Making Street Maintenance and Waste Management Easier & More Efficient

RasTrac®

Introduction

Every municipality, from the smallest township to major metropolitan population centers have to deal with a year-round struggle to keep streets free of debris and to ensure the swift collection of trash.

Road debris from vehicle collisions, animal incidents, and storms can clog roads and make them unsafe for commuters. Common hazards from road debris include popped tires, damage to vehicle undercarriages, and increased risk of collisions.

Trash collection, on the other hand, has fewer immediate risks, but residents really don't like it when their trash collection is late. Keeping trash collection on schedule helps keep residents happier.

Being fast and efficient with such sanitation services is critical for maintaining safe roads and sanitary municipalities. This is a challenge that municipalities have to confront year-round, from the icy conditions of winter to the height of the summer heat as well as the more temperate seasons in between.

That being said, how can a municipality ensure greater efficiency for their trash collection and road maintenance efforts on a tight government budget?

Well, there are a lot of ways to increase efficiency, particularly for your vehicles that handle the collection of trash and road debris. This guide collects a few ideas for improving the efficiency of your municipal vehicles to make meeting operational goals on a budget easier for municipalities.

Although there are no easy shortcuts to making massive, guaranteed efficiency improvements, following a few general tips might help out more than you might think.

Let's start by taking a look at a few of the things that make maintaining fleet efficiency so difficult.

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Fleet Efficiency Challenges for Municipal Sanitation Services

Every year, municipalities are challenged to get more done with fewer resources. As more and more roads are added, and your vehicles are tasked with covering more ground, meeting basic service needs gets tougher and tougher.

Overcoming this challenge takes a high degree of efficiency. With this in mind, what are some of the biggest obstacles to maintaining fleet efficiency, and how can you overcome them?

Several of the biggest fleet efficiency obstacles include:

- ☐ Controlling Fuel Costs
- ☐ Improving Route Efficiency
- ☐ Handling Emergency Road Service
- ☐ Preventing On-the-Road Breakdowns
- ☐ Managing Driving Behaviors

These basic examples of challenges to building and maintaining fleet efficiency for municipal tasks such as clearing road debris and collecting trash highlight just how much municipal fleet managers have to deal with.

Although there are many other potential challenges that fleet managers might have to deal with, being able to tackle these few challenges can make a big difference for the efficiency of a fleet of trash collection and road maintenance vehicles.

The following sections will cover each of these issues in greater detail, as well as providing tips on addressing them.

Controlling Fuel Costs in Sanitation

Keeping a fleet of garbage trucks and road maintenance vehicles fully fueled isn't cheap. For the majority of municipalities, keeping vehicles fueled is likely the single largest expense on the books.

Add to this the volatility of gas prices, which can fluctuate wildly depending on a number of different factors, and controlling fuel costs quickly becomes an enormous trial.

One solution that some municipalities are investigating is the use of alternative drive trains that use different fuel sources. The trouble with using alternative fuel sources is that most such alternatives are years away from being practical for daily road maintenance and heavy-duty garbage collection tasks.

For example, some municipalities might consider the use of battery-powered vehicles, but there aren't any commonly-available battery drivetrains that can power the dump trucks used for garbage collection. Even if such drivetrains were readily-available, the cost of replacing your entire fleet of vehicles all at once would be prohibitive, to say the least.

Another solution might be to stockpile on gasoline when prices are low, but that involves creating and maintaining a long-term gasoline storage solution, which requires space and labor, generating costs that may well outstrip the savings of paying less for fuel.

Rather than trying to use a new fuel source or paying for massive long-term fuel storage, it may be better to focus on ways to improve the fuel efficiency of your fleet vehicles.

Common methods for doing this include:

- ☐ Improving route planning efficiency
- ☐ Preventing wasteful driving behaviors
- ☐ Optimizing vehicle maintenance to maximize vehicle MPG

If you can reduce your fuel spending, you can free up monetary resources for your other municipal operations.

Controlling Fuel Costs in Sanitation (Cont.)

Improving Route Efficiency for Municipal Sanitation

Making sure that your garbage collection vehicles and road maintenance crews are following the most efficient paths can do a lot to save time, labor, and fuel. Efficient route planning is a major element in creating a more efficient municipal vehicle fleet.

Finding the most efficient route takes some careful research and consideration for both dump trucks and road maintenance vehicles.

