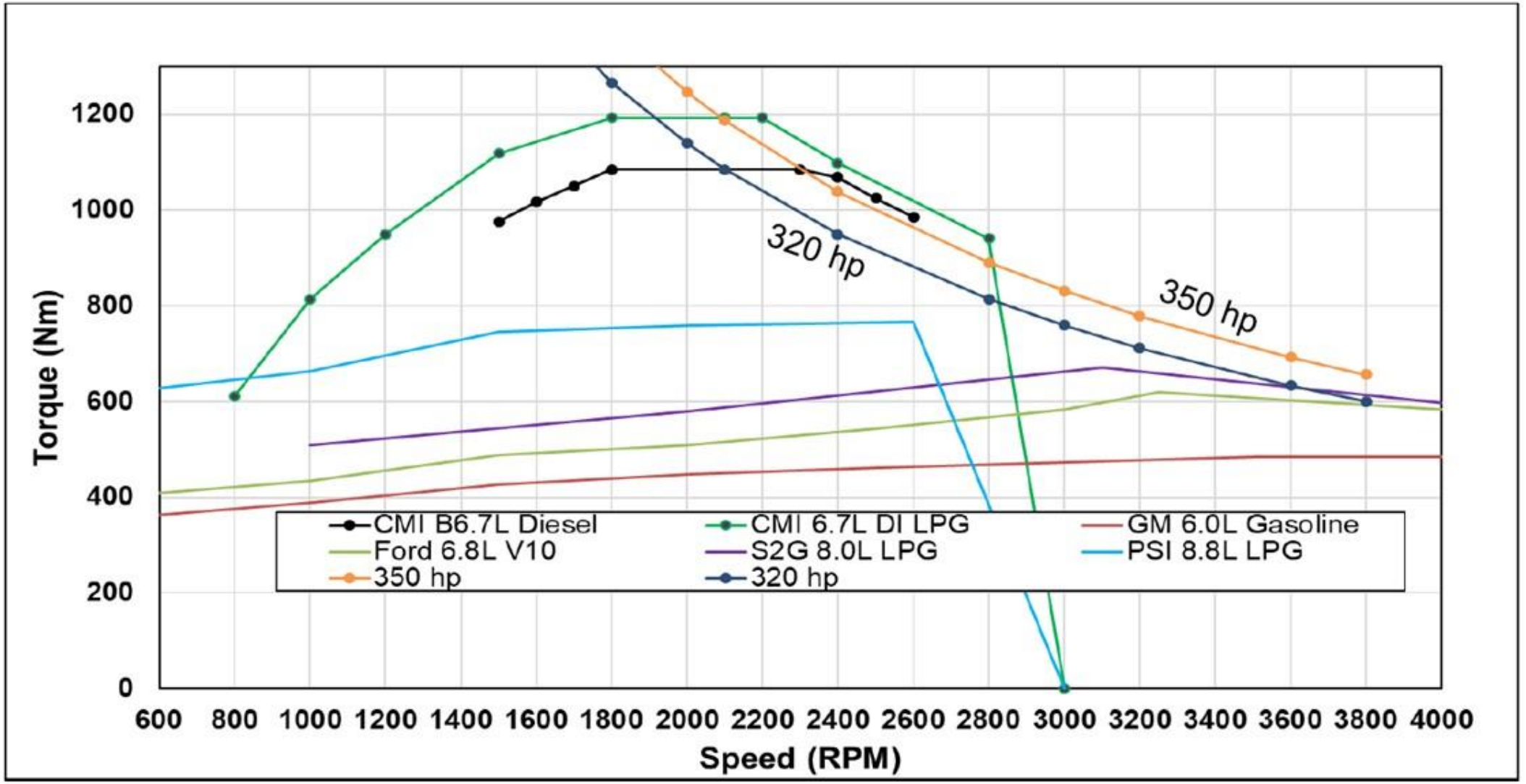
Electronics/Controls

- SI Specific ECM

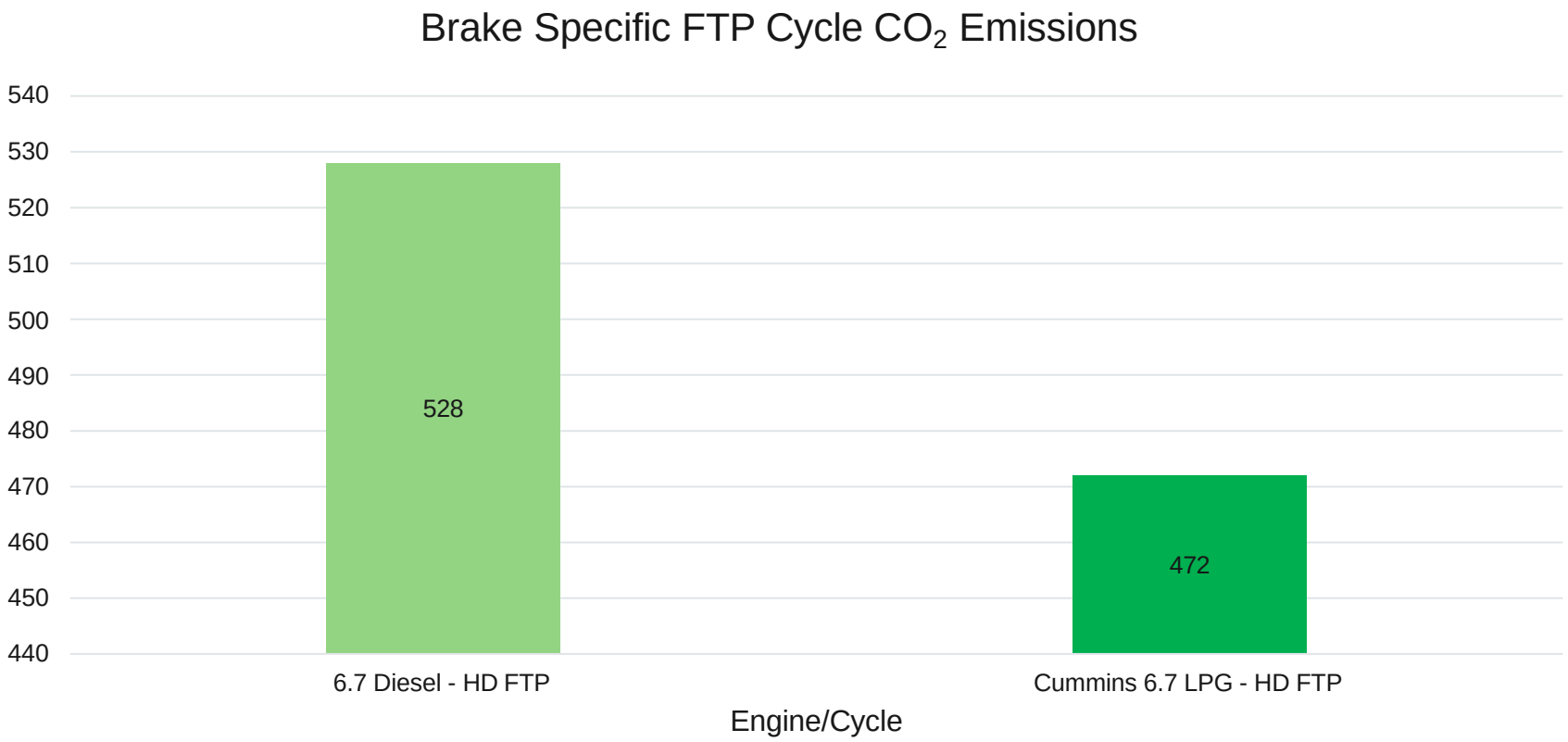
Vehicle Integration

- System Weight Improved Over B6.7 Diesel
- Customer Interfaces Similar to B6.7 Diesel

Torque Curve Comparison



Greenhouse Gas Emissions



- 11.4% lower CO_2 emissions than diesel engine with similar displacement and torque curve. Similar BTE, favorable H/C ratio results in lower CO_2.

Renewable Propane

The Future of Propane Autogas

Propane Education & Research Council

Renewable Propane

- Low carbon intensity.
- Inexpensive feedstock.
- Abundant feedstock.
- Low energy conversion.
- Final product competitively priced.

