

Driving down emissions

The road to a more sustainable fleet



A push towards a more sustainable future

We are living in an exciting era of change as governments and businesses around the world explore ways to address climate change.

Given the important contribution that the transportation sector makes to global carbon emissions, it's no surprise that fleets are a primary target.

According to [recent studies](#), the transportation sector accounts for 21% of global CO₂ emissions, with road transportation accounting for three-quarters of this. While there has been some progress over the last few years, the [International Energy Agency](#) (IEA) has reported that considerable investments and efforts are needed in this sector to reach an overall net-zero emissions goal by [2050](#).

In this guide, we'll explore the strategies that organizations can use to reduce their carbon emissions and create a more sustainable fleet. We'll examine the different methods for reducing fleet emissions, the solutions available to help track and monitor fleet performance, as well as the economic benefits of becoming more sustainable. From fleet managers to operations supervisors, this guide will be particularly helpful to organizations that own or operate light- and medium-duty vehicles.



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A brief look at GHG emissions in the U.S. transportation sector

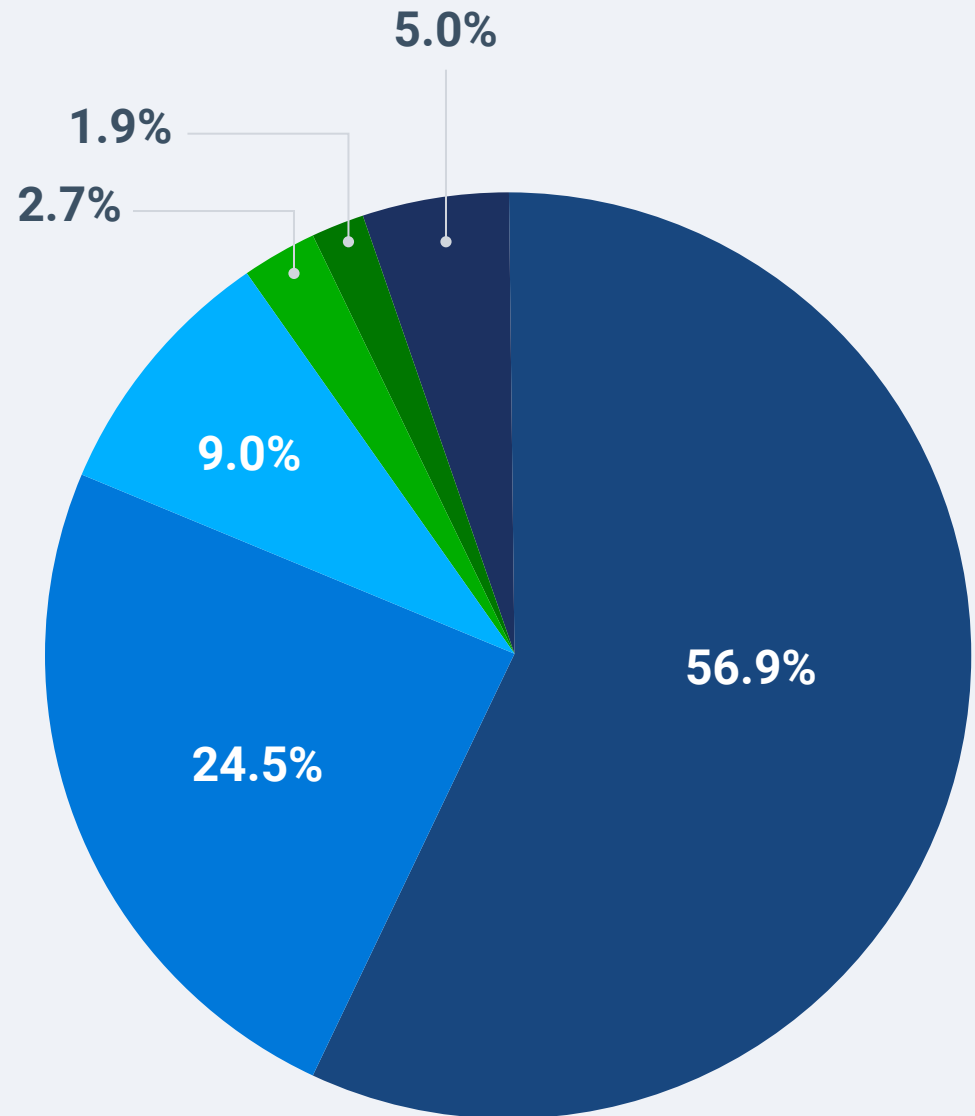
Over the last few decades, there have been numerous efforts to reduce GHG emissions.

In some areas, particularly [electricity generation](#), there have been some significant improvements. In others, like the transportation sector, there is still lots of room for improvement. As of 2021, the transportation sector accounts for 29% of total GHG emissions, with road transportation representing 81% of these emissions.

In order to achieve overall climate goals, such as the [Paris Agreement](#), reducing carbon emissions generated by fleet vehicles will be critical. Around the world, [governments](#) are introducing restrictions on purchasing new internal combustion engine (ICE) vehicles that will come into effect around 2035. Others, like the U.S. federal government, are taking a more gradual approach by creating targets like 50% EV sales in 2030. However, it should be noted that California and over a dozen other states, including [New York](#), have implemented their own regulations that would supersede these federal ones.

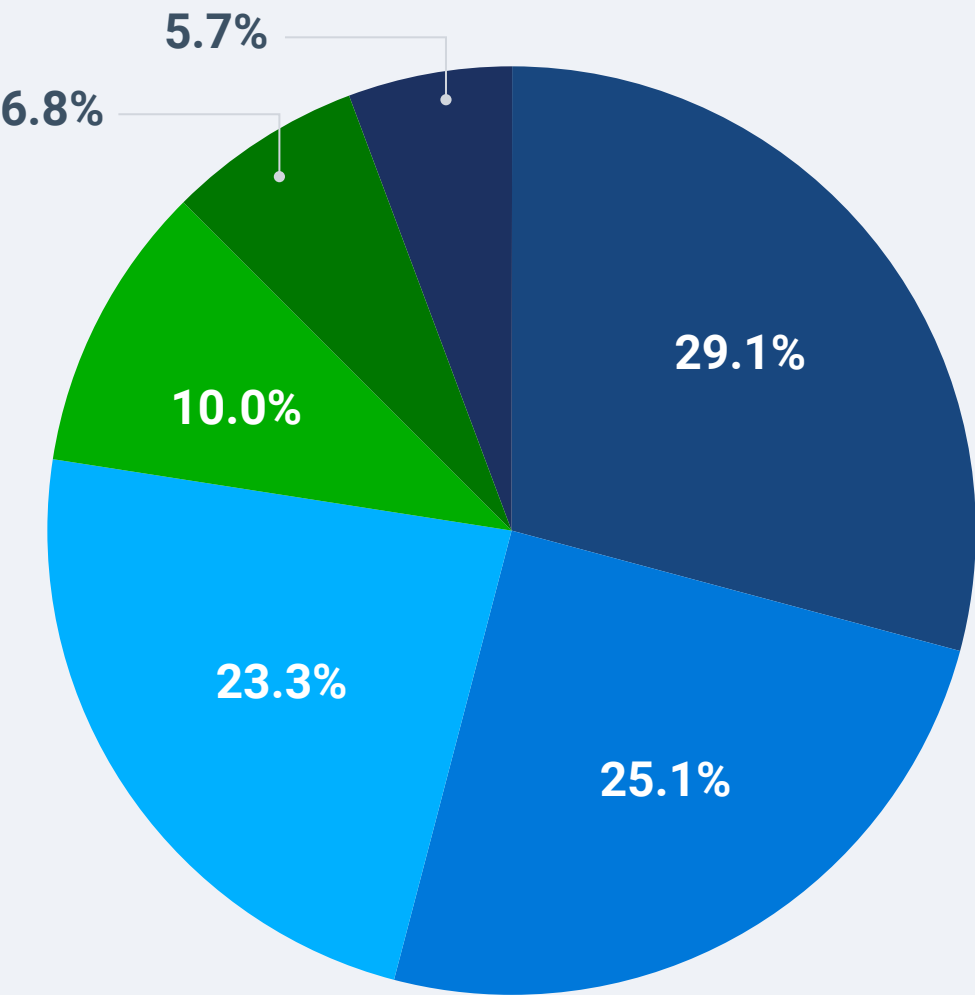
That said, new regulations are not solely focused on zero-emission vehicles. For example, the California Air Resources Board (CARB) has been working on phasing out older, higher-emitting trucks since 2008 through the [Truck and Bus Regulation](#). On January 1, 2023, it entered its final stage, which requires nearly all trucks and buses to have 2010 or newer model year engines.

