Produced by: Propane Education & Research Council

JUNE 12, 2026

ENERGY FOR EVERYONE propane

NAFA White Paper: Fleet Energy Decisions

A Practical Framework for Evaluating Fleet Energy Decisions Beyond Upfront Cost

Overview

Fleet managers and procurement leaders are under pressure to make energy decisions that go beyond upfront cost, yet many evaluations overlook the full impact on operations and long-term performance.

This white paper introduces a framework for assessing the total cost of ownership, considering factors like uptime, infrastructure readiness, and operational continuity. Through this lens, propane autogas stands out as an immediate, scalable energy source that supports predictable costs, dependable fleet performance, and emissions reduction goals without added complexity.

Energy decisions are becoming one of the most important factors in fleet performance. Today's fleet managers are challenged with choosing energy strategies that reliably support daily operations while meeting cost, infrastructure, performance, and sustainability needs.

However, many decisions are being made based on upfront costs or single factors rather than how an energy source performs across day-to-day operations. This can lead to misaligned investments and operational constraints.

By following a framework that reflects how fleets operate across their maintenance cycles, duty cycles, fueling logistics, and energy supply, procurement leaders can make better-informed energy decisions.

Fleet Energy Decision Framework

A Comprehensive Evaluation Beyond Vehicle Cost



Total Cost of Ownership
Understand the true cost over the long term.



Maintenance & Uptime
Minimize downtime and keep fleets moving.



Infrastructure Readiness
Fuel when and where you need it.



Reliability & Resilience
Operate confidently in any conditions.

Evaluating the Total Cost of Uptime & Maintenance

Fleet maintenance is becoming more complex amid rising operating costs, stricter emissions standards, and the strain of extreme weather. Vehicles now rely on advanced emissions-control systems to meet tightening environmental regulations, adding new maintenance, diagnostic, and upfit demands for fleet operators.

At the same time, fleets are operating in more volatile weather conditions at both extremes: subzero winter temperatures that cause fuel gelling and cold-start failures, and summer heatwaves that push cooling and battery systems to their limits.

As a result, fleet managers must evaluate energy choices not only on fuel costs, but also on their impact on maintenance requirements, technician workload, vehicle uptime, and overall operational efficiency.

EMISSIONS COMPLEXITY The complexity of the fleet emissions systems in operation will impact time, operations and costs. Traditional diesel engines require constant maintenance for Diesel Exhaust Fluid (DEF) Systems, Diesel Particulate Filters (DPF), and routine filter replacements. Energy sources that bypass these complex emissions systems offer an operational advantage by reducing maintenance demands and freeing up technicians while keeping trucks on the road.

COLD WEATHER PERFORMANCE Temperature and climate fluctuations that fleets may face throughout the year impact operational efficiency. Extreme temperatures can create challenges for fleets, as electric vehicle batteries drain rapidly and lose range while heating the cabin, and diesel fuel can gel, requiring expensive winter additives and block heaters. Using a spark-ignited energy source designed for sub-zero starts helps keep routes on schedule and eliminates seasonal additive costs.

ROUTE RELIABILITY & RANGE Fleet managers need vehicles that can reliably complete their daily routes without unexpected downtime, refueling delays, or range limitations. During high-demand periods or emergency response scenarios, fleets cannot afford electric fleets' hours-long downtime required to recharge batteries, nor the range anxiety these batteries introduce. A reliable, propane autogas-fueled fleet combines fast refueling with the range needed to support demanding routes and schedules. This helps ensure critical deliveries and evacuations continue without interruption.

OVERALL COST PER MILE Reducing fluid, filter, and labor requirements translates directly to bottom-line efficiency. For example, data from ROUSH CleanTech demonstrates that reducing maintenance requirements can drive the overall cost-per-mile for a Type C school bus down to just $0.63 for propane autogas compared to $0.86 for diesel and $2.02 for electric,

Key Maintenance & Uptime Considerations by Energy Source

EVALUATION FACTOR	DIESEL	ELECTRIC	PROPANE AUTOGAS
DEF Maintenance	High	None	None
DPF Regeneration	Yes	No	No
Cold Weather Issues	Fuel Gelling	Battery Range Loss	Minimal
Refueling Time	Minutes	Hours	Minutes
Technician Complexity	High	High	Moderate

when factoring in annual miles traveled, years operated, energy economy, and fuel price. Tracking performance over time is critical to validating cost savings and informing future fleet decisions.

MAINTENANCE SIMPLICITY Beyond cost and uptime, maintenance ease plays a key role in day-to-day operations. Simpler engine systems can improve technician efficiency and create a cleaner and more manageable work environment.

