

**Maximizing
public works fleet
efficiency across
all seasons**



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Effectively overseeing a public works fleet is challenging due to the mix of assets and equipment that require constant monitoring and maintenance to strengthen local infrastructure and keep roadways clear and safe. As weather conditions change with the seasons, those challenges remain year-round. Tracking and analyzing asset performance and materials usage throughout your year's operations is tricky with information flowing in from different sources. Many public works fleet managers choose telematics technology and fleet management software to keep up with and make sense of the data.

This guide will dive into why automation and digital operations are necessary for effective year-round public works fleet management and how the insights gained from telematics are the key to tackling your toughest operational challenges.



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CHAPTER 1

How can telematics benefit your public works agency?

For public works agencies, data-driven operations are critical to delivering services on time and meeting service-level mandates. However many organizations lack a consistent source of truth on fleet performance to inform their decisions through accurate reporting.

Telematics solutions fill the gap, providing the insights needed to deliver on key department goals, meet minimum maintenance requirements and improve operations all year round. Discover the difference telematics data can make across your public works fleet:

Limiting liability

Being held liable in a claim can negatively impact a public works agency, potentially damaging their public image, how the fleet is managed and its bottom line. Telematics can help reduce the risks by providing visibility into asset performance and operational effectiveness.

- Ensure your agency adheres to minimum maintenance standards and meets all levels of service requirements - and can easily report on your operations. Having impartial data at your fingertips can help prove your agency met all obligations and refute potential liability claims without “we said, they said” situations.
- Accidents do happen, despite all efforts to avoid them. When a complaint comes in - a knocked over mailbox, missed garbage pick-up, citizen vehicle damage - a telematics solution with deep asset integrations can provide context to the complaint. Plow status, precise vehicle location with timestamps, spreader controller data, and more can paint a detailed picture of vehicle activity at the time of claim or collision.



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Hitting compliance targets

Balancing maintenance standards and other public works policies and procedures is a tall task for fleet managers. Telematics data keeps vehicles and reporting in check so you can rest assured your fleet is ticking all the compliance boxes.

- Streamline fleet maintenance with features like integrated vehicle inspection applications to know vehicles are road-safe.
- Guarantee levels of service are met with access to live route maps to view near real-time activity completion metrics for compliance.

Eliminating material mismanagement

Wasting materials is not an option for public works fleets looking to reduce costs. Not only are you wasting dollars but material mismanagement can harm the environment. Telematics helps you measure material usage to stay on budget.

- Continuously monitor and measure material usage with insights direct from the controller, such as solid application and liquid application rates.
- Make informed decisions and use the right amount of materials to safeguard both your roadways and the natural environment.



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Staying accountable

Building trust within your community requires a level of transparency into your fleet's operations not readily available to most public works leaders. Telematics can create that connection by offering access to selected fleet activity that can be readily shared with citizens.

- Arm your call center customer support employees with vehicle locations and activity statuses for improved citizen complaint resolution while automating common workflows like snow clearing or trash pickup to improve customer service.
- Keep your constituents driving safely by proactively sharing road work status

Access to vehicle performance and activity reporting across your mixed asset fleet with telematics helps you make data-driven decisions regarding managing your public works operations and servicing your community effectively.

After exploring the benefits of telematics, let's dive into how the right solution can help you conquer the unique seasonal needs of a public works fleet.



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CHAPTER 2

A solution for all seasons

Your teams work tirelessly year-round to keep streets clear, community roadways safe and neighborhoods looking their best. To optimize operations and keep things running as smoothly as possible, you need a telematics solution that can keep up with the changes in the seasons and your rotating responsibilities.

Spring cleaning

April showers bring more than just May flowers. Pothole repairs, culvert maintenance, grading, sweeping and other winter clean-up activities are in full swing for public works crews in the spring as the frost comes out of the roads.