Becoming more sustainable is increasingly a focus for many organizations, but for those with fleets, it will be essential. Now is the perfect time to begin laying out your strategy for creating a sustainable fleet.



2021 U.S. transportation sector GHG emissions by source*

- Light-duty vehicles
- MD/HD vehicles
- Aircraft
- Ships and boats
- Rail
- Other



2021 U.S. GHG emissions by sector*

- Transportation
- Electricity
- Industry
- Agriculture
- Commercial
- Residential

*According to the [EPA report](#) "Draft U.S. Inventory of Greenhouse Gas Emissions and Sinks: 1990-2021."



CHAPTER 1

What is a sustainable fleet strategy?

The term sustainability is referenced widely in the business world, and it can mean different things to different people – including fleet managers.

Is sustainability simply an environmental issue? Or does it mean making changes so that your fleet can continue operating for the foreseeable future? In reality, it's a combination of both.

In order to remain compliant with government regulations and customer demands, fleets need to take action to reduce their carbon emissions. However, in order to make long-lasting improvements, those actions must also make financial sense. Fortunately, becoming more sustainable can also make your fleet more resilient and profitable.



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For the purpose of this guide, we have simplified this into one simple goal: creating a more efficient and environmentally-friendly fleet.

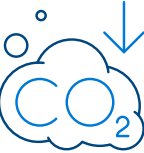
This can be accomplished by building strategies that focus on three key principles:



Improving fuel efficiency



Reducing operational costs



Meeting emission reduction targets

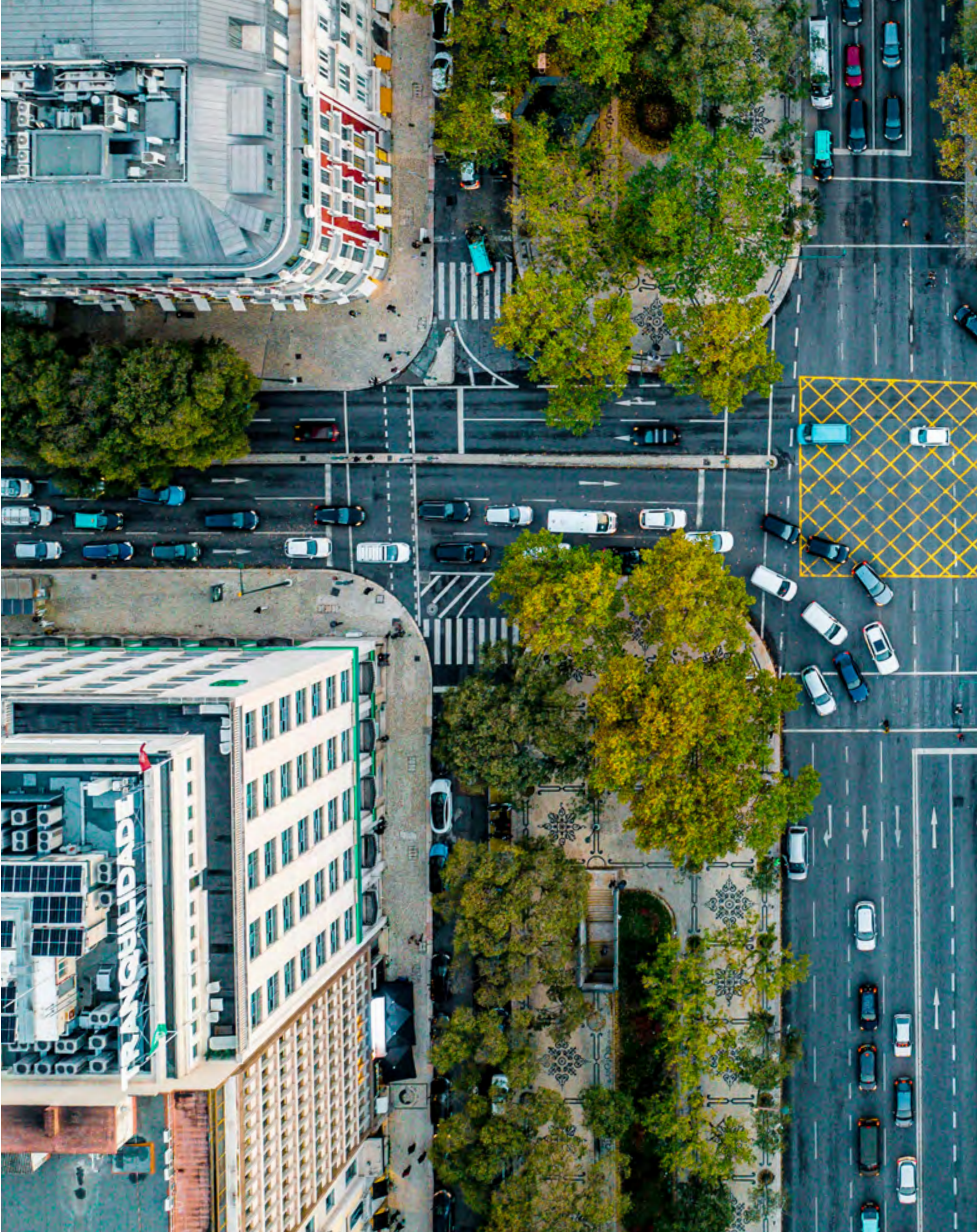
By implementing the right initiatives, you can often tackle multiple goals simultaneously. For example, by addressing unnecessary idling, you can avoid CO₂ emissions, reduce fuel consumption and thereby lower costs.

Now that we've defined the sustainability objectives let's start looking at where to begin.



Zero-emission vehicles, such as battery electric vehicles (BEVs), may play a significant role in your sustainable fleet strategy. But, it's important to note they are not the only solution.

Some sectors are still in the early stages of electrification and may not have commercially available models for another several years. Rather than waiting, fleets can take action now to improve their existing fleets' efficiency and reduce CO₂ emissions.



Mapping out a sustainable fleet journey

Creating a more sustainable fleet won't happen overnight. It takes time, planning and proper budgeting to succeed. It may involve implementing new initiatives that are outside of your current standard operations, as well as some additional metrics to consider. However, in many cases, it simply means improving on some traditional fleet management techniques and measuring or presenting the results in a new way.

