



The liability mitigation framework:

Building an integrated defense against risk in public works fleet operations

GEOTAB®

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Executive summary

Public works departments operate in a high-stakes environment where every vehicle, route and field operational decision carries potential liability. For today's municipal leaders, exposure is rising, driven by escalating jury awards, shrinking legal protections and heightened public scrutiny of fleet-related incidents. As accountability expectations expand, managing liability tied to public works fleets has become increasingly critical, with both financial and operational risks growing alongside the demands placed on municipal services.

When fleet-related liability expands, the consequences ripple across every aspect of municipal operations. Financially, "nuclear verdicts" stemming from vehicle collisions or equipment incidents can cripple a city's budget and threaten essential services. Operationally, lawsuits, investigations and claims divert limited resources from core public works functions such as road maintenance and snow response. Reputationally, public confidence erodes when a department is perceived as negligent or unsafe, undermining trust in local government.

This analysis examines municipal fleet liability across three primary dimensions:



Operational liability

Examines the day-to-day risks inherent in public works fleet activities (from property damage to driver safety) and how transparent data and documentation can prevent and defend against claims.



Compliance liability

Focuses on meeting statutory service levels and maintenance standards, demonstrating due diligence through verifiable data and digital recordkeeping.



Environmental liability

Addresses emerging risks around contamination, emissions and sustainability reporting, where ecological stewardship is increasingly linked to legal exposure.

Building on this framework, this guide introduces a unified, data-driven approach for identifying, mitigating and documenting fleet-related risk. Within each liability area, a detailed "feature map" outlines actionable tools available on the Geotab fleet data intelligence platform, including data capabilities and operational strategies designed to minimize exposure. This approach moves beyond a reactive stance, showing how AI-enabled fleet intelligence, real-time monitoring, predictive analytics and integrated data systems enable departments to shift from managing incidents to preventing them, so that public works operations can not only withstand liability pressures but also emerge stronger, safer and more resilient.



Chapter 1: The evolving liability landscape of government fleet risk

Adapting to expanding legal exposure and the rising cost of municipal accountability

Public works departments are operating in an era of heightened legal and financial exposure. Minor operational errors, once managed quietly within a department, can now escalate into high-profile, multimillion-dollar liability events. Understanding the forces driving this shift and how to manage them, is essential to protecting both your department and the community you serve.

In recent years, a new phenomenon has reshaped the risk landscape for cities and counties: The rise of “nuclear verdicts.” These substantial jury awards, often exceeding \$10 million, have become a defining feature of municipal liability. In one widely publicized sanitation-vehicle case, a collision resulted in a verdict approaching \$50 million. A single verdict of this magnitude can consume an entire year’s capital budget, forcing reductions in essential services and public programs. Even for municipalities with claim limits, like those familiar in Canada, the financial impact can accumulate quickly. Multiple mid-sized claims can collectively reach tens of millions of dollars, demonstrating that risk can manifest through both isolated high-value incidents and a series of compounding operational lapses.

These financial awards are coupled with a narrowing of traditional municipal protections. Doctrines such as **sovereign immunity**, which historically shielded cities from certain tort claims, have been increasingly constrained by courts. Municipalities are now held accountable for operational decisions, particularly in areas such as hiring, training, supervision, and vehicle maintenance, that were once considered discretionary. In several recent cases, immunity defenses have failed when claims focused on negligent supervision or inadequate hiring practices, reflecting a broader trend in which public entities are expected to exercise a duty of care comparable to that of private organizations.

Liability rarely stems from a single lapse. More often, it results from a cascade of minor oversights that compound risk. A driver lacking proper certification or operating a poorly maintained vehicle can set off a chain of incidents involving collisions, regulatory violations, or environmental harm.



Under the legal doctrine of *respondeat superior*, such actions can extend liability to the employer, making the municipality, rather than just the individual employee, legally responsible for acts performed within the scope of employment. In this way, even a seemingly isolated operational mistake can expose the entire organization to legal and financial consequences.

Municipalities are frequent targets for litigation due to their perceived financial capacity, often referred to as **“deep pockets jurisprudence,”** regardless of their direct involvement. This principle, combined with the potential for liability arising from incidents that occur during “off-hours” or involve the “personal use” of municipal vehicles, creates a pervasive and challenging risk exposure that traditional oversight methods struggle to address. Even minor incidents can escalate into substantial claims when they are framed as systemic failures in training, supervision or operational policy. One of the most consequential risks is negligent entrustment, which occurs when an unqualified or unsafe employee is allowed to operate a city vehicle. Courts generally view such failures as preventable, and juries often impose significant financial penalties when oversight is clearly inadequate.

At the core of these risks are management gaps: Disconnected systems, limited visibility into fleet operations, manual logs or verbal approvals for vehicle usage. This heightened exposure, with the burden of proof on the municipality to demonstrate its due diligence in monitoring and controlling its assets, requires a 24/7, verifiable tracking system. Geotab’s fleet intelligence platform closes these gaps by unifying vehicle data, driver data and contextual information within a single platform, creating a verifiable system of record.

When incidents occur, this integrated data provides defensible proof of oversight, showing that vehicles were properly maintained, operators were driving safely or the data to provide concrete evidence of non-sanctioned activity.



For example, if a snowplow damages private property, Geotab data can confirm the driver’s route, speed, training status and the vehicle’s maintenance history. Instead of facing presumptions of negligence, municipalities can demonstrate due diligence and operational control through transparent, time-stamped digital evidence.

The legal environment for public works fleets has fundamentally changed. Juries are awarding more, legal protections are narrowing and operational mistakes now carry consequences that extend far beyond the incident itself. Public works managers can no longer rely on manual processes or fragmented records to manage risk. Proactive data management, integrated fleet intelligence and verifiable operational documentation have become essential tools. By leveraging these resources, public works leaders can reduce exposure, strengthen accountability and demonstrate the diligence that courts and communities now demand.