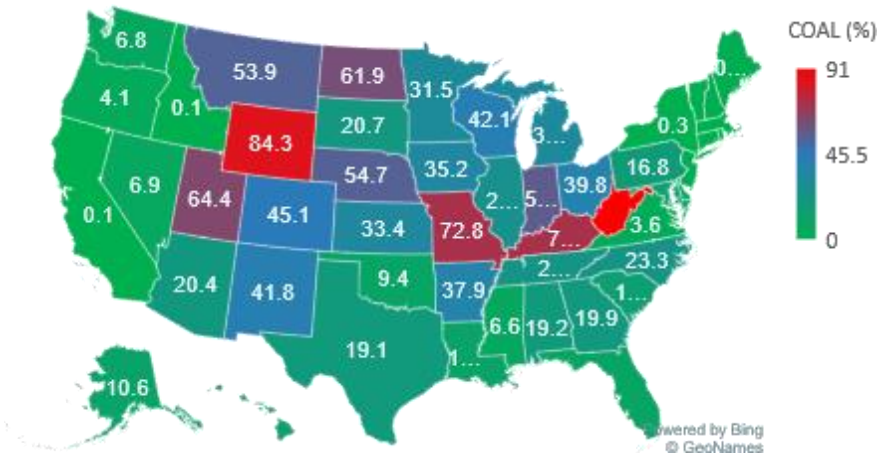
Current Renewable Propane Sources

GHG LCA
Comparisons between Propane and Electric Medium Duty Vehicles

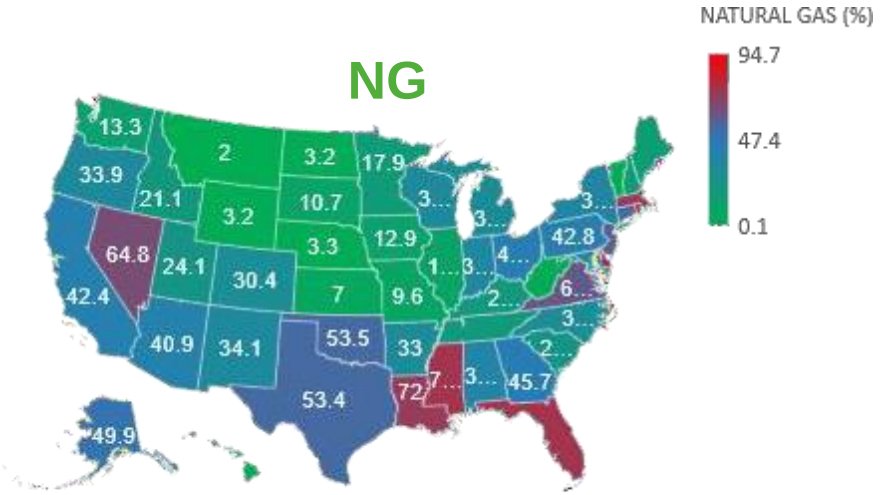
Propane Education & Research Council

2019 Electrical Grid Source Energy Mix – Fossil and Biomass

Coal

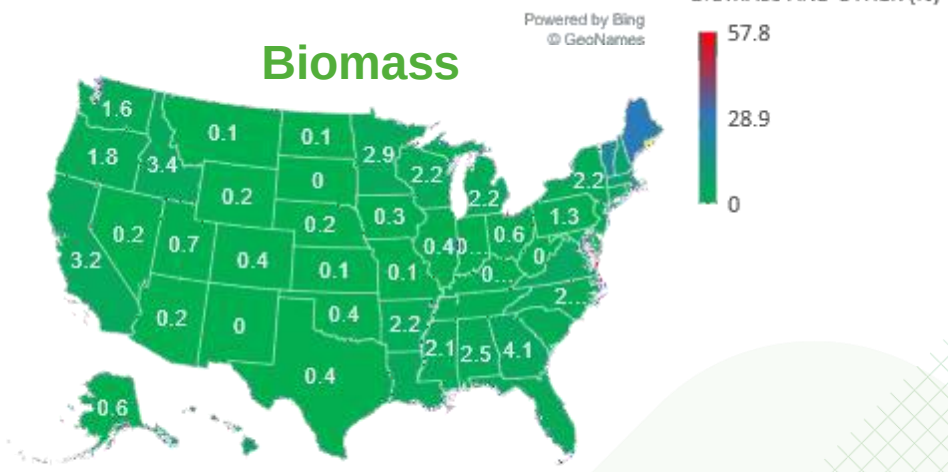


NG



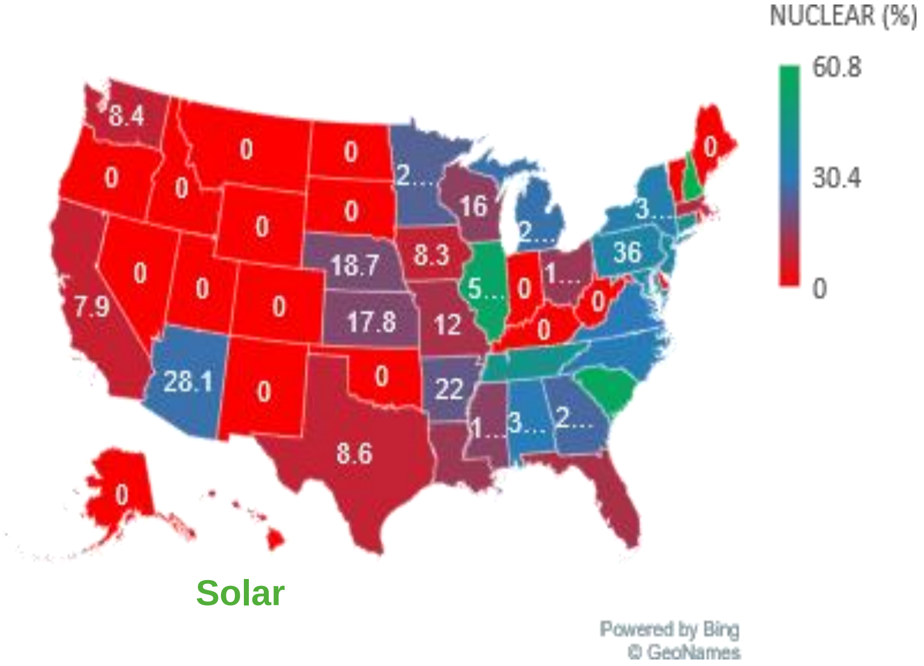
Petroleum

Biomass

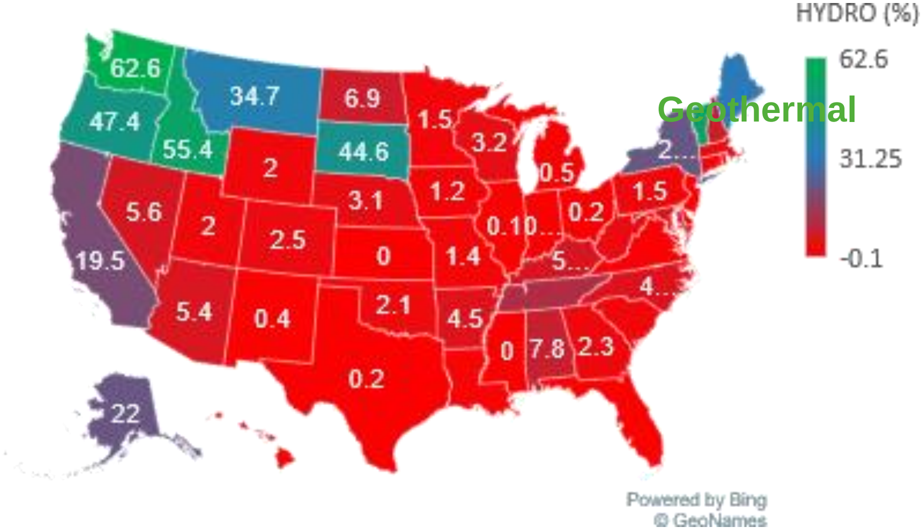


2019 Electrical Grid Source Energy Mix – Renewables and Nuclear

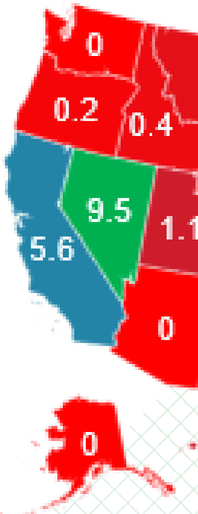
Nuclear



Hydro



Geothermal

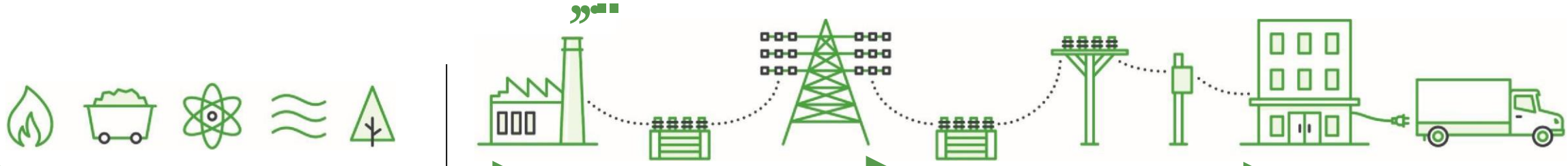


Solar

Wind

CHCIFOOTPRINT OF ELECTRICITY

CONSIDER EVERY STEP OF THE PROCESS



EXTRACTI ON

Electricity is not naturally occurring, so it must be produced using other resources.

- Gas extraction
- Coal mining
- Nuclear fission
- Wind and solar component manufacturing
- Biomass cultivation and harvesting

approximately 9.9% CO2eq emissions

CARBON INTENSITY SCORE:

15.2 g/MJ

GENERATION

Power plant generates electricity.

Transformer steps up voltage for transmission.

approximately 75.6% CO2eq emissions

CARBON INTENSITY SCORE:

116.5 g/MJ

TRANSMISSION & DISTRIBUTION

The transmission lines carry electricity to transformers, which step down voltage. Electricity is delivered to the charging location.

approximately 4.5% CO2eq emissions

CARBON INTENSITY SCORE:

7 g/MJ

EV CHARGING

Losses occur from charging electric vehicle battery.

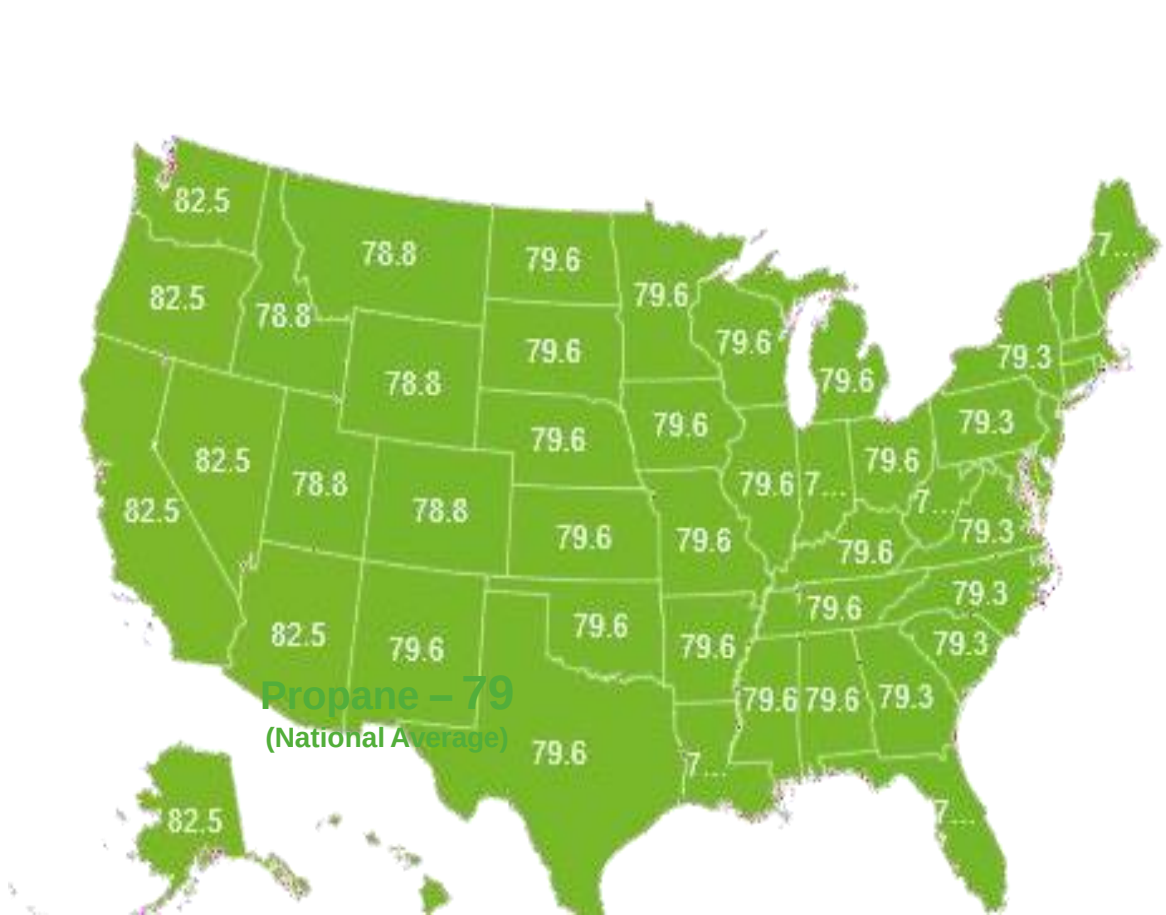
approximately 10 % CO2eq emissions

CARBON INTENSITY SCORE:

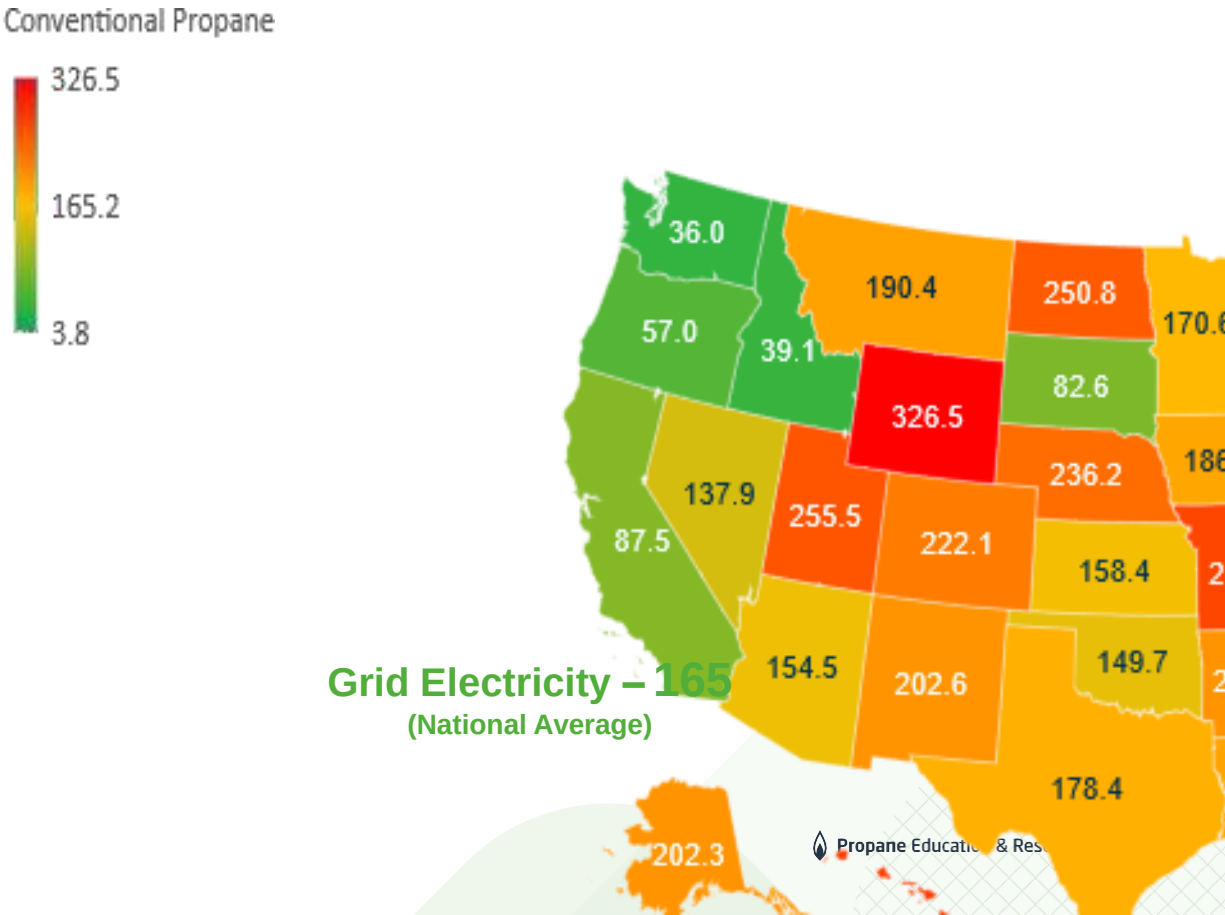
15.4 g/MJ

TOTAL CHCI INTENSITY= 154 g/MJ

Well-to-Wheels Carbon Intensity Comparisons of “Fuel” ($gCO2_{eq}/MJ$)



Propane – 79
(National Average)



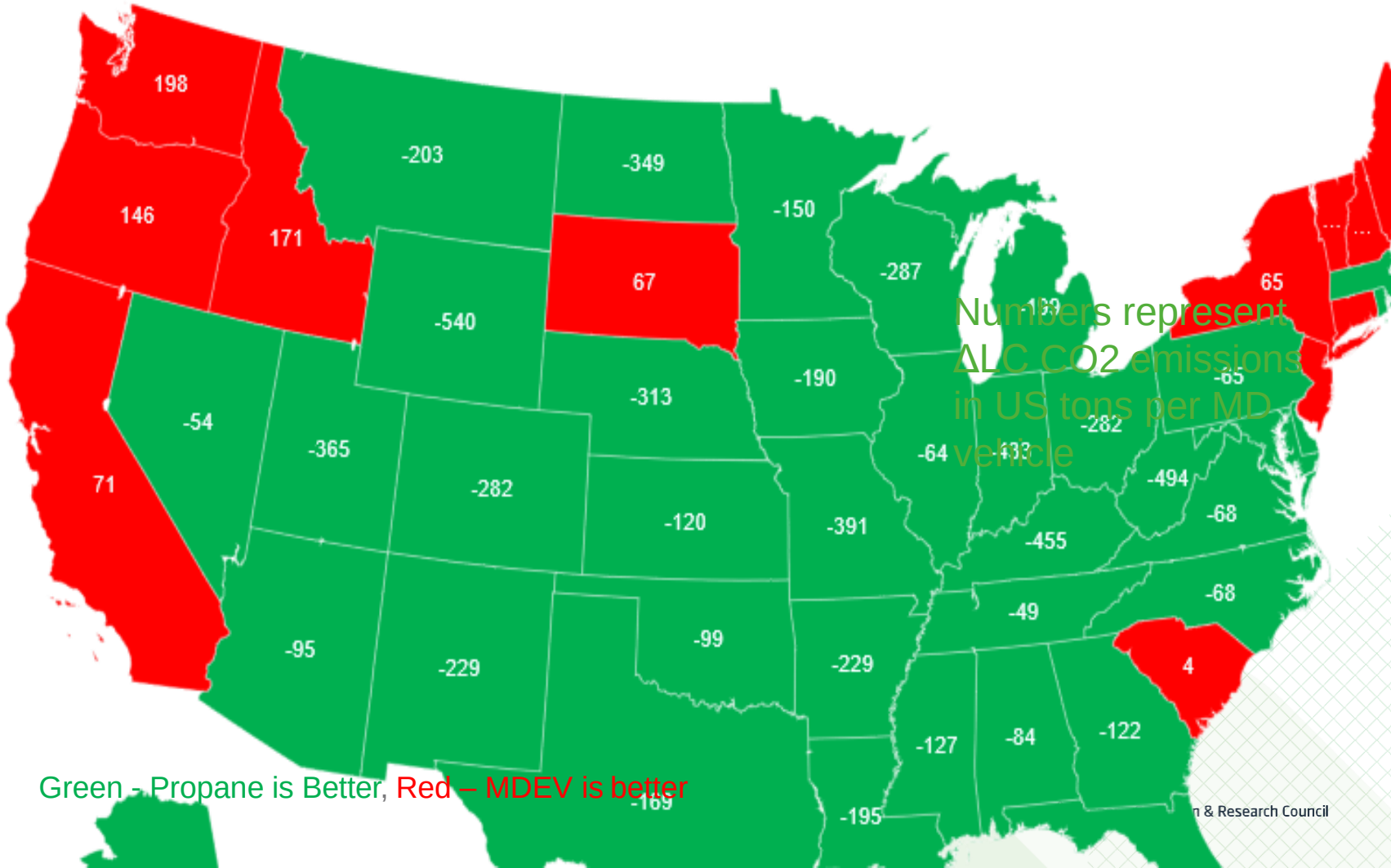
Grid Electricity – 165
(National Average)

Propane vs. full electric

Case-I: $\Delta CO2_{eq}$ for One Truck:

Today, Propane is a cleaner solution for 38 states and DC

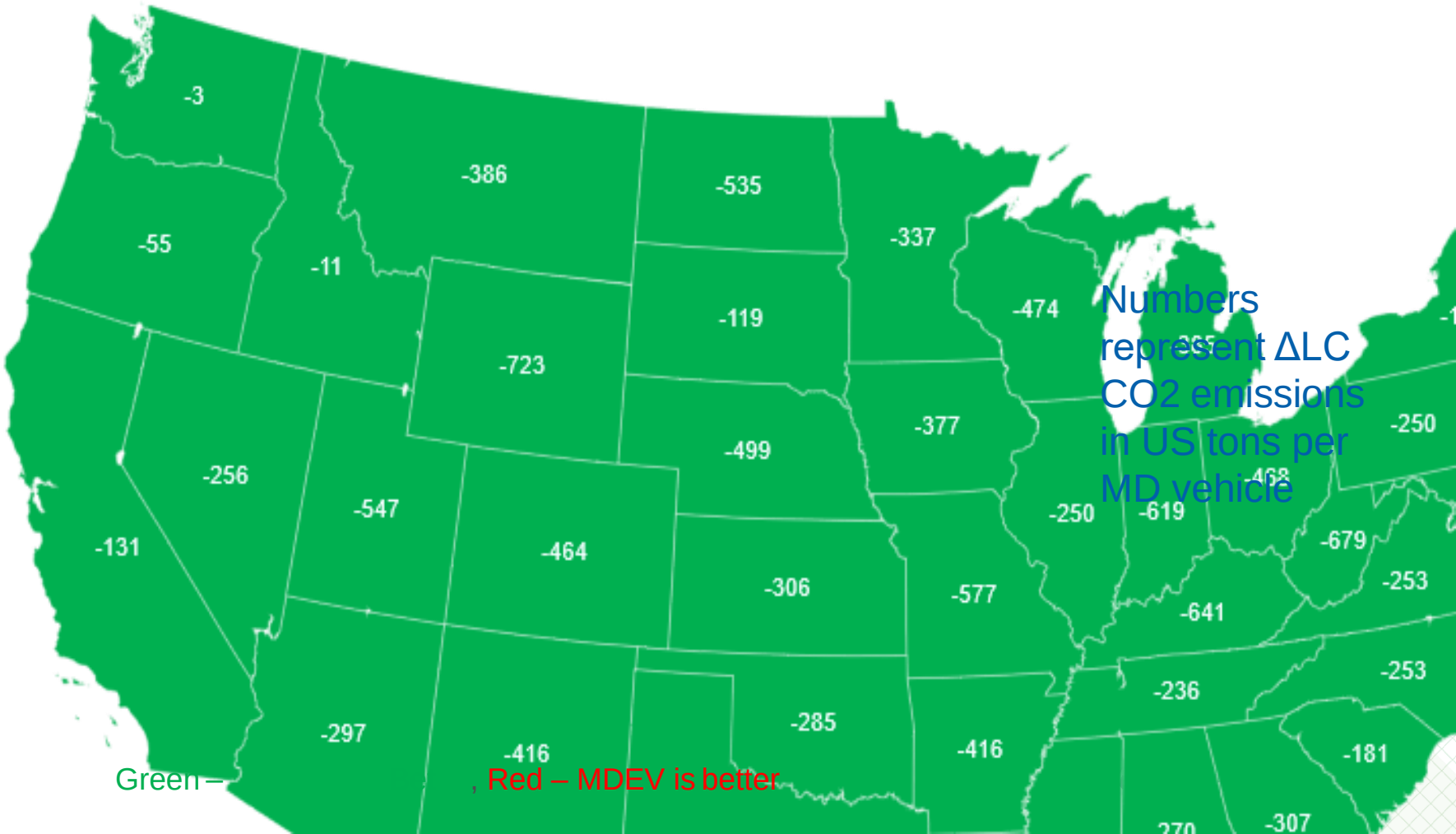
CO2 emissions depend on a number of factors in addition to carbon intensity; emissions from battery and feedstock production, electricity generation, transmission, and distribution.



Renewable propane vs. full electric

Case-II: $\Delta CO2_{eq}$ for One Truck:

Today, Renewable Propane is a cleaner solution for all but one state.