Defining success

When creating your sustainable fleet strategy, it's important to understand any internal and external objectives that need to be met. You may have some hard deadlines to meet in order to remain compliant, whereas other targets may be stretch goals, requiring significant effort and resources to achieve.

Here are some examples of sustainability targets:

- Transition to an all-electric fleet by 2035 in order to comply with state government mandates.
- Reduce CO₂ emissions by 15% over the next seven years to align with company ESG targets.
- Lower annual fuel consumption by 5% over the next seven years to reduce operational costs.

Regardless of the specifics of the target it's important that all applicable stakeholders have a clear understanding of what the objectives of these initiatives should be.



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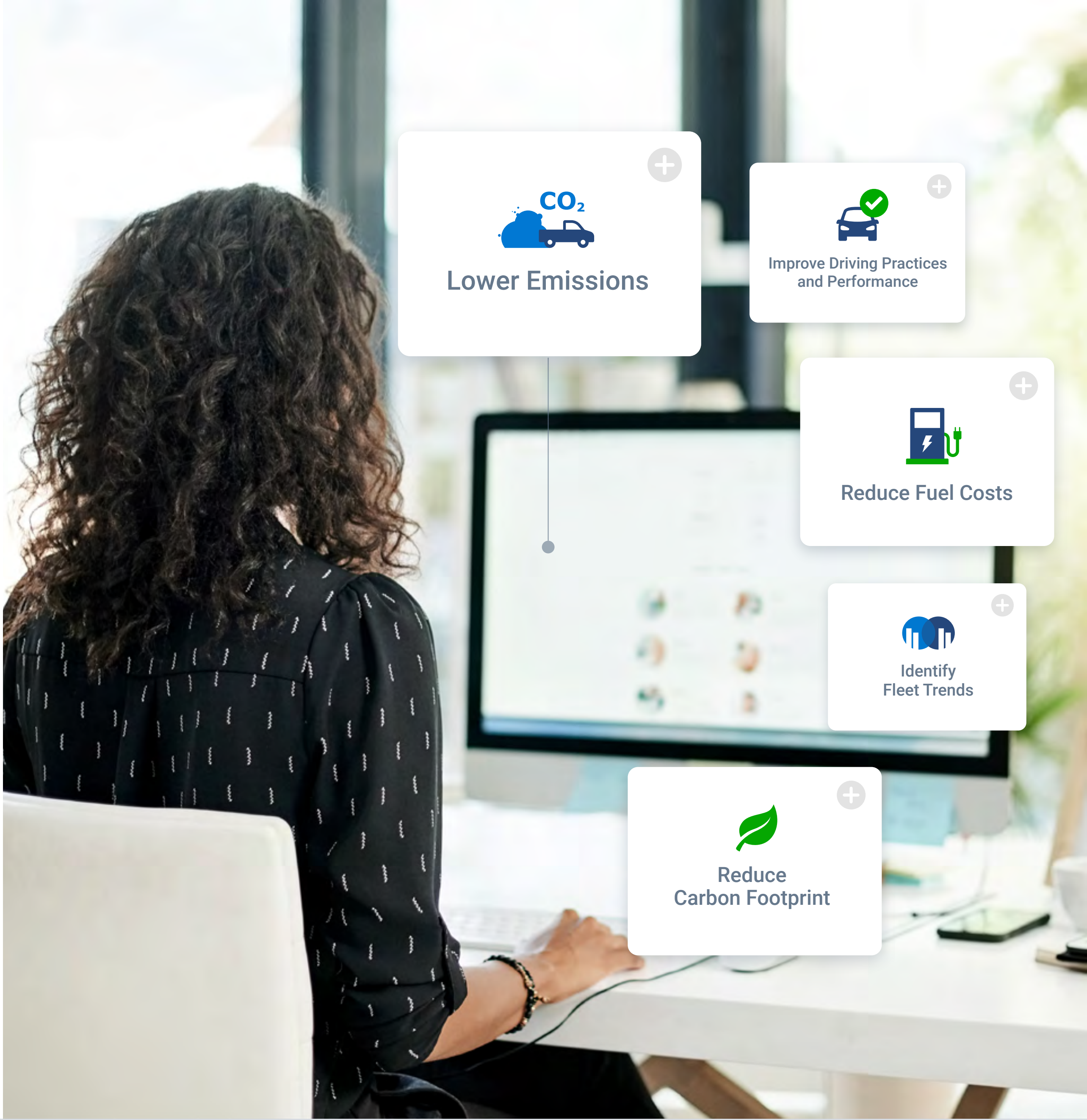
Measuring success

To gauge the success of any of your efforts properly, you'll need to be able to measure them accurately. This will require a robust telematics solution and baseline data. Some of the data will include metrics you're most likely already tracking, such as fuel consumption. In this case, it's just a matter of reporting levels before and after implementing the strategies.

Alternatively, some of the data points may be new for you and will require time to collect. The most common example of this is CO₂ emissions. Your telematics solution should be able to provide you with data on the amount of tailpipe emissions generated by your fleet. Other examples may include fuel consumed when idling or miles reduced from optimizing routes.

Evaluating existing policies

When creating a sustainable fleet strategy, it's important to review your existing business policies and processes to understand any overlapping areas. You may already have programs in place to optimize your operations, such as reducing idling. Traditionally viewed as a way to save on fuel costs, this same tactic can also be rolled into your CO₂ reduction initiatives. Working through a **checklist** can help identify current actions and inform potential improvement areas.



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Researching regulations

It’s important to collect information on any specific regulations, targets or mandates that apply to your organization’s fleet. Governments at all levels (federal, state/provincial and municipal) may have introduced regulations that could directly impact your ability to operate normally. For example, some governments are **banning the sale** of new ICE vehicles. Others are restricting where ICE vehicles can operate or subjecting these vehicles to fines.

The latter can be seen in London, England, which has both a Low Emission Zone (LEZ) and an Ultra Low Emission Zone (ULEZ). Each zone has its own restrictions based on the class of vehicle, but a non-compliant vehicle is required to pay up to a £300 (\$395 USD) a day fee for driving in the LEZ plus an additional £12.50 (\$16.50 USD) a day for entering the ULEZ.

Additionally, some organizations may be accountable to environmental, social and governance (ESG) targets. This practice may require companies to provide information on their emissions goals or sustainability programs to potential investors within a certain timeframe.

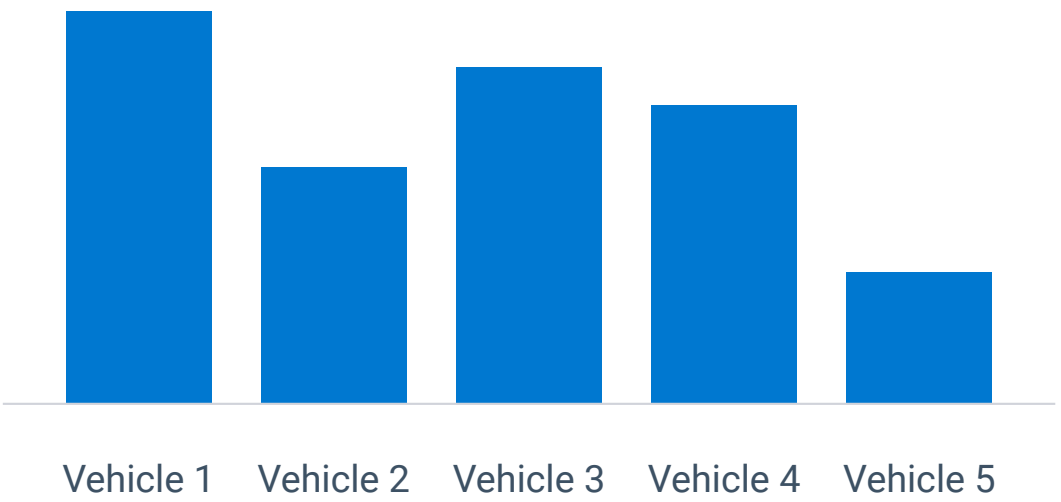
Finding incentives

While governments are pushing for progress, they are also providing some assistance. For example, there are numerous incentives available for purchasing EVs or installing charging infrastructure. They range from tax credits from federal or state governments, to purchase rebates from utility companies.