For example, knowing the maximum operating range a vehicle can cover allows you to create routes that maximize distance covered and minimize the total number detours needed to fuel up. Combine this with detailed information on the local road system, and you can generate garbage collection routes that minimize time spent on refueling.

Additionally, reducing overlap in collection routes can help to prevent fuel waste while maximizing the ground covered by each dump truck.

Also, minimizing unnecessary overlap for street cleaning efforts after an event such as a storm can help ensure a more efficient use of municipal resources.

"Efficient route planning is a major element in creating a more efficient municipal vehicle fleet"

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Controlling Fuel Costs in Sanitation (Cont.)

Increasing Efficiency for Emergency Sanitation Services

Every day, there are a variety of incidents that can leave potentially dangerous debris scattered on the road. From animal carcasses, to shredded car parts, to tree limbs and other plant debris, the variety of objects that can end up littering a road is endless.

The presence of debris on a road can make driving unsafe in a number of ways. For example, drivers attempting to avoid such debris can end up leaving their lanes unsafely, colliding with other vehicles. Debris stuck on the road can also puncture car tires, causing a loss of control on the part of drivers.

For road maintenance efforts, finding ways to quickly identify the closest vehicle to a reported road obstruction is not only a way to improve efficiency, it can minimize the time that commuters are stuck having to deal with danger from debris.

Maintaining street cleaning routes that ensure that no one area is neglected for too long is another way to help ensure that there are debris-clearing assets in the area whenever such debris is called in. However, the larger the area you have to cover, and the smaller your vehicle fleet, the tougher this task is.

Controlling Fuel Costs in Sanitation (Cont.)

Optimizing Maintenance for Sanitation Fleet Vehicles

The cost of keeping a fleet of vehicles maintained can be incredibly high. These costs increase with the severity of the issue. The longer a vehicle goes without maintenance, the worse the eventual failure is likely to be, and the costlier it will be to fix.

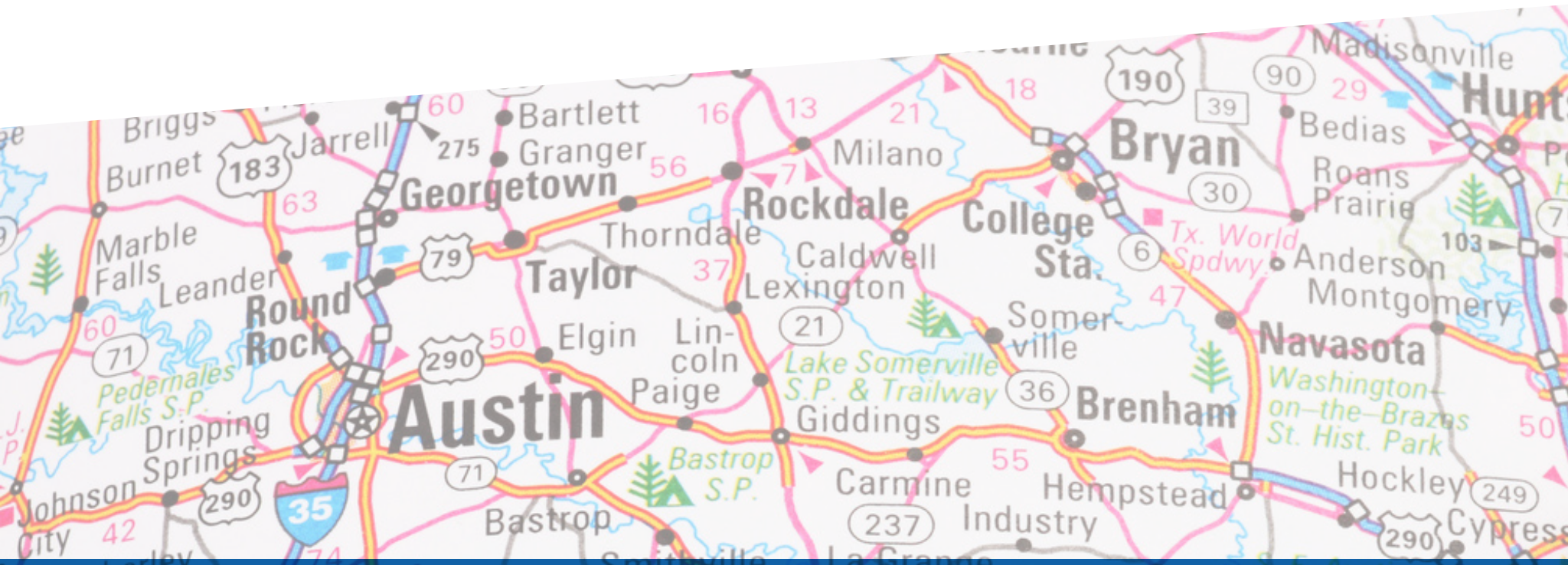
However, bringing a fleet vehicle in for inspection and service too frequently can also be detrimental, as the service fees for minor inspections can add up very quickly.