As the demands on public works fleets evolve, understanding where liability originates and how it can be mitigated is key to building a defensible, data-driven operation, and this perspective sets the stage for the three interconnected dimensions of liability - operational, compliance and environmental - that will be explored in the chapters that follow.

How liability flows through your department and how to stop it

RISK What can go wrong?	IMPACT What happens if it goes wrong?	DEFENSE How to reduce risk
Untrained or unsafe drivers	Financial: Jury awards, legal costs, insurance hikes, budget diversion	Integrated AI fleet data intelligence
Poor vehicle maintenance	Operational: Project delays, reduced emergency response, vehicle downtime	Predictive safety and risk management solutions
Missed compliance deadlines	Reputational: Public trust erosion, weakened community support	AI dash cameras with driver coaching workflows
Environmental hazards E.g., salt runoff, emissions		Compliance tracking and audit-ready records
Operational gaps		Environmental impact monitoring

Chapter 2: Operational liability

Reducing financial and reputational risk through data-driven fleet oversight.

Public works fleets operate under constant scrutiny. The combination of large, specialized vehicles, unpredictable working conditions and in many cases, dense urban environments, creates a uniquely high exposure profile. Snowplows, refuse trucks and maintenance vehicles move continuously through dense, unpredictable environments where a single incident can trigger financial loss or litigation.



In the United States, the **National Safety Council (NSC)** reported there were 1,085 fatalities and 3,500 injuries resulting from accidents involving garbage and refuse trucks in 2022.

Operational liability represents the most immediate and visible source of risk for public works departments. Every snowplow route, street sweep or waste collection run carries the potential for property damage, collisions or other operational incidents that can lead to legal, financial and reputational consequences. For municipal risk managers, successfully decreasing operational liability increasingly depends not only on safer fleet performance but also on the quality of operational data. Every verified GPS log, telematics alert and route record forms part of a city's legal defense against costly claims and community disputes.

This chapter examines two primary areas of exposure—damage to private property and driver liability—and explores how municipalities can use operational data, documentation and connected-vehicle intelligence to both prevent incidents and effectively address them when they occur.



Risk area 1: Damage to private property

Vehicle-related incidents and property damage now account for roughly **one-third of all municipal liability claims**, according to the 2024 Government Fleet Public Risk Report. This highlights the importance of operational oversight and accurate documentation in managing financial exposure and safeguarding public trust.

Even minor errors during routine operations—whether a plow inadvertently strikes a mailbox or the asphalt repair equipment damages landscaping—can result in costly claims if not properly documented. When municipalities cannot verify where equipment was operating or whether proper procedures were followed, they risk both financial loss and reputational damage.

Operational intelligence systems provide the tools to address this challenge. By capturing real-time data on vehicle location, activity and equipment use, these platforms create a verifiable record of operational diligence.



For example, **King Township, Ontario**, successfully defended 45 claims by leveraging route verification and operational logs, saving millions in potential settlements. This illustrates that structured, verifiable data can transform everyday operational oversight into concrete legal protection.

Reducing exposure to property damage claims requires both preventive action and proof of accountability. Geotab's fleet intelligence solution equips municipalities with data-driven tools that make both possible, linking vehicle behavior, service activity and public transparency into one defensible system of record. The following capabilities show how these functions work together to mitigate risk and manage claims effectively.



Mitigate damage to private property

Feature name	Functionality	Value
Auxiliary input monitoring and rules	The IOX-AUXM collects time-stamped, GPS-verified data on the status of connected equipment and allows for custom rules that send alerts.	- Mitigate damage by alerting drivers to situations that could damage property. - E.g. a custom rule that alerts the driver if the dump truck box is up while the vehicle is moving.
Route completion and boundary zones	- Automatically tracks and reports when vehicles enter, exit, or complete work within predefined geofenced zones. - E.g. service areas or restricted customer zones.	Ensures drivers know exactly which areas they are responsible for servicing, reducing the chance of them accidentally entering and damaging private property.
In-cab navigation	Provides drivers with optimized, turn-by-turn routing and real-time alerts to confirm adherence to pre-planned, authorized paths.	Minimizes the chances of drivers being in areas that are not part of their pre-approved routes.
Citizen insights platform	A public-facing portal provides transparency about where and when services like snowplowing are scheduled to occur or have recently been completed.	By communicating service areas and times to the public, residents can take preventative measures, such as ensuring mailboxes or other obstructions are clear of the roadway.
Sensor integration	- Integration of sensors requiring an 'active signal' when an operation is underway. - E.g. proximity, hydraulic.	Reduces the chances that auxiliary equipment is only used when necessary.
360° cameras	Integrated 360-degree dash cams capture road- and driver-facing video with blindspot and cyclist detection and in-cab monitors.	Automatic detection systems provide audible and visual alerts, warning the driver of obstacles such as mailboxes in the vehicle's blind spots.

Addressing complaints of damage to private property

Feature name	Functionality	Value
Investigation	Gather precise evidence: • Use the 'Area of Activity' feature to conduct proximity searches. • Simply draw a geographical area on the map and set a timeframe to collect truncated trip and safety event data—focusing strictly on relevant activity rather than entire trips. Centralize your findings: • Save your evidence as an "Investigation" to trigger the case management workflow. • This generates a dedicated case file where telematics data, safety events, and user comments are consolidated in one view. Build a complete file: • Enhance your case by attaching external files, such as photos or police reports, ensuring all critical documentation is stored in one place. Secure legal documentation: • Export your findings into a professional PDF formatted for legal use, protected by robust access control features.	• Simplifies the investigation and resolution of property damage claims made against your fleet and serious incidents. • Quickly build comprehensive, legal-ready case files that consolidate telematics evidence with external documentation in one secure location.
Trips history and replay	• Records and allows managers to visually replay a vehicle's exact path, speed, and time for any completed trip.	• Quickly confirm if a city vehicle was present at the scene at the time of the incident, providing crucial information for post-claim investigations.
Event data	• Logs every instance of predefined safety rule violations, such as speeding, harsh braking or unauthorized boundary entry.	• Creates documented accountability to analyze incidents and support investigations.
Auxiliary input monitoring	Collects time-stamped, GPS-verified data: • IOX-AUXM: ON/OFF status of connected equipment. • E.g. plow blades, salt spreaders. • IOX-WRKS: Spreader controller mode, plow position, sweeper data. • E.g. broom on/off.	• Verify the status of equipment • E.g. plow blade status, broom position, etc. at the time of the complaint.