Numbers represent ΔLC CO2 emissions in US tons per MD vehicle

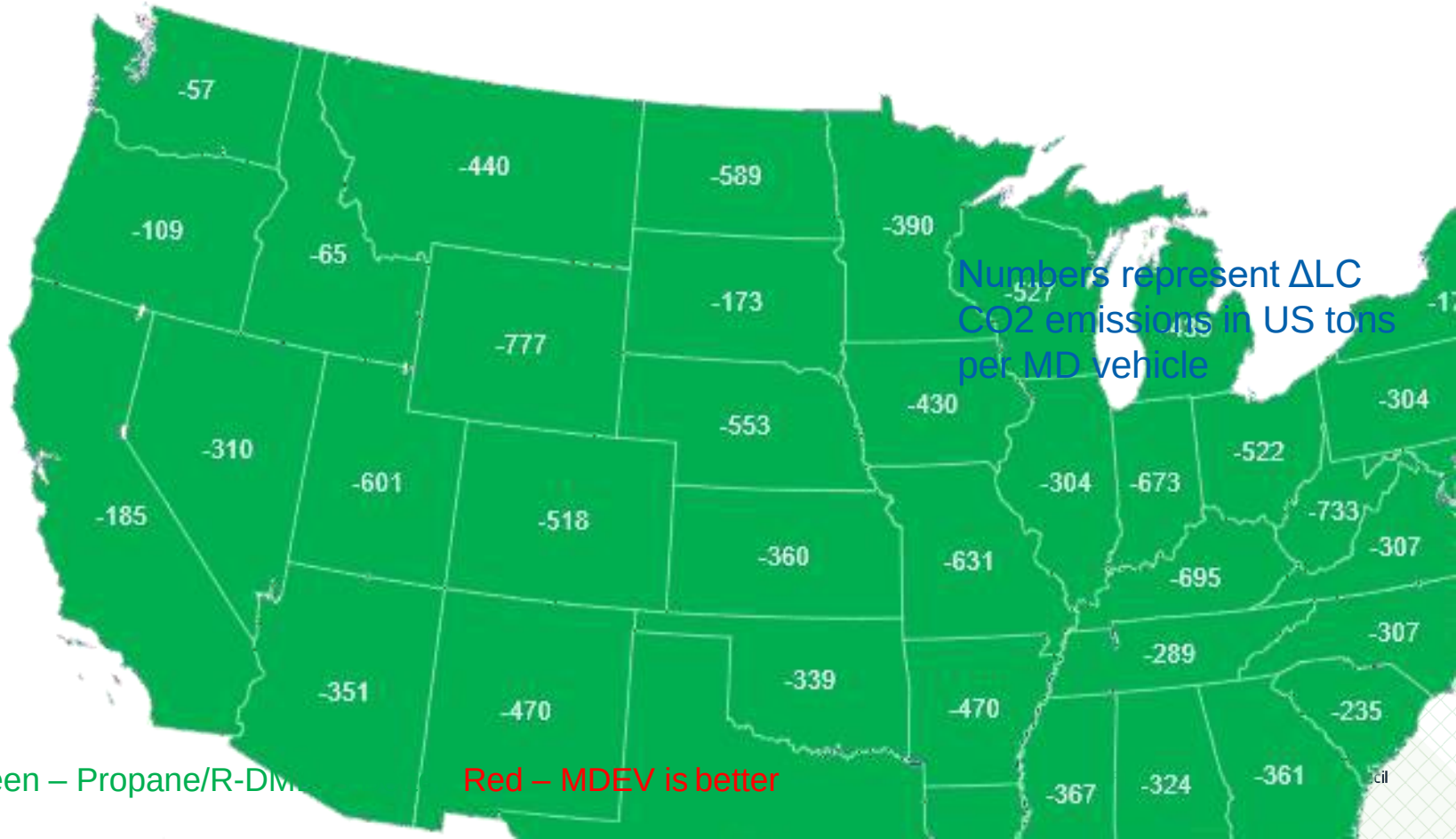
Green – , Red – MDEV is better

Propane/renewable DME blend vs. full electric

Case-III: $\Delta CO2_{eq}$ for One Truck:

Today, Propane/R-DME blend is a cleaner solution for all states (and DC) but Vermont

OBERON + SUBURBAN: MOVING RDME TOWARDS COMMERCIALIZATION



Numbers represent ΔLC CO2 emissions in US tons per MD vehicle

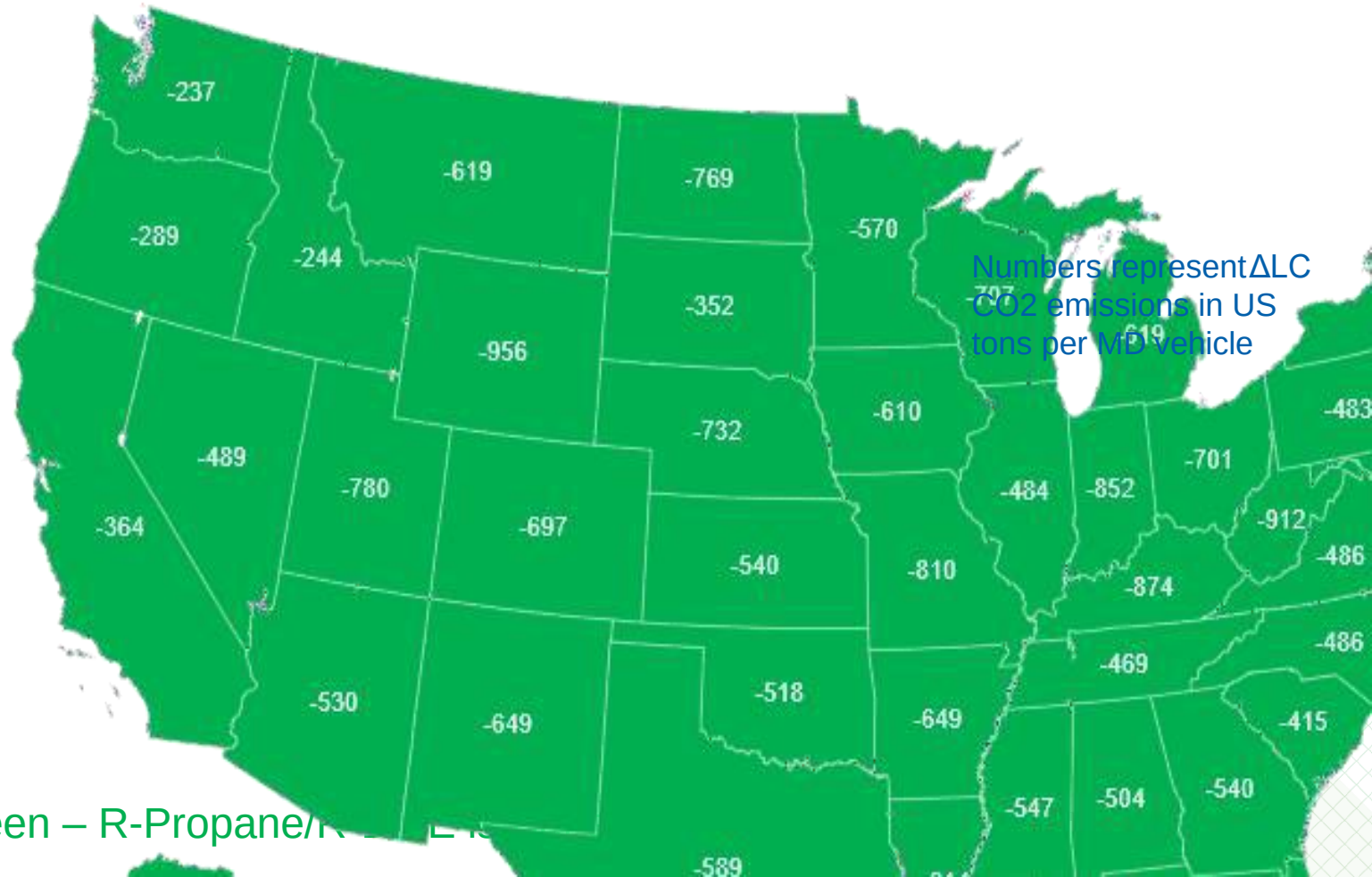
Green – Propane/R-DM

Red – MDEV is better

Renewable Propane/renewable DME blend vs. full electric

Case-IV: $\Delta CO2_{eq}$ for One Truck:

Today, R-Propane/R-DME blend is a cleaner solution for all states and DC



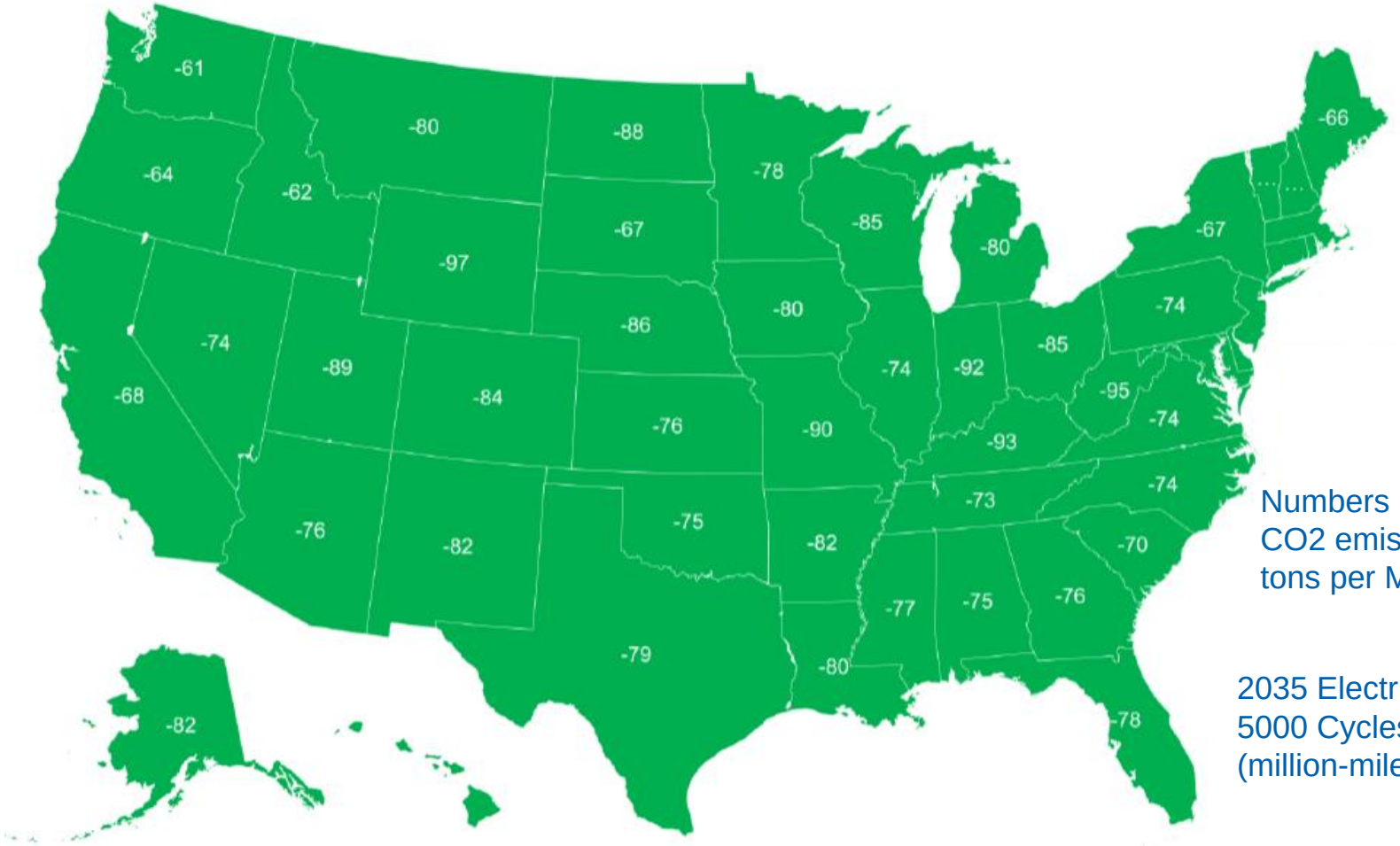
Numbers represent ΔLC CO2 emissions in US tons per MD vehicle