Enacting a preventative maintenance plan that addresses key vehicle systems before they reach the breaking point can help prevent on-the-road breakdowns, saving a massive amount of time, money, and resources.

Optimizing maintenance for municipal vehicles requires having detailed information about each of your fleet vehicles, such as:

- ☐ Engine performance data
- ☐ Total vehicle mileage
- ☐ Mileage since last maintenance
- ☐ Mileage on key vehicle components (brakes, wheels, suspension, transmission, etc.)

Having this information allows you to more accurately assess which vehicles need to undergo specific preventative maintenance services. This allows you prioritize maintenance tasks for the greatest effect at the lowest expense.



Managing Driving Behaviors

Driving behaviors and habits can have a significant impact on the overall efficiency of your vehicle fleet. The way that your drivers operate behind the wheel can greatly influence the fuel efficiency of your vehicles, and directly impact the timeliness of municipal services.

For example, while some idling is mandatory for garbage collection and debris-clearing tasks, excessive idling outside of working on such tasks burns fuel unnecessarily. Also, hard acceleration and braking not only make driving less safe, it increases fuel consumption and vehicle wear and tear.

However, managing such driving behaviors among your municipal workers is effectively impossible without having a set of eyes on drivers at all times to monitor their behaviors. To enforce smarter driving behaviors requires the ability to accurately track and log how drivers are using their vehicles.

Since you can't personally ride with every driver in your municipal fleet all the time, using a tracking solution such as GPS fleet tracking can be an invaluable tool for managing driving habits among your drivers.

Armed with data from a GPS tracker, you can easily review a driver's behaviors on the road, and identify opportunities for improving efficiency. Naturally, you'll also need a way to log and retrieve said GPS data, such as a GPS fleet management software program.

Learn more about GPS Fleet Tracking and GPS Fleet Management Software in the next section.

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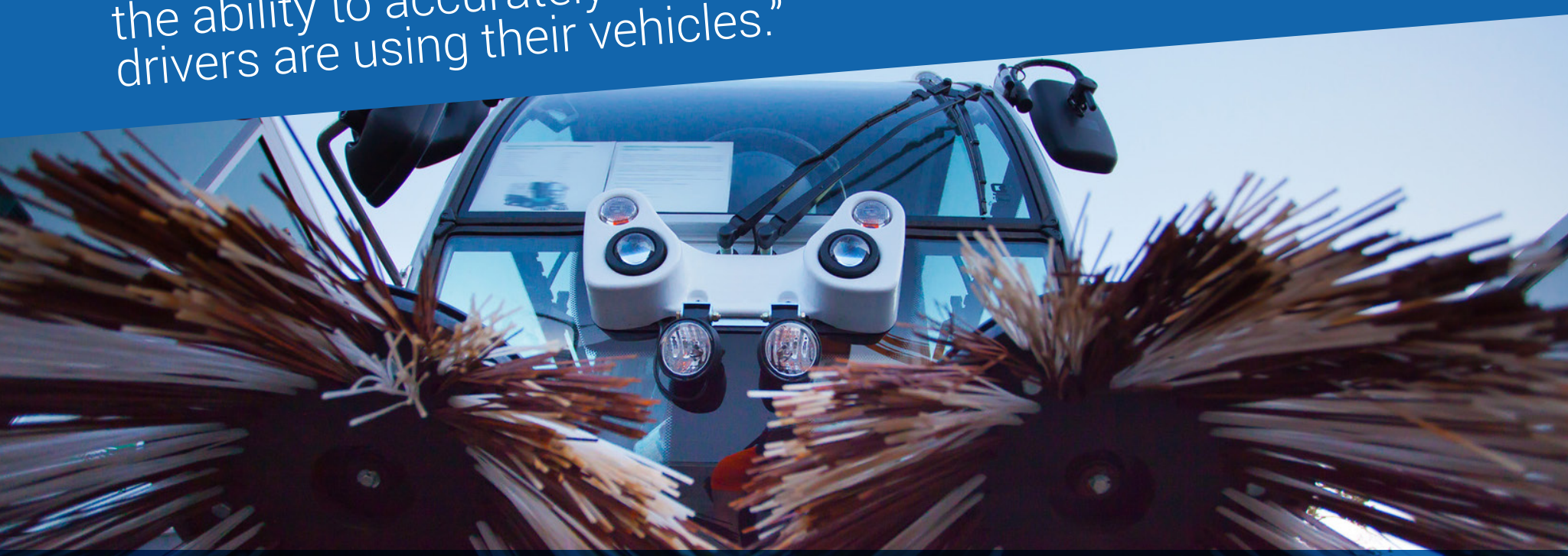


