ROUSH CLEANTECH

PROPANE AUTOGAS FOR SCHOOL BUS FLEETS

Enterprise Brand Portfolio

ROUSH Industries
OEM manufacturing, engineering, prototyping and design

Roush Fenway Racing
NASCAR racing team(s)

ROUSH Performance
Industry leading high performance vehicles

ROUSH CleanTech
Propane autogas powered commercial vehicles.

ROUSH CleanTech

- Founded in 2010.
- Dedicated to developing quality alternative fuel solutions.
- Propane autogas focus.
- EPA and CARB certification.
- Platform customization to suit customer needs.
- Reduces operating costs, carbon footprint.
- OEM support through Ford and BPN dealers.
- Creating opportunities for partner companies.
- Using American fuel and American technology.

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Our Scorecard

QVM QUALIFIED VEHICLE MODIFIER

OVER

18,000

VEHICLES ON THE ROAD

ACCUMULATED OVER

450

MILLION MILES

OVER

750

SCHOOL DISTRICTS

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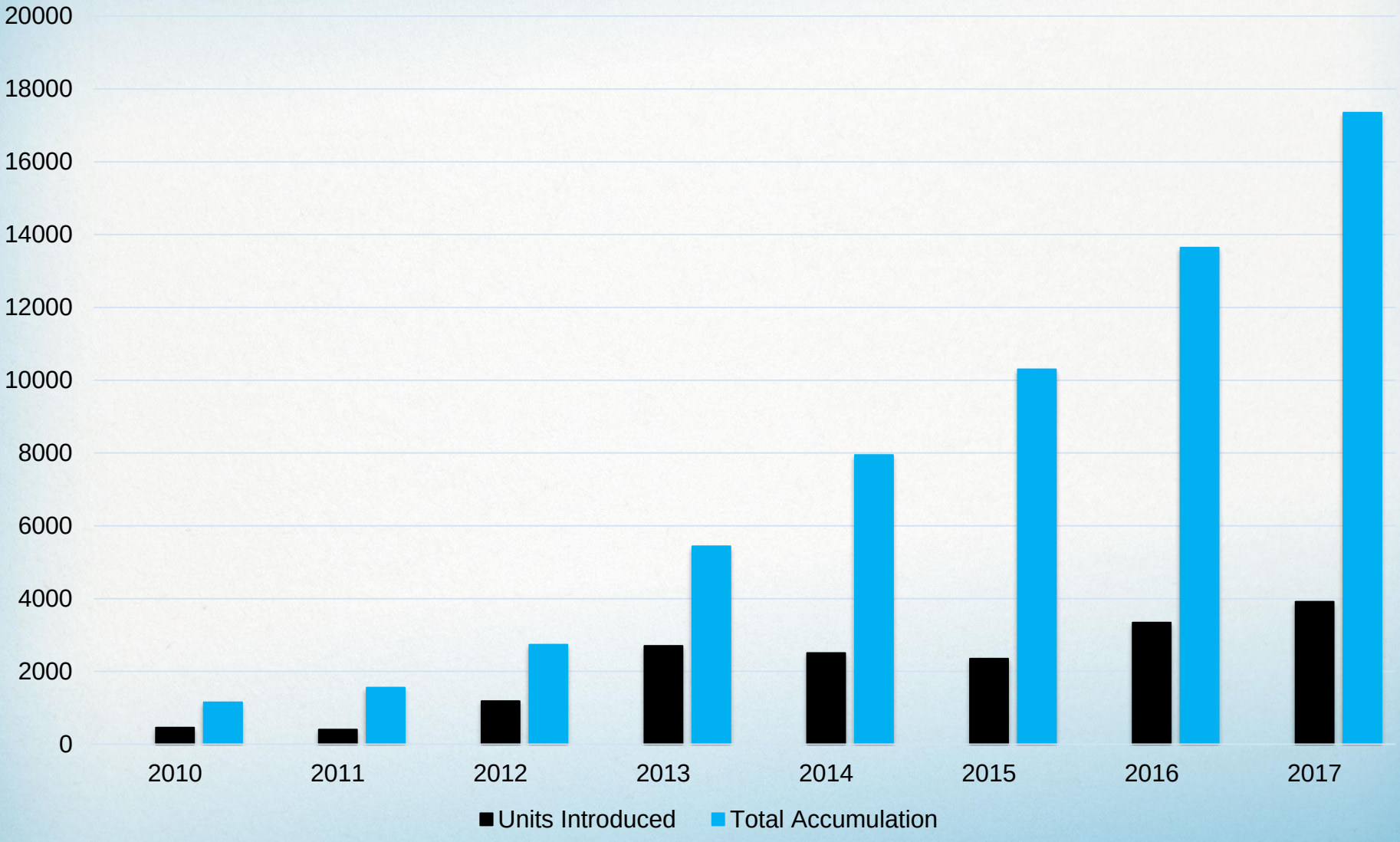
Units in Operation