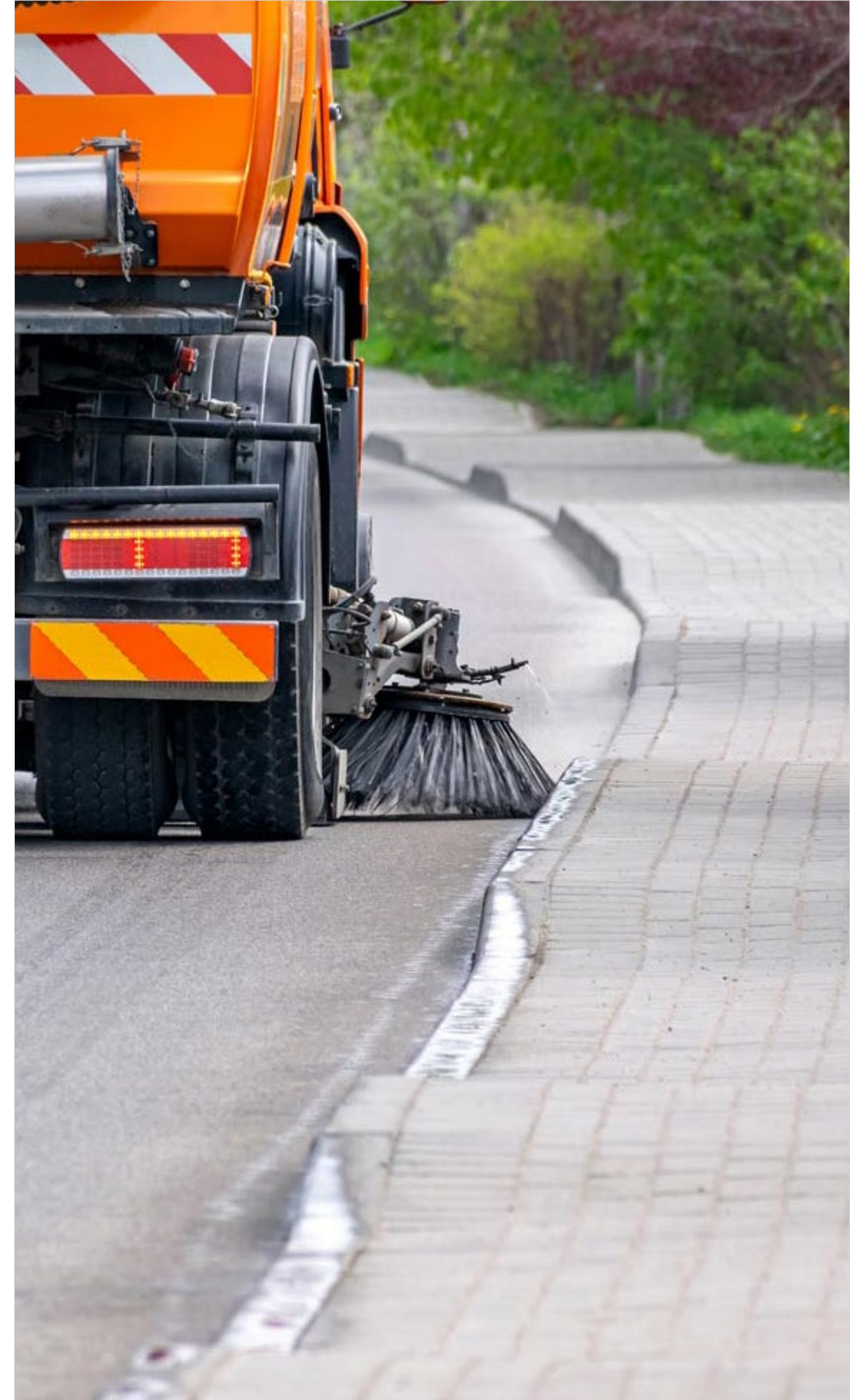
Collecting and clearing salt from the road is a top priority so that it doesn't end up in watersheds leading to salinized drinking water. Many cities have mandates and compliance requirements for removing salt as it remains in the environment long after the last snow.

Springtime street sweeping is a crucial component of keeping roads clear and free of built-up salt. Telematics data helps keep an eye on springtime operations and can provide insight into when brooms are on or off to monitor sweeping activity as well as keep track of water usage on board street sweeper vehicles. This helps to know when roads have been cleared of debris and that excess salt has been removed.