Using GPS to Overcome Efficiency Obstacles

Now that we've discussed some of the biggest obstacles to maximizing efficiency for trash collection and road maintenance operations, it's time to look at two of the biggest fleet efficiency-enhancing solutions out there: GPS Tracking Devices and GPS Fleet Management Software.

These two technologies, when used together, can make improving the efficiency of your trash collection and road cleanup services quick and easy.

About GPS Vehicle Tracking Devices

Global Positioning Satellite, or GPS, technology has become a technology that most are now familiar with. GPS systems use orbiting satellites to triangulate the position of vehicles and other assets that have a GPS tracking system installed on them. Most consumers are familiar with the technology as a navigation aid, using it to help them navigate road systems.

Municipalities across the country employ GPS trackers to achieve a number of specific goals, such as preventing vehicle theft, tracking driver activities, and optimizing vehicle deployments.

The benefits of using GPS tracking systems for monitoring your vehicles are numerous, and can make a significant difference for your ability to meet service needs for your municipality on a budget.

This being said, a GPS tracker alone is not a complete solution. To get the most out of these highly useful devices, you'll need GPS management software to integrate your GPS data.

About GPS Fleet Management Software

GPS tracking devices provide raw data on the location of your vehicles. GPS fleet management software takes that data and helps you organize it for easier interpretation. Using such management software allows you to get the most out of your GPS systems.

Some of the tasks that the right GPS fleet management software can help you with include:

- ☐ Check on the current locations of all your field assets (dump trucks, road maintenance trucks, etc.) in your municipality.
- ☐ Optimize the route planning for trash pickup and street cleaning to save time, labor, and fuel costs.
- ☐ Track the amount of time that has passed since a street was last swept, with easy-to-read color code indicators.
- ☐ Keep an eye on driving habits such as braking and acceleration behaviors on a turn-by-turn basis for each of your drivers.
- ☐ Remotely monitor key engine performance statistics (for GPS trackers with diagnostic capabilities).

Using GPS to Overcome Efficiency Obstacles (Cont.)

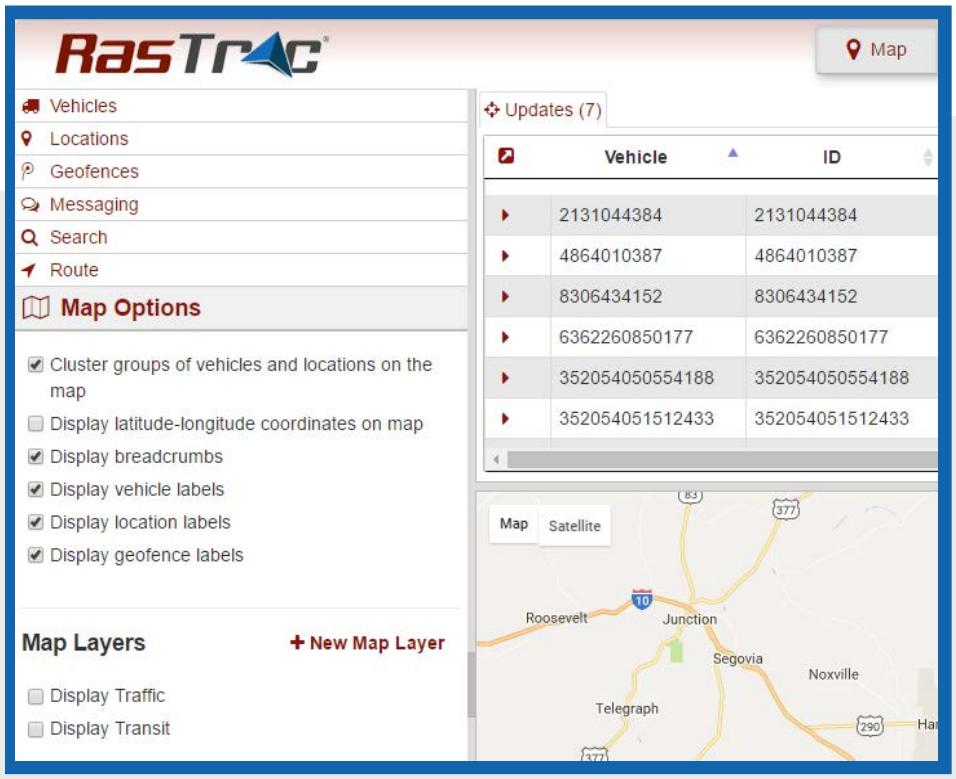
Having this information makes optimizing street cleaning and trash collection tasks easier by allowing you to make more informed decisions as well as spot and eliminate wasteful activities.