Why The Hockey Stick?

- Reliable Technology & Robust Service Program
- Strong OEM Partners/Ford & Blue Bird
- 1,000 Customers & 450 Million Miles of Data
- Low Cost Infrastructure
- Plentiful Fuel
- Emerging Low NOx Certifications
- Easy to Scale

Propane Autogas Product Lineup

- Medium duty Ford trucks, chassis cabs, cutaways, and stripped chassis; and Blue Bird Type A and C school bus.
- Factory Ford warranty maintained.
- No loss of HP / torque / towing capacity.
- Serviceable with existing diagnostic equipment.
- EPA & CARB Certified.

Ford F-53 / F-59 | Ford E-450 | Ford F-450/550 | Ford F-650/750 | Blue Bird Vision | Micro Bird G5

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Successful Propane Segments

Food & Beverage

Para-Transit

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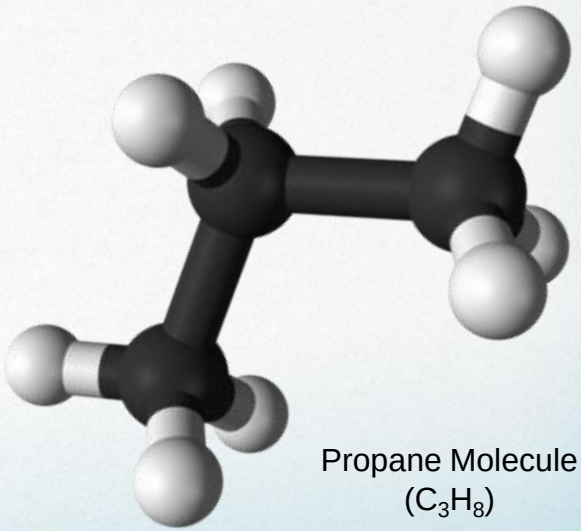
PROPANE AUTOGAS

What is Propane Autogas?

- **Clean:**
  - 24% reduction in Greenhouse Gas (GHG) emissions compared to gasoline.
  - 20% reduction in Nitrogen Oxide (NOx) emissions compared to gasoline.
  - 60% reduction in Carbon Monoxide (CO) emissions compared to gasoline.

- **Domestic:**
  - 90% of propane used in U.S. comes from U.S.
  - 7% of propane used in U.S. comes from Canada.

- **Abundant:**
  - Most refueling infrastructure of any alternative fuel.
  - Major natural gas shale found in U.S.
  - Powers over 25 million vehicles worldwide.



Propane Molecule (C_3H_8)

- **Safe:**
  - Low pressure (~ 200 psi).
  - Narrow flammability range.
  - Fuel tanks are 20 times more puncture resistant than gasoline.