Risk area 2: Driver liability

Even with precise routing, driver behavior remains a major liability factor. The [U.S. Bureau of Labor Statistics \(2024\)](#) reports transportation incidents as the leading cause of public sector occupational fatalities, accounting for 37% of worker deaths. For municipalities, this translates into direct exposure under the doctrines of respondeat superior and negligent entrustment.



Case studies from fleets such as the [Missouri Department of Transportation \(MoDOT\)](#) demonstrate that integrating telematics and driver behavior monitoring can dramatically reduce risk. MoDOT achieved a 25% decrease in fleet liability claims, a 50% reduction in claim severity and over \$1 million in annual savings.

Cities that fail to systematically monitor and train operators risk not only safety but also significant fiscal repercussions, highlighting the critical importance of real-time data, video intelligence and verifiable event records.

Fleet intelligence platforms like Geotab deliver more than operational data: They provide the visibility and insights necessary to both prevent incidents and defend against liability claims. By integrating driver behavior analytics, real-time alerts and verifiable event data, municipalities can transform driver oversight from a compliance exercise into a proactive framework for risk reduction. The following capabilities demonstrate how connected-vehicle intelligence supports safer driving practices and defensible documentation when incidents occur.

Mitigate potential driver liability

Feature name	Functionality	Value
Safety	Centralizes all safety data, event video and driver performance metrics into a single view.	Effective risk management and action prioritization.
Driver scorecards	Quantify driver behavior by assigning a score based on predefined rules, such as speeding and harsh braking, to rank individual performance.	Provides objective, quantified evidence of driver safety compliance for liability defense, including protecting a department's safety culture and driver training effectiveness in claims.
Predictive collision risk	Uses AI and machine learning to analyze telematics and driving data patterns, forecasting the probability of future collisions for vehicles or groups.	Enables a shift from reactive to proactive safety strategies by identifying high-risk drivers early and allowing intervention before collisions occur.
Safety benchmarks	Compare safety performance metrics against like fleets.	Offers critical context to understand risk levels relative to those of fleets with a similar make-up and activity, demonstrating due diligence and a commitment to safety in liability reviews.
Geotab GO Focus AI dash cam family and integrated 360° cameras	- Includes options for road-facing, dual-facing or 360° visibility, in addition to ADAS/DMS capabilities. - Can include AI-enabled alerts for instant, audible driver feedback and critical insights, with in-cab monitoring, blind spot and cyclist detection.	Reduces the likelihood of collisions by rapidly creating safer habits through instant, in-cab voice cues as risky driving happens and by creating targeted coaching workflows to assign, track and recognize driver improvement.
Geotab Drive app	Delivers personalized safety profiles, performance benchmarks against similar drivers and an AI-calculated collision risk forecast directly to the driver's Geotab Drive app.	Empowers drivers to correct high-risk behaviors, reducing preventable incidents and overall fleet liability exposure.
Hazardous conditions alerts	Geotab and its Marketplace partners (like WeatherOptics) can provide real-time alerts to drivers and managers about potential weather-related hazards (heavy snow, high winds, slippery roads) directly integrated into the platform.	- Alerts drivers of a specific, localized hazard. - E.g. "Slippery conditions on Elm Street" or "Visibility below 1/4 mile".
Event data	- Logs every instance where a vehicle violates pre-defined rules. - E.g. speeding, idling, harsh driving, including GPS coordinates and time stamps.	Creates a detailed record of high-risk activities, enabling targeted coaching and proactive risk mitigation.

Addressing driver liability claims

Feature name	Functionality	Value
Collision reconstruction add-in	Detailed collision report on impact force, direction, point of impact and detailed second-by-second data from before, during and after the event.	Provides forensic-quality data for litigation and insurance claims, allowing fleets to help prove non-fault and protect drivers from wrongful liability.
Trip replay and event details	- Combines animated trip replay with an integrated event timeline that displays all driver safety events. - E.g. speeding, harsh braking leading up to an incident.	Delivers comprehensive context for collision events, enabling managers to distinguish between driver fault and external factors for targeted coaching or defense.
Geotab GO Focus AI dash cam family	- Includes road-facing and dual-facing camera options, in addition to ADAS/DMS capabilities. - Can offer AI-enabled alerts for instant, audible driver feedback and critical insights, with in-cab monitoring, blind spot and cyclist detection.	Reduces legal exposure by delivering impartial video evidence for crash analysis, helping exonerate drivers and limit false claims or liability costs.
360° camera	Multi-lens video coverage with AI event tagging that automatically records dangerous maneuvers and collisions.	Provides comprehensive visual evidence that strengthens defense against driver liability claims, exonerating drivers and reducing costly settlements.
Investigation	Gather precise evidence: - Use the 'Area of Activity' feature to conduct proximity searches. - Simply draw a geographical area on the map and set a timeframe to collect truncated trip data and safety exceptions—focusing strictly on relevant activity rather than entire trips. Centralize your findings: - Save your evidence as an "Investigation" to trigger the case management workflow. - This generates a dedicated case file where telematics data, safety events, and user comments are consolidated in one view. Build a complete file: - Enhance your case by attaching external files, such as photos or police reports, ensuring all critical documentation is stored in one place. Secure legal documentation: - Export your findings into a professional PDF formatted for legal use, protected by robust access control features.	- Simplifies the investigation and resolution of serious incidences, such as major collisions, and liability claims made against a driver. - Quickly build comprehensive, legal-ready case files that consolidate telematics evidence with external documentation in one secure location.



