



# Case Study Metro Transit System St. Louis, Missouri



Mainstay of Metro Call-A-Ride fleet: Aero Elite Chevy C4500

**The industry leader in transit fleet operations, Metro upgraded its vehicles with SmartPedal to generate a 6%+ increase in fleet mileage.**

### Challenge

Recognized by the Federal Transit Administration as the model for best practices in efficiency and innovation within the transit industry, the Metro Transit System operates the St. Louis metropolitan area public transportation system, including both fixed route and Call-A-Ride (paratransit) services.

The mainstay of its 120 vehicle Call-A-Ride fleet is the Aero Elite built on the Chevrolet C4500 chassis. Each vehicle in regular use travels about 4,000 miles monthly and consumes approximately 6,000 gallons of diesel annually.

As for all fleet operators, managing fuel costs is a priority. Improving fleet mileage translates into significant savings in the operating budget. To generate those savings, Metro continually investigates new technologies.

### Goal: Eliminate energy loss caused by unwanted changes in power

In July 2016, Metro purchased SmartPedal for its Call-A-Ride fleet. A ruggedized computing device about the size of an iPhone charger, SmartPedal monitors the slight up-and-down motion of the vehicle as it travels, determines the effect of this motion on the driver’s use of the accelerator pedal, and then automatically corrects the pedal signal to eliminate unwanted changes in power.

Repeating dozens of times a second, the entire process operates transparently to the driver and other vehicle systems: the vehicle drives the same before and after installation. For Metro, this meant no additional investment in driver training or reliance on a change in driver behavior to generate savings.

In late July, Metro began installation of SmartPedal on 37 of its newest Aero Elite paratransit vans. Another 13 vans of the same model and year were utilized as a control fleet against which to measure the performance of the SmartPedal-upgraded fleet.

Due to the luck of the draw, the SmartPedal fleet inherited a 0.45 combined average miles-per-gallon deficit at the outset of the test—before any equipment was installed. Specifically, the pre-installation combined averages of the control and (soon-to-be) SmartPedal fleets were 8.54 and 8.09 mpg, respectively.

### Overview

Customer  
Metro St. Louis

Fleet Size  
120 Vans

Product  
SmartPedal

MPG:  
6.17% increase

“We consider SmartPedal one of our best investments to date.”

Darren Curry  
Chief Maintenance Officer  
Metro St. Louis

Telemetric and fuel data was collected from late summer through the end of winter—a total of eight months. During this period, the SmartPedal and control fleets traveled 967,000 and 309,000 miles respectively, for a total of nearly 1.3 million miles. Drivers and routes were randomized daily.

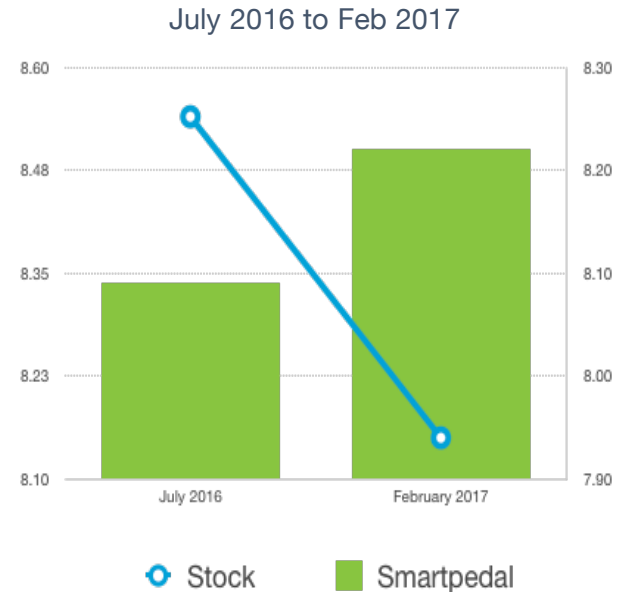
### Results: 6.17% increase in mileage

By the end of February 2017, the SmartPedal fleet had achieved a 6.17% improvement in combined average mileage relative to the control fleet. This large overall gain arose from initially smaller increases that grew over several months.

In delivering these results, the SmartPedal fleet continually increased its combined average mileage throughout the harsh winter months, even as the control fleet mileage declined.

By the end of the data series, despite *starting* with a pre-installation 0.45 mpg deficit versus the control fleet, the SmartPedal fleet finished with a higher combined average mpg than the control.

“Although the technology made sense to us, the results exceeded our expectations,” stated Dale Schaefer, Metro Director of Product Development.



### Cleaner air and a greener fleet

By improving the underlying fuel efficiency, SmartPedal also reduced CO2 emissions for the fleet.

The estimated annual CO2 savings for *each vehicle* are equivalent to the carbon sequestered by approximately 3.55 acres of US forest. Over the first five years of ownership, the avoided CO2 for the entire Call-A-Ride fleet is projected to equal the carbon storing capability of 890 acres of US forest.

### Investment payback in 19 months

Metro budgeted \$895 for each bus upgraded with SmartPedal. The related investment in labor to install was nominal: typically 5-10 minutes per vehicle.



Metro CMO Darren Curry and Dir. Product Dev. Dale Schaefer

Based on the data collected from July 2016 to February 2017, the estimated annual fuel savings is approximately 370 gallons of diesel per vehicle. At a discounted rate of \$1.50 per gallon, the estimated annual savings to the operating budget are \$555 per vehicle.

When factored against the \$895 investment, the payback period is just over 19 months. (SmartPedal is \$299 for cars, light trucks and SUVs.) Assuming no change in fuel prices, the projected ROI is 210% over five years.

“We are always looking for new technologies to improve efficiencies. We consider SmartPedal one of our best investments to date,” said Metro CMO, Darren Curry.

“Metro St. Louis continues to set the gold standard for efficiency in fleet operations,” added Marc Lurie, CEO of SmartPedal. “It’s an honor to be a part of that standard.”