Fueling Options

Public Propane Station

- Over 3,000 public stations nationally

Private Infrastructure

- Infrastructure available for little to no cost to you
- Lock in your fuel prices for a whole year

On-site resupply via bobtail fill-up

24 hours / 7 days a week roadside assistance

Propane autogas fills at the same rate as gasoline and diesel

On-Site Fueling

Ford Michigan Assembly Plant (MI)

AmeriGas Propane Tank

Kyrene Elementary School (AZ)

Bend LaPine School District (OR)

Rhoads Energy (PA)

Amerigas Propane Tank

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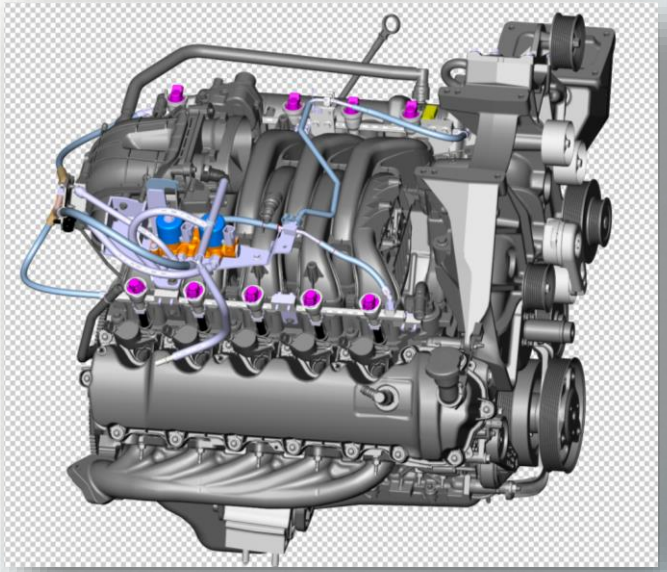
ULTRA LOW
NO_X EMISSIONS

Drive for Reduced NOx

- ARB is encouraging all Manufacturers of Record (MORs) to overachieve on the NOx standard to support smog reduction.
- ARB has issued alternative standards at 0.1, 0.05 and 0.02g/bhp-hr for NOx.
- The recent VW settlement also includes funding that supports NOx reductions across all 50 states that off sets the increase in NOx caused by their diesel emissions.

Production Powertrain

Achievement of Ultra Low NOx starts with a high quality production engine



At ROUSH CleanTech, we start with:

- Ford 6.8L V10 3V Spark Ignition
- Used by Ford in all HD Vehicle applications
- F 450/550 Chassis Cab
- F 650/750 Chassis Cab
- F 53/59 Stripped Chassis
- 320 HP/460 Lbs. Ft
- Close to 2 Million in operation
- Started production in 1997
- For gasoline, meets or exceeds all emissions standards presently through 2017.

RCT Status of Low NOx

- June 7th 2017 ROUSH CleanTech announces achievement of very low NOx with the 6.8L V10 Engine.

- For the 2017 MY RCT LPG Blue Bird Buses and applicable Ford Truck upfits are now certified to **0.05 g/bhp-hr NOx**.

- This is achieved with **no extra hardware or increased variable cost.**

	CO	CO2	NOx	NMHC
Full Useful Life STD	14.4	627	0.05	0.140
Actual Cert Level	2.7	614	0.03	0.04

- The low NOx levels were achieved through careful, significant calibration changes and a CSSR (cold start spark retard) approach.

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Cost Effectiveness

PROPANE

Purchase price: $95,000
NOx reduced: 537 lbs.

Cost per pound of NOx reduced: $177

DIESEL

Purchase price: $90,000
NOx reduced: 331 lbs.

Cost per pound of NOx reduced: $272

ELECTRIC

Purchase price: $300,000
NOx reduced: 593 lbs.