Green – R-Propane/R-

Renewable propane/renewable DME blend vs. full electric

Case-V – Utopian Future: $\Delta CO2_{eq}$ for One Truck:

Even with decarbonized electric grid, renewable propane/renewable DME blend vehicle is a cleaner solution than MDEV for all states and DC



Numbers represent ΔLC CO2 emissions in US tons per MD vehicle

2035 Electric Grid
5000 Cycles
(million-mile battery)

Green – R-Propane/R-DME is Better

References

- https://www.nei.org/resources/statistics/state-electricity-generation-fuel-shares
- https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities
- GREET3.0
- https://www.eia.gov/dnav/pet/pet_sum_snd_d_r50_mbbl_a_cur-3.htm
- https://www.eia.gov/electricity/state/unitedstates/
- https://ww2.arb.ca.gov/sites/default/files/classic//fuels/lcfs/fuelpathways/comments/tier2/elec_update.pdf
- https://ww2.arb.ca.gov/sites/default/files/classic//fuels/lcfs/fuelpathways/comments/tier2/rpane_temp.pdf
- https://batteryuniversity.com/learn/article/bu_1003a_battery_aging_in_an_electric_vehicle_ev
- Kawamoto et al. (2019). Estimation of CO2eq Emissions of Internal Combustion Engine Vehicle and Battery Electric Vehicle Using LCA, Sustainability, 2019
- Hawkins et al. (2012). Comparative Environmental Life Cycle Assessment of Conventional and Electric Vehicles, Journal of Industrial Ecology
- Effects of battery manufacturing on electric vehicle life-cycle greenhouse gas emissions, ICCT Briefing (2018)
- Rengarajan, Saradhi, et al. LPG Direct Injection Engine for Medium Duty Trucks. No. 2020-01-5008. SAE Technical Paper, 2020.
- Medium- and Heavy Duty Vehicle Electrification, An Assessment of Technology and Knowledge Gaps (2019): ORNL/SPR-2020/7

Propane Education & Research Council

Benefits of Propane/Renewable Propane

- Cost Effectiveness
  - MD Propane averages 15% of vehicle cost
  - MD EV averages 300% of vehicle cost
- Payload/Range
  - MD Propane –no loss of payload/300+ miles in all weather
  - MD EV – heavy battery weight diminishes payload/100 miles weather dependent (no AC or heat)
- Emissions
  - MD Renewable Propane best blend produces less carbon in all states than EV's best grid in 2035
  - MD Propane including upstream NOx emissions = 0.44 g/mile (CA)
  - MD EV including upstream NOx emissions = 0.83 g/mile (CA)

Contact Your Local Propane Gas Association

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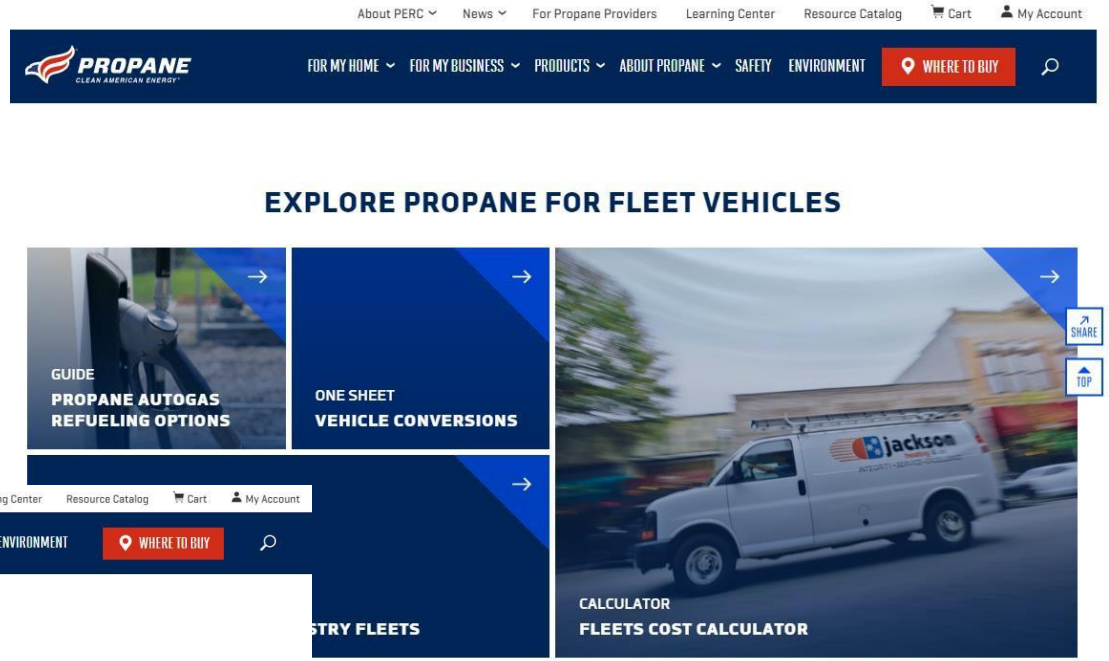
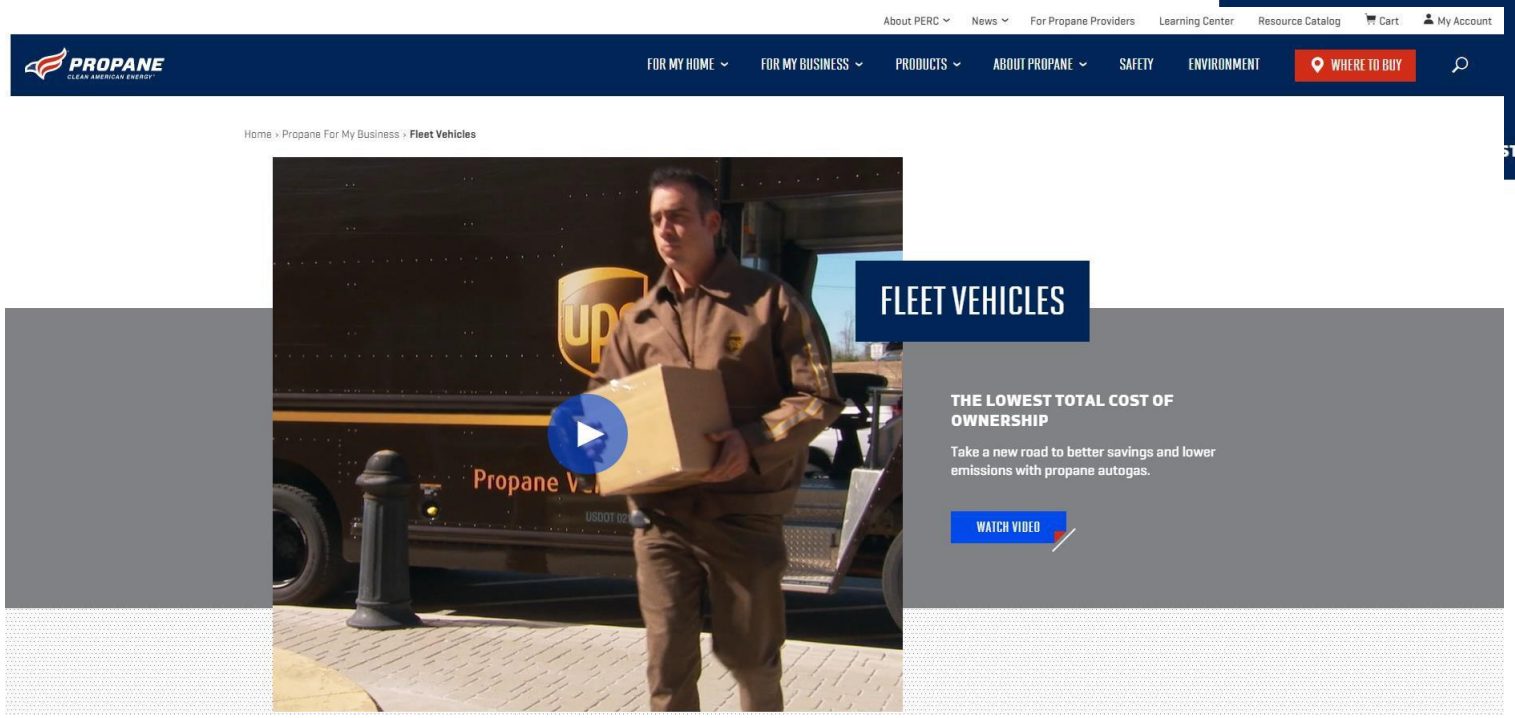
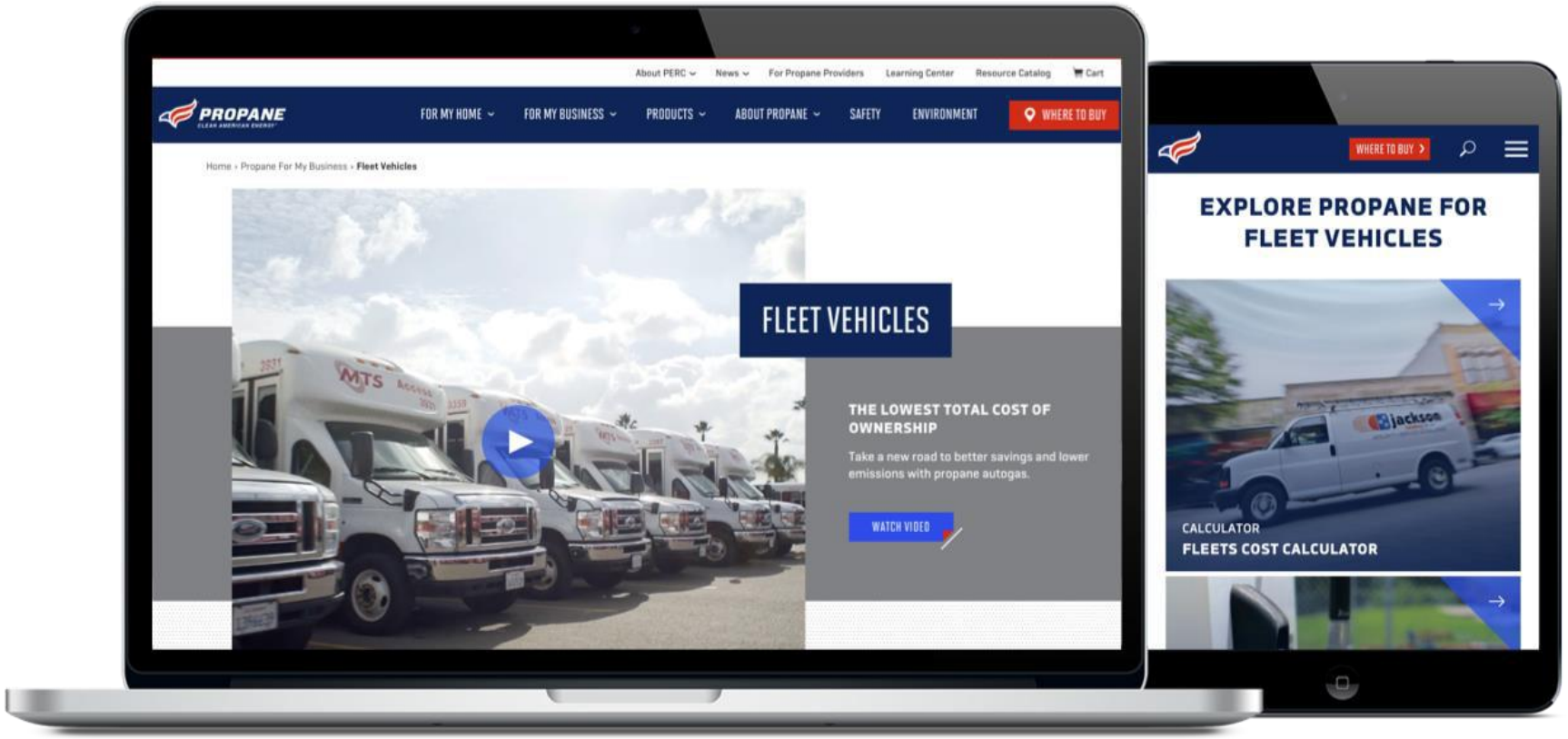
www.propane.com/for-my-business/fleet-vehicles/