There are also various non-EV-related programs available, so you should research **available incentives** in your area to determine which options make the most sense for your fleet.



CO2 Emissions Report



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Building out your timeline

Your sustainable fleet journey will roll out in different stages, so it's important to establish a timeline and outline the various milestones. You will need to allocate time for researching strategies, building a business case for relevant stakeholders, procuring any necessary vehicles or equipment and gathering any benchmark data. Once you've sorted all that out, you'll want to pilot the different strategies to find which ones work best for your unique situation before implementing them across your entire fleet.



Creating a business case

Ready to create your business case?

[Download](#) our "Adopting electric vehicles and sustainable fleet strategies" workbook.



CHAPTER 2

Assess your existing fleet

Your first step to creating a more sustainable fleet is to better understand your current environmental impact.

By establishing baseline metrics, you can identify specific areas to focus on and monitor progress as you work towards achieving your targets.

When initially assessing your fleet, there will be three areas of focus:



CO₂ emissions



Fuel and energy usage



Fleet composition



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Monitoring CO₂ emissions

One of the primary goals of creating a sustainable fleet is to reduce carbon emissions, or more specifically, tailpipe emissions. For the purposes of this guide, we will focus specifically on tailpipe CO₂ emissions produced by the operation of the vehicle, as it is the metric that you'll have the most control over.

CO₂ emissions are measured either by volume (metric tons or kilograms) or emissions intensity (volume of emissions per distance traveled). It can be monitored at the fleet, department or individual vehicle level. Monitoring total emissions and emissions intensity across the whole fleet and by different vehicle groupings is good practice, as these indicators will serve different purposes.

Vehicle emissions

By reviewing tailpipe emission intensity at the vehicle level, you can identify which ones are the biggest emitters. Comparing vehicle emission intensity across similar vehicles in the same class allows you to catch the poor performers. With this information, you can target them with specific sustainable strategies, a topic covered more in [Chapter 3](#). You should also review the vehicles by vocation to see if there are any outliers that may require some extra attention.



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Fleet-wide emissions

In order to monitor your overall progress, you'll also want to review emissions at a fleet level. When you are reviewing this data, it's important to view trends over time. This way, you take into account any seasonal changes. For example, vehicles are more likely to idle longer during colder months. By not taking these considerations into account, you may not have a true representation of your progress.

A helpful way to gauge your potential room for improvement is by comparing your fleet's performance to others. **The Green Fleet Dashboard** allows you to compare tailpipe emissions against similar fleets within the Geotab ecosystem based on vocation, class and daily driving distance.

A note about scopes 1, 2 and 3 emissions

When reviewing total environmental impact, organizations will generally consider all three categories of emissions defined by the **Greenhouse Gas Protocol** –scopes 1, 2 and 3. For organizations, this will include everything from the emissions generated by their vehicles to emissions produced by any third-party transportation and distribution of outbound goods or services.

In North America, most fleets will still be focused on tackling scope 1 emissions that are directly tied to their owned or controlled sources, such as the tailpipe emissions from their vehicles. However, in time they will be required to explore scope 2 and **scope 3**, which will target indirect emissions from purchased energy and supply chains accordingly.



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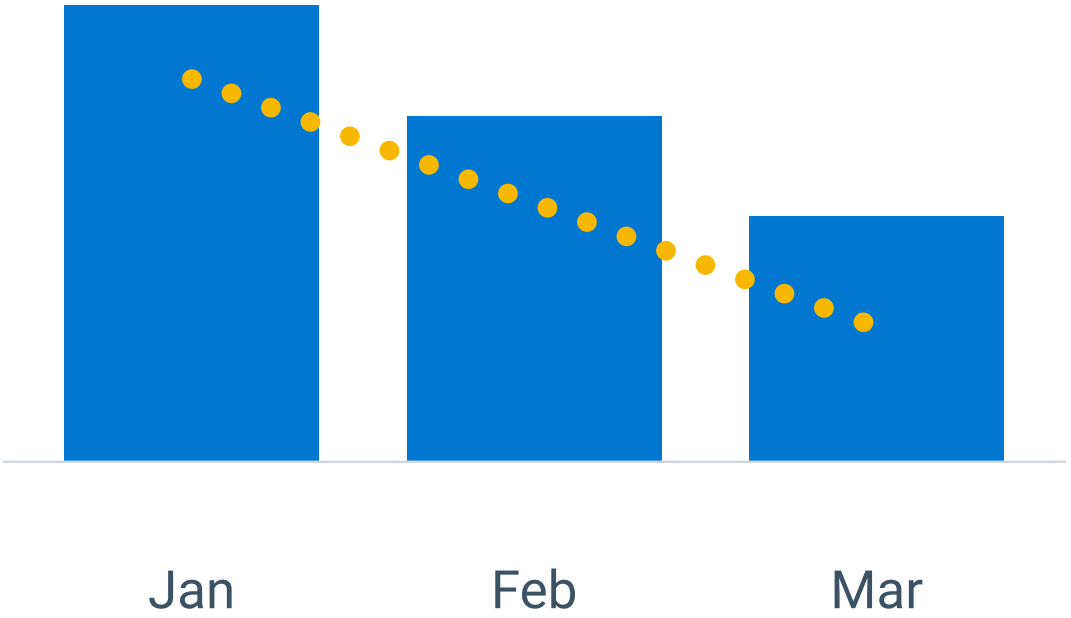
Tracking fuel usage

Fuel is not only one of the highest cost centers for any fleet, it's also directly related to CO₂ emissions. Put plainly, the more fuel that's used, the more emissions are generated. Fleet managers have long been familiar with the need to improve fuel efficiency. However, besides cost savings, there is also a compelling environmental reason to do so. **Chapter 3** will explore strategies for improving fuel efficiency in depth, recognizing its critical role in reducing emissions and achieving sustainability goals.

With telematics solutions, you're able to track costs at a very granular level, including tracking the cost of fuel at each fill-up by vehicle and location. By reviewing this fuel data, you may be able to find inefficiencies and other areas of improvement.