Cost per pound of NOx reduced: $506

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STUDENT TRANSPORTATION

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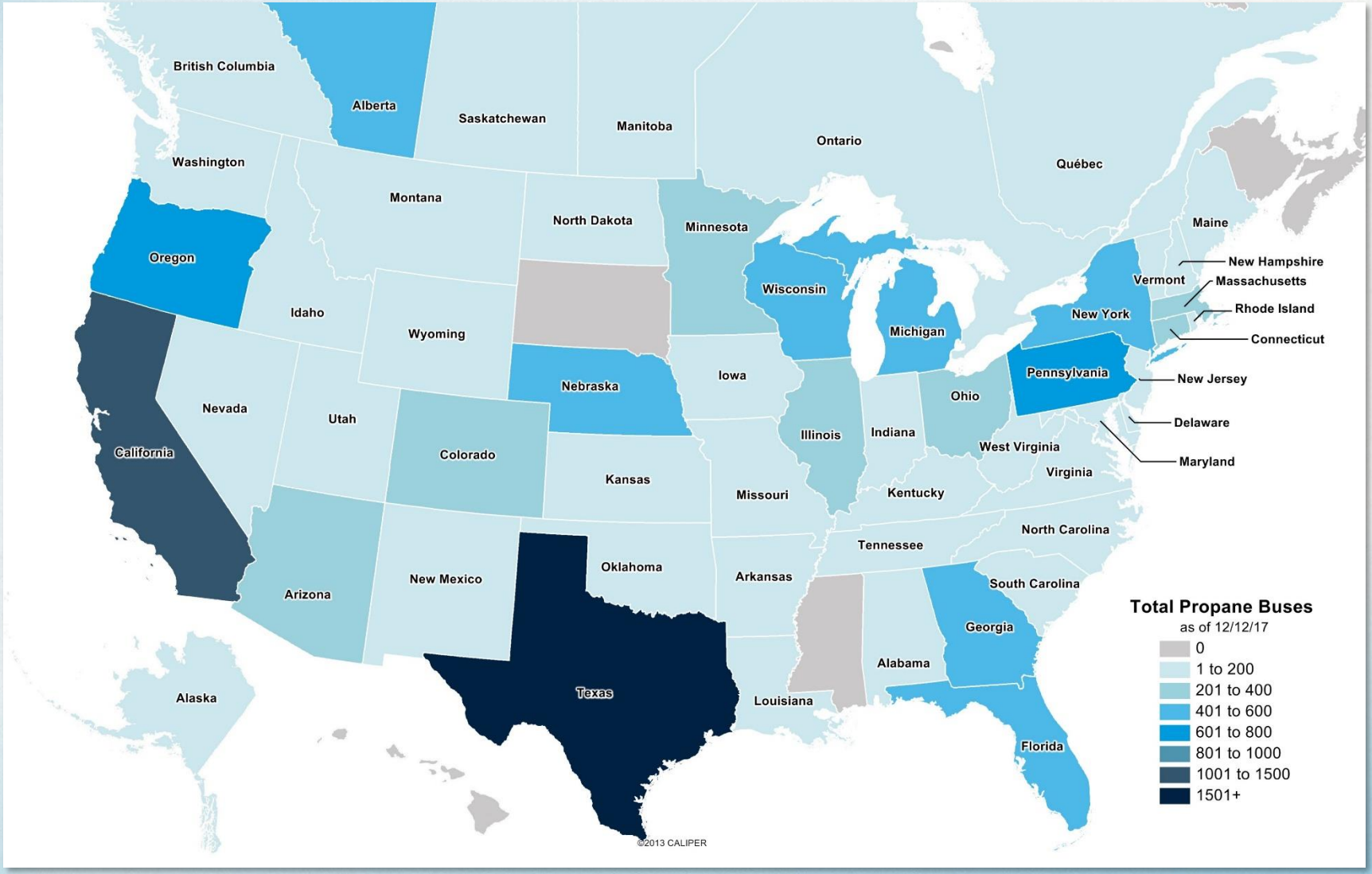
Propane School Bus Deployments