Not All GPS Technologies are the Same

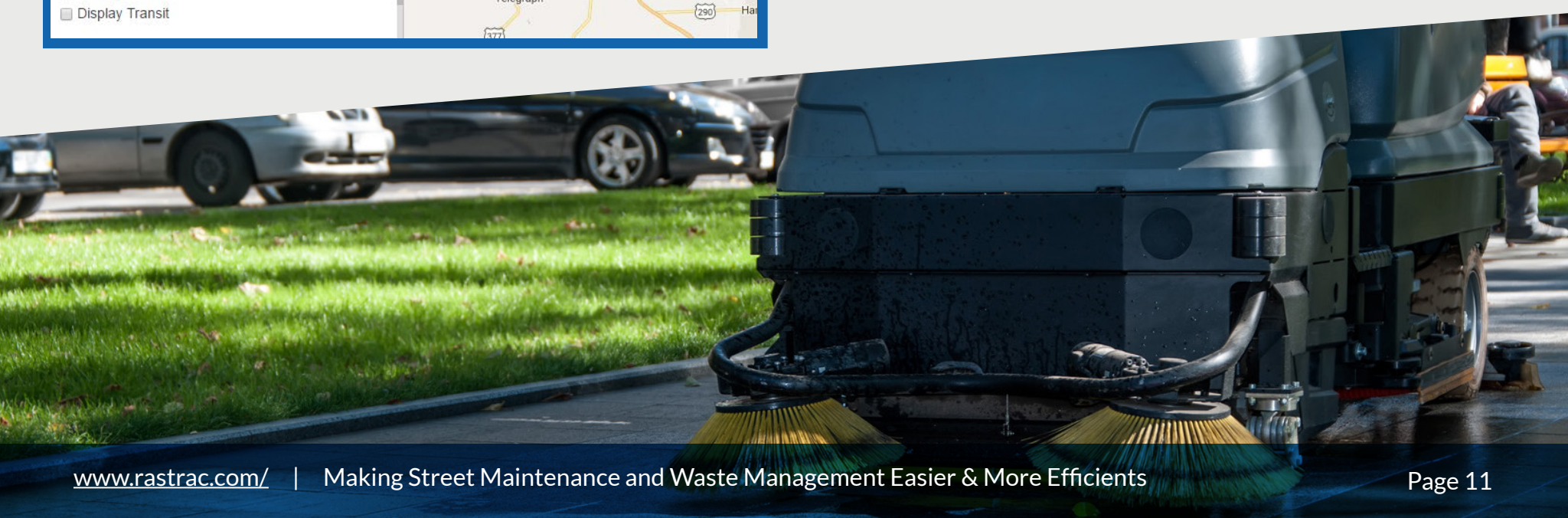
There are nearly limitless options for GPS technologies that you can use to optimize your trash collection and road maintenance fleets. However, not all of these GPS technologies are the same.

For example, some GPS systems have different positioning data updates. Slow update rates can mean that you only have a rough approximation of where your vehicle assets are.

Certain GPS fleet management software programs might be too complicated, putting so much useless information on the screen all at once that you cannot find the key points you're looking for.



When you're looking for GPS tracking tools and software to aid your municipal sanitation efforts, you want tools that are comprehensive enough to give you what you need, but still easy enough to use without needing a software engineering degree.