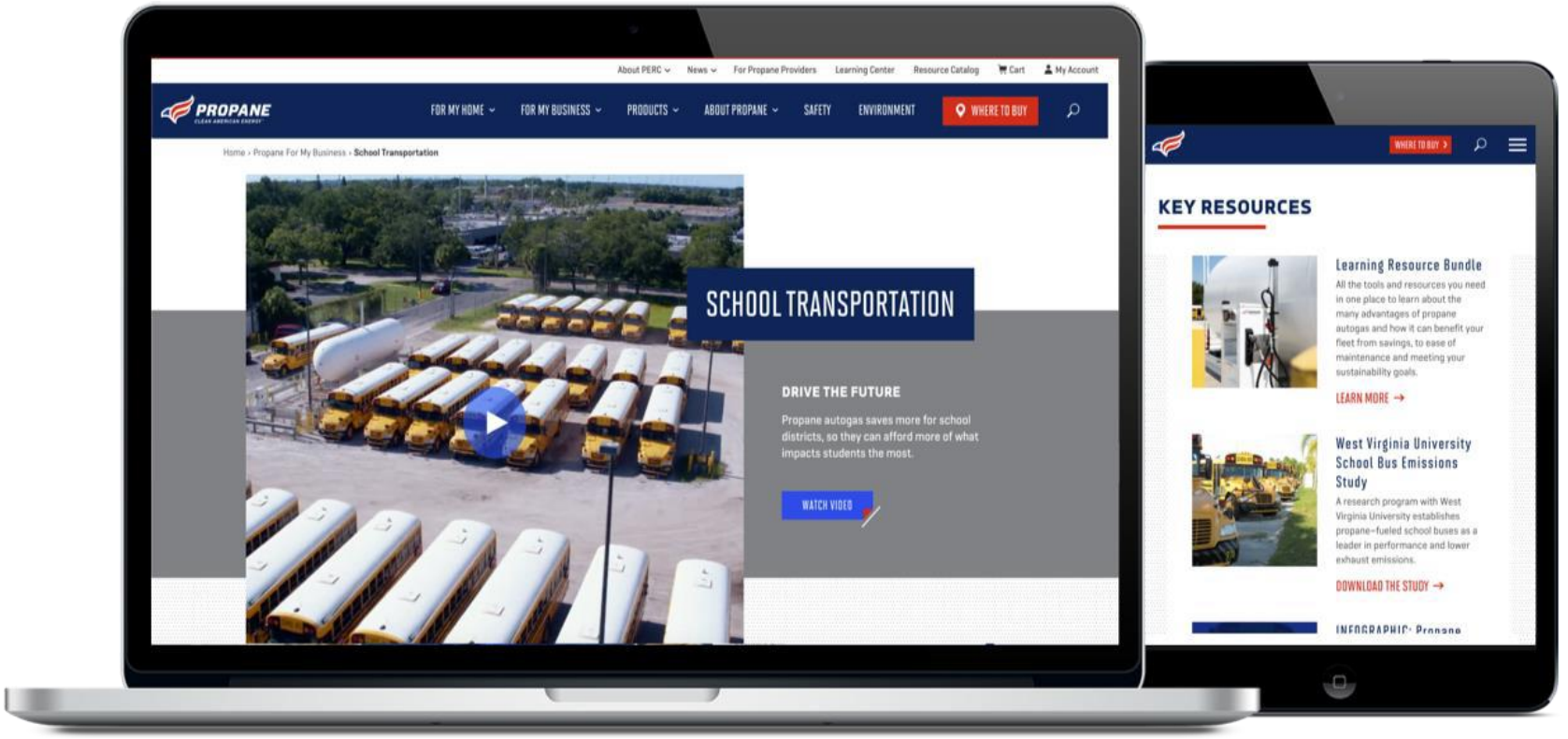




www.propane.com/for-my-business/fleet-vehicles/



https://propane.com/for-my-business/school-transportation/



STEVE WHALEY

DIRECTOR OF AUTOGAS

BUSINESS DEVELOPMENT

PROPANE EDUCATION &

RESEARCH COUNCIL

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AmeriGas®

America's Propane Company

AutoGas Refueling Infrastructure

Chris Ransom – National Account Manager Autogas

Always Reliable • Safe • Responsive there.

amerigas.com

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We Grow with You!

AutoGas Refueling - Onsite Station*

***Eligible for Alt Fuel Credits @ $.367**

AutoGas Refueling - Onsite Station*

***Eligible for Alt Fuel Credits @ $.367**

Always Reliable • Safe • Responsive there.
amerigas.com

AutoGas Refueling – Transport Tank*

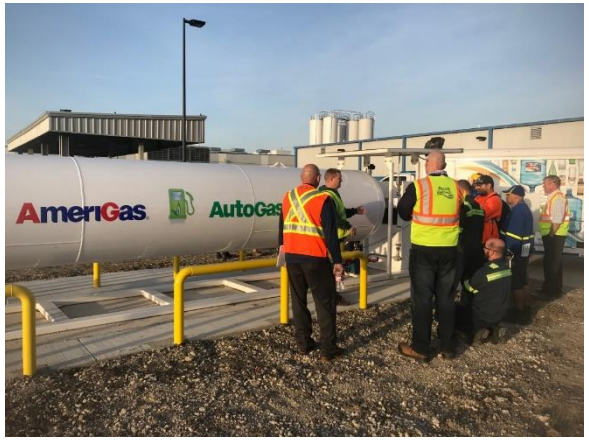
Always there. Reliable • Safe • Responsive amerigas.com

Fuel Management

What gets measured, gets improved.

Modern Refuel Process

From Permit to Commission – We are there!



Thank You!

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amerigas.com

Propane Education & Research Council

Off-Road Market Overview

Matt McDonald

Director, Off-Road Business Development

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816-663-0949

ENERGY FOR EVERYONE propane

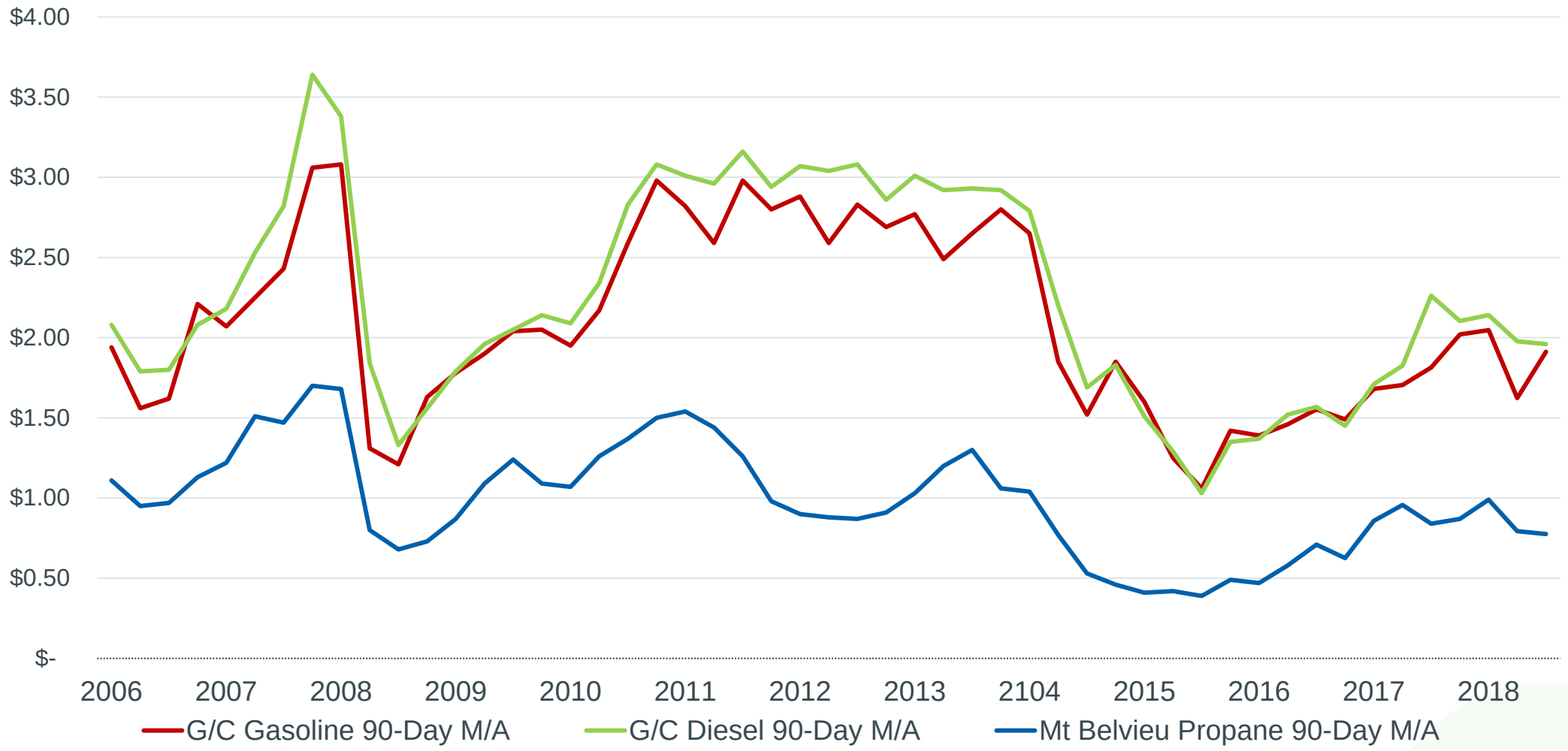
Current Challenges for Landscape Contractors

1. Cost of doing business.
   - Daily operating costs.
   - Seasonal labor issues.
   - Expensive equipment.
   - Oversaturated markets driving down margins.
2. Emissions restrictions.
   - Either requested or required by customer.
3. Downtime is a revenue killer.