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A Growing Trend

OVER
11,000
SCHOOL BUSES

Ford QVM QUALIFIED VEHICLE MODIFIER

OVER
750
SCHOOL DISTRICTS

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WHERE WE ARE HEADED

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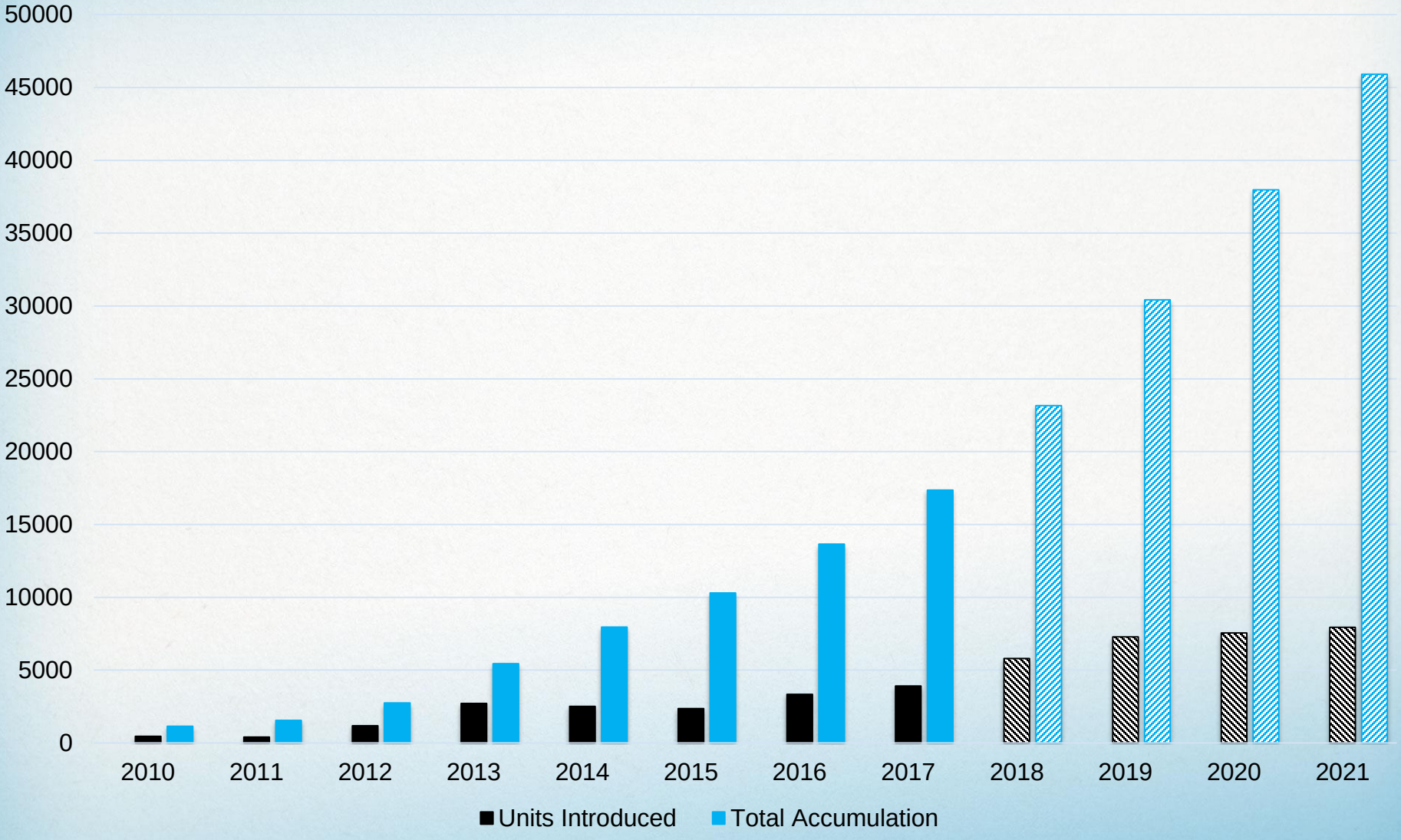
2021: Units in Operation



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WHY?

- Significant cost per mile reduction vs diesel based on lower fuel and maintenance costs
- Low cost of infrastructure
- Comparable range to diesel
- Cleaner
- Domestic
- Evidence manual grows

Best NOx reduction per dollar spent in the class 4-7 market

THANK YOU

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