Combining Comprehensive Data with Ease of Use: StreetComplete by Rastrac

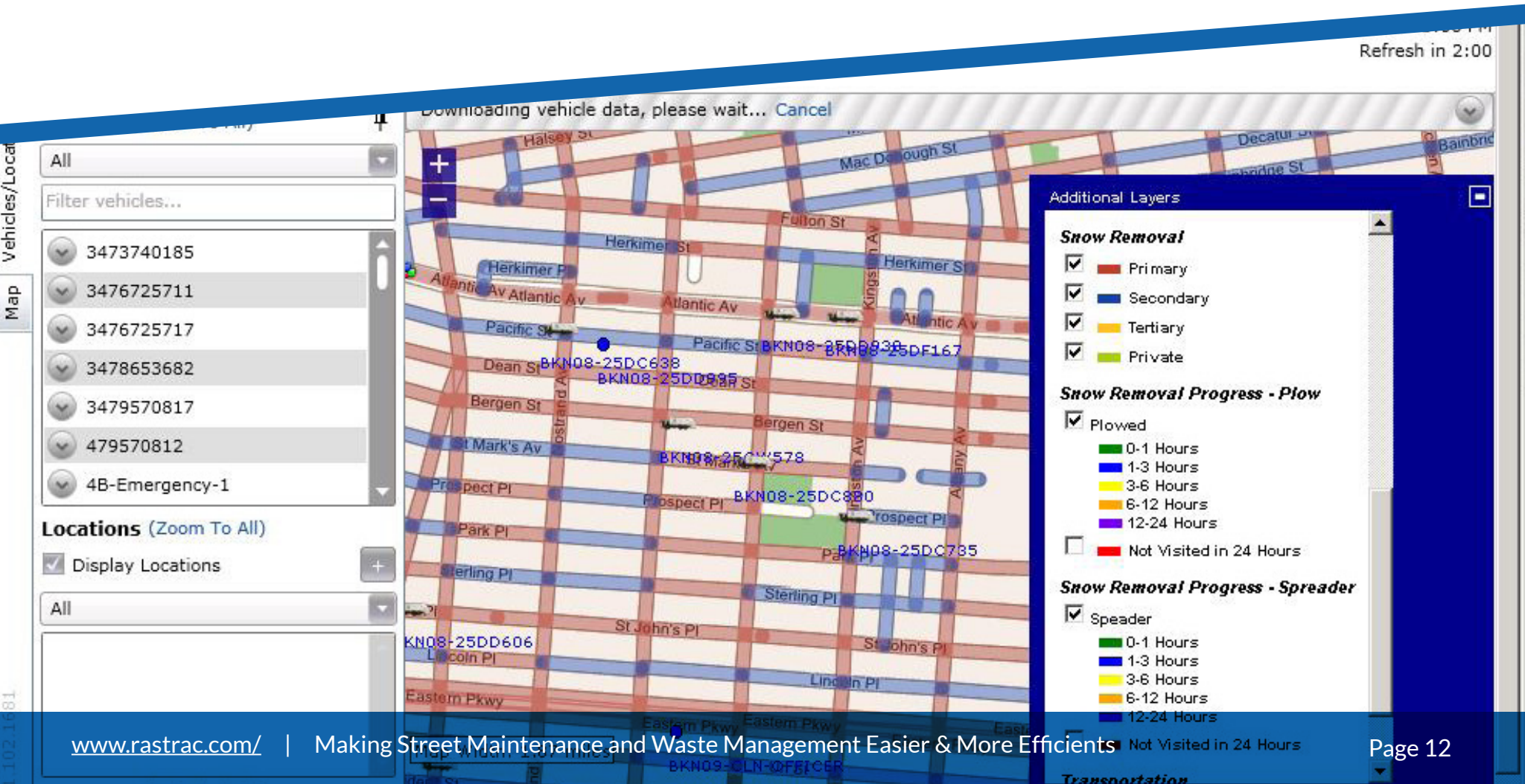
StreetComplete is an added feature to Rastrac's Automated Tracking Solution which offers both versatility and ease of use. In particular, this solution is ideal for helping optimize street cleaning route planning.

StreetComplete takes your GPS maps, and allows you to add color-coded routes to it. You can specify the conditions for a color code, such as time since a route was last swept, allowing you to quickly look at the screen and see which roads are your highest priority for servicing.

For example, you could make it so that roads that have been swept in the last 12-24 hours have a blue highlight, and that roads which haven't been serviced in a week or more have a red highlight. Colors on the map will change automatically as each route passes a given threshold.