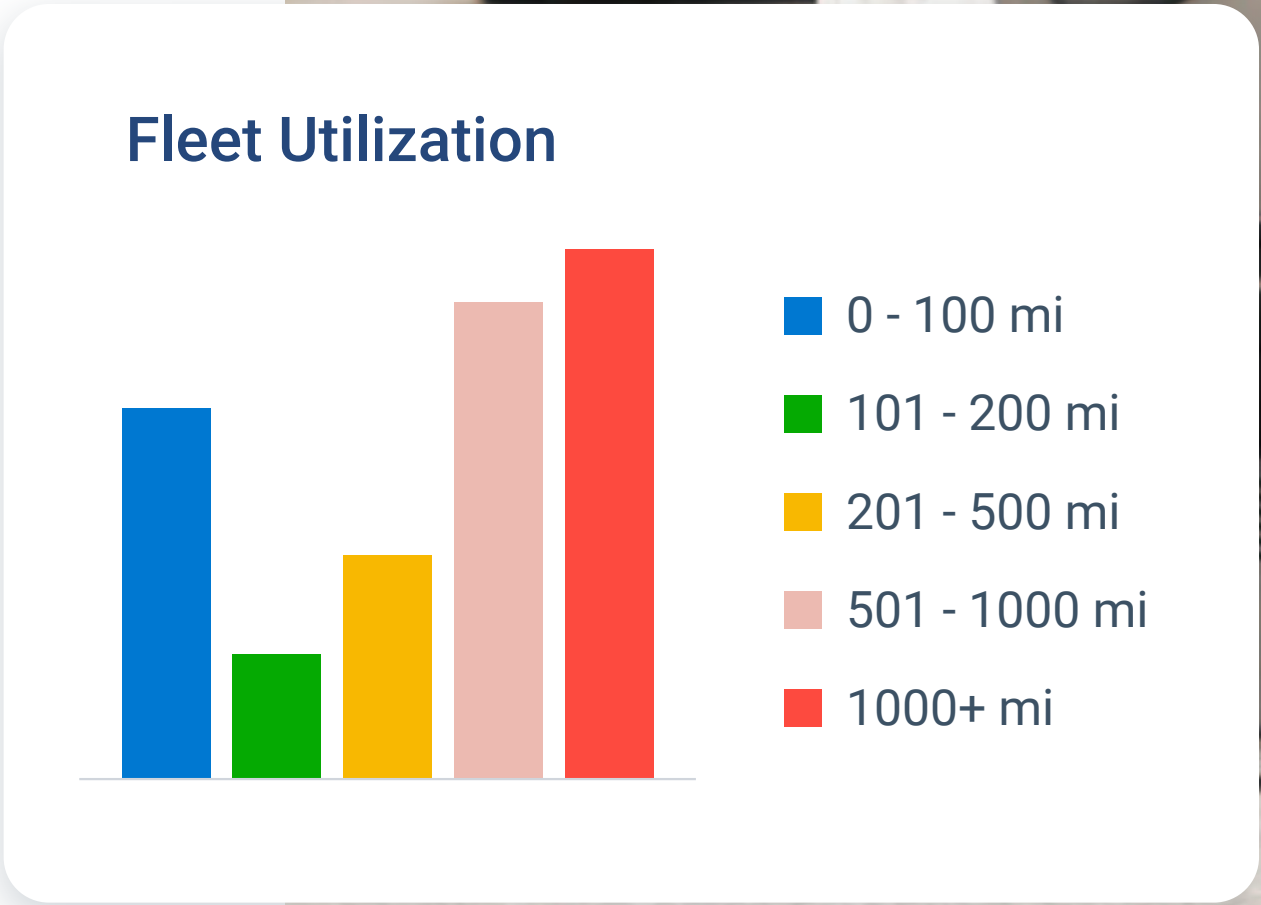
Last 3 Months Fuel Trend



Fleet rightsizing

Matching the correct number and type of vehicles in your fleet for the work required is critical for improving your bottom line. By rightsizing your fleet, you can assure the most efficient vehicles for the job are deployed and retire under-utilized or underperforming vehicles. You can also combine this with **optimized utilization** to make sure your most efficient vehicles are assigned to higher utilization roles.

You may find that by implementing some sustainable fleet strategies, such as route optimization (explained further in **Chapter 3**), you may even be able to phase out low-utilization vehicles entirely.



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CHAPTER 3

Explore sustainable fleet strategies

With a solid understanding of where your opportunities lie, you can now start putting your sustainable fleet strategies into action.

You can most likely implement multiple strategies in conjunction with each other to maximize your efforts. However, not all of the tactics discussed in this chapter may be viable for every fleet, depending on its unique situation.

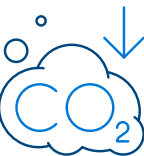
As a reminder, these strategies focus on three key principles:



Improving fuel efficiency



Reducing operational costs



Meeting emission reduction targets



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Idle reduction

Reducing unnecessary idling is a great first step in becoming more sustainable as it can significantly impact fuel economy and CO₂ emissions. To fully understand the consequences of idling, you can monitor both the amount of emissions produced and determine the cost of wasted fuel.

What are the costs of idling?

Your fleet	Best in class comparison
Total fuel costs	Total fuel costs
\$3,573 USD	\$2,327 USD
Tailpipe emissions	Tailpipe emissions
4.3 metric tons CO ₂	2.8 metric tons CO ₂
Fuel usage	Fuel usage
1,853.5L	1,789.9L

Once you’ve identified and quantified the impact of idling, you can begin taking steps to reduce it by training your drivers to limit idling whenever possible. To help remind your drivers, you can use your telematics solution to create an audible in-cab alert that will notify them if they have been idling longer than your set time limit. You can also measure the effectiveness of your efforts by running reports that track these rule violations.



Success story: Orkin

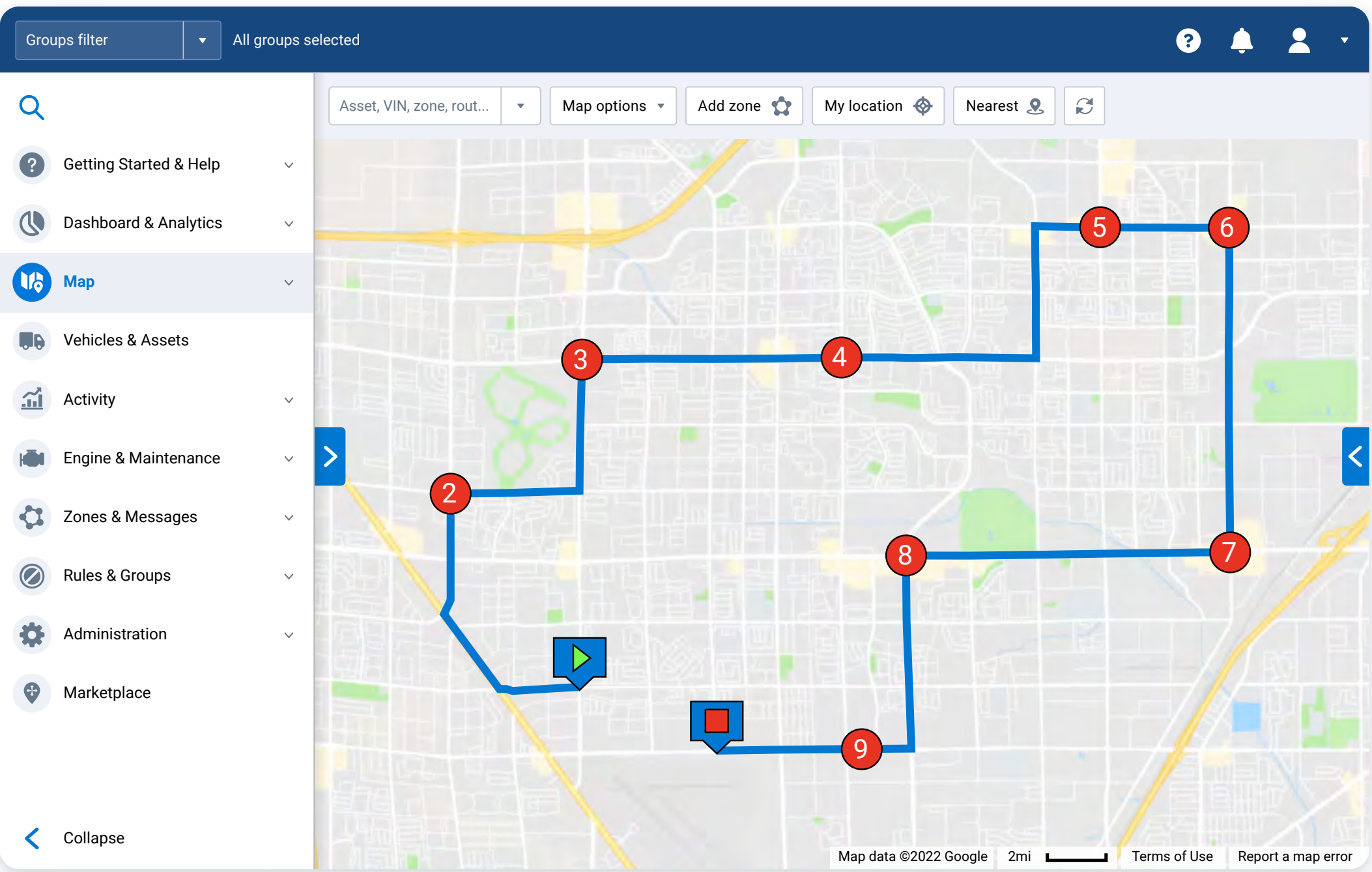
In an effort to reduce idling, Orkin took a creative approach and created an internal competition. They monitored each driver’s total idle time, awarding the drivers with the lowest and most improved idle times. In three months, they were able to reduce fleet-wide idling by 8.4%, which they estimated saved them \$50,000.