Chapter 3: Compliance liability

Reducing legal exposure from regulatory non-compliance and service failures

Compliance liability in public works fleets extends beyond administrative requirements to encompass the municipality's responsibility for public safety, regulatory adherence and service standards. When statutory service levels, maintenance schedules or operational regulations are not met or properly documented, municipalities face legal exposure as well as public scrutiny. This chapter examines the compliance areas most susceptible to liability and explores how data intelligence tools can support measurable, verifiable compliance assurance.

Risk area 1:

Demonstrating compliance with levels of service

Municipalities have a statutory duty to maintain roads and public spaces in accordance with defined service standards, and courts are increasingly holding them accountable for failing to meet these requirements. Legal exposure often arises not only from actual service lapses but also from an inability to prove that levels of service (LOS) standards were consistently met. Missed snow removal, delayed emergency access or skipped street sweeping can all trigger scrutiny if there is no verifiable documentation showing that obligations were addressed.

Proactive service tracking and real-time documentation are essential for mitigating this risk. Modern fleet intelligence platforms enable municipalities to continuously monitor operations, confirm that service level agreements (SLAs) are being fulfilled and provide defensible proof in the event of an incident or claim. Automated reporting, route verification and digital recordkeeping strengthen a municipality's legal standing while promoting service reliability.

Maintaining defined levels of service requires continuous visibility, precise documentation and data-backed accountability.



The **City of Henderson, Nevada**, uses Geotab technology to track street sweeping activities, providing full visibility into completed routes and service cycles. This approach not only ensures SLAs are consistently met but also allows the city to address deficiencies proactively and demonstrate measurable performance against LOS commitments.

Mitigating risk of LOS violations

Feature name	Functionality	Value
Route optimization and completion tracking	Define service routes, groups and segments, and identify problems in near real time with a live service status view.	Prevents missed routes and provides verifiable proof that mandated levels of service were met, supporting defense against service violation penalties.
Event data	- Detailed summary report for any rule-based violation. - E.g. skipped stops, early zone exit.	Focuses management attention on verifiable violations, keeping documented processes in place to correct service failures and mitigate legal risk.
Citizen insights platform	Public-facing map of service activity that demonstrates compliance with service standards.	Transparency into service status (e.g., “Serviced within the last four hours”) helps manage public expectations and reduce incoming service calls.
IOX-WRKS and IOX-AUXM hardware integration and custom rules	- Connect auxiliary equipment data—such as spreaders, plow position and street sweeper broom/vacuum status—to MyGeotab. - Set custom rules to log the time and location of material application or sweeping activity.	Monitor real-time auxiliary equipment status to confirm LOS, track where materials are applied or sweeping passes occur and identify when vehicles are actively working versus deadheading.
Configurable time intervals for service status	Define specific time windows (e.g., hours or days) that correspond to their service level agreements within route completion and citizen insights settings.	Visually tracks and displays performance against service standard targets to maintain compliance.





Addressing LOS violations

Feature name	Functionality	Value
Route completion reports	- A dashboard and summary views that aggregate post-event analysis data. - E.g. serviced routes and segments with pass count versus the expected pass count) over longer periods.	Primary tool for long-term compliance reporting, providing clear, data-backed evidence of compliance with maintenance standards.
Trip replay and route verification	Visually recreates a vehicle's route and activity, allowing managers to confirm the exact path driven and where service was performed or missed.	Provides irrefutable visual evidence to dispute inaccurate claims of service failure or non-compliance by showing precisely where vehicles were (or were not).
Historical route data	Maintains long-term archives of raw GPS, speed and location data.	Provides forensic capability to defend against service-related litigation, maintaining the integrity and availability of critical operational data.
Material Management Reports (MMRs)	Trip-based and route-based reports provide a detailed summary of materials used, operational time and distances covered for specific timeframes.	Data proving that service was performed on a specific route or during a specific trip when disputes arise.
360° cameras	360° vision with internal and external visibility and blind spot and cyclist detection and in-cab monitors.	Video recording proving a service was performed, per required LOS.

Risk area 2:

Hazards created by unmet service standards

Each year, **over 2 million injuries and 22,000 fatalities in the U.S. are linked to poor road conditions**; icy roads alone contribute to more than **150,000 crashes annually, resulting in over 1,800 deaths**.

Public works departments carry a critical responsibility for keeping roadways and public spaces safe, which is why many municipalities are bound by statutes dictating response times and service quality for snow and ice control, drainage and debris removal, pothole repair, etc. Failure to meet these standards can quickly elevate liability risk, resulting in negligence claims, regulatory penalties and reputational damage.

For instance, following heavy snow and ice events, one major city experienced widespread road hazards, including potholes and untreated sidewalks. Over six years, approximately 18,200 claims were filed for personal injury and property damage, with total settlements exceeding \$138 million. Analysis revealed that these claims resulted not from individual operational errors but from systemic failures to maintain roads to the required service levels.

Fleet intelligence and telematics solutions provide the data necessary to prevent hazards from arising. Real-time monitoring of plow activity, de-icing material usage and safety events helps municipalities identify and address potential dangers before they escalate.



For example, **MassDOT leverages Geotab to regulate snow removal and de-icing, promoting compliance with service standards while protecting motorists and pedestrians.**

By focusing on hazard prevention and continuous monitoring, municipalities reduce public exposure to unsafe conditions and generate defensible evidence in the event of claims.