This easy-to-read color coding system allows you to manage the deployment of street cleaning teams at a glance.

Additionally, this system can help you find the most efficient routes for your street sweeping and trash collection vehicles, improving your fuel cost to service area covered ratio.



Managing Assets Through Mobile Devices

Mobile devices are becoming more connected and capable every year. Because of this fact, many fleet management systems are starting to become more integrated with mobile technologies such as smartphones and tablets.

Municipalities now have the option to install GPS applications onto sanitation workers' smartphones that can turn these devices into a remote GPS tracker. Using this technology, municipalities can keep in touch with workers in the field to pass along important updates.

This integration carries numerous benefits for both municipalities and street sanitation workers.

For example, dispatch can use mobile phones to alert drivers to upcoming traffic jams, giving the driver a chance to change routes before they get stuck in traffic. Or, a driver can call in an as-yet unreported incident of road debris, allowing dispatch to log the event.

The improved communication between drivers and dispatch can even help improve safety and planning initiatives. For example, if a vehicle suddenly stops, dispatch can reach out to the driver immediately to get a report. If the sudden stop was because of an accident, dispatch can then send emergency response straight to the accident site, improving safety.

If the rapid deceleration was just the result of bad driving habits, the event can be logged, and the sanitation fleet manager will then be able to address the behavior.

"The improved communication between drivers and dispatch can even help improve safety and planning initiatives."

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Benefits of Using GPS Fleet Management for Sanitation Operations

Now that we've reviewed GPS Tracking devices and GPS Fleet Management software, let's dive into the specific benefits they have on municipal sanitation operations such as street cleaning and trash collection.

#1: Improved Emergency Dispatch Control

When a major road obstruction is reported, it's important to clear that obstruction as soon as possible to minimize delays and damages to your municipality's motorists. Debris from a traffic accident, storm, or other source can damage tires and prevent the smooth flow of traffic. The sooner that debris is cleared, the better.

With GPS tracking devices and software, dispatch can immediately identify the closest street cleaning vehicle to a given road obstruction and send that vehicle right away. This minimizes the time spent trying to figure out which truck to send, speeding up the process of getting that debris cleared.

#2: More Efficient Route Planning

One of the biggest benefits of using GPS is that it can help you plan out faster, more efficient routes for your sanitation vehicles to follow. By increasing route efficiency, you can minimize fuel consumption and improve speed of service to your municipality at the same time.

Additionally, using software plugins such as StreetComplete can help you track how long it's been since a given route was serviced for street cleaning efforts. This helps you keep your streets cleaner while reducing redundancy and waste.

"Increasing route efficiency, you can minimize fuel consumption and improve speed of service."

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Benefits of Using GPS Fleet Management for Sanitation Operations (Cont.)

#3: Improved Vehicle Maintenance

Municipal sanitation vehicles see a lot of heavy use, and keeping them maintained can be tough. By relaying important information about miles traveled, engine performance, and total operational time, GPS tracking devices can help your efforts to create an efficient and effective vehicle maintenance schedule.

Using the information gathered by a GPS system, you can prioritize maintenance efforts on the vehicles that most need it. This helps you maintain fuel efficiency and prevent costly breakdowns without going overboard on maintenance costs.

This particular benefit isn't limited to sanitation vehicles, either. Many municipalities use GPS data to optimize maintenance scheduling for all of their fleet vehicles to make the most out of their maintenance budgets.

#4: Theft Prevention and Asset Recovery

Municipal vehicles, even ones marked for sanitation work, can be tempting targets for thieves. Larger sanitation vehicles, such as dump trucks, represent a significant investment of capital in their own right, having a massive impact on your municipality's bottom line if stolen.

Even the most basic GPS devices can prove to be excellent tools for preventing vehicular theft. With a GPS tracking device, you can see where a vehicle is currently located, or at least pass along the most recent known coordinates to police. More advanced systems may give you the ability to remotely kill a vehicle's starter, keeping the vehicle's engine from being turned over.

These features of GPS systems can vastly improve the odds of recovering a stolen asset intact, saving money on new equipment costs and putting that asset back to work sooner rather than later.

Benefits of Using GPS Fleet Management for Sanitation Operations (Cont.)

#5: Preventing Bad Driving Habits

Hard acceleration and braking, excessive idling, and other bad driving habits can increase fuel consumption while adding extra wear and tear to municipal assets. Such bad driving habits can significantly increase costs for your municipality over time.

