

# Waste Pickup “Re-View:” Utilizing Computer Vision for the Waste Pickup Industry

White Paper

« Computer vision is one of the most powerful tools to optimize and improve the waste pickup service »»

## Background

We live in a visual world. Our main sense is vision, and as such, we tend to align our environment accordingly. For example, in order to distinguish between organic waste bin and paper recycling bin – we would paint them in different colors.

For many years, technologies have been adapted to serve the waste pickup space. RFID tags, scanners and other tools and methods are used to allow the pickup truck to “understand” its surroundings. **GreenQ takes this one step further: why not allow the truck to “see” and analyze the pickup process using computer vision?**

Monitoring waste pickup metrics can be extremely challenging considering truck assignments and

waste capacity cannot be predicted. Moreover, the waste is diverse and is not necessarily collected

using one specific type of container.

Computer vision (or “image recognition”), a technology that is heavily utilized in other industries, can improve and optimize: the level of service provided; truck and collection efficiency; and satisfaction of the city residents.

## The GreenQ Solution

The GreenTrack platform by GreenQ is based on computer vision and automatic analysis of the waste pickup process. Advanced image recognition algorithms in the GreenTrack platform identify and measure various data points and export them back to the GreenQ dashboard. By utilizing GreenTrack, cities and contractors are able to achieve full data transparency and cultivate important analytics for the waste pickup process. Leveraging this data allows for vast improvements and optimization of the waste collection services that they offer.

## GreenTrack Setup

Within a single day of installation, a heavily-protected, durable GreenTrack box is installed on the truck. The box includes the main computer which collects, processes and transmits the metrics to the GreenQ cloud, alongside a camera and several more sensors.

The installation process takes 6-9 hours per truck, and once installed, the customer receives credentials for accessing the GreenQ dashboard. As a part of GreenQ's fully-automated approach, the system works independently in the background, without any interference with the regular waste pickup process. No special certifications or training are required for the truck staff and waste collection continues as usual.

The system activates automatically once the truck is started, and begins transmitting data and metrics in real time back to the GreenQ cloud service. The data collected is then presented on the customer dashboard in a simple and intuitive way.

When the customer is interested in receiving information for a specific pickup, the data is accessible with a single click on the pickup icon which appears on the map. This provides a snapshot of the work environment before, during, and after the pickup, along with other useful data points. Statistics and alerts on the waste pickup process are automatically generated by the system and are sent via email and/or SMS to the customer.

## Visual Recognition

Was the waste picked up? How much was collected? Was the environment left clean and tidy?

A single click on the pickup icon can provide the answers to all of these questions without having to spend an excessive amount of time manually analyzing video.

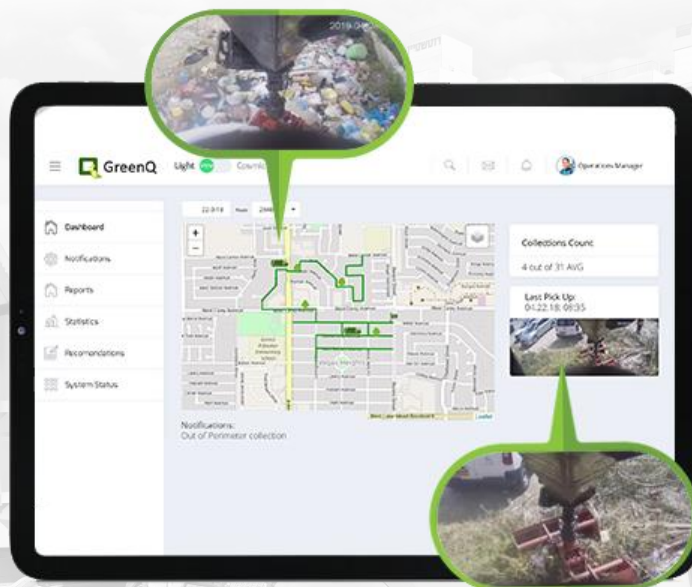


## Computer Vision's Value

- Low TCO, given the commodity hardware GreenQ is able to utilize (leveraging the smart algorithms behind the scenes)
- Requires no setup on the waste bins
- Note: when using computer vision, the system can only monitor what it is able to “see...”

## Improving Customer Transparency

- GreenTrack allows for images to be attached to the invoice for full transparency
- The system can be connected through an API, allowing for external system enrichment with information on the waste pickup progress
- GreenTrack provides visibility for the entire cycle of the waste pickup process-contractors and cities often use CRM or ERP solutions to manage the ongoing work and back-end processes, including communications with the end consumers. GreenTrack offers an outside-the-box integration solution for notifications and connectivity with features including allowing pickup events to serve as triggers for creating, updating or closing related tickets.



Interested in a demo?

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