Did you know?

Water usage has become a hot topic for many communities dealing with water shortages. One city experiencing a water shortage monitored their water usage in public works operations to compare how much they have vs how much was used to combat water theft. Telematics onboard street sweepers can help to accurately track water levels and aid in conservation efforts.



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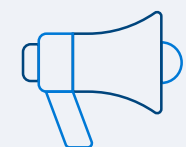
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Summer breeze

Although trash pickup is a year-round activity, citizen complaints about missed garbage collections start to pile up in the summer when the smelly impacts are more noticeable. Plus efficient garbage collection is essential for public health and safety and deters citizens from littering and illegal dumping which have harmful impacts on the environment.

Telematics data can ensure your waste management vehicles are on the most optimized route to meet collection deadlines and satisfy service level requirements that don't lead to contamination. A well-managed and reliable garbage collection service contributes to overall community satisfaction and fewer complaints. However, if a call does come in, you'll be armed with the data to verify when vehicles made their rounds and if collection was on time.

Integrations with camera solutions can help you pinpoint where trash contamination might have occurred with access to what materials are inside garbage bins during pickup. Tires, paint cans or other hazardous materials could be incorrectly put out for collection, and knowing where the point of contamination happened aids in issuing fines to offenders



Extra benefit

With telematics aiding in better materials management during winter seasons, it can reduce the harsh effects on road surfaces that would then require pothole or repair activity in summer months, lowering your operational costs and freeing up resources.



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Fall foliage

Once the leaves start to change color, it's time for public works crews to hit the roads for street sweeping and leaf collection. Whether your community asks residents to pile leaves at the front of the house for leaf vacuum collection vehicles or bring bagged yard waste to the curb, crews are responsible for collecting leaves promptly and keeping the roads clear of debris before winter storms roll in and clog up catch basins.

With telematics guiding the way to optimal leaf collection routes, you can be sure your crews are hitting priority areas first and meeting all leaf service level requirements. Gain a comprehensive view into when and where all leaf collecting activity occurs with route completion and live route features to stay accountable to community inquiries. Pinpoint efficiencies in leaf collection routes and the time it takes crews to hit leaf dumping facilities for composting, saving you money through improved productivity and, potentially, reduced fuel usage.



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Winter freeze

The **winter months bring many challenges to public works operations** as keeping roads safe and clear becomes paramount to reduce the risk of vehicle collisions or pedestrian slips and falls. Telematics aids public works departments with liability concerns by providing data evidence of plowing as well as solid and liquid activity to know that roads are in the safest condition possible.

On top of that, telematics can also help better manage material usage like salt, sand or brine, to comply with the various environmental mandates around contaminating groundwater. Better manage operational costs by knowing exactly how much material has been used in a season and forecast how much material will be necessary next season based on accurate, historical benchmarking.

The right telematics solution that meets your needs year-round will streamline efficiencies in your operations while helping you find ways to stay accountable and on budget. The next step is figuring out exactly what to look for in a telematics solution provider.

With telematics data from Geotab, the public works management team in the **Town of Blacksburg** can now make informed decisions based on real-time data that shows how much salt is being used, and how it's being spread onto roadways during a snow event.

"We compared the numbers this past season with previous winters and have seen significant savings in terms of materials,"

explains John O'Shea, Safety and Special Projects Manager for the Town of Blacksburg Department of Public Works.



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Four key factors to consider when choosing a telematics provider

As you consider which telematics solution to implement, there are multiple factors to consider when comparing features across several different vendors. Here are the four most important elements that make up an effective public works fleet management tool.