With GPS tracking systems, you can readily identify these bad driving habits, allowing you to correct them and minimize their impact on your operations.

#6: Preventing Fuel Theft/Fraud

Closely monitoring vehicle use statistics for your sanitation vehicles can help your municipality prevent fuel theft and fraud by sanitation workers. By checking engine performance and total mileage against reported fuel use, you can quickly spot abnormal fuel consumption reports that might indicate that a driver is intentionally misrepresenting their fuel costs.

If there's nothing wrong with a vehicle's fuel lines or engine, and a driver is reporting significantly more fuel use than the miles driven and time spent in idle can account for, that can be a warning sign of fuel theft or fraud by a driver.

By spotting this issue early, you can protect your municipality from fraud more effectively and reduce your losses.

Overall, the benefits of using GPS tracking for your sanitation fleet can greatly outweigh the cost of the investment.

3 Tips for Making the Most Out of Your GPS Fleet Management for Municipal Sanitation

#1: Have a Strategy for Managing Your Fleet Assets First

As useful as GPS tracking software can be, it won't replace taking the time to come up with a solid strategy for managing your sanitation assets. GPS software can automate a ton of key tasks and management processes, but you need an asset management strategy in place first if you're going to get the most out of using GPS tracking.

When developing your strategy, make sure to not only keep your drivers and dispatchers in the loop, but try to get their input as well. This will help ensure that they buy into your strategy, and maybe even give you a few good ideas for that strategy as well.

#2: Assess Common Street Cleaning Hotspots, and Common Sources of Debris

Different municipalities will face different difficulties in keeping their streets clear of debris. For example, municipalities that have heavily wooded areas next to roads may have to sweep their streets more frequently in autumn, or certain intersections might see a higher rate of traffic accidents that leave debris in the road.

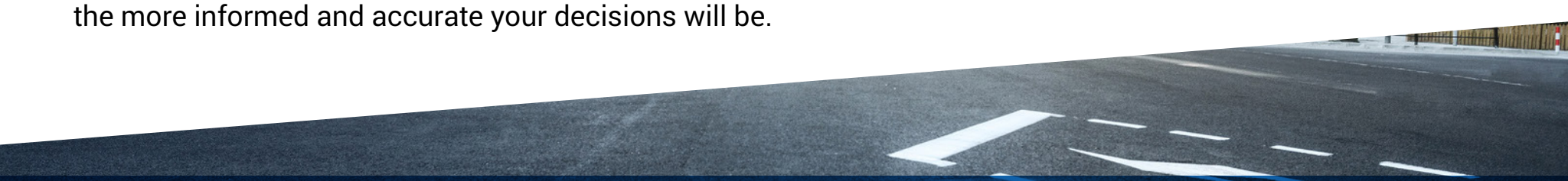
Knowing which roads are at the highest risk of collecting debris, and the nature of that debris, can help you better plan out your GPS routes and make sure that your street cleaning crews are properly equipped for the task at hand.

#3: Remember That Collecting Data Alone Isn't Enough

To see any benefits from the GPS data that your tracking solution collects, you have to be able to interpret and act on that information. Being able to collect and properly analyze information can make a major difference for your efforts to optimize sanitation operation efficiency.

For example, if you notice a dip in the MPG that your fleet vehicles get, it's important to check both driver habits and key engine performance statistics when trying to determine the root cause of the problem. If drivers are accelerating too hard, that could be the cause of the drop in fuel efficiency. On the other hand, worn fuel lines, injectors, and engine cylinders can also reduce fuel efficiency for your sanitation vehicles, things that might be identified from changes in engine performance statistics.

Analytics on engine performance and driving habits help you dig into the root causes of different issues with your vehicle fleet. The better the analytics tools you have, and the more practiced you are at interpreting them, the more informed and accurate your decisions will be.



Conclusion

Improving your municipal sanitation fleet's efficiency can be a huge challenge. This is especially true since each municipality faces different challenges, which means there's no such thing as a "one size fits all" solution.

Factors such as budget limits, regional weather patterns, and random emergencies can all contribute to the complexity of managing your sanitation efforts for your municipality.

However, with the right tools, you can increase the efficiency and effectiveness of your sanitation fleet. With some time, effort, and collaboration with your sanitation workers, it's definitely possible to keep your streets safe and clean for everyone.

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