



# Rubicon and Esri Help City of Columbus Use AWS to Increase Waste Management Efficiency and Reduce Customer Wait Times

## Executive Summary

Rubicon and Esri, both AWS Partners, created an application service integration to help the City of Columbus, Ohio Division of Refuse Collection shorten resident wait times for bulk collection from three weeks to one week, save four hours of time weekly by eliminating manual request updates, and increase the efficiency of routing. Rubicon and Esri worked with Columbus to integrate RUBICONSmartCity and Esri ArcGIS and automate the flow of customer route data from ArcGIS to RUBICONSmartCity, running on Amazon EC2 and Amazon S3.

## Struggling to Move Data Between Critical Applications

The [City of Columbus](#) is Ohio's state capital and largest city, with more than 900,000 residents in the city limits and more than two million people in the greater metropolitan area. The city's [Department of Public Service, Division of Refuse Collection](#) manages all residential waste collection for 344,000 households in the city, acting on 360 daily requests to pick up bulk waste at residents' homes.

In 2021, the city implemented [RUBICONSmartCity](#), an Amazon Web Services (AWS)-based technology suite that helps city governments streamline waste operations by more accurately tracking the progress of garbage trucks. "We do up to 12,000 bulk stops every month. By not optimizing or verifying what we are collecting or not collecting, we often had to return to houses or have residents call us back," says Tim Swauger, refuse administrator for the City of Columbus. "The Rubicon solution automated and optimized the entire collection process."

However, the Division of Refuse Collection still had a challenge: getting customer data from its [Esri](#) ArcGIS mapping software into the [Rubicon](#) solution each day. Residents dial 311 to call in bulk waste collection requests and the data goes to ArcGIS. However, the department's staff had to manually input the customer data from ArcGIS into RUBICONSmartCity each morning. "Even though our day starts at 6:00 AM, one of our employees had to start work at 5:30 AM every day to get all

THE CITY OF  
**COLUMBUS**

ANDREW J. GINTHER, MAYOR

DEPARTMENT OF  
PUBLIC SERVICE

## About the City of Columbus

Columbus, a city of more than 900,000 people, is the capital of Ohio. The city has more than two million residents in the greater metropolitan region and is the 14th-most populous city in the United States.

## AWS Services Used

- [Amazon Elastic Compute Cloud](#)
- [Amazon Simple Storage Service](#)

## Benefits

- Shortens resident wait times for bulk collection from three weeks to one week
- Saves four hours of time weekly by eliminating manual request updates
- Increases the efficiency of routing

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**Tim Swauger**

Refuse Administrator,  
City of Columbus

the data into Rubicon,” Swauger says. “It was not an efficient use of time, and we need our employees working on other, more important projects.”

### **Collaborating to Automate Data Flow Between ArcGIS and Rubicon**

To solve its data challenges, the division turned to Rubicon for assistance in developing a feature service integration with ArcGIS. “We initially thought about creating an integration on our own with an on-premises system, but it was way too complicated,” Swauger says. “We trusted Rubicon and knew the team could help.”

Rubicon developers collaborated with both Esri and the Division of Refuse Collection to create an integration with a feature service layer in ArcGIS. “The integration allows customer data such as location, service, and route information to flow automatically from ArcGIS into the Rubicon portal every night so the department can do accurate routing the next morning,” says Courtney Camporine, project manager for integrations at Rubicon. The Esri and Rubicon solutions both use AWS services such as [Amazon Elastic Compute Cloud](#) (Amazon EC2) and [Amazon Simple Storage Service](#) (Amazon S3) for data storage.

The RUBICONSmartCity and ArcGIS integration currently focuses on extracting data directly for solid waste collection. In the future, Rubicon plans to add more integrations with Esri. “We are constantly enhancing things to make the system better and more useful for cities like Columbus,” says Camporine.

### **Integrating an Application in Three Months Instead of a Year**

By relying on application environments already based on AWS, the Esri, Rubicon, and City of Columbus teams accelerated the development of the feature service integration. “We could never have done this integration as quickly as we did if we weren’t all on AWS,” says Conor Riffle, senior vice president at Rubicon. “We only needed a few lines of code and some APIs to design the right integration as opposed to having a much more complicated integration if we used an on-premises system. As a result, we did this in three months instead of a year.”

### **Saving Four Hours of Time Weekly, Increasing the Efficiency of Routing Operations**

The Division of Refuse Collection has automated nightly data transfers from ArcGIS into RUBICONSmartCity, eliminating the need for staff to arrive at work early and spend extra time manually entering route data. “By eliminating manual processes using the Rubicon integration into ArcGIS, we’re saving about four hours per week,” says Swauger. “Also, if we had to keep relying on manual data input, we would have had to hire a second person to help with that task at some point. So, we’re avoiding that cost.”

The division has also increased the efficiency of its routing operations for bulk waste collection, improving the ability to track time per task by gaining more visibility into where refuse collection drivers are going and what they’re picking up. Additionally, by accumulating more frequently updated data and photos, the department has more insights into residential waste. “We’ve been able to use the insights we have to change some of our policies,” Swauger says. “For example, we’ve learned that some residents running businesses out of their homes are scheduling bulk waste collections more often than they should, which is not a cost that taxpayers should have to cover. As a result, we’ve tightened up our policies on online scheduling to limit what we pick up and when.”

## Shortening Wait Times for Refuse Collection

With more efficient operations, the Division of Refuse Collection can work faster, helping reduce bulk waste collections from 12,000 to 10,000 each month. “We’ve reduced that number because we’re actually collecting exactly what we should be collecting, and that leads to shorter wait times for residents. Someone calling to schedule a collection two to three weeks out might now get scheduled next week because we can get to them faster.”

Rubicon continues to collaborate with Esri to expand from a single feature service layer to multiple feature service layers, allowing cities like Columbus to import and integrate a wider array of data. Riffle concludes, “We want this integration to support the variety of data complexity municipalities have. And we can do that with the power of AWS.”

## About AWS Partner Rubicon

Rubicon is a digital marketplace for waste and recycling, and a provider of innovative software-based products for businesses and governments worldwide. Rubicon is an AWS Partner.



## About AWS Partner Esri

Esri, a global market leader in geographic information system (GIS) software, location intelligence, and mapping, helps customers unlock the full potential of data to improve operational and business results. With its pioneering commitment to geospatial technology and analytics, Esri engineers the most innovative solutions that leverage a geographic approach to solving some of the world’s most complex problems by placing them in the crucial context of location.

