5 STEP GUIDE

HOW FLEET TECHNOLOGIES CAN IMPROVE YOUR FLEET'S FUEL ECONOMY

PETRO-CANADA™ LUBRICANTS

AN HF SINCLAIR BRAND

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INTRODUCTION

In 2008, a good Class 8 highway truck could deliver 6.0 miles per gallon (mpg). Today, the national average for a truck hauling an 80,000-pound haul is 6.4mpg with the most efficient trucks delivering 8.5-9mpg. The US Department of Energy's (DOE) latest sponsored concept SuperTruck II aims to demonstrate a 100% improvement or more in vehicle Freight-Ton Economy (FTE) over the existing 2009 baseline vehicle. The project is now in its final stages of evaluation and reporting, with the results expected late 2022[1].

Fuel is always the second largest expense for a fleet, so how have all these gains been obtained when cost is key? By making little fuel efficiency upgrades throughout the truck and its driveline, including the use of lower viscosity lubricants.

READ ON FOR OUR STEP-BY-STEP GUIDE TO IMPROVING YOUR FLEETS FUEL ECONOMY

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STEP 1

START WITH THE BASICS

You can't go wrong with the lightest truck and the latest high-performance materials – so long as the vehicle still meets your service and reliability needs.

Your spec unit should include:

- Single wide base tires with lower rolling resistance
- A disconnecting or lifting drive axle for 6 x 2 operation this reduces drag
- Driver feedback on gentle driving and reduced idling whenever possible, (some drivers reduce their idling from 25% down to 15% with significant fuel savings)
- A maximum truck speed limit of 65MPH

STEP 2

MOVE FREELY WITH AERODYNAMIC DEVICES

Below are the best proven aero devices and upgrades that can be fitted to improve aerodynamics effective at any speed above 30MPH:

- Trailer skirts
- Reducing the tractor to trailer gap
- Newer tractors with aerodynamic lower noses, shaped mirrors, and side shields
- Trailer tails on the back
- Wheel covers can help too
- Rear roof extenders
- Cab extenders
- Vented mudflaps

STEP 3

OPTIMIZE ALL DRIVELINE COMPONENTS

Start with the heart of the powertrain – the engine – and look for a smaller displacement model that has the power you need. You may also want to consider the following features:

- Choosing a 10–11L displacement over a 13–15L to reduce the weight
- A wide, but lower speed (900–1,200rpm) torque band
- A newer engine with variable speed oil and water pump designs to lower parasitic losses for accessory functions
- Emission control systems, which have become simpler with reduced exhaust backpressure
- Improved overall engine breathing with variable valve timing and reduced EGR
- The Original Equipment Manufacturer (OEM) specified filtration for air, fuel, coolant, and oil systems

Deliver all that engine torque to the wheels via an integrated drivetrain containing:

- Clutches, transmission, shafts, and axles capable of the lower speeds and higher torques
- Automated manuals or automatic transmissions with optimized shift times to ensure best fuel economy and lower driver fatigue
- Tag axle disconnects or a liftable axle, which runs 6x2 configurations for better fuel economy (FE) while retaining traction enhancement in poor conditions

STEP 4

LOWER THE OVERALL VISCOSITIES OF DRIVELINE OILS

For over 40 years, oil and additive companies have been lowering the viscosity of engine, transmission and axle lubricants that helps improve a truck's fuel economy. At the same time, powertrain OEMs have been improving their designs and the manufacturing of their components to optimize the utilization of the upgraded oils.

Perfectly fitted parts, with the optimal thermal management of oil, experience lower friction and drag.

- Quality North American motor oils are made with lower viscosity basestocks, like high quality API Group II and Group III to promote better fuel economy
- Moving from a traditional SAE 15W-40 diesel engine oil to an SAE 10W-30 or even a 5W-30 can improve fuel efficiency up to 1.5–2.5%
- API CK-4 and FA-4 engine oils provide better protection through improved oxidative stability, resistance to aeration and better shear stability versus the previous category of engine oils. These superior oils maintain their lubricating properties and fuel economy benefits longer over the life of the drain interval. API CK-4 oils are also fully compatible with previous API CJ-4, CI-4 and older 4-stroke diesel oil categories. API FA-4 oils are for newer engine designs (2017 and onwards) and offer a lower high temperature high shear (HTHS) viscosity than CK-4 oils of the same SAE grade to deliver even better fuel economy
- Adoption of low viscosity FA-4 engine oils is increasing however, it's important to note that they are not backwards compatible to the previous API C oil categories and should not be used in older engines (pre-2017) as they were not formulated for older engine technology
- Changing to a low viscosity API FA-4 engine oil is the simplest, most cost effective to target fuel economy. Essentially, they've been designed from the ground up to provide better fuel economy, reduce emissions with no compromise to engine protection
- Heavy-duty transmissions have moved away from straight SAE 50 viscosity oils in favour of dedicated low viscosity oils (often synthetic for longer drain intervals) due to optimized and integrated drivetrain components as well as the increased use and variations of automatic, semi-automatic and automated manual transmissions
- Heavy-duty axle and gear oils with lower viscosity multigrades, such as SAE 75W-90 or even 75W-85 offer the potential for extended drains and warranty periods
- Utilizing lower viscosity transmission and axle oils could provide up to 2.5% improvement in fuel economy under optimal conditions

Best of all, many of these newer lower viscosity oils can be implemented right now into your existing fleet.