1. Keeps track of every vehicle and every piece of equipment in your fleet

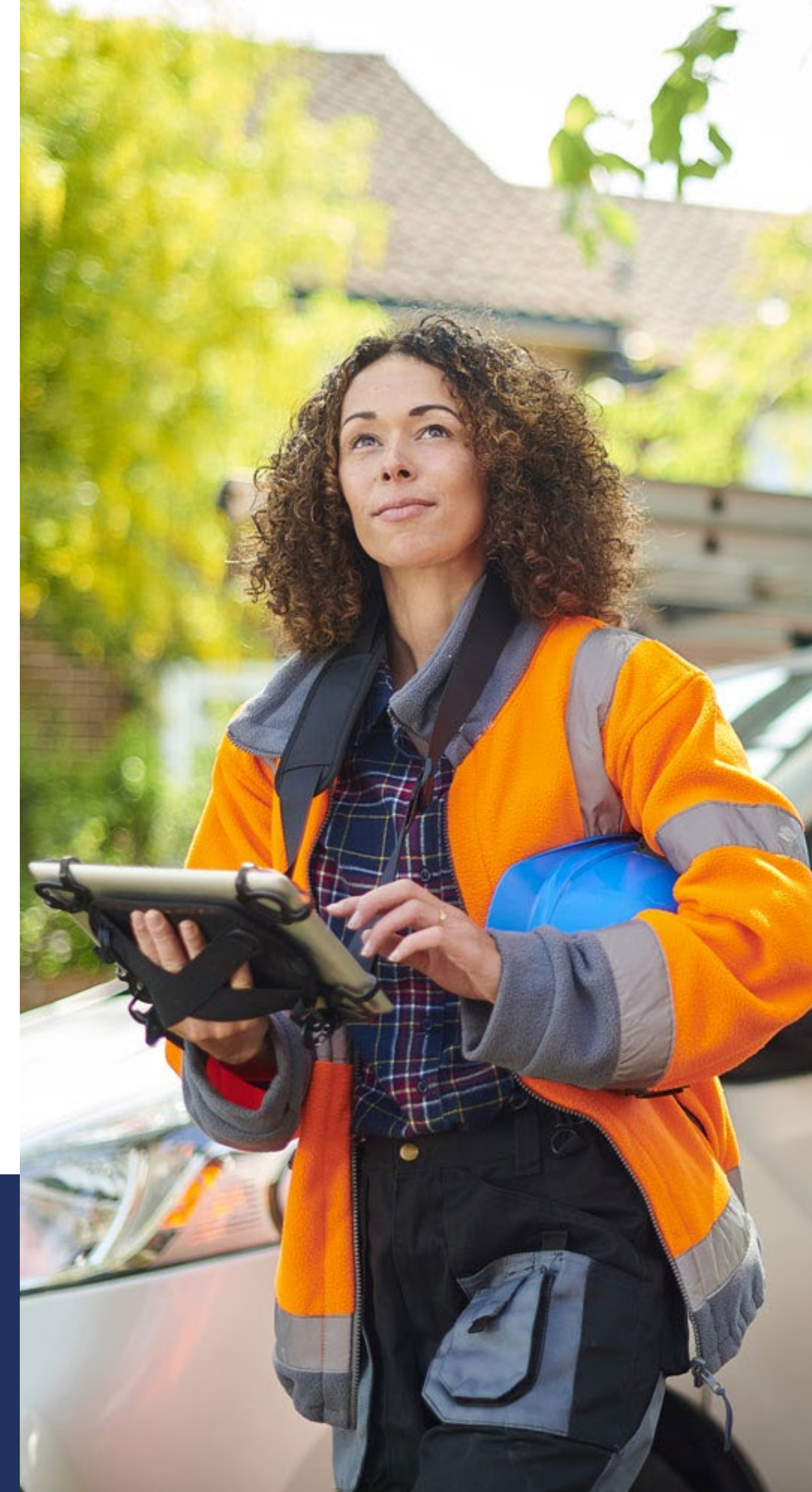
At its core, a telematics solution built for public works fleet management must continuously monitor every asset. That includes comprehensive, real-time visibility into the entire mixed fleet, from the biggest pieces of machinery to electric vehicles to non-powered assets like signboards and remote generators. Choose a provider that can extend its solution's coverage to include all of your owned, leased or contracted vehicles and equipment in one comprehensive dashboard.

To properly assess a fleet's performance and figure out where improvements or tweaks can be made, you require access to all relevant data, including engine data and the auxiliaries like snow plow sensors or spreaders. Without insight into how a piece of equipment is used, you cannot effectively measure performance or manage your operations going forward.