How Propane Helps Commercial Landscapers

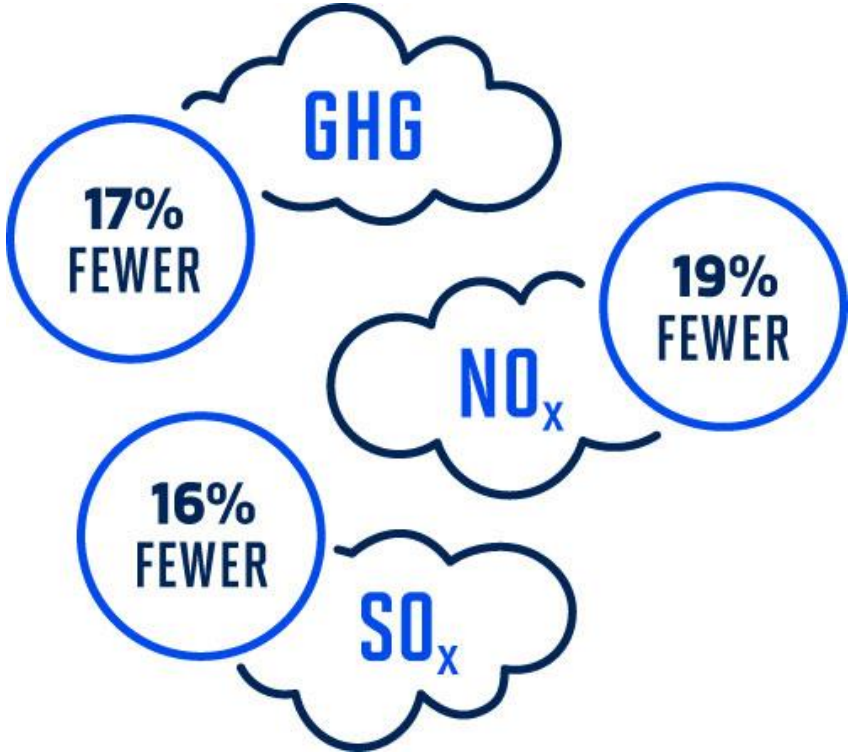
1. Reduces fuel costs.
   - Between 30-50% savings over gasoline & diesel.
2. Improved emissions profile.
   - Qualify for more bids.
   - Ability to operate on more days (Ozone Action Days).
3. Increase in productivity.
   - Faster refueling & on-site refueling options.

US Energy Price Comparison 2006-2018



Reduced Emissions

1. Emissions matter to the contractor and their customers.
   - Could even be *required* by a bid.
2. Being “green” enables contractors to reach new or niche audiences.
   - Schools, municipalities, etc.
3. Contractors can leverage propane’s low-emissions status in their marketing efforts.

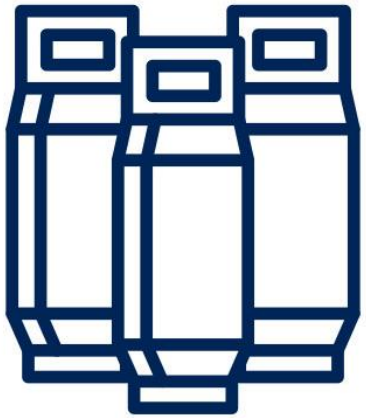


COMPARED WITH GASOLINE

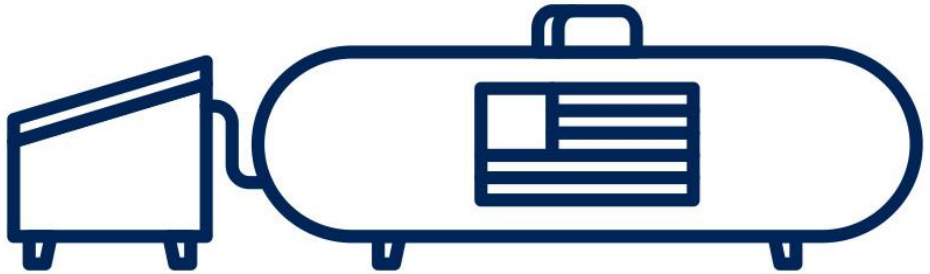
Increased Productivity with Refueling

Less time spent refueling or dealing with fuel-related issues and more time spent mowing.

Increased Productivity with Refueling



Best for small mowers fleets
(1-10 mowers)



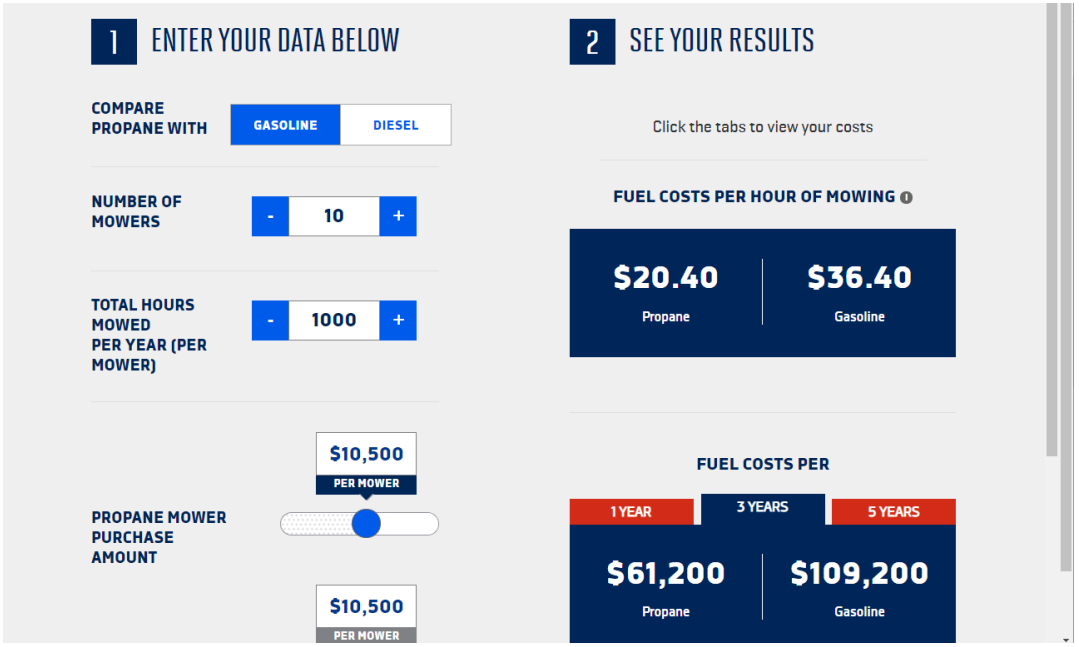
Best for larger mower fleets
(10+ mowers)

Propane Options from Brands Contractors Prefer

Calculate Your Savings

- Input variables specific to your fleet to determine the amount of savings propane equipment can provide your business.
- Available in tablet, smartphone, and desktop applications.

Propane.com/Mower-Calculator



Off Road

Rental Equipment


NATURAL STONE SOLUTIONS
HTX
MQ MULTIQUIP


BC-1000


G-250XTP
CPS
G-250XTP


JOHN DEERE
GATOR

Power Generation

Power Generation

- Prime Microgrids

- Backup

- Remote

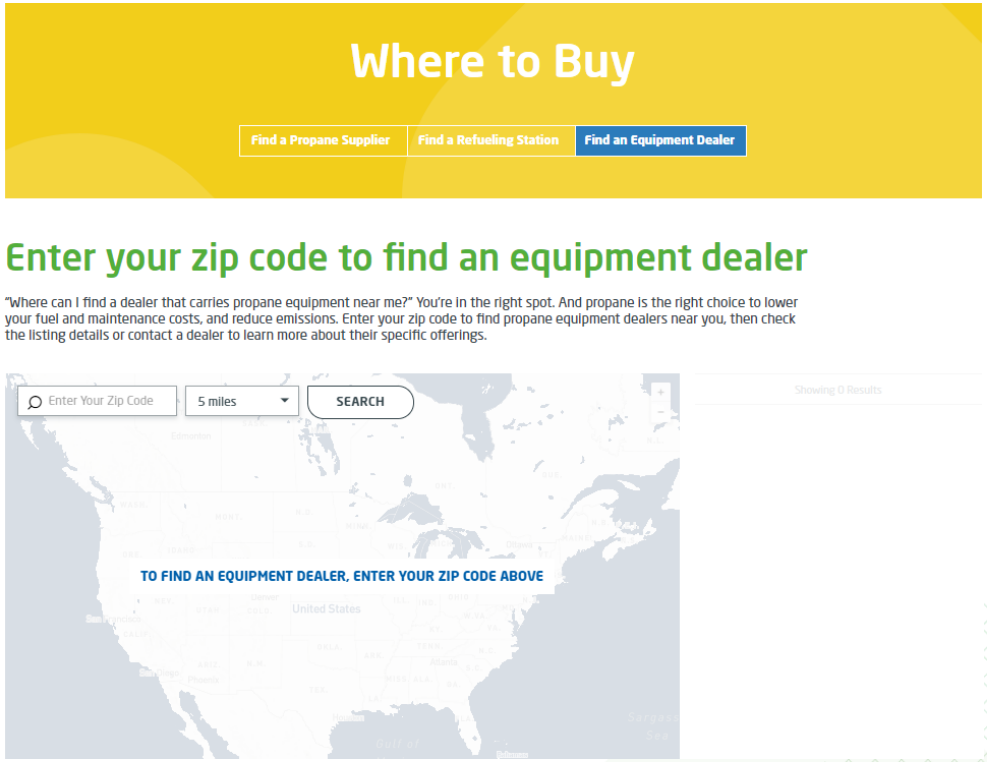
- Mobile

- Combined Heat & Power

Need Help Finding an Equipment Dealer or Conversion Specialist?

- The only locator of its kind, directing contractors who want to buy propane equipment to the dealers who sell it.

Propane.com/Where-To-Buy/Find-Equipment-Dealer



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ALCIVIA

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ALCIVIA

ALL. TOGETHER. NOW.

Propane Auto Gas Virtual Event

JOHN KRETT

SCHOOL DISTRICT OF ARCADIA

About Me

- My name is John Krett
- Currently work for School District of Arcadia as Transportation Director and Bus Mechanic, serve on my local town board, am full time college student, operate a small beef farm, and most importantly am a family man.
- I am also a board member for the Wisconsin School Bus Association
- One of my favorite pastimes is spending time with my wife and children on our family farm
- My Clean Energy journey began in a somewhat unusual way
- I consider myself a Conservative Western Wisconsin resident. I do not believe that being a conservative should in any way mean a person doesn't care about the environment.

Going Green!