Read the full story [here](#).

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Route optimization

Another way to reduce CO₂ emissions and fuel use is by always taking the most efficient route. This may include avoiding certain roads during high congestion periods, grouping drop-offs or deliveries to avoid unnecessary travel and rerouting in case there is construction or some other type of disruption. By comparing real-world versus planned travel times, you can continuously improve and establish more efficient routes.



You can amplify the effects of this strategy by assigning your most efficient vehicles to high-utilization routes. In fact, you may find that through route optimization, you can actually reduce the total number of vehicles you need to complete your tasks.



Success story: Ferrovia Services

With the help of telematics, Ferrovia Services was able to improve their operations and reduce their number of routes, saving them money.

Read the full story [here](#).

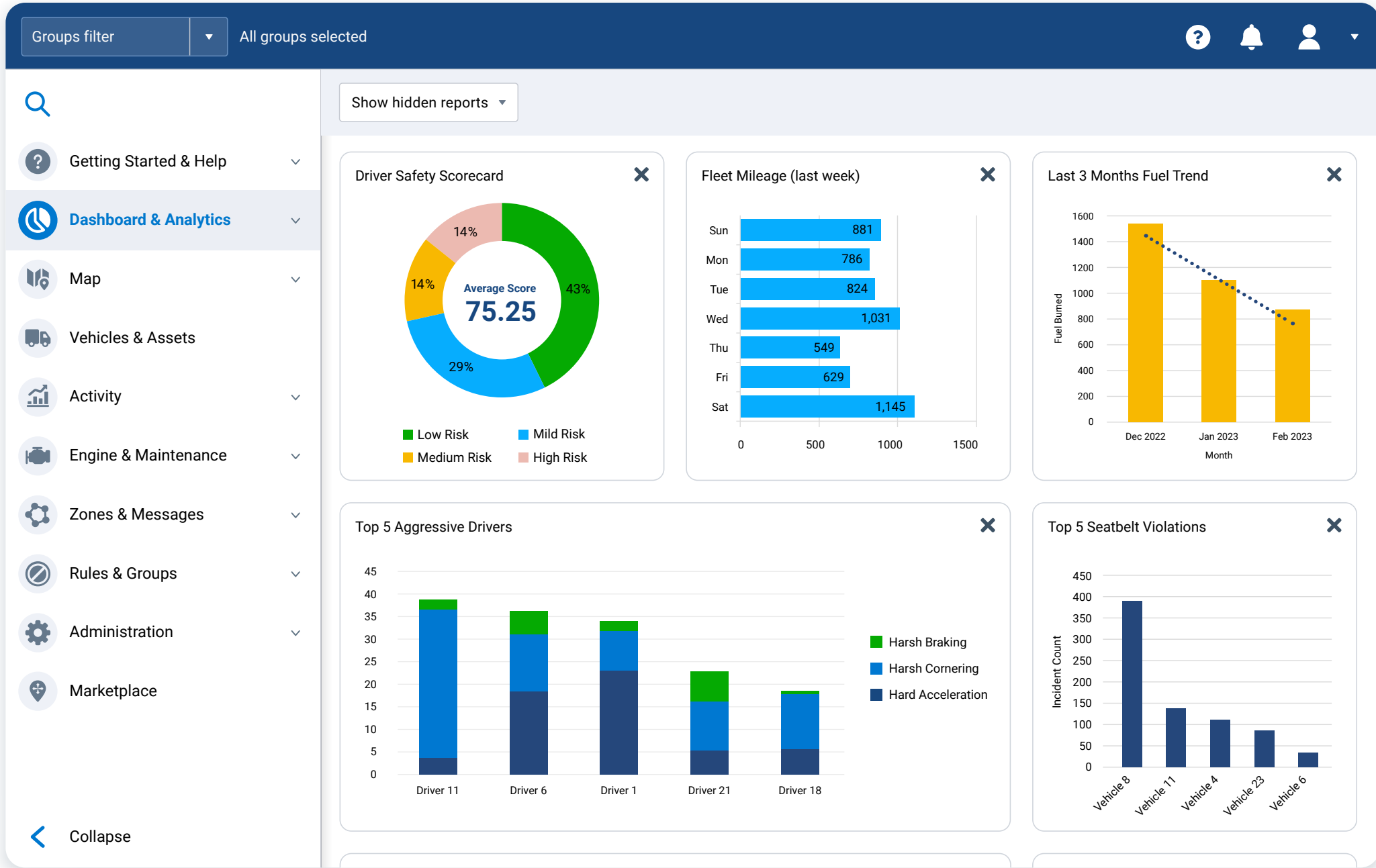


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Driver behavior

Studies have shown that **aggressive driving**, specifically speeding along with harsh acceleration and braking, can significantly lower a vehicle’s fuel economy. There are many different strategies for promoting more fuel-efficient driving and you’re most likely keeping an eye out for these bad habits as part of your overall safety plan.

For example, some fleets have implemented **Driver Safety Scorecards**. These reports keep track of incidents of unsafe driving and help identify coaching opportunities. Since safety is typically a top priority for fleet managers, this is a win-win strategy.



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Proper maintenance

Making sure your vehicles are in proper working order is essential for overall fuel efficiency. Engine malfunctions, faulty oxygen sensors and improperly inflated tires can all contribute to a drop in efficiency. In fact, according to the [United States Department of Energy](#), having tires that are not adequately inflated can reduce fuel economy by as much as 3%.

Low-carbon fuels

Another way to reduce fleet emissions is by transitioning to low or zero-carbon fuel. A variety of options are available to fleets today that offer lower emission alternatives, including biodiesel and ethanol blends, compressed and liquified natural gas (CNG, LNG), renewable natural gas, battery electric and hydrogen. The right choice for your fleet will depend on many factors, including technology and fuel availability in your location, what regulations and incentives are available to you, your vehicles' duty cycles, and your sustainability drivers and targets.