This applies to your most important asset as well— your operators. The right telematics solution will combine all the relevant equipment data with detailed safe driving reporting, risk management summaries and vehicle inspection reporting in one centralized platform.

After selecting Geotab as their telematics solution, Mark Goldstein with the [MassDOT Highway Operation](#) said

"Now we can see the precise location of fleets, measure vehicle performance and evaluate operator behavior. All of this information helps us optimize performance and manage operating costs."



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2. Allows you to proactively maintain your fleet

Making sure vehicles are road-worthy and equipment is operational are top areas of concern for public works fleet managers given shortages of replacements and the increasing costs to repair or replace parts and vehicles. With budgets tightened regularly, departments may look to save dollars by switching to cheaper but harsher chemicals to clear and melt snow and ice. These can be harder on vehicles in your operations and require a closer eye for regular maintenance.

Mother nature doesn't operate on a set schedule so neither can your teams. A high-functioning public works department must keep vehicles ready to go at a moment's notice - especially heavy-duty vehicles - to meet levels of service requirements. This entails regularly monitoring engine performance and maintaining auxiliaries, like sensors on plows, to collect telematics data. Monitoring soot levels in your heavy equipment means you can proactively run an active regen when the skies are clear rather than scrambling as a storm is coming in and you need all vehicles road-ready.



Impactful Insight

A large government fleet saw 3-4 mpg improvement in a vehicle that had a cylinder misfire that was going undetected. Telematics uncovered this issue and ensured peak vehicle performance. **When fuel accounts for nearly 60% of total fleet operating costs on average**, finding ways to lower fuel consumption with telematics is a win-win.

Maintenance reminders Showing 65 reminders Columns

Maintenance reminder	Maintenance type	Frequency	Repeats	Assets added
Battery replacement	Battery	Every 36 months	Yes	24
Oil change	Oil change	Every 3 months or 3,000 mi or 3,000 hrs	Yes	24
Tire rotation	Tire rotation	Every 6 months or 6,000 mi	Yes	24
AdBlue refill	SCR Urea addition	Every 6 months or 6,000 mi	Yes	18
Flatbed safety inspection (DOT)	DOT Inspection	Every 9 months	Yes	18
Monthly truck check	DOT Inspection	Every month	Yes	18
Annual safety certificate	Vehicle documentation	Every 12 months	Yes	24



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That data can help predict maintenance schedules using real-time data to identify vehicle and engine failures before they occur. Look for a telematics provider that can plug into a predictive maintenance platform to analyze hundreds of thousands of vehicle data points such as sensor data and driver usage across all asset classes to pick out patterns that have led to failures in the past.



Did you know?

A heavy-duty vehicle, like a snowplow, can be out for 30 days if the diesel filter gets clogged up to inoperable levels. The regeneration cycle to clear the filter costs time and money. Geotab allows you to identify soot levels for the filter and create reports to raise an alert when the filter is getting to 40-50% full, sending operators a message to run a regen cycle.

"We're able to see the fault code even before the driver comes in; it's very handy to know that already. It's also a time saver. The mechanic is often waiting for the driver as they come into the garage,"

Brad Huthinson, Road Superintendent for **Wellington County**. Because of the Geotab reporting features, the team can also schedule service reminders, allowing for better staging of maintenance work.



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3. Provides transparency to the public while helping you stay compliant

Accountability goes a long way for public works departments navigating relationships with their constituents. As important as it is to be accountable, it is equally important to be seen as accountable. This helps instill a sense of responsibility and communicates to citizens that there will be consequences if services are not completed effectively and on time.

Transparency showcases that taxpayer dollars are being used appropriately and for the betterment of the community. It's important to share timely updates to show citizens that your crews are doing everything they can to protect them on the roads and communicating to the public where road construction activity is occurring increases public and worker safety.

A comprehensive telematics solution for public works departments will offer the ability to easily share near real-time road status and activity completion times with constituents through a public-facing website that automatically pulls the chosen data. Through this website, citizens can know when a road is clear and safe for travel as well as alleviate concerns around road status, garbage pick up or leaf collection schedules. This becomes a tool for your teams to provide evidence of completion for service-level mandates around snow removal and materials application. Over time, this open communication will result in fewer 311 calls placed as citizens are proactively kept in the loop.