TRAINING & WORKFORCE READINESS Fleets should evaluate training availability, cost, and staff onboarding time. Propane autogas training resources are widely available, often at little to no cost, and can be delivered online, onsite, or through manufacturer support. For technicians already familiar with gasoline engines, the transition is typically straightforward with minimal training required.

DRIVER EXPERIENCE AND PERFORMANCE Reliable operations also depend on how vehicles perform in real-world conditions and how drivers experience them day to day. Power, ride quality, and noise levels can influence driver satisfaction and overall fleet performance.

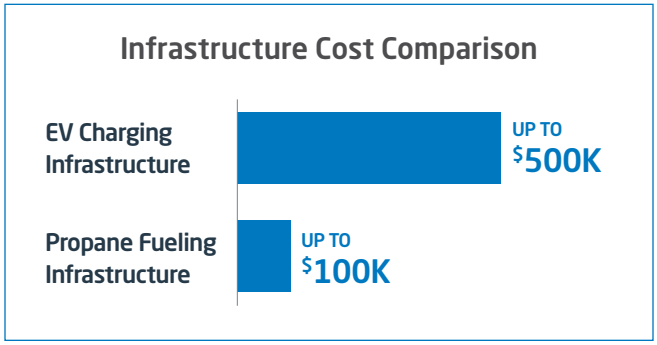
> *"Our drivers prefer propane autogas in comparison to diesel. There's a little more power than the diesel truck; it's a smoother ride, and it's a quieter ride."*
>
> — Gene Keck, Direct Sales Manager, Alpha Baking Company

Infrastructure Readiness: Balancing Cost, Speed, and Scale

Transitioning a fleet to a new energy source often hinges on the feasibility of energy infrastructure, both for refueling and recharging. Procurement leaders should look beyond vehicle costs to also consider station costs, construction timelines, reliance on utility grid upgrades, and available funding or incentive opportunities.

CAPITAL COST Commercial EV charging depots can require significant upfront investment, with traditional infrastructure costing up to 75% more than off-grid alternatives. Depending on fleet size and operational needs, EV charging installations reach up to $500,000 for similar capacity. At the same time, propane autogas infrastructure follows a simpler deployment process, with installations for fleets of up to 50 vehicles typically ranging up to $100,000 depending on site conditions and ownership structure.

THE PROPANE ADVANTAGE What makes propane autogas uniquely affordable is the flexibility of its purchasing options. Propane suppliers will often pay for the upfront infrastructure and installation costs themselves. Under this model, fleets repay the investment over time through a fuel agreement, reducing upfront capital requirements and making budgeting more manageable.



Ultimately, this flexibility allows fleets to integrate propane autogas alongside electric vehicles and align energy solutions to operational needs without requiring additional complex infrastructure spend for every application.

FUNDING & INCENTIVES Fleets should evaluate available grants, tax credits, and state or local incentives for planning new energy investments. These programs can help offset upfront costs and improve overall return on investment, with some fleets saving hundreds of thousands of dollars by leveraging available funding opportunities from state rebate and national grant programs. Fleets that are interested in receiving grants to adopt propane autogas can apply through PERC's Grant Portal.

DEPLOYMENT SPEED Utility connections and grid upgrades for high-capacity charging can stall fleet deployments for months or even years. On-site refueling systems like those used for propane autogas aren't dependent on these upgrades and can be installed and operational in as little as 90 days.

SCALABILITY Fleets need energy solutions that can grow seamlessly alongside their operations. A truly scalable model allows fleets to scale both their infrastructure and their assets in phases:

- Phased Infrastructure: Fleets can begin with temporary on-site refueling before investing in permanent private stations. A scalable infrastructure model allows fleets to begin with temporary refueling until a standard or advanced private station can be put in place.
- Phased Conversion: More than 60% of propane autogas vehicles on the road today were converted using certified aftermarket bi-fuel systems, allowing fleets to transition without the high cost of replacing existing vehicles.