STEP 5

CONNECT EVERYTHING WITH ELECTRONICS AND TELEMATICS

The integration of the latest technology to track data to optimize fleet performance and to incorporate more automatic components is continuing at pace. This enables fleets to benefit from enhanced fuel economy, driver satisfaction and insight into the operation of their fleet through:

- Speed controls which now utilize adaptive control help to maintain a specified safe distance from vehicles ahead
- Greatly enhanced fuel tracking which is available via fuel cards to:
  - Monitor fuelling locations, volumes, and amounts
  - Cross-check the engine ECM indicated fuel economy
  - Provide direct driver feedback
- After “learning” the route terrain or tiling GPS/3D maps, today’s powertrains can optimize shifts and speeds for maximum efficiency over all types of geography
- Trials are underway to produce semi-autonomous vehicles capable of travelling in “platoons” of multiple units in convoy. It’s estimated that this will improve fuel economy by 3% for the lead unit, 7% for the second and 9% for those after that
- Leading OEMs are collaborating on autonomous driving technology, with the aim of having completed their project before 2030

THE IMPACT

With the adoption rate for fuel efficiency technologies increasing from **17%** 2003 to **45%** 2018

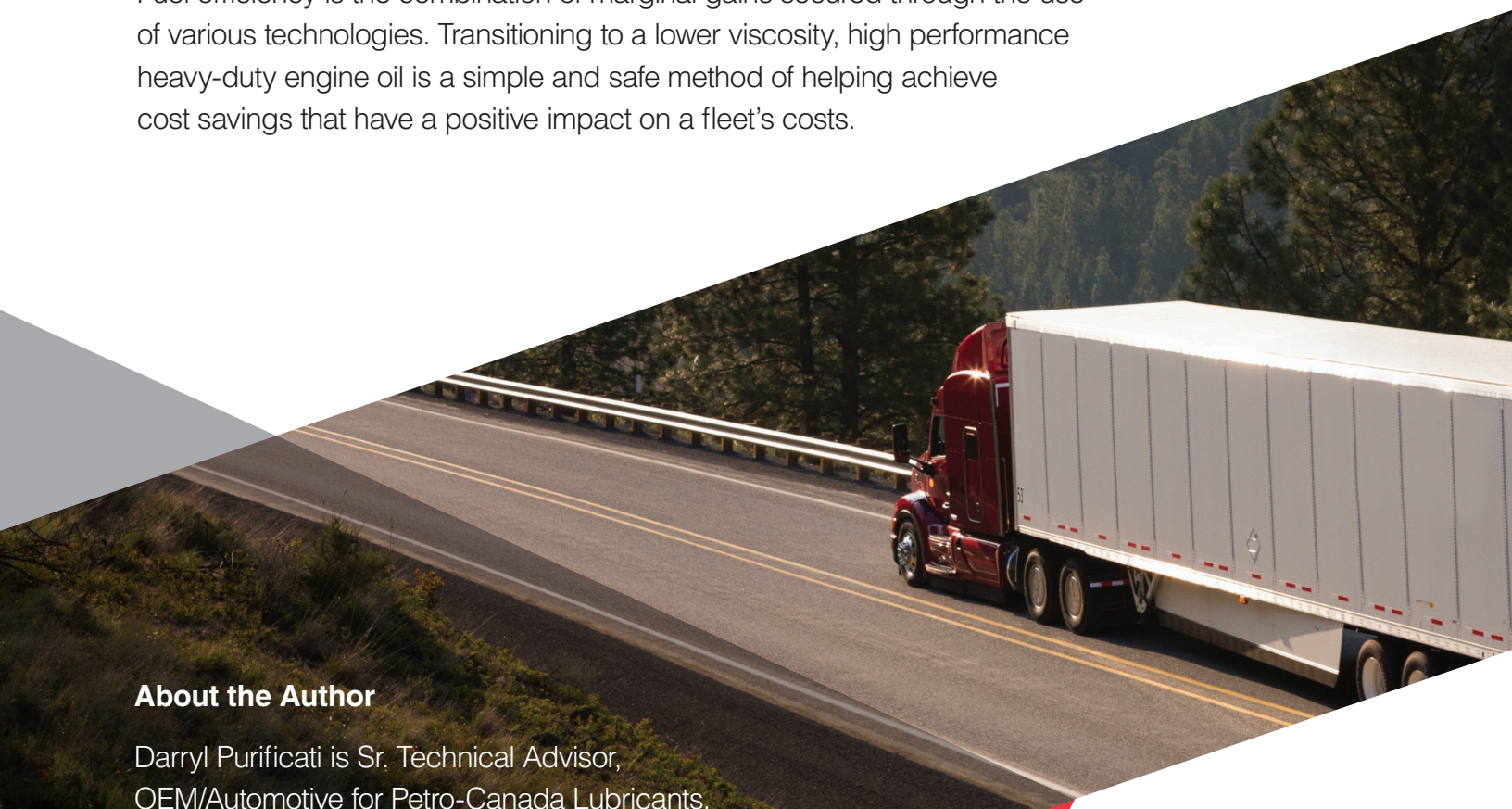
NACFE fleets average **7.27 MPG saving $9,912 USD** over the national average of 5.98 MPG.

The most fuel efficient fleets can increase this further, **resulting in a saving of**

$9,900 USD

per truck compared to the national average.

Fuel efficiency is the combination of marginal gains secured through the use of various technologies. Transitioning to a lower viscosity, high performance heavy-duty engine oil is a simple and safe method of helping achieve cost savings that have a positive impact on a fleet's costs.



About the Author

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[1]Source: https://www.truckinginfo.com/10159567/daimler-gives-an-inside-look-into-supertruck-ii-development)

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