Mitigating road hazard exposures

Feature name	Functionality	Value
Plow and equipment activity monitoring (IOX-AUXM/IOX-WRKS)	Monitors and time-stamps the precise locations and statuses of connected equipment.	Provides verifiable evidence of road hazard mitigation work, such as plowing and de-icing activities.
MMRs and reporting	Tracks when and where plowing and materials spreading occurs.	Helps verify that snow and ice removal activities are being performed correctly and according to plan.
Routes and zone management	Enables real-time modification and optimization of routes and zones.	Promotes timely and accurate service in priority zones to mitigate road hazards and proactive hazard response.
Live map and real-time fleet tracking	Offers animated, near real-time visualization of all fleet vehicles, including current location, status and trip paths on a single digital map.	Improves situational awareness and response times during storms or emergencies.
Citizen insights platform	Publishes current and recent service activity on a public-facing map interface.	Reduces dispute frequency by increasing transparency into activities and raising awareness of potential hazards.
Route completion and live route tracking	Provides a live view of service progress and identifies routes that were missed or partially completed.	Helps verify that all critical infrastructure is serviced adequately and within required timeframes, allowing for quick response to missed routes that can lead to road hazards.

Addressing road hazard incidents

Feature name	Functionality	Value
Trip replay and area of activity	Replays a vehicle's exact path, speed and time for a trip; query a specific geographic area to see all vehicles that passed through during a defined period.	Data to defend against time- or location-based claims.
Route completion reports	Show service statuses for specific road segments, including the number of passes completed versus the number required.	Provides defensible proof of service coverage, supporting defense against claims of missed service or created hazards.
Historical data storage	Securely retains all telematics data, including GPS breadcrumbs, speed and sensor inputs, for extended periods.	Supports post-incident forensic analysis and provides verifiable evidence to defend against long-tail liability claims.

Risk area 3: Negligent maintenance

Large municipal vehicles, such as dump trucks, graders, loaders and transit buses, are classified as commercial motor vehicles (CMVs) in both the U.S. and Canada. These vehicles are subject to stringent maintenance and inspection standards governed by the Federal Motor Carrier Safety Administration (FMCSA) in the U.S. and the Ministry of Transportation (MTO) in Canada. Failure to adhere to these standards, whether through missed inspections, delayed repairs or inadequate documentation, can lead to regulatory non-compliance, fines, and, more critically, severe accidents or equipment failures.

The risks of neglecting fleet maintenance are stark. **A study by the FMCSA** revealed that motor carriers with maintenance violations are 65% more likely to be involved in collisions. Brake issues alone account for 22% of accidents caused by poorly maintained vehicles, while tire problems contribute to 35% of such incidents. These statistics underscore the critical need for proactive maintenance to promote safety and compliance.

Municipalities can mitigate these risks through digital inspection records and predictive maintenance tools. These technologies not only help extend vehicle lifespans but also provide defensible evidence of compliance, reducing exposure to claims related to mechanical failures.



For example, the **City of Raleigh, North Carolina** employs Geotab’s digital inspection and fault code monitoring tools to identify mechanical issues before they escalate into breakdowns or collisions. By leveraging remote diagnostics and automated Driver Vehicle Inspection Reports (DVIRs), Raleigh has reduced vehicle downtime, improved compliance documentation and maintained a safe, roadworthy fleet.

Compliance alone is no longer sufficient. Municipalities must be able to verify and demonstrate it. Geotab’s maintenance solution enables departments to automate inspections, monitor vehicle health and document all service activities, creating a transparent and auditable record of due diligence. By embedding verification into everyday maintenance practices, public works leaders can reduce liability risk, strengthen compliance posture and reinforce public trust in the safety and reliability of their fleets.

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Q Jump to...

DashboardAssetsMapBookmarks

Productivity

Compliance

Safety

Maintenance

Sustainability

People

Messages8

Notifications9

Reports

Groups & Rules

Marketplace

Support

System

FaultsBeta

GroupsAssetsTodaySources

Asset	Fault Code	Fault	Severity
Vehicle 1 Heavy Duty, Group K, Group...	P0732	Gear 2 incorrect ratio	Critical
Vehicle 24 Heavy Duty, Group U, Group...	P0420	Catalyst system efficiency below threshold bank 1	High
Vehicle 6 Heavy Duty, Group P, Group...	P0302	Cylinder 2 misfire detected	High
Vehicle 7 Heavy Duty, Group Q, Group...	P0117	Engine coolant temperature sensor 1 circuit low	High
Vehicle 11 Heavy Duty, Group R, Group...	P0174	System too lean bank 2	Medium
Vehicle 76 Heavy Duty, Group Y, Group...	P0573	Brake switch A circuit high	Medium
Vehicle 13 Heavy Duty, Group A, Group...	P0171	System too lean bank 1	Medium
Vehicle 26 Heavy Duty, Group A, Group...	P0300	Random misfire detected	Medium
Vehicle 62 Heavy Duty, Group A, Group...	P2002	Particulate filter efficiency below threshold bank 1	Medium
Vehicle 71 Heavy Duty, Group S, Group...	P0442	EVAP system leak detected (small leak)	Medium
Vehicle 17 Heavy Duty, Group L, Group...	P0562	System voltage low	Medium
Vehicle 45 Heavy Duty, Group K, Group...	P0300	Random misfire detected	Medium
Vehicle 3 Heavy Duty, Group U, Group...	P0171	System too lean bank 1	Medium
Vehicle 23 Heavy Duty, Group P, Group...	P048A	Exhaust pressure control valve A stuck closed	Medium