Charlottesville, VA was one of the first government agencies to launch Geotab's Citizen Insights to be more proactive about pushing out information to the public in real time. Citizens saw up-to-date information on which streets were set for leaf collection and which streets had already been collected as the department piloted Citizen Insights for their leaf program.

"I've envisioned Citizen Insights for 10 years – it just wasn't available, – We want to eliminate as much inefficiency as possible and now we're looking to roll out Citizen Insights for snow events."

said Ron Cook, Systems Performance Analyst for Charlottesville.



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4. Helps you meet environmental mandates

As you move your fleet forward towards sustainability goals of the future, you'll need a telematics partner who can guide you on that journey with data-driven recommendations along the way.

Telematics data helps fleets reduce their carbon footprint by targeting unnecessary idling, pulling emissions data and keeping only the most efficient, well-maintained vehicles on the road. By ingesting all of your fleet's data, you get a comprehensive view of where to take corrective actions needed for sustainable outcomes.

Diesel trucks and heavy-duty equipment are rapidly moving towards a compressed natural gas (CNG) future and while public works duty cycles make it tough to electrify the full fleet, you'll want a telematics solution provider that supports a wide range of EV makes and models to give you options when replacing administrative vehicles. An all-in-one platform that can compare diesel, gasoline or CNG fuel usage along with charge requirements across all engine types and asset classes is your best bet for running the most environmentally efficient fleet.

A telematics solution that covers all of these points can provide the insights needed to know how your operations measure up. It also gives you an advantage in planning more effectively to support future strategies.

The City of Seattle aims to cut carbon emissions by 50% by 2025. The city's fleet leadership chose Geotab to help meet its sustainability goals and determine which internal combustion engine (ICE) vehicles could be cycled out for EVs.

Philip Saunders, Deputy Director of Logistics and Emergency Management and the Green Fleet Program, chose Geotab because of its EV reporting capabilities. With Geotab installed, they improved the decision-making process for determining if an EV is the right fit, currently operating over 1/3 of its fleet in alternative fuel vehicles. Having the data-rich Geotab system has been critical in reporting sustainability progress.

"The real eye-opener for me was the big picture. I saved \$2 million in fuel and spent only \$100,000 on electricity," noted Saunders.



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CHAPTER 4

Leveling up with the right telematics partner

Data-driven decision-making is behind the most effective public works operations across the country. Telematics propels these departments into achieving better levels of service, higher productivity rates and safer crews and communities.

At its core, telematics helps public works leaders measure the outputs of their crews and keep track of vehicles to know when and where jobs are being completed. Expanding on and analyzing that base-level information helps you better manage vehicle health, resource allotment and driver behavior. Understanding how your operations are being performed and the tools needed to get the job done enables you to solve operational issues while communicating those updates to the public.

With a comprehensive view of how these factors fit together across a public works fleet's performance, leaders can then start to use telematics data for predictive analysis in building the fleets of tomorrow. The right telematics solution can offer data integrations and APIs that tie together other business intelligence tools for a collaborative approach to budgeting and planning across other government agencies.

Thinking of taking your public works department to the next level with telematics?

Learn more by visiting <https://www.geotab.com/public-works/>



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About Geotab

Geotab is advancing security, connecting commercial vehicles to the internet and providing web-based analytics to help customers better manage their fleets. Geotab's open platform and Marketplace, offering hundreds of third-party solution options, allows both small and large businesses to automate operations by integrating vehicle data with their other data.

The in-vehicle device provides additional functionality through IOX Add-ons as an IoT hub. Processing billions of data points a day, Geotab leverages data analytics and machine learning to help customers improve productivity, focus on sustainability, optimize fleets by reducing fuel consumption, enhance driver safety and achieve strong compliance to regulatory changes. Geotab's products are represented and sold worldwide through Authorized Geotab Resellers.

To learn more, please visit www.geotab.com and follow us [@GEOTAB](https://twitter.com/GEOTAB) and on [LinkedIn](https://www.linkedin.com/company/geotab)

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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