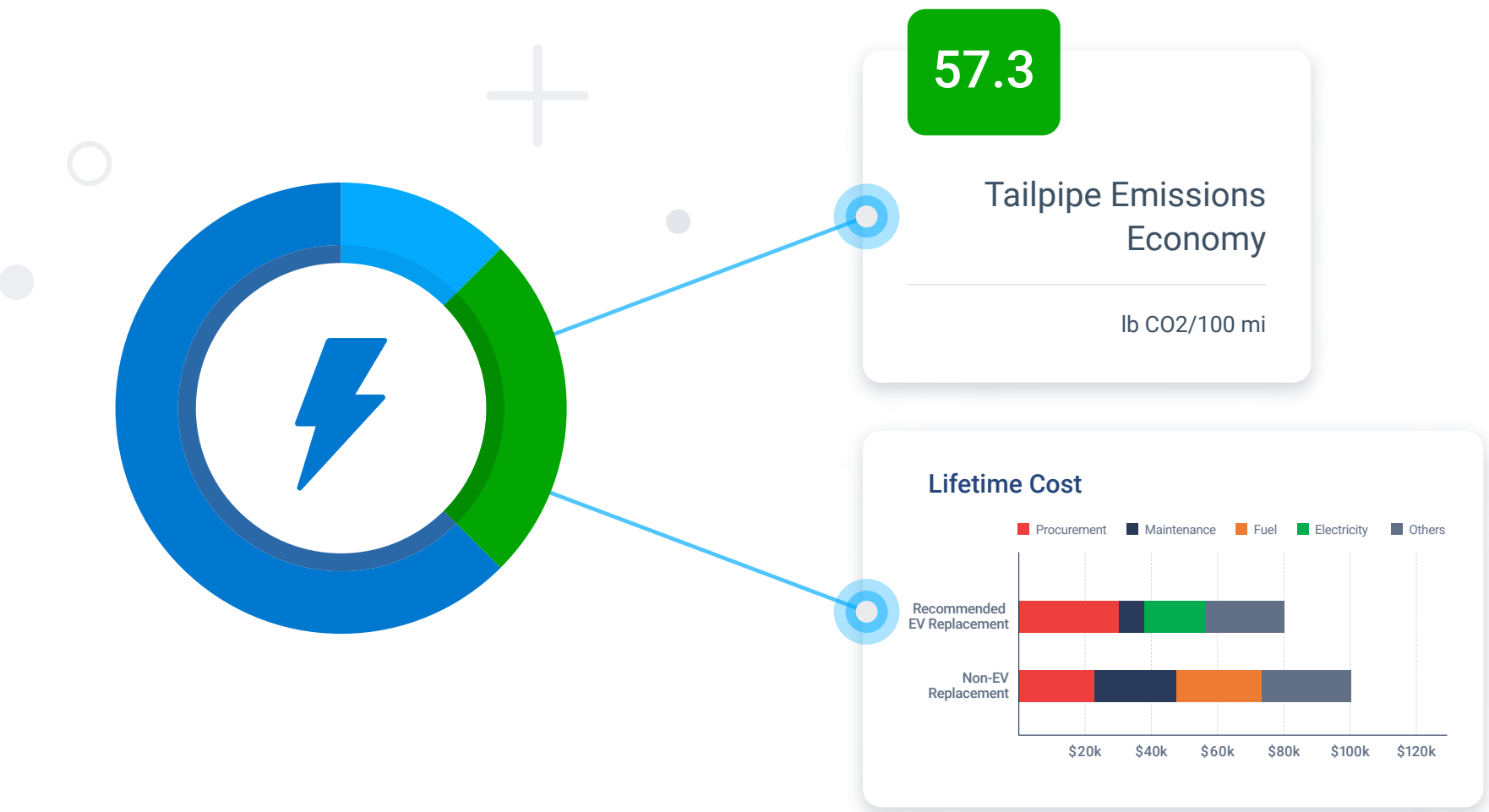
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Fleet electrification

When people hear “sustainable fleet,” they typically think of electric vehicles – and for a good reason. EVs can drastically reduce your fleet’s carbon footprint by eliminating tailpipe emissions. As electrical grids shift to renewable energy, the upstream emissions can approach zero as well. This is the reason why many governments are implementing regulations to promote their use.

Going electric

Your first step is to determine which vehicles in your fleet are best suited for electrification and to identify the benefits of making the transition. You can accomplish this by conducting an EV Suitability Assessment, which uses your own telematics data to provide EV make and model recommendations that best fit each vehicle’s driving profile. It will also highlight the potential cost-savings of going electric, which is primarily the result of reduced fuel costs, as well as the potential avoided carbon emissions.



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Monitoring EV operations

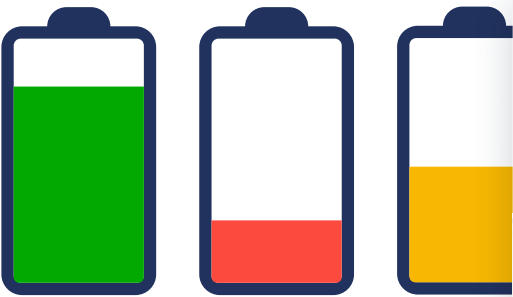
Like any other fleet vehicle, you will need to stay on top of your EVs’ performance in order to make sure they are operating efficiently. However, there are metrics that will be specific to EVs – most notably their state-of-charge (SOC). An EV’s SOC represents how much energy it has, similar to a fuel gauge, and since it takes longer for an EV to “fill up,” it plays an important role when planning its routes.

Fortunately, you can observe an EV’s SOC in real time while tracking its location. This also allows you to dispatch vehicles and know they have enough range to complete their task. You can make sure all the vehicles are charging when they are supposed to be and avoid any unnecessary downtime.

Optimizing the EVs in your fleet

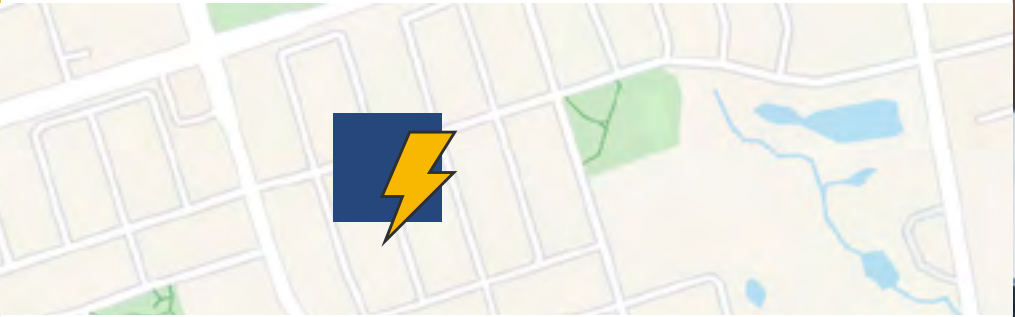
Once you have some EVs in your fleet, there are steps you can take to optimize their operation. For example, you can monitor energy usage and end-of-trip state-of-charge data to make sure that the vehicles aren't being underutilized.

EV Battery Charge Levels



Vehicle 15 84%
Vehicle 09 21%
Vehicle 48 48%

EV charging status



▲ Driving ■ Stopped
🔋 Battery Life ⚡ Charging

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One of the most important and challenging aspects of fleet electrification is streamlining your charging. By reviewing your charging data, you can track charging costs and time spent charging to create efficient charging schedules. You can also create custom alerts to identify if an EV is not charging when it's supposed to be – like if someone forgot to plug in at the end of a shift.