Mitigating road hazard exposures

Feature name	Functionality	Value
Automated DVIR (Driver Vehicle Inspection Reports)	Logs pre- and post-trip inspections digitally according to FMCSA/MTO standards.	Provides an irrefutable, time-stamped, certified record showing vehicles are legally safe and compliant before each shift.
Predictive maintenance, reminders and work order integration	- Triggers maintenance alerts based on real-time data (mileage, engine hours, fault codes) and calculates the risk of a vehicle breakdown. - Integration generates automated work orders into the fleet's existing system.	Creates defensible evidence of proactive vehicle care, reducing missed maintenance schedules and protecting against claims of negligent upkeep that can contribute to collisions.
Fault code monitoring, alerts and reports	Reads and transmits diagnostic trouble codes (DTCs) and engine data, instantly notifying managers of critical issues.	Reports service critical issues and reduces liability from equipment failure by confirming that vehicles are not operated with safety-critical defects, such as brake or engine issues.
Maintenance dashboard	Provides a central interface to track all preventative maintenance schedules and summarizes upcoming service needs and engine fault statuses.	Offers verifiable proof of maintenance regularity and adherence to schedules, defending the fleet against claims of negligent vehicle upkeep.
Custom rules	- Define a Rule that triggers an exception (an alert or notification) when specific conditions are met. Conditions can be based on: Time/distance/engine hours: - E.g. "Alert me every 5,000 miles" or "Alert me every 250 engine hours." Active Fault Codes (AFCs): - Alert when a Diagnostic Trouble Code (DTC) is detected. Measurement thresholds: - Alerts are triggered when a specific engine measurement exceeds or falls below a set value. - E.g. DEF Fluid Level drops below 10%.	Create proactive, tailored maintenance reminders and alerts based on vehicle data, diagnostics and operational schedules, moving maintenance from reactive to predictive.
FMIS integrations	FMIS integrations enable seamless data exchange between the Field Maintenance Information System and other organizational systems, such as ERP or GIS.	By providing a centralized, auditable record of all maintenance actions and asset conditions, FMIS integrations substantially reduce the risk of negligent maintenance claims by demonstrating due diligence and adherence to standards.
Qualified technician documentation	Records a complete, auditable history of repairs and maintenance actions, verified and certified by the qualified technician upon completion.	Establishes a clear chain of custody for all maintenance, documenting certified repairs essential for regulatory and legal defense.



Addressing negligent maintenance incidents

Feature name	Functionality	Value
Inspection and maintenance history reports	Aggregates all electronic DVIRs, fault codes and completed work orders into a single vehicle history file.	Provides irrefutable proof of timely, documented vehicle upkeep, serving as the primary legal defense against claims of negligent maintenance.
Fault event logs	Captures and logs all diagnostic trouble codes (DTCs) and active engine warning lights from the vehicle's ECM.	Confirms safety-critical mechanical issues are addressed immediately, eliminating claims that management was unaware of defects contributing to a collision.
Compliance record archives	Securely stores all legally required electronic records, including DVIRs and Hours of Service (HOS) logs, for the mandated regulatory period.	Protects the fleet from fines and penalties by guaranteeing that all compliance documentation is auditable and legally verifiable.

Chapter 4: Environmental liability

Managing emerging risks in environmental compliance and sustainability.

Environmental liability represents a growing area of legal and reputational exposure for public works departments. Municipal operations (particularly those involving road maintenance, waste management and fleet activity) can directly affect soil, water and air quality. As environmental regulations tighten and public scrutiny intensifies, municipalities face increasing pressure to document, manage and reduce their ecological impact.



Even routine operations, such as road salting, can result in significant liability if environmental impacts are not properly managed, as demonstrated in cases like [Steadman v. Lambton County](#), where off-site salt migration caused soil contamination and crop loss, exposing the municipality to legal action.

This chapter explores two key areas of environmental liability exposure and how telematics and data intelligence can support proactive environmental compliance management.



Risk area 1: Contamination from de-icing operations

Winter maintenance operations, including the application of road salt, brine and other de-icing chemicals, are essential for public safety during icy conditions, yet they carry significant environmental costs. Chloride-based runoff from de-icing materials can contaminate surface and groundwater, harm vegetation and accelerate infrastructure deterioration. In the U.S., road salt usage has grown exponentially **from 5,000 tons annually in the 1940s to over 20 million tons today**—equivalent to 123 pounds per person. This widespread use has led to alarming environmental consequences, including rising salinity levels in 37% of U.S. drainage areas over the past 50 years. Chloride levels above 230 mg/L are toxic to aquatic life, inhibiting growth and reproduction while disrupting ecosystems. **In New Hampshire**, the number of waterbodies impaired by chloride contamination more than doubled from 19 to 46 between 2008 and 2016. Additionally, **road salt contributes to \$5 billion in annual infrastructure repair costs in the U.S.**, corroding bridges, roads and vehicles.

Municipalities face increasing scrutiny from environmental groups, regulatory bodies and the public. Excessive or poorly controlled material application can lead to lawsuits, penalties and reputational damage. To balance safety with environmental stewardship, municipalities must adopt data-driven approaches to optimize de-icing operations.



For example, **King Township in Ontario leveraged Geotab-powered data insights to reduce salt usage by 30% per storm, cutting annual salt application from 9,000 to under 6,000 tons. This not only minimized environmental runoff but also delivered significant cost savings, proving that operational efficiency and environmental responsibility can coexist.**

Managing environmental risk during winter operations demands precision and accountability, including the ability to demonstrate after the season that sweeping activities effectively removed salt and sand from roadways. By leveraging digital monitoring, automated material controls and predictive analytics, municipalities can ensure that de-icing activities meet environmental standards while maintaining road safety. Real-time data capture and transparent reporting deliver a defensible record of responsible operations, demonstrating proactive environmental stewardship at a time when sustainability and compliance expectations are higher than ever. The following features highlight how Geotab's platform enables data-driven environmental management across winter maintenance programs.