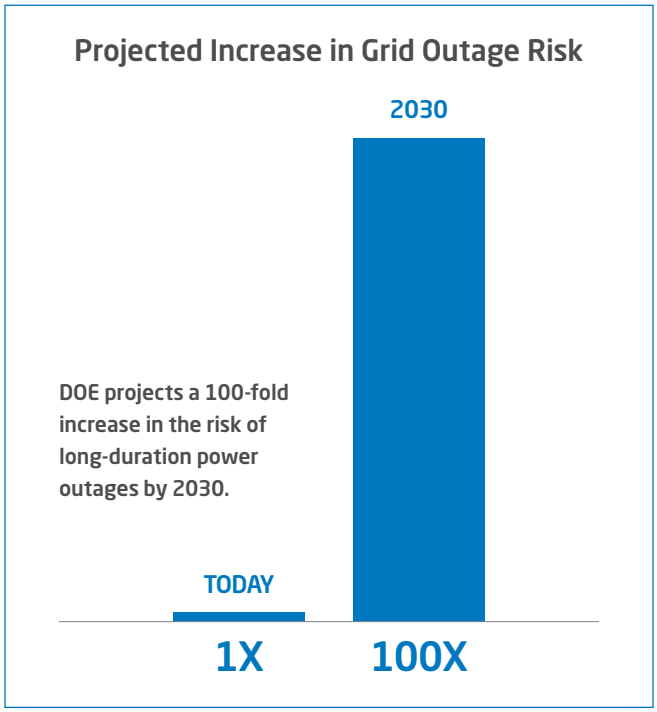
This flexibility also extends to broader energy strategies, where propane autogas can serve as an on-site energy source for EV charging, helping fleets scale while making progress toward lower-carbon goals.

Safeguarding Operational Reliability Against External Disruption

With energy demand rapidly increasing, true fleet reliability requires evaluating how a chosen energy source performs when local infrastructure fails.

GRID VULNERABILITY Relying solely on the electric grid introduces critical risks for delivery, transit, and service fleets. The U.S. Department of Energy warns that with projected load growth and plant retirements, the risk of power outages is expected to increase 100-fold by 2030. On-site energy solutions can also allow fleets to maintain operations during grid interruptions, reducing reliance on external infrastructure during blackouts.

FUEL STABILITY Long-term reliability requires an energy source that is immediately available during a crisis. Electricity cannot be easily stored in bulk without large-scale battery investments, and gasoline and diesel fuel can degrade over time, requiring additional maintenance. In contrast, stable alternative fuels like propane autogas do not degrade, providing an abundant supply that's ready whenever needed.



ENERGY FOR EVERYONE
propane

Case study: McAbee Trucking

McAbee Trucking, a longtime freight contractor for the United States Postal Service, needed to reduce emissions while maintaining its high-performance standards, including a 99% on-time dispatch rate and consistent day-to-day reliability.

Without compromising operational performance, increasing maintenance burden, or disrupting delivery schedules, McAbee needed to transition the fleet to a lower-emission energy source.

To achieve this, they deployed propane autogas-powered Ford F-750 delivery trucks and installed on-site refueling infrastructure to reduce driver downtime associated with off-site fuel stops.

McAbee Trucking maintained its 99% on-time dispatch performance while reducing fuel costs by approximately $1 per gallon, totaling about $115,000 in annual savings. The fleet also lowered maintenance requirements by avoiding diesel emissions system issues, helping reduce operating costs while supporting reliable day-to-day performance.

By proving that emission reductions can go hand-in-hand with cost savings and reliability, McAbee Trucking serves as a blueprint for fleets looking to scale sustainably without operational compromise.

> *"As a business owner, I continually look for ways to add safety, improve day-to-day operations, advocate for environmental preservation, and save money. Our new propane autogas fleet vehicles accomplish all these goals."*
>
> — Lisa McAbee, Owner, McAbee Trucking, Inc.

Fleet Performance in Practice

99%	$115K	~$1
On-Time Dispatch	Annual Savings	Fuel Savings Per Gallon

The Path to Predictable and Reliable Fleet Performance

The most effective fleet energy decisions balance cost, uptime, infrastructure readiness, and operational resilience. By evaluating energy choices through this broader lens, fleet managers can make investments that support both immediate performance and long-term business objectives.

Within this framework, propane autogas represents a specification-ready energy source that fleets can deploy today to support reliable performance and predictable costs without adding unnecessary complexity.

For fleets exploring how propane autogas can be integrated into their existing operations, additional case studies, infrastructure guidance, and practical implementation resources – including fuel options and cost planning – are available at Propane.com.

THE PROPANE EDUCATION & RESEARCH COUNCIL was authorized by the U.S. Congress with the passage of Public Law 104-284, the Propane Education and Research Act (PERA), signed into law on October 11, 1996. The mission of the Propane Education & Research Council is to promote the safe, efficient use of odorized propane gas as a preferred energy source.

propane.com

200 S. 10th Street
10th Floor, Suite 1075
Richmond, VA 23219

©2026
1243-WP-26
PRC-101243