Fleets with multiple EVs at their facility may opt for a charge management solution to help manage the load. Integrating the telematics data with the charge management system can help assure vehicles are charged when they need to be.



A note about EV support from your telematics solution

Unlike ICE vehicles, EVs do not adhere to the same mandatory telematics data standards, making it more difficult to access vehicle data. It's important to confirm your telematics provider not only supports the EV models you currently own but also has the experience and ability to support future models as your fleet grows.

Learn more about selecting an EV-ready solution with our [telematics RFP checklist](#).

Looking for more information on EVs?

If you're looking to build out an entire EV adoption strategy, make sure you download: [The complete fleet electrification roadmap](#). This comprehensive guide covers everything from understanding the fundamentals of EVs to establishing charging infrastructure needs and optimizing operations.

Get your copy [here](#).



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Sustainable fleet solutions from Geotab

There has never been a better time to start finding ways to become more sustainable.

Geotab is committed to helping organizations make real progress against their climate action goals. By revealing insights from real-world data, we help fleets reduce emissions and costs while improving operational efficiency.

Below is a list of some of the sustainable fleet solutions available in MyGeotab and on the Geotab Marketplace.

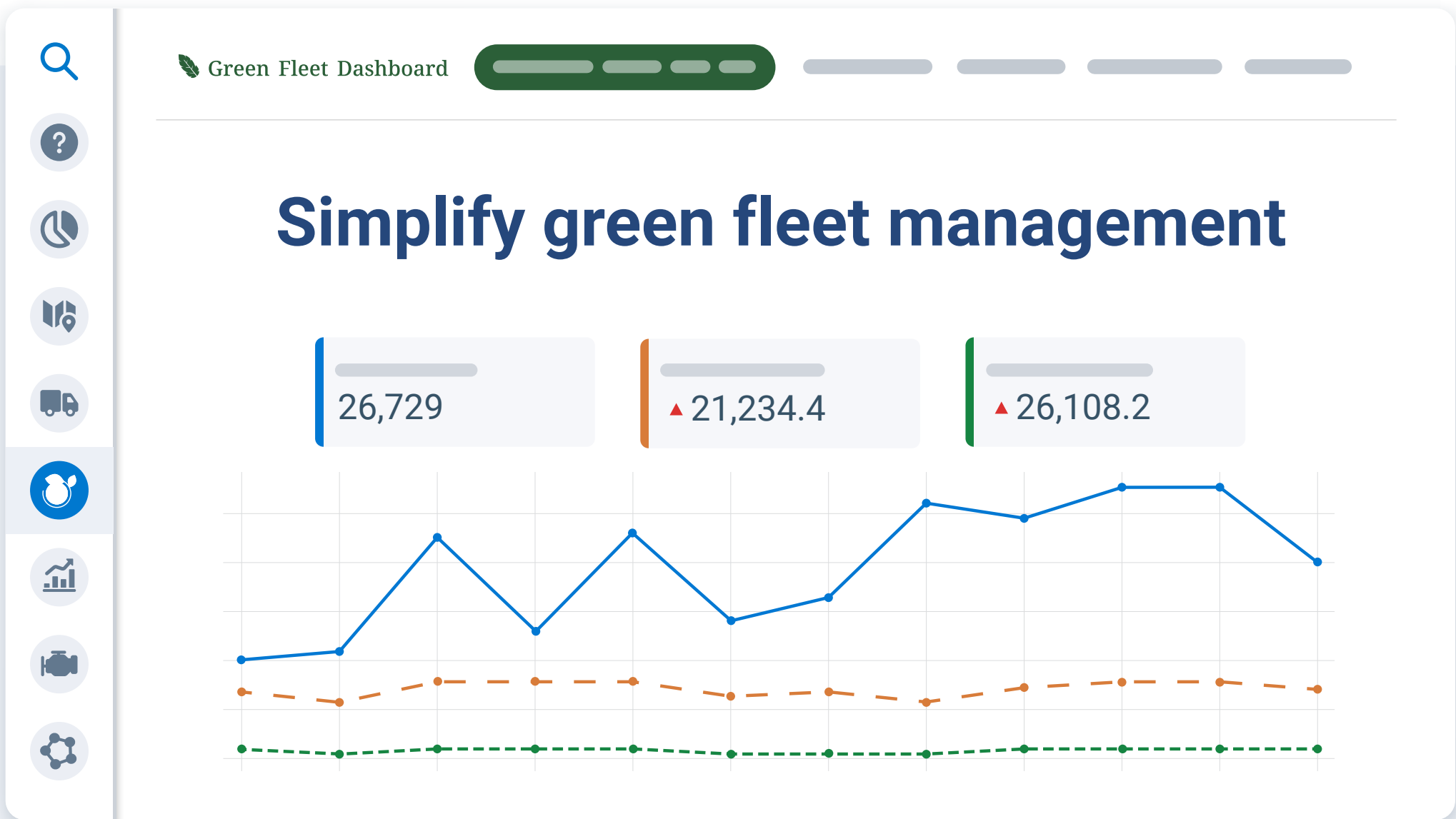


Green Fleet Dashboard – [Geotab Add-in](#)

Insights for reduced emissions and increased savings

Compare your performance against similar fleets. Oversee your fleet’s operating costs and environmental performance with the Green Fleet Dashboard.

[Schedule a demo today.](#)



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Fuel Tracker App – Geotab Add-in

Track the cost of fuel at each fill-up.



Last 3 Months Fuel Trend – Report Download

Monitor trends in fleetwide fuel consumption on a quarterly basis.



Route Optimization

Visit the Geotab Marketplace for a complete list of **Routing and dispatch solutions**.



Last 3 Months Idling Trend – Report Download

Monitor trends in fleetwide idling on a quarterly basis.



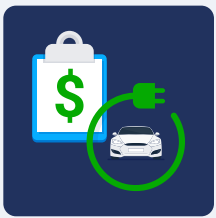
EV Charge Assurance – Geotab Add-in

Deploy EVs with full knowledge of their charge status.



EV Suitability Assessment– Geotab Add-in

Get EV model recommendations based on your fleet's specific needs.



EV Charging Cost – Report Download

Report on the cost of your electric vehicle charging.



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About Geotab

Geotab is a global leader in connected transportation solutions. We provide telematics – vehicle and asset tracking – solutions to over forty thousand customers in 150 countries. For more than 20 years, we have invested in ground-breaking data research and innovation to enable partners and customers, including Fortune 500 and public sector organizations, to transform their fleets and operations. We connect to over 3.2 million vehicles and process more than 55 billion data points a day so that customers can make better decisions, increase productivity, have safer fleets, and achieve their sustainability goals.

Geotab’s open platform and Marketplace, offers hundreds of third-party solution options. Backed by a team of industry leading data scientists and AI experts, Geotab is unlocking the power of data to understand real-time and predictive analytics – solving for today’s challenges and tomorrow’s world.

To learn more, visit www.geotab.com, follow @GEOTAB on [Twitter](#) and [LinkedIn](#) or visit the [Geotab Blog](#).

This ebook is intended to provide information and encourage discussion on topics of interest to the telematics community. Geotab is not providing technical, professional or legal advice through this white paper. While every effort has been made to ensure that the information in this white paper is timely and accurate, errors and omissions may occur, and the information presented here may become out-of-date with the passage of time.

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