Mitigating environmental contamination risk

Feature name	Functionality	Value
Spreader controller and material usage monitoring (IOX-WRKS/IOX-AUXM)	Precisely measure and report the average spread rate of de-icing material (salt, brine), promoting correct application rates.	Provides defensible evidence that material usage was controlled and aligned with annual salt management plans, mitigating claims of excessive or wasteful contamination.
Geospatial mapping and zone management	Create and define specific zones within the MyGeotab mapping feature to map out areas with high environmental sensitivity, such as near lakes, rivers or protected wetlands.	Prevents contamination in the most vulnerable areas with automated driver alerts if a vehicle enters a sensitive zone with the spreader on, or if the application rate exceeds a pre-defined limit for that area.
Temperature and road condition sensor integration	Integrates data from external sensors (e.g., pavement temperature) to inform managers of precise road conditions relevant to de-icing application.	Supports legal and regulatory defense by demonstrating that spreading operations were data-driven and necessary for public safety under verifiable conditions.
Route optimization and automated reporting	Plans the most efficient service routes and automatically generates reports confirming where and when service was completed.	Offers verifiable proof of service coverage, showing routes were completed as planned to mitigate road hazards and environmental risk.

Addressing environmental contamination events

Feature name	Functionality	Value
MMRs	Summarizes the total amount, rate and duration of material usage per vehicle, per route and over time.	Provides auditable records demonstrating responsible environmental stewardship, supporting defense against claims of over-application or ecological damage.
Trip replay and route verification	Visually recreates a vehicle's route and activity, allowing managers to confirm where service was performed or missed.	Offers irrefutable visual evidence to dispute inaccurate claims of material misapplication or non-compliance by showing exactly where vehicles were (or were not).
Historical data archives	Securely retains all telematics data, including GPS, speed and material sensor inputs, for extended periods.	Enables post-incident forensic analysis, keeping data available to defend against long-tail environmental liability claims.
Event	- Automatically logs every instance where a vehicle violates pre-defined rules. - E.g. improper material application, idling, harsh driving with GPS coordinates and timestamps.	Provides a detailed record of activities that could create contamination risks, enabling targeted coaching and proactive risk mitigation.

Risk area 2: Greenhouse gas emissions compliance

Municipalities across North America are under increasing pressure to monitor and reduce greenhouse gas (GHG) emissions. Regulations like **California's Advanced Clean Fleets (ACF)** mandated that 50% of new public fleet acquisitions must be zero-emission vehicles (ZEVs) by 2024, increasing to 100% by 2027, with limited exemptions for certain specialized equipment, including snow-removal vehicles. These standards reflect a broader trend toward decarbonization, with non-compliance carrying significant risks, including regulatory penalties, ineligibility for grants and reputational harm. As decarbonization mandates expand, environmental non-compliance is evolving into a new class of liability, where inaction itself can result in financial and legal consequences.

Transportation accounts for nearly 29% of total GHG emissions in the U.S., making it the largest contributor to climate change. Public fleets play a critical role in addressing this challenge, as transitioning to ZEVs can significantly reduce emissions.



For example, **New Brunswick Power in Canada used Geotab's Electric Vehicle Suitability Assessment (EVSA) to identify that 94% of its fleet duty cycles could be met by EVs, enabling a potential 94% reduction in GHG emissions and over \$1 million in cost savings. These insights are guiding the utility's long-term fleet electrification strategy while ensuring measurable progress toward regulatory compliance.**

While mandates push fleets toward zero-emission vehicles, municipalities also face practical constraints. Not all assets (such as snowplows, street sweepers or specialized heavy-duty road construction equipment like graders and loaders) can transition to battery-electric technologies in the near-term. For these vehicles, alternative fuels like compressed natural gas or renewable fuels may remain the most viable path. Progress still matters: Electrifying lighter-duty units, such as supervisor or administrative vehicles, provides early wins that demonstrate measurable decarbonization while long-term solutions for heavier assets continue to develop.

Data-driven fleet solutions are essential for municipalities to meet evolving regulatory requirements with confidence. Advanced telematics and analytics tools enable real-time tracking of emissions, automated compliance reporting and strategic planning for fleet transitions. By integrating proactive monitoring with verifiable data, municipalities can document their progress, respond effectively to environmental reviews and showcase a measurable commitment to sustainability goals.

As emissions regulations tighten, environmental performance is now a core pillar of municipal risk management. From monitoring fleet emissions to transitioning toward cleaner technologies, municipalities must show measurable progress and accountability. Geotab's sustainability intelligence tools allow public works departments to track emissions, identify reduction opportunities and document compliance with evolving environmental regulations. The following capabilities demonstrate how data-driven sustainability transforms environmental accountability into a strategic advantage—reducing regulatory exposure while strengthening public confidence in municipal leadership.