- Our school district's first LPG (Liquid Propane Gas) bus was purchased in 2013
- Initially, we needed to reduce costs while also reducing downtime for district, this is why we looked at the LPG buses
- The benefits then started adding up!

Comparisons

LPG

- Lower per mile fuel costs
- $25-40 oil changes (materials)
- Cheaper automotive style parts
- Environmentally friendly
- Warm up and get to peak operation and emission status quicker
- Reduction in idle time
- No need for diesel exhaust fluid

Diesel

- Higher per mile fuel costs
- $75-140 oil changes(materials)
- Expensive diesel parts
- Not as good for environment
- Take longer to warm up, need to be plugged in during cold weather
- Longer idle time
- Need for diesel exhaust fluid and complicated emissions systems

Example

- The 2007-2012 diesels in 2012 were getting 5.75-8 mpg at a cost of more than $3 per gallon of fuel
- The LPG buses get 3.75-5.5 mpg at a cost of $0.90-1.30 per gallon of fuel
- As an added bonus, with the LPG bus, the air is kept clean. We all breathe the air – if we can breathe *cleaner* air while saving money, it's a win-win!

Downtime

LPG Buses

- Buses at 100,000 miles have statistically zero downtime
- Downtime does occur, minimally, but for occasional repairs only
- No recurring LPG related downtimes have been noted

Diesel Buses

- Extreme downtime with buses at just 25,000 miles
- Some units less than 2 years old exhibited up to 70% downtime in 2012 and 2013.

Initial Investment

The initial increased price for LPG versus diesel units purchased has, on average, taken approximately one school year to recover those funds.

How is that done?

- Cheaper fuel
- Lower cost of service needs
- Nearly no repairs required
- Almost no downtime or incurred towing expenses
- Grant opportunities

Other Funding

- Additional funding has occurred from grants available
- Last year, the district brought in grant funds directly related to the use of LPG buses.
- Fuel tax incentives available at times and were not included in the grant total on the previous line.

Conclusion

I would implore anyone looking for a way to save money, have a better product, and do their part to help our environment to consider LPG fuel as a safe, clean, and efficient fuel option!

Questions?

Contact information:
John Krett
Arcadia School District Bus Garage number: 608-323-7082
Email: krettj@arcadia.k12.wi.us

Thank you!

LaPorte TransPorte

Transit System for

LA PORTE
INDIANA

Who Are We?

LaPorte

- Located between Chicago and South Bend
- Estimated current population 22,000

TransPorte

- 1 full time manager
- 1 full time mechanic
- 12 drivers / 3 are full time rest part time
- 2 dispatchers / 1 full time 1 part time
- 4 drivers crossed trained to dispatch
- 7 buses in fleet
- Sub-recipient of NIRPC

Then and Now

1973

- Started September 17, 1973
- Unleaded fueled buses
- Fixed Route
- Budget $119,000

2021

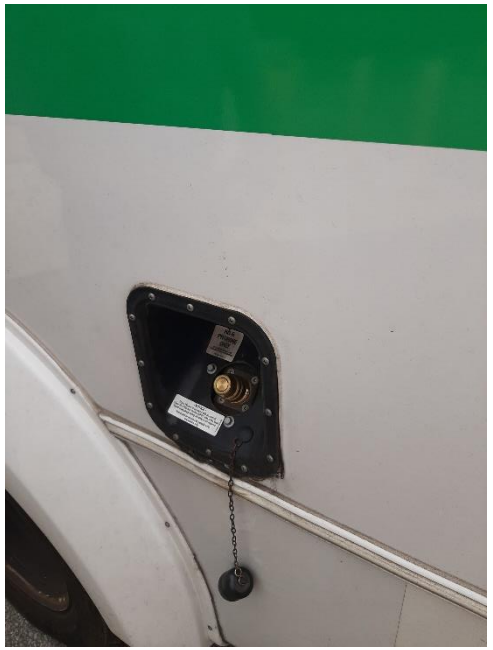
- On demand – curb to curb
- Fleet is all propane
- Budget $608,993
- Of that $300,000 grant money
- Averaging 2,633 passengers / month

Propane

- Average 1,257 miles per bus / monthly
- 286 gallons per month per bus = 23 mpg
- Currently $2.05 / gallon
- 1,000 gallon Tank is refilled once a week

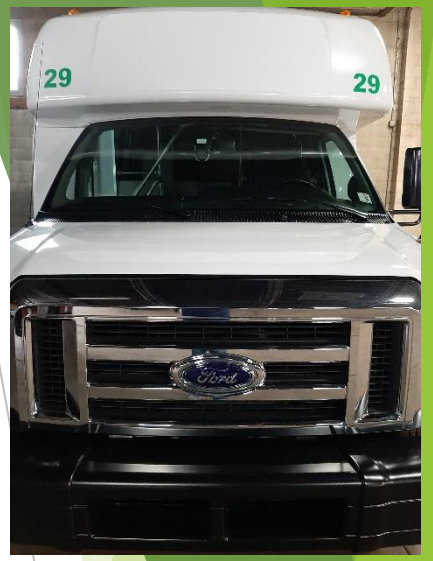
Why Propane

- Better for environment
- Cost effective
- Less break downs
- Driver's like driving them
- "Feels like driving a car"
- "Couldn't tell a difference between unleaded and propane"



Our Buses

- Ford E450 Chassis
- Roush E450 LPG system installed
  - Holds 64 useable gallons
  - Add on Package runs around $22,850
- Newer buses are 22’6” bumper to bumper
- All equipped with a wheelchair lifts
- Fully loaded – 12 ambulatory / 2 wheelchair



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bwest@cityoflaportein.gov

LA PORTE
INDIANA

Go Green Go Riteway

Who We Are

- GoRiteway is a Transportation Company
- Our Vehicles Include:
  - School Bus
  - Airport Shuttles
  - Motorcoaches
  - Mini-Coaches
  - Sedans and SUVs

Some of Our Green Initiatives

- We have a Fuel Conservation Policy
- We have Self-Sustaining Hybrid Buses
- We have Propane Fueled Vans within our Airport Shuttle Vehicles
- We have Propane Fueled School Buses

GORiteway Propane Fleet

Airport Shuttle

- Prins Bi-Fuel System on 3.7L Engine
  - Gained Flexibility and Range
  - Items to Consider
    - EPA Cert
    - Self Install

Propane Project

- First we looked at our ROI and found that we could utilize a green technology and also, increase our bottom line
- We analyzed and decided to install our own propane re-fueling station with the following reasons in mind
  - Price of buying bulk propane
  - Ease of accessibility

Station Considerations

- Items to Consider When Building a Station
  - Site preparations/size
  - Rules and regulations
  - Training requirements
  - Maintenance factors

Infrastructure

Bumps in the Road

- Fuel Efficiency
- Parts availability
- Outside vehicle repair
  - Technician certification
  - Shop availability
- Fueling Sites

Positive Notes

- Minimal cold start issues
- Engines warm-up faster
- Lower fuel costs

  (~50% vs Diesel ~ 33% vs gas)
- Potential Tax Incentives

Thank You

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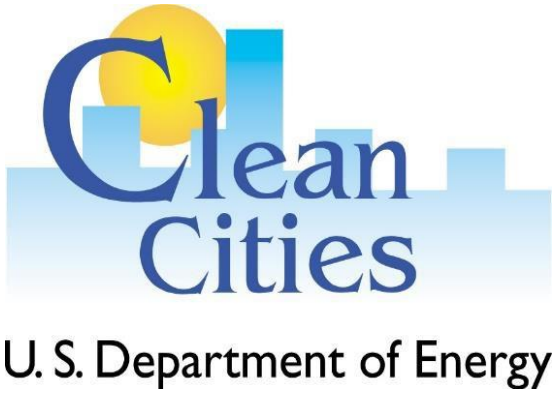
Lorrie Lisek

Executive Director,
Wisconsin Clean Cities

&

Ryan Lisek

Project Manager,
South Shore Clean Cities



South Shore Clean Cities, Inc.
NORTHERN INDIANA

Partnerships & Grant Acquisitions

Indiana Green Fleet Program

- South Shore Clean Cities manages the Indiana Green Fleet program for metropolitan planning organizations, including MACOG & NIRPC.

- **Goal of the program:** To improve the environmental performance of public, private and nonprofit vehicle fleets in Indiana.

- SSCC currently guides over **170 municipal, county, school & university member fleets** to help mitigate barriers associated with sustainable transportation adoption while creating policies supporting vehicle emission & petroleum use reductions.

WISCONSIN CLEAN CITIES

Established 1994

Clean Cities

U. S. Department of Energy

WI SMART FLEET

DRIVE Electric WISCONSIN

MICHIGAN TO MONTANA

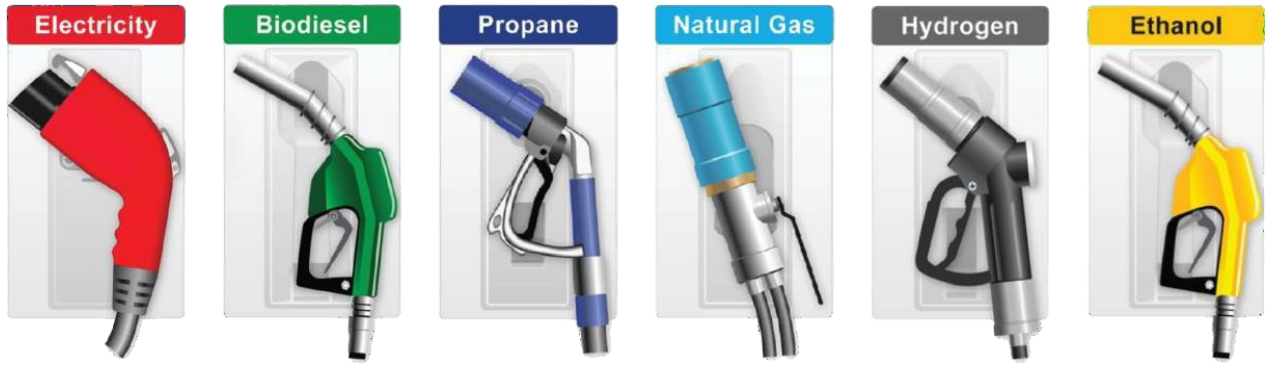
1,500 MILES OF ALTERNATIVE FUELING STATIONS

M2M 94 Clean Fuels Across I-94

Smart Fleet 2.0 Program

WISCONSIN CLEAN CITIES
Established 1994

WI SMART FLEET



M2M I-94 Clean Fuel Corridor

WISCONSIN CLEAN CITIES
Established 1994

South Shore Clean Cities, Inc.
NORTHERN INDIANA

Contact Your Local Clean Cities Today!

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Lorrie Lisek
Wisconsin Clean Cities
Executive Director
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Lorrie.lisek@wicleancities.org

Questions?

Put your questions in the chat or questions box and we'll get to as many as we can!

South Shore Clean Cities Upcoming Event

South Shore Clean Cities, Inc.

NORTHERN INDIANA

SOUTH SHORE CLEAN CITIES
9th ANNUAL CLEAN AIR GOLF OUTING
Tuesday, September 21, 2021
9:30 a.m. - 5 p.m. CDT
White Hawk Country Club
Crown Point, Indiana

Wisconsin Clean Cities Upcoming Event

Thank You For Attending!