Mitigating greenhouse gas emissions risk

Feature name	Functionality	Value
Sustainability overview	Dedicated sustainability hub within MyGeotab with visual analytics on key environmental metrics, including fuel consumption, idling time and carbon emissions.	Makes environmental performance transparent, enabling proactive correction of practices that could create regulatory or litigation risk.
Emissions and fuel consumption tracking	Records emissions trends and monitors fuel usage trends across the fleet.	Reduces emissions-related regulatory risk by tracking and curtailing factors (e.g. speeding) that lead to high emissions and could result in fines or non-compliance.
Idling time reports and rules	- Accurately identifies, quantifies and reports on excessive engine idling. - Differentiates between general “excessive idling” and “idling due to PTO use.” - Custom rules can be set up to generate ‘event’ alerts for excessive idling.	Provides a more accurate picture of emissions profile, understanding which idling events are necessary for work (e.g., operating a compactor) versus which are wasteful, enabling more targeted reduction efforts.
EV Suitability Assessment tool	Analyzes real-world fleet driving data to identify vehicles that could be cost-effectively replaced with electric vehicles without impacting public works operations.	Demonstrates a proactive strategy to meet future emissions compliance standards, reducing regulatory liability and supporting sustainability goals.
Engine health and efficiency monitoring	Reports vehicle diagnostics to identify issues that negatively impact engine efficiency and emissions performance.	Confirms vehicles operate optimally to meet emissions control requirements, minimizing the risk of fines for non-compliant exhaust or pollutant levels.
Automated compliance reporting	- Automatically generates and prepares reports for environmental and regulatory bodies. - E.g. fuel usage, IFTA.	Provides accurate, timely regulatory submissions, defending against fines and penalties for emissions-related compliance failures.
Integrated solution: Mapping and in-cab navigation	- Creation, editing and management of turn-by-turn routes through its intuitive Draw Mode and comprehensive Vehicle History features. - In-cab navigation for drivers with turn-by-turn direction.	By helping drivers follow optimized paths, fleets can reduce unnecessary mileage, fuel consumption and associated GHG emissions.
Event reporting and benchmarking	Flags operational behaviors that violate emissions or sustainability rules and compares performance against peer groups.	Identifies and mitigates environmental risks by highlighting non-compliant activities, enabling targeted, documented corrective actions.

Addressing greenhouse gas emissions compliance

Feature name	Functionality	Value
Historical emissions reporting	Creates and archives long-term reports detailing fleet emissions and performance metrics over time.	Establishes an auditable record of emissions reduction progress, supporting legal defense and demonstrating commitment to sustainability goals.
EV transition tracking	Monitors performance, charging efficiency and total cost of ownership of electric vehicles during the transition period.	Provides verifiable data to justify and defend fleet investment in EVs, reducing long-term emission compliance risk.
Data export and integration	Offers tools (APIs, Data Connector) to export and integrate telematics data into external ESG reporting or corporate systems.	Confirms environmental performance data is transparent, accurate and verifiable, mitigating reputational and compliance risks.





Chapter 5: Strategic recommendations for municipal fleet risk mitigation

**Building a data-driven framework for
safer, smarter municipal operations**

The liability environment facing public works departments is more complex and interconnected than ever before. Legal exposure now extends across operational activity, regulatory compliance and environmental stewardship — areas that once operated independently but now demand integrated oversight.

Traditional risk management methods, such as manual logs, paper records and reactive reporting, can no longer keep pace with today's accountability standards. The most effective defense against modern liability risks is a comprehensive, data-driven strategy that unifies all aspects of fleet operations under a single, intelligent platform.

Strategic recommendations for reducing fleet liability



1. Centralize risk data for full operational visibility

Consolidate telematics, maintenance and compliance data from every vehicle into a single, integrated platform. Partial or selective data capture can leave critical gaps in oversight, masking emerging risks. By unifying information across the entire fleet, municipalities gain a complete, real-time view of operations and compliance, enabling fleet managers, safety officers and risk teams to identify trends, address issues proactively and make informed decisions based on a true picture of fleet performance and exposure.



2. Use data to anticipate, not just react, to risk

Predictive analytics and automated alerts enable municipalities to address potential problems before they escalate into costly claims. By leveraging driver behavior data, maintenance trends and environmental monitoring, cities can transition from reactive incident management to proactive prevention. Responsible AI can further enhance decision-making by analyzing patterns, flagging anomalies and prioritizing risks, while creating transparency and accountability through automated insights.



3. Make documentation your defense

In liability cases, proof is as necessary as prevention. Automated digital records, from plow activity and salt usage to training logs and emissions reports, provide defensible evidence of due diligence. These records can even prevent claims from escalating: When a complaint comes in, quickly supplying video or telematics proof (e.g., confirming a vehicle was not at the reported location) can stop a claim before it ever reaches legal review. Data-backed documentation protects municipal credibility and demonstrates accountability to regulators, insurers and the public.



4. Strengthen cross-department coordination

Operational, environmental, and compliance teams must work from a shared information foundation. Integrating fleet data with asset management, safety and sustainability programs eliminates duplication, promotes consistent reporting and aligns municipal departments under a standard liability reduction strategy. Selected data can also be shared instantly with frontline staff, such as councillors or 311 operators, so they can address complaints in real time. Providing verifiable evidence on the spot helps stop issues from escalating into formal claims, reinforcing accountability while improving public responsiveness.



5. Prioritize scalable, integrated technology investments

Rather than managing multiple disconnected tools for safety, compliance and sustainability, municipalities can simplify oversight by adopting a single telematics platform that supports all risk areas. This reduces complexity, streamlines training and lowers long-term operational costs.

Taking a unified approach to public sector risk

Municipal risk is multi-dimensional, but that doesn't mean the solution has to be. The most effective way to manage operational, compliance and environmental liability is through an integrated fleet intelligence platform that connects people, vehicles and data in one place.

Geotab's fleet management platform delivers exactly that: A single source of truth for municipal fleet performance, safety and compliance. From driver behavior insights to emissions tracking and proof of service documentation, Geotab helps municipalities safeguard their communities and their budgets.



We've used ... Geotab to help us with the insurance claims. Slips, trip-and-falls in parking lots; we were able to pull out video footage to make sure that we can find the actual locations that they were using. A lot of insurance claims have been taken care of through this."

- Tim Anderson, Fleet and Facility Supervisor, City of Port Colborne

Take the next step toward fleet resilience

Reducing municipal liability starts with choosing the right technology partner.

Download the [Public Works Procurement Checklist](#) to evaluate fleet management solutions that support:

- Integrated operational, compliance and environmental oversight.
- Transparent, defensible data collection and reporting.
- Predictive safety and maintenance intelligence.
- Scalable, future-ready technology infrastructure.

A unified, data-driven approach is the foundation of safer, smarter and more sustainable municipal operations — and the most effective way to protect your community and your budget.



Download the [Public Works Procurement Checklist](#) to start your fleet risk assessment today.

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